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UNITED STATES PATENT AND TRADEMARK OFFICE



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DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

**OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE**

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

**CONSOLIDATED LISTING OF RECENT OFFICIAL GAZETTE NOTICES
RE PATENT AND TRADEMARK OFFICE
PRACTICES AND PROCEDURES
PATENT NOTICES**

The following is a compilation of the more important notices and rule changes which have been published in the OFFICIAL GAZETTE from July 1, 1964, through December 31, 1966. These notices and rule changes are currently in effect unless otherwise noted.

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INFORMATION AND CORRESPONDENCE

**(1) OFFICIAL PATENT OFFICE MAILING ADDRESS.
REMAINS WASHINGTON, D.C.**

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of any communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Director of Administration.
Feb. 20, 1966.
(Office name change per Public Law 93-506, Jan. 2, 1975)

[880 O.G. 662]

(2) GROUP NUMBER SHOULD APPEAR ON COMMUNICATIONS RELATING TO PENDING APPLICATIONS

It is again requested that the Group number be typed on amendments and other communications relating to pending applications in order to expedite the handling of mail and to conserve manpower. The number of the Group should be placed on the right-hand side, opposite the Serial Number or name of applicant. In view of the vast amount of mail, continued careful attention to these details will do much toward avoiding delay in handling of mail.

C. A. KALK,
Director of Administration.
Nov. 6, 1966.

[880 O.G. 345]

(3) IDENTIFICATION FOR APPLICATION CORRESPONDENCE

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the file.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action,
5. Title of the invention.

To further reduce the burden on the Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL-85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Assistant Commissioner.
Mar. 5, 1971.

[885 O.G. 2]

**(4) IDENTIFYING APPLICATION CORRESPONDENCE WITH
ISSUE BATCH NUMBER**

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example: "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
*Assistant Commissioner
for Administration.*
Jan. 16, 1976.

[943 O.G. 519]

(5) HAND DELIVERY OF PAPERS

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,

Jan. 29, 1974. Deputy Assistant Commissioner for Patents.

[819 O.G. 1070]

(6) POST CARD RECEIPT REMINDER

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz., affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for each document for which a receipt is desired.

RICHARD A. WAHL,

Assistant Commissioner.

Nov. 21, 1968.

[857 O.G. 667]

(7) STATUS INQUIRIES

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive

period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL-327 in every case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL-327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL-35) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL-327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the OFFICIAL GAZETTE are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1081) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,

Assistant Commissioner of Patents.

Nov. 24, 1971.

[893 O.G. 810]

(8) CHANGE OF ADDRESS

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in each application for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is additional to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice of change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing plural applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,

Deputy Assistant Commissioner for Patents.

May 28, 1975.

[935 O.G. 1352]

(9) CHANGE OF ADDRESS OR PRACTITIONER IN A PLURALITY OF PATENT APPLICATIONS

Change of Address

This notice is supplemental to the Notice of May 28, 1975, 935 O.G. 1352.

In those instances where a change in the correspondence address of a registered attorney or agent is necessary in a plurality of applications, and the number of applications is such as to cause undue hardship, the notification filed in each application may be a reproduction of a properly executed, original notification. The original notice may be sent to the Office of the Solicitor as notification to the Attorney's Roster

of the change of address, or may be filed in one of the applications affected, provided that the notice includes an authorization for the public to inspect and copy the original notice in the event one of the applications containing a copy matures into a patent and the application containing the original paper is either pending or has become abandoned. The copies submitted in each affected application must identify where the original paper is located. Otherwise, the practice governing the filing of notifications of change of address remains the same.

Powers of Attorney

In the event of a need to file a change in the power of attorney in a plurality of applications of a common assignee or inventive entity, and the number of applications is such as to cause undue hardship, a single, original paper may be used provided that a reproduction of this original paper is supplied in each of the affected applications. The copy of the original paper must identify in which application the original paper is located and authorize the public to inspect and copy the original paper in the event one of the applications containing a copy matures into a patent and the application containing the original paper is pending or has become abandoned. The procedures and usual prerequisites for the filing of grants and/or revocations of power of attorney otherwise remain the same.

WILLIAM FELDMAN,

Sept. 9, 1976. Deputy Assistant Commissioner for Patents.

[951 O.G. 454]

(10) EXPRESS MAIL

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the OFFICIAL GAZETTE of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail does not provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service does not notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
Acting Assistant Commissioner
for Administration.

May 15, 1975.

[938 O.G. 1554]

(11) CERTIFICATE OF MAILING PROCEDURES

On November 1, 1976, the Patent and Trademark Office instituted the Certificate of Mailing Procedure by promulgating 37 CFR 1.8 in an attempt to reduce the number of problems resulting from late receipt of responses due to mail delays. This notice was published in the OFFICIAL GAZETTE on October 26, 1976 (951 O.G. 1242 and TM 210). Guidelines relative to this procedure were published in the OFFICIAL GAZETTE on November 16, 1976 (952 O.G. 918 and TM 174).

Although the new procedure has gained wide acceptance, it has not been entirely without problems. One major problem involves the correlation of the certification with the appropriate papers when presented on a separate sheet. In order

to curtail this problem and other minor ones, the guidelines published on November 16, 1976, are superseded by the following guidelines. They are applicable to responses in both patent and trademark matters, as permitted by 37 CFR 1.8.

Guidelines

A) The certification requires a signature. Specifically, if the certification appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification. Although not specifically required by 37 CFR 1.8, it is preferred that the certificate be signed by the applicant, assignee, or registered practitioner.

B) When possible, the certification should appear on a portion of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO-85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, that sheet must (1) be signed and (2) fully identify and be securely attached to the paper it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., responses to rejection or refusal, Notice of Appeal, etc. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

If the sheet should become detached from the paper and thereafter not associated with the appropriate file, evidence that this sheet was received in the Office can be supported by submitting a copy of a post card receipt specifically identifying this sheet and the paper and by submitting a copy of the sheet as originally mailed. Attention is directed to the notice of November 21, 1968 published in the OFFICIAL GAZETTE (857 O.G. 667) relative to the use of post cards as receipts.

D) In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO-85 and an assignment), each paper must have its own certification as a part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a Notice of Appeal), each paper should have its own certification as a part thereof or attached thereto.

Use of Stamped Certification

Some practitioners are placing the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on _____

(Date of Deposit)

Name of applicant, assignee, or
Registered Representative

Signature

Date of Signature

Interpretations

The phrase "prior to expiration of the set period" in 37 CFR 1.8(a) includes the last day of the set period, which last day may be the "next succeeding secular or business day" as set out in 35 U.S.C. 21. Also, the filing of a 37 CFR 3.54 form to effect a filing under 37 CFR 1.60 is considered the filing of an application and is, therefore, excluded from the Certificate of Mailing Procedure.

C. MARSHALL DANN,

Aug. 30, 1977. Commissioner of Patent and Trademarks.

[962 O.G. 20]

(12) CHANGE IN LEGAL HOLIDAYS

The Commissioner's Notice of December 2, 1970, "Change in Legal Holidays" is hereby rescinded, in view of Public Law 94-97, September 18, 1975, 89 Stat. 479, which amended the listing of legal public holidays in 5 USC § 6103 by changing the Veterans Day holiday from the fourth Monday in October to November 11 of each year. Section 6103, as amended, reads as follows:

(a) The following are legal public holidays:

New Years Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, November 11.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

Attention is called to the fact that the above listing of holidays in 5 USC § 6103, as amended, should be followed, rather than the listing appearing on page 69 of the June 1979 Patent Laws pamphlet which does not reflect the noted amendment.

LUTRELLE F. PARKER,
Acting Commissioner,
U.S. Patent and Trademark Office.

Date: Sept. 25, 1979.

EDITORIAL NOTE: Sec. 6103(c) states that January 30 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

[967 O.G. 30]

(13) ACCEPTABLE DRAWINGS FOR PATENTS

Approximately ten years ago, the Office's standards for acceptable drawings with respect to certain matters including the blackness and minimum thickness of inked lines, and shading of drawings, were relaxed in order to reduce the backlog of informal drawings at that time.

Apparently, because of the increased use of pens with a round, open-end capillary tip in place of the conventional draftsman's drawing pen, the Office now has a problem of obtaining acceptable reproduction copies of thin, light and gray lines which appear on many drawings. As a result, approximately 10,000 drawings sheets filed each year are not acceptable for normal reproduction and microfilming from the printed copy. Special printing steps must be taken to try to print very thin or light lines. Inked lines should be at least 0.012 inch in width and no closer together than 0.05 inch. Shading lines should be constructed to meet these criteria for acceptable drawings. The inked lines must not rub off the standard bristol board sheet, and their reflectance should not exceed 12%.

Applicants and draftsmen are requested not to use thin or light lines on their drawings. In the future, drawing requirements will be more stringent regarding the blackness and minimum thickness of lines to be acceptable. The Chief Draftsman has been instructed to adhere strictly to the above standards and criteria after January 1, 1978 so that special printing requirements can be held to a minimum.

Persons interested in examples of acceptable and unacceptable lines for drawings may obtain one set of "Printed Examples from Unacceptably Inked Drawings" by writing to:

The Chief Draftsman
U.S. Patent and Trademark Office
Washington, D.C. 20231

RICHARD J. SHAKMAN,
Oct. 20, 1977. Assistant Commissioner for Administration.
[964 O.G. 21]

(14) REGULATIONS FOR THE USE OF THE FACILITIES OF THE PATENT AND TRADEMARK OFFICE

Revision of Regulations

AGENCY: Patent and Trademark Office, Commerce.
ACTION: Notice.

SUMMARY: The Patent and Trademark Office gives notice of a revision of its "Regulations for the Public Use of Records in the Public Search Room for Patents of the Patent and

Trademark Office," published in the Federal Register of July 14, 1976, 41 FR 29009. The regulations published in the Federal Register of July 14, 1976, are limited to the use of the Public Search Room for Patents. The revision is intended to allow public use of other Patent and Trademark Office record facilities with minimum risk to the security of Patent and Trademark Office personnel and government property.

EFFECTIVE DATE: June 26, 1979.

FOR FURTHER INFORMATION CONTACT: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, 703-557-2390.

SUPPLEMENTARY INFORMATION: This revision is an extension of the present regulations, published in the Federal Register of July 14, 1976, 41 FR 29009, to allow public use of Patent Examining Group Facilities and the Scientific Library under conditions which are as nearly as possible the same as those which apply to the Public Search Room for Patents.

All persons seeking use of the Public Search Room for Patents and/or the Patent Examining Group Facilities must obtain a User Pass. The guards at the entrances to the Public Search Room for Patents can direct prospective users to the pass issuance desk. User Passes will be issued to persons not under prohibition from using the facilities who agree to abide by the regulations of the Public Search Room for Patents and the Patent Examining Group Facilities.

The use of the Group facilities for search purposes by members of the public is strictly limited to the search of materials not available in the Public Search Room for Patents or the Scientific Library and when it does not conflict with the regular business of Patent and Trademark personnel and only between the hours of 8:45 a.m. and 4:45 p.m. on regular business days.

The Public Search Room for Patents is open 8:00 a.m.—8:00 p.m., Monday through Friday except on legal holidays. The hours of the Record Room are 8:00 a.m.—5:00 p.m. on the days the Public Search Room for Patents is open.

The revised regulations appear below:

REGULATIONS

Regulations for members of the public using the facilities of the U.S. Patent and Trademark Office, including but not limited to the Public Search Room for Patents.

The Public Search Room for Patents is defined as that area comprising the foyers of the lobbies of Buildings 3 and 4 of Crystal Plaza; the offices; Microfilm Center; restrooms and telephone areas off these foyers; the stacks; Record Room public reception area; study and copier areas between the foyers; and the Mesanine.

The facilities of the Patent Examining Groups are defined as those areas in Buildings 3, 34 and 4 of Crystal Plaza designating Examining Groups.

With the respect to the Group Facilities, authorized personnel under these Regulations, include Supervisory Patent Examiners and Examining Group Directors.

The Scientific Library is located on the second floor of Building 34 of Crystal Plaza.

To maintain and protect the patents and related records located in the Public Search Room for Patents and the Patent Examining Group Facilities, it is necessary to establish and to enforce certain rules and regulations pertaining to the use thereof. Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR Subpart 101-20.3; and appropriate Sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the regulations appearing below are established for those using the facilities of the Patent and Trademark Office.

These regulations supersede all previous regulations on the subject.

1. All persons using the facilities of the Patent and Trademark Office are subject to the regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101-20.3 [41 CFR §§ 101-20.300 through 101-20.314].
2. All posted Official Notices are to be complied with.
3. Smoking is not permitted except in designated areas.
4. No food or beverages in any form are to be consumed except in designated areas.
5. Loud talking, use of radios, and any other form of activity which may disturb other members of the public

and/or Patent and Trademark Office personnel are forbidden.

6. Children brought into the Patent and Trademark Office must not be allowed to disturb others.

7. Users of the facilities may not give the Patent and Trademark Office as a mailing address or otherwise suggest that mail may be received at the Patent and Trademark Office; nor may correspondence be conducted on official Patent and Trademark Office stationery.

8. Messages shall not be affixed to walls, desks, phone booths, or other public property, except designated message boards.

9. Patent records and any other property of the Patent and Trademark Office shall not be removed from their normal location without permission from an authorized official; nor shall such records or property be mutilated. Authorization will not be given to remove from any Group Facility, U.S. patents or any other material readily available through the Scientific Library.

10. The use of equipment such as reproducing machines, typewriters and photographic equipment is prohibited without prior permission from an authorized official. Relative to the Public Search Room, the use of dictation equipment is prohibited except in designated areas. Whenever permission is obtained, the use of such equipment must not conflict with Regulation 5.

11. In the Public Search Room for Patents, library trucks or carts are to be used for transporting bundles only. The trucks or carts are not to be used for storage while making searches.

12. In the Public Search Room for Patents, patents temporarily removed from bundles for any purpose must be returned to the proper place in the appropriate bundle.

13. In the Public Search Room for Patents, all bundles of patents must be promptly and properly replaced in the stacks by the user.

14. The reserving of seats and/or working areas is prohibited.

15. Users of the Public Search Room for Patents are not permitted to use Patent and Trademark Office facilities beyond the Public Search Room for Patents after 5:00 p.m.

16. The front portion of the Public Search Room for Patents, i.e., that portion facing Crystal Plaza Drive and having a high ceiling shall not be occupied by users after 6:00 p.m.

17. A valid User Pass must be worn and visible at all times when Patent and Trademark Office facilities are being used. In addition, all persons holding User Passes must register with the designated representative in each Examining Group where they search and must sign a log (sign-in, sign-out sheet) indicating time-in, time-out, name, User Pass number, class(es) and subclass(es) users after 6:00 p.m.

18. User Passes are nontransferable and must be surrendered to authorized Patent and Trademark personnel upon request for cause.

19. Packages, briefcases or other personal effects brought into the Public Search Room for Patents or the Group Facilities are subject to search by authorized Patent and Trademark Office personnel upon request.

20. All packages, briefcases or other personal effects brought into the Group Search Rooms must be removed when leaving the Group Search Room areas.

21. Patents and other documents must not be removed from the Group patent shoes for any reason other than for cursory study thereof while kept in close proximity with the shoe and must not be moved out of their normal sequence.

22. All patent shoes must be promptly replaced in their proper location in the shoe cases.

23. All textbooks, journals and the like must be returned to their proper location.

24. All persons using the facilities of the Patent and Trademark Office are to refrain from engaging in any conduct which (1) is criminal in nature or (2) which causes or appears to cause an employee of the Patent and Trademark Office to violate the conflicts of in-

terest regulations of the Department of Commerce [15 CFR §§ 0.735-1 through 0.735-41].

25. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Public Search Room for Patents and the Group Facilities, when made by authorized Patent and Trademark Office personnel, must be promptly complied with.

These regulations will be enforced in accordance with the Procedures for Enforcement published in the Federal Register of May 17, 1978, 43 FR 21345 (970 O.G. 114, published May 30, 1978).

Persons violating these regulations may be denied the use of the facilities in the Public Search Room for Patents and the Patent Examining Group Facilities and may further be subjected to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.542.

These Regulations have been instituted in order to maintain high quality and completeness of patent files and to provide an orderly environment for exploring, or studying in depth, the wealth of scientific and technological information contained in United States Patents. Although the Regulations may cause some inconvenience, the understanding and cooperation of users will insure that, for future users, the knowledge contained in United States Patents will be available in an environment conducive to study in the Public Search Room for Patents and the Patent Examining Group Facilities.

DONALD W. BANNER,
Commissioner of Patents
and Trademarks.

June 20, 1979.

[1984 O.G. 26]

(15) REGULATIONS RELATING TO THE USE OF PATENT AND TRADEMARK OFFICE RECORDS FACILITIES

Establishment of Enforcement Procedures

AGENCY: Patent and Trademark Office, Commerce.
ACTION: Notice.

SUMMARY: The Patent and Trademark Office is adopting procedures for enforcing existing regulations governing the use of the Public Search Room for Patents and the Patent Examining Group Search Facilities by members of the public. Enforcement of the existing regulations is necessary, and is intended by these procedures, to carry out the commitment of the Office to the public to promote an atmosphere conducive to research and maintain the integrity of the files in the Public Search Room for Patents and in the Examining Group Search Facilities.

EFFECTIVE DATE: 6-30-78.

FOR FURTHER INFORMATION CONTACT: Bradford R. Hunter, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557-2290.

SUPPLEMENTARY INFORMATION: The procedures will apply in enforcing the regulations for the public use of records of the Public Search Room for Patents and the Patent Examining Group Search Facilities. The regulations of the Public Search Room for Patents were published in the Federal Register for July 14, 1976, 41 F.R. 29009, and incorporated in a Search Room User Agreement entered into by each person who is issued a User Pass. Regulations for Users of the Patent Examining Group Search Facilities were established under Rule 2 of the regulations of the Public Search Room for Patents and were published in the OFFICIAL GAZETTE of March 22, 1977, 956 O.G. 1118. The procedures appear below.

PROCEDURES FOR ENFORCEMENT OF THE REGULATIONS FOR THE PUBLIC USE OF RECORDS IN THE PUBLIC SEARCH ROOM FOR PATENTS AND THE PATENT EXAMINING GROUP SEARCH FACILITIES

Under applicable statutes and regulations, including 40 U.S.C. 496(c); 41 CFR 101-20.3; and appropriate sections of Department Organization Orders 30-3A and 30-3B of the Department of Commerce, the procedures appearing below are established.

VIOLATION INVOLVING THE SECURITY SYSTEM

1. Unauthorized removal of government property.

(a) The Public Search Room for Patents is equipped with a security system designed to sound an alarm when an attempt to remove government property from the Public Search Room is detected. Each alarm signal triggered by a person passing through an exit to the Public Search Room will be investigated by security guards stationed at the Public Search Room exits. The person involved will be required to stop and allow the security guards to determine the cause of the alarm. If non-government property is the cause for the alarm, the person will be allowed to proceed without further delay. If unauthorized possession of government property is found to be the cause of the alarm, the person in whose possession the property is found will be advised that a violation has occurred and will be required to surrender the property to the Manager of the Public Search Room. An oral explanation for the possession of such property will be requested by the Manager.

(b) The Manager of the Public Search Room will immediately report each incident involving unauthorized possession of government property to the Deputy Assistant Commissioner for Administration by telephone, and if requested submit a written report, together with the government property and User Pass involved to the Deputy Assistant Commissioner for Administration.

(3) If it shall appear to the Deputy Assistant Commissioner for Administration that unauthorized possession of government property, detected by the security system, was inadvertent or otherwise unintentional, no further action will be taken. Otherwise, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

OTHER VIOLATIONS OF THE PUBLIC SEARCH ROOM REGULATIONS

2. All other violations of the Public Search Room Regulations.

(a) Each observed or reported violation will be investigated by the Manager of the Public Search Room. If a violation has occurred and is not denied, the person involved will be verbally requested by the Manager to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request of the Manager to comply with the regulations, or violates the regulations after having agreed to comply with them, the person will be required to surrender his or her User Pass to the Manager of the Public Search Room.

(b) The Manager of the Public Search Room will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Administration.

(c) If the Deputy Assistant Commissioner for Administration is satisfied that a reported violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

VIOLATIONS OF THE PATENT EXAMINING GROUP SEARCH FACILITIES REGULATIONS

3. Violations of the Regulations for Users of the Patent Examining Group Search Facilities.

(a) Each observed or reported violation will be investigated by Authorized Official. If a violation has occurred, and is not denied, the person involved will be verbally requested to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request to comply with regulations, or violates the regulations after having agreed to comply with them, the person involved will be required to surrender his or her User Pass to the Authorized Official.

(b) The Authorized Official will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Patents.

(c) If the Deputy Assistant Commissioner for Patents is satisfied that violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Patents will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked. A written decision will be rendered by the Deputy Assistant Commissioner for Patents after consideration of any timely submitted response.

PENALTIES

4. Factors to be Considered in Assessing Penalties.

(a) Penalties will be determined on a case-by-case basis. A record of penalties imposed for given violations will be kept and made available to the public upon request.

(b) Due weight may be given to prior violations of the regulations in assessing whether any given violation is willful, deliberate or intentional.

(c) Prior violations of the regulations will be considered in determining any specific penalty to be imposed. Depending upon the circumstances, the penalty for a first offense may range from an oral or written warning to a 60-day suspension of the User Pass. For a second offense, the penalty may be a suspension of from 5 days to 1 year. For a third offense, the penalty may range from a 30-day suspension to revocation of the User Pass.

GENERAL PROVISIONS

5. Use of Search Facilities During Suspension or After Revocation of User Pass.

No individual will be permitted to use the Public Search Room for Patents or the Patent Examining Group Search Facilities while his or her User Pass is suspended or revoked.

6. Temporary User Pass.

Any person whose User Pass was surrendered, but not suspended or revoked, may be issued a temporary User Pass which shall be valid until the User Pass is returned or a decision is rendered pursuant to paragraph 1(c), 2(c), 3(c).

7. Absence of the Deputy Assistant Commissioner for Administration.

In the absence of the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services will carry out the functions and responsibilities assigned to the Deputy Assistant Commissioner for Administration in paragraph 1(b) and (c) and 2(b) and (c).

8. Absence of the Manager of the Public Search Room.

In the absence of the Manager of the Public Search Room, the Acting Manager will carry out the duties and responsibilities assigned to the Manager in paragraphs 1(a), 1(b), 2(a) and 2(b).

9. Assistance.

The Manager of the Public Search Room and the Authorized Official may, when necessary request the Security Officer of the Patent and Trademark Office or the GSA to provide assistance in carrying out their functions in paragraphs 1(a), 2(a), and 3(a).

10. Petitions.

A decision rendered by the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services, or the Deputy Assistant Commissioner for Patents may be reviewed on petition to the Commissioner.

LUTRELLE F. PARKER,

Acting Commissioner of Patents
and Trademarks.

May 5, 1978.

[1970 O.G. 114]

(16) USE OF CERTIFICATE OF CORRECTION FORMS

The purpose of this notice is, to once again, remind patentees and their attorneys and agents to submit the text of any correction under 37 CFR 1.322 and 1.323 on the Certificate of Correction form, PTO-1050, which is available free of charge from the Patent and Trademark Office. The presentation of all corrections on this form permits its use as

camera copy for prompt, direct offset printing of the Certificate of Correction.

Instructions for use of Form PTO-1050 are printed on the top portion thereof, and are also set forth, in further detail, in Section 1402.02 of the Manual of Patent Examining Procedures. It is especially important that the typing be clean and clear. Both thin, light type and heavy, smudged type should be avoided. Changes and corrections are preferably made by use of white opaque correction fluid.

The typing should be within the borders printed on the form and a two-inch blank space should be left at the bottom of the last page of the form for the placement of the signature of the Attesting Officer.

Both sheets of the printed form should be forwarded to the Office. The copies should be stapled together only at the upper left-hand margin at the indicated location.

Copies of form PTO-1050 may be obtained, as needed, from either the Correspondence and Mail Division in Building 2, or from the receptionist in the lobby of Building 3, Crystal Plaza, Arlington, Va.

RICHARD J. SHAKMAN,
Assistant Commissioner for
Administration.

May 10, 1977.

[1959 O.G. 3]

(17) GOVERNMENT PUBLICATION SUBSCRIPTION SERVICE

The purpose of this notice is to inform subscribers of Federal Government publications serviced by the Government Printing Office, Superintendent of Documents, of the requirement to standardize subscriber change of address procedures. It is imperative that the Government Printing Office be advised by each subscriber of an address change and that such advisement be accompanied by the latest subscription address label.

The Government Printing Office has the largest number of subscriptions of any activity in the United States. The Superintendent of Documents maintains about 835 mailing lists containing nearly 3 million addresses. Many of these subscribers frequently change their addresses and inform the Superintendent of Documents in a wide variety of methods. Some large organizations have as many as 20 identical subscriptions to the same street address but with different internal deliveries. Altogether the Government Printing Office is mailing nearly 5 million subscription copies each month. The Government Printing Office requests your cooperation to more effectively maintain the many mailing lists.

For your convenience, a change of address form is reproduced on the last page of the OFFICIAL GAZETTE.

BRADFORD R. HUTHER,
Acting Assistant Commissioner for Administration.

Aug. 9, 1977.

[1962 O.G. 2]

(18) NOTICE TO OFFICIAL GAZETTE SUBSCRIBERS

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE, MPEP Revisions, Trademark Rules of Practice, Annual Indices, and all other patent and trademark publications.

The Superintendent of Documents advises that expiration notices are sent out approximately three months in advance of the expiration date. However, subscribers should not be dependent upon such notices. In the event that a notice is not received within two months of the expiration date, the subscriber should renew his subscription with the Superintendent of Documents and attach a label from the envelope in which he receives the gazette, together with a check covering the amount of the subscription.

All correspondence and inquiries concerning subscription services to patent and trademark related publications, and requests for reinstatement of subscriptions should be directed to:

Mr. C. A. LaBarre
Asst. Public Printer
Superintendent of Documents (SD)
Government Printing Office
Washington, D.C. 20401

This notice is effective with the publication date and supercedes the notice published on this subject in 939 O.G. 1, dated October 7, 1975.

Mar. 14, 1978.

RICHARD J. SHAKMAN,
Assistant Commissioner
for Administration.

[969 O.G. 2]

(20) FLEXIBLE WORKING HOURS

On January 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:00 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

DONALD W. BANNER,
Commissioner of Patents
and Trademarks.

Dec. 13, 1978.

[978 O.G. 140]

(21) Rules Service Company Address Change

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Company
4341 Montgomery Avenue
Bethesda, Maryland 20814
(301) 656-4660

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

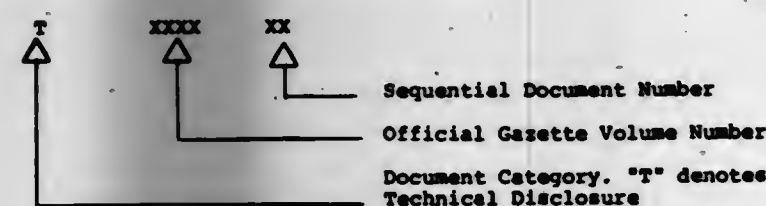
Date: Apr. 7, 1980.

[984 O.G. 10]

(22) Defensive Publication Program

A change in the numbering system of Defensive Publication documents will be implemented, effective with the issue of November 4, 1980.

The numbering system will be as follows:



The numbering system as announced in 869 O.G. 637 remains in effect for the issues of December 16, 1979 through October 1980.

RICHARD J. SHAKMAN,
Assistant Commissioner
for Administration.

Date: Sept. 2, 1980.

[998 O.G. 38]

(23) Forms Booklet Available

A new publication titled "Patent and Trademark Forms Booklet" dated October 1979 is now available from the Superintendent of Documents. The price is \$12.00 and the stock number is 003-004-00569-6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8½ by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Dated: Mar. 26, 1980.

[993 O.G. 26]

(24) Patent and Trademark Office Services

The Patent and Trademark Office is making every effort to utilize its resources as effectively and efficiently as possible. However, delays in some services are being experienced. To improve services, the PTO is taking the following steps:

● Beginning with the issue of January 1, 1980, the original formal drawing which is supplied by the patent applicant and is 8½ by 14 inches (21.0 by 29.7 cm.) is being stored within the patented file in the Patent Search Division. This is a change from the earlier practice under which the drawing is stored in a separate location from the patent file wrappers. The new procedure will simplify obtaining the complete patented file. This procedure will be used for a three month trial period and then reevaluated for its effectiveness.

● Effective December 3, 1979, sale of tokens and maintenance of all token operated photocopy and microfilm reader-printer equipment throughout the Patent and Trademark Office are being performed by a private contractor, T S Info Systems, Inc. (TSI). Improved quality and timeliness of copy service to the public are anticipated.

All token sales are made between the hours of 8:30 A.M. and 5:00 P.M. at the token sales booth in the Record Room located in Building CP-4. When purchasing tokens by check, please make the check payable to "TSI" rather than "Commissioner of Patents and Trademarks." Tokens will not be sold at the cashier's window in CP2.

Effective February 1, 1980, charges for tokens to PTO customer deposit accounts will no longer be accepted.

● Effective immediately, no requests for new patent or trademark drawings will be accepted by the Patent and Trademark Office. New drawings will be prepared only for requests already received. All currently available drafting time and facilities are required to correct the backlog of drawings needing correction prior to issue. When this backlog has been eliminated, a notice will be issued to that effect and new drawings can again be prepared for the public.

Effective immediately, three additional special mail room boxes will be established in the PTO:

Box 4 will be used for all mail for the Office of Legislation and International Affairs.

Box 5 will be used for documents which are related to trademarks and for which no fee is required at the time of filing; e.g., amendments to applications and requests for extensions of time to file an opposition. For mail directed to the Trademark Trial and Appeal Board, put "Attention TTAB" on the envelope in addition to "Box 5."

Box 7 will be used for reissue applications which are involved in litigation and any subsequently filed papers for these applications.

Mail appropriately addressed will be sorted and forwarded on a more timely basis.

Applicants and other users of the PTO services can assist in improving the efficiency of office operations by doing the following:

● Use the following special PTO box numbers for forwarding particular types of mail. The boxes should be used only for the specified purpose.

- Box 2—Replenishment of funds in deposit accounts.
- Box 4—Mail for the Office of Legislation and International Affairs.
- Box 5—"No fee" mail related to trademarks.
- Box 7—Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
- Box 8—All papers for the Office of the Solicitor.
- Box 9—Coupon orders for U.S. patent and trademark copies.
- Box 10—Orders for certified copies of patent and trademark applications.
- Box PCT—Mail related to applications filed under the Patent Cooperation Treaty.

Only that material for which the special box was established should be enclosed.

The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended. Envelopes should be addressed:

Box—
Commissioner of Patents and Trademarks
Washington, D.C. 20231

● Consider the fact that some PTO services are experiencing delays, and allow sufficient lead time for services requested of the Office. Where possible, urgent items which require no fee should be hand delivered to the appropriate area.

● Minimize the number of inquiries to the PTO regarding acknowledgment of receipt of applications, fee papers, orders for patent copies, etc.

● Include a self addressed return post card with newly filed applications. The serial number assigned the application will be stamped on the post card, which will constitute the means by which the application can be identified.

● Use commercial services for preparation of new patent and trademark application drawings.

● On all papers which are filed in patent and trademark applications and are being sent to an examining group, include the appropriate identifying data, such as examining group number, examiner's name, and the number of the application paper to which the response is directed. The paper should also identify the type of document being presented (e.g., response to Office action #—, amendment, etc.). The name and telephone number of the individual representing the applicant also should appear on all papers.

These steps have been devised in an effort to minimize delays in services. We solicit the help and cooperation of the public.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Jan. 4, 1980.

[990 O.G. 184]

(24.1) Simultaneous Issue of Patents

Applicants and their attorneys who desire the simultaneous issue of allowed applications must submit the request to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Publications
CP-2, Room 5C26

The request must contain the following information about each allowed application for which simultaneous issue is requested:

- (1) serial number.
- (2) filing date

- (3) name(s) of inventor(s)
- (4) title of invention
- (5) date of allowance

Separate copies of the request must accompany each Issue Fee Transmittal (PTO-85b).

Questions concerning this practice may be directed to Mr. Stanley J. Bania, Director, Office of Publications, Area Code (703) 557-3794.

Aug. 25, 1978.

RICHARD J. SHAKMAN,
Assistant Commissioner
for Administration.

[974 O.G. 16]

RECORDS AND FILES

(25) ASSIGNEE NAMES

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the same party are identified on the Base Issue Fee Transmittal form, POL-85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL-85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL-85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

Dec. 17, 1975.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

[942 O.G. 186]

(26) SUBMISSION OF UNIFORM ASSIGNEE NAMES ON THE ISSUE FEE PAYMENT FORM PTOL-85b

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL-85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL-85b should ensure that the same company name form is used for all patents issuing to a particular company.

Nov. 17, 1977.

RICHARD J. SHAKMAN,
Assistant Commissioner
for Administration.

[965 O.G. 8]

(27) TITLE OF INVENTION CARRIED ON OFFICE RECORDS

The Patent and Trademark Office is experiencing an increased incidence in the number of newly filed applications in which the title of the invention is inconsistent within the papers. This has resulted in applicants requesting correction of the official filing receipt in many instances to indicate the title preferred by applicants.

Hereafter, whenever the title of the invention appears inconsistent within the papers of a newly filed application for patent, the records of the Office will carry the title as indicated on the first page of the specification and no corrected filing receipt will be issued to indicate another title. Note that 37 CFR 1.72(a) indicates that the title of the invention

should appear as a heading on the first page of the specification.

It should also be noted that applicant may amend the title under 37 CFR 1.115 if any changes are subsequently desired before issuance of a patent.

BRADFORD R. HUTHER,

Acting Assistant Commissioner for Administration.
Aug. 31, 1977.

[1962 O.G. 23]

(28) REVISED PATENT APPLICATION FILING RECEIPT

As a part of the new automated patent application information system, a revised Filing Receipt will be put into use in June 1979. The major modification is a change in size from the current 3 x 5 inch size to a larger 8½ x 11 inch size. It should be noted that this change is consonant with the recently announced, government-wide policy to use 8½ x 11 inch paper.

The same information currently appearing on the Filing Receipt form will be retained on the revised form. In addition, all information supplied by applicant relating to prior domestic, foreign and PCT international applications will be printed on the Receipt. Applicants are requested to verify all of the data printed on the Receipt and notify the Patent and Trademark Office of any errors. Such notification should be directed to the attention of the Application Division.

RICHARD J. SHAKMAN,
Assistant Commissioner
for Administration.

May 14, 1979.

[1983 O.G. 2]

(29) NEW SECURITY PROCEDURES

A Security Task Force, which was established in mid-1978, submitted a number of recommendations for improvements in the security of Patent and Trademark Office personnel and government property.

One recommendation that we adopted requires that either an employee building pass, user pass, or visitor pass be worn by each person in the Patent and Trademark Office in a manner so as to be visible at all times when the person is using Patent and Trademark Office facilities. This procedure will permit immediate visual recognition of all persons authorized to use our facilities. User and visitor passes may be obtained from the Receptionist, Public Search Room, Crystal Plaza Building 3, Room 1A03.

Effective upon publication of this notice, all persons will be required to comply with this procedure. Failure to do so may result in denial of the use of our facilities.

DONALD W. BANNER,
Commissioner of Patents
and Trademarks.

June 4, 1979.

[1983 O.G. 25]

(30) New System To Monitor Patent Applications

During this summer the Patent and Trademark Office will begin implementation of a new office-wide computer system, the Patent Application Locator and Monitor System (PALM 3), for monitoring the location and status of pending patent applications. The system will also have the ability to print data on certain form letters such as the Notice of Allowance, using computer-controlled printers located in the Examining Groups. This will permit the Notice of Allowance to be printed and mailed by the Groups shortly after the Examiner has decided that an application is in condition for allowance. Under the new system, the Notice of Allowance will be mailed prior to completion of final issue revision by the Group clerical staff. In those applications where an Examiner's Amendment is required, it will normally be mailed as an attachment to the Notice of Allowance.

When existing printing backlogs have been eliminated, this accelerated mailing should reduce the time between allowance by the examiner and issuance of the patent grant in most cases. The nature and/or extent of the revisions or processing requirements subsequent to mailing of the Notice of Allowance may result in little or no reduction in the time required for the printing of a few patents. In addition, it is possible that, as a result of this additional processing, withdrawal or correction of the Notice for a given application may be required. For instance, prosecution might

be reopened as a result of the Quality Review Program. In situations where the Base Issue Fee has been paid and the Notice of Allowance is subsequently withdrawn, the applicant may request that a refund be made or that the fee be credited to a Deposit Account.

Applicants will continue to receive a three part Notice of Allowance packet, but, as a result of automated printing, the Notice will be produced in a slightly revised format. This new format will have the following application data printed thereon:

- Serial Number
- Filing Date
- Total Claims Allowed
- Date of Mailing
- Examiner Name and Group Art Unit
- First Named Applicant
- Title of the Invention
- Base Issue Fee Due (Utility Applications Only)
- Attorney's Docket Number
- Class and Subclass Where Issued

Copy (a) of the new Notice of Allowance will be used as applicant's record copy in the current manner. Copy (b) will continue to be used as a transmittal for the fee with copy (c) required when a charge to a deposit account is authorized. The new version of copy (c) will also have a section to notify the Office of a change in an inventor's address. Note that this address change need not be signed by the inventor. This procedure eliminates the need for the separate Inventor's Address Change form (PTOL-231) now in use.

One other change to current practice will also be implemented as a result of the new system. Beginning with patents issuing in the late fall of this year, advance orders for patent copies will only be sent to the correspondence address of record in the application. This practice will permit computer generation of mailing labels for the orders and thereby eliminate the need for the separate, pink Advance Order form (PTO-721) now in use. Requests for advance orders will now be made in a special section of copy (b) of the Notice of Allowance. During the transition from the old order method to the new, it will be necessary to send some advance orders to the correspondence address of record in the application rather than some other address as has been requested on an earlier submitted Advance Order Form.

While the major impacts on the public will be limited to those discussed above, one other minor matter should be mentioned. It is anticipated that, due to the absence of data in the master data base, some information occasionally may not be printed on the Notice of Allowance or on other form correspondence. However, this does not necessarily mean that a corrected Notice or form letter is required. Furthermore, since the data base is not used for printing of the patent grant, the missing information should appear on the final issued patent if it is in the application file wrapper. This problem is expected to diminish as the implementation of the system proceeds and the data base becomes more complete. The cooperation of applicants and their representatives during this system implementation is sincerely appreciated by the Patent and Trademark Office.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Approved: June 16, 1980.

[1987 O.G. 9]

FEEES AND PAYMENT OF MONEY

(31) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

This notice supplements the Notice of September 10, 1965, 818 O.G. 1207, September 28, 1965, relating to the administration of the act of July 24, 1965, Public Law 89-83, increasing certain fees payable to the United States Patent Office.

That act provides for the payment of additional fees on presentation of certain claims during the prosecution of applications. This provision applies in the case of applications filed on or after October 25, 1965, the effective date of the act. In such cases, when any amendment is filed which presents additional claims over the total number covered by fees previously paid, it should be accompanied by any additional fees due.

As in the case of claims presented after an application is filed and before first action, described in the Notice of September 10, 1965, when independent claims are subsequently presented so that the number of uncanceled independent claims in the application as amended exceeds the number of such claims paid for, an additional fee of \$10 is due for each such additional claim. Similarly, an additional fee of \$2 is due for each claim added in excess of the number of uncanceled claims, independent or dependent, already paid for.

Treatment of Amendments Unaccompanied by Fees Due

Amendments filed during and after the prosecution of an application and not accompanied by the entire fee due upon such filing will be treated as follows:

If such an amendment is filed in reply to an Office action it will be regarded as not being fully responsive thereto and the practice set forth in section 714.03 of the Manual of Patent Examining Procedure will be followed, care being taken to avoid any abuse of this practice by attorneys as, for example, by habitual submission of such amendments without fees or with insufficient fees.

If an amendment which is not filed in response to an Office action is of such a nature as to require a fee and is not accompanied by the full fee required, it will not be entered and the applicant will be so advised.

Amendment During Interference

An amendment filed in connection with a motion to add counts to an interference (Rule 233) must be accompanied by the claim or claims to be added and with the appropriate fees, if any, which would be due if the amendments were to be entered. It may be that the amendments will never be entered. Only upon the granting of the motion is it necessary for the other party or parties to present the claims, but the fees must be paid whenever presented.

Claims which have been submitted in response to a suggestion by the Office for inclusion in an application must be accompanied by the fee due, if any.

Amendment After Requirement for Restriction

After a requirement for restriction or election of species, nonselected claims will be included in determining the fees due in connection with a subsequent amendment unless such claims are canceled.

Refunds

Money paid in excess or by mistake in connection with an amendment will be refunded in the usual manner.

Amendments affecting the claims cannot serve as the basis for granting any refund.

Money paid in connection with the filing of a proposed amendment will not be refunded by reason of the nonentry of the amendment.

EDWARD J. BRENNER,
Commissioner of Patents.

Jan. 13, 1966.

[823 O.G. 814]

(32) DEPOSIT ACCOUNTS—STATUTORY FEE CHARGES

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdraw of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically; and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period

in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Commissioner.

Feb. 23, 1966.

[824 O.G. 1200]

(33) PRACTICE IN THE USE OF ACCOUNTS FOR PAYMENT OF STATUTORY FEES

In the OFFICIAL GAZETTE of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89-83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose. Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will not be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Commissioner of Patents.

Apr. 12, 1966.

[825 O.G. 1183]

DEPOSIT ACCOUNTS

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as payment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdraw of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing

such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1980. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,
Commissioner.

June 23, 1980.

[828 O.G. 377]

(35) PAYMENT OF ADDITIONAL FEES FOR CLAIMS

Section 41(a) 1 of Title 35 U.S. Code, provides that the Commissioner shall charge "On filing each application for an original patent, except in design cases, \$65, in addition on filing or on presentation at any other time, \$10 for each claim in independent form which is in excess of one, and \$2, for each claim (whether independent or dependent) which is in excess of ten. . . . Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner."

The Office accords filing dates to applications with insufficient fees provided the basic \$65.00 filing fee is present. In such cases a notice is mailed requiring that the balance of the fee be paid within two months from the notification of the deficiency.

Occasionally applications contain informal claims that counsel feels should not be present. However, since alteration after execution and before filing is prohibited and could result in the application being stricken from the files, such applications must be filed in the form in which they are received from applicants. In the past the Office has charged fees for these informal claims, resulting in an unnecessary financial burden on applicants. In the future, applicants will be permitted to file with the application a preliminary amendment limited to cancellation of such claims, which will diminish the number of claims to be considered in calculating the filing fee to be paid. Any other changes should be the subject of a separate amendment.

On the other hand, if a preliminary amendment cancelling such claims does not accompany the application at the time the application is filed, the notification of the fee deficiency will inform applicant of his option of correcting the error by (1) paying the additional fee, or (2) filing an amendment cancelling claims, thereby reducing the number of claims to be considered in calculating the fee. However, it should be noted that once the fee for claims is paid, no refund will be made even though applicant later decides that certain claims are informal or otherwise unnecessary.

This change, which will become effective December 1, 1978, should benefit both applicants and the Office. It will alleviate applicants' financial burden and will also result in more efficient examination.

DONALD W. BANNER,

Nov. 9, 1978. Commissioner of Patents and Trademarks.

[977 O.G. 8]

APPLICATION CONTENT

(36) USE OF METRIC SYSTEM OF MEASUREMENTS IN PATENT APPLICATIONS

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Système International d'Unités," the French name for the International System of Units, a

modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
Commissioner of Patents.

July 1, 1974.

[924 O.G. 1104]

(37) FILING OF NON-ENGLISH LANGUAGE APPLICATIONS

This notice is in response to inquiries regarding the filing of applications in a language other than English. The Office has received a few such applications in the past in emergency situations where the filing of a non-English language specification was the only possibility of saving a foreign priority date or preventing the running of a statutory bar. In such situations the Office practice has been to accord the application a filing date if it includes all of the component parts required by 35 U.S.C. 111, and to require applicant to submit a verified translation of the previously filed application within two months.

In view of the inquiries received, it is considered appropriate that the Office clarify and publicize its practice in this area to avoid misunderstandings.

Accordingly, beginning February 1, 1976, the Office will accord a filing date to an application meeting the requirements of 35 U.S.C. 111 even though some or all of the application papers, including the written description and the claims, is in a language other than English and hence does not comply with 37 CFR 1.52, provided:

- (1) the oath or declaration is signed and physically attached to the specification and claims to which it refers; and
- (2) the application papers are accompanied by a statement, in English, from the applicant, his attorney or agent, certifying that it has been considered necessary to file the non-English language application in order to save a foreign priority date or prevent the running of a statutory bar.

A verified English translation of the non-English language papers should either accompany the application papers or be filed in the Office no later than two months after a notice requesting the translation has been mailed by the Office.

A subsequently filed verified English translation must contain the complete identifying data for the application in order to permit prompt association with the papers initially filed. Accordingly, it is strongly recommended that the original application papers be accompanied by a cover letter and a self-addressed return post card, each containing the following identifying data in English: (a) applicant's name(s); (b) title of invention; (c) number of pages of specifications, claims, and sheets of drawings; (d) whether oath or declaration was filed and (e) amount and manner of paying the filing fee.

The translation must be a literal translation verified as such by the translator, and must be accompanied by a signed request from the applicant, his attorney or agent, asking that the verified English translation be used as the copy for examination purposes in the Office. If the verified English translation does not conform to idiomatic English and United States practice it should be accompanied by a preliminary amendment making the necessary changes without the introduction of new matter prohibited by 35 U.S.C. 132. In the event the verified literal translation is not timely filed in the Office the application will be regarded as abandoned.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be routinely used for filing applications. There are at least two reasons why this should not be used on a routine basis. First, there are obvious dangers to applicant and the public if he fails to obtain a correct literal translation. Second, the filing of a large number of applications

under the procedure will create significant administrative burdens on the Office.

The practice will be closely monitored to determine whether or not it should be continued.

C. MARSHALL DANN,
Dec. 31, 1975. Commissioner of Patents and Trademarks.
[942 O.G. 1552]

(38) FILING OF COPIES OF PATENT APPLICATIONS

Beginning on October 1, 1978, the Office will accord a filing date to facsimile or other reproduced copies of United States national patent applications meeting the requirement of 35 U.S.C. 111, provided:

- (1) the application was properly executed by the inventor(s) prior to transmission of the copy.
- (2) the copy filed is a complete copy and bears a reproduction of applicant's signature, and
- (3) the originally signed application is filed no later than two months after the facsimile or other reproduced copy is filed.

Authority for this practice is found in 35 U.S.C. 26 as interpreted by the District Court decisions *Neergaard v. Dann*, Civil Action No. 76-586, December 20, 1976 (D.D.C.) and *Dietsel et al. v. Commissioner of Patents and Trademarks*, Civil Action No. 75-0298, December 22, 1976 (D.D.C.).

In order to ensure prompt association with the copy of the application initially filed it is strongly recommended that the subsequently filed original application be accompanied by a cover letter signed by the applicant or the attorney or agent averring it is the original of the earlier filed facsimile application, identifying the application by applicant's name, title of invention, date of initial filing and serial number, if known.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be used routinely for filing applications.

The above procedure does not apply to international applications filed under the Patent Cooperation Treaty since procedures to cover unsigned international applications are already provided for in PCT Article 14(1)(a) (i) and (b) and PCT Rule 26.2.

DONALD W. BANNER,
Aug. 28, 1978. Commissioner of Patents and Trademarks.
[974 O.G. 14]

(39) GRAPHICAL ILLUSTRATIONS IN THE SPECIFICATION

For convenience many applicants have been including graphs or other types of graphical illustrations in the text portion of the specification. These illustrations do not come within the purview of 37 C.F.R. 1.58 which permits tables and chemical and mathematical formulas in the specification in lieu of formal drawings. Frequently, these graphical illustrations do not have satisfactory reproduction characteristics. Moreover, these reproductions are generally less than satisfactory due to the fact that the illustrations are usually reduced in size in order to fit a column of the printed patent page. Accordingly, effective immediately, graphs and graphical type illustrations in the specification will be objected to under 37 C.F.R. 1.58(a) and drawings pursuant to 37 C.F.R. 1.81 will be required.

WILLIAM FELDMAN,
Jan. 12, 1978. Deputy Assistant Commissioner for Patents.
[967 O.G. 3]

(40) MULTIPLE DEPENDENT CLAIMS AND NEW DRAWING FILING REQUIREMENTS

Introduction

On January 24, 1978, Public Law 94-131 (pages 108-115 of "Patent Laws," August 1976 issue) and the Patent Cooperation Treaty came into force. This public law amends the patent statute, Title 35, United States Code, by providing for procedures and requirements set forth in the Patent Cooperation Treaty. Some of these statutory amendments also effect the laws governing the processing and examination of

regular United States national applications filed on and after January 24, 1978.

The amendments of the patent law which will affect U.S. patent applications filed on and after January 24, 1978, relate to two elements of the patent application: the claims and the drawings. With regard to claims, the amendments to 35 U.S.C. 41 and 112 provide for multiple dependent claims in accordance with PCT Rule 6.4. With regard to drawings, the amendment to 35 U.S.C. 113 changes the requirements for filing drawings in order to obtain a filing date in accordance with PCT Article 7.

Purpose

This memorandum establishes in more detail the new procedures required by the amended statute. Any questions concerning these instructions may be directed to either Mary Turowski (extension 7-3776) in the administration area or Louis Maassel (extension 7-3070) in the examining area.

Revised 37 CFR sections 1.75(c), (f) and (g); and 1.81 and 1.83(c) were published in the OFFICIAL GAZETTE of February 21, 1978.

MULTIPLE DEPENDENT CLAIMS

Generally, a multiple dependent claim is a dependent claim which refers back in the alternative to more than one preceding independent or dependent claim.

The second paragraph of 35 U.S.C. section 112 has been revised in view of the multiple dependent claim practice introduced by the Patent Cooperation Treaty. Thus, section 112 authorizes multiple dependent claims, as long as they are in the alternative form (e.g., "A machine according to claims 3 or 4, further comprising . . ."). Cumulative claiming (e.g., "A machine according to claims 3 and 4, further comprising . . .") is not permitted. A multiple dependent claim may refer in the alternative to only one set of claims. A claim such as "A device as in claims 1, 2, 3 or 4, made by a process of claims 5, 6, 7 or 8" is improper. Section 112 allows reference to only a particular claim. Furthermore, a multiple dependent claim may not serve as a basis for any other multiple dependent claim, either directly or indirectly. These limitations help to avoid undue confusion in determining how many prior claims are actually referred to in a multiple dependent claim.

The amendment of the second paragraph of section 112 further clarifies that the limitations or elements of each claim incorporated by reference into a multiple dependent claim must be considered separately. Thus, a multiple dependent claim, as such, does not contain all the limitations of all the alternative claims to which it refers, but rather, contains in any one embodiment only those limitations of the particular claim referred to for the embodiment under consideration. Hence, a multiple dependent claim must be considered in the same manner as a plurality of single dependent claims.

Restriction Practice

For restriction purposes, each embodiment of a multiple dependent claim will be considered in the same manner as a single dependent claim. Therefore, restriction may be required between the embodiments of a multiple dependent claim. Also, some embodiments of a multiple dependent claim may be held withdrawn while other embodiments are considered on their merits.

Handling of Multiple Dependent Claims by the Application Division

The Application Division will be responsible for verifying whether multiple dependent claims filed with the application are in proper alternative form, that they depend only upon prior independent and single dependent claims and also for calculating the amount of the filing fee. A new form, PTO-1360, has been designed to be used in conjunction with the current fee calculation form PTO-875.

Handling of Multiple Dependent Claims by the Examining Group Clerical Staff

The examining group clerical staff is responsible for verifying compliance with the statute and rules of multiple dependent claims added by amendment and for calculating the amount of any additional fees required. This calculation should be performed on form PTO-1360.

If a multiple dependent claim (or claims) is added in an amendment without the proper fee, the amendment will not be entered until the fee has been received. In view of the requirements for multiple dependent claims, no amendment

containing new claims or changing the dependency of claims will be entered before checking whether the paid fees cover the costs of the amended claims. The applicant, or his attorney or agent, will usually be contacted to pay the additional fee in the same manner as currently in existence for such defects. Where a letter is written in insufficient fee situations, a copy of the multiple dependent claim fee calculation form PTO-1360 will be included for applicant's information.

Handling of Dependent Claims by the Examiner

Should any multiple dependent claim be in an application filed prior to January 24, 1978 or include a claim association or claim structure that violates any of the prohibitions, the claim will be objected to as not being in proper form as required by 37 CFR 1.75 in the next Office action. Such an improper claim will not be further treated on the merits.

When referring to a singular dependent claim or a single embodiment of a multiple dependent claim, as when making a rejection, such a claim or embodiment will be referred to by using the number of all of the claims involved in that claim or embodiment, starting with the highest. For example, if claim 2 was dependent on claim 1, the notations would be 2/1. If in the same application, claim 3 was independent and claim 4 was multiple dependent on claims 2 or 3, the notations would be 4/2/1 and 4/3. Furthermore, if claim 5 depended from claim 4, the notations would be 5/4/2/1 and 5/4/3. Each of these embodiments will be treated individually. It would be possible for claim 4/2/1 to be rejected under section 102 and claim 4/3 to be indicated as avoiding the prior art and being allowable if rewritten in independent form. A number of embodiments may be grouped together if there is a common ground of rejection, but it must be clear how each embodiment is treated.

A claim, such as claim 4, will not be allowed until all embodiments covered thereby are allowable. If an embodiment of a multiple dependent claim avoids the art while other embodiments are rejected over prior art, a statement will be made that that embodiment avoids the art and would be allowed if rewritten in separate dependent or independent form. Wording similar to the following may be used:

"Embodiment ——— would be allowable if rewritten as a proper dependent or independent claim which contains only the limitations of this embodiment."

Calculation of Fees When Multiple Dependent Claims are Presented, Use of Form PTO-1360

To assist in the computation of the fees for multiple dependent claims, a separate "Multiple Dependent Claim Fee Calculation Sheet," form PTO-1360, has been designed for use with the current "Patent Application Fee Determination Record," form PTO-875. Form PTO-1360 will be placed in the file wrapper by the Application Division where multiple dependent claims are in the application as filed. If multiple dependent claims are not included upon filing, but are later added by amendment, the examining group clerical staff will place the form in the file wrapper. If there are multiple dependent claims in the application, the total number of independent and dependent claims for fee purposes will be calculated on form PTO-1360 and the total number of claims and number of independent claims will then be placed on form PTO-875 for final fee calculation purposes.

If at least \$65 is included with the application on filing, but the total fee is insufficient, a "Notice of Insufficient Fee," form PTO-1094, is placed in the file wrapper by the Application Division as is currently done. The notice will be mailed by the examining group in accordance with established procedures.

Calculating Fees for Multiple Dependent Claims Proper Multiple Dependent Claims

Amended section 41(a) of title 35, U.S.C., provides that claims in multiple dependent form cannot be considered as single dependent claims for the purpose of calculating fees. Thus, a multiple dependent claim would be considered to be that number of dependent

claims to which it refers. Any proper claim depending directly or indirectly from a multiple dependent claim would also be considered as the same number of dependent claims as referred to in the multiple dependent claim from which it depends.

Improper Multiple Dependent Claim

If any multiple dependent claim is improper, Application Division may indicate that fact by placing an encircled numeral "1" in the "Dep. Claims" column of form PTO-1360. The fee for any improper multiple dependent claim, whether it is defective for not being in the alternative form or for being directly or indirectly dependent on a prior multiple dependent claim, will only be one, since only an objection to the form of such a claim will normally be made.

This procedure also greatly simplifies the calculation of fees. Any claim depending from an improper multiple dependent claim will also be considered to be improper and be counted as one dependent claim.

FEE CALCULATION EXAMPLE

Claim Number	
1	Independent
2	Dependent on claim 1
3	Dependent on claim 2
4	Dependent on claim 2 or 3
5	Dependent on claim 4
6	Dependent on claim 5
7	Dependent on claim 1 or 4
8	Dependent on claim 1 or 5
9	Dependent on claim 8
10	Independent
11	Dependent on claim 1 or 10
12	Dependent on claim 1 and 10

FORM PTO-1360
(1/78) U.S. DEPT. OF COM.
PAT. AND TRADEM. OFF.

**MULTIPLE DEPENDENT CLAIM
FEE CALCULATION SHEET
(FOR USE WITH FORM PTO-875)**

	AS FILED		AFTER 1 ST AMDT		AFTER 2 ND AMDT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1					
2		1				
3		1				
4		2				
5		2				
6		2				
7		①				
8		①				
9		①				
10	1					
11		2				
12		①				
TOTAL IND.	2					
TOTAL DEP.	14	←		←		←
TOTAL CLAIMS	16					

Comments on Fee Calculation Example

Claim 1.—This is an independent claim; therefore, a numeral "1" is placed opposite claim number 1 in the "Ind." column.

Claim 2.—Since this is a claim dependent on a single independent claim, a numeral "1" is placed opposite claim number 2 in the "Dep." column.

Claim 3.—Claim 3 is also a single dependent claim, so a numeral "1" is placed in the "Dep." column.

Claim 4.—Claim 4 is a proper multiple dependent claim. It refers directly to two claims in the alternative, namely, claims 2 or 3. Therefore, a numeral "2" to indicate direct reference to two claims is placed in the "Dep." column opposite claim number 4.

Claim 5.—This claim is a singularly dependent claim depending from a multiple dependent claim. For fee calculation purposes, such a claim is counted as being that number of claims to which direct reference is made in the multiple dependent claim which it depends. In this case, the multiple dependent claim number 4 it depends from counts as 2 claims; therefore, claim 5 also counts as 2 claims. Accordingly, a numeral "2" is placed opposite claim number 5 in the "Dep." column.

Claim 6.—Claim 6 depends indirectly from a multiple dependent claim 4. Since claim 4 counts as 2 claims, claim 6 also counts as 2 dependent claims. Consequently, a numeral "2" is placed in the "Dep." column after claim 6.

Claim 7.—This claim is a multiple dependent claim since it refers to claims 1 or 4. However, as can be seen by looking at the "2" in the "Dep." column opposite claim 4, claim 7 directly depends from a multiple dependent claim. This practice is improper under 35 U.S.C. 112 and Rule 1.75(c). Following the procedure for calculating fees for improper multiple dependent claims, a numeral "1" is placed in the "Dep." column with a circle drawn around it to alert the examiner that the claim is improper.

Claim 8.—This claim is a multiple dependent claim since it refers to claims 1 or 5. However, since claim 5 depends from multiple dependent claim 4, claim 8 indirectly depends from multiple dependent claim 4 through claim 5. This practice is improper. See MULTIPLE DEPENDENT CLAIMS, paragraph 2, above. Consequently, a numeral "1" is placed in the dependent claim column with a circle drawn around it.

Claim 9.—Claim 9 is improper since it depends from an improper claim. If the base claim is in error, this error cannot be corrected by adding additional claims depending therefrom. Therefore, a numeral "1" with a circle around it is placed in the "Dep." column.

Claim 10.—Here again we have an independent claim which is always indicated with a numeral "1" in the "Ind." column opposite the claim number.

Claim 11.—This claim refers to two independent claims in the alternative. A numeral "2" is therefore placed in the "Dep." column opposite claim 11.

Claim 12.—Claim 12 is a dependent claim which refers to two claims in the conjunctive ("1 and 10") rather than in the alternative ("1 or 10"). This form is improper under 35 U.S.C. 112 and Rule 1.75(c). Accordingly, since claim 12 is improper, an encircled numeral "1" is placed in the "Dep." column opposite claim 12.

Calculation of Filing Fee

After the numbers of "Ind." and "Dep." claims are noted on form PTO-1360, each column is added. In this example, there are 2 independent claims and 14 dependent claims or a total of 16 claims. The number of independent and total claims can then be placed on form PTO-875 and the fee calculated. In this example, the total number of claims 16 minus 10 leaves 6, which is multiplied by \$2 for an additional total claim fee of \$12. The total number of independent claims in the example is 2, which minus 1 is 1, which times the \$10 rate is \$10. The total filing fee is therefore \$65 + \$12 + \$10, or a total of \$87.

DRAWING REQUIREMENTS

Revised 35 U.S.C. 118 relaxes the previous requirements for submission of drawings on filing under certain conditions. The first sentence of 35 U.S.C. 118 does require a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention. In this situation the lack of a drawing renders the application incomplete and as

such, the application cannot be given a filing date until the drawing is received. The second sentence of 35 U.S.C. 118 deals with the situation wherein a drawing is not necessary for the understanding of the invention but the case admits of illustration and no drawing was submitted on filing. The lack of the drawing in this situation does not render the application incomplete but rather is treated much in the same manner as an informality. The examiner should require such drawings in almost all such instances. Such drawings could be required during the processing of the application but do not have to be furnished at the time the application is filed. The applicant is allowed at least two months from the date of the letter requiring drawings to submit them.

Handling of Drawing Requirements Under the First Sentence of 35 U.S.C. 118

Under the revised provisions the Application Division examiner will continue to make the initial decision in all new applications as to whether a drawing is "necessary" under the first sentence of 35 U.S.C. 118.

If during examination an examiner feels that a filing date should not have been granted in an application because it does not contain drawings, the matter will be brought to the attention of the Supervisory Primary Examiner (SPE) for review. If the SPE decides that drawings are required to understand the subject matter of the invention, the SPE will return the application to the Application Division with a memorandum requesting cancellation of the filing date and identifying the subject matter required to be illustrated.

Handling of Drawing Requirements Under the Second Sentence of 35 U.S.C. 118

35 U.S.C. 118 also deals with the situation wherein the drawing is not necessary for the understanding of the invention, but the subject matter admits of illustration by a drawing and the applicant has not furnished a drawing. The lack of the drawing in this situation does not render the application incomplete but rather is treated as an informality. A filing date will be accorded with the original presentation of the papers, despite the absence of drawings. In these situations, a drawing or further illustration will normally be required by the examiner. This may be done either prior to examination in a separate letter or in the first Office action and may be handled in much the same manner as informal photocopy drawings are presently handled. The examiner should require drawings where appropriate as early as possible, since the possession of the drawing at that time would facilitate the examination process. A letter requiring drawings may contain wording similar to the following:

"The examiner has decided that the subject matter of this application admits of illustration by a drawing and that a drawing would facilitate the understanding of the subject matter disclosed. (Continue with a specific mention of those items of which drawings are desired.) Applicant is required to furnish a drawing under 37 CFR 1.81. (Incorporate in Office action or set two-month period for response.)"

The applicant will be given at least two months from the date of such requirement to submit drawings. If the requirement for drawings is included in an Office action, the time for supplying the drawings will be the same as the time of response to the Office action. Upon receipt of the drawing within the period set, the examiner will check the drawings for new matter. If new matter is included, the drawing will not be entered. It will be objected to as containing new matter. A new drawing without such new matter may be required if the examiner still feels a drawing is needed under 37 CFR 1.81 or 1.83. The examiner's decision would be reviewable by petition to the Commissioner under Rule 1.181. The decision on such a petition would be handled by the Group Director. If a drawing is not timely received in response to a letter from the examiner which requires a drawing, the application becomes abandoned for failure to respond.

Date Feb. 8, 1978.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.
[968 O.G. 7]

(41) EXECUTION AND FILING OF PATENT APPLICATIONS

This notice is intended as a reminder that United States patent applications which have not been prepared and exe-

cutted in accordance with the requirements of Title 35 of the United States Code and Title 37 of the Code of Federal Regulations may be denied a filing date as a complete application or may be, in appropriate circumstances, stricken from the files as having been improperly executed and/or filed. Although the statute and the rules have been in existence for many years, the Office continues to receive a number of applications which have been improperly executed and/or filed. Since the improper execution and/or filing of patent applications can ultimately result in a loss of rights it is appropriate to re-emphasize the importance of proper execution and filing.

Attention is invited to the fact that 35 U.S.C. 111 requires that "(t)he application must be signed by the applicant..." The same requirement appears in 37 CFR 1.57 which specifies that the signature to the oath or declaration "will be accepted as the signature to the application provided the oath or declaration... is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims."

It should be carefully noted that the application "signed by the applicant" must be a complete application and cannot be simply an oath or declaration signed without the remainder of the application. As an example, it is improper for an applicant to sign an oath or declaration which is later attached to a specification and/or claims unless the specification is also signed after the claims. See 37 CFR 1.56(c) which provides that "(a)ny application may be stricken from the files if: (1) Signed or sworn to in blank, or without actual inspection by the applicant..."

The provisions of 35 U.S.C. 363 for filing an international application under the Patent Cooperation Treaty (PCT) which designates the United States and thereby has the effect of a regularly filed United States national application, except as provided in 35 U.S.C. 102(e), are somewhat different than the provisions of 35 U.S.C. 111. Under 35 U.S.C. 363 and PCT Article 11(1), the signature of the inventor is not required to obtain a filing date but must be submitted later. The oath or declaration requirements for an international application before the Patent and Trademark Office are set forth in 37 CFR 1.70.

The requirement that applicant sign "the application" also precludes alterations to the application after execution. See 37 CFR 1.52(c) which states that "(n)o... alterations are permissible after execution of the application papers." It is therefore necessary that the application, including the oath or declaration, be executed in the form in which it is intended to be filed since it is improper for anyone, including counsel, to complete or otherwise alter application papers, including the oath or declaration, after the applicant has executed the same. Section 1.56(c) provides that "(a)ny application may be stricken from the files if: (2) Altered or partly filed in after being signed or sworn to."

In summary, it is emphasized that the application filed must be the application executed by the applicant and it is improper for anyone, including counsel, to alter, rewrite, or partly fill in any part of the application, including the oath or declaration, after execution by the applicant. This reminder should particularly be brought to the attention of foreign applicants by their United States counsel since the United States law and practice in this area may differ from that in other countries. Hopefully, this Notice will serve as an adequate reminder so that applicants will not lose rights through the improper execution and/or filing of patent applications.

LUTRELLE F. PARKER,
Acting Commissioner of
Patents and Trademarks.

Oct. 11, 1979.

[1980 O.G. 2]

(42) USE OF SYMBOL "Ø" IN PATENT APPLICATIONS

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or "slash" key to result in "Ø" which is an ap-

proximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "O" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("Ø") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "Ø" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any question about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "Ø" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the patentee's expense (37 CFR 1.523) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (Φ, φ) in the patent application.

RICHARD J. SHAKMAN,
Assistant Commissioner
for Administration.

Dec. 20, 1978.

[1978 O.G. 152]

EXAMINATION OF APPLICATIONS

(43) EXAMINATION OF CLAIMS FOR PATENTABILITY UNDER 35 U.S.C. 103

The purpose of this notice is to inform the public of the current Patent and Trademark Office policy concerning determinations of obviousness under 35 U.S.C. 103 in view of the recent Supreme Court decision in *Sakraida v. Ag Pro*, 189 USPQ 449 (1976).

The following text is a copy of a memorandum issued to all patent examining personnel relative to this topic.

"A clarification of the policy of the Patent and Trademark Office in the examination of claims for patentability under 35 U.S.C. 103 seems in order at this time in view of the Supreme Court's decision in *Sakraida v. Ag Pro*, 189 USPQ 449 (decided April 20, 1976) which is similar to the Court's earlier decision in *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 163 USPQ 673 (decided December 8, 1969).

"Office policy has consistently been to follow *Graham v. John Deere Co.*, 148 USPQ 459 (decided February 21, 1966) in the consideration and determination of obviousness under 35 U.S.C. 103. The three factual inquiries enunciated therein as a background for determining obviousness are as follows:

1. Determination of the scope and content of the prior art;
2. Ascertaining the differences between the prior art and the claims in issue; and
3. Resolving the level of ordinary skill in the pertinent art.

"Attention is directed to MPEP Section 706 for a more complete discussion of the application of the Graham test.

"The Supreme Court reaffirmed and relied upon the Graham three-pronged test in its consideration and determination of obviousness in the fact situations presented in both the *Ag Pro* and *Black Rock* decisions. In each case, the Court went on to discuss whether the claimed combinations produced a 'new or different function' and a 'synergistic result,' but clearly decided whether the claimed inventions were unobvious on the basis of the three-way test in Graham. Nowhere in its decisions in those cases does the Court state

that the 'new or different function' and 'synergistic result' tests supersede a finding of unobviousness or obviousness under the Graham test.

"Accordingly, examiners should continue to apply the test for patentability under 35 U.S.C. 103 set forth in Graham. It should be noted that the Supreme Court's application of the Graham test to the fact circumstances in *Ag Pro* is somewhat stringent, as it was in *Black Rock*."

July 8, 1976.

C. MARSHALL DANN,
Commissioner of Patents & Trademarks.

[1949 O.G. 3]

(44) CLAIMS COPIED FROM PATENTS

Applicants and their attorneys or agents are reminded of the requirement of Rule 205(b) (37 CFR 1.205(b)) of the Rules of Practice that "Where an applicant presents a claim copied or substantially copied from a patent, he must, at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office."

The requirement of Rule 205(b) (37 CFR 1.205(b)) applies to claims copied in an application at the time of filing as well as to claims copied in an amendment to a pending application. If an applicant, attorney, or agent presents a claim copied or substantially copied from a patent without complying with Rule 205(b) (37 CFR 1.205(b)) the examiner may be led into making an action different from what he would have made had he been in possession of all the facts. Therefore, failure to comply with Rule 205(b) (37 CFR 1.205(b)), when submitting a claim copied from a patent, may result in the issuance of an Order To Show Cause why the application should not be stricken from the files of the Patent Office. If a satisfactory answer is not filed within the period set in the Order it may be necessary to strike the application under Rule 56 (37 CFR 1.56).

This reminder is being published to emphasize to applicants and their attorneys or agents the importance of complying with the requirement of Rule 205(b) (37 CFR 1.205(b)) at the time the claim is copied.

WILLIAM FELDMAN,

Apr. 10, 1974. Acting Assistant Commissioner for Patents.

[1922 O.G. 442]

(45) TRANSLATIONS OF FOREIGN LANGUAGE REFERENCES

Frequently, Office actions cite references that are in a foreign language. In the event a translation of the entire text or portion of the text of the reference is readily available in the examiners' search files, a copy of the translation will normally be included with the Office action. However, applicants are cautioned that the inclusion of a translation with a foreign language reference should not be construed to mean that the examiner used or relied on the translation, or that it is accurate or an official translation made by the Patent and Trademark Office.

While this service may be infrequent, it could be increased by the submission of translations by the applicant to the Office. Accordingly, it is requested that translations of foreign language references be transmitted to the Office, and in particular be transmitted with the response to the Office action or in a separate envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. In addition, it would be of great assistance to the Office in filing the translation, if the translation carried the following: 1. an identification of the foreign language reference and, where possible, 2. its location in the examiners' search files (e.g. location should be known if reference was cited in Office action). If identifying information is not available, the incoming translation should carry the name "Scientific Library" thereon so that it can be processed by the Library.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Date: Oct. 26, 1977.

[1984 O.G. 24]

(46) RESTRICTION BETWEEN INVENTIONS

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions, only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions as claimed are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
Deputy Assistant Commissioner
for Patents.

Apr. 9, 1975.

[1984 O.G. 450]

(47) REVISED PRACTICE RE MARKUSH-TYPE CLAIMS

This notice deals with Markush-type generic claims which include a plurality of alternatively usable substances or members. In most cases, a recitation by enumeration is used because there is no appropriate or true generic language. In many cases, the Markush-type claims include independent and distinct inventions. This is true where two or more of the members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

In applications containing claims of that nature, the Examiner may require a provisional election of a single species prior to examination on the merits. The provisional election will be given effect in the event that the Markush-type claim should be found not allowable. Following election, the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. Should the Markush-type claim be found not allowable, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration.

As an example, in the case of an application with a Markush-type claim drawn to the compound C-R, wherein R is a radical selected from the group consisting of A, B, C, D, and E, the Examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species. If on examination the elected species is found to be anticipated or rendered obvious by prior art, the Markush-type claim and claims to the elected species shall be rejected, and claims to the non-elected species would be held withdrawn from further consideration. As in the prevailing practice, a second action on the rejected claims would be made final.

On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a non-elected species, the Markush-type claim shall be rejected and claims to the non-elected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all non-elected species. Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be re-examined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the re-examination that anticipates or renders obvious the amended Markush-type claim, the claim will be rejected and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim will not be entered.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the Examiner is encouraged to examine all claims on the merits, even though they are directed to independent and distinct inventions. In such a case, the Examiner will not follow the above procedure and will not require restriction.

This notice supersedes the practice set out in 922 O.G. 1016, dated May 1, 1974.

Although the above practice is now in effect, a rule change proposal is also being considered to provide for prosecution of multiple inventions in a single patent application by submission of additional fees.

DONALD W. BANNER,

Oct. 23, 1978. Commissioner of Patents and Trademarks.
[976 O.G. 128]

(48) REVISED PROCEDURES FOR RECORDING SEARCHES AND CONSIDERATIONS OF CERTAIN PRIOR ART

In order to provide a more complete, accurate and uniform record of what has been searched and considered by the examiner for each application the Patent and Trademark Office has established revised procedures for recording search data in the application file. Such a record is of importance to anyone evaluating the strength and validity of a patent, particularly if the patent is involved in litigation. These new procedures will also facilitate the printing of certain search data on patents.

Under the revised procedures, searches are separated into two categories and listed, as appropriate, in either the "SEARCHED" box or a newly added "SEARCH NOTES" box on the file jacket.

Until file jackets can be reprinted to include a second search data box, all file jackets for new applications will have the "SEARCH NOTES" box stamped therein by the Mail Room. If additional space is required, entries will be continued on the outside right flap of the file jacket.

The revised procedures will apply to all new applications in which the first search is made after April 1, 1977 and do not affect the manner in which references are listed on the form PTO-892, "Notice of References Cited." Appropriate changes in the Manual of Patent Examining Procedure will be made.

A. "SEARCHED" Box Entries

Search entries made here, except those for search updates (see item A. 3 below), will be printed under "Field of Search" on the patent front page. Therefore, the following

searches will be recorded in the "SEARCHED" box by the examiner along with the date and the examiner's initials, according to the following guidelines:

1. A complete search of a subclass, including all United States and foreign patent documents and other publications placed therein. The complete classification (class and subclass) will be recorded.
2. A limited search of a subclass, for example, a search that is restricted to an identifiable portion of the patent documents placed therein. If, however, only the publications in a subclass are searched, such an entry is to be made under "SEARCH NOTES" rather than under "SEARCHED." (See item B. 4 below.)

The class and subclass, followed by the information defining the portion of the subclass searched in parenthesis, will be recorded.

3. An update of a search previously made.

This search entry will be recorded in a manner to indicate clearly which of the previously recorded searches have been updated, followed by the expression "(updated)." Search update, entries, although recorded in the "SEARCHED" box, will not be printed.

When a search made in a parent application is updated during the examination of a continuing application, those searches updated, followed by "(updated from parent S.N. _____)" will be recorded. If the parent has been patented, the patent number "Pat. N. _____" instead of serial number in the above phrase will be recorded.

4. A mechanized search of a file of documents in a specific art, conducted by using key terms to retrieve documents. The name of the mechanized search system as it appears in the following list will be recorded along with the expression "MS File" to indicate mechanized search file.

Mechanized Search Systems

Termatrix Systems:

Automatic Fuel Controls
Boots & Shoes
Chemical Testing
Combined Fasteners
Electrical Contact Materials
Surface Bonding Using Critical Metal

Edge-Notched Card System:

Fluid Devices

Punch Card Systems:

Electrolysis
Organometallics
Steroids

Computer Controlled Microfiche Search Systems (CCMSS):

A-D Convertors
Digital Data Processing Systems
Special Purpose Digital Processing Systems

When a search with a Termatrix or Edge-Notched card system is conducted, the examiner will complete form PTO-1041 in two copies, recording all queries searched, even those which yield only non-relevant documents. All documents returned by the system in response to a query which are not actually reviewed will have an "X" drawn through their associated access and patent numbers. The examiner will place one copy of the form PTO-1041 in the application file on the right flap of the file jacket, the other copy of the form PTO-1041 will be forwarded to the Office of Search Systems.

When conducting a search with a Punched Card system, the examiner will place in the application file the Code Sheet on which the terms searched have been marked along with the machine tape listing the documents retrieved. Any document not actually reviewed will have an "X" drawn through that document's number on the listing.

When conducting a search with the CCMSS search systems, the machine-produced search report, which lists

the terms and tagged documents, will be placed in the application file on the right flap of the file jacket. Any tagged document not actually reviewed will have an "X" drawn through that document number on the search report.

B. "SEARCH NOTES" Box Entries

Entries made in the "SEARCH NOTES" box are of equal importance to those placed in the "SEARCHED" box; however, these entries will not be printed on any resulting patent. They are intended to complete the application file record of areas and/or documents considered by the examiner in the search. The examiner will record the following searches in the "SEARCH NOTES" box and in the manner indicated, with each search dated and initialed:

1. A cursory search, or scanning, of a subclass, i.e., a search usually made to determine if the documents classified there are relevant. The classification will be recorded, followed by "(Cursory)."
2. A consultation with other examiners to determine if relevant search fields exist in their areas of expertise. The class and subclass discussed, if not actually searched, will be recorded, followed by "(consulted)." This entry may also include the name of the examiner consulted and the art unit.
3. A search of a publication not located within the classified patent file, e.g., a library search, a text book search, a Chemical Abstracts search, etc. The following data will be recorded for each type of literature search:
 - a. Abstracting publications, such as Chemical Abstracts or the Engineering Index—the name of the publication, the list of terms consulted in the index and the period covered will be recorded.
 - b. Periodicals—The title and period or volumes covered, as appropriate, will be recorded.
 - c. Books—The title and author, edition or date, as appropriate, will be recorded.
 - d. Other types of literature not specifically mentioned above (i.e., catalogs, manufacturer's literature, private collections, etc.).

Unless the search is a cursory or browsing one, data as necessary to provide unique identification of material searched will be recorded. Specific materials cited by the examiner will not be recorded again here.

- e. Computer search in Scientific Library—An on-line computerized literature searching service which uses key terms and index terms to locate relevant publications in many large bibliographic data bases is available to examiners in the Scientific Library of the Patent and Trademark Office. A member of the library staff is assigned to assist examiners in selecting key terms and to program the search.

There are two on-line search systems: The Lockheed Information Systems and the SDC Search Service. These search systems include many data bases.

A copy of the search printout will be made and placed in the application file, attached to the right flap of the file jacket.

The examiner will also indicate which publications were reviewed by initialing and dating the copy of the printout in the left margin adjacent to each reviewed publication. If only an abstract of a document was reviewed, the note of "ck'd abstr." will be made next to the initials and date. If the complete document was reviewed, the note "ck'd doc." will be placed with the initials and date.

4. A search of only the publications in a subclass. The class and subclass followed by "(publications only)" will be recorded.
5. A review of art cited in a parent application or in an original patent, as required for all continuing and re-issue applications, or a review of art cited in related applications or patents mentioned within the specification, such as those included to provide background of the invention.

The serial number of a parent application that is still pending or abandoned, followed by "refs. checked" or "refs. ck'd" will be recorded. If for any reason not all

of the references are checked because they are not available or clearly not relevant, such exceptions will be noted.

The patent number of a parent or related application that was patented or of an original patent now being reissued will be recorded along with the expressions "refs. checked" or "refs. ck'd."

C. Not Recorded

The following data will not be recorded in either of the search boxes, but will be noted in the application file as indicated below.

1. Citations of prior art by applicants conforming to Rule 98 and the practice thereunder.

In each instance where all prior art referred to in a paper placed in the application file is considered, the examiner will place the notation "all ck'd" and his or her initials adjacent to the citation.

2. Citations of prior art by applicants not conforming to Rule 98 and the practice thereunder.

In each instance where an examiner considers, but does not cite on form PTO-892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference. If all the references referred to in such a paper are reviewed, the examiner will place the notation "all ck'd" and his or her initials adjacent to the citation. If included in the specification, the examiner will write his or her initials adjacent to any reference(s) checked and enter "checked" or "ck'd" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" or "ck'd" will be entered adjacent to the citation(s) or wherever possible to indicate clearly those checked.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Date: 2-22-77.

[956 O.G. 1546]

(49) Prior Art Cited by Applicants

Effective immediately, applicants are encouraged to use new form PTO-1449, "List of Prior Art Cited by Applicant," when preparing a prior art statement under 37 CFR 1.97-1.99. A copy of the form is included herewith from which suitable reproductions can be made. This form, which will enable applicants to provide the PTO with a uniform listing of prior art citations, supersedes form PTO-372.

While the filing of prior art statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 CFR 1.97 through 1.99. To be considered a proper prior art statement, form PTO-1449 shall be accompanied by an explanation of relevance of each listed item, a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all prior art citations submitted in conformance with 37 CFR 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the boxes provided on the form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines and has not been considered. A copy of the submitted form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the examiner will be printed on the issued patent in the same manner as prior art cited by the examiner on form PTO-892.

The reference designations "AA," "AB," etc. (referring to Applicant's reference A, Applicant's reference B, etc.) will be used by the examiner in the same manner as examiner's

reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

Aug. 15, 1980.

WILLIAM FELDMAN,
Deputy Assistant Commissioner
for Patents.

[1998 O.G. 9]

(50) EXPRESS ABANDONMENTS

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138.

Since 1960, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date of the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP). Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(i) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application. The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Apr. 7, 1978.

[1934 O.G. 2]

(51) NOTICE OF ABANDONMENT FOR FAILURE TO PROSECUTE APPLICATION

Effective immediately the Patent Examining Corps will mail a communication, concerning all applications becoming abandoned in the Corps for failure to prosecute, to the correspondence address of record.

The communication to be mailed will merely comprise a copy of the first page of the Office action, to which applicant

failed to properly respond, the copy including stamped language thereon indicating that the application has become abandoned and the date that the copy was mailed. The language stamped on the copy will be as follows: APPLICATION HAS BECOME ABANDONED. THIS NOTICE MAILED: _____. In no case will the mere failure to receive a notice of abandonment affect the status of an abandoned application.

This new procedure should enable applicants to take appropriate and diligent action to reinstate an application inadvertently abandoned for failure to timely respond to an official communication. In most cases, a petition to revive under 37 CFR 1.137 will be the appropriate remedy. It may be that a response to the Office action was mailed to the Office with a certificate of mailing declaration as a part thereof (notice of October 26, 1976; 951 O.G. 1342) but was not received in the Office. In this instance, adequate relief may be available by means of a petition to withdraw the holding of abandonment.

In any instance, if action is not taken promptly after receiving the notice of abandonment, appropriate relief may not be granted.

If a lack of diligent action is predicated on the contention that neither the Office action nor the notice of abandonment was received, one may presume that there is a problem with the correspondence address of record. Accordingly, your attention is directed to recent notices of May 28, 1975, and September 9, 1976, dealing with changes of address (935 O.G. 1352 and 951 O.G. 454). In essence, it is imperative that a paper notifying the Office of a change of address be filed promptly in each application in which the correspondence address is to be changed.

If an application is abandoned or a patent lapsed for an excessive time a terminal disclaimer may be required. A terminal disclaimer may also be required where the holding of abandonment or lapse is withdrawn but a determination is made that action attempting to correct the problem should have been taken in a more diligent manner.

WILLIAM FELDMAN,
May 9, 1977. Deputy Assistant Commissioner for Patents.

[1959 O.G. 24]

(52) NEW PROCEDURES FOR RECORDATION OF INTERVIEWS

This notice establishes within the Patent and Trademark Office additional general procedures for the recordation of interviews. Proposed procedures were published in the OFFICIAL GAZETTE of June 28, 1977 (959 O.G. 36) for comment from interested members of the public by August 10, 1977. Fifteen written comments were received the majority of which were favorable to the proposed procedures. Careful consideration has been given to the comments and the procedures are being adopted with a few changes.

Under present practice it is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability as set forth in Section 713.04 of the Manual of Patent Examining Procedure (MPEP). This practice is continued and further amplified as set forth below.

Recent surveys have indicated that the substance of many interviews has not been made of record or the text thereof is incomplete as to substantive matters. In some cases, the substance of an interview may be presented as arguments in a subsequent response filed by the applicant but without any indication that they had been presented at the interview. In order to help insure a better record of examiner-applicant interviews in application files, the following new procedures are adopted to become effective for interviews conducted on and after January 1, 1978. Appropriate changes will be made in the Manual of Patent Examining Procedure (MPEP).

Examiners will complete a two-sheet carbon interleaf Interview Summary Form for each interview held where a matter of substance has been discussed by checking the appropriate boxes and filling in the blanks in neat handwritten form. Discussions regarding only procedural matters, directed solely to restriction requirements (for which interview recordation is otherwise provided for in Section 812.01 of the MPEP), or pointing out typographical errors or unreadable script in

Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the file and listed on the "Contents" list on the file wrapper. The docket and serial register cards will not be updated to reflect this interview. In a personal interview, the duplicate copy of the Form will be removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy will be mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner before an allowance is not likely or if other circumstances dictate, the Form will be mailed promptly after the telephonic interview rather than with the next official communication. The original of the completed Form will be made of record and placed in the right hand flap of the file.

The Form provides for recordation of the following information:

- Serial Number of the application
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (personal or telephone)
- Name of participant(s) (applicant, attorney or agent, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the claims discussed
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
- The signature of the examiner who conducted the interview
- Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner will check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

The complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted.
- 2) An identification of the claims discussed.
- 3) An identification of specific prior art discussed.
- 4) An identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner.
- 5) A brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner.
- 6) A general indication of any other pertinent matters discussed, and

7) If appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will take appropriate action as set forth in MPEP Section 713.04. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

C. MARSHALL DANN,

Aug. 30, 1977. Commissioner of Patents and Trademarks.

[1962 O.G. 21]

(53) STATEMENTS FILED UNDER ATOMIC ENERGY ACT AND NASA ACT

Attention is called to the provisions of section 153 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (a) the full facts in regard to the making or conception of the invention, and (b) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an application which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses

to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,

Deputy Assistant Commissioner for Patents.

Aug. 18, 1978.

[914 O.G. 2]

(54) EXTENSIONS OF TIME TO SUBMIT AFFIDAVITS
AFTER FINAL REJECTION.

Not infrequently, applicants request an extension of time, stating as a reason therefor that more time is needed in which to submit an affidavit. When such a request is filed after final rejection, the granting of the request for extension of time is without prejudice to the right of the examiner to question why the affidavit is now necessary and why it was not earlier presented. If applicant's showing is insufficient, the examiner may deny entry of the affidavit, notwithstanding the previous grant of an extension of time to submit it. The grant of an extension of time in these circumstances serves merely to keep the case from becoming abandoned while allowing the applicant the opportunity to present the affidavit or to take other appropriate action. Moreover, prosecution of the application to save it from abandonment must include such timely, complete and proper action as required by 37 CFR 1.113. The admission of the affidavit for purposes other than allowance of the application, or the refusal to admit the affidavit, and any proceedings relative thereto, shall not operate to save the application from abandonment.

Implicit in the above practice is the fact that affidavits submitted after final rejection are subject to the same treatment as amendments, submitted after final rejection. In *re*, *Affidavit Filed After Final Rejection*, 152 USPQ 292, 1966 C.D. 53.

WILLIAM FELDMAN,

Deputy Assistant Commissioner for Patents.

July 25, 1977.

[961 O.G. 16]

(55) EXTENSION OF TIME LIMIT

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(e), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

WILLIAM FELDMAN,

Deputy Assistant Commissioner for Patents.

Nov. 28, 1977.

[965 O.G. 14]

(56) EXAMINATION OF PATENT APPLICATIONS
HAVING AN ISSUE OF FRAUD

This notice deals with the general procedures established within the Patent Office for the handling, during ex parte examination, of applications in which, or in relation to which, some facts appear or representations are made raising an issue of fraud.

Such applications should be forwarded by the examiner to the Office of the Assistant Commissioner for Patents as soon as the facts or representations are discovered. The application will then be reviewed and a determination made as to whether immediate action on the issue of fraud is necessary or whether the consideration of such an issue should be delayed until after the normal ex parte examination by the examiner (if such examination has not previously taken place).

Where compelling reasons dictate immediate action, the application will not be returned to the examining group for normal ex parte examination until such action is complete. Otherwise, the application will be returned to the examining group. The examiner will complete the examination as to all matters except that any issues relating to possible fraud will not be considered or commented upon. When this examination is completed the application will be returned to the Office of the Assistant Commissioner for Patents. An investigation will then be undertaken to resolve the issues relating to the possible fraud. Such an investigation may include a requirement for additional information from applicant, or from the examiner, should it be necessary for the proper conduct of the investigation.

If the investigation reveals a prima facie case of fraud an Order to Show Cause why the application should not be stricken under Rule 56 of the Rules of Practice [37 CFR 1.56] will be issued.

If a prima facie case of fraud does not exist, or is adequately rebutted, a decision will be entered in the application file stating that the Patent Office has found no evidence necessitating striking the application. The application will then be returned to the examining group or other appropriate Patent Office section for further action.

WILLIAM FELDMAN,

Jan. 2, 1975. Acting Assistant Commissioner for Patents.

[930 O.G. 1455]

(57) TITLE 37—PATENTS, TRADEMARKS AND
COPYRIGHTS

CHAPTER 1—PATENT AND TRADEMARK OFFICE,
DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

Patent Examining and Appeal Procedures

On October 4, 1976 notice was given in the Federal Register (41 FR 43729) of a proposal to amend sixteen sections of Title 37 of the Code of Federal Regulations relating to patent examining and appeal procedures. Interested persons were invited to comment on the proposal by December 7, 1976. One hundred seventy-five written letters and statements were submitted. A hearing was held in Arlington, Virginia on December 7, 1976 at which 21 persons testified orally. Careful consideration has been given to all comments received, and the proposal is being adopted with certain changes.

The regulations adopted involve all sections that were proposed to be revised, amended or added—namely, §§ 1.11, 1.14, 1.52, 1.56, 1.65, 1.69, 1.97, 1.98, 1.99, 1.109, 1.175, 1.194, 1.196, 1.291, 1.292, and 1.346. Amendments also are being made in two sections which were not included in the published proposal—§§ 1.51 and 1.176. Since amendments to these sections are closely related to the substance of matters which were contained in the published proposal, separate notice and public comment on these amendments are deemed unnecessary.

In addition, amendments are being adopted which were published for comment in two earlier, much less extensive proposals that concerned availability of certain files for public inspection. A notice of a proposed amendment to § 1.14(b) was published on June 4, 1974 (39 FR 19788). A notice of a proposed amendment to § 1.11(a) was published on September 17, 1974 (39 FR 83376). No negative comments were submitted with respect to either of these proposals and both are being adopted without change.

The text of the rules will be reproduced in the Patent and Trademark Office OFFICIAL GAZETTE in about a month with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. A transcript of the hearing, the letters and written statements received, and a summary and analysis of the comments are available for public inspection in Room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

PURPOSE OF RULES

The purpose of the rules that are being adopted is to improve the quality and reliability of issued patents by strengthening patent examining and appeal procedures. It is desirable that patents be as dependable as possible, so as to enhance the incentives provided by the patent system to make inventions, to invest in research and development, to put new or improved products on the market, and to disclose inventions that otherwise would be kept as trade secrets. It is believed that the rules being adopted will help to maintain strong patent incentives.

The rules afford patent owners an opportunity, through the filing of a reissue application, to obtain a ruling from an examiner on the pertinence of additional prior art after a patent has been issued. The rules also broaden the public's opportunity for participation in the patent examining process, consistent with the limitations of statute, the protection of trade secrets, and the need to avoid making it unduly expensive to obtain a patent.

The rules set forth the duty of candor and good faith which applicants have to the Patent and Trademark Office and encourage them to provide information about the prior art in a way that will make it more useful to examiners. A provision for foreign language oaths by individuals who do not understand English is intended to make them more aware of their representations and of their obligations.

Under the rules more Patent and Trademark Office decisions that could have important precedent value will be available to the public, and some additional files will be available for inspection. Proceedings before the Board of Appeals are modified to help avoid the issuance of invalid patents. The rules encourage examiners to see that persons inspecting the file history of issued patents will be able to tell why the case was allowed.

REISSUE APPLICATIONS

Amended § 1.175 permits a patent owner to have new prior art considered by the Office by way of a reissue application without making any changes in the claims or specification. It is adopted with no change from the proposal. The requirement for an oath or declaration alleging that the reissue applicant believes "the original patent to be wholly or partly inoperative or invalid. . . ." is dispensed with in § 1.175(a) (1) unless the applicant believes that to be the case. Section 1.175(a)(4) recognizes that reissues may be filed to have the patentability of the original patent considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

Thus, a patentee may file a reissue if he believes his patent is valid over prior art not previously considered by the Office but would like to have a reexamination. The procedure may be used at any time during the life of a patent. During litigation, a federal court may, if it chooses, stay proceedings to permit new art to be considered by the Office.

If a reissue application is filed as a result of new prior art with no changes in the claims or specification and the examiner finds the claims patentable over the new art, the application will be rejected as lacking statutory basis for a reissue, since 35 USC 251 does not authorize reissue of a patent unless it is deemed wholly or partly inoperative or invalid. However, the record of prosecution of the reissue will indicate that the prior art has been considered by the examiner.

A substantial majority of the comments received favored amended § 1.175 as a means for improving the reliability of patents and avoiding unnecessary litigation costs. The negative comments generally questioned the statutory authority of the Commissioner to adopt this section. Authority for § 1.175 is believed to exist in 35 U.S.C. 6, which is the Commissioner's rulemaking authority, and in 35 U.S.C. 251. The latter section of the statute requires that the patent be deemed wholly or partly inoperative or invalid before a reissue may be granted, but does not require such a belief by the patentee before a reissue application may be filed. The case law does not suggest that the approach of new § 1.175(a)(4) is inconsistent with 35 U.S.C. 251. Inasmuch as 35 U.S.C. 251 is a remedial provision, it is believed that a liberal interpretation is justified and that adequate authority exists for the amended section.

Amended § 1.11(b) opens all reissue applications to inspection by the general public. Section 1.11(b) also provides for announcement of the filings of reissue applications in the OFFICIAL GAZETTE. This announcement will give interested members of the public an opportunity to submit to the examiner information pertinent to patentability of the reissue application. The announcement will include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned. Section 1.11(b) is amended from the proposal to so indicate. Reissue applications already on file on the effective date of the section will not be automatically open to inspection and will not be announced in the OFFICIAL GAZETTE. However, a liberal policy will be followed in granting petitions for access to individual applications already on file.

In order that members of the public may have time to review the reissue application and submit pertinent information to the Office before the examiner's action, § 1.176 is amended to provide that reissue applications will not be acted on sooner than two months after the OFFICIAL GAZETTE announcement of filing.

A substantial majority of the comments received favored adoption of § 1.11(b). The only opposition was based upon a suggestion that no statutory authority exists. However, since reissue applications contain no new disclosure, and therefore no trade secrets or confidential information, they are considered to present a "special circumstance" within the meaning of 35 U.S.C. 122.

The insertion of "all" as the fifth word of the first sentence of § 1.11(b) is for clarity. The word "furnished" is changed to "obtained" in § 1.11 for clarity.

PROTESTS AND PUBLIC USE PROCEEDINGS

Amended §§ 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions in avoiding the issuance of invalid patents.

A substantial majority of the comments favored these sections and viewed them as improving the quality of issued patents. Entry of protests has been upheld in court.¹

Section 1.291(a) provides that public protests against pending applications will be entered in the application file and will, if they meet stated requirements, be considered by the examiner. To guarantee consideration by the examiner, protests must be accompanied by copies of prior art documents relied upon, although protests without copies will not necessarily be ignored. This is similar to the requirement of new § 1.98 that copies of patents and publications accompany prior art statements. Section 1.291 does not contemplate permitting a protester to participate as a party in further proceedings. In the case of applications available to the public, such as reissue applications, the protester may file papers rebutting statements made by the applicant. The examiner at his discretion may request a protester to submit additional written information or may provide extra time for comments by a protester to be filed.

¹ See *In re Clark*, 522 F.2d 623, 187 USPQ 209 (CCPA 1975), at footnote 4 where the court declined to decide whether it is proper to seek reissue merely to disclose untested prior art. See also *In re Allenport*, 500 F.2d 1151, 183 USPQ 38 (CCPA 1974).

² See *In re Ode*, 443 F.2d 1200, 170 USPQ 368 (CCPA 1971).
³ *International Paper Co. v. Fibreboard Corp.*, 63 F.R.D. 88, 181 USPQ 740 (D. Del. 1974).

To ensure consideration by the examiner, all protests must be timely submitted. Protests will generally be considered timely submitted, if they are filed before final rejection or allowance of the application by the examiner. The consideration given to protests filed after final rejection or allowance of the application by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Obviously, if the prior art documents anticipate or clearly render obvious one or more claims they will not knowingly be ignored. It must be recognized, however, that the likelihood of consideration by the examiner decreases as the patent date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

The first sentence of § 1.291(a) is deleted as unnecessary. Section 1.291(a) also is changed from the proposal to make clear that it applies to pending applications and that all protests will be referred to the examiner having charge of the subject matter involved.

Section 1.291(b) incorporates the existing Office policy of permitting persons to submit prior art citations or copies of prior art after a patent has been granted. The section is changed from the proposal by the addition of the words "any papers related thereto" to recognize that statements as to the pertinence of prior art may be submitted. Both the citations and the related papers are to be entered without comment. The material submitted is not examined by the Office but is available to members of the public inspecting Office records.

Some suggestions were received for major modifications of § 1.291. It was suggested that an advisory opinion of the examiner be placed in the patent file when protests were received after issuance of the patent. Several persons supported a suggestion for examiners to state whether a "new issue" was raised by prior art cited by a protester. Another suggestion was that a procedure similar to that used in the recent Trial Voluntary Protest Programs⁴ be adopted on a continuing basis. These suggestions were carefully considered, but are not adopted. The suggestions extend substantially beyond § 1.291 as proposed, and their benefits do not appear sufficient to justify the added cost at this time.

Materials submitted to the Office under §§ 1.291 and 1.292 are to be served upon the applicant, patentee, attorney or agent when possible. The term "patentee" is used in its ordinary sense as defined in 35 USC 100(d). If service is not possible, materials are to be submitted in duplicate so that the Office can attempt to send the duplicate copy. The proposal is changed by adding the words "with the Office" after "filed" in §§ 1.291(c) and 1.292(b) for clarity.

In § 1.292, the requirement that petitioner bear the Office's expenses in conducting the public use proceeding is deleted. Section 1.292 is also amended to ensure that the existence of public use proceedings is recorded in the application file wrapper. Notice of a petition for a public use proceeding will be entered in the file in lieu of the petition itself when the petition and the accompanying papers are too bulky to accompany the file. Any public use papers not physically entered in the file will be publicly available whenever the application file wrapper is available.

DUTY OF DISCLOSURE

Amended § 1.56 defines the duty to disclose information to the Office and the criteria for striking an application when that duty is violated. The wording of the section is changed in several respects from the proposal, but the purpose and general scope are the same as in the proposal. The section codifies the existing Office policy on fraud and inequitable conduct, which is believed consistent with the prevailing case law in the federal courts. The expanded wording of the section is intended to be helpful to individuals who are not expert in the judicially developed doctrines concerning fraud. The section should have a stabilizing effect on future decisions in the Office and may afford guidance to courts as well.

A majority of comments received favored § 1.56 as proposed or with modifications. Persons opposed expressed concern over the imprecise definition of the duty of disclosure and the possibility that the proposal would substantially increase the burden on patent applicants. Some stated that there would be increased litigation as a result of the pro-

posal. Several suggestions were received on better ways to define the individuals who should disclose information and the kinds of information that should be disclosed.

The first sentence of § 1.56(a) is changed from the proposal by adding the word "substantively," so that individuals having a duty of disclosure are limited to those who are "substantively involved in the preparation or prosecution of the application." This change is intended to make clear that the duty does not extend to typists, clerks, and similar personnel who assist with an application. This phrase, when taken with the last sentence of § 1.56(a), is believed to provide an adequate indication of the individuals who are covered by the duty of disclosure. The word "with" is inserted in the first sentence of § 1.56(a) before "the assignee" and before "anyone to whom there is an obligation to assign" to make clearer that the duty applies only to individuals, not to organizations.

Numerous comments concerned the term "relevance" that was used in the proposal. In response to the comments, language is substituted in § 1.56 and related sections which is believed to establish a clearer standard for determining whether information need be disclosed to the Office. "Relevant" is replaced by "material" because the latter term connotes something more than a trivial relationship. It appears to be more commonly used in court opinions. In addition, the third sentence of § 1.56, which defines materiality, is rewritten. The sentence now states that information is material "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." The sentence paraphrases the definition of materiality used by the Supreme Court in its recent decision in *TSC Industries v. Northway*.⁵ Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in recent patent cases.

The definition of materiality in § 1.56 will have to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in *TSC Industries* the Supreme Court considered some of the same matters over which concern was expressed in the public comments on proposed § 1.56. The Court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information—a result that is hardly conducive to informed decision making."

Although the third sentence of § 1.56(a) refers to decisions of an examiner, it is intended that the duty of disclosure would apply in the same manner in the less common instances where the official making a decision on a patent application is someone other than an examiner—e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the Office that is specified in the first sentence of § 1.56(a).

Comments and questions were received concerning the term "information" used in the second and third sentences of § 1.56(a) and elsewhere. It means all of the kinds of information required to be disclosed under current case law. In addition to prior art patents and publications, it includes information on prior public uses, sales, and the like. It is not believed practicable to define information in the text of the rule at this time. However, the rule is not intended to require disclosure of information favorable to patentability—e.g., evidence of commercial success of the invention. Neither is it meant to require disclosure of information concerning the level of skill in the art for purposes of determining obviousness.

Several comments were received concerning the duty to disclose information the patent applicant regards as confidential, including information the applicant has received from another party under an injunction of secrecy. This problem has existed prior to amendment of § 1.56. The Patent

⁴ 426 U.S. —, 48 L. Ed. 2d 737, 96 S. Ct. 2126, 44 U.S.L.W. 4452, decided June 14, 1976.
⁵ 426 U.S. at —, 48 L. Ed. 2d at 765, 96 S. Ct. at 2132, 44 U.S.L.W. at 4855.

PRIOR ART STATEMENT

and Trademark Office, of course, keeps information disclosed by applicants confidential until a patent is issued. It has been suggested that the Office should develop a mechanism for continuing to hold information in confidence after issuance of a patent if in the judgment of the examiner the information is not material to the examination of the application. The feasibility of offering a rule for public comment on this topic at a later date will be considered.

New § 1.56(b) is added to make clear that information may be disclosed to the Office through an attorney or agent of record or through a pro se inventor, and that other individuals may satisfy their duty of disclosure to the Office by disclosing information to such an attorney, agent or inventor. Information that is not material need not be passed along to the Office.

Proposed sections 1.56 (b) and (c) have been revised and shortened and appear at §§ 1.56 (c) and (d). The proposal was criticized for leaving it open to the Office to apply a different standard of materiality from the one set forth in § 1.56. Section 1.56(d) as adopted states that an application "shall" be stricken when the criteria set forth are met. Thus § 1.56(d) as adopted establishes a single standard for striking applications.

The term "inequitable conduct" is dropped from § 1.56(d) as covering too great a spectrum of conduct to be subject to mandatory striking. Inequitable conduct that is equivalent to fraud is intended to come within the definition of fraud. The Court of Customs and Patent Appeals already has interpreted "fraud" in existing § 1.56 to encompass conduct of this sort.⁶ Moreover, § 1.56(d) as adopted calls for striking an application either for fraud or for a violation of the duty of disclosure.

In § 1.56(d) "bad faith" is substituted for the term "deliberate" that was used in the proposal. This change is to make clear than an intent to deceive (or gross negligence equivalent to such an intent) must be shown before an application will be stricken. Bad faith is not present if information is withheld as a result of an error in judgment or inadvertence.

Several comments concerned whether attorneys and agents could represent their clients' interests and at the same time comply with § 1.56. Similar comments were directed to §§ 1.97 to 1.99. It is of course in the interest of the client to have a valid patent and this cannot be obtained without disclosure of known material facts. It is not inconsistent for an attorney or agent to fulfill his duty of candor and good faith to the Office and to act as an advocate for his client. The submission of information under § 1.56 does not preclude the submission of arguments that such information does not render the subject matter of the application unpatentable.

In § 1.65 a new third sentence is added to require the patent applicant to acknowledge the duty of disclosure. The language is changed from the proposal to be consistent with changes made in § 1.56. To allow time for the Office and applicants to revise printed oath and declaration forms now in use, the mandatory acknowledgement of the duty of disclosure in amended § 1.65 does not become effective until January 1, 1978. Applicants at their option may include the new language in oaths and declarations filed prior to the effective date. The Office will publish a separate notice in the Federal Register adding a sentence acknowledging the duty of disclosure to appropriate forms in 37 CFR Part 3, "Forms for Patent Cases."

The word "statement" is deleted from the title of § 1.65 to avoid confusion with the prior art statement of §§ 1.97 through 1.99.

Amended § 1.346 emphasizes that there must be a reasonable basis to support every allegation of improper conduct made by a registered practitioner in any Office proceeding. The language that was proposed is clarified in the section as adopted. Although § 1.346 is limited to papers filed in Office proceedings, the amendment to § 1.346 is not intended to imply that disciplinary action never will be taken against a registered practitioner under § 1.346 for a groundless allegation of improper conduct in a court proceeding.

⁶ See discussion accompanying proposed rules in Federal Register of October 4, 1976, page 48731, first sentence.
⁷ *Norton v. Curtiss*, 428 F. 2d 779, 792, 167 USPQ 532, 543 (CCPA 1970).

New §§ 1.97, 1.98 and 1.99 deal with prior art statements and provide a mechanism by which patent applicants may comply with the duty of disclosure provided in § 1.56. The sections have been substantially changed from the proposal, in response to comments received.

Unlike the corresponding part of the proposal, the sections as adopted are not mandatory, though applicants are strongly encouraged to follow the procedures described in them. Applications will be examined whether or not a prior art statement is filed and whether it complies with the rules or is defective. It is nevertheless believed that applicants will find that the use of prior art statements complying fully with the requirements of §§ 1.97 through 1.99 will be the best way to satisfy the duty of disclosure. The Patent and Trademark Office cannot assure that prior art disclosed in other ways will be considered by the examiner.

Sections 1.97 through 1.99 do not prescribe the content of what materials should be submitted in the prior art statement; this is for the applicant and the attorney or agent to decide in the light of the duty of disclosure expressed in § 1.56. The only criterion contained in §§ 1.97 through 1.99 as to content of the art cited is in § 1.97(b). This subsection indicates that the statement will be construed as a representation that the prior art listed includes what the submitter considers to be the closest art of which he is aware. The submitter need not decide which particular items of prior art are the closest or identify any items as such; the representation is simply that he is not withholding known prior art which he considers closer than that which is submitted. Section 1.97(b) makes clear that the prior art statement is not a representation that a search has been made or that no better art exists.

In § 1.97(a) the time for filing the prior art statement is extended from the two months of the original proposal to three months. In most cases prior art submitted within three months will be available to the examiner before he takes up the case for action, though it will be helpful if citations are made as promptly as possible.

Section 1.98 lists the elements of the prior art statement: a listing of the art, a concise explanation of the relevance of each listed item, and copies of the art or the pertinent portions thereof.

The prior art statement resembles somewhat the "patentability statement" of the proposal and the "patentability brief" proposed elsewhere.⁸ The name has been changed to reflect a change in the requirements of § 1.98(a). Unlike the proposed version of this paragraph, which called for an explanation of why the claimed invention is believed patentable over the cited art, the paragraph as adopted calls only for a concise explanation of the relevance of each listed item. This may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention. It might be a simple statement pointing to similarities between the item of prior art and the claimed invention. It is permissible but not necessary to discuss differences between the prior art and the claims. It is thought that the explanation of relevance will be essentially as useful to the examiner as the formerly proposed explanation of patentability, and should be significantly less burdensome for the applicant to prepare.

Section 1.98 requires a copy of each patent or publication cited, including U.S. patents, to accompany the prior art statement. Several comments questioned the need for burdening the applicant to supply copies of materials that are present in the Office's files. However, substantial time and effort often is needed to locate a document in the Office's files. Since the person submitting the prior art statement generally has available a copy of the item being cited, it is believed that expense and effort can be minimized by having that person supply the copy in all cases. Consideration has been given to proposals to allow the applicant to submit an order for copies of the patents along with his statement instead of actually submitting copies. This will be further studied, but to date no way has been found to assure that the copies will be available to the examiner by the first action unless the applicant submits them with the prior art statement.

Other changes to §§ 1.97 through 1.99 from the proposal eliminate unnecessary language and clarify the requirements.

⁸ E.g., Federal Register of September 9, 1963, 34 FR 14176, 866 O.G. 1402; S. 2255, 94th Congress, § 181(b).

A notice published in 1974¹⁰ contained guidelines for the citation of prior art by applicants. Many of those guidelines are repeated or superseded by §§ 1.97 through 1.99. In order to allow applicants, attorneys and agents time to adjust their procedures to comply with the requirements for prior art statements, the effective date of §§ 1.97 through 1.99 will be July 1, 1977. Until these new sections become effective, applicants should continue to follow the 1974 guidelines. Issuance of a revised notice, to take effect July 1, 1977, is under study.

A survey conducted by the Office in 1976 concludes that many applicants have not been citing prior art to the Office.¹¹ It is hoped that with the duty of disclosure expressly set forth in § 1.56, applicants will perceive that it is to their advantage to use the procedures of §§ 1.97 through 1.99.

Section 1.51 is amended by designating the existing rule as § 1.51(a) and adding new § 1.51(b) which contains a reference to §§ 1.97 through 1.99.

FOREIGN LANGUAGE OATHS

Amended § 1.52 and new § 1.69 are adopted as proposed. Section 1.69 requires that oaths and declarations be in a language which is understood by the individual making the oath or declaration, i.e., a language which the individual comprehends. If the individual comprehends the English language, he must use it. If the individual cannot comprehend the English language, any oath or declaration must be in a language which the individual can comprehend. If an individual uses a language other than English for an oath or declaration, the oath or declaration must include a statement that the individual understands the content of any documents to which the oath or declaration relates. If the documents are in a language the individual cannot comprehend, the documents may be explained to him so that he is able to understand them.

The Office will provide approved translations for as many of the oath or declaration forms which appear in Part 3 of Title 37 of the Code of Federal Regulations as practicable, and in as many languages as practicable, probably using a side-by-side English/foreign language format. The availability of the foreign language forms will be announced in the OFFICIAL GAZETTE at a later date.

The change in § 1.52, providing for an exception to the requirement that oaths and declarations be in the English language, is necessitated by the adoption of § 1.69.

Although very few persons opposed §§ 1.52 and 1.69, several suggested that the philosophy behind the change be extended to the specification, requiring the specification to be in a language which the applicant understands, accompanied by an English translation. This suggestion was not considered feasible because of the obvious burdens on the applicant and the danger to the applicant and the public if the translation is not literally correct. Also, if a large number of applications were filed in a foreign language, there would be significant administrative burdens on the Office. Attention is directed to the Manual of Patent Examining Procedure, § 608.1, which permits non-English language applications to be filed in certain limited circumstances.

Other suggested modifications of the proposed rule included: (1) using an English language oath or declaration with one additional clause in a language understood by the person making the oath or declaration, the clause stating that the person understands all the documents to which the oath or declaration relates; and (2) extending the two month grace period for filing an English translation of an oath or declaration filed under § 1.65.

After due consideration, suggestion (1) was believed not to accomplish the objectives of the rule as well as the adopted rule. Suggestion (2) would cause unsatisfactory delays in the initial processing of applications.

DECISIONS AND FILES MADE PUBLIC

Section 1.14(d) makes more explicit the conditions under which significant decisions of the Patent and Trademark Office will be made available to the public, and includes reference to decisions of the Board of Patent Interferences, in addition to decisions of the Board of Appeals and the Commissioner.

A large majority of the comments received were favorable. Several commentators felt that more decisions would be made available as a result of the proposed section and that it would assist in publicizing aspects of Office procedure which may not have been available previously.

Some negative comments were based on the view that the Freedom of Information Act¹² required all decisions of the Office to be made publicly available. A greater number of those opposing the proposed section, however, felt that applicants should have an absolute right to have their applications maintained in confidence and that no information should be made public without specific authorization from them. One commentator felt that rulemaking on this subject should be deferred until currently pending litigation¹³ under the Freedom of Information Act was finally resolved.

The section as adopted is applicable to decisions deemed by the Commissioner to involve an interpretation of patent laws or regulations that would be of significant precedent value, where such decisions are contained in either pending or abandoned applications or in interference files not otherwise open to the public. It is applicable whether or not the decision is a final decision of the Patent and Trademark Office.

The parenthetical phrase in the first sentence of the proposed section, which cited other provisions of the rules under which decisions are open to public inspection, is deleted as unnecessary and possibly confusing. Also, in view of several comments received, the period of time during which an applicant or party in interest may object to having a decision made public is extended from one month to two months. At least twenty days is given to request reconsideration and seek court review before a decision is made public over an objection.

Section 1.14(d) is considered to place a duty on the Patent and Trademark Office to identify significant decisions and to take the steps necessary to inform the public of such decisions, by publication of such decisions, in whole or in part. It is anticipated, however, that no more than a few dozen decisions per year will be deemed of sufficient importance to warrant publication under the authority of this section.

Amended § 1.14(b) allows public inspection of abandoned applications referred to in defensive publications. The comments received on the proposed amendment on this topic in 1974 expressed no opposition and the proposal is adopted without change.

The amendment is intended to encourage use of the defensive publication program provided under § 1.139. The objective of that program is to make available to the public the technical disclosure of applications in which the owner prefers to publish an abstract in lieu of obtaining an examination. Existing §§ 1.11(b) and 1.139 open the complete defensive publication application to inspection by the general public upon publication of the abstract. With the amendment, an abandoned application referred to in a defensive publication application will likewise be open to public inspection, avoiding any need to repeat its contents in the defensive publication application. Thus, public availability of the applications involved should be of benefit both to the applicant and the public.

A suggestion was made that the section be extended still further to include abandoned applications referred to in foreign patents. This suggestion, however, goes too far beyond the proposal that was published and has too uncertain an impact to be adopted at this time.

Amended § 1.11(a) provides earlier access to the file of an interference which involved a patent or an application on which a patent has issued. All comments that were submitted on the 1974 proposal on this topic were favorable and two commentators felt the proposal should be extended further. The proposal is being adopted without change.

Under present practice, access to the file of an interference is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The amended section allows access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. It is believed that such earlier access will be of benefit to members of the public by

making available information relevant to the issuance of the patent whether or not the interference decision is still being adjudicated.

PATENT APPEALS

Section 1.194 clarifies the circumstances in which oral hearings should be requested, provides for oral arguments by or on behalf of examiners in certain appeals and reduces the time permitted for oral arguments.

Comments relating to this section were favorable by a very substantial majority, although there were several reservations to the effect that § 1.194(a) tended to discourage or downgrade oral arguments. Participation by examiners was considered to be desirable not only from the standpoint of improving the overall presentation of the argument, particularly in complex cases, but also for the educational and experience benefits to the examiners themselves.

The only opposition to the section was based on the feeling that oral hearings would be discouraged. The rule is intended to discourage oral hearings only to the same extent as the Office's 1975 Official Gazette notice on the subject.¹⁴ Section 1.194(a) indicates that oral hearings should not be requested as a matter of course in every appeal, but only in those circumstances where the appellant feels that such a hearing will be of material assistance to the proper presentation of the appeal. The section expressly provides that equal consideration will be accorded in deciding all appeals, whether or not an oral hearing is held.

In appeals where the appellant has requested an oral hearing, § 1.194(b) provides for oral argument by, or on behalf of, the primary examiner, if such argument is considered to be helpful by either the primary examiner or the Board. This provision incorporates the present practice of permitting examiners to present an oral argument before the Board.¹⁵ It gives the Board additional discretionary authority to request presentation of an oral argument by, or on behalf of, the examiner to ensure that all issues are fully and accurately presented.

Section 1.194(c) provides, as does existing § 1.194, that appeals will be assigned for consideration and decision without an oral hearing where none has been requested by the appellant. Where an oral hearing has been requested, a day of hearing will be set, and both appellant and the primary examiner will be notified. A provision for notice to the examiner is added to the proposed version. Additionally, § 1.194(c) reflects the present practice of limiting oral argument on behalf of the appellant to twenty minutes.¹⁶ The time permitted for argument by the examiner has been shortened from twenty minutes, as proposed, to fifteen minutes. The examiner, unlike the appellant, will not ordinarily need time to present the facts of the case or for rebuttal.

In any appeal where oral argument is to be presented by, or on behalf of, the primary examiner, the appellant will be given due notice of that fact.

Proposed § 1.196(b) would have authorized the Board of Appeals to reject allowed claims, in cases before it, whenever the Board had knowledge of grounds for so doing.

While a majority of those commenting on this section favored in principle the concept of allowing the Board to have this right, significant concern was voiced that there was no statutory authority for the Board to actually reject allowed claims. Further, the question of proper authority for judicial review of such action by the Board was a matter of concern. Other reasons advanced in opposition to the section were that applicants would be inhibited from appealing by the risk of having allowed claims rejected and that the proposal would create a higher presumption of validity in cases reviewed by the Board. A significant number commented that it would be more appropriate for the Board to remand the case to the primary examiner for consideration of the grounds raised by the Board. This would afford the applicant an opportunity to demonstrate the patentability of the claims and would remove any question as to statutory authority.

In view of the comments received, existing § 1.196(b) will not be modified, but a new § 1.196(d) is added providing express authority for the Board of Appeals to include, in its decision, a statement of any grounds for rejecting any allowed claim that it believes should be considered by the

primary examiner. Section 1.196(d) provides that the Board may remand the case to the examiner for such consideration, and that the applicant shall have an opportunity to respond to the grounds set forth by the Board prior to consideration, by the examiner. If the previously allowed claims are rejected by the examiner, the rejection may be appealed to the Board.

The new section further provides that a decision of the Board which includes a remand will not be considered as a final decision in the case, but that the Board, following conclusion of the proceedings before the primary examiner, will either adopt its earlier decision as final or will render a new decision based on all appealed claims, as it considers appropriate. In either case, final action by the Board will give rise to the existing alternatives available to an appellant following a decision by the Board.

In situations where the primary examiner concludes after consideration of all the evidence and argument that the remanded claims should be allowed, the new rule dealing with reasons for allowance (§ 1.109) provides an appropriate mechanism for him to explain, on the record, his reasoning for coming to this conclusion, notwithstanding the grounds set forth by the Board in its statement.

Promulgation of new § 1.196(d) does not affect the Board's existing authority to remand a case to the primary examiner without rendering a decision in appropriate circumstances. Section 1.196(d) is not intended as an instruction to the Board to reexamine every allowed claim in every appealed application. It is, rather, intended to give the Board express authority to act when it becomes apparent, during the consideration of rejected claims, that one or more allowed claims may be subject to rejection on either the same or on different grounds from those applied against the rejected claims.

REASONS FOR ALLOWANCE

New § 1.109 is intended to emphasize and formalize the examiner's authority to state his reasoning for allowing a claim or claims. The authority is discretionary with the examiner and is only to be used when the record does not otherwise reveal the reasons for allowance.

A majority of the comments received favored the rule as proposed because it would tend to provide courts and others who were reviewing the patent with a clearer record. Those who opposed the rule most often gave the reason that the examiner might fail to state all the reasons or the strongest reasons why a claim was allowed, which could place unnecessary limitations on the claims or create an estoppel in subsequent litigation or licensing.

To help insure that the examiner's statement of his reasoning in allowing a claim will not unnecessarily limit the claims or create an estoppel, a final sentence is added to the proposal which states that failure of the applicant to comment upon or rebut the examiner's reasoning "shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner."

Several commentators suggested that stricter enforcement of §§ 1.111 and 1.133 would eliminate the need for a new rule concerning reasons for allowance. Situations exist, however, where a statement of reasons for allowance could be helpful, for example when an examiner withdraws a rejection for reasons not suggested by the applicant; when an applicant submits several arguments for allowing a claim and the examiner finds not all of them persuasive; when an examiner allows a claim on the first Office action after citing very close prior art; and when the examiner allows a claim after remand from the Board of Appeals (see new § 1.196(d)).

The first sentence of the proposed rule is changed to define more precisely the circumstances in which an examiner's statement is appropriate, as well as to define more precisely the content of the statement. The statement will include the examiner's "reasoning." The examiner may state his reasoning whenever he "believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims."

Several persons commented that the rule should provide a procedure for appeal from the examiner's statement of his reasoning. The rule does permit applicants to comment upon the examiner's reasoning. If the applicant does not wish to comment, he may reserve for a later proceeding, without prejudice, any rebuttal.

¹⁰ Notice of August 12, 1974, 926 O.G. 2.

¹¹ RNA's Patent, Trademark and Copyright Journal, No. 301, October 28, 1976, page D-1.

¹² 5 USC 552.

¹³ *Irons v. Gottschalk*, Slip Opinion, No. 74-1365 (D.C. Cir., October 21, 1976).

¹⁴ See notice of March 20, 1975, 933 O.G. 1010.

¹⁵ MPEP, § 1209.

¹⁶ See notice of March 20, 1975, 933 O.G. 1010.

[Text of adopted rules appears in 37 CFR, revised 7-1-77]

Effective Date. These amendments become effective on March 1, 1977, except for §§ 1.51, 1.97, 1.98, and 1.99 which become effective on July 1, 1977, and §§ 1.65 and 1.69 which become effective on January 1, 1978.

Date: Jan. 18, 1977.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved:

BETSY ANCKER-JOHNSON, Ph.D.

Assistant Secretary for Science and Technology.

Date: Jan. 19, 1977.

[955 O.G. 1054]

(58) GUIDELINES FOR IMPLEMENTATION OF RECENTLY REVISED RULES

Recently a number of rules relating to Patent Examining and Appeal Procedures were revised. The new rules were published in the Federal Register at 42 F.R. 5588 on January 28, 1977, and in the OFFICIAL GAZETTE at 955 O.G. 1054 on February 22, 1977. The following guidelines are being published to describe the procedures which are being followed in implementing 37 CFR sections 1.11, 1.97-1.99, 1.109, 1.194, 1.291 and 1.292.

Files Open to the Public

Section 1.11(b) is applicable only to those reissue applications filed on or after March 1, 1977. Those reissue applications already on file will not be automatically open to inspection but a liberal policy will be followed by the Office of the Solicitor in granting petitions for access to such applications.

(NOTE.—These sections as changed will be incorporated into the Manual text in Rev. 3 of the Manual.)

For those reissue applications filed on or after March 1, 1977, the following procedure will be observed:

- 1) The filing of reissue applications will be announced in the OFFICIAL GAZETTE and will include certain identifying data as specified in section 1.11(b). Any member of the general public may request access to a particular reissue application filed after March 1, 1977. Since no record of such request is intended to be kept, an oral request will suffice.
- 2) The reissue application files will be maintained in the examining groups and inspection thereof will be supervised by group personnel. Although no general limit is placed on the amount of time spent reviewing the files, the Office may impose limitation, if necessary, e.g., where the application is actively being processed.
- 3) Where the reissue application has left the examining group for administrative processing, requests for access should be directed to the appropriate supervisory personnel in the Division or Branch where the application is currently located.
- 4) Requests for copies of papers in the reissue application file must be in writing addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and may be either mailed or delivered to the Office mailroom. The price for copies made by the Office is thirty cents per page.

Prior Art Statements

This notice supersedes the notices of August 12, 1974 (926 O.G. 2) and May 19, 1975 (935 O.G. 902) relating to citations of prior art. Although new sections 1.97 through 1.99 are not effective until July 1, 1977, and are not mandatory upon applicants, they provide an ideal mechanism for complying with the duty of disclosure under 37 CFR 1.56. The statements should be submitted in accordance with the following guidelines:

- 1) Prior art statements should be submitted at the time of filing the application or within three months thereafter and may be separate from the specification or incorporated therein. The statement shall serve as a representation that the person preparing

it has included therein what he believes to be the closest prior art of which he is aware and shall not be construed as a representation that no better art exists or that a search has been made. If the first action in the application is received prior to three months after filing of the application and no prior art statement has been submitted, the prior art statement may be submitted with the response to the first action and be considered timely.

- 2) The statement shall include a listing of the patents, publications or other information which the preparer of the statement wishes to cite and a concise explanation of the relevance of each listed item. Copies of the pertinent portions of all listed documents shall be supplied along with the statement, both when incorporated into the specification and when filed separately. If two or more patents or publications considered material are substantially identical, a copy of a representative one shall be included with the statement and others may merely be listed with an indication of which are considered to be substantially identical.

- 3) A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant. It will be sufficient, however, to transmit an equivalent English language patent or publication so long as it is identified as an equivalent.

Where the applicant has submitted copies of prior art in accordance with these guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application as far as the copies are concerned. As far as the statement per se is concerned, the relevance of the prior art to the claimed subject matter must be indicated if it differs from its relevance as explained in the prior application.

- 4) If prior to the issuance of a patent an applicant pursuant to his duty of disclosure under 37 CFR 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements aforementioned. The transmittal should include a statement explaining why the prior art was not earlier submitted.

While the Patent and Trademark Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other information not submitted in accordance with these guidelines will be considered by the examiner.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an Ex parte Quayle action, a notice of allowability (PTOL-327), an examiner's amendment (PTOL-37), or a Notice of Allowance (PTOL-85), any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

- (a) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;
- (b) A timely affidavit under 37 CFR 1.131 with respect to the material cited; or
- (c) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other information cited raises a serious question as to the patentability of the claimed subject matter, or is closer prior art than that of record.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under 37 CFR 1.183 requesting a waiver of 37 CFR 1.312. Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

In each instance where an examiner considers, but does not cite on form PTO-892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference according to the following:

If included in the specification, the examiner will write his or her initials adjacent to any references checked and enter "checked" in the left margin, opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" will be entered adjacent to the citations or wherever possible to indicate clearly those checked.

Reasons for Allowance

One of the primary purposes of the change in Section 1.109 is to improve the quality and reliability of issued patents by providing a complete file history which should clearly reflect, as much as is reasonably possible, the reasons why the application was allowed. Such information facilitates evaluation of the scope and strength of a patent by the patentee and the public and may help avoid or simplify litigation of a patent.

The practice of stating the reasons for allowance is not new and the rule merely formalizes the examiner's existing authority to do so and provides applicants an opportunity to comment upon any such statement of the examiner.

When the examiner determines that it is necessary or desirable, a "Statement of Reasons for Allowance" will be prepared. The "Statement" will usually be an attachment to either a notice of allowability (PTOL-327) or Examiner's Amendment (PTOL-37). Any comments considered necessary by applicant must be submitted no later than the issue fee and should preferably accompany the issue fee. Submission with the issue fee avoids any delay in the processing of the application and avoids the necessity to associate the comments with the application while it is in issue except at the time the file must be pulled to record the payment of the issue fee. Such comments will be entered in the application file by the Allowed Files Branch with an appropriate notation on the "contents" list of the file wrapper, but will not be reviewed by the examiner.

Oral Hearings Before Board of Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested and provides for oral arguments by, or on behalf of, primary examiners in certain appeals.

Under Section 1.194, the following procedures will be in effect:

- 1) In accordance with Section 1.192, appellants who desire an oral hearing must request the same at the time of filing the appeal brief.
- 2) If appellant has requested an oral hearing and the primary examiner intends to present an oral argument, the last paragraph of the examiner's answer will indicate this intention.
- 3) Notice of the oral hearing will be given to the appellant and, at the same time, to the primary examiner in those cases in which the primary examiner has indicated an intention to present an oral argument.
- 4) After an oral hearing has been confirmed and the date set as provided in Section 1.104(c), the application file will be delivered to the examiner via the appropriate Group Director at least one week prior to the date of the hearing for those cases in which the examiner is expected to be present at the hearing. In those cases where the Board requests the presentation of an oral argument by, or on behalf of, the primary examiner, the appellant will be so notified. The Board's request for an oral argument may, where appropriate, indicate specific points or questions to which the argument should be particularly directed. The application file will be returned to the Board before the hearing.
- 5) In those appeals in which an oral hearing has been confirmed and either the primary examiner or the Board has indicated a desire for oral argument, such oral argument may be presented whether or not appellant appears.

Protests and Public Use Proceedings

Amended sections 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions and are intended as an aid in avoiding the issuance of invalid patents.

Under sections 1.291 (b) and (c) and 1.292(b), the following procedures will be observed:

- 1) Only in those instances where it has not been possible to serve protest papers upon the applicant, attorney or agent, should duplicates of the papers submitted be provided. In this case the appropriate examining group will attempt to get the duplicate copy to the applicant, attorney or agent. However, every effort should be made by the protester to effect service.
- 2) Citations of prior art and any papers related thereto may be entered in the file after a patent has been granted by submitting them to the attention of the Record Room, where they will be entered without comment by the Office. If after diligent effort it has not been possible to serve the prior art citations and related papers on the patentee, his attorney or agent, duplicate copies should be submitted in which case the Record Room will attempt to get the duplicate copy to the owner of record.
- 3) When public use petitions and accompanying papers are submitted they, or a notice in lieu thereof, will be entered in the application file. Duplicate copies should be submitted only when, after diligent effort, it has not been possible for petitioner to serve a copy of the petition on the applicant, his attorney or agent in which case the Office of the Solicitor will attempt to get the duplicate copy to the applicant, his attorney or agent.
- 4) To ensure consideration by the examiner, protests should be timely submitted, i.e., before final rejection or allowance. Consideration of protests filed after final rejection or allowance will depend upon the relevance of the prior art documents and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not knowingly be ignored. If protests are not timely submitted or if they fail to comply with section 1.291(a) as to the submission of a copy of each prior art document relied upon, they will be acknowledged and referred to the examiner having charge of the subject matter involved for entry in the application file and such consideration as seems warranted.

In each instance where an examiner considers but does not cite on form PTO-892 specific prior art referred to in a protest, the examiner will place a notation in the protest paper adjacent to the reference which will include his or her initials and the term "checked."

Additional future guidelines as to protest procedures may be developed after gaining experience with the new practice.

C. MARSHALL DANN,

Mar. 18, 1977. Commissioner of Patents and Trademarks.

[957 O.G. 11]

(59) FURTHER GUIDELINES RELATING TO 37 CFR 1.175 AND 1.291, AS AMENDED EFFECTIVE MARCH 1, 1977

The experience with the above revised rules since their effective date has indicated the desirability of further guidelines relating to the manner in which they are to be implemented. The following guidelines are supplemental to those which have already been provided in the publication of the rules in the Federal Register of January 28, 1977 (42 F.R. 5588) (955 O.G. 1054, February 22, 1977), and in the earlier Guidelines published at 957 O.G. 11 on April 12, 1977. Copies of the latter two OFFICIAL GAZETTE publications appear as items 59 and 60 of the current "Consolidated Listing of Recent Official Gazette Notices" published at 966 O.G. 22-32. The present guidelines are also supplemental to the appropriate sections of the Manual of Patent Examining Procedure, e.g., Sections 1401-1401.12 relating to reissue, and Section 1809.02 relating to protests. Sections 721 and 721.01 of the MPEP contain guidelines to be followed if either a reissue or other application, or a protest relative to any application, raises

questions of "fraud" or "violation of the duty of disclosure." Accordingly, the above-noted materials should be consulted in addition to these further guidelines, which are in themselves not intended to completely treat the subjects involved. For the most part, the guidelines herein merely identify and clarify existing requirements and practices. The Patent and Trademark Office has a general study underway of the procedures for handling reissue applications and protests which may result in future modifications in these guidelines.

Section 1.175(a)(4) of the revised rules recognizes that reissues may be filed to have the patentability of the original patent, without changes therein, considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

The experience to date reveals the need to clarify what should be filed by the applicant in order to seek the reexamination contemplated by sub-section (a)(4) and also the type and content of the examination which the examiner will give to applications filed under sub-section (a)(4).

First, sub-section (a)(4) does not contemplate, or permit, the filing of a reissue application without an oath or declaration. To the contrary, an oath or declaration is required, and such oath or declaration must comply with each of sub-sections (a)(4), (a)(5), and (a)(6). Thus, under sub-section (a)(4) the oath or declaration must particularly specify the "prior art or other information relevant to patentability, not previously considered by the Office," which the reissue applicant considers "might cause the examiner to deem the original patent wholly or partly inoperative or invalid." The reissue oath or declaration must also request, under sub-section (a)(4), that "if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent."

Under sub-section (a)(5), the reissue oath or declaration, including those filed under sub-section (a)(4), must particularly specify "the errors or what might be deemed to be errors relied upon, and how they arose or occurred."¹ This sub-section has two specific requirements, both of which must be complied with in, or by, the reissue oath or declaration. Thus, insofar as (a)(4) reissue oaths or declarations are concerned, the oath or declaration must particularly specify "what might be deemed to be errors." For example, if the reissue applicant is seeking reexamination in view of particular prior art or other information, the reissue oath or declaration must point out "what might be deemed to be errors" in patentability in view of such prior art or other information. More specifically, the oath or declaration, in appropriate circumstances, might state that some or all claims might be deemed to be too broad and invalid in view of references X and Y which were not of record in the patented files. Usually, a general statement will suffice. But where appropriate, such as where the pertinence of the new references X and Y are not evident, more specificity about "what might be deemed to be errors" should be provided. Of course, the reissue applicant does not have to, and presumably does not, agree that "errors" exist. However, the reissue applicant does have to, in the reissue oath or declaration of the sub-section (a)(4) type, particularly specify "what might be deemed to be errors relied upon."

In addition to specifying "what might be deemed to be errors relied upon," sub-section (a)(5) also requires "particularly specifying" "how they arose or occurred." This means, of course, that the reissue oath or declaration must specify the manner in which that which "might be deemed to be errors" "arose or occurred." For example, if the (a)(4) reissue is being filed for reexamination in view of prior art or other information, the reissue oath or declaration must indicate when and the manner in which the reissue applicant became aware of the possible error in the patent, e.g., third party allegation, discovery of prior art or other information subsequent to issuance of patent, knowledge of prior art or other information before issuance of patent with significance being brought out after issuance by third party, through allegations made in litigation involving the patent, etc. It is particularly important that the reissue oath or declaration adequately specify how "what might be deemed to be errors" arose or occurred. If the reissue oath or declaration does not particularly specify "how," i.e., the manner in which any possible errors arose or occurred, the Office will be unable to adequately evaluate reissue applicant's statement in compli-

ance with (a)(6) that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant."

Sub-section (a)(6) specifically requires that the reissue oath or declaration, including those filed under sub-section (a)(4), contain the averment that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant." This requirement must not be overlooked in filing since the requirement for an absence of "deceptive intention" is a necessary part of any reissue application, including those of the (a)(4) type.

The significance and importance of sub-sections (a)(5) and (a)(6) must not be overlooked or minimized insofar as reissue oaths or declarations are concerned, including those filed under sub-section (a)(4). These sub-sections, to a large extent, enable the Office to make its determination required by statute that any error is "without any deceptive intention."

In addition to meeting the requirements of Sections 1.175(a)(4)-(a)(6) insofar as the reissue oath or declaration is concerned, the reissue applicant, at the time of filing the reissue application, including the (a)(4) type reissue application, must also be aware of the requirements of 37 CFR 1.56, as revised effective March 1, 1977. Reissue applicants may, of course, utilize new Sections 1.97-1.99 to comply with the duty of disclosure required by Section 1.56. While Section 1.97 provides for filing of the prior art statement within three months of the filing of the application, reissue applicants are encouraged to file the prior art statement at the time of filing the application in order that such prior art statements will be available to the public during the two-month period provided by Section 1.176.

In situations in which the patent for which reexamination is being sought is, or has been, involved in litigation, which raised a question material to examination of the reissue application, such as the validity of the patent, or any allegation of fraud, the existence of such litigation must be brought to the attention of the Office at the time of, or shortly after, filing the application, either in the reissue oath or declaration, or in a separate paper, preferably accompanying the application as filed. Litigation begun after filing of the reissue application also should be promptly brought to the attention of the Office. The details and documents from the litigation, insofar as they are "material to the examination" of the reissue application as defined in 37 CFR 1.56(a), should accompany the application as filed, or be submitted as promptly thereafter as possible. For example, the defenses raised against validity of the patent, or charging fraud or inequitable conduct in the litigation, would normally be "material to the examination" of the reissue application. It would, in most situations, be appropriate to bring such defenses to the attention of the Office by filing in the reissue application a copy of the Court papers raising such defenses. As a minimum, the applicant should call the attention of the Office to the litigation, the existence and nature of any allegations relating to validity and/or "fraud" relating to the original patent, and the nature of litigation materials relating to these issues. Enough information should be submitted to clearly inform the Office of the nature of these issues so that the Office can intelligently evaluate the need for asking for further materials in the litigation. Thus, the existence of supporting materials which may substantiate allegations of invalidity or "fraud" should, at least, be fully described, or submitted. The Office is not, of course, interested in receiving voluminous litigation materials which are not relevant to the Office's consideration of the reissue application. The status of the litigation should be updated in the reissue application as soon as significant events happen in the litigation.

The Examination of Reissue Applications, Including Those Filed Under 37 CFR 1.175(a)(4)

The examination of reissue applications, including those filed under sub-section (a)(4), will be in accordance with Sections 1401-1401.12, M.P.E.P. Attention is particularly directed to Section 1401.09, M.P.E.P. which refers to the two aspects of reissue examination, i.e., examination in the same manner as an original application and examination for compliance with the reissue statute and rules. The purpose of the present guidelines is to supplement those presently in existence and to emphasize certain points, particularly as they relate to reissue applications filed under sub-section (a)(4).

When examining the reissue application the examiner will consider whether or not applicant, in the reissue oath or declaration, has complied with each of the requirements of 37 CFR 1.175. For example, in all reissue applications, the

reissue oath or declaration must comply with the requirements of the first sentence of 37 CFR 1.65. When the reissue application is other than the (a)(4) type, the reissue oath or declaration must comply with the appropriate sub-sections (a)(1) to (a)(3) and sub-sections (a)(5) and (a)(6). When the reissue application is filed under sub-section (a)(4), the reissue oath or declaration must also comply with sub-sections (a)(5) and (a)(6). Thus, all reissue applications must comply with sub-sections (a)(5) and (a)(6). If the examination reveals a lack of compliance with any requirement of Section 1.175, e.g., the requirements of sub-sections (a)(5) and/or (a)(6), a rejection will be made on the basis that the reissue oath or declaration is insufficient. See Section 1401.08, M.P.E.P. Under no circumstances will any reissue application be passed for issue without full compliance with 37 CFR 1.175.

Applications filed under sub-section (a)(4) will not, of course, be passed for issue without amendment, but will be rejected as lacking statutory basis for a reissue if there are no other grounds for rejection, since 35 U.S.C. 251 does not authorize reissue of a patent unless the patent is deemed wholly or partly inoperative or invalid. If a reissue filed under sub-section (a)(4) is subsequently amended thereby converting it into an application under sub-sections (a)(1) to (a)(3), a supplemental reissue oath or declaration must be filed containing the appropriate averments. If such a proper supplemental oath or declaration is not filed, a rejection will be made on the basis that the reissue oath or declaration is insufficient. The supplemental oath or declaration insures compliance with 35 U.S.C. 251 by providing appropriate averments relating to actual errors rather than possible errors.

If the examiner becomes aware of litigation involving the patent sought to be reissued during examination of the reissue application, and applicant has not made the details regarding that litigation of record in the reissue application, the examiner, in the next Office action, will inquire regarding the same. The following paragraph may be used for such an inquiry:

"It has come to the attention of the examiner that the patent sought to be reissued by this application (is) (has been) involved in litigation. Any documents and/or materials, including the defenses raised against validity, or against enforceability because of fraud or inequitable conduct, which would be material to the examination of this reissue application are required to be made of record in response hereto. See 37 CFR 1.175(b)."

If the additional details of the litigation appear to be material to examination of the reissue application, the examiner may make such additional inquiries as necessary and appropriate under 37 CFR 1.175(b).

However, any application which indicates the existence of a question of "fraud" or "violation of the duty of disclosure" will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P., as soon as the existence of such question is appreciated. For example, any reissue application which seeks reexamination in view of material prior art or other information known before issuance of the patent to a person having a duty under 37 CFR 1.56(a) must be forwarded under Section 721.01, M.P.E.P., to the Assistant Commissioner via the Group Director.

The Filing of Protests Under 37 CFR 1.291

The amendments to Section 1.291 reflected the increased value the Office places on appropriate written protests as an aid in avoiding the issuance of invalid patents. The present supplemental guidelines are in addition to those previously published and referred to above.

The nature of the protest, and the timeliness of its submission, are important factors in determining the consideration which is given the protest, and by whom it is considered. Insofar as the question of timeliness is concerned, the original publication of the rules at 955 O.G. 1054, the earlier Guidelines published at 957 O.G. 11, and Section 1309.02, M.P.E.P. adequately treat this question. Protests should obviously be submitted as early in the examination process as possible in order to be of maximum benefit to the Office in its examination of the application involved.

If the protest is being filed with regard to a reissue application, the protest should be filed within the two-month period following announcement of the filing of the reissue application in the Official Gazette, if it is at all possible to do so. If, for some reason, the protest of the reissue applica-

tion cannot be filed within the two-month period provided by 37 CFR 1.176, the protest can be submitted at a later time, but protestor must be aware that reissue applications are "special" and a later filed protest may be received after action by the examiner, if submitted later than the two months provided by 37 CFR 1.176. In the event a protest is intended against a reissue application, but cannot be submitted within the two months provided following the O.G. announcement, the protestor can request an additional specified period within which to file the protest, explaining why the additional time is necessary and the nature of the protest intended. A copy of any such request for additional time to protest a reissue application beyond the two months provided must be served on the reissue applicant. The request for additional time should be directed to the appropriate Group Director. The requests for additional time beyond the two months provided will be critically reviewed as to demonstrated need before being granted since the delay of examination of a reissue application of another party is being requested. Accordingly, the requests should be made only where necessary, for the minimum period required and with a justification establishing the necessity for the extension.

Any protest filed alleging "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A-13. Protests based on grounds other than "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Director of the particular examining group in which the application is pending. If the protestor is unable to specifically identify the application to which the protest is directed, but, nevertheless, believes such an application to be pending, the protest should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A-13, along with as much identifying data for the application as is available.

As indicated in the earlier publications, e.g., Section 1309.02, M.P.E.P., every effort should be made by a protestor to effect service of the protest upon the attorney or agent of applicant who is of record or upon the applicant. The protest filed in the Office should reflect that service has been made. Only in those instances where service is not possible should the protest be filed in duplicate in order that the Office can attempt service. Of course, the copy served upon applicant or applicant's attorney or agent should be accompanied by a copy of each prior art or other document relied upon in the same manner as required by Section 1.291(a) for the Office copy.

The Examiner's Consideration of Protests

Protests other than those alleging "fraud" or "violation of the duty of disclosure" will be received by, or forwarded to, the Group Director of the examining group where the application is, or may be, pending and then referred to the appropriate examiner. If it is then, or later, discovered that a question of "fraud" or "violation of the duty of disclosure" exists, the application and the protest, will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P.

If no allegations or questions of "fraud" or "violation of the duty of disclosure" are found to exist, the examiner will consider the protest and report the results of the consideration to the Group Director. If the protest has been timely submitted, i.e., before final rejection or allowance, the examiner will consider each of the prior art or other documents submitted. At least those prior art documents which the examiner relies on in rejecting claims will be made of record by means of form PTO-892. If the examiner does not cite all of the prior art or other documents on form PTO-892, the examiner will place a notation in the protest paper adjacent to the reference to the documents which will include the examiner's initials and the term "checked."

If the protest is filed after final rejection or allowance of the application, the consideration by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not be knowingly ignored. Prosecution of the application will be reopened where necessary. However, protestor must be aware that the likelihood of consideration by the Examiner decreases as the patent issue date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

¹ The text of sub-section (a)(5) is incorrectly reproduced in the July 1977 revision of Title 37 CFR. The text, as quoted herein, is correct.

If the protest is not accompanied by a copy of each prior art or other document relied upon as required by Section 1.291(a), the protestor cannot be assured that the examiner will consider the missing document. However, if the examiner does so, the examiner will either cite the document on form PTO-892 or place a notation in the protest paper adjacent to the reference to the document which will include the examiner's initials and the term "checked."

If, upon considering the protest or any submissions subsequent thereto, the examiner considers it desirable to obtain applicant's comments on the protest before further action, the examiner will offer applicant an opportunity to file comments within a set period, usually two months.

The following suggested format can be used to offer applicant an opportunity to file comments on the protest:

"A protest against the issuance of a patent based on this application has been filed under 37 CFR 1.291 on _____ and a copy (has been indicated as having been served on applicant) (is attached hereto). Any comments or response applicant desires to file before consideration of the protest must be filed by _____."

Section 1.291(a) indicates that protests are acknowledged and this acknowledgment will normally be made by the particular office to which the protest is ultimately directed for consideration. Protests alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Office of the Assistant Commissioner for Patents. Other protests, i.e., those not alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Group Director of the examining group where the application is, or may be, pending.

If the protest involves an application to which the protestor has access, e.g., a reissue application filed after March 1, 1977, or one in which protestor has been formally granted access, then protestor may monitor the proceedings and file such additional papers as protestor considers appropriate. If protestor has access to the application, protestor may request the Office to supply protestor with copies of Office actions or other documents mailed by the Office. Such a request should be directed to the particular area in which the application is pending, e.g., Office of Assistant Commissioner for Patents, or Director of the particular examining group. The request should explain why protestor needs the copies in question and should indicate an intent on protestor's part to assist the Office in its examination by supplying relevant comments. Normally, the Office will send copies of Office actions to protestors where the protestor indicates an intent to review actions and, if appropriate, comment to the Office on them. However, since protestor has no right to copies of the Office actions or other documents, the granting or denying of such requests will be within the sole discretion of, and for the convenience of, the Office.

If the protestor has access to the application, the examiner may communicate with the protestor in writing to seek clarification and/or additional information if the examiner considers such clarification and/or additional information necessary to properly consider the protest. The following suggested format can be used by the examiner to seek clarification and/or additional information from a protestor having access to an application:

"The protest, as filed _____, has been noted. However, clarification and/or additional information is desired. In particular [Examiner explains] any submission of the requested information should be made within ONE MONTH of the date of this letter and the submission must indicate service on applicant."

While the examiner should not normally need clarification and/or additional information from the protestor where the grounds involve only published prior art, e.g., patents, periodicals, etc., under some circumstances it may be necessary for the examiner to seek such clarification and/or additional information. For example, if the date of a reference is in question, or some question of public use is involved, and the information being sought is within the knowledge or control of the protestor, the examiner may find it necessary to communicate with the protestor to obtain the same.

Where the examiner feels that a protestor with access to an application can contribute significantly to the examination process, the protestor may be given a specific period, normally one month, within which to comment on responses submitted by patent applicants to Office actions. Such a comment period

should only be provided where it would appear to be of benefit to the examination process and only with the approval of a Supervisory Primary Examiner. Where an applicant agrees to such participation by a protestor or where a Court has suspended litigation for consideration of a related application by the Patent and Trademark Office with an expression of its desire for such protestor participation, it should be more liberally granted.

Where a protestor requests permission to participate in an interview between an applicant and the examiner or requests on its own behalf to have an interview with the examiner, the request should be referred to the Office of the Assistant Commissioner for Patents for action. Normally, protestor participation in interviews with examiners will not be allowed unless special justifying circumstances exist. Where authorized, participation by the protestor in an interview will be according to conditions set down by the Patent and Trademark Office. Normally, any transcript of the interview, if authorized, will be at the expense of the party or parties requesting it and will be arranged by such party or parties. Where Office actions are being sent to a protestor or where a protestor is present for an interview, a copy of the Interview Summary Form and other records made of the interview will be provided to the protestor. Where protestor's participation in an interview, they may submit their own record of the interview which will be made of record in the file.

Interviews relating to a patent application with a protestor will not be permitted without the applicant present.

A protestor with access to an application appealed to the Board of Appeals who intends to file comments or a brief in opposition to appellant's brief should file an indication of such intention within one month after the notice of appeal is filed and serve a copy of the same upon appellant. The indication of intention should state that protestor agrees to file such comments or brief in triplicate, within one month after appellant's brief is filed, and also agrees to serve a copy of the comments or brief upon appellant. If such an indication is not filed and served, or the protestor's comments or brief is not timely filed in triplicate and served, no assurance is given that the Examiner will consider the protestor's comments or brief during the preparation of the Examiner's Answer.

A protestor who participates by the filing of comments or a brief in opposition to appellant's brief may also request, at the time of filing the comments or brief, to appear at any oral hearing. If a protestor does not file such comments or brief, the protestor cannot be present at any oral hearing. If a protestor does file such a request, the Board of Appeals, in its discretion, will decide whether or not the issues on appeal are such that protestor's participation at the hearing would be helpful. The Board of Appeals will notify protestor whether or not the request to appear at the hearing is granted and, if granted, how much time will be permitted. Of course, if appellant does not request an oral hearing, or provides timely notification to the Board and protestor that appellant will not appear, protestor will not be heard.

A copy of any examiner's letter or communication to a protestor will be mailed to applicant at the same time it is mailed to the protestor. While the examiner may communicate in writing with a protestor having access to the application, the examiner will not communicate orally and protestor must refrain from oral communications with the examiner except to ask purely procedural questions which have no relation to the substance of the protest or the merits of the application, unless specifically authorized in writing by the Assistant Commissioner for Patents.

Where the handling of a protest or the handling of a reissue application involved in related litigation requires an inordinately larger than normal amount of work on the part of an examiner and where otherwise warranted, Supervisory Primary Examiners may authorize the use of non-examining time for handling some or all of the examination.

The above guidelines are intended to make clearer the policies of the Patent and Trademark Office in respect to the handling of reissue applications, protests and "fraud" questions. The Office is especially interested in seeing that the consideration of reissue applications and protests is thorough and fair. It is interested in seeing that protestors have an opportunity to participate in the proceedings in the Office to the extent that such participation is helpful and appropriate in each case. It is also greatly interested in the completeness and accuracy of the file record, including indications whether or not prior art references and information mentioned in the record have been reviewed by the examiner.

The present guidelines which will be incorporated into the M.P.E.P. as soon as possible, when considered in conjunction with those previously issued and the M.P.E.P., should answer many of the questions being raised about the revised rules.

DONALD W. BANNER,
Commissioner of Patents & Trademarks.

Nov. 13, 1978.

[1977 O.G. 11]

(60) EXPEDITED PROCESSING OF REISSUE APPLICATIONS AND APPLICATIONS HAVING ISSUES OF FRAUD OR FAILURE TO COMPLY WITH THE DUTY OF DISCLOSURE

The Patent and Trademark Office has been experiencing increasing delays in the examination of reissue applications and other applications in which charges or questions of fraud or failure to comply with the duty of disclosure have been raised or are apparent on the record. Consideration of these charges involves considerable expenditures of resources and time. They also tend to delay prompt consideration on the merits in view of the prior art, etc. Considerable duplication of effort and expenditures of resources and time also may occur when the Office considers applications in circumstances where the same issues are concurrently being considered in Court.

Deferral of Fraud Issues

Effective immediately, the Office is instituting a policy of delaying consideration of issues of fraud or failure to comply with the duty of disclosure in any application until all other issues are settled.

Accordingly, under this procedure, applications having issues of fraud or failure to comply with the duty of disclosure will continue to be referred to the Office of the Assistant Commissioner for Patents, but will then be promptly returned, along with any appropriate examining instructions, to the Director of the Examining Group for immediate action by the Examiner. Decisions on Petitions to Strike applications pursuant to 37 CFR 1.56(d) will be deferred pending resolution of the patentability issues before the Examiner. Any such Petitions to Strike filed after the Office of the Assistant Commissioner has initially reviewed the application and returned it for immediate action will be acknowledged by the Examining Group Director and action on the Petition will be deferred pending completion of the patentability issues before the Examiner. Examiners will note in their Office actions the existence of issues of fraud or failure to comply with the duty of disclosure without commenting on the substance of such issues and will indicate that the issues will be considered after all other matters have been disposed of. Matters other than fraud or failure to comply with the duty of disclosure raised in a Petition to Strike, e.g., patentability in light of a reference, will be treated by the Examiner or other appropriate official. Petitions relating to procedural matters involving the examination of the applications, e.g., requests for protestor participation in interviews, will be decided by the appropriate Examining Group Director. Applications which have been referred to the Office of the Assistant Commissioner and which are required to be returned thereto before allowance or after abandonment of the application will have a notation placed on the face of the application file by the Office of the Assistant Commissioner requiring such return.

Suspension of Action Where There is Concurrent Litigation

In order to avoid duplication of effort, actions in applications in which there is an indication of concurrent litigation will be suspended automatically unless and until it is evident to the examiner, or the applicant indicates, that: (1) a stay of the litigation is in effect; (2) the litigation has been terminated; (3) there are no significant overlapping issues between the application and the litigation; or (4) it is applicant's desire that the application be examined at that time.

Expedited Examination of Reissues

All reissue applications, except those under suspension because of litigation, will be taken up for action ahead of other "special" applications; this means that all issues not deferred will be treated and responded to immediately. Furthermore, reissue applications involved in "stayed litigation" will be taken up for action in advance of other reissue applications.

Insofar as reissue applications for patents in litigation are

concerned, the Office is presently considering modifications to the rules to provide for their examination within the two-month waiting period now provided by Section 1.176. Until appropriate modifications are made to the rules, the Office will entertain petitions under 37 CFR 1.188 to waive the delay period of 37 CFR 1.176. In addition, the Office is presently considering requiring the prompt disclosure of the existence of litigation related to a pending application.

Time monitoring systems are being put into effect which will closely monitor the time used by applicants, protestors, and examiners in processing reissue applications of patents involved in litigation in which the court has stayed further action.

Applicants in reissue applications involved in litigation which has been stayed, dismissed, etc. for consideration by the Patent and Trademark Office will normally be given one month to respond to Office actions in those situations where the Office determines that the reissue applicant can readily prepare a response in such time. This one month period may be extended upon a showing of clear justification. Of course, up to three months may be set for response if the Examiner determines such a period is justified.

Applicants and protestors submitting papers for entry in reissue applications of patents involved in litigation are requested to mark the outside envelope and the top right hand portion of the paper with the words "REISSUE LITIGATION" and with the unit of the PTO in which the reissue application is located—e.g., Assistant Commissioner for Patents, Board of Appeals or Examining Group. The notations preferably should be written in a bright color with a felt point marker. Papers marked "REISSUE LITIGATION" will be given special attention. Also, the PTO will place a prominent notation on the application file to indicate the existence of litigation.

The purpose of these changes is to reduce the time between filing and final action insofar as possible while still giving all parties sufficient time to be heard. This notice is supplemental to, and in some respects modifies, the earlier published notices on this subject and particularly the notice published at 977 O.G. 11 on December 12, 1978.

DONALD W. BANNER,
Commissioner of Patents
and Trademarks.

June 5, 1979.

[1983 O.G. 24]

(61) PRIOR ART CITED BY PATENT OFFICES IN OTHER COUNTRIES

Section 1.56 of Title 37 of the Code of Federal Regulations requires patent applicants and others associated with the prosecution of a patent application before the U.S. Patent and Trademark Office to call to the Office's attention information which is material to examination. Where related or corresponding patent applications have been filed in other countries, prior art may be cited by the Patent Offices of those other countries in connection with the examination of the applications filed there. Where prior art is cited by those other Patent Offices while the U.S. application is pending, citations which are material to examination in this country and known to any of the individuals covered by Section 1.56 must be called to the attention of this Office. Attorneys and agents are reminded of their obligations in this respect.

It is suggested, of course, that such prior art be cited to the U.S. Patent and Trademark Office in a prior art statement which complies with the provisions of Sections 1.97-1.99 of 37 CFR.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

April 23, 1979.

[1982 O.G. 86]

(62) DEPOSIT OF COMPUTER PROGRAM LISTINGS

[37 CFR Part 1]

Notice of Proposed Rulemaking

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed Rule.

SUMMARY: This proposed rule would amend the rules of practice to provide special procedures for presentation of

computer program listings in patent applications. This proposal would reduce the present burden of presenting such listings on paper and would also reduce expenses for both the patent applicant and the Patent and Trademark Office.

DATES: Comments must be received on or before: September 13, 1977. Hearing: September 13, 1977, beginning at 9:30 a.m.

ADDRESSES: Send comments to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza, at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952, as amended (68 Stat. 793; 85 Stat. 364; 88 Stat. 1949; 35 U.S.C. 6 as amended) the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending Sections 1.21 and 1.77 and by adding a new Section 1.96. This proposal has been reviewed pursuant to E.O. 11821 and OMB Circular A-107 and determined to have no major inflationary impact.

The purpose of the proposed rule change is to provide suitable procedures for presenting computer program listings where such listings are submitted with applications for patent to fulfill the disclosure requirements under 35 U.S.C. 112.

This proposal does not in any way imply that the Patent and Trademark Office considers computer programs per se to be patentable subject matter.

The provisions of 37 CFR Sections 1.52 and 1.84 were developed for and are suitable for the specification and drawings of most patent applications. However, when lengthy computer program listings must be included in order to provide a complete disclosure, their presentation in the conventional manner can become burdensome.

The cost of printing long computer programs or routines in patent documents is very expensive to the Office. The issue fees for the applicant, which are based on the number of pages or sheets, are correspondingly high.

Proposed new Section 1.96 sets forth alternative methods for presentation of such listings. Under paragraph (a), relatively short computer program listings (10 printout pages or less) will be printed as part of the patent. Paragraph (b) provides for submitting computer program listings which are 51 or more paper pages in length in the form of microfiche as an appendix. Computer program listings 11-50 pages in length may be submitted under the provisions of either paragraphs (a) or (b). Appendices on microfiche will not be printed in the patent but will become publicly available on the date the patent is issued. After patenting, the appendix will be prior art under 35 U.S.C. 102(e) as of the filing date of the application with which it was filed. Various incorporations by reference have been approved by the courts in *General Electric Company v. Brenner*, 159 USPQ 335; *In re Hawkins*, 179 USPQ 157, and *In re Argoudelis et al.*, 168 USPQ 99.

Copies of publicly available computer program listing appendices may be purchased either as microfiche (148 mm x 105 mm card) at \$1.00 per microfiche or as printed out on paper copy 30¢ per page.

The micrographic standards referred to in proposed Section 1.96(b)(2) may be obtained from either the National Micrographic Association, 8728 Colesville Road, Silver Spring, Maryland 20910 or the American National Standards Institute, 1430 Broadway, New York, New York, 10018.

1. Section 1.21 is proposed to be amended by adding a new paragraph (1) to read as follows:

Section 1.21. *Patent and miscellaneous fees and charges.*

(1) The fee for obtaining a microfiche copy, per microfiche ----- \$1.00

2. Section 1.77 is proposed to be amended by revising paragraph (c) to read as follows:

Section 1.77. *Arrangement of application.*

(c) (1) Cross-reference to related applications, if any.

(2) Reference to material incorporated by reference, if any. (See Sections 1.96(b) and (c)).

3. A new Section 1.96 is proposed to be added which reads as follows:

Section 1.96. *Submission of computer program listings.*

Computer program listings may be submitted in the following forms:

(a) *As part of application which is to appear in the patent.* If the computer program listing is contained on 10 printout pages or less, it may be submitted either as drawings or as part of the specification.

(1) *Drawings.* The listing may be submitted in the manner and complying with the requirements for drawings as provided in Section 1.84. At least one figure numeral is required on each sheet of drawing.

(2) *Specification.*

(i) The listing may be submitted as part of the specification in accordance with the provisions of Section 1.52, at the end of the description but before the claims.

(ii) The listing may be submitted as part of the specification in the form of computer printout sheets commonly (11 by 14 inches in size) for use as "camera ready copy" when a patent is subsequently printed. Such computer printout sheets must be original copies from the computer with dark solid black letters, on white, unshaded and unlined paper, the printing on each sheet must be limited to an area 9 inches high by 11 inches wide, and the sheets should be submitted in a protective cover. When printed in patents, such computer printout sheets will appear at the end of the description but before the claims and will be reduced about 1/2 in size with two printout sheets being printed as one patent specification page. Any corrections must be made by way of substitute sheets.

(b) *As an appendix which will not be printed.* If a computer program listing printout is more than 51 pages long, applicants must submit such listing in the form of microfiche, referred to in the specifications. The microfiche filed with a patent application is referred to as an appendix. The microfiche appendix will not be part of the printed patent. Reference in the application to the appendix should be made at the location indicated in Section 1.77(c).

(1) *Availability of appendix.* Such computer program listings on microfiche will be available to the public, and paper or microfiche copies will be available for purchase, after a patent is granted based on such an application. Any corrections must be made by way of revised microfiche.

(2) *Submission requirements.* Computer-generated information submitted as an appendix to an application for patent shall be in the form of microfiche in accordance with the standards set forth in National Micrographics Association (NMA) Standards—

MS1—Quality Standards for Computer Output Microfilm

MS2 (ANSI PH 5.18-1976)—Format and Coding Standards for Computer Output Microfilm

MS5 (ANSI PH 5.9-1975)—Microfiche of Documents

ANSI PH 2.19-1959—"Diffuse Transmission Density"—except as modified or clarified below:

(i) Film submitted shall be first generation (camera film) negative appearing microfiche (with emulsion on the back side of the film when viewed with the images right reading).

(ii) Either Computer-Output-Microfilm (COM output) or copies of photographed paper copy may be submitted. In the former case, NMA standards MS1 and MS2 apply; in the latter case, standard MS5 applies.

(iii) Reduction ratio of microfiche submitted should be 24:1 or a similar ratio where variation from said ratio is required in order to fit the documents into the image area of the microfiche format used.

(iv) Film submitted shall have a thickness of at least .005 inches (0.13 mm) and not more than .009

inches (0.28 mm) for either cellulose acetate base or polyester base type.

(v) Both microfiche formats A1 (93 frames, 14 columns x 7 rows) and A3 (63 frames, 9 columns x 7 rows) which are described in NMA standard MS2 (A1 is also described in MS5) are acceptable for use in preparation of microfiche submitted.

(vi) At least the left-most 1/2 (50 mm x 12 mm) of the header of each microfiche submitted shall be clear or positive appearing so that the Patent and Trademark Office can apply serial number and filing date thereto in an eye-readable form. The middle portion of the header shall be used by applicant to apply an eye-readable application title together with inventor's name and any other bibliographic information the applicant sees fit to include. The final right-hand portion of the microfiche shall contain sequence information for the microfiche such as 1 of 4, 2 of 4, etc.

(vii) Additional requirements which supply specifically to microfiche of filmed paper copy or COM microfiche:

(a) Microfiche of filmed paper copy.

(1) The first frame of each microfiche submitted shall contain a standard NBS Microcopy Resolution Test Chart (No. 1010A).

(2) The second frame of each microfiche submitted must contain a fully descriptive title.

(3) The pages appearing on the microfiche frames should be consecutively numbered.

(4) Pagination of the microfiche frames shall be left to right and from top to bottom.

(5) At a reduction of 24:1 resolution of the original microfilm shall be at least 120 lines per mm (5.0 target) so that reproduction copies may be expected to comply with provisions of paragraph 7.1.4 of NMA Standard MS5.

(6) Background density of negative-appearing camera master microfiche of filmed paper documents shall be within the range 0.9 to 1.2 and line density should be no greater than 0.08. The density shall be visual diffuse density as measured using the method described in ANSI Standard PH 2.19-1959.

(7) A suitable index should be included on each microfiche.

(b) Microfiche generated by COM.

(1) Background density of negative-appearing COM-generated camera master microfiche shall be within the range of 1.7 to 2.0 and line density should be no greater than 0.2. The density shall be visual diffuse density as described in ANSI PH 2.19-1959.

(2) The first frame of each microfiche submitted shall contain a resolution test frame in conformance with NMA Standard MS1 (3.1.1).

(3) The second frame of each microfiche submitted must contain a fully descriptive title together with any other suitable index or other appropriate information.

(4) The pages appearing on the microfiche frames should be consecutively numbered.

(5) It is preferred that pagination of the microfiche frames be from left to right and top to bottom but the alternative, i.e., from top to bottom and from left to right, is also acceptable.

(c) *Optional use of either paragraph (a) or (b).* If the computer program listing is 11-50 pages long, applicants may

utilize either the procedures of paragraph (a) or (b) of this section.

June 1, 1977.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved June 7, 1977.

JORDAN J. BARUCH,

Assistant Secretary for Science and Technology.

[FR Doc. 77-17080; Filed 6-14-77; 8:45 a.m.]

48 FR 30588, June 16, 1977

[960 O.G. 2]

(Pending—No Final Action Taken)

(63) PRACTICE RE: APPLICATIONS INVOLVING
COMPUTER PROGRAMS

On November 18, 1976, the Court of Customs and Patent Appeals decided the cases of *In re Noll* and *In re Chatfield*. In both cases the Board of Appeals had taken the position that the claims were drawn to non-statutory subject matter under the Supreme Court's decision in *Gottschalk v. Benson*, 409 U.S. 63, 175 USPQ 673 (1972). The Noll application claims were drawn to an apparatus and the Chatfield application claims were drawn to a method.

The CCPA reversed the Board of Appeals in both cases. Until these decisions become final and since further review or clarification may be forthcoming, the patent examining corps will continue to examine computer programming applications in accordance with its current interpretation of the Supreme Court decision in the Benson case.

Prosecution will be resumed on all applications previously suspended under 37 CFR 1.103(b). No further programming applications will be suspended at the instance of the Office.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[954 O.G. 550]

(64) PRIORITY CLAIMS BASED ON INVENTORS
CERTIFICATES

Pursuant to the provisions of 35 U.S.C. 119, last paragraph (as amended July 28, 1972), 37 CFR 1.55(c) requires that when an applicant wishes to claim a right of priority on the basis of an application for an inventor's certificate, "... the applicant or his attorney or agent, when submitting a claim for such right ... shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or for an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority."

As such, it has been and remains the position of the Patent and Trademark Office that, in accordance with 35 U.S.C. 119, applications for inventor's certificates shall give rise to a right of priority only when the country in which they are filed gives to applicants, at their discretion, the right to apply, on the same invention, either for a patent or for an inventor's certificate. The affidavit or declaration specified under 37 CFR 1.55(c) is only required for the purpose of ascertaining whether, in the country where the application for an inventor's certificate originated, this option generally existed for applicants with respect to the particular subject matter of the invention involved. The requirements of 35 U.S.C. 119 and 37 CFR 1.55(c) are not intended, however, to probe into the eligibility of the particular applicant to exercise the option in the particular priority application involved.

It is recognized that certain countries that grant inventors' certificates also provide by law that their own nationals who are employed in state enterprises may only receive inventors' certificates and not patents on inventions made in connection with their employment. This will not impair their right to be granted priority in the United States based on the filing of the inventor's certificate.

Accordingly, affidavits or declarations filed pursuant to 37 CFR 1.55(c) need only show that in the country in which the original inventor's certificate was filed, applicants generally have the right to apply at their own option either for a patent or an inventor's certificate as to the particular subject matter of the invention.

C. MARSHALL DANN,
Aug. 17, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 14]

(65) REQUIREMENTS FOR PRIORITY DOCUMENTS,
PRIORITY BASED ON APPLICATION FOR
INDUSTRIAL DESIGN

In the Federal Republic of Germany, an application for protection of an industrial design may be accompanied by either a model or a drawing. It is understood that German residents file such applications with their local judicial authority ("Amtsgericht") rather than with the German Patent Office in Munich.

Questions have been raised in this connection as to:

- (1) What sort of priority document under 35 U.S.C. 119 is required when the original filing has comprised a model rather than a drawing, and
- (2) Whether it is necessary where the original filing was with a local judicial authority to obtain also a certificate from the national patent office.

As to the first question, the Patent and Trademark Office will receive under 35 U.S.C. 119, as evidence of an earlier filed design application which included the deposit of a model, drawings or acceptable photographs of the deposited model faithfully reproducing the design embodied therein together with other required information, certified by an official of the court or office with which the application was originally filed.

No additional certification by the national patent office will be required. Article 4D(3) of the Paris Convention refers to certification "... by the authority which received such application ..." so the reference in 35 U.S.C. 119 to "patent office" will be construed to extend also to the authority in charge of the design register.

Aug. 15, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[962 O.G. 14]

(66) RIGHT OF PRIORITY (35 U.S.C. 119) BASED ON
A FOREIGN APPLICATION FILED UNDER A
BILATERAL OR MULTILATERAL TREATY

Under Article 4A of the Paris Convention for the Protection of Industrial Property (21 UST 1583; 24 UST 2140; TIAS 6923, 7727; 852 O.G. 511) a right of priority may be based either on an application filed under the national law of a foreign country adhering to the Convention or on a foreign application filed under a bilateral or multilateral treaty concluded between two or more such countries. Examples of such treaties are the Hague Agreement Concerning the International Deposit of Industrial Designs, the Benelux Designs Convention, and the Libreville Agreement of September 13, 1962, relating to the creation of an African and Malagasy Industrial Property Office. The Convention on the Grant of European Patents and the Patent Cooperation Treaty will be further examples of such treaties once they enter into force.

The Priority Claim

In claiming priority of a foreign application previously filed under such a treaty, certain information must be supplied to the Patent and Trademark Office. In addition to the application number and the date of the filing of the application, the following information is required: (1) the name of the treaty under which the application was filed, (2) the name of at least one country other than the United States in which the application has the effect of, or is equivalent to, a regular national application, and (3) the name and location of the national or intergovernmental authority which received such application.

Certification of the Priority Papers

Section 119 of Title 35 of the United States Code requires the applicant to furnish a certified copy of priority papers.

Certification by the authority empowered under a bilateral or multilateral treaty to receive applications which give rise to a right of priority under Article 4A(2) of the Paris Convention will be deemed to satisfy the certification requirement.

Aug. 9, 1977.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[962 O.G. 2]

(67) ABSTRACT OF THE DISCLOSURE

This notice is intended to announce a change in the examining practice concerning review of the abstract for compliance with the guidelines set forth in MPEP 608.01(b).

At present, the examiner is instructed to review the abstract for compliance with the guidelines when passing the case to issue, making any necessary revisions by examiner's amendment. This policy has led to the necessity for many changes by the examiner which could have and should have been made at an earlier point in the prosecution. For example, abstracts in excess of the 250 word limit require cancellation and/or rewriting of portions thereof. This 250 word limit is strictly enforced since it represents a requirement of the printing process and the printed patent format designed to present a maximum amount of information concerning a patent on a single page.

Effective immediately, examiners are to require correction of the abstract at the earliest point in the prosecution that non-compliance with the guidelines is detected. Applicants are expected to observe the guidelines in drafting the abstract and correct any defect that is identified in an Office action. Applicants are encouraged to make the necessary corrections not only to relieve the examiner of this burden, but also to help avoid any potential conflict with respect to altering the scope of the enabling disclosure. In this regard, it should be noted that the abstract of the disclosure has been interpreted to be a part of the specification for the purposes of compliance with paragraph 1 of 35 USC 112. *In re Armbruster*, 512 F.2d 676, 185 USPQ 152 (CCPA 1975). However, although it is preferable for applicant to make any necessary changes, the examiner will retain the authority and responsibility for reviewing, editing and revising the abstract of the disclosure at the time of allowance of the application to assure compliance with the guidelines.

Section 608.01(b) of the Manual of Patent Examining Procedures will be amended appropriately.

WILLIAM FELDMAN,
Dec. 30, 1977. *Deputy Assistant Commissioner for Patents.*

[967 O.G. 2]

(68) SUPPLEMENTAL GUIDELINES FOR THE IMPLEMENTATION
OF 37 CFR 1.109—REASONS FOR ALLOWANCE

A recent review of recorded statements of reasons for allowance indicates the need for a better understanding regarding implementation of new Rule 109 (37 CFR 1.109).

These guidelines are supplemental to those published in the OFFICIAL GAZETTE at 957 O.G. 11 on April 12, 1977 and amplified in Section 1302.14 MPEP, Rev. 52, April 1977.

In determining whether reasons for allowance should be recorded the primary consideration lies in the first sentence of the Rule:

"If the examiner believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims, the examiner may set forth such reasoning." (Emphasis added.)

In most cases the examiner's actions and the applicant's response make evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule. This is particularly true when applicant fully complies with 37 CFR 1.111 (b) and (c), 37 CFR 1.119 and 37 CFR 1.133(b). Thus where the examiner's actions clearly point out the reasons for rejection and the applicant's response explicitly represents reasons why claims are patentable over the reference, the reasons for allowance are in all probability evident from the record and no statement should be necessary. Conversely, where the record is not explicit as to reasons, but allowance is in order, then a logical extension of 37 CFR 1.111, 1.119

and 1.133 would dictate that the examiner should make reasons of record and such reasons should be specific.

Where specific reasons are recorded by the examiner, care must be taken to insure that such reasons are accurate, precise and do not place unwarranted interpretations, whether broad or narrow, upon the claims. The examiner should keep in mind the possible misinterpretations of his statement that may be made and its possible estoppel effects. Each statement should include at least: (1) the major difference in the claims not found in the prior art of record, and (2) the reasons why that difference is considered to define patentably over the prior art if either of these reasons for allowance is not clear in the record. The statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed and should not be written to specifically or impliedly state that all the reasons for allowance are set forth.

Under the rule, the examiner must make a judgement of the individual record to determine whether or not reasons for allowance should be set out in that record. These guidelines, then, are intended to aid the examiner in making that judgement. They comprise illustrative examples as to applicability and appropriate content. They are not intended to be exhaustive.

*Examples of When It Is Likely That a Statement
Should Be Added to the Record*

1. Claims are allowed on the basis of one (or some) of a number of arguments and/or affidavits presented and a statement is necessary to identify which of these were persuasive, for example:
 - a. When the arguments are presented in an appeal brief.
 - b. When the arguments are presented in an ordinary response with or without amendment of claims.
 - c. When both an affidavit under 37 CFR 1.131 and arguments under 102 and 103 are presented.

2. First action issue:

- a. Of non-continuing application wherein claims are very close to cited prior art and differences have not been discussed elsewhere.
 - b. Of continuing applications wherein reasons for allowance are not apparent from the record in the parent case or clear from preliminary filed matters.
3. Withdrawal of a rejection for reasons not suggested by applicant, for example:
- a. As a result of an appeal conference.
 - b. When applicant's arguments have been misdirected or are not persuasive alone and the Examiner comes to realize that more cogent argument is available.
 - c. When claims are amended to avoid a rejection under 35 USC 102 but arguments (if any) fail to address the question of obviousness.

4. Allowance after remand from the Board of Appeals.

5. Allowance coincident with the citation of newly found references that are very close to the claims, but claims are considered patentable thereover:

- a. When reference is found and cited (but not argued) by applicant.
- b. When reference is found and cited by Examiner.

6. Where the reasons for allowance are of record but in the Examiner's judgement, are unclear (e.g. spread throughout the file history) so that an unreasonable effort would be required to collect them.

7. Allowance based on claim interpretation which might not be readily apparent, for example:

- a. Article claims in which method limitations impart patentability.
- b. Method claims in which article limitations impart patentability.
- c. Claim is so drafted that "non-analogous" art is not applicable.
- d. Preamble or functional language "breathes life" into claim.

Examples of Statements of Suitable Content

1. The primary reason for allowance of the claims is the inclusion of .03 to .05 percent nickel in all the claims.

Applicant's second affidavit, in example 5 shows unexpected results from this restricted range.

2. During two telephonic interviews with applicant's attorney, Mr. — on 5/8 and 5/10/77, the Examiner stated that Applicant's remarks about the placement of the primary teaching's grid member were persuasive, but he pointed out that applicant did not claim the member as being within the reactor. Thus, an amendment doing such was agreed to.

3. The instant application is deemed to be directed to an unobvious improvement over the invention patented in Pat. No. 3,953,224. The improvement comprises baffle means 18 whose effective length in the extraction tower may be varied so as to optimize and to control the extraction process.

4. Upon reconsideration, this application has been awarded the effective filing date of S.N. —. Thus the rejection under 35 USC 102(d) and 103 over Belgian Patent No. 757,246 is withdrawn.

5. The specific limitation as to the pressure used during compression was agreed to during the telephone interview with applicant's attorney. During said interview, it was noted that applicants contended in their amendment that a process of the combined applied teachings could not result in a successful article within the amended pressure range. The Examiner agreed to rely on this statement (see page 3, bottom, of applicant's amendment), and the case was allowed.

6. In the Examiner's opinion, it would not be obvious to a person of ordinary skill in the art first to eliminate one of top members 4, second to eliminate plate 3, third to attach remaining member 4 directly to tube 2 and finally to substitute this modified handle for the handle 20 of Nania (see Fig. 1) especially in view of applicant's use of term "consisting."

Examples of Statements That Are Not Suitable as to Content

1. The 3 roll press couple has an upper roll 36 which is swingably adjustable to vary the pressure selectively against either of the two lower rolls. (Note: The significance of this statement may not be clear if no further explanation is given.)

2. The main reasons for allowance of these claims are applicant's remarks in the appeal brief and an agreement reached in the appeals conference.

3. The instant composition is a precursor in the manufacture of melamine resins. A thorough search of the prior art did not bring forth any compositions which corresponds to the instant compositions. The Examiner in the art also did not know of any art which could be used against the instant composition.

4. Claims 1-6 have been allowed because they are believed to be both novel and unobvious.

The examiner should not include in his statement any matter which does not relate directly to the reasons for allowance. For example:

5. Claims 1 and 2 are allowed because they are patentable over the prior art. If applicants are aware of better art than that which has been cited, they are required to call such to the attention of the Examiner.

6. The reference Jones discloses and claims an invention similar to applicant's. However, a comparison of the claims, as set forth below, demonstrates the conclusion that the inventions are non-interfering.

WILLIAM FELDMAN,
Jan. 24, 1978. *Deputy Assistant Commissioner for Patents.*

[968 O.G. 6]

(69) PRACTICE/RE: NEW GROUNDS OF REJECTION
AFTER APPEAL BRIEF HAS BEEN FILED

A new practice has been implemented in the Patent Examining Corps to promote uniformity and adherence to guidelines in situations where a new ground of rejection is made in an Office action after an appeal brief has been filed. Under this practice Supervisory Patent Examiner approval is required for any new ground of rejection made after the filing of an Appeal Brief. This requirement extends to new grounds of re-

jection made either in an examiner's answer or in an Office action reopening prosecution. Evidence of that approval should appear on applicant's copy of the Office action or answer as well as the record copy. Consultation with or approval by the Group Director is no longer required in these situations.

This new practice does not alter the existing guidelines for reopening prosecution (MPEP) 706.7(e), or for making a new ground of rejection in an examiner's answer (MPEP 1208.01). Appropriate modifications will be made to applicable Sections of the Manual of Patent Examining Procedure in a future revision.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[970 O.G. 94 (5-23-78)]

(70) COMMERCIAL SUCCESS AND OTHER CONSIDERATIONS BEARING ON OBVIOUSNESS

In order to clarify Office practice relative to considerations of commercial success and other items bearing on obviousness, the following changes are being made in the Manual of Patent Examining Procedure.

In section 716, subsection 4, change the sub-title and first paragraph to read as follows:

4. Commercial Success and Other Considerations Bearing on Obviousness

Affidavits or declarations submitting evidence of commercial success, long-felt but unsolved needs, failure of others, etc., must be considered by the Examiner in determining the issue of obviousness of claims for patentability under 35 U.S.C. 103. Such evidence might be utilized to give light to circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or unobviousness, such evidence may have relevancy. *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); *In re Palmer*, 172 USPQ 126, 451 F.2d 1100 (CCPA 1971); *In re Fielder and Underwood*, 176 USPQ 300, 471 F.2d 640 (CCPA 1973). The *Graham v. John Deere* pronouncements on the relevance of commercial success, etc. to a determination of obviousness were not negated in *Sakurada v. Ag Pro*, 425 U.S. 273, 189 USPQ 449 (1976) or *Andersons Black Rock, Inc. v. Pavement Salvage Co., Inc.*, 396 U.S. 57, 163 USPQ 673 (1969), where reliance was placed upon *A & P Tea Co. v. Supermarket Corp.*, 340 U.S. 147, 87 USPQ 303 (1950). See *Dann v. Johnston*, 425 U.S. 219, 189 USPQ 257 (1976), at 261, footnote 4.

The weight attached to evidence of commercial success, etc. by the Examiner will depend upon its materiality to the issue of obviousness and the amount and nature of the evidence. Note the great reliance apparently placed on this type of evidence by the Supreme Court in upholding the patent in *United States v. Adams*, 383 U.S. 39, 148 USPQ 479 (1966).

Evidence of commercial success, etc. must be commensurate in scope with the scope of the claims [*In re Tinn*, 448 F.2d 791, 171 USPQ 294 (1971)]. Further in considering evidence of commercial success, care should be taken to evaluate, to the extent possible from the evidence submitted, whether the commercial success alleged is directly derived from the invention claimed, in a marketplace where the consumer is free to choose on the basis of objective principles, and that such success is not the result of heavy promotion or advertising, shift in advertising consumption by purchasers normally tied to applicant or assignee, or other business events extraneous to the merits of the claimed invention, etc. [*In re Magell et al.*, 176 USPQ 303, (CCPA 1973)]; [*In re Nosnick et al.*, 178 USPQ 43, (CCPA 1973)].

Similarly in considering evidence of long-felt but unsolved needs and failure of others, care should be taken to determine whether such failures were due to lack of interest or appreciation of an invention's potential or marketability rather than want of technical know-how [*Scully Signal Co. v. Electronics Corp. of America*, 196 USPQ 657 (1st Cir. 1977)].

In section 716, subsection 4, add the following as the last paragraph:

If, after evaluating the evidence, the examiner is still not convinced that the claimed invention is patentable, his action should include a simple statement to that effect, identifying the reason(s) (e.g., evidence of commercial success not con-

vincing, the commercial success not related to the technology, etc.).

July 10, 1978.

RENE D. TROMETER,
Assistant Commissioner for Patents.
[978 O.G. 34]

(71) HANDLING OF DEPENDENT CLAIMS BY THE EXAMINER

Effective immediately, the following practice will be followed by patent examiners when making reference to a dependent claim—either singular or multiple. The new practice is intended to simplify and streamline our current practice (MPEP 608.01(n), Revision 55, January 1978) which experience indicates was unnecessarily burdensome in many cases.

1. When identifying a singular dependent claim which does not include a reference to a multiple dependent claim, either directly or indirectly, reference should be made only to the number of the dependent claim.
2. When identifying the embodiments included within a multiple dependent claim, or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, each embodiment should be identified by using the number of the claims involved, starting with the highest, to the extent necessary to specifically identify each embodiment.
3. When all embodiments included within a multiple dependent claim or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, are subject to a common rejection, objection or requirement, reference may be made only to the number of the dependent claim.

The following table illustrates the intended differences between current and the revised practice where each embodiment of each claim must be treated on an individual basis:

Claim Number	Claim Dependency	Identification	
		Current Practice	Revised Practice
1.....	Independent.....	1	1
2.....	Depends from 1.....	2/1	2
3.....	Depends from 2.....	3/2/1	3
4.....	Depends from 2 or 3.....	4/2/1	4/2
5.....	Depends from 3.....	5/3/2/1	5/3
6.....	Depends from 2, 3 or 5.....	6/2/1	6/2
7.....	Depends from 6.....	7/6/3/2/1	7/6/3
		7/6/3/2/1	7/6/3

When all embodiments in a multiple dependent claim situation (claims 4, 6 and 7 above) are subject to a common rejection, objection or requirement, reference may be made only to the number of the individual dependent claim. For example, if 4/2 and 4/3 were subject to a common ground of rejection, reference should be made only to claim 4 in the statement of that rejection.

The provisions of 35 USC 132 require that each Office action make it explicitly clear what rejection, objection and/or requirement is applied to each claim embodiment.

WILLIAM FELDMAN,
Deputy Assistant Commissioner.
Oct. 17, 1978.
[976 O.G. 128]

(72) Microorganisms—Patentable Subject Matter

The decision of the Supreme Court in *Diamond v. Chakrabarty* (206 U.S.P.Q. 193) held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. § 101. It is clear from the Supreme Court decision that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability.

Accordingly, the Patent and Trademark Office is now examining patent applications including claims to microorganisms which had been under suspension. Assuming that

the products involved were the result of human intervention and were not products of nature, such claims will not be rejected under 35 U.S.C. § 101 as directed to unpatentable subject matter.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Date: July 29, 1980.

[1997 O.G. 24]

(73) Department of Commerce

PATENT AND TRADEMARK OFFICE

Designation of International Depository
Authorities under the Budapest Treaty

The Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary and Japan. A copy of the Treaty was published in the OFFICIAL GAZETTE on Aug. 23, 1977 (961 O.G. 21-26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depository on its territory to serve as an international depository authority. More than one depository may be designated. Each such depository will be authorized to receive and store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depository authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depository's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depository to assume the cost of transferring deposits made under the Treaty to another international depository authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depository promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-8065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depository authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depository authority.

MEMORANDUM

For the purposes of prospective international depository
authorities under the Budapest Treaty

Introduction

1. This memorandum contains information for the benefit of any depository institutions (culture collections) that may wish to become "international depository authorities" under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depository institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depository authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of inter-governmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 8(1)(a) and 9(1)(a)).

General Remarks on International Depository Authorities

3. "International depository authorities" are depository institutions that have acquired the status of international depository authorities. To obtain this status, a depository institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depository institution acquire such status: it is therefore possible for there to be several international depository authorities located on the territory of one and the same State.

4. An international depository authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depository authority, or again by virtue of a decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depository Authorities

5. The requirements referred to in paragraph 3 above which a depository institution has to meet in order to become a depository authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

- (i) accepting for deposit any or certain kinds of microorganisms;
- (ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and

any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms;

(v) complying with respect to the microorganisms deposited under the Treaty, with the requirement of secrecy, which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph 10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. *Reception of the microorganism.* The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b) (v)). When it receives the microorganism, the international depositary authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. *Viability test.* The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1).

8. *Viability statement.* The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. *Storage of the microorganism.* The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indicating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. *Furnishing of samples.* The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure whereby the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by

it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. *Communication of the scientific description and/or proposed taxonomic designation.* If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. *Fees.* For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

July 14, 1978.

[1978 O.G. 2]

(74) Entry Into Force of the Budapest Treaty

The Patent and Trademark Office announces the entry into force on Aug. 19, 1980 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure with respect to the United States, Hungary, Bulgaria, France and Japan. A copy of the Treaty was published in the Official Gazette on Aug. 23, 1977 (1977 O.G. 21-36).

Following entry into force of the Treaty, each State adhering or acceding thereto will be authorized to nominate depositaries on its territory to serve as international depositary authorities. Upon compliance with certain procedural steps set forth in the Treaty, each such depositary will be designated an international depositary authority.

No depositary in the United States or elsewhere has yet been nominated or designated to serve as an international depositary authority. It is expected, however, that some depositaries will shortly be designated both in the United States and other States adhering to the Treaty. Public notice will be provided of the designation of each international depositary authority and its requirements for patent deposits.

An application for a patent in any adhering State involving the action of a microorganism, for which a deposit is required, may make the required deposit in any international depositary authority. The fact and date of making the deposit will be recognized for all patent purposes in each State adhering to the Treaty. No further deposit will be required for national patent processing or enforcement, provided a deposit is properly made under the provisions of the Treaty.

An application for a United States patent will not be required to proceed under the provisions of the Budapest Treaty, however. Such an applicant may rely instead on a deposit made in any depositary meeting the requirements set forth in *In re Argoudelis et al.*, 188 USPQ 99 (CCPA, 1970) and reprinted in section 608.01(p), Manual of Patent Examining Procedure.

Questions or information regarding the Budapest Treaty may be directed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557-8065.

SIDNEY A. DIAMOND,
Commissioner of Patents and
Trademarks.

Date: July 14, 1980.

JORDAN J. BARUCH,
Assistant Secretary for
Productivity, Technology and Innovation.

Date: July 16, 1980.

[1977 O.G. 10]

(75)

Department of Commerce

PATENT AND TRADEMARK OFFICE

37 CFR Part 1

FILE WRAPPER; CONTINUING APPLICATION PROCEDURE

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rulemaking.

SUMMARY: Patent and Trademark Office proposes amendment of the rules of practice in patent cases to provide an additional procedure for filing continuation and divisional applications. This procedure is being proposed to simplify filing and processing continuation and divisional patent applications by using the application and amendment papers filed in the abandoned parent application. The proposed procedure would eliminate many of the problems currently involved in preparing and processing new patent application papers in such applications.

DATES: Written comments by Feb. 4, 1981. Hearing, Feb. 4, 1981 beginning at 10:00 a.m.

ADDRESSES: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 8, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 8, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassell by telephone at (703) 557-8070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office is considering amendments to the rules of practice in patent cases to permit an applicant for patent to file a continuation or divisional application by simply filing a special request, a new set of claims, and paying the statutory filing fee. The proposed procedure would simplify filing a continuation or divisional application in those cases where the parent application is to be abandoned. If the parent application will issue as a patent, a division or continuation thereof may continue to be filed under the provisions of 37 CFR 1.60. Under the proposal, a new serial number would be assigned to the continuing application, the parent application would be abandoned and, the specification, drawings, oath or declaration, and other papers in the file wrapper of the parent application would be used as the papers in the continuing application, along with the new set of claims. Only the payment of the filing fee, the filing of a special request containing an indication of a desire to continue prosecution and a new set of claims would be required to effect the filing of a continuation or divisional application. The procedure would be available for utility, design, plant, and reissue applications. Use of the proposed procedure will automatically result in abandonment of the parent application.

The proposed procedure could be used for either a continuation or divisional application provided that applicant wishes the parent case to become abandoned.

A continuation or divisional application is an application in which the disclosure is identical to an earlier application. However, the claims may be somewhat changed. Continuation applications are often filed in situations where the applicant feels that the issue of patentability has not been sufficiently developed before the examiner for an appeal from the final rejection to be filed with the Board of Appeals. Divisional applications are filed voluntarily or as a result of a requirement for restriction by the examiner in a prior application.

The filing of continuing applications is provided for in the patent statute at 35 U.S.C. 120. Divisional applications are provided for in 35 U.S.C. 121. Under these provisions of the patent law, a continuation or divisional application may be filed during the pendency of an earlier application and retain the benefit of the filing date of the earlier parent application. Such benefit is valuable to the applicant if prior art becomes available or another inventor made the same invention during the pendency of the first application.

A simplified method of filing of such continuation or divisional applications is presently available under 37 CFR 1.60. Under § 1.60, the applicant may pay the filing fee and either supply or ask the Office to prepare the continuation or divisional application papers by making a copy of the original papers. Section 1.60 replaced earlier, more restrictive procedures under 37 CFR 1.147 and a procedure estab-

lished by Commissioner's notice known as the "Streamline Continuation" program. The procedure under § 1.60 would remain in effect in its present form, if the proposed procedure were adopted since it allows a continuation or divisional application to be filed without abandonment of the parent application. The continuation or divisional application practice under § 1.60 has resulted in a number of problems. Often the original application does not permit the reproduction of good quality copy. Sometimes applicants prematurely abandon or fail to abandon the original application or otherwise do not understand the § 1.60 procedures. Correspondence relating to such problems has become burdensome to both the applicants and the Office. Under current § 1.60, the continuation or divisional application, in addition to being copied, must be completely processed as a new application through the Application Division, Microfilming Branch and Licensing and Review Division, as well as the Examining Group's new case docketing and amendment entry procedures. The prior application is sometimes difficult to locate because of the movement and placement of the application file wrapper after it leaves the Examining Group. The proposed procedure would not require such copies to be processed and filed and should therefore result in fewer problems and less work.

The proposed procedure is set forth in proposed § 1.62 and is in compliance with the requirements of 35 U.S.C. 111. The specification and drawings from the parent application are made available for use in the continuation or divisional application. A new filing fee is required in accordance with 35 U.S.C. 41(a). The only other statutory filing requirements are claims and a signed oath or declaration. A new copy of claims, beginning with "claim 1," would be required under the proposed procedure. Since a continuation or divisional application filed under proposed § 1.62 can not contain new matter, the oath or declaration filed in the parent case should supply all the information required under the statute and rules to obtain a filing date. Accordingly, the previously filed oath or declaration would be considered to be the oath or declaration of the § 1.62 continuation or division. If the claims submitted are broadened, a supplemental oath or declaration should be filed by the applicant in accordance with 37 CFR 1.67.

The original disclosure of an application filed under § 1.62 would be the original parent application as executed by the inventor(s). However, the filing fee would be based on the new copy of claims which must accompany the request and filing fee. The Certificate of Mailing Procedure under 37 CFR 1.8 would not apply to filing such a request since the filing of such a request is considered to be the filing of an application which is excluded under 37 CFR 1.8(a)(1).

Some of the anticipated benefits of the proposed procedures are the following: 1. Formality problems should be very small.

2. All current rules relating to after final rejection practice and filing of continuing applications would remain unchanged. The proposed filing procedure is an additional alternative which would be available to applicants to use at their option.

3. A more prompt first action in the continuation or divisional application should be received in view of the reduced processing time. The Application Division will process promptly all such applications. In the examining groups, such applications will be given high priority for processing purposes.

4. Amendments made to the specification and drawings of the parent application would carry over into the continuing application and would not need to be submitted again in the continuing application.

For the public: 1. The pendency of applications should be reduced since the time delay before examination and issuance of a continuing application filed under the proposed program would be reduced.

2. The entire record of prosecution would be in one file wrapper, even if several continuation applications were filed. This would result in easier access to a series of applications by the public if a patent is later issued.

For the Patent and Trademark Office: 1. The workload of reviewing and processing new application papers in the Application Division would be reduced.

2. The examining group clerks would not be required to again enter amendments made in the parent application.

3. Less storage space would be required since there would be fewer papers.

4. The parent file history and references cited therein would be readily available to the examiner and need not be ordered from abandoned files.

5. The Office would not be required to prepare a copy of the parent application file as under the current procedures under 37 CFR 1.60.

Proposed new § 1.62 outlines the requirements of the proposed procedure.

Section 1.138 is proposed to be amended so that a registered attorney or agent could, without being of record, file a § 1.60 or 1.62 application and expressly abandon the prior application. Such an action would not affect an applicant's rights since the prior application would only be expressly abandoned if a filing date is granted to a continuing application.

Notice is hereby given that, pursuant to the authority contained in section 6 of Title 35 of the United States Code, as amended, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending § 1.138 and by adding a new § 1.62. The Patent and Trademark Office has determined that these rule changes would have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044. In the text of rule 1.138 below, additions are shown by arrows and deletions are shown by brackets. It is proposed to amend Title 37 of the Code of Federal Regulations, Chapter I, Part 1, as follows: 1. By adding new § 1.62 to read as follows:

§ 1.62. *File wrapper continuation or division procedure.*

(a) A continuation or divisional application which discloses and claims only subject matter disclosed in a prior application may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application by filing a request to use the specification, drawings, and oath of declaration from the prior application if the following four conditions are met: (1) The prior application is to be abandoned and not issued as a patent.

(2) A new set of claims to be prosecuted in the continuing application is submitted which begins with a new claim numbered "1."

(3) The filing fee under 35 U.S.C. 41(a) for the continuation or divisional application is paid during the pendency of the prior application. Such filing fee should be based on the number of claims submitted under the previous paragraph.

(4) Information is supplied as to the title, applicant, correspondence address, prior U.S. application, foreign priority application, number of pages of specification and sheets of drawings in the prior application.

(b) The filing of an application under § 1.62 will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning, either the prior application, or any one of its continuation or divisional applications filed under the provisions of this section may be given similar access to, or information concerning, the other applications in the file wrapper.

(c) The filing of an application under § 1.62 will be considered to be a request to expressly abandon the parent application as of the filing date granted the continuation or divisional application filed under § 1.62.

2. By revising § 1.138 to read as follows:

§ 1.138 *Express abandonment.*

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant himself and the assignee of record, if any, and identifying the application. Except as provided in § 1.262 an application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. A registered attorney or agent or agent acting under the provisions of § 1.34(a), or of record, may also expressly abandon a parent application as of the filing date granted to a continuing application by filing such a continuing application under the provisions of § 1.60 or § 1.62. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Dated: Oct. 17, 1980

Approved:

Dated: Oct. 31, 1980.

JORDAN J. BARUCH,
Assistant Secretary for
Productivity, Technology and Innovation.

[1001 O.G. 9]

MISCELLANEOUS

(76) HEARINGS BEFORE THE BOARD OF APPEALS

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months. Intensive effort by the Board and greater use of acting examiners-in-chief have been successful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to twenty minutes unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Date: Mar. 20, 1976.

[933 O.G. 1010]

(77) ACCESS TO INTERFERENCE SETTLEMENT AGREEMENTS BY GOVERNMENT AGENCIES

Under the provisions of 35 U.S.C. § 135(c), a party to an interference filing a copy of a settlement agreement may request that the copy be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person on a showing of good cause.

In order to provide the parties with a record of the inspection of such agreements by Government agencies, a representative of an agency will henceforth be required to present a written request, similar to the following, for each interference in which the inspection and/or copying of the agreement(s) is desired:

Date: _____

To: Clerk, Board of Patent Interferences

Pursuant to the provisions of 35 USC 135(c), please permit _____ the bearer(s) of this letter, to [] inspect and/or [] copy the settlement agreement(s) filed in interference No. _____

The information gained from such inspection and/or copying will be kept in confidence and will not be disclosed to any other person except for official investigative or law enforcement purposes.

Name, Title _____

Agency _____

The request will be placed in the folder containing the copy of the agreement, where it may be inspected by the parties or their authorized representatives.

This procedure will be applicable only to inspection or copying by the representatives of Government agencies, since no person other than a representative of a Government agency, or of a party, will be granted access to a copy of an interference settlement agreement which is kept separate from the interference file except by way of a petition for access thereto, see M.P.E.P. § 1002.02(k), item 2, and the parties to the interference are normally provided with copies of any such petition.

LUTRELLE F. PARKER,
Acting Commissioner of Patents
and Trademarks.

[972 O.G. 2]

(78) ACCESSIBILITY OF NON-FINAL DISCOVERY OPINIONS AND ORDERS ISSUED BY THE BOARD OF PATENT INTERFERENCES

A number of inquiries have been received from the patent bar and other interested persons relating to discovery practice under 37 C.F.R. § 1.287 before the Board of Patent Interferences. The inquiries indicate a need for making available to the public non-final Board opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of discovery matters before the Board. While non-final opinions need not be made available to the public [5 U.S.C. § 552(a)(2)], in order to satisfy the need, copies of non-final opinions issued by the Board will be kept in a file in the Service Branch of the Board in the U.S. Patent and Trademark Office (Crystal Plaza, Building 6, Eleventh Floor, Room 1116, Arlington, Virginia). Opinions in the file may be reviewed by the public during normal business hours (8:30 A.M. to 5:00 P.M.). Copies of opinions may be made by the public on reproducing equipment in the Service Branch with tokens at a cost of \$0.15 per page or copies may be ordered at a cost of \$0.30 per page [37 C.F.R. 1.21(b)].

In view of the provisions of 35 U.S.C. § 122 and 37 C.F.R. § 1.11(a), a consent will be obtained by the Office from all parties in an interference before an opinion issued in connection with the interference is placed in the file if the interference file is not otherwise available to the public. Preliminary indications are that the parties and their counsel generally consent.

In order to obtain optimum dissemination of the information contained in the file, opinions placed therein will be indexed according to specific topics. Copies of the index will be updated from time to time as the need occurs. Specific questions relating to the index and file may be directed to the Patent Interference Examiners.

The initial index is as follows:

Index

- 1.00 Discovery in general [37 C.F.R. § 1.287]
- 1.10 Requests and service under § 1.287(a)
- 1.20 Requests under § 1.287(b)
- 1.30 Motions for additional discovery under § 1.287(c)
- 1.31 Related to derivation
- 1.32 Related to abandonment, suppression, and concealment
- 1.33 Related to inequitable conduct
- 1.34 Other
- 1.40 Motions under § 1.287(d)(1)
- 1.50 Action under § 1.287(d)(2)
- 1.60 Agreements under § 1.287(e)

C. MARSHALL DANN,

Mar. 5, 1976. Commissioner of Patents and Trademarks.

[944 O.G. 2098]

(79) EXTENSIONS OF TIME AND FILING OF PAPERS IN INTERFERENCES

A recent sample of the interferences declared during fiscal years 1971-1975 has shown that since the 1950-1959 period there has been an increase of 27 days in the approximately one and one-half year pendency time of the average interference. This increase has occurred in spite of the Commissioner's notice of April 24, 1964, 802 O.G. 601, and an extensive revision of the interference rules in 1965.

While the failure to achieve any reduction in average interference pendency time may in part be attributable to the adoption in 1971 of 37 CFR 1.287(a)(2), which provides for the setting of additional time periods for purposes of discovery, it appears that a considerable reduction would result if the parties were to adhere to the times originally set by the Office, rather than seeking extensions of those times. Accordingly, stipulations or motions for extensions of time under 37 CFR 1.245 will not henceforth be approved or granted, respectively, unless accompanied by a detailed showing of facts sufficient to establish that the action for which the extension is sought could not have been or cannot be taken or completed during the time previously set therefor, and that the entire extension appears necessary for the taking or completion of that action. Since the Office favors the amicable settlement of interferences, the foregoing requirement will be liberally applied in the case of a first request for extension of time for the purpose of negotiating settlement.

Another factor which adversely affects the pendency time of the average interference is the number of papers filed. While parties are certainly entitled to exercise their rights in filing papers provided for by the rules, many papers are also filed that are not provided for by the rules, such as replies to replies to oppositions to motions under 37 CFR 1.231, and replies to oppositions to motions or petitions under 37 CFR 1.243 or 1.244. These unprovided-for papers appear to be generally unnecessary, cause a considerable increase in the size of the interference files, and delay determination of the motions or petitions to which they relate. Therefore, in the future papers filed in interference proceedings will be given no consideration unless they are specifically provided for by the rules. In this regard, particular attention is directed to 37 CFR 1.228, 1.231(b), 1.237, 1.243 and 1.244.

C. MARSHALL DANN,
Nov. 9, 1976. Commissioner of Patents and Trademarks.
[953 O.G. 2]

(80) Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)

Notwithstanding the clear statement in the last sentence of 37 CFR 1.287(c), parties in interference cases continue to seek review by the Commissioner of decisions of the Board of Patent Interferences on motions for additional discovery under 37 CFR 1.287(c). Review of such a decision can be had along with judicial review of a decision on the question of priority. *Cochran v. Kresock*, 530 F.2d 885, 188 USPQ 553 (CCPA 1976); *Comstock v. Krookel*, 200 USPQ 548 (Comm'r. Pat. 1978). Accordingly, parties in interference cases are reminded that a petition to the Commissioner should not be filed for the purpose of seeking review of an interlocutory decision of the Board granting or denying a motion for additional discovery under 37 CFR 1.287(c). See also *Fenstermacher v. Dougherty*, 189 USPQ 536 (Comm'r. Pat. 1976) and *Shoeken v. Doyle*, 203 USPQ 753 (Comm'r. Pat. 1978). The filing of such a petition only serves to delay the ultimate disposition of interferences on the merits. The filing of a paper for the mere purpose of delay is not permitted by the rules. 37 CFR 1.346. The Board of Patent Interferences will no longer grant a stay of proceedings pending disposition of a petition to the Commissioner seeking review of a decision of the Board on a motion for additional discovery under 37 CFR 1.287(c).

SIDNEY A. DIAMOND,
Dated: Apr. 17, 1980. Commissioner of Patents
and Trademarks.
[994 O.G. 28]

(81) Petitions in Interference Cases to Strike Applications for Alleged Violations of 37 CFR § 1.56

Not infrequently a party in an interference will file a petition requesting the Commissioner to enter an order under 37 CFR § 1.56(d) striking from the files a patent application involved in an interference. The issues raised by such a petition have been determined to be ancillary to priority within the meaning of 37 CFR § 1.258(a). See e.g., *Norton v. Curtiss*, 57 CCPA 1384, 433 F. 2d 779, 167 USPQ 532 (1970); *Langer v. Kaufman*, 59 CCPA 1261, 465 F. 2d 915,

175 USPQ 172 (1972). Hence, the issues may be considered by the Board of Patent Interferences at final hearing if properly and timely presented.

The normal disposition of a petition to strike an application involved in an interference is to dismiss the petition, without prejudice to renewal following termination of the interference. Such a disposition allows the parties to develop the issues before the Board of Patent Interferences. If the party filing the petition ultimately prevails in the interference, further action on the petition may be unnecessary. Should action on the petition be necessary, the Commissioner has the benefit of the view of the Board of Patent Interferences on the issues.

Under present practice, the Board of Patent Interferences generally will hold a petition to strike an application involved in an interference until the time for opposition has expired. The file is then forwarded to the Commissioner, where the petition is normally disposed of as indicated in the preceding paragraph. This practice is time consuming and needlessly delays the interference.

In order to prevent such delays, in the future the Patent Interference Examiner is authorized to enter an order dismissing a petition to strike an application involved in an interference, without prejudice to renewal of the petition after termination of the interference. The petition should be dismissed immediately upon receipt, without suspension of the interference.

Petitions to strike an application not involved in an interference will continue to be handled in the Office of the Assistant Commissioner for Patents in the manner previously announced.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Dated: Aug. 11, 1980.

[1980 O.G. 8]

(81.1) Department of Commerce
PATENT AND TRADEMARK OFFICE
37 CFR Part 1

PATENT INTERFERENCE PROCEEDINGS

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rulemaking.

SUMMARY: The Patent and Trademark Office is proposing to amend five sections and to add one additional section to its rules of practice in patent cases. Each of these sections concerns patent interference proceedings. The purpose of this action is: (1) to clarify and more specifically define the matters which may be raised before the Board of Patent Interferences at final hearing; (2) to broaden the present requirements relating to printed briefs at final hearing; and (3) to specify the manner in which discovery may be used.

DATE: Written comments must be received on or before February 4, 1981.

ADDRESSES: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. All comments received will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Ian A. Calvert, Chairman, Board of Patent Interferences, by telephone at (703) 557-3625, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The reasons for the proposed changes are set out in the following discussion, under three headings which correspond to the purposes stated in the "SUMMARY."

(1) *Matters raised at final hearing.*—The second sentence of present § 1.258(a) contains a lengthy statement concerning consideration of the patentability of a claim. This statement appears to be superfluous and has proven to be extremely confusing even to persons well versed in interference practice. Proposed § 1.258 eliminates this problem by concisely stating that at final hearing the Board of Patent Interferences will consider only priority of invention and matters ancillary thereto.

The other proposed changes in § 1.258 arose as a result of the decision on petition for rehearing in *Pecka v. Satomura*, 602 F.2d 969, 202 USPQ 726 (CCPA 1979), in which the court noted that § 1.258(b) did not specify certain steps which the Patent and Trademark Office requires to have occurred in order for a motion under § 1.231(a)(4) to be con-

sidered at final hearing. In order to correct this deficiency, § 1.258(a) is proposed to be rewritten to specify how matters which are ancillary to priority must have been raised in order to entitle a party to raise them at final hearing. Under the proposed provisions, matters raised in § 1.231 motions which were dismissed as procedurally defective, for example, because they were filed belatedly, or did not comply with the first sentence of § 1.231(b), may not be raised before the Board of Patent Interferences. However, a matter raised in a motion which was dismissed solely because it was based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications (as provided in § 1.231(a)(1)), or because it would require the taking of testimony (*Cory v. Blakey*, 1905 C.D. 116 (Comr. Pats.)), may be raised at final hearing under proposed § 1.258(a)(1)(iii).

The language of proposed § 1.258(a)(2) is taken from present § 1.225(a).

Present paragraph (b) of § 1.258 has been eliminated as redundant, since the question of benefit of a prior application is ancillary to priority, and is therefore covered under paragraph (a). Paragraph (c) of § 1.258 remains unchanged.

In view of the proposed revision of § 1.258, § 1.225(a) is proposed to be considerably simplified by merely referring to § 1.258. The provision for requesting final hearing within 30 days of the decision denying the motion has been dropped as superfluous, since the time for requesting final hearing, if appropriate, is always set by the patent interference examiner. A final sentence requiring a motion to take testimony is proposed to be added, in order to ensure that if a matter (ancillary to priority) raised in a § 1.231 motion is one which must be supported by evidence, the testimony or other evidence (e.g., under 37 CFR 1.282) necessary for consideration of the matter by the Board of Patent Interferences will be taken *inter partes*, in accordance with 37 CFR 1.271 et seq. Minor changes are proposed in § 1.231(d) for the purpose of consistency with proposed § 1.258.

None of the proposed changes in §§ 1.225(a), 1.231(d) or 1.258 is intended to alter the existing practice, except for the last sentence of proposed § 1.225(a), which makes mandatory a step which good practice dictates should be taken under present procedure but often is not.

(2) *Printed briefs.*—Under present §§ 1.253 and 1.254, testimony and briefs for final hearing filed in interferences must, if printed, comply with the requirements of § 1.253(e), which have consistently been interpreted as requiring standard typographic printing. Since the Court of Customs and Patent Appeals accepts as "printed" briefs produced by other processes, it is considered that the Patent and Trademark Office should follow suit, in order to spare interference parties the present onerous cost of typographic printing. § 1.253(e) is therefore proposed to be amended to conform it more closely to Rule 5.8(a) of the Court of Customs and Patent Appeals. A sentence, based on Court of Customs and Patent Appeals Rule 5.8(e), is proposed to be added to § 1.254 in order to permit the Board of Patent Interferences to accept, in its discretion, a brief which may not literally comply with the rules, but is otherwise considered satisfactory.

(3) *Use of discovery.*—When § 1.287 was adopted in 1971, no particular provision was made in the rules for the introduction and use as evidence of items obtained through discovery. This has led to some disagreement and confusion on the subject. Compare, for example, the majority and concurring opinions in *Inoue v. Lobur*, 195 USPQ 256 (Bd. Pat. Int. 1976).

Proposed new § 1.288 is intended to remedy this situation. Paragraph (a) of the rule is analogous to § 1.282, and permits a party to an interference who has obtained, through discovery related to the interference, admissions in writing in response to written requests for admissions, or written answers to written interrogatories, to introduce the admissions or answers into evidence without taking testimony. The term "discovery" is intended to include discovery conducted voluntarily between the parties or in a court, as well as discovery under § 1.287.

Paragraph (b) of the proposed section specifies that other matter obtained by discovery must be introduced in the same manner as other evidence; for example, documents obtained by discovery must be introduced, as indicated in *Clark v. Wilke*, 203 USPQ 1101 (Bd. Pat. Int. 1978), and testimony taken in an ancillary proceeding under the control of a U.S. District Court must be introduced in accordance with § 1.283 (Commissioner's Notice of May 2, 1972, 808 O.G. 1500).

Pursuant to 35 USC 6(a), as amended, the Commissioner of Patents and Trademarks proposed to amend Title 37 of the Code of Federal Regulations by amending the §§ 1.225, 1.231, 1.253, 1.254 and 1.258, and by adding a new § 1.288, as shown below. The Patent and Trademark Office has determined that these rule changes have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044.

It is proposed to amend 37 CFR, Chapter I, Subchapter A, Part 1, as follows:

1. By revising paragraph (a) of § 1.225 to read as follows:
§ 1.225 *Failure of junior party to file statements or to overcome filing date of senior party.*

(a) If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of another party, judgment on the record will be entered against that junior party unless:

(1) Under the provisions of § 1.258(a), he would be entitled to raise before the Board of Patent Interferences a matter which is ancillary to priority and which, if decided in his favor, would remove the basis for judgment on the record against him; and

(2) Within a time set by the patent interference examiner, not less than 30 days, he requests that final hearing be set to review such matter. If the matter was raised in a motion which was dismissed for one of the reasons specified in § 1.258(a)(1)(iii), the request for final hearing must be accompanied by a motion to take testimony under paragraph (b) of this section.

2. By amending paragraph (d) of § 1.231 as follows (additions are indicated by arrows, deletions by brackets):

§ 1.231 *Motions before the primary examiner.*

(d) All proper motions as specified in paragraph (a) of this section, or of a similar character, will be transmitted to and considered by the primary examiner without oral argument, except that consideration of a motion to dissolve on a ground other than no interference in fact will be deferred to final hearing before a Board of Patent Interferences where the motion urges unpatentability of a claim to one or more parties. A matter which would be reviewable at final hearing under § 1.258(a) and such [unpatentability is urged] matter is raised against a patentee or has been ruled upon by the Board of Appeals or by a court in ex parte proceedings. Also consideration of a motion to add or remove the names of one or more inventors may be deferred to final hearing if such motion is filed after the times for taking testimony have been set. Request for reconsideration will not be entertained.

3. By revising paragraph (e) of § 1.253 to read as follows:

§ 1.253 *Copies of the testimony.*

(e) When the copies of the testimony are submitted in printed form, they may be produced by standard typographic printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be either 7½ by 10½ inches (19.4 by 26 cm.) with type matter 4½ by 7½ inches (10.6 by 18.2 cm.), or 8½ by 11 inches (21.6 by 27.9 cm.) with type matter 6½ by 9½ inches (16.5 by 24.1 cm.). The testimony shall be bound to lie flat when open. Plastic and metal ring-type bindings are not acceptable. Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no appeal be taken, the twenty-five copies will be returned to the party filing the testimony.

4. By adding the following sentence to § 1.254:

§ 1.254 *Briefs at final hearing.*

• • • The board may refuse to accept any brief which has been printed, typewritten, or bound otherwise than in substantial conformity with this section.

5. By revising § 1.258 to read as follows:

§ 1.258 *Matters considered in determining priority.*

(a) In determining priority of invention, the Board of

Patent Interferences will consider only priority of invention on the evidence submitted, and matters ancillary thereto. A party shall be entitled to raise a matter which is ancillary to priority only if:

(1) The matter was raised by the party in a motion under § 1.231(a), and;

(i) The motion was transmitted to and decided by the primary examiner; or

(ii) Consideration of the motion was deferred to final hearing; or

(iii) The motion was dismissed as being based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications, or as being based on a ground which would require the taking of testimony; or

(2) The matter was raised by the party in opposition to a motion under § 1.231(a)(2), (3), (4) or (5) which was granted over his opposition; or

(3) The party shows good reason why the matter was not raised as specified in paragraphs (a)(1) or (2) of this section.

(b) To prevent manifest injustice the Board of Patent Interferences may in its discretion consider a matter which is ancillary to priority even though it would not otherwise be entitled to consideration under paragraph (a) of this section.

(c) At final hearing between an application and a patent the prior art of record in the patent file may be referred to for the purpose of construing the issue.

6. By adding the following new section:

§ 1.288 *Use of discovery.*

(a) If a party intends to rely upon an admission or upon an answer to an interrogatory, obtained by discovery, the admission or answer may be introduced into evidence by filing, before the closing of the time for taking the testimony of the party (before the time for taking the testimony in chief if such admission or answer is not in rebuttal), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer, together with a notice of reliance thereon.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence pursuant to §§ 1.271 to 1.286.

Dated: Oct. 15, 1980

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks

Approved:

Dated: Oct. 31, 1980

JORDAN J. BARUCH,
Assistant Secretary for
Productivity, Technology and Innovation
[FR Doc. 80-38675 Filed 11-24-80; 8:45 am]

[1001 O.G. 30]

(82) DISCLOSURE DOCUMENT PROGRAM

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program.

Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

THE PROGRAM

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney, or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception

of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

CONTENT OF DISCLOSURE DOCUMENT

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8½ by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A \$10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the \$10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

RETENTION

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

(84) POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557-8158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

WARNING AS TO LIMITATIONS

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,

Assistant Commissioner of Patents.

Jan. 4, 1971.

[883 O.G. 3]

(83) SUSPENSION OF ACTION UNDER 37 CFR 1.103 AND UNDER 37 CFR 1.212

The purpose of this notice is to clarify existing Office practice with respect to suspension of action.

"Suspension of action" under 37 CFR 1.103 applies only to the situation where action is to be taken by the Examiner. In other words, action cannot be suspended in an application which contains an outstanding Office action awaiting response by the applicant.

Under 37 CFR 1.212, upon declaration of an interference, ex parte prosecution of an application is suspended and any outstanding Office actions are considered as withdrawn by operation of the rule. *Ex parte Peterson*, 49 USPQ 119 (Commissioner of Patents, 1941). Upon termination of the interference, the Examiner will reinstate the action treated as withdrawn by operation of 37 CFR 1.212 and set a statutory period for response. The formats set forth in MPEP 1109.01 and MPEP 1109.02 may be followed.

Careful adherence to the distinction set forth above will prevent any question of abandonment from arising in connection with cases in which suspension of prosecution has occurred.

WILLIAM FELDMAN,
Deputy Assistant Commissioner
for Patents.

Mar. 7, 1978.

[889 O.G. 8]

POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766-2386.	DES MOINES, IOWA, 52806, 609 Federal Bldg., 210 Walnut St. (515) 284-4222.	NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264-0634.
ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265-4597.	DETROIT, 48226, 445 Federal Bldg. (313) 236-3650.	NEWARK, N.J., 07102, Gateway Bldg., (4th floor) (201) 645-6314.
ATLANTA, 30309, Suite 528, 1401 Peachtree St., NE. (404) 526-6000.	GREENSBORO, N.C., 27402, 208 Federal Bldg., W. Market St., P.O. Box 1950, (919) 275-9111, Ext. 345.	PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597-2550.
BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962-3560.	HARTFORD, CONN., 06103, Room 610-B, Federal Office Bldg., 450 Main St. (203) 244-3530.	PHOENIX, ARIZ., 85004, 503 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261-3288.
BIRMINGHAM, ALA., 35205, Suite 200-201, 908 S. 20th St. (205) 326-3827.	HONOLULU, 96813, 298 Alexander Young Bldg., 1015 Bishop St. (808) 546-8694.	PITTSBURGH, 15222, 481 Federal Bldg., 1000 Liberty Ave. (412) 644-2850.
BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 233-2312.	HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226-4231.	PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittcock Block. (503) 221-3001.
BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842-3208.	INDIANAPOLIS, 46204, 355 Federal Office Bldg., 48 E. Ohio St. (317) 269-6214.	RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784-5203.
CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343-6181, Ext. 375.	KANSAS CITY, MO., 64108, Room 1840, 601 E. 12th St. (816) 374-3142.	RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782-2246.
CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 778-2151.	LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824-7591.	ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622-4243.
CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353-4450.	MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 584-3213.	SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524-5116.
CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (513) 684-2944.	MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350-5267.	SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556-5860.
CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522-4750.	MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224-3473.	SAN JUAN, P.R., 00902, Room 100, Post Office Bldg. (809) 723-4640.
COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765-5845.	MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725-2133.	SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125-29 Bull St. (912) 232-4204.
DALLAS, 75202, Room SE7, 1100 Commerce St. (214) 749-1515.	NEW ORLEANS, 70130, Room 422, International Trade Mart, 2 Canal St. (504) 589-6546.	SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442-5615.
DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837-3246.		

C. MARSHALL DANN,

Commissioner of Patents and Trademarks.

July 18, 1975.

[887 O.G. 386]

(85) Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patent may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries—Continued

Illinois	Chicago Public Library.....	(312) 269-2814
Massachusetts	Boston Public Library.....	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library.....	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center.....	(612) 372-6552
Missouri	Kansas City: Linda Hall Library.....	(816) 363-4600
	St. Louis Public Library.....	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library.....	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library.....	(603) 862-1777
New Jersey	Newark Public Library.....	(201) 733-7740
New York	Albany: New York State Library.....	(518) 474-5125
	Buffalo and Erie County Public Library.....	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries).....	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University.....	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County.....	(513) 369-6936
	Cleveland Public Library.....	(216) 623-2932
	Columbus: Ohio State University Libraries.....	(614) 422-6286
	Toledo/Lucas County Public Library.....	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library.....	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library.....	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh.....	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University.....	(814) 865-4861
Rhode Island	Providence Public Library.....	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center.....	(901) 528-2957
Texas	Dallas Public Library.....	(214) 748-9071
	Houston: The Fondren Library, Rice University.....	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington.....	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin.....	(608) 262-6845
	Milwaukee Public Library.....	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5:00 p.m.

[999 O.G. 27]

(86) EXAMINER TESTIMONY

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works v. Joy Manufacturing Co.*, 167 USPQ 170, 171: "... the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the procedure set forth in

Section 7.02, Department of Commerce Administrative Order 206-12, June 29, 1967 as amended April 10, 1970. That section states:

In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (a) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (b) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Mar. 13, 1972.

[897 O.G. 703]

(87) Report on Results of a July, 1979 Survey on the Citation by Applicants of Prior Art in Patent Applications

This report summarizes the data compiled from a sample of 900 allowed applications surveyed in the Office of Patent Program Control during the week of July 16 to July 19, 1979. All applications in this survey were filed on or after July 1, 1977, the effective date of the establishment of new rules 37 CFR 1.97-1.99 relating to the citation of prior art by applicants.

For the purposes of the survey, a "citation", whether appearing in the specification or in a separate paper, is defined as (1) a listing of patents or publications together with a concise explanation of the relevance of each listed item (i.e. a prior art "statement" under 37 CFR 1.98 (a)) or (2) a "mere listing" of patents or publications. In addition, a "reference" is defined as any patent or other publication cited by applicant.

This survey is similar to and presented in the same general format as the surveys published in the *OFFICIAL GAZETTE* of November 23, 1976, pages 1356 and 1357 and of September 26, 1978, pages 23 and 23.

This survey indicates, among other things, that 68% of the sampled applications include citations by applicants. This is generally consistent with the 64% finding in the 1976 survey and, like the 1976 survey, represents an improvement over the 54% finding in the 1976 survey.

The statistics are otherwise presented without comment as follows:

	Chem.	Elec.	Mech.	Total
(1) Number of applications in sample.....	300	300	300	900
Number of applications having citations submitted in:				
(2) Separate papers only.....	28	80	71	214
(3) Both separate papers and in specification.....	28	20	24	72
(4) The specification only.....	10	14	9	33
(5) Total number of applications having citations.....	86	104	125	315
(Percent of sample 35%).....	29	35	42	35

Applications in which the applicant submitted citations in the specification.

	Chem.	Elec.	Mech.	Total
(6) Number of applications including citations in the specification.....	95	128	134	357
(7) Number of applications including mere listing of references in the specification.....	9	9	4	22
(8) Number of applications including prior art statements in the specification.....	36	114	130	280
(9) Number of applications including prior art statements in the specification which included copies of the references.....	26	36	20	82
(10) Number of applications having prior art statements in the specification which comply fully with the guidelines (37 CFR 1.97-1.99; MPEP § 600) (e.g. timely filed, translations where applicable, etc.).....	28	30	25	83
(11) Number of applications having prior art statements citing non-English documents in specification.....	28	30	19	77
(Percent of applications, with statements, citing non-English documents 11%).....	37	18	15	19

Applications in which the applicant submitted citations in the specification.

	Chem.	Elec.	Mech.	Total
(12) Number of applications having prior art statements citing non-English documents in specification which included an English translation or English equivalent document.....	4	5	3	12
(Percent of applications, with statements, having translations of non-English documents 12/11).....	17	26	16	19

Applications in which applicant submitted citations in separate papers.

	Chem.	Elec.	Mech.	Total
(13) Number of applications having citations in a separate paper. (Percent of applications having citations in separate papers 12/1).....	98	74	80	252
(14) Number of separate papers having citations. (Note that 253 papers were filed in 247 applications. Of 247 applications, 241 had one paper and 6 applications had two papers).....	31	26	27	84
(15) Number of separate papers having citations submitted within 3 months of the filing date of the application. (Percent of separate papers having citations submitted within 3 months 15/14).....	95	77	81	253
(16) Number of separate papers having citations filed later than 3 months after the filing date and after the first Office action which included a statement explaining why the prior art was not earlier presented. (Percent of separate papers having citations including explanations for late filing 19/14).....	2	3	3	8
(17) Did not include a statement explaining why the prior art was not earlier presented. (Percent of separate papers having citations not including explanation for late filing 17/14).....	2	4	4	10
(18) Number of separate papers having citations which included a copy(a) of the reference(s). (Percent of separate papers having citations including copy(a) of the reference(s) 18/14).....	26	27	17	70
(19) Number of separate papers having citations which included a non-English document citation.....	28	35	21	84
(20) Number of separate papers having citations which included an English translation or English language equivalent of a non-English document. (Percent of separate papers having translation etc., of non-English documents 20/10).....	73	54	62	189
(21) Number of separate papers having prior art statements. (Percent of separate papers having prior art statements 21/14).....	76	73	77	226
(22) Number of separate papers having citations which fully conformed with the guidelines (37 CFR 1.97-1.99; MPEP § 600).....	20	10	23	53
(Percent of separate papers fully conforming with CFR and MPEP 22/14).....	21	13	27	61
(23) Number of separate papers having citations which fully conformed with the guidelines (37 CFR 1.97-1.99; MPEP § 600).....	13	3	3	19
(Percent of separate papers fully conforming with CFR and MPEP 23/14).....	85	30	36	151
(24) Number of separate papers having citations which fully conformed with the guidelines (37 CFR 1.97-1.99; MPEP § 600).....	98	51	63	212
(Percent of separate papers fully conforming with CFR and MPEP 24/14).....	98	68	77	243
(25) Number of separate papers having citations which fully conformed with the guidelines (37 CFR 1.97-1.99; MPEP § 600).....	54	30	37	121
(Percent of separate papers fully conforming with CFR and MPEP 25/14).....	60	36	46	142

Applications (With Statements in Specification) Grouped Below According to Numbers of References Cited.

	Chem.	Elec.	Mech.	Total
(23) Numbers of applications including statements in the specification having a range of 1-5 references.....	66	96	108	272
(Percent of applications having statements in specification with 1-5 references 23/8).....	77	86	83	82
(24) Number of applications including statements in the specification having a range of 6-10 references.....	15	10	20	45
(Percent of applications having prior art statements in specification with 6-10 references 24/8).....	17	9	15	14
(25) Number of applications including statements in the specification having more than 10 references.....	5	6	2	13
(Percent of applications having statements in specification with 10 or more references 25/8).....	8	5	2	4

Separate Papers (With Statements) Grouped Below According to Numbers of References Cited.

	Chem.	Elec.	Mech.	Total
(26) Number of separate papers including statements having a range of 1-5 references.....	47	28	34	109
(Percent of separate papers with 1-5 references 26/21).....	53	55	55	54
(27) Number of separate papers including statements having a range of 6-10 references.....	20	14	19	53
(Percent of separate papers with 6-10 references 27/21).....	23	27	31	26
(28) Number of separate papers including statements having more than 10 references.....	21	9	9	39
(Percent of separate papers with 10 or more references 28/21).....	24	18	14	20

Applications (With Mere Listings of References in Specification and Separate Papers) Grouped Below According to Number of References Cited.

	Chem.	Elec.	Mech.	Total
(29) Number of applications having a range of 1-5 references.....	7	18	9	34
(Percent of applications having listings of 1-5 references 29/29+30+31).....	47	55	39	48
(30) Number of applications having a range of 6-10 references.....	6	10	4	20
(Percent of applications having listings of 6-10 references 30/29+30+31).....	40	30	17	28
(31) Number of applications having more than 10 references.....	2	5	10	17
(Percent of applications having listings of 10 or more references 31/29+30+31).....	13	15	44	24

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

[1997 O.G. 8]

(88) Department of Commerce
PATENT AND TRADEMARK OFFICE
37 CFR Part 5

SECRET OF CERTAIN INVENTIONS AND LICENSES TO FILE
APPLICATIONS IN FOREIGN COUNTRIES; EXPORTS OF
TECHNICAL DATA

AGENCY: Patent and Trademark Office, Commerce.
ACTION: Final rule.

SUMMARY: This amendment of the rules of practice brings them into agreement with changes which the Office of Export Administration of the International Trade Administration, Department of Commerce, has made in its Export Administration Regulations. The Office of Export Administration has amended these regulations by adding the filing of patent applications in foreign countries to the list of exports which are not controlled by the Office of Export Administration. As amended, these regulations point out that exports of unclassified technical data in the form of patent applications, amendments and the like are governed by regulations issued by the Patent and Trademark Office. These changes in the Export Administration Regulations are intended to be reflected in this amendment of the Patent and Trademark Office's rules of practice.

EFFECTIVE DATE: November 3, 1980.

FOR FURTHER INFORMATION CONTACT: Mr. Samuel Engle by telephone at (703) 557-2897 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: On July 30, 1980, the International Trade Administration of the Department of Commerce published in the Federal Register (45 FR 50556) its amendment of 15 CFR Parts 370 and 379. These amendments added the filing of patent applications in foreign countries to the list of exports which are not controlled by the Office of Export Administration. They point out that no validated export license from the Office of Export Administration is required for data contained in a patent application, or an amendment, modification, supplement or division thereof for filing in a foreign country in accordance with the regulations of the Patent and Trademark Office in 37 CFR Part 5. Section 5.19 of 37 CFR Part 5 is therefore being revised to delete the now-obsolete requirement for a validated export license and make clear that such a license is not required if the filing of a patent application in a foreign country is in accordance with Patent and Trademark Office regulations, 37 CFR 5.11-5.23.

This amendment of 37 CFR Part 5 has been reviewed pursuant to Executive Order 12044 and found to have no major economic consequences and therefore does not require a regulatory analysis.

Since the amendment imposes no burden on any person and is a clarification of an existing rule, notice and public procedures thereon are considered to be unnecessary.

Accordingly, pursuant to the authority contained in 35 U.S.C. 6, as amended and 35 U.S.C. 181-188, the rules of practice in 37 CFR Part 5, relating to licenses to file applications in foreign countries are amended as follows:

By revising § 5.19 to read:

§ 5.19 *Export of technical data.*

(a) Under regulations (15 CFR 370.10(j)) established by the U.S. Department of Commerce, International Trade Administration, Office of Export Administration, a validated export license is not required in any case to file a patent application or part thereof in a foreign country if the foreign filing is in accordance with the regulations (37 CFR 5.11-5.23) of the Patent and Trademark Office.

(b) A validated export license is not required for data contained in a patent application prepared wholly from foreign-origin technical data where such application is being sent to the foreign inventor to be executed and returned to the United States for subsequent filing in the U.S. Patent and Trademark Office (15 CFR 379.3(c)).

(3) Inquiries concerning the export control regulations for the foreign filing of technical data other than patent applications should be made to the Office of Export Administration, International Trade Administration, Department of Commerce, Washington, D.C. 20230.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Dated: Oct. 15, 1980.

Approval:

JORDAN J. BARUCH,
Assistant Secretary for
Productivity, Technology and Innovation.

[FR Doc. 80-34082 Filed 10-31-80; 8:45 am]
Billing Code 3510-16-M

[1001 O.G. 15]

(89) No Change In Foreign Filing License Requirements

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbsing at 703-557-2897, or Mr. Edward Drasowsky at 703-557-2167.

WILLIAM FELDMAN,
Acting Assistant Commissioner,
for Patents.

Date: Nov. 24, 1980.

[1001 O.G. 28]

Patent Cooperation Treaty Information

(90) PATENT COOPERATION TREATY (PCT) IMPLEMENTATION: INFORMATION FOR PROSPECTIVE APPLICANTS

International applications under the Patent Cooperation Treaty (PCT) may be filed with the Patent and Trademark Office beginning on 01 June 1978. In order to provide prospective applicants with information necessary for filing and to advise on the availability of various documents covering the requirements and procedures under the PCT, the following topics are included in this Notice:

- Amendments to the Regulations under the Patent Cooperation Treaty.
- Administrative Instructions under the Patent Cooperation Treaty.
- Fees for the processing of International Applications.
- PCT Member States which may be designated in International Applications.
- Availability of Documents concerning the Patent Cooperation Treaty.

A revision of pertinent parts of Title 37 of the Code of Federal Regulations incorporating changes necessary to implement the Patent Cooperation Treaty will be published in the near future.

TOPIC I: AMENDMENTS TO THE REGULATIONS UNDER THE PATENT COOPERATION TREATY (PCT)

The PCT Assembly at its first meeting on April 10-14, 1978 adopted several changes to the PCT Regulations. These changes are reproduced below so that prospective applicants who already have copies of the Treaty may incorporate the changes. To obtain copies of the Treaty, including the changes to the Regulations, see Topic V of this Notice.

AMENDMENTS TO THE REGULATIONS UNDER THE PATENT COOPERATION TREATY (PCT)

Adopted by the Assembly of the International Patent Cooperation (PCT) Union on April 14, 1978

TABLE OF AMENDMENTS

Rule 4.4(c).....	Amended
Rule 4.10(d).....	Amended
Rule 11.6(a).....	Amended
Rule 11.6(b).....	Amended
Rule 11.18(a).....	Amended
Rule 15.2(a).....	Amended
Rule 15.2(b).....	Amended
Rule 32b.1.....	New rule added
Rule 48.2(a).....	Amended
Rule 48.3(c).....	Amended
Rule 57.2(a).....	Amended
Rule 57.2(b).....	Amended
Rule 58.2.....	New rule added
Rule 58.3.....	New rule added
Rule 61.1(b).....	Amended
Rule 74b.1.....	New rule added
Rule 86.3(a).....	Amended
Rule 86.3(b).....	New rule added
Rule 86.4(a).....	Amended
Rule 86.4(b).....	New rule added

RULE 4

The Request (Contents)

4.4 Names and Addresses

(c) Addresses shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and, in any case, shall consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. It is recommended to indicate any telegraphic and teleprinter address and telephone number.

4.10 Priority Claim

(d) If the filing date of the earlier application as indicated in the request does not fall within the period of one year preceding the international filing date, the receiving Office, or, if the receiving Office has failed to do so, the International Bureau, shall invite the applicant to ask either for the cancellation of the declaration made under Article 8(1) or, if the date of the earlier application was indicated erroneously, for the correction of the date so indicated. If the applicant fails to act accordingly within 1 month from the date of the invitation, the declaration made under Article 8(1) shall be cancelled ex officio. The receiving Office effecting the correction or cancellation shall notify the applicant accordingly and, if copies of the international application have already been sent to the International Bureau and the International Searching Authority, that Bureau and that Authority. If the correction or cancellation is effected by the International Bureau, the latter shall notify the applicant and the International Searching Authority accordingly.

RULE 11

Physical Requirements of the International Application

11.6 Margins

(a) The minimum margins of the sheets containing the request, the description, the claims, and the abstract, shall be as follows:

top: 2 cm
left side: 2.5 cm
right side: 2 cm
bottom: 2 cm

(b) The recommended maximum, for the margins provided for in paragraph (a), is as follows:

top: 4 cm
left side: 4 cm
right side: 8 cm
bottom: 3 cm

11.13 Special Requirements for Drawings

(c) Drawings shall be executed in durable, black, sufficiently dense and dark, uniformly thick and well-defined, lines and strokes without colorings.

RULE 15

The International Fee

15.2 Amounts

(a) The amount of the basic fee shall be:

(i) if the international application contains not more than 30 sheets: US \$165.00 or 300 Swiss francs.

(ii) if the international application contains more than 30 sheets: US \$165.00 or 300 Swiss francs plus US \$3.00 or 6 Swiss francs per sheet in excess of 30 sheets.

(b) The amount of the designation fee for each designated State or each group of designated States for which the same regional patent is sought shall be: US \$40.00 or 80 Swiss francs.

RULE 32bis

Withdrawal of the Priority Claim

32bis.1 Withdrawals

(a) The applicant may withdraw the priority claim made in the international application under Article 8(1) at any time before the international publication of the international application.

(b) Where the international application contains more than one priority claim, the applicant may exercise the right provided for in paragraph (a) in respect of one or more or all of them.

(c) Where the withdrawal of the priority claim, or, in the case of more than one such claim, the withdrawal of any of them, causes a change in the priority date of the international application, any time limit which is computed from the original priority date and which has not already expired shall be computed from the priority date resulting from that change. In the case of the time limit of 18 months referred to in Article 21(2)(a), the International Bureau may nevertheless proceed with the international publication on the basis of the said time limit as computed from the original priority date if the withdrawal is effected during the period of 15 days preceding the expiration of that time limit.

(d) For any withdrawal under paragraph (a), the provisions of Rule 52.1(c) and (d) and Rule 74bis.1 shall apply *mutatis mutandis*.

RULE 46

International Publication

46.2 Contents

(a) The pamphlet shall contain:

- (i) a standardized front page,
- (ii) the description,
- (iii) the claims,
- (iv) the drawings, if any,
- (v) subject to paragraph (g), the international search report or the declaration under Article 17(2)(a); the publication of the international search report in the pamphlet shall, however, not be required to include the part of the international search report which contains only matter referred to in Rule 48 already appearing on the front page of the pamphlet,
- (vi) any statement filed under Article 19(1), unless the International Bureau finds that the statement does not comply with the provisions of Rule 44.4.

46.3 Language

(c) If the international application is published in a language other than English, the international search report to the extent that it is published under Rule 48.2(a)(v), or the declaration referred to in Article 17(2)(a), and the abstract shall be published both in that language and in English. The translations shall be prepared under the responsibility of the International Bureau.

RULE 57

The Handling Fee

57.2 Amount

(a) The amount of the handling fee shall be US \$50.00 or 96 Swiss francs augmented by as many times the same amount as the number of languages into which the international preliminary examination report must, in application of Article 36(2), be translated by the International Bureau.

(b) Where, because of a later election or elections, the international preliminary examination report must, in application of Article 36(2), be translated by the International Bureau into one or more additional languages, a supplement to the handling fee shall be payable and shall amount to US \$50.00 or 96 Swiss francs for each additional language.

RULE 58

The Preliminary Examination Fee

58.2 Failure to pay

(a) Where the preliminary examination fee fixed by the International Preliminary Examining Authority under Rule 58.1(b) is not paid as required under that Rule, the International Preliminary Examining Authority shall invite the applicant to pay the fee or the missing part thereof within one month from the date of the invitation.

(b) If the applicant complies with the invitation within the prescribed time limit, the preliminary examination fee will be considered as if it had been paid on the due date.

(c) If the applicant does not comply with the invitation within the prescribed time limit, the demand shall be considered as if it had not been submitted.

58.3 Refund

The International Preliminary Examining Authorities shall inform the International Bureau of the extent, if any, to which, and the conditions, if any, under which, they will refund any amount paid as a preliminary examination fee where the demand is considered as if it had not been submitted under Rule 57.4(c), Rule 58.2(c) or Rule 60.1(c), and the International Bureau shall promptly publish such information.

RULE 61

Notification of the Demand and Elections

61.1 Notifications to the International Bureau, the Applicant, and the International Preliminary Examining Authority

(b) The International Preliminary Examining Authority shall promptly inform the applicant in writing of the date of receipt of the demand. Where the demand has been considered under Rules 57.4(c), 58.2(c) or 60.1(c) as if it had not been submitted, the International Preliminary Examining Authority shall notify the applicant accordingly.

RULE 74bis

Notification of Withdrawal under Rule 38

74bis.1 Notification of the International Preliminary Examining Authority

If, at the time of the withdrawal of the international application or of the designation of all designated States under Rule 32.1, a demand for international preliminary examination has already been submitted and the international preliminary examination report has not yet issued, the International Bureau shall promptly notify the fact of withdrawal, together with the date of receipt of the notice effecting withdrawal, to the International Preliminary Examining Authority.

RULE 86

The Gazette

86.3 Frequency

(a) Subject to paragraph (b), the Gazette shall be published once a week.

(b) For a transitional period after the entry into force of the Treaty terminating upon a date fixed by the Assembly, the Gazette may be published at such times as the Director General considers appropriate having regard to the number of international applications and the amount of other material required to be published.

86.4 Sale

(a) Subject to paragraph (b), the subscription and other sale prices of the Gazette shall be fixed in the Administrative Instructions.

(b) For a transitional period after the entry into force of the Treaty terminating upon a date fixed by the Assembly, the Gazette may be distributed on such terms as the Director General considers appropriate having regard to the number of international applications and the amount of other material published therein.

[Topic II not reprinted]

(91) UPDATES OF INFORMATION CONCERNING THE PATENT COOPERATION TREATY

[Topics 1 and 2 not reprinted]

TOPIC 8: CHANGES IN THE PCT RULES

The following PCT Rule changes, adopted by the PCT Assembly on May 1, 1979 become effective on August 1, 1979 with the exception of the changes in PCT Rule 47 which became available on May 1, 1979.

RULE 15

The International Fee

15.1 Basic Fee and Designation Fee

Each international application shall be subject to the payment of a fee for the benefit of the International Bureau ("international fee") to be collected by the receiving Office and consisting of:

- (i) a "basic fee," and
- (ii) as many "designation fees" as there are national patents and regional patents sought by the applicant in the international application, except that, where Article 44 applies in respect of a designation, only one designation fee shall be due.

15.2 Amounts

(a) The amounts of the basic fee and of the designation fee are as set out in the Schedule of Fees.

(b) The amounts of the basic fee and of the designation fee shall be established, for each receiving Office which, under Rule 15.3, prescribes the payment of those fees in a currency or currencies other than Swiss currency, by the Director General after consultation with that Office and in the currency or currencies prescribed by that Office ("prescribed currency"). The amounts in each prescribed currency shall be the equivalent, in round figures, of the amounts in Swiss currency set out in the Schedule of Fees. They shall be published in the Gazette.

(c) Where the amounts of the fees set out in the Schedule of Fees are changed, the corresponding amounts in the prescribed currencies shall be applied from the same date as the amounts set out in the amended-Schedule of Fees.

(d) Where the exchange rate between Swiss currency and any prescribed currency becomes different from the exchange rate last applied, the Director General shall establish new amounts in the prescribed currency according to directives given by the Assembly. The newly established amounts shall become applicable two months after the date of their publication in the Gazette, provided that the interested Office and the Director General may agree on a date falling amounts shall become applicable for that Office from that date.

15.3 Mode of Payment

The international fee shall be payable in the currency or currencies prescribed by the receiving Office, it being understood that, when transferred by the receiving Office to the International Bureau, the amount transferred shall be freely convertible into Swiss currency.

15.4 Time of Payment

(a) Subject to paragraph (c), the basic fee shall be due on the date of receipt of the international application.

(b) Subject to paragraph (c), the designation fee shall be paid on the date of receipt of the international application or on any later date prior to the expiration of one year from the priority date.

(c) The receiving Office may permit applicants to pay either the basic fee or the designation fee or both of the fees later than on the dates provided for in paragraphs (a) and (b), provided that:

- (i) permission shall not be given to pay the basic fee or the designation fee later than one month after the date of receipt of the international application;
- (ii) permission may not be subject to any extra charge. Such later payment of the said fees shall be without loss, in the case of the basic fee, of the international filing date, or, in the case of the designation fee, of the designations to which the payment relates.

15.5 Partial Payment

(a) Where the amount of the international fee received by the receiving Office is not less than that of the basic fee and at least one designation fee but less than the amount required to cover the basic fee and all the designations made in the international application, the amount received shall be applied as follows:

- (i) to cover the basic fee, and

(ii) to cover as many designation fees as, after deduction of the basic fee, may be covered in full by the amount received in the order indicated in paragraph (b).

(b) The order, in which the said amount shall be applied to the designations shall be established as follows:

- (i) where the applicant indicates to which designation or designations the amount is to be applied, it shall be applied accordingly but, if the amount received is insufficient to cover the designations indicated, it shall be applied to as many designations as are covered by it in the order chosen by the applicant in indicating the designations;
- (ii) to the extent that the applicant has not given the indications under item (i), the amount or the balance thereof shall be applied to the designations in the order in which they appear in the international application;
- (iii) where the designation of a State is for the purposes of a regional patent and provided that the required designation fee is, under the preceding provisions available for that designation, the designation of any further States for which the same regional patent is sought shall be considered as covered by that fee.

15.6: [No change]

RULE 16

The Search Fee

16.1 Right to Ask for a Fee

(a) [No change]

(b) The search fee shall be collected by the receiving Office. The said fee shall be payable in the currency or currencies prescribed by that Office ("the receiving Office currency"), it being understood that, if any receiving Office currency is not that, or one of those, in which the International Searching Authority has fixed the said fee ("the fixed currency or currencies"), it shall, when transferred by the receiving Office to the International Searching Authority, be freely convertible into the currency of the State in which the International Searching Authority has its headquarters ("the headquarters currency"). The amount of the search fee in any receiving Office currency, other than the fixed currency or currencies, shall be established by the Director General after consultation with that Office. The amounts so established shall be the equivalents, in round figures, of the amount established by the International Searching Authority in the headquarters currency. They shall be published in the Gazette.

(c) Where the amount of the search fee in the headquarters currency is changed, the corresponding amounts in the receiving Office currencies, other than the fixed currency or currencies, shall be applied from the same date as the changed amount in the headquarters currency.

(d) Where the exchange rate between the headquarters currency and any receiving Office currency, other than the fixed currency or currencies, becomes different from the exchange rate last applied, the Director General shall establish the new amount in the said receiving Office currency according to directives given by the Assembly. The newly established amount shall become applicable two months after its publication in the Gazette, provided that any interested receiving Office and the Director General may agree on a date falling during the said two-month period in which case the said amount shall become applicable for that Office from that date.

(e) Where, in respect of the payment of the search fee in a receiving Office currency, other than fixed currency or currencies, the amount actually received by the International Searching Authority in the headquarters currency is less than that fixed by it, the difference will be paid to the International Searching Authority by the International Bureau, whereas, if the amount actually received is more, the difference will belong to the International Bureau.

(f) As to the time of payment of the search fee, the provisions of Rule 15.4 relating to the basic fee shall apply.

16.2: [No change]

16.3: [No change]

RULE 47

Communication to Designated Offices

47.1 Procedure

- (a) [No change]
- (b) Such communication shall be effected promptly after the international publication of the international application and, in any event, by the end of the 19th month after the priority date. Where the time limit under Rule 46.1 has not expired when the communication is effected and the International Bureau has neither received amendments from the applicant nor a declaration that the applicant does not wish to make amendments before the International Bureau, the International Bureau shall, at the time of the communication, notify the applicant and the designated Offices accordingly; it shall, immediately after receipt, communicate any amendment received subsequently to the designated Offices and notify the applicant accordingly. Where, under Article 17(2) (a), the International Searching Authority has made a declaration that no international search report will be established, the communication shall be effected, unless the international application is withdrawn, within 1 month from the date on which the International Bureau has been notified of the said declaration by the International Searching Authority; such communication shall be accompanied by an indication of the date of the notification sent to the applicant under Article 17(2) (a).
- (c) [No change]
- (d) [No change]
- (e) [No change]

47.2 Copies

- (a) [No change]
- (b) [No change]
- (c) Except to the extent that any designated Office notifies the International Bureau otherwise, copies of the pamphlet under Rule 48 may be used for the purposes of the communication of the international application under Article 20.

RULE 57

The Handling Fee

57.1 Requirement to Pay

- (a) Each demand for international preliminary examination shall be subject to the payment of a fee for the benefit of the International Bureau ("handling fee") to be collected by the International Preliminary Examining Authority to which the demand is submitted.
- (b) Where, because of a later election or elections, the international preliminary examination report must, in application or Article 36(2), be translated by the International Bureau into one or more additional languages, a "supplement to the handling fee" shall be collected by the International Bureau.

57.2 Amounts of the Handling Fee and the Supplement to the Handling Fee

- (a) The amount of the handling fee is as set out in the Schedule of Fees. The amount payable in any particular case shall be the amount as so set out, increased by as many times the same amount as the number of languages into which the international preliminary examination report must, in application of Article 36(2), be translated by the International Bureau.
- (b) The amount of the supplement to the handling fee is as set out in the Schedule of Fees. The amount payable in any particular case shall be the amount as so set out, multiplied by the number of additional languages referred to in Rule 57.1(b).
- (c) The amount of the handling fee shall be established, for each International Preliminary Examining Authority which, under Rule 57.3(c), prescribes the payment of the handling fee in a currency or currencies other than Swiss currency, by the Director General after consultation with that Authority and in the currency or currencies prescribed by that Authority ("prescribed currency"). The amount in

each prescribed currency shall be the equivalent, in round figures, of the amount of the handling fee in Swiss currency set out in the Schedule of Fees. The amounts in the prescribed currencies shall be published in the Gazette.

(d) Where the amount of the handling fee set out in the Schedule of Fees is changed, the corresponding amounts in the prescribed currencies shall be applied from the same date as the amount set out in the amended Schedule of Fees.

(e) Where the exchange rate between Swiss currency and any prescribed currency becomes different from the exchange rate last applied, the Director General shall establish the new amount in the prescribed currency according to directives given by the Assembly. The newly established amount shall become applicable two months after its publication in the Gazette, provided that the interested International Preliminary Examining Authority and the Director General may agree on a date falling during the said two-month period in which case the said amount shall become applicable for that Authority from that date.

57.3 Time and Mode of Payment

- (a) The handling fee shall be due at the time the demand is submitted.
- (b) Any supplement to the handling fee shall be due at the time the later election is submitted.
- (c) The handling fee shall be payable in the currency or currencies prescribed by the International Preliminary Examining Authority to which the demand is submitted, it being understood that, when transferred by that Authority to the International Bureau, it shall be freely convertible into Swiss currency.
- (d) Any supplement to the handling fee shall be payable in Swiss currency.

57.4 Failure to Pay (Handling Fee)

- (a) Where the handling fee is not paid as required, the International Preliminary Examining Authority shall invite the applicant to pay the fee within one month from the date of the invitation.
- (b) If the applicant complies with the invitation within the prescribed time limit, the demand shall be considered as if it had been received on the date on which the International Preliminary Examining Authority receives the fee, unless, under Rule 60.1(b), a later date is applicable.
- (c) If the applicant does not comply with the invitation within the prescribed time limit, the demand shall be considered as if it had not been submitted.

57.5 Failure to Pay (Supplement to the Handling Fee)

- (a) Where the supplement to the handling fee is not paid as required, the International Bureau shall invite the applicant to pay the supplement within one month from the date of the invitation.
- (b) If the applicant complies with the invitation within the prescribed time limit, the later election shall be considered as if it had been received on the date on which the International Bureau receives the supplement, unless, under Rule 60.2(b), a later date is applicable.
- (c) If the applicant does not comply with the invitation within the prescribed time limit, the later election shall be considered as if it had not been submitted.

57.6 Refund

In no case shall the handling fee, or the supplement to the handling fee, be refunded.

RULE 96

The Schedule of Fees

96.1 Schedule of Fees Annexed to Regulations

The amounts of the fees referred to in Rules 15 and 57 shall be expressed in Swiss currency. They shall be specified in the Schedule of Fees which is annexed to these Regulations and forms an integral part thereof.

SCHEDULE OF FEES

SECTION 817

Kind of Fee	Amount
1. Basic Fee: (Rule 15.2(a)) if the international application contains not more than 30 sheets	325 Swiss francs
if the international application contains more than 30 sheets	325 Swiss francs plus 6 Swiss francs for each sheet in excess of 30 sheets
2. Designation Fee: (Rule 15.2 (a))	78 Swiss francs
3. Handling Fee: (Rule 57.2(b))	100 Swiss francs
4. Supplement to the Handling Fee: (Rule 57.2(a))	100 Swiss francs

TOPIC 4: CHANGES IN THE ADMINISTRATIVE INSTRUCTIONS

The following modifications in the Administrative Instructions have been promulgated by the Director General of the World Intellectual Property Organisation in accordance with PCT Rule 89.2 with effect from November 9, 1978.

SECTION 107

Identification of International Authorities

[Only the modification is specified]

The example of Section 107(b), is modified to read "(e.g., 'RO/JP,' 'ISA/US,' 'IPEA/SU')."

SECTION 201

Names of States: Cancellation of Designations

- (a) The name of any State referred to in the request shall be indicated either by the full name of the State or by a generally accepted short title which, if the indications are in English or French, shall be as appears in Annex A. The receiving Office, or the International Bureau where the receiving Office fails to do so, shall insert, in the appropriate space provided for in the request Form, the two-letter country code as appears in Annex B (for example, where France is the third designated State in Box V of the request form, "FR 3. France" or "FR 3. French Republic").

(b) The receiving Office shall cancel *ex-officio* the designation of States other than Contracting States, and inform the applicant promptly of such action. If the international application has already been sent to the International Bureau and the International Searching Authority, the receiving Office shall also notify promptly that Bureau and that Authority. In any event, the International Bureau shall, where the receiving Office fails to do so, cancel *ex-officio* the designation of States other than Contracting States and inform the applicant, the receiving Office and the International Searching Authority promptly of such action.

SECTION 203bis
National and Regional Patents

Where the request of the international application contains a designation of a Contracting State without an indication of the wish to obtain a regional patent and also a designation of the same Contracting State with an indication of the wish to obtain a regional patent and the national law of the Contracting State does not contain a provision referred to in Article 45(2), the receiving Office shall calculate the designation fees on the basis that a separate fee is payable in respect of the designation of the Contracting State in addition to the designation fee payable in respect of that Contracting State as a Contracting State or as one of a group of Contracting States for which a regional patent is sought.

Procedure in the Case of the Designation of a State being Considered Not To Have Been Made

Where the receiving Office finds that, under Rule 18.4(b), the designation of a State is to be considered as not having been made, it shall indicate that fact in the international application by enclosing the designation of that State within square brackets and entering the words "CONSIDERED NOT TO HAVE BEEN MADE," or their equivalent in the language of the international application, in the margin, and shall promptly notify the applicant accordingly. If copies of the international application have already been sent to the International Bureau and the International Searching Authority, the receiving Office shall also notify promptly that Bureau and that Authority.

SECTION 412

Fee for Copies of Certain Documents

- (c) The International Bureau shall make a charge of 6 Swiss francs to designated and elected Offices for a copy of any document cited in the international search report requested under Rule 44.3(c) or any document cited in the international preliminary examination report requested under Rule 71.2(c).
- (b) When mailing by air is requested the actual cost of such mailing shall be additionally charged.

SECTION 503

Method of Identifying Documents Cited in the International Search Report

[Only the modification is specified]

In the example given in Section 503(a), the number of the patent document is modified to read: "JP. B. 50-14535."

[1984 O.G. 2]

(92) Update of Information Concerning the Patent Cooperation Treaty (PCT)

[Topics 1, 2, 3 and 5 not reprinted]

TOPIC 4: NOTE CONCERNING THE PATENT TREATY BETWEEN SWITZERLAND AND LIECHTENSTEIN

On April 1, 1980, a Patent Treaty between Switzerland and Liechtenstein will enter into force and, on the same day, the European Patent Convention will enter into force for Liechtenstein. Certain modifications to the Administrative Instructions under the PCT relating to the designation of Switzerland and Liechtenstein in international applications will also enter into force on April 1, 1980.

Under the Treaty between Switzerland and Liechtenstein, the two will constitute a single territory for patent purposes and the Swiss Intellectual Property Office will have assigned to it the performance of the administrative tasks related hereto. The Swiss Intellectual Property Office will also act as the receiving Office for international applications under the PCT filed by the nationals and residents of Liechtenstein. The designation of either Switzerland or Liechtenstein in an international application will automatically have the effect of the designation of both.

Until April 1, 1980, international applications which designate Switzerland (whether for the purposes of a national patent or for a European patent) will have effect for Liechtenstein once a patent is granted by virtue of the present law in Liechtenstein which extends to Liechtenstein the effect of patents having effect for Switzerland. This makes it unnecessary to designate Liechtenstein in international applications filed prior to April 1, 1980; indeed, no provision will exist for effect to be given to such a designation prior to that date.

From April 1, 1980, the designation of Switzerland and Liechtenstein (or either of them without the other) in an

international application (whether for the purposes of a patent granted by the Swiss Intellectual Property Office or for the purposes of a European patent) will have the effect of a designation for the purposes of a single patent granted with reference to and having effect for both Switzerland and Liechtenstein.

The following principles will apply with respect to the designation of Switzerland and Liechtenstein (or both) in international applications:

European Patents. If the designation is for the purposes of a European patent, the indication that a regional patent is sought (or alternatively that a European patent is sought) must be given in connection with the designation.

Patents granted by Swiss Intellectual Property Office. If a patent is to be granted by the Swiss Intellectual Property Office is sought, the designation must not contain any further indications besides the name of Switzerland or Liechtenstein (or both), in particular the words "regional patent" must not be used.

Double Designations. The designation of Switzerland and Liechtenstein for the purposes of a European patent and also for the purposes of a patent granted by the Swiss Intellectual Property Office (i.e., a double designation) is also possible where either of them (or both) is (are) indicated once with the indication that a regional patent is sought and once without such indication.

No additional designation fee will be payable under the PCT by reason of the fact that Liechtenstein is included in the designation of Switzerland and vice versa since the effect of the Treaty between Switzerland and Liechtenstein is, for the purposes of the PCT, to create a unitary regional patent for the two States.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

June 17, 1980.

[1996 O.G. 16]

(93) Revised Patent Cooperation Treaty (PCT) Regulations

The fifth session of the Assembly of the International Patent Cooperation Treaty (PCT) Union was held in Geneva, Switzerland from June 9-16, 1980. At this meeting numerous changes in the PCT Rules were adopted to make the PCT route more attractive to prospective applicants.

The amendments to (including, where applicable, deletions affecting) PCT Rules 4.1(b)(ii), 4.8(b), 4.10(b), 4.11, 10.1(b), 10.1(c), 11.2(d), 11.12, 11.13(j), 18.2, 18.5, 17.1, 18.5, 19.2, 22.5, 30.1, 41, 46.2, 47.1(c), 54.4, 55.1, 57.4(b), 57.5(b), 60.1(b), 60.2(b), 60.6, 60.3(a), and 92.1(b) and to the Schedule of Fees and new Rules 11.10(d), 16b, 20.3b, 90.3(d), 91.2, 92.1(c), 92.4, and 92b, become effective on October 1, 1980.

New Rule 13b and the amendments to Rules 49.3 and 76.3 (the latter being consequential upon the amendment of Rule 49.3), become effective on January 1, 1981.

COMMENTS ON RULE CHANGES

Rule 4.1(b)(ii) and 4.11. A reference to an "other" search has been added in the Request to allow reference to a search which is neither an international nor an international-type search. This provision would call such a search to the attention of the International Searching Authority for possible refund of a portion of the search fee under PCT Rule 41. The standard practice of the United States Patent and Trademark Office (USPTO) to allow such reference and make such refunds will continue.

Rule 4.8(b). This Rule relates to the situation where there are plural applicants and no common agent or common representative has been appointed. The amended Rule states that the first named applicant who is entitled to file with the receiving Office in which the international application was filed will be considered to be the "common representative."

Rule 4.10(b). The last sentence has been amended to allow corrections to be made in the priority claim information where it is necessary due to an obvious error of transcription or due to the missing data which can be supplied on the basis of information the receiving Office has available to it.

Rule 10.1(b). The word "centigrade" has been replaced by the word "Celsius" to adopt current usage.

Rule 10.1(c). This paragraph was deleted since in effect it duplicated the requirements of Rule 10.1(a).

Rules 11.2(d) and 11.10(d). These Rules have been amended to provide for placing tables and chemical or mathematical formulae sideways on the sheets.

Rule 11.12. The phrase, "in exceptional cases," has been deleted. Accordingly, the Rule will now permit interlineations and other changes in the typed text as long as good reproduction is not in jeopardy.

Rule 11.13(j). The second sentence was added to indicate the arrangement of sideways positioned figures on drawing sheets.

Rule 13.2. This Rule, which relates to unity of invention, has been amended by adding a new section (iii) and by changing "one" to "an" or "a" in sections (i) and (ii). The USPTO will continue to apply the criteria set forth in M.P.E.P., sections 806.05(f) and 806.05(g). These criteria are considered to come within the wording "specially adapted" and "specifically designed," of Rule 13.2(iii).

Rule 13b. This Rule was added to facilitate the filing of international applications relating to or involving the use of microorganisms which are not available to the public but have been deposited with a depositary institution. The Rule sets out the indications concerning such a deposit which must be included in an international application or furnished later (generally within 16 months after the priority date). Compliance with any national requirements diverging from this Rule will only be necessary if a designated State has notified the International Bureau of WIPO of the national requirement and the national requirement has been published in the PCT Gazette at least 2 months before the filing of the international application. Any notification received by the International Bureau of WIPO will be published in an issue of the PCT Gazette by the end of October 1980.

Where the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure does not govern the depositary institution with which a microorganism may be deposited for the purposes of any designated State, a deposit conforming with the law of the designated State will be required. The issue of the PCT Gazette referred to above will also contain notifications as to the depositary institutions with which deposits of microorganisms may be made for each such Office as well as those Offices whose national law does not make provision for such deposits.

Rule 15.5. The section on partial payment has been deleted in view of new Rule 16b.

Rule 16b. New Rule 16b was added to provide greater security to the applicant and his professional representative in the case of a mistake (as to the prescribed amount) or delay (beyond the prescribed time limit) in the payment of fees to the receiving Office (transmittal fee, search fee, and international fee, i.e., basic fee and designation fees). The system introduced by this Rule guarantees the timely payment of these fees by the International Bureau of WIPO, thereby assuring that any mistake in the amount of the fee, or any delay in payment will not result in a loss of the application.

The new system operates in the following fashion. Where the receiving Office finds the amount paid to be insufficient to cover all fees due, the receiving Office will charge the International Bureau with the missing amount. The International Bureau will then notify the applicant of the amount it has advanced and will invite the applicant to pay the International Bureau the amount advanced, together with a 50% surcharge. The surcharge, however, cannot be less than 200 or more than 500 Swiss francs (see the Schedule of Fees.) If the applicant does not timely pay the required amount to the International Bureau, the latter will notify the receiving Office which will then declare the international application, or certain designations therein, withdrawn.

Rule 17.1. As amended, this Rule now provides that the priority document may be submitted to the receiving Office not only at the time of filing the international application but at any time thereafter, up to the expiration of 16 months from the priority date. The amended Rule also provides that where the priority document is issued by the receiving Office, the applicant may, up to the expiration of 16 months from the priority date, simply request the receiving Office to transmit the priority document to the International Bureau of WIPO. The date of the request to the receiving Office or the date of receipt of the priority document by the receiving Office will be considered as the date of receipt of the priority document.

Rule 18.5. This paragraph was deleted in view of new Rule 92b relating to changes in the person or name of the applicant.

Rule 19.2. This Rule has been rewritten to clearly indicate that if there are several applicants, an international application is properly filed as long as at least one of the applicants has the right to file in the receiving Office.

Rule 20.3b. This is a new paragraph which simply refers to the Administrative Instructions (Section 309) for the manner of submitting corrections, where the original papers filed could not be granted a filing date.

Rule 22.5. Amended Rule 22.5 clarifies the handling of documents filed with the international application and which are referred to in the check list portion of the Request.

Rule 30.1. The time limit for determining that a filing date should not have been granted has been reduced from 6 months to 4 months from the international filing date.

Rule 41. This Rule now provides for the granting of a search fee refund on a search other than an international or international-type search.

Rule 46.2. Under the amended Rule, applicants will be notified of the date of receipt of any amendment under PCT Article 19 by the International Bureau.

Rule 47.1. Amended Rule 47.1(c) provides greater security to the applicant with regard to the communication of the international application to designated Offices under Article 20 of the PCT. Thus, the International Bureau of WIPO will, besides notifying the applicant of the communication, also notify each designated Office separately. This separate notification will be conclusive evidence that the international application was communicated to each designated Office, thereby avoiding the possibility that the applicant himself would be required to file another copy of the international application, in the event the communication by the International Bureau was defective.

It is noted, however, that until the patent law of Sweden is changed, this new system will not be permitted with respect to communications of international applications to the Swedish Patent Office.

Rule 49.3. This Rule has been amended to provide for translations of indications under Rule 13b which were not included in the original international application, and which refer to a deposited microorganism.

Rule 54.4, Rule 55.1, Rule 57.4(b), Rule 57.5(b), Rule 60.1(b), Rule 60.2(b), Rule 76.3 and Rule 80.6. These rules all relate to Chapter II procedure which is not available to international applications filed in the United States Receiving Office or designating the United States of America (35 U.S.C. 361(a)).

Rule 90.3(a). This Rule has been rewritten to clarify the fact that the appointment of an agent or common representative by the applicant can be made either on the request form or by a separate power of attorney.

Rule 90.3(d). This is a new Rule which provides for the use of general powers of attorney for the purpose of filing and processing international applications up to the point of entering the designated Offices. General powers of attorney will not be recognized by the United States Patent and Trademark Office for regularly filed national applications, or for international applications once they enter the national phase. A form for a general power of attorney appears in Annex M2 of the "PCT Applicant's Guide." Original copies of general powers of attorney must be filed with the PCT Division and a copy thereof filed in each international application relying thereon for the power of attorney.

Rule 91.2. This new Rule merely refers to the Administrative Instructions for the manner of making corrections of obvious errors of transcription.

Rule 92.1. Paragraph (b) has been substantially rewritten to require that the applicant be informed if a letter received from him was unsigned and that he be given time to correct such defect. If the defect is overlooked, new paragraph (c) indicates that the defect shall be disregarded.

Rule 92.4. This is a new paragraph which provides for timely receipt by International Authorities of responses filed by teletype, teleprinter, etc., provided that the formal responses follow within 14 days.

Rule 93b. This new Rule relates to changes in the person, name, residence, nationality, or address of the applicant and the person, name, or address of the inventor or agent.

Schedule of Fees. Item 5 has been added to set minimum and maximum amounts of surcharges for late payment under Rule 16b.

Changes in Administrative Instructions effective October 1, 1980.

Section 106. The first paragraph has been designated "(a)" and a new paragraph (b) has been added to indicate that applicants who have not signed a general power of attorney for the purpose of appointing a common agent, may sign either the Request or a separate power of attorney.

Section 111. This is a new section requiring that any request for changes under Rule 92b, be signed by the applicant or the receiving Office, depending upon who made the request.

Section 204. Paragraph "(v)" has been amended to provide for the indication of "Mode(s) for Carrying Out the Invention," in instances where the countries designated do not require an identification of the "best mode."

Section 205. Paragraph (a)(ii) has been amended to provide a procedure under Article 19 for adding a new claim with a number lower than the highest previously numbered claim.

Section 306. This Section has been deleted in view of new Section 111 and the cancellation of Rule 18.5.

Forms PCT/RO/101 and PCT/ISA/210 have only been changed in very minor aspects and are not included with this notice. The current forms may be used until the supply is exhausted. Future printings of these forms will incorporate the changes.

A copy of the amended PCT Rules and Administrative Instructions follows.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

RULE 4 The Request (Contents)

4.1 Mandatory and Optional Contents; Signature

- (a) [No change]
- (b) The request shall, where applicable, contain:
 - (i) a priority claim,
 - (ii) a reference to any earlier international, international-type or other search,
 - (iii) choices of certain kinds of protection,
 - (iv) an indication that the applicant wishes to obtain a regional patent and the names of the designated States for which he wishes to obtain such a patent,
 - (v) a reference to a parent application or parent patent.

- (c) [No change]
- (d) [No change]

- 4.2 [No change]
- 4.3 [No change]
- 4.4 [No change]
- 4.5 [No change]
- 4.6 [No change]
- 4.7 [No change]

4.8 Representation of Several Applicants Not Having a Common Agent

- (a) [No change]
- (b) If there is more than one applicant and the request does not refer to an agent representing all the applicants and it does not comply with the requirement of designating one of the applicants as provided in paragraph (a), the common representative shall be the applicant first named in the request who is entitled to file an international application with the receiving Office with which the international application was filed (Rule 19.1(a)).

4.9 [No change]

4.10 Priority Claim

- (a) [No change]
- (b) If the request does not indicate both
 - (i) when the earlier application is not a regional or an international application, the country in which it was filed; when the earlier application is a regional or an international application, at least one country for which it was filed, and
 - (ii) the date on which it was filed,

the priority claim shall, for the purposes of the procedure under the Treaty, be considered not to have been made except where, resulting from an obvious error of transcription, the indication of the said country or the said date is missing or is erroneous; whenever the identity or correct identity of the said country, or the said date or the correct date, may be established on the basis of the copy of the earlier application which the receiving Office receives before it transmits the record copy to the International Bureau, the error shall

be considered as an obvious error.

- (c) [No change]
- (d) [No change]
- (e) [No change]

4.11 Reference to Earlier Search

If an international or international-type search has been requested on an application under Article 15(5) or if the applicant wishes the International Searching Authority to base the international search report wholly or in part on the results of a search, other than an international or international-type search, made by the national Office or intergovernmental organization which is the International Searching Authority competent for the international application, the request shall contain a reference to that fact. Such reference shall either identify the application (or its translation, as the case may be) in respect of which the earlier search was made by indicating country, date and number, or the said search by indicating, where applicable, date and number of the request for such search.

- 4.12 [No change]
- 4.13 [No change]
- 4.14 [No change]
- 4.15 [No change]
- 4.16 [No change]
- 4.17 [No change]

RULE 10

Terminology and Signs

10.1 Terminology and Signs

- (a) [No change]
 - (b) Temperatures shall be expressed in degrees Celsius, or also expressed in degrees Celsius, if first expressed in a different manner.
 - (c) [Deleted]
 - (d) [No change]
 - (e) [No change]
 - (f) [No change]
- 10.2 [No change]

RULE 11

Physical Requirements of the International Application

11.1 [No change]

11.2 Fitness for Reproduction

- (a) [No change]
- (b) [No change]
- (c) [No change]
- (d) Subject to Rule 11.10(d) and Rule 11.13(j), each sheet shall be used in an upright position (i.e., the short sides at the top and bottom).
- 11.3 [No change]
- 11.4 [No change]
- 11.5 [No change]
- 11.6 [No change]
- 11.7 [No change]
- 11.8 [No change]
- 11.9 [No change]

11.10 Drawings, Formulae, and Tables, in Text Matter

- (a) [No change]
- (b) [No change]
- (c) [No change]
- (d) Tables and chemical or mathematical formulae may be placed sideways on the sheet, if they cannot be presented satisfactorily in an upright position thereon: sheets on which tables or chemical or mathematical formulae are presented sideways shall be so presented that the tops of the tables or formulae are at the left side of the sheet.
- 11.11 [No change]
- 11.12 Alterations, Etc.

Each sheet shall be reasonably free from erasures and shall be free from alterations, overwritings, and interlineations. Non-compliance with this Rule may be authorized if the authenticity of the content is not in question and the requirements for good reproduction are not in jeopardy.

- (a) [No change]
- (b) [No change]
- (c) [No change]
- (d) [No change]
- (e) [No change]
- (f) [No change]
- (g) [No change]
- (h) [No change]

- (i) [No change]

(j) The different figures shall be arranged on a sheet or sheets without wasting space, preferably in an upright position, clearly separated from one another. Where the figures are not arranged in an upright position, they shall be presented sideways with the top of the figures at the left side of the sheet.

- (k) [No change]
- (l) [No change]
- (m) [No change]
- (n) [No change]
- 11.14 [No change]
- 11.15 [No change]

RULE 13

Unity of Invention

13.1 [No change]

13.2 Claims of Different Categories

Rule 13.1 shall be construed as permitting, in particular, one of the following three possibilities:

- (i) in addition to an independent claim for a given product, the inclusion in the same international application of an independent claim for a process specially adapted for the manufacture of the said product, and the inclusion in the same international application of an independent claim for a use of the said product, or
- (ii) in addition to an independent claim for a given process, the inclusion in the same international application of an independent claim for an apparatus or means specifically designed for carrying out the said process, or
- (iii) in addition to an independent claim for a given product, the inclusion in the same international application of an independent claim for a process specially adapted for the manufacture of the product, and the inclusion in the same international application of an independent claim for an apparatus or means specifically designed for carrying out the process.

13.3 [No change]

13.4 [No change]

13.5 [No change]

RULE 13bis

Microbiological Inventions

13bis.1 Definition

For the purposes of this Rule, "reference to a deposited microorganism" means particulars given in an international application with respect to the deposit of a microorganism with a depositary institution or to the microorganism so deposited.

13bis.2 References (General)

Any reference to a deposited microorganism shall be made in accordance with this Rule and, if so made, shall be considered as satisfying the requirements of the national law of each designated State.

13bis.3 References: Contents; Failure to Include Reference or Indication

- (a) A reference to a deposited microorganism shall indicate,
 - (i) the name and address of the depositary institution with which the deposit was made;
 - (ii) the date of deposit of the microorganism with that institution;
 - (iii) the accession number given to the deposit by that institution; and
 - (iv) any additional matter of which the International Bureau has been notified pursuant to Rule 13bis.7(a)(i), provided that the requirement to indicate that matter was published in the Gazette in accordance with the Rule 13bis.7(c) at least two months before the filing of the international application.
- (b) Failure to include a reference to a deposited microorganism or failure to include, in a reference to a deposited microorganism, an indication in accordance with paragraph (a), shall have no consequence in any designated State whose national law does not require such reference or such indication in a national application.

(b) Failure to include a reference to a deposited microorganism or failure to include, in a reference to a deposited microorganism, an indication in accordance with paragraph (a), shall have no consequence in any designated State whose national law does not require such reference or such indication in a national application.

13bis.4 References: Time of Furnishing Indications

If any of the indications referred to in Rule 13bis.3(a) is not included in a reference to a deposited microorganism in the international application as filed but is furnished by the applicant to the International Bureau within 16 months after

the priority date, the indication shall be considered by any designated Office to have been furnished in time unless its national law requires the indication to be furnished at an earlier time in the case of a national application and the International Bureau has been notified of such requirement pursuant to Rule 13bis.7(a)(ii), provided that the International Bureau has published such requirement in the Gazette in accordance with Rule 13bis.7(c) at least two months before the filing of the international application. In the event that the applicant makes a request for early publication under Article 21(2)(b), however, any designated Office may consider any indication not furnished by the time such request is made as not having been furnished in time. Irrespective of whether the applicable time limit under the preceding sentences has been observed, the International Bureau shall notify the applicant and the designated Offices of the date on which it has received any indication not included in the international application as filed. The International Bureau shall indicate that date in the international publication of the international application if the indication has been furnished to it before the completion of technical preparations for international publication.

13bis.5 References and Indications for the Purposes of One or More Designated States; Different Deposits for Different Designated States; Deposits with Depositary Institutions other than Those Notified

(a) A reference to a deposited microorganism shall be considered to be made for the purposes of all designated States, unless it is expressly made for the purposes of certain of the designated States only; the same applies to the indications included in the reference.

(b) References to different deposits of the microorganism may be made for different designated States.

(c) Any designated Office shall be entitled to disregard a deposit made with a depositary institution other than one notified by it under Rule 13bis.7(b).

13bis.6 Furnishing of Samples

(a) Where the international application contains a reference to a deposited microorganism, the applicant shall, upon the request of the International Searching Authority or the International Preliminary Examining Authority, authorize and assure the furnishing of a sample of that microorganism by the depositary institution to the said Authority, provided that the said Authority has notified the International Bureau that it may require the furnishing of samples and that such samples will be used solely for the purposes of international search for international preliminary examination, as the case may be, and such notification has been published in the Gazette.

(b) Pursuant to Articles 23 and 40, no furnishing of samples of the deposited microorganism to which a reference is made in an international application shall, except with the authorization of the applicant, take place before the expiration of the applicable time limits after which national processing may start under the said Articles. However, where the applicant performs the acts referred to in Articles 23 or 29 after international publication but before the expiration of the said time limits, the furnishing of samples of the deposited microorganism may take place, once the said acts have been performed. Notwithstanding the previous provision, the furnishing of samples from the deposited microorganism may take place under the national law applicable for any designated Office as soon as, under that law, the international publication has the effects of the compulsory national publication of an unexamined national application.

13bis.7 National Requirements: Notification and Publication

(a) Any national Office may notify the International Bureau of any requirement of the national law,

(i) that any matter specified in the notification, in addition to those referred to in Rule 13bis.3(a)(i), (ii) and (iii), is required to be included in a reference to a deposited microorganism in a national application;

(ii) that one or more of the indications referred to in Rule 13bis.3(a) are required to be included in a national application as filed or are required to be furnished at a time specified in the notification which is earlier than 16 months after the priority date.

(b) Each national Office shall notify the International Bureau a first time before entry into force of this Rule and then each time a change occurs of the depositary institutions

with which the national law permits deposits of microorganisms to be made for the purposes of patent procedure before that Office or, if the national law does not provide for or permit such deposits, of that fact.

(c) The International Bureau shall promptly publish in the Gazette requirements notified to it under paragraph (a) and information notified to it under paragraph (b).

RULE 15

The International Fee

- 15.1 [No change]
- 15.2 [No change]
- 15.3 [No change]
- 15.4 [No change]
- 15.5 [Deleted]
- 15.6 [No change]

RULE 16bis

Advancing Fees by the International Bureau

16bis.1 Guarantees by the International Bureau

(a) Where, by the time they are due under Rule 14.1(b), Rule 15.4(a) or (c) and Rule 16.1(f), the receiving Office finds that in respect of an international application no fees were paid to it by the applicant, or that the amount paid to it by the applicant is less than what is necessary to cover the transmittal fee, the basic fee and the search fee, the receiving Office shall charge the amount required to cover these fees, or the missing part thereof, to the International Bureau and shall consider the said amount as if it had been paid by the applicant at the due time.

(b) Where, by the time it or they are under Rule 15.4(b) or (c), the receiving Office finds that in respect of an international application the payment made by the applicant is insufficient to cover the designation fees necessary to cover all the designations, the receiving Office shall charge the amount required to cover these fees to the International Bureau and shall consider that amount as if it had been paid by the applicant at the due time.

(c) The International Bureau shall transfer from time to time to each receiving Office an amount which is expected to be necessary for covering any charges that the receiving Office has to make under paragraphs (a) and (b). The amount and the time of such transfers shall be determined by each receiving Office according to its own wish. The charging of any amount under paragraphs (a) and (b) shall not require any advance notice to, or any agreement by, the International Bureau.

(d) Each month, the receiving Office shall inform the International Bureau of the charges, if any, made under paragraphs (a) and (b).

16bis.2 Obligations of the Applicant

(a) The International Bureau shall promptly notify the applicant of any amount by which it was charged under Rule 16bis.1(a) and (b) and shall invite him to pay it, within one month from the date of the notification, the said amount augmented by a surcharge of 50%, provided that the surcharge will not be less, and will not be more, than the amounts indicated in the Schedule of Fees. The notification may refer to the charges made both under Rule 16bis.1(a) and (b) or, at the discretion of the International Bureau, there may be two separate notifications, one referring to charges made under Rule 16bis.1(a), the other referring to charges made under Rule 16bis.1(b).

(b) If the applicant fails to pay, within the said time limit, to the International Bureau the amount claimed, or pays less than what is needed to cover the transmittal fee, the basic fee, the search fee, one designation fee and the surcharge, the International Bureau shall notify the receiving Office accordingly and the receiving Office shall declare the international application withdrawn under Article 14(3)(a) and the receiving Office and the International Bureau shall proceed as provided in Rule 29.

(c) If the applicant pays, within the said time limit, to the International Bureau an amount which is more than what is needed to cover the fees and surcharge referred to in paragraph (b) but less than what is needed to cover all the designations maintained, the International Bureau shall notify the receiving Office accordingly and the receiving Office shall apply the amount paid in excess of what is needed to cover the fees and surcharge referred to in paragraph (b) in an order which shall be established as follows:

RULE 17

*The Priority Document*17.1 *Obligation to Submit Copy of Earlier National Application*

- (i) where the applicant indicates to which designation or designations the amount is to be applied, it shall be applied accordingly but, if the amount received is insufficient to cover the designations indicated, it shall be applied to as many designations as are covered by it in the order chosen by the applicant in indicating the designations;
- (ii) to the extent that the applicant has not given the indications under item (i), the amount or the balance thereof shall be applied to the designations in the order in which they appear in the international application;
- (iii) where the designation of a State is for the purposes of a regional patent and provided that the required designation fee is, under the preceding provisions, available for that designation, the designation of any further States for which the same regional patent is sought shall be considered as covered by that fee.

The receiving Office shall declare any designation not covered by the amount paid withdrawn under Article 14(3) (b) and the receiving Office and the International Bureau shall proceed as provided in Rule 29.

(d) The receiving Office shall not return to the International Bureau any amount that it has charged to that Bureau for covering the transmittal fee.

(e) Where the international application is considered withdrawn, any amount charged to the International Bureau, other than the amount needed to cover the transmittal fee and the search fee transferred by the receiving Office to the International Searching Authority, shall be returned by the receiving Office to the International Bureau.

(f) Where the international application is considered withdrawn, any search fee charged by the receiving Office and transferred to the International Searching Authority shall be transferred by that Authority to the International Bureau unless the said Authority has already started the international search.

(g) Where paragraph (e) applies, the amount charged by the receiving Office to the International Bureau for designations which, as a consequence of the application of the order under that paragraph, are not maintained, shall be returned to the International Bureau by the receiving Office.

18b.3 *Notifications*

(a) Any receiving Office may exclude the application of Rules 18b.1 and 18b.2 by a written notification to that effect given to the International Bureau by September 1, 1980. Such notification may be withdrawn at any time. The International Bureau shall publish all such notifications and withdrawals in the Gazette.

(b) Former Rule 18.5* remains applicable in respect of any receiving Office giving a notification under paragraph (a).
* Former Rule 18.5 *Partial Payment*

(a) Where the amount of the international fee received by the receiving Office is not less than that of the basic fee and at least one designation fee but less than the amount required to cover the basic fee and all the designations made in the international application, the amount received shall be applied as follows:

- (i) to cover the basic fee, and
- (ii) to cover as many designation fees as, after deduction of the basic fee may be covered in full by the amount received in the order indicated in paragraph (b).

(b) The order in which the said amount shall be applied to the designations shall be established as follows:

- (i) where the applicant indicates to which designation or designations the amount is to be applied, it shall be applied accordingly but, if the amount received is insufficient to cover the designations indicated, it shall be applied to as many designations as are covered by it in the order chosen by the applicant in indicating the designations;
- (ii) to the extent that the applicant has not given the indications under item (i), the amount or the balance thereof shall be applied to the designations in the order in which they appear in the international application;

(iii) where the designation of a State is for the purposes of a regional patent and provided that the required designation fee is, under the preceding provisions, available for that designation, the designation of any further States for which the same regional patent is sought shall be considered as covered by that fee.

(a) Where the priority of an earlier national application is claimed under Article 8 in the international application, a copy of the said national application, certified by the authority with which it was filed ("the priority document"), shall, unless already filed with the receiving Office together with the international application, be submitted by the applicant to the International Bureau or to the receiving Office not later than 16 months after the priority date or, in the case referred to in Article 22(2), not later than at the time the processing or examination is requested. Where submitted to the receiving Office, the priority document shall be transmitted by that Office to the International Bureau together with the record copy or promptly after having been received by that Office. In the latter case, the receiving Office shall indicate to the International Bureau the date on which it received the priority document.

(b) Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to transmit the priority document to the International Bureau. Such request shall be made not later than the expiration of the applicable time limit referred to under paragraph (a) and may be subjected by the receiving Office to the payment of a fee. The receiving Office shall, promptly after receipt of such request, and, where applicable, the payment of such fee, transmit the priority document to the International Bureau with an indication of the date of receipt of such request.

(c) If the requirements of neither of the two preceding paragraphs are complied with, any designated State may disregard the priority claim.

(d) The International Bureau shall record the date on which the priority document has been received by it or by the receiving Office. Where applicable the date of receipt by the receiving Office of a request referred to under paragraph (b) shall be recorded as the date of receipt of the priority document. The International Bureau shall notify the applicant and the designated Offices accordingly.

17.2 [No change]

RULE 18

The Applicant

- 18.1 [No change]
18.2 [No change]
18.3 [No change]
18.4 [No change]
18.5 [Deleted]

RULE 19

The Competent Receiving Office

19.1 [No change]

19.2 *Several Applicants*

If there are several applicants, the requirements of Rule 19.1 shall be considered to be met if the national Office with which the international application is filed is the national Office of or acting for a Contracting State of which at least one of the applicants is a resident or national.

19.3 [No change]

RULE 20

Receipt of the International Application

- 20.1 [No change]
20.2 [No change]
20.3 [No change]

20.3bis *Manner of Carrying Out Corrections*

The Administrative Instructions prescribe the manner in which corrections required under Article 11(2)(a) shall be presented by the applicant and the manner in which they shall be entered in the file of the international application.

- 20.4 [No change]
20.5 [No change]
20.6 [No change]
20.7 [No change]
20.8 [No change]
20.9 [No change]

RULE 22

Transmittal of the Record Copy

- 22.1 [No change]
22.2 [No change]
22.3 [No change]
22.4 [No change]

22.5 *Documents Filed with the International Application*

Any power of attorney and any priority document filed with the international application referred to in Rule 3.3(a)(ii) shall accompany the record copy; any other document referred to in that Rule shall be sent only at the specific request of the International Bureau. If any document referred to in Rule 3.3(a)(ii) which is indicated in the check list as accompanying the international application is not, in fact, filed at the latest by the time the record copy leaves the receiving Office, that Office shall so note on the check list and the said indication shall be considered as if it had not been made.

RULE 30

*Time Limit Under Article 14(4)*30.1 *Time Limit*

The time limit referred to in Article 14(4) shall be 4 months from the international filing date.

RULE 41

*Earlier Search other than International Search*11.1 *Obligation to Use Results: Refund of Fee*

If reference has been made in the request, in the form provided for in Rule 4.11, to an international-type search carried out under the conditions set out in Article 15(5) or to a search other than an international or international-type search, the International Searching Authority shall, to the extent possible, use the results of the said search in establishing the international search report on the international application. The International Searching Authority shall refund the search fee, to the extent and under the conditions provided for in the agreement under Article 16(3)(b) or in a communication addressed to and published in the Gazette by the International Bureau, if the international search report could wholly or partly be based on the results of the said search.

RULE 46

Amendment of Claims Before the International Bureau

46.1 [No change]

46.2 *Dating of Amendments*

The date of filing of any amendment shall be recorded by the International Bureau, which shall also notify the applicant of the date and indicate the date in any publication or copy issued by it.

- 46.3 [No change]
46.4 [No change]

RULE 47

*Communication to Designated Offices*47.1 *Procedure*

- (a) [No change]
(b) [No change]

(c) The International Bureau shall send a notice to the applicant indicating the designated Offices to which the communication has been effected and the date of such communication. Such notice shall be sent on the same day as the communication. Each designated Office shall be informed, separately from the communication, about the sending and the date of mailing of the notice. The notice shall be accepted by all designated Offices as conclusive evidence that the communication has duly taken place on the date specified in the notice.

- (d) [No change]
(e) [No change]

- 47.2 [No change]
47.3 [No change]

RULE 49

Languages of Translations and Amounts of Fees under Article 22(1) and (2)

- 49.1 [No change]
49.2 [No change]

49.3 *Statements under Article 19; Indications under Rule 13b.4*

For the purposes of Article 22 and the present Rule, any statement made under Article 19(1) and any indication furnished under Rule 13b.4 shall be considered part of the international application.

The Applicant Entitled to Make a Demand

- 54.1 [No change]
54.2 [No change]
54.3 [No change]
54.4 [Deleted]

RULE 55

*Languages (International Preliminary Examination)*55.1 *The Demand*

The demand shall be in the language of the international application or, when a translation is required under Rule 55.2, in the language of that translation, provided that the International Preliminary Examining Authority may permit the demand to be in any language specified in the agreement concluded between the International Bureau and that Authority.

55.2 [No change]

RULE 57

The Handling Fee

- 57.1 [No change]
57.2 [No change]
57.3 [No change]

57.4 *Failure to Pay (Handling Fee)*

(a) [No change]
(b) If the applicant complies with the invitation within the one-month time limit, the handling fee shall be considered as if it had been paid on the due date.

(c) [No change]

57.5 *Failure to Pay (Supplement to the Handling Fee)*

(a) [No change]
(b) If the applicant complies with the invitation within the one-month time limit, the supplement to the handling fee shall be considered as if it had been paid on the due date.

(c) [No change]
57.6 [No change]

RULE 60

*Certain Defects in the Demand or Elections*60.1 *Defects in the Demand*

(a) [No change]
(b) If the applicant complies with the invitation within the prescribed time limit, the demand shall be considered as if it had been received on the actual filing date, provided that the demand as submitted contained at least one election and permitted the international application to be identified; otherwise, the demand shall be considered as if it had been received on the date on which the International Preliminary Examining Authority receives the correction.

(c) [No change]
(d) [No change]

60.2 *Defects in Later Elections*

(a) [No change]
(b) If the applicant complies with the invitation within the prescribed time limit, the later election shall be considered as if it had been received on the actual filing date, provided that the later election as submitted contained at least one election and permitted the international application to be identified; otherwise, the later election shall be considered as if it had been received on the date on which the International Bureau receives the correction.

(c) [No change]
60.3 [No change]

RULE 76

Languages of Translations and Amounts of Fees under Article 22(1); Translation of Priority Document

- 76.1 [No change]
76.2 [No change]

76.3 *Statements under Article 19; Indications under Rule 13b.4*

For the purposes of Article 39 and the present Rule, any statement made under Article 19(1) and any indication furnished under Rule 13b.4 shall be considered part of the international application.

76.4 [No change]

RULE 80

Computation of Time Limits

80.1 [No change]

80.2 [No change]

80.3 [No change]

80.4 [No change]

80.5 [No change]

80.6 Date of Documents

(a) Where a period starts on the day of the date of a document or letter emanating from a national Office or intergovernmental organization, any interested party may prove that the said document or letter was mailed on a day later than the date it bears, in which case the date of actual mailing shall, for the purposes of computing the period, be considered to be the date on which the period starts. Irrespective of the date on which such a document or letter was mailed, if the applicant offers to the national Office or intergovernmental organization evidence which satisfies the national Office or intergovernmental organization that the document or letter was received more than 7 days after the date it bears, the national Office or intergovernmental organization shall treat the period starting from the date of the document or letter as expiring later by an additional number of days which is equal to the number of days which the document or letter was received later than 7 days after the date it bears.

(b) Any receiving Office may exclude the application of paragraph (a) by a written notification to that effect given to the International Bureau by September 1, 1980. Such notification may be withdrawn at any time. The International Bureau shall publish all such notifications and withdrawals in the Gazette.

80.7 [No change]

RULE 90

Representation

90.1 [No change]

90.2 [No change]

90.3 Appointment

(a) Appointment of any agent, or of any common representative within the meaning of Rule 4.8(a), shall be effected by each applicant, at his choice, either by signing the request in which the agent or common representative is designated or by a separate power of attorney (i.e., a document appointing an agent or common representative).

(b) [No change]

(c) [No change]

(d) A general power of attorney may be deposited with the receiving Office for purposes of the processing of the international application as defined in Rule 90.2(d). Reference may be made in the request to such general power of attorney, provided that a copy thereof is attached to the request by the applicant.

90.4 [No change]

RULE 91

Obvious Errors of Transcription

91.1 [No change]

91.2 Manner of Carrying Out Rectifications

The Administrative Instructions prescribe the manner in which rectifications of obvious errors of transcription shall be made and the manner in which they shall be entered in the file of the international application.

RULE 92

Correspondence

92.1 Need for Letter and for Signature

(a) [No change]

(b) If the requirements provided for in paragraph (a) are not complied with, the applicant shall be informed as to the

non-compliance and invited to remedy the omission within a time limit fixed in the invitation. The time limit so fixed shall be reasonable in the circumstances; even where the time limit so fixed expires later than the time limit applying to the furnishing of the paper (or even if the latter time limit has already expired), it shall not be less than 10 days and not more than one month from the mailing of the invitation. If the omission is remedied within the time limit fixed in the invitation, the omission shall be disregarded; otherwise, the applicant shall be informed that the paper has been disregarded.

(c) Where non-compliance with the requirements provided for in paragraph (a) has been overlooked and the paper taken into account in the international procedure, the non-compliance shall be disregarded.

92.2 [No change]

92.3 [No change]

92.4 Use of Telegraph, Teleprinter, etc.

(a) Notwithstanding the provisions of Rules 11.14 and 92.1(a), but subject to paragraph (b), below, any document (including any drawing) subsequent to the international application may be sent by telegraph or teleprinter or other like means of communication producing a printed or written document. Any such document so sent shall be considered to have been submitted in a form complying with the requirements of the said Rules on the day on which it was communicated by the means mentioned above, provided that, within 14 days after being so communicated, its contents are furnished in that form; otherwise, the telegraphic, teleprinter or other communication shall be considered not to have been made.

(b) Each national Office or intergovernmental organization shall promptly notify the International Bureau of any means referred to in paragraph (a) by which it is prepared to receive documents referred to in that paragraph. The International Bureau shall publish the information so received in the Gazette as well as information concerning the means referred to in paragraph (a) by which the International Bureau is prepared to receive any such document. Paragraph (a) shall apply with respect to any national Office or intergovernmental organization only to the extent the said information has been so published with respect to it. The International Bureau shall publish, from time to time, in the Gazette, changes in the information previously published.

RULE 92bis

Changes in Certain Indications in the Request or the Demand

92bis.1 Recording of Changes by the International Bureau
The International Bureau shall, on the request of the applicant or the receiving Office, record changes in the following indications appearing in the request or demand:

- (i) person, name, residence, nationality or address of the applicant,
- (ii) person, name or address of the agent, the common representative or the inventor.

92bis.2 Notifications

(a) The International Bureau shall give notifications concerning changes recorded by it:

- (i) to the receiving Office where the change has been recorded on the request of the applicant,
- (ii) as long as the international search report or the declaration referred to in Article 17(2) has not yet issued, to the International Searching Authority,
- (iii) until the expiration of the time limit referred to in Article 22(1), to the designated Offices,
- (iv) as long as the international preliminary examination report has not yet issued, to the International Preliminary Examining Authority,
- (v) until the expiration of the time limit referred to in Article 39(1)(a), to the elected Offices.

(b) A copy of each notification sent under paragraph (a) shall be sent to the applicant by the International Bureau.

SCHEDULE OF FEES

Fees	Amounts
1. Basic Fee: (Rule 15.2(a)) if the international application contains not more than 30 sheets	325 Swiss francs

If the international application contains more than 30 sheets	325 Swiss francs plus 6 Swiss francs for each sheet in excess of 30 sheets
2. Designation Fee: (Rule 15.2(a))	75 Swiss francs
3. Handling Fee: (Rule 57.2(a))	100 Swiss francs
4. Supplement to the Handling Fee: (Rule 57.2(b))	100 Swiss francs
Surcharge for late payment: (Rule 16b.2(a))	Minimum: 300 Swiss francs Maximum: 500 Swiss francs

Changes in the Administrative Instructions.

SECTION 106

Common Agent for Several Applicants

(a) [Existing text of Section 106]

(b) Where the international application is filed with reference to a general power of attorney not signed by all the applicants, it shall be sufficient for the purpose of appointment of a common agent under Rule 90.3, if the request or a separate power of attorney is signed by the applicant, who did not sign the general power of attorney.

SECTION 111

Changes in Certain Indications in the Request and the Demand

Any request for the recording of any changes referred to under Rule 92bis shall be signed by the applicant or, if the receiving Office requested such change, by the receiving Office. The request shall clearly identify the indications the change of which is requested.

SECTION 304

Headings of the Parts of the Description

The headings referred to in Rule 5.1(c) should be as follows:

- (i) for matter referred to in Rule 5.1(a)(i), "Technical Field";
- (ii) for matter referred to in Rule 5.1(a)(ii), "Background Art";
- (iii) for matter referred to in Rule 5.1(a)(iii), "Disclosure of Invention";
- (iv) for matter referred to in Rule 5.1(a)(iv), "Brief Description of Drawings";
- (v) for matter referred to in Rule 5.1(a)(v), "Best Mode for Carrying Out the Invention," or, where appropriate, "Mode(s) for Carrying Out the Invention";
- (vi) for matter referred to in Rule 5.1(a)(vi), "Industrial Applicability."

SECTION 305

Numbering of Claims Upon Amendment

(a) Any claim submitted after the filing date of the international application and which is not identical with the claims previously appearing in the international application shall, at the choice of the applicant, be submitted either:

- (i) as an amended claim, in which case, it shall bear the same number as the previous claim it amends; that number shall be followed by the word "(amended)" or its equivalent in the language of the international application; or
- (ii) as a new claim, in which case it shall bear the next number after the highest previously numbered claim; that number shall be followed by the word "(new)" or its equivalent in the language of the international application; where the consecutive order of claims requires that a new claim be given a number lower than the highest previously numbered claim, the claims following the new claim shall be renumbered; any new number shall be followed by the words "(Original claim No.)" or an equivalent of these words in the language of the international application and an indication of the original number of the renumbered claim.

(b) [No change]

SECTION 306

[Deleted]

ANNEX F TO THE ADMINISTRATIVE INSTRUCTIONS FORMS

Form PCT/RO/101 (Request and Fee Calculation Sheet): page 3 of this form, was modified.

Form PCT/ISA/210 (International Search Report): an additional (optional) sheet for this form called "(Extra Sheet)" is provided.

[998 OG 24]

(94)

Increase in PCT Fees and Changes in PCT Rules Effective in International Applications Filed After January 1, 1981

The sixth session of the Assembly of the International Patent Cooperation Treaty (PCT) Union, was held in Geneva, Switzerland from September 22 to 26, 1980. This meeting adopted several changes in the PCT Rules and increased the amounts of the International Basic and Designation fees due in international applications filed after January 1, 1981.

The amounts of the fees charged in international applications filed after January 1, 1981 will be as follows:

- Transmittal Fee—\$35.00 (no change).
- Transmittal Fee—\$35.00 (no change).
- International Basic Fee: For first 30 sheets of international applications—\$265.00 (revised).
- Basic Supplemental Fee: For each sheet over 30—\$5.00 (revised).
- International Designation Fee: For State for which a national patent is sought or group of States for which the same regional patent is sought—\$64.00 (revised).

The above revised amounts are the U.S. dollar equivalent amounts of the fees fixed in Swiss francs in "Schedule of Fees" using the exchange rate of September 22, 1980.

LIST OF PCT MEMBER STATES AS OF NOVEMBER 1, 1980

State	Ratification or Accession	Date of Ratification or Accession	Date From Which State May Be Designated
(1) Central African Empire*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar*	Ratification	27 March 1972	01 June 1978
(4) Mali*	Accession	10 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	20 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978

LIST OF PCT MEMBER STATES AS OF NOVEMBER 1, 1980

(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978
(21) Austria**	Ratification	23 January 1979	23 April 1979
(22) Monaco	Ratification	22 March 1979	22 June 1979
(23) Netherlands**	Ratification	10 April 1979	10 July 1979
(24) Romania	Accession	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein**	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member states. A designation of any state is an indication that all OAPI states have been designated. Note: only one designation fee is due regardless of the number of OAPI member states designated.

**Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for member States are available through PCT, except for France, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due if the regional patent protection is sought for several States.

Amended PCT Rule 22 provides 15 months, rather than the earlier 14 months, from the priority date for transmitting a copy of the Record Copy to the International Bureau. This change is effective January 1, 1981.

The amendment to PCT Rule 80.6(b) merely clarifies a change made by the fifth PCT Assembly. This change entered into effect on October 1, 1980.

PCT Rule 82 concerning irregularities in the mail service has been amended to apply to the transmittal of the Record Copy by the Receiving Office or applicant to the International Bureau. This change becomes effective on January 1, 1981.

RULE 22

Transmittal of the Record Copy

22.1 [No change]

22.2 Alternative Procedures

- (a) [No change]
- (b) [No change]
- (c) [No change]
- (d) [No change]

(e) Where the receiving Office does not hold the record copy at the disposal of the applicant by the date fixed in paragraph (d), or where, after having asked for the record copy to be mailed to him, the applicant has not received that copy at least 10 days before the expiration of 18 months from the priority date, the applicant may transmit a copy of his international application to the International Bureau. This copy ("provisional record copy") shall be replaced by the record copy or, if the record copy has been lost, by a substitute record copy certified by the receiving Office on the basis of the home copy, as soon as practicable and, in any case, before the expiration of 15 months from the priority date.

22.3 Time Limit under Article 12(3)

- (a) The time limit referred to in Article 12(3) shall be:
 - (i) where the procedure under Rule 22.1 or Rule 22.2(c) applies, 15 months from the priority date;
 - (ii) where the procedure under Rule 22.2(d) applies, 14 months from the priority date, except that, where a provisional record copy is filed under Rule 22.2(e), it shall be 14 months from the priority date for the filing of the provisional record copy, and 15 months from the priority date for the filing of the record copy.
- (b) [Deleted]

22.4 [No change]

22.5 [No change]

RULE 80

Computation of Time Limits

80.1 [No change]

80.2 [No change]

80.3 [No change]

80.4 [No change]

80.5 [No change]

80.6 Date of Documents

(a) [No change]

(b) Any receiving Office may exclude the application of the second sentence of paragraph (a) by a written notification to that effect given to the International Bureau by September

1, 1980. Such notification may be withdrawn at any time. The International Bureau shall publish all such notifications and withdrawals in the Gazette.

80.7 [No change]

RULE 82

Irregularities in the Mail Service

82.1 Delay or Loss in Mail

(a) Any interested party may offer evidence that he has mailed the document or better 5 days prior to the expiration of the time limit. Except in cases where surface mail normally arrives at its destination within 2 days of mailing, or where no airmail service is available, such evidence may be offered only if the mailing was by airmail. In any case, evidence may be offered only if the mailing was by mail registered by the postal authorities.

- (b) [No change]
- (c) [No change]

82.2 Interruption in the Mail Service

(a) Any interested party may offer evidence that on any of the 10 days preceding the day of expiration of the time limit the postal service was interrupted on account of war, revolution, civil disorder, strike, natural calamity, or other like reason, in the locality where the interested party resides or has his place of business or is staying.

- (b) [No change]

SCHEDULE OF FEES; PRICES OF PUBLICATIONS

Basic Fee:

(Rule 15.2(a)):

If the international application, contains not more than 30 sheets—432 Swiss francs.

If the international application contains more than 30 sheets—432 Swiss francs (plus 8 Swiss francs for each sheet in excess of 30 sheets).

Designation Fee:

(Rule 15.2(a))—104 Swiss francs.

Handling Fee:

(Rule 57.2(a))—133 Swiss francs.

Supplement to the Handling Fee:

(Rule 57.2(b))—133 Swiss francs.

Surcharges:

(Rule 16bis.2(a)) surcharges for late payment—minimum: 200 Swiss francs; maximum: 500 Swiss francs.

Price of the Subscription to the PCT Gazette—400 Swiss francs.

Sales Price of Each Copy of the Pamphlet—8 Swiss francs.

LUTRELLE PARKER,

Acting Commissioner of

Patents and Trademarks.

Date: Nov. 17, 1980.

[1001 O.G. 14]

(95) Reduction of European Search Fee for PCT Cases

The following letter dated December 21, 1979 from Dr. J. B. van Benthem, the President of the European Patent

Office, was received by the Commissioner of Patents and Trademarks and is being published to provide the information to applicants using the Patent Cooperation Treaty (PCT). The effect of the decision of the Administration Council of the European Patent Organization is to reduce the search fee required by the European Patent Office by 20% if the application was filed under the PCT and was searched by the United States Patent and Trademark Office acting as an International Searching Authority.

The letter and accompanying annex are reproduced below.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

"Dear Mr. Diamond:

Pursuant to Article 157, paragraph 3, EPC, the Administrative Council of the European Patent Organization is entitled to decide under what conditions and to what extent: a) the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with b) the search fee as provided for in Article 157, paragraph 2b, EPC is to be reduced.

Up to the present, the Administrative Council of the EPO has taken decisions in regard to Article 157, paragraph 3, in respect of international applications for which the international search report has been drawn up by the following Offices: the European Patent Office, the Swedish Patent Office, the Austrian Patent Office, the United States Patent and Trademark Office, the Japanese Patent Office and the USSR State Committee for Inventions and Discoveries.

The decisions concerning the Swedish and Austrian Patent Offices are based on the agreements concluded between these Offices and the EPO pursuant to Section III, paragraph 2 and Section IV, paragraph 2 of the Protocol on the Centralisation of the European Patent System, which is an integral part of the EPC. These agreements prescribe that the searches to be carried out by these Offices are to meet the same criteria and be of the same standard as applied at the EPO.

For these reasons the Administrative Council has decided that in respect of Sweden and Austria the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with and a search fee as provided for in Article 157, paragraph 2b, EPC shall not be charged.

As far as those States are concerned which are not members of the European Patent Organization, the Administra-

tive Council of the EPO decided on 14 September 1979, that the search fee provided for in Article 157, paragraph 2b, EPC, shall be reduced by one-fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries. This reduction reflects the economy expected to be made in drawing up the supplementary European search report according to EPO standards.

Annexed you will find a copy of the Decision of 14 September 1979. It applies to all international applications filed since 1 June 1979.

Yours sincerely,

J. B. Van Benthem,
(President)."

ANNEX

The Administrative Council of the European Patent Organization

Having regard to the European Patent Convention (hereinafter called "the Convention"), and in particular Article 157, paragraph 3, thereof,
Has decided as follows:

ARTICLE 1

The search fee provided for in Article 157, paragraph 2(b), of the Convention shall be reduced by one fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries.

ARTICLE 2

This decision shall enter into force on 14 September 1979. It shall apply to all international applications filed since 1 June 1979.

Done at Berlin, 14 September 1979.

For the Administrative Council
The Chairman,
G. VIANES.
END OF ANNEX

[992 O.G. 2]

TRADEMARK NOTICES

(96) INTERVIEWS INVOLVING TRADEMARK APPLICATION

[855 O.G. TM 95 (Feb. 21, 1987)]

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the mark of a pending application will not be had before the first official Office action thereon and ordinarily not before filing the first response. Arrangements for an interview should be made in advance so that the Examiner may review the case and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, Jr.,
Assistant Commissioner.

July 6, 1964.

This supersedes the notice of February 10, 1958, 728 O.G. (TM 1).

[804 O.G. TM 147 (July 28, 1964)]

(97) POWERS OF ATTORNEY IN REGISTERED TRADEMARK FILES

On and after February 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C. M. WENDT,
Director.

Jan. 30, 1967.

(98) PREFACE TO THE TRADEMARK O.G. NOTICES

In September 1970, a Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce. The Purpose of this Committee was to advise the Patent Office on ways to increase the efficiency and effectiveness of the administration of the Trademark Act. A report of this Advisory Committee has been received by the Commissioner of Patents. After reviewing the recommendations, although the review is not complete, it has been decided to make certain changes in trademark practice and procedure, and to propose changes in the rules of practice. Beginning with this issue of the OFFICIAL GAZETTE and in subsequent issues as needed, announcements will be published concerning changes in procedures and proposed amendments to the Trademark Rules of Practice.

WILLIAM E. SCHUYLER, Jr.,
Commissioner of Patents.
June 16, 1971.

Published in 36 F.R. 12888; July 16, 1971

[889 O.G. TM 2 (Aug. 3, 1971)]

(99) REQUEST FOR EXTENSION OF TIME IN WHICH TO OPPOSE

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further,

this procedure will provide the applicant with additional information concerning the potential opposition.

June 16, 1971. **WILLIAM E. SCHUYLER, JR.,**
Commissioner of Patents.

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 3 (Aug. 3, 1971)]

(100) INITIAL PROCESSING OF APPLICATION

On February 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under § 2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective February 1, 1972.

Jan. 11, 1972. **RICHARD A. WAHL,**
Acting Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for
Science and Technology.

Published in 37 FR 942; Jan. 21, 1972

[895 O.G. TM 193 (Feb. 22, 1972)]

(101) PETITION TO MAKE TRADEMARK APPLICATIONS SPECIAL

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer v. Lowry*, 59 O.G. 1861, 1899 C.D. 230, and *Willette v. Van Achen*, 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Date: Mar. 13, 1972.

[897 O.G. TM 2 (Apr. 4, 1972)]

(102) TRADEMARK REGISTRATION TREATY

At the conclusion of the Vienna Diplomatic Conference on industrial property, the Trademark Registration Treaty was signed on June 12, 1973 for the United States. This Treaty is designed to simplify the procedures for obtaining international registration of trademarks for United States companies doing business abroad.

The Treaty was unanimously adopted at the final plenary session. In addition to the United States, the United Kingdom, the Federal Republic of Germany, Italy, Portugal, Hungary, San Marino and Monaco also signed. Some forty-six countries were represented at the Conference. In their closing statements most of the other delegations present indi-

cated their hope to sign before the end of the year. The Treaty remains open for signature through December 31, 1978. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession.

The negotiations at Vienna represent the climax of the work of several committees of experts and working groups which have met at Geneva since 1970 with the assistance of the World Intellectual Property Organization (WIPO). The U.S. delegation to the Vienna Conference was composed of officials from the Department of State, the U.S. Patent Office and advisors from the private sector. Previous versions of the proposed Treaty were published on February 22, 1972; September 19, 1972; and February 20, 1973; in the OFFICIAL GAZETTE of the U.S. Patent Office. Published in this issue is the complete text of the Trademark Registration Treaty and its Regulations, as adopted by the Conference. For convenience, in addition to the text of the Articles and Regulations as adopted there is included a table of contents at the end of each section.

Additional copies of this material are available upon request to the Commissioner of Patents.

ROBERT GOTTSCHALK,
Commissioner of Patents.

June 22, 1973

[912 O.G. TM 205 (July 24, 1973)]

(103) REALIGNMENT OF PATENT OFFICE HANDLING OF OPPOSITION PAPERS

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. Assistant Commissioner for Trademarks.

[929 O.G. TM 62 (Dec. 10, 1974)]

(104) CONFERENCE OF PARTIES IN TRADEMARK INTER PARTES PROCEEDINGS

Under the inter partes rules of procedure in trademark cases effective July 1, 1972 (898 O.G. TM 170, May 16, 1972), the interlocutory phases of trademark inter partes proceedings are becoming increasingly involved, and the experience of the Trademark Trial and Appeal Board has been that the difficulties in such proceedings can frequently be resolved more satisfactorily and quickly by conference in person than by correspondence or telephone. Therefore, effective immediately, the following practice is being adopted:

Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of a trademark inter partes proceeding have become so complex that their resolution by correspondence or telephone is not practical and would be likely to be facilitated by conference in person of the parties and/or their attorneys with a member or members of the Trademark Trial and Appeal Board, the Board may at its discretion suggest that the parties and/or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices in Crystal Plaza, Arlington, Virginia, to discuss the resolution of difficulties.

C. MARSHALL DANN,
Feb. 3, 1975. Commissioner of Patents and Trademarks.

[932 O.G. TM 2 (Mar. 4, 1975)]

(105) INTERNATIONAL PROTECTION OF GOVERNMENT EMBLEMS AND SEALS

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one departmental seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of December 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by September 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1½ inches in diameter.

These seals will then be forwarded to WIPO for protection under Article 6ter of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Dated: August 18, 1976.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Published in 41 F.R. 36741

[950 O.G. TM 114 (Sept. 21, 1976)]

(106) TRADEMARK RULES OF PRACTICE

The ninth edition of the Trademark Rules of Practice, dated December 1976, is now available. It replaces the previous edition in its entirety.

The Rules are in looseleaf form so as to accommodate revisions. New subscriptions may be ordered from:

Superintendent of Documents
United States Government Printing Office
Washington, D.C. 20402.

The charge is \$5.00 for domestic mailing and \$6.25 for foreign mailing. Prior subscribers were sent a notice of expiration by the Government Printing Office in January, 1977.

The Rules booklet is available only by subscription. When revisions are issued, they are a part of the subscription and are mailed automatically. Revisions are announced in the OFFICIAL GAZETTE of the Patent and Trademark Office.

BERNARD A. MEANY,
Sept. 16, 1977. Assistant Commissioner for Trademarks.

[963 TMOG 12 (Oct. 18, 1977)]

(107) RECORDING OF "TERRITORIAL ASSIGNMENTS" IN THE ASSIGNMENT DIVISION OF THE PATENT AND TRADEMARK OFFICE

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and there-

fore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

BERNARD A. MEANY,

Oct. 7, 1977. Assistant Commissioner for Trademarks.

[1984 TMOG 8 (Nov. 8, 1977)]

(108) TRADEMARK RULE 2.165 REQUIREMENT WHERE A SECTION 8 AFFIDAVIT OF DECLARATION IS HELD INSUFFICIENT

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (a) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least respond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (b) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the

Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

BERNARD A. MEANY,

Dec. 12, 1977. Assistant Commissioner for Trademarks.

[1986 TMOG 80 (Jan. 10, 1978)]

(109) DISSEMINATION OF TRADEMARK INFORMATION

In order to clarify the policy regarding Trademark Examiners giving out Trademark information to the general public, the following directive has been promulgated:

Trademark Examiners are reminded that they may only be responsive to questions regarding applications pending before them. All other questions regarding Trademark matters must be directed to the Director of the Trademark Examining Operation, 703-557-3268.

BERNARD A. MEANY,

Feb. 15, 1978. Assistant Commissioner for Trademarks.

[1988 TMOG 9 (Mar. 14, 1978)]

(110) NOTICE TO PURCHASERS OF TRADEMARK INDICES

An incorrect stock number has been assigned to the "1976 Index of Trademarks."

The correct stock number to be used when ordering the "1976 Index of Trademarks" through the Superintendent of Documents is as follows: 003-004-00532-7. The cost of this publication is \$8.00 per copy.

RICHARD J. SHAKMAN,

Mar. 14, 1978. Assistant Commissioner for Administration.

[1989 TMOG 2 (Apr. 4, 1978)]

(111)

TRADEMARK REGISTRATION TREATY

Implementing Legislation

On September 3, 1975 the Trademark Registration Treaty (TRT), signed at Vienna, Austria, on June 12, 1973, was transmitted by the President to the Senate of the United States with a view to receiving its advice and consent to ratification. Legislation designed to implement the TRT has been prepared by the Patent and Trademark Office in the Department of Commerce.

Following a suggestion by the General Accounting Office, the Patent and Trademark Office is planning a survey of a random sample of United States trademark owners who would have a direct interest in the TRT and in the changes required in United States trademark law. In order to provide the interested public with the information on which the sampled companies will base their responses, the complete draft legislation, including Summary, Statement of Purpose and Need and Sectional Analysis is re-

produced below. A copy of the survey questionnaire will be published in a future issue of the OFFICIAL GAZETTE.

The text of the TRT was reproduced in the OFFICIAL GAZETTE of July 24, 1973. Some post conference documents, including a history of the Treaty, were reproduced in the OFFICIAL GAZETTE of February 11, 1974. The report of the United States delegation to the Vienna Conference was reproduced in the OFFICIAL GAZETTE of February 11, 1975. Additional copies of the material reproduced below as well as the previous OFFICIAL GAZETTE publications are available upon request to the Commissioner of Patents and Trademarks.

DONALD W. BANNER,

Commissioner of Patents and Trademarks.

Date: July 11, 1978.

SUMMARY

In 1973, the United States and thirteen other countries signed the Trademark Registration Treaty. This Treaty was transmitted to the Senate on September 3, 1975, with a view to advice and consent to receiving its ratification.

The Trademark Registration Treaty will establish an international trademark filing arrangement, through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Since the Treaty is not self-executing, the instrument of United States ratification will not be deposited until the necessary implementing legislation is enacted.

The proposed implementing legislation effects the necessary changes in the trademark statutes and provides to persons filing domestic applications the same benefits in the United States as those accorded under the Treaty. The implementing legislation would not come into force until the Treaty enters into force. Entry into force requires the deposit of instruments of ratification or accession by five States.

STATEMENT OF PURPOSE AND NEED

The enclosed bill would amend the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) to implement the Trademark Registration Treaty and make certain of its benefits available to persons filing national applications for United States trademark registration.

First, the bill would implement the Trademark Registration Treaty (TRT), an agreement adopted on June 12, 1973, by the Vienna Diplomatic Conference on Industrial Property to facilitate the protection of trademarks used or intended to be used in international commerce. This Treaty was signed by the United States and was transmitted by the President to the Senate of the United States on September 3, 1975, with a view to receiving its advice and consent to ratification.

Ratification of the Treaty and its implementation by this bill would enable United States nationals and residents to avail themselves of the advantages offered by the Treaty when it has entered into force with respect to the United States. In addition to the procedural implementing provisions, the bill would effect certain changes in the Trademark Act of 1946 (60 Stat. 427, as Amended,

15 U.S.C. 1051 et seq.) that are required to be made in order to comply with certain conditions and requirements of the Trademark Registration Treaty. These changes would not come into effect until the entry into force of the Treaty.

Second, the bill also makes modifications in the present law to provide to United States nationals and residents the same benefits when filing national applications for trademark registration in the United States Patent and Trademark Office as would be available to such applicants in the United States if filing under the Treaty.

Purpose of Trademark Registration Treaty

The Trademark Registration Treaty has as its primary purpose the establishment of a trademark filing arrangement through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Separate actions in approximately 150 jurisdictions (i.e. States, possessions, territories, etc.) are now required by United States companies in order to extend the protection of a trademark throughout the world. The complexity and high cost of establishing and protecting trademarks in international markets through the diverse national laws and procedures is a serious problem for businessmen seeking to further their commercial objectives by the sale of trademarked products across national boundaries. However, if trademark protection in potential foreign markets is not secured promptly, the unprotected mark is frequently appropriated by a "pirate" or may even be coincidentally adopted by another.

The entry into force of the Trademark Registration Treaty would help alleviate these problems by establishing an alternative international registration procedure through which the effects of national trademark registration in member countries could be secured, maintained and renewed on a central international register of marks. With a few exceptions, the effects of international registration in each participating State would remain subject to the substantive requirements of the national laws of such State.

History of Treaty Development

The Trademark Registration Treaty is the culmination of continuous efforts, since 1965, by the United States, to participate in an acceptable international arrangement to facilitate the protection of trademarks in international commerce. Consideration was first given to the possibility of United States adherence to the Madrid Agreement for the International Registration of Marks, a special arrangement under the Paris Convention for the Protection of Industrial Property. The Madrid Agreement, in force since 1891, has long operated successfully among twenty-three countries, principally European.

By 1968, it became apparent that there was substantial U.S. private sector opposition to adherence to the Madrid Agreement in its present form, largely because of certain of its features which, it was argued, would be contrary to the interests of United States firms.

From 1968 to 1970, there were efforts to revise the Madrid Agreement to correct these alleged deficiencies, but these efforts were not successful. However, whereas there was opposition to our adherence to the Madrid Agreement, interested private groups continued to urge United States participation in an acceptable trademark registration treaty.

In September, 1970, a United States sponsored resolution to develop a new trademark registration treaty was adopted unanimously by the competent administrative organs of the Paris Convention. After several drafts and examination by three Committees of Experts and several Consultants' groups, a final draft was considered at a diplomatic conference held in Vienna, Austria, from May 17 to June 12, 1973. Fifty States and thirty-one international organizations (governmental and non-governmental) were represented at the conference. On June 12, 1973, the Trademark Registration Treaty was signed by eight countries, including the United States, and remained open for signature until December 31, 1973, by which date a total of fourteen countries had become signatories. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession. To date, none of the signatory States has ratified the Treaty. Four States (Congo, Gabon, Togo, and Upper Volta) have deposited instruments of accession.

Main Features of Treaty

The Trademark Registration Treaty will establish a multilateral trademark filing arrangement for residents or nationals of its member countries, which provides easier procedures for securing, administering and maintaining national trademark registration effects in other countries by filing a single international application, securing a single international registration and maintaining a record of such rights on a central international register. International registration amounts to central recording of a "bundle of national rights" rather than a separate property right.

With some exceptions (as noted below), the substantive aspects of rights are regulated by each member State according to its national law. The main features of the Treaty are as follows:

1. A national or resident of a member State may file directly with the International Bureau of the World Intellectual Property Organization an international application designating the States in which protection of the trademark is desired. Any number of States, including the applicant's home State, may be designated.
2. The international application may claim the priority (Paris Convention "right of priority") of an earlier first application to register the same trademark.

3. The application is subject to an international fee plus a fee for each designated State (not higher than 100% of the total fees for national registration).

4. After a brief examination as to formal requirements, the trademark is registered by the International Bureau. The details of the international registration are promptly published in English and French in an international gazette and communicated to each of the designated States.

5. Unless refused by a designated State, the international registration is accorded the same legal effect as if the same trademark were registered nationally in that State. The time limit for the initial notice of refusal, including all reasons or possible reasons for refusal, is fifteen months from the date of the international publication. The reasons for refusal cannot be different from those applicable to national applications.

6. If initially refused by any designated State, the owner is notified of the refusal and is guaranteed the same procedural rights of re-examination and/or remedies available in the case of refusals of national trademark applications. Further proceedings are not subject to any Treaty time limits, and are carried out directly between the owner and the concerned national office.

7. The effects of an international registration may be cancelled in any designated State according to the national law of that State. The effect of cancellation is limited to the State in which the legal action for cancellation was brought.

8. An international registration may be renewed at ten year intervals by a single renewal application filed with the International Bureau.

9. States not originally designated may be added later by requesting the recording of later designations of the new States.

10. Assignments, changes of name, limitations of the goods and/or services, etc. may be recorded by filing a single international request, with the same legal effect as if recorded in the national registers.

11. Non-use of the trademark during an initial period of three years counted from the filing date cannot result in refusal or cancellation by any State. However, any State may require that the owner declare his intention to use the trademark in that State and may further provide in its law that no action for infringement may be commenced until the continuing use of the trademark in that State has started and that any remedy (e.g. damages or profits) may relate only to the period after use has commenced.

The benefits of the Treaty will be available only to nationals or residents of member countries. As to such persons, the Treaty may be used to secure protection in a few countries, or in many, depending upon the extent of the commercial interests.

The Treaty provides that the contracting States shall constitute a Union for the international registration of marks. The provisions for administration of the Union are similar to those established for the Patent Cooperation Treaty, which was transmitted to the Senate on September 12, 1972, and was favorably acted on by that body on October 30, 1973.

The Regulations annexed to the Treaty provide rules concerning administrative requirements and procedures and details useful in implementation of the Articles.

Interest of Other Countries

In addition to the United States, the signatories of the TRT include a number of major trading countries (e.g.

Federal Republic of Germany, United Kingdom, Italy, Sweden, Austria). Others are awaiting developments in the United States, which furnished primary impetus to the negotiations. In particular, the interest of most Western European countries is contingent upon United States ratification, primarily because of the existence of the Madrid Agreement. The Trademark Registration Treaty is more modern than the Madrid Agreement, has more advantages for trademark owners and eliminates features which have long inhibited the territorial growth of the Madrid system. However, the position of the Madrid Agreement members is dependent upon the interest of major countries outside that Union in the new arrangement. Of these, the United States is clearly the most important. However, Japan, United Kingdom, Canada, and the Scandinavian group are among other countries outside the Madrid Union which are known to be seriously considering participating in the TRT arrangement, or, failing that, in some other multilateral agreement, such as Madrid.

Main Advantages

The main advantages of the Treaty are the simplified procedures provided in order to secure national registration effects, to maintain the rights thereby acquired, and to continue these rights by renewal. Other benefits are the time limits for national refusal notifications and the limitations on national use requirements.

The Treaty will not be a panacea for all trademark problems. It will establish what is essentially a multilateral trademark filing arrangement, reserving (except for a few

Effect on U.S. System—Cost

As the Treaty matures in terms of the number of participating States, one of its effects will probably be an increase of foreign origin filings in this country (present foreign origin filings are less than 10% of total filings). It is fundamental that the benefits of simplification accrue in both directions. To the extent that any increased filings reflect existing commercial rights, this result would be consistent with a fundamental purpose of the federal trademark registration system, i.e. the central recording of marks in which rights may exist. Because registration is not mandatory in order to secure rights in a trademark in the United States (and this would not change under the Treaty), the U.S. system is designed to encourage federal registration, in order to provide centralized information to those searching for and selecting new marks for new products or services to be sold in commerce. Part of the increase, as explained later, may result from permitting the filing and registration of marks based on an intent to use as an alternative to actual use.

Since the intent to use amendments to be effected by the bill will not come into force until the date of entry into force of the Treaty, none of the financial consequences will accrue until after that date. It is assumed that entry into force will occur promptly after United States ratification, if not before that date. Assuming action by the 95th Congress, increased incremental costs and manpower requirements of the Patent and Trademark Office have been estimated as shown in the following chart.

ESTIMATED COSTS INCURRED BY RATIFICATION OF TRT AND ENACTMENT OF RELATED LEGISLATION¹
(Dollar Amounts in Thousands)

	FY 1979		Adjustment for FY 1980		Total FY 1980		Adjustment for FY 1981		Total FY 1981	
	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar
Operational printing ²		581.9		(+68.7)		650.6		(+54.8)		705.4
Operational, other ³	21.7	420.3	(+11.6)	(+262.6)	33.3	672.9	(+7.4)	(+176.1)	40.7	849.0
Start-up ⁴	3.0	109.8	(-2.0)	(-73.4)	1.0	36.4	(-1.0)	(-31.5)		* 4.9
	24.7	1,112.0			34.3	1,359.9			40.7	1,550.3

¹ These estimated costs will be partially offset by fees to the same extent as under our national system.

² Assumes additional publication of all applications will be required (see discussion of Sections 9 and 10 of bill in the Sectional Analysis).

³ Includes supervisory, professional and clerical personnel, and mail.

⁴ Includes Legislation and International staff, Organization and Systems, and all travel.

⁵ Only travel remains.

points) the substantive aspects of rights to regulation on a country-by-country basis under the national law of each country. However, by limiting participation to States having previously adhered to the Paris Convention for the Protection of Industrial Property, it assimilates or applies the norms and standards of trademark protection law which have been agreed to by the eighty-seven member countries of that Union over the almost 100 years of its existence. The fact that its filing, maintenance and administrative procedures are independent of national procedures means that a framework for future development of international substantive standards and further rationalization of procedures is provided. Also, since trademark piracy is best dealt with preemptively by prompt filing and diligent maintenance practices, the Treaty attacks this problem directly by facilitating the filing and maintenance procedures.

Even the short range objectives and benefits will not be immediately realized upon United States ratification. Five States must ratify before the Treaty enters into force. To date, only eighteen out of the eighty-seven potential member States have taken positive steps (i.e. fourteen signatories and four adherents). The benefits of simplified filing and maintenance will accrue in proportion to the number of member States.

An important caveat is that many of the assumptions on which the above estimates are based are, at this point, very speculative. Also, since the Treaty provides for the assessment of country designation fees (paid centrally) at a level equal to the fees for national registration, any increased operational costs of the Patent and Trademark Office due to increased filings will be offset to the same extent as under the national system. The above cost estimate does not reflect these partially offsetting fees.

Additional cost factors, too remote for attempting to estimate at this time, involve contributions to the World Intellectual Property Organization (WIPO) which will serve as the International Bureau under the Treaty. Article 34(5) of the Treaty establishes a working capital fund, constituted by a single payment made by each contracting State. Based on the experience in the case of other treaties administered by WIPO, it is believed that consideration of any working capital fund would be deferred, at least, until several years after the Treaty enters into force. The amount of the initial payment of each contracting State to this fund is computed with due regard to the number of international applications which are filed by residents of that State. Thus, a direct relationship exists between the amount of the payment by the United States and the use of the TRT by U.S. companies.

In starting up for operations under the TRT, the International Bureau will have to establish a budget financed from fees and charges for services rendered by the International Bureau, from sales of publications and other miscellaneous income. While the Madrid Agreement, also administered by WIPO, has operated at a profit for many years, and the TRT is designed to be self-supporting under normal circumstances (Article 34(4)), the possibility of deficits cannot be ruled out altogether. Deficits would be covered out of the working capital fund, which fund would then be reimbursed by the States. Deficits are not expected to be of any significant magnitude. Contributions to the working capital fund would be the responsibility of the Department of State.

Effect on U.S. Trademark Law

Participation in the international system will require that our national trademark law be amended in a number of respects. The most fundamental change is one which would permit the securing of a national registration in the United States based on intention to use the trademark applied for, and provide for an initial period of 3 years during which nonuse of the mark could not be a basis for refusing or cancelling such registration. Consistent with the Treaty, the proposed legislation provides that infringement actions in the courts would continue to be contingent upon the commencement of use, however.

As explained by the President in forwarding the Treaty to the Senate for its advice and consent, there is a sharp difference of opinion among interested persons, firms and associations in the United States as to the desirability of making this change, and, to a lesser extent, other less significant changes, required by the Treaty, in our national law.

The essence of the change in United States law is that it would move us from the strict use approach (today held to only by the United States, and a few other countries, e.g. Republic of Philippines, Panama) to the middle position, i.e. a use or intention to use system similar in principle to that of the British. The change is believed to be more consistent with the legitimate needs of businessmen, especially where international trade is contemplated.

Intention To Use Legislation

In fact, legislation permitting the filing of a trademark application based on an intent to use was widely supported in the private sector and, in the 91st Congress, identical House and Senate bills, substantially the same as the earlier Senate bills, were introduced at the request of the Administration (S. 3110, McClellan; H.R. 14050 Kastenmeier). This legislation was not reintroduced in the 93rd and 94th Congresses, however, since it was known at an early stage in the Treaty negotiations that the use requirements of the United States would be affected.

The support of intention to use legislation in the United States had its foundation in domestic concerns. Under present law actual use of a mark is a prerequisite to the filing of an application for registration. Thus, every applicant for federal registration, in addition to other requirements, must specify in his application the date of first use of the mark and the date of first use in commerce over which Congress has control (usually interstate commerce).

As applied to the adoption of new trademarks, the requirement of establishing use of a mark prior to applying for its registration is unrealistic since the time interval between clearance and adoption of a trademark and use of commercial quantities varies from several months to several years depending upon the products involved. Typically, before a consumer product is marketed com-

mercially, there is considerable time and effort expended in the developmental effects. After having undertaken the effort and expense of creating and planning the promotion of a new mark, however, the businessman may find that the mark is not registrable because of conflict with another mark or some other reason. These problems led to the drafting and introduction of intent to use legislation.

Canada, in 1954, after careful study, adopted a system permitting applications for registration on the basis of an owner's proposed use. The Canadian system is favorably regarded by businessmen, as are the intention to use systems of many other nations. Approximately one-half of the trademark applications filed today in Canada are based on proposed use, rather than actual use, evidencing the usefulness and acceptability of the system.

Differences Between Previous Intention To Use Legislation and the Treaty

Although similar in terms of their substantive effect, the "intent to use" amendments previously proposed in this country do not satisfy the requirements of the Treaty. There are two basic differences:

- (1) The time period under the Treaty during which use may not be required cannot be less than 3 years, counted from the filing date.

Under the "intent to use" bills, the time period was flexible, depending upon the length of time consumed by the examination, i.e. 90 days, counted from the date of allowance of the application by the examiner (a shorter period if the application were opposed). Although entirely dependent upon pendency experience of the Patent and Trademark Office, the period of permitted non-use of most of the applied for marks under those bills would have been in the approximate range of one to two years, counted from the filing date.

Whereas the Treaty permits the "reserving" of a mark for an initial 3 years, more extended "reserving" may be precluded under Article 19(3) and this is done in the proposed implementing legislation. Thus, the 3 year period cannot be extended except for extraordinary reasons. The fact that an application is still pending at the date of expiration of the 3 years may not be accepted as a reason for extension. The use requirements after 3 years are the same as under present law.

- (2) Under the Treaty, the national registration effect of an international registration may not, for the initial three year period, be refused or cancelled on the ground of non-use. However, any country may provide that the right to sue for infringement of the registered mark (even during the three years) is subject to the condition of use, i.e. no right to sue until after continuous use has commenced; and that any remedy may relate only to the period after use has commenced.

Under the "intent to use" bills, an application could be filed, and priority secured, based on intent to use, without actual use, but the registration would not issue until a declaration demonstrating actual use had been filed and accepted.

The implementing legislation takes into account the above differences, as the Treaty requires. Also, in all respects, the benefits to applicants from the 3 year use moratorium are accorded to United States residents filing regular national applications in the United States as well as to those applicants filing under the Treaty.

A BILL

To amend the Act entitled "An Act to provide for the registration and protection of trademarks used in com-

merce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946, as amended.

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, that, in order to carry out the provisions of the Trademark Registration Treaty and extend its benefits to citizens and residents of the United States pursuant to the authority of Congress to regulate commerce within its control, section 1 of the Act entitled "An Act to provide for the registration and protection of trademarks used in commerce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946 (60 Stat. 427), as amended, is amended to read as follows:

"(a) Any person who is the owner of a trademark which is used or intended to be used in commerce may register that trademark on the principal register hereby established, subject to the conditions and requirements of this Act.

"(b) Application by a person described in section 1(a) to register a trademark on the principal register may be made:

- (1) By paying in the Patent and Trademark Office the filing fee and filing in such Office—

(A) A written application, in such form as may be prescribed by the Commissioner, signed by the applicant or by a duly appointed representative of the applicant, specifying the applicant's domicile and citizenship and the particular goods in connection with which the trademark is used or intended to be used in commerce;

(B) A drawing of the trademark;

(C) Except where the declaration under section 1(c) is filed together with the application, a declaration of the applicant's intention to use the trademark in commerce in connection with the goods specified in the application;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

- (2) By designating the United States in an international registration, or in the recording of any later designation in an international registration, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty: *Provided*, That—

(A) the person applying was entitled to file international applications, is entitled to own international registrations, and is the Owner of the international registration of the trademark sought to be registered under this Act; and

(B) a declaration of such person's intention to use the trademark in commerce in connection with the goods specified in the international registration is notified to the Patent and Trademark Office in conformity with the said Treaty.

"A person whose international application, or request for the recording of later designation, designating the United States, has been declined by the International Bureau may apply to register the same trademark under paragraph (1) of this subsection. If the application under paragraph (1) is filed in the Patent and Trademark Office prior to the expiration of two months, counted from the date of the notification by the International Bureau of its declining of the corresponding international application or request, and if the Commissioner determines that such declining was not justified, the application shall be treated as if it had been filed on the date which would have been the international registration date or the re-

cording date of the later designation had the declining not taken place.

"(c)(1) The applicant of an application for registration under this Act, or the registrant of a registration issued on the basis of such application, shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the trademark is in use in commerce and that such use commenced on or prior to the date of expiration of three years counted from the filing date of the application, and specifying the date of his first use of the trademark, the date of his first use of the trademark in commerce, those of the particular goods identified in the registration, or, if the registration has not been issued, in the application for registration, in connection with which the trademark is used, and the mode or manner in which the trademark is used in connection with such goods. The declaration shall be signed by the registrant or his duly appointed representative, or, if the registration has not been issued, by the applicant or his duly appointed representative, and it shall be accompanied by such number of specimens or facsimiles of the trademark as actually used as may be prescribed by the Commissioner. Where the declaration concerns an application filed under, or registration issued pursuant to, section 1(b)(2), it may, in such form as may be prescribed by the Commissioner or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application to which it pertains, or later: *Provided*, That unless such declaration has been filed prior to the expiration of four years, counted from the filing date, the Commissioner shall cancel the registration, if issued, or refuse the application for registration, if pending. If the declaration is accepted in respect of fewer than all of the goods stated in the registration or identified in the application, the application or registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is in use in commerce.

(3) If an application for registration is pending after the expiration of the three-year period referred to in paragraph (1) of this subsection, or if a registration is relied upon in an opposition or cancellation proceeding under this Act which was filed, or which is pending, after the expiration of such period, the Commissioner may require that the declaration under this subsection in respect of such application or registration be filed within such earlier period as he may prescribe: *Provided*, That such earlier period shall not expire earlier than 2 months, counted from the date of a notice mailed to the applicant or registrant.

(4) If a person who applied for registration of a trademark under this Act, or any successor, assignee or related company of such applicant, shall subsequently apply for registration under this Act of the same or a substantially equivalent trademark on or prior to the date of expiration of five years from the filing date of the said earlier application in respect of all or fewer than all of the goods recited in the said earlier application, the three-year period referred to in paragraph (1) of this subsection shall, in respect of those of the goods which are the same, be counted from the filing date of the said earlier application, or if there were more than one such earlier application, from the filing date of the earliest of them: *Provided*, That this paragraph shall not be applicable if a declaration of use

conforming to the requirements of this subsection is filed together with the said subsequently filed application.

(5) Upon a satisfactory showing by the applicant or registrant that his failure to commence use of the mark in commerce on or prior to the date of expiration of the three-year period referred to in paragraph (1) of this subsection was due to extraordinary circumstances which excuse such failure and was not due to any intention to abandon the mark, the Commissioner may extend the date of expiration of the said period and of the time limit for filing the declaration under this subsection: *Provided*, That the said expiration dates may not be extended for the reason that the application for registration was pending after the date of expiration of the said three-year period.

(6) The Commissioner shall notify the applicant or registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor.

"(d) In any application in respect of which the declaration under section 1(c) has been filed, the applicant may claim concurrent use. If concurrent use is claimed, the applicant shall state exceptions to his claim of exclusive use, in which he shall specify, to the extent of his knowledge, any concurrent use by others, the goods in connection with which and the areas in which each concurrent use exists, the periods of each use, and the goods and area for which the applicant desires registration.

"(e) If the applicant is not domiciled in the United States he shall designate by a written document filed in the Patent and Trademark Office the name and address of some person resident in the United States on whom may be served notices or process in proceedings affecting the trademark. Such notices or process may be served upon the person so designated by leaving with him or mailing to him a copy thereof at the address specified in the last designation so filed. Unless filed with the application, the document designating such person shall be filed on or prior to the date on which the applicant, or the registrant of any registration issued on the basis of such application, replies to any communication by the examiner, or otherwise institutes or defends any proceeding under this Act, relating to such application or registration. Until such person has been designated, or if the person so designated cannot be found at the address given in the last designation, such notices or process may be served upon the Commissioner."

SEC. 2 The first sentence of section 3 of such Act is amended by striking out "used in commerce".

SEC. 3 The first sentence of section 4 of such Act is amended by striking out "used in commerce" and by inserting, following "exercising", the words "or intending to exercise".

SEC. 4 Section 5 of such Act is amended by inserting, following "used" (first occurrence), the words ", or is intended to be used,"; and by inserting, following "use" (both occurrences), the words "or intention to use".

SEC. 5(a) The second sentence of section 7(a) of such Act is amended by inserting, following "date" (third occurrence), the words "of issue"; by striking out "date on which the application for registration was received in the Patent and Trademark Office" and inserting in lieu thereof the words "filing date"; and by changing the period at the end of the sentence to a colon and adding the following proviso:

"*Provided*, That if the declaration under section 1(c) has not been filed, this fact shall be indicated in lieu of the dates of first use of the mark."

(b) A new sentence is added to section 7(a) of such Act reading as follows:

"The Commissioner shall cause a notice concerning the issuance of the registration to be published in the Official Gazette of the Patent and Trademark Office."

(c) Section 7(b) of such Act is amended to read as follows:

"Subject to any conditions and limitations stated therein, a certificate of registration of a mark upon the principal register provided by this Act shall be prima facie evidence of the validity of the registration, of the registrant's ownership of the mark, and of the right of the registrant to prevent registration under this Act by any other person, except a lawful concurrent user, of the mark either in the identical form as reproduced in the registration, or in such near resemblance thereto as to be likely, when applied to the goods or services of such other person, to cause confusion or to cause mistake, or to deceive."

(d) Section 7(d) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The registrant of any registration under this Act may limit the goods and/or services specified in his registration by filing an application, in such form as may be prescribed by the Commissioner, for the recording of such limitation or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), by filing at the International Bureau a request for the recording of a limitation, in respect of the United States, of the goods and/or services of the international registration on the basis of which such registration was issued. The Commissioner shall refuse to record any limitation requested by the registrant if its effect would be to enlarge the scope of the goods and/or services beyond that of the goods and/or services specified in the registration. The recording by the International Bureau of a limitation of the goods and/or services, in respect of the United States, of an international registration shall, unless refused by the Commissioner, have the same effect as if such limitation had been entered in the records of the Patent and Trademark Office on the same date of such recording."

"(3) Where the Commissioner has limited the goods and/or services of any registration pursuant to the provisions of paragraph (2) of this subsection, or sections 1(c)(2), 8(a)(2), or 9(c)(2) of this Act, appropriate entry of such limitation shall be made in the records of the Patent and Trademark Office and, if requested by the registrant, upon the certificate of registration or, if such copy is lost or destroyed, upon a certified copy thereof."

(e) Section 7 of such Act is amended by adding, after subsection 7(g), the following new subsection:

"(h)(1) Appropriate entry shall be made in the records of the Patent and Trademark Office of any recording notified to it by the International Bureau in respect of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), unless the effect of such recording has been refused in conformity with the provisions of this Act or of the Trademark Registration Treaty.

(2) The Commissioner shall notify the International Bureau as provided in the Trademark Registration Treaty before making any entry, other than as specified in paragraph (1) of this subsection, in the records of the Patent and Trademark Office in respect of a registration issued on the basis of an application

under section 1(b)(2), or renewed pursuant to section 9(b)(2), and the entry in such records shall not be made until the corresponding entry has been annotated and published by the International Bureau as provided in the said Treaty."

SEC. 6 Section 8(a) of such Act is amended to read as follows:

"(1) The initial term of a registration under this Act shall be 10 years counted from the filing date:

Provided, That the registration of any mark under the provisions of this Act shall be cancelled by the Commissioner at the end of 6 years counted from its date of issue, unless, within 1 year next preceding the expiration of such 6 year period, the registrant shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, an affidavit or declaration showing that the mark is still in use in commerce. Special notice of the requirement for such affidavit or declaration shall be attached to each certificate of registration. Where the affidavit or declaration concerns a registration issued pursuant to section 1(b)(2), it may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the same date as the date on which it was received by the International Bureau.

(2) If the affidavit or declaration of use under paragraph (1) of this subsection is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods and/or services specified in the affidavit or declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the affidavit or declaration under this section."

SEC. 7 Section 9 of such Act is amended to read as follows:

"(a) The owner of a mark which is still in use in commerce may renew his registration of that mark for periods of ten years from the end of each expiring period of the registration, subject to the conditions and requirements of this Act.

"(b) Renewal of a registration by a person described in section 9(a) may be effected:

(1) By paying in the Patent and Trademark Office the prescribed fee and filing in such Office—

(A) within the six months next preceding the date of expiration of the period for which the registration was issued or renewed, an application for renewal; or

(B) prior to the expiration of six months counted from the date of expiration of the period for which the registration was issued or renewed, an application for late renewal, on payment of the additional fee herein prescribed;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By the renewal of an international registration in respect of which the United States is a designated State, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, *Provided*: That the person applying is entitled

to own international registrations and is the Owner of the international registration of the mark sought to be renewed under this Act.

If the Commissioner refuses an application for renewal of a registration filed under paragraph (1), he shall notify the registrant of his refusal and the reasons therefor. The provisions of section 1(e) shall be applicable to any person not domiciled in the United States who applies for or effects the renewal of a registration under this Act.

"(c)(1) The registrant of a registration renewed under this Act shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the mark is still in use in commerce, and specifying those of the particular goods and/or services identified in the registration on or in connection with which the mark is so used. The declaration shall be signed by the registrant or by his duly appointed representative, and shall be accompanied by a specimen or facsimile showing current use of the mark. Where the renewal is effected pursuant to section 9(b)(2), the declaration may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application for renewal under section 9(b)(1), or, in the case of a renewal effected pursuant to section 9(b)(2), with the demand for renewal of the corresponding international registration filed with the International Bureau, or later: *Provided*, That unless such declaration has been filed prior to the expiration of six months, counted from the starting date of the term of renewal, the Commissioner shall cancel the registration. If the declaration is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the declaration under this section.

(4) The Commissioner shall notify the registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor."

SEC. 8(a) Section 10 of such Act is amended by inserting, preceding the first sentence of such section, "(a)(1)", by striking out "(d)" in the last sentence and inserting in lieu thereof "(e)", and by adding at the end of such section the following new paragraphs:

"(2) A change in the ownership of a registration or application for registration under this Act may be recorded in the Patent and Trademark Office in such form as may be prescribed by the Commissioner, or, in the case of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in Ownership, in respect of the United States, of the international registration on the basis of which such application was filed or such registration was issued. The recording by the International Bureau of a change in the Ownership, in respect of the United States, of an international registration shall, if valid,

have the same effect as if such change had been entered in the records of the Patent and Trademark Office on the same date as the date of such international recording.

"(3) The recording of a change in ownership pursuant to paragraph (2) which is the result of an assignment of the registered or applied for mark shall, as of the date of such recording, be accorded the same effects as those which are accorded to the recording of such assignment: *Provided*, That within three months from the date of notice of such recording, mailed to the person who applied therefor, or, where the recording is effected by the International Bureau, from the date of publication of such international recording, instruments of assignment conforming to the requirements of paragraph (1) have been recorded in the Patent and Trademark Office.

"(4) Any person, not entitled to file international applications, who has, nevertheless, become the owner of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), other than as a result of a contract between him and the previous applicant or registrant, may file an application for registration of the same mark under section 1(b)(1). If the application under section 1(b)(1) is filed by such person in the Patent and Trademark Office within two years from the said change in ownership and prior to six months after the expiration of the initial term, or of the then running term of renewal, of the international registration on which such application or registration is based, it shall, in respect of those of the goods and/or services which are the same, be treated as if it had been filed on the same date as the date on which the designation of the United States in such corresponding international registration took effect: *Provided*, That such application under section 1(b)(1) conforms to all of the requirements of this Act."

(b) Section 10 of such Act is amended by adding the following subsections:

"(b) Instruments evidencing changes in the name of the applicant or registrant may be recorded in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, or, in the case of a registration issued on the basis of an application filed under section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in the name of the Owner of the international registration on the basis of which such registration was issued. The recording by the International Bureau of a change in the name of the Owner of an international registration, in which the United States is a designated State, shall, if valid, have the same effect as if it had been entered in the records of the Patent and Trademark Office on the same date as the date of such recording.

"(c) Where at any time, as a result of a final decision in any proceeding under this Act, it is determined that a recording made under this section is void or that such recording was made contrary to the requirements of the Act, the Commissioner shall, upon request of any interested party, cause an appropriate correction to be entered in the records of the Patent and Trademark Office. If such recording was effected on the basis of a recording in respect of an international registration, the Commissioner shall, if appropriate, deny the effect of such international recording and notify the International Bureau accordingly, as prescribed in the Trademark Registration Treaty."

Sec. 9 Section 12(a) of such Act is amended to read as follows:

"Upon the filing of an application for registration, the Commissioner shall refer the application to the examiner in charge of the registration of marks, who shall cause an examination to be made. Unless the application has been previously withdrawn or abandoned, the mark shall be published in the OFFICIAL GAZETTE of the Patent and Trademark Office at such time as the Commissioner shall prescribe, not later than 12 months, counted from the filing date of the application. In the case of an applicant claiming concurrent use, or in the case of an application to be placed in an interference as provided for in section 16 of this Act, the mark may be published subject to the determination of the rights of the parties to such proceedings."

Sec. 10 Section 12(b) of such Act is amended by striking out "6" in two places and inserting, in lieu thereof "3" and by adding at the end thereof:

"Except for the failure of an applicant to comply with the requirements of section 1(c), no mark shall be refused registration for a reason which has not been indicated in a communication given or mailed to the applicant on or prior to 12 months, counted from the filing date: *Provided*, That this limitation shall not apply to any refusal determined by the Trademark Trial and Appeal Board or by a court."

Sec. 11 The second sentence of section 13 of such Act is amended by changing the period at the end of this sentence to a colon and adding a proviso and a new third sentence reading as follows:

"*Provided*, That such time shall in no event be extended to a date which is later than 14 months, counted from the filing date of the application for registration in respect of which the extension of time for filing opposition is requested. An opposition may be filed by a duly authorized attorney of the opposer."

Sec. 12 Section 14 of such Act is amended by inserting, following "person" the words, "or by a duly authorized attorney of any person"; by inserting, following "date" in clause (a), the words "of issue", and by inserting, following "thereunder", in clause (c), the following words:

"or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), on the ground that the registrant was not entitled to own international registrations."

Sec. 13 The first sentence of section 15 of such Act is amended by inserting, following the third occurrence of "date", the words "of issue".

Sec. 14 The first sentence of section 16 of such Act is amended by inserting, following "may" the words "prior to the publication under section 12(a) of such mark."

Sec. 15 Section 17 of such Act is amended by inserting, between the first and second sentences thereof:

"Where an interference, opposition to registration or concurrent user proceeding concerns an application for registration under this Act of a mark, the entitlement to registration of which has not been finally determined by the examiner in charge of the registration of marks or, as a result of an appeal from a final refusal of the examiner, by the Trademark Trial and Appeal Board or a court, the Commissioner may, with notice to all parties, defer the commencement of such proceeding until such final determination has been made."

Sec. 16 The first sentence of paragraph (1) of section 21(a) of such Act is amended by inserting, following "affidavit", the words "or declaration"; and by striking out "section 8" and inserting in lieu thereof "section 8.1(c), or 9(c)".

Sec. 17 Section 22 of such Act is amended by inserting, at the beginning of the sentence, "Issuance of a" and by changing the "R" in "Registration" to "I".

Sec. 18 Section 23 of such Act is amended by inserting, following "commerce" in the second sentence of such section, ", or are intended to be used in commerce,"; by striking out in the second sentence of such section "for the year preceding the filing of the application"; by inserting between the second and third sentences of such section: "An application for the registration of a mark shall be treated as an application under this section only if the application or, in the case of an application pursuant to section 1(b)(2), if the international registration or recording of later designation which is the basis for such application, contains an indication to this effect."; and by striking out in its entirety the last sentence of such section.

Sec. 19(a) The second sentence of section 24 of such Act is amended by inserting, preceding "may," the words "or his duly authorized attorney," and by striking out the word "verified".

(b) The fourth sentence of section 24 of such Act is amended by inserting, following "used", the words "following the date of expiration of the period referred to in section 1(c)(1)."

Sec. 20 The second sentence of section 30 of such Act is amended to read as follows:

"When the goods and/or services specified in an application fall within a plurality of classes, a fee equalling the sum of the fees for filing an application in each class shall be paid, and the Commissioner may issue a single certificate of registration for such mark."

Sec. 21(a) Subsection (a) of section 31 of such Act is amended by striking out paragraph (3) of such subsection, by appropriately renumbering the remaining paragraphs; and by inserting, following "mark" in newly renumbered clause (6) (old paragraph (7)), "change in the name of the registrant."

(b) Section 31 of such Act is amended by adding, after subsection 31(c), the following new subsection:

"(d) The fees specified in paragraphs (1) and (2) of subsection (a) shall, in the case of applications pursuant to section 1(b)(2) and renewals pursuant to section 9(b)(2), be deemed to be substituted for, respectively, by the individual State fees and the individual State renewal fees applicable to designations of and renewals concerning the United States pursuant to the Trademark Registration Treaty. The Commissioner shall communicate to the International Bureau the amounts of such individual State fee and individual State renewal fee and such amounts shall be the same, respectively, as the amounts of the fees specified in paragraphs (1) and (2) of subsection (a)."

Sec. 22 Section 32(1) of such Act is amended by adding at the end of such section the following sentence:

"No action under this section may be started by the registrant of a registration issued under this Act until the declaration under section 1(c) in respect of the mark which is the subject of such registration has been filed in the Patent and Trademark Office and accepted by the Commissioner."

Sec. 23(a) Section 33(a) of such Act is amended by inserting following "registration" (second occurrence), the words "and in respect of which the mark is stated to be in use in commerce in the registration, or in the declaration under section 1(c) which has been filed in the Patent and Trademark Office and accepted by the Commissioner,"

(b) Paragraph (5) of section 33(b) of such Act is

amended by inserting, preceding "registration" the words "the date of issue of the".

(c) Section 33 of such Act is amended by adding, after subsection 33(b), a new subsection reading as follows:

"(c) For the purpose of determining priority of rights in any proceeding under this Act, an application for registration of a mark which has not been withdrawn or abandoned or a registration issued on the basis of such application, shall, from and after its filing date, be accorded the same effect as if the applicant, or the registrant, had commenced use of the mark in commerce on the said filing date, without derogation, however, of any earlier priority based on use of the mark commenced earlier than the said filing date or of any right of priority to which the applicant or registrant may be entitled pursuant to section 44(d) of this Act."

Sec. 24 Section 35 of such Act is amended by adding at the end of such section the following sentence:

"Any remedy under this section shall relate only to the period after the registrant commenced the continuing use of the mark in commerce."

Sec. 25 Section 44(a) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The Commissioner shall keep a register of international registrations designating the United States which have been published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, including renewals thereof and recordings related thereto, and shall be authorized to accord and refuse effects, communicate notifications, make attestations, decide petitions, determine the amounts of and receive payments of fees, and perform all other acts prescribed by the said Treaty, subject to the requirements thereof.

"(3) Where the time limit for a notification to the International Bureau prescribed by the Trademark Registration Treaty is stated in terms of the date of receipt of such notification by the International Bureau, such notification shall be transmitted by Registered Mail no later than 14 days prior to the expiration of the time limit and, except where an agency of the said Bureau, established pursuant to the said Treaty, is operating within the United States, shall be transmitted to that bureau via Air Mail.

"(4) A mark subject of an application under section 1(b)(2) in respect of which no notification of refusal or possible refusal was received by the International Bureau within the time limit fixed in Article 12(2)(a) (i) of the Trademark Registration Treaty shall be automatically entitled to registration under this Act on the same register as the one for which such application was made. Upon request by the applicant of such an application and unless the registration has been previously issued, the Commissioner shall issue the registration to which such applicant is entitled under this paragraph and the date of issue of such registration shall be the date of the OFFICIAL GAZETTE next preceding the date of expiration of the said time limit. Registration of a mark under the provisions of this paragraph shall be without prejudice to the right of any person to petition to cancel such registration under section 14 of this Act for any reason, including one which was referred to in a refusal made pursuant to section 12(b) or in an opposition filed pursuant to section 13, the notification of which was not received by the International Bureau or which was not received by such Bureau within the said time limit. If a registration is

issued pursuant to this paragraph in respect of a mark, the registration of which had been opposed in a timely filed opposition, the Commissioner shall notify the opposer in such opposition and shall, upon request of such opposer received within 30 days from the date of such notice, direct the Trademark Trial and Appeal Board to determine and decide the rights of registration as if the opposition to registration had been filed as an application to cancel the said registration on the date of issue of such registration.

"(5) Failure by the applicant of an international application or by the Owner of an international registration to act within prescribed time limits in connection with requirements pertaining to an international application, international registration or later designation designating the United States, or to any recording related thereto, may be excused upon a showing satisfactory to the Commissioner of unavoidable delay, to the extent not precluded by the Trademark Registration Treaty or by this Act."

SEC. 26 Section 44(c) of such Act is amended by striking out the first sentence of such section; and by striking out the heading, preceding the second sentence, "Country of origin defined."

SEC. 27 Section 44(d) of such Act is amended to read as follows:

"An application for registration of a mark under sections 1, 2, 3, 4 or 23 of this Act filed by a person described in paragraph (b) of this section who has previously duly filed an application for registration of the same mark in one of the countries described in paragraph (b), or a regular international application in respect of the same mark designating at least one country other than the United States, shall be accorded the same force and effect as would be accorded to the same application if filed under this Act on the same date on which such application was first filed in such foreign country, or on which such international application was first filed with the International Bureau: *Provided*, That—

(1) The application under this Act is filed within 6 months from the date on which the application was first filed in the foreign country or on which the international application was first filed with the International Bureau;

(2) The rights acquired by third parties before the date of the filing of the first application in the foreign country or of the first international application shall in no way be affected by a registration obtained on an application filed under this subsection (d);

(3) Nothing in this subsection (d) shall entitle the owner of a registration granted under this section to sue for acts committed prior to the date on which such registrant has commenced the continuing use of the mark in commerce.

In like manner and subject to the same conditions and requirements, the right provided in this section may be based upon a subsequent regularly filed foreign application or subsequent regular international application, instead of the first filed foreign application or international application: *Provided*, That any foreign application or international application filed prior to such subsequent application or international application has been withdrawn, abandoned, or otherwise disposed of, without having been laid open to public inspection and without leaving any rights outstanding, and has not served, nor thereafter shall serve, as a basis for claiming a right of priority."

SEC. 28(a) The paragraphs headed "Trademark," "Service Mark," "Certification Mark," "Collective Mark" and "Intent of Act" in section 45 of such Act are

amended by inserting, following each occurrence of "used", the words "or intended to be used".

(b) Clause (a) of the paragraph in section 45 of such Act headed "Abandonment of Mark" is amended to read as follows:

"(a) when its use has not commenced and there is no intent to commence use or when its use has been discontinued with intent not to resume. Lack of intent to commence or intent not to resume may be inferred from the circumstances. If use of a mark has been discontinued, its nonuse for two consecutive years shall be prima facie abandonment."

(c) Section 45 of such Act is amended by adding the following paragraphs:

"*Filing date*. The filing date of an application for registration under section 1(b)(1) shall be the date on which all of the elements prescribed by the Commissioner as minimum elements for according a filing date have been received in the Patent and Trademark Office. The filing date of an application for registration under section 1(b)(2) shall be the same date as the international registration date of the international registration or, if applicable, the recording date of the later designation, on the basis of which such application is filed."

"*Date of issue*. The date of issue of a registration under this Act is the date of the issue of the OFFICIAL GAZETTE of the Patent and Trademark Office in which the notice concerning the issuance of the registration appears."

"*Trademark Registration Treaty*. The term "Trademark Registration Treaty" means the Treaty so entitled, done at Vienna, Austria, on June 12, 1973, including the Regulations under the said Treaty."

"*International application, international registration, request for the recording of later designation, recording of later designation, International Bureau, regular international application, individual State fee, individual State renewal fee*. The terms "international application", "international registration", "request for the recording of later designation", "recording of later designation", "International Bureau", "regular international application", "individual State fee" and "individual State renewal fee" are to be taken in the sense indicated by the Trademark Registration Treaty."

"*Owner, Ownership*. The terms "Owner" and "Ownership" are to be taken in the sense indicated by the Trademark Registration Treaty where they appear in this Act in capitalized form."

"*Owner of a trademark*. The term "owner of a trademark" means a person who is using, or who has an intention to use, a trademark in commerce: *Provided*, That no other person, except a lawful concurrent user, has the right to use, and is using or has previously declared, in an application filed under this Act which has not been withdrawn or abandoned, his intention to use, such mark in commerce either in the identical form thereof or in such near resemblance thereto as to be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive."

SEC. 29(a) This Act shall come into force on the same date as the entry into force of the Trademark Registration Treaty with respect to the United States. It shall apply to applications for registration of marks filed in the Patent and Trademark Office on or after such date, even though entitled to an earlier effective filing date, and to registrations issued on the basis of such applications; to international applications and later designations

nations designating the United States filed with the International Bureau on or after such date, even though entitled to an earlier effective filing date, and to international registrations accorded effects in the United States on the basis of such international applications and later designations; and to proceedings under the Trademark Act of 1946, as amended, commenced on or after such date.

(b) Except as otherwise hereafter provided, applications for registration of marks on file in the Patent and Trademark Office on the date this Act comes into force, registrations issued on the basis of such applications, and proceedings under the Trademark Act of 1946, as amended, which are pending on such date, shall be governed by the provisions of the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(c) Except as otherwise provided hereafter in this section, all registrations under the Trademark Act of 1946, as amended, or under the previous Acts specified in section 46(b) of such Act, existing on the date this Act comes into force shall be governed by the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(d) The provisions of section 9 of the Trademark Act of 1946, as amended, as amended by this Act, shall apply to all registrations under such Act and under the previous Acts specified in section 46(b), whether issued or applied for before, on, or after the date this Act comes into force: *Provided*, that the amendments to such section by this Act shall not apply to the renewal of any registration for any period which started on a date which is earlier than six months after such date.

(e) The amendment by this Act, of the Trademark Act of 1946, as amended, shall not affect any rights or liabilities existing under such Act in effect immediately prior to the date this Act comes into force.

SECTIONAL ANALYSIS

SECTION 1 of the bill amends section 1 of the Trademark Act of 1946, as amended (hereinafter referred to as Trademark Act) in a number of respects. The preamble makes it clear that the commerce clause as well as the treaty power is invoked to support the amendments. Section 1 of the amended Trademark Act is divided into five subsections, each of which is separately discussed below:

Section 1(a) *Entitlement to registration of a trademark*. Entitlement to registration is changed from present law in one fundamental respect. This is that intention to use, as well as actual use of, a trademark is a valid basis for ownership and registration. The other conditions are essentially the same as under present law.

The applicant must be a "person", as defined in section 45. The definition of "person" has not been changed.

As under the present statute, the applicant must be the "owner" of the trademark sought to be registered. The concept of ownership is modified as necessary to be consistent with the new alternative basis of rights. Also, rather than being part of the verified statement, the definition of "owner of a trademark" is in section 45.

¹ Public Law 489, 79th Congress, approved July 5, 1946: 60 Stat. 427. Amendments have been effected by the following public laws.

P.L. 710, 81st Cong., 64 Stat. 459, 8-17-50.
P.L. 593, 82nd Cong., 66 Stat. 792, 7-19-52.
P.L. 609, 85th Cong., 72 Stat. 540, 8-8-58.
P.L. 333, 87th Cong., 75 Stat. 748, 10-3-61.
P.L. 772, 87th Cong., 76 Stat. 709, 10-9-62.
P.L. 89-83, 89th Cong., 79 Stat. 260, 7-24-65.
P.L. 93-596, 93rd Cong., 88 Stat. 1949, 1-2-75.
P.L. 93-600, 93rd Cong., 88 Stat. 1955, 1-2-75.

The term "owner" is defined, as under present law, in respect of the absence of a superior right in any other person. What is new is that a claim of ownership is defeated not only by the superior right of a prior user of the same or a similar mark but also by the superior right of one who has a prior intention to use such a mark. However, the latter right can defeat the claim of ownership only if the intention to use has been previously declared in an application filed under the Act which has not been withdrawn or abandoned. Accordingly, while a person acquires (absent a superior right) an ownership right by reason of his intention to use a trademark, the right in that case is inchoate and is accorded no protection under the statute and no priority until it has been fixed in an application filed under the Act in which the intention to use is declared. Thus, filing the application is critical to a claim of ownership by intention to use and except, of course, where the Paris Convention "right of priority" (i.e. section 44(d)) is invoked, the filing date is the earliest date on which such a person can rely in a priority contest. (See SECTION 23(c))

Finally, the use or intended use must be in commerce. The definition of "commerce" is not changed. The outside parameters of "intended use in commerce" are left to interpretation just as has been the case with "use in commerce" under the present statute, and the principles that would be applied in such interpretation are essentially the same.

Section 1(b) *Procedure for applying to register a trademark*. Under the amended Act, there are two basic procedures for securing the registration of a trademark, i.e. by filing an application in the Patent and Trademark Office (section 1(b)(1)) and by designating the United States in an international registration pursuant to the Trademark Registration Treaty² (section 1(b)(2)). Except for the place where the application is filed and the fee is paid, the substantive requirements applicable to the alternative procedures are essentially the same.

Section 1(b)(1) *Domestic procedure*. In order to achieve harmonization of domestic and international procedures, the following changes are made in the national application procedures.

1. The application may be signed by a representative, duly appointed by the applicant, as an alternative to signing by the applicant himself. The same benefit is provided to applicants filing under the Trademark Registration Treaty (Article 26).

2. Consistent with the requirements of the Trademark Registration Treaty and modern practice in regard to the filing of statements with federal agencies the verification of ownership requirement has been eliminated.

Of course, the criminal provisions of 18 U.S.C. 1001 would remain applicable to a statement made in a trademark application irrespective of whether such statement is verified.

3. The applicant need not allege use of the mark in his application. The Trademark Registration Treaty prohibits such a requirement (Article 19(3)(a)) for the owners of international registrations; consequently, the same benefit is accorded to persons filing regular national applications. Substituted for this requirement is the declaration of intention to use the mark in commerce, which is permitted by the Treaty (Article 19(4)). Consistent with this change, specimens or facsimiles of the mark as actually used need not be submitted with the application.

It should be noted that required allegations and exhibits relating to actual use according to the present statute are

² Done at Vienna, Austria, June 12, 1973. This is the Treaty which was transmitted by the President to the Senate for advice and consent to ratification on September 3, 1975. *Congressional Record* 9/3/75, 8, 15139.

retained in section 1(c). It should also be noted here that the applicant may file the section 1(c) declaration together with his application (section 1(c)(2)), if the mark is already in use in commerce. In such case, the declaration of intention to use is obviously superfluous and need not be made.

Section 1(b)(2) *International procedure.*

This paragraph states the requirements which must be satisfied in order to secure the effect of a United States application, i.e. the effect required by the Trademark Registration Treaty (Article 11(1)).

The provisions of Article 19(4) of the Treaty, requiring a declaration of intention to use, are also implemented, corresponding to the same requirement in section 1(b)(1)(C) for domestic applicants.

Finally, a special requirement as to entitlement of a foreign applicant to use the Trademark Registration Treaty (Article 4) has been added since the International Bureau will only examine this question formally, leaving it to the designated States to examine it as to substance. Thus, non-entitlement of a foreign applicant to use the Treaty procedure is a ground for refusal (Article 12(1)(ii)) or cancellation (Article 13(1)(ii)) in addition to the grounds applicable under the national law.

The final two sections of section 1(b) implement part of Article 9 of the Treaty whereunder the improper declining of an international application or later designation request by the International Bureau can be rectified by filing a regular domestic application within 2 months from the notice of the declining.

Section 1(c) *Declaration of use.*

Section 1(c) calls for a declaration of use showing that use of the mark commenced on or prior to the date of expiration of three years, counted from the filing date. Paragraph (1) requires the declaration to contain essentially the same information as that required by present section 1.

Paragraph (2) prescribes a time limit of four years, counted from the filing date, within which the declaration may be filed, and indicates the consequences of failure to file an acceptable declaration.

Paragraph (3) authorizes the Commissioner to require the earlier filing of a declaration when important relative to an issue in any Office proceeding, provided that the three-year period has expired.

Paragraph (4) prevents abuse of the intention to use provisions by a person filing successive applications for the same, or a substantially equivalent, mark by providing that, unless there is a gap of at least two years between the expiration of the nonuse moratorium of the earlier case and the date of filing of the later case, the three-year period in the later case is measured from the filing date of the earlier case. Any subsequent application which is accompanied by a declaration of use is excluded from the special provisions.

Paragraph (5) provides for an extension of the time limits when due to extraordinary circumstances nonuse is excusable. The proviso expressly states, however, that the mere pendency of the application for registration as of the expiration of the three-year period shall not justify an extension, making it clear that Article 19(3)(b) of the Trademark Registration Treaty does not apply in the United States.

Paragraph (6) requires the Commissioner to give notice regarding acceptance or refusal of a declaration.

Section 1(d) *Special requirement for concurrent use applications.*

This provision, unchanged from present law, is placed in a separate subsection because its applicability is limited

to applications wherein the section 1(c) declaration of use has been filed.

Section 1(e) *Special requirement for applicants not domiciled in United States.*

This subsection requires all applicants not domiciled in the United States to designate an agent for service on or prior to the institution or defense of a proceeding under this Act. Before a local agent for service has been designated, service may be made upon the Commissioner.

SECTIONS 2 and 3 of the bill amend sections 3 and 4 of the Trademark Act so that service marks and collective and certification marks may be registered based on either use or intention to use.

SECTION 4 of the bill amends section 5 of the Trademark Act to provide that the intended use by a related company inures to the benefit of the registrant or applicant.

SECTION 5(a) of the bill amends section 7(a) of the Trademark Act to take into account the fact that registrations issued on the basis of intent applications would not, if the declaration of use has not been filed, contain any data concerning use of the mark. In such cases, the fact that the declaration has not been filed would be indicated in the registration in lieu of the indications as to use. Also, the term "date of the registration" has been deleted, the significant dates under the amended statute being the "filing date" and the "date of issue."

SECTION 5(b) amends section 7(a) by requiring a notice of registration to be published in the OFFICIAL GAZETTE in support of the definition of "date of issue" in section 45.

SECTION 5(c) amends section 7(b) of the Trademark Act by deleting the presumption of the registrant's exclusive right to use the registered mark in commerce on the goods specified in the registration. One reason is that this presumption in the present statute is repeated in section 33(a).

The other reason is that this presumption, as it pertains to infringement actions, must be limited to be consistent with the limitation on the right even to file an infringement action prior to the commencement of use (see SECTION 23(a)).

Deletion of the "exclusive right to use" presumption from section 7(b) leaves a gap in the statute, however, the bringing of Patent and Trademark Office proceedings, i.e. oppositions and cancellations is not subject to the above mentioned limitation. The exclusive right to use presumption has served in such proceedings as the basis of the ruling that a registrant is entitled to rely solely upon his registration on the principal register as prima facie evidence of his right to exclude any other person from securing a registration under the Act of a confusing mark. Therefore, a presumption as to this right has been added.

SECTION 5(d) of the bill amends section 7(d) by adding two new paragraphs which provided domestic and international procedures, consistent with present law and with the Treaty, for amending a registration in respect of the specification of goods and/or services.

SECTION 5(e) of the bill amends section 7 by adding a new subsection, section 7(h), providing for appropriate notification, consistent with Article 20 of the Treaty, with respect to entries concerning registration based on international registrations.

SECTION 6 of the bill amends section 8(a) of the Trademark Act by changing the term of a registration from 20 to 10 years and the date from which the term is measured from the registration date to the filing date. These changes correspond the term of domestic registrations to that of registrations secured under the Trademark Reg-

istration Treaty. The shorter term also facilitates the clearing from the register of unused marks.

The section is also amended to require that the use declared in the affidavit or declaration set forth in the proviso, i.e. the present section 8 affidavit, be use "in commerce".

Finally, the section is amended to permit, consistent with the requirement in the Treaty (Article 19(3)(d)), that such affidavit or declaration requirements be capable of being fulfilled in the case of an international registration by filing with the International Bureau.

SECTION 7 of the bill amends section 9 of the Trademark Act to set forth domestic and international procedures for renewal and to provide equivalent treatment, as to substantive requirements, of international and domestic registrants. Thus, as in the case of an application for registration, the renewal application may be signed by a representative, duly appointed by the registrant.

Two changes are made in the statute which conform to the Treaty, as follows:

1. The term of renewal is 10 years rather than 20, consistent with the Treaty (Article 17).
2. The time period, counted from the expiration date of the expiring term, in which a late renewal application can be filed is increased from three months to six months, corresponding to Article 17(3)(a).

Section 9(c) requires a declaration of use which requirement is applicable to all renewed registrations. Other than the three additional months in which to declare use of the mark, the only difference from present law is that the consequence of failure to satisfy the requirement is cancellation of the registration rather than refusal to renew.

SECTION 8(a) of the bill amends section 10 of the Trademark Act in several minor respects. Except for a technical change, the present provision for recording of assignments (section 10) is not changed.

Three new paragraphs have been added to the assignment section. The first two of these (i.e. 10(a)(2) and 10(a)(3)) implement Article 14 of the Treaty, under which a change in the ownership of an international registration may be recorded, by adding equivalent procedures to the national law. Thus, any applicant or registrant may record the fact that a new person has become the owner of an application filed or registration issued under the Act by complying with certain basic formalities. Paragraph (3) provides that if this step is taken within the period specified in paragraph (1) and it is followed up by the recording of instruments of assignment conforming to the requirements of paragraph (1), the constructive notice effect of recording an assignment in the Office will accrue.

The third additional paragraph (i.e. 10(a)(4)) is a special provision, implementing Article 14(5), for the benefit of one who, although not entitled to file under the Treaty, becomes the owner of an international registration by operation of law (e.g. by inheritance). Such a person may, subject to special requirements, rectify this defect by filing a regular national application.

SECTION 8(b) of the bill amends section 10 of the Trademark Act by adding two new provisions. The first of these (Section 10(b)) adds a new procedure, consistent with Article 15 of the Treaty, for recording a change in the name of the registrant.

Subsection (c) is added to clarify the procedure where a recording is void. Recordings under subsections (a) and (b) may later be determined to be void or contrary to law in another proceeding (cancellation, infringement action,

etc.) under the Act. A specific provision has been added to clarify the fact that the Commissioner has the authority to correct the records and to provide a basis for denial of any international recording which formed the basis of the national entry.

SECTION 9 of the bill amends section 12(a) of the Trademark Act to provide for a "cut off" in the length of the ex parte examination of twelve months counted from the filing date of the application. Under amended section 12(a) all applications, the examination of which has not been completed, would have to be published for opposition purposes no later than 12 months from the filing date.

The reason for 12 months as the "cut off" is that the time required to effect publication, to receive oppositions (including delays in processing oppositions received on the last day), and to communicate, in the case of international registrations, all grounds of refusal or possible refusal to the International Bureau, must be taken into account in order to meet the deadlines prescribed by the Treaty (see Article 12).

It should be noted that the exact schedule for publication is left to determination by the Commissioner. There are, at least, two possibilities: (1) publication, promptly after filing, of all applications; and (2) publication (of allowed cases) after completion of the ex parte examination (as at present), or (of all still pending cases) at the expiration of 12 months, whichever event is the earlier to occur.

SECTION 10 of the bill amends section 12(b) of the Trademark Act by reducing the period of time in which to reply to an Office communication concerning the application from six to three months and by providing a time limitation applicable to notifying the applicant of grounds raised during the ex parte examination. The reduction of response time should make it possible for the Office to complete the ex parte examination of most applications within the 12 months period of amended section 12(a).

The cut off is the same as the one in amended section 12(a), i.e. 12 months, counted from the filing date. The examination need not be completed within the 12 months as the Treaty requirement is only that all grounds be communicated within that period. Also, the limitation would not apply to a new ground of refusal based on a decision of the Trademark Trial and Appeal Board or of a court.

SECTION 11 of the bill amends section 13 of the Trademark Act by providing for a time limit of 14 months for receiving oppositions. The 14 month time limitation ties in with the amendment to section 12(a) of the Act, providing equivalence of treatment of domestic and Treaty applicants. Section 13 is also amended to provide that an attorney may file an opposition on behalf of the opposer.

SECTION 12 of the bill amends section 14 of the Trademark Act in two respects, conforming this section to amended section 13, and a minor change in terminology ("date of issue").

SECTION 13 of the bill amends section 15 of the Trademark Act by a minor change in terminology ("date of issue").

SECTION 14 of the bill amends section 16 of the Trademark Act by providing specifically that an interference may be declared as to any particular application for registration of a mark only prior to the publication for opposition of that mark. While this is no different than current practice, the change in the statute seemed desirable. Since the declaration of an interference would constitute a ground of possible refusal under the Trademark Registration Treaty, such ground would have to be notified to the International Bureau within the prescribed time limit.

By requiring the declaration of the interferences prior to the date of publication, the section is subject to the same time limitation as in amended section 12(a), i.e. 12 months from the filing date.

SECTION 15 of the bill amends section 17 of the Trademark Act by providing discretionary authority to the Commissioner to defer the commencement of certain inter partes proceedings where the ex parte examination of a concerned application is not complete.

SECTION 16 of the bill amends section 21 of the Trademark Act by providing for an appeal from a refusal to accept a declaration pursuant to sections 1(c) and 9(c), as is now provided in the case of refusal of a section 8 affidavit.

SECTION 17 of the bill makes a language change in section 22 of the Trademark Act, consistent with the change from "date of registration" to "date of issue". Thus, constructive notice begins with publications of issuance of the registration (date of issue), no different in substance than under present law.

SECTION 18 of the bill amends section 23 of the Trademark Act by eliminating the requirements and provisions relating to use in the first and fourth paragraphs. Also, provision is made for treatment of applications as being under this section only where the application or the international registration (or recording of later designation) so indicates. The specific reference implements Article 11(3) which requires this treatment in the case of international registrations.

SECTION 19(a) of the bill amends section 24 of the Trademark Act by deleting the requirement that a petition to cancel a registration on the Supplemental Register be verified (consistent with amended section 14).

SECTION 19(b) of the bill amends section 24 of the Trademark Act by limiting the authority to cancel a registration on the Supplemental Register for nonuse, consistent with the use moratorium of the Treaty.

SECTION 20 of the bill amends section 30 of the Trademark Act in minor respects to remove an incidental reference to use of a mark that is inconsistent with amended section 1.

SECTION 21(a) of the bill amends section 31 of the Trademark Act by deleting the requirement of a fee for the filing of a section 8 affidavit. Since a section 8 fee cannot be assessed against a registration issued on the basis of an international registration (Article 19(1)), it is deleted in order to provide equivalence between domestic and Treaty applicants as to fees payable to the United States.

SECTION 21(b) of the bill amends section 31 of the Trademark Act by adding new subsection (d) whereby the filing and renewal fees are deemed to be substituted for by the corresponding fees set forth in the Treaty, where the international procedure is followed. This provision also obligates the Commissioner to fix the Treaty fees at the same amounts as the national fees.

SECTION 22 of the bill amends section 32(1) of the Trademark Act by providing that no infringement action may be started under the Act until the declaration of use of the mark in commerce has been filed in the Patent and Trademark Office and accepted by the Commissioner. This change implements the last sentence of Article 19(3)(a). Examination of the declaration could be accelerated if the registrant faced an impending infringement situation.

SECTION 23(a) of the bill amends section 33(a) of the Trademark Act so that the presumption of exclusive right to use the mark would apply as a rule of evidence only as to those goods and/or services in respect of which

the mark is stated to be in use in commerce either in the registration itself or in the declaration under section 1(c).

SECTION 23(b) makes some minor changes in the language of section 33(b).

SECTION 23(c) amends section 33 of the Trademark Act by adding a new subsection (c) to define priority of rights accorded to applications or registrations based on an intention to use the mark. Under new subsection (c), the priority of an intent applicant or registrant would be the same as if he had commenced use of the mark in commerce on the filing date, unless, of course, he had an earlier priority based on use or based on the Paris Convention priority provisions of section 44(d) of the Act.

SECTION 24 of the bill amends section 35 of the Trademark Act in order to implement the last sentence of Article 19(3)(a) so that the remedies of profits and damages cannot date back prior to the date of commencement of use.

SECTION 25 of the bill rennumbers present section 44(a) of the Trademark Act as section 44(a)(1) and adds to it some special provisions relating to the Trademark Registration Treaty.

Paragraph (2) authorizes the Commissioner to keep a register of international registrations designating the United States.

Paragraph (2) also contains a broad implementing provision, authorizing the Commissioner to take various actions prescribed by the Treaty. While all of the essential Treaty provisions parallel to provisions concerning domestic applications and registrations have been specifically implemented, a large number of Treaty provisions remain which solely concern the international procedures.

Paragraph (3) prescribes a procedure for communicating notifications where the deadline is stated in terms of the date of receipt by the International Bureau, most importantly the notification of refusal or possible refusal under Article 12(2)(a)(i).

Paragraph (4) implements Article 11(2)(i) of the Treaty providing for automatic registration as of the date of expiration of the time limit fixed in Article 12(2)(a)(i) where no notification of refusal or possible refusal has been received by the International Bureau.

Paragraph (5) implements Article 29 of the Treaty whereby certain delays in meeting the time limits fixed in the Treaty must be waived and others may be waived. There are some specific exceptions in the Treaty which is the reason for the last clause in this paragraph.

SECTION 26 of the bill amends section 44(c) of the Trademark Act by deleting the first sentence of this subsection. Since a person can secure a registration based on an intention to use the mark in commerce, the sentence is inconsistent with the amended Act. However, the sentence is no longer necessary. Under the amended Act all applicants would be required to declare use or an intention to use in commerce, whether or not the mark is also registered in the country of origin.

SECTION 27 of the bill deletes present subsection 44(d) of the Trademark Act and substitutes therefor a subsection providing that a right of priority may be based on a first international application as well as a first national application. Paragraph (2) of present subsection (d) is not continued. Waiver of use in commerce is no longer necessary since an application need not allege use under the amended Act. Old paragraph (4) (new paragraph (3)) of the subsection is amended to be consistent with the first sentence of section 44(c).

SECTION 28(a) of the bill amends the definitions, in section 45 of the Trademark Act, of the terms "trademark,"

"service mark," "certification mark," "collective mark" and "Intent of Act" by adding the phrase, "or intended to be used" in appropriate places consistent with the new basis for securing registrations.

SECTION 28(b) of the bill amends the definition, in section 45 of the Trademark Act, of "abandonment" to provide for abandonment of a mark applied for based on an intention to use where no use is commenced and there was never any intention to commence use. The two year prima facie abandonment provision is amended to make it clear that it applies only where use of a mark is discontinued.

SECTION 28(c) of the bill amends section 45 of the Trademark Act by adding the following new definitions:

- (1) "Filing date" is defined because of its significance in respect of priority of rights in the case of an application or registration based on the intention to use;
- (2) "Date of issue" is defined;
- (3) "Trademark Registration Treaty" is defined;
- (4) Various terms used in respect of the Trademark Registration Treaty are referenced to the Trademark Registration Treaty definitions;
- (5) The terms "Owner" and "Ownership," used in capitalized form are referenced to the Trademark Registration Treaty.

This was done in order to distinguish these references from other references in the statute to "owner" or "ownership" which refer to the owner, or ownership, of a mark. Finally, the term "owner of a trademark" is defined. The reason for this definition is discussed under SECTION 1, infra.

SECTION 29 of the bill prescribes the implementation of the various changes effected by the bill. The effective date of the Act coincides with the entry into force of the Treaty with respect to the United States. Appropriate provisions specify the controlling law which is applicable before, or on or after, the effective date.

(112) TRADEMARK APPLICATIONS UNDER SECTION 44 OF THE TRADEMARK ACT OF 1946

[37 CFR Parts 2 and 4]

Withdrawal of Proposed Rules

AGENCY: Patent and Trademark Office, Commerce.
ACTION: Withdrawal of proposed rules.

SUMMARY: The Patent and Trademark Office hereby withdraws its rule proposals (FR Doc. 77-23095 published in the Federal Register on August 10, 1977, 42 FR 40450; 962 TMOG 2-4, September 6, 1977) regarding applications filed under section 44 of the Trademark Act of 1946.

Under the proposed rules, foreign applicants filing under section 44 (d) or (e) of the Trademark Act of 1946, as amended, 15 U.S.C. 1126, would no longer have been required to allege use of the mark somewhere or to submit specimens or facsimiles demonstrating such use.

The primary consideration for the withdrawal of this rules proposal was the strong objection voiced by several commentators that the proposed rule changes would have placed some United States nationals in a less favorable position than foreign nationals than is the case under the present rules.

EFFECTIVE DATE: June 30, 1978.

FOR FURTHER INFORMATION CONTACT: J. Paul Williamson, Patent and Trademark Office, 703-557-2521.

SUPPLEMENTARY INFORMATION: A notice was published in the OFFICIAL GAZETTE of the United States Patent and Trademark Office on April 30, 1974 (921 OG TM 250) detailing the procedure being followed by this Office in connection with applications filed under section 44 of the Trademark Act of 1946 without specimens and without a statement of use of the mark. That notice is hereby withdrawn and the procedure thereunder terminated. Henceforth, in order to receive a formal filing date, an application under section 44 must include in the application at least one specimen and a statement that the mark has been used.

Those applicants having cases now under suspension in this Office in accordance with the April 1974 OFFICIAL GAZETTE notice will be notified individually of the Office policy regarding specimens and use as set out above.

Finally, the withdrawal of this rules proposal should in no way be interpreted as a diminution of the continuing support of the Department of Commerce and this Office for the Trademark Registration Treaty. Under that Treaty it will be possible to treat all applicants, foreign and domestic, equally in regard to initial use requirements for filing an application for trademark registration in the United States Patent and Trademark Office.

Dated: June 16, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Approved:

JORDAN J. BARUCH,

Assistant Secretary for Science and Technology.

[FR Doc. 78-18301; Filed 6-29-78; 8:45 am]

[978 TMOG 19 (Aug. 1, 1978)]

(113)

THE RETENTION SCHEDULE FOR TRADEMARK RECORDS

As with most government agencies, the Patent and Trademark Office disposes of old files, papers and records pursuant to a specific schedule. In an effort to clarify any questions concerning the procedures for disposing of Trademark records and in response to public inquiries, the present Retention Schedule for Trademark Records and other records including trademark matters which may be of interest to the public is set forth as follows:

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports, records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.

Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interests of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.

Trademark Adversary Proceedings Files. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.

PERMANENT. Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.

PERMANENT. Transfer to FRC after 5 years. Offer to National Archives when 25 years old.

The past schedule to destroy after 10 years is in the process of being changed. At this time, these records are not being disposed of pending the new amendment to this section.

THE RETENTION SCHEDULE FOR TRADEMARK RECORDS—(Continued)

Cancelled Trademark Registration Files. Consists of original application and all related correspondence.

Expired Trademark Registration Files. Consists of original application and all related correspondence.

Abandoned Trademark Application Files. Consists of original application and all related correspondence.

Trademark Renewal Index. Index to trademark registrations that are renewed.

Indexes to Trademark Applications. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.

A. Applicant's Index.

B. Serial Index.

Proceedings Index to Trademark Adversary Proceedings. Index arranged by type of proceeding. Shows status of proceeding prior to and immediately after a decision by the Board.

Trademark Adversary Proceeding Records. Card file showing records of Trademark Adversary Proceedings.

Trademarks Published in Official Gazette. Clippings of marks from Official Gazette.

a. Those which have been opposed.

b. All others.

Trademark Registrant's Index. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.

Class of Goods Index. Card index used to indicate into what class any conceivable goods may fall.

Index to Trademark Trial and Appeal Board Cases. Record of trademark trial and appeal board cases.

Public Advisory Committee for Trademark Affairs Files.

a. Agenda, minutes, correspondence, reports and related supporting files.

b. Working papers and reference materials.

Seminar in Trademark Practice and Procedure Files. Record set of training materials used in training trademark examiners.

Trademark Petitions Files. Petitions to the Commissioner relating to trademarks with related materials.

a. Original Petitions in trademark case file.

b. Other copies.

Trademark Protest Letters. Letters of protest to the Commissioner related to trademarks.

International Patent and Trademark Activities Case Files. Project case files showing Patent and Trademark Office activity relating to international patent and trademark programs.

a. Records that supplement the International Property Activities Case Files (Item 108).

b. Other materials.

Destroy 2 years after the date of cancellation.

Destroy 2 years after expiration of registration.

Destroy 2 years after date of abandonment.

PERMANENT. Offer to National Archives when no longer needed for reference.

PERMANENT. Offer to National Archives when no longer needed for reference.

PERMANENT. Offer to National Archives when no longer needed for reference.

Destroy 3 years after termination of the proceeding.

PERMANENT. Offer to National Archives when no longer needed for reference.

Retain in agency until no longer needed for reference.

Destroy when mark is registered.

PERMANENT. Offer to National Archives when no longer needed for reference.

Destroy after information transferred to magnetic media.

PERMANENT. Offer to National Archives when no longer needed for reference.

PERMANENT. Transfer to Federal Records when 10 years old. Offer to National Archives when 25 years old.

Destroy when 10 years old or no longer needed for reference, whichever is sooner.

PERMANENT. Transfer to Federal Records Center when 10 years old. Offer to National Archives when 25 years old.

Dispose of with related case file.

Destroy when 2 years old.

Destroy when no longer needed or when three years old, whichever is earlier.

PERMANENT. Transfer to office responsible for international affairs after case is closed.

Destroy 5 years after close of case or sooner if no longer needed.

THE RETENTION SCHEDULE FOR TRADEMARK RECORDS—continued

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.

Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts or legislation, reports to committees on introduced legislation, and comments on legislative proposals.

Bulky Trademark Specimens. Trademark applications specimens which do not strictly meet the basic requirements for physical form of specimens which state:

1. That they be made of material suitable for being placed inside a manila file wrapper.
2. That they be capable of being arranged flat, such as being folded.
3. That they be of a size not to exceed 8½ inches wide by 13 inches long. (Rule 2.56)

These requirements provide for specimens which will fit inside the application file wrapper, which is 9 x 14 inches in size and which will conveniently expand to about one inch thickness.

Specimens which do not meet the above requirements are referred to as "bulky" specimens and the Examiner must require that they be replaced by specimens of acceptable size and shape.

February 25, 1979.

[980 TMOG 16 (3-27-79)]

SAUL LEFKOWITZ,

Acting Assistant Commissioner for Trademarks.

(114)

FLEXIBLE WORKING HOURS

On January 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:30 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

DONALD W. BANNER,
Commissioner of Patents
and Trademarks.

Dec. 13, 1978.

(115) BULKY SPECIMENS IN TRADEMARK CASES

When an application containing bulky specimens is received, it will be given a filing date; but before it is forwarded to the Examiner, a letter will be sent to the applicant requiring new specimens in conformance with Rule 2.56. If the new specimens are not received within six months from the date of the letter, the application will be abandoned. The letter will also note that the "bulky specimens" received by the Office will be held for pick-up by the applicant for 30 days from the date of the letter, and will then be destroyed.

This practice is being instituted to alleviate the increased storage difficulties posed by bulky specimens. As always, however, an Examiner has the discretion to request additional information in the form of bulky specimens during examination under Trademark Rule 2.61(b). In the case of International Class 16, at least one complete issue of a publication will still

be required. Also in the situation where the mark is a configuration of the goods, or a configuration of the container of the goods, then one actual container may be required. The other four specimens should be facsimiles as described in Trademark Rule 2.57. All applicants are reminded that bulky specimens which are not picked up within 30 days of notification will be destroyed and that specimens having intrinsic value should not be filed.

The inconsistent provisions of the previous O.G. Notice concerning bulky specimens [900 T.M.O.G. 176 (July 25, 1972)], are hereby repealed.

The new procedure will be put into effect on April 1, 1979.

Feb. 28, 1979.

DONALD W. BANNER,
Commissioner of Patents
and Trademarks.

[980 TMOG 17 (3-27-79)]

(116) PUBLIC ADVISORY COMMITTEE FOR TRADEMARK AFFAIRS

Reestablishment

In accordance with the provisions of the Federal Advisory Committee Act 5 U.S.C. App. (1976) and Office of Management and Budget Circular A-68 of March 1974, and after consultation with GSA, it has been determined that the reestablishment of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law.

The Committee was first established in September, 1970, and its present charter expired on January 10, 1979. Since its inception the purpose of the Committee has been to advise the Patent and Trademark Office concerning steps which can be taken to increase the efficiency and effectiveness of administration of the Trademark Act and to provide a continuing flow of knowledge from the private sector to the government in the field of trademarks. Approximately seventy-five per cent of the over one hundred twenty-five specific recommendations have been implemented at least in part. There is no question that the Committee has contributed greatly to the efficiency and effectiveness of the administration of the statute. In reviewing the Committee, the Secretary has sought continued effort towards this objective. The

Committee's function cannot be accomplished by any organizational element or other committee of the Department.

As it was initially established, the Committee will continue to comprise the members of the Advisory Committee for Trademark Affairs of the United States Trademark Association. The membership is balanced and is under the control of the President of the Association. The Committee will continue to operate in compliance with the provisions of the Federal Advisory Committee Act.

Copies of the Committee's revised charter will be filed with appropriate committees of Congress.

Any inquiries or comments may be addressed to Patricia M. Davis, Committee Control Officer, Office of Trademark Program Control, U.S. Patent & Trademark Office, Washington, D.C. 20231; telephone (703) 557-3881.

GUY W. CHAMBERLIN,
Assistant Secretary
for Administration.

Dated March 15, 1979.

[FR Doc. 79-8929; Filed 3-22-79; 8:45 am]

[1982 TMOG 14 (5-15-79)]

Forms Booklet Available

A new publication titled "Patent and Trademark Forms Booklet" dated October 1979 is now available from the Superintendent of Documents. The price is \$12.00 and the stock number is 003-004-00569-6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8½ by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Dated: Mar. 26, 1980.

[1983 TMOG 18 (4-22-80)]

(118) Reorganization of the Patent and Trademark Office

In July 1980 the Patent and Trademark Office was reorganized to establish a fourth Assistant Commissioner position. The new Assistant Commissioner is known as the Assistant Commissioner for Finance and Planning. Set forth below is the text of Department of Commerce Organization Order 30-32 and an accompanying organization chart defining the functions and lines of authority for the principal units in the Patent and Trademark Office.

SECTION 1. PURPOSE

.01 This Order prescribes the organization and assignment of functions within the Patent and Trademark Office. (Department Organization Order 30-3A prescribes the scope of authority and functions.)

.02 This revision reflects the realignment of existing elements of the Patent and Trademark Office to form the offices reporting to the newly established Assistant Commissioner for Finance and Planning (Section 9.), and incorporates the provisions of outstanding amendments.

SECTION 2. ORGANIZATION STRUCTURE

The principal organization structure and line of authority shall be as depicted in the attached organization chart (Exhibit 1).

SECTION 3. COMMISSIONER OF PATENTS AND TRADEMARKS

The Commissioner of Patents and Trademarks determines the policies and directs the programs of the Patent and Trademark Office and is responsible for the conduct of all activities of the Patent and Trademark Office. The Commissioner is principally assisted by a Deputy Commissioner, four

Assistant Commissioners and a Solicitor whose main duties shall be as specified below.

a. The Deputy Commissioner shall assist the Commissioner in the direction of the Patent and Trademark Office; shall perform the duties of the Commissioner in the latter's absence; and shall direct the Office of Equal Employment Programs.

b. The Assistant Commissioner for Patents (an Assistant Commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the patent examining and documentation operations which consist of the organizational elements enumerated in Section 5. of this Order. The Assistant Commissioner is assisted by a Deputy Assistant Commissioner. The Deputy Assistant Commissioner shall, among other duties as assigned, have immediate responsibility for patent examination and for the organizational elements enumerated in paragraph 5.01, and shall perform the duties of the Assistant Commissioner during the latter's absence. There shall also be an Administrator for Documentation who shall have immediate responsibility for domestic and foreign patent documentation and the organizational elements enumerated in paragraph 5.02.

c. The Assistant Commissioner for Trademarks (an Assistant Commissioner under 35 U.S.C. 8) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organizational elements enumerated in Section 6. of this Order.

d. The Solicitor shall be the chief law officer of the Patent and Trademark Office and shall provide administrative and policy direction to organizational elements enumerated in Section 7. of this Order. Pursuant to Department Organization Order 10-6, the Solicitor shall be subject to the overall authority of the Department's General Counsel with respect to legal matters involving the Patent and Trademark Office, other than in connection with the issuance of patents or the registration of trademarks. The Solicitor shall be assisted by a Deputy Solicitor who shall perform the duties of the Solicitor during the latter's absence.

e. The Assistant Commissioner for Administration shall be the principal advisor to the Commissioner on the formulation and application of administrative policies. The Assistant Commissioner for Administration shall provide administrative and policy direction to the organizational elements enumerated in Section 8. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

f. The Assistant Commissioner for Finance and Planning shall be the principal advisor to the Commissioner on financial and planning matters. The Assistant Commissioner shall provide administrative and policy direction to the organizational elements enumerated in Section 9. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner. Among other duties as assigned, the Deputy Assistant Commissioner also shall be the Director of Resource Management, with immediate responsibility for the organizational elements enumerated in paragraph 9.01.

SECTION 4. ORGANIZATIONS REPORTING TO THE COMMISSIONER

.01 The Board of Appeals shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patent.

.02 The Board of Patent Interferences shall conduct interference proceedings and make final determinations in the Patent and Trademark Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of Sections 2182 and 2456 (d) and (e) of Title 42, U.S.C.

.03 The Office of Information Services shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and of the functions, services and administrative publications of the Patent and Trademark Office; and develop publication policies.

.04 The Office of Legislation and International Affairs shall, subject to Department Organization Order 10-6, make studies and advise the Commissioner on policy and actions concerning matters which may require legislation or which involves international patent and trademark (intellectual property) matters; draft proposed legislation relating to patents and trademarks and advise on pending legislation affecting the Patent and Trademark Office; represent the

Commissioner in the negotiation or renegotiation of treaties and the negotiation of other new major international initiatives; assist in the development and implementation of related programs; coordinate or conduct in cooperation with other appropriate Patent and Trademark Office organizations, negotiations in matters relating to existing international programs; and maintain liaison with the Office of the Secretary, the General Counsel, other agencies, international and foreign bodies, members of the public, and appropriate congressional committees in such matters.

.05 The Office of Equal Employment Programs, under the immediate direction of the Deputy Commissioner, shall be responsible for the design, development, implementation, review, and maintenance of all Patent and Trademark Office Equal Employment Opportunity (EEO) programs; including EEO complaint processes, the Affirmative Action Plan, upward mobility programs and other special emphasis programs such as those for women, Hispanic-Americans, the handicapped, and all protected groups and classes of employees.

SECTION 5. ORGANIZATIONS REPORTING TO THE ASSISTANT COMMISSIONER FOR PATENTS

.01 Patent Examination Organizations.

a. The Office of Patent Program Control shall establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and provide planning evaluation and budget support to the examination organizations, and perform such other duties as assigned.

b. The Patent Examining Groups shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

.02 Patent Documentation Organizations.

a. The Office of Documentation Planning, Support and Control shall analyze the examiner and public patent search files and all proposed programs concerning them; coordinate efforts in regard to numerical files; develop and maintain overall documentation plans relating to these files; define the form, content and accessibility of these files and insure such definition through periodic checks; initiate the acquisition and provision of patent documentation for these files; coordinate the development of an overall system, and the efforts of related implementing activities, to insure the accuracy and effective utilization of patent data; provide budgetary and other services for the documentation organizations; and establish performance standards and evaluation criteria for, and monitor and evaluate, the activities of the documentation organizations.

b. The Office of International Patent Classification shall direct Patent and Trademark Office initiatives designed to foster harmonization of the United States Patent Classification System with the International Patent Classification System. The Office shall also consult and participate with foreign counterparts representing national offices and appropriate international groups in further development and refinement of the International Patent Classification System. In carrying out such consultations and participations, it shall coordinate all related policy matters with the Office of Legislation and International Affairs.

c. The Office of Micrographic Systems shall develop and recommend plans for micrographic information systems including analyses of existing and proposed micrographic hardware and techniques suitable for meeting the particular demands of the U.S. Patent and Trademark Office. It shall also evaluate ongoing micrographic information systems in respect to the responsiveness of such systems to evolving informational needs. The foregoing shall be coordinated with other appropriate offices such as the Office of Automatic Data Processing Administration and the Office of Search Systems.

d. The Office of Search Systems shall maintain a state-of-the-art awareness of machine-assisted information storage, access, retrieval, and display systems useful or potentially useful in searching patent documentation; participate with parties in the private and government sectors in cooperative programs designed to develop systems for Patent and Trademark Office utilization; evaluate the potential of existing and cooperatively developed systems; initiate the acquisition and adaption of selected systems and direct the maintenance of all non-operational search and display systems (equipment

and materials); conduct and evaluate pilot tests in Patent and Trademark Office operating environments; recommend operational establishment or discontinuance of evaluated systems; and monitor and evaluate the performance of operational systems.

e. The Scientific Library maintains collections of technical and scientific information such as foreign patents, periodicals, books and other publications, in printed or microfilm form, and provides related services and facilities, for use by the public and by examiners and other personnel in the internal operations of the Patent and Trademark Office.

f. The Classification Groups shall develop, implement and maintain subject matter classification systems for the organization of patent search files of prior art including the preparation of definitions, indexes, schedules, and related documentation. Each classification group shall perform this function for subject matter falling within the generic category (chemical, electrical, mechanical) assigned to it.

SECTION 6. ORGANIZATIONS REPORTING TO THE ASSISTANT COMMISSIONER FOR TRADEMARKS

.01 The Office of Trademark Program Control shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practices and procedures and coordinate trademark administrative support activities.

.02 The Trademark Trial and Appeal Board shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The Trademark Examining Operation shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks, and maintain the principal and supplemental registers of trademarks. The Trademark Examining Operation shall be composed of examining divisions, the number and coverage of such divisions to be determined by the Commissioner.

SECTION 7. OFFICES REPORTING TO THE SOLICITOR

.01 The Office of the Solicitor shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The Office of Government Employee Inventions shall review questions of ownership of patents and rights to inventions made by Government employees in issues brought before it under Executive Order 10096 and shall make appropriate recommendations to the Commissioner for action on such questions.

SECTION 8. OFFICES REPORTING TO THE ASSISTANT COMMISSIONER FOR ADMINISTRATION

.01 The Office of Automatic Data Processing Administration shall coordinate automatic data processing resources for the Patent and Trademark Office; recommend to management the acceptance, updating or termination of all Patent and Trademark Office automatic data processing resources and contracts; provide management with regular reviews on the status of automatic data processing expenditures and utilization of resources; advise management on alternatives for meeting defined short and long range ADP requirements; coordinate ADP procurement and installation; operate a central computer facility for the Patent and Trademark Office responsive to user needs; conduct and review specified ADP feasibility studies; design, implement, operate and coordinate specialized ADP management information systems, including data collection, manipulation and dissemination; coordinate ADP liaison for the Patent and Trademark Office with the Department of Commerce and other Federal agencies; provide programming and systems design resources for approved projects based on requirements; provide technical assistance to the Patent and Trademark Office to fulfill needs as specified by the user.

.02 The Office of General Services shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, files, mail and correspondence, and forms management; administrative printing; and clearance of all requirements involving contractual procurements, in-

cluding liaison with the Department of Commerce, in connection therewith.

.03 The Office of Patent and Trademark Services shall provide materials and services to the public, many on a fee basis, as well as to examiners and other personnel for internal operations of the Patent and Trademark Office. It shall maintain a Public Search Room with a collection of U.S. patents; record assignments and other instruments for the transfer of property rights to patents and trademarks; furnish copies of patents, trademark registrations and office records; and provide drafting services. It shall also conduct an initial examination of patent applications for compliance with law and regulations as to form and certain matters of factual content; grant or deny a filing date based on such examination, and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; and maintain records on the status and location of all applications.

.04 The Office of Personnel shall administer activities relating to recruitment, placement, employee relations, training and career development, incentive awards, performance rating, position classification and wage administration, group-management relations, and various employee benefit programs.

.05 The Office of Publications shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly issues and related announcements in the Official Gazette; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

SECTION 9. OFFICES REPORTING TO THE ASSISTANT COMMISSIONER FOR FINANCE AND PLANNING

.01 Resource Management Organizations.

a. The Office of Finance shall develop and maintain the financial accounting system of the Patent and Trademark Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent and Trademark Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent and Trademark Office, and administration of the payroll system and related employee accounts; and provide financial advice.

b. The Office of Budget shall develop and maintain Patent and Trademark Office budget and fiscal plans; provide advice and staff to assist line managers in preparing, reviewing, justifying, presenting and executing the Patent and Trademark Office's budget; develop budgetary policies and procedures for the entire Patent and Trademark Office budget

process; maintain budgetary accountability for available funds; maintain external liaison on budgetary matters; and provide assistance in integrating program plans with the budgetary process.

c. The Office of Planning and Evaluation shall coordinate and help develop medium and long range plans for all Patent and Trademark Office programs; develop and administer a system for integrating the Patent and Trademark Office planning process with the budgetary process; coordinate and help develop goals, objectives, and strategies for the operating program offices of the Patent and Trademark Office, and evaluate the effectiveness of the administration of the programs against those goals, objectives and strategies.

.02 The Office of Management and Organization shall develop and/or receive requests for management improvement systems, programs or projects, including studies for work measurement, resource utilization, workflow analyses, computer systems, operations research and other operational problems and programs and determine the best resource(s) for analyses, resolution, and implementation; conduct organizational reviews; conduct, coordinate or assign studies on resource utilization, procedures or workflow analyses; coordinate work measurement studies; manage Patent and Trademark Office policy orders and administrative instructions and issuances; develop and maintain statistical data; and develop and manage a historical file on all management studies and statistical data developed.

.03 The Office of Technology Assessment and Forecast shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast development on a worldwide basis.

.04 The Office of Quality Review shall establish criteria for reviewing, and perform a review of the quality of examination of patent and trademark applications which have been examined. The Office shall review: the application of substantive statutory criteria for patentability or registrability; the adequacy of the examiner's search of prior patent, trademark or other literature; and the adherence to approved examining procedures. The Office shall provide information to managers and examiners on the results of its review, and make recommendations for maintaining or improving the quality of examination.

SECTION 10. EFFECT ON OTHER ORDERS

This Order supersedes Department Organization Order 30-3B of August 19, 1976, as amended.

SIDNEY A. DIAMOND,

Commissioner of Patent and Trademarks.

Approved:

Assistant Secretary for Science and Technology.

Acting Assistant Secretary for Administration.

[1001 O.G. 10]

U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office

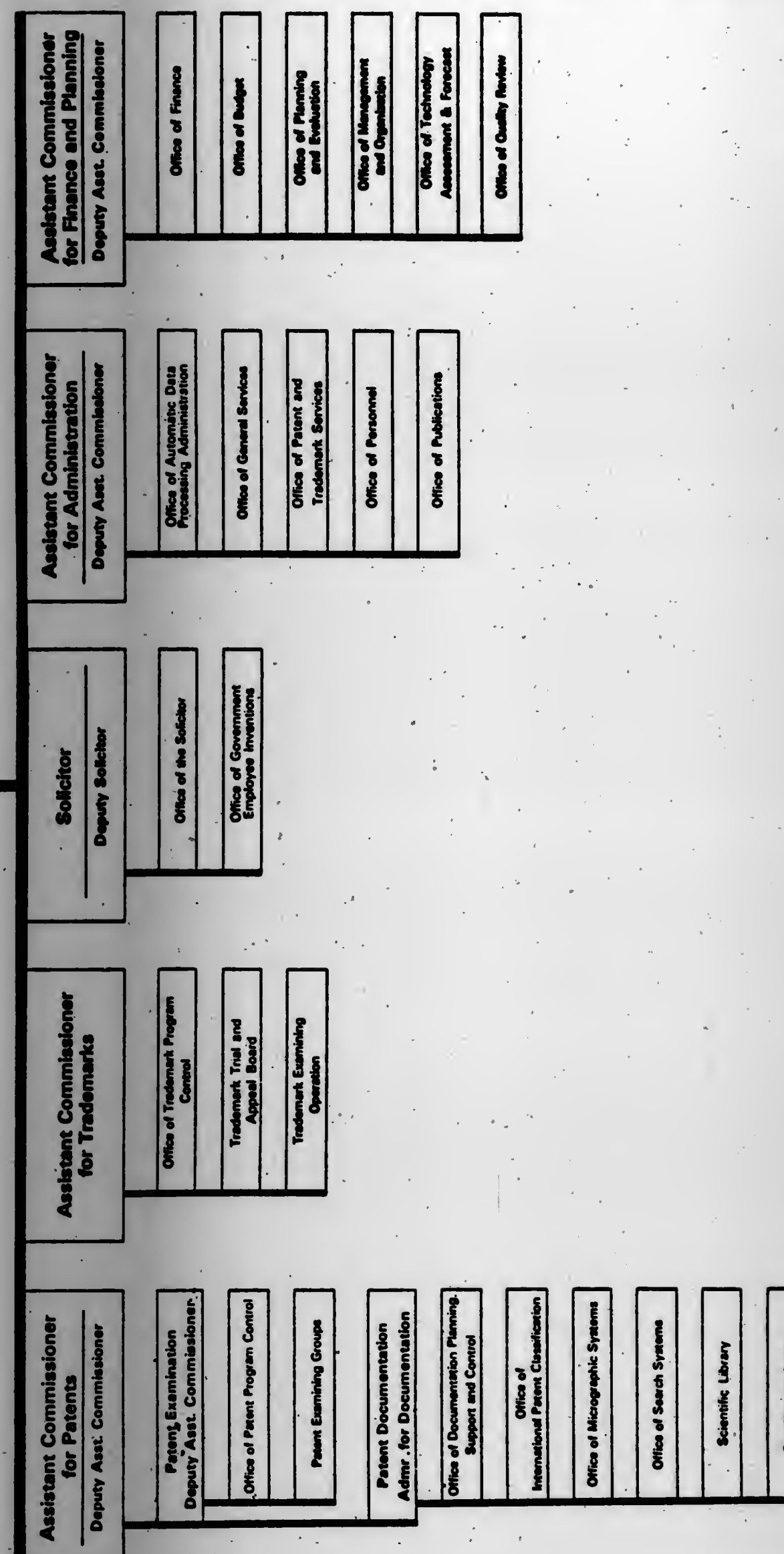
JANUARY 6, 1981

U. S. PATENT AND TRADEMARK OFFICE

1002 O.G.—91

JULY 6, 1980

COMMISSIONER OF PATENTS AND TRADEMARKS Deputy Commissioner



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TELEPHONE DIRECTORY

General Information (703) 557-3080

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee.....	\$35.00
Search fee.....	\$60.00
Basic fee (first 30 pages).....	\$100.00
Basic fee supplement (each sheet over 30).....	\$3.50
Designation fee.....	\$45.00

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

June 17, 1980.

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys or agents will be held on Tuesday, April 7, 1981.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 293, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, * * * but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If you are an officer or employee of the United States, your application for registration must be accompanied by your supervisor's verified statement that your official duties as a United States officer or employee require that you prepare and prosecute applications for patent.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken in any of the cities in which

the Office of Personnel Management regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a \$35 fee not later than January 31, 1980.

Application blanks may be obtained from the Clerk of the Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

Dec. 10, 1980. LUTHELLE F. PARKER,
Chairman, Committee
on Enrollment.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,831,662, Re. S.N. 194,535, Filed Oct. 6, 1980, Cl. 164/362, CASTING MOLD WITH CONSTRICTING DEVICE, John R. Nieman, et al., Owner of Record: Caterpillar Tractor Co., Peoria, Ill., Attorney or Agent: Ralph E. Walters, et al., Ex. Gp.: 324

3,847,063, Re. S.N. 020,202, Filed Nov. 16, 1979, Cl. 92/100, VACUUM OPERABLE UNITS FOR IGNITION DISTRIBUTORS, William Harold Cooksey, Owner of Record: Joseph Lucas (Industries) Limited, Birmingham, England, Attorney or Agent: John Clarke Holman, et al., Ex. Gp.: 341

4,116,853, Re. S.N. 189,742, Filed Sep. 23, 1980, Cl. 252/142, COMPOSITION FOR CLEANING ALUMINUM AT LOW TEMPERATURES, Robert E. Binns, Owner of Record: Amchem Products, Inc., Ambler, Pa., Attorney or Agent: Ernest G. Szoke, et al., Ex. Gp.: 166

4,129,397, Re. S.N. 189,771, Filed Sep. 22, 1980, Cl. 404/14, ROAD SURFACE MARKING PREFABRICATED TAPE MATERIAL, HAVING RETROREFLECTIVE COMPOSITE ELEMENTS ASSOCIATED THERETO, Ludwig Eigenmann, Owner of Record: Inventor, Attorney or Agent: Michael J. Striker, et al., Ex. Gp.: 352

PATENT NOTICES

Certificates of Correction for the Week of Jan. 6, 1981

Re. 29,331	4,205,401	4,217,996	4,224,120
D. 253,540	4,205,748	4,218,019	4,224,159
4,065,398	4,206,168	4,218,461	4,224,752
4,068,817	4,206,664	4,218,558	4,224,835
4,066,872	4,207,119	4,218,693	4,225,460
4,124,314	4,210,121	4,218,933	4,225,678
4,140,641	4,210,565	4,219,012	4,225,980
4,150,088	4,210,885	4,219,139	4,226,981
4,158,438	4,211,671	4,219,446	4,226,576
4,160,877	4,211,689	4,219,761	4,226,596
4,181,796	4,212,919	4,220,466	4,226,648
4,188,564	4,213,251	4,220,535	4,226,898
4,189,434	4,213,714	4,220,737	4,227,184
4,191,046	4,213,775	4,221,216	4,227,361
4,194,248	4,214,126	4,221,240	4,227,688
4,194,949	4,214,267	4,221,626	4,227,702
4,196,351	4,214,608	4,221,833	4,227,738
4,197,120	4,215,041	4,221,947	4,227,788
4,197,812	4,215,158	4,221,997	4,227,882
4,200,137	4,215,205	4,222,305	4,227,918
4,200,362	4,215,408	4,222,529	4,228,130
4,202,186	4,215,581	4,222,784	4,228,197
4,203,891	4,216,329	4,223,039	4,228,255
4,203,924	4,216,788	4,223,221	4,228,290
4,204,102	4,217,218	4,223,450	4,228,911
4,204,633	4,217,351	4,223,539	4,229,708
4,205,319	4,217,595	4,223,814	4,231,745
			4,236,817

Dedications

3,470,716.—Robert R. Candor, Miami Township and James T. Candor, Washington Township, Ohio. ELECTROSTATIC APPARATUS. Patent dated Oct. 7, 1969. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,491,456.—Robert R. Candor, Miami Township and James T. Candor, Washington Township, Ohio. ELECTROSTATIC LIQUID REMOVAL APPARATUS AND METHOD. Patent dated Jan. 27, 1970. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,543,408.—Robert R. Candor, Miami Township and James T. Candor, Washington Township, Ohio. LIQUID-REMOVING APPARATUS AND METHOD. Patent dated Dec. 1, 1970. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,546,783.—Robert R. Candor, Miami Township and James T. Candor, Washington Township, Ohio. ELECTROSTATIC APPARATUS. Patent dated Dec. 15, 1970. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,633,282.—Robert R. Candor, Miami Township and James T. Candor, Washington Township, Ohio. LIQUID-REMOVING APPARATUS AND METHOD. Patent dated Jan. 11, 1972. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,641,680.—Robert R. Candor, Miami Township and James T. Candor, Washington Township, Ohio. LIQUID-REMOVING APPARATUS AND METHOD. Patent dated Feb. 15, 1972. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,667,130.—Robert R. Candor, Miami Township and James T. Candor, Washington Township, Ohio. LIQUID-REMOVING APPARATUS AND METHOD. Patent dated June 6, 1972. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

4,196,409.—Hisashi Judo, Rye, N.Y. MULTIPLE FUSE DEVICE. Patent dated Apr. 1, 1980. Dedication filed Mar. 31, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

4,052,285.—John Vincent Dobson, Hartlepool, England. ION SELECTIVE ELECTRODES. Patent dated Oct. 4, 1977. Disclaimer filed Oct. 15, 1980, by the assignee, National Research Development Corporation.

Hereby enters this disclaimer to all claims of said patent.

4,081,686.—Gerrit Nieuweboer, Claymont, Del. X-RAY FILM CASSETTE AND METHOD OF MAKING SAME. Patent dated Mar. 28, 1978. Disclaimer filed Nov. 12, 1980, by the assignee, E. I. du Pont de Nemours and Company.

Hereby enters this disclaimer to claim 5 of said patent.

4,104,156.—John K. Fletcher, Hot Springs, Ark. DETACHABLE SLING LETDOWN APPARATUS FOR LUMBER SORTER. Patent dated Aug. 1, 1978. Disclaimer filed Nov. 4, 1980, by the assignee, Harvey Engineering and Manufacturing Corporation.

Hereby enters this disclaimer to claim 1 of said patent.

4,125,988.—Francis E. Schluter, Des Moines, Iowa. COTTON HARVESTER. Patent dated Nov. 21, 1978. Disclaimer filed Oct. 17, 1980, by the assignee, Deere & Company.

Hereby enters this disclaimer to all the claims, claims 1-4 of said patent.

4,198,139.—John Michael Payne, Peterborough, England. ELECTROSTATIC CAMERAS. Patent dated Apr. 14, 1980. Disclaimer filed Nov. 3, 1980, by the inventor.

Hereby enters this disclaimer to claims 7, 8, 11 and 12 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for \$5.00 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for \$5.00 each (\$10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administration
Service Division, Federal Bldg., Science and Education
Administration, Hyattsville, Md. 20782

Patent application 6-027,695. High-Performance, Lightweight Structural Particleboard. Filed Apr. 6, 1979.

Patent application 6-087,242. Laboratory Pesticide Spray Chamber. Filed May 9, 1979.

Patent application 6-078,474. Slope Stability Warning Device for Articulated Tractors. Filed Sept. 7, 1979.

Patent application 6-102,484. Running Skyline Intermediate Support and Multi-Span Carriage. Filed Dec. 11, 1979.

Patent application 6-115,588. Intermediate Support for a Skyline Logging System. Filed Jan. 25, 1980.

Patent application 6-152,874. Method and Apparatus for Edgewise Compression Testing of Flat Sheets. Filed May 23, 1980.

Patent application 6-156,434. Apparatus for Planting Seeds. Filed June 4, 1980.

Patent 4,201,210. Veterinary Ocular Ring Device for Sustained Drug Release. Filed Nov. 28, 1977. Patented May 6, 1980. Not available NTIS.

Patent 4,209,433. Method of Bonding Particle Board and the Like Using Polyisocyanate/Phenolic Adhesive. Filed Dec. 19, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,210,415. Shrinkproofing of Fabrics of Wool. Filed Apr. 7, 1977. Patented July 1, 1980. Not available NTIS.

Patent 4,212,800. Inhibition of Lanthionine Formation During Alkaline Treatment of Keratinous Fibers. Filed Sept. 26, 1978. Patented July 15, 1980. Not available NTIS.

Patent 4,214,380. Method for Treatment of Fibers with Ozone-Steam Mixtures. Filed Feb. 23, 1979. Patented July 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20505

Patent application 6-011,018. Fiber Optics Welder. Filed Feb. 9, 1979.

Patent application 6-018,086. Air Ejector Augmented Compressed Air Energy Storage System. Filed Feb. 28, 1979.

Patent application 6-021,141. Method of Determining Interwell Oil Field Fluid Saturation Distribution. Filed Mar. 16, 1979.

Patent application 6-022,895. Improved Tool Grinding Machine. Filed Mar. 22, 1979.

Patent application 6-028,740. High Energy KrCl Electric Discharge Laser. Filed Apr. 10, 1979.

Patent application 6-028,742. Shuttleless Toroid Winder. Filed Apr. 10, 1979.

Patent application 6-028,778. High Energy XeBr Electric Discharge Laser. Filed Apr. 10, 1979.

Patent application 6-031,809. Optical Device. Filed Apr. 20, 1979.

Patent application 6-034,804. Improved Method for Enhanced Oil Recovery. Filed Apr. 30, 1979.

Patent application 6-037,078. Long-Term Ice Storage for Cooling Applications. Filed May 8, 1979.

Patent application 6-037,079. Free Piston Inertia Compressor. Filed May 8, 1979.

Patent application 6-037,982. Laser Beam Alignment Apparatus and Method. Filed May 10, 1979.

Patent application 6-039,412. Compressed Air Energy Storage System. Filed May 15, 1979.

Patent application 6-039,985. Small Diameter, Deep Bore Optical Inspection System. Filed May 17, 1979.

Patent application 6-041,864. Chromatographic Hydrogen Isotope Separation. Filed May 22, 1979.

Patent application 6-062,872. Method for Detecting Trace Impurities in Gases. Filed July 31, 1979.

Patent application 6-067,855. Improved Method and Apparatus for Chromatographic Quantitative Analysis. Filed Aug. 20, 1979.

Patent application 6-069,151. Photolytic Separation of Isotopes in Cryogenic Solution. Filed Aug. 23, 1979.

Patent application 6-069,152. Apparatus for Use in Rapid and Accurate Controlled-Potential Coulometric Analysis. Filed Aug. 23, 1979.

Patent application 6-074,288. Method for Inhibiting Corrosion of Nickel-Containing Alloys. Filed Sept. 11, 1979.

Patent application 6-076,527. Leak Test Fitting. Filed Sept. 18, 1979.

Patent 3,844,928. Humic Acid as an Additive in a Process of Forming a Salt-Rejecting Membrane. Patented Oct. 3, 1967.

Patent 3,481,201. Hyperfiltration Process Having Ion Exchange Pretreatment. Patented Mar. 4, 1969.

Patent 3,449,245. Method of Separating Salts From Aqueous Solutions. Patented June 10, 1969.

Patent 3,503,789. Method of Making a Dynamic Solute-Rejecting Membrane. Patented Mar. 31, 1970.

Patent 3,577,839. Filtration Method of Separating Liquids From Extraneous Materials. Patented May 4, 1971.

Patent 4,161,028. Up-and-Down Chopper Circuit. Filed Sept. 7, 1977. Patented July 10, 1979. Not available NTIS.

Patent 4,162,227. Dielectric Gas Mixtures Containing Sulfur Hexafluoride. Filed Feb. 24, 1976. Patented July 24, 1979. Not available NTIS.

Patent 4,162,593. Tool Holder for Preparation and Inspection of a Radiused Edge Cutting Tool. Filed Feb. 28, 1978. Patented July 31, 1979. Not available NTIS.

Patent 4,167,819. Pressure Regulator. Filed Dec. 5, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,169,280. Method for Making Glass Nonforming. Filed July 18, 1978. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,171,464. High Specific Heat Superconducting Composite. Filed June 27, 1977. Patented Oct. 16, 1979. Not available NTIS.

Patent 4,172,224. Process for the Detection of Micro-Cracks. Filed Oct. 24, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,174,728. Sliding-Gate Valve. Filed Nov. 14, 1977. Patented Nov. 20, 1979. Not available NTIS.

Patent 4,176,526. CF₄ Laser. Filed Oct. 20, 1977. Patented Nov. 27, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent application 6-142,745. Antineoplastic 1-Hydroxy-4-(Substituted Aminoalkylamino)-Anthraquinones. Filed Apr. 22, 1980.

Patent 4,188,878. Anticancer and Antiviral Activity of 9-Beta-D-Arabinofuranosyl-2-Fluoroadenine. Filed Jan. 4, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,189,583. Synthesis of 4A-Aryl-Decahydroisoquinolines. Filed Apr. 26, 1978. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,194,240. Precision Envelope Detector and Linear Rectifier Circuitry. Filed May 2, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,877. Dye-Containing Polymer Composition. Filed Nov. 28, 1977. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,206,907. Preparation of Tetrahydrofolic Acid From Folic Acid. Filed Nov. 7, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,217,496. Portable Instrument for Measuring Neutron Energy Spectra and Neutron Dose in a Mixed N-Gamma Field. Filed Mar. 14, 1978. Patented Aug. 12, 1980. Not available NTIS.

Patent 4,217,497. Portable Instrument for Measuring Neutron Energy Spectra and Neutron Dose in a Mixed N-Gamma Field. Filed June 16, 1978. Patented Aug. 12, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts., NW.
Washington, D.C. 20240

Patent application 6-104,922. Portable Airborne Droplet Impactor Sampler and Method. Filed Dec. 18, 1979.

Patent application 6-108,206. Sample Mount for X-Ray Diffraction. Filed Dec. 27, 1979.

Patent application 6-114,586. Mounting Block for a Coal Bit Utilizing a Belleville-Type Spring. Filed Jan. 23, 1980.

Patent application 6-114,546. Mounting Block for a Coal Bit Utilizing a Belleville-Type Spring. Filed Jan. 23, 1980.

Patent application 6-118,959. Method of and Apparatus for Minimizing Coal Dust Production in Longwall Mining Machine. Filed Feb. 6, 1980.

Patent application 6-186,126. Slideboard Device for Underground Mine Face Ventilation. Filed Mar. 31, 1980.

Patent application 6-142,946. Flexible Continuous Grout Filled Packer for Use With a Water Infusion System. Filed Apr. 23, 1980.

Patent application 954,028. Induced Air Flow Self-Cleaning Spray Nozzle. Filed Oct. 23, 1978. Patented Apr. 29, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5:00 p.m.

1002 OG 98

PATENT EXAMINING CORPS

RENE D. TEGMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director	11-23-70
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director	10-10-70
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Ferulic Acids; Poisons; Medicines; Cosmetics; Steroids; Ozo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director	9-11-70
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthetic; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director	12-13-70
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director	12-5-70
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant	1-8-70
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant	7-2-70
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant	10-0-70
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing; Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 340—A. L. SMITH, Director	1-23-70
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Rewinding; Cable Hoists; Measuring and Testing; Indicating; Fluid Material Handling.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	12-21-78
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 260—Vacant	1-8-70
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-18-70
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Apparatuses; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 330—M. M. NEWMAN, Director	7-20-70
Manufacturing Processes; Assembling; Combined Machines; Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 350—R. E. AEGERTER, Director	8-1-70
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Eroding; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Trolley; Printing; Typewriters; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 360—D. J. STOCKING, Director	6-1-70
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 380—G. M. FORLENZA, Director	3-19-70
Building Structures; Boats; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Walls; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 86th Congress, approved August 23, 1954 (68 Stat. 744), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents: Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents: Numbers 2,296 to 2,323, inclusive

1002 OG 99

DEFENSIVE PUBLICATIONS

PUBLISHED JANUARY 6, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T100,201

INDIGO DYEING OF POLYESTER FIBERS

Francis M. Logullo, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

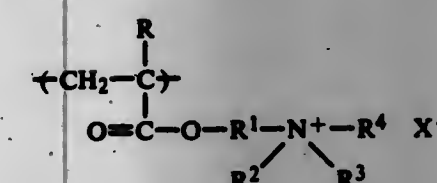
Filed Feb. 7, 1980, Ser. No. 119,212

Int. Cl.³ D06P 1/22, 7/00

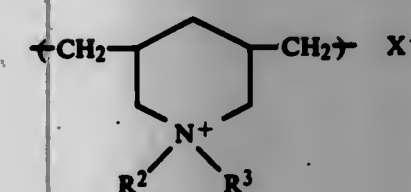
U.S. Cl. 8—495

No Drawing. 19 Pages Specification

Polyester fiber can be dyed with indigo so as to possess wash-down and fading characteristics similar to indigo-dyed cotton fibers provided they are first coated with a polymeric salt having the following repeating units:



with from 0 to 75 mol % of another ethylenically unsaturated monomeric unit, or



wherein

R is hydrogen, methyl or ethyl

R¹ is a divalent hydrocarbon radical of 1 to 4 C atoms

R² and R³ are lower alkyl (from 1 to 4 C atoms)

R⁴ is hydrogen, hydroxyethyl or lower alkyl (from 1 to 4 C atoms)

X⁻ is an anion

Preferably, in Formula A, R¹ contains 2 carbon atoms; R²=R³=R⁴=methyl; and X⁻ is 83 mol % CH₃SO₄⁻ and 17 mol % C₁₈H₃₅SO₄⁻.

T100,202

PROCESS FOR CALENDERING KNIT FABRICS

Winfried T. Holfeld, 700 Thornaby Rd., Wilmington, Del. 19803

Filed Sep. 6, 1979, Ser. No. 73,017

Int. Cl.³ D06F 15/02

U.S. Cl. 38—144

No Drawing. 13 Pages Specification

Light weight knit fabrics of reduced air permeability and light transmission as well as decreased susceptibility to snagging are

provided by a calendering process that involves selecting a dyed knit fabric composed of fibers from the group of (1) at least 40% by weight of polyester fiber and from 0 to 60% by weight of a fiber of the group consisting of wool, cotton, nylon, and acrylic fiber or (2) about 5-30% by weight of a spandex fiber and from 70 to 95% by weight of a fiber of the group consisting of wool, cotton, nylon, polyester and acrylic fiber and calendering the back side of the fabric at a calender roll temperature between about 200° to 320° F., at a calender roll pressure of between about 0.5 to 1.0 ton per linear inch and at a calender roll surface speed of from 10 to 30 yards per minute.

T100,203

LABEL ADHESIVE

John E. Lauck, Spring, Tex., assignor to Shell Oil Company

Continuation of Ser. No. 15,531, Feb. 23, 1979, abandoned. This

application May 9, 1980, Ser. No. 148,469

Int. Cl.³ B31D 1/02; C08K 5/01; C08L 53/02

U.S. Cl. 428—40

No Drawing. 9 Pages Specification

A label adhesive composition having the necessary balance of holding power, bleed and die cuttability comprises 40 to 70 parts of a linear or radial ABA-type monoalkenyl arene/conjugated diene block copolymer, 60 to 30 parts of an AB two-block copolymer, 20 to 300 parts of a tackifying resin and 0 to 100 parts of a rubber compounding oil.

T100,204

COATING COMPOSITION

Doyle A. Weemes, 1603 Moore Ave., Greenville, Tenn. 37743;

Robert W. Seymour, 1341 Belmeade Dr., and George J. O'-

Neill, 3805 Thornton Dr., both of Kingsport, Tenn. 37664

Continuation of Ser. No. 914,714, Jun. 12, 1978, abandoned.

This application Apr. 10, 1980, Ser. No. 139,066

Int. Cl.³ C08G 63/18

U.S. Cl. 264—177 R

No Drawing. 12 Pages Specification

Disclosed is a primer coating composition for use between thermoplastic materials and metal. The primer composition comprises a polyester, at least half of the dibasic acid components of which are selected from terephthalic acid, isophthalic acid, 1,4-cyclohexanedicarboxylic acid or a mixture thereof. The polyester is either amorphous, or may contain some crystallinity to result in a melting point below about 175° C. The heat of fusion of the polyester is less than about 10 calories per gram. The primer is especially useful in promoting adhesion between metal foil and cellulose acetate butyrate laminated thereto.

REISSUES

JANUARY 6, 1981

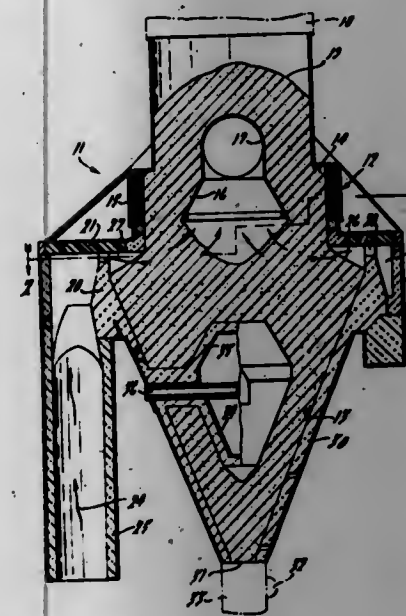
Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,469
PREHEATER FOR LIME KILN
 Marshall F. Parsons, Washington, D.C., assignor to Detroit Lime Company, Detroit, Mich.
 Original No. 3,766,663, dated Oct. 23, 1973, Ser. No. 232,579, Mar. 7, 1972. Application for reissue Apr. 27, 1978, Ser. No. 901,019

U.S. Cl. 34-168

Int. Cl.² F26B 17/12

13 Claims



1. In a preheater for particulate materials such as limestone, a refractory lined vessel having an upper material intake section, an exhaust offtake concentrically mounted in said section, means for feeding material into said section, a gas intake section below said material intake section, a plurality of circumferentially arranged ports around said gas intake section, means feeding hot gases to said ports, whereby the gases will flow radially inwardly through said material, a material holding section extending downwardly from said gas intake section, said material holding section being entirely below said ports and being sufficiently deep to permit heat to be absorbed by the interiors of the particles of material, [] and a material discharge port at the bottom of said material holding section] *the depth of said material holding section relative to the height of said gas intake section being so great that substantially the entire material holding section is remote from the path of gases flowing into said gas intake section, said material holding section being so constructed that little gas flow will take place in said holding section, a material discharge port at the bottom of said material holding section, and feeding means connected to said material discharge port and controlling the retention time of material in said holding section so as to cause the high surface temperatures developed on each particle to be diffused substantially into its entire volume.*

Re. 30,470
ADDRESS PRINTING MACHINE WITH ROLLER PLATENS AND METHOD

Dean W. Johnson, Euclid, Ohio, assignor to AM International, Inc., Los Angeles, Calif.
 Original No. 3,272,120, dated Sep. 13, 1966, Ser. No. 405,673, Oct. 22, 1964. Application for reissue Apr. 27, 1978, Ser. No. 901,002

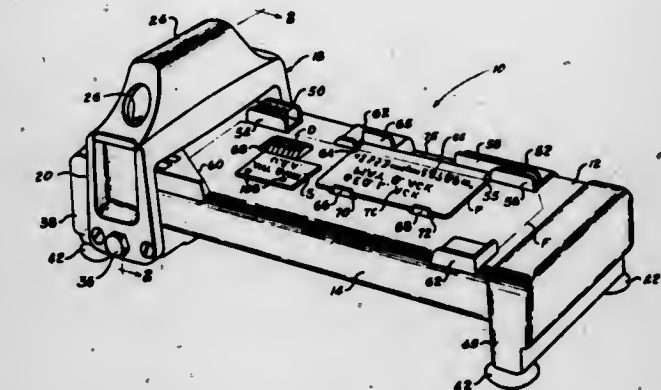
U.S. Cl. 101-269

Int. Cl.³ B41F 3/04

7 Claims

1. A printing machine of the character described comprising means for holding a printing device in printing position in a plane; a platen carriage reciprocable adjacent said printing

position in a path substantially parallel to the plane of the printing device; two roller platens rotationally supported on said carriage in end-to-end relation with their axes extending transversely of the direction of carriage motion and each movable between an extended position relative to said carriage in which its axis is shifted towards the plane of the printing device and a retracted position relative to said carriage in which its axis is more remote from the plane of the printing device than



said extended position; means for shifting either platen to one or the other of said extended and retracted positions and simultaneously shifting the other of said platens to the opposite position; and means adjacent the carriage when the same is at each end of its path for operating said shifting means so that one platen is extended during motion of the carriage in one direction and the other is extended during motion of the carriage in the other direction.

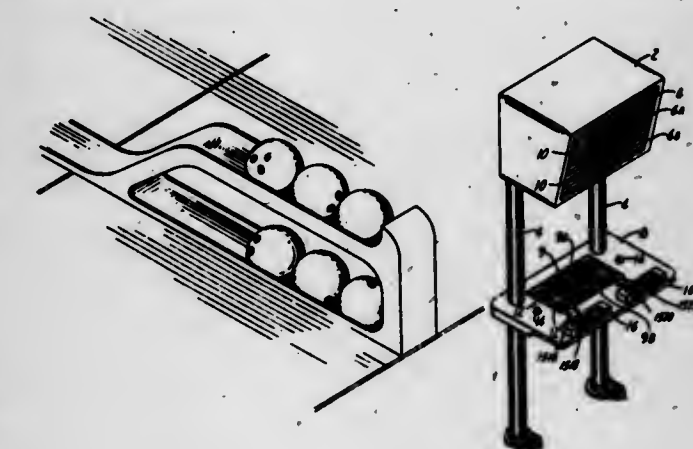
Re. 30,471
AUTOMATIC BOWLING SCORE COMPUTING AND DISPLAY DEVICE

Eugene E. Reynolds, Richmond, Calif., assignor to Brunswick Corporation, Chicago, Ill.
 Original No. 3,738,652, dated Jun. 12, 1973, Ser. No. 196,039, May 16, 1962. Continuation of Ser. No. 697,632, Nov. 20, 1957, abandoned. Application for reissue Dec. 29, 1978, Ser. No. 974,626

U.S. Cl. 273-54 C

Int. Cl.³ A63D 5/04

266 Claims



82. An apparatus for calculating scores of a bowling game wherein normally first and second balls are bowled to knock down pins during each of a succession of scoring frames comprising a plurality of registers each corresponding to a bowler and adapted to receive and store score values of a corresponding bowler, means for entering information representing pinfall for each of said first

and second balls, means responsive to the entry of pinfall for at least one of said balls, to cause the apparatus to undergo a cycle of operation, means operable during said cycle serving to add pinfall corresponding to a first ball to a preceding frame when a preceding frame score requires such addition, means operable during said cycle for adding the total pinfall corresponding to both balls to the preceding frame when a strike has been scored in the preceding frame, means operable during said cycle serving to condition the apparatus to add pinfall from succeeding frames when the score requires such addition, means operable during said cycle to add pinfall during said frame if the pinfall is less than 10, [An apparatus as in claim 81 including additionally] printing means responsive to said adding means on completion of a frame score value for printing the score value, and means operable during said cycle for controlling the printing means so that score values are printed in the proper position.

Re. 30,472

DETERGENT COMPOSITION WITH ANTISOIL AND ANTIREDEPOSITION PROPERTIES

Arthur S. Teet; Percy J. Hamlin, and Albert B. Savage, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Original No. 4,138,352, dated Feb. 6, 1979, Ser. No. 878,122, Feb. 3, 1978. Continuation of Ser. No. 775,136, Mar. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 679,536, Apr. 23, 1976, abandoned. Application for reissue Aug. 20, 1979, Ser. No. 68,293

Int. Cl.³ C08B 11/193; C11D 3/37; D06M 15/04, 15/24

U.S. Cl. 252—135

4 Claims

1. A detergent composition wherein the essential components thereof consist of
 - (a) about 20 percent by weight of a C₈–C₂₂ alkyl monoether of a polyethylene glycol of about 5–20 alkylene oxide units,
 - (b) about 60 percent of sodium sesquicarbonate,
 - (c) about 10 percent of sodium silicate having a ratio of SiO₂/Na₂O of about 2–3/1,
 - (d) about 0.1–2 percent of a hydroxybutylmethylcellulose having a DS of about 1.5–2.3 and an MS of about 0.01–0.6, and a viscosity of about 20–200 cps. in 2 percent aqueous solution at 20° C. and
 - (e) about 10 percent of Na₂SO₄.

Re. 30,473

BENZOPHENONE GLYCINAMIDE DERIVATIVES

Cedric H. Hassall, Welwyn; William H. Johnson, Hitchin; Antonin Krohn, London; Carey E. Smithen, Welwyn Garden City, and William A. Thomas, Eaton Ford, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Original No. 4,007,219, dated Feb. 8, 1977, Ser. No. 605,580, Aug. 18, 1975. Application for reissue Jul. 31, 1978, Ser. No. 929,383

Claims priority, application United Kingdom, Jul. 20, 1974, 36567/74; May 21, 1975, 21821/75; Aug. 11, 1975, 36567/75

Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R

6 Claims

3. The compound: *L*-prolyl-*N*-(2-benzoyl-4-nitrophenyl)-glycinamide.
4. The compound: *L*-lysyl-*N*-(2-benzoyl-4-chlorophenyl)-*N*-methylglycinamide.
5. The compound: *L*-phenylalanyl-*N*-(2-benzoyl-4-nitrophenyl)-glycinamide.
6. The compound: *L*-arginyl-*N*-(2-benzoyl-4-chlorophenyl)-*N*-methylglycinamide.
7. *L*-arginyl-*N*-(2-benzoyl-4-chlorophenyl)glycinamide.

Re. 30,474

HOT MELT SIZE AND YARN SIZED THEREWITH AND PACKAGES AND FABRICS OF SIZED YARN

Robert C. Malpass, High Point; Walter F. Illman, Greensboro, and Delano M. Conklin, Burlington, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Original No. 4,082,883, dated Apr. 4, 1978, Ser. No. 778,080, Mar. 16, 1977. Continuation of Ser. No. 286,946, Sep. 7, 1972, abandoned. Application for reissue Mar. 13, 1979, Ser. No. 20,439

Int. Cl.³ C08K 5/05, 5/10, 5/13; C08L 67/02

U.S. Cl. 428—253

24 Claims

1. A quick-setting non-aqueous water-extractable textile melt size composition comprising an intimate admixture of a water-soluble film-forming meltable thermoplastic polymer and a melt-miscible, solid modifier having a melting point of at least about 90° C. and selected from the class consisting of aliphatic polycarboxylic acids and partial esters thereof, aromatic [carboxylic] monocarboxylic acids, [partial esters thereof,] partial esters of aromatic polycarboxylic acids, non-polymeric polyhydric alcohols, phenolic acids, and polyhydric phenols, wherein the proportion of polymer to modifier is about 90:10 to about 50:50 on a weight basis, said size capable of being applied as a melt to textile yarns, with quick setting when exposed to ambient conditions, and capable of being removed from the yarns by aqueous or alkali extraction.

PLANT PATENTS

GRANTED JANUARY 6, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,612

ROSE PLANT

Samuel D. McGredy, P.O. Box 14-100, Auckland, New Zealand

Filed Jun. 12, 1979, Ser. No. 47,939

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—3

1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by petite pointed buds opening into pure white maintaining their color well upon aging and a loose growing, spreading plant that is very resistant to blackspot, mildew and rust.

4,613

ROSE PLANT NAMED PAUL'S PINK

Paul F. DeVor, late of Pleasanton, Calif. (by Thelma G. DeVor, executrix), assignor to DeVor Nurseries, Inc., Pleasanton, Calif.

Filed Jul. 2, 1979, Ser. No. 53,933

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—18

1 Claim

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by its beautifully opening high centered blooms which have a very soft pink coloration and strong fragrance, its vigorous and free branching growth habit, and its profuse year-around production of long lasting flowers.

4,614

DISTINCT VARIETY OF BLACK WALNUT TREE

Walter F. Belneke, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 5, 1978, Ser. No. 939,833

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—32

1 Claim

1. A new and distinct variety of black walnut tree substantially as illustrated and described, which has excellent timber quality, is fast growing, has strong central stem tendency, little

sweep, few crooks; late in time of leafing, pistillate flowers very late, pollen sheds late, and a nut crop is seldom produced.

4,615

APPLE TREE

Irving H. Wrigley, 2550 Wrigley Rd., Eureka, Calif. 95501

Filed May 7, 1979, Ser. No. 36,787

Int. Cl.³ A01H 5/03

U.S. Cl. Plt.—34

1 Claim

1. A new and distinct variety of apple tree, substantially as described in this application, and in particular, characterized by the solid red colored fruit which it bears.

4,616

PEAR TREE

Kenneth L. Turnbull, Depew, Okla., and Daniel K. Hybekmann, Shenandoah, Iowa, assignors to Henry Field Seed and Nursery Company, Shenandoah, Iowa

Filed Apr. 20, 1979, Ser. No. 31,985

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—36

1 Claim

1. A new and distinct variety of pear tree, substantially as shown and described herein, distinguished by the physical characteristics of the fruit including its size, shape and taste.

4,617

PEACH TREE

Aram Kevorkian, P.O. Box 409, Reedley, Calif. 93654

Filed Jul. 5, 1979, Ser. No. 55,026

Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—43

1 Claim

1. A new and distinct variety of peach tree substantially as illustrated and described, characterized by its bearing of free-stone fruit having yellow flesh striated with red and by its general resemblance to the Redtop Peach Tree (unpatented), but which is distinguished therefrom by its fruit ripening from seven to ten days earlier and by having more highly colored skin.

PATENTS

GRANTED JAN. 6, 1981

ERRATA

For CLASS	See PATENT NO.
119-001	4,242,763
434-263	4,242,812
411-041	4,242,939
493-295	4,242,949
440-038	4,242,979
132-037 R	4,243,061
411-174	4,243,086
493-422	4,243,215
101-195	4,243,338
040-312	4,243,340
203-010	4,243,526
260-037 SB	4,243,542
556-414	4,243,605
570-257	4,243,607
564-091	4,243,609
564-491	4,243,610
568-379	4,243,611
568-431	4,243,612
568-482	4,243,613
568-931	4,243,614
570-150	4,243,615
178-019	4,243,843
369-045	4,243,848
369-062	4,243,849
369-046	4,243,850
370-110	4,243,930

PATENTS

GRANTED JANUARY 6, 1981

GENERAL AND MECHANICAL

4,242,757

HELMET WITH TILTABLE VISOR

Pierluigi Nava, Via Dogana 1, Milan, Italy

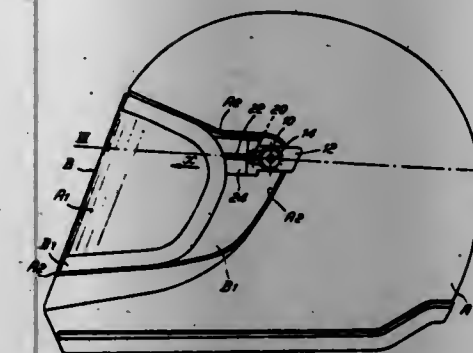
Filed Jun. 14, 1978, Ser. No. 915,376

Claims priority, application Italy, Jan. 11, 1978, 19178 A/78

Int. Cl.³ A42B 3/02

U.S. Cl. 2—10

19 Claims



1. A helmet assembly, in particular for motorcyclists and the like, comprising:
a helmet;

a transparent visor hinged to the helmet to removably cover an opening in the helmet, with the perimetral edge of the visor being housed in an outward facing peripheral recess defining the peripheral edge of said opening in said helmet, such that said visor is flush with and not projecting from the outer surface of the helmet; and

hinging means located between the outer ends of said visor and said helmet, said hinging means including elongated guide means on said helmet extending along said helmet toward said peripheral edge of said helmet opening,

and pivot means on said outer ends of said visor engaging said elongated guide means on said helmet and being movable forwardly therealong for guiding forward displacement of said visor out of said flush position on said helmet and into a position spaced forward of and disengaged from said peripheral recess,

said elongated guide means including camming surfaces extending therealong and inclined to move the outer ends of the visor away from each other as said pivot means move forwardly therealong,

said pivot means pivotally supporting said visor on said elongated guide means for swinging of said visor about a substantially horizontal axis.

4,242,758

ELBOW PROSTHESIS

Andrew A. Amis, Leeds, England, and James H. Miller, Glasgow, Scotland, assignors to University of Leeds Industrial Service Ltd., United Kingdom

Filed May 30, 1978, Ser. No. 911,031

Claims priority, application United Kingdom, Jan. 1, 1977, 23129/77

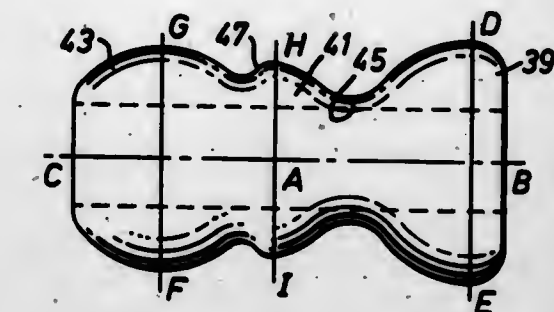
Int. Cl.³ A61F 1/03

U.S. Cl. 3—191

19 Claims

1. An elbow prosthesis comprising a humeral component for fitting over the end of the humerus to provide the entire bearing surface for the humerus by replacing the natural articulating surfaces of the trochlea and capitellum, the component being an elongate member of substantially C-cross section, the inner surface of which is for engagement with the end of the humerus and the outer surface of which is provided with first, second and third spherical surface portions, the first and third spherical surface portions being arranged on either side of the second spherical surface portion and the three spherical surface portions together extending over substantially the whole

of the length of the component, the first and second spherical surface portions being for engagement with the ulna or a prosthetic component located thereon and the third spherical surface portion being optionally for engagement with the radius or a prosthetic component located thereon, the diameter of the



first spherical surface portion being greater than the diameter of the third spherical surface portion and the ratio of the distance from the lateral end of the humeral component to the position of maximum diameter of the humeral component in the region of the second spherical surface portion to the length of the humeral component being less than 0.5.

4,242,759

M.C.P. JOINT REPLACEMENT

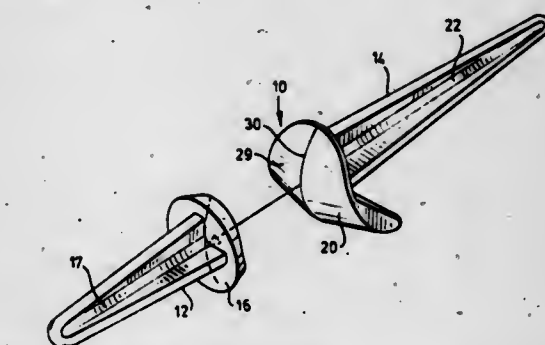
Robert C. White, Beamsville, Canada, assignor to Ontario Research Foundation, Mississauga, Canada

Filed Mar. 12, 1979, Ser. No. 19,517

Int. Cl.³ A61F 1/03

U.S. Cl. 3—191

5 Claims



1. A joint replacement comprising:

a first member having a head portion and an elongated tail portion, the latter adapted for insertion into one bone of a joint,

a second member having a head portion and an elongated tail portion, the latter adapted for insertion into another bone of the joint,

the head of said first member defining a female contact face remote from the tail portion of the first member, said face being centrally indented to define a curved trough with the curve lying in a plane containing the tail portion of the first member,

the head of said second member defining a male contact face remote from the tail portion of the second member, said male face being centrally protuberant to define a curved ridge with the curve lying in a plane containing the tail portion of the second member,

the trough and the ridge being so shaped that, when the two members are in face-to-face contact in a first angular portion, the ridge and trough are substantially complementary with each other in the area of contact, such that lateral articulation of the tail portions in a plane normal to the planes of the ridge and trough is restrained, and when the two members are in face-to-face contact in a second

angular position the respective contacting areas of the ridge and trough are non-complementary and such that the trough allows the ridge and its tail portion to articulate laterally in said plane normal to the ridge and trough planes, the profile of the trough being substantially constant, and the profile of the ridge changing smoothly around the curve thereof from more protuberant to less protuberant.

4,242,760

INTRAOCULAR LENS STRUCTURE

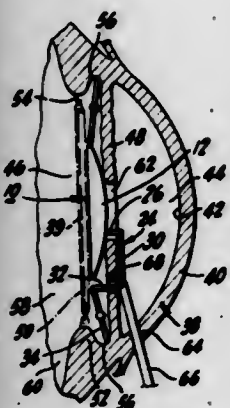
Edgar A. Rainin, 20 Shawn Ct., Danville, Calif. 94526

Filed Jan. 11, 1979, Ser. No. 47,319

Int. Cl.³ A61F 1/16, 1/24

U.S. Cl. 3-13

11 Claims



1. An intraocular lens structure intended for insertion within the eye; the iris of the eye having an opening therethrough comprising:

- a. lens intended for placement adjacent a side of the iris, said lens adapted for covering at least a portion of the pupil;
- b. first appendage being connected to said lens and intended for extending away from said lens to the periphery of the iris for engagement therewith;
- c. second appendage being connected to said lens having a first portion extending from said lens, a second portion intended for passing through the iris opening and an enlarged end portion intended for extending to the periphery of the iris for engagement therewith;
- d. means for urging engagement of said first appendage to the periphery of the iris;
- e. means for urging engagement of said second appendage to the periphery of the iris.

4,242,761

INTRAOCULAR LENS WITH THREADABLY LOCKED RETENTION LOOPS

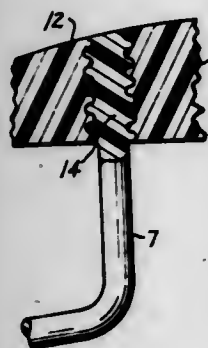
Charles P. Chase, Brea, and Richard B. MacAnally, Altadena, both of Calif., assignors to Heyer-Schulte Corporation, Goleta, Calif.

Filed Jul. 25, 1979, Ser. No. 60,529

Int. Cl.³ A61F 1/16, 1/24

U.S. Cl. 3-13

8 Claims



1. An intraocular lens comprising: an optical section with a

pair of spaced apart threaded recesses; and a retention loop with a pair of integral spaced apart threaded shank sections that extend into the recesses and threadingly lock the retention loop to the optical section, said shank sections forming with the loop a unitary one-piece construction.

4,242,762

POSTERIOR ENCAPSULATED IMPLANT LENS

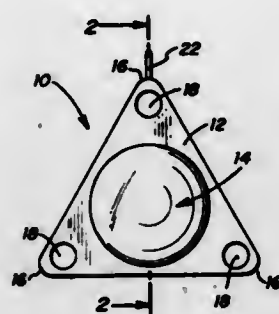
Jerald L. Tennant, 806 Greentree Ct., Duncanville, Tex. 75116

Filed Jul. 25, 1979, Ser. No. 60,595

Int. Cl.³ A61F 1/16, 1/24

U.S. Cl. 3-13

15 Claims



1. An artificial intraocular lens, comprising:
- a substantially flat base element dimensioned for implantation in the posterior chamber of an eye adjacent to the iris;
 - said base element having coplanar posterior and anterior surfaces and a multi-sided periphery with rounded corners;
 - an optic element mounted substantially centrally in said base element; and
 - pin means extending outwardly from the periphery of at least one corner of said base element for clipping the lens to the iris.

4,242,763

PET TOILET

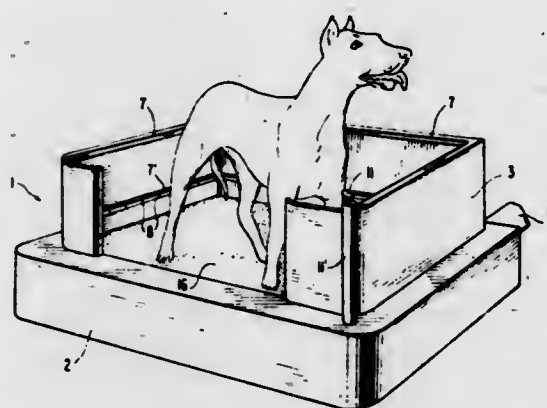
John A. Walker, 663 Lefferts Ave., Brooklyn, N.Y. 11302

Filed Dec. 19, 1978, Ser. No. 971,052

Int. Cl.³ A47K 17/00

U.S. Cl. 119-1

4 Claims



1. A lavatory unit for a pet comprising:
- a housing having a hollow base with a bottom slanted toward one end thereof;
 - an upstanding enclosure wall mounted along the bottom thereof to said base and defining an interior lavatory area;
 - liquid inlet piping connectable to a source of liquid for providing a source of flushing liquid and mounted on said housing, said inlet piping having orifices thereon for directing flushing liquid against the interior side of said enclosure wall;
 - an elongate platform mounted to said base and forming the top thereof, said platform being spaced at two opposing ends from said base;

sets of spaced gear wheels respectively located at corresponding ones of said opposed platform ends;

- an endless belt mounted around and supported by said platform and at least one of said gear wheels and driven by said gear wheels;
- an end member having a circular cross-section located at said one end of said base and around which said belt extends;
- a trough mounted within said base transversely to said belt and having an arcuate cross-section, the top of said trough being closely spaced from said end member;
- a depending member for defining a liquid seal mounted to said base and spaced on one side thereof from said trough;
- a drain and trap area located at said one end of said base and spaced from and below said end member, said drain and trap area being defined by the base bottom and by said trough and depending member;
- a drain in fluid communication with said trap area and located on the other side of said depending member, the bottom of said drain being located above the bottom of said depending member so that a liquid seal can be formed at the end of said drain and trap area; and
- a scraper means mounted at the top of said trough in engagement with said belt at said end member for removing most of said waste deposited on said belt and for directing said waste onto said trough and into said drain and trap area.

4,242,764

HYGIENIC CLEANING APPARATUS

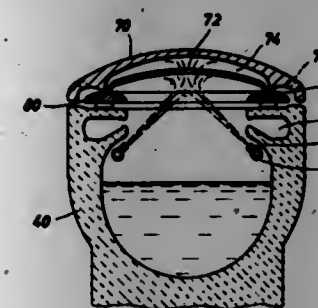
Mamoru Fukuda, 1260 Hardy Dr., Bridge City, Tex. 77611

Filed Sep. 20, 1978, Ser. No. 944,067

Int. Cl.³ A47K 13/24; A61H 35/00; E03D 9/08

U.S. Cl. 4-420.4

22 Claims



1. In combination with a toilet having an overhanging lip affixed to a water holding bowl, hygienic cleaning apparatus for washing the genital area of a person sitting thereover, comprising

- a tube having an inlet for receiving water under pressure, said tube being adapted to be located in the bowl extending along the lip thereof with said tube being located beneath and at least partly circumscribing the genital area; and
- a plurality of nozzles connected to said tube and spaced apart from each other, said nozzles being directed upwardly and angularly inwardly so that water streams emanating under pressure from said nozzles converge at a point below the genital area to form a further upward combined stream that contacts the genital area.

4,242,765

WATER SAVING COMMODE

Joyce A. Russell, 838 W. 41st St., Houston, Tex. 77018

Filed Aug. 17, 1979, Ser. No. 67,458

Int. Cl.³ E03D 1/00

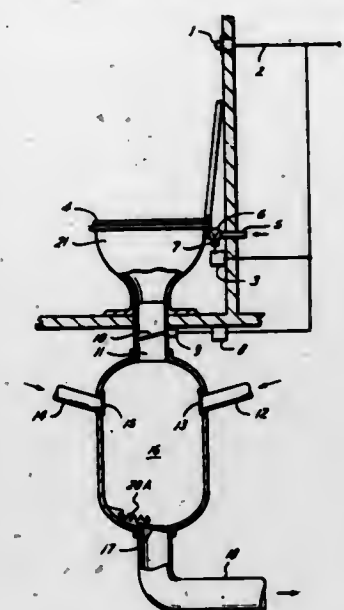
U.S. Cl. 4-321

7 Claims

1. A waste removal system comprising:
- a receptacle capable of receiving waste;
 - control means for controlling said waste's removal from said receptacle;
 - fluid delivery means responsive to said control means for

introducing sufficient flush fluid into said receptacle to to flush waste from said receptacle;

- valve means in fluid communication with said receptacle and responsive to said control means for controlling the exit of said waste and said flush from said receptacle;
- a holding tank in fluid communication with said valve means and having an outlet leading to a sewer line;



at least one source of waste fluid other than said receptacle, said source being in fluid communication with said holding tank; and

- bias valve means positioned for opening said holding tank outlet in response to the accumulation of a predetermined quantity of said waste, flush fluid and waste fluid, for controlling the flow of said accumulated wastes and fluids from said holding tank to the sewer line.

4,242,766

HEAT TRANSFER BED ASSEMBLIES

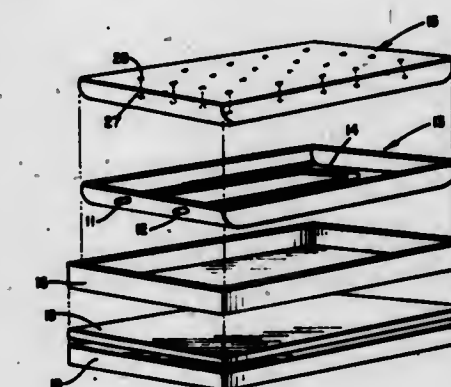
Joseph Allegro, 731 NE. 69th St., Boca Raton, Fla. 33431

Filed Jan. 11, 1979, Ser. No. 47,355

Int. Cl.³ A47C 27/08, 21/08

U.S. Cl. 5-422

8 Claims



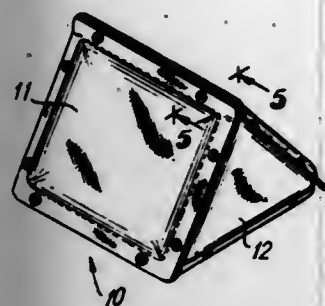
1. A heat transfer bed assembly comprising in combination a lowermost thermal insulating panel, an uppermost mattress panel and an intermediate heat transfer panel sandwiched between the insulating panel and the heat transfer panel containing inlet and outlet fittings connected to an internal passageway for circulation of fluid through the heat transfer panel, and a fluid confining thermally conductive liner about the upper side of the heat transfer panel in thermal contact with the mattress panel.

4,242,767

PLAY PILLOWS

Susan L. McMullen, said David W. McMullen, both of 309 W. 82nd St., New York, N.Y. 10024
 Filed Aug. 30, 1978, Ser. No. 938,152
 Int. Cl.³ A47C 7/02; A63H 33/08
 U.S. Cl. 5-465

11 Claims



1. A play pillow construction comprising, in combination, a plurality of pillows, each pillow having multi-sided polygonal shaped cushioning means, first and second polygonal shaped layers of fabric, said respective layers of fabric being secured together to enclose said cushioning means therebetween and define a multi-sided polygonal peripheral portion entirely surrounding said cushioning means, a flexible shape retention means enclosed between the peripheral portions of said layers for stiffening the periphery of said pillow and a fastening means positioned on each peripheral portion side for enabling said pillow to be joined to another pillow of like configuration, said flexible shape retention means and said fastening means being cooperatively disposed on each peripheral portion side to thereby provide increased structural integrity to said peripheral portions, said plurality of pillows being joined to one another with their joined sides maintained in adjacent and parallel relationship to define a polyhedral configuration that has structural integrity provided by said flexible shape retention means utilized to stiffen the periphery of each of the pillows.

2. A play pillow comprising, in combination, a multi-sided polygonal shaped cushioning means, first and second polygonal shaped layers of fabric, said respective layers of fabric being secured together to enclose said cushioning means therebetween and define a multi-sided polygonal peripheral portion entirely surrounding said cushioning means, a flexible shape retention means enclosed between the peripheral portions of said layers for stiffening the periphery of said pillow, and a fastening means positioned on each peripheral portion side for enabling said pillow to be joined to another pillow of like configuration, wherein said fastening means positioned on each peripheral portion includes an operative fastening means disposed on both opposed surfaces of each peripheral portion side, each of said operative fastening means being disposed in a like position on both surfaces of each peripheral portion side.

4,242,768

MEANS FOR ATTACHING A BOAT TO A TRAILER
 Walter P. Winsett, Houston, Tex., assignor to Darrell T. Mosley, Houston, Tex.

Filed Jul. 2, 1979, Ser. No. 54,166
 Int. Cl.³ B63P 3/10

U.S. Cl. 9-1.2

2 Claims

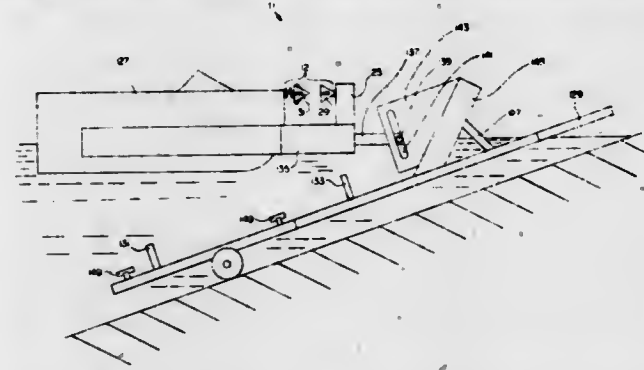
2. A boat and trailer combination comprising:

- (a) a generally upstanding member fixedly attached to substantially the forward end of said trailer, said upstanding member having a generally upwardly directed elongated slot therein;
- (b) a substantially U-shaped float member for substantially encircling the front and sides of said boat when said boat is positioned above said trailer;
- (c) means for pivotally attaching said float member to said upstanding member to allow said float member to pivot relative to said trailer and to move up and down within

said slot in said upstanding member to aid in guiding said boat from and onto said trailer;

(d) female means fixedly attached to the forward end of said float member, said female means including a body member having a rearwardly directed substantially conical cavity for defining a cam means and having a plurality of apertures in the side of said conical cavity for defining a lock means; and

(e) male means attached to the forward end of said boat, said male means including a body member and a lock means for coacting with said lock means of said female means to automatically lock said male and female means together when said lock means of said male and female means engage one another thereby locking said boat to said trailer, said lock means of said male means including a latch member for extending outward of the exterior surface of said body member of said male means and into each of said apertures of said body member of said female means when said male means is received in said female means, said body member of said male means including a cam follower means for coacting with said cam means of



said female means to guide said lock means of said male means into lockable engagement with said lock means of said female means, said body member of said male means including a forwardly directed substantially conical exterior surface for being selectively received in said conical cavity of said female means and for defining said cam follower means thereof, said lock means of said male means including means for urging said latch members thereof outward of said conical exterior surface of said body member of said male means and including means for selectively pulling said latch members thereof inward of said apertures in the side of said conical cavity of said body member of said female means to selectively unlock said male means from said female means, said male means including a spring member having a first end fixedly attached to said body member of said male means and having a second end fixedly attached to the forward end of said boat for movably attaching said body member of said male to said boat, said float member causing said female means to align with said male means when said boat is positioned within said float member.

4,242,769

ANTI-EXPOSURE INFLATABLE STRUCTURE

John F. Rayfield, Dover, Del., and John D. Schieble, Chester-town, Md., assignors to ILC Dover, a division of ILC Industries, Inc., Frederica, Del.

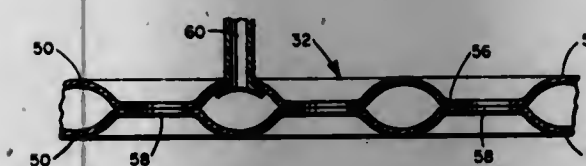
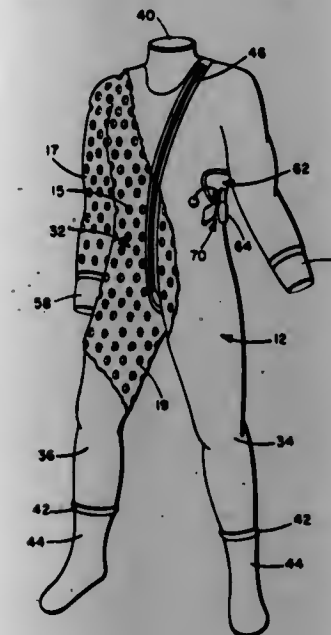
Filed Dec. 14, 1978, Ser. No. 969,380
 Int. Cl.³ B63C 9/08; A41D 13/02

U.S. Cl. 9-330

17 Claims

1. An inflatable body protective spacer assembly for reducing loss of heat from the body of a wearer when subjected to a hostile cold environment comprising: a spacer formed from an inflatable bladder means having inner and outer surfaces formed to fit a portion of the body and sealed at their contiguous edges, said bladder means having a plurality of sealed areas that form a plurality of intercommunicating inflatable cavities

between said unsealed areas; at least one water-vapor-passing opening positioned in each of said sealed areas; a breathable fabric resistant to the passage of water therethrough loosely overlaying said outer surface of said bladder means with its edges sealed to the outer surface of the bladder means and covering said water-vapor-passing openings to prevent water outside the spacer assembly from entering between the body of



the wearer and said bladder means but allowing body moisture that passes through said water-vapor-passing opening to pass through said breathable fabric; an inflation gas supply means operatively connected to said inflatable bladder means; and means for releasing gas from said supply means to inflate said bladder means when protection from loss of heat from the body of the wearer is demanded.

4,242,770

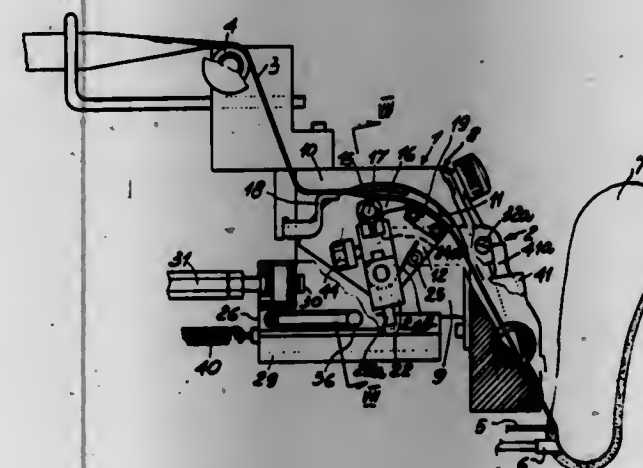
DEVICE FOR INFEEEDING A STRIP OF FLEXIBLE MATERIAL FOR USE IN MACHINES FOR BINDING THIN ARTICLES AND, IN PARTICULAR, MACHINES FOR EDGING PARTS FOR BOOTS AND SHOES

Alberto Bocca, and Mario Pagani, both of Vigevano, Italy, assignors to Sagitta Officina Meccanica S.p.A., Italy

Filed Mar. 30, 1978, Ser. No. 891,758

Claims priority, application Italy, Apr. 1, 1977, 22034 A/77

Int. Cl.³ A43D 43/06, 11/00; B65H 17/36; B32B 3/04
 U.S. Cl. 12-24.5 3 Claims



1. An infeed device for infeeding a strip of flexible material,

said infeed device capable of being used in a machine for binding thin articles and, in particular, a machine for edging parts for boots and shoes, said machine comprising, means for placing adhesive between said strip and the articles to be edged, cutting mechanism actuated by control means provided with a reciprocating motion, for cutting said strip, mechanism for folding the strip partly above and partly below the outline of the said articles, and pressure-applying and transportation mechanism for intermittently pressing the strip against the articles and for causing the articles to be moved forward as they are edged, said infeed device comprising a quadrant mounted ahead of said cutting mechanism oscillatable around an axis perpendicular to the direction in which said strip moves forward, a gripper unit mounted on said quadrant to take firm hold of the strip and to move it forward towards said cutting mechanism while the said quadrant travels forward, and operating means with which to cause the said quadrant to undergo a pendulum motion and said gripper unit to close and to open during the forward and return travel, respectively, of said quadrant, said operating means being connected to the cutting mechanism control unit so as to bring about the forward movement of the said strip, immediately after it has been cut, until the said strip, immediately after it has been cut, until the free end thereof has been carried to a point corresponding to where said folding mechanism and said pressure-applying and transportation mechanism are positioned.

4,242,771

PIPELINE PIG

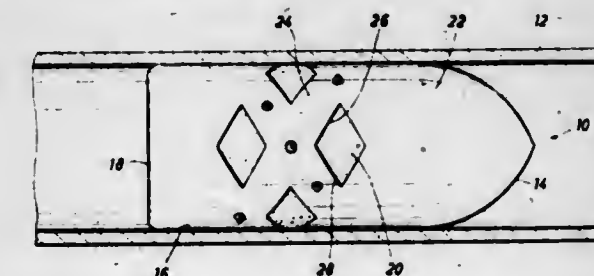
Kenneth M. Knapp, 1209 Hardy St., Houston, Tex. 77020

Filed Jul. 16, 1979, Ser. No. 58,064

Int. Cl.³ B08B 9/04

U.S. Cl. 15-104.06 R

11 Claims



1. A pipeline pig comprising:

- (a) a pig body having
 - (1) an outer surface adapted to be partly contacted against the wall of a pipe to be cleaned;
 - (2) a transversely extending end portion adapted to respond to a pressure gradient acting thereon to push said pig body along the pipeline;
 - (3) a central portion formed of a resilient material; and
- (b) a stud having
 - (1) an elongate shank;
 - (2) a tip on said shank converging to a point and adapted to be positioned protruding from said body to engage pipe wall located deposits; and
 - (3) shoulder means on said shank for embedding in said central portion to position said shank extending radially outwardly therefrom through said outer surface to position said tip protruding from said body, said shoulder means cooperating with said central portion permitting flexure of said shank upon deflection of said tip.

4,242,772

TRAVERSE ROD DRAPERY HOOK

Marcel T. Rahal, 11251 Promenade, Detroit, Mich. 48213

Filed Oct. 16, 1978, Ser. No. 951,372

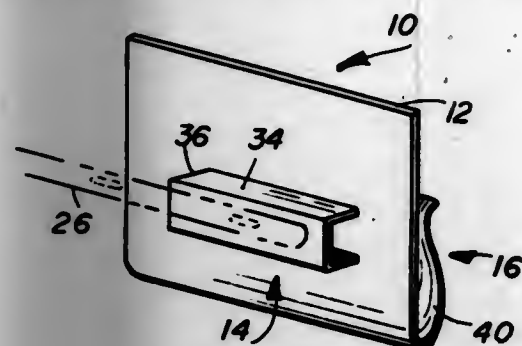
Int. Cl.³ E05D 13/02

U.S. Cl. 16-93 D

12 Claims

1. A drapery hook for suspending a drapery from a traverse rod having a travelling bracket thereon, comprising:

- a. a support plate, forming part of said hook
b. means on said plate telescopically receiving the travelling bracket of the traverse rod, said receiving means config-



- ured to prevent rotation of the hook about the bracket of the traverse rod, and
c. means for detachably interconnecting the hook to a drape.

4,242,773

CABINET HINGE

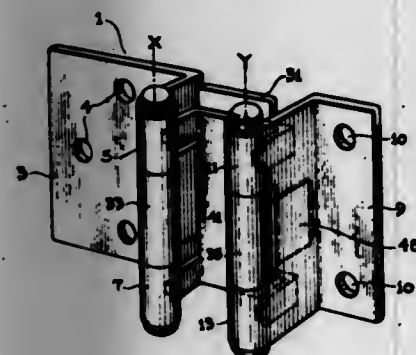
Lauris L. Beigh, 9801 - 47th Ave. SW., Seattle, Wash. 98136

Filed Aug. 17, 1978, Ser. No. 934,429

Int. Cl.² E05D 3/06

U.S. Cl. 16-164

2 Claims



1. A hinge comprising:
a first plate member including a first pivot journal defining cam means;
a second plate member including a second pivot journal defining cam means;
a movable pivot sequencing member operatively connected to the cam means on the first and second plate members;
a third plate member operatively connected to the first and second plate members in substantially surrounding relation to the sequencing member;
and means for locking the sequencing member and either the first plate member or the second plate member together while the unlocked member pivots.

4,242,774

MEAT TENDERER

Margaret F. Massaro, 229 Walawright Ave., Syracuse, N.Y. 13208

Filed Jul. 13, 1979, Ser. No. 57,445

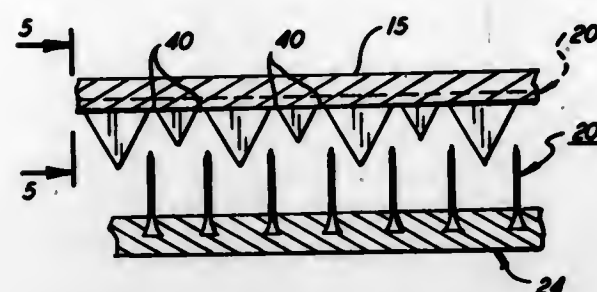
Int. Cl.³ A22C 9/00

U.S. Cl. 17-28

13 Claims

1. A meat tenderer that includes
a generally flat support plate,
a handle secured to the top surface of the plate,
a plurality of thin blades mounted in rows along the bottom surface of the plate, and
each of said blades further including a series of teeth aligned

along its length that depend downwardly from the plate, each of said teeth terminating in a point, and every other



tooth along the length of the blade being of shorter length than that of an adjacent tooth.

4,242,775

SNAPRING

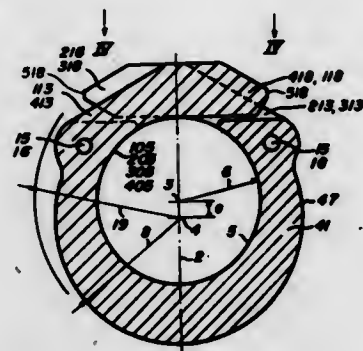
Karl Eickmann, 2420 Iashiki, Hayama-machi, Kanagawa-ken, Japan

Filed Feb. 12, 1979, Ser. No. 11,242

Int. Cl.³ B65D 63/00; F16B 19/00

U.S. Cl. 24-16 R

7 Claims



6. A snapring consisting of four substantially equal plane rings, wherein each ring has an inner face and an outer face with an eccentricity between said faces for forming a radially wider portion on the respective ring and a radially narrower portion on the respective ring, wherein said radially wider portion bears the main force of the radial capability to span said ring in radial direction,

wherein a slot is provided cutting said radially narrower portion for making a radial flexibility of said ring possible, wherein an imaginary face can be assumed through the middle of said wider and narrower portions, whereby said ring forms portions of symmetry around said imaginary face;
wherein said slot extends normal or under an angle relatively to said imaginary face,
wherein an extension of one arm of said ring extends along said slot to form the other wall of said slot,
wherein the other arm of said ring ends on said slot,
wherein said ring includes at least one connection portion for fastening of a plurality of rings axially behind each other,
wherein said four rings consist of two inner rings and of two outer rings, wherein said inner rings are axially behind each other,
wherein one of said outer rings attaches one of said inner rings and the other outer ring attaches the other of said inner rings,
wherein said inner rings are oppositionally mounted respectively to said outer rings whereby said extensions of said inner rings face said slots of said outer rings,
wherein said arm extensions extend radially beyond said slot; and
wherein said rings are axially behind each other are kept together by connection means to form together said snap ring, whereby the inner rings are closing the slot areas of said outer rings and said outer rings are closing the slot

areas of said inner rings for forming a radially allround inner face-set on said snap-ring while said snap ring may be radially expanded by pressing said extensions together by a respective jig for moving said snap ring over a cylindrical part to be fastened whereafter when said extensions are released from said pair of forceps, the said snap ring clamps radially inwardly to keep said part kept allround spanned by said inner faces of said rings under the radially inwardly directed spanning forces of said snap ring.

4,242,776

CUFFLINK

Hideo Kurashima, Zip 110, 5-6, Negishi 2-chome, Taito-ku, Tokyo, Japan

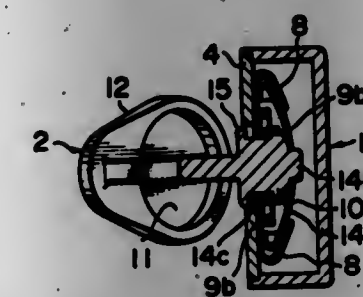
Filed Aug. 13, 1979, Ser. No. 66,466

Claims priority, application Japan, Apr. 13, 1979, 54-49013[U]

Int. Cl.³ A44B 5/00

U.S. Cl. 24-41

12 Claims



1. A cufflink, comprising:
two enlarged elements, the first being free and the second having an attached shank;
the shank having an enlarged free end portion and an axially adjacent portion of non-circular transverse cross-sectional figure;
the shank further having laterally outwardly opening notch means associated with said non-circular portion;
said first enlarged element being hollow and having a back through which an opening communicates with the interior thereof;
said opening having a portion of non-circular transverse cross-sectional figure sized to permit receipt of said non-circular portion of said shank therethrough in each of two different angular orientations;
said first enlarged element housing a first spring and a second spring;
the first spring being adapted, positioned and mounted to be intercepted by and resiliently loaded by engagement with said enlarged free end portion of said shank is inserted through said opening with said shank non-circular portion being in a first said angular orientation relative to said opening non-circular portion and said shank free end pushed further into the interior of said first enlarged element;
the second spring being adapted, positioned, and mounted to snap into said notch means and to remain therein as further pushing is relaxed, whereupon said first spring, recovering slightly causes said shank non-circular portion to become closely surrounded for at least part of the axial extent thereof by said opening non-circular portion, so that engagement of the second spring in the notch prevents withdrawal of the shank non-circular portion by the opening non-circular portion prevents substantial angular rotation of said first enlarged element relative to said second enlarged element, but so that upon further pushing of said shank into said opening, said shank non-circular portion fully axially passes said opening non-circular portion, whereupon said first enlarged element may be angularly rotated relative to said second enlarged element to sequentially cam said second spring out of said notch and bring said shank non-circular portion into said second angular orientation relative to said opening non-circular

portion so that said first spring, upon relaxation of said further pushing, may substantially eject said shank from said opening permitting separation of said first enlarged element from said second enlarged element.

4,242,777

MARKED CABLE SLING

Daniel P. J. Bourard, Thibermont by Neuville les Dieppe, and Michel J. Garconnet, 22, rue du Docteur Vitet, Saint Nicolas d'Allermont, both of France

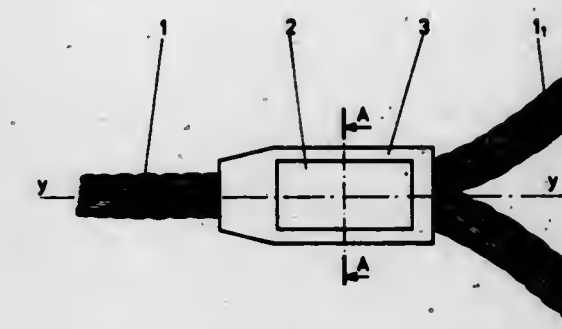
Filed Jul. 12, 1978, Ser. No. 923,782

Claims priority, application France, Jul. 13, 1977, 77 21798

Int. Cl.³ F16G 11/00

U.S. Cl. 24-115 A

3 Claims



1. A sling comprising a cable having an end portion doubled back upon itself to form an end loop, a malleable metal sleeve encircling and tightly engaging the end of the cable and the portion of the cable beside said end, and a transversely curved metal plate embedded in the outer surface of said sleeve and having an exposed outer surface and side edges extending lengthwise of the axis of the sleeve, metal of said sleeve overlying said side edges to hold the plate in place as long as the sleeve is not deformed, said outer surface of the plate being provided with identifying intaglio marking.

4,242,778

PRESS FIT INTELLIGENT FASTENERS FOR RANDOM OR LIGHTLY CONSTRAINED ASSEMBLY

Alan F. Kay, 67 Byron Rd., Weston, Mass. 02193

Filed Jul. 26, 1978, Ser. No. 928,297

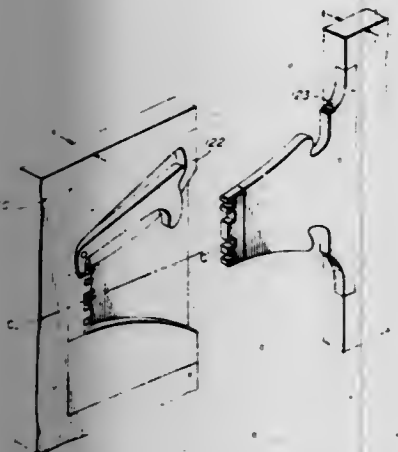
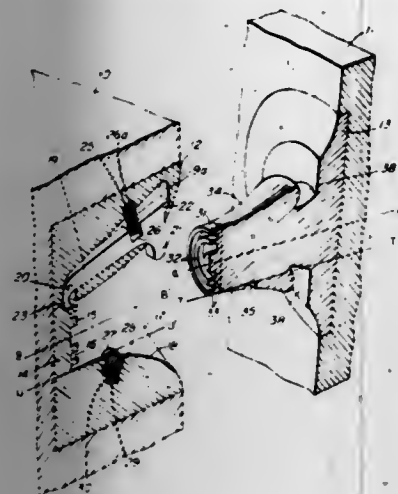
Int. Cl.³ A44B 19/00

U.S. Cl. 24-230 R

18 Claims

1. Fastening means, comprising:
a first mating element for receiving a second mating element in mating relation along an insertion axis, said first element having
circular key code means formed in said first element in a plane perpendicular to said axis and rotationally symmetric about said axis,
receiving surface means formed in said first element rotationally symmetric about said axis, said receiving surface providing a monotonically decreasing aperture directed toward said code means for receiving said second element,
extensible locking means formed in said receiving surface means for locking said second mating element in place

relative to said insertion axis only when said elements are in mating relation as determined by said code means; a second mating element for insertion in said first mating element in mating relation along said insertion axis in the direction of said code means, said second element having second circular key code means formed in said second element in a plane normal to said axis and rotationally



symmetric about said axis in mating relation to the first said code means, inserting surface means formed in said element rotationally symmetric about said axis, said inserting surface providing a monotonically decreasing projection directed toward said second code means for inserting into said first element, and engaging means formed in said inserting surface means for engaging said locking means in locking relation only when said elements are in mating relation as determined by said code means, whereby said second element may be introduced into said first element along an arbitrary axis and easily aligned with said insertion axis in mating relation and locked in place only as determined by said code means.

4,242,779

APPARATUS FOR THE MANUFACTURE OF NON-WOVEN TEXTILE FABRICS

Jean Curinier, Le Cheylard, and Charles Vandermarliere, Pont-de-Cherry, both of France, assignors to Les Fils d'Auguste Chomarat & Cie, Paris, France

Filed Apr. 21, 1978, Ser. No. 898,577

Claims priority, application France, Apr. 24, 1977, 77 13991; Jul. 13, 1977, 77 22475

Int. Cl.³ D04H 3/04

U.S. Cl. 28-101

3 Claims

1. In an apparatus for the manufacture of a web of weft yarns which run transversely relative to the length of the web and which can be incorporated into a composite non-woven fabric, where said apparatus comprises, in combination:

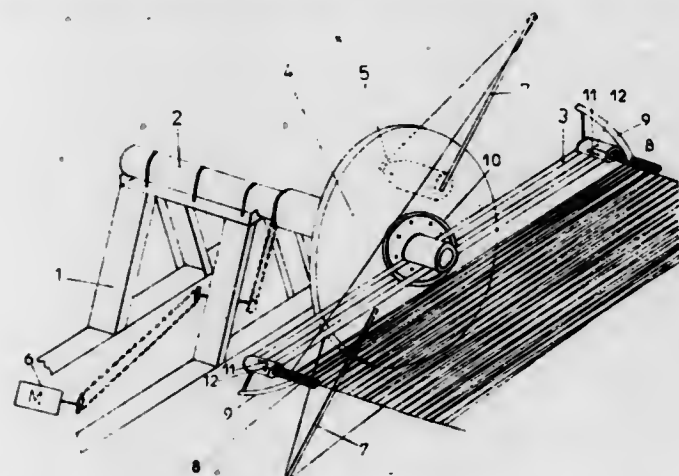
- (a) a pair of laterally spaced helical yarn guide members rotatable about their own axes,
- (b) at least four yarn feed elements rotatable together about

an axis which is parallel to and between the axes of the helical yarn guide members,

- (c) at least four bobbin supports,
- (d) means for feeding a yarn from a bobbin carried by each of said supports, whereby each yarn may be wrapped around said helical yarn guide members, and
- (e) a yarn guide yarn ramp placed adjacent each said helical yarn guide member, said yarn guide ramps being disposed to guide yarn into the space between adjacent turns of the respective helical yarn guide members,

the IMPROVEMENT comprising:

- (f) the laterally spaced helical yarn guide members being substantially identical hollow rotary members, each helical yarn guide member comprising a plurality of individual helices imbricated with one another, wherein the number of helices is equal to the number of weft yarns being fed, and the individual helices are rotated at a speed which is double that of the speed of rotation of the yarn feed elements, and
- (g) each yarn guide ramp including two fixed guides, one upstream and one downstream of the direction of advance of the web, said fixed guides being disposed adjacent each helical yarn guide member, the ends of said fixed guides adjacent the helical yarn guide member being tangential thereto and at a distance from one another equal to the pitch of the helical yarn guide member minus the thickness of the material forming the helical yarn guide mem-



ber itself, said fixed guides being inclined in opposite directions, the upstream guide being inclined away from the direction of advance of the web and the downstream fixed guide being inclined toward the direction of advance of the web,

- (h) a first half of the yarn feed elements, said first half including feed elements adjacent one to the other and having their outlet ends positioned upstream of the upstream fixed guides, and a second half of the yarn feed elements, said second half including feed elements adjacent one to the other and having their outlet ends positioned downstream of the downstream fixed guides, so that the yarns from the first half of the yarn feed elements are laid down in a common vertical plane and guided into spaces between turns of the helices by the upstream fixed guide and the yarns from the second half of the yarn feed elements are laid down in a common vertical plane and guided into spaces between turns of the helices by the downstream fixed guide, whereby the weft yarns are strictly parallel to one another and identical selvages are formed.

4,242,780

HAMMER WITH CHIPPING BLADE

Erwin J. Littman, 4466 N - 600 W, LaPorte, Ind. 46350

Filed Nov. 13, 1979, Ser. No. 93,056

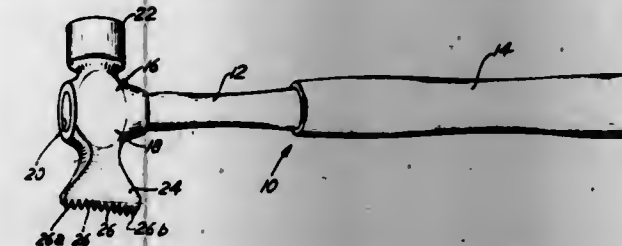
Int. Cl.³ B23C 43/00

U.S. Cl. 29-81 D

7 Claims

1. A chipping hammer for cleaning welds and the like comprising an elongated handle, a head fixed to an end of the

handle, said head having a hammer head portion on one end and a chipping blade projecting from the other end, said chipping blade having a plurality of teeth formed on the end thereof, said teeth being formed with surfaces transverse and



square to the plane of the head and converging toward the tip of the tooth to form a blunt tip, the edges of each tooth being sharp, the axis of said handle lying in the plane of said chipping blade for facilitating use of the chipping hammer in scraping chipping and cleaning welds.

4,242,781

VARIABLE CROWN SLEEVE ROLL

Toshiji Takigawa, Nishinomiya, and Junichi Kida, Kohriyama, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

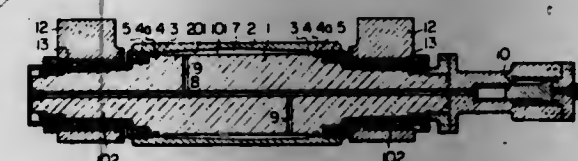
Filed Apr. 4, 1978, Ser. No. 893,305

Claims priority, application Japan, Mar. 2, 1978, 53-23938

Int. Cl.³ B21B 31/32; B60B 9/22

U.S. Cl. 29-113 AD

1 Claim



1. A variable crown sleeve roll for rolling steel strip comprising an arbor, a sleeve having the opposite ends of the inner peripheral surface shrink fitted to the outer peripheral surface of said arbor for being sealingly secured thereto and the portion of said sleeve between said opposite ends defining with said arbor a chamber of a predetermined shape, said arbor having fluid passage means therein for supplying a pressurized fluid to said chamber to thereby control the amount of crown of said sleeve, the thickness of said sleeve being tapered along straight lines and decreasing from the opposite ends to the center, the optimum minimum thickness t_{min} of the sleeve at the central axial portion thereof, the optimum pressure receiving length l of the sleeve, the optimum contact pressure p^1 between the sleeve and the arbor, and the sleeve thickness taper angle α being in accordance with the optimum formulas:

$$0.3 \sqrt{R \frac{q}{p}} \leq t_{min} \leq \sqrt{R \frac{q}{p}}$$

$$B - (D/4) \leq l \leq L - (D/2)$$

$$1' \leq \alpha \leq 5'$$

$$p^1 > p$$

wherein:

R is the average radius of the sleeve at the axially central position thereof
D is the outer diameter of the sleeve
L is the overall length of the sleeve
B is length of the roll to contact the width of the steel strip to be rolled
q is the unit length rolling load; and
P is the pressure of the fluid.

4,242,782

CERAMIC CONVEYOR ROLLS WITH METAL END CAPS FRICITIONALLY FIXED THERETO

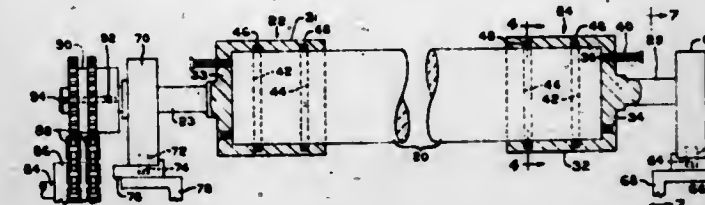
Henry P. Hanneken, Pittsburgh, and William H. Marriott, Jr., Altoona, both of Pa., assignors to PFG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 8, 1979, Ser. No. 46,984

Int. Cl.³ B21B 31/08; F27D 3/00

U.S. Cl. 29-129

8 Claims



1. A glass conveyor roll of ceramic composition having an axially elongated, substantially cylindrical shape including an intermediate portion of round cross-section for conveying glass sheets for thermal treatment, shafts located in alignment with the ends of said roll, and means for drivingly connecting at least one of said shafts to said roll, said means comprising a metal end cap including a metal cylindrical member rotatable with one of said shafts and having an inner surface in circumferential engagement with said roll at an end portion thereof, a circumferential groove in said inner surface of said metal cylindrical member and an O-ring of elastomeric material received within said groove in position to provide a frictional force sufficient to transmit a torque from said one of said shafts through said metal cylindrical member to said ceramic roll without undue wear of said roll, O-ring or said metal cylindrical member.

4,242,783

CALENDER ROLL FOR USE IN SUPER CALENDER FOR MAGNETIC TAPES

Kenji Watanabe, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

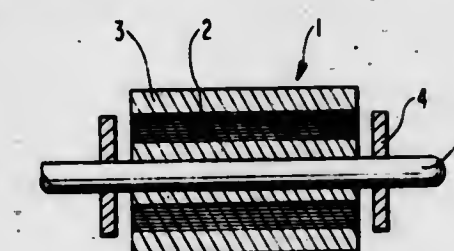
Filed Jul. 11, 1978, Ser. No. 923,751

Claims priority, application Japan, Jul. 11, 1977, 52-82054

Int. Cl.³ B21B 27/02, 31/08

U.S. Cl. 29-132

8 Claims



1. In a super-calender roll for super-calendering the magnetic surface of a magnetic recording medium and having a core and a roll portion secured to said core, the improvement wherein:

said roll portion comprises an inner roll portion of fibrous material on which is molded an outer roll portion of polyamide resin, the outer surface of said outer roll portion having a super smooth surface and being free of said fibrous material;
said inner roll portion comprising a plurality of layers of said fibrous material wound on said core, the thickness of said plurality of layers being 20 to 30 mm;
said outer roll portion has a thickness of about 10 to 15 mm, and said polyamide resin has a linear expansion coefficient from about $8 \times 10^{-5}/^{\circ}\text{C}$. to about $8 \times 10^{-4}/^{\circ}\text{C}$.;
said fibrous material is made of glass fibers; and

the hardness of said outer surface is at least 80 degrees Shore.

4,242,784

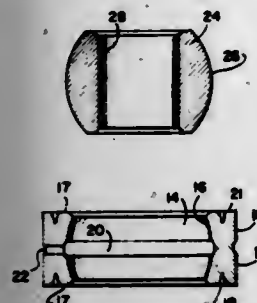
METHOD OF MANUFACTURING A SPHERICAL BEARING

Albert R. McCloskey, Fairfield, Conn., assignor to The Heilmann Corporation, Fairfield, Conn.
Continuation of Ser. No. 703,820, Jul. 9, 1976, abandoned. This application Jul. 25, 1978, Ser. No. 928,040

Int. Cl.³ B21D 53/10; B21K 1/04

U.S. Cl. 29—149.5 B

13 Claims



1. A method of manufacturing a spherical bearing comprising preforming an annular metallic outer bearing member with an axial opening therethrough and a concave spheroidal inner bearing surface, preforming an inner bearing member and with a convex outer spheroidal bearing surface complementary to and in precise spheroidal bearing conformity with said preformed concave inner bearing surface of said outer member to substantially final dimensions of the members and bearing surfaces, axially aligning the inner and outer bearing members, forcing the inner member axially within the opening of the outer member, the inner member acting as a die, and uniformly radially expanding and enlarging one end of the outer member, thereby cold working an annular portion of the metallic outer member which surrounds the opening, by stretching the annular portion beyond its elastic limit.

4,242,785

METHOD FOR GAPPING A SLIDE FASTENER CHAIN

Hideo Shimai, Namerikawa, Japan, assignor to Yoshida Kogyo KK, Chiyoda, Japan

Division of Ser. No. 938,972, Aug. 4, 1978, Pat. No. 4,188,716.

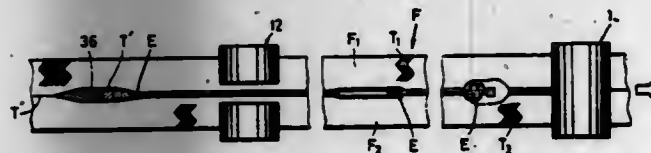
This application Nov. 13, 1979, Ser. No. 93,278

Claims priority, application Japan, Aug. 10, 1977, 52-95696

Int. Cl.³ B23P 19/04

U.S. Cl. 29—408

1 Claim



1. A method of producing a series of gaps free of fastener elements in and along a continuous length of slide fastener chain having a pair of oppositely disposed stringer tapes carrying along confronting longitudinal edges rows of fastener elements in interengaged relation, each of said elements having a coupling head portion and a connecting portion, which method comprises the steps of:

(a) applying a preliminary spreading force to the fastener chain to impart a tendency to the fastener chain to spread the confronting edges of the tapes apart;

- (b) applying constant tension to a length of said fastener chain;
- (c) spreading apart the confronting edges of the tapes which have been imparted said tendency, and holding the interengaged coupling head portions of the fastener elements of the tensioned fastener chain;
- (d) gripping the connecting portions of the interengaged fastener elements;
- (e) severing said interengaged coupling head portions of the fastener elements;
- (f) pulling said connecting portions, while being gripped, outwardly apart from their respective tapes to remove residual element debris; and
- (g) withdrawing the fastener chain intermittently along a length comprising to the spacing between adjacent gaps to be produced.

4,242,786

METHOD OF FORMING AN ASSEMBLED ARTICLE

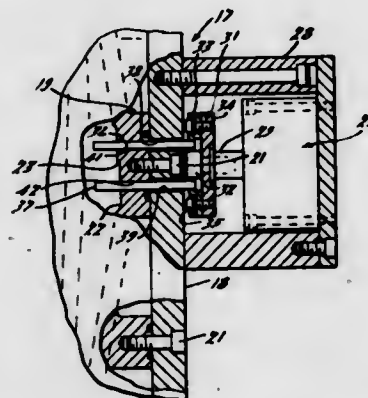
P. Paul Pappalardo, Greenwich, Conn., assignor to Greenstate, Inc.

Filed Dec. 1, 1978, Ser. No. 965,486

Int. Cl.³ B29C 17/07, 17/08, 27/00

U.S. Cl. 29—416

4 Claims



1. The method of making an article to be assembled from two pieces having overlapping apertured parts comprising the steps of forming a mold with a surface to generate the shape of the pieces, the mold surface being configured to form the pieces simultaneously and initially being integrally connected together, the mold surface being configured to form the portions of the parts to be aperture aligned in one direction relative to each other and offset relative to each other in non-overlapping relationship in a normal direction, placing a preform in the mold, blow molding the preform into engagement with the mold surface to form a single element, simultaneously piercing apertures in the respective parts of said preform while still held in engagement under pressure with the mold surfaces, removing the element from the mold, severing the element along the abutting edges of the parts and between the pierced apertures of the respective parts to form the separate parts for subsequent assembly, aligning the pierced apertures so that they are superimposed and placing a fastener through the aligned apertures for affixing the pieces together.

4,242,787

METHOD FOR JOINING FIBERGLASS PLASTIC ROD TO METAL FITTING OF ELECTRICAL DEVICE

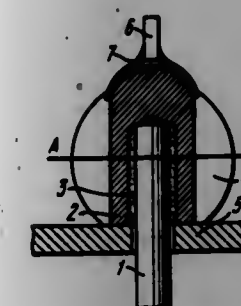
Andrei A. Deribas, ulitsa Pravdy, 1, kv. 20; Alexei I. Limasov, ulitsa 1905 goda, 85, kv. 110; Alexei I. Matytsin, Morskoi prospekt, 5, kv. 32; Anatoly M. Staver, Morskoi prospekt, 36, kv. 10; Rudolf I. Shebalin, ulitsa Serebrenikovskaya, 16, kv. 4, all of Novosibirsk, and Jury N. Yashin, Slavyansk, Parkovy pereulok, 7, kv. 52, Donetskaya oblast, all of U.S.S.R.

Filed Aug. 7, 1978, Ser. No. 931,424

Int. Cl.³ B23P 17/00

U.S. Cl. 29—421 E

5 Claims



1. A method for joining a fiberglass plastic rod to a metal fitting of an electrical device, comprising the steps of providing a bore in said metal fitting, the diameter of said bore somewhat greater than that of said fiberglass plastic rod; inserting one of the ends of said fiberglass plastic rod into said bore; filling the gap defined between said fiberglass plastic rod and said bore provided in said metal fitting with a porous material to form a porous layer; and compressing said metal fitting by pulse loading, by providing an explosive charge around said fitting in the region of said bore and shaping the explosive charge to have a maximum thickness at a cross-section which intersects said bore, and thereafter igniting said explosive charge to apply a maximum pressure to said rod at said cross-section to compressively join said fiberglass plastic rod and said metal fitting.

4,242,788

METHOD OF DISASSEMBLING HOOKS FROM HOOK RETAINERS IN RECESSED CUPS OF FISHING LURES

Welbourne D. McGhee, Melbourne, Fla., assignor to Loop-A-Line, Inc., Melbourne, Fla.

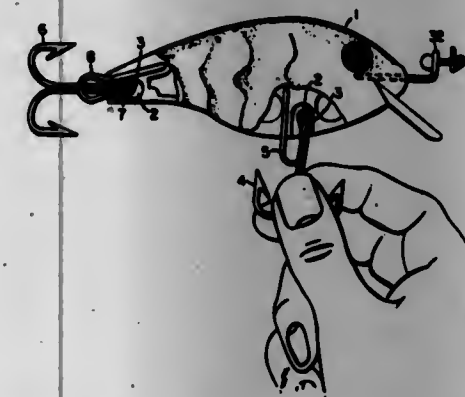
Division of Ser. No. 908,738, May 16, 1978, This application Jul.

23, 1979, Ser. No. 99,630

Int. Cl.³ B23P 19/00

U.S. Cl. 29—426.6

1 Claim



1. A method of disassembling a fishing lure having hooks and biased hook retainers with free ends located in recessed cups, comprising: pressing the eye of each hook into said associated cup until the eye is adjacent to the free end of said retainer;

rotating each hook eye 90 degrees to disengage the eye from said retainer; and withdrawing the hook eye from said associated cup.

4,242,789

METHOD FOR MAKING AN IMPROVED MAGNETIC ENCODING DEVICE

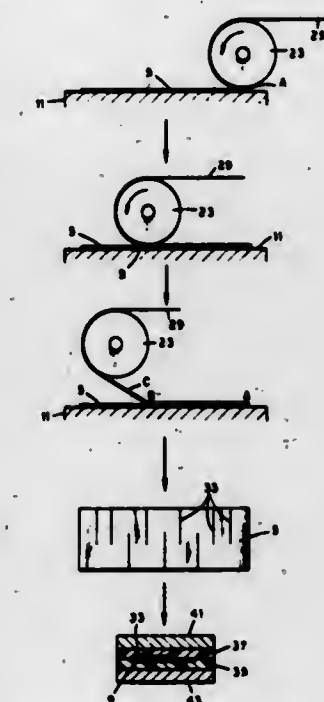
Richard J. Fox, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 16, 1979, Ser. No. 21,291

Int. Cl.³ B23D 11/02

U.S. Cl. 29—446

8 Claims



1. A method of making an improved magnetic encoding device having at least one element of magnetic material for use as a magnetic storage medium, comprising the steps of: bending said element uniformly along the length thereof by passing said element about a roller having a radius sufficient to bend said element along a common radius of curvature sufficient to exceed the yield point of said element; attaching the free end of said element passing about said roller to a non-magnetic substrate; advancing said roller over said substrate to extend said element in an unbent orientation a desired length thereover; and restraining the prebent element in an unbent orientation on said substrate by attaching said element to said substrate at said desired length position so that a uniform stress is produced in said element along said desired length thereof.

4,242,790

METHOD OF MAKING AN ELECTRICAL CONNECTOR CONTACT

Dennis L. Ellington, Sidney; Paul D. Niles, Bainbridge; Richard W. Normann, Otago, and Theodore L. Wilklow, Sidney, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 863,366, Dec. 22, 1977, This application

Sep. 28, 1978, Ser. No. 946,690

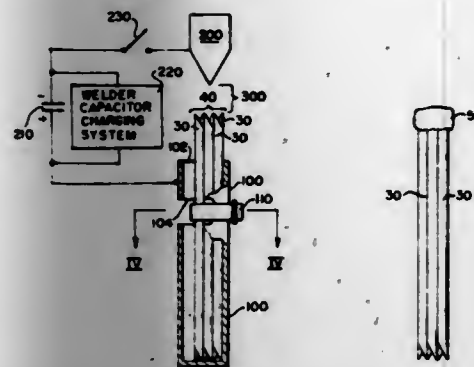
Int. Cl.³ H01R 43/02

U.S. Cl. 29—879

9 Claims

1. A method of assembling an electrical contact for an electrical connector, said contact including a plurality of wires held within a sleeve, the steps of the method comprising: cutting a fine wire into a plurality of straight wire lengths having a primary axis and of approximately equal length; forming a tapered portion onto one end of each wire length; assembling the plurality of straight wire lengths into a bun-

die so that the axes of the wire lengths are generally parallel but non-coplanar to one another and with the tapered end portion of each wire length being located at the same end of the bundle;



welding the wires together at the other end of the bundle; inserting the welded bundle into the sleeve; and securing the bundle of wires to the sleeve.

4,242,791

HIGH PERFORMANCE BIPOLAR TRANSISTORS FABRICATED BY POST EMITTER BASE IMPLANTATION PROCESS

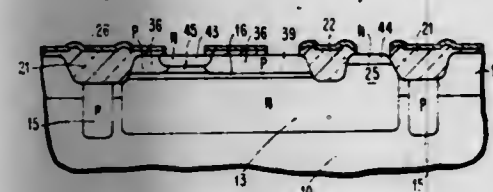
Cheng T. Horng, Fishkill; Harold V. Lillja, Peekskill, and David K. Seto, LaGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,699

Int. Cl.³ B01J 17/00

U.S. Cl. 29—578

10 Claims



1. In a method for forming a bipolar transistor said method including the following steps:

- forming a subcollector region of a first conductivity type in a monocrystalline semiconductor substrate of a second conductivity type;
- forming an annular shaped isolation region in said substrate that at least encompasses said subcollector region;
- depositing an epitaxial layer of semiconductor material on said substrate;
- forming a silicon dioxide layer on said epitaxial layer;
- forming a silicon nitride layer on said silicon dioxide layer;
- opening an annular shaped trench in said exposed surface of said substrate, said trench having a depth less than the thickness of said epitaxial layer, said annular shaped trench being superimposed over said annular shaped isolation region and including a portion to be utilized in providing collector reach through isolation;
- exposing said substrate to an oxidizing atmosphere to provide recessed silicon dioxide in said annular shaped trench and said portion utilized in providing collector reach through isolation;
- remove the silicon nitride layer formed in step (e) supra;
- implant impurities of a first conductivity type into a predetermined region of said epitaxial layer to provide collector reach-through;
- form a silicon nitride layer over said exposed surface of said substrate;
- open an emitter contact window, a base contact window and a collector contact window in said silicon nitride layer and underlying silicon dioxide to expose three regions on said epitaxial layer, said three regions on said epitaxial layer respectively corresponding to said emitter contact

region, said base contact region and said collector contact region;

- deposit a metal film over the exposed surface of the said substrate;
- utilize the substrate as an anode in an electrolytic cell, whereby the metal film over said emitter contact region, said base contact region and said collector contact region are respectively anodized to form first, second and third metal oxide regions on the exposed surface of said substrate;
- remove the unoxidized metal film whereby said first, second and third metal oxide regions remain on the surface of the substrate; and
- additional steps further characterized in that said first metal oxide region is utilized to align the emitter and provide for post emitter ion implantation of the base.

4,242,792

PORTABLE TOOL FOR MASS TERMINATION CONNECTOR

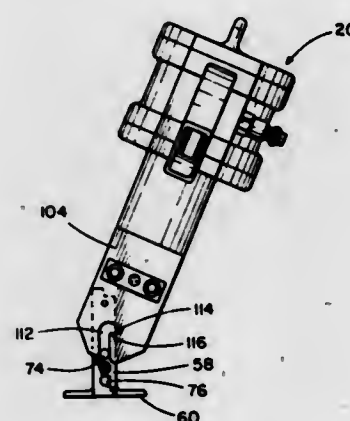
Peter Kirsinas, Jr., Country Club Hills, Ill., assignor to Panduit Corp., Tinley Park, Ill.

Filed Jun. 4, 1979, Ser. No. 45,578

Int. Cl.³ H01R 43/00

U.S. Cl. 29—857

16 Claims



- A portable tool for simultaneously terminating a plurality of conductors in a connector positioned in a connector support which is mounted on a wiring board or the like, said connector comprising a housing defining a series of spaced wire-receiving cavities and a metallic terminal element having a wire-receiving portion disposed in each cavity, said conductors being positioned in alignment with said cavities, said tool comprising: means for detachably mounting said tool on said connector support; a ram which reciprocates relative said connector; an insertion assembly carried by said ram and including a plurality of wire insertion fingers for moving said conductors into said cavities; movable cutter means carried by said ram adjacent said dieset; and fixed cutter means underlying said conductors when said tool is mounted on said support, said movable and fixed cutter means cooperating to sever excess portions of said conductors substantially flush with a wall of said housing as said ram extends causing said wire-insertion fingers to move said conductors into said cavities where they are terminated in the wire-receiving portions of said terminal elements whereby a single tool can be used to terminate conductors in a plurality of connectors held at spaced locations on said wiring board.

4,242,793

NUT GUIDE FOR INSTALLATION HEAD

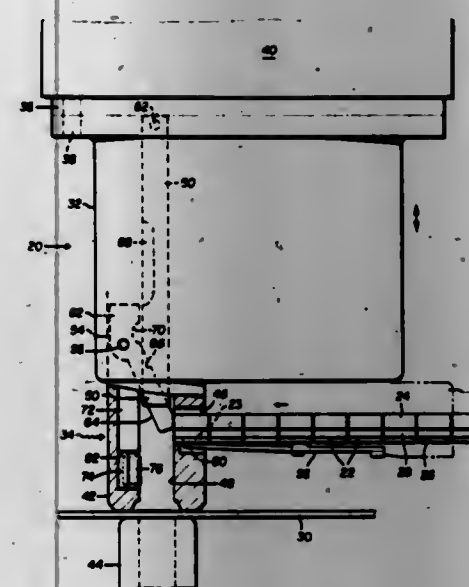
Horton Matthews, Brighton; Kenneth V. York, Howell, and Dale H. Goodsmith, Livonia, all of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Filed May 25, 1979, Ser. No. 42,658

Int. Cl.³ B23P 19/04

U.S. Cl. 29—798

10 Claims



- In a nut installation head having a nut passage receiving a plurality of nuts, a transverse plunger passage communicating with said nut passage, a plunger reciprocating in said plunger passage through the intersection of said passages to install a nut received in said plunger passage from said nut passage, a feed means feeding a nut successively into said plunger passage, said head having an apertured nose portion, said plunger passage extending through said nose portion, said nut passage extending into said nose portion, and said plunger being movable through said nose portion, the improvement which comprises a nut guide for said head including:

- a generally cylindrical slot within said nose portion parallel to and displaced laterally of said plunger passage, below said nut passage;
- a nut guide assembly within said slot including a split semi-tubular resilient retainer means nested within said slot having a semi-tubular recess parallel to said plunger passage with a predetermined internal first radius, facing said plunger passage;
- a metallic dowel of generally cylindrical shape having a predetermined second external radius, greater than said first radius, positioned within said slot parallel to said plunger passage, laterally and guidably nested partly within said retainer recess, with surface portions thereof throughout its height bearing against said retainer means, a radial portion of said dowel extending into said plunger passage to guidably support a nut within said plunger passage;
- successive downward movement of said plunger moving said nut along said dowel and adapted to forcefully project said nut into piercing and interlocking registry with a metallic panel underlying said nose, said dowel guidably engaging said nut during its downward movement;
- said dowel adapted for transverse movement and resilient deforming engagement with said retainer means further into its recess as said nut is moved past said dowel, said dowel under the expansive action of said retainer means automatically returning into said plunger passage to its initial nut supporting position.

4,242,794

UNIVERSAL BLOWER ATTACHMENT UNIT

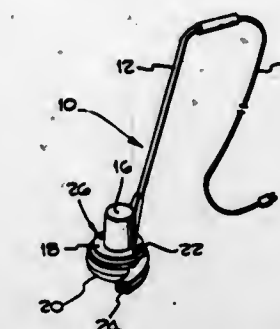
Clayton R. Peterson, 308 Avenida Santa Margarita, San Clemente, Calif. 92672

Filed Feb. 27, 1979, Ser. No. 15,630

Int. Cl.³ B25F 3/00

U.S. Cl. 30—122

19 Claims



- A blower attachment for a line trimmer including a trimmer housing and drive shaft; said attachment comprising: a blower housing having an air inlet and an air outlet said blower housing being secured in a position spaced from said trimmer housing, and said inlet being disposed between said blower housing and said trimmer housing; an impeller mounted for rotation in said blower housing and having means coupling said impeller to said drive shaft for moving air from said inlet to and out of said outlet, said impeller including a shaft extending out of said blower housing toward said trimmer, said shaft carrying a second impeller outside of said blower housing for providing cooling air to said trimmer; and means for releasably securing said blower housing to said trimmer housing in a position placing said receiving means on said impeller in operative connection with said drive shaft.

4,242,795

KNIFE HANDLE

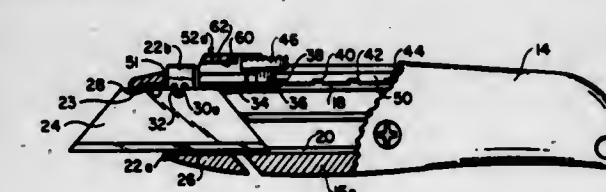
Ernest J. Rollband, Brooktondale, N.Y., and Robert F. West, West Simsbury, Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Feb. 2, 1979, Ser. No. 8,877

Int. Cl.³ B26B 1/08, 5/00

U.S. Cl. 30—162

3 Claims



- An elongated knife handle having a blade opening at the forward end thereof, a blade carrier within said handle for mounting a blade for longitudinal movement between a sheathed position in which it is stored in the handle and an extended unsheathed position, and a longitudinal slot extending along the top of the handle in general alignment with the longitudinal plane passing through said blade opening, said blade carrier including a latching member providing a thumb button extending through said top slot for manipulation of the blade carrier between its sheathed and unsheathed positions, the improvement wherein an integral upstanding abutment is provided on the top of the handle adjoining the forward end of the top slot, said abutment extending higher than said thumb button to shield the thumb button from inadvertent pressure when the thumb button is positioned at the forward end of the slot with the blade in its unsheathed position and manual pressure is applied to the handle during cutting operations, the carrier having a flexible upstanding arm which extends through said top slot forwardly of the thumb piece, said arm

including means for securing the blade on the blade carrier, said handle providing a forward extension to the top slot for receiving the flexible arm when the blade is in its unsheathed position and a lateral recess for receiving the flexible arm when it is deflected laterally removed the blade, and said abutment being longitudinally tunneled to permit the arm to pass under the abutment.

4,242,796
TREE SAW

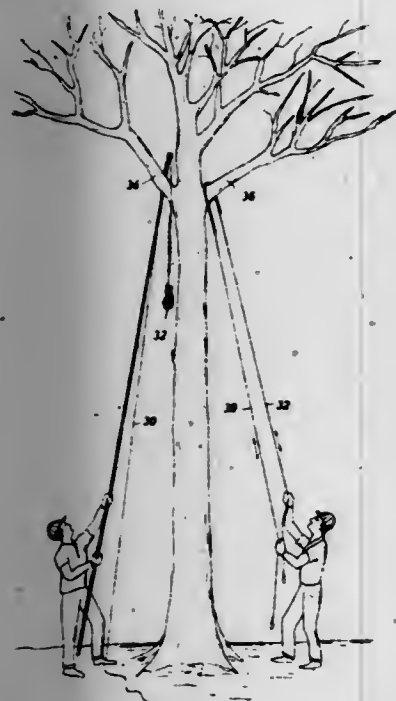
Victor Barausch, and Anton Barausch, both of 4902 Imperial, Houston, Tex. 77401

Filed Sep. 19, 1979, Ser. No. 77,136

Int. Cl.³ B27B 21/00

U.S. Cl. 30—166 R

5 Claims



1. A saw operable from ground level for cutting limbs from a tree comprising a plurality of saw blades, each blade comprising a relatively short, thin, flat-sided member having cutting teeth on its edge, and means connecting the saw blades in spaced, end-to-end relationship for relative pivotal movement around axes perpendicular to the flat sides thereof said connecting means being equal to or less in width than the saw blades and connects the saw blades so that the blades and the connecting means lie in the same plane and the force applied to the ends of the saw is transmitted to the saw blades along the longitudinal axis of the blades so that when the saw is positioned over the top of a tree limb, the individual saw blades will assume a position with the blades in a plane generally transverse the longitudinal axis of the limb and in the plane of the forces that are alternately applied to the end saw blades to move the blades back and forth across the limb to cause the teeth to cut through the limb.

4,242,797

ROTARY NYLON LINE VEGETATION CUTTER

Vincent A. Palmieri, and John P. Palmieri, both of 3745 El Camino Dr., San Bernardino, Calif. 92410

Division of Ser. No. 925,045, Jul. 17, 1978, Pat. No. 4,185,381.

This application Jan. 28, 1979, Ser. No. 53,101

Int. Cl.³ A01D 50/00

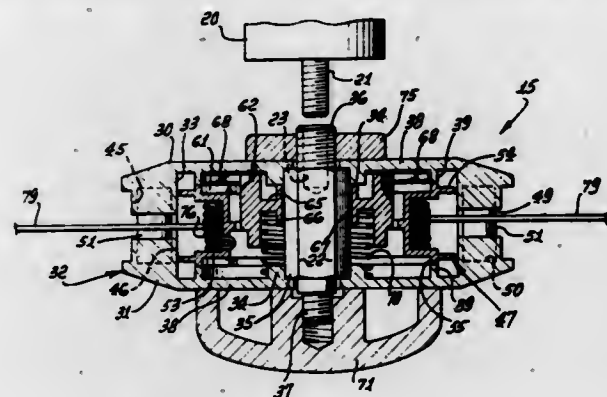
U.S. Cl. 30—276

8 Claims

1. In a flexible line whirling vegetation cutting hand tool, a rotary head for which is provided to be supported by and manipulated on the lower end of a relatively long handle equipped with power means for rapidly spinning said head on a vertical axis, the improvement comprising the following combination of elements;

an annular, cylindrical, double radially flanged spool providing an external peripheral storage space for winding a

reserve supply of flexible cutting line thereon, said spool having a relatively large diameter bore provided with suitable circumferentially equally spaced stops; a rotary head including a housing providing a cylindrical chamber freely rotatably confining said spool and having at least one peripheral window for the withdrawal of a free end portion of said line from said spool for use in vegetation cutting, the centrifugal force thus generated in said free line portion tending to powerfully unwind said reserve line by rotating said spool relative to said housing; indexing means spring biased to translate said means axially on said housing into a first position thereon for locking said spool against such rotation, said indexing means being responsive to a vertical upward shock applicable to said rotary head, as by swinging downwardly the handle of the power assembly on which said head is rotating at its nor-



mal speed, until said head strikes the ground while so rotating, to produce a reverse translation of said indexing means axially to a second position which frees said spool, tentatively permitting it to rotate through a predetermined angle to facilitate withdrawal of a corresponding amount of reserve line from the spool and releasing it through said window to supplement the pre-existing length of said free line end portion, and thereupon automatically concluding said bumping cycle by resuming its initial vertical spool locking position; and

a braking means associated with said indexing means which is automatically responsive to an excessive centrifugal force being currently generated by a supplemented length of said free cutting line end portion, to inhibit the immediate consummation of a consecutively additional bumping cycle.

4,242,798

HAND HELD BAND SAW

Mark W. Wikoff, Cincinnati, Ohio, assignor to Best & Donovan, Cincinnati, Ohio

Division of Ser. No. 881,734, Feb. 27, 1978, Pat. No. 4,160,320, which is a continuation-in-part of Ser. No. 785,037, Apr. 6, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,854

Int. Cl.³ B27B 13/08

U.S. Cl. 30—380

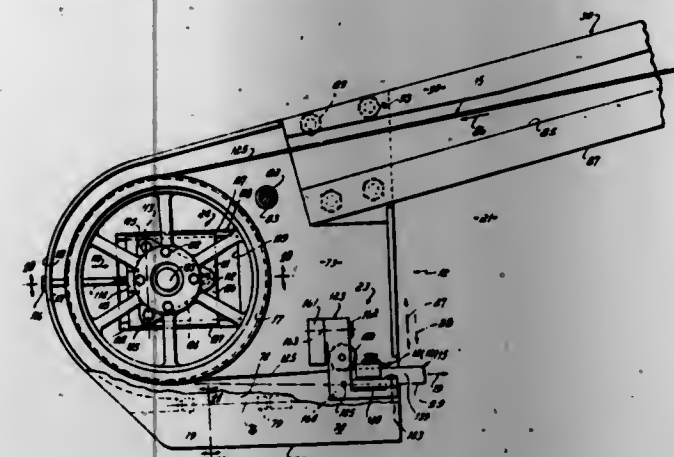
2 Claims

1. A blade take-up assembly for an idler wheel of a band saw of the endless blade type, said blade take-up assembly being connected within said saw's idler wheel housing, said blade take-up assembly comprising

a slide plate slidably mounted in a hole defined in said idler wheel housing, said idler wheel housing having ribs along parallel and spaced side edges of said hole, and said slide plate having rails along opposed side edges thereof, said rails being slidably received on said ribs,

a mounting plate carrying said idler wheel in rotatable relation thereon, said mounting plate being pivotally mounted to said slide plate by at least two spaced bolts, each of said bolts being oriented generally normal to said slide plate and said mounting plate, the bolted connection between said slide plate and said mounting plate being not structur-

ally rigid for permitting a limited tilting motion of said mounting plate relative to said slide plate about a phantom tilt axis defined by said spaced bolts and generally normal to said bolts, a first threaded shaft threadedly connected to said slide plate and extending exteriorly of said housing through said housing hole, said threaded shaft being adapted to bear against said mounting plate, the position of said first



threaded shaft relative to said slide plate determining the angular position of said idler wheel relative to said slide plate, and a second threaded shaft threadedly connected to said slide plate, a head on said second shaft being adapted to bear against the exterior surface of said idler wheel housing, the position of said second threaded shaft relative to said slide plate determining the position of said idler wheel relative to a driven wheel of said band saw.

4,242,799

CAR SHAVER AND HOLDER THEREFOR

Atrumi Kameyama, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

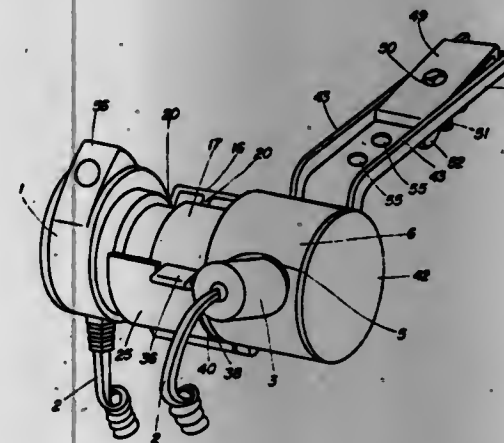
Filed Aug. 7, 1978, Ser. No. 931,528

Claims priority, application Japan, Aug. 17, 1977, 52-110409[U]; Aug. 17, 1977, 52-110410[U]; Aug. 25, 1977, 52-114189[U]; Aug. 30, 1977, 52-118043[U]; Sep. 5, 1977, 52-120314[U]; Mar. 14, 1978, 53-32876[U]; Mar. 14, 1978, 53-32877[U]

Int. Cl.³ B26B 19/38

U.S. Cl. 30—43.1

5 Claims



1. An electric shaver comprising a cutting portion formed on one end of a body of said electric shaver, a motor disposed in said body of said shaver, a hood slidably secured around the body of said shaver for alternately protecting and exposing the cutting portion of said shaver, a spring means which depresses said slidable hood into a first position of protecting the cutting portion from ambience, a lock mechanism for locking said slidable hood in a second position, thereby exposing the cutting portion to ambience, a switching means comprising a normal open switch which controls the power supply to said motor, said switch comprising a pair of conductive leaves which are

separated from each other when said hood is in said first position and are in contact when said hood is in said second position, and an actuator which forms a protrusion on one end of said slidable hood and engages and depresses one of said pair of conductive leaves toward the other of said pair of conductive leaves so as to automatically supply power to said motor when said hood is placed and held in said second position.

4,242,800

GARMENT DESIGNING AID

Fred W. K. R. Werber, 29 Schaumann-kamp, Reinbeck, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 853,668, Nov. 21, 1977, Pat. No. 4,156,969.

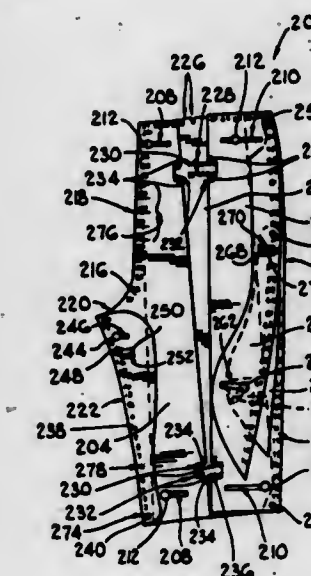
This application Mar. 1, 1979, Ser. No. 16,669

Claims priority, application South Africa, Mar. 9, 1977, 77/1434; United Kingdom, Nov. 19, 1976, 48456/76

Int. Cl.³ A41H 3/015

U.S. Cl. 33—14

1 Claim



1. A garment design aid for assisting a person in providing a pattern for a garment, the design aid including a main pattern template defining a hip region of the garment and including a hip adjusting means comprising: a first member that is pivotally attached at one end to the pattern template member on one side of the hip region, has at its other end a slot-extending circumferentially of said pivotal attachment that will allow movement of said first member across said main pattern template and has a suitably curved side edge; a second member that is pivotally attached at one end to the first member intermediate the first member's ends adjacent the hip region, has a substantially outwardly extending slot transverse to the slot in said first member and has a suitably curved side edge which cooperates with the side edge of the first member to define a variable hip profile of the garment; a pin fast with the main pattern template member and extending through the slots in the first and second members such that pivoting of the first member causes the second member to pivot about its attachment to said first member and to slide along said transfer slot in a suitable manner; and a securing means for securing the first and second members in a desired configuration.

4,242,801

BOWLING BALL GAUGE

John D. Ellison, 2451 W. 234 St., Torrance, Calif. 90501

Filed Mar. 9, 1979, Ser. No. 19,097

Int. Cl.³ G01B 5/25

U.S. Cl. 33—174 F

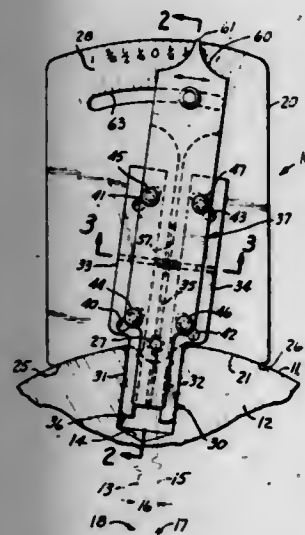
2 Claims

1. A gauge for measuring the divergence at the surface of a bowling ball between the axis of a bore entering said ball at said

surface and a radius of the ball which intersects said axis at said surface, said gauge comprising:

a reference member comprising a plate bearing at least a pair of contact points for contacting the surface of the bowling ball, and a pivot axis between and spaced from said contact points, said pivot axis being normal to said plate, said points and said pivot axis lying substantially upon a surface having a diameter approximating that of an average bowling ball;

an expandable plug pivotally mounted to the reference member at said pivot point, said plug having a plug axis which is coincident with said bore axis when inserted in said bore and comprising a frame and two contactors, each contactor having a contact surface parallel to said plug axis, said contact surfaces being substantially parallel to one another, and movable toward and away from one another while remaining substantially parallel so as to expand against and contact the inside wall of said bore, said ball



radius passing through said pivot axis when said plug is in said bore and said points bear against said surface of said bowling ball, and bias means intermediate said contactors for biasing said contactors apart from one another; alignment means comprising a pair of parallel slots in each contactor, said slots being axially spaced apart from one another and oblique to said plug axis, the slots of opposite contactors being directly opposed to one another and oppositely inclined, and pin means mounted to said frame and engaging in each of said slots, and further including a shaft normal to the plane of said contact surfaces and spaced from said pivot axis and entering both of said contactors, said shaft cooperating with said biasing means so as to prevent axial shear motion relative to them while permitting them to move toward and away from one another;

a pointer mounted to said plug; and
a scale on said reference plate to cooperate with said pointer to indicate said divergence.

4,242,802

DRAWING PATTERN FOR THE HUMAN FORM

Rolf-Dieter Jenner, Tamm; Dieter Schäfer, and Wolfgang O. Bauer, both of Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed May 17, 1979, Ser. No. 40,078

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822151

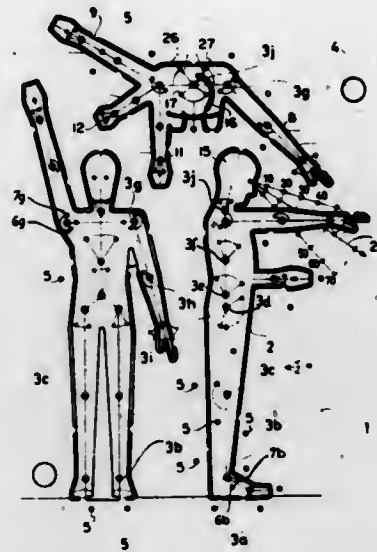
Int. Cl.³ B41N 1/24

U.S. Cl. 33—174 B

12 Claims

1. A stencil plate for showing on a drawing the contour and disposition, to a predetermined scale, of the human body in a variety of attitudes of the body, for facilitating the design of man-machine interface structures for control of a vehicle or machine, comprising a thin flat plate having at least one outline of one view of a human body with a succession of line slots through said plate along said outline so as to permit said outline

to be drawn, except for short interruptions, through said slots, and having pivot holes respectively located at places within a said outline corresponding to joints of the body thereby represented, whereby outlines may be drawn at least in part for a variety of body postures in the same direction of view by rotating the stencil plate about a pivot hole between stages of



tracing the body outline through the stencil, said at least one outline of one view of a human body being an outline of a view from above of a human body with an erect torso which view includes at least two outlines of an arm, in respectively different positions, connected to the same shoulder; an arm outline in at least one position for each shoulder; and slots for showing the position of the knees in a seated attitude of the body.

4,242,803

EQUIPMENT UNIT FOR CHECKING DEFORMATIONS OF A VEHICLE BODY

Alain Dory, Saint Colombre, France, assignor to Celette S.A., Vienne, France

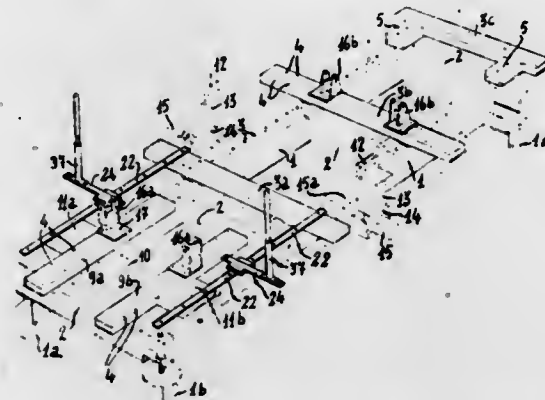
Filed Apr. 16, 1979, Ser. No. 30,139

Claims priority, application France, Apr. 21, 1978, 78 11833

Int. Cl.³ G01C 15/12; G01B 11/26

U.S. Cl. 33—288

6 Claims



1. An equipment unit for checking any deformations of a vehicle body, comprising a checking bench constituted by a platform having at least two longitudinal members pierced with holes for fixing various components in order to secure the vehicle body to be checked, as well as a plurality of cross members which can be fixed at different points along the longitudinal members of said platform and on which are provided series of uniformly spaced holes, wherein said unit further comprises two removable sole pieces of elongated shape and each provided with a lateral appendage on one side, said sole pieces being intended to be fixed on the checking platforms substantially in the central axis of the front side members of the vehicle to be checked, said sole pieces as well as the lateral

appendages thereof being provided in the same manner as the cross-members with series of uniformly spaced holes for fixing therein body attachment elements and/or measuring or checking accessories.

4,242,804

UNIVERSAL DIGITAL CONVERTER FOR DRAFTING MACHINES

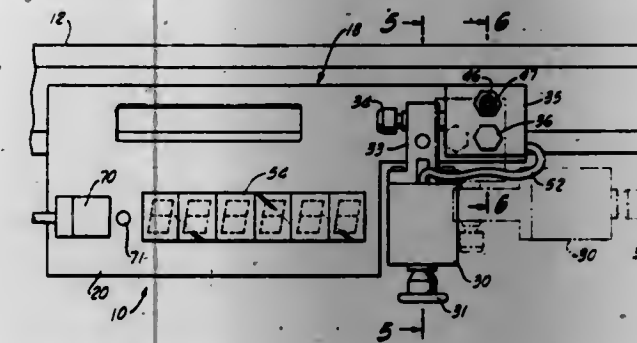
Wolfgang P. Buerner, Flintridge, Calif., assignor to Los Angeles Scientific Instrument Co. Inc., Los Angeles, Calif.

Filed Jul. 27, 1979, Ser. No. 61,526

Int. Cl.³ G01B 3/12; B43L 13/02

U.S. Cl. 33—438

19 Claims



1. That improvement in a drafting machine of the type having a unitary horizontal and vertical scale assembly bodily pivotable as a unit about the axis of the protractor scale ring of said machine, which improvement comprises:

an incremental encoder secured to and pivotable with said unitary scale assembly, said encoder having a sensing wheel adapted to have continuous rolling contact with underlying sheet material and freely rotatable in either direction to sense the net movement of said sensing wheel over said sheet material thereby to generate electrical signals proportional to the rotary movement of said wheel over said sheet material; and

means, including digital electronic readout means securable to said drafting machine adjacent said encoder, providing an instantaneous precision readout of the net movement of said sensing wheel in either direction from a previous position thereof.

4,242,805

METHOD AND APPARATUS FOR DRYING A THICK WET LAYER COATED ON ONE FACE OF A CARDBOARD SHEET

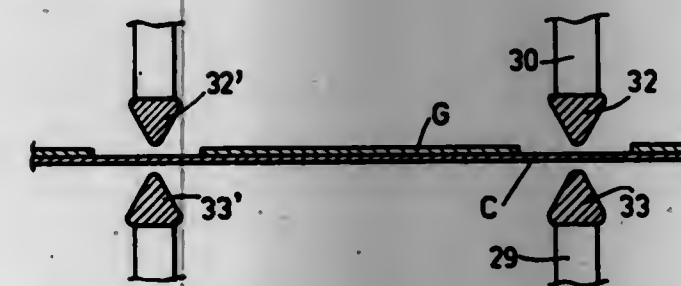
Henri de Angelis, Macon, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France
Filed Jul. 2, 1979, Ser. No. 53,795

Claims priority, application France, Jul. 7, 1978, 78 20245

Int. Cl.³ F26B 3/34

U.S. Cl. 34—1

4 Claims



1. A method for drying a cardboard sheet having two opposed side edges and two faces, said sheet having a thick wet layer coated on one of said faces, said method comprising:

- (a) feeding said cardboard sheet continuously along a predetermined path;
- (b) applying a first high frequency electric field to said sheet such that the lines of force of said electric field penetrate only said thick layer to selectively heat said layer; and
- (c) further applying a second electric field to said sheet such

that the lines of force of said second electric field penetrate through at least said cardboard sheet, whereby the application of said second electric field begins before the application of said first electric field.

4,242,806

STACKED AIR DRYER WITH AIR RECIRCULATION

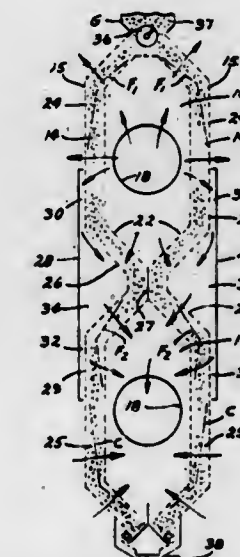
Jay L. McClaren, P.O. Box D, Dassel, Minn. 55325

Filed Mar. 29, 1978, Ser. No. 891,451

Int. Cl.³ F26B 3/14

U.S. Cl. 34—13

18 Claims



1. A grain dryer comprising an upright grain column passage means having a top inlet and a bottom outlet, the passage means having upright and aligned top and bottom passage segments and a pair of intermediate passage segments therebetween, said passage means having opposite obverse and reverse sides defined by perforate walls confining the grain column therebetween and passing air therethrough and into and through the grain column,

enclosure means at the reverse side of the full length of the passage means and engaging the passage means adjacent the inlet and outlet and intermediate segments to define enclosed upper and lower plenums respectively adjacent the top, bottom and intermediate passage segments, air treating means heating and inducing flow of air in a duct from the lower plenum to the upper plenum for producing flow of heated drying air outwardly through the grain column in said top passage segment and in the adjacent intermediate passage segment to produce drying thereof, a portion of the air supplied from the lower plenum being drawn from the atmosphere and through the grain column at the bottom passage segment for cooling the grain,

an upright panel confronting the obverse side of the passage means adjacent said intermediate passage segments, the panel also extending upwardly and downwardly partly along the top and bottom passage segments, and the intermediate passage segments of the passage means being obliquely offset with respect to the top and bottom passage segments and with respect to each other and being spaced from the panel to cooperate with the panel in defining a return air plenum receiving drying air from the upper plenum and from the adjacent grain column and passage means wherein drying of the grain column is effected, and returning the air to the lower plenum and through the adjacent grain column and passage means to effect additional drying of the grain column.

4,242,807

PAINT LINE FLOTATION OVEN

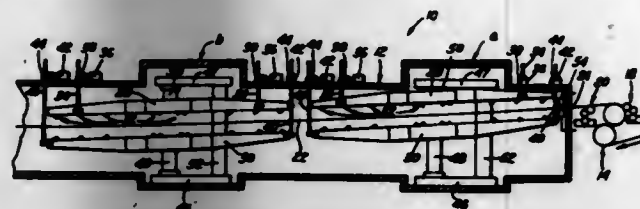
Carl Braun, Riverside, Calif., assignor to Hunter Engineering Co., Inc., Riverside, Calif.

Filed Aug. 11, 1978, Ser. No. 932,801

Int. Cl.³ F26B 3/10

U.S. Cl. 34-23

6 Claims



1. A method of curing a film of paint on a travelling strip, said method comprising the steps of: conveying a travelling strip having a coat of paint thereon through a plurality of heating zones in an oven along a catenary path; directing jets of gas onto the strip with sufficient velocity and in a direction such as to effect at least partial flotation of the strip; sensing the angle of the travelling strip at some point along said path; and adjusting the amount of flotation of the strip caused by said gas jets in response to a sensed change in said angle so as to vary tension in the strip in the direction to counteract said change in angle.

4,242,808

PAPER WEB DRYING SYSTEM AND PROCESS

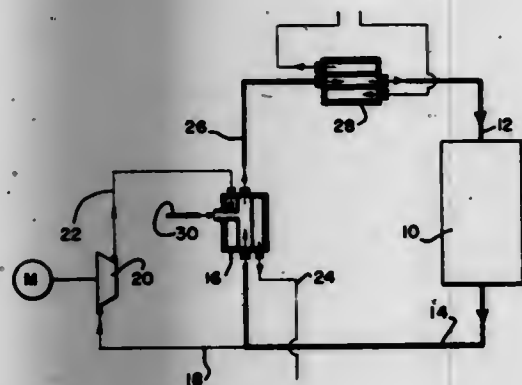
Oscar Luthi, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 22, 1978, Ser. No. 963,008

Int. Cl.³ F26B 3/04

U.S. Cl. 34-23

4 Claims



1. A method of drying a paper web in a paper mill comprising: directly contacting the paper web with superheated steam to evaporate the water in the paper web by direct contact and exhausting said steam; feeding a major portion of the exhaust steam to a superheater, and a minor portion of the exhaust steam to a compressor where it is compressed and heated for use in other elements of the paper mill; superheating said major portion of the exhaust steam; and using said superheated steam in the drying of the paper web.

4,242,809

METHOD AND APPARATUS FOR PRESERVING PROTEIN IN ANIMAL DROPPINGS

Joseph T. Elder, Box 21, Lakeview, Ohio 43331

Filed Dec. 8, 1976, Ser. No. 748,651

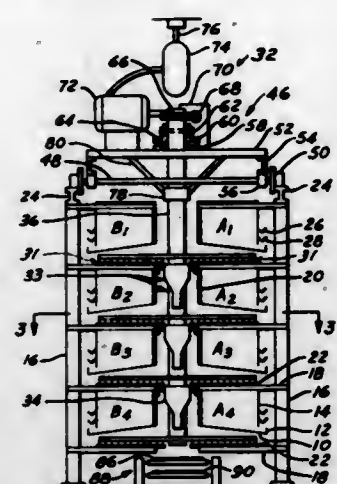
Int. Cl.³ F26B 3/04

U.S. Cl. 34-33

15 Claims

1. A method of handling animal droppings to retain protein therein comprising: collecting fresh animal droppings on a generally horizontal collection surface, forcing a flow of room

temperature air over droppings on said surface to effectively dry droppings thereon, periodically agitating the droppings on the collection surface to expose all surfaces of the droppings to



said forced flow of air to dry the droppings on said collection surface substantially to a nonbacteria growing state, and periodically removing dried droppings from said collection surface.

4,242,810

HAIR STYLING APPARATUS

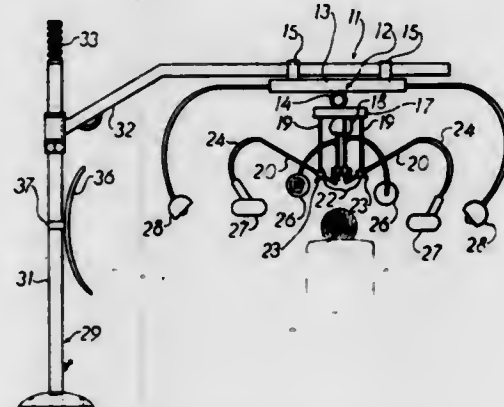
David M. Blanco, 2408 Broadwater Ave., Billings, Mont. 59102

Filed May 24, 1979, Ser. No. 42,074

Int. Cl.³ A45D 20/16

U.S. Cl. 34-98

9 Claims



1. Hair styling apparatus including a substantially horizontally disposed cross frame member, support means extending upwardly from said cross frame member engageable with a substantially horizontal support, a central power section attached to said cross frame member, light emitting means disposed below said central power section, a plurality of rigid arm sections extending from said cross frame member, rigid cross arm members pivotally connected adjacent the free ends of said rigid arm sections, said pivotable connections between said rigid arm sections and said rigid cross arm members including means for adjusting the ease of movement between respective sections, flexible conduit means extending from each of said cross arm members, electrical appliances disposed on the free ends of said flexible conduit means, said electrical appliances including light emitting means, hot air conveying means and the like.

4,242,811

THERMO-PNEUMATIC UNIT AND APPARATUS FOR THERMAL TREATMENT OF TRAVELLING FLAT MATERIALS

Aritsune Moriyama, Nishinomiyu, and Kunio Kida, Kasai, both of Japan, assignors to Sanko Air Plant, Ltd., Osaka, Japan

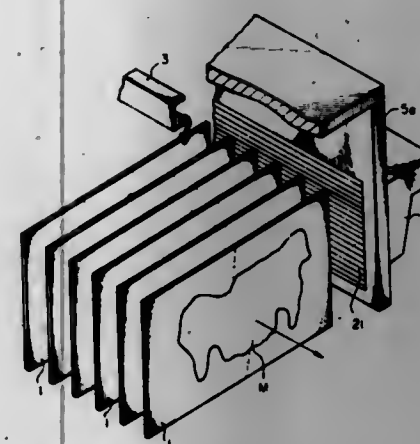
Filed Jan. 3, 1979, Ser. No. 766

Claims priority, application Japan, Jan. 7, 1978, 53-000712

Int. Cl.³ F26B 15/22

U.S. Cl. 34-150

2 Claims



1. An improved thermo-pneumatic unit for thermal treatment of travelling flat animal hides, comprising: means for transporting a plurality of animal hides in a vertically disposed spread state along a prescribed travel path in parallel planes and spaced relationship to each other, the planes including said spread animal hides being substantially perpendicular to said travel path; a blower of hot air arranged close to one lateral side of said travel path and having an outlet for said hot air facing said travel path, said blower including means for generating a laminar flow of hot air, deflection means between said outlet and said travel path for downwardly directing at least a lower portion of said hot air flow, and means for controlling the mass/velocity distribution of said laminar flow in such a manner that the mass flow rate of said flow is higher adjacent the lower portion of said outlet, said downwardly directed lower portion of said hot air flow rising as said lower portion of said flow approaches the hides, so that a relatively high mass flow of hot air traverses the center portion of each of said animal hides, said center portion having a relatively high initial moisture content as compared with the remainder of the hide; and means for supplying said hot air to said blower.

4,242,812

TYPDONT HAVING REMOVABLE TEETH

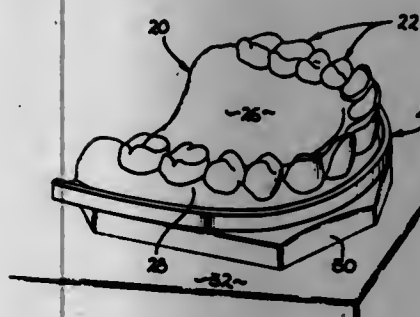
Ivan H. Randall, 60 Camino La Madera, Camarillo, Calif. 93010, and Robert C. McShirley, Glendale, Calif., assignors to Ivan H. Randall, Camarillo, Calif.

Filed Feb. 26, 1979, Ser. No. 15,418

Int. Cl.³ G09B 23/28

U.S. Cl. 434-263

3 Claims



1. A typodont comprising:

a jaw member including a base and a gum section on said base; said gum section defining a plurality of spaced-apart openings which are arranged in the general shape of an arch, and said jaw member further defining an elongated groove generally extending about said arch, said groove being in communication with each of said openings; a plurality of removable tooth members, each removable tooth member comprising a crown and a shank, and each of said shanks defining a notch which is in substantial alignment with said groove when said removable tooth members are inserted into said openings; a generally U-shaped locking ring which cooperatively engages said groove, with said ring having a locking portion which extends into each of said openings when said locking ring is inserted into said groove; wherein said locking ring has a gripping portion with a generally L-shaped cross-section which extends around the entire outer periphery of said locking ring so that said locking ring may be easily gripped; whereby said removable tooth members may be inserted into said openings and locked therein by placing said locking ring into said groove thereby causing said locking portion of said locking ring to engage said notch in each of said removable tooth members.

4,242,813

SKI EQUIPMENT TRANSPORT AND SECURITY METHOD AND APPARATUS

Raymond P. Quance, 5309 Mason Dr., Fort Wayne, Ind. 46809

Filed Mar. 8, 1979, Ser. No. 18,630

Int. Cl.³ A43D 5/00; A45C 0/00; A43B 5/00

U.S. Cl. 36-132

14 Claims



1. Transport apparatus for a pair of ski boots each boot having an inner space adapted to receive the foot of the wearer of the boot and having an upper portion with an opening therein adapted to receive the leg of the wearer of the boot and including means for selectively constricting the opening when the boot is worn, said transport apparatus comprising: a pair of voluminal members dimensioned to be inserted through the openings and into the inner spaces of the respective boots when the openings are in their unconstricted states, and to be in close fitting emplacement within the boot inner spaces and securely retained therein when the boot openings are constricted, and an elongated, flexible carrying support secured to said voluminal members at spaced apart locations on said carrying support.

4,242,814

CUTTER WHEEL FOR A DREDGING APPARATUS

Marten Pluks, Vianen, Netherlands, assignor to Conrad-Stork B.V., Haarlem, Netherlands

Filed Feb. 23, 1979, Ser. No. 14,551

Claims priority, application Netherlands, Feb. 27, 1978, 7802151

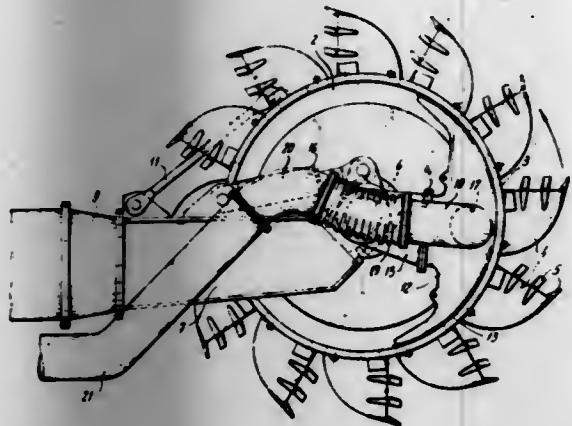
Int. Cl.³ E02F 3/88

U.S. Cl. 37-66

5 Claims

1. A cutter wheel for a dredging apparatus having a suction pipe and a ladder comprising a cylindrical body having at least one partially open flat side and a cylindrical circumferential surface including openings arranged at equal distances with respect to each other, on which openings outwardly projecting cutting blades are provided; said body being adapted to be mounted on the free end of the ladder of the dredging apparatus by means of an approximately horizontally positioned shaft

extending along the axis of symmetry of the body and said body being mounted for rotation about said shaft, said body having a stationary suction mouth disposed therein provided with a suction aperture being directed to the inner side of the cylindrical circumferential surface and connected to the suction pipe of the dredging apparatus by means of a bent member extending through the open side of the body to the interior thereof, means being provided for changing the angular position of the said mouth by rotation about the axis of symmetry of the body, wherein: the suction mouth is formed of a box shaped body having an open side forming the suction aperture



and shaped in the form of an arc of a circle, which is positioned in proximity to the inner side of the cylindrical circumferential surface of the cutter wheel body, an opening being provided in the side of the box shaped body directed to the open side of the cutter wheel body on which the one open end of the bent member is mounted, the other end of which being connected to the first end of a flexible tube, the second end of which is connected to the suction pipe; said mouth being connected to the shaft whereby the mouth is rotatable about said shaft and a piston-cylinder unit being provided having one end pivotally attached to the ladder and the other to the suction mouth.

4,242,815

SUCTION PIPE POSITION CONTROL

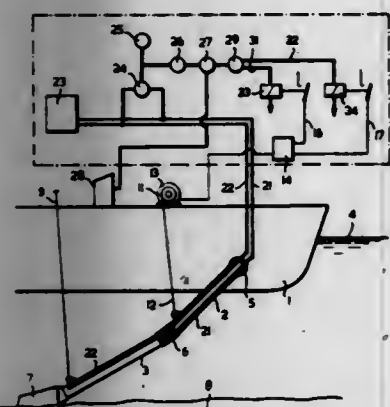
Tennis Vermeulen, Papendrecht, Netherlands, assignor to Koninklijke Bos Kalks Westminster Group N.V., Netherlands
Filed Apr. 21, 1978, Ser. No. 898,536

Claims priority, application Netherlands, Apr. 28, 1977, 7704643

Int. Cl.³ E02F 3/88

U.S. Cl. 37-58

8 Claims



1. A method for the continuous and automatic control of the angle of inclination of the last section of a suction pipe provided with a drag head relative to the sea bottom of a trailing suction dredger having a suction pipe consisting of more than one section comprising the steps of

- (a) maintaining said drag head via a swell compensator in contact with the sea bottom at the required pressure, and
- (b) continuously and automatically controlling said angle of inclination of said last section of suction pipe relative to the sea bottom by varying the depth of the connecting

point between said last section and the section immediately adjacent it.

4,242,816

DREDGER HAVING A TWO-PART BOOM

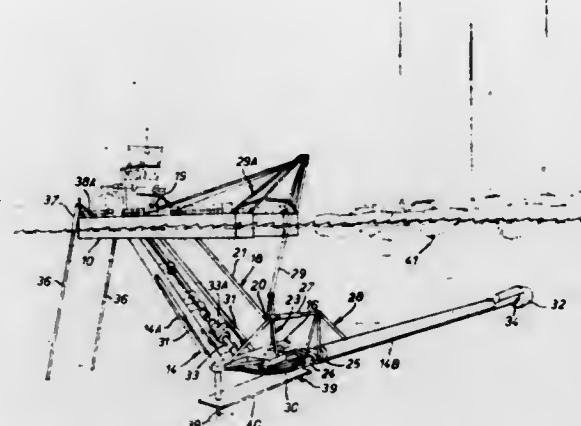
René H. Jeanson, Auzay, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jan. 15, 1978, Ser. No. 915,884

Claims priority, application France, Jun. 23, 1977, 77 19280
Int. Cl.³ E02F 3/88

U.S. Cl. 37-67

4 Claims



1. A dredger comprising a floating body, a two-part boom having a raised, rest position and submerged, operative position and including a first boom part pivotally mounted at its rear end about a horizontal axis on said floating body and a second boom part having at its front end a disintegrating tool; a platform disposed between the front end of said first boom part and the rear end of said second boom part, means for maintaining the platform horizontal, means pivotally mounting the rear end of said second boom part on said platform about a vertical axis, said second boom part extending in its raised, rest position substantially entirely outwardly beyond the longitudinal confines of the floating body so as to enable the disintegrating head to operate beneath floating obstacles in its submerged, operative position, means mounting the rear end of said second boom part on said platform for vertical swinging movement relative to said platform about a horizontal axis, and means for adjusting the angle of said second boom part relative to said platform between a horizontal position and other positions of inclination.

4,242,817

HOLDER

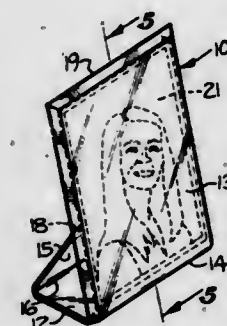
Donald M. Ballard, 7300 Leesburg Rd., Charlotte, N.C. 28215

Filed Jan. 8, 1979, Ser. No. 1,733

Int. Cl.³ A47G 1/06; G09F 1/12

U.S. Cl. 40-152.1

2 Claims



2. A holder for pictures and the like comprising an integral sheet of transparent material having approximately one sixth thereof folded to define a linear support portion, approximately one half of said sheet defining a generally rectilinear face portion having predetermined width and length dimensions and joined to said support portion at a first fold line and

extending therefrom at an acute angle with said support portion, and the remainder of said sheet opposite said face portion defining a linear brace portion joined to said support portion at a second fold line parallel to and spaced from said first fold line and forming acute angles with said support and face portions, said brace portion having an end portion remote from said second fold line and which terminates adjacent and in close proximity to said face portion at an area defined by an angled cross section through said sheet and spaced from said first fold line at a distance of about one half of said length dimension, and said material having such resilience as to exert in said area between said face portion and said end portion of said brace portion a force effective for gripping engagement with a picture or the like inserted therebetween.

4,242,818

COLLAPSIBLE PHOTOGRAPHIC SLIDE VIEWER

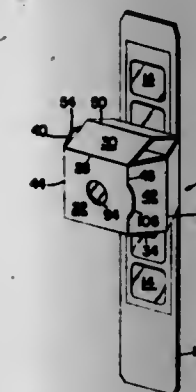
Robert G. Carver, Ashland, Ohio, assignor to Creative Cartons of Ashland, Inc., Ashland, Ohio

Filed Nov. 29, 1978, Ser. No. 964,474

The portion of the term of this patent subsequent to Nov. 27, 1996, has been disclaimed.
Int. Cl.³ G09F 13/00

U.S. Cl. 40-364

14 Claims



1. A collapsible optical viewer for viewing photographic slides, comprising:
 - (a) a front wall having a light-admitting opening therein;
 - (b) a reinforced rear wall assembly having a viewing aperture therein, said aperture having an optical axis coincident with said opening;
 - (c) a magnification lens disposed in said aperture;
 - (d) a top wall contiguous with said front wall along a transverse fold line and adhered to said rear wall assembly;
 - (e) a bottom wall contiguous with both of said front wall and said rear wall assembly along a pair of spaced transverse fold lines;
 - (f) a pair of opposing side walls contiguous with said rear wall assembly along a pair of spaced longitudinal fold lines;
 - (g) a pair of glue flaps contiguous with said front wall along a pair of spaced longitudinal fold lines, said glue flaps being adhered to portions of said side walls; and,
 - (h) a film strip receiving channel outwardly proximate said front wall, said channel comprising:
 - (i) a channel wall comprised of an extension of a first of said side walls, contiguous therewith along a longitudinal fold line;
 - (ii) a light-admitting opening in said channel wall coincident with said optical axis; and,
 - (iii) a light-diffusing element disposed in the opening in said channel wall.

4,242,819

MICROFICHE CARRIER ASSEMBLY

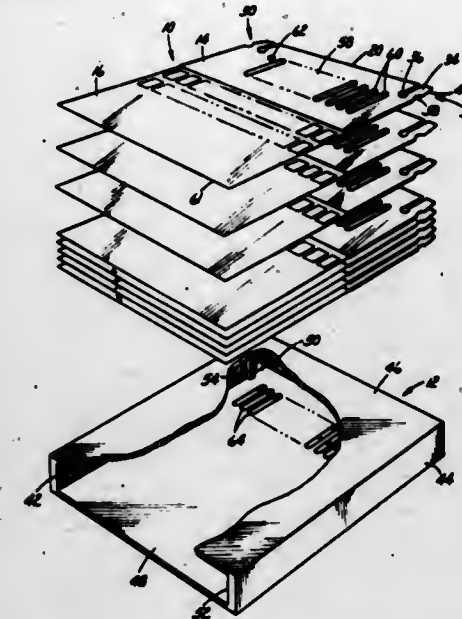
William R. Swift, Placentia, and Clyde E. LaFevre, Orange, both of Calif., assignors to AM International, Inc., Los Angeles, Calif.

Filed May 22, 1978, Ser. No. 907,906

Int. Cl.³ G09F 11/30

U.S. Cl. 40-513

9 Claims



1. A microfiche carrier, comprising:
 - a core of flexible but relatively rigid sheet material having a pair of faces and a first and a second end;
 - a thin cover sheet secured to the core and extending beyond said second end of the core to provide at least one flap overhanging the second end for receiving an edge of a microfiche; and
 - carrier selector means comprising a plurality of parallel, elongate slots in said cover sheet, a like plurality of elongate slots in said core in registration with the slots in said cover sheet, and a single perforation at a predetermined location in said cover sheet and core distinct from the locations of said slots.

4,242,820

CONTAINER FOR PHOTOGRAPHIC PRINTS

Peter Akeret, Küssnacht, Switzerland, assignor to Lclavest AG, Chur, Switzerland

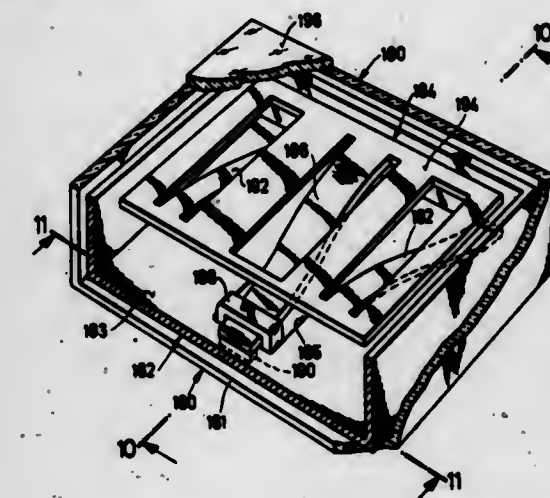
Filed Sep. 18, 1978, Ser. No. 943,367

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742347

Int. Cl.³ G09F 11/30

U.S. Cl. 40-513

21 Claims



1. A container for accommodating a variable number of photographic prints, comprising enclosure means having a print compartment confining the prints in a pile and defining a viewing window through which a print is displayed, the enclosure also having operable means providing access into the print

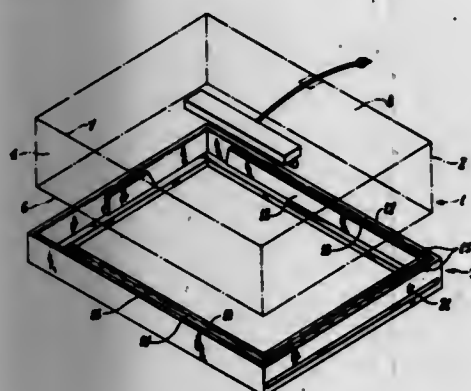
compartment for removing the pile of prints, and a backing device having print-engaging means in spaced and confronting relation with the window to confine the pile including a variable number of prints therebetween, the backing device also including variable means adjacent the compartment for variably changing the spacing between the print-engaging means and the window to lift and urge the pile toward the window and to urge the displayed print in the pile firmly against the window, said pile of pictures being loosened upon actuating of said operable means.

4,242,821 LIGHT BOX

John C. McNeil, 2 Glencairn St., Malgrave, Victoria, Australia
Continuation-in-part of Ser. No. 771,326, Feb. 23, 1977,
abandoned. This application Jul. 25, 1978, Ser. No. 927,836
Int. Cl.³ G09F 13/04

U.S. Cl. 40—571

12 Claims



1. A light box comprising:
 - (a) a peripheral wall having opposite peripheral edges;
 - (b) a backwall adjacent one of said peripheral edges;
 - (c) a rigid one piece molded frame adjacent the other of said peripheral edges, said frame defining one side of the light box, said frame comprising:
 - (i) front and rear faces and inner and outer side faces;
 - (ii) gripping means including a rearwardly opening channel on said frame clampingly receiving the other said peripheral edge of said peripheral wall, said channel extending inwardly from said rear face towards said front face, said channel being defined by a pair of opposed flanges each of which defines a respective one of said inner and outer side faces;
 - (iii) a groove in the inner side face of said frame and extending around the periphery thereof;
 - (iv) a slot in a portion of said frame extending there-through between the inner and outer side faces, said groove and said slot being substantially co-planar whereby a marginal edge of a pictorial display is held captive in said groove and is receivable therein through said slot; and
 - (d) illuminating means mounted within the lightbox for illuminating the pictorial display.

4,242,822

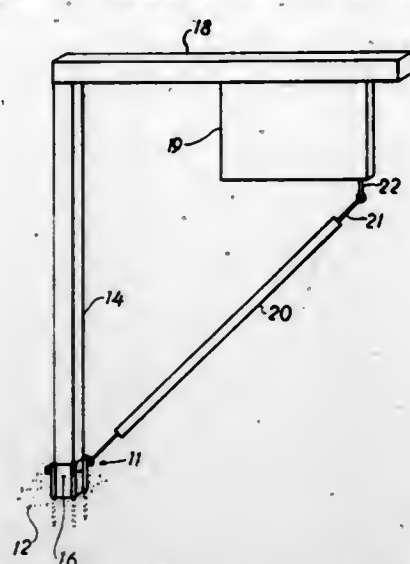
REMOVABLE SIGN POST HOLDING APPARATUS
John W. Black, 1940 Papago, Sheridan, Wyo. 82801
Filed Aug. 31, 1979, Ser. No. 71,766
Int. Cl.³ G09F 7/18

U.S. Cl. 40—607

7 Claims

1. A removable sign post holding apparatus including a body portion having a post-receiving opening at the top thereof, a plurality of tubular retaining means disposed around the periphery of said body portion, said retaining means extending along the length of said body portion from a point adjacent said post-receiving opening thereof, a plurality of ground-engaging members removably and slidably engageable with said tubular retaining means and extending from adjacent said post-receiving opening of said body portion beyond the opposite end of said body portion a significant distance, whereby

said body portion is secured to the ground by said members, each of said ground-engaging members having an enlarged



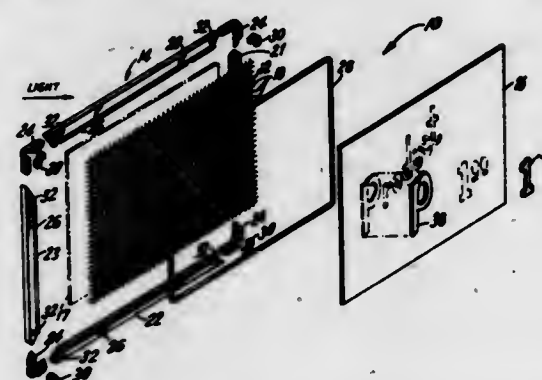
portion adjacent the end thereof closest to said post-receiving opening.

4,242,823

MAGNETICALLY ATTRACTIVE DISPLAY DEVICE
John Bruno, 77-83 Second Ave., Patterson, N.J. 07524
Filed Aug. 30, 1977, Ser. No. 829,149
Int. Cl.³ G09F 7/04

U.S. Cl. 40—621

10 Claims



1. A lightweight display device for supporting magnetized indicia characters, which comprises:
 - a generally sheet-like first member being magnetically attractive at spaced intervals, said first member comprising a woven mesh screen of strands of magnetically attractive material, said woven mesh screen being formed from two sets of closely spaced parallel strands of said material, which sets extend essentially perpendicular to each other;
 - a frame member adapted to maintain the strands of said woven mesh screen in a generally planar configuration;
 - a substantially lightweight generally sheet-like second member adapted to provide at least a background for said magnetized indicia characters, said second member being held in a generally flat configuration adjacent said first member by said frame member and said second member being sufficiently flexible to be held directly against said first member between said magnetized indicia characters and said first member without requiring additional fastener means; and
 - a generally lightweight, sheet-like backing member attached to said device adjacent said first member on the opposite side thereof from said second member, such that magnetized indicia characters may be removably attached in desired positions against said second member by magnetic attraction between said first member and the magnetized indicia characters and said second member is held adjacent said first member only by said frame member and the magnetic attraction between said indicia characters and said first member.

4,242,824

PISTOL GRIPS HAVING CUSHIONING RECESSES
Frank A. Pachmayr, Los Angeles, and Jack R. Farrar, Whittier, both of Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.

Filed Jan. 3, 1979, Ser. No. 764
Int. Cl.³ F41C 23/00

U.S. Cl. 47—71 P

34 Claims



1. A pistol grip comprising:
 - a grip body of elastomeric material adapted to be connected to the frame of a pistol with said frame projecting forwardly from an upper portion of the grip body;
 - said elastomeric material containing a recess within which a grip mounting portion of said frame extends downwardly;
 - said body being dimensioned to be gripped in the hand of a user when attached to the pistol frame, with the user's fingers extending across the front of the grip body, and with outer surfaces of said elastomeric material exposed for contact with the user's hand;
 - said elastomeric material containing a cushioning recess which is located rearwardly of said first mentioned recess and gives to the grip body greater compressibility in a front to rear direction at that location than if said elastomeric material were solid at the location of the cushioning recess, to thereby increase the absorption of recoil force.

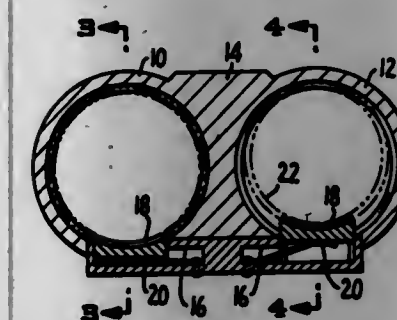
4,242,825

FIREARM MECHANISM
Fred L. deBoer, Honolulu, HI., assignor to Sherry Miles deBoer, Walnut Creek, Calif.

Filed Feb. 28, 1979, Ser. No. 16,011
Int. Cl.³ F41C 27/00

U.S. Cl. 42—1 R

5 Claims



1. A firearm comprising
 - a barrel having a discharge end,
 - an ignition chamber in said barrel remote from the discharge end for supporting a cartridge during ignition with the ignition chamber having a predetermined diameter for receiving a cartridge of substantially said predetermined diameter,
 - said barrel having a minimum diameter less than the predetermined diameter, and
 - means forming a permanent part of the firearm for excluding

from the portion of the barrel outside of the chamber cartridges having diameters which are less than the predetermined diameter and greater than the minimum diameter.

4,242,826

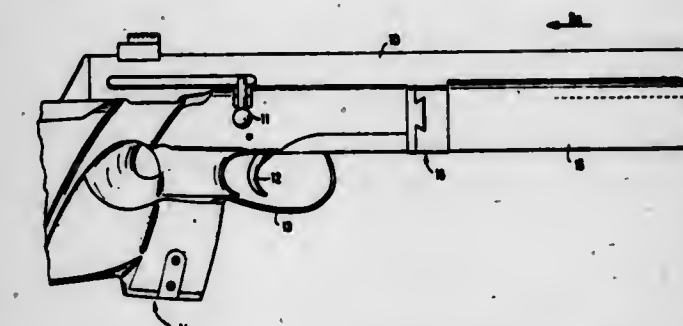
FIREARM
Elfi Anschütz, Schwalbenweg 79, D 7900 Ulm/Donau, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,790
Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723110

Int. Cl.³ F41C 23/00

U.S. Cl. 42—73

5 Claims



1. A firearm comprising a barrel, a receiver, and a stock wherein the stock is divided into a main stock and a forestock connected by a pivoting guide which establishes a pivoting of the forestock along a circular path, the center of said circular path being coincident with the bore axis of the barrel, and wherein the forestock is fixable in each of its positions relative to the barrel.

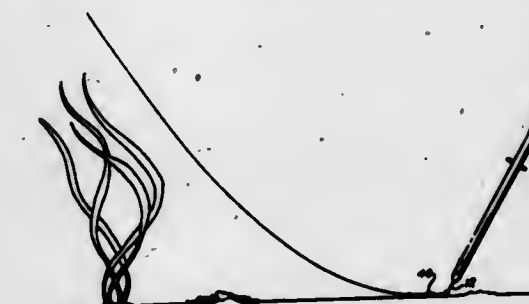
4,242,827

FISHING LURE

Wyatt B. Smith, Crosbyton, Tex., assignor to Doyle A. Reddig, Crosbyton, Tex., a part interest
Filed Apr. 19, 1979, Ser. No. 31,405
Int. Cl.³ A01K 85/00

U.S. Cl. 43—42.1

18 Claims



1. A fish lure comprising:
 - a. an elongated flat spring metal strip,
 - b. attachment means onto the front of the spring metal strip for attachment of a fishing line,
 - c. a fish hook attached to the back of the spring metal strip, and
 - d. a flexible covering surrounding the spring metal strip,
 - e. said strip about twenty times as wide as it is thick and about thirty times as long as it is wide.

4,242,828

FLY SWATTER

Severin G. Schurger, and Judith Schurger, both of 3266 SW. 25 Ter., Miami, Fla. 33133

Filed Apr. 25, 1979, Ser. No. 33,130

Int. Cl.³ A01M 3/02

U.S. Cl. 43-137



1. An improved fly swatter comprising:
 - a working end,
 - a handle, the handle being elongate and having a terminal distal end, the terminal distal end having a recess inwardly extending toward the working end,
 - a separate pick-up member comprising a pair of legs having a terminal end and a proximal end, hinge means joining the legs at the terminal end for hinged connection therewith, a shoulder means between the hinge means and the proximal end of the legs, the shoulder means formed on the legs for abutting engagement with the terminal distal end of the handle and closing the recess when inserted in the recess and releasably connected to the handle for removal therefrom to pickup a dead fly or the like.

4,242,829

CONNECTING DEVICE

Anders P. Arnström, Generalvägen 80, S-184 02 Österskär, Lennart K. Dahlgren, and Britt I. Dahlgren, both of Utviktsvägen 10, S-436 00 Askim, all of Sweden

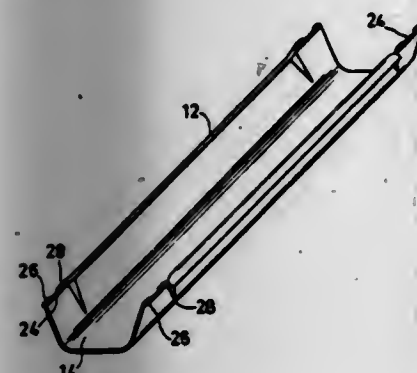
Filed Oct. 24, 1978, Ser. No. 954,229

Claims priority, application Sweden, Oct. 13, 1978, 7810717

Int. Cl.³ A63H 23/00; E04D 13/00; F16B 7/18, 7/04

U.S. Cl. 46-91

2 Claims



1. A device for providing a waterproof connection between two sections of a water canal in a toy kit which comprises a connecting element having substantially a U-shaped cross-section, wherein the legs of the U-shaped element are elastically bendable, said connecting element having transversally positioned sealing strips on the inner face thereof, at least two pairs of gripping snap elements provided opposite each other at the outer portions of said elastically bendable legs of the connecting element, each of said snap elements including a curved guiding surface facing a corresponding guiding surface of the opposite member of the respective pair of snap elements such that the end of a similarly U-shaped canal section may be inserted between the guiding surfaces of said snap elements for locking with said connecting element under said gripping snap element.

4,242,830

THREE DIMENSIONAL LIMBED DOLL

Maria T. Hauser, Frühlingstrasse 8, D-8216 Reit im Winkel, Fed. Rep. of Germany

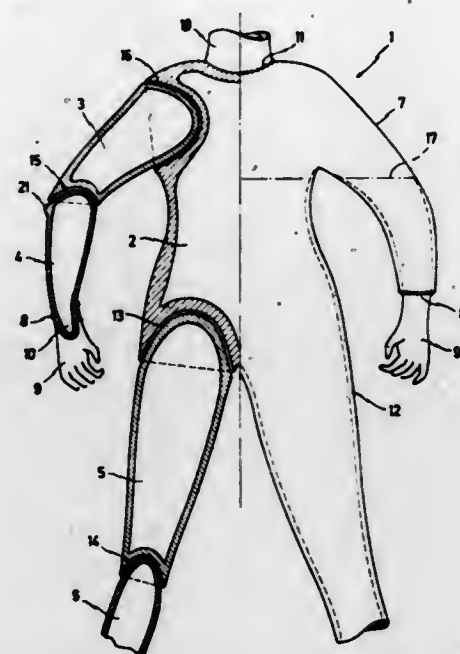
Filed Apr. 4, 1979, Ser. No. 27,168

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814473

U.S. Cl. 46-161

Int. Cl.³ A63H 3/20

7 Claims



1. A doll having movable jointed air and fluid-tight body parts comprising a main body part and limb parts, the latter being preformed individually, a one piece body-shaped covering bag of air and fluid-tight material defining generally the final outline of said doll, joint regions between said limb parts being formed by a juxtaposition of said limb parts within appropriate portions of said bag which alone holds said limb parts in their correct pivoted relationship with each other, and a fluid filling means introduced into the space between said body and limb parts and said covering bag.

4,242,831

TOY APPARATUS WITH PHOTOEMISSIVE MOTOR CONTROL SYSTEM

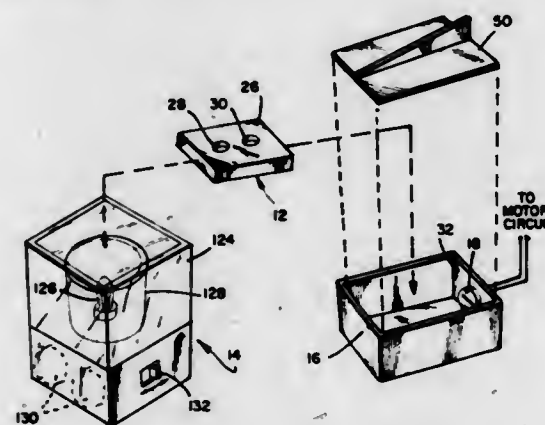
John F. O'Shaughnessy, Staten Island, N.Y., assignor to Ned Strongin Associates, Inc., New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,016

Int. Cl.³ A63H 17/00, 33/00; H01H 47/24; F21K 2/00

U.S. Cl. 46-251

10 Claims



1. A photoemissive control system for a toy apparatus having a body portion, comprising
 - a photoemissive phosphorescent member,
 - an enclosed chamber within said body portion and sized to receive said phosphorescent member therewithin,
 - light dependent means mounted within said chamber for producing an electrical output in response to impingement

thereon of a predetermined value of photoemission from said photoemissive fluorescent member, electrical load means mounted in said toy apparatus and operative to provide an output in response to electrical energization, direct current power source means, and electrical circuit means connecting said light dependent means, said power source, and said electrical load means for energizing said load means when said phosphorescent member is placed in said chamber after exposure to light, said light dependent means being adapted to render said load means inoperative when photoemission from said phosphorescent member drops below said predetermined value.

4,242,832

PROCESS FOR PREPARING MONOKARYONS BY DEDIKARYOTIZING DIKARYOTIC STRAINS OF BASIDIOMYCETES

Gerlind Eger, Lockerglaschen 2, 3550 Marburg an der Lahn, and Hermilo Leal Lara, Richtsburg 68-602, Marburg an der Lahn, both of Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 23,772

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1978, 2813521

Int. Cl.³ A01G 1/04

15 Claims

1. A process for preparing a monokaryon by dedikaryotizing a dikaryotic strain of Basidiomycetes comprising the following steps: (a) mechanically fragmenting the mycelium of a dikaryotic strain of Basidiomycetes in an aqueous medium to give viable mycelial fragments having predominantly one to a very few hyphal compartments, (b) introducing a small portion of the mycelial fragments so obtained into a dedikaryotizing solution containing glycine and at least one carbon source, (c) incubating the fragments, while keeping them covered by at least 2 mm of said dedikaryotizing solution, to allow the fragments to grow into spatially isolated mycelial pellets, (d) inspecting random samples of said mycelial pellets to determine the degree of dedikaryotization, (e) fragmenting visible mycelial pellets in an aqueous medium to give hyphal fragments having one or a very few cells, (f) placing the resulting hyphal fragments on or in a nutrient agar plate and allowing said fragments to grow into spatially isolated individual monokaryotic colonies, and (g) transferring at least one of said monokaryotic colonies to new nutrient medium.

4,242,833

GREENHOUSE AND METHOD OF GROWING PLANTS IN COLD CLIMATES

Reed E. Maes, Jr., Ypsilanti, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Feb. 26, 1979, Ser. No. 15,391

Int. Cl.³ A01G 9/18

U.S. Cl. 47-17

8 Claims



1. A greenhouse consisting of an enclosure defining an inte-

rior space within which plants are to be grown, said enclosure including a ceiling portion thereof consisting of a pond of water extending atop said enclosure and means supporting said layer of water, including sheets of a material transparent to those portions of solar radiation supporting photosynthetic processes in plants grown, whereby said water layer acts to absorb the longer wavelength infrared radiation in the solar spectrum while transmitting the photosynthetic component of solar radiation, said water layer also acting as a thermal storage media; and a plurality of pivotal reflector-insulator panels mounted to said greenhouse enclosure to be movable between a first position whereat said panel is positioned immediately over said water pond and a second position tilted above said water pond, and wherein each of said pivotal reflector-insulator panels consists of a panel member and includes an insulating layer, whereby said panel may be positioned over said water during periods of low or no solar radiation to minimize heat losses from said water pond to the exterior of said greenhouse.

4,242,834

NESTABLE AND STACKABLE TRANSPLANTING SYSTEM

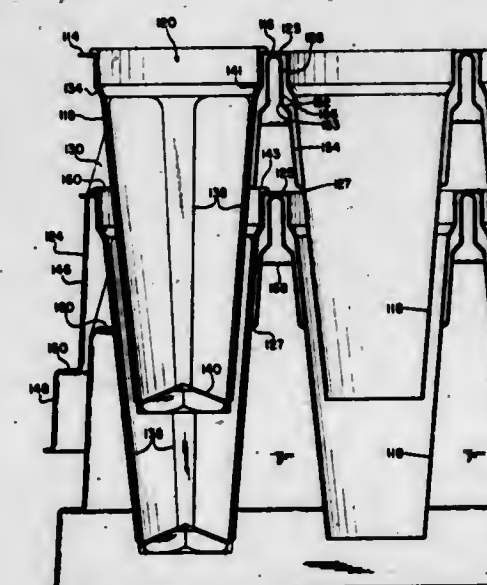
Robert C. Olsen, Streamwood, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 19, 1979, Ser. No. 86,546

Int. Cl.³ A01G 23/02

U.S. Cl. 47-73

9 Claims



1. In an assembly adapted for growing a plurality of plants intended to be transplanted, a support tray configured for cooperation with a plurality of plant receiving sleeves integrally interconnected at their upper regions by web means, said support tray being a thin-walled plastic material having integral sidewalls, an open bottom, and grid-like upper structure, said sidewalls taper upwardly and inwardly from their lower edges, which define the perimeter of the open bottom, the grid-like structure comprising a plurality of longitudinal and lateral generally vertically directed wall means extending upwardly from a first horizontal plane which includes the upper extremities of the sidewalls, the plurality of longitudinal and lateral wall means defining, at least in part, a plurality of apertures through which plant receiving sleeves may be inserted, the vertical wall means being generally V-shaped in cross section and defining a first vertical dimension from the upper apex of the V-shaped cross section to the lowermost region of said vertical wall means which is at said first horizontal plane, the vertical distance from the lower edges of the sidewalls to the apex of the V-shaped cross section of said wall means defining a second predetermined vertical dimension, each vertical wall means including a pair of wall sections which are interconnected at the apex and laterally spaced at their

intersection with said horizontal plane, the plant receiving sleeves depending downwardly from the web means and arranged in a pattern permitting the web means to be disposed on apices of the V-shaped cross sections with the sleeves depending between said vertical wall means, each of the sleeves having walls tapering downwardly and inwardly from the uppermost extremity to the lowermost extremity, the vertical dimension of each sleeve being substantially greater than said first predetermined vertical dimension and less than said second predetermined vertical dimension.

4,242,835

CONTAINER FOR THE INDIVIDUAL TRANSPORTATION OF PLANTS

Ramon Mendragon Sorribes, Reverendo Martí 11 & 13, Meliana, Valencia, Spain

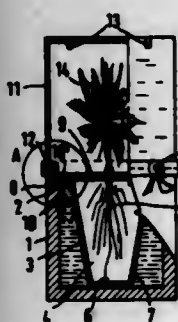
Filed Mar. 9, 1979, Ser. No. 19,186

Claims priority, application Spain, Mar. 10, 1978, 234,563; Feb. 19, 1979, 241,472

Int. Cl.³ A01G 9/02, 27/00

U.S. Cl. 47-84

3 Claims



1. A container unit for the growth and transportation of plants, said unit comprising:

- a container having a closed lower end and an open upper end, said container upper end having formed in the interior thereof a recess defining an annular step including an annular substantially horizontal surface and an inner substantially vertical surface;
- a soil receptacle containing soil having therein a plant, said receptacle having a closed lower end and an open upper end, said receptacle upper end having extending radially outwardly therefrom an integral annular flange;
- said receptacle being positioned within said container in a substantially coaxial manner with said annular flange of said receptacle being supported by said annular horizontal surface of said container, and said annular flange being soldered to said annular horizontal surface to form a hermetically sealed chamber defined by the outer surface of said receptacle and the inner surface of said container;
- said annular flange having extending therethrough an orifice for the introduction of water into said chamber;
- plug means for closing said water introduction orifice to prevent the leakage of water from said chamber;
- said receptacle having therein, adjacent said lower end thereof, small orifice means for allowing water to pass from said chamber to said soil in said receptacle to achieve automatic capillary irrigation of said plant in said soil;
- disc means for retaining said soil within said receptacle, said disc means having therein a central hole dimensioned to have extend therethrough the stem of said plant, said disc means having therein slit means extending from the periphery of said disc means to said central hole for enabling said stem of said plant to be inserted into said central hole, said disc means being positioned over and supported by said annular flange of said receptacle, and said disc means having an outer edge precisely fitting within said vertical surface of said recess of said container; and
- a transparent cover including an open lower end having edge means precisely fitting within said vertical surface of said recess of said container for securely retaining said cover to said container and for pressing said disc means

against said annular flange of said receptacle to thereby maintain said disc means in an operative position to retain said soil within said receptacle.

4,242,836

ENERGY CONSERVING SECURITY SHUTTERS

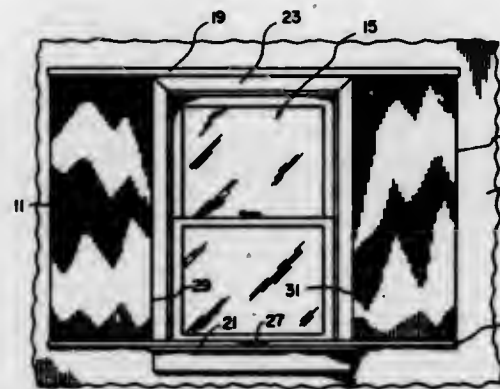
Harold E. Anderson, 1460 E. River Rd., Grand Island, N.Y. 14072

Filed Aug. 2, 1978, Ser. No. 930,425

Int. Cl.² E06B 9/00

U.S. Cl. 49-63

10 Claims



1. A sliding drapery covered shutter assembly for insulating a window and for securely closing a window opening about such window which comprises upper and lower track members, at the inside top and bottom of the window, respectively, a sliding shutter, slidable in said track members to open and closed positions, in the open position of which access may be had to the window from the inside and in the closed position of which the shutter closes off said window and maintains an insulating dead air space about it, which shutter is covered on the inside by a drapery member which is slidable with it and which exerts an additional insulating effect.

4,242,837

FINE GRINDING APPARATUS

Siegfried Lohse, Stenbreite 18, Faldabrück 1, Fed. Rep. of Germany (3501)

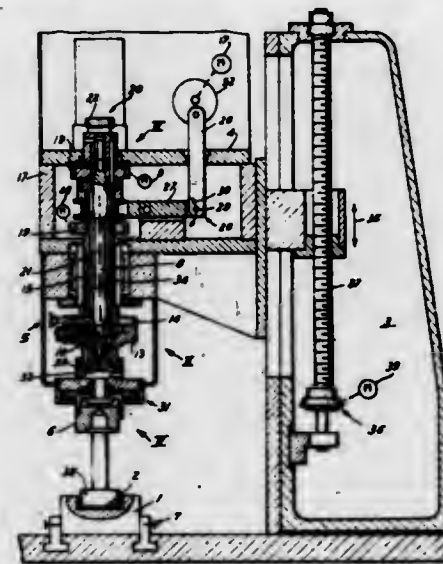
Filed Jan. 22, 1979, Ser. No. 50,958

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2827543

Int. Cl.³ B24B 35/00

U.S. Cl. 51-59 R

10 Claims



1. A fine-grinding apparatus comprising:
a stationary stand having an arm and a workpiece holder;
a tube defining a tube axis;

means for mounting said tube on said arm for displacement angularly and axially thereon;
a tool mount adapted to hold a tool and having a tool axis generally parallel to said tube axis;
means for mounting said mount on said tube for displacement of said tool axis along a diameter through said axis and fixed angularly relative to said tube;
tube adjustment means for rotating said tube on said arm about said tube axis and for locking said tube in any of a plurality of angularly offset positions for adjustment of the angular orientation of said diameter on said tube;
a shaft angularly and axially displaceable in said tube and having an end provided with a pin inclined to said axis and operatively engaging said tool mount;
shaft adjustment means for axially displacing said shaft in said tube and for locking said shaft in any of a plurality of axially offset positions for adjustment of the eccentricity of said tool axis relative to said tube axis; and
drive means for rotating said shaft about said tube axis relative to said tube and thereby diametrically reciprocating said tool mount relative to said shaft through a diametrical stroke proportional to said eccentricity of said tool axis.

4,242,838

CENTRIFUGAL DRUM APPARATUS

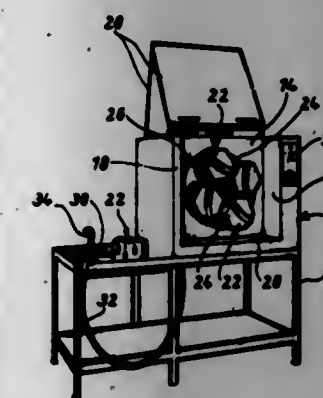
Manfred Dreher, Engelsbrand, Fed. Rep. of Germany, assignor to Dr. Ing. Manfred Dreher GmbH & Co. K.G., Engelsbrand, Fed. Rep. of Germany

Filed Nov. 6, 1978, Ser. No. 957,704

Int. Cl.³ B24B 31/04

U.S. Cl. 51-164.2

3 Claims



1. In a centrifugal drum apparatus for finishing the surfaces of metal objects including a housing (12), a generally disk-shaped rotor member (26) connected with said housing for rotation about a generally horizontal first axis, a cylindrical stationary rotor bearing collar member (90) connected with said housing and containing a longitudinal through-opening coaxial with said first axis, a plurality of cylindrical finishing drums (22) each being open at one end and arranged with its longitudinal axis extending parallel with said first axis, said drums being symmetrically arranged about said first axis and being rotatably connected with said rotor member, first drive means for rotating said rotor member about said first axis, and second drive means for rotating said finishing drums about their longitudinal axes, respectively, whereby when the metal objects are introduced into said drums, they are polished during the rotation of said drums about their longitudinal axes, the improvement wherein said rotor member includes:

- (a) a plurality of finishing drum bearing means, each of said bearing means including
 - (1) a bearing housing (64) adapted to receive the open end of one of said finishing drums;
 - (2) a bearing shaft (80) arranged within said bearing housing with its longitudinal axis extending parallel with said first axis, one end of said shaft being connected with said second drive means;
 - (3) a receiving flange (82) arranged at the other end of said shaft; and

- (4) a connector device (24) for connecting one of said finishing drums with said bearing receiving flange;
- (b) a drive shaft (48) extending longitudinally through said rotor bearing collar member through-opening, said first drive means being connected with one end of said drive shaft, said drive shaft having a hub portion (62) arranged at its other end;
- (c) first brace members (66) extending radially from said hub portion and being connected with said finishing drum bearing housings;
- (d) second brace members (67) connecting the adjacent bearing housings; and
- (e) an annular bracing plate (68) connected with said drive shaft hub portion, said bracing plate including a plurality of openings (72), each of said openings being adapted to receive one of said bearing housings.

4,242,839

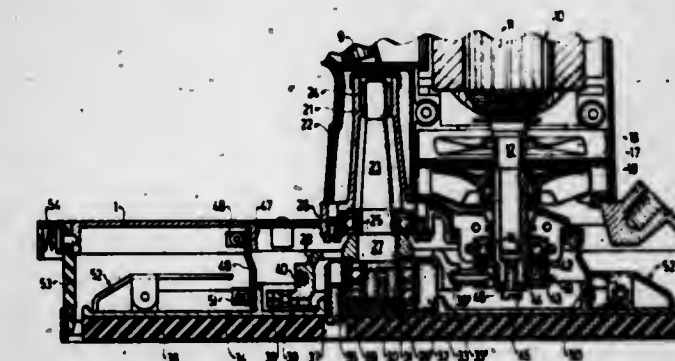
HIGH-SPEED POWER TOOL

Gerhard Armbruster, Stuttgart-Pfingsten; Albert Kleider, Waldenbuch, and Eberhard Vogel, Dettmoldhausen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Continuation of Ser. No. 797,503, May 16, 1977, abandoned, which is a continuation of Ser. No. 624,105, Oct. 20, 1975, abandoned. This application Oct. 23, 1978, Ser. No. 954,630
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1974, 7436615[U]

Int. Cl.³ B24B 23/00

U.S. Cl. 51-170 MT

13 Claims



1. An oscillatory finishing tool comprising, in combination, a housing provided with a handle for the user of the finishing tool to hold while using the tool;
a crank mounted in the housing for rotation about a crank rotation axis and including an eccentric portion;
a drive motor accommodated in the housing and coupled to the crank for rotating the latter about the crank rotation axis;
a roller bearing unit encircling and engaging the eccentric portion of the crank;
a discrete annular sleeve of a material of relatively high specific weight encircling and engaging the roller-bearing unit;
a discrete support plate structure for supporting a sheet of sandpaper or the like, the support plate structure having a first face facing the annular sleeve and having a second face, the second face being an exposed face for supporting a sheet of sandpaper or the like in direct surface-to-surface contact with the second face;
the annular sleeve having at least one threaded axial mounting bore and the support plate structure having in correspondence thereto at least one axial mounting passage extending all the way through the support plate structure from the second to the first face thereof;
at least one mounting screw having a threaded shank extending through the mounting passage and threaded into the mounting bore of the annular sleeve and having a head pressing the first face of the support plate structure towards the annular sleeve,

the head of the mounting screw being exposed to direct access for a screwdriver or the like when a sheet of sandpaper or the like is removed from the second face of the supporting plate structure.

the support plate structure when removed from the tool exposing the annular sleeve and the roller-bearing unit for access and the support plate structure being made of a material of relatively low specific weight, whereby the center of gravity of the combination of the annular sleeve and the support plate structure is located in the vicinity of the annular sleeve and spaced a distance from the support plate structure.

4,242,840

WORKPIECE DRIVE WHEEL FOR A GRINDING MACHINE

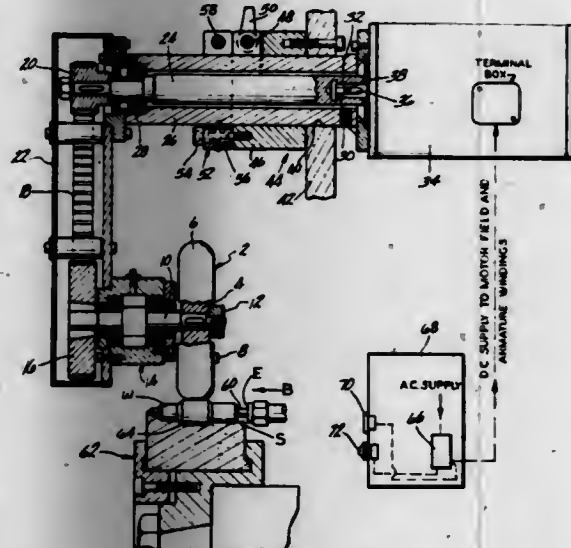
Kenneth J. Morris, Durham, England, assignor to Smiths Industries, London, England

Continuation of Ser. No. 901,031, Apr. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 801,931, May 31, 1977, abandoned, which is a continuation of Ser. No. 665,977, Mar. 11, 1976, abandoned. This application Aug. 3, 1979, Ser. No. 63,496

Int. Cl.³ B24B 5/18

U.S. Cl. 51—236

5 Claims



1. Apparatus for cutting stock off of a preformed workpiece, said apparatus comprising:

- cutting means engageable with the workpiece for performing a cutting operation thereon;
- workpiece support means for rotatably supporting a workpiece to be cut by said cutting means;
- inflatable drive wheel means for frictionally engaging a workpiece to press the workpiece against said cutting means and to rotate the workpiece during a cutting operation;
- variable speed DC motor drive means capable of generating an output torque for rotating said drive wheel means; and
- control means electrically connected to said drive means for maintaining said drive means output torque at a substantially constant level during the entire cutting operation, thereby minimizing the length of the cutting operation without transmitting excessive force between said inflatable drive means and said workpiece.

4,242,841

APPARATUS FOR PREPARING AND FEEDING AN ABRASIVE-CONTAINING SUSPENSION INTO THE ZONE OF ACTION OF WORK TOOLS OF POLISHING AND FINISHING LATHES

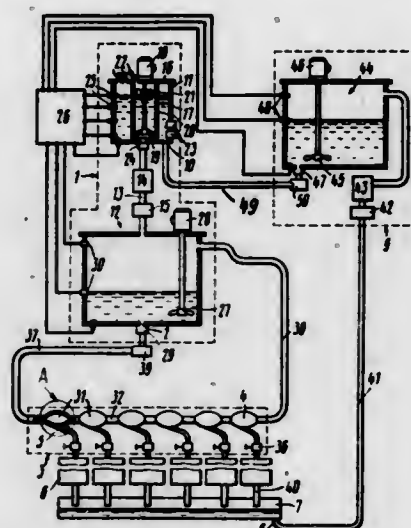
Vladimir F. Ushakov, ulitsa Starykh bolsherrkov, 9, kv. 56; Alexandr I. Pergunov, Leninsky prospekt, 152, kv. 75; Albert V. Alexeev, ulitsa Ostuzheva, 1, kv. 6; Pavel N. Maslennikov, ulitsa 25 Yanvarya, 18, kv. 119, and Vladimir I. Seljutin, ulitsa Ilcha, 61, kv. 77, all of Voronezh, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,405

Int. Cl.³ B24B 57/00

U.S. Cl. 51—263

2 Claims



1. An apparatus for preparing and feeding an abrasive-containing suspension into the zone of action of a plurality of tools of polishing or finishing lathes, comprising: a unit for preparing and storing the suspension having ports for charging starting components, and having an outlet opening and a plurality of inlet openings; connecting pipes; a distributing unit formed with a pipe of a longitudinally variable cross section with sections of greater and smaller cross sectional areas, and said distributing unit having an inlet opening and an outlet opening along the direction of flow of the suspension; said distributing unit communicating through the said connection pipes connecting said inlet opening with the outlet opening of the unit for preparing and storing the suspension and through the said outlet opening connecting with one of the said inlet opening of the unit for preparing and storing the suspension; branch pipes corresponding in number to said lathes and branching off from the said pipe of variable cross section at the place of said sections of greater cross section and directed toward the said zones of action of the work tools of the said lathes; a reservoir for collecting a waste suspension located beyond the zones of action of the work tools along the direction of flow of the suspension and having an outlet; and a unit for cleaning the waste suspension, having an inlet opening and an outlet opening and said cleaning unit communicating through other connection pipes connecting said inlet opening with the said outlet opening of the reservoir for collecting the waste suspension and through the said outlet opening connecting with another of the said inlet openings of said unit for preparing and storing suspension.

4,242,842

PRECISION POLISHING SUSPENSION AND METHOD FOR MAKING SAME

Paul J. Yancey, Matthews, N.C., assignor to La Pierre Synthetique Balkowski, S.A., Annecy, France

Filed Aug. 8, 1979, Ser. No. 65,005

Int. Cl.³ C08J 5/14

U.S. Cl. 51—298

17 Claims

1. A substantially non-toxic precision liquid polishing composition having nondrying characteristics consisting essentially of a fine abrasive polishing powder having a nominal particle

size of less than about 5 microns essentially permanently suspended in a viscous liquid medium comprising water, glycerine and a carboxy polymethylene polymer thickening agent wherein the polishing powder makes up less than about 20 weight-percent of the entire composition and wherein the glycerine makes up at least about 25 weight-percent of the entire composition.

4,242,843

EXPANDABLE SANDING BLOCK FOR ENDLESS WRAP AROUND ABRASIVE BELTS

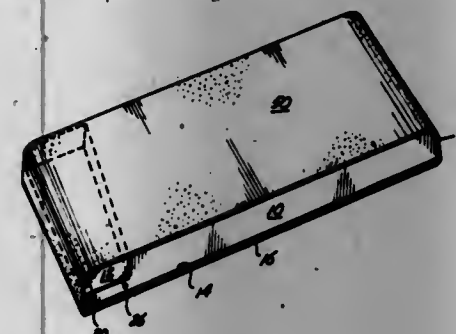
Jerry L. Phillips, 412-123rd Ave. SE., Lake Stevens, Wash. 98285

Filed Dec. 4, 1978, Ser. No. 966,065

Int. Cl.³ B24D 15/00

U.S. Cl. 51—380

4 Claims



1. An abrading tool comprising: a wrap-around, endless abrasive belt, an elongated block having an uninterrupted right-rectangular planar bottom surface, upstanding surfaces substantially right-angulantly disposed relative to each end of said bottom surface, and an overlying top surface; means forming a transversely disposed wedge-cavity at one end of said top surface, said cavity consisting essentially of a ledge surface and an upright wedge wall angularly related to each other; said ledge surface being located in said block intermediate between said bottom surface and its top surface; said wedge wall being disposed transverse said block non-parallel to its adjacent upstanding end surface; and a wedge member transversely slidable on the ledge surface relative said wedge cavity, said wedge member having a wedging surface functionally and frictionally related to said wedge wall, said wedge member being operable during the transverse sliding movements relative said wedge cavity to apply tension on said endless abrasive belt wrapped around said block.

4,242,844

SPARK PLUG CLEANER WITH IMPROVED GRIT RECYCLING

James I. Tucker, Manhattan Beach, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Mar. 9, 1979, Ser. No. 19,166

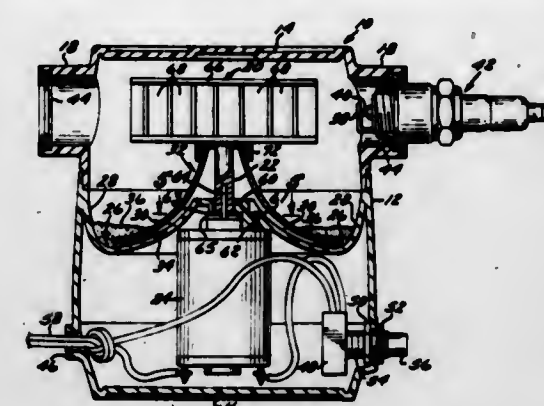
Int. Cl.³ B24C 3/34

U.S. Cl. 51—412

5 Claims

1. A spark plug cleaner comprising: a housing having a confining wall and a vertical axis and at least one spark plug socket extending into said confining wall in the upper portion thereof for receiving and holding a spark plug with electrodes directed inwardly relative to said axis; an impeller mounted on a shaft within said housing to rotate about said vertical axis at the level of said socket, said impeller comprising a horizontally disposed circular upper disk and a parallel annular lower disk spaced therefrom by a plurality of vanes with outwardly directed openings therebetween, said lower annular disk having a downwardly extending collar outside of a central circular opening therein, an annular concave collection floor located below said

socket and converging upwardly and inwardly in a smooth, arcuate, curved sloping surface toward said axis and upwardly and outwardly toward said confining wall, an annular suction guide located interiorly of said confining walls and having a smooth, arcuate, curved sloping surface facing convex inward toward said axis and toward said collection floor in spaced disposition therefrom and



coaxial therewith to define an annular suction gap therebetween, whereby said collar of said lower disk overlaps said suction guide and resides in close proximity thereto, and an electric motor for driving said shaft and said impeller to propel grit therein outwardly toward said spark plug socket whereby spent grit falls to said collection floor for recycling to said suction gap for reuse.

4,242,845

CONNECTING HINGE SYSTEM FOR PREFABRICATED BUILDING FOLDABLE PANEL STRUCTURES

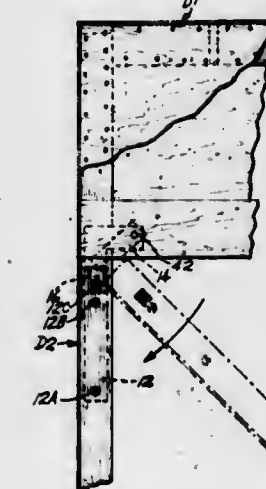
George R. Osborne, Sr., 2815-35th Ave., W., Seattle, Wash. 98199

Filed Nov. 13, 1978, Ser. No. 960,474

Int. Cl.³ E04B 1/343

U.S. Cl. 52—69

1 Claim



1. In a prefabricated building structure including hinged connected roof panel and opposite wall panels foldable beneath the same and adapted to swing downwardly relative to the roof panel into depending upright positions with elevation of the roof panel, each of said wall panels having upright and horizontal structural members forming upper corners in the wall panel, connector hinge units each including a substantially flat base plate having first and second legs intersecting substantially in perpendicular relationship in a common vertical plane and further having a substantially flat transverse connector plate perpendicular to said base plate, said connector plate projecting at right angles from said first leg at a location intermediate one end of said first leg and its intersection with the second leg, said first leg and said transverse connector plate

lying in mutually perpendicular planes and being respectively secured to such upright structural member and such horizontal structural member at said corner formed by such members, and means pivotally connecting the projecting end of said second leg to the roof panel to pivot thereon about a horizontal axis, whereby to guide the wall panel upper end into abutment with the underside of the roof panel adjacent the end of the latter when the wall panel is swung into upright position, said wall panel upright and horizontal structural members each comprising paired parallel members, the first leg and connector plate being bolted in position closely sandwiched between the members of the respective pairs.

4,242,846

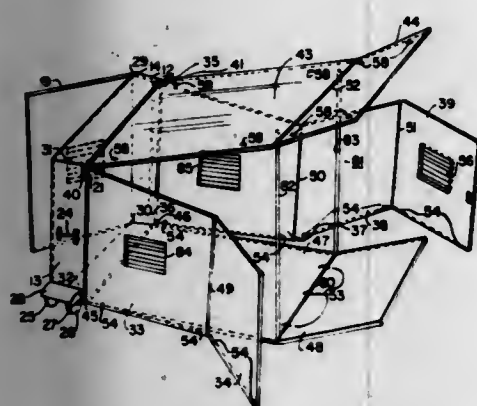
MOTORCYCLE GARAGE

Roger B. Hurd, 21 Lake Ave., Apt. 1A, East Brunswick, N.J. 08816, and Roosevelt N. Barbosa, 275 N. Field Ave., West Orange, N.J. 07052

Filed Jan. 25, 1979, Ser. No. 51,792
Int. Cl.³ E04B 1/346

U.S. Cl. 52—71

12 Claims



1. A portable motorcycle garage, comprising: an open rectangular frame having vertical left and right side walls and horizontal top and bottom walls, a vertical open front surface and a vertical rear surface; first vertically oriented hinge means mounted within said frame adjacent said left side wall; second vertically oriented hinge means mounted within said frame adjacent said right side wall; said first and second hinge means being disposed different distances from said front surface; third horizontally oriented hinge means mounted within said frame adjacent said top wall; fourth horizontally oriented hinge means mounted within said frame adjacent said bottom wall; said third and fourth hinge means being disposed different distances from said front surface; a roof member comprising first and second generally rectangular panels hinged together by a roof hinge parallel to said third hinge means, an edge of said first panel being attached to said third hinge means; a floor member comprising third and fourth generally rectangular panels hinged together by a floor hinge parallel to said fourth hinge means, an edge of said third panel being attached to said fourth hinge means; a left side member comprising fifth and sixth panels hinged together by a left side hinge parallel to said first hinge means, an edge of said fifth panel being attached to said first hinge means, said fifth panel being generally trapezoidal and said sixth panel being quadrilateral; a right side member comprising seventh and eighth panels hinged together by a right side hinge parallel to said second hinge means, an edge of said seventh panel being attached to said second hinge means, said seventh panel being generally trapezoidal and said eighth panel being quadrilateral; a front door panel hinged to one of said sixth and eighth

panels by a front door hinge parallel to a corresponding one of said first and second hinge means; latching means for detachably securing to each other adjacent edges of said panels to form a motorcycle enclosure having a front end accessible via said front door and a rear end defined by said frame; means for closing the rear surface of said frame; vent means for permitting air to flow through said enclosure; and weatherstrip means for sealing the edges of said panels adjacent said hinges; said hinge means, panels and front door being positioned and dimensioned to fold into said frame with one of said panels being relatively proximate to said front vertical surface and providing a closure therefor.

4,242,847

MODULAR LIFT STATION CONSTRUCTION

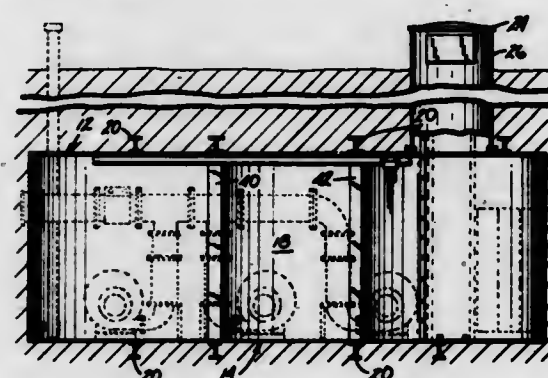
Robert G. Rezia, Tomah, Wis., assignor to Universal Sanitary Equipment Manufacturing Co., Inc., Tomah, Wis.

Filed Dec. 27, 1978, Ser. No. 973,637

Int. Cl.³ E02D 29/12; E03F 5/22

U.S. Cl. 52—169.6

2 Claims



1. An enclosure for housing industrial equipment suitable to be buried underground, comprising: at least two sections having a common top wall and floor, each of said sections having vertically extending side walls between said top wall and said floor, each side wall curved outwardly in a generally convex manner, said sections disposed adjacent to each other along a substantially horizontal elongation axis, said side walls of adjacent sections joined to each other along substantially vertical lines to define an enclosed equipment chamber, said enclosure having a maximum exterior width and a minimum exterior width measured along lines normal to said elongation axis, said adjacent sections joined to each other at said minimum exterior width; and reinforcing members secured to said sections at said joints between adjacent sections and sized such that said reinforcing members do not extend beyond said maximum exterior width.

4,242,848

METAL STRIP EDGE PROTECTING AND REINFORCING CHANNEL

Sven Schoultz, Lidnargatan 8, S-112 53 Stockholm, Sweden

Filed May 19, 1978, Ser. No. 907,749

Claims priority, application Sweden, May 24, 1977, 7706076

Int. Cl.³ E04C 2/38

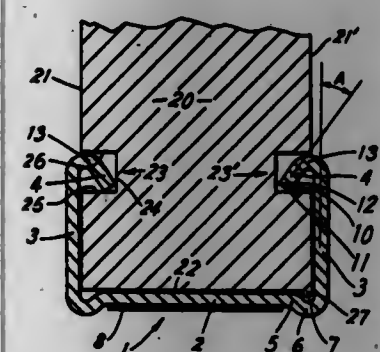
U.S. Cl. 52—716

5 Claims

1. In combination, an edge protecting and reinforcing channel and a platelike member, said platelike member having an edge to be protected by said channel and two side surfaces extending from said edge, said side surfaces having grooves therein substantially parallel to said edge, said channel being formed of a single metal strip, said channel as seen in cross section including an exterior section and two legs substantially perpendicular thereto and arranged such that with the exterior

section extending along an edge of said platelike member, the legs extend along adjacent portions of the two opposite side surfaces of the platelike member, the free end portions of the legs being formed as inwardly bent edge flaps arranged to be introduced into said grooves in said side surfaces of the platelike member, and including the improvement comprising:

corner portions joining the exterior section to the legs and bent outwards and thereby forming a free space at the inside of each such corner portion to loosely cover the corners of the platelike member; said bent edge flaps at the free end portions of the legs forming an acute angle relative to the legs, said bent edge flaps each having at the free end thereof an inner corner facing said exterior section, said bent edge flaps each having a top facing away from said exterior section and located at the bend joining said flaps to the respective legs; said grooves being of substantially rectangular cross section and extending into said side surfaces substantially at a right angle thereto, said grooves each having opposed side walls respectively located nearest and furthest from said edge of said platelike member;



the distance between the edge of said platelike member and the nearest said side wall of said grooves slightly exceeding the distance between said exterior section and said inner corner of said bent edge flap, to press said exterior section of said channel tightly against said edge of said platelike member; said inner corner of said bent edge flaps tending to cut into the material of said platelike member in said nearest side wall of said groove to resist sideward movement of said legs away from said side surfaces of said platelike member; the distance between said top of said inwardly bent edge flap and said inner corner thereof being slightly smaller than the distance between the opposed said side walls of each said groove; whereby after inserting said platelike member edge into said channel, with said inwardly bent edge flaps swung apart due to outward bending of said legs to receive said platelike member, said inwardly bent edge flaps of said channel can easily swing toward each other and enter said grooves.

4,242,849

SKYLIGHT CONSTRUCTION AND METHOD

William D. Benkelman, Bloomfield Hills, Mich., and George C. Cariyon, Tampa, Fla., assignors to Dayco Corporation, Dayton, Ohio

Filed Jul. 3, 1978, Ser. No. 921,658

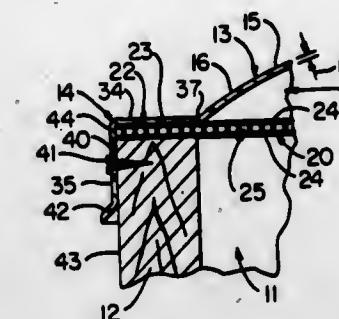
Int. Cl.³ E04B 7/18

U.S. Cl. 52—741

1 Claim

1. In a method of making a skylight construction comprising the steps of: providing a support; providing an outer sheet made of a light-transmitting material and having a peripheral portion adjoining said support; disposing an inner structure made of a light-transmitting material and having a peripheral edge portion against said support; and attaching said peripheral edge portion to said support defining a first air space between said outer sheet and said structure; the improvement comprising the method steps of: constructing said inner structure of a pair of flat sheets each made of a synthetic plastic light-trans-

mitting material, fixing said flat sheets in spaced parallel relation solely using a plurality of spaced parallel sheets to define a second air space therebetween, said ribs and flat sheets being made as a single-piece structure by extrusion process and of the same synthetic plastic material with said making and fixing



steps being simultaneously achieved during said extrusion process, said sheets and first and second air spaces enabling provision of said skylight construction having minimum weight yet providing minimum heat loss in winter and minimum heat gain in summer.

4,242,850

METAL WATER TOWER

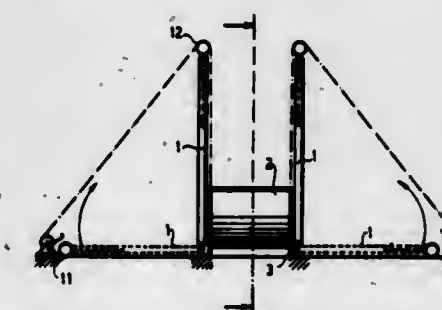
Miklos Merenyi, László Huszar, and Janos Hildvegi, all of Budapest, Hungary, assignors to Vízügyi Torvény Vállalat, Budapest, Hungary

Filed Dec. 12, 1977, Ser. No. 859,929

Int. Cl.³ E04B 1/00; E04G 21/00

U.S. Cl. 52—745

3 Claims



1. A method of making a water tower comprising the steps of sequentially: mounting each of a pair of generally two-dimensional support frames each having an upper portion and a pair of lower ground-engaging feet projecting therefrom for pivoting about respective horizontal axes at ground level; pivoting said frames about the respective axes from down positions each extending generally horizontally and lying on the ground into up positions each extending generally vertically with said upper portions spaced apart; hoisting up an said frames in said up positions on upwardly open U-section trough and positioning same between said upper portions; and securing said U-section trough between said upper portions to form an upwardly open vessel and thereby fixing said frames and vessel together into a rigid assembly.

4,242,851

POLE CONSTRUCTION

Joe C. Pohlman, P.O. Box 15098, Pittsburgh, Pa. 15217, and James P. Romualdi, 5737 Wilkins Ave., Pittsburgh, Pa. 15213

Continuation-in-part of Ser. No. 841,740, Oct. 13, 1977,

abandoned. This application Apr. 16, 1979, Ser. No. 30,441

Int. Cl.³ E04G 21/00

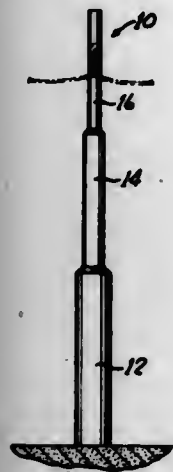
U.S. Cl. 52—743

7 Claims

1. A pole construction comprising: a plurality of longitudi-

nally aligned elongated structural tube members, each of said tube members being of generally uniform outer dimensions, all of said tube members having progressively decreasing outer dimensions with respect to each other, with one end section of a larger dimension tube member overlapping in spaced relationship to the end section of the next smaller dimensioned tube member;

an annular body of non-metallic, non-shrinking means filling the spaces between the overlapping end sections of said tube members and adhering to the opposing surfaces of



the overlapping end sections for rigidly securing said overlapping tube members to each other; said tube members and said annular body being constructed and arranged with respect to each other such that the joints formed between said tube members resist both axial tension and compression loads as well as bending moment imparted to the tube members; and said tube members having their respective interiors generally unobstructed with respect to any structural filler material therein except within said space between said overlapping tube members.

4,242,852

DEVICE FOR CONDITIONING AND PRESERVING IN VACUO PLASTIC-WRAPPED STERILIZED PRODUCTS, NOTABLY LINEN, IN AN AUTOCLAVE

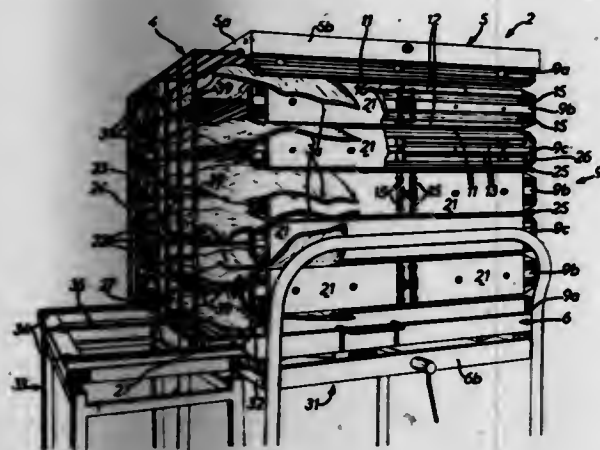
Maurice Orlaguet, Sacy en Brie, and Christian F. Colas, Neuilly sur Seine, both of France, assignors to M A J, Societe a Responsabilite Limitee, Pantin, France

Filed Mar. 9, 1979, Ser. No. 19,085

Claims priority, application France, Mar. 13, 1978, 78 07107
Int. Cl.³ B65B 31/02, 55/06

U.S. Cl. 53-89

8 Claims



1. In a device for packing and preserving sterilized products under vacuum in plastic packs, in particular linen, in an autoclave, comprising at least one support-rack, a plurality of parallel bars supported by said support-rack forming a structure adapted to receive a plurality of packs in the form of air-imperious plastic bags open at one end, means for supporting said packs in said support-rack in such a manner that the

open end of each pack extends between two adjacent bars of said plurality of parallel bars; and members mounted on said parallel bars for compressing and sealing the open ends of said packs, said compressing members being movably mounted on said parallel bars between inoperative and operative positions, the improvement wherein:

- said parallel bars are rigidly secured to said support-rack so as to form slots of predetermined width open at at least one end between adjacent compressing and sealing members; and
- said pack supporting means comprises at least one auxiliary parallelipedical rack which can be introduced into and removed from said main support-rack in a direction parallel to the longitudinal direction of said slots on the side of the open ends thereof.

- said compressing members are movably mounted on said parallel bars between inoperative and operative positions.

4,242,853

METHOD AND APPARATUS FOR ARRANGING A CARRIER MAT ON A NUMBER OF CONTAINERS

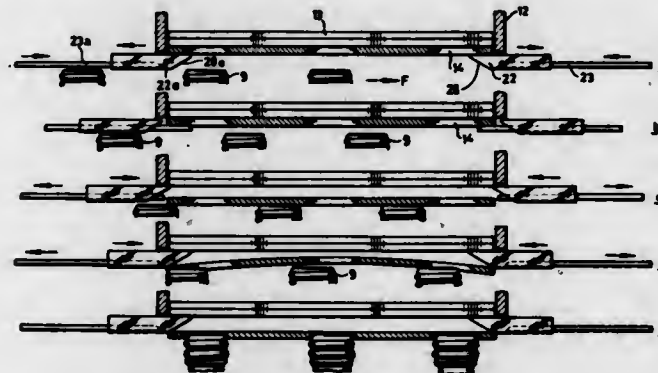
Johannes A. Roetgerink, Hengelo, Netherlands, assignor to B.V. Machinefabriek M. Brouwer & Co., Hengelo, Netherlands

Filed Jan. 16, 1979, Ser. No. 3,801

Int. Cl.³ B65B 21/00

U.S. Cl. 53-398

11 Claims



1. A method for applying a carrier mat on a plurality of moving ranged containers, said carrier mat having a corresponding plurality of apertures for receiving the tops of said plurality of said ranged containers, comprising the steps of:

- conveying said plurality of ranged containers under a carrier mat delivery device;
- positioning said carrier mat in said delivery device for dropping onto said containers as said containers are conveyed past said delivery device;
- dropping said carrier mat from said delivery device so that portions of said carrier mat other than said plurality of apertures rest on the tops of said containers;
- holding said carrier mat in pressure abutment against said tops of the containers after dropping of said carrier mat while said containers continue to move in relation to said carrier mat;
- releasing said mat when said apertures of said mat coincide with the tops of said containers, whereby said mat drops to rest in position wherein said tops of said containers extend through said apertures; and
- pressing said carrier mat into pressure engagement with the top portions of said containers.

4,242,854

AUTOMATIC BAG LOADER

Walter D. Nissen, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 23, 1979, Ser. No. 59,665

Int. Cl.³ A65B 63/02; B65B 35/56

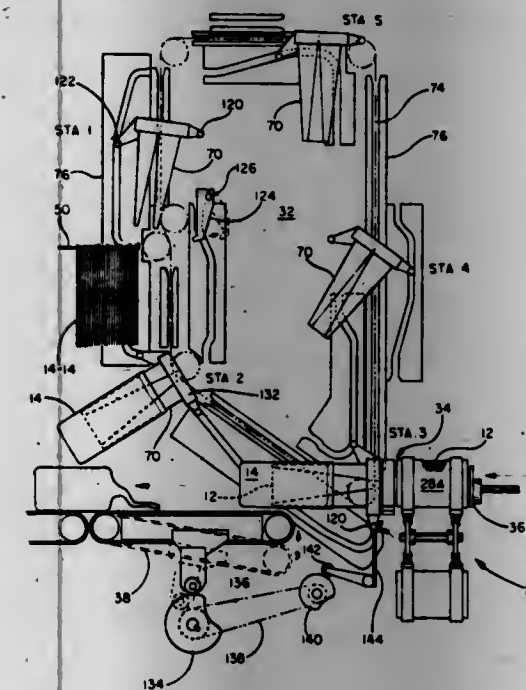
U.S. Cl. 53-529

6 Claims

1. A bagging system for bagging a stack of a compressible

material into a plastic bag, wherein a material supply source supplies each stack of compressible material systematically and in consecutive order to said bagging system, wherein said stack of compressible material comprises a plurality of sheets of compressible material that are folded in half and stacked with the folded edges oriented in the same direction, said system comprising:

- an input station for receiving each stack of compressible material with the folded edge of each sheet oriented in a first direction, in line with the direction of travel of the stack from said supply source to said input station;
- a transfer station spaced from said input station for receiving each stack of compressible material with the folded edge of each sheet oriented in a second direction, 180° from the first direction;
- orienting means disposed between said input station and transfer station for moving each stack from said input station to said transfer station in a manner causing said stack to be compressed gradually from a free-standing height to a chosen compressed height while causing the folded edge of each sheet in said stack to be oriented in said second direction;
- a bag loading station spaced from said transfer station for bagging each stack of compressed material;
- a bucket conveyor means disposed between said transfer



station and said bag loading station for transferring in consecutive order each compressed stack from said transfer station to said bag loading station;

- means for loading each stack of said compressed material into a bucket of said bucket conveyor.
- bag supply means for providing a continuous supply of vertically suspended bags;
- means for partially opening each vertically suspended bag supplied by said bag supply means, said means for partially opening each vertically suspended bag comprising (1) separating means for separating a first edge of each bag from a second edge at a lip of said bag, and (2) a retaining means for grasping and holding the first edge separated from the second edge;
- means for fully opening said bag to form a box-shaped bag having a tension stressed surface and positioning said fully opened box-shaped bag at said bag loading station in a manner to receive said compressed stack of folded material;
- bag loading means for transferring each stack of compressed material into the fully opened bags with the folded edge of each sheet of compressed material located at the opened end of said bag including (1) means for transferring each compressed stack of material in consecutive order from each bucket of said bucket conveyor into each opened bag supplied by the fully opened bag positioning means to form a package and simultaneously separating

the package from the fully opened bag positioning means, (2) means for transferring the separated package to a twist-tie station, and (3) means for twist-tying the open end of the package at the twist-tie station.

4,242,855

LAWN MOWER AUXILIARY UNIT WITH FLEXIBLE DRIVE SHAFT

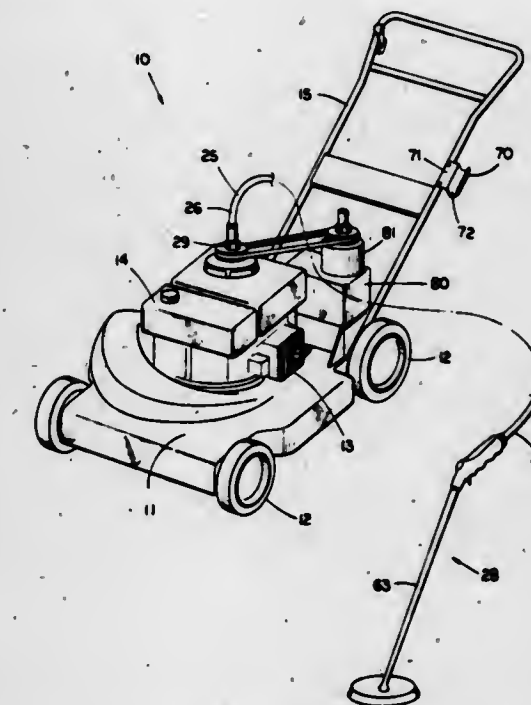
B. Max Beaver, Jr., 3145 Merrick La., #2B, Indianapolis, Ind. 46222

Filed Feb. 22, 1979, Ser. No. 13,883

Int. Cl.³ A01D 35/26

U.S. Cl. 56-13.7

5 Claims



5. A rotary lawn mower with auxiliary unit comprising: a lawn mower main frame with wheels to move across a lawn;

an engine mounted on said frame having a rotatable drive means with a top end extending upwardly from said engine and a bottom end extending downwardly beneath said engine;

a cutting head mounted to said bottom end and being rotatable therewith about an axis of rotation perpendicular to a cutting plane with said cutting head including cutting elements extending outwardly therefrom in said plane for cutting vegetation beneath said main frame;

an auxiliary frame sized to be moved away from said main frame with said auxiliary frame having an output means of power and a rotatable input driver;

a flexible shaft with one end connected to said top end and an opposite end connected to said driver, said shaft being rotatable by said drive means of said engine to rotate said driver;

a rigid extension mounted to said opposite end of said flexible shaft and mountingly received by said driver;

clutch means on said auxiliary frame operable to connect and disconnect said output means of power to said flexible shaft;

a flexible nonrotatable housing in which said flexible shaft rotates and extends from said one end to said opposite end of said flexible shaft and wherein said rotatable drive means is a crankshaft of said engine;

an adaptor removably connecting said one end of said flexible shaft to said rotatable drive means, said adaptor including a main body with an internally threaded end portion removably threaded onto said top end of said rotatable drive means and an opposite end releasably connected to said one end of said flexible shaft.

4,242,856

FRUIT HARVESTING ASSEMBLY

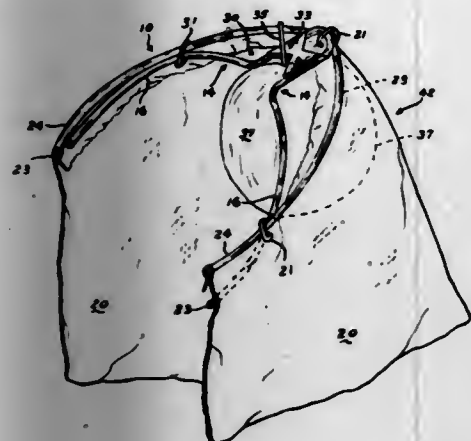
Franklin C. Patton, 3918 97th Ave. N., Pinellas Park, Fla. 33565

Filed Jan. 22, 1979, Ser. No. 51,037

Int. Cl.³ A01D 46/24

U.S. Cl. 56—339

7 Claims



1. A fruit harvesting assembly of the type primarily designed to cut and collect fruit located at an above ground position, said assembly comprising: handle means, support frame means secured to said handle means and including a base portion and a head portion disposed in spaced apart, linearly aligned relation to one another and to the longitudinal axis of said handle means, said support frame means comprising two support arm means each disposed in spaced apart relation to one another and interconnected relation between said head portion and said base portion, said support arm means are cooperatively positioned to define an entrance to said assembly, each support arm means disposed to define a plane angularly oriented to one another and to the linear alignment of said base portion, head portion and longitudinal axis of said handle means, each said support arm means includes an arcuately, substantially outwardly bowed, curvilinear relation to one another so as to define said entrance to said assembly through which fruit passes after being cut; cutting means secured to said head portion and disposed in predetermined angular orientation to the linear alignment of said head portion, base portion and longitudinal axis of said handle means, said cutting means comprises a blade element disposed in an angular depending relation to said linear alignment of said base portion, head portion and the longitudinal axis of said handle means, each support arm means angularly oriented in depending declined relation to said linear alignment and said blade element, said angular oriented cutting means disposable in a cutting position substantially defined by a transverse relation to the stem of the fruit being cut while said linear aligned head portion and base portion are depending therefrom in declined relation to the cutting plane of said cutting means, whereby a clear view of the fruit being cut is available to the operator of said assembly.

4,242,857

OVERRIDE MEANS FOR AUTOMATIC BALE EJECTION DRIVE

Charles A. Parrish, and Richard E. Jennings, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Mar. 29, 1979, Ser. No. 25,172

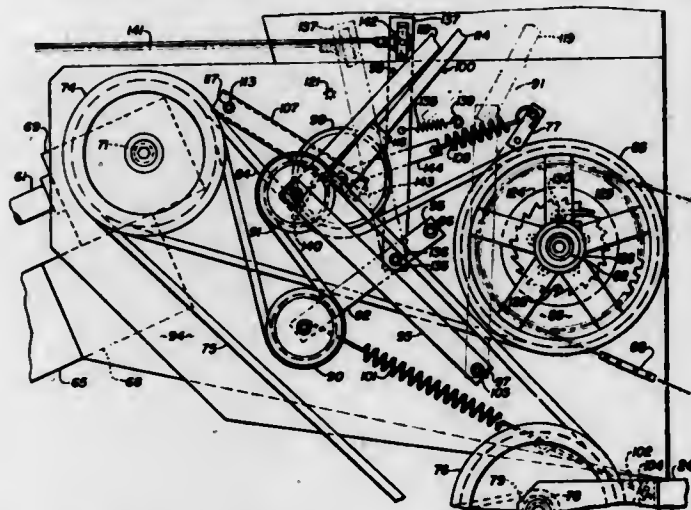
Int. Cl.³ A01F 15/00

U.S. Cl. 56—341

15 Claims

1. In a crop roll forming machine having a pickup mounted to a mobile frame, a tailgate movable in an arcuate path of travel between a first point and a second point, an upper bale forming means reversibly movable in a first direction and an opposing second direction, a lower bale forming means movable in at least a first direction of travel, a roll forming region defined generally by the upper and lower bale forming means, drive means connectable to the bale forming means effective to automatically reverse the movement of the upper bale forming

means when the tailgate is elevated beyond a predetermined point in its arcuate path of travel and to concurrently stop the travel of the lower bale forming means, the drive means further having a first power transfer means and a second power transfer means, the second power transfer means being movable between at least a first position and a second position, and first tensioning means cooperative with the first power transfer means and second tensioning means cooperative with the second power transfer means, the improvement comprising: an overcenter pivotal and selectively actuatable control means cooperative with the drive means and connected thereto such that when actuated the control means pivots downwardly and forwardly to contact the first tensioning



means, the first tensioning means further including an idler rotatably mounted on an arm fixed to the tailgate and connected to a pivot link pivotally fastened to the machine on a first end and having a rotatable surface affixed to its second end and connected to the idler intermediate the first end and the rotatable surface thereby maintaining the first tensioning means via the rotatable surface in engagement with the first power transfer means to continue to drive the upper bale forming means in the first direction and the lower bale forming means in its first direction, the control means further exerting a generally downward force on the second tensioning means to maintain the second power transfer means substantially in its first position.

4,242,858

OPEN-END SPINNING DEVICE

Yuan-Heng Duchen, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 6, 1978, Ser. No. 939,955

Claims priority, application Switzerland, Sep. 15, 1977, 11286/77

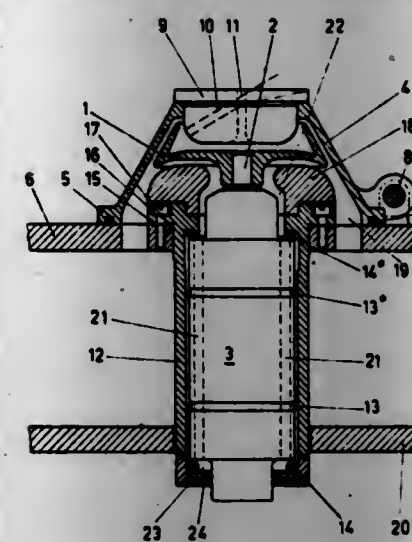
Int. Cl.³ D01H 1/135

U.S. Cl. 57—58.89

9 Claims

1. An open-end spinning device, comprising: a spinning rotor having a frustoconical shape; a toroidal intermediate member arranged closely beneath the spinning rotor; a spinning compartment housing, the spinning rotor being closely received within the spinning compartment housing with the spinning compartment housing, the spinning rotor and the toroidal intermediate member together defining a first flow path extending between the frustoconical spinning rotor and the spinning compartment housing in a direction of increasing radius of the spinning

rotor and then between a radial outer surface of the toroidal intermediate member and the spinning compartment



housing, and with a pressure differential being provided across the first flow path during rotation of the rotor; and means for rotating the spinning rotor.

4,242,859

THREAD SPINNING APPARATUS

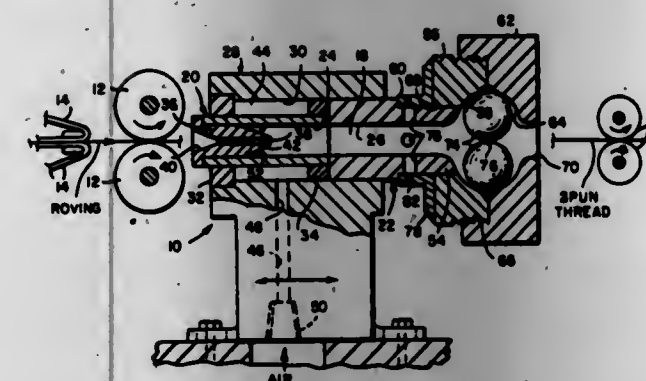
William E. Landgren, Northborough, Mass., assignor to Lawrence M. Keeler, Whitinsville, Mass.

Filed Jan. 21, 1980, Ser. No. 113,972

Int. Cl.³ D01H 7/882, 1/12

U.S. Cl. 57—58.89

22 Claims



1. Apparatus for direct spinning comprising a spinning unit to which staple fibers are supplied and from which a spun thread is withdrawn, said spinning unit defining an elongate, cylindrical chamber of uniform diameter, means for delivering air to the chamber in a forwardly moving vortex, means for delivering staple fibers into a vortex within the chamber, said vortex operating to disperse the fibers as they are delivered into the chamber and reform them into an embryo thread free of false twists, means at the end of the chamber for rotating the embryonic thread as it is withdrawn in the direction of rotation of the vortex to impart a true twist thereto, said means defining an annular raceway at said end of the tubular chamber concentric therewith and means arranged in said annular raceway to be rotated about the axis of the tubular chamber by impingement of the vortex of air moving forwardly through the tubular chamber, said means when rotating within the raceway presenting friction-engendering means turning about the axis of the thread generated within the chamber in the direction of rotation of the vortex.

4,242,860

YARN MONITORING APPARATUS FOR AN OPEN END SPINNING TURBINE

Heinz Wehde, Rothenberg; Burkhard Wulffhorst, and Fritz Schumann, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

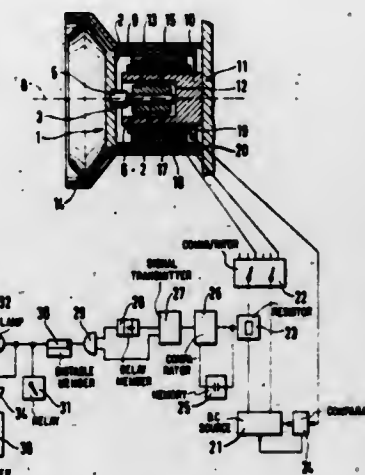
Filed Dec. 14, 1978, Ser. No. 972,713

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755647

Int. Cl.³ D01H 13/16, 13/18; G08B 21/00

U.S. Cl. 57—81

8 Claims



1. In an apparatus for monitoring the yarn delivered by an open end spinning turbine including an electric motor for driving the open end spinning turbine with a predetermined rpm; the apparatus including a measured value transmitting means responsive to changes in the current consumption of the electric motor for generating a signal when the change in the current consumption exceeds a predetermined threshold value; the improvement wherein said measured value transmitting means includes sensing means responsive to a reduction in the current consumption of said electric motor and signal generating means operatively connected to said sensing means for generating a yarn breakage indicating signal when the reduction in the current consumption of said electric motor falls below a predetermined value indicative of yarn breakage.

4,242,861

YARN TWISTER RING LUBRICANT

J. Frank Kirksey, Thomaston, Ga., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 927,796, Jul. 25, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,107

Int. Cl.³ D01H 7/62; C10M 3/08, 7/12; C10L 1/16

U.S. Cl. 57—120

3 Claims

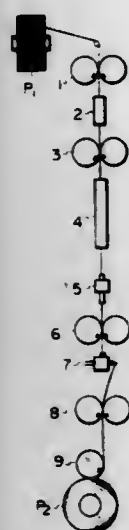
1. In a method for twisting yarn by passing the yarn through the eye of a nylon traveler turning on a twister ring to twist the yarn and feed it onto a rotating bobbin, wherein the surface of the twister ring is lubricated with a lubricant comprising a mixture of a lubricating oil and a paraffin wax, the improvement comprising lubricating the surface of the twister ring in contact with the traveler with a solid lubricant consisting essentially of a minor amount of the lubricating oil having an SUS viscosity at 20° C. in the range of 30-600 selected from the group consisting of hydrorefined naphthenic petroleum oil, hydrorefined paraffinic petroleum oil, solvent refined paraffinic petroleum oil, hydrogenated polyolefin oil, and mixtures thereof and a major amount of the paraffin wax whereby the friction between the traveler and the twister ring is reduced.

4,242,862

MULTIFILAMENT YARN HAVING NOVEL CONFIGURATION AND A METHOD FOR PRODUCING THE SAME

Takao Negishi, and Kazuo Tomita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Division of Ser. No. 639,873, Dec. 11, 1975, Pat. No. 4,059,950.
This application Aug. 30, 1977, Ser. No. 829,192
Int. Cl.³ D02G 1/02; D02J 1/22
U.S. Cl. 57-287

17 Claims



1. Method of producing a polyester yarn composed of a plurality of individual fibrous materials, each of said fibrous materials provided with thicker cross-sectional portions, thinner cross sectional portions and intermediate thickness-size portions randomly distributed along the axial direction thereof, comprising drawing undrawn multifilament yarn under a condition of a drawing ratio below a natural draw ratio of undrawn filaments of said undrawn multifilament yarn and a drawing temperature of said yarn over a crystallizing initiating temperature of said undrawn filaments.

3. Method of producing a polyester yarn according to claim 1, further comprising a step of twisting said undrawn multifilament yarn before applying said drawing operation, and imparting twists less than 250/Total thickness of yarn in denier Turns/meter to said undrawn multifilament yarn in said twisting operation.

4,242,863

DUAL PHASE FUEL VAPORIZING COMBUSTOR

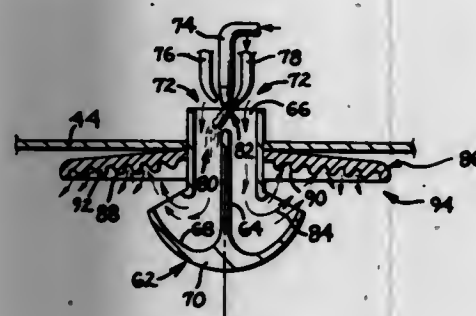
John M. Bailey, Danlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 16, 1978, Ser. No. 887,149

Int. Cl.² F02C 7/22

U.S. Cl. 60-39.06

25 Claims



1. A method of burning heavy and highly carbonaceous portions of fuel in a gas driven turbine, comprising, introducing fuel and air in an appropriate air-fuel ratio mixture into a vaporizing combustor of a gas driven turbine during a continuing operational phase thereof and subjecting the mixture to heat for at least partial vaporization of the fuel, impinging the partially vaporized mixture against a hot surface, with liquid fuel remaining in the partially vaporized mixture being depos-

ited in a thin film on the hot surface with the more volatile portions of the so deposited liquid fuel thereupon vaporizing and burning, the heavier portions of the so deposited liquid fuel remaining on the surface and forming a carbon deposit thereon, and thereafter, during sustained turbine operation, selectively controlling, by a continuous cyclic reduction or cessation of fuel flow, flowing a stream of hot air with little or no fuel therein against the hot surface and the hot carbon deposits thereon, the hot and highly oxidizing air in the so selectively controlled fuel and air stream causing the hot carbon deposits to oxidize and burn.

4,242,864

INTEGRATED CONTROL SYSTEM FOR A GAS TURBINE ENGINE

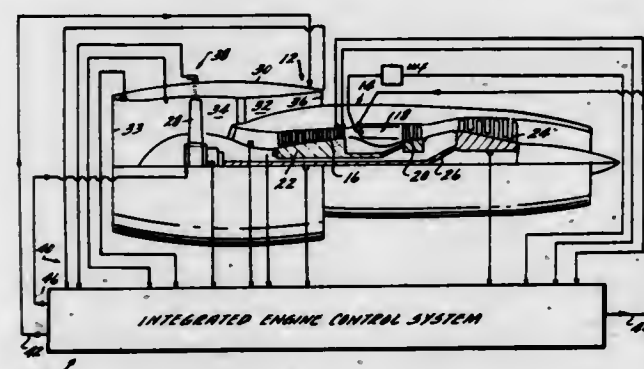
Jack E. Cornett; Andrew A. Saunders, Jr., both of Cincinnati; Ira E. Marvin, Fairfield, and Richard S. Beltler, Cincinnati, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 741,056, Nov. 11, 1976, abandoned. This application May 25, 1978, Ser. No. 909,608

Int. Cl.³ F02K 3/06

U.S. Cl. 60-226 R

29 Claims



1. In a gas turbine engine of the turbofan type which includes a wall spaced apart from a core engine to define a bypass duct therebetween, said duct including an inlet and a variable area fan exhaust nozzle, a control system comprising: means for generating a signal representative of the actual inlet throat Mach number; means for generating an inlet throat Mach number reference signal; means for comparing said signals to generate a difference signal; actuator means responsive to said difference signal for modifying said fan exhaust nozzle area; means for generating a signal representative of the actual engine thrust; means for generating a signal representative of the engine power setting; means for modifying said power setting signal in response to existing operating conditions to create a thrust demand signal; means for comparing said actual thrust signal with said thrust demand signal to generate a thrust difference signal; and actuator means responsive to said thrust difference signal for modifying engine fuel flow.

4,242,865

TURBOJET AFTERBURNER ENGINE WITH TWO-POSITION EXHAUST NOZZLE

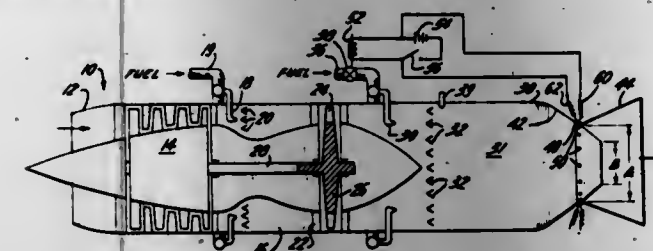
Emmett S. Harrison, Corona, N.Y., and Anthony Leto, Franklin Lakes, N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Jan. 25, 1978, Ser. No. 872,249

Int. Cl.² F02K 1/24, 3/10

U.S. Cl. 60-242

5 Claims



1. A turbojet engine for aircraft missiles including an afterburner, an exhaust nozzle duct disposed downstream of said afterburner for discharge of the engine exhaust therethrough and having a non-variable throat portion of convergent-divergent profile, an element secured to and within said nozzle duct at its said throat portion and coacting with said throat portion to provide a non-variable reduced cross-sectional flow area nozzle for non-afterburning operation of the engine, and means operative during flight to jettison said element when the engine afterburner is activated so that the effective cross-sectional flow area is defined by the throat portion.

4,242,866

BY-PASS VALVE

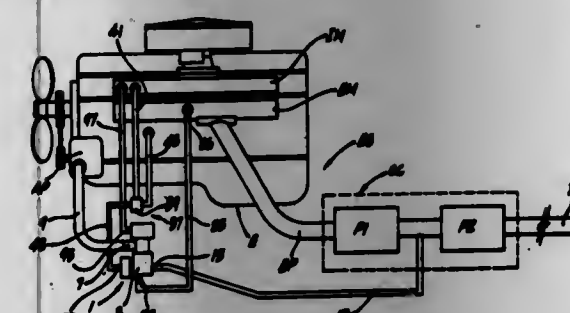
Raymond E. Williamson, Granite City, Ill., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,059

Int. Cl.³ F01N 3/15

U.S. Cl. 60-290

8 Claims



1. An improved by-pass valve for use in the exhaust system of an automobile engine, the exhaust system having a catalytic converter and the engine having an air pump, the by-pass valve comprising:

- an air inlet connected to the air pump;
- first and second air outlets respectively connected to first and second portions of the catalytic converter;
- a third outlet through which air from the inlet is dumped to the atmosphere;
- means responsive to the operating temperature of the engine for directing air from the inlet to the first outlet when engine temperature is less than a predetermined value and from the inlet to the second outlet when engine temperature reaches the predetermined value;
- a first and normally closed valve intermediate the air inlet and the first and second outlets;
- a second and normally open valve intermediate the air inlet and the third outlet; and
- means responsive to the engine vacuum level for opening the first valve and closing the second valve when engine vacuum exceeds a predetermined level whereby air flows from the inlet to either of the first and second outlets, the vacuum responsive means including means responsive to a blockage of whichever of the first or second outlets air

from the inlet is directed to for reopening the second valve whereby air from the inlet is dumped to the atmosphere, the blockage responsive means comprising a split shaft having a first section with which the first valve is integrally connected and a second section with which the second valve is integrally connected, the first and second shaft sections being movable in unison to open the first valve, but the second shaft section being movable relative to the first shaft section when said blockage occurs thereby to reopen the second valve.

4,242,867

STANDBY SUPPLY SYSTEM FOR DELIVERING PRESSURE FLUID TO A USER COMPONENT

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to IIT Industries, Inc., New York, N.Y.

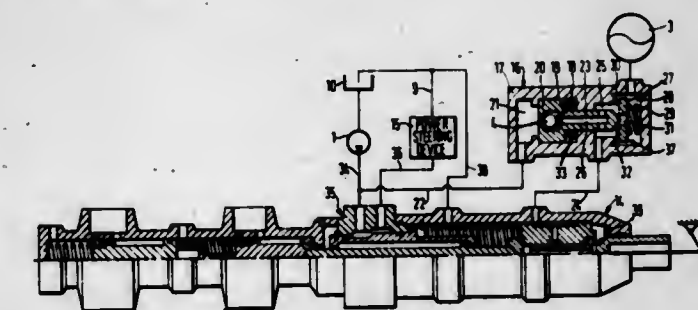
Filed Mar. 12, 1979, Ser. No. 19,951

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814163

Int. Cl.³ F16K 11/03

U.S. Cl. 60-405

6 Claims



1. A standby supply system for delivering pressure fluid to a user component comprising:

- a primary fluid source;
- a first check valve coupling the pressure fluid of said primary source to said user component;
- an accumulator;
- a second check valve coupling the pressure fluid of said primary source to said accumulator for charging thereof; and
- a valve arrangement coupled to said primary source, said accumulator and said user component, said valve arrangement being responsive to pressure from said primary source to control a connection from said accumulator to said user component;

said valve arrangement including

- a housing having a longitudinal stepped bore accommodating a stepped piston slidable therein in an axial direction, an inlet chamber coupled to said primary source and an outlet chamber coupled to said user component, said piston having a front surface on its larger diameter portion exposed to pressure from said primary source in said inlet chamber and its smaller diameter portion projecting into said outlet chamber to control a passageway connecting said outlet chamber to said accumulator;
- the end of said passageway adjacent said outlet chamber being a valve seat and the end of said smaller diameter portion being a closing member for said valve seat, said inlet chamber being coupled to said outlet chamber by said first check valve, and
- said outlet chamber being coupled to said accumulator by said second check valve, said piston being biased in a direction to open said passageway.

4,242,868

HYDRO-POWER GENERATION SYSTEMS

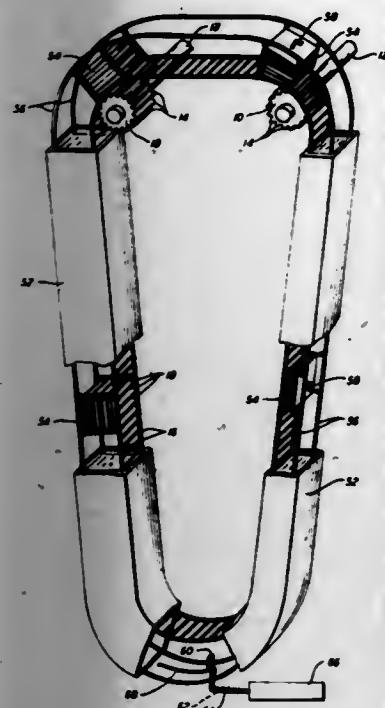
Charles E. Smith, 7932 Eisenhower Blvd., Bridgeport, N.Y. 13030

Filed Aug. 15, 1978, Ser. No. 933,819

Int. Cl.³ F03B 9/00; F03G 7/00

U.S. Cl. 60-496

4 Claims



1. A system for generating useful energy from forces associated with a quantity of water, said system comprising:

- a pair of endless flexible belts of equal length;
- a plurality of rigid links each affixed at opposite ends to said belts to maintain the latter in parallel relation, said links being spaced at equal, predetermined intervals about the periphery of said belts;
- at least one gear having teeth extending radially from its periphery, the pitch of said teeth being equal to said predetermined intervals, said links being in meshed engagement with said teeth;
- a power shaft connected to said gear for rotation thereby;
- a plurality of inflatable and deflatable bellows fixedly attached in spaced relation to at least one of said belts and links in driving engagement and movable in a path producing movement of said belts, and thereby rotation of said gear and shaft, in a single direction;
- a U-shaped conduit defining two substantially parallel, vertical legs, open at the top, and a connecting lower portion, at least a substantial portion of said path being enclosed within said conduit;
- means for deflating said bellows when positioned in one of said legs and for inflating said bellows when positioned in the other of said legs; and
- a quantity of water contained by said conduit and exerting a buoyant force upon said bellows when positioned in said other leg to apply thereto a force sufficient to move said bellows, and thereby said belts, in said single direction.

4,242,869

MASTER CYLINDER

Takeaki Sakazume, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Division of Ser. No. 904,918, May 3, 1978, Pat. No. 4,198,825, which is a continuation of Ser. No. 743,215, Nov. 18, 1976, abandoned. This application Aug. 22, 1979, Ser. No. 68,956

Int. Cl.³ B60T 7/02

U.S. Cl. 60-594

6 Claims

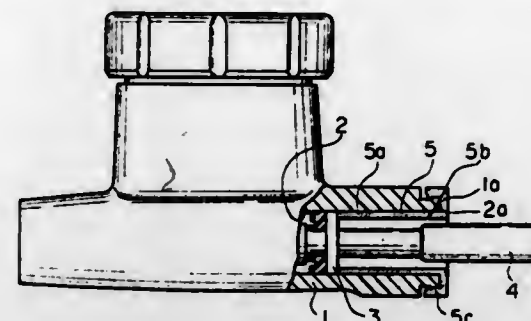
1. A master cylinder for use in a vehicle braking system, said master cylinder comprising:

- a main body formed of a single integral rigid member and having therein a bore with an open end, said bore having a uniform diameter;

a piston slidably positioned within said bore, said piston being permanently maintained in sliding contact with the inner surface of said bore;

an elongated hollow cylindrical sleeve extending into said bore through said open end thereof, said sleeve having an outer peripheral surface contacting the inner surface of said bore, said sleeve having a first axial end adjacent said piston and a second axial end adjacent said open end of said main body;

said main body having formed in an outer surface thereof at least one recess extending radially with respect to the axis



of said bore, said sleeve having at least one integral projection projecting radially with respect to said axis of said bore, said at least one projection snappingly fitting into said at least one recess, thereby retaining said sleeve in said bore;

an inner end face of said first end of said sleeve abutting against said piston to maintain said piston within said bore; and

said sleeve having a cylindrical wall having therein at least one slot extending from said second end axially toward said first end of said sleeve, said slot extending entirely through at least one portion of said cylindrical wall of said sleeve, said axially extending slot being adapted for the receipt of a brake actuating lever.

4,242,870

POWER SYSTEMS USING HEAT FROM HOT LIQUID

Judson S. Searingen, 500 Bel Air Rd., Los Angeles, Calif. 90038, and Sham Sunder, 2235 Carmelina Ave., Los Angeles, Calif. 90064 (last known address)

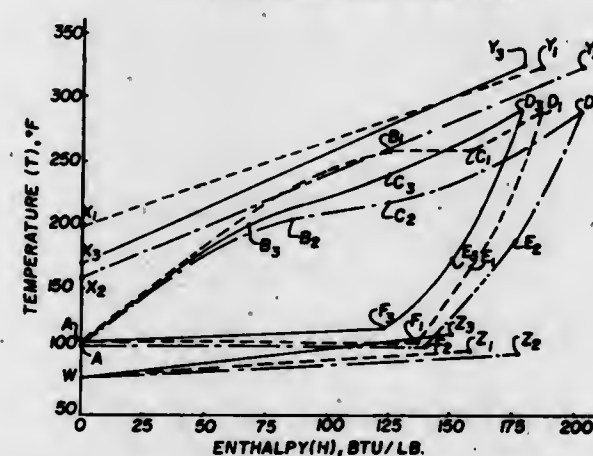
Continuation of Ser. No. 321,810, Jan. 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 174,774, Aug. 28, 1971, abandoned. This application Aug. 29, 1974, Ser. No. 501,838

Int. Cl.³ F01K 25/06, 25/10

U.S. Cl. 60-651

12 Claims

— PROpane
— ISOBUTANE
— 35 MOL % ISOBUTANE IN PROPANE



1. In a process for converting thermal energy to mechanical energy wherein a working fluid is pre-heated and vaporized by being passed through a heating zone in countercurrent heat exchange relation with a heating fluid, said working fluid is expanded to produce mechanical energy, and said working

fluid is cooled and condensed, the improvement comprising: using as said working fluid a mixture of ingredient fluids having moderately close but essentially different boiling points such that said working fluid vaporizes over a desired range of substantially continuously increasing vaporization temperatures, wherein for a substantial increase in enthalpy of said working fluid as it passes through said heating zone there is a substantial increase in temperature of said working fluid, and the differences in temperature between said working fluid and said heating fluid at each point in said heating zone are more nearly equal than would be the differences in temperature between any of said ingredient fluids and said heating fluid at each point in said heating zone were said ingredient fluids passed individually through said heating zone in counter-current heat exchange relation with said heating fluid; maintaining substantially constant the respective compositions of said working fluid and said heating fluid throughout said heating zone; and further maintaining said heating fluid in substantially a single phase throughout said heating zone.

4,242,871

LOUVER BURNER LINER

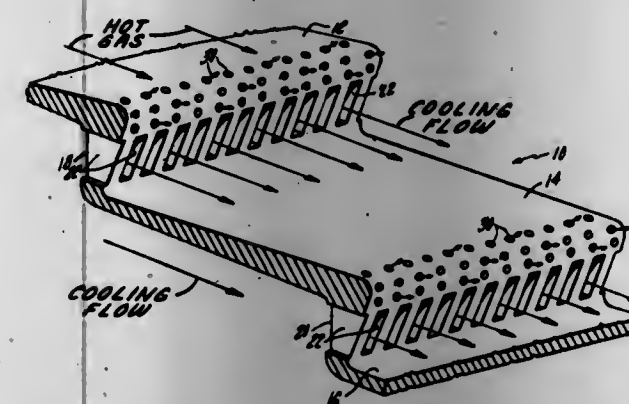
Robert A. Breton, Old Saybrook, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 18, 1979, Ser. No. 76,639

Int. Cl.³ F02C 7/22

U.S. Cl. 60-757

4 Claims



1. A burner liner for a combustor for a gas turbine power plant having wall means defining a chamber in which combustion takes place, said wall means having substantially step like portions including an upper portion and a lower portion and a substantially vertical portion therebetween, a plurality of spaced vertical slots, the space therebetween being sized to allow a portion of the cooling air flowing over the upper and lower portions to pass therethrough and forming a film of cooling air to pass adjacent one of said portions in the combustion side of said wall means, a plurality of drilled holes adjacent said slots and at the bent portion formed at the juncture point of said upper portion and said vertical portion also admitting cooling air and the thickness therebetween of said wall means being selected to control the temperature gradient across said vertical portion.

4,242,872

ATTIC MOUNTED SOLAR ASSIST MULTI-SOURCE/SINK RESIDENTIAL HEAT PUMP SYSTEM

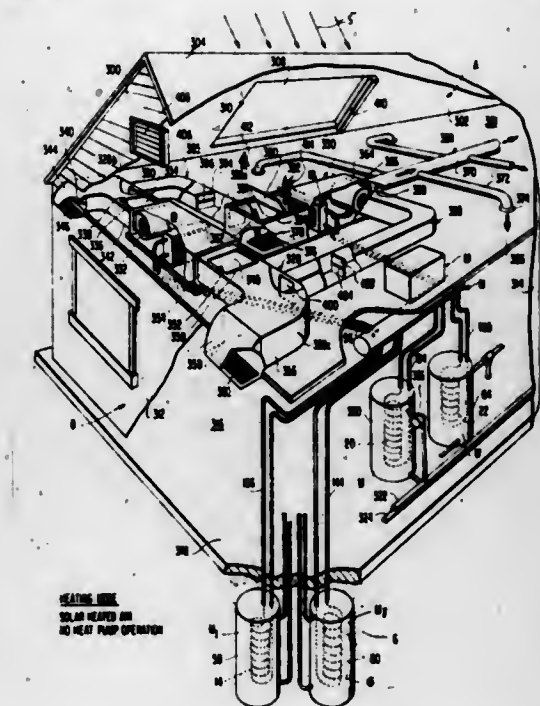
David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 950,905, Oct. 12, 1978, which is a continuation-in-part of Ser. No. 924,015, Jul. 11, 1978, which is a continuation-in-part of Ser. No. 882,729, Mar. 2, 1978, which is a continuation-in-part of Ser. No. 806,407, Jun. 14, 1977, Pat. No. 4,148,436, which is a continuation-in-part of Ser. No. 782,675, Mar. 30, 1977, Pat. No. 4,086,072, which is a continuation-in-part of Ser. No. 653,586, Jan. 29, 1976, Pat. No. 4,058,968. This application Dec. 18, 1978, Ser. No. 970,789

Int. Cl.³ F24J 3/02; F25B 27/00

U.S. Cl. 62-2

10 Claims



1. A heat pump refrigeration system for conditioning a residential building space or the like, said building comprising an attic thermally isolated from the space to be conditioned, said attic including a solar window facing a solar radiation source such that said attic defines a passive solar collector and forms a solar space, said refrigeration system comprising:

- a first heat exchange coil;
- a second heat exchange coil,
- said coils trading functions as evaporator or condenser to absorb heat and discharge heat, respectively;
- a compressor;
- conduit means carrying refrigerant and defining a closed refrigeration loop circuit including said coils and said compressor and further comprising means for selectively operating said first and second heat exchange coils as evaporator or condenser as required, the improvement comprising:
- a first duct within said attic, said first duct housing said first coil and having an inlet and an outlet;
- a second duct within said attic and thermally isolated from said first duct, said second duct housing said second coil and having an inlet and an outlet;
- blower means for forcing air flow through said ducts;
- means for selectively communicating said first duct inlet and outlet to the building exterior or to said attic solar space; said second duct outlet opening into the building space to be conditioned; and
- means for communicating said second duct inlet to at least said space to be conditioned,

whereby said first coil functions to pick up heat from said solar space or from said outside when functioning as system evaporator or to discharge heat to the outside when functioning as system condenser, and said second coil functions to heat or cool the space to be conditioned

when functioning as condenser and evaporator, respectively.

4,242,873

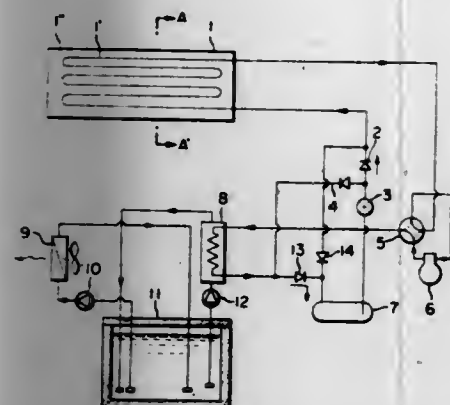
HEAT PUMP TYPE HEATING AND COOLING SOURCE SYSTEM

Toshiyuki Hino, Tokyo, Japan, assignor to Kajima Kenetsu Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 812,314, Jul. 1, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 51,030
Int. Cl.³ F25B 27/00, 27/02, 13/00

U.S. Cl. 62-2

5 Claims



1. A heat pump type heating and cooling source system comprising a primary refrigerant medium circulating circuit utilizing the latent heat of the refrigerant medium, a secondary medium circulating circuit arranged for heat exchange relation with said primary medium circulating circuit and including a utility unit for heating and cooling purposes and at least one heat collecting and radiating member in panel form connected in said primary refrigerant medium circulating circuit, said heat collecting and radiating member being disposed outdoors substantially normal to the horizontal and capable of absorbing heat through solar radiation and from the atmosphere and capable of discharging heat to the atmosphere, the said primary refrigerant medium circulating in said system for winter heating purposes in the said member at an evaporating temperature of from about -10°C . to 20°C . when the cold ambient air is above -10°C . whereby said primary refrigerating medium absorbs solar radiation and heat from the atmosphere and the said primary refrigerant medium circulating in said system for summer cooling purposes at a condensing temperature of from 30°C . to 60°C . when the air temperature is up to about 30°C . whereby said primary refrigerating medium discharges heat through said member to the atmosphere, the said primary refrigerant medium constituting essentially the sole fluid means in the system for absorbing heat from and releasing heat to the outdoors.

4,242,874

ICEBOX CONVERSION UNIT

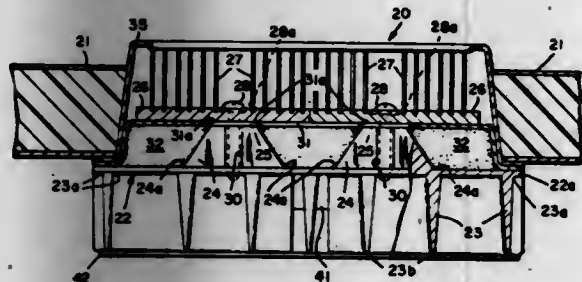
Larry L. Simms, P.O. Box 1063, San Pedro, Calif. 90733

Filed Dec. 11, 1978, Ser. No. 968,502

Int. Cl.³ F25B 21/02; F25D 3/08

U.S. Cl. 62-3

4 Claims



1. A thermoelectric refrigeration unit adapted for installa-

tion in an existing thermally insulated enclosure having an opening therein comprising:

- a cold plate adapted to be secured to said enclosure in the opening, said cold plate having heat absorbing fins on one side thereof and facing inwardly of said enclosure, and means defining at least one boss on the other side thereof facing outwardly of said enclosure, said heat absorbing fins radially extending outwardly from a generally central space;
- a fan mounted on said cold plate within the central space;
- a baffle plate secured to said heat absorbing fins and having louvers therein generally positioned over said fan, whereby said fan moves air from said enclosure, past said heat absorbing fins and out through said louvers back into said enclosure;
- a heat sink plate with heat radiating fins on one side thereof facing outwardly of said enclosure;
- means defining at least one thermoelectric module disposed between said plates and cemented to said heat sink plate with a thermally conductive epoxy cement, and module means being thermally joined to said boss means with a thin continuous film of a thermally conductive grease;
- a plurality of screws extending from said heat sink plate to said cold plate and compressing said module therebetween, said screws extending through thermally insulating washers, clearance holes in said heat sink plate, relief grooves in the sides of said boss means, and being threaded into said cold plate;
- a pour-in-place polyurethane foam thermal insulation material disposed between said plates to substantially completely fill the space therebetween;
- a dished separator disposed substantially to enclose the space between said plates, said separator having a flange secured to the edge of said cold plate, said separator extending to cover said insulation material and pass beneath said heat sink plate, said separator having an opening to accommodate said module;
- a second fan mounted on said dished separator adjacent said heat radiating fins of said heat sink plate; and
- a cover nesting over said dished separator and enclosing said second fan, said heat sink plate and said heat radiating fins, said cover having a flange secured to said separator flange and opening over said second fan and said heat radiating fins to permit circulation of air therethrough.

4,242,875

HYDROGEN CRYOGENIC PURIFICATION SYSTEM

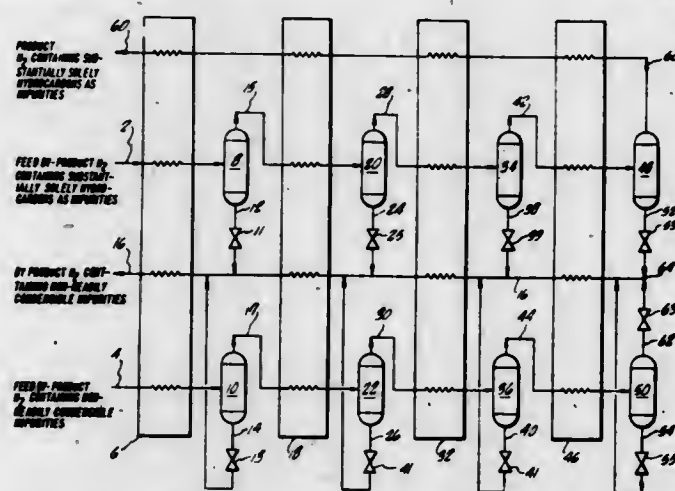
Arthur E. Schaefer, Arcadia, Calif., assignor to C F Braun & Co., Alhambra, Calif.

Filed May 10, 1978, Ser. No. 904,373

Int. Cl.² F25J 3/08

U.S. Cl. 62-23

21 Claims



1. A process for the cryogenic purification of industrial by-product gas streams containing impure hydrogen in recoverable amounts, one of the by-product hydrogen gas streams also containing non-readily condensible impurities having

boiling points below that of methane, which comprises the steps of:

- (a) passing a first and second hydrogen containing gas streams through a successive series of cooling and separation stages, the first gas stream containing hydrocarbons as substantially the sole impurities and the second gas stream containing nitrogen or other non-readily condensible impurities having boiling points below that of methane;
- (b) separating at each such separation stage from the first and second hydrogen containing gas streams a purified gas stream overhead from a condensed bottom fraction, the purified overhead of the second gas stream also containing the non-readily condensible impurities, and combining the bottom fractions into one or more condensate streams;
- (c) injecting the overhead containing the non-readily condensible impurities from the final separation stage into a condensate stream containing combined bottom fractions; and
- (d) recovering the overhead of the first stream as hydrogen product of desired purity.

4,242,876

ROOFTOP TYPE AIR CONDITIONER

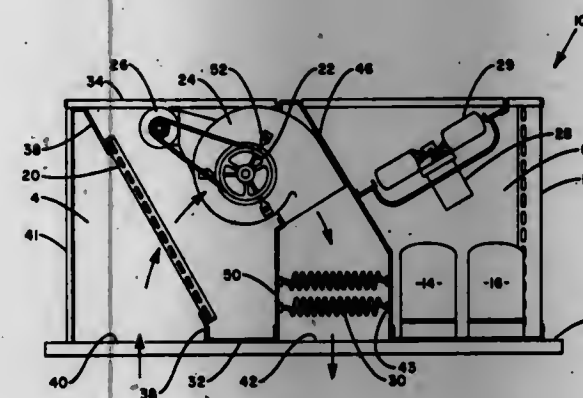
Edward G. Cooper, Skaneateles; Richard D. Jeffers, North Syracuse, and David M. New, Homer, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 27, 1979, Ser. No. 24,357

Int. Cl.³ F25D 17/06

U.S. Cl. 62-89

7 Claims



1. A rooftop type air conditioning unit with top, bottom and side walls having a dividing wall separating the unit into an indoor section and an outdoor section having a heat exchanger, an outdoor fan and a compressor, the indoor section having an intake opening in the bottom wall for the receipt of air from the area to be conditioned, an indoor air heat exchanger mounted between the top and bottom walls of the unit at an acute angle, such that entering air flows generally upward therethrough, a centrifugal fan and shroud mounted adjacent to the top wall of the unit on the opposite side of the heat exchanger from the intake such that indoor air may be drawn through the heat exchanger by the fan, said fan being spaced from the heat exchanger to promote efficient air flow therethrough, a discharge opening in the bottom wall of the unit such that air drawn into the fan is accelerated and discharged downwardly therefrom towards the discharge opening to provide a relatively obstacle free and direct air flow path through the indoor section of the unit, the major angular deflection of the air occurring within the fan shroud, and an internal wall which serves to support the centrifugal fan and shroud and which serves to separate air being drawn into the fan from air being discharged from the fan.

4,242,877

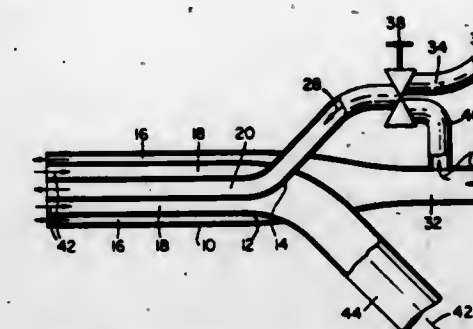
HEAT-EXCHANGER ELEMENT FOR A FREEZE DRIER

Friedhelm Geerkens, Schwalbenstr. 3, 4044 Kaarst, Fed. Rep. of Germany
Filed Mar. 8, 1978, Ser. No. 884,573
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709961

Int. Cl.³ F25D 17/06

U.S. Cl. 62-93

11 Claims



1. A heat exchanger element for cooling and drying a gas, said element comprising an outer tube for the through-flow of a freezing mixture, an inner tube disposed within the outer tube for the through-flow of a gas to be dried, and a core tube located within the inner tube for the through-flow of a first fluid component, wherein a feed tube for the through passage of a second fluid component is provided at an end of said core tube.

4,242,878

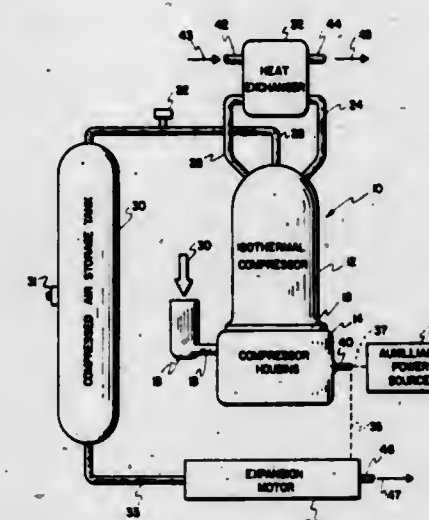
ISOTHERMAL COMPRESSOR APPARATUS AND METHOD

VerDon C. Brinkerhoff, Salt Lake City, Utah, assignor to Split Cycle Energy Systems, Inc., Salt Lake City, Utah
Filed Jan. 22, 1979, Ser. No. 5,415

Int. Cl.³ F25D 15/00

U.S. Cl. 62-119

14 Claims



1. A compressor comprising:
a compression chamber defined by a thin-wall element having a hemispherical profile;
a piston operable in the compression chamber to compress a compressible gas;
valve means for admitting the compressible gas into the compression chamber;
conduit means for removing compressed gas from the compression chamber;
cooling means for cooling the compressible gas comprising an evaporation chamber disposed about at least a portion of the hemispherical profile of the compression chamber, the evaporation chamber containing a body of liquid having a predetermined heat of vaporization to accommodate removal of at least a portion of the thermal energy from the compressible gas wherein the thermal energy is

in the compressible gas resulting from compression of the compressible gas; and heat exchange means for removing the thermal energy from the evaporated liquid.

4,242,879

CONTROL SYSTEM FOR A REFRIGERATING APPARATUS OPERABLE ELECTRICALLY OR BY GAS

Peter E. Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

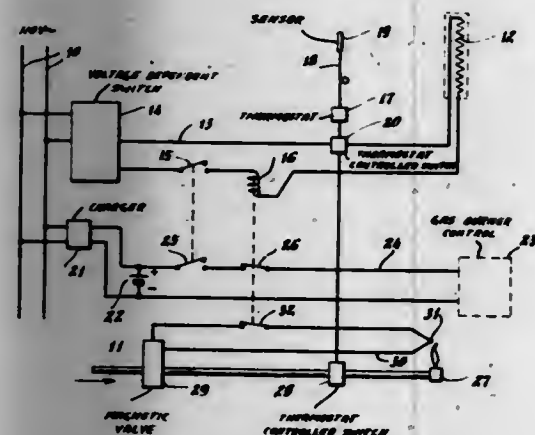
Filed Jan. 18, 1979, Ser. No. 49,542

Claims priority, application Sweden, Jan. 19, 1978, 7806991

Int. Cl.³ F25B 15/00, 27/00, 27/02; B60H 3/04

U.S. Cl. 62-148

5 Claims



1. In a control system for an absorption refrigeration apparatus having an electric heating means, gas heating means, and a gas control means for controlling said gas burner means, said gas control means including an electric circuit for igniting and maintaining a flame in said burner means; the improvement wherein said control system further comprises an input for receiving electric supply current, a voltage-dependent switch circuit coupled to said electric heating means for applying electric current thereto from said input when a voltage at said input exceeds a given value, and means coupling the voltage-dependent switch circuit to said electric circuit for enabling said gas control means when voltage at said input is below said given value.

4,242,880

REFRIGERATING APPARATUS

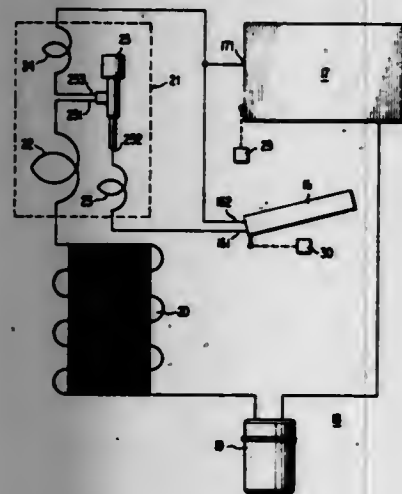
Hideo Nitta, Ibaraki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Nov. 1, 1977, Ser. No. 847,435

Int. Cl.³ F25B 39/02

U.S. Cl. 62-200

4 Claims



1. In a refrigerating apparatus including a cabinet, a refriger-

ating food compartment and a frozen food compartment in said cabinet,

first and second doors movably secured to said cabinet for closing said compartments, first and second evaporators comprising a refrigerant circuit for cooling each of said compartments, an electric solenoid valve for controlling a refrigerant gas flowing to each of said evaporators, and a controlling circuit for operating said refrigerant circuit, wherein said controlling circuit comprises a second temperature-sensitive switch and a solenoid coil connected to said second temperature-sensitive switch for operating said valve, and wherein said refrigerant circuit further comprises:

a motor driven compressor, a condenser connected to said compressor, a first capillary tube connected at one end to said condenser, said valve having one inlet and two outlets and operable in an open position to provide flow between said inlet and a first one of said outlets, and in a closed position to permit flow between said inlet and a second one of said outlets, and said inlet and said valve being connected to the other end of said first capillary tube, a second capillary tube connected at one end to said first one of said outlets of said valve, an inlet of said first evaporator connected to the other end of said second capillary tube for cooling said refrigeratory food compartment, an inlet of said second evaporator connected to an outlet of said first evaporator for cooling said frozen food compartment, and a third capillary tube connected at one end to said second outlet of said valve and at another end to said inlet of said second evaporator, whereby a refrigerant gas flows to said first evaporator when said valve is opened by the temperature in said refrigeratory food compartment.

4,242,881

REFRIGERATION SYSTEM AND THERMAL EXCHANGER THEREFOR

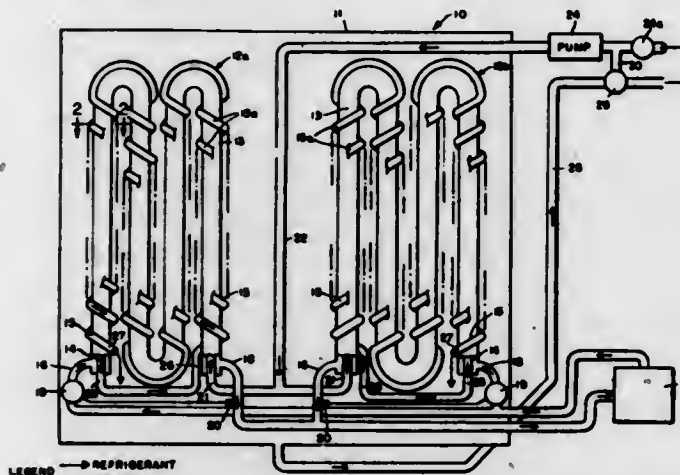
Alea Williams, 1930 Asbury, Evanston, Ill. 60201

Continuation-in-part of Ser. No. 780,777, Mar. 24, 1977, Pat. No. 4,144,718. This application Jan. 11, 1979, Ser. No. 2,519

Int. Cl.³ B67D 5/62; F25B 41/04

U.S. Cl. 62-225

12 Claims



1. A refrigerant-water thermal exchange assembly for cooling water for industrial use, said assembly comprising a coiled refrigerant tube having refrigerant inlet means at one end thereof for receiving refrigerant from a condenser and having refrigerant outlet means at the opposite end thereof for discharging the refrigerant to a compressor, a coaxial water tube disposed within said refrigerant tube, said coaxial water tube having an outside diameter substantially smaller than the inside diameter of said refrigerant tube and having water inlet means adjacent said refrigerant outlet means for receiving water to be cooled, said coaxial water tube also having water outlet means adjacent said refrigerant inlet means, and a helical water tube

coiled about said refrigerant tube along substantially the full length thereof, said helical water tube having water inlet means at one end thereof communicating directly with said outlet means of said coaxial water tube, said helical water tube also having water outlet means disposed at the opposite end thereof, each of said tubes being formed of a material of high thermal conductivity.

4,242,882

GLASS DOOR MERCHANDISER

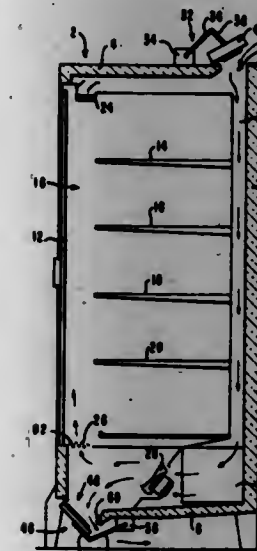
Fayes F. Abraham, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 25,473, Mar. 30, 1979, This application Jul. 19, 1979, Ser. No. 58,916

Int. Cl.³ A47F 3/04; F25D 21/10

U.S. Cl. 62-256

13 Claims



1. A refrigerated display case comprising: a cabinet having top, bottom, rear and side walls with an interior display space and an opening at its front for enabling access into said display space; at least one door covering said front opening, said door being movable for enabling access through said front opening to products within said display space of said display case; an air conduit extending along said top, bottom and rear walls and having an outlet opening and an inlet opening at opposing ends thereof, said outlet opening being located adjacent said top wall of said cabinet and said inlet opening being located adjacent said bottom wall of said display case and said outlet and inlet openings being arranged in alignment so that air leaving said outlet opening will be directed towards and received by said inlet opening so as to form an air curtain across said front opening along a path inside of said door; an air band establishing means for establishing a flow of refrigerated air through said air conduit during a refrigeration cycle of operation so that air is expelled through said outlet opening and received through said inlet opening, said air band establishing means including refrigeration means and means for creating a positive pressure air flow through said refrigeration means; and defrost means for defrosting said display case when said display case is operated in a defrost cycle of operation, said defrost means causes ambient air to flow in a reverse direction with respect to the direction of air flow during a refrigeration cycle of operation through a substantial portion of said air conduit, including that portion of said air conduit located along said rear wall of said cabinet of said display case, and passing such ambient air through said refrigeration means for defrosting said refrigeration means and causing most of such ambient air before it enters said display space to be expelled from said air conduit into the atmosphere surrounding said display case.

4,242,883

LIVER PRESERVATION

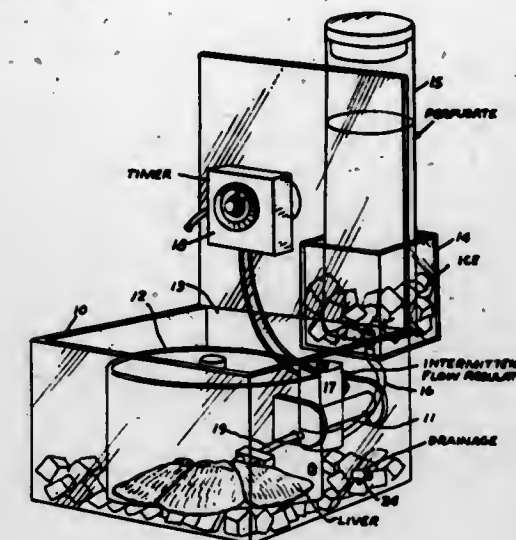
Luis H. Toledo-Pereyra, Grosse Pointe Farms, Mich., assignor to Henry Ford Hospital, Detroit, Mich.

Filed Apr. 2, 1979, Ser. No. 25,774

Int. Cl.³ B01F 3/04

U.S. Cl. 62-306

2 Claims



1. An apparatus for perfusing livers comprising a portable container, a liver receptacle removably positioned in such container, portions of said receptacle being spaced from the walls of said container when the receptacle is in position so that ice may be positioned around the receptacle, a perfusate holder mounted on said container for containing perfusate at ambient pressure, a second container surrounding a portion of said holder and adapted to receive ice, an intermittently operated flow regulator for controlling flow of perfusate solely by gravity from said holder to said receptacle, a timer for controlling operation of said controller, said receptacle having an outlet.

4,242,884

BEVERAGE COOLER

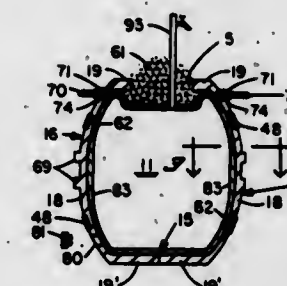
Rex R. Kotschwar, 2311 Lake Ave., Gothenburg, Nebr. 69138

Filed May 7, 1979, Ser. No. 36,945

Int. Cl.³ F25D 3/08

U.S. Cl. 62-371

10 Claims



1. An improved beverage cooler in the form of an insulating container, comprising: a container element having insulating characteristics; an enclosure cavity within said container element to envelope a beverage container; an interior chamber within said container element for receiving a cooling medium such as ice; a means for opening said container element to install said beverage container into said enclosure cavity; and a means for securing said container element so that said beverage container is securely held within said enclosure cavity; said beverage container having an exterior surface and said container element having an interior surface.

interior chamber being provided within said container element above said enclosure cavity so that when said beverage container is installed in said enclosure cavity, and an amount of ice is received within said interior chamber, said ice will melt and transform into an amount of ice water, said ice water circulating by the force of gravity down said exterior surface of said beverage container; said container element having an interior surface and said interior surface being provided with a circulation impeding means for impeding the circulation of said ice water down said exterior surface of said beverage container; said interior surface of said container element having a bottom portion, said container element further comprising a means for allowing said ice water to escape said container element once said ice water has circulated down said exterior surface of said beverage container to said bottom portion of said interior surface of said container element.

4,242,885

APPARATUS FOR A REFRIGERATION CIRCUIT

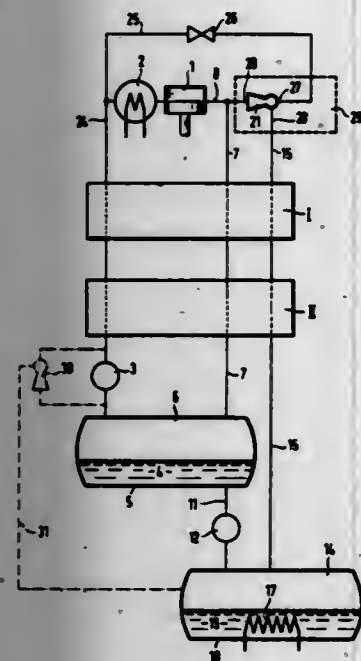
Hans Quack, Pfaffikon, and Armin E. Senn, Winterthur, both of Switzerland, assignors to Salzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 18, 1978, Ser. No. 970,159

Claims priority, application Switzerland, Dec. 23, 1977, 15972/77

Int. Cl.³ F25B 1/06

U.S. Cl. 62—500



1. Apparatus for a refrigeration circuit comprising a compressor for compressing a gas, said compressor having an intake side for receiving gas and a delivery side for expelling compressed gas; an after-cooler downstream of said compressor for cooling the compressed gas; cooling means downstream of said after-cooler for at least partially liquefying the compressed gas; a pair of tanks connected in series to said cooling means to receive the at least partially liquefied compressed gas, a first one of said tanks having a gas space connected to said intake of said compressor to recycle gas thereto; and an ejector having an intake side connected to a gas space of the other of said tanks to receive gas therefrom, a propellant jet input connected to said delivery side of said compressor and a delivery side connected to said intake side of said compressor.

4,242,886

EARRING STAY

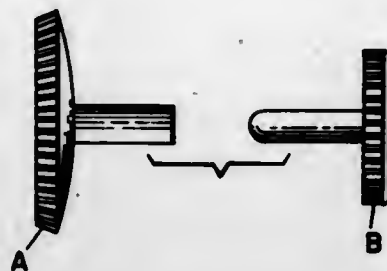
Mary Y. Tucker, 506 W. Bay View Dr., Sandusky, Ohio 44870
Filed May 24, 1979, Ser. No. 42,054

The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.

Int. Cl.³ A44C 7/00

U.S. Cl. 63—14 B

1 Claim



1. An earring stay comprising an article similar to an earring in size, shape and composition, said article including a female section having a tube with a smooth exterior surface and outer diameter adapting it for insertion into the aperture in the lobe of a pierced human ear, said tube having secured at one end thereof a platform adapted to overlie the external lobe surface adjacent one end of said lobe aperture and having its other end free with an opening at said free end; a male section having a shaft of a size to be received within said tube through said opening and having secured at one end thereof a platform adapted to overlie the external lobe surface adjacent the other end of said lobe aperture, said tube and shaft including coacting means which, when the sections are applied to a wearer's lobe, will permit a screw-on earring to be tightly attached to said earring stay without discomfort to the wearer, at least one of said platforms including means for positively preventing the movable part of a screw-on earring clamp from sliding off said one platform.

4,242,887

SHAFT COUPLING

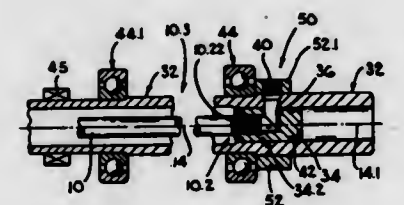
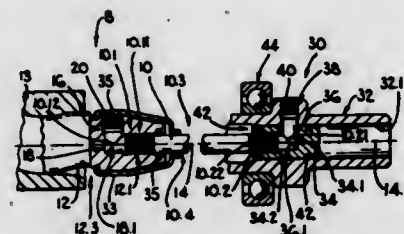
Stanley A. E. Payne, Randburg, South Africa, assignor to Mono Pumps (Africa) (Proprietary) Limited, Edenvale, South Africa
Filed Mar. 5, 1979, Ser. No. 17,652

Claims priority, application South Africa, Mar. 9, 1978, 78/1387

Int. Cl.³ F16C 1/06, 1/26

U.S. Cl. 64—4

21 Claims



1. A shaft coupling comprising a shaft having at one end a screw-threaded spigot portion having a thrust surface disposed at an oblique angle to the shaft axis; a mating member having a screw-threaded socket engaged by the spigot portion and having a transverse socket intersecting the screw-threaded socket;

a locking element within the transverse socket and having a locking surface complementary to the thrust surface urged into abutment with the thrust surface.

4,242,888

EXTERNAL MEMBER FOR A TRIPOD JOINT AND METHOD FOR MANUFACTURING SAME

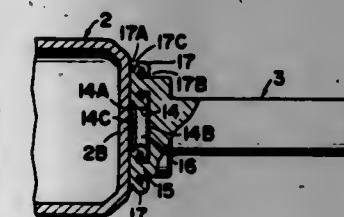
Shigeki Komeiji, Yoshisumi Futamura, Tsugio Mizobe, all of Toyota; Morio Okayama, Togocho, and Isao Iwasaki, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 2, 1978, Ser. No. 912,232

Claims priority, application Japan, Nov. 9, 1977, 52-135155
Int. Cl.³ F16D 3/30

U.S. Cl. 64—21

6 Claims



1. An external member for a tripod joint comprising: a cup shaped spider holding portion having an imperforate bottom; and a stem portion having an annular ridge formed on one end, said annular ridge being friction welded to said bottom of said cup shaped spider holding portion.

4,242,889

COUPLING FOR TORQUE TRANSMISSION

Helmut Müller, and Heinz Schweizer, both of Heidenheim, Fed. Rep. of Germany, assignors to Voith Transmitt GmbH, Fed. Rep. of Germany

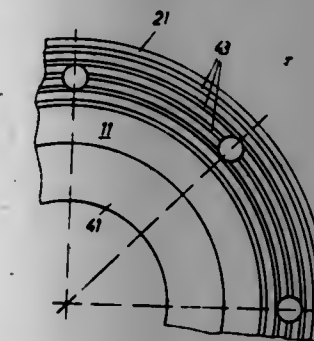
Filed May 4, 1978, Ser. No. 902,701

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721306; Mar. 23, 1978, 2812783

Int. Cl.³ F16D 7/02

U.S. Cl. 64—30 R

29 Claims



1. A coupling for rigidly connecting two substantially coaxial machine elements, for transmitting torque, comprising: said coupling having an axis; a first coupling member having a first face; a second coupling member having a second face; said first and said second faces in engagement; a plurality of annular ribs formed on said first face; a corresponding plurality of annular grooves formed on said second face; said ribs and said grooves being circular in shape around their respective said faces; said ribs and said grooves being so placed and shaped such that each said rib engages in a respective corresponding said groove.

4,242,890

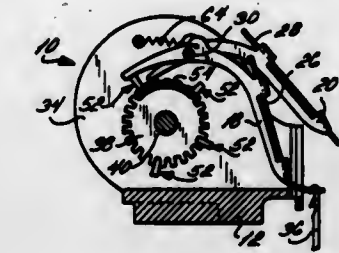
STRIPING BOX WITH MORE THAN ONE YARN FINGER ACTIVATED AT A TIME

Charles Seligson, 160 E. 38th St., New York, N.Y. 10016
Continuation-in-part of Ser. No. 702,858, Jul. 6, 1976, Pat. No. 4,107,954. This application Jul. 24, 1978, Ser. No. 927,218

Int. Cl.³ D04B 15/58

U.S. Cl. 66—133

3 Claims



1. In a striping box for circular knitting machines comprised of a rotating needle cylinder having cylinder needles, a plurality of yarn-carrying fingers, each finger being individually movable between an inoperative position and an operative position in which it feeds the yarn it carries to cylinder needles receiving yarn from the striping box; and means operative in synchronism with needle cylinder rotation for causing more than one of the yarn-carrying fingers to move into and stay in the operative position throughout at least one complete rotation of the needle cylinder to feed yarn from more than one finger at a time to cylinder needles receiving yarn from the striping box during the at least one complete rotation, said means comprising a control drum provided with a circumferential succession of axial holding slots for holding finger-activating jacks, an indexing arrangement operative for indexing the control drum slot-by-slot at preselected intervals each corresponding to at least one complete rotation of the needle cylinder, at least one of the axial holding slots accommodating a plurality of discrete finger-activating jacks, each of the plurality of discrete finger-activating jacks having a leg projecting radially outward from the control drum for finger activation, the projecting legs of respective ones of the plurality of discrete jacks in the axial holding slot being differently located for activating different respective ones of the yarn-carrying fingers of the striping box, each of the individual ones of the plurality of discrete jacks in said at least one holding slot having a radially inward part located radially inward of the radially outward part of the holding slot and a radially outward part including the respective projecting leg thereof, the radially inward parts of the plurality of discrete jacks each having a thickness less than the thickness of the holding slot, the combined thicknesses of the radially inward parts of the plurality of jacks in the slot being equal to the thickness of the slot for a snug fit in the slot, the radially outward part of each individual one of the plurality of discrete jacks in said at least one holding slot being at least equal to the thickness of the holding slot.

4,242,891

PNEUMATIC TAKE-DOWN DEVICE FOR A CIRCULAR KNITTING MACHINE

Enzo Gradi, Florence, Italy, assignor to Brematex S.p.A., Prato, Italy

Filed Apr. 27, 1978, Ser. No. 900,762

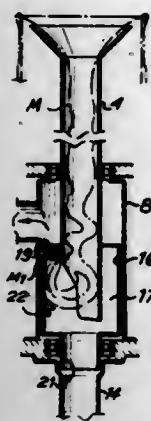
Claims priority, application Italy, Apr. 29, 1977, 9427 A/77
Int. Cl.³ D04B 15/92

U.S. Cl. 66—149 S

6 Claims

1. A pneumatic take-down device for a circular knitting machine of the rotating cylinder type comprising a take-down tube mounted in the knitting machine cylinder for rotation therewith, a housing mounted on said tube for rotation therewith and having an article receiving chamber therein, said housing having perforations therein, said tube having an end

opening transversely into said chamber adjacent said perforations for feeding of articles to said perforations, means for applying suction through said perforations to impose a take-down suction to an article in said tube and to retain in said chamber adjacent said perforations the portion of an article



being knit that feeds from said tube into said chamber for rotation thereof with said housing and tube without relative twisting, and said housing having an article discharge opening separate from said perforations for discharge of articles there-through from said housing upon discontinuance of suction through said perforations.

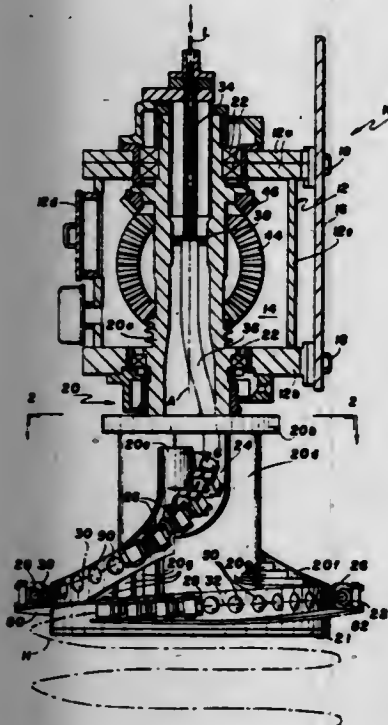
4,242,892

LAYING HEAD WITH SEGMENTED LAYING PIPE
Robert D. Wykes, Worcester, and Harold E. Woodrow, Northboro, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Apr. 26, 1979, Ser. No. 33,451
Int. Cl. B21D 11/00

U.S. Cl. 72-66

10 Claims



1. In a rolling mill, a laying head for forming a longitudinally moving hot rolled product length into a helix, comprising: a housing; a cone assembly journaled in said housing for rotation about an axis, said cone assembly having a support member with a three dimensional configuration curving around said axis; a plurality of clamp members fixed to said support member at spaced locations along the length thereof; a plurality of discrete tubular guides, said guides being removably retained by said clamp members at operative positions collectively defining a guide path which is parallel to the curvature of said support member; means for receiving said product length along said axis and for delivering said product length into the first of said guides; and, means for rotating said cone assembly, whereupon passage of the product length along said guide path

will result in said product length exiting from said laying head in the form of a helix.

4,242,893

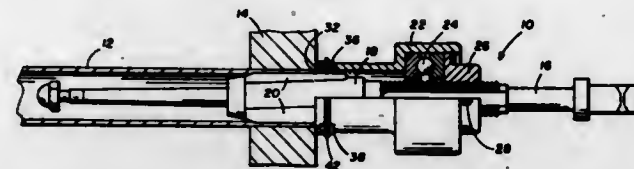
STOP COLLAR FOR TUBE EXPANDER

Charles E. Diller, Springfield, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 22, 1979, Ser. No. 41,289
Int. Cl. B21D 39/10

U.S. Cl. 72-122

5 Claims



1. In an improved tube expander including a rotatable tubular cage sized to be received in a tube end that is to be expanded, forming rollers carried by the cage for engaging the interior of the tube, and a tapered mandrel extending through the cage for driving the cage and rollers to expand the tube, the improvement comprising a relatively non-rotatable stop collar including:

a hollow, generally cylindrical stop collar body encircling a portion of the mandrel and cage and rotatable relative thereto and having a first end lotted adjacent the tube end; and, stop means slidably connected to said first end forming a variable aperture generally encircling said cage for engaging the tube end to limit the movement of said expander into the tube and thereby prevent damage to the tube end.

4,242,894

METHOD AND APPARATUS FOR PRODUCING THIN TUBES IN A SKEW-ROLLING MILL

Walter von Dorp, Monchen-Gladbach, and Heinrich Steinbrecher, Meerbusch, both of Fed. Rep. of Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

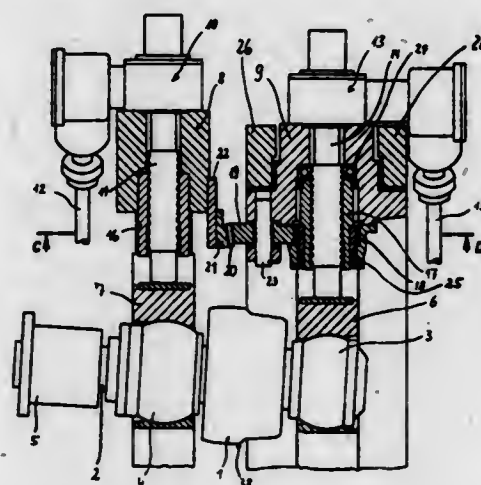
Filed Mar. 16, 1979, Ser. No. 21,367

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2814493

Int. Cl. B21B 19/06

U.S. Cl. 72-96

13 Claims



1. In a method of producing a thin walled tube wherein a mandrel is inserted in a blank generally parallel to the direction of rolling and the blank is rolled between skewed rollers forming a rolling area in a rolling mill, each roller having an end mounted in a stationary housing and an end mounted in a rotatable housing, the skewed rollers having cooperating shouldered rolling surfaces defining high points wherein upon contact with the blank, the wall is reduced to a relatively small

wall thickness compared to the outer diameter of the rolled tube, comprising the steps of:

- shortly before the end of the blank is introduced into the rolling area, pivoting the rotation axes of the rollers about a point remote from the rolling area in the direction of rolling and remote from the high points of the rollers to reduce the adjustment angle between the rotation axis of the inclined rollers and the axis of the rolled tube to effect a change in the rolling action between the rollers and the blank which reduction of angle causes an enlargement of said rolling area, and
- with respect to the enlargement of said rolling area, superimposing a further movement of the skewed rollers in the form of an adjustment movement of the rollers at right angles to the direction of rolling to thereby obtain a rolling condition more conducive to rolling the end portion of the blank.

4,242,895

METHOD AND APPARATUS FOR COOLING AND HANDLING EXTRUDED WORKPIECES

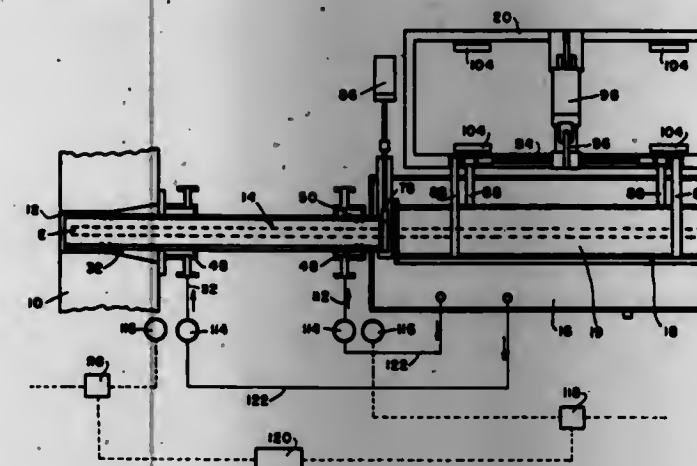
Raymond F. Boshold, Springfield, and Francis J. Kent, Wallingford, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Sep. 15, 1978, Ser. No. 943,252

Int. Cl. B21C 29/00, 35/00; C21D 1/62, 1/667

U.S. Cl. 72-257

11 Claims



1. In a method of cooling a hot extrusion by passing it below the level of a cooling medium immediately after extruded by an extrusion press, having a platen through which the extrusion passes, by employing in cooperative spaced relationship, a cooling tube and a cooling tank, and for quickly emptying and refilling the cooling tube on the experience of certain operational conditions, the steps of:

- arranging a cooling tube below the surface level of cooling medium in the cooling tank, which cooling tube has a portion inside said platen to receive an extrusion produced from a die and a portion outside said platen having at least a two-piece member arranged between said platen and said cooling tank into which the extrusion is delivered from said cooling tube,
- applying a first source of cooling medium into said tube in a manner that the extrusion is cooled while passing through said platen,
- causing said cooling tube to subject the extrusion to cooling from the time it enters said platen until its delivery to said cooling tank,
- applying a second source of cooling medium to the extrusion when in said cooling tube after cooling by said first source takes place and before the extrusion enters into said tank, causing said second source of cooling medium to direct its cooling medium in the direction of travel of said extrusion passing through said cooling tube,
- on the experience of said operational conditions, discontinuing said application of said first source of cooling medium, and at the same time, continuing said application of

said second source of cooling medium to draw the cooling medium out of said tube and to prevent cooling medium from said tank from passing into said cooling tube, and separating said two members to expose at least a portion of said extrusion extending between said platen and said cooling tank for quick removal of said extrusion portion.

4,242,896

APPARATUS FOR FORMING LONG WORKPIECES IN PRESSES

Erwin Kukullies, and Guenther Dietrich, both of Duesseldorf, Fed. Rep. of Germany, assignors to Malmadie & Co. Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

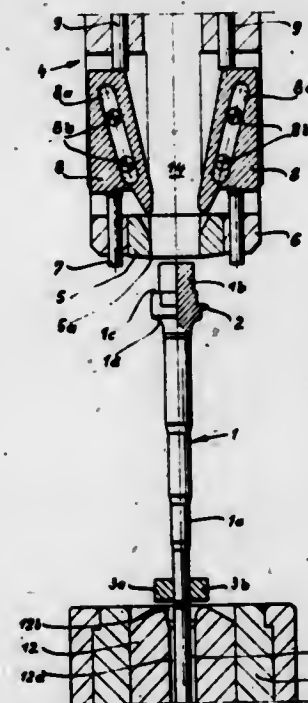
Filed Jan. 26, 1979, Ser. No. 52,117

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830769

Int. Cl. B21D 45/00

U.S. Cl. 72-345

6 Claims



1. In apparatus for forming a long workpiece, said apparatus including a press with at least one plunger and a die cooperating therewith for shaping the workpiece, the improvement which comprises an ejection channel for the workpiece passing axially through the plunger, at least two opposed clamp jaws mounted on the plunger, and means for selectively moving the clamp jaws away from each other and out of the ejection channel, and toward each other so that a portion of each clamp jaw projects into the ejection channel to grip a first end of a workpiece projecting into the ejection channel in the plunger and to center the workpiece with respect to the die, the clamp jaws advancing the workpiece with the plunger toward the die for shaping the workpiece between the die and plunger, and retracting the workpiece from the die with the plunger after the shaping operation.

4,242,897

EXTRUSION MACHINE AND METHOD OF CONTINUOUS TUBULAR EXTRUSION

Nazeer Ahmed, and Myrna M. Ahmed, both of 8 Tee Ar Pl., Princeton, N.J. 08540

Filed Mar. 12, 1979, Ser. No. 19,717

Int. Cl. B21C 25/04, 29/00, 33/02

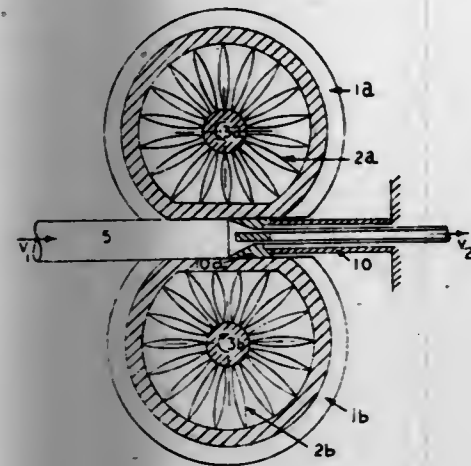
U.S. Cl. 72-262

11 Claims

1. A method wherein a tubular product of unlimited length is formed from a material of unlimited length by:

- feeding a material of unlimited length into a chamber formed by radially squeezing together two hollow toruses which have suitably shaped grooves on their toroidal surfaces and whose inner rims are connected to drive

shafts by leaf springs and where the squeezing action between the two toruses is of sufficient magnitude to cause a radial deformation in each torus in excess of 0.2 percent but less than an amount which would cause permanent set in either the toruses or the leaf springs and which amount is such that the contact length between the two toruses is at least twice the extrusion length needed for the desired extrusion;



- (b) locating a bridge die substantially near the center of contact length;
- (c) supporting the said die on a die stem;
- (d) rotating the two toruses together by suitable means so as to cause the incoming material of unlimited length to be pushed towards and into the bridge die;
- (e) taking up the extruded tubular product of unlimited length on a suitable take up mechanism.

4,242,898

MACHINE FOR BENDING THE EDGES OF RECTANGULAR SHEETS OF METAL

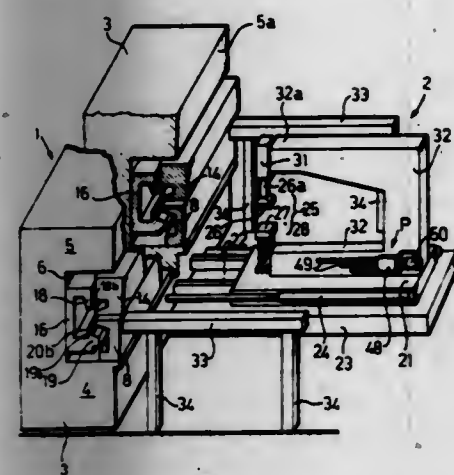
Guido Salvagnini, Arzignano, Italy, assignor to Salvagnini Trasferica S.p.A., Sargos, Italy

Filed Sep. 13, 1978, Ser. No. 941,988

Claims priority, application Italy, Sep. 19, 1977, 27666 A/77

Int. Cl.³ B21D 5/04

U.S. Cl. 72-307



18. A machine for bending a sheet of material, comprising an integral support structure with outwardly extending support arms;
- a bending counterblade positioned on one of the support arms;
 - a blank-holder counterblade positioned on the other support arm;
 - said bending and blank-holder counterblades being movable relative to one another;
 - a unitary bending structure positioned between said support arms and movable relative to said counterblades;
 - thereby to permit said material to be bent during successive

movements of said unitary bending structure relative to said counterblades.

4,242,899

THERMOCLAMPS

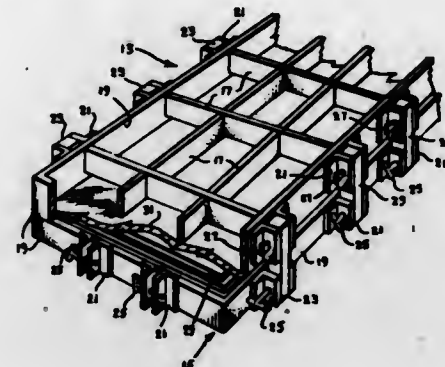
Roger S. Raymond, Redondo Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 5, 1979, Ser. No. 17,623

Int. Cl.³ B21J 1/06

U.S. Cl. 72-342

4 Claims



1. A thermoclamp for flattening and forming a sheet material workpiece in a heated oven, said thermoclamp comprising an upper die fabricated of an alloy having a large thermal expansion, a lower die fabricated of an alloy having a large thermal expansion, said upper and lower dies being of the "egg crate" type with a plurality of cross members between outer frame members thereof, the sheet material workpiece being positioned between said upper and lower dies, and a series of vertically oriented wedge activated tie bars attached between the outer edges of the upper and lower dies, said tie bars being fabricated of an alloy having a low thermal expansion, whereby the application of heat to the thermoclamp causes a differential expansion between said dies and said tie bars thereby applying pressure to the workpiece.

4,242,900

PARTS UNLOADING MECHANISM

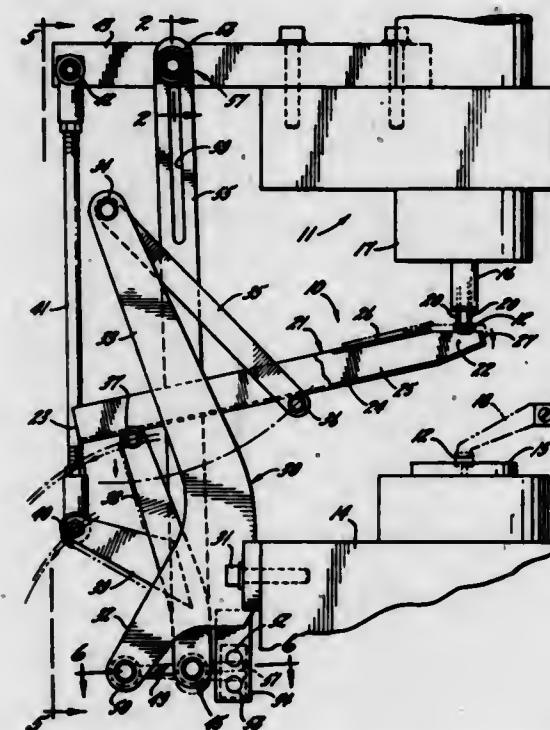
Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Jul. 9, 1979, Ser. No. 55,986

Int. Cl.³ B21D 45/00

U.S. Cl. 72-345

6 Claims



1. A mechanism for unloading a part from a machine having

a movable tool and having a drive for reciprocating the tool upwardly and downwardly between lowered and raised positions, the part being carried upwardly with the tool as the latter moves upwardly, said mechanism comprising a tray having a part receiving end and a part discharging end, said tray having a bottom which slopes downwardly and outwardly upon progressing from said part receiving end to said part discharging end, said tray having a lip projecting upwardly from said bottom adjacent the part receiving end of said tray, means mounting said tray on said machine to move outwardly and inwardly between a part receiving position and a part unloading position and to increase the downward slope of the tray during outward movement and decrease the downward slope of the tray during inward movement, the part receiving end of said tray being located beneath said tool and said lip being located inwardly of said part when said tray is in said receiving position and said tool is in said raised position, the tray being located out of the path of said tool when said tray is in said unloading position, means connecting said tray to said drive and operable to move said tray outwardly to said unloading position as said tool moves downwardly and to move said tray inwardly to said receiving position as said tool moves upwardly, and means responsive to initial downward movement of said tool for causing the tray receiving end of said tray to move upwardly to locate said lip alongside said part and thereby cause the lip to knock the part off of the tool and into the tray as said tray moves outwardly as an incident to continued downward movement of said tool.

4,242,901

HYDRAULIC PRESS WITH INTEGRAL KNOCKOUT AND STROKE CONTROL

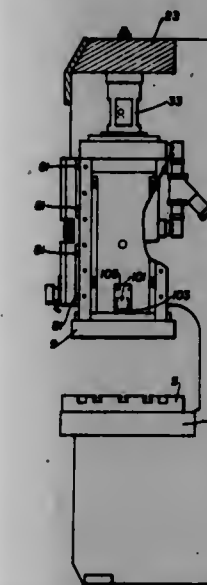
Eugene W. Pearson, Orinda, Calif., and Wilbur G. Short, Browns, Ill., assignors to Cannon Corp., Oakland, Calif.

Filed Mar. 20, 1978, Ser. No. 875,353

Int. Cl.³ B21D 45/00

U.S. Cl. 72-345

11 Claims



1. A press comprising a frame including a bed, a bolster on said bed for holding one of a pair of complementary dies, drive means for producing a work stroke and a return stroke supported by said frame above said bed for carrying a bolster to which may be affixed the other of such complementary dies, a bolster carried by said drive means, said latter bolster having at least one knockout opening therethrough, knockout means carried by said drive means above said latter bolster for use in conjunction with said knockout openings, and means for actuating said knockout means during the initial portion of a return stroke of said drive means, said knockout means being separate from the die.

4,242,902

SURGICAL CLIP APPLICATOR

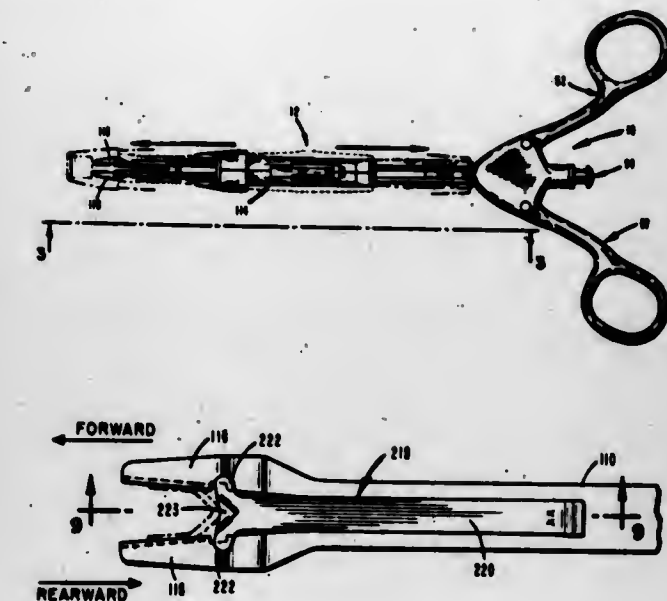
David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 843,063, Oct. 17, 1977, Pat. No. 4,152,920. This application May 11, 1978, Ser. No. 905,030

Int. Cl.³ B21D 9/08; A61B 17/10

U.S. Cl. 72-410

8 Claims



1. In an apparatus for applying surgical clips comprising at one end a pair of opposed spaced-apart grooved jaws; means operably associated with said jaws and adapted to contain a plurality of surgical clips and to feed them singly to a predetermined position between said jaws, and means operable to close said jaws to clinch a clip held therein, the improvement comprising a resilient elongated arm member having clip stop means defining a pair of outwardly directed projections and a concave intermediate portion, said intermediate portion serving to prevent rearward movement of said clip.

4,242,903

MANUALLY OPERATED PINCER MECHANISM FOR PIPELINES

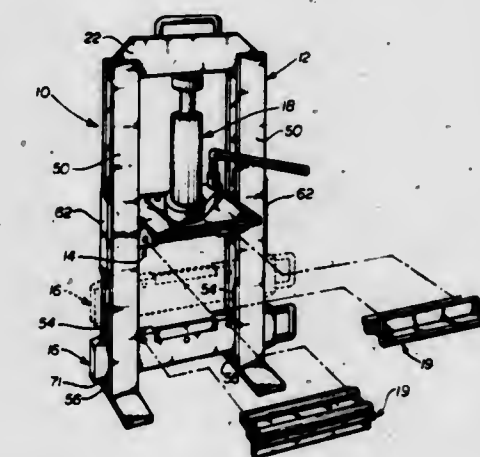
James B. Ledford, 4711 Cowden Pl., Yakima, Wash. 98908, and Edward Niederer, Jr., 19330-3rd Northwest, Seattle, Wash. 98177

Filed Jul. 30, 1979, Ser. No. 61,823

Int. Cl.³ B21J 13/02

U.S. Cl. 72-413

7 Claims



1. A manually operated pipe pincer mechanism, comprising:
- a. a generally U-shaped support frame consisting of a top cross frame member and including elongated depending arms from each end of said cross frame member, said arms being comprised of double, spaced apart bar sections,
 - b. spacer and jaw support members between the bar mem-

- bers of each of said arms such that an upper jaw space and a lower jaw space are defined,
- c. a slidably removable lower jaw blade supported between said bar members in one of at least two support positions by said spacer members,
- d. an upper jaw blade received between said bar members and including a support plate attached to the upper edge thereof, and
- e. a manually operated hydraulic jack detachably supported on and between said support plate on said upper jaw blade and the bottom edge of said cross frame member.

4,242,904

WORKPIECE STOP MEANS FOR A SHEET METAL WORKING MACHINE

Brian D. Scarrott, Northampton, England, assignor to Northampton Sheet Metal Fabrications Ltd., Northampton, England

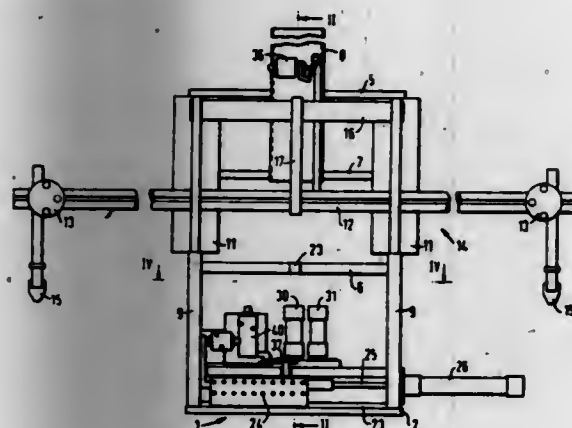
Filed Mar. 19, 1979, Ser. No. 21,745

Claims priority, application United Kingdom, Apr. 17, 1978, 14999/78

Int. Cl.³ B21D 11/22

U.S. Cl. 72—451

5 Claims



1. Workpiece stop means for a sheet metal working machine comprising a holder, a plurality of stop members mounted on said holder, a reference face on said holder, each of said stop members being of a respective determined length and being engagable with said holder with one end of each of said stop members abutting said reference face of said holder, a reciprocable carriage, an abutment member on said carriage, means for moving said holder sequentially to present said stop members each for abutment of its other end with said abutment member, a workpiece backstop of the machine mounted on said carriage and control means whereby, by said abutment of said abutment member with said other end of successive ones of said stop members, said carriage and thus said workpiece backstop is positioned at desired locations for successive operations of the machine.

4,242,905

PHONON SPECTROSCOPY

Lawrence J. Challis, Wollston, England, assignor to National Research Development Corporation, London, England

Filed Jul. 25, 1979, Ser. No. 60,681

Claims priority, application United Kingdom, Aug. 10, 1978, 32932/78

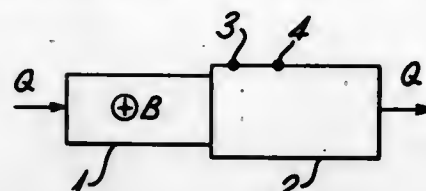
Int. Cl.³ G01N 25/00

U.S. Cl. 73—15 R

12 Claims

1. A method of phonon spectroscopy comprising: passing a heat current of phonons of broad spectral width through a composite solid structure incorporating two solid bodies respectively containing resonant phonon-scattering centres of different types, said bodies being so arranged that the occurrence of a frequency crossing involving two scattering processes respectively associated with said different types of centre will give rise to an excursion in the temperature difference between a pair of

given locations on said structure spaced apart in the direction of flow of said heat current; subjecting said structure to a varying external perturbation



so as to affect the resonant frequency of only one of said scattering processes; and monitoring the changes of said temperature difference caused by the variation of said perturbation.

4,242,906

THERMOCOUPLE-EQUIPPED, SOIL PROBE WITH REMOVABLE PROTECTIVE SHIELD

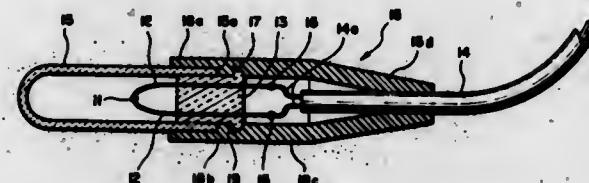
Ralph D. Briscoe, Providence, and Wayne K. Barlow, Logan, both of Utah, assignors to Wescor, Inc., Logan, Utah

Filed Sep. 4, 1979, Ser. No. 72,152

Int. Cl.³ G01N 25/56; G01K 1/16

U.S. Cl. 73—73

6 Claims



1. A probe for a soil hygrometer or psychrometer, comprising a thermocouple; a mounting block for the thermocouple; a vapor-permeable, thermocouple shield removably engaging said block and protectively encasing the thermocouple; and a tubular, shield-retaining, elastic boot tightly engaging the shield and interlocked with the block, so the shield may be easily removed by pulling it free of the block and the boot and may be subsequently replaced.

4,242,907

APPARATUS FOR MONITORING AND CONTROLLING A FLAT ZONE IN A FURNACE

Casimir W. Kazmierowicz, 26546 Aracena Dr., Mission Viejo, Calif. 92675

Filed Feb. 12, 1979, Ser. No. 11,413

Int. Cl.³ G01K 7/06

U.S. Cl. 73—341

9 Claims



1. A thermocouple probe for monitoring the flat zone profile of a furnace by generating signals indicative of the temperature differential between a plurality of points along the length of the probe, said probe comprising:

- a plurality of temperature measuring thermocouple junctions laterally displaced along the length of the probe;
- a plurality of reference thermocouple junctions, one for each temperature measuring junction, displaced from and electrically connected to its respective temperature junction, each reference junction being located in a single plane displaced along the length of the measuring portion of the probe; and

a single common return lead electrically connected to each of the reference junctions and temperature junctions.

4,242,908

PARTICULATE SAMPLER SHIELD

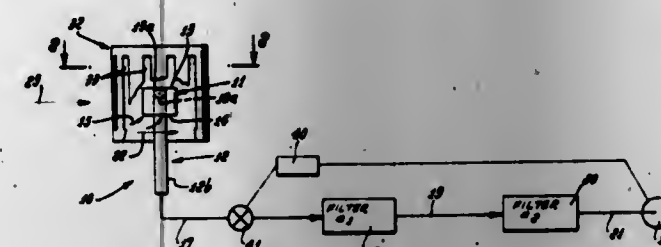
Ivar Tombach, Altadena, Calif., assignor to Aerovironment Inc., Pasadena, Calif.

Filed Jun. 26, 1979, Ser. No. 52,096

Int. Cl.³ G01N 1/24

U.S. Cl. 73—421.5 R

11 Claims



1. For use in combination with a particulate matter sampler having an inlet providing particle size cut-off,
- (a) porous shield means extending at least part way about said sampler inlet for reducing the velocity of gas flow reaching said inlet via the shield means,
- (b) said shield means forming openings that pass the gas and particulate entrained in the gas for flow at reduced velocity within an open interior zone defined by the shield means and adapted to receive said sampler inlet, said open interior zone exposed to multiple of said openings and located generally radially inwardly of such openings and of the shield means between the openings.

4,242,909

SAMPLE INJECTOR

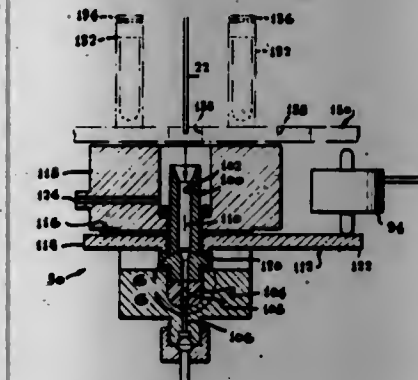
Richard Gundelfinger, Oakland, Calif., assignor to Rheodyne Incorporated, Cotati, Calif.

Filed Apr. 19, 1979, Ser. No. 31,473

Int. Cl.³ G01N 1/12

U.S. Cl. 73—422 GC

8 Claims



1. In a sample injecting system which includes a sample loop with inner and outer ends, for receiving a sample liquid originally held in a container, and means for pumping a liquid into the loop to inject a sample therefrom into a chromatographic column or other analyzing device, the improvement comprising:

- a loop end coupling for detachably receiving said loop outer end;
- means for connecting said loop end coupling to said analyzing device;
- motor means for moving said loop outer end downwardly into a container and upwardly out of the container, and downwardly into said loop end coupling and upwardly out of the coupling;
- means for withdrawing a liquid; and
- means for alternately connecting said inner loop end to said means for withdrawing a liquid and to said pumping means.

4,242,910

ACCELERATION MONITORING SYSTEM

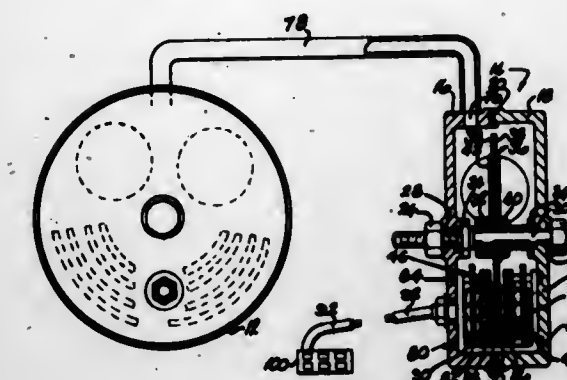
Andries J. Stoltz, Pretoria, South Africa, assignor to C.W.M. Du Toit Beleggings (Eendoms) Bepark, Pretoria, South Africa

Filed Apr. 13, 1979, Ser. No. 29,741

Int. Cl.³ G01P 15/08

U.S. Cl. 73—516 LM

10 Claims



1. A monitoring system comprising:
- (A) a sensor responsive to acceleration in a predetermined plane and comprising a liquid-filled casing, a float structure immersed in the liquid in the casing and mounted for pivotal movement about a generally horizontal axis of rotation when the sensor is subjected to acceleration in the predetermined plane, the float structure comprising a pair of spaced floats having centres of buoyancy above and one on each side of the axis of rotation for biasing the float structure to a position in which a datum line movable with the float structure and passing through the axis of rotation adopts a datum position; and
- openings in the float structure at different distances from the axis of rotation, at least some of the openings terminating at different angular positions about the axis of rotation; and
- (B) means responsive to the sensor for indicating details of acceleration, the responsive means comprising detectors located in the casing at the same distances from the axis as respective openings and each having components on opposite sides of the structure for operating in a first mode when the float structure is interposed between the components and in a second mode when an opening is between the components so that the responsive means will detect differing degrees of acceleration in dependence on the degree of movement of the float structure.

4,242,911

ULTRASONIC MEDICAL DIAGNOSTIC APPARATUS AND METHOD

Henry E. Martin, South Windsor, Conn., assignor to Mediscan, Inc., South Windsor, Conn.

Filed Feb. 1, 1979, Ser. No. 8,331

Int. Cl.³ G01N 29/04

U.S. Cl. 73—620

25 Claims

1. In apparatus for the testing of objects with ultrasonic energy, the apparatus including a transducer for generating a beam of ultrasonic energy and means for coupling the generated beam into a test object, the apparatus further comprising means for receiving echoes from within the test object and displaying information commensurate with the received echoes, the improvement comprising:
- means for varying the focal length of the generated beam of

4,242,917

ISOLATION FLEXURE FOR GYROSCOPES

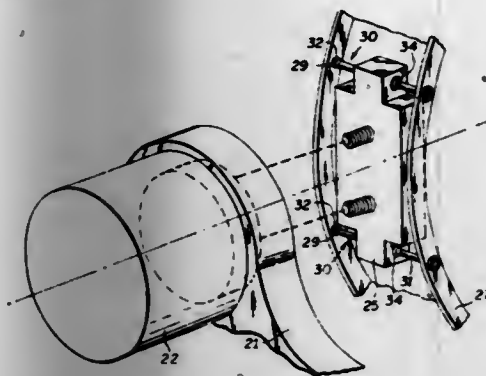
Virgil O. Bennett, and George W. Wilson, both of Phoenix, Ark., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,301

Int. Cl.³ C01C 19/16

U.S. Cl. 74—5.5

4 Claims



1. A gyroscopic device including a rotor assembly adapted to spin about an axis, a gimbal assembly for rotatably mounting the rotor about an axis perpendicular to the spin axis and oppositely disposed and aligned module assemblies including bearing means for receiving the gimbal assembly for rotation wherein said device comprises:

isolation flexure means disposed between and coupled to the gimbal assembly and respective modules, said isolation flexure means being aligned in a plane perpendicular to the gimbal and rotor output axes and parallel to the spin axis,

said isolation flexure means having a predetermined relative low stiffness in the plane of the gimbal and output axes and a predetermined relative high stiffness along the spin axis and about the gimbal and output axes, and whereby said isolation flexure means attenuates vibratory disturbances emitted by the rotor assembly to the module assemblies along the gimbal and output axes and insures torsional stiffness about the output axis.

4,242,918

MECHANICAL PROPULSION SYSTEM

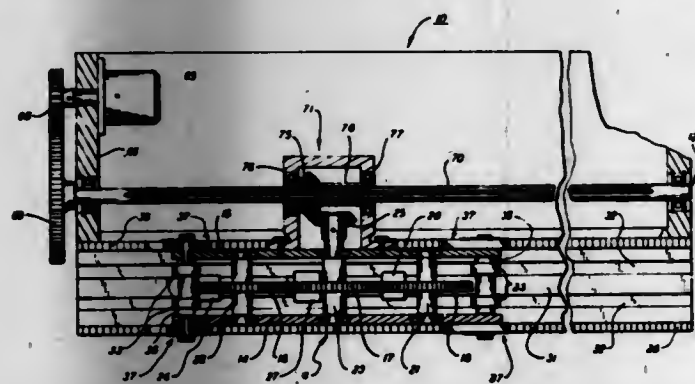
Ladislav G. Srogi, 338 Apple St., Syracuse, N.Y. 13204

Filed Dec. 26, 1978, Ser. No. 973,247

Int. Cl.³ F16H 27/04

U.S. Cl. 74—34 S

17 Claims



6. Apparatus for developing a directional thrust suitable for propelling itself including

an unrestrained frame that is capable of moving freely in any direction,

a shuttle mounted within the frame for reciprocal movement along a linear path of travel;

oscillatory means affixed to the shuttle for producing an alternating series of opposed force pulses acting on the shuttle in both directions along said path of travel of said shuttle, and

rectifying means for locking the shuttle to the frame when

the force pulses act in a first direction to propel the frame and the shuttle in the first direction, and to unlock the shuttle from the frame when the forces act in a second direction, to move the shuttle in the second direction within the frame along said path of travel.

4,242,919

VARIABLE SPEED TRANSMISSION OF THE FRICTION-DRIVE TYPE

Ulrich Menzi, 13, rue de Chamblon, 1400 Yverdon, Switzerland

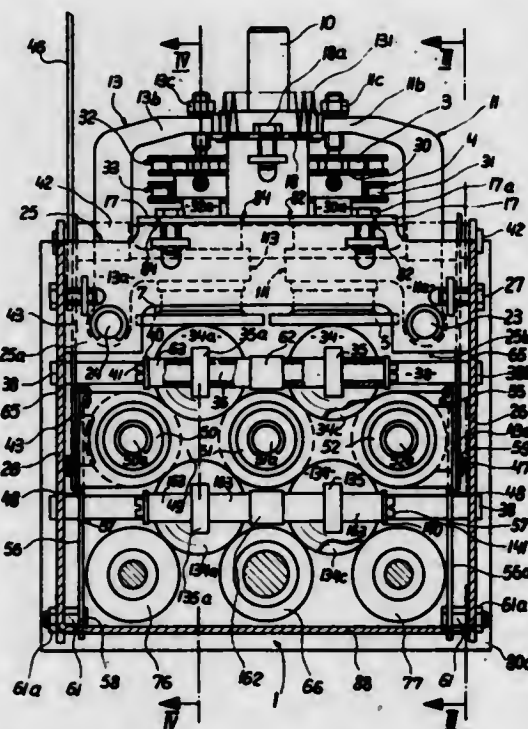
Continuation-in-part of Ser. No. 821,499, Aug. 3, 1977, abandoned. This application Sep. 26, 1978, Ser. No. 945,870

Claims priority, application Switzerland, Aug. 6, 1976, 10059/76

Int. Cl.³ F16H 15/26

U.S. Cl. 74—198

13 Claims



1. A variable speed transmission of the friction-drive type, comprising:

(a) a driving shaft and drive means mounted thereon;

(b) at least two ball-driving elements;

(c) first torque-transmitting means connected with said drive means of said driving shaft and associated with said ball-driving elements for rotating the latter in unison with said drive shaft;

(d) first ball means comprising first cage means and at least two balls each of which balls is in rolling contact with said ball-driving elements;

(e) driven-shaft means comprising at least three driven shafts disposed parallel to one another;

(f) second ball means comprising second cage means and at least two balls each of which balls is in rolling contact with two of said three driven shafts; one of said two balls of said second ball means being in rolling contact with a middle one and a second one of said three driven shafts, and the other ball of said second ball means being in rolling contact with said middle driven shaft and with the third one of said three driven shafts; the gap between two adjacent ones of said three driven shafts being smaller than the diameter of the ball being in contact with these two adjacent driven shafts;

(g) second torque-transmitting means for transmitting torque from said first ball means to said second ball means; and

(h) shifting lever means engaging and being adapted for shifting said second torque-transmitting means, said first cage and said second cage, the shift of said second torque-transmitting means being larger than the shift of said cages.

4,242,920

MARINE REVERSING GEARING

Hans Sigg, Mutschellen, Switzerland, assignor to Maag Zahn- räder & Maschinen AG, Zürich, Switzerland

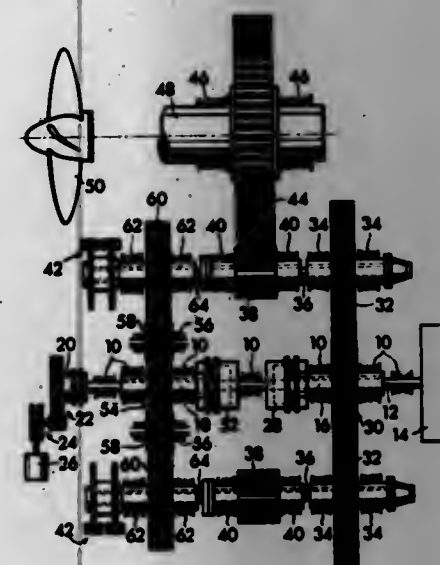
Filed Sep. 13, 1978, Ser. No. 941,909

Claims priority, application Switzerland, Oct. 7, 1977, 12274/77

Int. Cl.³ F16H 3/14

U.S. Cl. 74—361

3 Claims



1. A marine reversing gearing comprising:

a drive shaft;

a forward clutch;

a forward pinion arranged substantially coaxially with respect to said drive shaft;

said forward clutch coupling, during forward travel, said forward pinion with said drive shaft;

two intermediate gears continuously meshing with said forward pinion;

two intermediate pinions, each connected with one of the respective intermediate gears;

a large gear continuously meshing with both intermediate pinions;

a reverse clutch;

a rearward pinion arranged substantially coaxially with respect to said drive shaft;

said reverse coupling, during rearward travel, said rearward pinion with said drive shaft;

two reversing pinions driven by said rearward pinion;

a respective rearward gear;

said intermediate gears meshing with said forward pinion constituting forward gears which exclusively transmit power during forward travel;

said reversing pinions both meshing with said rearward pinion and with a respective one of said rearward gears;

and each of both intermediate pinions being fixedly connected with one of the rearward gears.

4,242,921

DEFORMED LOCKING CLAMP

Robert C. Bremer, Jr., Brownsville, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,557

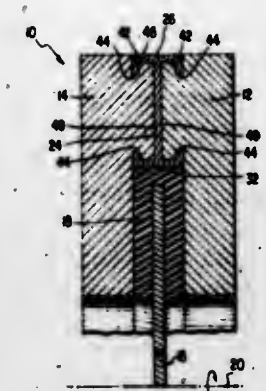
Int. Cl.³ F16F 15/10

U.S. Cl. 74—574

4 Claims

1. A torsional vibration damper of the type having a hub and an inertia ring, the hub and inertia ring coupled to each other by an elastomer member, the hub adapted to be coupled to the crankshaft of an engine, the improvement comprising, the inertia ring being formed of two axially spaced ring parts, each said ring part having at least one annular groove on the outer ring periphery, said groove positioned axially between end faces of the ring part, a ring locking element in the form of a radially extending disc carrying at least one generally axially extending locking key, the axially outermost ends of the lock-

ing key being received in, respectively, the said ring part annular grooves, the axially outermost ends of the locking key each being deformed to each define a tang which extends at least partially in a radial direction, the outermost diameter of said locking key being no greater than the outermost diameter of



said ring parts, the said radially extending disc being under axial compression and thus exerting an axially extending force against the two ring parts to urge them apart, the tangs of the locking key contacting portions of the annular grooves to resist the disc axially directed force.

4,242,922

HYBRID TRANSMISSION DEVICE OF THE HEAT ENGINE TYPE FOR AUTOMOBILES AND MOTOR VEHICLES

Patrice Baudoin, Bougival, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

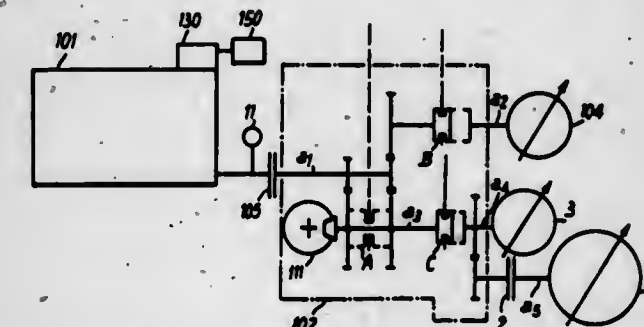
Filed Aug. 2, 1977, Ser. No. 821,202

Claims priority, application France, Aug. 6, 1976, 76 24060

Int. Cl.³ F16H 47/04; F16D 31/02

U.S. Cl. 74—687

3 Claims



1. A hybrid transmission system for a motor vehicle having an internal combustion engine, said hybrid transmission system comprising:

a reversible, variable displacement hydraulic pump adapted to be driven by said internal combustion engine;

an energy accumulator supplied by said pump;

at least one hydraulic motor selectively supplied by said accumulator and said hydraulic pump;

a mechanical transmission selectively driven by said engine and said hydraulic motor;

means adapted to control the brakes of said vehicle;

means adapted to control the acceleration of said vehicle;

means for sensing brake application;

means for sensing the acceleration of said vehicle;

means for sensing the pressure in said accumulator;

means for sensing the speed of said engine;

means for sensing the displacement of said hydraulic pump;

means for sensing the operation of said hydraulic motor;

pump mode selection means for controlling the displacement of said reversible hydraulic pump;

means for controlling the pressure in said accumulator;

means for controlling the displacement of said reversible hydraulic motor;

a first logic means responsive to signals from said accumula-

tor pressure sensing means, said engine speed sensing means, and said pump displacement sensing means, for activating said pump mode selection means and for actuating said means for controlling the pressure in said accumulator;

hydraulic motor coupling means for coupling said hydraulic motor to said transmission so that said transmission may be driven thereby;

a second logic means responsive to signals from said accumulator pressure sensing means, said brake application sensing means, and said hydraulic motor operation sensing means, for activating said coupling means and for activating said means adapted to control the brakes of said vehicle;

the second logic means having a comparator which is known per se, the output of said comparator being adapted to supply on the one hand the control electrode of a first analog switch and through a reversing switch the control electrode of a second analog switch and a third analog switch and, on the other hand, the control electrode of a fourth analog switch;

engine coupling means for coupling said engine to said transmission so that said transmission may be driven thereby;

a third logic means responsive to signals from said accumulator pressure sensing means, and vehicle acceleration sensing means, for activating said means for controlling the displacement of said hydraulic motor and for selectively activating said hydraulic motor coupling means and said engine coupling means; and

control and switching means for controlling the operation of said mechanical transmission, said control and switching means responsive to signal from said vehicle acceleration sensing means, and said brake application sensing means for activating said means for controlling the displacement of said reversible hydraulic motor and for selectively activating said hydraulic motor coupling means and said engine coupling means.

4,242,923

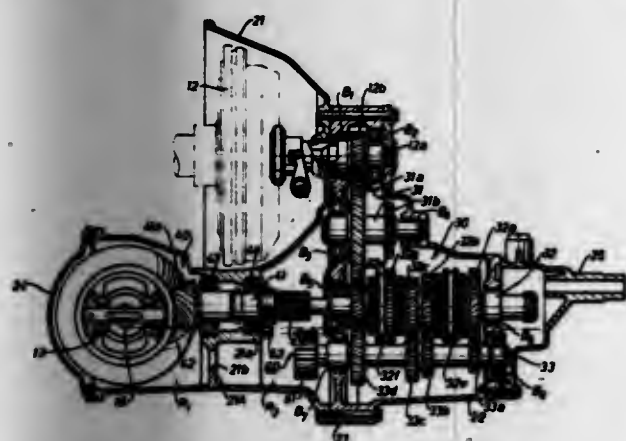
LUBRICATION IN POWER TRANSMISSION UNIT
Kazuyoshi Nishikawa, and Makoto Uno, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 22, 1978, Ser. No. 935,776
Claims priority, application Japan, Nov. 2, 1977, 52-132287; Nov. 2, 1977, 52-132288

Int. Cl.² F16H 37/08

U.S. Cl. 74—700

11 Claims



1. In a power transmission unit, for a motor vehicle, comprising a trans-axle casing secured at its upright front seating face to a cylinder block of an engine and having an upper compartment to contain therein a disengageable coupling for connection to a crankshaft of said engine and a lower compartment to contain therein a final drive gearing and a differential gear unit, and a transmission casing sealingly jointed at its upright front seating face to the upright rear seating face of said trans-axle casing to contain therein a change-speed gearing

drivingly connected to an output member of said disengageable coupling, said change-speed gearing having a countershaft with counter gears for selectively driving respective change-speed gears on a mainshaft which includes an input gear arranged to be driven by rotation torque of said output member to drive one of said counter gears, and in which said trans-axle casing is provided therein with an upright partition wall to subdivide the lower compartment into front and rear chambers, and said final drive gearing includes a drive pinion shaft supported by a pair of axially spaced front and rear bearings carried on said partition wall and having a drive pinion located in the front chamber, said drive pinion shaft being coaxially connected to said mainshaft and said drive pinion being meshed with a crown wheel to drive said differential gear unit, the improvement comprising:

stirring means mounted on one of said mainshaft and countershaft to dip up lubrication oil in the rear chamber, an oil receiver secured to the rear face of said partition wall to receive the lubrication oil dipped up by rotation of said stirring means,

an axial cavity provided on said partition wall adjacent said drive pinion shaft and opening toward the rear chamber to receive the lubrication oil from said oil receiver, and

a lateral passage provided through said partition wall to communicate said cavity into an annular space around said drive pinion shaft between said bearings.

4,242,924

TRANSMISSION MECHANISM

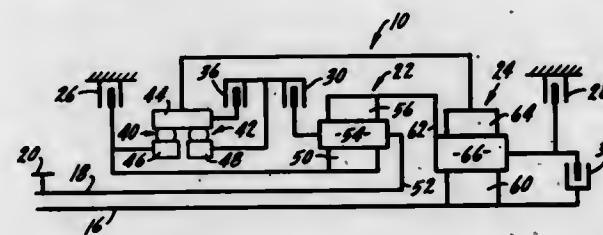
Barry J. Melhorn, and Alex Krulikowski, both of Westland, Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 21, 1978, Ser. No. 944,432

Int. Cl.³ F16H 57/10

U.S. Cl. 74—759

6 Claims



1. A transmission mechanism for an engine driven vehicle providing a plurality of drive ratios and including a pair of planetary gear sets; an input shaft; said gear sets each having a sun, ring, and planetary carrier element, each planetary carrier element having a plurality of pinion gears journaled thereon, said pinion gears meshing with said sun and ring elements; said input shaft being connected to an element of one of said planetary sets; clutch means engageable to connect said input shaft to another element of said one planetary set, thereby locking up said one planetary gear set when engaged; second clutch means engageable to connect an element of each of said gear sets together; separate brake means for an element of each of said gear sets; an output shaft connected to one of said elements of the other gear set such that by selective engagement of said clutch and brake means said plurality of ratios may be established through said transmission; a pair of one-way engaging devices having a common outer race connected to an element of said one gear set, said devices having one inner race being connectable to one of said brake mechanisms and another inner race being connectable to an element of said other gear set, whereby said devices can at times connect the last-mentioned element of said one gear set to said brake and at times connect same to an element of said other gear set.

4,242,925

REVERSING APPARATUS

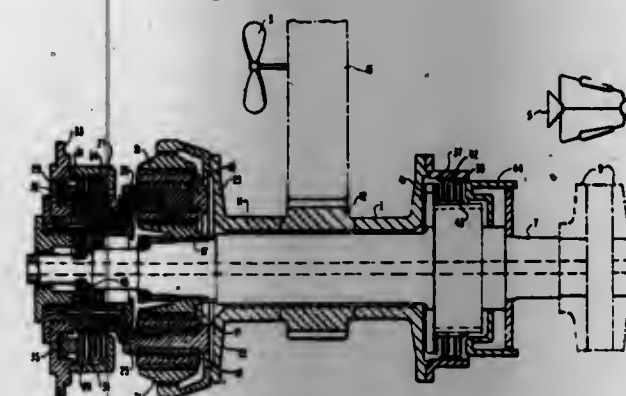
Alexander Fariss, Sunnyvale, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 17, 1978, Ser. No. 925,086

Int. Cl.³ F16H 3/44

U.S. Cl. 74—792

10 Claims



1. Reversing apparatus for reversing a propeller of a ship driven by a unidirectional drive, said apparatus comprising a first shaft directly connected to the unidirectional drive; a second shaft connected to the propeller; a sun gear affixed to said first shaft; a plurality of planet gears meshing with said sun gear; a ring gear directly connected to the second shaft and meshing with said planet gears; said planet gears being rotatably disposed in a planet carrier; braking means connected to said planet carrier to stop rotation of said planet carrier when engaged and reversing the direction of rotation of said second shaft and the propeller; and

clutching means disposed between said first and second shaft whereby engagement of said clutch and disengagement of the brake will cause the first and second shafts to rotate in the same direction and the propeller to rotate in the ahead direction.

4,242,926

DEVICE FOR SHARPENING SAW CHAINS

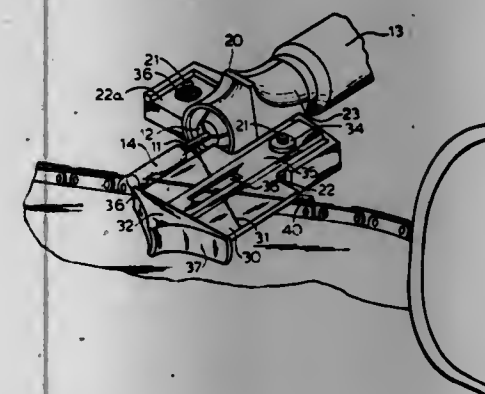
Nicholas T. Anton, Park Ridge, Ill., assignor to Wen Products, Inc., Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 72,420

Int. Cl.³ B23D 63/16

U.S. Cl. 76—25 A

11 Claims



2. For use with a portable electric grinding tool or drill, a saw chain sharpening device comprising:

a detachable housing with two channels laterally spaced from a central opening which allows for mounting on a portable electric grinding tool, a means of fastening a guide plate in each of the channels, a thumb grip on the upper rear surface of the housing, and a means for locking the housing onto the electric grinding tool;

a grinding bit, one end of the bit to be clampedly attached to the chuck of the portable electric grinding tool, the other

end of the bit containing a grinding portion of a size required to sharpen the cutting portion of a saw chain; and a guide plate which removably mounts in either channel of the housing so as to be parallel with the axis of the grinding bit and so as to rest on the top plates of adjacent teeth of a saw chain, being displaced from the axis of the grinding bit for proper placement of the grinding bit against the cutting portion of the saw chain tooth.

4,242,927

METHOD OF MAKING A CUTTING TOOL

Ronald R. Oaks, North Tonawanda, N.Y., assignor to Niagara Cutter Inc., North Tonawanda, N.Y.

Division of Ser. No. 896,738, Apr. 17, 1978, Pat. No. 4,193,719.

This application Apr. 23, 1979, Ser. No. 32,632

Int. Cl.³ B21K 5/12

U.S. Cl. 76—101 A

3 Claims



1. A process of fabricating an inserted blade rotary cutting tool, comprising the steps of:

forming a rotatable fixture body having opposite radial side faces joined by a peripheral surface and provided with at least one slot extending between such fixture body side faces and opening to such fixture body peripheral surface, said fixture body slot being bounded by spaced and facing leading and trailing wall surfaces separated by an intermediate base surface and also having a radial rake;

forming a blade blank having inner and outer ends and leading and trailing blade surfaces, one of which is provided with a locating groove having a width corresponding to the thickness measured axially of said fixture body between its said side faces;

inserting such grooved blade blank in said fixture body slot with its said inner end against such fixture body base surface and with the base of such blade locating groove against the opposing one of said fixture body wall surfaces;

wedging said blade blank in said fixture body slot such that said blade blank is axially and radially held in a predetermined position relative to said fixture body;

shaping the outer end of said blade blank to concentric form with respect to the axis of rotation of said fixture body;

removing such shaped blade from said fixture body;

forming a rotatable cutter body having a similar thickness and slot configuration as for said fixture body except that the radial rake thereof is less than that for said fixture body slot;

and inserting and wedging said shaped blade in said cutter body slot in a manner similar to that followed for said fixture body, the shaped blade when so mounted on said cutter body having a radial relief on the trailing side of the cutting edge of predetermined profile, and permitting repeated blade sharpenings while maintaining said profile.

4,242,928 FILING AID

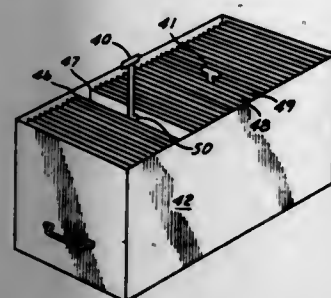
Belle J. Haley, and Robert D. Haley, both of 2525 Robb Ct., Lakewood, Colo. 80215

Filed May 14, 1979, Ser. No. 38,911

Int. Cl.³ B25B 9/02; B65G 7/12

U.S. Cl. 81-3 R

3 Claims



1. A filing aid for manipulating files in a drawer or cabinet comprising:

- a thin, rigid handle means of about 2½ to 4½ inches wide arranged for being grasped and turning the same,
- a rigid, thin and narrow shank means of substantially the thickness of handle means integrally secured to said handle means and depending therefrom, and
- a rigid file contacting head means of substantially the thickness of said handle means and of about 2-4 inches wide and the height of said handle means mounted on the end of said narrow shank means on the end opposite said handle means, said handle means, shank means and head means being coplanar and having a thin profile for being pressed between vertically standing files and having a combined length of at least about 11 inches which is greater than the width of the files being manipulated, said head means width of about 2-4 inches being sufficient to separate adjacent files between which said aid is passed, said aid being sufficiently strong and rigid to withstand turning motions by turning said handle.

4,242,929

WIRE STRIPPING DEVICE

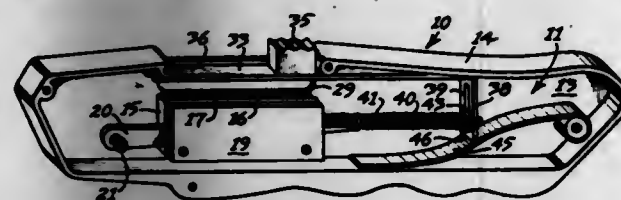
Falts J. Bobby, Rte. 1, Box 340CC, Decherd, Tenn. 37324

Filed Mar. 16, 1979, Ser. No. 21,118

Int. Cl.³ H02G 1/12

U.S. Cl. 81-9.5 R

8 Claims



1. A device for stripping annular insulation from a conductor of substantially circular cross-section comprising:

- a stationary block member including an upper platform surface having a longitudinal dimension,
- an elongated knife blade projecting above said platform surface,
- a plate member above said platform surface and having a bottom conductor-gripping face,
- mounting means supporting said plate member for longitudinal and vertical movement over said platform surface and said knife blade for engaging an insulated conductor spanning said platform surface transversely over said knife blade and rolling said conductor, causing said knife blade to circumferentially cut the insulation on said conductor,
- said mounting means comprising a first elongated guide member projecting longitudinally of one end of said block member,
- said mounting means further comprising a second elongated guide member projecting from said plate member

longitudinally in the same direction as said first guide member,

- cooperative means coupling said first and second elongated guide members to permit relative longitudinal movement of one of said guide members relative to said other guide member, and

- said mounting means permitting vertical movement of said plate member relative to said platform surface.

4,242,930

TORQUE CONTROLLED CLAMP STICK ADAPTER

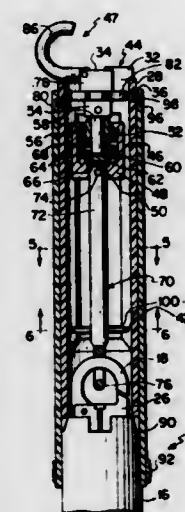
Franklin D. Myers, and Marvin D. McKelvy, both of Centralia, Mo., assigns to A. B. Chance Company, Centralia, Mo.

Filed Apr. 27, 1979, Ser. No. 34,196

Int. Cl.³ B25B 23/142

U.S. Cl. 81-474

11 Claims



8. A clamp stick comprising:

- an elongated body;
 - a manipulative tool; and
 - means for mounting said tool adjacent one end of said body for axial rotation of the tool as desired,
- said mounting means comprising an elongated, tubular, axially rotatable head, means for axially rotatably securing said head to said body, an operating assembly at least partially located within said head including a torque limiting device presenting a torque input and a torque output, means operatively connecting said output to said tool, and means operatively connecting said device input to said body, said torque limiting device having means for transmitting torque from said input to said output only up to a predetermined maximum torque.

4,242,931

GEAR WRENCH

Burke Clement, 1213 Galewood, Knoxville, Tenn. 37919

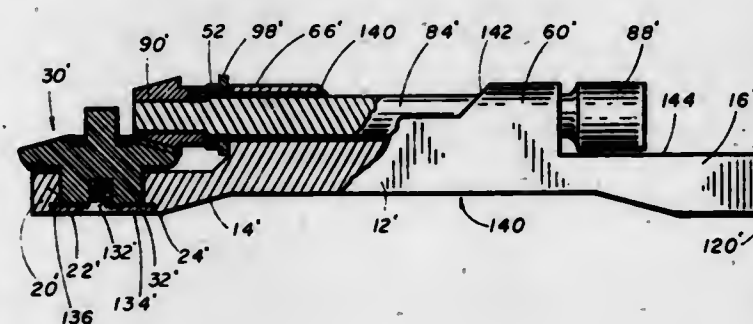
Continuation-in-part of Ser. No. 877,302, Feb. 13, 1978,

abandoned. This application Feb. 22, 1979, Ser. No. 14,037

Int. Cl.³ B24B 17/00

U.S. Cl. 81-57.29

3 Claims



1. A gear wrench comprising in combination: a first member

having first and further end portions, said first member being elongated and defining a recess at its further end portion, said recess being proportioned for receiving a member to assist in gripping and maintaining said wrench stationary during tightening and loosening operations,

- a housing carried by said first end portion of said first member, said housing defining a substantially cylindrical bore, a driven gear rotatably mounted on said housing, said driven gear including a substantially cylindrical hub portion integrally formed with a gear wheel, said gear wheel defining a substantially planar surface circumscribed by a plurality of gear teeth, and a stud extending substantially perpendicularly from the central portion of said surface, a tubular member carried by said first member, said tubular member having a first end portion and a further end portion, said tubular member defining an elongated opening therethrough,

- a shaft rotatably received in said elongated opening defined by said tubular member, said shaft having a first end portion and a further end portion, said first end portion of said shaft extending beyond said first end portion of said tubular member and disposed proximate said teeth on said gear wheel, said further end portion of said shaft defining a first recess, and said further end portion of said first member defines a further recess, said first and further recesses being proportioned to receive conventional attachments whereby said wrench is fully integrated with a conventional socket set,

- a gear pinion secured to said first end portion of said shaft and including teeth which mesh with the teeth of said gear wheel, said gear pinion defining a first end surface which is disposed substantially perpendicularly to the surface of said gear wheel such that upon advancing a socket onto said stud, said first end surface of said pinion gear is disposed at a spaced location from said socket and is at least partially coextensive with the length of said socket whereby a portion of the socket is recessed within the meshing space of said gears thereby reducing the volume necessary for the functioning of the wrench, and

- means for shielding the gears from the hand of an operator, said means for shielding said gears comprising a thrust washer interposed between said gear pinion and said first end portion of said tubular member, said gear pinion including a hub which is slotted, a shouldered washer including a coupling side which mates with said slotted gear pinion hub, such that said slotted hub and said shouldered washer turn as a unit, said shouldered washer further including an opposite side which bears against said thrust washer such that the wear occasioned by the rotation of said gear pinion is imparted to said shouldered washer rather than said gear pinion hub, said slotted hub including sections between the slots of said hub, and wherein said shaft defines at its first end portion shouldered down sections which engage the sections of said hub between said slots upon mounting said pinion on said first end portion of said shaft whereby rotation of said gear pinion with respect to said shaft is prohibited.

4,242,932

FASTENING DEVICE

Thomas C. Barnmore, 4 N. 127 Verrill, Addison, Ill. 60101

Continuation of Ser. No. 861,349, Dec. 16, 1977, abandoned.

This application Mar. 28, 1979, Ser. No. 24,711

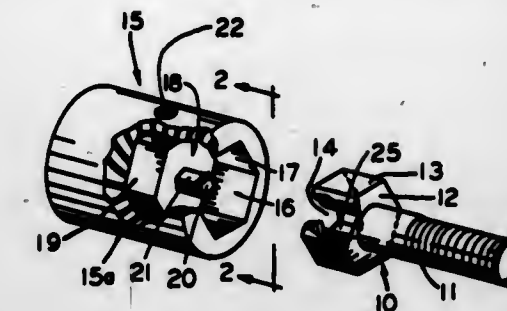
Int. Cl.³ B25B 13/48; F16B 23/00

U.S. Cl. 81-437

3 Claims

- A fastening device comprising a bolt having a threaded shank and a body, said body having a polygonal outer surface, said body having also an axial cavity in its end, said bolt having a polygonal surface at the side boundary of its cavity, a socket having an axial cavity extending inwardly from its end, said socket having a polygonal surface at said side boundary of its cavity, and an auxiliary drive member having an outer polygonal surface and being axially moveable into the cavity of said socket with its outer polygonal surface in engagement with

said polygonal surface of said socket, said auxiliary member having an axial extension therefrom which is provided with an outer polygonal surface, said socket being axially moveable with said auxiliary member contained within its cavity, into engagement with said bolt, to bring its polygonal surface at the boundary of its cavity into engagement with said outer polygo-



nal surface of the body of said bolt and to bring the polygonal surface of said extension into engagement with said polygonal surface at the side boundary of said cavity in said bolt body, whereby turning of said socket causes the application of torque directly from said socket to said bolt and also indirectly through said auxiliary member to said bolt.

4,242,933

METHOD AND APPARATUS FOR SHEARING BILLETS WITH HYDRAULIC SHEARS IN CONTINUOUS CASTING PLANT

Steno Famos, Ronchi dei Legionari; Fulvio Fasano, Gorizia, and Alfredo Bassarutti, Terenzano, all of Italy, assigns to Officine Meccaniche Danieli & C. SpA, Udine, Italy

Division of Ser. No. 648,720, Jan. 13, 1976, Pat. No. 4,154,129.

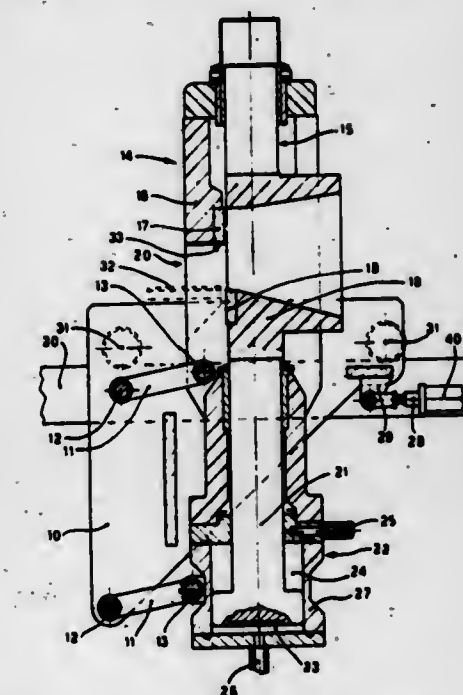
This application Jan. 15, 1979, Ser. No. 3,644

Claims priority, application Italy, Jan. 13, 1975, 83303 A/75

Int. Cl.³ B23D 25/04; B26D 1/60

U.S. Cl. 83-37

2 Claims



- A process for the continuous shearing of billets in continuous casting plants comprising the steps of (1) longitudinally moving a shearing device having first and second movable blades constructed with a piston and cylinder means for movement of said blades in harmony with a billet to be sheared; (2) causing a first blade of the moving shearing device to approach a first edge on a billet and rest on said billet by means of said cylinder and piston means; (3) thereafter causing the second blade on said shearing device, positioned opposite said first blade, to approach a second edge on said billet being sheared by means of said cylinder and piston means; and (4) thereafter

causing said blades to continue their cutting course and cut into and shear said billet while said shears are supported substantially only by said billet.

4,242,934

TRIM CHUTE APPARATUS

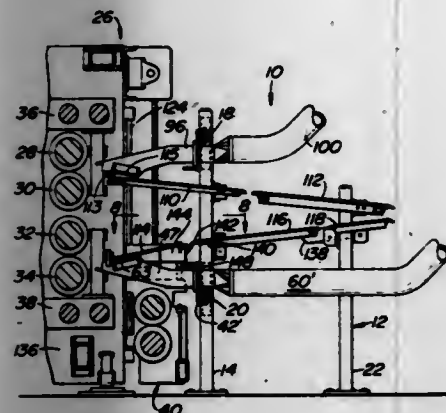
Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,562

Int. Cl.³ B26D 7/18

U.S. Cl. 83—100

9 Claims



1. Trim chute apparatus comprising a frame having an upper web path and a lower web path, first and second upper trim chutes supported by said frame for reciprocal movement transverse to said upper web path, first motor means coupled to said upper trim chutes for simultaneously moving the upstream end of said trim chutes toward and away from each other, third and fourth lower trim chutes supported by said frame for reciprocal movement transverse to said lower web path, second motor means coupled to said lower trim chutes for simultaneously moving the upstream end of said lower trim chutes toward and away from each other, at least one web support member mounted on said frame below the elevation of said upper trim chutes for supporting a web in the upper web path, at least one web support member mounted on said frame above the elevation of said lower trim chutes for supporting a web in the lower web path, and each trim chute upstream mouth portion being movable to an inoperative position wherein the extent to which each mouth portion projects in an upstream direction is decreased.

4,242,935

MUSICAL TONE GENERATOR SYSTEM USING MULTIPLE FREQUENCY SYNTHESIZERS

Richard H. Peterson, 11748 Walnut Ridge Rd., and Robert A. Finch, 12219 S. 89th Ave., both of Palos Park, Ill. 60464

Continuation of Ser. No. 678,358, Apr. 19, 1976, abandoned.

This application Aug. 25, 1977, Ser. No. 827,655

Int. Cl.³ G10H 1/10, 5/00

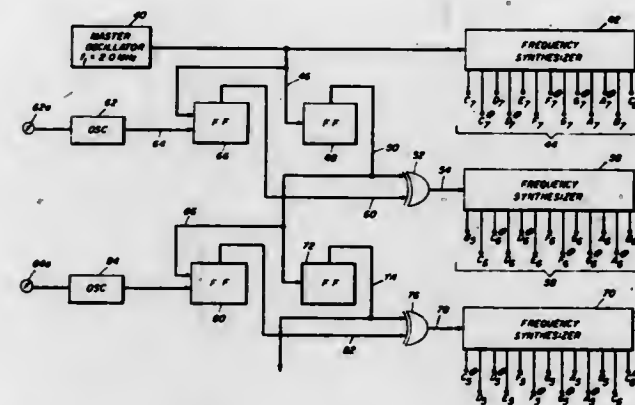
U.S. Cl. 84—1.01

8 Claims

1. A tone generator system for an electrical musical instrument, said system comprising, at least first and second frequency synthesizers, one for each of two related octaves, each having an input terminal and a plurality of output terminals, and each being operative to divide the frequency of a signal of appropriate frequency applied to its input terminal to produce at its output terminals a like plurality of pitches corresponding to different notes of the musical scale, said at least first and second frequency synthesizers having like frequency dividing factors associated with like output terminals so as to be operative in response to application thereto of input signals of the same frequency to produce the same pitches at corresponding output terminals thereof, a first source of clock pulses connected to the input terminal of said first frequency synthesizer, said first source having a frequency to produce at a given plurality of the output terminals of said first synthesizer a like plurality of notes

of the musical scale in one octave, which notes inherently have slight errors in frequency from corresponding notes of the true equitempered scale which differ in sense and degree from note to note as a function of its frequency dividing factors, and

a second source of clock pulses connected to the input terminal of said second frequency synthesizer, the frequency of said second source differing from the frequency of said first source by a factor which differs from a power of two by one or more nominal semitones such that said second frequency synthesizer is operative in response to clock pulses from said second source to produce at the plurality of output terminals of said second synthesizer corresponding to the said given plurality of output terminals of said



first synthesizer, a like plurality of notes in a related octave which individually are octavely unrelated to the notes produced at like output terminals of said first synthesizer, which notes also inherently have slight errors in frequency from the true equitempered scale which differ in sense and degree from note to note, with the error from true equitemperament appearing at a given output terminal of said second synthesizer being of the same sense and magnitude as the error from true equitemperament appearing on the corresponding output terminal of said first synthesizer, whereby, because different notes appear on corresponding output terminals of said first and second frequency synthesizers, temperament interval errors inherent in said first and second frequency synthesizers are randomized.

4,242,936

AUTOMATIC RHYTHM GENERATOR

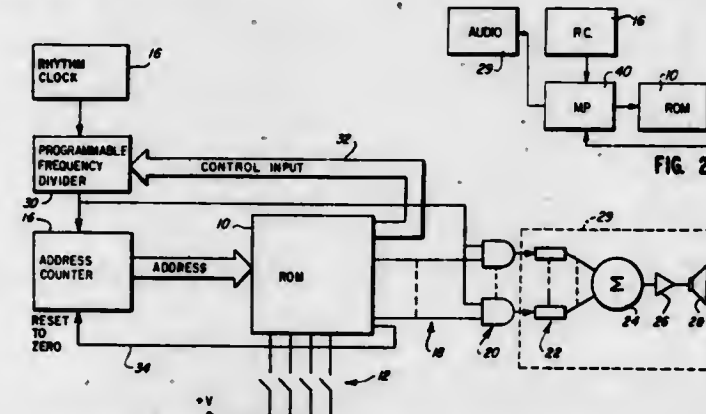
Richard S. Swain, Niles, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Sep. 14, 1979, Ser. No. 75,831

Int. Cl.³ G10H 1/42, 7/00

U.S. Cl. 84—1.03

13 Claims



1. An automatic rhythm generator comprising: means developing a rhythm clock signal defining a sequence of rhythm clock intervals; a memory storing a sequential set of rhythm instructions at a plurality of consecutive memory addresses, each of said

rhythm instructions including an associated code representing a number of said rhythm clock intervals; and means for sequentially addressing said memory at a rate determined by the number of rhythm clock intervals represented by the code associated with the presently addressed memory address.

4,242,937

PICKUP ASSEMBLY FOR PERCUSSION INSTRUMENT

Cleve F. Pozar, 125 Green St., Cambridge, Mass. 02139

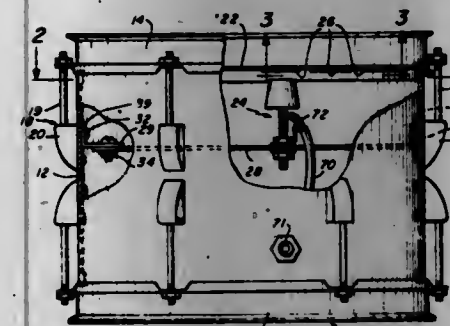
Continuation-in-part of Ser. No. 857,180, Dec. 2, 1977,

abandoned. This application Feb. 8, 1979, Ser. No. 10,226

Int. Cl.³ G10D 13/02

U.S. Cl. 84—1.15

19 Claims



1. A pickup apparatus for a percussion instrument that has a vibratable diaphragm, said apparatus comprising: a single pickup means disposed within the instrument, a plurality of ferromagnetic members each including a thin foil and means for securing each foil directly to the under-surface of the diaphragm whereby said foils are spacedly disposed along a locus extending from the center of the diaphragm to the edge thereof, means for mounting said single pickup means within the instrument facing the ferromagnetic members in one of a plurality of positions aligned with one of said ferromagnetic members, said means for mounting comprising a support bar having a width substantially less than the diameter of the percussion instrument extending in a direction between opposite side walls of the percussion instrument and including a pickup means mounting section extending substantially parallel to the diaphragm and having a length at least sufficient to permit positioning of said single pickup means in alignment with any of said ferromagnetic members, said pickup means mounting section being at least as long as the width of two adjacent ferromagnetic members including the spacing therebetween, and means for releasably locking said single pickup means to the pickup means mounting section in a fixed position in alignment with one of the ferromagnetic members, said single pickup means being adjustable relative to the ferromagnetic members to enable tone adjustment.

4,242,938

STRINGED MUSICAL INSTRUMENT

Henk van Zalinge, Schapendrift 84, Blaricum, Netherlands

Filed Dec. 14, 1978, Ser. No. 969,460

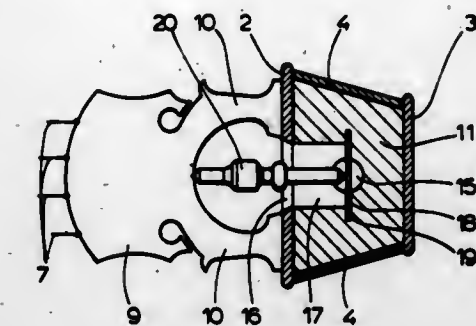
Int. Cl.³ G10D 1/02; G10H 3/00

U.S. Cl. 84—1.16

9 Claims

1. A stringed musical instrument comprising a resonating body formed by a front plate, back plate and side ribs, said body having a narrow elongate shape; a neck secured to the body; a bridge supported on the front plate; strings extending across the body and neck and stretched across the bridge; an electrical pick-up element associated with said bridge for connection to an electrical amplifier and loudspeaker system; and a transverse sound-beam arranged in and forming part of said body, dividing the latter into two separate resonating chambers of unequal size, said sound-beam extending across the

whole width of the body between the side ribs thereof and fittingly engaging the inner sides of the front plate and back plate of the body, and said sound-beam having a first bore formed therein extending in the longitudinal direction of the



body connecting said two resonating chambers, said bridge being supported on the front plate at said sound-beam, and said pick-up element being mounted between and engaging said bridge and said body at said sound-beam.

4,242,939

BLIND FASTENER

Michael L. Osborne, Sutton Coldfield, and Michael J. Hadley, Great Barr, both of England, assignors to USM Corporation, Farmington, Conn.

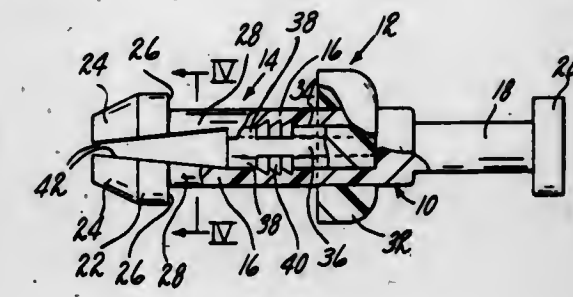
Filed Oct. 12, 1978, Ser. No. 950,586

Claims priority, application United Kingdom, Oct. 15, 1977, 42995/77

Int. Cl.³ F16B 13/04

U.S. Cl. 411—41

10 Claims



1. A two-part pull-type blind fastener comprising a pull-part having a shank provided by a plurality of legs, the legs joined at rear ends to a pulling stem and at their other, free, forward ends having external, rearwardly facing shoulders lying in a plane at right angles to a longitudinal axis of said shank, and a push-part axially slidable on said shank, the shank legs passing through apertures in the push-part, and a plug projecting forwardly from said head, the plug being accommodated in, and extending part way along, the shank and capable, after the shank has been inserted through a hole in a workpiece and the plug has been advanced to a position between said shoulders, of holding the legs apart with the shoulders overlying the workpiece around the hole at the blind side, the fastener also comprising means for effecting such interengagement of the two parts that movement of separation of the head of the push-part and the shoulders of the shank legs, after they have been urged towards one another to clamp the workpiece therebetween and the portion of the pull-part projecting from the head of the push-part has been removed, is prevented.

4,242,940

FLUID OPERATED CONTROL DEVICE

Victor J. Page, 47 Westmiston Ave., Saltdean, Sussex, England

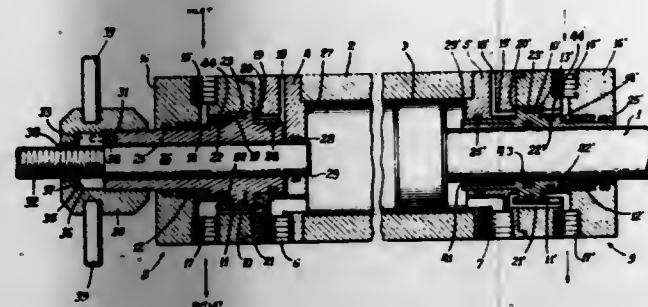
Filed Oct. 17, 1977, Ser. No. 842,791

Claims priority, application United Kingdom, May 30, 1977, 22742/77

Int. Cl.³ F01L 31/14, 25/06

U.S. Cl. 91-277

10 Claims



1. A fluid operated control device comprising, a first cylinder containing a first piston for reciprocal displacement between first and second locations at respective ends of said first cylinder, said first cylinder being provided with inlet and outlet means for supplying fluid to and from said cylinder to cause displacement of said first piston; valve means mounted at respective ends of said first cylinder, one of said valve means having a second cylinder containing a second piston and the valve means at the other end having a third cylinder containing a third piston, said second and third cylinders each having first and second biasing means for urging the respective second and third pistons toward a first position in the path of displacement of said first piston, said second and third pistons being thereby alternatively displaced, in response to said first piston, to second positions, and each said second and third cylinders being provided with a signal inlet and outlet, said signal inlets and outlets providing signal inputs and outputs respectively in accordance with the positions of said second and third pistons, each said signal inlet communicating with the respective signal outlet when the respective piston is in its first position and each said signal inlet being isolated from the respective signal outlet when the respective piston is in its second position; a stroke adjusting means extending through the piston in one said valve means to adjust the stroke of said first piston while said first piston is in reciprocal displacement motion; and exhaust means provided on each said second and third cylinder for releasing fluid when the respective piston has been displaced to its second position in response to displacement of said first piston, whereby said signal inputs and outputs are useable to control the supply of fluid to said first cylinder and hence control displacement of said first piston, one of said first and second biasing means being a pressure biasing means that is relieved while the other biasing means is maintained while either of said second or third pistons is moved toward its second position in response to said first piston, said stroke adjusting means shifting its associated piston to relieve said pressure biasing for its associated piston.

4,242,941

ACTUATOR VALVE

James K. Wilden, Yucca, and Alan D. Tuck, Jr., Upland, both of Calif., assignors to Wilden Pump & Engineering Co., Colton, Calif.

Filed May 14, 1979, Ser. No. 38,685

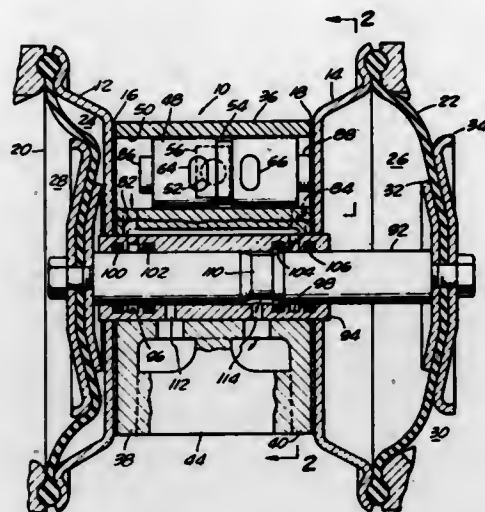
Int. Cl.³ F01L 25/06

U.S. Cl. 91-319

4 Claims

1. An actuator valve for an air driven reciprocating device, comprising a valve piston, a control rod fixed to reciprocate with the air driven reciprocating device, and a housing having a cylinder closed at each end and enclosing said valve piston, a passageway through which said control rod extends, an air

inlet to said cylinder spaced from the ends of said cylinder, valve piston vent passages extending from the ends of said cylinder to said passageway, and control rod vent passages extending from said passageway to atmosphere, said valve piston cooperating with said housing to include means for directing incoming air to the ends of said valve piston and



means for selectively directing incoming air to and exhausting outgoing air from the air driven reciprocating device, wherein the improvement comprises an axial passage in said control rod positioned between said valve piston vent passages to vent selectively each of said valve piston vent passages to said control rod vent passages.

4,242,942

HYDRAULIC POSITIONER WITH FEEDBACK DEVICE

Reiner Bartholomäus, Neuenhof; Karl-Heinz Bernhardt; Wolfgang Eberhard, both of Lohr; Hans-Dieter Kokus, Niederkaes; Herbert Lembke, Lohr, and Heinz Schulte, Marktheidenfeld, all of Fed. Rep. of Germany, assignors to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

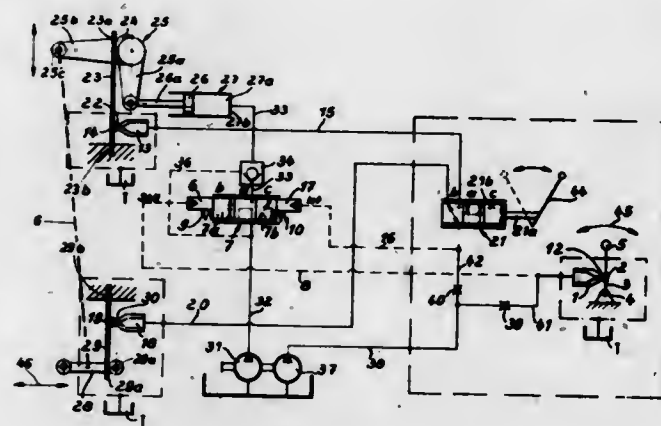
Filed Mar. 19, 1979, Ser. No. 21,818

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811585

Int. Cl.³ F15B 13/16

U.S. Cl. 91-358 R

17 Claims



1. A hydraulic control arrangement for positioning an implement comprising a source of operating fluid under pressure; a hydraulic positioner; a pressure line connecting said source to said positioner; a fluid operated three-position selector valve in said pressure line movable between a neutral position connecting said source to a reservoir and two operating positions, in one of which said source is connected to said positioner to move the latter in one direction and in the other of which said positioner is connected to the reservoir so as to move in the other direction, said selector valve including spring means tending to maintain the same in said neutral position and two opposite pilot chambers for respectively moving said selector valve to either of its operating positions; mechanical means

connecting said positioner to said implement; a source of control fluid under pressure; a first control line connecting said source of said control fluid to one of said pilot chambers; a fixed throttle and an operator controlled adjustable throttle cooperating therewith in said first control line for producing a predetermined pressure according to the setting of said adjustable throttle, said predetermined pressure being fed to said one pilot chamber tending thereby to move said selector valve from said neutral to one of said operating positions; and feedback means comprising a second control line connecting said source of control fluid to the other of said pilot chambers, and a second fixed throttle and at least one adjustable throttle cooperating therewith and adjusted by engagement with said mechanical means operated by said positioner.

4,242,943

BOOSTER UTILIZING FLUID PRESSURE

Akira Nakamura, Shizuoka, and Masato Oguri, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

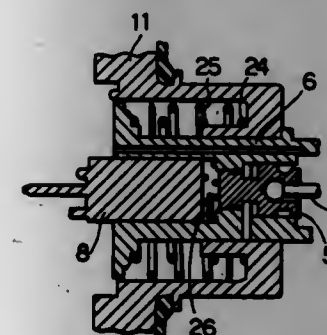
Filed Jan. 26, 1978, Ser. No. 919,071

Claims priority, application Japan, Jan. 23, 1978, 53-535981

Int. Cl.³ F15B 9/10

U.S. Cl. 91-369 A

14 Claims



1. A booster, utilizing fluid pressure, for amplifying an operation force delivered from an operation mechanism in order to transfer the same to a succeeding mechanism, said booster comprising;

- a power piston movably disposed between a constant-pressure chamber on one side thereof, and a variable-pressure chamber on the other side thereof, for being actuated by the pressure difference between said two chambers;
- an input member which may be shifted by the operation force from said operation mechanism, said input member being on said other side of said power piston;
- a control valve actuated by the shifting of said input member to communicate said variable-pressure chamber with said constant-pressure chamber or a high pressure source, which is higher in pressure than said constant-pressure chamber, for varying the inside pressure of said variable pressure chamber;
- an output mechanism for transmitting the resultant force of the operation force delivered to said input member and an actuating force of said power piston to said succeeding mechanism, said output mechanism being on said one side of said power piston; and
- said control valve comprising a control member disposed relatively movably to said power piston, and a spring means disposed between said power piston and said control member, whereby the variation of the elastic force of said spring means produced by the operation of said power piston can be transferred, via said control member, to said control valve for regulating the operation of said control valve, said spring means biasing said control member toward said constant pressure chamber and biasing said power piston toward said variable pressure chamber.

4,242,944

PLASTICS MOULDING MACHINE

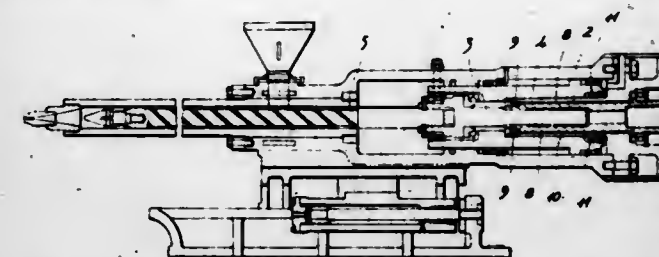
Jui-Lieh Su, 37 Lane 355, Fu-Chian Rd., Tainan, Taiwan

Filed Oct. 27, 1978, Ser. No. 955,398

Int. Cl.³ F01B 21/00

U.S. Cl. 92-2

2 Claims



1. An improved plastics moulding machine of the type comprising a hydraulic oil operating cylinder, an injection ram operating within said cylinder, and a rotating shaft system operating coaxially through the ram, wherein the improvement comprises: a fixed annular sleeve disposed between the ram and the shaft system, said shaft system operating through said sleeve, and an hydraulic seal provided between said ram and said sleeve, whereby said shaft is isolated from the hydraulic oil.

4,242,945

ASSEMBLY WITH RELATIVELY DISPLACEABLE MEMBERS

Claus-Gustav E. Y. Tisel, Strangnäs; Karl E. B. Lundell, Bromma; Sven H. N. Horner, Eskilstuna; Gustav Y. Thorstenson, Sollentuna, and Gustav S. E. Karlstedt, Sollentuna, all of Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

Continuation of Ser. No. 534,812, Dec. 20, 1974, abandoned.

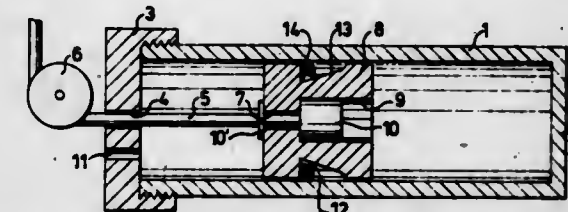
This application Sep. 8, 1976, Ser. No. 721,220

Claims priority, application Sweden, Dec. 21, 1973, 7317345

Int. Cl.³ F15B 15/26

U.S. Cl. 92-26

10 Claims



1. An assembly comprising an inner and an outer cylindrical member, respectively, the inner member being relatively axially displaceable along the inner peripheral surface of the outer member, means for axially displacing said inner member relatively to said outer member, the inner member being provided with an annular peripheral recess, a resilient split ring being lodged in the recess fully retractable into same but elastically biased in radial direction toward the inner peripheral surface of the outer member, the recess having a first flank and a second flank, the first flank lying in a radial plane of the inner member, the second flank extending in a plane oblique to the longitudinal center line of the inner member, forming an angle with the longitudinal axis of said inner member that is less than 30°, the first flank bearing equatorially on the ring upon axial displacement of the inner member relative to the outer member in a first direction, and upon axial displacement of the inner member relative to the outer member in a second direction said ring is displaced from bearing upon said first flank and said ring is caused to move along said second flank such that the second flank is applying to the ring a substantially radial outward jamming pressure toward the inner peripheral surface of the outer member whereby the ring is jammed like a wedge and locks the inner member against substantial displacement in the second direction.

4,242,946

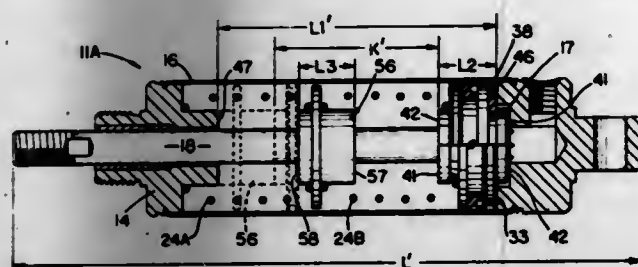
FLUID PRESSURE CYLINDER CONVERTIBLE FOR USE WITH OR WITHOUT INTERNAL BUMPERS

Vytautas J. Tollu, Paw Paw Township, Van Buren County, Mich., assignor to Humphrey Products Company, Kalamazoo, Mich.

Filed Aug. 2, 1978, Ser. No. 930,422
Int. Cl.³ F01B 11/02, 29/04

U.S. Cl. 92—59

26 Claims



1. In a fluid pressure cylinder having an identical preselected piston stroke whether provided with or without resilient bumpers, said cylinder including a housing having spaced end caps fixedly connected by a sleeve, piston means slidably and sealingly engaged with the interior of said sleeve for reciprocating movement relative to said housing between first and second end positions disposed adjacent said first and second end caps respectively, and a piston rod fixed to said piston means and slidably projecting outwardly through at least one of said end caps, the improvement comprising:

said piston being axially nonsymmetrical and, selectively axially oriented in one axial orientation or the other, relative to said housing, so as to be respectively used with or without resilient bumpers;

connecting means for fixedly joining said piston means to said piston rod in either axial orientation of said piston means relative to said housing, said connecting means including first means on said rod engageable with second means on said piston means;

first stop means cooperating between said first end cap and said piston means for defining said first position when said piston means is in said one axial orientation relative to said housing, said first stop means including a first rigid axially-facing stop surface on said first end cap and adapted for engagement with a second axially-facing stop surface on said piston means adjacent one end thereof;

second stop means cooperating between said second end cap and said piston means for defining said second position when said piston means is in said one axial orientation, said second stop means including a third rigid axially-facing stop surface on said second end cap and adapted for engagement with a fourth resilient axially-facing stop surface on said piston means adjacent the other end thereof;

third stop means cooperating between said first end cap and said piston means for defining said first position when said piston means is in said opposite axial orientation relative to said housing, said third stop means including a fifth rigid axially-facing stop surface on said piston means adjacent said other end thereof and adapted for engagement with said first stop surface;

fourth stop means cooperating between said second end cap and said piston means for defining said second position when said piston means is in said opposite axial orientation, said fourth stop means including a sixth rigid axially-facing stop surface on said piston means adjacent said one end thereof and adapted for engagement with said third stop surface;

said piston means being free of resilient bumper means when disposed in said opposite axial orientation;

said piston means including resilient bumper means mounted thereon when said piston means is disposed in said one axial orientation, said bumper means defining thereon said fourth stop surface with the latter being engaged with said third stop surface when the piston means is at one end of its stroke, the fifth stop surface on said piston means being

spaced from and maintained out of engagement with said second end cap when the piston means is at said one end of the stroke;

the axial distance between said first stop surface and said third stop surface at its point of engagement with said fourth stop surface, minus the axial distance between said second and fourth stop surfaces, being equal to said preselected stroke of said piston means when the latter is in said one axial orientation; and

the axial distance between said first stop surface and said third stop surface at its point of engagement with said sixth stop surface, minus the axial distance between said fifth and sixth stop surfaces, also being equal to said preselected stroke of said piston means when the latter is in said opposite axial orientation.

4,242,947

HYDRAULIC ACTUATOR

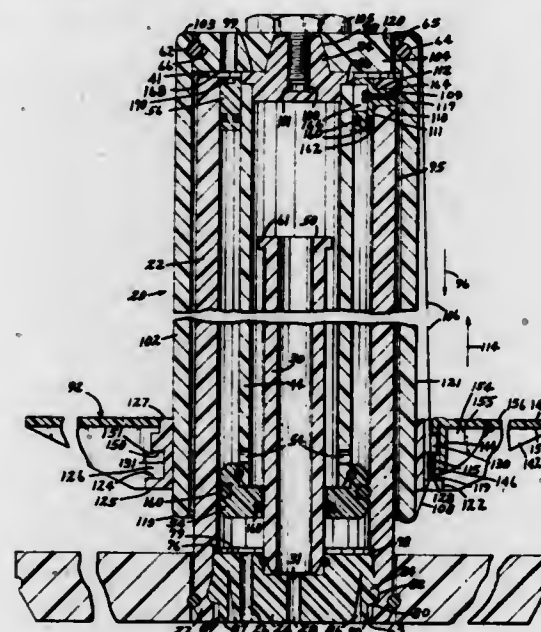
Robert A. Renner, and Ralph Lovelace, both of Mankato, Minn., assignors to Renner and Lovelace, Inc., Mankato, Minn.

Filed Jul. 28, 1978, Ser. No. 929,009

Int. Cl.³ F01B 11/00, 29/08

U.S. Cl. 92—108

15 Claims



1. A hydraulic actuator, comprising:

an open ended cylinder having first and second ends and a plurality of female bayonet fitting receptacles formed circumferentially within said second end;

a blind end plug having extension and retraction fluid transfer ports extending through its axial thickness, said blind end plug closing the first end of said cylinder;

a retract tube having first and second ends and an axial bore through its longitudinal length, mounted at its first end within the cylinder to the blind end plug so that said axial bore communicates with the retraction fluid transfer port of the blind end plug;

an actuator end plug having an aperture extending through its axial thickness and a plurality of radially extending male bayonet extensions formed in its circumferential surface, said extensions circumferentially disposed to correspond to locations of said female bayonet fitting receptacles formed in said cylinder, said actuator end plug closing the second end of said cylinder by insertion and locking of said male bayonet extensions in said female bayonet fitting receptacles;

a piston, having first and second axial faces, slidably disposed within said cylinder for axial movement therein, said piston having an aperture extending through its axial thickness to accommodate said retract tube and permit relative movement therewith;

means for preventing axial movement of said piston toward

the second end of said cylinder beyond the second end of said retract tube;

an extender tube, with first and second ends, mounted at its first end to the second axial face of said piston in encircling relation to, and spaced radially from, the retract tube, its second end extending through the aperture of said actuator end plug, said extender tube disposed for relative axial movement therewith, and said extender tube having a fluid passageway formed through the wall of said extender tube intermediate the second axial face of said piston and said actuator end plug;

means for closing the second end of said extender tube; an effective work member disposed external to said cylinder for axial movement relative thereto;

a sleeve with first and second ends, said sleeve disposed radially intermediate said cylinder and said effective work member for axial movement relative thereto;

means for maintaining a fixed axial relationship between said sleeve and said extender tube; and

cable means having first and second ends, said first ends retained at said male bayonet extensions and said second ends attached to said effective work member, said cable means extending in a first axial direction within said sleeve from said male bayonet extensions to the second end of said sleeve, and, thereafter, in a second axial direction without said sleeve to the point of attachment at said effective work member.

4,242,948

INSULATED COMPOSITE PISTON

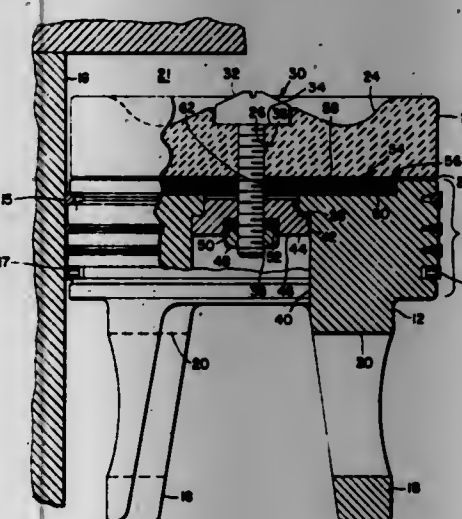
John H. Stang, Columbus, and Kenneth A. Johnson, Elizabethtown, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 755,760, Dec. 30, 1976, abandoned. This application Dec. 16, 1977, Ser. No. 861,467

Int. Cl.³ F01B 31/08; F16J 1/00

U.S. Cl. 92—212

1 Claim



1. A piston for an internal combustion engine, said piston comprising:

a crown portion of temperature resistant material, said crown portion having a circular periphery;

a one piece aluminum piston body having a circular periphery, said crown portion and said piston body having opposed planar surfaces, the opposed planar surface of said crown portion being the sole surface facing said piston body, and the opposed planar surface of said piston body being defined by a recess in said piston body facing said crown portion;

a plurality of stacked steel discs having a relatively low conductivity planar interface between adjacent discs and positioned between the opposed planar surfaces of said crown portion and piston body for forming a low effective thermal conductivity interface, the planar surface of said

crown portion extending radially outward at least as far as the periphery of said discs,

means for fastening said crown portion to said piston body, thereby sandwiching said discs between the crown portion and the piston body, said discs being freely separable from one another in the absence of the fastening means, whereby the temperature gradient across said crown portion is minimized,

wherein said crown, said discs, and said piston body have aligned holes, the one in said piston body terminating in an interior recess thereof, and wherein said fastening means comprises a bolt extending through said holes and having a head positioned on said crown portion and a threaded portion extending through said piston body to said interior recess, a nut threaded onto said bolt, and a plurality of Belleville washers positioned between said nut and said piston body for yieldably urging said piston body and crown portion towards one another, said piston body has a larger diameter hole than the one through said crown portion said piston further comprises a steel sleeve-like insert supported in said hole of said piston body, said insert having a flange which abuts the interior recess of said piston body, said washers acting between said insert and said nut; and

wherein said discs do not extend to the periphery of the interface between the crown portion and the piston body, the overall thickness of said stacked discs being selected so that the crown portion and said piston body are maintained out of contact with one another.

4,242,949

APPARATUS FOR MAKING PACKAGING SLEEVES

Robert Auckenthaler, Schaffhausen, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

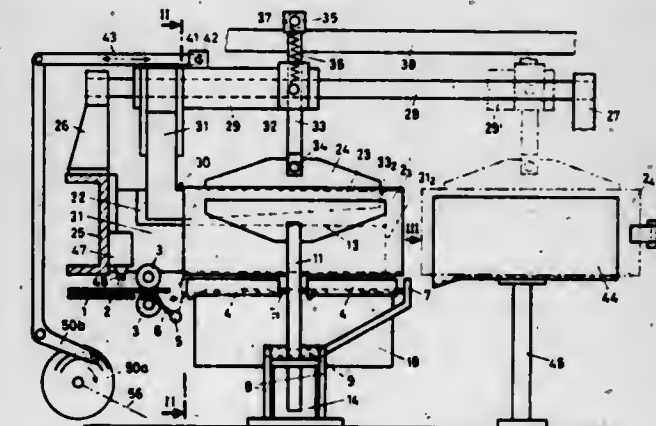
Filed Apr. 23, 1979, Ser. No. 32,479

Claims priority, application Switzerland, Apr. 21, 1978, 4346785/78

Int. Cl.³ B31B 1/52

U.S. Cl. 493—295

13 Claims



1. In an apparatus for making a packaging sleeve from a sheet blank, including a mandrel having a length dimension; folder means for wrapping the sheet blank about the mandrel, whereby opposite free longitudinal edge zones of the blank are brought into an overlapping relationship on the mandrel; pressing means for pressing and bonding the overlapping edge zones to one another for obtaining a seam along the length dimension of the packaging sleeve; the improvement wherein said mandrel has a recess extending in said length dimension; said pressing means comprises an elongated first pressing shoe arranged to be receivable in said recess and to be displaceable in its length dimension parallel to the length dimension of said mandrel; said first pressing shoe having at least one face that complements a face of said mandrel into a substantially continuous folder face; said pressing means further including a second pressing shoe arranged to cooperate with said first pressing shoe for pressing overlapping edge zones of the blank sheet to one another; said pressing means further comprising shoe

moving means connected to said first and second pressing shoes for displacing said second pressing shoe towards or away from said first pressing shoe into a pressing state and a relaxed state, respectively, and for shifting said first and second pressing shoes as a unit relative to said mandrel and parallel to the length dimension thereof for stripping the packaging sleeve from said mandrel with said first and second pressing shoes.

4,242,950

MOTOR VEHICLE HEATER AND VENTILATOR
Holger Grossmann, Ingolstadt, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

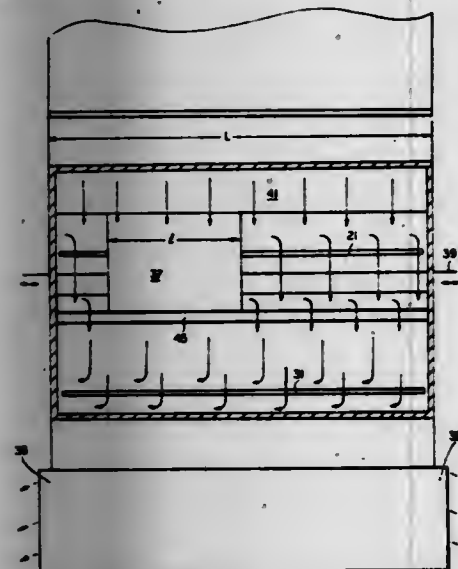
Filed Sep. 7, 1978, Ser. No. 940,163

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742670

Int. Cl.³ B60H 1/02

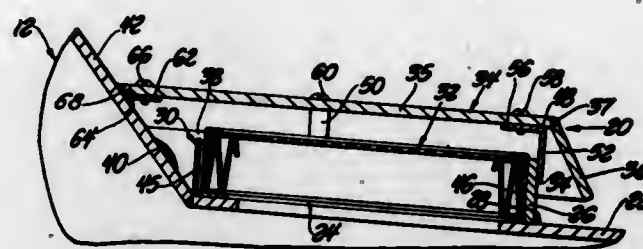
U.S. Cl. 98—2

9 Claims



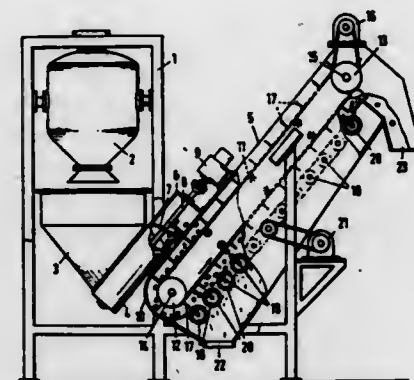
1. A temperature control system for a vehicular passenger compartment having a pair of sides, said system comprising: a housing forming an elongated mixing chamber having a fresh-air inlet slot and a modified-air inlet slot each elongated longitudinally of said chamber and a pair of outlets at opposite respective longitudinal ends of said chamber; means for feeding fresh air to said chamber through said fresh-air inlet slot; means for feeding temperature-modified air to said chamber through said modified-air inlet slot; respective conduits leading from said outlets to said sides of said vehicular passenger compartment, whereby temperature-modified air and fresh air are mixed in said chamber and the mixture is conducted from said outlets and through the respective conduits to the respective sides of said passenger compartment; a guide extending the full length of one of said slots; a slide plate substantially shorter than said guide and longitudinally displaceable therealong; and means for displacing said slide plate longitudinally along said guide and thereby blocking air flow out of said one slot into said mixing chamber at said slide plate over only the length thereof to increase in said mixing chamber adjacent said slide plate the proportion of air issuing from said other slot to air issuing from said one slot, whereby when said slide plate is closer to one of said longitudinal ends of said mixing chamber than to the other end thereof the temperature of the air issuing from the respective outlet will be closer to that of the air issuing from said other slot than that of the air issuing from said one slot.

4,242,951
AIR INTAKE VENT FOR ARMORED VEHICLE
James M. Bemiss, St. Clair Shores, Mich., assignor to Cadillac Gage Company, Warren, Mich.
Filed Aug. 6, 1979, Ser. No. 64,325
Int. Cl.³ B60H 1/28, 3/06
U.S. Cl. 98—2.11 11 Claims



1. In an armored vehicle including a cowl having an opening, an air intake vent comprising: a front armor plate welded to the cowl so as to extend upwardly therefrom spaced forward of the opening therethrough, a holder for mounting an air filter over the cowl opening with the filter supported on the cowl forward of the opening therethrough, a cover of armor plate mounted over the cowl opening spaced above the front armor plate on the cowl, and a front flange on the cover extending downwardly forward of the front armor plate in a spaced relationship thereto, the front cover flange having a lower edge terminating below the upper extremity of the front armor plate in an upwardly spaced relationship from the cowl so as to prevent projectiles from passing through the cowl opening while still permitting air to enter the vehicle.

4,242,952
PEELING APPARATUS
Peter W. C. van der Schoot, Oudekerk, Netherlands, assignor to Goudsche Machinefabriek B.V., Gouda, Netherlands
Filed Jan. 30, 1976, Ser. No. 653,814
Claims priority, application Netherlands, Feb. 3, 1975, 7501239
Int. Cl.² A23N 7/02
U.S. Cl. 99—625 11 Claims



1. Apparatus for peeling tuberos fruits comprising an elongated tunnel-like transporting channel defined by fruit contacting upper and bottom walls between which said fruits are to be conveyed, the distance between said upper and bottom walls being such that fruit being passed therethrough can move freely across said channel to cannon between said upper wall and said bottom wall, said bottom wall being formed by the

upper surface of a plurality of slightly interspaced parallel rollers positioned transversely to the main transport direction of the tuberos fruits, said rollers provided circumferentially with peel removing elements, said upper wall of the transporting channel comprising the lower part of at least one endless conveyor belt which is smooth on the side facing said rollers, said rollers connected to means for rotating the same at a circumferential speed greater than the speed of said endless conveyor belt and at sufficient speed to impart rotation to fruit in contact therewith while removing peel from said fruit and discharging said peel away from said channel and the transporting direction of the fruit and through interspaces between rollers by centrifugal speed of rotation of said rollers, the circumferential speed of said rollers being sufficient to cause said fruit to bounce and bound away from said rollers while rotating and against said endless conveyor belt whereby the fruit's speed of rotation is altered upon striking said endless conveyor belt.

4,242,953

GARBAGE COLLECTING TRUCK
Denis St-Gelais, 110 de la Barre St., Longueuil, Quebec, Canada (J4K1A3)

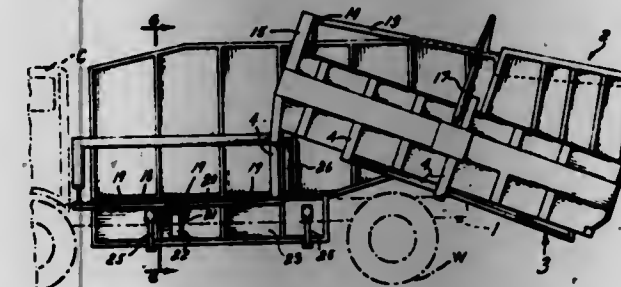
Filed May 30, 1979, Ser. No. 43,657

Claims priority, application Canada, May 10, 1978, 303044

Int. Cl.³ B30B 7/00, 15/32

U.S. Cl. 100—100

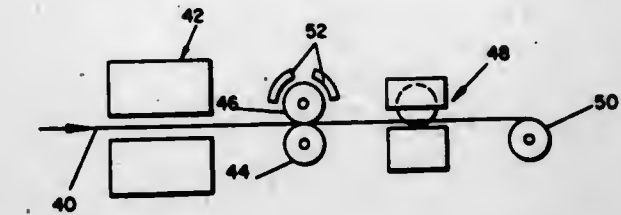
4 Claims



1. A garbage collecting truck comprising a truck chassis mounted on front and rear wheels, a driver cabin mounted at the front of said truck chassis, two separate elongated refuse collecting compartments mounted side by side longitudinally of said truck chassis and rearwardly of said driver's cabin, each compartment comprising a bottom and upstanding side walls, each compartment open at its rear end, the bottom of each compartment being longitudinally straight and inclined upwardly in the forward direction relative to said truck, each bottom terminating at its rear end at a level below the top of said rear wheels and behind said rear wheels, a refuse pushing power-operated ram mounted in each compartment longitudinally movable along the bottom and between the side walls of the respective compartments from a rearmost loading position adjacent the rear end of the bottom in which the top edge of the ram is at a low enough level to permit manual refuse loading of the compartment over and ahead of said ram by persons standing on the ground behind the truck, one of said compartments serving to receive recyclable refuse mainly consisting of paper and fabric, the other of said compartments serving to receive mainly non-recyclable refuse, the bottom of said one compartment terminating short of said driver's cabin at its front end, a platform carried by said truck chassis and extending longitudinally of said truck intermediate said driver's cabin and the front end of said bottom of said one compartment and a lower level than the front end of said last-named bottom, said front end forming part of a discharge opening at the front of said one compartment, said one compartment, together with its ram serving to form successive bales of said recyclable refuse, which are pushed by said ram in said one compartment past said bottom front end and dropped onto said platform in a position to be unloaded from said truck, said other compartment extending longitudinally forward of said truck alongside said platform and forming a closed chamber at its front end portion, said front end portion having a side door in its side wall facing exteriorly of the truck, said other compartment

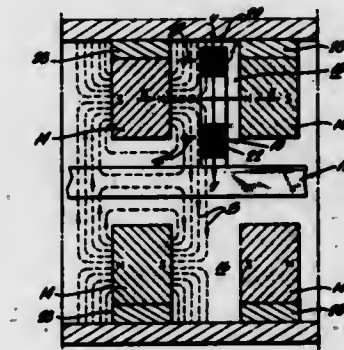
power tiltable transversely of said truck for unloading of said other compartment upon opening of said side door.

4,242,954
CALENDAR ROLL SYSTEM
Gordon L. McDaniel, Graham, Tex., assignor to Graham Magnetics Incorporated, North Richmond Hills, Tex.
Filed May 23, 1978, Ser. No. 908,644
Int. Cl.³ B30B 3/04 6 Claims
U.S. Cl. 100—176



1. A calendar roll system, having (A) as a compliant roll thereof, a calendar roll comprising, as a surface thereover, a sleeve of a shape-memory alloy which is plastically deformable characterized by an ability after its surface is marred, to return to its original shape after being heated at a transformation temperature; and (B) a second roll forming means adjacent said compliant roll to force a web against said compliant roll.

4,242,955
MAGNETICALLY ACTUATED EQUIPMENT
Carl I. Wassermann, Great Neck, N.Y., assignor to North Atlantic Industries, Inc., Hauppauge, N.Y.
Filed Mar. 13, 1978, Ser. No. 887,293
Int. Cl.³ B41J 9/38 4 Claims
U.S. Cl. 101—93.29



1. Magnetically actuated equipment for use in a printer or the like comprising first and second groups of permanent magnets, the magnets of said groups being respectively located in planes displaced from and substantially parallel to each other, said magnets of each group being further displaced with respect to one another so that gaps are formed between adjacent magnets in each group, the magnets of each group having a pair of opposed surfaces of opposite polarity and being positioned so that the surfaces of like polarity of adjacent magnets are presented toward one another across the gaps between the said adjacent magnets in each group; the surfaces defining a gap in the first group being in substantial alignment with the surfaces defining a gap in the second group and being of opposite polarity with respect to the surfaces in the second group, the like poles of the magnets in said groups being spaced in proximity to one another to form fields having field portions extending generally parallel to the surfaces defining the gaps and in opposite directions from a neutral axis within each gap, the proximity of the magnets producing an amplification of flux density in said field portions, generally planar conducting coils movably mounted within said gaps, an impact member associated with each coil for movement upon movement of said coil, means for independently electrically exciting each

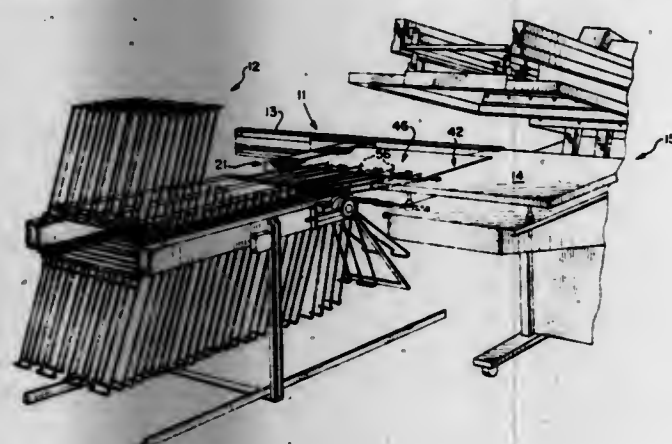
coil whereby pulsed magnetic fields are established when said coils are excited, each said coil being disposed within a gap with the coil axis extended transverse to said surfaces of like polarity, each said coil being wound upon a support of non-magnetic material and having oppositely disposed legs located within the oppositely extending field portions.

4,242,956

TAKEOFF APPARATUS FOR A WICKET DRYER
Henry J. Babley, Deerfield; Melvin E. Green, Chicago, and Alex Iaccino, Mount Prospect, all of Ill., assignors to American Screen Printing Equipment Company, Chicago, Ill.
Filed Feb. 13, 1978, Ser. No. 877,245
Int. Cl.³ B41F 15/12, 21/08

U.S. Cl. 101-123

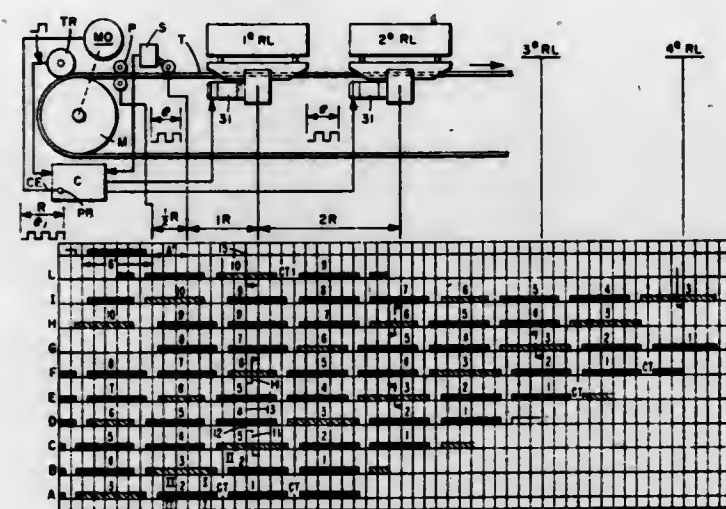
1 Claim



1. A takeoff apparatus particularly adapted to automatically transfer stock from the printing bed of a screen printing press to a wicket dryer having a plurality of rows of wickets movable along the upper and lower surfaces of said dryer, said takeoff apparatus comprising:

- a single elongated support arm, said support arm being mounted to said printing press at a corner of said printing bed;
- a transfer carriage movable along said support arm between a takeoff position adjacent said printing press and a delivery position adjacent said wicket dryer;
- mounting means for mounting an end of said transfer carriage to said support arm for movement therealong, said mounting means including a channel attached to said support arm, a pair of first rollers vertically mounted to said transfer carriage, said first rollers being disposed within said channel for movement therealong, an angle iron comprising a fixed stem perpendicular to an upright stem, the end of said fixed stem being mounted to said support arm, a pair of second rollers horizontally mounted to said transfer carriage, said rollers being disposed on opposite sides of said upright stem of said angle iron for movement therealong, whereby said first and second rollers support one end of said transfer carriage on said support arm for reciprocation therealong; and,
- gripper means mounted to said transfer carriage, said gripper means being operable to grip said printed stock on the printing bed at said takeoff position, and to release said printed stock face-up on a row of said wickets beneath said transfer carriage at said delivery position, whereby said row of wickets move upwardly from beneath said transfer carriage at said delivery position without contacting said support arm toward the upper surface of said dryer for drying said printed stock.

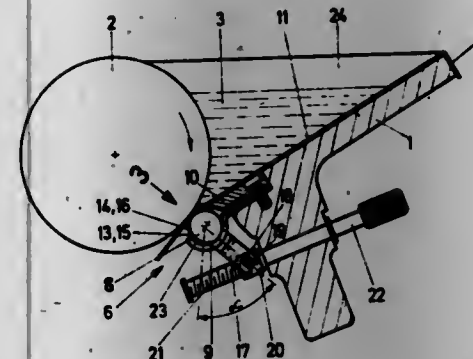
4,242,957
PROCESS AND APPARATUS FOR THE PRINTING OF SPONGE-CLOTHS AND THE LIKE
Umberto Mascioni, Azzio; Adolfo Giani, Bergamo, and Mario Panseri, Ranica, all of Italy, assignors to Reggiani S.p.A., Bergamo, Italy
Filed Jul. 17, 1978, Ser. No. 925,198
Claims priority, application Italy, Jul. 19, 1977, 25881 A/77
Int. Cl.³ B41L 13/02; B41N 1/24
U.S. Cl. 101-126 13 Claims



1. Apparatus for effecting an automatic multi-color printing process for sponge-cloths with contiguous ends or continuous textile bands of stretch-yarn fabrics and the like, characterized in that there is provided a conventional flat-screen printing machine comprising:

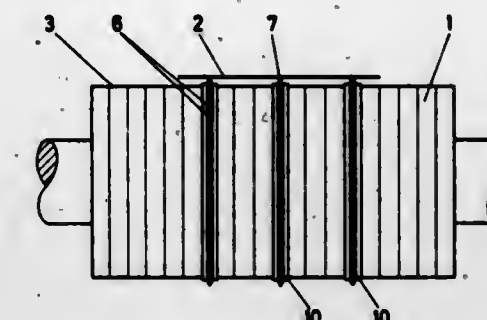
- an electrical impulse generating device produced impulses in a quantity proportional to the length of the print repeat, synchronized with the carrying belt of the machine and electrically connected to an electronic computer-programmer for controlling and actuating in a sequential way the individual printing unit;
- a device for reading and detecting the differences in length of the sponge-cloths advancing on the carrying belt, comprising at least one electromechanical, photoelectrical sensor, mounted adjustably lengthwise and with respect to the width of the printing plane, and arranged to actuate said programmer to effect the shiftings of the printing units in a position centered on the sponge-cloths, and effect the printing operation on said sponge-cloths;
- a control device for effecting traverse motion of the printing unit along the printing plane and partial rotation with respect to the printing plane, comprising:
- a carriage for each printing unit, said carriage being held by two guide slides, two racks connected to each side of said carriage, each of said racks engaged with first and second pinions;
- first and second stepping motors for driving each of said pinions in response to a pulse applied to each motor;
- means connecting said stepping motors to said computer-programmer, whereby the position of said printing units with respect to said printing plane is controlled by said computer-programmer;
- mechanical adjustment means provided on each side of said printing unit for initially positioning said printing unit; and
- means for rotating said printing units with respect to said printing plane comprising a partially spherical hinge located on each side of said carriage, connected to said printing unit permitting pivoting of said pivot unit with respect to said carriage.

4,242,958
INK DUCT FOR OFFSET OR RELIEF PRINTING MACHINES
Willi Jeschke, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Continuation of Ser. No. 845,370, Oct. 25, 1977, abandoned.
This application Apr. 23, 1979, Ser. No. 32,412
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648098
Int. Cl.³ B41F 31/04; B41L 27/06, 27/08
U.S. Cl. 101-365 10 Claims



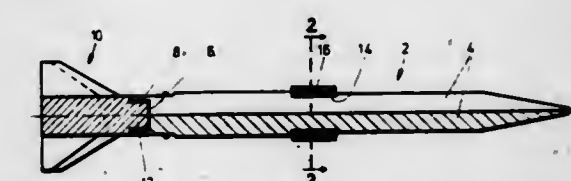
1. Ink duct for printing machines provided with a doctor roller, the ink duct having an ink metering device adjustable with respect to the doctor roller for varying an ink gap therebetween and thereby thickness of ink receivable in said variable ink gap, the ink metering device comprising adjusting means for varyingly adjusting the gap zonewise between the ink metering device and the doctor roller, said adjusting means being formed with respective bracing regions at which said adjusting means are braced against the doctor roller and respective metering regions at which a variable metering gap is defined thereby with the doctor roller, said bracing regions and said metering regions being located adjacent one another in a plurality of respective zones disposed in axial direction of the doctor roller, and respective means for resiliently biasing said adjusting means continuously into a contact relationship with the doctor roller at said bracing regions and for adjustably varying a spacing of said adjusting means from said doctor roller at said metering regions so that the respective spacing of the respective metering regions from the doctor roller determines the ink gap in each of the respective zones, said adjusting means comprising a plurality of adjusting elements of substantially cylindrical construction rotatable in peripheral direction thereof, the respective bracing regions being narrow with respect to the width of the respective metering regions, and the respective metering regions being formed by eccentric tapped grooves located adjacent the respective bracing regions, said ink metering device including zonewise subdivided pressure strips, said resilient biasing means supportingly biasing said pressure strips toward the doctor roller, said pressure strips being formed with a recess in a forward region thereof wherein said cylindrical adjusting elements are received, said adjusting means further including an elastic foil fixed to said ink metering device and covering said pressure strips and said adjusting elements, the respective bracing regions being biased by said resilient biasing means into indirect contact with the doctor roller through the intermediary of said elastic foil.

4,242,959
SHEET CARRIER
Willi Jeschke, Heidelberg, and Peter W. Gügele, Rauenberg, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany
Filed Mar. 26, 1979, Ser. No. 24,011
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813136
Int. Cl.³ B41L 21/00; B41F 21/00
U.S. Cl. 101-420 3 Claims



1. Sheet carrier device disposed so as to be axially adjustable on a transfer drum in a multicolor rotary printing machine and having axially shiftable carriers extending in circumferential direction on the casing of the drum, sheet carrier elements being interchangeably mounted on the carriers and adjustably displaceable in circumferential direction of the drum, the sheet carrier elements having supporting edges whereon a sheet being carried is supportable in a given working position of the sheet carrier elements, comprising lines disposed circumferentially on the transfer drum and having a hook at least at one end thereof for hooking said lines into the drum casing, the sheet carrier elements being formed with respective bores through which the sheet carrier elements are threaded on said lines, said sheet carrier elements having a square cross section concentric to said bores formed therein, respectively, and having the respective supporting edge thereof projecting from said square cross section, said carriers, respectively, comprising a guide band mounted on the casing surface of the transfer drum and shiftable in axial direction thereof, said sheet carrier elements being disposed on said guide band so as to be pivotable through 90° into and out of said given working position thereof.

4,242,960
AUTOMATICALLY DISINTEGRATING MISSILE
Dieter Boeder, Christian Jaeneke, both of Dusseldorf; Rudolf Romer, Kaarst, and Guenter Silkowski, Dusseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany
Filed Dec. 18, 1978, Ser. No. 970,182
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756420
Int. Cl.³ F42B 13/20, 13/18
U.S. Cl. 102-92.7 15 Claims



1. A missile having a tip and a tail end, which automatically disintegrates after attaining a predetermined flight time, comprising a missile body formed of at least two parts, a sleeve coaxially mounted with respect to the missile on said two parts thereby gripping said parts and holding them together, said sleeve being formed of a material which softens or melts as a result of the increase of temperature caused by the air flowing around the missile during its flight, at least two parts being

formed as identical sector-shaped parts in a longitudinal direction, such parts of the missile body forming a recess at the tail end of the missile, wing tail unit having a stud received and held within the recess, and an annular groove encircling the missile body in a central zone thereof, the sleeve for securing the missile body parts together being disposed in said annular groove.

6. A missile which automatically disintegrates after attaining a predetermined flight time, comprising a missile body formed of a plurality of parts, a locking means for positively locking said missile body parts to one another, the locking means being mounted on the missile body and being releasable after a predetermined time delay by the action of the air flowing around the missile in its flight, the locking means includes a securing element which can be shifted by the air flowing around the missile during its flight, the missile body is divided into at least two longitudinally extending identical sector-shaped parts, and the securing element comprises a piston displaceable longitudinally of the missile body and located in one of the parts of the missile body, said piston being capable of being displaced rearwardly of the missile body by the pressure of the air through which the missile travels and by the force of inertia upon the piston after the discharge of the missile.

4,242,961

CHEVRON GROOVED DECOUPLING OBTURATOR

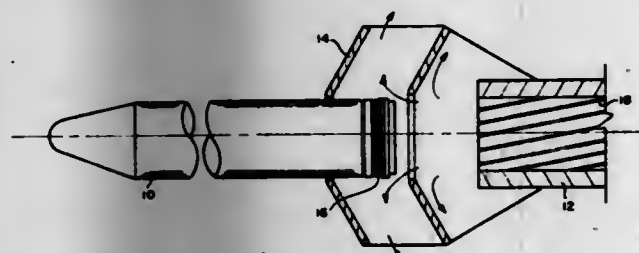
Jerry L. Morelock; James E. Wagner, and Jonnie O. Hyder, all of Orlando, Fla., assigns to Martin Marietta Corporation, Orlando, Fla.

Filed Oct. 23, 1978, Ser. No. 953,731

Int. Cl.³ F42B 31/00

U.S. Cl. 102—93

4 Claims



1. An obturator for a projectile to be fired from a barrel having rifling, which obturator is mounted on the projectile in such a way as to permit slippage such that the projectile will be caused to rotate at only a fraction of the rotational speed it would otherwise have attained, said obturator comprising a ring of non-metallic material, which ring is capable of mounting on a circular body portion of the projectile, an external portion of said obturator ring having a plurality of encircling slots, essentially parallel to each other, which slots are rearwardly inclined so as to define a plurality of chevron-like members designed to forcibly engage the rifling of the barrel, the interior of said ring being designed to slip rotationally with respect to the projectile body portion as the projectile travels along the barrel, thus enabling the rotation of the projectile as a result of rifling effects to be minimized.

4,242,962

ANTITANK WEAPON SYSTEM AND ELEMENTS THEREFOR

David R. Wakeman, Clearwater, Fla.; Ernest Goldberg, Westford, and Gordon C. MacKenzie, North Billerica, both of Mass., assigns to Raytheon Company, Lexington, Mass.

Filed Jan. 2, 1979, Ser. No. 303

Int. Cl.³ F42C 13/02

U.S. Cl. 102—213

2 Claims

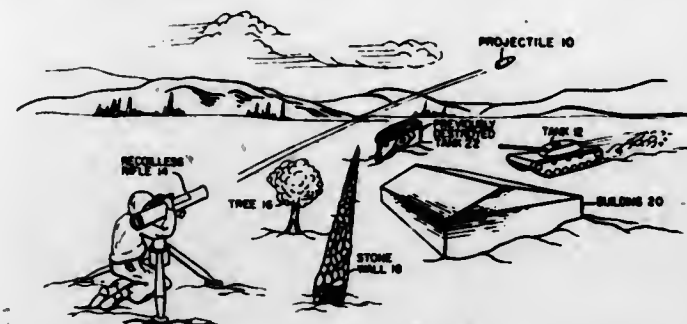
1. An antitank weapon system wherein a spinning projectile carrying submunitions is fired toward an aiming point above a tank intended to be struck from above by such submunitions, such system comprising:

(a) a plurality of pulsed laser radars in the spinning projec-

tile, each one of such lasers being disposed successively to illuminate swaths of the underlying terrain ahead of the projectile in flight;

(b) means for actuating each one of the plurality of pulsed laser radars when each is oriented to illuminate one of the swaths;

(c) means for first processing returns from successively illuminated swaths to determine the height of any illuminated targets above the underlying terrain, the length and



width of any such targets and the range of any such targets from the spinning projectile, and, in accordance with the height, length and width of any such targets, identifying returns from a tank and then calculating the position of the source of such identified returns relative to the aiming point; and

(d) firing, when the spinning projectile is at the aiming point, the submunitions toward the source of returns identified as from a tank to impact on the upper surface of the identified tank.

4,242,963

DELAYED ARMING FUZE FOR A SPINNING PROJECTILE

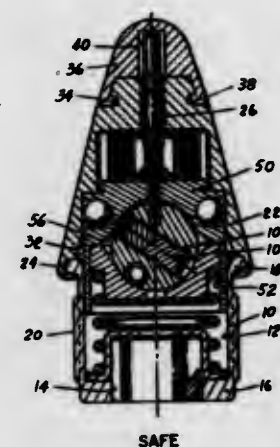
Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sep. 25, 1978, Ser. No. 945,679

Int. Cl.³ F42C 15/76, 15/22

U.S. Cl. 102—236

3 Claims



1. A time delay fuze having a safed configuration and an armed configuration, for spinning projectiles, comprising:

a housing having a first longitudinal axis and a longitudinal bore therein;

a rotor carrier journaled in said bore of said housing for reciprocation along said first longitudinal axis between an aftmost station and a forwardmost station, and having a cavity therein;

a firing pin journaled in said bore of said housing for reciprocation along said first longitudinal axis between an aftmost station and a forwardmost station;

a rotor disposed in said cavity of said carrier and journaled for rotation about a second axis which is perpendicular to said first longitudinal axis, and having a detonator which is disposed along a diametral third axis of said rotor which is perpendicular to said second axis;

first means including a split collar which is integral with said rotor carrier and an unwinding ribbon for normally interlocking said firing pin to said rotor carrier and to said rotor with said rotor third axis at an angle to said first axis, and upon the continued application of spin, for releasing said firing pin from said rotor carrier and said rotor, second means for biasing said firing pin, when released, out of interlock with said rotor, third means for normally biasing said rotor carrier towards said forwardmost station, fourth means, upon the application of setback force, and thereby the displacement of said rotor carrier to said aftmost station, and during the application of centrifugal force, for retaining said rotor carrier in said aftmost station, and fifth means for normally locking said rotor against rotation in said rotor carrier with said third axis at an angle to said first axis, and upon the application of centrifugal force, for unlocking said rotor, whereby said rotor is free to rotate to align its said third axis with said first longitudinal axis.

4,242,964

EXPLOSIVE FUZE FOR PROJECTILE

John B. Warren, Tustin; Ernest Y. Robinson, Altadena, and Robert P. Kananjy, Irvine, all of Calif., assigns to Ares, Inc., Port Clinton, Ohio

Filed Dec. 18, 1978, Ser. No. 970,760

Int. Cl.³ F42C 1/02

U.S. Cl. 102—275

16 Claims



1. A percussion fuze for a high explosive projectile, comprising:

a fuse body including means defining a cavity opening from a rearward end thereof, and extending forwardly, generally along a longitudinal body axis and terminating at an end wall rearwardly of the forward end of the fuse body; said body also including means defining a weakened region near said forward end, and adjacent to and forwardly of said wall;

said weakened region being open to an exterior surface of the body to thereby define a forward tip portion and being configured to shear upon impact of said tip portion with a target, thereby enabling at least partial rearward penetration of the tip portion into the cavity; and,

means disposed within said cavity for causing detonation of an explosive projectile for which the fuze is connected in response to said partial cavity penetration by the tip portion.

4,242,965

CARRIER CONVEYOR

Alfred Granot, 7, Rue de Clos de Lareche, 86000 Poitiers, France

Filed Feb. 15, 1979, Ser. No. 12,604

Claims priority, application France, Feb. 17, 1978, 78 04602

Int. Cl.³ B65G 17/00

U.S. Cl. 104—96

11 Claims

1. A carrier conveyor comprising:

a main runway including a main chain to which are secured stationary lugs for continuously driving carriers on said main runway;

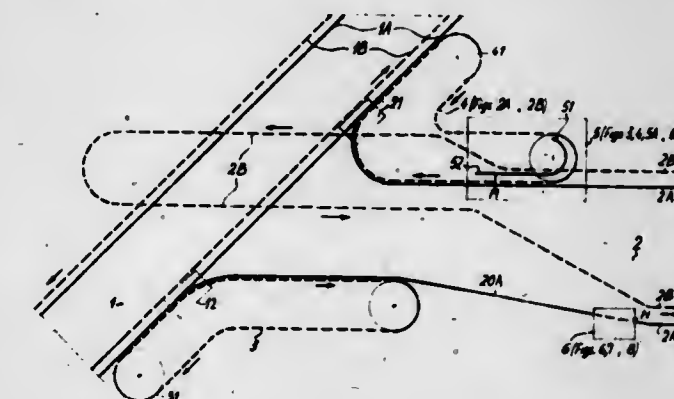
a bidirectional secondary runway including a secondary

chain to which are secured stationary lugs for continuously driving carriers on said secondary runway;

a first auxiliary runway including a first auxiliary chain arranged to be moved in synchronism with said main chain and having retractable lugs for driving carriers from a waiting position of said secondary runway to said main runway, said first auxiliary runway further including lug returning means for each lug of said first auxiliary chain, said lug member having a returning spring to being the lug into an engaged position for driving the carrier;

a second auxiliary runway including a second auxiliary chain arranged to be moved in synchronism with said main chain and having lugs for driving carriers from said main runway to a stop position on said second auxiliary runway which stop position is located upstream of said secondary runway;

a first electromechanical transfer means for transferring a carrier from said waiting position of said secondary runway onto the runway of said first auxiliary runway by means of an engaged lug of said first auxiliary chain, said



first electromechanical means comprising movable means located in the region of said waiting position for selectively disengaging said retractable lugs of said first auxiliary chain from the path followed by said carriers when no carrier is to be transferred from said secondary runway to said main runway wherein a retractable lug at the disengaged position is not in contact with the carriers at said waiting position;

a second electromechanical transfer means for transferring a carrier from said stop position of said second auxiliary runway to said secondary runway, said second electromechanical means comprising pivotable stopping means for stopping at a carrier previously driven by said second auxiliary chain at the stop position; and

said second electromechanical transfer means further comprising a retractable slidable means which is in the path followed by the carrier upstream of said stop position, said retractable slidable means being effective to push a stop carrier into said secondary runway between two stationary lugs on said secondary chain while simultaneously disengaging said pivotable stopping means.

4,242,966

RAILWAY CAR TRUCK TRANSOM INCLUDING A TUBULAR BEARING ASSEMBLY

Jan D. Heit, St. Charles, and Robert E. Neff, St. Louis, both of Mo., assigns to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,647

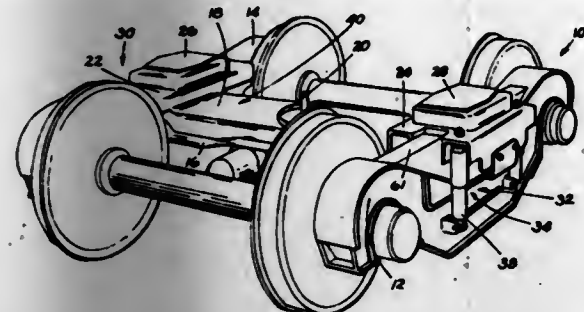
Int. Cl.³ B61F 3/08, 5/06, 5/08, 5/14

U.S. Cl. 105—182 R

9 Claims

1. A single transom for a railway car truck comprising: a pair of tubes rigidly connected respectively to a pair of longitudinally extending side frames; said tubes being longitudinally and vertically aligned, and located below a bolster which extends between the side frames above the transom; a bearing rigidly attached to one of the tubes; said bearing extending within the other of the tubes; a layer of low friction material located

between said bearing and said other tube to allow the side frames to rock in a vertical plane about a transverse axis as vertical undulations in the track are traversed; said transom



having sufficient rigidity to resist the tendency for the side frames to move longitudinally with respect to each other, whereby said truck is maintained in tram.

4,242,967

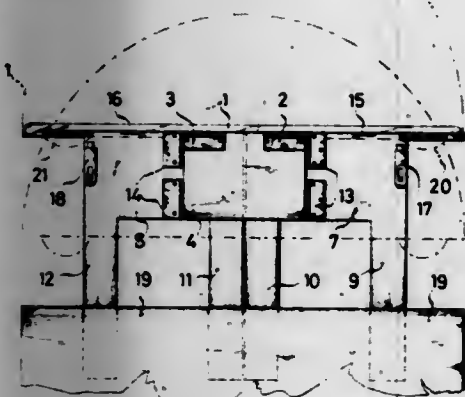
SEPARATELY USEABLE PULL-OUT TABLE LEAF
Xaver F. Leonhart, 8381 Harburg, near 8385 Pilating, Ndb., Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,727

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834469

Int. Cl.³ A47B 1/04

U.S. Cl. 108—11



1. An extension table pull-out and separable table end leaf comprising, an end leaf body portion (1) having a table mating edge, two U-shaped supports (7,8) the legs (9-12) of which are adapted to form the legs of a table with four legs, a rectangular body portion (4) having end and side edges, first hinge means (2,3) connecting the end edge of said rectangular body portion (4) to the bottom of said end leaf body portion at the center of gravity thereof, said end leaf body portion (1) adapted to move about said first hinge means from a position substantially parallel with said rectangular body portion to a position normal thereto, second hinge means (13,14) connecting the side edges of said rectangular body portion (4) to said U-shaped supports (7,8), said U-shaped supports connected to move about said second hinge means (13,14) from positions in the same plane to extended positions at acute angles with said rectangular body portion, catch means (15,16) connected on the bottom of said end leaf body portion (1), latch means (17,18) on said U-shaped supports engageable with said catch means (15,16) to hold said U-shaped supports in the extended positions, and the legs (9-12) of said U-shaped supports (7,8) when in said same plane extending beyond the table mating edge of said end leaf body portion (1) when the latter is positioned parallel with said rectangular body portion (4) whereby said legs form slide connections with an extension table.

4,242,968 **STEPPING ADVANCING DEVICE ADAPTED FOR USE WITH COMPONENT SUPPORT TABLES AND OTHER PURPOSES**

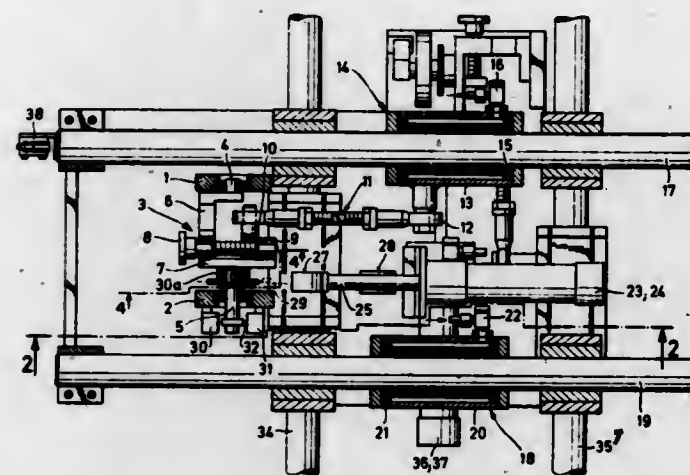
Hubert Schaidl, Kochel am See, and Josef Leingärtner, Bad Heilbrunn, both of Fed. Rep. of Germany, assignors to Dorst-Keramikmaschinen-Bau Otto Dorst und Dipl.-Ing. Walter Schlegel, Kochel am See, Fed. Rep. of Germany
Filed Oct. 12, 1977, Ser. No. 841,370

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646465

Int. Cl.³ A47B 11/00; F16C 5/00

U.S. Cl. 108—20

6 Claims



1. A device for high speed accurate positioning of a table through a plurality of intermittent incremental movements with graduated acceleration and deceleration, said device comprising: a crank and means secured to said table rotatably mounting said crank; a pair of alternately actuated fluid operated pistons and means connecting said pistons to said crank for reciprocating said crank through an arc of approximately 180°; a pair of fixed guide rods; a pair of elements slidably mounted, one on each of said rods; one of said elements being secured to the table; rod means having one end eccentrically connected to said crank and its other end connected to the other of said elements; a pair of sensors mounted to be alternately actuated by said crank at the opposite ends of its rotational movement; each of elements having a clamp for engaging said guide rods; means connected to said sensors for alternately operating said clamps in coordination with said pistons with the clamp of one of said elements being actuated while the crank is rotating in one direction and the clamp of the other of said elements being actuated while the crank is rotating in the opposite direction to effect incremental movement of said table; the chord of the arc of rotation of said crank being parallel to the surface of said table whereby the rate of lineal movement of the table has a sine wave pattern.

4,242,969

TABLE AND SHELF ASSEMBLY

Andrew R. Checkwood, 18379 Lake Encino Dr., Encino, Calif. 91316, and Andrew M. Checkwood, 9438 Trebert Pl., Tujunga, Calif. 91042, assignors to Andrew R. Checkwood; Andrew M. Checkwood and Larry Checkwood, all of Sun Valley, Calif.

Filed Feb. 21, 1979, Ser. No. 13,212

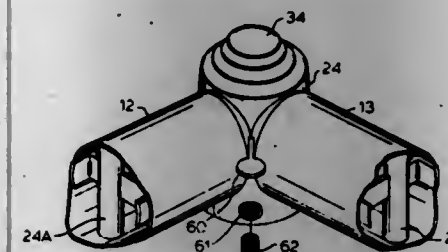
Int. Cl.³ A47B 3/06; F16D 1/00

U.S. Cl. 108—153

6 Claims

1. A table comprising a plurality of unperforated tube members for defining a peripheral framework;
a plurality of corner members each including a central body portion and at least two arms extending angularly with respect to each other and each in telescoping relationship with adjacent tube members thereby defining a junction of said framework;
each of said arms defining at least one edge recess at a prede-

termined distance from said central body portion and adjacent to the interior of the wall of said tube member; said tubular members and respective arms in dimpled interlocking staked relationship with each other at said recess; the body portion of said corner member including a shelf support;
said body portion of said corner members defining a connecting member for receiving legs in an orthogonal relationship with at least one of said arms



wherein said arms are generally in cruciform shape with the extremities thereof matching the inside dimension of the tube member whereby said tube member and arms assume a generally rigid interconnection when telescoped; and wherein at least one of said cruciform portions of said arms extends in the direction downward when said table is in a normal position and said recess defined by said arm is at the underside of said arm whereby the dimpled connection between the arm and the tube is virtually invisible in normal use of the table.

4,242,970

FREE-STANDING ARTICLE SUPPORT UNIT

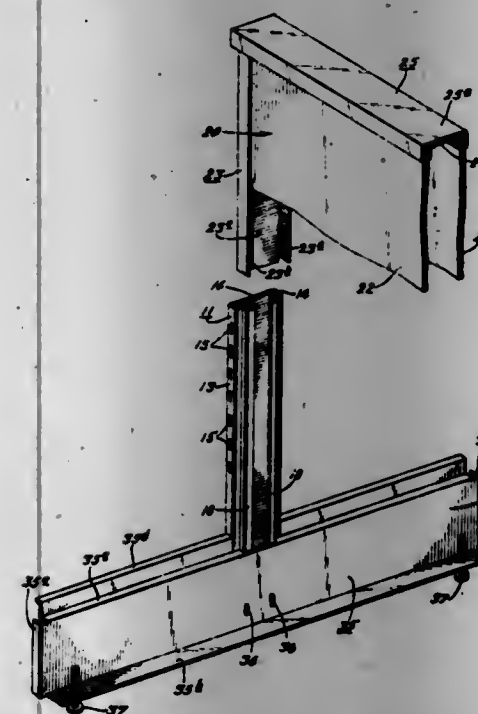
James M. Suttles, Elberton; Terry L. Norton, Royston; Joseph P. Hart, Canon, and Thomas C. Jordan, III, Royston, all of Ga., assignors to Royston Manufacturing Corporation, Royston, Ga.

Filed Jun. 27, 1979, Ser. No. 52,811

Int. Cl.³ A47F 5/00

U.S. Cl. 108—159

13 Claims



1. A free-standing article support comprising:
a pair of vertically-disposed uprights, each having a pair of outwardly-offset flanges terminating in spaced confronting relation to form a slotted tongue;
a panel assembly having a pair of edge members, each formed into a groove for matingly receiving the slotted tongues of the respective uprights to mount said uprights and panel assembly in a common plane;
a clip mounted to each edge of said panel assembly adjacent

its upper end for engaging in said slotted tongue and behind said flanges upon downward movement of said panel assembly;
a base member extending laterally from the bottom of each upright;
a lower shelf spanning across the tops of said base members;
a kickplate extending across the ends of said base members;
and
means on said kickplate and said base members for securing said kickplate to said base members upon downward movement of said kickplate.

4,242,971

DISPLAY TABLE

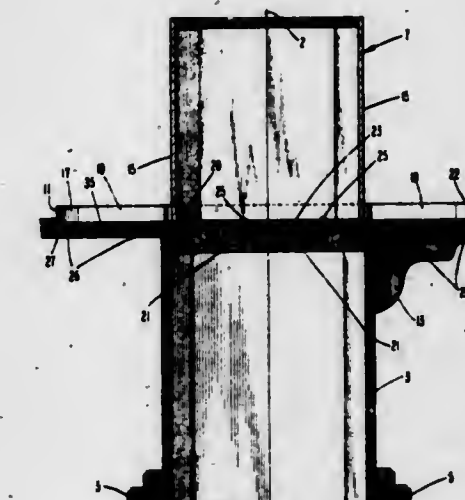
Edward B. Kleiman, 1675 E. Churchill Downs, Germantown, Tenn. 38138

Filed May 7, 1979, Ser. No. 36,651

Int. Cl.³ A47B 85/00

U.S. Cl. 108—26

22 Claims



1. A merchandise display table for enabling dispensing of eyeglass frames and the like and for enabling plural customers to simultaneously select and view a plurality of frames located on the table comprising:

pedestal means;
mirror means vertically disposed atop said pedestal means, said mirror means including a plurality of faces arranged in a generally circular array;
an annular platform fixedly disposed about said mirror means and an upper portion of said pedestal means, said platform including grooved annular track means formed thereon, said platform being disposed to define a plurality of customer seating stations, said platform including a display space extending beyond the grooved annular track means and on which selected frames and optical instruments can be placed; and
an annular display tray member disposed within the area defined by said track means so that the tray member is captured by sides of the grooved track means, said tray member arranged for rotation about said annular platform, said annular tray member having a plurality of compartments for displaying the eyeglass frames.

4,242,972

COMBUSTION SYSTEM WITH PARTIAL RECIRCULATION OF EXHAUST GASES AND FEED MECHANISM THEREFOR

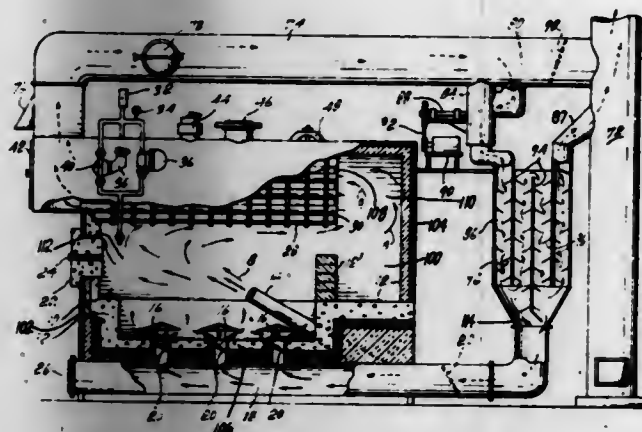
Guy Sicard, 4, rue Courcel, Neufchâtel, Quebec, G2B 2H5,
Canada

Filed Dec. 22, 1978, Ser. No. 972,332

Int. Cl.³ F23B 7/00

U.S. Cl. 110-234

5 Claims



1. A combustion system comprising a generally rectangular combustion chamber having side walls, front and back end walls, a bottom wall and a top wall, a fire tube boiler horizontally disposed in the top portion of said combustion chamber and which has its rear end wall spaced forwardly from said back wall, so as to define a rear combustion chamber portion disposed rearwardly of said boiler and in communication with the fire tube inlets opening at said rear end wall of said boiler, a flue duct in communication with the fire tube outlets opening at the front end wall of said boiler, said boiler combustion chamber having a major portion located underneath said boiler, a particulate fuel feed conduit passing through a wall of said combustion chamber and having an inner straight portion exposed within said combustion chamber major portion and having a discharge end located underneath said boiler forwardly of said rear combustion chamber portion and intermediate said boiler and said bottom wall, said inner straight portion being directed upwardly forwardly towards said front wall and said boiler, means to feed primary air and means to throw particulate fuel into said combustion chamber major portion through said feed circuit, means to mix secondary air with the exhaust gases in said flue duct, means to separate suspended particles in the mixture of secondary air and exhaust gases in said flue duct, means to recirculate the separated particles and a portion of said mixture back into the combustion chamber, said last-named means including several inlets in said bottom wall of said combustion chamber, and means to discharge the remaining portion of said mixture into the atmosphere, said remaining portion being substantially free of suspended particles.

4,242,973

SEWING MACHINE WITH ELECTRONIC PATTERNING SYSTEM

Hachiro Makabe, Fusa; Kazuo Watanabe; Hideaki Takenoya, both of Hachioji; Toshihide Kakinuma, Tokyo, and Toshiaki Kume, Tachikawa, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 926,627, Jul. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 876,326, Feb. 8, 1978, which is a continuation of Ser. No. 715,691, Aug. 19, 1976, Pat. No. 4,086,862. This application Sep. 28, 1979, Ser. No. 80,072

Claims priority, application Japan, Oct. 17, 1975, 50-124306
Int. Cl.³ D05B 3/02

U.S. Cl. 112-158 E

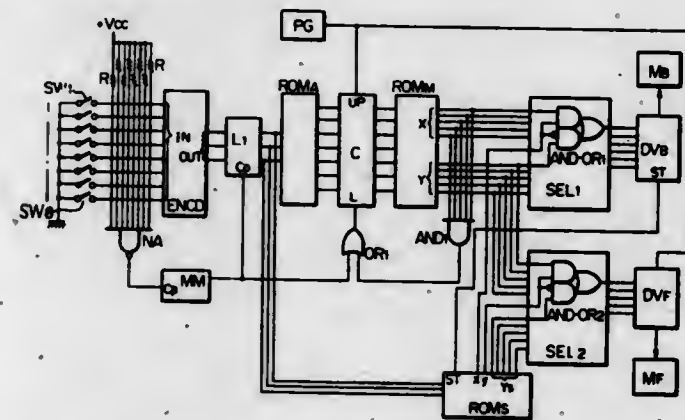
3 Claims

1. In a sewing machine of the type provided with electromechanical stitch-forming means responding to stitch-control

data by changing the relative positions of the needle of the machine and the fabric being sewn on the machine, in combination,

a main pattern memory containing a plurality of individually addressable storage locations and having stitch-control data outputs and address-signal inputs and operative for transmitting to the data outputs the data stored in whatever addressable storage location is addressed by an address signal applied to the address-signal inputs of the pattern memory;

means for selecting differing ones of a plurality of stitch-patterns whose stitch-control data are stored in addressable storage locations of the pattern memory and means for applying address signals to the address-signal inputs of the pattern memory,



at least some of the individually addressable storage locations of the memory each comprising a first storage-location section storing stitch-control data pertaining to one stitch of a pattern but also comprising a second storage-location section storing stitch-control data pertaining to a different stitch, the first storage-location section and the second storage-location section of each such storage location not being addressable separately from each other, and means operative for applying to the electromechanical stitch-forming means stitch-control data alternatively derived from the first storage-location sections or else the second storage-location sections of the individually addressable storage locations.

4,242,974

PATTERN FEED ELONGATION IN ELECTRONIC SEWING MACHINE

Howard L. Beckerman, Middletown, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 10, 1980, Ser. No. 128,996

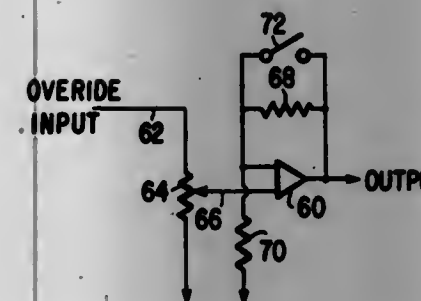
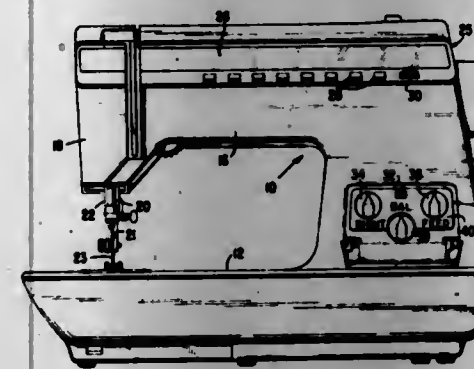
Int. Cl.³ D05B 27/22, 3/02

U.S. Cl. 112-158 E

3 Claims

1. An electronically controlled sewing machine comprising a frame, a selectively variable work feeding system supported in said frame, an endwise reciprocating and selectively laterally jogging needle bar supported in said frame, said needle bar terminating in a sewing needle, a solid state memory, means for receiving and converting information from said solid state memory to effect selective lateral jogging of said needle bar and selective variation of said work feeding system, means for obtaining continuous feed length change of the work feeding information received from the solid state memory from 0 to the maximum stored therein, means for achieving additional feed

steps between needle penetrations for feed multiplication, and means for combining said obtaining means with said achieving



means to obtain a continuous change in said feed length from 0 to the maximum multiplication thereof.

4,242,975

NEEDLE SUPPORT MEANS

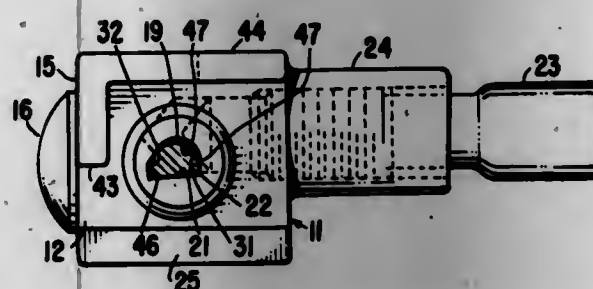
Warren D. Knowles, Clark, and Lionel J. Coulombe, Matawan, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jan. 22, 1980, Ser. No. 114,165

Int. Cl.³ D05B 55/02

U.S. Cl. 112-226

7 Claims



1. Needle support means for supporting, in a sewing machine, a needle having a shank including a flat slab surface, the support means comprising:

a needle clamp comprising a main body portion having a needle-receiving end and a needle bar-receiving end, the needle bar-receiving end having a first cylindrical recess extending longitudinally into the main body portion to fit onto the end of a needle bar, and the needle-receiving end having a needle channel that extends longitudinally through the main body portion from the needle-receiving end to the recess in the needle bar-receiving end, the needle channel being defined by surfaces extending longitudinally into the main body portion and comprising a first flat surface in a first longitudinal plane, a second flat surface in a second longitudinal plane at an acute angle to the first flat surface, and a cylindrical surface segment joining distal edges of the first and second flat surfaces, the radius of curvature of the cylindrical segment being greater than the radius of curvature of the standard sewing machine needle but less than a radius that would permit the shank of the smallest sewing machine needle that is to be used in the needle bar clamp to be inserted into the

needle channel in any orientation other than with the flat slab surface of the needle shank in flat surface-to-surface contact with the first flat surface of the needle channel;

a hole in the needle bar-receiving end of the needle extending transversely with respect to the axial direction of the needle bar recess;

a first screw extending through the transverse hole to be threaded into a hole aligned therewith near the end of the needle bar to hold the needle clamp on the end of the needle bar; and

a side lug extending from one side of the main body portion of the needle clamp and having an internal thread along part of its length to receive a needle-holding second screw threaded into the side lug and comprising a conical point engaging a curved portion of the needle shank to press the needle shank against both the first and second flat surfaces of the needle channel.

4,242,976

PRECISE POSITIONER OF BUTTONHOLE PRESSER FOOT

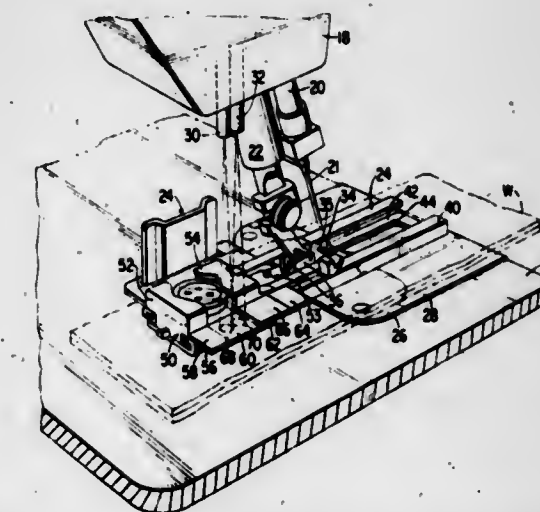
Howard L. Beckerman, Middletown; Russell J. Pepe, Piscataway, and Allan M. Dob, Clifton, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Feb. 29, 1980, Ser. No. 126,087

Int. Cl.³ D05B 3/06

U.S. Cl. 112-264.1

1 Claim



1. A method of initiating the stitching of a buttonhole by a zig zag sewing machine having means for selectively reversible work material feeding, and a buttonhole presser device having a sliding portion for travelling with a work material during the formation of a buttonhole, said sliding portion of said presser device having an initial position from which actuation of said buttonhole is initiated, which method comprises the steps of:

a. sensing the position of the sliding portion of the buttonhole presser device;

b. determining whether the sliding portion of the buttonhole presser device is in the correct initial position for buttonholing; and,

c. initiating corrective feed action if the sliding portion of the buttonhole presser device is not in the correct initial position, to move the same to the correct initial position.

4,242,977

ANCHOR GUIDE

George W. Long, 23241 Collins St., Woodland Hills, Calif. 91364

Filed Apr. 20, 1978, Ser. No. 898,148

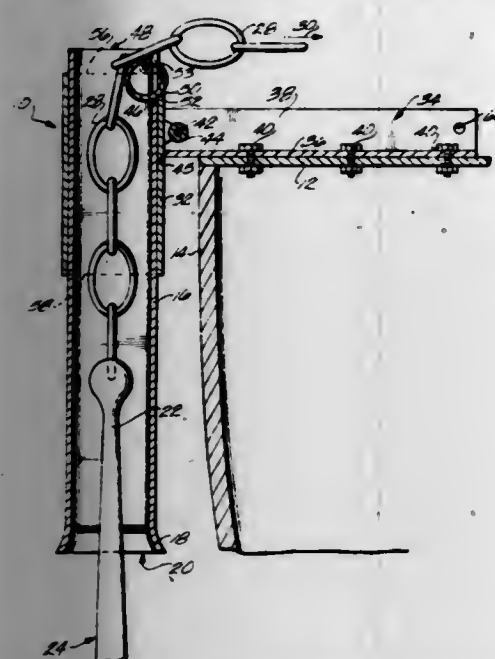
Int. Cl.³ B63B 21/22

U.S. Cl. 114-210

30 Claims

1. An anchor guide comprising:
an elongated tube for receiving the shank of an anchor

secured to a tension line passing through an entrance opening at one end of the tube;
a bracket for being mounted adjacent an edge of a boat deck;
an elongated collar disposed around the tube so that the tube is confined within the collar and is slidable lengthwise relative to the collar; and
means hinging the collar to the bracket for allowing the collar to pivot relative to the bracket about an axis transverse to the length of the collar, the length of the collar



being greater from the transverse pivot axis to a first end of the collar adjacent the entrance opening of the tube than from the transverse pivot axis to a second end of the collar opposite the entrance opening of the tube, the tube and collar pivoting together through an angle while the tube slides lengthwise relative to the collar so as to reduce the amount of force applied to the tension line to lift the anchor onboard the boat deck when the shank of the anchor is received in the tube.

4,242,978

HOOK ASSEMBLY FOR RETRIEVING THE CHAIN BRIDLE COMPONENT OF BROKEN MARINE VESSEL TOWING LINES

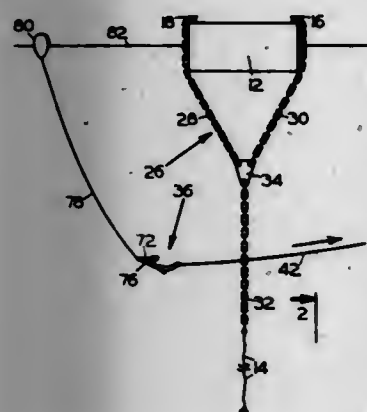
Orville A. Fuller, 995 Oakway Dr., Coos Bay, Oreg. 97420

Filed Jul. 17, 1978, Ser. No. 925,457

Int. Cl.³ B63B 21/04

U.S. Cl. 114—253

4 Claims



4. A hook assembly for retrieving the chain bridle component of a broken marine vessel towing line, the hook assembly comprising:

- a hook member having an insertion slot dimensioned to receive flatwise therein a link of the chain bridle component of the towing line,
- a float member,
- a float tow line interconnecting the hook and float members and dimensioned to maintain the hook member a distance below the surface of the water predetermined to

intercept the vertically depending chain bridle, the float tow line including a pair of bridle lines connected to the hook member for orienting the insertion slot of the hook member in chain link receiving position, and

- a hook towing line connected at one end to the hook member and arranged for connection at its opposite end to a towing vessel for moving the hook member for intercepting and engaging the chain bridle component of the vessel towing line.

4,242,979

SCREW PROPELLER WITH NO SHAFT BOSS AND SHIP THRUSTER USING SUCH SCREW PROPELLER

Kiyoshi Shima, 1-10-17 Tsujido-Shinmachi, Fujisawa-shi, Kanagawa-ken, Japan

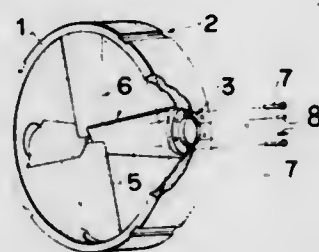
Filed Oct. 27, 1978, Ser. No. 955,324

Claims priority, application Japan, Nov. 9, 1977, 52-134332; Nov. 30, 1977, 52-160643[U]

Int. Cl.³ B63H 1/14, 5/06

U.S. Cl. 440—38

4 Claims



1. A ship thruster device comprising a rotatable cylinder disposed in a suction and exhaust hole in the hull of a ship, a plurality of propeller blades are removably secured to said cylinder and are inclined a predetermined angle from the vertical plane to the center axis of said cylinder, and said blades extending radially from the inner periphery of said cylinder to a point close to the center thereof, said cylinder including a gear about its periphery connected to a motor through a power transmitting means; and said cylinder having a plurality of stepped holes, larger in diameter at its inner portion and smaller in diameter at its outer portion, for securely seating and retaining in place the proximal end portions of said propellers and for facilitating assembly and replacement of the propellers.

4,242,980

DISPLAYING MEASURING INSTRUMENT

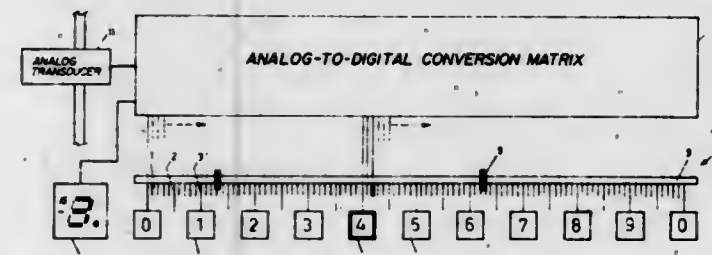
Thiam L. Go, The Hague, Netherlands, assignor to Friedrich Wilhelm Zube, Nidda, Fed. Rep. of Germany

Filed Feb. 10, 1978, Ser. No. 876,699

Int. Cl.³ G08B 5/36; G09F 9/00

U.S. Cl. 116—202

3 Claims



1. Displaying measuring instrument in which a measured value of a quantity is displayed by a selective change of illumination state of predetermined visual display elements arranged in a display panel, comprising a plurality of discrete display elements, each element having more than one illumination state and each element adapted to change its illumination state to illuminate from within said element upon energization, at least some of which display elements of the display panel being

arranged in a straight line, each of which said display elements arranged in a straight line representing a uniform, discrete measured quantity from the next nearest display element in the straight line, and means successively changing the illumination state of said display elements to correspond to a new measured value when said measured value is changed to said new measured value, wherein each of said visual display elements comprises a shape selected from one of a first shape and a second shape, wherein said first shape is distinguishably different from said second shape, and wherein the display elements arranged in a straight line, periodic ones of said display elements comprise said second shape, and all other of said display elements comprise said first shape, said visual display elements comprised of said second shape being further comprised of an alphanumeric indication arranged in a closed border around said alphanumeric indication, the alphanumeric indication and the closed border changing its illumination state upon energization, said measuring instrument further comprising at least one tab supported in close proximity to said straight line of visual display elements on said display panel, and moveable linearly along said straight line so as to be in close proximity to said visual display elements, each tab comprising a light-sensitive element adapted to provide a signal when the visual display element nearest to said tab is energized and is illuminated from within.

4,242,981

APPARATUS FOR REBUILDING CYLINDRICAL OBJECTS

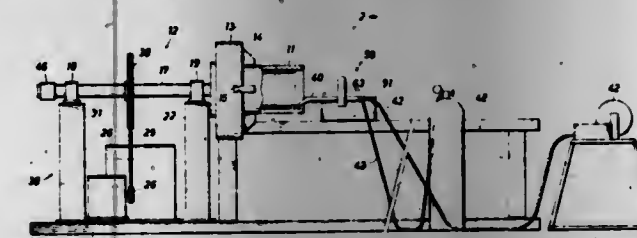
Philippe G. Bernard, and Jack E. Bunn, both of P.O. Box 10086, Station 1, Houma, La. 70361

Filed May 25, 1979, Ser. No. 42,570

Int. Cl.³ B05C 11/00

U.S. Cl. 118—47

9 Claims



1. Apparatus for depositing material on the interior surface of a cylindrical workpiece which comprises:
a mandrel having an axis of rotation;
means for supporting said workpiece coaxially with said mandrel for rotation therewith;
a wire-fed welding torch positionable on the interior of said workpiece adjacent to said interior surface of said workpiece;
means for moving said welding torch axially with respect to said workpiece, said axially-moving means including a carriage connected to said welding torch for movement therewith and electric means for moving said carriage axially with respect to said workpiece;
switch means for energizing said electric moving means; and means on said mandrel for operating said switch means to move said welding torch.

4,242,982

APPARATUS FOR METAL COATING OF POWDERS

Miles P. Drake, and Sarah Y. Hughes, both of Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 16, 1979, Ser. No. 39,625

Claims priority, application United Kingdom, May 25, 1978, 22454/78

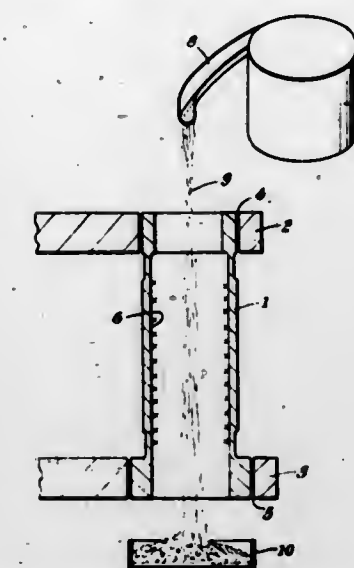
Int. Cl.³ B05D 7/00

U.S. Cl. 118—716

10 Claims

1. Apparatus for coating powdered or granular material with metal films in a vacuum chamber which comprises means

for creating a free flowing stream of the material to be coated falling through the central portion of the chamber, a body of refractory material having a vertical face positioned in the central part of the chamber such that the falling stream of material falls adjacent the vertical face of the body, the vertical face having its surface covered with a layer of the metal to be



deposited on the particles of material in the falling stream, and means disposed adjacent opposite ends of the body for heating the body to a temperature sufficient to raise the vapor pressure of the metal covering to cause evaporation of the metal while the stream of material falls past the face under vacuum conditions.

4,242,983

BIRD NESTING BOX FORMED OF A DISPOSABLE STORAGE CONTAINER

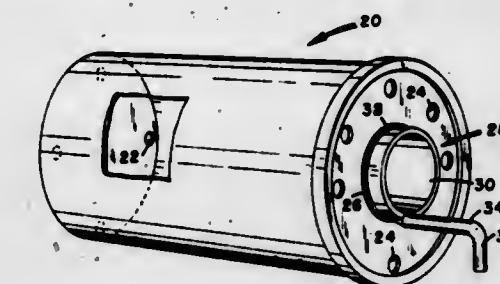
Michael R. P. Moore, 11724 Lovejoy, Silver Spring, Md. 20902

Division of Ser. No. 789,347, Apr. 21, 1977, Pat. No. 4,166,432. This application May 30, 1979, Ser. No. 43,904

Int. Cl.³ A01K 31/00

U.S. Cl. 119—23

8 Claims



1. A bird nesting box formed of a substantially cylindrical storage container for holding granular material, comprising:
a housing formed from the storage container and having an open end sealable by means of a snap-fit lid having pre-stressed portions which are removable from the lid;
a removable cover disposed over the open end of the housing, the removable cover being formed from the snap-fit lid, the cover having an access opening formed therein on removal of said pre-stressed portions, the access opening having ridgeless perimetric surfaces formed about the periphery thereof;
a hollow channel member disposed in the access opening and secured therein, the hollow channel member having ridges extending from the exterior surface thereof, the ridges cooperating with the ridgeless perimetric surfaces formed about the periphery of the access opening to secure the channel member therewithin; and
a perch member formed on the hollow channel member and extending outwardly of the container therefrom.

4,242,984

COMBINATION CONTAINER AND FEEDER

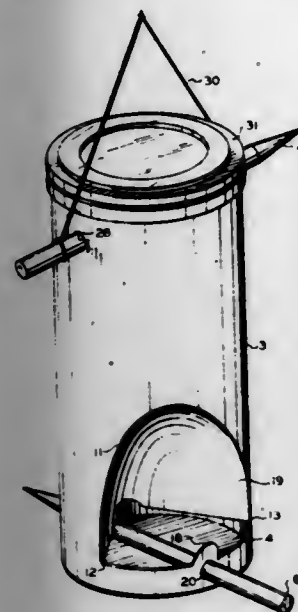
Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 10, 1978, Ser. No. 904,663

Int. Cl.³ A01K 39/00

U.S. Cl. 119—52 R

24 Claims



1. A combination container and feeder comprising:
- a tubular side wall having a top end and a bottom end and a generally circumferentially extending first break line adjacent to and spaced from said bottom end and extending partially around said side wall and having first and second ends, said side wall having at least one generally arcuate scoreline extending from said first end toward said top end and then to said second end, said first break line and said at least one scoreline defining an invertible panel therebetween;
 - a bottom member secured to said bottom end and forming a container bottom; and
 - a top member cooperating with said side wall at said top end and forming a container top.

4,242,985

ANIMAL ACTUATED FEEDER

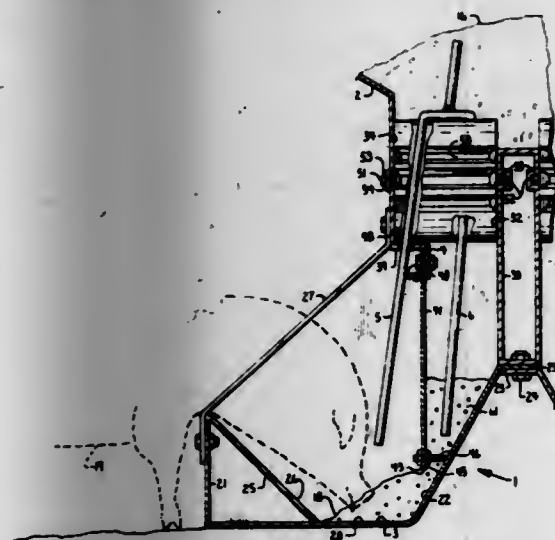
William D. Freeborn, Smith Center, Kans., assignor to Osborne Industries, Inc., Osborne, Kans.

Filed Apr. 23, 1979, Ser. No. 32,177

Int. Cl.³ A01K 5/00

U.S. Cl. 119—54

8 Claims



1. A demand-type animal feeder comprising:
- (a) an animal feeding station;
 - (b) storing means for storage of feed; said storing means comprising an enclosed hopper positioned above said animal feeding station;

- (c) conveying means for transferring said feed from said storage means to said feeding station; said conveying means comprising a chute attached to and communicating with a lower terminus of said hopper and terminating above said animal feeding station;
- (d) demand means normally blocking transfer of said feed by said conveying means and being adapted to be operatively actuated by work of an animal to allow transfer of said feed by said conveying means; whereby said animal can selectively demand additional feed by actuating said demand means, thereby allowing additional feed to transfer from said storing means to said feeding station; said demand means comprising a rotatable cylinder and an actuator bar; said cylinder substantially forming a block in said chute and having pockets on the surface thereof suitable for holding said feed; said cylinder, being rotatably mounted about the axis thereof, such that said pockets fill with said feed from said hopper when moving upwardly and deposit said feed below said chute block when moving downwardly; said actuator bar depends from said cylinder into said feeding station, such that side to side movement of said actuator bar rotates said cylinder, thereby depositing additional feed in said chute; and
- (e) dampening means for resisting actuation of said demand means by said animal in proportion to increases in the accumulation of said feed in said feeding station, whereby as the accumulation of said feed in said feeding station increases, the work of said animal to demand additional food and actuate said demand means becomes substantially greater.

4,242,986

INDEPENDENT CRYOGENIC FLUID VAPORIZATION INSTALLATION

Ermanno Bo, Ternay, France, assignor to B.B.M. S.A., Feyzin, France

PCT No. PCT/FR78/00010 8 371 Date Mar. 13, 1979, 8 102(e)

Date Mar. 13, 1980, PCT Pub. No. WO 79/00056, PCT Pub.

Date Feb. 8, 1979

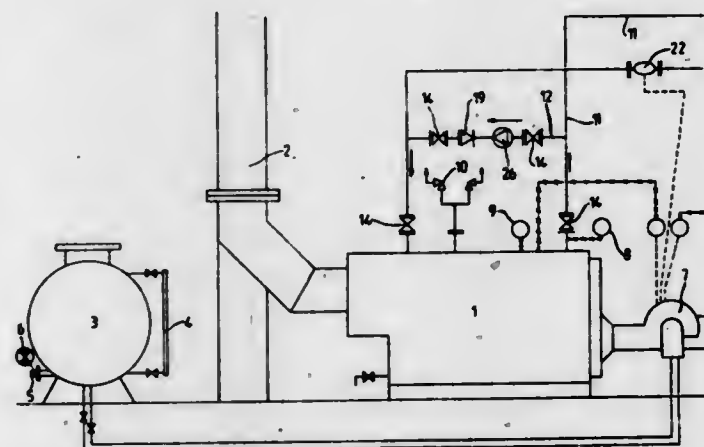
This PCT application filed Mar. 13, 1979, Ser. No. 23,194

Claims priority, application France, Jul. 22, 1977, 77 23352

Int. Cl.³ F22B 1/02

U.S. Cl. 122—33

18 Claims



1. A self-contained apparatus for heating a cryogenic fluid, said apparatus comprising:
- (a) a container adapted to receive heating water for heating said cryogenic fluid;
 - (b) first heating means within said container for heating said heating water;
 - (c) second heating means for heating said heating water outside of said container; and
 - (d) recycle means for recycling said heating water from said container and either into said second heating means or back into said container, said recycle means comprising at least one perforated rack adapted to drain said heating water from said container; and means for directing said heating water from said at least one perforated rack either into said second heating means or back into said container.

4,242,987

CONNECTING ARRANGEMENT FOR A HEATING BOILER

Hans Vlesmann, Im Hain, 3559 Battenberg Eder, Fed. Rep. of Germany

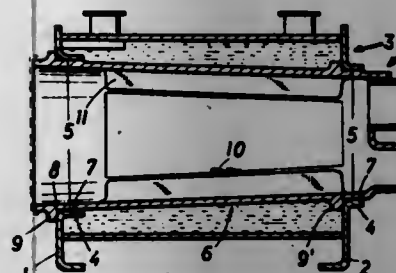
Filed Jul. 10, 1978, Ser. No. 923,200

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1977, 2731357; Dec. 27, 1977, 2758296

Int. Cl.³ F22B 9/00

U.S. Cl. 122—44 A

13 Claims



1. A connecting arrangement for a heating boiler of the type having a sheet-metal housing adapted for containing water and having at least front and rear sheet metal walls opposed to each other, comprising:
- a first opening in said front wall;
 - a first sheet metal collar integral with said front wall surrounding said first opening;
 - a second opening in said rear wall, aligned with said first opening;
 - a second sheet metal collar integral with said rear wall surrounding said second opening;
 - an installation casting adapted for a combustion chamber and fuel gas ducts;
 - first and second spaced apart seating faces on said installation casting;
 - said first seating face being a first press fit in said first sheet metal collar;
 - said second seating face being a second press fit in said second sheet metal collar; and
 - first and second ends of said installation casting extending outward a substantial distance beyond said front and rear sheet metal walls respectively.

4,242,988

METHOD AND DEVICE FOR TRANSFERRING CONDENSATES FROM A LOW PRESSURE NETWORK INTO A HIGH PRESSURE NETWORK IN A SYSTEM OF GENERATION, DISTRIBUTION AND UTILIZATION OF CONDENSABLE VAPOR

Pierre E. Regamey, 35, Le Calabert, 69130 Ecully, France Division of Ser. No. 741,339, Nov. 12, 1976, Pat. No. 4,177,767.

This application Jan. 22, 1979, Ser. No. 5,374

Claims priority, application France, Nov. 13, 1975, 75 34705; Sep. 13, 1976, 76 27510; Sep. 13, 1976, 76 27511

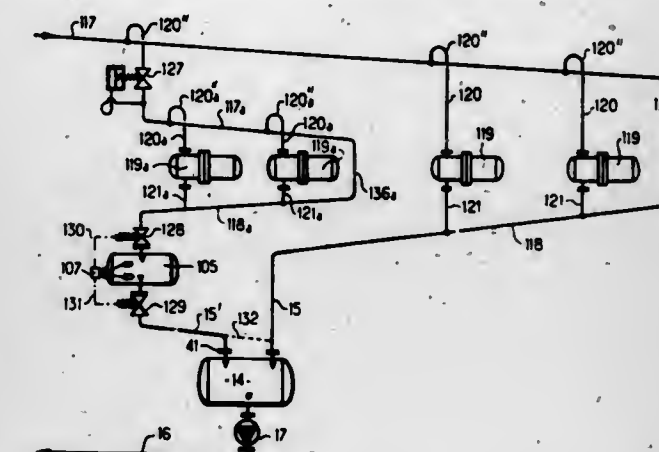
Int. Cl.³ F22D 5/30

U.S. Cl. 122—458

3 Claims

1. In a method for the discharge and recovery of condensates in a system of production and distribution of condensable vapor in a closed circuit at approximately constant pressure and temperature, in which the system includes at least one evaporating boiler and serving at least two systems of stations utilizing vapor at a high-pressure and a low-pressure, respectively, the said method including the steps of vapor feeding the said low-pressure system of stations by expanding part of the vapor feeding the said high-pressure system of stations, and recovering at least part of the condensates discharged from each system of stations by directing a substantially dry and at least moistly natural gravitational return-flow to an individual storage, collecting and accumulating same at least temporarily therein; reintroducing at least the condensates from the storage of the said high-pressure system of stations into the boiler with automatic control of the rate of outflow of the condensates

proceeding from the said storage of the said low-pressure system of stations, said control being effected in particular by detecting the instant amount of condensates present in the said low pressure system of stations and interlocking floating on-off type control means in follow-up relationship with the detected instant amount of condensates present in the said storage of the said low-pressure system of stations; automatically controlling the rate of inflow of the condensates into the said storage of the said low-pressure system of stations by measuring the instant amount of condensates in the said storage of the said low-pressure system and interlocking floating on-off type control means in follow-up relationship with the measured instant amount of



condensates in the said storage of the said low-pressure system; controlling the rates of inflow and outflow, respectively, in mutually opposite relationship stopping said inflow when the said outflow is taking place and vice versa; isolating the said storage of the low-pressure system from the said low-pressure system by stopping the inflow of condensates proceeding from said low pressure systems, then, equalizing the respective pressures in the two storages of the two systems of stations by effecting communication between said storages and discharging the condensates from the said storage of the low-pressure system gravitationally into the said storage of the high-pressure system.

4,242,989

BOILER LEVEL CONTROL SYSTEM

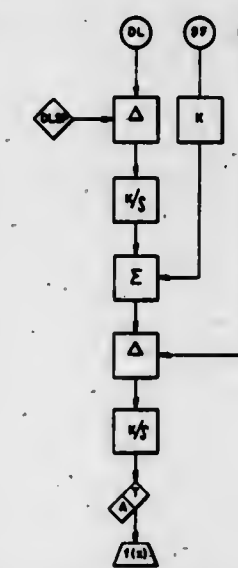
Harvey H. Chamberlain, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.

Filed May 14, 1979, Ser. No. 38,658

Int. Cl.³ F22D 5/26

U.S. Cl. 122—451 R

10 Claims



1. A boiler drum water level control system comprising: a feedwater control valve upstream from the boiler drum water inlet;

a valve controller for controlling the position of the feedwater control valve; and,
a control circuit for generating a valve control signal based on the difference between drum level and drum level set point modified by the rate of change of the difference between steam flow and water flow.

4,242,990

SPARK IGNITED INTERNAL COMBUSTION ENGINE
Dieter Scherenberg, and Walter Benedikt, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

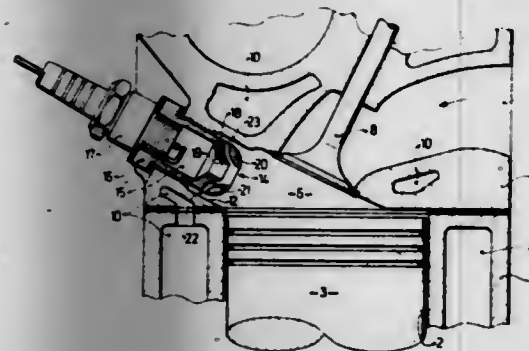
Filed Sep. 27, 1978, Ser. No. 946,462

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746596

Int. Cl.³ F02B 15/02, 23/00

U.S. Cl. 123—263

10 Claims



1. A spark ignited internal combustion engine which has one main combustion chamber per cylinder and one ignition chamber which communicates with the main combustion chamber via an excess flow channel into which ignition chamber a spark plug having a central electrode is inserted, further wherein an orifice-like body having an exterior wall and means defining an opening to receive the spark plug, said body including said ignition chamber and said ignition chamber terminating in a flame ejector means which projects into said main combustion chamber through which the mixture located in said main combustion chamber which radially surrounds said body is induced upon the exit of the jet of flame through said flame ejector means out of said ignition chamber via induction openings in said exterior wall.

4,242,991

METHOD AND APPARATUS FOR ADJUSTING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE
Dieter Scherenberg, Stuttgart, and Valerio Bianchi, Hochdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 16, 1978, Ser. No. 916,414

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1977, 2727804

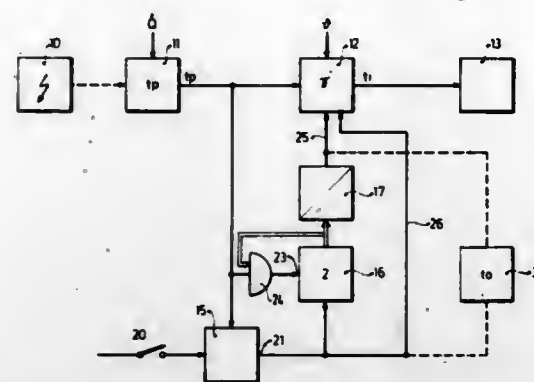
Int. Cl.³ F02B 3/00

U.S. Cl. 123—326

9 Claims

1. An apparatus for supplying fuel to an internal combustion engine, comprising:
fuel injection valves disposed in the intake section of the internal combustion engine;
a pulse generator for generating pulses of variable length, the length depending at least on engine speed and air flow rate; and
a counter for counting engine speed-synchronous pulses,

said counter having its output connected to an input of said pulse generator for increasing fuel supply for a limited



time and being further responsive to a signal initiated subsequent to engine braking.

4,242,992

INTERNAL COMBUSTION ENGINE WITH FUEL INJECTORS

Yoshihisa Kawamura, Fujisawa, and Masaki Saito, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

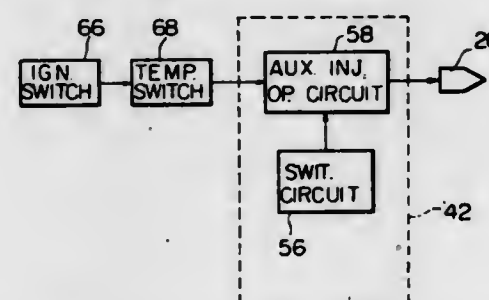
Filed Oct. 6, 1978, Ser. No. 949,060

Claims priority, application Japan, Oct. 7, 1977, 52-120016

Int. Cl.³ F02B 3/00

U.S. Cl. 123—491

6 Claims



1. An internal combustion engine having cylinders and an intake passageway through which air is supplied to the cylinders, comprising:
a main fuel injector;
means for operating said main fuel injector so as to inject fuel into the intake passageway in a variable amount according to the engine operating condition;
an auxiliary fuel injector;
means for operating said auxiliary fuel injector so as to inject fuel into the intake passageway in a constant amount when activated irrespective of the engine operating condition;
sensing means for sensing an engine operating parameter substantially representing the amount of intake air and for producing a signal in response to said parameter;
control means, responsive to said signal, said control means including said means for operating said main fuel injector and said means for operating said auxiliary fuel injector, said control means also including additional means for operating both said main and auxiliary fuel injectors until the magnitude of said parameter decreases to reach a first predetermined value below which value said auxiliary fuel injector is stopped and for operating only said main fuel injector until the magnitude of said parameter increases to reach a second predetermined value in excess of which value both said main fuel injector and said auxiliary fuel injector operate, the amount of intake air at the first predetermined value being smaller than that at the second predetermined value; and
means for starting a cold engine, which cold engine starting means includes an ignition switch having an "engine start-

ing" position at which an engine starting motor of the engine is operated to rotate and an engine coolant temperature switch which is operatively connected between said ignition switch and said auxiliary fuel injector operating means, said temperature switch being put into its "ON" position when the engine coolant temperature is below a predetermined level, said auxiliary fuel injector operating means including means for operating said auxiliary fuel injector when said ignition switch is in its "engine starting" position and said engine coolant temperature switch is in the "ON" position.

4,242,993

2-CYCLE ENGINE OF AN ACTIVE THERMOATMOSPHERE COMBUSTION

Siguru Onishi, Kanazawa, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

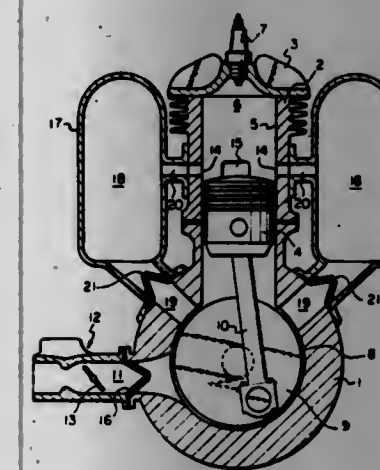
Filed Jan. 29, 1979, Ser. No. 7,177

Claims priority, application Japan, Feb. 9, 1978, 53/01294

Int. Cl.³ F02B 33/04, 75/20

U.S. Cl. 123—59 B

10 Claims



1. A 2-cycle engine comprising:
an engine body having a cylinder bore and a crank room therein;
a piston reciprocally movable in said cylinder bore, said piston and said cylinder bore defining a combustion chamber;
an intake passage having mixture forming means therein for introducing a fresh combustible mixture into said crank room;
transfer passage means communicating said crank room with an inlet port opening into said combustion chamber;
an exhaust passage having an exhaust port opening into said combustion chamber for discharging exhaust gas into the atmosphere;
accumulation means arranged in said transfer passage and having a volume which is larger than the stroke volume of said piston, and;
check means arranged in said transfer passage between said crank room and said accumulation means for only allowing inflow of the fresh combustible mixture from said crank room to said accumulation means.

4,242,994

IDLE SPEED CONTROL SYSTEM FOR VEHICLE ENGINES

William A. Keely, Fremont, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 5, 1977, Ser. No. 857,636

Int. Cl.³ F02M 7/00; F02B 33/00

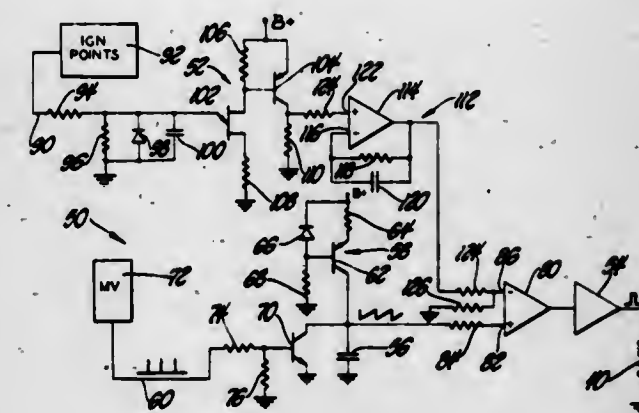
U.S. Cl. 123—339

3 Claims

1. An idle speed control system for use with an internal combustion engine of the type including a primary air passage having throttle means located therein for controlling the amount of air flowing through the primary air passage into the internal combustion engine, an auxiliary air supply means,

including a bypass passage, for supplying auxiliary air to the engine bypassing the valve means, an air control valve connected to control the auxiliary air supply means for controlling the amount of auxiliary air supplied to the engine, the idle speed control system comprising:

speed means for generating a signal indicative of engine speed;
duty cycle means connected to said valve including pulse generator means for generating a constant frequency electrical signal for controlling the amount of auxiliary air supplied and for maintaining the speed of the engine during idle conditions at a set value, said electrical signals having a fixed pulse width to operate said valve at a predetermined duty cycle at said set value of idle speed, said duty cycle means further including:



recurrent signal generating means for generating a repetitive signal having said substantially constant repetition rate; and

pulse width generator means responsive to said repetitive signal and said speed signal for modulating said pulse width signal to operate said valve during the time the magnitude of said repetitive signal exceeds the magnitude of said speed signal, said pulse width generator means further including idle speed range means for prohibiting the communication of said pulse width signal to said valve during intervals when the engine speed exceeds that value of speed corresponding to the upper limit of engine idling speed and where said idle speed range means includes means for adjusting the peak value of said repetitive signal equal to the value of said speed signal when the engine speed is at the upper limit of engine idling speed.

4,242,995

PERFORMANCE OPTIMIZING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Herbert Schramm, Stuttgart, and Bert Warst, Mühlhausen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 925,990

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739508

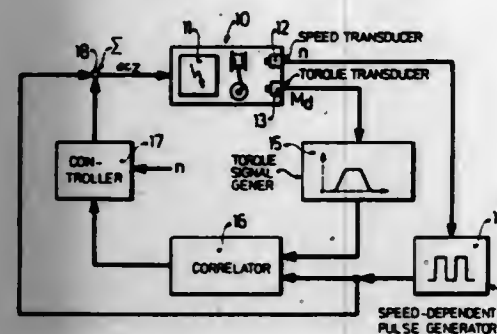
Int. Cl.³ F02P 5/04

U.S. Cl. 123—425

10 Claims

1. Performance optimizing control system for an internal combustion engine (10) having
means (13) sensing an operating parameter (Md) of the engine and providing a parameter signal;
speed transducer means (12) providing a speed-dependent signal;
regulating means (11, 18) regulating the timing of a periodic event in the engine which controls performance thereof;
oscillating command signal generating means (14) generating a command signal which oscillates about a commanded datum;
correlator means (16) connected to said command signal and to said parameter signal and providing an error signal;

and control means (17) controlled by said error signal and providing a control signal to said regulating means to regulate the timing of said periodic event as a function of said error signal and to form, with said engine (10), the operating parameter sensing means (13) and the correlator (16), a closed control loop, the control means operating with a controlled regulating speed to affect the control regulation of said loop;



and wherein, in accordance with the invention,
(a) the command signal generating means is connected to and controlled by the speed-dependent signal to increase the frequency of oscillation with increase in speed and
(b) the control means (17) are connected to and controlled by said speed-dependent signal to render the controlled regulating speed dependent on the speed of the engine (10).

4,242,996

IGNITION TIMING CONTROL DEVICE FOR A TURBO-CHARGED INTERNAL COMBUSTION ENGINE
Rolf Urbansky, Adenbüttel, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

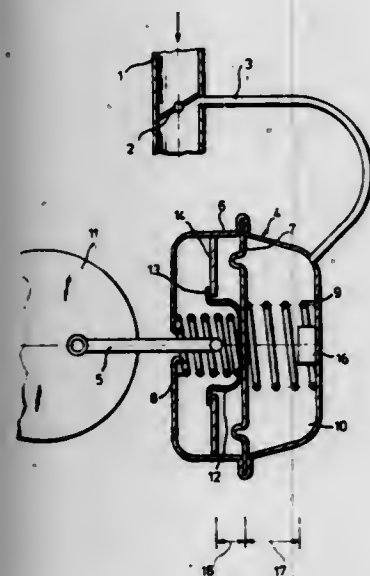
Filed Mar. 30, 1979, Ser. No. 25,750

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816404

Int. Cl.³ F02P 5/04

U.S. Cl. 123—407

1 Claim



1. In a turbo-charged internal combustion engine having an ignition distributor, a throttle valve pivotally contained within the intake manifold of the engine, and an adjustment device acting on the distributor for advancing or retarding the ignition timing, the improvement comprising control means for adjusting the ignition timing as a function of the intake manifold pressure, said control means including a pressure housing, a yieldable wall in said housing forming a pressure chamber on one side thereof, a pressure line connected between said pressure chamber and said intake manifold and opening into said manifold at a point swept by the throttle, wherein changes in manifold pressure are transmitted through said line to said pressure chamber to act on said wall, at least a portion of said

wall movable from a neutral position to a retarding position in response to increased pressure in said pressure chamber and to a timing advance position in response to negative pressures in said intake manifold and thereby said pressure chamber, coupling means between said wall and said adjustment device for retarding the ignition timing in response to displacement of said wall from said neutral position toward said retarding position and for advancing the ignition timing in response to displacement of said wall toward said advancing position, biasing means acting on said wall for permitting said wall to be moved toward said retarding position only when the pressure in the intake manifold, and thereby the pressure chamber, exceeds a predetermined minimum corresponding to the onset of engine knocking, wherein said biasing means comprises a first spring, and said housing includes stop means arranged so that said first spring engages the stop means when said wall is in the neutral position or the timing advance position, and said first spring engages said wall to act in opposition to the movement of said wall only when said wall is moved from said neutral position toward the retarding position, and further comprising a second spring acting on said wall in opposition to movement of said wall toward said timing advance position.

4,242,997

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Tokio Kohama, Nishio; Takeaki Matsui; Akira Nishimatsu, both of Aichi; Tokuta Inoue, Mishima; Kiyohiko Oishi, Susono, and Kiyoshi Kobashi, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

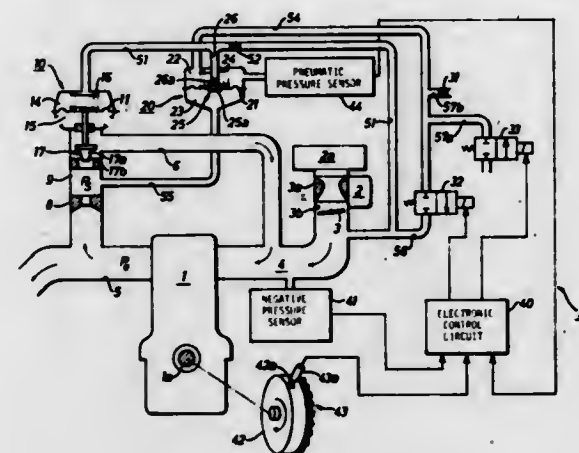
Filed Jul. 31, 1979, Ser. No. 62,556

Claims priority, application Japan, Aug. 2, 1978, 53-94418

Int. Cl.³ F02M 25/06

U.S. Cl. 123—568

5 Claims



1. An exhaust gas recirculation system for an internal combustion engine having an induction passage for conducting air-fuel mixture into a combustion chamber of said engine, an exhaust passage for discharging exhaust gases from the combustion chamber, and a recirculation passage leading said exhaust passage to said induction passage to recirculate exhaust gases into the combustion chamber of said engine there-through, said system comprising:

a pneumatically operated servomotor to be operated by negative pressure applied thereto from said induction passage;
flow control means disposed within said recirculation passage and associated with said servomotor for controlling the flow quantity of exhaust gases through said recirculation passage in accordance with changes of the negative pressure applied to said servomotor;
throttle means disposed within said recirculation passage upstream of said flow control means to form a space between said flow control means and said throttle means; pressure responsive means for modulating negative pressure

applied to said servomotor in response to pneumatic pressure applied thereto and pressure appearing in said space; first means for producing a first electric binary signal indicative of rotational speed of said engine;
second means for producing a second electric binary signal indicative of negative pressure in said induction passage;
third means for producing a first electric analog signal indicative of pneumatic pressure applied to said pressure responsive means;
a digital computer for repetitively calculating a value indicative of optimum pneumatic pressure to be applied to said pressure responsive means in accordance with the first and second binary signals, said computer being programmed to calculate the optimum value from a function describing a desired relationship among optimum pneumatic pressure, rotational speed of said engine and negative pressure in said induction passage;
fourth means for converting a third electric binary signal indicative of the calculated optimum value from said computer into a second electric analog signal;
fifth means for comparing a level of said first analog signal with first and second levels derived from said second analog signal to produce a first output signal therefrom when said first level is higher than the level of said first analog signal and to produce a second output signal therefrom when said second level is lower than the level of said first analog signal, said fifth means ceasing the output signals when the level of said first analog signal is between said first and second levels; and
first and second electrically operated valves to selectively apply negative pressure and the atmospheric pressure respectively from said induction passage and the exterior to said pressure responsive means when energized in response to one of said first and second output signals from said fifth means.

4,242,998

ENGINE EXHAUST GAS RECIRCULATION SYSTEM
Toshio Shiota, Urawa; Hiroyuki Nishimura, Kousoku, and Takashi Umamoto, Nitta, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

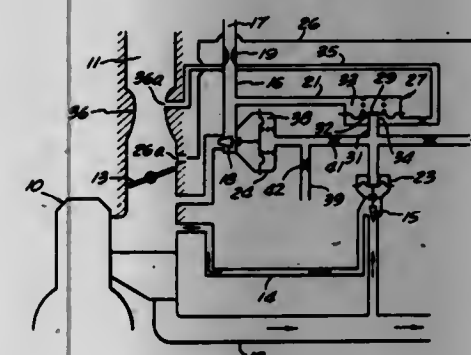
Filed Aug. 27, 1979, Ser. No. 70,025

Claims priority, application Japan, Sep. 6, 1978, 53-108541; Sep. 6, 1978, 53-108542

Int. Cl.³ F02B 47/08; F02M 25/06

U.S. Cl. 123—568

4 Claims



1. In an internal combustion engine having an intake passage for delivering an air-fuel mixture into the engine, a throttle valve in the intake passage, and an exhaust passage for carrying exhaust gases from the engine, the improvement comprising, in combination: a passageway connecting the exhaust passage to the intake passage downstream from the throttle valve for recirculating exhaust gases into said engine, a first control valve in said passageway, an air conduit connecting said intake passage downstream from said throttle valve to atmosphere, a second control valve in said air conduit, each of said control valves having a vacuum responsive actuator, said air conduit having a restriction located between its opening to atmosphere and said second control valve, an air control line connected to said air conduit downstream with respect to said restriction, a

vacuum line connected to said intake passage upstream from said throttle valve, a regulating valve responsive to differential pressure between vacuum pressure in said vacuum line and vacuum pressure in said air control line, a control pipe system connecting said vacuum responsive actuators to said intake passage near said throttle valve, means whereby said regulating valve acts through said control pipe system to act upon vacuum responsive actuators for said control valves.

4,242,999

SELF-REGULATING HEATER

Alfred Hoser, Fassenstrasse 4, Eltensheim, Fed. Rep. of Germany

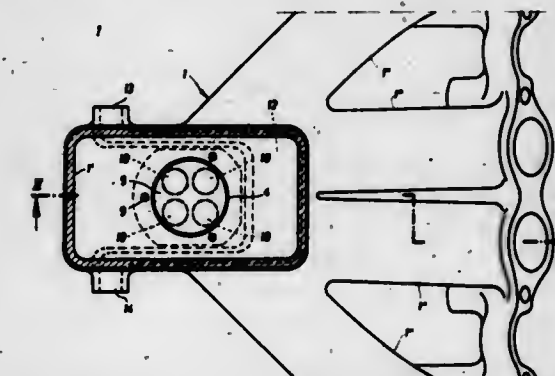
Filed Mar. 7, 1977, Ser. No. 774,988

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629610

Int. Cl.³ F02M 31/00

U.S. Cl. 123—548

6 Claims



1. A fuel entry system of an internal combustion engine comprising a carburetor having one barrel through which fuel and air are adapted to pass, an intake manifold connected to said carburetor and having a wall at right angle to said barrel, a stove disposed in said wall and offset with respect to said barrel, said stove comprising a self-regulating heater element having a steeply sloped positive temperature coefficient of resistivity, means to electrically connect the element to power supply so that shortly after energization thereof the element is maintained at an essentially constant preselected temperature whereby fuel droplets coming in contact with the stove will be vaporized to enhance start-up of the internal combustion engine, said stove having a top plate in heat transfer relationship with said element, said top plate being provided with a multiplicity of heat-conducting rods on the side opposite to said element and projecting into said intake manifold, a baffle within said intake manifold for guiding the fuel-air stream passing through the barrel towards said stove, said baffle being mounted for rotation within said intake manifold, and means for rotating said baffle in dependence on engine load such that with increasing load said baffle is swung away from said stove.

4,243,000

INDUCTION SYSTEM OF MULTI-CYLINDER ENGINE
Minoru Yamada, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 1, 1978, Ser. No. 965,485

Claims priority, application Japan, Mar. 15, 1978, 53-30060

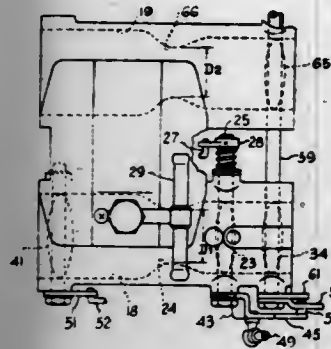
Int. Cl.³ F02M 13/06

U.S. Cl. 123—442

11 Claims

1. In an internal combustion engine having at least two variable volume chambers in which combustion occurs, a first charge forming device, a second charge forming device, first and second main induction passages, each connecting a respective one of said charge forming devices with a respective one of said chambers only for delivering a charge from the charge forming device to the respective chamber, an auxiliary induction passage connecting said first charge forming device with each of said chambers for delivering a charge from said first

charge forming device to each of said chambers, said first charge forming device having supply means to supply a charge adapted to serve a specific engine operating condition for each of said chambers, said second charge forming device being devoid of such a specific supply means, and valve means for controlling the rate of communication of said charge forming devices with said chambers through the respective induction passages, said valve means including a pair of throttle valves,



each of said throttle valves controlling the flow through a respective one of said main induction passages, the improvement comprising the throttle valve in said second main induction passage and said second main induction passage having adjacent surfaces juxtaposed to each other when said throttle valve is in its closed position and means providing a seal between said surfaces when said throttle valve in said second main induction passage is closed to effectively preclude any leakage past said throttle valve.

4,243,001

INDUCTION SYSTEM FOR MULTI-CYLINDER ENGINE
Minoru Yamada, Iwata, Japan, assignor to Yamaha Hatsukoki Kabushiki Kaisha, Iwata, Japan

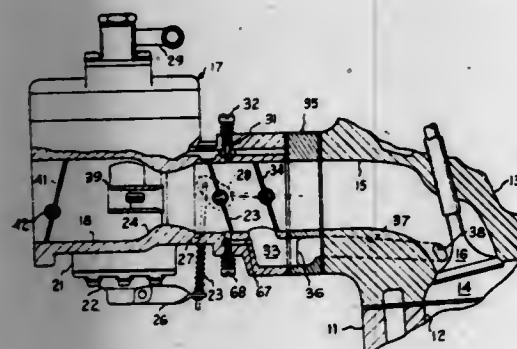
Filed Feb. 9, 1979, Ser. No. 10,930

Claims priority, application Japan, Feb. 10, 1978, 53/14523

Int. Cl.³ F02N 17/00

U.S. Cl. 123—583

10 Claims



1. In an internal combustion engine having a first variable volume chamber in which combustion occurs, a second variable volume chamber in which combustion occurs, a first carburetor barrel, a first main intake passage interconnecting said first carburetor barrel with said first variable volume chamber and not with said second variable volume chamber, a second carburetor barrel, a second main intake passage interconnecting said second carburetor barrel with said second variable volume chamber and not with said first variable volume chamber, said first carburetor barrel being provided with a specific system for discharging a mixture particularly adapted for a certain condition of engine operation, said second carburetor barrel being devoid of such a specific system, and induction means for communicating said first carburetor barrel with said second variable volume chamber for supplying the particular mixture to said second variable volume chamber, said specific system being effective to increase the flow resistance through said first carburetor barrel from that which said first carburetor barrel would have if said first carburetor barrel

was devoid of said specific system, the improvement comprising means providing a flow resistance in said second carburetor barrel equal to the flow resistance generated by said specific system in said first carburetor barrel for equalizing the flow through said first and said second main induction passages when the engine is operating at a condition other than the particular condition served by said specific system to provide uniform mixture to said first and said second chambers.

4,243,002

FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Erwin Freyer, Neckarsulm; Johannes Steinwart, Obersulm-Willsbach, and Peter Will, Bad Rappenau, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm/Württ., Fed. Rep. of Germany

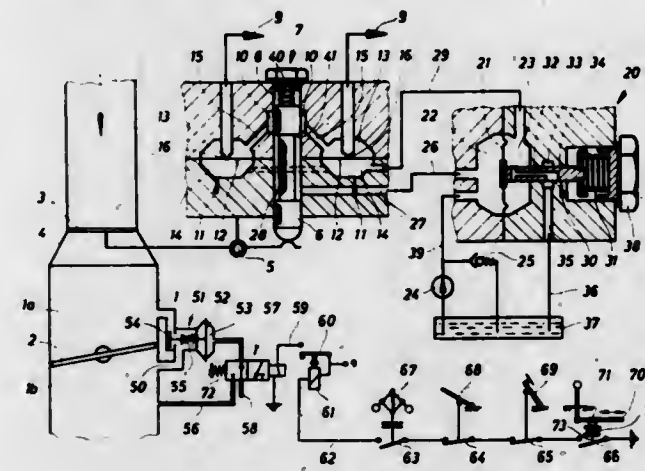
Filed Jan. 15, 1978, Ser. No. 915,676

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730386

Int. Cl.³ F02M 39/00; F02D 31/00; F16D 23/00

U.S. Cl. 123—325

7 Claims



1. A fuel injection system for an internal combustion engine with continuous fuel injection into a suction pipe for use with a vehicle having a clutch and gear box having at least one gear, said system comprising:

- a suction pipe;
- a throttle valve located in the suction pipe;
- a member upstream of the throttle valve, said member being actuatable by air flowing through the suction pipe so as to dose fuel to the engine;
- a duct which bypasses the throttle valve;
- a duct valve located in said duct capable of closing off said duct;
- a control means for controlling the operation of the duct valve, with said means including: a first switch and means for actuating said first switch when the clutch is engaged; a second switch and means for actuating said second switch when a gear of the gear box is engaged; a third switch and means for actuating said third switch when the throttle valve is closed; a fourth switch and means for actuating said fourth switch when the engine speed is above the idle speed; and means for actuating the duct valve to close off the duct when the throttle valve is closed, the engine speed is above the idling speed, the clutch is engaged and a gear of the gear box is engaged.

4,243,003

FUEL INJECTION SYSTEM

Heinrich Knapp, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

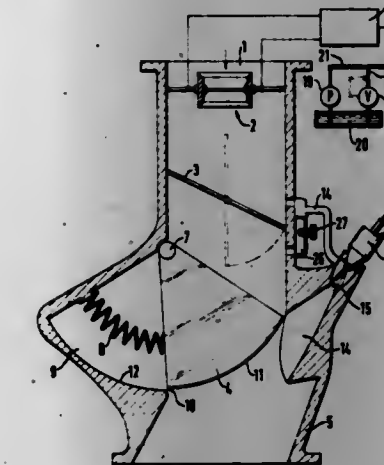
Filed May 17, 1979, Ser. No. 39,915

Claims priority, application Fed. Rep. of Germany, May 27, 1978, 2823275

Int. Cl.³ F02M 39/00

U.S. Cl. 123—442

7 Claims



1. In a fuel injection system for mixture compressing, spark-ignited internal combustion engines, including: an air intake manifold defining an air flow passage; an arbitrarily operable throttle element mounted within the air intake manifold; a conditioning member mounted within the air intake manifold in series with the arbitrarily operable throttle element; and resetting force applying means engageable with the conditioning member, said conditioning member being mounted within the air intake manifold so that it can be pivoted by the air drawn into the intake manifold against the resetting force applied to the conditioning member by the resetting force applying means, the improvement comprising:

- air bypass means connected to the air flow passage of the intake manifold, said air bypass means extending from a region of the air flow passage upstream of the arbitrarily operable throttle element to a region of the air flow passage controlled by the conditioning member;
- means within said air bypass means for producing, in operative cooperation with the conditioning member, a constant air flow in the air bypass means; and
- a fuel injection valve mounted to inject fuel into the air bypass means, wherein a pressure drop is produced at the conditioning member when the engine is in operation so that the constant air flow in the air bypass means is maintained for all positions of the arbitrarily operable throttle element.

4,243,004

INJECTION PUMP WITH ELECTRONICALLY CONTROLLED FULL-LOAD STOP

Ernst Ritter, Stuttgart; Werner Faupel, Gerlingen; Karsten Hummel, Wendlingen, and Johannes Locher, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,308

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804038

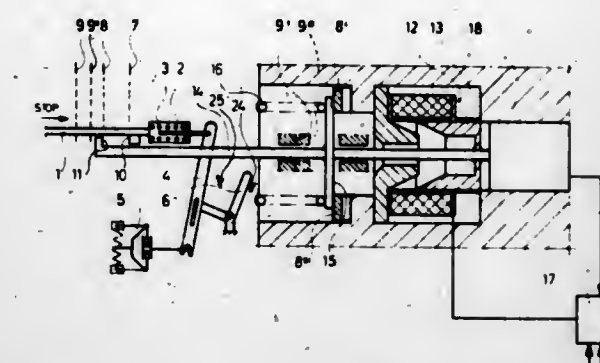
Int. Cl.³ F02D 1/04

U.S. Cl. 123—367

8 Claims

1. An injection pump for Diesel fuel injected internal combustion engines wherein the quantity of fuel injected is regulated by displacement of a regulator rod means, the stroke of said regulator rod means having a detent means and being de-limited by means of a full-load stop means, said full-load stop means being settable in accordance with operational values of said engine by electronic control means, further wherein said full-load stop means is coupled with an armature of an

electromagnet to provide for a predetermined stroke thereof and further means carried by said full-load stop means arranged to cooperate with prestressed resilient means capable of holding said full-load stop means in a terminal position to reduce full-load quantity of fuel injected.



4,243,005

IGNITION SYSTEM IN DUAL SPARK PLUG IGNITION ENGINE WITH EGR SYSTEM

Takashi Hisatomi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

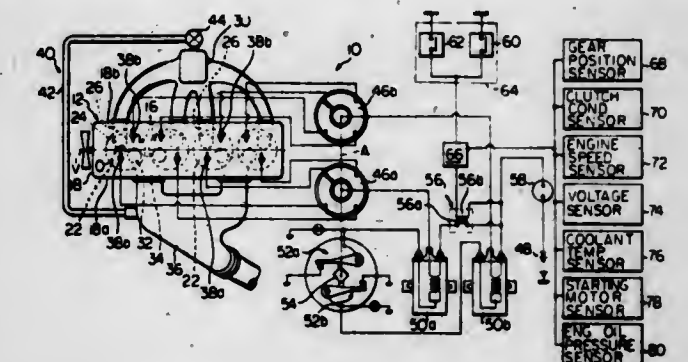
Filed Apr. 27, 1978, Ser. No. 900,574

Claims priority, application Japan, Apr. 29, 1977, 52-54794[U]

Int. Cl.³ F02P 15/02; F02B 35/00; F02N 17/08

U.S. Cl. 123—638

14 Claims



1. A four stroke internal combustion engine having a combustion chamber defined between a cylinder head and a piston, said engine having an exhaust and an intake and an electric source, said engine further including means for recirculating a portion of exhaust gases from the engine back to the engine intake, said engine including:

- first and second spark plugs disposed in the combustion chamber and operative to ignite an air-fuel mixture applied to said combustion chamber;
- first transforming means for transforming electric current from said electric source into a high voltage current, electrically connectable to said first spark plug for placing said first spark plug in an operative condition;
- second transforming means for transforming electric current from said electric source into a high voltage current, electrically connectable to said second spark plug for putting said second spark plug into an operative condition;
- first switching means, responsive to at least one engine operating parameter, for interrupting an electrical connection between said first transforming means and said electric source when said at least one engine operating parameter is at a predetermined value indicative of a high power output engine operating range; and
- second switching means, responsive to an engine operating parameter indicative of engine starting, for establishing an electrical connection between said first transforming means and said electric source, said second switching

means independent of the operation of said first switching means:

said first switching means comprises a relay switch electrically connected between said first transforming means and the electric source to interrupt the electrical connection therebetween when actuated, and
an intake vacuum responsive switch to be actuated to, in turn, actuate said relay switch when intake vacuum of the engine is below a predetermined level which is encountered at the high power output engine operating range, and said second switching means comprises:
an engine starting sensing switch to interrupt the electrical connection between said relay switch and said intake vacuum responsive switch when the engine operating parameter represents the engine starting.

4,243,006

ROTARY ENGINE WITH LATERAL PISTONS

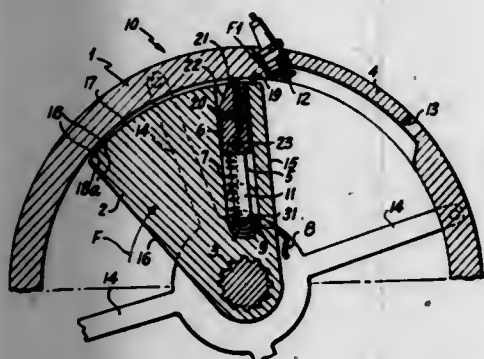
Pascual A. Quiroga, Córdoba 1080, 1 piso, 2000 Rosario, Santa Fe, Argentina

Filed Sep. 22, 1978, Ser. No. 944,973

Claims priority, application Argentina, Nov. 16, 1977, 270002
Int. Cl.³ F02B 53/00

U.S. Cl. 123-247

3 Claims



1. A rotary internal combustion engine comprising a rotor having a plurality of radial chambers and an output rotor shaft:
a housing having an intake and exhaust opening in the outer periphery of said housing forming an outer shell rotatably supporting said rotor shaft;
said housing having an irregularly shaped cavity around the periphery of said rotor;
a plurality of radially disposed vanes, each mounted in one of the chambers of said rotor for radial reciprocating movement relative to the axis of rotation of said rotor;
an ignition means in said housing for igniting an explosive charge of fuel and air in said chamber;
means for supplying an explosive charge of fuel and air under pressure to said chamber;
a plurality of corresponding pistons each connected to one of said vanes for reciprocating movement in said radial chambers responsive to said explosive charge under a compression condition in the chamber of fuel and air through the intake of said chamber in the presence of said ignition means;
cam means interconnected between said outer shell and said vanes to initially actuate the vanes and pistons radially outwardly upon rotation of the rotor to positively maintain the positioning of the outer ends of said pistons in close proximity to the peripheral surface of said irregularly shaped cavity; and
each of said vanes having a spring under tension biasing the vane against the cam means for actuating the vane outwardly, said tension spring responding immediately to the explosive force of the ignition charge which moves the piston inwardly.

4,243,007 SELECTIVE IGNITION TIMING

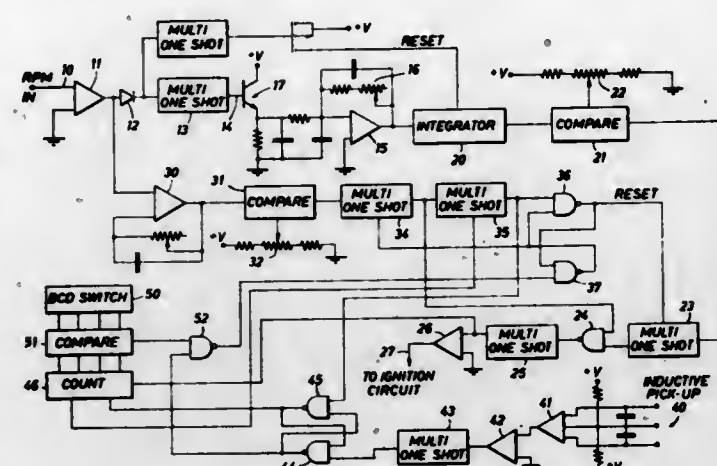
William M. Ehrhardt, and Earl J. Hanry, both of Houston, Tex.,
assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 26, 1979, Ser. No. 24,121

Int. Cl.³ F02P 5/04; G01L 23/22

U.S. Cl. 123-419

13 Claims



1. An ignition optimizing circuit for multiple cylinder internal combustion engines, said engines being equipped with an electronic ignition system including a switching amplifier that controls the switching of low voltage current in the ignition coil, said optimizing circuit comprising:

control means responsive to engine speed for supplying a control signal whose frequency equals the engine speed times the number of cylinders divided by two;
counting means for counting the cycles of said control signal and converting the count to a digital number;
reset means coupled to said counting means to reset said counting means once for each two revolutions of the engine;
memory and microprocessor means, said counting means being coupled to said memory and microprocessor means to cause said memory means to produce an output signal related to the desired ignition timing of each cylinder; and, multiplexing means coupled to said memory means and responsive to said output signal to produce a pulse for actuating the switching amplifier of the electronic ignition system.

12. An ignition circuit for use in determining the octane requirement of a selected cylinder of a multiple cylinder engine comprising:

a circuit means coupled to the engine for producing a plurality of ramp voltages whose slopes are related to the engine speed, said circuit producing a separate ramp voltage for firing each cylinder;
comparing means coupled to said circuit means for comparing the instantaneous value of said ramp voltage with a preset voltage to produce an ignition signal when said ramp and preset voltages are equal;
ignition means coupled to said comparing means and responsive to said ignition signal for firing all cylinders except said selected one;
counting means for counting the number of ignition signals produced and supplying an interrupting signal when the position of said selected cylinder in the firing order of said engine is reached, said counting means being reset once in each cycle of said firing order, said interrupting signal being used to inactivate the coupling between said comparing means and said ignition means; and,
delay circuit means for producing a delay signal, said delay circuit being coupled to said ignition means when the coupling between said comparing means and said ignition means is inactivated.

4,243,008 METHOD FOR CONTROLLING IGNITION TIMING OF INTERNAL COMBUSTION ENGINE

Norio Omori, Hideya Fujisawa, both of Kariya; Yutaka Kawashima, Okazaki; Masakazu Nishimura, Kariya; Hirosi Kawai, Toyohashi, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of Japan

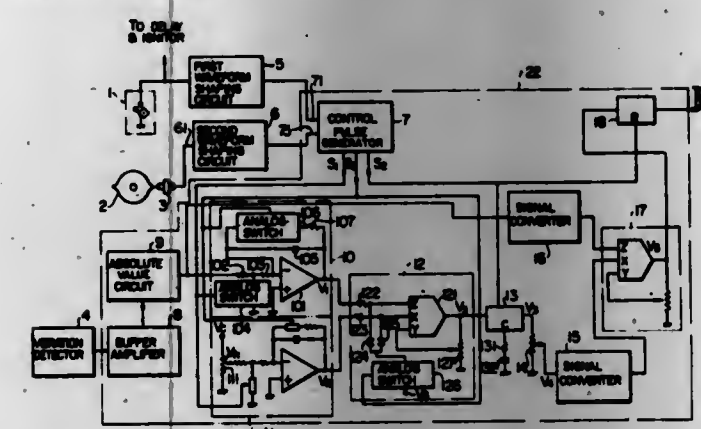
Filed Jan. 5, 1979, Ser. No. 1,208

Claims priority, application Japan, Feb. 1, 1978, 53/10319

Int. Cl.³ F02P 5/04

U.S. Cl. 123-425

4 Claims



1. A method for controlling ignition spark timing for an internal combustion engine having an output shaft rotated by a piston, the method comprising the steps of:
monitoring the magnitude of vibration of said engine by vibration responsive means coupled to said engine;
integrating said magnitude of vibration during a predetermined interval of rotation of said output shaft before arrival of a piston of said engine at the top dead center position;
integrating a predetermined magnitude during said predetermined interval of rotation of said output shaft;
dividing the output of said former integrating step by the output of said latter integrating step;
holding said division output of said former dividing step after an arrival of said piston to the top dead center position;
dividing said monitored magnitude of vibration by a holding output of said former holding step; and
holding said division output of said latter dividing step at the same time as said former holding step; and
controlling ignition spark timing supplied to said engine in response to a holding output of said latter holding step.

4,243,009

DETONATION CONTROL APPARATUS FOR OUTBOARD MOTOR

Richard E. Staerz, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Sep. 27, 1979, Ser. No. 79,425

Int. Cl.³ F02B 33/00; F02M 17/00

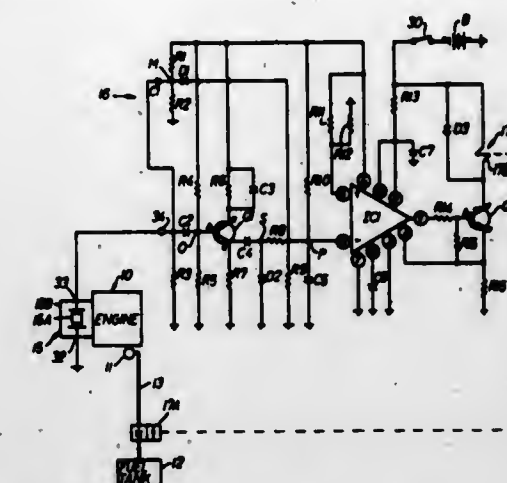
U.S. Cl. 123-435

5 Claims

1. Detonation control apparatus for an internal combustion engine which is supplied with a mixture of fuel and air comprising:

- (A) an electrically operated valve operable to regulate the proportion of fuel to air in the mixture supplied to said engine;
- (B) a transducer for sensing engine detonation and for providing an electrical signal having a value related to detonation magnitude;
- (C) electrical control means responsive to said signal for operating said valve to maintain the proportion of fuel to air in said mixture below a predetermined proportion when detonation is below a predetermined magnitude and to increase the proportion of fuel to air above said pre-

terminated proportion when detonation exceeds said predetermined magnitude; and
(D) power supply means for energizing said electrically operated valve and said electrical control means;



said control means being further responsive to decrease of signal magnitude of said signal below a predetermined value to increase the proportion of fuel to air above said predetermined proportion even if detonation is below said predetermined magnitude.

4,243,010

SUPERCHARGER APPARATUS WITH FIXED BAFFLE AIR-FUEL MIXTURE ROUTING BOX

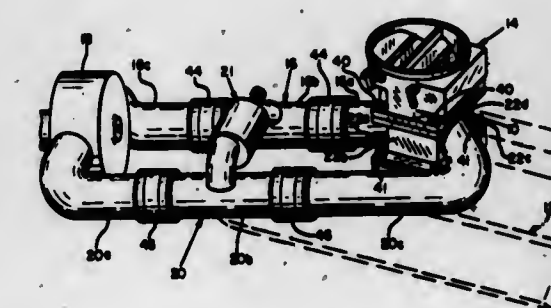
Robert A. Zopf, 4301 S.E. Fieldcrest, Milwaukie, Oreg. 97222

Filed Jan. 25, 1979, Ser. No. 6,367

Int. Cl.³ F02B 33/44

U.S. Cl. 123-599

6 Claims



1. An apparatus for directing an air-fuel mixture from a fuel mixture outlet port of a fuel induction device of an internal combustion engine to an inlet port of a supercharger, in which the mixture is pressurized, and the pressurized mixture from an outlet port of the supercharger to an intake inlet port of the intake manifold of the engine comprising:

an upright hollow air-fuel mixture routing box having an upper cover member, a lower base member, and first and second side members extending between said cover and base members;
said routing box also including an opening free internal fixed baffle member separating the interior of said routing box into first and second chambers, said baffle member extending between said cover and base members in a non-vertical plane;
said routing box defining a first opening through said cover member which communicates between the exterior of said routing box and said first chamber, a second opening through said base member which communicates between the exterior of said routing box and said second chamber, a third opening through said first side member which communicates between the exterior of said routing box and said first chamber and a fourth opening through said second side member which communicates between the exterior of said routing box and said second chamber;
said apparatus also including means for connecting the fuel

mixture outlet port to said first opening, means for connecting the second opening to the intake inlet port, means for connecting the third opening to the supercharger inlet port and means for connecting the supercharger outlet port to the fourth opening such that an air-fuel mixture from the fuel mixture outlet port of the fuel induction device enters said first chamber through the first opening in said cover plate, flows along an upper surface of said baffle member and exits said first chamber through the third opening in said first side member to the supercharger inlet port, and such that the pressurized air-fuel mixture from the supercharger outlet port enters said second chamber through the fourth opening in said second side member, flows along a lower surface of said baffle member and exits from said second chamber through the second opening in said base member to the intake inlet port of the engine intake manifold.

4,243,011

DUST SHROUD FOR PIPE-CUTTING PORTABLE CIRCULAR SAW

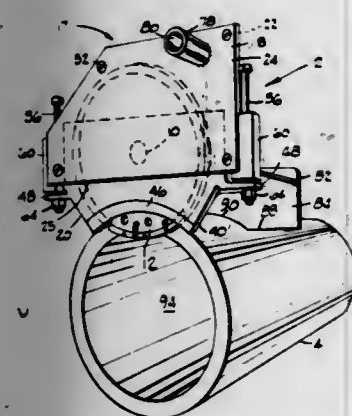
Frederick M. Bodycomb, Jr., Englewood, and Glenn R. Bauman, Littleton, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Jun. 25, 1979, Ser. No. 51,604

Int. Cl.³ B28D 1/04

U.S. Cl. 125-13 R

5 Claims



1. A dust shroud for a portable circular saw adapted for cutting a hollow generally cylindrical object, the saw comprising a motor, a shaft rotated by said motor, a circular blade mounted on one end of said shaft so as to rotate therewith, and a motor housing surrounding said motor with the shaft projecting out of the motor housing and the blade being mounted on the shaft outside the motor housing; said dust shroud comprising

- an upper blade housing attached to said saw and comprising walls forming a first enclosed chamber open at the bottom, said first chamber being of sufficient size to surround at least the major portion of said blade and to permit free rotation of said blade within said upper blade housing, said upper blade housing also having an exhaust duct attached thereto with the interior of said exhaust duct communicating with said first chamber;
- a lower blade housing comprising walls forming a second enclosed chamber open at the top and bottom, said second chamber being of sufficient size to surround at least the lower portion of said blade and to permit free rotation of said blade within said lower blade housing, said lower blade housing fitting within said upper blade housing and capable of slidable movement therein, and the periphery of the open bottom of said lower blade housing having a shape generally conforming to the surface curvature of said object; and
- guide means mounted on said upper blade housing and attached to said lower blade housing, said guide means being adapted to bias said lower blade housing slidably outward from within said upper blade housing and to guide said lower blade housing slidably into said upper blade housing when said lower blade housing is urged against said object.

4,243,012

APPARATUS FOR SEPARATING JOINED-BRICKS

Dieter Keck, Ibbenbüren, Fed. Rep. of Germany, assignor to C. Keller GmbH u. Co. KG, Ibbenbüren-Laggenbeck, Fed. Rep. of Germany

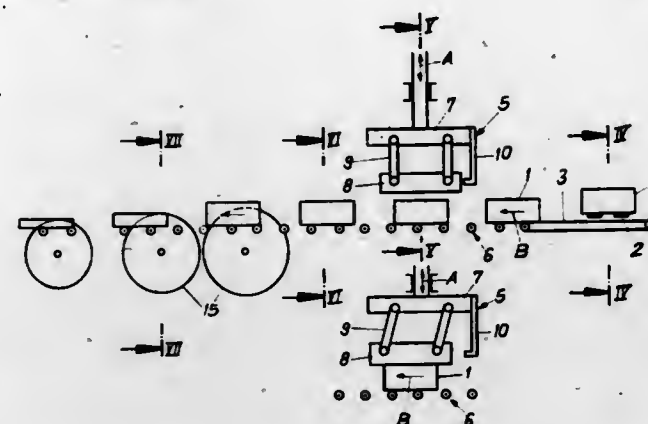
Filed May 4, 1979, Ser. No. 36,266

Claims priority, application Fed. Rep. of Germany, May 8, 1978, 2819991

Int. Cl.³ B28D 1/32

U.S. Cl. 125-23 R

13 Claims



1. Apparatus for separating joined-bricks comprising a transport means for moving said joined-bricks, a separating means disposed along said transport means for separating said joined-bricks into two parts, said separating means comprising a vertically movable carrier means carrying a pressure bar, said vertically movable carrier means being disposed to cause said pressure bar to engage one part of said joined-brick to effect vertical movement thereof relative to another part of said joined-brick such that the joined-bricks are thereby separated, said carrier means comprising a vertically movable actuating means and pivotal means pivotally connecting said pressure bar to said actuating means such that when said pressure bar engages said one part of said joined-brick to effect said separation, said pressure bar moves synchronously with said engaged one part along said transport means as said pivotal means pivot, whereby the joined-bricks are movable without interruption along said transport means during said separation.

4,243,013

FOOD WARMER

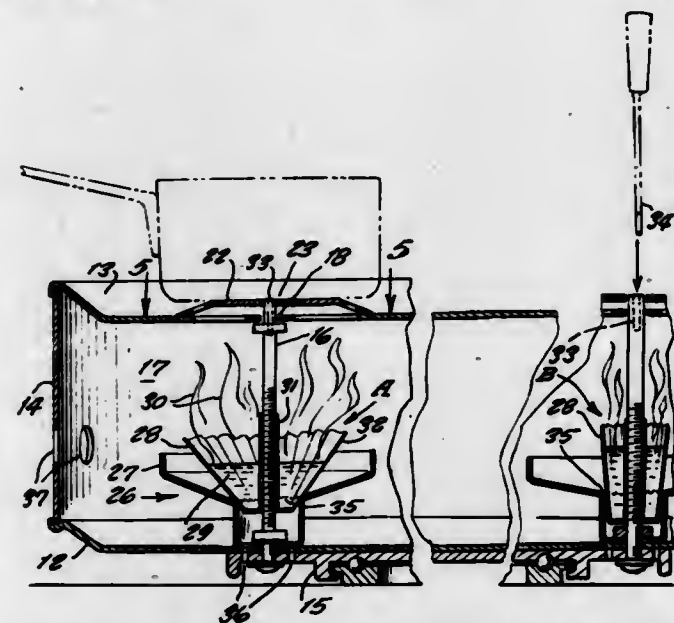
Harry Goon, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jun. 13, 1979, Ser. No. 48,142

Int. Cl.³ F24C 5/00

U.S. Cl. 126-43

4 Claims



1. A food warmer, comprising in combination, a hollow shell mounted upon a rotatable turn table, a plurality of burners inside said shell and a hot plate on said shell above each said burner,

each burner including a brazier with a receptacle therein receiving sterno canned heat fuel, and said receptacle being expanded in diameter when raised upward out said brazier.

4,243,014

COMBUSTION CHAMBER CONSTRUCTION

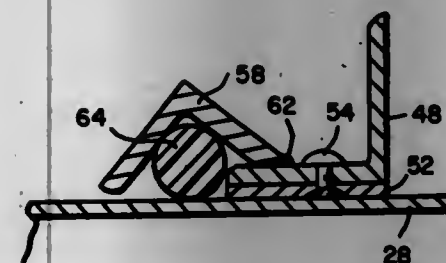
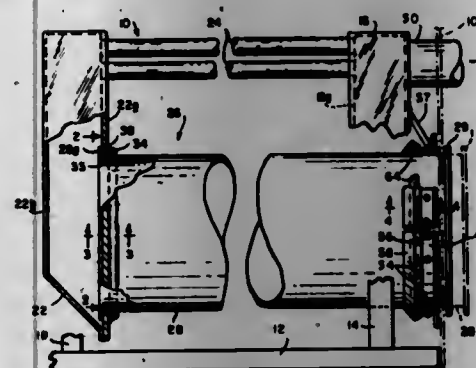
Lloyd P. Hunt, Bridgeton, Mo., assignor to Johnson Heater Corp., Bridgeton, Mo.

Filed Aug. 30, 1979, Ser. No. 71,317

Int. Cl.³ F24H 9/14; B21D 53/00; F16L 41/00

U.S. Cl. 126-119

3 Claims



1. An improved combustion chamber construction comprising a cylindrical shell made of a corrosion-resistant metal, a circular array of integral longitudinal teeth formed at one end of the shell, a metal ring having a circular cross-section shrunk-fit onto the shell at or near the roots of the teeth, a header sheet made of a metal different from the shell metal and having a thermal coefficient of expansion similar to that of the ring, means defining an opening in the header sheet for receiving said one shell end whereby said ring abuts one face of the header sheet while the roots of the teeth are disposed at or near the opposite face of said sheet, a continuous weld bead extending between the ring and the one header sheet face all around the ring, said weld bead being composed of a metal having a coefficient of thermal expansion similar to that of the ring and the header sheet, said teeth being bent radially outward at the opposite sheet face and being in intimate relatively large area thermal heat exchange contact with that face, and a series of welds connecting the teeth to said opposite sheet face radially outboard of the ring.

4,243,015

ASH-FREE FIREPLACE VENTILATING APPARATUS

Glendon C. Trytten, R.R. 2, Lake Mills, Iowa 50450

Filed Dec. 18, 1978, Ser. No. 970,614

Int. Cl.³ F24B 1/18, 7/00

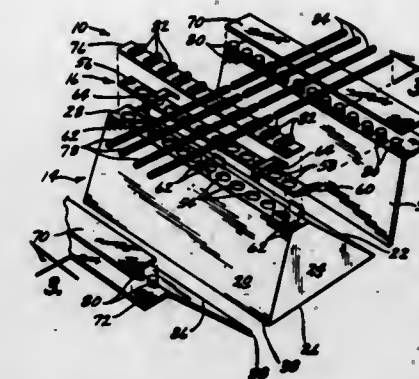
U.S. Cl. 126-120

20 Claims

1. In combination with a fireplace having a rear wall, opposing first and second end walls, a hearth surface and a wood grate, an ash-free ventilating apparatus comprising, a grate means adapted to support said wood grate above said hearth surface, a ventilator housing supported on said hearth surface and located below said grate means, said housing being centrally located within said fireplace and having an interior chamber, inlet port means in communication with said chamber and adapted for connection to a source of fresh air, and outlet port means in communication with said chamber and centrally disposed below said grate means,

valve means operationally connected to said outlet port means to regulate the flow of fresh air through said outlet port means,

said ventilator housing comprising first and second elongated side walls and forward and rearward ends, each said side wall being in spaced apart relation to the immediately adjacent end wall of said fireplace and sloping downwardly toward said hearth surface and outwardly toward said immediately adjacent end wall so that said ventilator



housing has a generally inverted V-shaped cross sectional area with the apex portion of said V-shape being centrally disposed between said end walls, said outlet port means comprising a plurality of outlet apertures positioned along said apex portion and extending therethrough, and said valve means comprising a plate element slidably mounted to said apex portion, said plate element having a plurality of valve apertures therethrough to alternatively, selectively align and misalign with said outlet apertures.

4,243,016

VITREOUS CERAMIC COOKER HOB PLATE WITH PERMANENTLY ELASTICALLY ADHESIVELY ATTACHED CIRCUMFERENTIALLY SURROUNDING FRAME

Klaus Kristen, Wiesbaden, and Herwig Scheidler, Flinthen, both of Fed. Rep. of Germany, assignors to JENAer Glaswerk Schott & Gen., Fed. Rep. of Germany

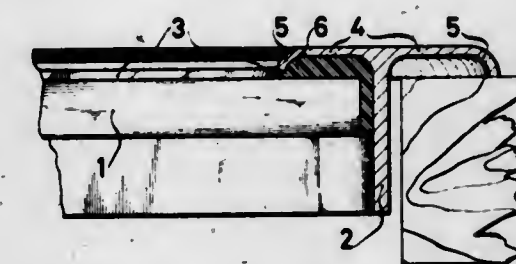
Filed Apr. 4, 1979, Ser. No. 26,588

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 7812144[U]

Int. Cl.³ F24C 15/10; H05B 3/68

U.S. Cl. 126-211

8 Claims



1. A vitreous ceramic cooker hob plate having a circumferentially surrounding frame permanently elastically adhesively fitted thereto, said frame being generally of T-shaped cross-section having an inwardly extending flange portion overlapping, but slightly spaced from the upper marginal surface portion of said ceramic plate, another portion of said frame extending downwardly past the outer edge of said ceramic plate but slightly spaced therefrom, and a permanently elastic adhesive filling the spaces between said frame and said ceramic plate, said permanently elastic adhesive making a sealed and firm joint between said frame and said hob plate.

4,243,017

CATALYTICALLY HEATED CURLING DEVICE WITH IMPROVED IGNITION SYSTEM

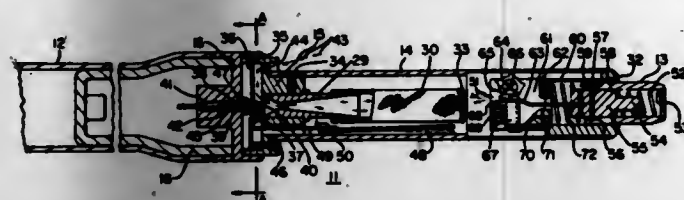
Walter J. Diederich, West Newbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jan. 11, 1979, Ser. No. 47,260

Int. Cl.³ A45D 1/04

U.S. Cl. 126-409

12 Claims

**11. A hand-held curling iron comprising:**

a tubular body defining a heating chamber therein and having first and second ends and a hair winding portion disposed between said first and second ends and surrounding said heating chamber;

heating means including a non-combustible sleeve disposed in and generally coextensive with said tubular body and treated with a catalytic material, said sleeve end nearer said first end of said tubular body being unravelled to substantially fill said sleeve end and act as a flame arrestor and increase ignition efficiency;

a housing mounted proximate said second end of said tubular body and forming a handle including fuel supply means for storing a fuel;

vaporizing means positioned between said fuel supply means and said heating means for vaporizing the fuel;

a nozzle means generally coextensive with said tubular body and positioned between said vaporizing means and said heating means for accelerating said vaporized fuel;

tube means generally coextensive with said tubular body and positioned between said nozzle means and said heating means for mixing said vaporized fuel with air and for supplying a vaporized fuel/air mixture to said catalytic material; and

self-contained ignition means proximate said filled sleeve end and positioned in a tip housing telescopically mounted proximate said first end of said tubular body for initiating oxidation of the vaporized fuel/air mixture in the presence of said catalytic material.

4,243,018

SOLAR ENERGY CONCENTRATOR

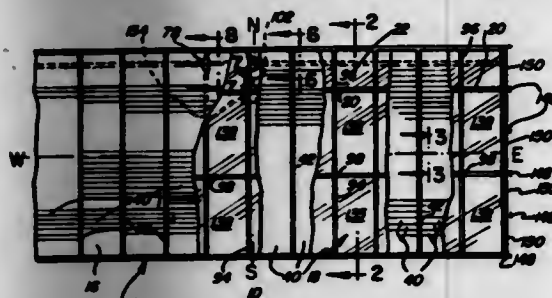
S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Jan. 19, 1978, Ser. No. 916,816

Int. Cl.³ F24J 3/02

U.S. Cl. 126-425

20 Claims

**1. A solar energy concentrator comprising:**

an elongated collector for receiving concentrated solar energy and positioned to extend longitudinally in an East-West direction spaced above a supporting surface;

a horizontal array of separate, elongated, thin, flat, solar energy reflectors for reflecting received solar energy and focusing the same upwardly toward said collector, said reflectors mounted in parallel, elongated rows extended

parallel of said collector and at a level spaced below the same with said reflectors in end to end relation in each row and forming columns of reflectors normal to said rows;

support means for supporting opposite ends of each reflector, said support means including a substantially flat base member having an upstanding flange portion on opposite sides and means pivotally mounting each base portion, said support means being unobstructed in a generally upward direction thereby permitting removal and/or replacement of each reflector by movement in a generally upward and/or downward direction with respect to said support means associated therewith;

a generally horizontal floor structure having a plurality of spaced apart, parallel rails disposed adjacent opposite ends of the reflectors in each column of the array, each said reflector being independently, pivotally supported from a pair of said rails at opposite ends;

an enclosure above said floor structure comprising a roof structure sloping upwardly of a longitudinal edge of said floor structure toward a ridge parallel of said collector, said roof structure including transparent panels for transmitting solar energy downwardly toward said reflectors on said floor structure, and a back wall sloping upwardly of an opposite longitudinal edge of said floor structure joining said roof structure adjacent said ridge; and

drive means interconnecting said supports in each column for pivotally moving said reflectors in unison to substantially continuously reflect received solar energy toward said collector as the angle of elevation of said received solar energy changes.

4,243,019

LIGHT-WEIGHT-TROUGH TYPE SOLAR CONCENTRATOR SHELL

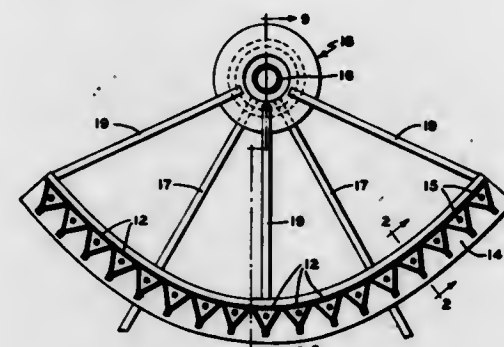
Ashjorn M. Severson, Hennepin County, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 25, 1978, Ser. No. 954,711

Int. Cl.³ F24J 3/02

U.S. Cl. 126-438

4 Claims

**1. A generally parabolic cylindrical trough solar concentrating collector comprising:**

a pair of oppositely disposed end support members: structural means spanning said support members said structural means comprising a plurality of juxtaposed, generally triangular elongate structural members each of which is provided with a concave side such that the concave sides together generate a generally parabolic trough-shaped surface;

a radiant energy reflective surface on said concave generally parabolic trough such that radiant energy striking the concave surface is focussed on a line above said concave surface;

elongated radiant energy receiving and absorbing conduit for containing a heat transfer fluid disposed along the focal line of said radiant energy;

support means supporting trough from said end support

members said support means including bearing means allowing free angular rotation of said trough means.

4,243,020

SOLAR PANEL AND PANEL ASSEMBLY

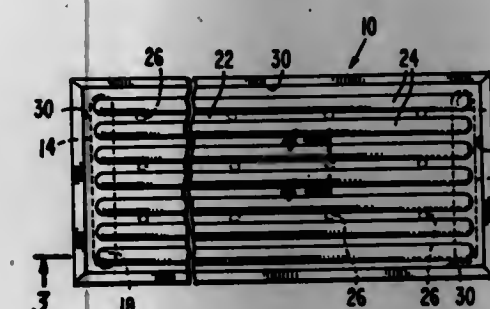
Thomas P. Mier, 194 Shady Ln., Trenton, N.J. 08619

Filed Oct. 23, 1978, Ser. No. 953,661

Int. Cl.³ F24J 3/02

U.S. Cl. 126-444

2 Claims



1. A solar heat collector panel comprising: a first sheet having an inlet and an outlet manifold; and a second sheet in superposed relation to the first sheet and connected at its periphery to the first sheet, the second sheet having a plurality of channels communicating with and extending between the inlet and outlet manifolds, the inlet and outlet manifolds being formed in closely spaced relation to the respective, opposite ends of the first sheet, the material of the first sheet being otherwise generally flat between the opposite ends thereof, said corrugations being disposed wholly to one side of the general plane of the first sheet, the channels of the second sheet being defined by a plurality of closely spaced, parallel corrugations extending substantially from end to end of the second sheet between the inlet and outlet manifolds of the first sheet, said corrugations of the second sheet being pressed out of the general plane of the second sheet in a direction opposite to that in which the corrugations of the first sheet are extended, the opposite ends of the corrugations of the second sheet being disposed in communication with the corrugations defining said inlet and outlet manifolds of the first sheet, the material of the first and second sheets being spot welded at locations spaced along the lengths of said sheets and occurring between adjacent corrugations of the second sheet, the sheets being spaced apart at locations between the spot welds providing cross-flow areas between adjacent corrugations of the second sheet.

4,243,021

SOLAR HEAT CONVERSION PANEL AND METHOD OF ASSEMBLY

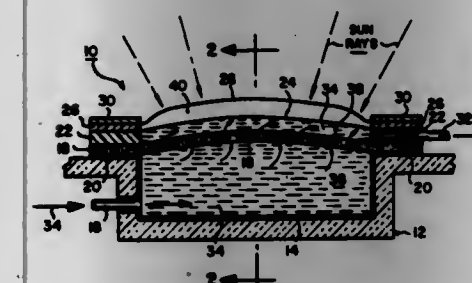
Charles A. Homsy, and Paul T. Homsy, both of Houston, Tex., assignors to Vitek, Inc., Houston, Tex.

Filed Jan. 9, 1978, Ser. No. 868,016

Int. Cl.³ F24J 3/02

U.S. Cl. 126-449

21 Claims

**1. A solar energy collector panel having a fluid inlet port and a fluid outlet port, comprising:**

a porous body consisting of a thermally-insulating porous matrix material having a unitary mass enclosing surface

and bulk macropores, the walls of said macropores defining tortuous fluid passageways in said body, and distinct elements discretely disposed on said walls of said-macropores throughout said matrix material, said elements having a high degree of absorptivity for solar radiation and low emissivity for long-wave radiation;

a first overlaying flexible member essentially transparent to incident solar radiation and substantially opaque to radiation emitted by said porous body, said first member and said porous body forming a collection chamber therebetween;

a second flexible member overlaying said first member and spaced therefrom, said second member being essentially transparent to incident solar radiation and substantially opaque to radiation emitted by said porous body;

a low-thermal conductivity fluid filling the space between said first and second members; means admitting a working fluid to be heated under said porous body through said inlet port, said working fluid being sufficiently pressurized to cause said working fluid to percolate through said passageways of said porous body into said collection chamber, thereby converting radiant energy to sensible heat in said working fluid; and said working fluid exiting from said collection chamber through said outlet port.

4,243,022

SOLAR PICK-UP PANEL

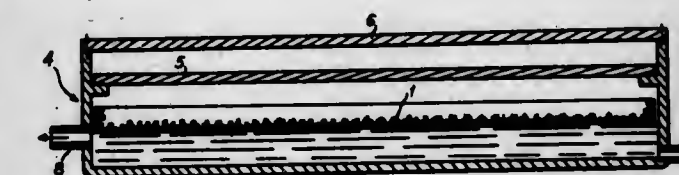
Angelo Pedone, 13 Place Verte, Tournai, Belgium

Filed May 3, 1978, Ser. No. 902,342

Claims priority, application Italy, May 9, 1977, 23357 A/77 Int. Cl.³ F24J 3/02

U.S. Cl. 126-449

9 Claims



1. A solar pick-up comprising a body of fluid and a thin sheet, or foil, for conductively transferring solar energy directly to said fluid, said thin metal sheet, or foil, having an arborescent dendritic surface configuration having primary and secondary reliefs on one side, said arborescent dendritic surface being provided with a heat-absorptive coating to be exposed to solar energy, the opposite side of the sheet, or foil, being in direct contact over virtually the whole of its surface with said fluid, said sheet, or foil, being self-supporting, impermeable to said fluid and being substantially entirely formed by electro-deposition of thermally-conductive metal whereby heat absorption is substantially unaffected by the angle of incident light.

4,243,023

SOLAR COLLECTOR

Frank E. Rom, Avon Lake; Carl J. Wenzler, North Ridgeville, and William L. Mang, Strongsville, all of Ohio, assignors to Rom-Aire Solar Corporation, Avon Lake, Ohio

Filed May 19, 1978, Ser. No. 907,787

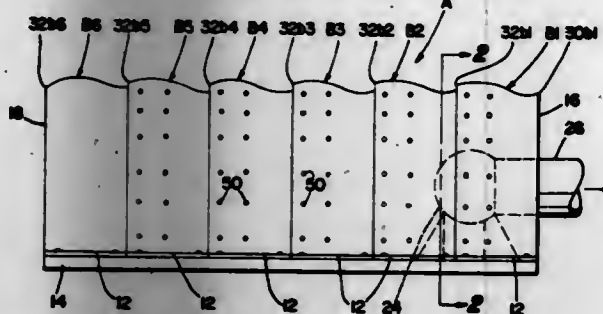
Int. Cl.³ F24J 3/02

U.S. Cl. 126-449

19 Claims

1. A solar collector comprising: a plurality of absorber plates of opaque material having a high thermal conductivity and having outer surfaces highly absorptive of solar energy, each said plate having opposite overlying and underlying portions, said plates being overlapped along one direction such that each plate, except for the end plates, has said overlying portion thereof overlying an underlying portion of one adjacent plate and has said underlying portion thereof underlying an overlying

ing portion of another adjacent plate to define a plurality of overlapping areas spaced along said one direction, said plates being slightly spaced from one another in said overlapping areas transversely of said one direction to define spaces through which air flows from said outer surfaces toward the opposite surfaces of said plates, each said plate having a predetermined dimension generally along said one direction and the dimension of said underlying portion generally along said one



direction being approximately 25-50% of said predetermined dimension, each said plate having a bottom surface facing away from the sun and said outer surface thereof being exposed to the sun, each said plate being of a material having a predetermined thermal conductivity and a predetermined thickness, and said outer surface being related to said thermal conductivity and thickness such that the temperature difference between said outer and bottom surfaces is minimized.

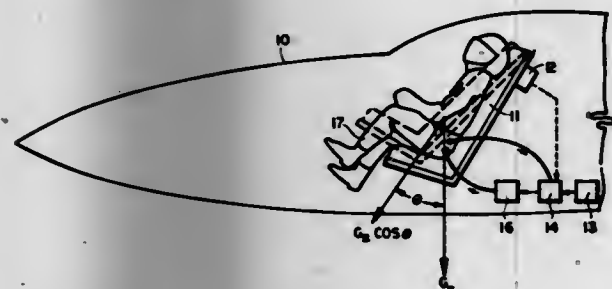
4,243,024

G-PROTECTION SYSTEM SENSING A CHANGE IN ACCELERATION AND TILT ANGLE

Richard J. Crobble, Langhorne, and Paul R. Edwards, Chalfont, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 2, 1979, Ser. No. 25,822
Int. Cl.³ A61B 19/00

U.S. Cl. 128-1 A

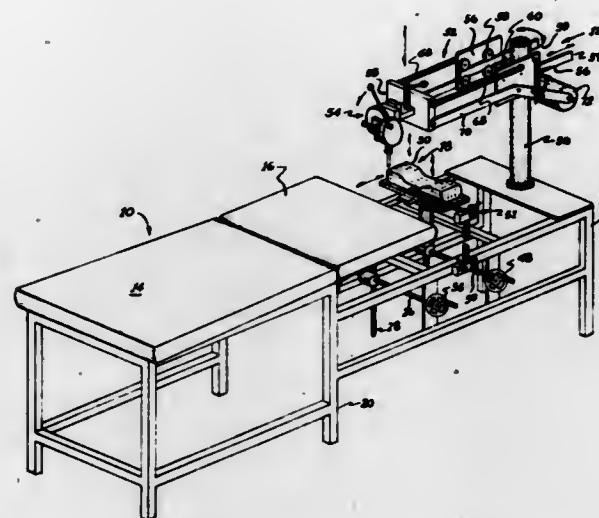
9 Claims



1. A G-protection system for the occupant of an aircraft, comprising in combination:

- a seat for supporting the occupant in the aircraft;
- sensor means, said means connected to said seat for producing a first signal indicative of the product of acceleration along the vertical axis of an aircraft and the cosine of the angle subtended by said axis with the thoracic axis of the occupant;
- a source of fluid pressure;
- control means connected to receive said first signal and said source for producing a regulated fluid pressure; and
- a G-suit connected to receive said regulated fluid pressure for constraining the occupant against body distension caused by the acceleration.

5. An improved chiropractic cervical adjusting unit for applying a specifically directed force to the cervical spine of a patient, said unit including an elongate adjustable table for supportably receiving and positioning a patient in a preselected side posture orientation thereon, a headpiece located adjacent an end of said table for supportably receiving the head of a patient, and means operatively connected to said headpiece for adjustably positioning the headpiece relative to said table rotationally about an axis parallel to the longitudinal axis of said table and linearly in directions parallel and perpendicular to said longitudinal axis of said table, positionally adjustable force applicator means located adjacent said headpiece for applying a specifically directed force at a particular location on the cervical spine of a patient lying on said table, said force applicator means comprising a generally vertical support column, an adjustable parallelogram support section movably mounted at one end portion thereof on said support column for rotational movement about a vertical axis, means for moving said one end portion of said parallelogram support section horizontally toward and away from said support column, said parallelogram support section extending outwardly from said column and having an outer end positionable in general proximity to said table headpiece, said parallelogram support section including a generally vertical support plate at said outer end thereof, and means for pivotally moving said support plate upwardly and downwardly with respect to said support column about a horizontal axis adjacent said support column while maintaining said support plate in a vertical attitude, a force applicator head, means mounting said force applicator head on said support plate for pivotal movement about a vertical axis, said force applicator head comprising an elongate stylus having an end surface for contacting the body of a patient on said table to impart a particularly directed force against the cervical spine of the patient on said table, means for directing said stylus in its axial direction through a predetermined distance with respect to said support plate to apply said force, and means for rotatably positioning said stylus about a first horizontal axis and about a second axis perpendicular to said horizontal axis and about an axis perpendicular to the longitudinal axis of said stylus, whereby said stylus can be adjustably located to impart said force against the patient on the table in any direction.



4,243,025

CERVICAL ADJUSTING UNIT

Donald E. Jones, Mullins, S.C., assignor to Life Chiropractic College, Inc., Marietta, Ga.
Filed Apr. 26, 1978, Ser. No. 900,195
Int. Cl.³ A61F 5/00

U.S. Cl. 128-70

7 Claims

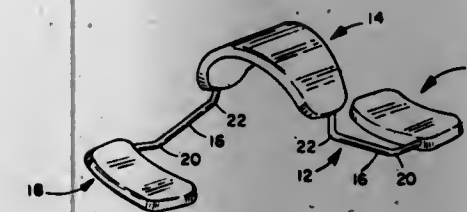
4,243,026

FINGER SPLINT

Lois M. Barber, 111 Nieto Ave., Long Beach, Calif. 90803
Filed Oct. 5, 1978, Ser. No. 948,869
Int. Cl.³ A61F 5/10

U.S. Cl. 128-77

7 Claims



1. An adjustable finger splint which permits limited movement comprising:

- an elongated central section having a first and a second end, said central section being concave lengthwise such that when said central section is mounted on one of the dorsal and ventral surfaces of a finger across the width of the finger and at the proximal interphalangeal joint, said central section will fit along the transverse circumferential curve of the finger;
- a first elongated arm having a proximal and a distal end, said proximal end of said first arm being connected to said first end of said central section;
- a second elongated arm having a proximal end and a distal end, said distal end of said second arm being connected to said second end of said central section;
- said first and second arms being sized and positioned such that when said central section is mounted on one of the dorsal and ventral surfaces of a finger across the width of the finger and at the proximal interphalangeal joint, said first arm extends along one side of the finger to a point adjacent the tip of the finger and said second arm extends along the other side of the finger in a direction opposite to the direction of extension of said first arm to a point adjacent the base of said finger;
- a first elongated support connected at one end to said distal end of said first arm, said first support extending in a direction substantially perpendicular to said first arm such that when said central section is mounted on one of the dorsal and ventral surfaces of a finger across the width of the finger and at the proximal interphalangeal joint, said first support is in a position to hold and support a portion of the finger adjacent the tip of the finger on the side of the finger which is opposite to that being held by said central section;
- a second elongated support connected at one end to said proximal end of said second arm, said second support extending in a direction substantially perpendicular to said second arm such that when said central section is mounted on one of the dorsal and ventral surfaces of a finger across the width of the finger and at the proximal interphalangeal joint, said second support is in a position to hold and support a portion of the finger adjacent the base of the finger on the side of the finger which is opposite to that being held by said central section;
- said central section and said first and second arm being formed of a continuous resilient spring material;
- said splint being otherwise open along its length to permit said splint to be readily mounted and removed;
- said arms being bent and bendable along their length in a direction opposite to the direction of the curve of the central section to permit adjustment of the forces applied to a finger.

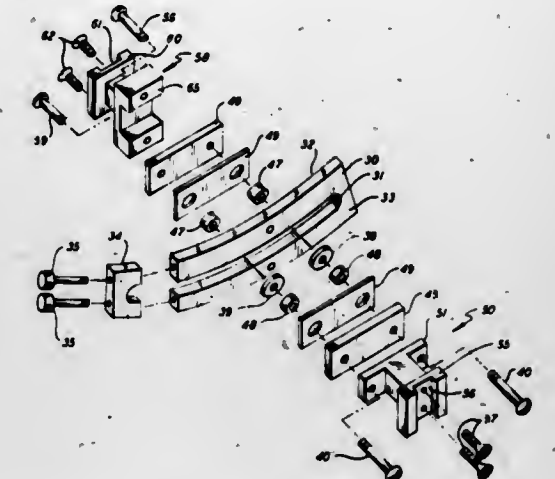
4,243,027

HIP STABILIZER

Y. Ronald LaCourse, 25 Cheyenne Crescent, Whitesboro, N.Y. 13492
Filed Oct. 20, 1978, Ser. No. 953,076
Int. Cl.³ A61F 5/01

U.S. Cl. 128-80 F

12 Claims



1. Apparatus for stabilizing the hips of a crippled individual including a pair of leg braces, one brace for the left leg of a person and another for the right leg of a person, wherein the improvement comprises

- a guide member having two opposed vertical side walls and a contoured slotted hole passing through said vertical side walls, the slotted hole being contoured to describe a predetermined path of travel within a generally vertical plane,
- a slide mechanism having two opposed plates that are arranged to ride in close sliding contact with the vertical side walls of the guide and having a follower that is seated within the contoured slotted hole of the guide which provides a close running fit therewith to allow the slide mechanism to move back and forth along the path of travel as described by said slotted hole,
- a first mounting bracket secured at one end of said guide member and at the other end to one of said pair of leg braces, and
- a second mounting bracket secured at one end to said slide mechanism and at the other end to the other one of said pair of leg braces whereby the motion of the braces is limited to that described by the contoured slotted hole.

4,243,028

THERAPEUTIC PRESSURE STRAP

Alfonso Puyana, 444 W. 24th St., Yuma, Ariz. 85364
Continuation of Ser. No. 912,882, Jun. 5, 1978, abandoned, which is a continuation of Ser. No. 745,646, Nov. 29, 1976, abandoned. This application Jun. 7, 1979, Ser. No. 46,349
Int. Cl.³ A61F 13/00

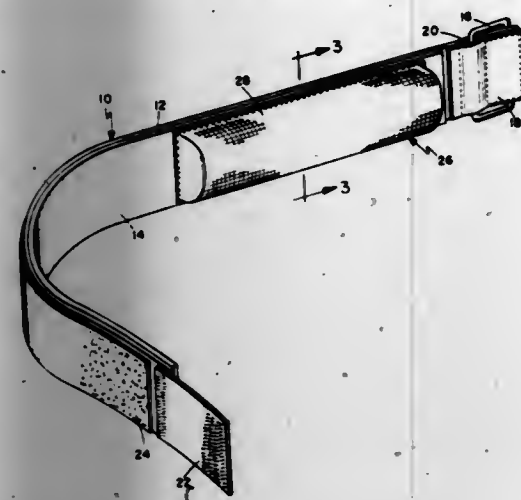
U.S. Cl. 128-165

6 Claims

1. A therapeutic pressure strap adapted for applying concentrated localized pressure to the muscles of a limb for alleviating pathological lesions, said pressure strap comprising:

- an elongated flexible inelastic band having an inside and an outside for encircling a human limb with the inside toward the limb,
- adjustable cooperative fastening means proximate the ends of said band for adjustably fastening said band about the limb and adjusting the pressure applied thereto,
- an enclosed pocket formed on the inside of said band, and pressure concentrating means protruding from the inside of said band and including at least one elongated resilient self supporting cylindrical pressure member mounted on the inside of said pocket, and having a semi-cylindrical pres-

sure surface extending partially along the longitudinal axis of said band for engaging and concentrating pressure on



and across a selected area of the muscles of a limb encircled by said strap.

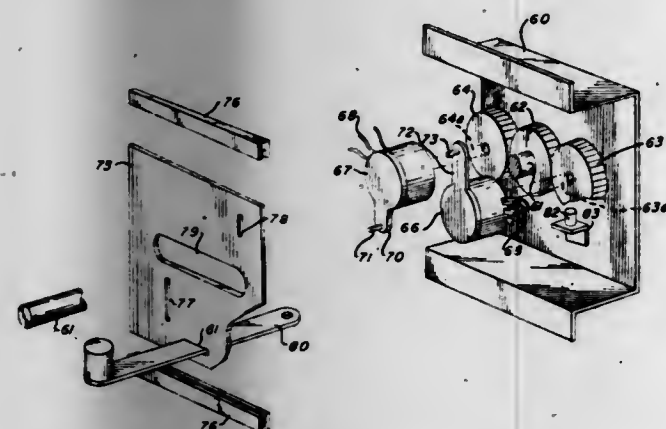
4,243,029

APPARATUS FOR AUTOMATIC VENTILATION OF THE LUNGS USING DUAL POTENTIOMETERS TO VARY THE POWER TO AN ELECTRIC MOTOR TO CONTROL THE INHALATION/EXHALATION RATIO

Wayne R. Apple, P.O. Box 3370, Denver, Colo. 80303
Division of Ser. No. 945,644, Sep. 25, 1978, which is a division of Ser. No. 815,659, Jul. 14, 1977, Pat. No. 4,141,355. This application Apr. 16, 1979, Ser. No. 29,987
Int. Cl.³ A61M 16/00

U.S. Cl. 128—204.21

7 Claims



1. In a respiratory machine having a piston type pump actuated by an electric motor to provide an inhalation stroke in one half cycle and an exhalation stroke in another half cycle, the improvement of

- (a) a pair of potentiometers connected to the electric motor, each arranged for applying power to the motor during only a half cycle of the electric motor, and
- (b) means arranged to vary the voltage of said potentiometers to change the power ratio of one half cycle to the other half cycle while maintaining the number of strokes per minute of the piston constant.

4,243,030

IMPLANTABLE PROGRAMMED MICROINFUSION APPARATUS

Harry J. Lynch, Waltham, Mass., and Robert W. Rivest, Montreal, Canada, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 18, 1978, Ser. No. 935,060

Int. Cl.³ A61J 7/00

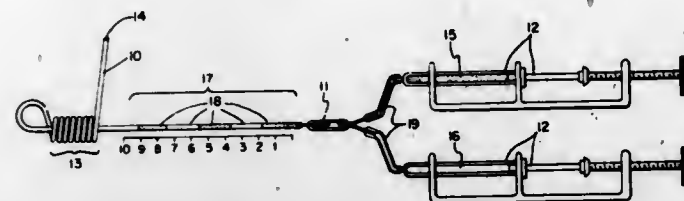
U.S. Cl. 128—213 R

6 Claims

1. In an apparatus implantable in an animal which delivers an infusate to the animal, said apparatus including a pump section

that exerts a relatively constant pressure on a fluid located within said pump, the improvement which comprises:

- (a) a tube attached to said pump, the interior of said tube being in fluid communication with said fluid located within said pump and



- (b) an infusate located within the interior of said tube, said infusate being divided into segments which are separated by a second fluid located within the interior of said tube comprising a material other than said infusate, said infusate and said second fluid being immiscible thereby to maintain said segments separated within said tube.

4,243,031

INTRAVENOUS PUMP FILTER PROTECTOR

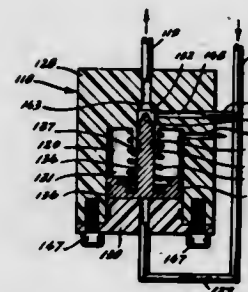
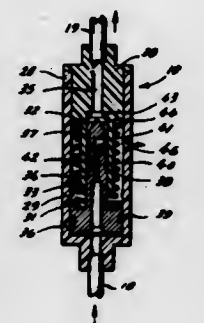
Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,286

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214 E

15 Claims



1. A pressure activated shut-off device for an intravenous fluid administration set comprising:

- a housing defining a piston chamber with a large dimensional cavity and a small dimensional cavity;
- a piston member defined by a piston head and a piston arm, said piston head constructed and arranged for slidable and sealable engagement in said large dimensional cavity and said piston arm for slidable engagement in said small dimensional cavity;
- means operatively positioned in said housing and contacting said piston member for biasing said piston member in a direction away from said small dimensional cavity said biasing means providing a biasing force sufficient to be unaffected by a downstream pressure drop;
- fluid passage means communicating with both said cavities including an outlet passage communicating with said small dimensional cavity;
- a valve seat operatively associated with said small dimensional cavity and said outlet passage;

a valve closure defined by said piston arm for sealable contact with said valve seat; and means to vent said large dimensional cavity; so that when a predetermined pressure is reached in said cavities said piston will move in the direction of said small dimensional cavity to cause said valve closure to contact said valve seat whereby fluid flow in said fluid passage means is stopped.

4,243,032

PARENTERAL FLUID ADMINISTRATION SETS

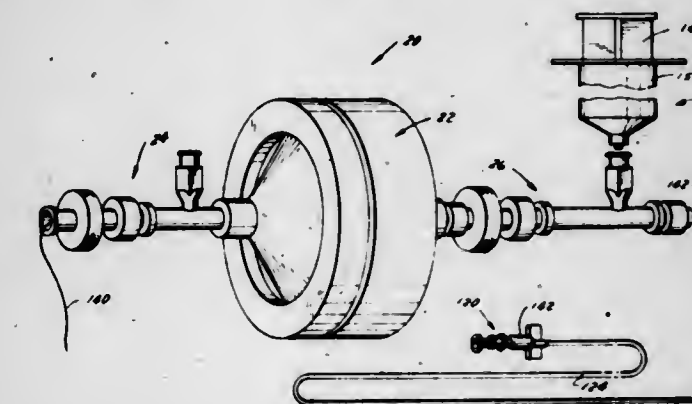
William L. Howell, 3615 Macomb St., NW., Washington, D.C. 20016

Filed Jan. 16, 1979, Ser. No. 3,923

Int. Cl.³ A61M 5/16

U.S. Cl. 128—214 C

8 Claims



direct fluid through the nozzle means so that when the second valve means is in the open position the one end of the member and a portion in the chamber would be delivered through the forward end of the nozzle and from the apparatus, the fluid pressure means including a port in the nozzle means providing entrance to the fluid passageway through the nozzle, the second valve means being located between the chamber and the fluid pressure means so that when the second valve means is in the closed position the one end of the member will remain in fixed position during passage of fluid through the nozzle in either direction in response to actuation of the fluid pressure means, and the storage chamber being removably attached to the nozzle means to facilitate removal of the chamber after delivery of the member and permit use of the nozzle means independent of the storage chamber.

4,243,034

CANNULA OR CATHETER ASSEMBLY

Werner J. Brandt, Helsingborg, Sweden, assignor to Viggo AB, Helsingborg, Sweden

Filed Oct. 15, 1979, Ser. No. 85,153

Claims priority, application Sweden, Oct. 17, 1978, 7810807

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214.4

5 Claims



1. A floating siphon-type flow regulator for parenteral fluid administration sets incorporating a source of the fluid to be administered which is maintained at a high level relative to that of the regulator, said regulator comprising an upright, substantially cylindrical chamber-forming member closed at its ends by top and bottom end plates respectively, a float U-tube assembly comprising a float member and a siphon U-tube affixed to said float member, means preventing turning movement of said assembly about the axis of said chamber-forming member, whereby the shorter arm of the U-tube is constrained to move in an unvarying vertical path responsive to variations in the level of fluid present in the chamber-forming member, and means for introducing fluid from said source at a manually controllable rate to said member interior through the bottom end plate and at a point thereof which is vertically aligned with the bore of said shorter arm of the U-tube, being thereby effective to build up a body of the fluid on which said float U-tube assembly may float as a unit and simultaneously therewith to direct a portion of the so introduced fluid to and into the bore of the shorter U-tube arm.

4,243,033

CATHETER DELIVERY SYSTEM

Vincent DeCaprio, Totowa, and George Sanderson, Clark, both of N.J., assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Jan. 29, 1979, Ser. No. 7,481

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214.4

10 Claims

1. Apparatus for delivering a small elongated flexible member into a body cavity comprising: a storage chamber open at both ends for containing substantially the entire length of the member to be delivered with one end extending through the

1. A cannula or catheter assembly having a cannula or catheter tube (1, 22) to be inserted in a patient, and a socket (2, 23) therefor which has a straight passageway (3, 24) to which the tube is connected, wherein a connecting housing (4, 27) is formed integral with or is releasably attached to the socket (2, 23) and has a straight through-channel (5, 28) which is surrounded by a wall and is coaxial with the passageway of the socket and connected at one end to said passageway, its opposite end being provided with connecting means (6, 29) for

coupling a hose, a syringe or the like, wherein said through-channel of the connecting housing accommodates an easily flexible hose section (7, 31) sealing against the channel wall, wherein the wall of the connecting housing that surrounds said channel is provided at a location between the ends of said hose section with at least one through-opening in which a pressure body (9, 32) is movable between one position at which said pressure body projects into said channel and maintains a portion of the hose section in a compressed closing state, and another position in which said portion of the hose section is substantially unaffected by said pressure body, and wherein a slide member (11, 35) mounted on the outer side of the wall surrounding said channel is movable back and forth in the longitudinal direction of the channel and has an oblique surface (14, 33) facing said pressure body and adapted, when said slide member is moved to displace the pressure body between said two positions.

4,243,035

SYRINGE WITH INTEGRAL SWAB

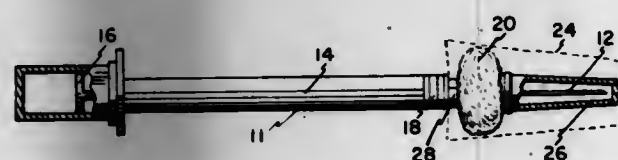
Howard G. Barrett, 1215 Briarcliff Dr., Orlando, Fla. 32806

Filed Jun. 18, 1979, Ser. No. 49,129

Int. Cl.³ A61M 5/00

U.S. Cl. 128—215

4 Claims



1. A hypodermic syringe and integral antiseptic dispenser, said syringe having a barrel portion adapted to contain fluid to be injected, a needle operatively mounted on one end of said barrel, and a plunger located on the other end of said barrel portion, with manipulation of said plunger bringing about the injection of fluid from said needle, the improvement comprising a presoaked antiseptic dispenser disposed on said barrel portion, said antiseptic dispenser making it convenient to clean the intended injection site immediately before the injection, said antiseptic dispenser taking the form of a pad encircling the barrel portion of the syringe.

4,243,036

AUTOMATIC INJECTING PROJECTILE

Peter Ott, Bahnhofstrasse 9, CH-4106 Therwil, Switzerland

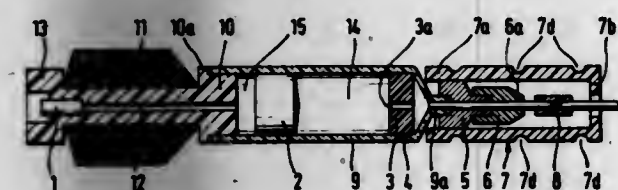
Filed Aug. 9, 1979, Ser. No. 65,233

Claims priority, application Switzerland, Jan. 29, 1979, 6104/79

Int. Cl.³ A61M 5/00

U.S. Cl. 128—215

7 Claims



1. Automatic injecting projectile to be fired from rifles and handguns, with a hollow, cylindrical casing, separated into a pressure chamber and a chamber containing the drug by a piston sliding loosely within the casing, where one end of the casing is equipped with stabilizers and a propellant, and the other end having a hollow needle, characterized by having a check valve (1) on the end away from the hollow needle (5), said check valve (1) being connected with the pressure chamber (15) of the casing (9) through a channel (12) in order to introduce a fluid gas propellant via the check valve (1) into the pressure chamber (15) before the injecting projectile is fired.

4,243,037
FECAL IMPACTION REMOVER
Norma J. Smith, 1001 King St., Plaquemine, La. 70764
Filed Jul. 2, 1979, Ser. No. 54,285
Int. Cl.³ A61B 17/00

U.S. Cl. 128—303 R

3 Claims



1. A device for breaking up impacted fecal in a rectum comprising an outer hollow tube having a cavity extending therethrough into which is located a plunger assembly having a rod means slidingly extending through said cavity and shaped to form a passageway between said tube and said rod, said plunger assembly having prong means attached at one end of said rod to break up said impacted fecal, said tube comprises a connecting means located at one end of said tube opposite said prong means for receiving an enema solution, said connecting means having a channel connecting to said passageway to allow said enema solution to flow into said passageway and wherein said tube comprises openings connected to said passageway and located at another end section opposite said connecting means allowing said enema solution to flow from said passageway to said rectum.

4,243,038

SKIN INCISING DEVICE FOR SCAR REMOVAL

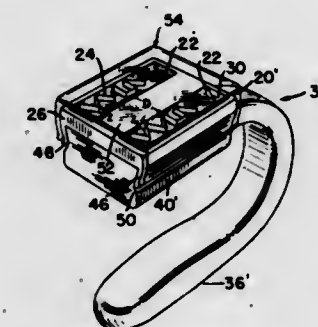
Donn B. Harnick, 228 S. Barry Ave., Mamaroneck, N.Y. 10543

Filed Mar. 23, 1979, Ser. No. 23,291

Int. Cl.³ A61B 17/32

U.S. Cl. 128—305

13 Claims



1. A skin incising device for scar removal comprising:
(a) a holder;
(b) a first cutting member having an elongated relatively thin blade element with a continuous cutting edge characterized by a plurality of transversely disposed corrugations, the said corrugations being generally triangular in cross-sectional profile with at least one corrugation being rectangular in cross-sectional profile, said cutting member mounted on said holder such that the cutting edge projects outwardly therefrom; and

(c) a removable imprint means for transferring at least one substantially identical image of the incision pattern produced by the transversely disposed corrugations of the cutting member and a releasable fastening means for releasably fastening the imprint means to the holder.

4,243,039

EMERGENCY TOURNIQUET

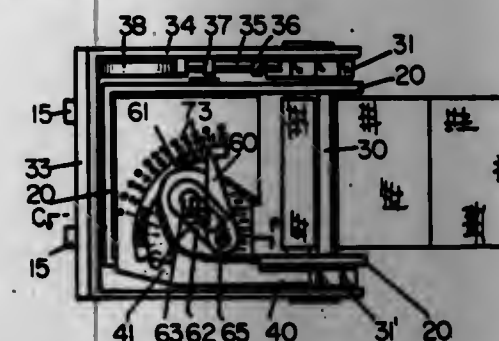
Yacov Aginsky, 18 Rachel St., Haifa, Israel

Filed Jun. 13, 1979, Ser. No. 48,086

Int. Cl.³ A61B 17/12

U.S. Cl. 128—327

10 Claims



1. An emergency tourniquet for controlling hemorrhage from a limb such as an arm or a leg, comprising a strap, a strap-tightening mechanism and a pressure-indicating device integral with the tightening mechanism, wherein

said tightening mechanism consists of a rigid front part firmly and permanently attached to the front end of said strap, and a rigid rear portion carrying near its rear end a slotted spool which latter is adapted to be unidirectionally rotated by a pawl and ratchet mechanism and, by this rotation, to wind up the rear end of said strap wound around the limb, to shorten and tighten said strip around said limb and thereby exerting circumferential pressure on said limb, said front portion and said rear portion being slidingly connected and pressed towards each other by at least one compression spring so dimensioned as to permit a rearward movement of the rear portion relative to the front portion proportionally to the pull exerted by the tightened strap,

said pressure indicating device being in the form of a scale combined with pointer means indicating on said scale the pull of said strap end, said scale being provided with marks indicating the permissible pull, related to the circumferential pressure to be exerted on an arm and a leg respectively for at least two different diameters of an arm and a leg respectively.

4,243,040

EXTRACTING DEVICE FOR REMOVING OBJECTS FROM HUMAN BODY PASSAGES

William H. Beecher, 292 Boyd Ave., Elmhurst, Ill. 60126

Continuation of Ser. No. 767,696, Feb. 11, 1977. This application

Sep. 17, 1979, Ser. No. 76,150

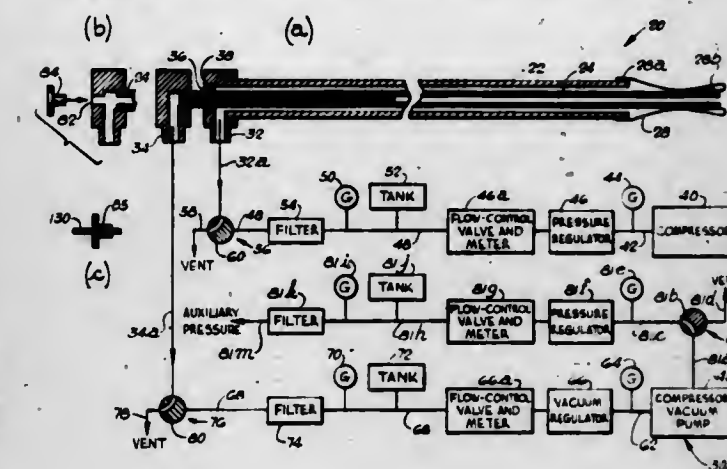
Int. Cl.³ A61B 17/00

U.S. Cl. 128—328

20 Claims

1. An extracting device for insertion into a human body passage for removing foreign objects therefrom, said device comprising an outer flexible tube the distal end of which is insertable into a body passage, an inner flexible tube having a greater length than and slidable received within said outer tube for free longitudinal sliding movement with the distal end of said inner tube normally projecting beyond the distal end of said outer tube, said inner and outer tubes having clearance space therebetween for carrying fluid under pressure, a thin tubular highly distensible and limp sleeve having its proximal end portion connected to said distal end of said outer tube, said sleeve having a distal end portion which is inverted and

is connected to the distal end of said inner tube for insertion into the body passage, said sleeve being otherwise free to expand upon inflation, said tubular sleeve having first and second tubular surfaces on opposite sides of said sleeve, said first surface facing inwardly at said proximal end portion of said sleeve, said inverted distal end portion of said sleeve being turned inside out with said second surface facing inwardly, said sleeve being inflatable by fluid transmitted along said clearance space to dilate the body passage, said sleeve when inflated having an annular flaring portion bulging beyond the distal end of said inner tube and



curved convexly in longitudinal section for sealing engagement with a foreign object in the body passage, said annular flaring curved portion being soft, pliable and capable of conforming to the shape of the foreign object to effect a seal therewith, said inner tube being operative to transmit suction for capturing and holding the foreign object in sealing engagement with said annular flaring portion of said sleeve, and means for retracting said inner tube relative to said outer tube while the suction pulls the foreign object within the confines of said sleeve and said sleeve is progressively turned inside out around the foreign object to envelop the foreign object for removal with said tubes.

4,243,041

COLD-PACK GOGGLES

Malcolm D. Paul, 111 Via Undine, Newport Beach, Calif. 92663

Continuation of Ser. No. 864,030, Dec. 23, 1977, abandoned,

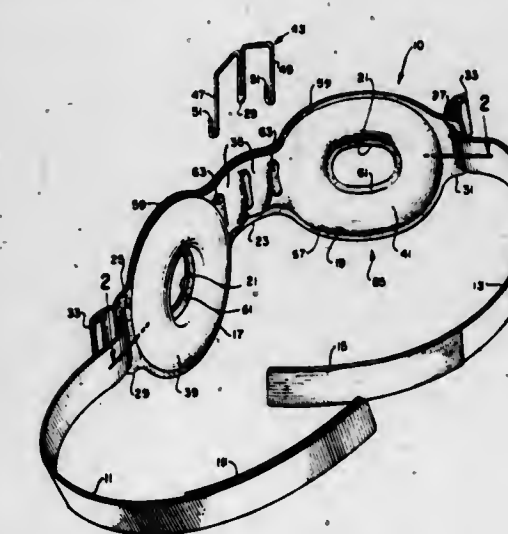
which is a continuation of Ser. No. 722,188, Sep. 10, 1976,

abandoned. This application Apr. 5, 1979, Ser. No. 27,447

Int. Cl.³ A61F 7/00

U.S. Cl. 128—402

4 Claims



1. A cold therapy pack comprising: goggle-shaped eyepieces joined together by a nose bridge,

said eyepieces comprising two layers of thermoplastic sheets heat sealed around their periphery to form a hydrophilic gel compartment between said sheets;
a separate nose pack comprising a plurality of hydrophilic gel compartments and means for attaching same; and detachable Velcro straps for securing said pack tightly around the head of a patient.

4,243,042

ENCLOSURE SYSTEM FOR BODY IMPLANTABLE ELECTRICAL SYSTEMS

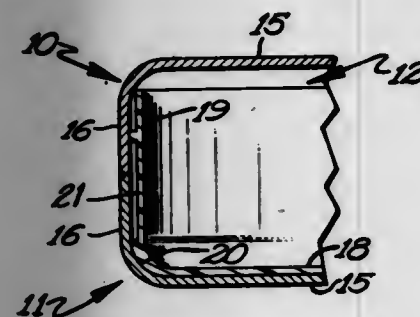
Lyle A. Ware, Bloomington, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 793,638, May 4, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,307

Int. Cl.³ A61N 1/02

U.S. Cl. 128-419 P

10 Claims



1. In a body implantable electrical stimulator of the type having interconnected electrical components housed within a preformed enclosure, the enclosure having a plurality of members at least one of which has a main wall and a side wall joined at a radius, the improvement which comprises cup means formed of a main wall and a side wall, said cup main wall being generally coextensive with at least a major portion of said enclosure member main wall and said cup means side wall encircling said components, said cup means further comprising means engaging said enclosure member radius for mechanically limiting movement of said cup means within said enclosure.

4,243,043

APPARATUS FOR ELECTRICAL STIMULATION OF MAMMAE

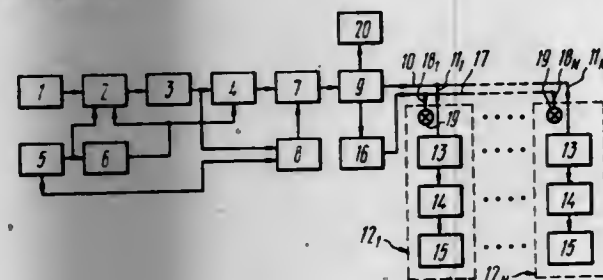
Viktor V. Sevastianov, ulitsa Komsomolskaya, 96, kv. 31, Ioshkar-Ola, and Eduard K. Kazimirov, Brest-Litovskiy prospekt, 12, kv. 133, Kiev, both of U.S.S.R.

Filed Jul. 11, 1979, Ser. No. 56,516

Int. Cl.³ A61N 1/36

U.S. Cl. 128-422

7 Claims



1. An apparatus for electrical stimulation of the mammae, comprising:
a master oscillator producing a train of pulses, having an output;
a frequency modulator adapted to perform frequency modulation of the pulses generated by said master oscillator and having an input, control inputs, and an output, said input being coupled to said output of said master oscillator;
a stimulating pulse generator producing pulses of a given length and shape, corresponding to respective pulses

obtainable from said master oscillator; an input and an output of said stimulating pulse generator, said input being coupled to said output of said frequency modulator;
an amplitude modulator in which said generated train of pulses is subject to amplitude modulation; an input, a control input and an output of said amplitude modulator, said input being coupled to said output of said stimulating pulse generator;
a modulating signal generator having outputs;
a unit adapted to form excitation and space periods and having an input and an output, said input being coupled to a first one of said outputs of said modulating signal generator, which is coupled to a first one of said control inputs of said frequency modulator, and said output of said forming unit being coupled to said control input of said amplitude modulator and to a second one of said control inputs of said frequency modulator;
a stimulating pulse polarity changing unit adapted to change the polarity of the stimulating pulses according to a given law, said unit having an input, a control input and an output, said input being coupled to said output of said amplitude modulator;
an output unit comprised of a combination of two unipolar signal amplifier, which have a common load, said output unit being adapted to produce an output signal with its polarity changed according to a given law, and having an input and an output, said input being coupled to said output of said stimulating pulse polarity changing unit;
a distributing line relating to N points subject to electrical stimulation and having leads connected to each of said N points;
an automatic stimulating pulse polarity control unit operated to realize a given law of changing the polarity of the output signal and having inputs and an output, said output being coupled to said control input of said stimulating pulse polarity changing unit, and said inputs being coupled to said output of said stimulating pulse generator and to said second output of said modulating signal generator, respectively;
said output of said output unit coupled to said distributing line;
a stimulating pulse amplitude adjustment circuit having an input and an output and designed for each of said points subject to electrical stimulation;
a matching unit having an input and an output; surface-type electrodes;
said input of said stimulating pulse amplitude adjustment circuit, coupled to a respective lead, and said output of said stimulating pulse amplitude adjustment circuit, coupled to said input of said matching unit;
said output of said matching unit, coupled to said surface-type electrodes.

4,243,044

COUPLING CIRCUIT WITH DRIVEN GUARD

Timothy B. Blancke, Concord, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 7, 1978, Ser. No. 940,403

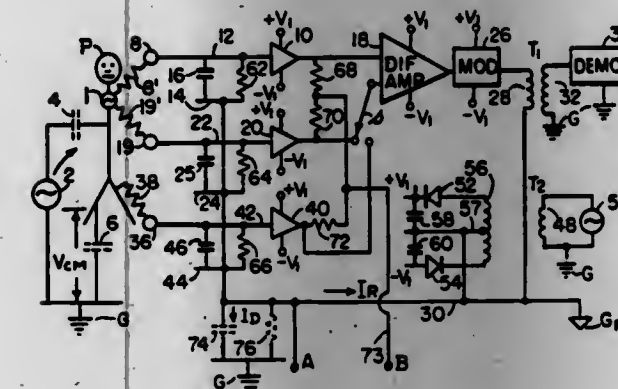
Int. Cl.³ A61B 5/04

U.S. Cl. 128-696

6 Claims

1. A circuit for coupling the difference between potentials supplied by two electrodes in contact with the body of a patient and conducted by shielded leads to the inputs thereof to an output referenced to ground in such manner as to minimize the effect of any common mode voltage and provide a high impedance between the patient and ground without requiring the attachment of another electrode to the patient, comprising
a point of ground potential,
a point of floating ground potential,
two input terminals to which electrode leads may be respectively attached,
a differential amplifier circuit having two inputs and an

output, said inputs respectively coupled to said input terminals,
a power supply coupled to provide operating potentials for said differential amplifier circuit, said power supply being referenced to said point of floating ground potential, output terminals, one of which is connected to said point of ground potential,
means coupling the differential amplifier signals at the output of said differential amplifier to said output terminals, said coupling means maintaining a high impedance to ground for the common mode signals at the output of said differential amplifier,



a terminal to which shields of electrode leads may be attached, said terminal being connected to said point of floating ground potential, and
a unity gain amplifying circuit means referenced to ground, said unity gain amplifying circuit means having an input connected by means exclusive of the body of a patient to a point in said differential amplifier circuit at which common mode voltages may appear and an output connected to said point of floating ground potential, the said unity gain amplifying circuit means having means for limiting current flowing between ground and both its input and its output, said latter means limiting the current that can flow to a value that is low enough to protect the patient from electrical shock.

4,243,045

METHOD AND APPARATUS FOR THE SUPPRESSION OF INTERFERENCE SIGNALS IN A USEFUL SIGNAL

Michael Mann, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

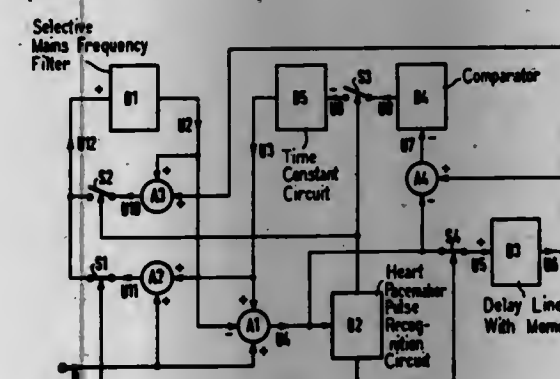
Filed Jan. 23, 1979, Ser. No. 5,865

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805681

Int. Cl.³ A61B 5/04

U.S. Cl. 128-696

17 Claims



1. A method for suppressing noise signals in a useful signal, said method comprising the steps of:
(a) supplying an input signal comprising a useful signal (U1) which is subject to a noise hum signal (U_N) and to noise in

the form of narrow noise pulses (P) of high amplitude which may be superimposed on the noise hum signal (U_N);
(b) monitoring said input signal to sense the presence of a narrow noise pulse (P);
(c) in the absence of the sensing of such a narrow noise pulse (P):
(c1) supplying the input signal to a noise hum filter (B1) to derive from the input signal a filtered-out interference hum component (U2) corresponding in waveform as a function of time to said noise hum signal (U_N); and
(c2) superimposing on the input signal in opposing relation said filtered-out interference hum component (U2) to tend to suppress the noise hum signal (U_N); and
(d) in the response to the sensing of such a narrow noise pulse (P) pursuant to step (b):
(d1) suppressing such narrow noise pulse;
(d2) decoupling the noise hum filter (B1) from the input signal, and switching over said noise hum filter (B1) to self-oscillation operation such that it continues to oscillate with the amplitude and frequency of the previously selected interference hum component without a phase jump to supply an artificially produced oscillation; and
(d3) superimposing on the input signal said artificially produced oscillation for the purpose of compensation of the interference hum during the period of suppression of said narrow noise pulse.

4,243,046

V LEAD EXTENDER FOR ECG

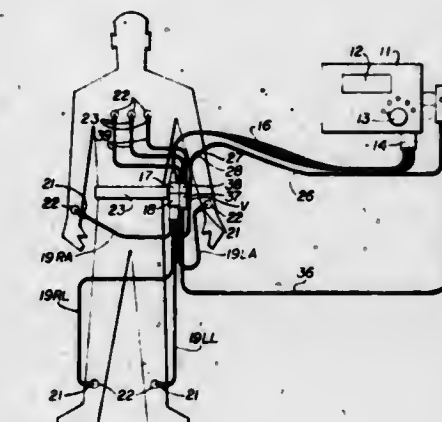
Belson J. Weinstein, Palo Alto, and Bruce H. Hyndman, Newark, both of Calif., assignors to Belson J. Weinstein, Palo Alto, Calif.

Filed Aug. 6, 1979, Ser. No. 63,841

Int. Cl.³ A61B 5/04

U.S. Cl. 128-709

5 Claims



1. Apparatus for extending the V lead of an ECG instrument of the single channel type having a driven chart, a stylus for marking characteristic electrocardiographs on said chart, a plurality of lead wires connected to said instrument, including a single "V" lead, means for attaching the distal of at least some of said leads to the skin of a patient, electrical means for supplying voltage to said leads and also for driving said stylus and a first selector switch for serially connecting said leads to said instrument, said first switch having a "V" position connecting said "V" lead to said instrument,

the improvement which comprises a conductor, means for connecting said V lead to said conductor, a second selector switch having a movable central contact connected to said conductor and a plurality of stationary contacts, a plurality of auxiliary patient leads, each said auxiliary lead being connected at a first end to one of said stationary contacts and at its distal to second means for attachment to the skin of said patient at a plurality of V positions, whereby when said instrument first selector switch is at "V" position, by serially turning said movable central contact readings at each of said plurality of V positions may be obtained on said chart.

4,243,047

INSTRUMENT FOR TAKING TISSUE SPECIMENS

C. Eric Olson, Ventura, Calif., assignor to Auburn Enterprises, Inc., Ventura, Calif.

Filed Feb. 7, 1979, Ser. No. 10,174

Int. Cl.³ A61B 10/00

U.S. Cl. 128—751

5 Claims



1. An instrument for taking tissue specimens comprising: a first elongated member having a first fore end and a first aft end; a second elongated member having a second fore end and a second aft end, said first and second elongated members being connected together and movable in relation to each other, said aft ends cooperating to form a manually graspable section for causing relative movement of said first and second elongated members; said first fore end including a cavity, said cavity being formed by a sidewall, said sidewall having an outer edge, said outer edge including a cutting blade, said second fore end including a third member movable into and out of said cavity, means located within said cavity, said means being movable within said cavity between a lower position and an upper position, said lower position establishing the maximum size of said cavity, said upper position establishing the minimal size of said cavity, whereby a tissue specimen is to be forced into said cavity by moving of said third member into said cavity causing the tissue specimen to be served by said cutting blade, and upon removing of said third member from said cavity said means moves to said upper position and causes the tissue specimen to be substantially displaced from said cavity; and said means including relief means for facilitating cooperation with a pair of tweezers to remove said tissue specimen located on said means.

4,243,048

BIOPSY DEVICE

Lawrence C. Griffin, Toledo, Ohio, assignor to Jim Zegeer, Arlington, Va., a part interest

Continuation of Ser. No. 168,415, Aug. 2, 1971, abandoned, which is a continuation of Ser. No. 857,858, Sep. 15, 1969, abandoned. This application Sep. 21, 1976, Ser. No. 725,300

Int. Cl.³ A61B 17/36

U.S. Cl. 128—751

2 Claims



1. A surgical device for extracting a biopsy specimen from the endocervical canal of females without surgery or dilation and enlargement thereof, comprising an elongated shaft, a rounded plastic member shaped as a guiding protuberance for entrance to the endocervical canal of a female, said plastic member being secured to the end of said elongated shaft, a hollow metallic tubular blade member telescopically fitted on said shaft for sliding and rotary motion along and about the longitudinal axis of said elongated shaft, an annular cutting element on the end of said tubular blade member, said hollow blade member having an internal diameter which is larger than the external diameter of said elongated shaft so as to form a

specimen receiving chamber, said guiding protuberance having a planar trailing surface which can be cut or scored by said annular cutting element to assure complete and clean severance of the specimen so that on withdrawal of the device from the endocervical canal of the female there is no pulling and tearing of tissue and no inadvertent spreading of possibly diseased tissue and cells during removal of the said device from the endocervical canal, and wherein said plastic member is constituted by a material which will tend to decompose in the prolonged presence of animal tissue.

4,243,049

METHOD AND APPARATUS FOR EXFOLIATIVE CYTOLOGY

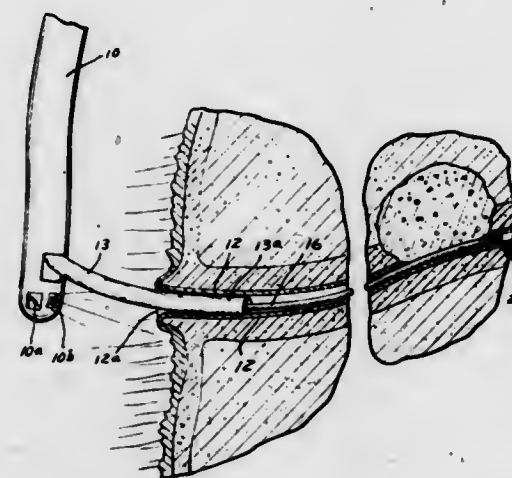
Robert L. Goodale, 1903 Kenwood Pkwy., Minneapolis, Minn. 55405; Thomas D. Dressel, 1409 Zealand Ave. North, Minneapolis, Minn. 55427, and John W. Borne, 9960 Linnet St. NW., Coon Rapids, Minn. 55433

Filed Jan. 11, 1979, Ser. No. 47,222

Int. Cl.³ A61B 10/00

U.S. Cl. 128—757

8 Claims



1. The method for exfoliative abrasion of cells from the inner portions of the pancreatic duct and other inaccessible anatomical locations; said method including the following steps: providing a serrated rasp element of a diameter less than 1.0 mm, inserting an endoscope down through the patient's mouth, esophagus, and stomach to locate the lower end thereof in substantially opposed relation to the entrance to the pancreatic duct, providing flexible operating means for said rasp element, inserting said operating means and rasp element downwardly through said endoscope and through the entrance of said pancreatic duct, engaging the epithelium of the desired ductal areas by a scraping action of the serrated rasp element to abrade the same and produce exfoliation of cells therefrom, collecting said exfoliated cells, and withdrawing said rasp and endoscope back through the patient's mouth.

4,243,050

METHOD FOR INSERTING PACEMAKER ELECTRODES AND THE LIKE

Philip O. Littleford, 251 Salvador Sq., Winter Park, Fla. 32789

Continuation-in-part of Ser. No. 860,246, Dec. 13, 1977, Pat. No. 4,166,469. This application Feb. 5, 1979, Ser. No. 9,137

The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.

Int. Cl.³ A61N 1/18

U.S. Cl. 128—784

4 Claims

1. A method for the rapid and atraumatic implantation of a permanent pacemaker into a patient, comprising the steps of: providing an encapsulated pulse pacing generator having a

receptacle, and further providing a permanent pacemaker electrode having an electrode tip and a connector plug cooperable with the receptacle of the encapsulated pulse pacing generator; providing a hollow needle, a flexible guide wire dimensioned to pass through said needle, a tubular introducer having a central hole larger than said wire and a taper at its forward end, and a hollow sleeve about said introducer with means providing a flange at one end of said sleeve opposite said forward end of said introducer, with a longitudinal slit along only a portion of said sleeve and extending through said flange means so as to terminate short of the forward end of said sleeve; inserting the needle into a subclavian vein of the patient; thereafter passing the flexible guide wire through the needle and into the subclavian vein and toward the heart; thereafter removing said needle while leaving said guide wire in the subclavian vein;



- positioning said sleeve on said introducer such that the unslit forward end of said sleeve terminates short of said taper to thereby avoid trauma and tearing of the subclavian vein when said introducer and sleeve are subsequently inserted therein; thereafter sliding said introducer and said sleeve together along said guide wire and into the subclavian vein; thereafter removing said guide wire and said introducer, leaving said sleeve in the subclavian vein; thereafter passing said permanent pacemaker electrode down said sleeve into the subclavian vein and then into the heart so as to position said electrode tip in the heart; thereafter grasping and pulling said flange means away from said electrode and the longitudinal direction of said slit for peeling said sleeve away from said electrode and tearing the unslit portion of said sleeve for removing said sleeve from the electrode; connecting the connector plug of the electrode to the receptacle of the encapsulated pulse generator; and implanting the pulse generator into the patient.

4,243,051

DISPOSABLE ELECTRODE

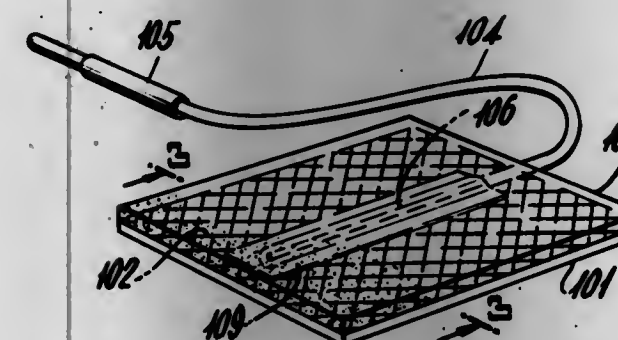
Robert F. Wittemann, New Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 8, 1979, Ser. No. 1,501

Int. Cl.³ A61N 1/04

U.S. Cl. 128—798

2 Claims



1. A transcutaneous electrode providing electrical contact with a patient's skin, having substantial uniformity of current density and resistance to physical deformation comprising: (a) a conductive member having upper and lower surfaces generally defining the configuration of said electrode; (b) an electrically conductive adhesive material, electrically and physically connected to and covering the lower surface of said conductive member, and physically connected to and covering the lower surface of said conductive member.

face of said conductive member, for interfacing said conductive member with the patient's skin; (c) electrical connection means for physically and electrically coupling said conductive member with an external electrical apparatus, said connection means including an electrical conductor joining said conductive member at a contact point along a side of said conductive member, thence extending away from said point substantially across the lower surface of said conductive member, said electrical conductor being in electrically conductive relation with said conductive member substantially across said lower surface; and (d) an electrically insulating tape reinforcing means overlaying the full length of said electrical conductor and simultaneously being bonded to said lower surface.

4,243,052

DISPOSABLE ELECTRODE

William D. Bailey, Wayzata, Minn., assignor to Stimtech, Inc., Minneapolis, Minn.

Filed Jan. 8, 1979, Ser. No. 1,502

Int. Cl.³ A61N 1/04

U.S. Cl. 128—798

2 Claims



1. A transcutaneous electrode providing electrical contact with a patient's skin, having substantial uniformity of current density and resistance to physical deformation comprising: (a) a conductive member having upper and lower surfaces generally defining the configuration of said electrode and having an opening in the central portion thereof; (b) an electrically conductive adhesive material, electrically and physically connected to and covering the lower surface of said conductive member, for interfacing said conductive member with the patient's skin; (c) electrically nonconductive backing means laminated to the upper surface of said conductive member, and defining the configuration of said electrode, said backing having an opening in the central portion thereof; (d) electrical connection means for physically and electrically coupling said conductive member with an external electrical apparatus, said connection means including (i) a stranded wire, penetrating said backing means central opening and further penetrating said conductive member central opening, thence dividing into two strands which extend in opposite directions away from said conductive member central opening, spanning between substantially opposite extremes of said conductive member and in physical and electrically conductive relation with said lower surface of said conductive member, and (ii) electrically insulating reinforcing tape means overlaying said two strands and holding them in physical contact to said lower surface of said conductive member.

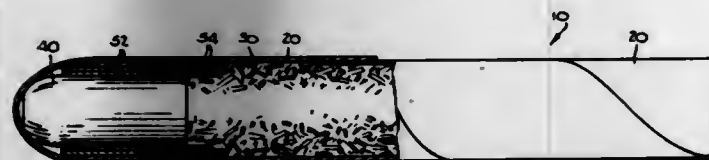
4,243,053 FILTER CIGAR

William F. Cartwright, Manchester; Alan Cornell, Bloomfield, both of Conn.; D. Bernard Higgins, Berwick, Pa., and Robert P. Mikkelsen, East Hartford, Conn., assignors to Gulf & Western Company, New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,612
Int. Cl.³ A24D 1/10

U.S. Cl. 131—4 A

4 Claims



1. An improved filter cigar of the type wherein a preformed, cylindrically shaped filter is tightly mated with a tobacco filler charge both integrally wrapped in sheets of cigar binder and cigar wrapper material, wherein the improvement comprises: reinforcement means for preventing separation between said filter and said filler charge, said reinforcement means comprising a strip of high wet strength material circumferentially wrapped over the interface between the filter and filler charge and directly bonded to the binder on both sides of said interface; and flame extinguishment means to extinguish the flame of said cigar prior to ignition of said filter; said flame extinguishment means comprising a strip of nonflammable material circumferentially wrapped over said interface and directly bonded to said reinforcement strip.

4,243,054

METHOD AND APPARATUS FOR FORMING AN EQUALIZED TOBACCO STREAM

Gerhard Grashmann, Wehltorf, and Heinz Siebert, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Kärber & Co. KG., Hamburg, Fed. Rep. of Germany

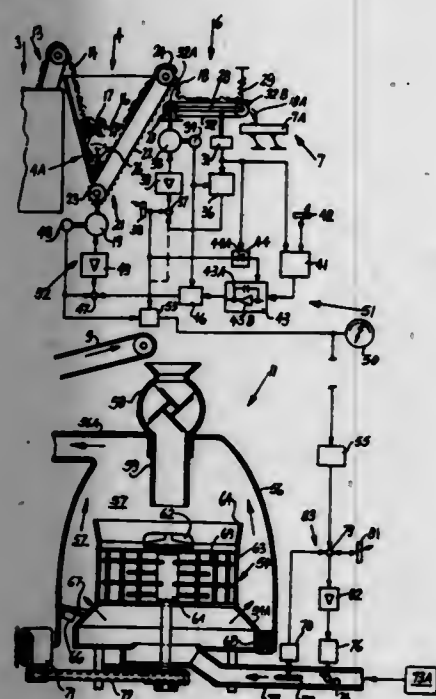
Filed Sep. 17, 1979, Ser. No. 76,208

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841470

Int. Cl.³ A24B 7/14; G01G 11/08

U.S. Cl. 131—22 R

22 Claims



1. A method of building an equalized tobacco stream wherein the weight of each unit length at least approximates a predetermined weight, comprising the steps of respectively conveying successive unit lengths of a tobacco stream at variable first and second speeds along first and second portions of

an elongated path; weighing successive unit lengths in said second portion and generating a first series of signals denoting the weight of the respective unit lengths; monitoring said second speed and generating a second series of signals denoting the speed of successive unit lengths in said second portion; utilizing said first and second signals for the generation of third signals which vary as a function of changes in the weight and/or speed of successive unit lengths; varying said second speed when the characteristics of said third signals deviate from a predetermined value; and varying the ratio of said first and second speeds as a function of the extent and duration of deviation of the characteristics of signals of one of said series from a preselected value.

4,243,055

METHOD AND DEVICE FOR WRAPPING CLOSED TIP CIGARS

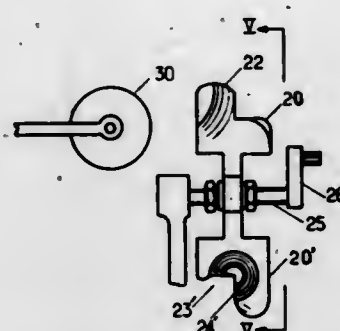
Jean Bossuet, Carbon Blanc; Jean Godet, Bordeaux; Jean-François Guiton, Bordeaux; René Sizarol, Bordeaux, and Pierre Waegert, Bordeaux, all of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Mar. 5, 1979, Ser. No. 17,107

Claims priority, application France, Mar. 9, 1978, 78 06789
Int. Cl.³ A24C 1/30, 1/32

U.S. Cl. 131—76

5 Claims



1. A device for mechanically wrapping closed tip cigars of the type in which the bunches are wound in the normal direction of the machine used when wrappers are to be employed which are cut out from a half-leaf corresponding to the "type" of the machine, i.e. "right-hand" or "left-hand", and said bunches are wound in the direction opposite said normal direction when wrappers are to be employed which are cut out from a half-leaf not corresponding to the type of the machine, said device comprising means for rotating a cigar bunch on itself, means for conducting a wrapper to the preceding means so that it is wound from the foot of said bunch to the tip thereof and shaping means for applying the end of the wrapper on the tip of said bunch so as to close said tip, wherein said shaping means comprise surfaces for guiding the end of the wrapper corresponding to the direction of guiding of the wrapper on the tip whatever this direction is.

4,243,056

METHOD FOR UNIFORM INCORPORATION OF ADDITIVES INTO TOBACCO

Roger Z. de la Burde, Powhatan, and Patrick E. Aument, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 12, 1979, Ser. No. 2,981

Int. Cl.³ A24B 3/18, 3/12, 3/00

U.S. Cl. 131—140 B

10 Claims

1. A method for uniform incorporation of additives into tobacco which comprises:
 - (a) dispersing an additive in liquid carbon dioxide;
 - (b) contacting tobacco with the resultant liquid carbon dioxide solution for a period of time sufficient to permit absorption of at least part of the solution by the tobacco;
 - (c) converting part of the liquid carbon dioxide absorbed by the tobacco to solid carbon dioxide; and

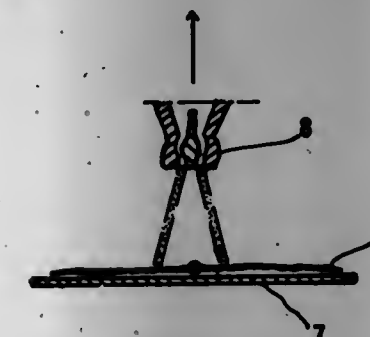
- (d) allowing the solid carbon dioxide to evaporate.

4,243,057

PROCESS FOR SPREADING TOBACCO LEAVES
Huguette Peschel born Chaudron, Paris, and Robert Caffes, Checy, both of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France
Filed Aug. 30, 1977, Ser. No. 828,992
Claims priority, application France, Sep. 1, 1976, 76 26326
Int. Cl.³ A24B 3/18, 3/00

U.S. Cl. 131—147 A

6 Claims



1. A method of spreading out a tobacco leaf comprising bringing a liquid into contact with the leaf while creating relative movement between the leaf and the liquid in a direction which effects spreading of the leaf.

4,243,058

JEWELRY SMOKING DEVICE

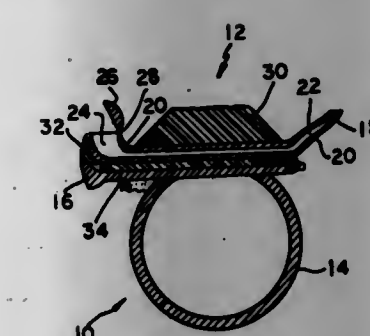
George Gornsheln, 30 W. 69th St., New York, N.Y. 10023

Filed Jan. 27, 1974, Ser. No. 483,629

Int. Cl.³ A24F 3/00, 5/10

U.S. Cl. 131—171 R

3 Claims



1. Jewelry smoking device comprising an ornamental pipe member in the form of an annular hollow member and adapted to be worn as an item of jewelry, the smoking device having a tobacco receiving portion for receiving smoking tobacco; a mouthpiece; and conduit means for carrying smoke from said tobacco receiving portion to said mouthpiece, said annular hollow member having one opening provided at one circumferential portion of said annular member and another opening provided at another circumferential portion spaced from said one opening, one of said openings forming said tobacco receiving portion and the other of said openings forming said mouthpiece portion; and thermal insulation means provided along the internal surface of said annular member, whereby the latter may be worn by a wearer without being exposed to the high temperatures reached in said hollow member.

4,243,059

METHOD AND DEVICE FOR DETERMINING THE HOMOGENEITY OF MAGNETIC DISPERSIONS
Fritz Hammon; Manfred Ohlinger, both of Frankfurt, and Job-Werner Hartmann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

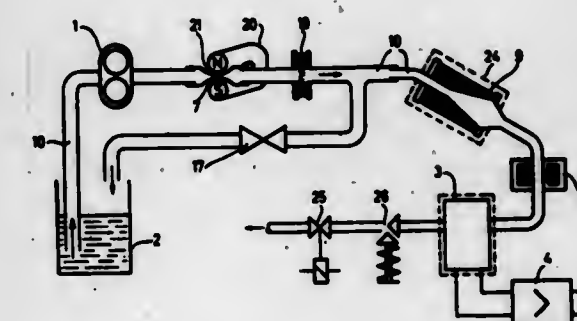
Filed May 22, 1978, Ser. No. 908,446

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1977, 2726370

Int. Cl.³ G01R 33/12

15 Claims

U.S. Cl. 137—2



1. A method of determining the homogeneity of a magnetic dispersion which comprises the steps of:
 - subjecting the dispersion, while in the form of a flowing stream, to a magnetic field,
 - conducting the flowing magnetic dispersion past the air gap of a magnetic head,
 - sensing the voltage generated by said head, and
 - determining from the sensed voltage the degree of homogeneity of the dispersion.

4,243,060

FLUID CONTROL VALVE

Lorne J. McKendrick, Westland, Mich., assignor to Parts Handling, Inc., Dearborn, Mich.

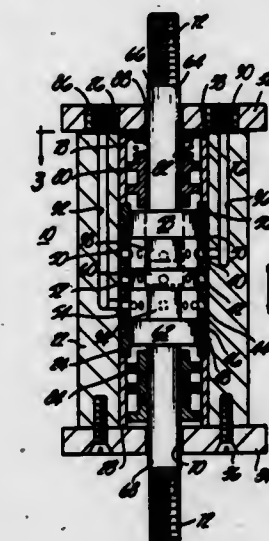
Continuation of Ser. No. 799,041, May 23, 1977, abandoned.

This application May 1, 1979, Ser. No. 34,957

Int. Cl.³ F16K 11/07; B66D 1/00; F15B 13/04

U.S. Cl. 137—625.69

6 Claims



1. A fluid control valve comprising:
 - a valve member;
 - a housing axially slidably disposed over said valve member, said housing having a first, second, and third fluid passageways open to said valve member, each of said fluid passageways being formed axially through the housing;
 - means for resiliently retaining said housing in a predetermined axial position relative to said valve member whereby said fluid passageways are disconnected from each other, said resilient retaining means being wholly contained within said housing;

wherein said valve member fluidly connects said first and second fluid passageways when said housing is moved in one axial direction from said predetermined position and wherein said valve member fluidly connects said first and third fluid passageways when said housing is moved in the other axial direction from said predetermined position; wherein said valve member is a spool valve disposed in a bore formed in said housing; wherein said housing has a bore in which the valve member is positioned and wherein said first, second, and third fluid passageways are fluidly connected to said housing bore at axially spaced positions, said first bore being axially positioned between said second and third passageways in said housing bore, and wherein said valve member includes at least one land which closes said first passageway when said housing is in said predetermined position, and a tubular valve sleeve disposed in said housing bore, said spool valve being slidably sealingly received through said valve sleeve, said valve sleeve being spaced radially inwardly from said housing bore, and sealing means being disposed between said valve sleeve and said housing bore for defining an upper fluid chamber, a central fluid chamber and a lower fluid chamber between said valve sleeve and said housing bore, said fluid chambers being annular in cross section and axially adjacent each other, wherein said first passageway communicates with said central annular chamber while said second and third passageways respectively communicate with the upper and lower annular fluid chambers, respectively, and at least one aperture formed through said valve sleeve for each of said annular chambers.

4,243,061

HAIR CURLING AND WAVING DEVICE

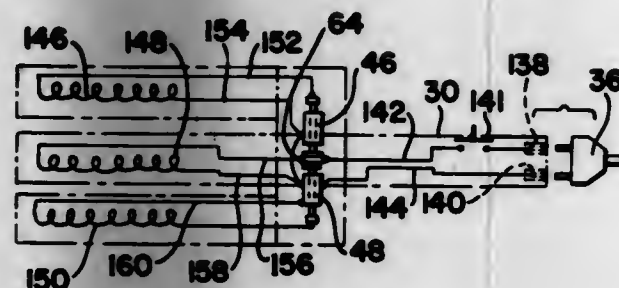
Glen W. Buchanan, 7049 Charing Ct., Dayton, Ohio 45424

Filed Feb. 23, 1979, Ser. No. 14,728

Int. Cl.³ A45D 2/24

U.S. Cl. 132—37 R

13 Claims

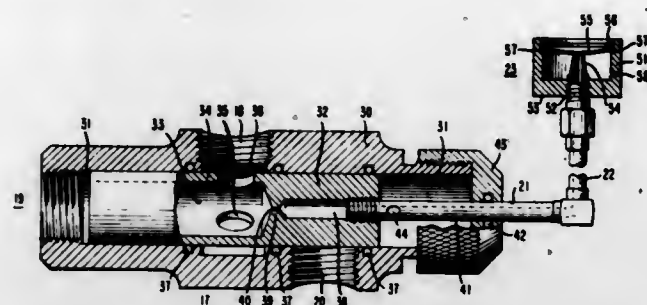


1. A hair waving device, comprising:
a handle;

first and second groups of elongated hair waving members mounted on said handle for intermeshing engagement, said first group being rotatable relative to said second group about end portions of both groups adjacent said handle, between a position in which said members of said first and second groups are disposed in a non-intermeshed position sufficiently separated for inserting a plurality of strands of hair and a position wherein said first and second groups are disposed in an intermeshed position wherein said strands of hair are alternately curved together in opposite directions about adjacent ones of said members; and

at least one elongated wave guide mounted to said handle for relative rotation with one of said groups of members and for sliding movement longitudinally thereof, said wave guide having means for engaging said hair for causing lateral displacement of a portion thereof longitudinally of said waving members a sufficient distance to impart a wave to the hair.

4,243,062
THERMOSTATIC SELF-POWERED DRAIN VALVE
Russell S. Shelton, Mt. Olive Township, Morris County, N.J., assignor to Sheltech, Inc., Springfield, N.J.
Filed Jul. 14, 1978, Ser. No. 924,848
Int. Cl.³ E03B 7/10; F16K 31/38
U.S. Cl. 137—62 9 Claims



5. A fluid containing system protected against extreme temperatures comprising a body having a longitudinal cavity therein and three ports opening into said cavity, said protected system being connected to one of said ports, a source of fluid flow under pressure connected to a second of said ports, a drain for said fluids connected to a third of said ports, said body having a fourth port opening into said cavity, a transverse barrier slideably retained within said cavity and adapted for selectively coupling said one port to either said second port or said third port on one side of said barrier, said barrier including an orifice for coupling said one port on one side of said barrier to the other side thereof and to said fourth port, means utilizing hydraulic pressure present at said one port for reversing the coupling between said one port and said second and third ports, said means for reversing including thermally sensitive means for relieving hydraulic pressure at said fourth port to create unequal hydraulic pressures on opposite sides of said barrier whereby said barrier is moved longitudinally in the direction of said relieved pressure.

4,243,063

MIXING VALVE

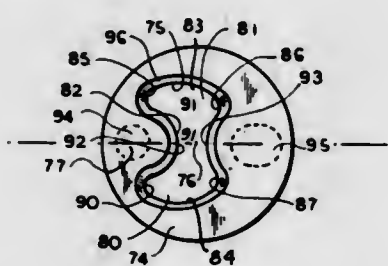
Richard G. Parkison, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,619

Int. Cl.³ F16K 19/00

U.S. Cl. 137—100

9 Claims



1. A mixing valve comprising a valve seat having a hot fluid aperture, a cold fluid aperture and a discharge aperture formed therein, a plate having a surface abutting said valve seat and rotatable relative thereto, said plate having a cavity formed in said abutting surface, said cavity having a pair of lobes each of said lobes being disposed on an opposite side of an axis and being axisymmetric therewith, said lobes being asymmetric with respect to an axis that is perpendicular to said axis of symmetry and having one portion of each of said lobes having a substantially larger volume than the other respective lobe portions, the each said larger volume lobe portion being offset

in the same direction relative to the center of said plate toward said plate perimeter, said lobes each having rounds formed at the ends thereof to provide a smooth development to a waist-like transition that joins said lobes together at said ends to enable the portion of one of said lobes that is offset toward said plate perimeter to register with one of said cold fluid or hot fluid valve seat apertures before the other lobe registers with the other of said cold fluid or hot fluid in order to establish fluid communication therethrough.

6. A mixing valve according to claim 1 further comprising a manifold, a cold water inlet fitting establishing fluid communication with said manifold, a hot water inlet fitting establishing fluid communication with said manifold, a pressure balancing valve coupled to said manifold for adjusting the volumes of cold- and hot-water flow through said manifold, a hot water discharge connecting said pressure balancing valve with said valve seat hot water aperture, and a cold water discharge for connecting said pressure balancing valve with said valve seat cold water aperture.

7. A mixing valve according to claim 6 wherein said pressure balancing valve further comprises a housing having a hot water inlet, a cold water inlet and a chamber in fluid communication with said hot- and cold-water pressure balancing valve inlets, a pressure balancing spool within said housing and slidable therewithin, said spool having two grooves formed in the surface thereof, said grooves being appreciably wider than a respective one of said housing inlets, a land separating said grooves, said land being substantially narrower than the separation between said housing inlet, a pair of further lands each disposed on a respective opposite end of said spool, and each said further land being at least as wide as said respective housing inlet, said spool having two bores formed therein, each of said bores establishing fluid communication for the hot- and cold-water through said spool, and a pair of further bores formed in said spool, each to establish fluid communication between a respective one of said hot- and cold-water bores and said housing chamber.

4,243,064

BYPASS VALVE FOR PUMPS, HEATING SYSTEMS AND THE LIKE

Ewald Nolte, Bielefeld, Fed. Rep. of Germany, assignor to Tuxhorn KG, Bielefeld, Fed. Rep. of Germany

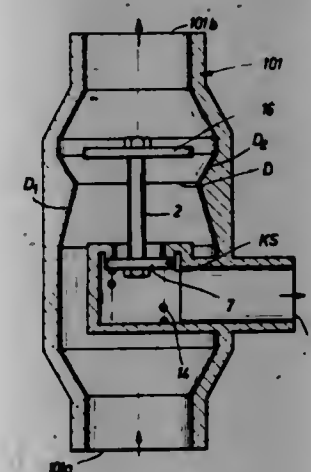
Filed Apr. 20, 1978, Ser. No. 898,340

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 2725044; Jan. 27, 1978, 7802444[U]

Int. Cl.³ G05D 11/00

U.S. Cl. 137—117

6 Claims



1. A bypass valve for regulating the flow of a fluid, comprising a valve member having an axis and including a larger-diameter main valve portion and a smaller-diameter bypass valve portion rigid with and axially spaced from said main valve portion; and a housing having a fluid-admitting inlet, a fluid-discharging main outlet aligned with said inlet, a passage communicating said inlet with said main outlet, a fluid-discharging bypass outlet communicating with said passage intermediate

said inlet and said main outlet, and a valve seat for said bypass valve portion at said bypass outlet, said housing accommodating said valve member for axial displacement between a first end position in which said bypass valve portion engages, and a second end position in which said bypass valve portion is axially spaced from, said valve seat, said passage having, as considered in the flow direction, a diverging section accommodating said main valve portion with a clearance in all positions of said valve member so that the fluid flows past said main valve portion at rates which gradually increase as said valve member is displaced from said second toward said first end position thereof, and a converging section situated upstream of said diverging section and directing the flow of the fluid against said main valve portion.

4,243,065

APPARATUS FOR REMOVING GAS FROM A LIQUID

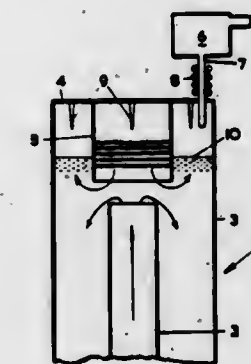
Michael E. Garrett, Woking, England, assignor to BOC Limited, London, England

Filed Mar. 19, 1979, Ser. No. 21,661

Int. Cl.³ F16K 24/00

U.S. Cl. 137—171

6 Claims



1. An apparatus for removing gas from a liquid comprising a siphon having a rising leg and a falling leg, a skirt depending into the siphon from an upper closure member, the skirt being positioned immediately opposite the upper part of the rising leg and a gas extraction pump in flow communication with the siphon by means of a tube extending through the closure member at a location outside the skirt.

4,243,066

FLUID FLOW CONTROL VALVES

John W. Lambie, Kilmarnock, Scotland, assignor to Neptune Glenfield Limited, Ayrshire, Scotland

Filed Dec. 22, 1978, Ser. No. 972,486

Claims priority, application United Kingdom, Dec. 30, 1977, 54263/77

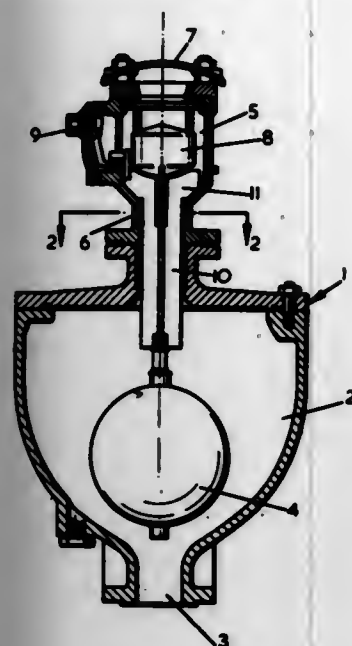
Int. Cl.³ F16K 31/18

U.S. Cl. 137—202

5 Claims

1. An air release valve incorporating a float chamber connectable to a pipeline and containing a float, an air chamber in communication with the float chamber by way of a passage leading from the top of the float chamber to the bottom of the air chamber, the top of the air chamber being formed with an air vent, a cup-shaped cage formed of bars located within the air chamber, a valve element contained within said cup-shaped cage in the air chamber and movable from a lowermost position above and clear of the entry of the passage into the air chamber and an upper position closing the air vent and a push rod having a cross section of multi-lobe shape located between the float and the valve element and operative to communicate

movement of the float to the valve element, the upper end of the push rod being slotted to permit the push rod to straddle



the bars of the cage and enter the cage to enable it to come into contact with the valve element within the cage.

4,243,067

BALL TYPE CHECK VALVE

Robert J. Rubey, Wisconsin Rapids, Wis., assignor to Sterling Drug Inc., New York, N.Y.

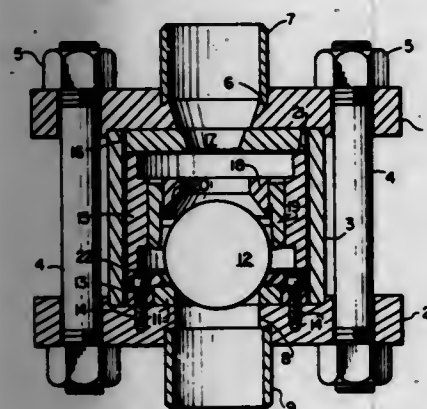
Continuation of Ser. No. 921,168, Jan. 30, 1978, abandoned.

This application Nov. 15, 1979, Ser. No. 94,732

Int. Cl.³ F16K 15/04

U.S. Cl. 137—329.03

12 Claims



1. A check valve comprising:

- first and second flanges spaced from each other, said first flange having an outlet opening therethrough and said second flange having an inlet opening therethrough coaxially aligned with said outlet opening;
- a spherical ball between said flanges;
- ball seat means concentric with and surrounding said inlet opening for receiving and seating said ball therein;
- a top plate between said first flange and said ball, said top plate having a hole therethrough coaxially aligned with said openings in said flanges, said hole being of conical shape and diverging away from said ball;
- ball stop means coaxially aligned with said axis through said inlet and outlet openings and spaced between said top plate and said ball and spaced from said ball seat means a distance slightly greater than the diameter of said ball for receiving said ball therein; and
- a valve body between said first and second flanges, and surrounding said ball, said top plate and said ball stop, and said ball seat means.

4,243,068

SEWER CHIMNEY

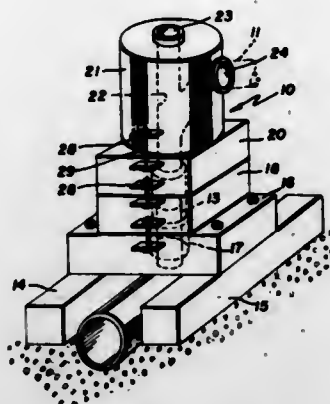
Peter J. Sagda, 30 Walnut St., Enfield, Conn. 06082, and Thomas G. Thompson, 4 Pond Ln., Granby, Conn. 06035

Filed Jan. 25, 1979, Ser. No. 51,616

Int. Cl.³ F16L 5/00

U.S. Cl. 137—363

9 Claims



1. A sewer chimney for connecting surface branch sewer lines to a deeply buried main sewer line having an upwardly-directed nipple, comprising:

- (a) a first and a second base positioned on opposite sides of the main sewer line,
- (b) a bridge which rests on the first and second bases and passes over the main sewer line, the bridge having a bore through which the nipple passes, so that a portion of the nipple extends above the bridge,
- (c) a transitional section which rests on and is secured to the bridge, this section having a bore which is coaxial with and encloses the end of the nipple, and
- (d) a cap block which rests on and is secured to the transitional section, the cap block having a bore with a first opening coaxial with the bore of the transitional section and a second opening adapted to connect to a branch sewer line, the weight of the bridge, section, and block being supported by the bases and not by the main sewer line.

4,243,069

FLUID FLOW REGULATOR

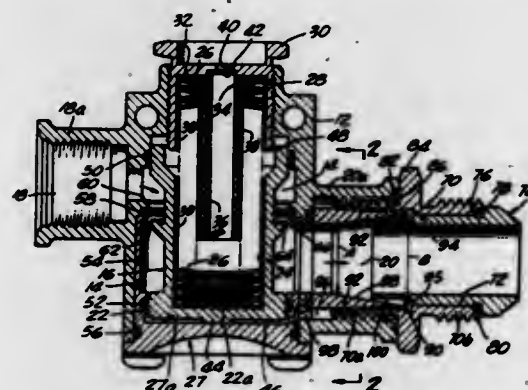
Meyer Piet, and James J. Castor, both of City of Industry, Calif., assignors to Futurecraft Corporation, City of Industry, Calif.

Filed Jan. 22, 1979, Ser. No. 51,050

Int. Cl.³ F16K 17/34

U.S. Cl. 137—484.6

12 Claims



1. A fluid flow regulator comprising:

- (a) a body having an axial opening and including a fluid inlet passage and an axially spaced fluid outlet passage interconnected with said axial opening;
- (b) pressure port means in said axial opening between said inlet and outlet passages;
- (c) a slide member receivable in said axial opening for axial

movement therewithin in response to fluid pressure exerted thereon;

- (d) biasing means operably associated with said slide member for yieldably resisting movement thereof within said axial opening;
- (e) port closure means carried by said slide member for closing said pressure port means upon movement of said slide member within said opening; and
- (f) fluid diverting means disposed within said outlet passage for diverting a portion of the fluid flowing therethrough and directing it toward said slide member, said fluid diverting means comprising a first conduit means defining a fluid flow path substantially parallel to the direction of flow of the fluid within said outlet passageway for capturing a portion of the fluid flowing through said outlet passageway.

4,243,071

SAMPLE INJECTION VALVE

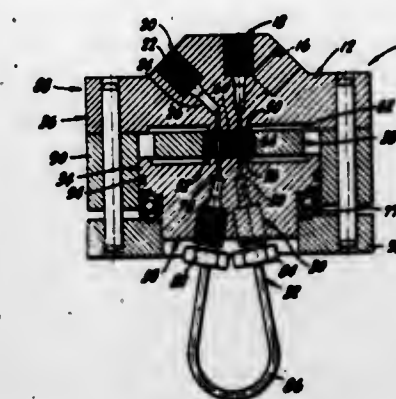
Carl L. Shackelford, San Pablo, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Filed Aug. 23, 1978, Ser. No. 936,174

Int. Cl.³ F16K 11/02

U.S. Cl. 137—625.46

11 Claims



1. A sample injection valve especially useful for injecting a fluid sample into a pressurized fluid system comprising:

- a. a first member having a first port as the fluid system inlet, a second port as the sample injection inlet, a third port as the fluid system outlet, and a fourth port as a vent;
- b. means for retaining a selected amount of fluid sample;
- c. control means for simultaneously connecting said first port of said first member to said third port of said first member, and connecting said fluid sample retaining means to said second port and said fourth port of said first member; said control means comprising:
- a second member having first, second, third, and fourth ports, said fluid sample retaining means being connected to said second member between said second and fourth ports thereof for communication therewith, said second member further including shunt means for connecting said first and third ports of said second member; said second member being mounted for communication of said first, second, third, and fourth ports thereof with said first, second, third, and fourth ports of said first member; and
- d. means for moving said second member in relation to said first member to change the position of said fluid sample retaining means from connection between said second and fourth ports of said first member to connection between said first and third ports of said first member.

4,243,070

VARIABLE BACK PRESSURE VALVE

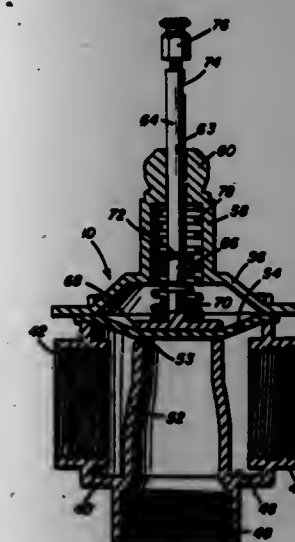
Samuel G. Jackson, P.O. Box 16587, Lubbock, Tex. 79490

Filed Aug. 16, 1978, Ser. No. 933,989

Int. Cl.³ F16K 7/17

U.S. Cl. 137—510

4 Claims



- 1. In a back pressure valve comprising a valve body including port means enabling fluid flow into the body, an exhaust orifice in said valve body, a diaphragm normally closing the exhaust orifice and being lifted from the exhaust orifice for discharging fluid therethrough, that improvement comprising a rod extending into the valve body and longitudinally movable with respect thereto with the inner end of the rod being operatively associated with the diaphragm and the outer end of the rod being operatively associated with an external control actuator to alter the opening and closing characteristics of the diaphragm, said diaphragm is held closed against fluid pressure in the body by a main coil spring, said rod including a ring mounted thereon for engagement with the end of the main spring remote from the diaphragm for varying the pressure exerted on the diaphragm by the spring, said valve includes a weak coil spring encircling the push rod and main coil spring engaged by the push rod with the inner end of the weak spring engaging the diaphragm to close the diaphragm in the event fluid flow ceases and pressure is removed from the diaphragm and main spring engaged with the rod by movement of the push rod outwardly thereby preventing entry of air through the exhaust orifice, the inner end of the rod extending into the main spring for maintaining the main spring and push rod in aligned relation.

4,243,072

THREE POSITION SELECTOR VALVE

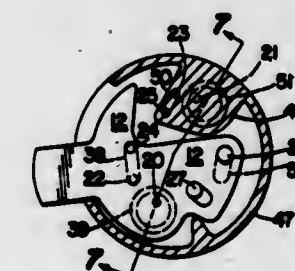
Robert K. Hoffman, and Mark A. Kavanaugh, both of Plainwell, Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Dec. 26, 1978, Ser. No. 972,769

Int. Cl.³ F16K 11/20

U.S. Cl. 137—637.1

14 Claims



- 1. A selector valve comprising a stationary port portion, first and second movable port portions each mounted for individual movement between two positions relative to said stationary

port portion, locking means locking one of said movable port portions in one of its positions when the other of said movable port portions is in one of its positions, means secured to said first movable port portion for receiving a manual force to move said first movable port portion between said two positions, and means secured to said second movable port portion and surrounding said first movable port portion for receiving a manual force to move said second movable port portion between said two positions.

4,243,073

SURGE STABILIZER

Dale G. Hugley, Box 465, Kennedale, Tex. 76060
Filed Mar. 2, 1979, Ser. No. 17,046
Int. Cl.³ F16L 55/00

U.S. Cl. 138—26

6 Claims



1. An improved surge stabilizer comprising: an elongated generally cylindrical case; means for placing the interior of said case in pressure communication with a line subject to pressure surges; a generally cylindrical pressurizable cartridge having a longitudinal axis and having a flexible wall containing reinforcing cords positioned at an angle between about 0° and about 30° to the axis of said cartridge and further having end caps, said cartridge being positioned within said case and being attached to said case through one of said end caps; said cartridge being so proportioned with respect to said case that its flexible wall is out of contact with the inner surface of said case when it is pressurized but uncompressed; and a control rod of selected length engagable with both of said caps disposed within said cartridge between said caps for limiting the distance said caps may displace toward each other upon receipt of a pressure surge within the case, the selected length of said control rod being such that said rod engages said end caps in displacement limiting engagement substantially simultaneously with engagement of said flexible wall with the inner surface of said case upon receipt of a pressure surge.

4,243,074

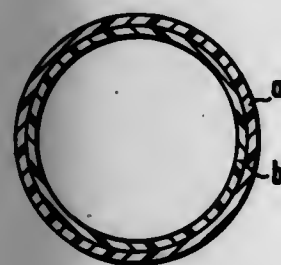
TUBULAR PACKAGING MATERIAL, PREFERABLY FOR USE AS A SAUSAGE CASING

Hans Strutzel, Klaus Hohelsel, and Siegfried Janocha, all of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1978, Ser. No. 910,144
Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724252

Int. Cl.³ F16L 11/00; B65D 81/34; B32B 27/06
U.S. Cl. 138—118.1

21 Claims



1. A multi-layer tubular packaging material having two or more layers, comprising a tubular packaging arrangement

comprised of a packaging material comprising at least one first layer of a polymer comprising a linear polyamide and, bonded to the outer surface of said first layer, at least one second layer of a polymer comprising a major proportion of a linear polyamide containing from about 2 to 40 percent by weight of a hydrophilic substance compatible with the polyamide, said hydrophilic substance comprising polyvinyl alcohol.

4,243,075

COMPOSITE PIPE

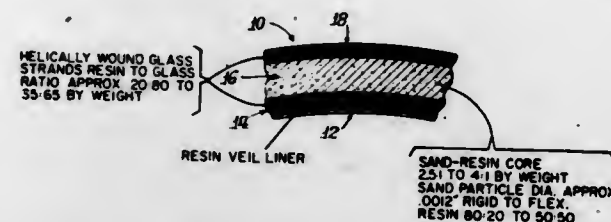
Alex L. McPherson, Winfield, Ill.; Douglas E. Triestram, and James E. Lawrence, Jr., both of Coshocton, Ohio, assignors to Clow Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 879,112, Feb. 21, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,471

Int. Cl.³ F16L 9/04

U.S. Cl. 138—174

5 Claims



1. A composite reinforced plastic pipe which includes a tubular inner liner of resin impregnated surfacing veil and/or mat, an inner layer of continuous resin impregnated fiberglass strands wound circumferentially in a helical manner about said inner liner in contact with the outer peripheral surface of said inner liner, a core layer disposed circumferentially about said inner layer in full surface engagement therewith, said core layer consisting of a homogenous particle size sand-resin composition having a sand-resin ratio in the range of approximately 2.5:1 to 4:1 by weight, and an outer layer of continuous resin impregnated fiberglass strands wound circumferentially in a helical manner about said core layer, said inner and outer resin impregnated continuous fiberglass strands having a resin to glass ratio in the range of approximately 20:80 to 35:65 by weight, said sand-resin composition comprising a mixture of rigid resin to flexible resin in the range of approximately 80:20 to 50:50 so as to enable approximately 4-9 percent resin elongation, said inner liner, inner layer, core layer and outer layer being cured to form a composite plastic pipe having high resistance to internal and external pressures.

4,243,076

LOOM RAPIER DRIVE MECHANISM

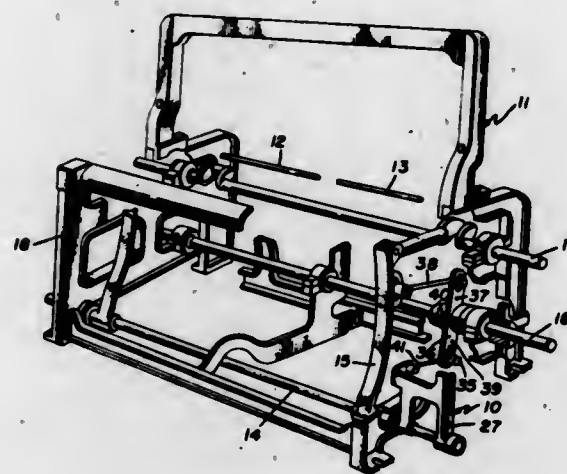
Robert G. Mallard, 390 S. Main St., Hopedale, Mass. 01747
Division of Ser. No. 756,020, Jan. 3, 1977, Pat. No. 4,111,240.

This application Jun. 8, 1978, Ser. No. 913,875

Int. Cl.³ D03D 47/18

U.S. Cl. 139—449

5 Claims



1. Rapier drive mechanism for a textile loom, having a recip-

rocating lay, a lay sword rocker shaft, and having a pair of transversely-slidable rapiers capable of movement for transferring weft yard from side-to-side of the loom, comprising:

- (a) a right angle transmission mounted on the loom lay with an input shaft whose axis extends transversely of the loom and with an output shaft whose axis is transverse to the axis of the input shaft, the input shaft having a pinion gear, the transmission including a geneva device that causes the output shaft to dwell,
- (b) connecting means operatively connected to the output shaft and to each of the rapiers, so that rotation of the output shaft in one direction moves the rapiers toward one another and rotation of the output shaft in the other direction moves the rapiers apart, and
- (c) operating means including a rocker arm that is mounted at one end on the lay sword rocker shaft for swinging movement and having a gear segment mounted at the other end for engaging and driving the pinion gear on the input shaft to bring about alternative rotation of the output shaft through a cycle that includes rotation of the output shaft in one direction to move the rapiers toward one another, rotation of the output shaft in the other direction to move the rapiers apart, and a substantial dwell after the rapiers have moved to the position at which they are furthest apart and before beginning the next cycle, the cycle taking place in the same period of time as a lay reciprocating cycle.

4,243,077

PACKAGE STRAPPING TOOLS

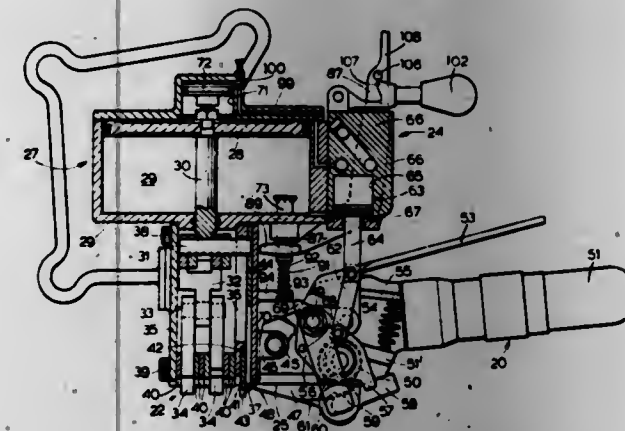
Robert D. Sansum, Harpenden, England, assignor to Gerrard Industries Limited, Kilmhurst, near Rotherham, England
Filed May 24, 1979, Ser. No. 42,243

Claims priority, application United Kingdom, May 25, 1978, 22590/78

Int. Cl.³ B21F 21/00

U.S. Cl. 140—93.4

15 Claims



1. A fluid-pressure operated package strapping tool of the kind which includes tensioning means for tightening a loop of strapping around a package and jointing means for securing together overlapped portions of the loop, both the tensioning means and the jointing means being powered by pneumatic or hydraulic fluid-pressure characterised in that the tool comprises means for initiating the jointing operation of the jointing means including a time-delay device the timing cycle of which is started by the application of fluid-pressure to the tensioning means.

4,243,078

METHOD AND APPARATUS FOR MANUFACTURING FUEL RODS

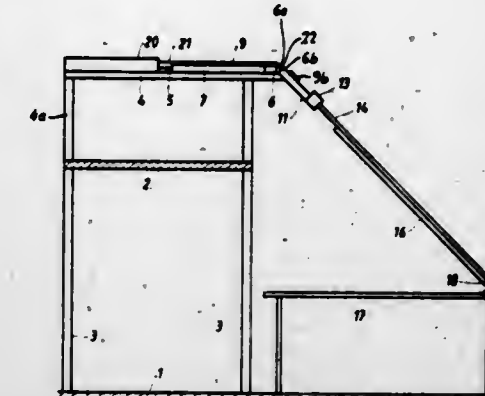
Thorbjörn Sahlin, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Jan. 12, 1979, Ser. No. 2,895

Claims priority, application Sweden, Jan. 24, 1978, 7800620
Int. Cl.³ B65B 1/04

U.S. Cl. 141—1

11 Claims



1. A method for manufacturing nuclear fuel rods by introducing elongated fuel pellets into cladding tubes, each having an open end, said method comprising: positioning a support means having an edge in a horizontal orientation; arranging a plurality of said pellets in end-to-end relationship along a horizontal axis extending toward said edge on said support; providing an elongated downwardly inclined guide means disposed with its upper end in direct contact with said edge at said axis whereby said support means and said guide means together present a break point at their junction, the downward inclination of said guide means being sufficient to cause a pellet placed longitudinally thereon to slide therealong under the influence of gravity; positioning a cladding tube at the lower end of said guide means in longitudinal alignment therewith and in a position for receiving sliding pellets therein through said open end; and displacing said pellets along said axis and over said break point whereupon each pellet will individually slide down said guide means and into the cladding tube, said displacing being accomplished at a rate such that the pellets are longitudinally spaced from one another as they slide toward and into the cladding tube.

4,243,079

APPARATUS FOR AND METHOD OF IN SITU APPLICATION OF LUBRICANT TO A WICK

Nicholas R. Daniels, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 16, 1979, Ser. No. 39,739

Int. Cl.³ B65B 3/04

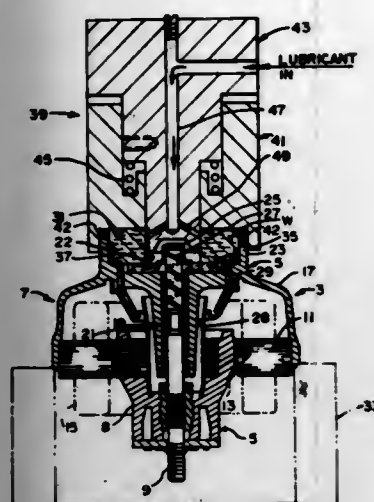
U.S. Cl. 141—1

13 Claims

11. The method of in situ application of a desired quantity of liquid lubricant to a wick after the wick has been installed in an electric motor or the like, said wick having a opening there-through and being enclosed at least in part by the structure of said motor, wherein the method of this invention comprises the steps of:

bringing a first member into sealable engagement with said motor thereby to substantially enclose said wick within said first member and the structure of the motor supporting said wick;
inserting a lubricant applying member into said wick opening, said lubricant applying member being proximate to the walls of said wick defining said opening and having at least one lubricant applying orifice proximate said wick walls;

applying a desired quantity of lubricant to said wick via said orifice; and



removing said lubricant applying member from said wick opening and removing said first member from said motor.

4,243,080

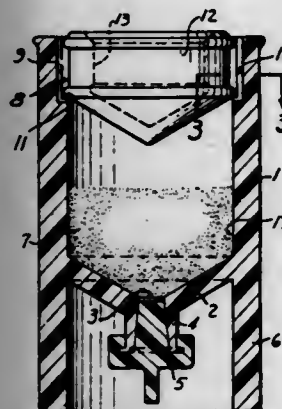
METHOD OF MIXING PLURAL COMPONENTS

Frank V. Choket, Northridge; Kenneth R. Michael, Canoga Park, and William H. Peany, Arcadia, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill. Division of Ser. No. 839,831, Oct. 6, 1977, Pat. No. 4,172,457. This application Apr. 2, 1979, Ser. No. 25,705

Int. Cl.³ B65B 3/04

U.S. Cl. 141-2

6 Claims



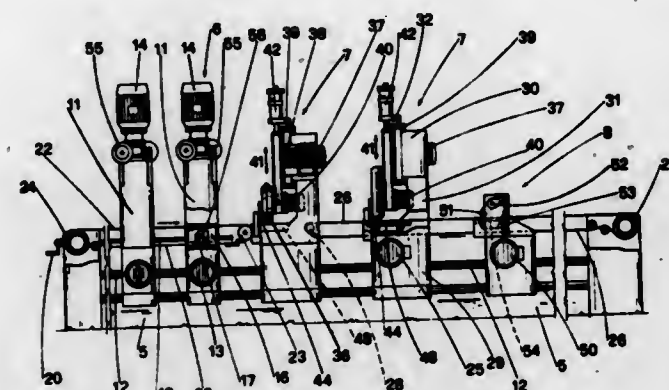
5. A method of mixing two components of a drug or the like in a system that has a rigid tubular housing with a vacuum movable piston containing a first component and having a sealed outlet, and a hypodermic syringe with an axially slidable stopper containing a second component and having a sealed outlet, said method including the steps of:

- opening the outlets of the housing and syringe;
- coupling the outlets of the housing and syringe in flow communication;
- pumping the second component from the syringe into the housing for mixing with the first component within the housing, and forming a fluid coupling between the piston and stopper;
- reciprocating the syringe stopper in a manner that causes the piston to similarly reciprocate within the housing without a structural connection between the stopper and piston to thoroughly mix the two components;
- retracting the stopper within the syringe barrel to extract at least an injectable portion of the mixed components from the housing into the syringe; and
- disconnecting the housing from the syringe enabling the dispensing of the mixed components from the syringe.

4,243,081
AUTOMATIC APPARATUS FOR MACHINING PANELS, PLANKS AND SIMILAR ARTICLES MADE OF WOOD, WOODEN DERIVATIVES AND THE LIKE
Giuseppe Pritelli, Cattolica, Italy, assignor to Pritelli, S.p.A., Morciano-di Romagna, Italy
Continuation-in-part of Ser. No. 682,404, May 3, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 960,250
Claims priority, application Italy, May 13, 1975, 3410 A/75; May 27, 1975, 3432 A/75; May 27, 1975, 3433 A/75
Int. Cl.³ B27C 9/04

U.S. Cl. 144-3 A

9 Claims



1. An automatic apparatus for machining panels, planks and similar articles made of wood, wooden derivatives and like materials, the apparatus comprising, in combination: means for conveying a panel along a given path in a direction parallel to its longitudinal axis; at least one set of drilling tools positioned along a first portion of said path along which the panel to be machined is to be carried forward; a plurality of cutter devices each including at least one respective cutter tool and positioned in spaced relation to each other along a second portion of said path downstream of said set of drilling tools with one of said cutter devices being positioned downstream of all others of said cutter devices for milling the panel along a direction transverse to said path; at least one moveable sensing feeler device installed along a third portion of said path downstream from said cutter devices for sensing the presence of milling in a panel as it moves along said path; and means responsive to movement of said feeler device as it senses the presence of milling in a panel for causing the panel to halt and to be in exact position necessary for the aforementioned drilling and milling tools, the distance between said feeler device and said one of said cutter tools forming part of said one of said cutter devices being equal to the length of at least one lateral side of a structure which is to be formed; whereby milling and drilling may take place contemporaneously during the course of making the structure to be formed.

4,243,082

RAFTER SIDE SLOTTING

Alfonso A. Paris, Jr.; Douglas W. Muscanell, both of South Hill, Va., and James H. Grutter, Grand Rapids, Mich., assignors to New England Log Homes, Inc., Hamden, Conn.

Filed Jul. 18, 1978, Ser. No. 925,773

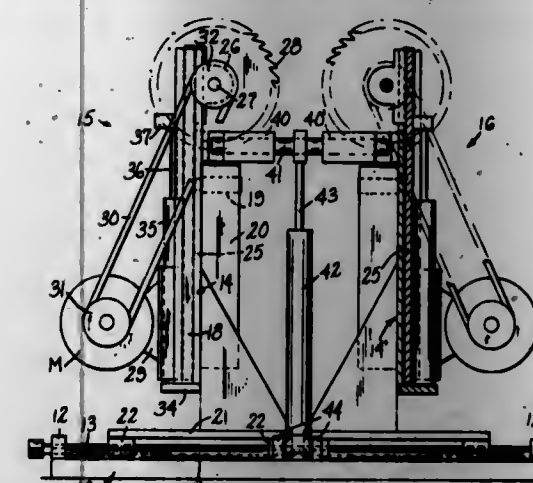
Int. Cl.³ B27C 5/02

U.S. Cl. 144-133 R

6 Claims

1. A machine for side slotting a roofing rafter comprising means for supporting a rafter in a horizontal position, at least one rotary saw rotatable on an axis lying in a vertical plane parallel to the vertical plane through the center line of the rafter and spaced laterally therefrom, a motor operatively connected to the saw, a support for the saw and motor, the saw and motor support being pivotally mounted for movement

around an axis perpendicular to said vertical planes and being independently laterally displaceable, means for adjusting the angular position of said saw and motor support, means for



laterally displacing said saw and motor support, and means for moving the saw upward and downward along a rafter side cutting path.

4,243,083

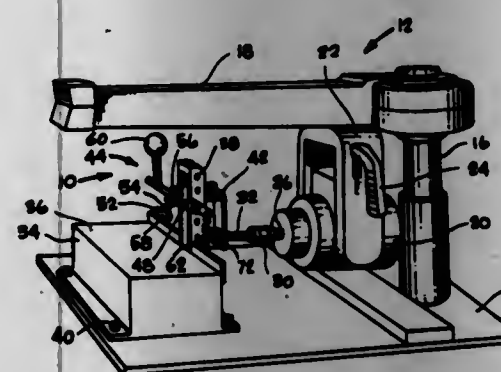
BORING ATTACHMENT FOR RADIAL ARM SAWS

Anthony B. Serrano, 1924 Margaret St., San Jose, Calif. 95116
Filed Feb. 8, 1979, Ser. No. 10,325

Int. Cl.³ B27B 5/00; B27C 3/02

U.S. Cl. 144-35 A

2 Claims



1. A conversion kit for modifying a radial arm saw for use as a boring tool comprising: adapter means attachable to a saw arbor of a radial arm saw for holding a drill for rotation by said arbor, the radial arm permitting axial movement of the drill, a workpiece engaging means for securing a workpiece in a position for drill communication with the drill, said workpiece engaging means including a workpiece support surface held by an upright platform, an upright post attached to said platform, substantially perpendicular to said workpiece support surface, said post being provided with a longitudinal slot for passing a drill therethrough, collar means axially affixed about said drill, and bracket means attached to said post and having a bifurcated end portion for passage of said drill therethrough, said collar means being restrained by said bracket means when the drill is axially moved to a desired limit position.

4,243,084

DOOR SIZING MACHINE

Jack M. Moody, Milwaukie, Oreg., assignor to Cranston Machinery Co., Inc., Oak Grove, Oreg.

Filed Jul. 27, 1979, Ser. No. 60,992

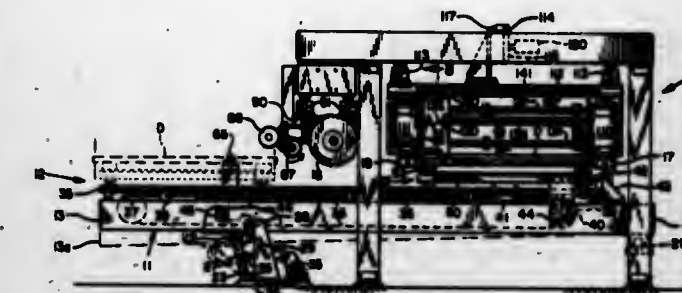
Int. Cl.³ B27B 5/00

U.S. Cl. 144-39

12 Claims

1. A door sizing machine comprising a door carriage mounted for travel on a horizontal carriage rail assembly,

means for moving said carriage from a front end to a back end of said rail assembly between a pair of end trim saws to trim the ends of a door on said carriage, a planer assembly at said back end of said rail assembly, means for moving said planer assembly transversely across said rail assembly to trim the sides of



said door, means for producing a vertical separation between said saws and the return path of travel of said door on said carriage so that the door and carriage may be returned to said front end of said rail assembly without engaging said saws, and means for returning said carriage to said front end of said rail assembly with the door passing clear of the saws.

4,243,085

PLANER WITH NOISE-REDUCING MEANS

Giuseppe Gemmani, Via Marconello 20, Rimini, Province of Forlì, Italy

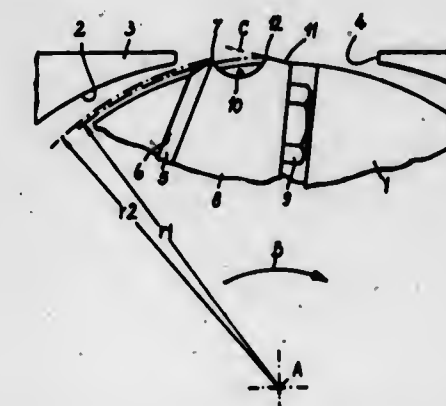
Filed Jun. 12, 1978, Ser. No. 914,955

Claims priority, application Italy, Jun. 13, 1977, 12015 A/77

Int. Cl.³ B27G 13/04

U.S. Cl. 144-230

1 Claim



1. A planer with noise reducing means comprising a shaft rotating about a horizontal axis and defining a rotary surface, a plurality of seats longitudinally extending along said shaft and radially open outwards, a plurality of blades and blades retaining gibs accommodated in said seats, said blades having a cutting edge projecting from said rotary surface and each gib being arranged ahead of each respective blade with respect to the shaft direction of rotation, wherein according to the improvement said gibs are provided with a longitudinally extending deflecting surface which is inclined with respect to the rotary surface of the shaft so that its prolongation extends above said cutting edge for deflecting the air flow thereover, said deflecting surface having a free edge radially external to the rotary surface of the shaft and having a distance from the axis of rotation of said shaft which is smaller than that of the cutting edge.

4,243,086

CLAMP-LIKE, SHEET-METAL, SLIP-ON NUT
Otto Kuttler, Lorrach, and Klaus Muller, Weil-Haltingen, both of Fed. Rep. of Germany, assignors to A. Raymond, Lorrach, Fed. Rep. of Germany

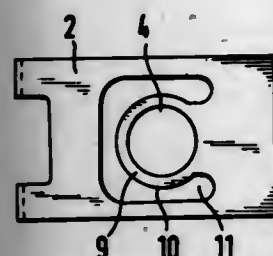
Filed Jun. 26, 1979, Ser. No. 52,427

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828078

Int. Cl.³ F16B 39/00

U.S. Cl. 411—174

9 Claims



6. The nut of claim 1 wherein said aperture is formed in an asymmetrical embossment in said upper leg for threadedly receiving said screw.

4,243,087

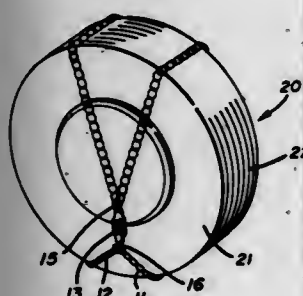
SELF-ADJUSTING TIRE CHAIN
Tony Marchionda, 708 Fifth St., Struthers, Ohio 44471

Filed Jul. 16, 1979, Ser. No. 57,984

Int. Cl.³ B60C 27/10

U.S. Cl. 152—218

4 Claims



1. A tire chain for a vehicle wheel and tire consisting of a single length of chain formed of a plurality of interconnected links and having two ends, an adjustable fastener attached to said single length of chain in the middle portion thereof, a spacing member and means on its ends attaching it to said chain at points spaced with respect to said adjustable fastener so that the parts of the chain between said fastener and said spacing member may be positioned over said tire, the two ends of said chain being releasably attached to said adjustable fastener, the arrangement positioning the parts of the chain inwardly of the ends thereof under said tire and in oppositely disposed relation to said parts of the chain positioned over said tire.

4,243,088

SKIDDER RING AND CHAIN CONNECTING MEANS
Emilien Labouville, RFD 1, Berlin, N.H. 03570

Filed Jul. 26, 1979, Ser. No. 60,980

Int. Cl.³ B60C 27/00

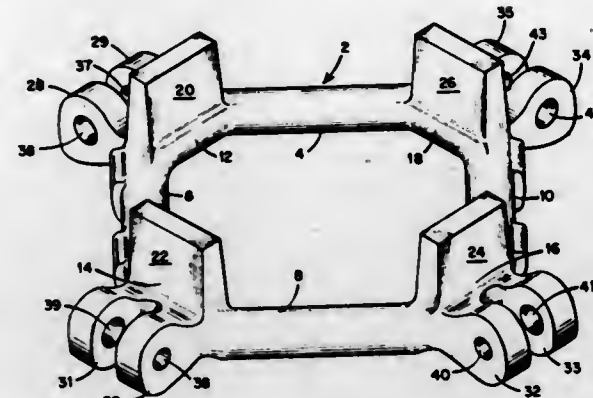
U.S. Cl. 152—223

5 Claims

1. Means for connecting a chain link to a skidder ring, said means comprising a clevis integral with and extending outwardly from said ring, said clevis comprising a pair of spaced parallel ears forming an opening therebetween substantially greater than the thickness of the chain link that is to be connected thereto, said ears having aligned bores therein and a clevis pin in said bores within the end link of said chain,

means in one of said ears for stopping the travel of said pin through said one ear and means for preventing removal of said pin from said ears comprising a spot of welding material applied to said pin at a position between the inner side of the other of said ears and the said link.

2. A skidder ring for use on wheels of vehicles used in the logging industry,



said ring comprising an eight sided body, lugs on alternate sides of said ring, clevises extending outwardly from said lugs, each clevis comprised of a pair of parallel ears with aligned bores therethrough, the axes of said bores being in the plane of said ring, each pair of said bores adapted to receive a clevis pin.

4,243,089

PLUGS COMPOSED OF TWO RUBBERS HAVING DIFFERENT MODULI OF EXTENSION USED FOR REPAIRING PNEUMATIC TIRES

Michael J. Kenney, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed Jul. 9, 1979, Ser. No. 55,778

Int. Cl.³ B32B 7/02, 25/04; B60C 21/06, 25/16

U.S. Cl. 152—370

21 Claims

1. A repair plug for a pneumatic tire comprises an elongate body having two components being rubber compositions having different moduli of extension, the component of higher modulus being adapted to be engaged by a repair tool so as to allow insertion of said plug singly through a hole in a pneumatic tire.

17. A repair kit for repairing a pneumatic tyre comprising a repair plug according to claim 1, a bonding solution and a repair tool engageable with said plug to allow insertion of said plug singly through a hole in a pneumatic tire.

18. A method of repairing a hole in a pneumatic tire comprises engaging with a repair tool a repair plug having two components being rubber compositions having different moduli of extension, the engagement being with the component of higher modulus of extension and inserting said plug from externally of the tire singly through said hole and then removing said tool, the method including the step of applying a bonding solution to said repair plug.

4,243,090

BURGLAR PROOF FIRE SAFE WINDOW COVERING

Alonso Kemp, 108 Manchester Apt. 2211, Pontiac, Mich. 48054

Filed Mar. 19, 1979, Ser. No. 21,504

Int. Cl.³ E06B 3/92

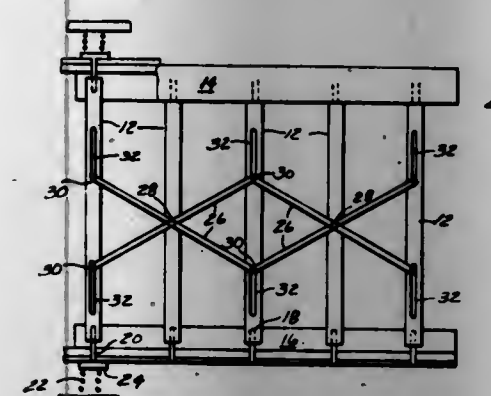
U.S. Cl. 160—145

6 Claims

1. A burglar proof fire safe window covering comprising: a plurality of vertical bars slidably supported at an upper and a lower end by a pair of spaced apart tracks disposed along an upper and lower inside edge of the window;

a plurality of pin engaging apertures at an upper and a lower end of the bars;

thereby allowing the door to descend toward the floor of the building to close.



an upper and lower plurality of vertically movable pins releasably biased into engagement with the apertures; and means for releasably engaging the pins in the apertures.

4,243,091

DOOR OPENING APPARATUS FOR LARGE OVERHEAD DOORS

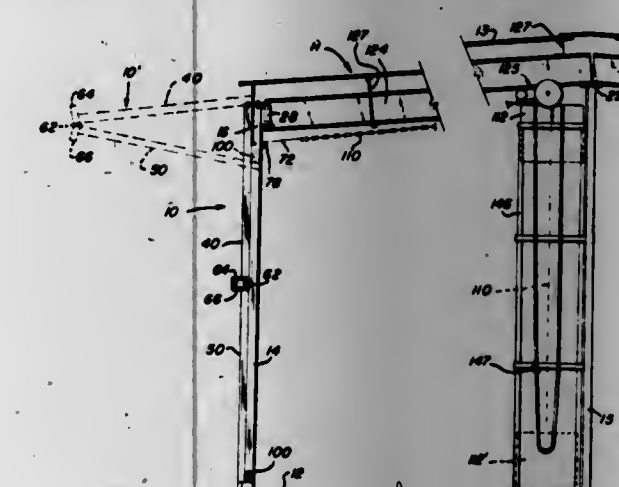
Wilfred H. DeVore, Box 75A Star Rt., Littleton, Colo. 80120
Division of Ser. No. 749,469, Dec. 10, 1976, Pat. No. 4,177,854.

This application Jul. 16, 1979, Ser. No. 57,909

Int. Cl.³ E05F 15/00

U.S. Cl. 160—189

2 Claims



1. In a door opening mechanism for opening a large door in a building which includes a cable, one end of which is attached to the lower edge of a door and the opposite end of which, after leading substantially vertically upward to the overhead of the building near the top of the door and then to a convenient, out-of-the-way position, is connected to a roller chain which passes over a sprocket on a rotatable shaft joined in a bearing housing attached to the overhead of the building and then hangs downwardly with a counterweight suspended from said opposite end, said counterweight being of slightly insufficient weight to lift and open the door, and a sheave attached to said rotatable shaft with a continuous coil chain passing over and in engagement with said sheave whereby sufficient manual force can be applied to said coil chain causing the sheave and sprocket to turn thereby pulling said door upwardly into open position, comprising in combination therewith:

an electric motor with a drive sprocket mounted on its driveshaft, said motor being mounted on a frame which is pivotally attached to said bearing housing such that said drive sprocket is aligned with said roller chain and the weight of said motor urges said drive sprocket into engagement with said roller chain whereby said sprocket when turned in one direction by said motor applies sufficient additional force to said roller chain to lift and open said door, and said drive sprocket when turned in the opposite direction will draw the counterweight upwardly

4,243,092

CONTINUOUS CASTING

Bertil Hannas, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

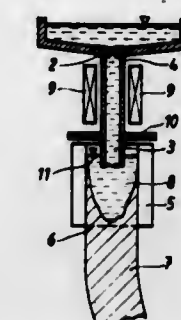
Filed Feb. 9, 1979, Ser. No. 10,907

Claims priority, application Sweden, Feb. 10, 1978, 7801554

Int. Cl.³ B22D 27/02

U.S. Cl. 164—49

3 Claims



1. A continuous casting method comprising casting molten metal through a pipe extending downwardly to the top of a continuous casting mold from above the mold's top, with the metal flowing through the pipe and into the mold and the pipe being smaller in cross-sectional area than the mold's cross-sectional area, and stirring the molten metal while flowing through the pipe, the metal forming a solidified skin containing molten metal in the mold and leaving the mold as a continuously traveling strand, said stirring being directed transversely through the flow through the pipe and restricted to the flow in the pipe above the level of the molten metal in the mold, said stirring being effected by inductively stirring the flow in the pipe in a direction that is rotative around the pipe's axis and at a high rotative velocity so that by momentum the stirring continues in the molten metal in the skin forming in the mold.

2. A continuous metal casting apparatus comprising a molten metal container having a bottom tapping hole, a casting pipe depending from said hole for conducting a flow of molten metal downwardly therefrom, a continuous casting mold spaced below said container and fed with said flow of molten metal via the bottom end of said pipe, said pipe having a smaller cross-sectional area than the mold, and means for stirring said flow while in said pipe, said stirring by said means being rotatively about the axis of said pipe and said bottom end of the pipe extending downwardly within the upper portion of said mold, said tapping hole having means for controlling the molten metal flowing therethrough and said means for stirring being an inductive stirrer on the outside of the pipe.

4,243,093

METHOD OF MAKING AN INSULATED MANIFOLD WITH DOUBLE CAST WALLS

John R. Nieman, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 17, 1977, Ser. No. 852,378

Int. Cl.³ B22D 19/16, 19/00

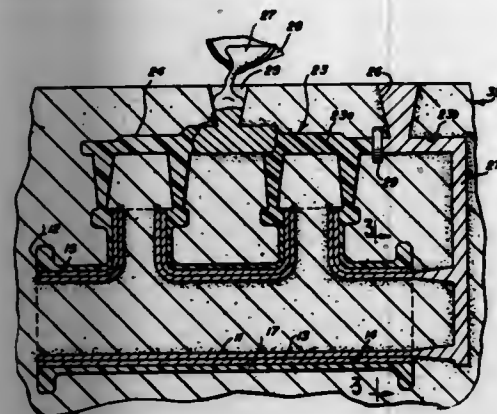
U.S. Cl. 164—96

13 Claims

1. A method of forming a thermal insulating composite article having an inner cast metal portion, an outer cast metal portion, and an intermediate thermally insulating wall, comprising the steps of:

forming an expendable gasifiable pattern of said inner portion;
forming an expendable gasifiable pattern of said outer portion;
assembling said inner and outer portions with a nongasifiable portion defined by an insulative wall snugly received and supported therebetween to define an integral assembly

wherein the insulative wall is accurately positioned solely by the supporting patterns; providing a mold about said assembly; and pouring molten casting metal into said mold from opposite sides of said insulative wall to gasify said patterns in said mold and form said inner and outer cast metal portions in facial engagement respectively with the inwardly and



outwardly facing surfaces of the pattern defined by said insulative wall, said insulative wall being effectively maintained accurately in the desired intermediate disposition by the ungasified portion of both patterns and the incoming metal during the pouring operation to define an effective thermal insulation barrier between said cast metal portions of the resultant composite article.

4,243,094

CONDENSER HEADER CONSTRUCTION

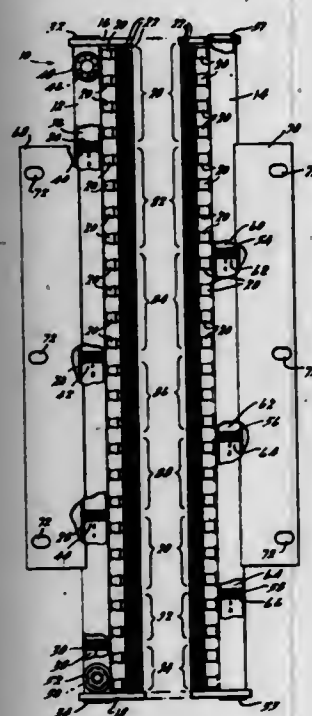
Ivan D. Woodhull, Jr., Flat Rock, and Thomas H. Liedel, Maybee, both of Mich., assignors to Karmazin Products Corporation, Wyandotte, Mich.

Division of Ser. No. 789,412, Apr. 21, 1977, Pat. No. 4,141,409. This application Jan. 11, 1979, Ser. No. 2,723

Int. Cl.³ F28B 9/08

U.S. Cl. 165-114

5 Claims



1. A condenser comprising: a plurality of substantially parallel fluid conducting members adapted to place one fluid in heat transferring relationship with another fluid so as to transform said one fluid from a gaseous state to a liquid state; an elongated header member; a baffle member secured within said header member defining a first and second chamber therein; a first predetermined number of said conduit members hav-

ing one end secured to said header member in fluid communication with said first chamber; a second predetermined number of said conduit members having one end secured to said header member in fluid communication with said second chamber; said second predetermined number being less than said first predetermined number and receiving said one fluid subsequent to said first predetermined number; said baffle member having an opening extending there-through, said opening being of a size to enable said one fluid in said liquid state to pass between said first and second chambers by capillary action.

4,243,095

COOLING TOWER

Geerard J. Kosten, Dordrecht, Netherlands, assignor to The Lammas Company, Bloomfield, N.J.

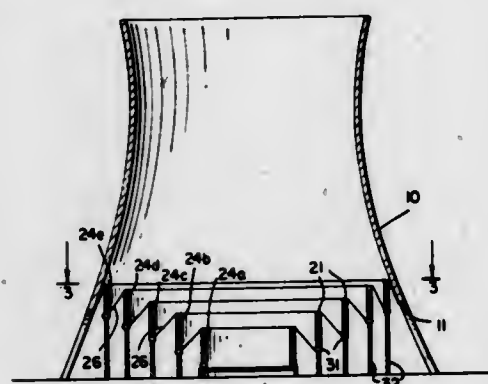
Continuation of Ser. No. 788,610, Apr. 18, 1977, abandoned.

This application Feb. 15, 1979, Ser. No. 12,328

Int. Cl.³ F28B 9/04

U.S. Cl. 165-125

16 Claims



1. A cooling tower, comprising: a hollow tower comprising air inlet means for introducing air at the lower peripheral wall of the tower and means for withdrawing air from the top of the tower; a plurality of heat exchangers comprising tubular heat exchanger surfaces positioned within said tower and disposed inwardly from the tower wall, said air inlet means being free of heat exchanger surfaces, said heat exchangers being circumferentially arranged to form at least two radially spaced heat exchanger rings with adjacent heat exchanger surfaces thereof defining vertically disposed ring walls, said rings extending to a progressively higher elevation from the inner ring to the outer ring; and, air directing means for directing air introduced into the tower through the heat exchangers.

4,243,096

MULTIPASS CORROSION-PROOF AIR HEATER

Adolf U. Lipets, prospekt Lenina, 150a, kv. 38; Boleslav M. Kramov, ulitsa Pionerskaya, 18, kv. 35; Ivan A. Sotnikov, ulitsa Mashinostroitelei, 32, kv. 114, all of Podolsk Moskovskoi oblasti; Alexei Z. Fedosov, ulitsa Burakova, 7, korpus 3, kv. 18, Moscow; Vadim B. Galuskin, Jushay prosad, 9, kv. 58, Podolsk Moskovskoi oblasti; Jury I. Lafa, ulitsa Mashinostroitelei, 28b, kv. 58, Podolsk Moskovskoi oblasti; Boris I. Alexandrov, ulitsa Udarnikov, 8, kv. 19, Podolsk Moskovskoi oblasti, and Geanady V. Gromov, ulitsa Filippova, 2, kv. 73, Podolsk Moskovskoi oblasti, all of U.S.S.R.

Filed Apr. 9, 1979, Ser. No. 28,394

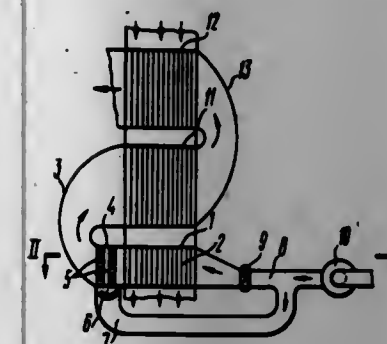
Int. Cl.³ F28F 19/00

U.S. Cl. 165-134 DP

4 Claims

1. A multipass corrosionproof air heater comprising banks of heating tubes arranged in separate passes series-connected on the airside, some of said passes being located inside a corrosive zone; air circulating ducts connecting the adjacent passes to each other; cold air feeding ducts one whereof contains a

means of preheating a fraction of the cold air introduced into the first pass while the rest of said air feeding ducts are connected, by way of mixers of cold and hot air, to the circulating ducts which are located in that portion of the air heater which operates in the corrosive zone and serve to connect said por-



4,243,097

WASTE HEAT BOILER

Jacobus E. Vogel, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 717,801, Aug. 26, 1976, abandoned.

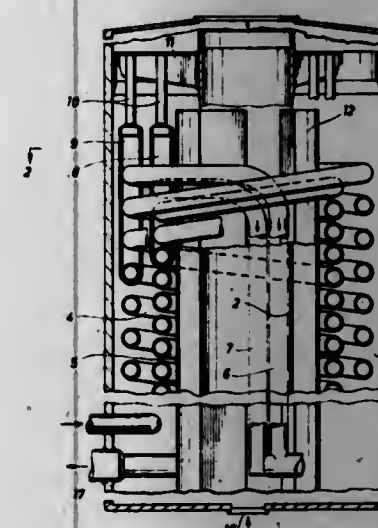
This application May 3, 1978, Ser. No. 902,478

Claims priority, application United Kingdom, Aug. 27, 1975, 35350/75

Int. Cl.³ F28D 7/10

U.S. Cl. 165-163

8 Claims



1. Heat exchange apparatus for high temperature gases comprising an upright shell including a top and bottom closure, an upright liquid tube disposed within the shell in radially spaced relation to the shell and defining therewith a vertically elongated annular cooling space, a plurality of concentrically arranged helically wound cooling pipe sections surrounding the liquid tube and disposed in the annular cooling space for a high temperature gas, the cooling pipe sections having gas inlet means communicating therewith disposed near the bottom of the shell, means for supplying coolant disposed near the bottom of the shell, said helically wound gas cooling pipe sections at their upper ends being transformed into substantially straight pipe members disposed between the helical pipe sections and the liquid tube, which pipe members extend to and are connected near the bottom of the shell with gas outlet means, and means defining a plurality of coolant recirculation channels located, respectively, in the spaces between said helical pipe sections, said pipe members and said upright liquid tube.

4,243,098

DOWNHOLE STEAM APPARATUS

Thomas Meeks, 3656 Virginia Ave., Lynwood, Calif. 90262, and Craig A. Rhoades, 9025 Wilshire Blvd. #215, Beverly Hills, Calif. 90211.

Filed Nov. 14, 1979, Ser. No. 93,978

Int. Cl.³ E21B 43/24

U.S. Cl. 166-59

10 Claims



9. Downhole steam apparatus for location within the casing of a well borehole, said apparatus comprising: a combustor for mixing and burning fuel and an oxidizing fluid and thereby producing heated gases; a heat exchanger having a downward extension and including a first portion having an inlet connected to said combustor for receiving said heated gases, said first portion further having an outlet for discharging spent gases into said casing for upward passage through said casing, said heat exchanger further including a second portion having an inlet for receiving water and an outlet for discharging steam for downward passage through said extension and into said borehole, said second portion being located in heat exchange relation to said first portion for conversion of said water to steam by said heated gases, and for conversion of said heated gases to said spent gases; conduit means connected to said combustor and to said second portion of said heat exchanger for supplying said fuel and oxidizing fluid, and said water, respectively; and a packer carried by said downward extension between said outlets of said first and second portions of said heat exchanger and expansible against said casing to seal off the high pressure steam injection area from the lower pressure spent gas injection area whereby said oxidizing fluid can be supplied at a pressure approximating said lower pressure.

4,243,099

SELECTIVELY-CONTROLLED WELL BORE APPARATUS

Robert E. Rodgers, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 24, 1978, Ser. No. 909,317

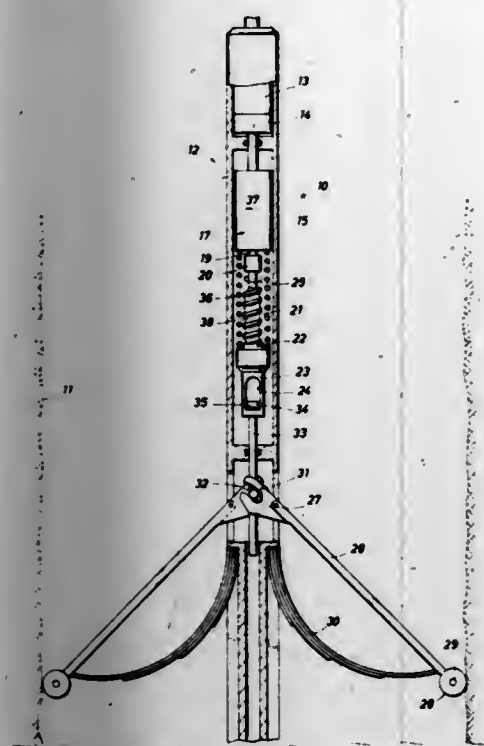
Int. Cl.³ E21B 47/022, 47/08

U.S. Cl. 166-65 R

36 Claims

36. Well bore apparatus comprising: body means adapted for passage through a well bore; driving means including a shaft member cooperatively arranged on said body means and adapted to be selectively rotated in opposite rotational directions or to remain stationary; tool-positioning means including a tool-positioning member cooperatively arranged on said body means and adapted for free movement between a retracted position and an extended wall-engaging position; coupling means cooperatively arranged on said body means between said driving means and said tool-positioning means for releasing said tool-positioning means for its free movement in response to rotation of said shaft member in a first direction; retracting said tool-positioning means to said retracted position.

tion in response to rotation of said shaft member in the second other direction; and



preventing said tool-positioning means from moving from its retracted position until said shaft member is rotated in said first direction.

4,243,100

OPERATION OF IN SITU OIL SHALE RETORT WITH VOID AT THE TOP

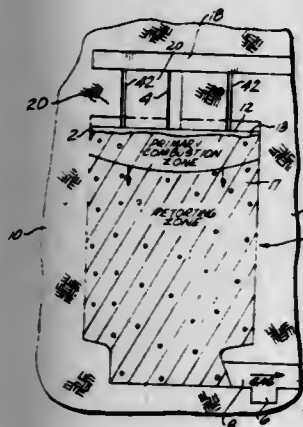
Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed May 4, 1979, Ser. No. 35,930

Int. Cl.² E21B 43/243, 43/26; E21C 41/10

U.S. Cl. 166—259

31 Claims



26. A method for retorting oil shale in an in situ oil shale retort in a subterranean formation containing oil shale, the retort having a top boundary of unfragmented formation and containing a fragmented permeable mass of formation particles wherein the upper surface of the fragmented permeable mass of formation particles is at least partly separated from the top boundary, the method comprising the steps of:

establishing a combustion zone in the fragmented permeable mass;

for a first period of time maintaining the temperature of the top boundary at less than the temperature at which unfragmented formation from above the top boundary will slough into the space between the upper surface of the fragmented permeable mass and the top boundary of unfragmented formation;

advancing the combustion zone downwardly through the retort; and

for a second period of time causing sloughing of unfragmented formation from above the top boundary into the

space between the top boundary and the upper surface of the fragmented permeable mass.

4,243,101

COAL GASIFICATION METHOD

Arnold W. J. Gruppig, Anjellerealaan, 3, Aerdenhout, Netherlands

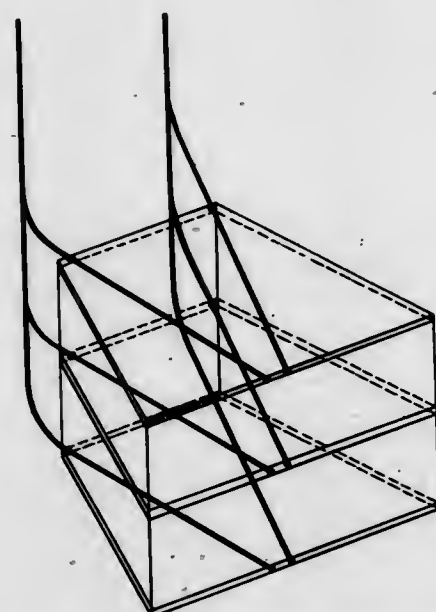
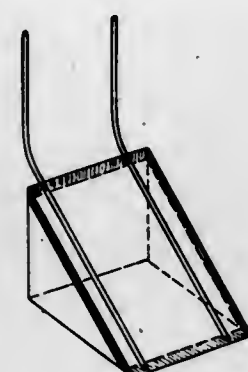
Filed Sep. 1, 1978, Ser. No. 939,031

Claims priority, application Netherlands, Sep. 16, 1977, 7710184

Int. Cl.² E21B 43/24, 43/26; E21C 43/00

U.S. Cl. 166—261

1 Claim



1. In a method for the underground gasification of coal or brown coal, of the kind comprising drilling boreholes in a downward direction along the dip of an inclined coal layer having overlying rock formation, passing gas downwardly in an injection borehole and withdrawing combustion gas from a production borehole, with development of a cavity in the coal layer providing communication between the boreholes, the improvement comprising:

(i) drilling boreholes in such a way that the horizontal distance between the boreholes becomes progressively smaller with their depth along the dip of the coal layer,

(ii) initiating gasification at or near to the deepest point reached by the boreholes,

(iii) introducing filler material into the developing cavity so that the gasification front is caused to move in an upward direction along the dip of the coal layer, said filler material being of such nature and composition as to resist or prevent caving in of the overlying rock formation and any surface subsidence which might result therefrom,

(iv) after gasification of a first portion of the coal layer has been completed, plugging back said boreholes and deviating said boreholes starting from a higher point of the boreholes to reach and extend into and along the dip of another portion of the coal layer, or another coal layer.

4,243,102

METHOD AND APPARATUS FOR FLOWING FLUID FROM A PLURALITY OF INTERCONNECTED WELLS

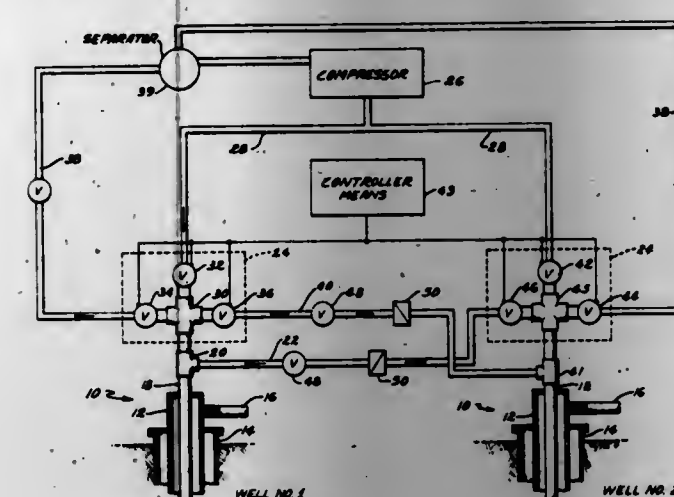
Johanne A. Elfarr, P.O. Box 901, Palestine, Tex. 75801

Filed Jan. 29, 1979, Ser. No. 7,365

Int. Cl.³ E21B 43/00; F04F 1/02

U.S. Cl. 166—314

7 Claims



1. An apparatus for utilizing pressurized gas provided by a gas source for flowing liquid from a plurality of interconnected wells, said apparatus comprising:

an injection conduit connecting said gas source to each of said wells;

a lift control assembly for each one of said plurality of wells, said assembly interposed between a well and the injection conduit, said assembly adapted for selectively introducing pressurized gas from said gas source into the respective well and for selectively communicating exhaust gas from said connected well;

a low pressure exhaust conduit connecting each of said lift control assemblies to said gas source for selectively communicating exhaust gas having a pressure less than a predetermined amount; and

a high pressure exhaust conduit for each one of said lift control assemblies, said high pressure exhaust conduit connected between said connected well and the lift control assembly of an adjacent well, said high pressure exhaust conduit communicating exhaust gas having a pressure in excess of a predetermined amount from said connected well to said adjacent control assembly.

4. A method for utilizing pressurized lift gas provided by a gas source for flowing liquid from a plurality of interconnected wells, each one of said wells having a gas actuated pumping unit located within said wells, said method comprising the steps of:

causing pressurized lift gas to enter a first well from said gas source;

actuating a pumping unit located within said well for flowing liquid from the well into a collection conduit;

communicating lift gas having a pressure in excess of a predetermined amount from said well to an adjacent well;

injecting said lift gas having a pressure in excess of a predetermined amount into said adjacent well;

exhausting lift gas having a pressure less than a predetermined amount from said first well;

causing pressurized lift gas to enter said adjacent well from said gas source;

actuating a pumping unit located within said adjacent well for flowing liquid from said adjacent well into a collection conduit;

communicating lift gas having a pressure in excess of a predetermined amount from said adjacent well to one of said plurality of wells; and

exhausting lift gas having a pressure less than a predetermined amount from said adjacent well.

3. A soil cultivating machine comprising:

a pair of frame units extending rearwardly and divergently to each other;

a respective shaft mounted on each of said frame units;

a plurality of tilling discs mounted on said respective shafts;

1002 O.G.—8

4,243,103

ROTARY HARROWS

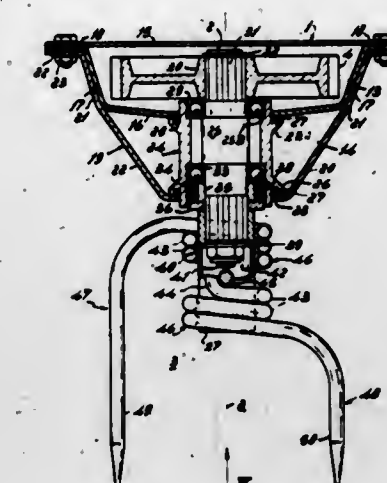
Cornelis van der Lely, 7, Brückeallee, Zug, Switzerland
Continuation of Ser. No. 597,680, Jul. 21, 1975, abandoned. This application Jan. 17, 1977, Ser. No. 759,669

Claims priority, application Netherlands, Jul. 22, 1974, 7409854

Int. Cl.³ A01B 33/06

U.S. Cl. 172—59

8 Claims



6. A soil cultivating implement or rotary harrow comprising a frame supporting a plurality of soil working members mounted on substantially vertical shafts and rotatable about said shafts, said shafts being journaled in a portion of said frame and being positioned in a row that extends transverse to the normal direction of travel, supports being connected to the lower ends of said shafts and said supports being located below said frame portion, at least two times fastened to said support by coils that encircle said support, said tines having respective lower, downwardly extending active portions and intermediate, substantially horizontal parts connected to said coils, the longitudinal axes of said coils substantially coinciding with the axis of rotation of the corresponding soil working member, one tine being connected to said support by an upper coil and the second tine being connected to the support by a lower coil, the lowermost ends of said tines being located at substantially the same soil working levels.

4,243,104

SOIL WORKING MACHINE

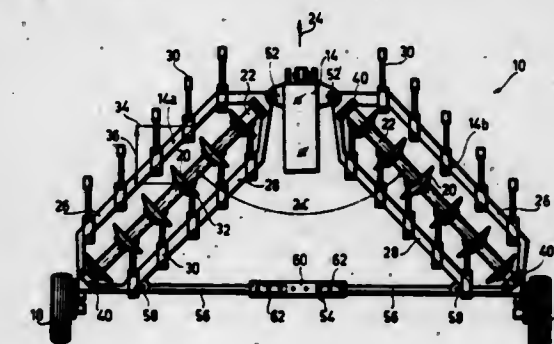
Sandor Sipos, Gödöllő; Sandor Varga, Kecskemet, and Imre Hall, Zalaegerszeg, all of Hungary, assignors to Kaposvari Mezőgazdasági Gépgyártó és Szolgáltató Vállalat in Kaposvár, Kaposvár, Hungary

Filed Jan. 27, 1978, Ser. No. 919,454

Int. Cl.³ A01B 13/08, 35/18

U.S. Cl. 172—148

3 Claims



3. A soil cultivating machine comprising:

a pair of frame units extending rearwardly and divergently to each other;

a respective shaft mounted on each of said frame units;

a plurality of tilling discs mounted on said respective shafts;

a respective front tool-holding bar and rear tool-holding bar on said frame units flanking said respective shaft;
a plurality of deep-tilling implements adjustably mounted on each of said respective tool-holding bars; and
means on each of said frame units for adjusting the mutual height between each of said tilling discs and at least one of said deep-tilling implements associated with each of said tilling discs.

4,243,105

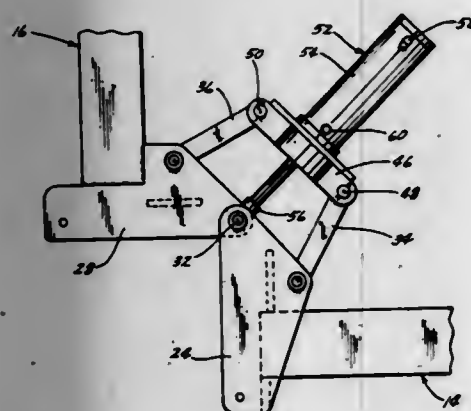
FOLDABLE AGRICULTURAL IMPLEMENT

Lambert P. Vogel, Fargo, N. Dak., and Robert J. Steffl, Moorhead, Minn., assignors to Westgo Industries, Inc., West Fargo, N. Dak.

Filed Jul. 26, 1979, Ser. No. 61,182
Int. Cl.³ A01B 73/00

U.S. Cl. 172-311

5 Claims



1. An agricultural implement comprising, a tool bar having ground working tools operatively supported thereon, said tool bar comprising a main frame and at least one wing frame pivotally connected to one of the ends thereof, said wing frame having inner and outer ends, pivotal connection means interconnecting said main frame and said wing frame whereby said wing frame may be pivotally moved from a working position substantially 180 degrees to a transport position over a portion of said main frame, said pivotal connection means comprising a first support means secured to one end of said main frame and extending upwardly therefrom, said first support means having inner and outer end portions and an upper end portion; a second support means secured to the inner end of said wing frame and extending upwardly therefrom, said second support means having inner and outer end portions and an upper end portion, the upper end portions of said first and second support means being pivotally connected about a horizontal axis which is transversely disposed to the length of said tool bar; a first linkage means pivotally connected at one end to said first support means inwardly of and below said upper end portion of said first support means; a second linkage means pivotally connected at one end to said second support means outwardly of and below said upper end portion of said second support means; a third linkage means pivotally connected to and extending between the other ends of said first and second linkage means; a power cylinder positioned above said tool bar, said power cylinder including a cylinder body mounted on said third linkage means, said power cylinder having a cylinder rod movably extending therefrom which is pivotally connected to the pivotal connection between the said upper end portions of said first and second support means whereby extension of said cylinder rod from said cylinder body will pivotally move said wing frame from its said working position to its said transport position and whereby retraction of said cylinder rod into said cylinder body will pivotally move said wing frame from its transport position to its working position.

4,243,106
DEVICE FOR SETTING BLADE OF EARTHMOVER
Otto Skublich, Hanover; Rudolf Perkert, Seelze, and Karl Heinz Fischer, Laatzen, all of Fed. Rep. of Germany, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

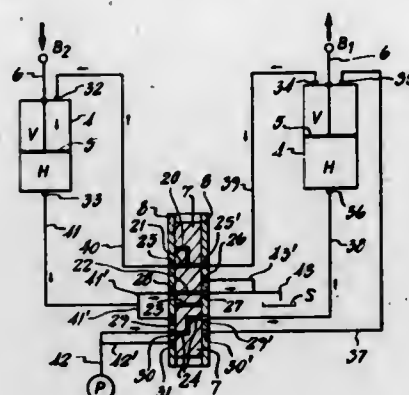
Filed Jan. 12, 1979, Ser. No. 2,909

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801296

Int. Cl.³ E02F 3/76

U.S. Cl. 172-804

2 Claims



1. A device to vary the position of a tiltable blade of earth moving machines including first and second double acting hydraulically operated piston-cylinder units connected to opposite sides of the blade, the piston of each opposed unit dividing its respective cylinder into forward and rear chambers, hydraulic circuit means including control means connected with a source of pressure medium and conduits interconnecting the forward chambers of said opposed units, and additional conduits interconnecting said rear chambers of said opposed units, said control means being connected to said conduits and said additional conduits to control the flow of said pressure medium between said forward chambers of said piston-cylinder units and between their rear chambers, said control means being actuatable to one position, to enable flow of said pressure medium to said rear chamber of said first piston-cylinder unit to cause its piston, to move so that pressure medium from its forward chamber is conveyed to the corresponding forward chamber of said second piston-cylinder unit to simultaneously actuate its piston in a reverse direction, and upon movement of said control means to an alternate position, flow of said pressure medium is directed to the forward chamber of said first piston-cylinder unit to cause the piston of such first unit to move so that pressure medium from the rear chamber of said first chamber is directed to the rear chamber of the second piston-cylinder to thereby simultaneously move its piston a corresponding amount in a reverse direction.

4,243,107

HYDRAULIC HAMMER MOUNTED ON A MOVABLE BOOM

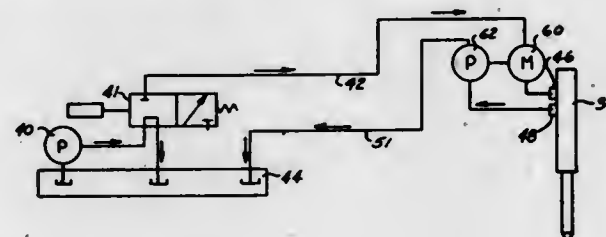
William M. Shook, New Philadelphia, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Jan. 24, 1979, Ser. No. 6,136

Int. Cl.³ E21C 5/00

U.S. Cl. 173-43

9 Claims



1. A machine comprising:
a platform;

an extendable boom supported from said platform;
a hydraulic hammer supported at the movable end of said extendable boom having an inlet port for receiving operating hydraulic fluid and an outlet for venting hydraulic fluid;
a hydraulic sump disposed on said platform;
a supply pump supplying pressurized hydraulic fluid for operating said hammer;
a supply line connecting the output of said supply pump to said hydraulic hammer;
a return line connecting to the outlet of said hydraulic hammer to the hydraulic sump; and
a back pressure reducing pump in close proximity to the hydraulic hammer at the end of said extendable boom, connected in the return line and having its suction inlet connected to the outlet of said hydraulic hammer to pump the hydraulic fluid through the return line.

spring disposed between the driven part of said composite hammer and said anvil; a stub shaft disposed in said anvil and connected thereto for a combined rotation and a relative axial movement; means for rotating and axially moving said stub shaft; a cam surface of said stub shaft for co-operating with said guide roller upon movement of said slider from its initial position; a spring-loaded locking member disposed in said stub shaft and mounted for a combined rotation together therewith and for an axial movement relative thereto; means for rotating and axially moving said spring-loaded locking member; a chamfered end of said spring-loaded locking member, received in said groove of the slider and oriented with respect to said cam surface of said stub shaft; a mechanism for returning said slider back into the initial position, which is operatively connected to the slider and to the driving part of said composite hammer.

4,243,108

PNEUMATIC IMPACT WRENCH HAVING ROTATABLE AND AXIALLY TRANSLATABLE COMPONENTS

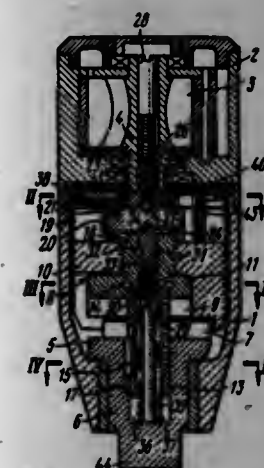
Anas G. Galimov, ulitsa Kulbyakova, 15, kv. 13, Sverdlovsk; Mikhail L. Gelfand, Yaroslavskoe shosse, 129, kv. 44; Boris G. Goldstein, ulitsa Molodogvardeiskaya, 24, korpus 1, kv. 26, both of Moscow; Viktor E. Killa, ulitsa Posadskaya, 44, korpus 2, kv. 40; Oleg Y. Satyagin, ulitsa Dekabristov, 5, kv. 51, both of Sverdlovsk; Yakov I. Tsipenjuk, ulitsa Kirova, 5, kv. 30, Solntsevo Moskovskoi oblasti; Georgy A. Antipov, ulitsa Krasny Mayak, 3, kv. 146, Moscow, and Oleg A. Yanovsky, ulitsa Sani Morozovoi, 175a, kv. 93, Sverdlovsk, all of U.S.S.R.

Filed Nov. 3, 1978, Ser. No. 957,370

Claims priority, application U.S.S.R., Nov. 21, 1977, 2545320
Int. Cl.³ B25D 15/00

U.S. Cl. 173-93

2 Claims



1. A pneumatic impact wrench comprising: a casing; a pneumatic motor having an output shaft, accommodated in said casing; an anvil journaled in said casing, connected to a spindle for a combined rotation and having impact jaws; a composite hammer accommodated in said casing and including a driving part and a driven part; said driving part of the hammer being coupled to the output shaft of said pneumatic motor; said driven part of the hammer being disposed in the driving part and connected thereto for a combined rotation and a relative axial movement and having impact jaws for engaging the impact jaws of the anvil; a diametrical slot in the driving part of said composite hammer; means for causing rotation and axial movement of the driven part of said composite hammer; a slider disposed in said diametrical slot and having its center of gravity offset relative to the axis of said composite hammer, said slider being movable from a first, initial position to a second position by rotation of said driving part; a guide roller mounted on said slider; a groove in said slider, facing said anvil; a crater in said groove; a spring-loaded ball received in said crater and mounted in the output shaft of said pneumatic motor for holding said slider in the initial position; a return

4,243,109

BI-DIRECTIONAL ROTARY IMPACT TOOL FOR APPLYING A TORQUE FORCE

J. Edward C. Anderson, Moreland Hills, Ohio, assignor to Marquette Metal Products Company, Fountain Inn, S.C.

Filed Jan. 7, 1979, Ser. No. 46,477

Int. Cl.³ B25D 15/02

U.S. Cl. 173-93.5

21 Claims



1. A bi-directional rotary impact mechanism comprising:

- (a) an input member;
- (b) an output member;
- (c) an inertia member;
- (d) said input, output and inertia members being all disposed about a common axis and journaled upon each other at mating, mutually telescoping circular surfaces thereof for independent angular movement about said axis;
- (e) a plurality of circumferentially spaced teeth connected to said output member for conjoined angular movement with the latter;
- (f) at least one pair of juxtaposed pawls carried by the inertia member for angular movement therewith and the pawls biased for engagement with the opposite sides of said teeth and capable of movement to disengage from the teeth;
- (g) spring means connected to the inertia and input members to store energy upon relative angular rotative movement between the input and inertia members and during engagement of said pawls with said teeth and to release the stored energy by angularly accelerating said inertia member upon disengagement of one of said pawls from said teeth;
- (h) a cam engageable with said pawls and carried by the input member and angularly adjustable relative to the input and inertia members to provide in one position of adjustment one pawl operative for impacting against a tooth of said teeth in one direction of rotation and in another adjusted position render the other pawl operative for impacting against a tooth of said teeth in the opposite direction of rotation; and
- (i) said cam coaxing with said pawls upon relative angular movement between the input, output and inertia members to force said pawls out of engagement with the teeth in either direction of rotation and releasing pawls so that one of the pawls, depending upon the direction of rotation and cam adjustment, impacts against a tooth of said teeth to rotatively drive the output member.

4,243,110

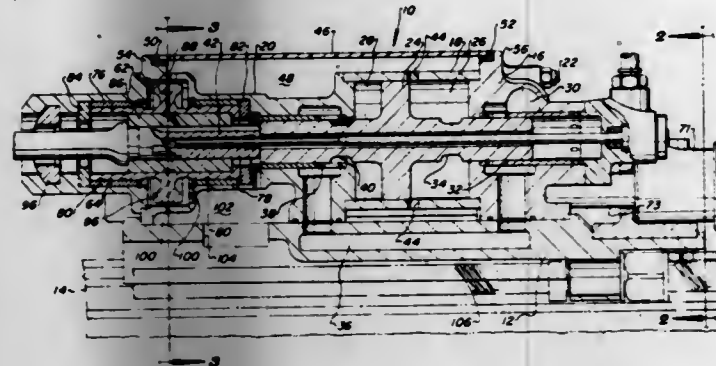
PNEUMATIC PERCUSSION DRILL WITH EXHAUST COOLING AND LUBRICATION OF CHUCK END

James T. Clemenson, Littleton, and Robert R. Vincent, Denver, both of Colo., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 8, 1979, Ser. No. 10,438
Int. Cl.³ B25D 15/00, 17/22

U.S. Cl. 173-104

6 Claims



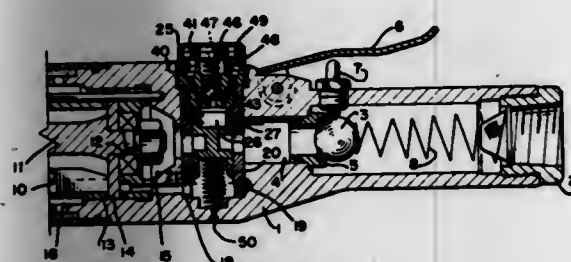
1. In a pneumatic percussion drill adapted to be connected to a source of motive air:
 - a housing including a cylinder bore;
 - a piston hammer disposed in said cylinder bore and forming opposed chambers in said cylinder bore;
 - exhaust ports opening into said cylinder bore for conducting exhaust air from said chambers;
 - a forward part of said housing including an interior chamber;
 - chuck means rotatably disposed in said interior chamber and drivably engaged with a drill stem shank;
 - inlet and exit ports opening into said interior chamber; and
 - means for conducting exhaust air from said exhaust ports to said interior chamber by way of said inlet ports whereby exhaust air and lubricant entrained therein may be conducted through said interior chamber to cool and lubricate said chuck means.

4,243,111

AUTOMATIC SHUT-OFF VALVE FOR POWER TOOLS
Robert A. Willoughby, and Renno W. Budziak, both of Athens, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.Filed Jan. 31, 1979, Ser. No. 7,905
Int. Cl.³ B23B 45/04; B27C 3/08

U.S. Cl. 173-169

5 Claims



1. A fluid-driven power tool including:
 - a casing containing a motor, an inlet passageway for feeding motive fluid to said motor and an exhaust passageway for exhausting fluid from said motor;
 - a fluid-actuated valve located in said inlet passageway and movable between alternate positions including an open position allowing motive fluid to flow to said motor and a closed position preventing motive fluid from flowing to said motor;
 - first valve-operating means including means for establishing relatively constant pressure and means for adjustably controlling the rate of pressure rise urging said valve to its closed position;
 - second valve-operating means communicating with said exhaust passageway and operative, when subject to fluid

pressure, to urge said valve to its open position against the force of said first valve-operating means; and said first and second valve-operating means being arranged so that said valve will move to its closed position in response to the drop in fluid pressure in said exhaust passageway when said motor slows down.

4,243,112

VIBRATOR-ASSISTED WELL AND MINERAL EXPLORATORY DRILLING, AND DRILLING APPARATUS

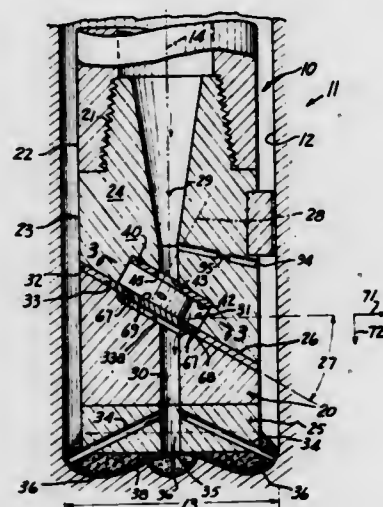
Ernest R. Sartor, 1665 Braeburn Rd., Altadena, Calif. 91101

Filed Feb. 22, 1979, Ser. No. 13,919

Int. Cl.³ E21B 10/00

U.S. Cl. 175-55

21 Claims



1. In combination:
 - a rotary drill bit having an axis of rotation, a body, cutting means carried by said body for cutting a hole when rotated and vibrated around said axis of rotation;
 - a free-orbiting vibrator having a case rigidly connected to said bit, said case having an internal race with a central axis, said vibrator having a freely orbiting, bearingless rotor inside said case adapted to roll around said race and thereby orbit therein, on a plane of vibration thereby exerting an orbiting lateral force having at least a component directed normal to said axis of rotation, said vibrator having a fluid inlet and a fluid outlet; and
 - conduit means for receiving compressible motive fluid under pressure, supplying it to the vibrator, and exhausting it from said vibrator.

4,243,113

DRILLING HEAD OF A ROTARY IMPACT DRILL
Werner Kleine, Achim, Fed. Rep. of Germany, assignor to Gebrüder Heller Verwaltungsgesellschaft mit beschränkter Haftung, Achim-Uphusen, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,575

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1978, 2807197

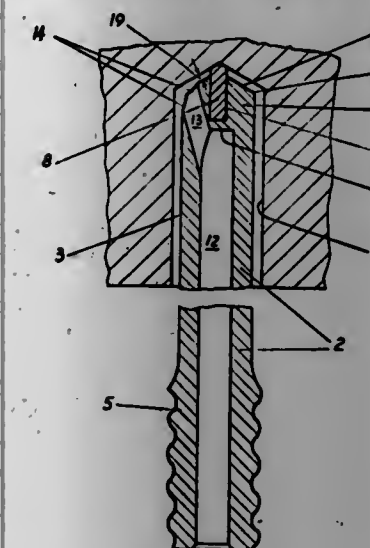
Int. Cl.³ E21B 10/38

U.S. Cl. 175-410

10 Claims

1. A drilling head for a rotary impact drill for producing drilled bores in rock comprising:
 - (a) a drill shaft having a cylindrical peripheral surface and an end face;
 - (b) a cutting member affixed in said end face, said cutting member protruding axially a predetermined axial distance beyond said end face, said cutting member having at least one cutting edge thereon;
 - (c) said cutting edge extending generally diametrically along said cutting member and having at least one radial outer end protruding radially beyond said peripheral surface, a radial extreme of said at least one radial outer end defining

- a cutting track, said cutting track being at a radial distance from said peripheral surface;
- (d) an exhaust bore in said drill shaft;
- (e) a connecting bore between said exhaust bore and an opening in a surface of said drilling head;
- (f) said opening having a rim extending over a portion of said end face and an adjoining portion of said peripheral surface;



- face, a point of said rim of said opening having a largest radial distance from said cutting track which exceeds the distance of said radial outer end of said cutting edge from said peripheral surface; and
- (g) said axial distance of said cutting edge from said end face being smaller than said largest radial distance of said point of said rim from said cutting track of said radial outer end of said cutting edge.

4,243,114

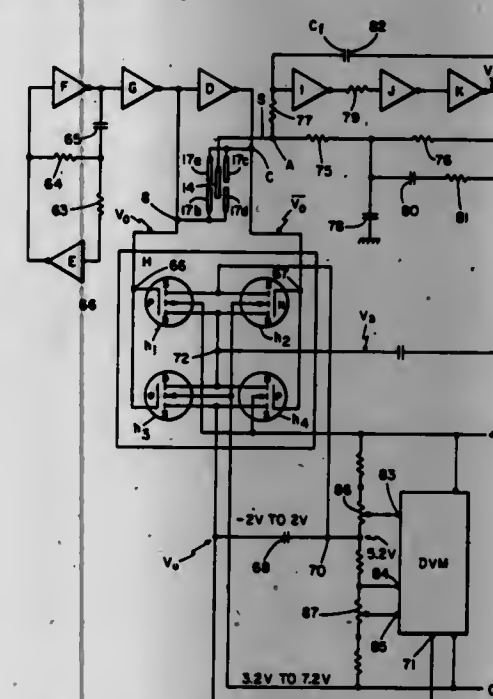
DIFFERENTIAL CAPACITOR AND CIRCUIT
Frans Brouwer, 410 Greenwood Ave., Glencoe, Ill. 60022

Filed Mar. 15, 1979, Ser. No. 21,166

Int. Cl.³ G01G 3/00

U.S. Cl. 177-210 C

13 Claims



1. In a differential capacitor circuit for generating an electrical signal at a variable capacitor plate proportional to the movement of the variable capacitor plate, the improvement comprising a pair of fixed spaced capacitor plates disposed in a generally parallel relationship with respect to one another with the variable capacitor plate being disposed between the fixed plates, and each of the fixed plates having double segments with each segment of a plate being electrically isolated from the other segment of the plate and with the opposite adjacent

segments of both plates being connected directly together to form two segment sets to which a reference signal is applied.

4,243,115

DRAW BAR UNIT

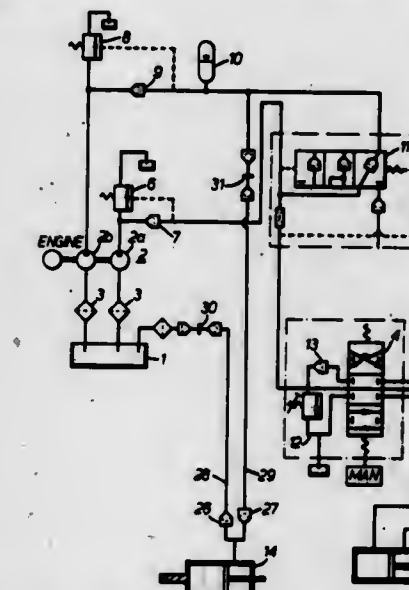
Christopher Wall, and Ronald Scaife, both of Wakefield, England, assignors to Dresser Europe S.A., Brussels, Belgium

Filed Apr. 2, 1979, Ser. No. 26,208

Int. Cl.³ B62D 5/10; B60D 7/02

U.S. Cl. 180-165

6 Claims



1. A draw bar unit for attaching a recovery vehicle to a vehicle having a pressure fluid operated steering system of the stored energy kind in cases of failure of the normal steering system pressurising means, said draw bar unit incorporating auxiliary pressurising means connectible into the pressure fluid circuit of the steering system of the disabled vehicle and operable in response to reciprocating movement of one of the vehicles towards and away from the other to pressurise said pressure fluid circuit by a pumping action.

4,243,116

FAIL-SAFE MECHANISM FOR GENERATING A PULSE INDICATING THE PRECISE MOMENT OF FIRING OF AN AIR GUN

Lloyd E. Elliott, Jr., and John L. Hudson, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 913,764, Jan. 8, 1978,

abandoned. This application Jul. 23, 1979, Ser. No. 59,792

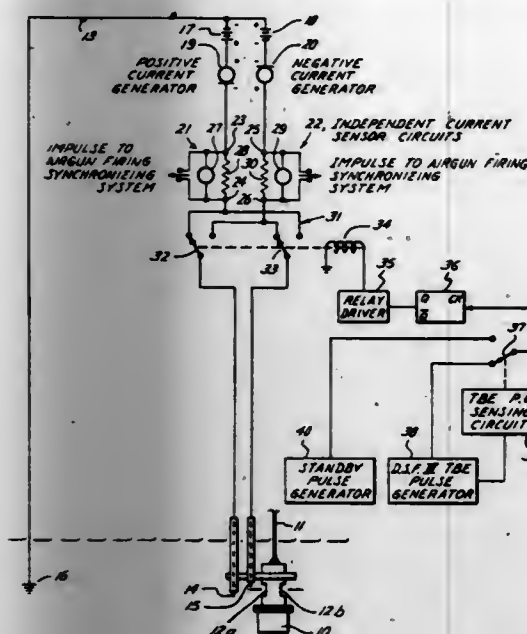
Int. Cl.³ G01V 1/38, 1/14

U.S. Cl. 181-118

17 Claims

1. A mechanism for generating a plurality of pulses indicating the precise moments of firing of an air gun for a seismic record comprising,
 - (a) circuit means for generating a current to two closely spaced apart electrodes submerged underwater very close to an air gun means exhaust port,
 - (b) said circuit means including a polarity reversing circuit means connected to a sea ground as a backup electrode when any one of the two electrodes become defective, and
 - (c) said circuit means being responsive to said polarity reversing circuit means for periodically reversing said cur-

rent to said two electrodes after a predetermined period of time for reducing plating action on the electrodes; for



reducing cross coupling between other channels, and for providing a fail-safe system.

4,243,117

SOUND ABSORBING STRUCTURE

Glenn E. Warnaka, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Division of Ser. No. 692,834, Jun. 4, 1976, Pat. No. 4,141,433.

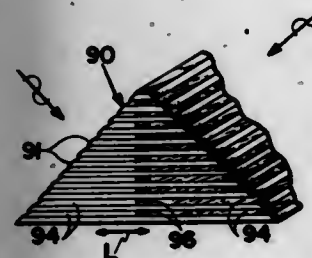
This application Oct. 27, 1978, Ser. No. 955,543

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.³ G10K 11/04; E04B 1/99

U.S. Cl. 181-286

10 Claims



1. A structure for absorbing sound waves comprising a plurality of parallel wall means that are (1) fabricated of a material which is generally impermeable to a fluid in which the sound-absorbing structure is to be immersed; (2) substantially free of openings therethrough; (3) generally lacking in sound absorbing capability; (4) acoustically reflective; and (5) laterally spaced a distance not more than one wavelength of a predetermined highest frequency to be absorbed, said wall means forming an array of side-by-side elongate fluid filled cavities each having an open end and a closed end, said open ends of said cavities receiving said sound waves, each of said cavities (1) having an uninterrupted dimension along said wall means greater than twice the spacing between and coextensive with said wall means, (2) having a length from said open end to said closed end at least equal to one-fourth of the wavelength of the predetermined highest frequency to be absorbed, and (3) having a uniform cross section substantially throughout the length thereof, and

acoustically reflective barrier means forming the closed ends of said cavities, said barrier means reflecting said sound waves received within said cavities through said open ends in a direction opposite to the direction of propagation of said sound waves, the sound-absorbing structure being free of any material adjacent to and extending over the

sound-receiving end of said array of cavities, said cavities being uninterrupted between their sound-receiving ends and said barrier means.

4,243,118

NON-CONDUCTIVE SAFETY LINE AND METHOD

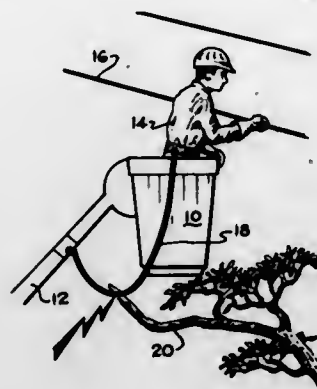
Milton E. Landry, 601 Sadie Ave., Metairie, La. 70003

Filed Mar. 5, 1979, Ser. No. 17,286

Int. Cl.³ A62B 35/00

U.S. Cl. 182-3

12 Claims



9. A non-conductive safety line, comprising:

- (a) an elongated rope core having a pair of ends;
- (b) end loop splices formed on the rope core ends;
- (c) an exterior tubing positioned over the rope core and having a pair of ends;
- (d) a filler contained within the exterior tubing and completely capsulating the rope core;
- (e) a pair of shrinkable tubing sections positioned over the end loop splices and over the ends of the exterior tubing; and
- (f) a film on the exterior of the safety line, preventing surface wetting.

4,243,119

FOLDING BUILDING SIDE MOUNTED FIRE LADDER

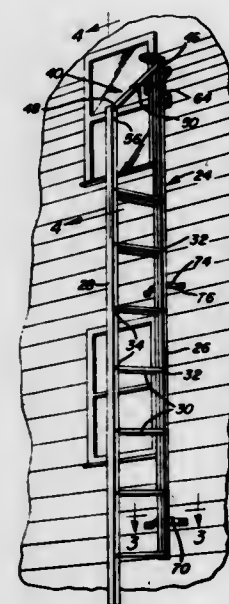
Eugene Rossey, Sr., Milwaukee, Wis., assignor to Ladder of Life, Inc., Milwaukee, Wis.

Filed Apr. 27, 1979, Ser. No. 34,141

Int. Cl.³ E06C 9/12

U.S. Cl. 182-96

4 Claims



1. A foldable ladder for ascending and descending to and from an elevated level, said ladder including a pair of upstanding elongated channel-shaped side rails opening laterally outwardly toward each other and a plurality of vertically spaced horizontal elongated rungs extending between and pivotally

attached at their opposite ends to and within the corresponding side rails and with said side rails and rungs defining a foldable parallelogram construction, a plurality of laterally outstanding anchor brackets carried by and spaced along one of said side rails for anchoring said one side rail in upright horizontally spaced position relative to a suitable upstanding support structure, said ladder being foldable between a first closed position with said side rails closely adjacent each other and said rungs generally paralleling said side rails and a second open position with said side rails spaced apart and said rungs generally horizontally disposed, the other side rail being swingable outwardly and downwardly relative to said one side rail upon folding of said ladder from said closed position toward said open position, and elongated collapsible inclined bracing means connected at its upper end to a predetermined portion of said one side rail at its lower end to a lower portion of said other side rail, said collapsible inclined bracing means defining a tension member brace defining the limit of outward and downward swinging movement of said other side rail from said one side rail during folding of said ladder from said closed position toward said open position, said collapsible inclined bracing means comprising an elongated articulated brace member including a pair of opposite end elongated brace member sections pivotally joined together at adjacent ends and to the upper end portions of said one and other side rails at their remote ends, said one side rail being of a greater inside transverse dimension than the outside transverse dimension of said other side rail and laterally receiving said other side rail, said bracing means and said rungs therein when said ladder is folded, the upper end of said one side rail projecting upwardly above the other side rail when said ladder is folded and including a downwardly opening laterally outwardly projecting inverted channel-shaped cover which overlies the upper ends of said one and other side rails when said ladder is folded, said anchor brackets including horizontally disposed V-shaped upper and lower brackets opening horizontally away from the side of said one side rail remote from the other side rail, the upper bracket being disposed in a vertical plane and the lower bracket being disposed in a horizontal plane.

4,243,120

RETRACTABLE BOARDING LADDER

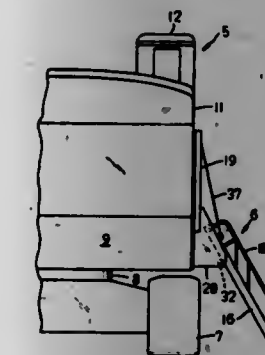
Dexter Pratt, Jr., Waukesha, and John F. Holz, Milwaukee, both of Wis., assignors to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Jun. 28, 1979, Ser. No. 52,900

Int. Cl.³ E06C 1/397, 5/04

U.S. Cl. 182-98

8 Claims



1. The combination of a ladder having a pair of elongated substantially parallel stringers that extend between its top and bottom ends and a plurality of transversely extending treads connected between the stringers at lengthwise spaced intervals along them, and means whereby said ladder is connected with relatively fixed structure that is in front of it and is guided and controlled for motion between a raised inoperative position and a lowered operative position, said combination being characterized by:

A. rail means on said fixed structure cooperating with rail-guided means on the top of the ladder for constraining the top of the ladder to move along a defined path that has

upper and lower ends and is straight and substantially vertical along a substantially major portion of its length from its upper end;

- B. guiding means on said fixed structure cooperating with said stringers to impart to the bottom of the ladder a rearward motion component during downward movement of the ladder and a forward component during its upward movement, so that in the operative position of the ladder the stringers are upwardly and forwardly inclined but in its raised position they are more nearly vertical;
- C. counterweight means guided for upward and downward motion along a fixed path;
- D. cable means attached at one end to said counterweight means;
- E. securement means connecting the other end of said cable means to the ladder at a location thereon which is spaced below its upper end and which therefore has a most forward position when the ladder is in its raised position, from which position the securement means moves rearward with downward movement of the ladder; and
- F. cable guide means on said fixed structure, engaged with the medial portion of the cable means, said cable guide means being at a fixed location that is above and forward of said most forward position of the securement means, so that forces imposed upon the ladder by the counterweight means, acting through the cable means, are such that the ladder can be moved out of each of its said positions with relatively small force, can be carried by momentum to the position towards which it is started, and decelerates during the final portion of its movement to each of said positions.

4,243,121

WEB LADDER RELEASE MECHANISM

Alexander S. Kiss, P.O. Box 209, Queenston, Niagara-on-the-Lake, Ontario, Canada, and Frank B. Leslie, 8883 Niagara River Pkwy., Niagara Falls, Ontario, Canada (L2E 6S6)

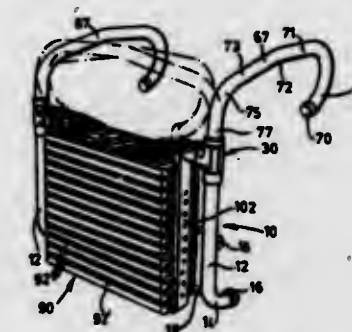
Filed Oct. 15, 1979, Ser. No. 85,000

Claims priority, application Canada, Sep. 11, 1979, 335418

Int. Cl.³ E06C 1/56

U.S. Cl. 182-196

7 Claims



1. In combination: frame means adapted for attachment adjacent an opening in a building, the frame means defining two spaced-apart, substantially horizontal passages, a catch element mounted for reciprocation within each passage, resilient means urging each catch element in one direction with respect to its passage, manual means for urging each catch element against its respective resilient means, and a collapsible ladder having attachment means by which a top end of the ladder may be anchored, the ladder also having containment means with reception means for receiving said catch elements when the latter are shifted in said one direction, whereby the containment means are retained with respect to the frame means, the containment means when so retained being adapted to maintain the ladder in collapsed condition.

4,243,122

LADDERS LEVELING DEVICE

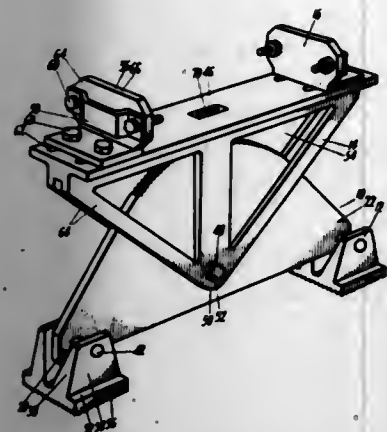
Ian B. Coutts, 20 Kildare St., Burwood, Victoria, Australia (3125)

Continuation-in-part of Ser. No. 819,174, Jul. 26, 1977. This application Dec. 19, 1978, Ser. No. 970,967

Claims priority, application Australia, Jan. 6, 1977, PD0304 Int. Cl.³ E06C 7/44

U.S. Cl. 182-200

15 Claims



1. A base device for attachment to a ladder comprising a base; ground engaging means depending from said base and being adapted to engage various types of surfaces; a top pivotally mounted to said base, said top being approximately triangular in shape and comprising two identical portions enveloping said base, and a plate attached to the topmost edge of each of said two identical portions; ladder receiving means on said top for releasably and securely receiving a pair of spaced apart rails of said ladder therein; and adjustment means for holding said top in a selected position relative to said base.

4,243,123

DEVICE FOR PREVENTING RATTLING OF PADS IN DISC BRAKES

Mamoru Watanabe, Tokyo, JPX, assignor to Watanabe Engineering Co., Ltd., Tokyo, Japan

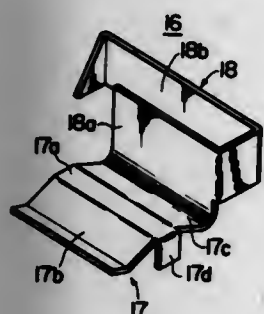
Filed Apr. 11, 1979, Ser. No. 29,149

Claims priority, application Japan, Sep. 29, 1978, 53-139937[U]

Int. Cl.³ F16D 65/00

U.S. Cl. 188-73.5

4 Claims



1. In a disc brake including a caliper body arranged to stride over a disc and having a friction pad receiving portion, and a pair of friction pads for applying pressure to the disc from its both sides to exercise a braking effect thereon, said friction pad receiving portion having an opening defining top, bottom, and side inner surfaces, a device for preventing a friction pad from rattling, said device comprising a flat elongated pad bottom supporting surface, a flat elongated pad side guiding surface, a resilient portion extending downwardly from each side of said supporting surface and then upwardly, the upwardly extending part of one of said resilient portions merging into said guiding surface, and a mounting portion cooperating with said guiding surface to mount said device on said caliper body in a lower corner of said pad receiving portion with said resilient portions

engaging said bottom surface, said device being mounted such that the lower edge of one of said pads, adjacent one lower corner thereof, rests on said supporting surface, and the side edge adjacent said lower corner bears against said guiding surface, whereby said pad slides along said supporting and guiding surfaces when said brakes are activated or deactivated and said resilient portions engagement with said bottom surface bias said pad into engagement with said top surface to prevent rattling.

4,243,124

AUTOMATIC NON-SERVO BRAKE ADJUSTER

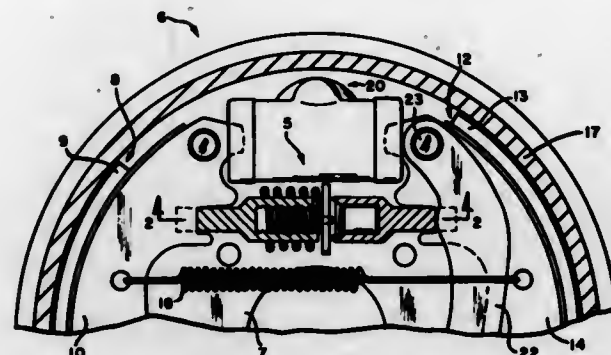
Michael A. Kluger, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 26, 1978, Ser. No. 973,468

Int. Cl.³ F16D 65/56

U.S. Cl. 188-79.5 P

2 Claims



1. In a drum brake having a backing plate, a pair of brake shoes with friction linings and carried by the backing plate, a return spring for biasing the brake shoes toward each other, service brake actuator means for urging the brake shoes to a braking position, and a parking lever pivotally attached to one of the brake shoes for urging the brake shoes to a braking position, an adjustable strut for maintaining a controlled clearance between the linings and the drum, the strut comprising:

- a nut member with an internally threaded portion and a bifurcated end portion for receiving one of the brake shoes;
- a screw member with an externally threaded portion received by the threaded portion of the nut member, a projecting portion extending axially away from the threaded portion and a radially extending flange portion disposed between the threaded and projecting portions, the projecting portion comprising a cylindrical stem with a uniform diameter and with a unitary planer end face facing axially away from the nut member, the projecting portion also comprising a base portion adjacent the flange, the base portion defining an outwardly facing frustoconical clutch surface;
- a torsion spring circumscribing the threaded portions of the nut and screw members, the torsion spring having a first end anchored to the nut member and a second end anchored to the flange of the screw member, the torsion spring being biased to rotate the screw member out of the nut member to lengthen the strut;
- a pivot member with a bifurcated end portion for receiving the parking lever and the other brake shoe, and having a blind axial bore with a uniform diameter for receiving the stem of the screw member, the bore terminating in a unitary planer axially facing bottom face parallel to the stem end face, the bottom face and the end face of the stem cooperating to define a space therebetween, the pivot member also comprising an inwardly facing frustoconical clutch surface engageable with the screw member clutch surface; and
- a resilient member comprising a Belleville washer disposed within the space between the bore bottom face and the stem end face, engageable with the bottom and end faces

and biased to resist rotation of the screw member out of the nut member, the clutch surfaces engaging each other to prevent rotation of the screw member upon full compression of the Belleville washer between the end and bottom faces under the influence of the return spring when the brakes are released, the clutch surfaces also engaging upon full compression of the Belleville washer between the bottom and end faces to prevent rotation of the screw member into the nut member as the strut is compressed by the parking lever during a parking brake application so that the strut functions as a rigid parking brake strut, the clutch surfaces disengaging and the bottom and end faces separating to permit expansion of the Belleville washer and rotation of the screw member out of the nut member to lengthen the strut upon lining wear during a service brake application, the rotation of the screw member out of the nut member tending to compress the Belleville washer until the Belleville washer balances the torsion spring.

4,243,125

SELF-ADJUSTING DRUM BRAKE

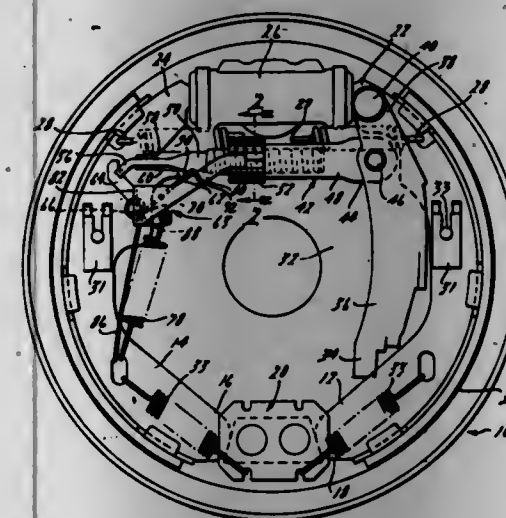
Robert Spaargaren, Southfield, and Albert DiMatteo, Metamora, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 21, 1979, Ser. No. 77,830

Int. Cl.³ F16D 65/40

U.S. Cl. 188-79.5 P

2 Claims



1. A one-piece adjusting lever and mounting member for an internal shoe drum brake system which includes a pair of webbed brake shoes mounted in a conventional manner with a first pair of end portions supported for pivotal movement, one of the brake shoes having an aperture through the web, an axially extendable and contractable strut assembly between a pair of shoe second end portions with a rotatable member as part of the strut assembly so as to produce extension and contraction thereof, the one-piece adjusting lever and mounting member comprising: a sheet metal member having a first arm portion extending so that a free end thereof engages an end of the strut assembly to produce pivotal movements of the adjusting lever in response to relative movement between the strut assembly and the brake shoes; a second arm of the adjusting lever extending substantially normal to the first arm and through the aperture in the brake shoe web to provide a mounting fulcrum to pivot the adjusting lever in response to the actuating force on the first arm by the strut assembly, a third arm extending from the second arm in substantial parallelism with the web of the one brake shoe and on an opposite side thereof than the first arm; the adjusting lever further including a pawl arm for engaging the rotatable portion of the strut assembly at its free end so that pivotal movements of the adjusting lever about the point of engagement between the brake web and second arm produce circumferentially oriented movements of the pawl arm's free end relative to the struts rotatable member; means between the free end of the pawl arm

4,243,126

BRAKE SYSTEM FOR A VEHICLE AND METHOD OF OPERATION THEREOF

Arthur L. Lee, and Arthur B. Coval, both of Columbus, Ohio, assignors to A. L. Lee Corporation, Columbus, Ohio

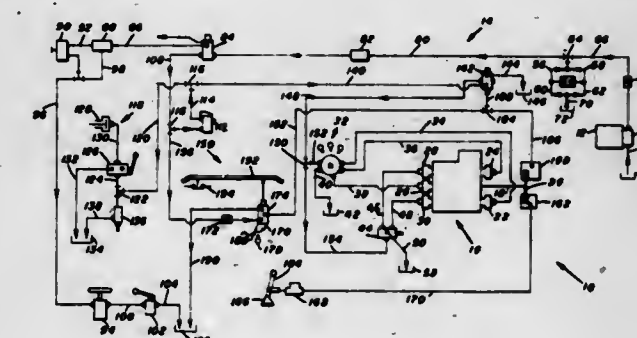
Division of Ser. No. 702,396, Jul. 6, 1976, Pat. No. 4,113,076.

This application Apr. 10, 1978, Ser. No. 895,150

Int. Cl.³ B60K 41/20

U.S. Cl. 192-2

9 Claims



1. A brake actuator for a vehicle comprising, propelling means for said vehicle, electric traction motors connected to said propelling means, an electric circuit to supply current to said electric traction motors, fluid pressure operated switch means to open and close said circuit, said fluid pressure operated switch means arranged when subjected to fluid under pressure to close said circuit and energize said electric traction motors, fluid actuated brake means for engaging said propelling means and braking said vehicle, a source of fluid under pressure, a brake actuator valve, a fluid circuit for controlling the flow of fluid under pressure between said source of fluid under pressure to said brake actuator valve, said fluid actuated braking means and said fluid pressure operated switch means, said brake actuator valve arranged in a brake disengaged position to supply said fluid actuated brake means with fluid under pressure from said source and maintain said fluid actuated brake means in a brake disengaged position, said brake actuator valve arranged in a brake engaged position to vent said fluid under pressure from said fluid actuated brake means and vent said fluid under pressure from said fluid pressure operated switch means so that upon engagement of said fluid actuated brake means said fluid pressure operated switch means opens said circuit and deenergizes said traction motors, and brake reset means connected to said brake actuator valve for maintaining said brake in an engaged position after actuation of said brake actuator valve.

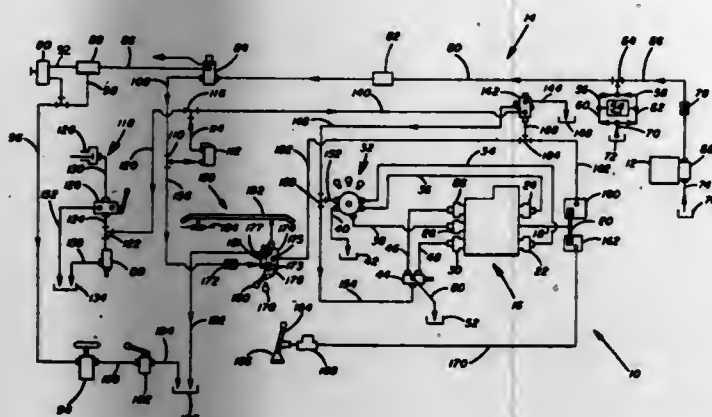
4,243,127

CONTROL SYSTEM FOR AUTOMATICALLY ACTUATING VEHICLE BRAKES

Arthur L. Lee, and Arthur B. Coval, both of Columbus, Ohio, assignors to A. L. Lee Corporation, Columbus, Ohio
Continuation-in-part of Ser. No. 702,396, Jul. 6, 1976, Pat. No. 4,113,076. This application Sep. 11, 1978, Ser. No. 941,201
Int. Cl.³ B60K 41/20

U.S. Cl. 192-4 A

7 Claims



1. A control system for automatically actuating a vehicle brake comprising:
propelling means for the vehicle,
fluid pressure operated control means for controlling the transmission of power to said propelling means,
fluid actuated brake means for engaging said propelling means to brake the vehicle,
a brake actuator valve,
a fluid circuit for controlling the flow of fluid under pressure between a source of pressurized fluid and said brake actuator valve, said fluid actuated brake means, and said fluid pressure operated control means,
said brake actuator valve having a valve housing with an inlet, a first outlet for pressurizing said fluid circuit, and a second outlet for venting said fluid circuit,
a valve member movable in said valve housing between a brake disengaged position connecting said inlet with said first outlet for pressurizing said fluid circuit and a brake engaged position connecting said first outlet with said second outlet for venting said fluid circuit,
said brake actuator valve being normally positioned in said brake disengaged position to supply said fluid actuated brake means and said fluid pressure operated control means with fluid under pressure to maintain said fluid circuit pressurized and said fluid actuated brake means in a disengaged position with respect to said propelling means and to supply drive to said propelling means,
said brake actuator valve being movable upon actuation to said brake engaged position to direct said fluid under pressure from said first outlet to said second outlet to vent said fluid circuit so that said fluid actuated brake means engages said propelling means to brake the vehicle and interrupt drive to said propelling means,
a safety brake valve having a valve member connected to said brake actuator valve, said safety brake member being positioned in said fluid circuit and subjected to the fluid pressure applied to said fluid actuated brake means and said pressure operated control means,
said safety brake valve member being operable to maintain said brake actuator valve positioned in a brake disengaged position when said fluid pressure supplied to said fluid pressure operated control means in said fluid circuit exceeds a preselected pressure, and
said safety brake valve member being actuated when said fluid pressure applied to said fluid pressure operated control means in said fluid circuit decreases to said preselected pressure to move said brake actuator valve to a brake engaged position to stop the vehicle and prevent

restarting of the vehicle until said fluid pressure in said fluid circuit is increased above said preselected pressure.

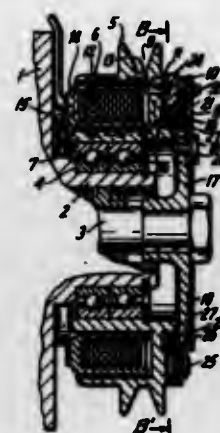
4,243,128

ELECTROMAGNETIC CLUTCHES

Isamu Shirai, Iseaki, Japan, assignor to Sankyo Electronic Company Limited, Iseaki, Japan
Filed Mar. 28, 1978, Ser. No. 890,962
Claims priority, application Japan, Mar. 30, 1977, 52/36601
Int. Cl.³ F16D 27/10

U.S. Cl. 192-35

7 Claims



1. In an electromagnetic clutch comprising a first rotatable member rotatably supported on a bearing means and having an axial end surface thereof, said first rotatable member being provided with an annular first clutch element of magnetic material having axial end magnetic friction surfaces, a second rotatable member rotatably supported on another bearing means and having a flange which faces said axial end surface with an axial gap therebetween, a cooperating annular second clutch element of magnetic material being supported on said flange of said second rotatable member so as to be capable of limited axial movement and having an axial end surface which faces said magnetic friction surfaces of said annular first clutch element with an axial gap therebetween, and electromagnetic means associated with one of said annular first and second clutch elements for attracting the other clutch element, the improvement comprising said second annular clutch element being relatively rotatable on said second rotatable member, said first rotatable member being provided with an axial projection on said axial end surface thereof to define an annular surface with a smaller diameter than said first annular clutch element, said flange being provided with an axial annular projection on the axial end surface thereof which faces said axial projection of said first rotatable member, said annular projection having a greater inner diameter than the diameter of the annular surface defined by said axial projection of said first rotatable member and being partially cut away, said second clutch element being partially cut away at the radial inner edge thereof, at least one C-shaped spring member having a greater inner diameter than said annular surface of said projection and having radially outwardly extending projections at opposite ends thereof, said C-shaped spring being disposed within an annular space between said annular axial projection of said flange and said axial projection of said first rotatable member with said radially outwardly extending projections being disposed in said cut away portion of said annular axial projection and said cut away portion of said second clutch element so that one of said projections of said arcuate spring member engages with said second clutch element, with the other projection engaging with said flange when second clutch element is rotated, whereby the transmission of the rotational force from said first rotatable member to said second rotatable member may be secured by a frictional contact between said annular surface of said projection and the inner surface of said C-shaped spring member established by the rotation of said second clutch element together with said first clutch element

attracted thereto, in addition to the frictional contact between said first and second clutch elements.

engage said elastic means to bias said radial extension of the inner ring against said one face of said radial flange, said bear-

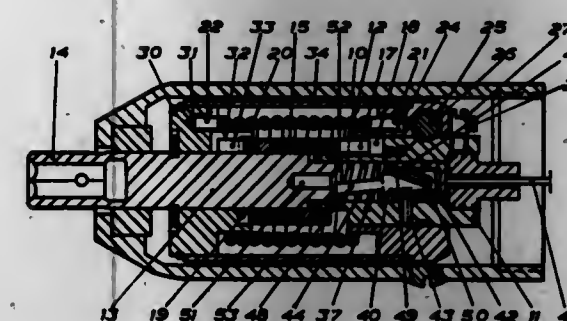
4,243,129

DEVICE FOR TIGHTENING A SCREW JOINT

Knut C. Scheep, Tyresjö, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Mar. 15, 1978, Ser. No. 886,651
Claims priority, application Sweden, Mar. 22, 1977, 7703254
Int. Cl.³ F16D 43/21, 13/08

U.S. Cl. 192-56 C

7 Claims



1. A device for tightening screw joints, comprising:
a motor;
a torque responsive slip clutch coupled to said motor;
an output shaft coupled to said slip clutch;
said slip clutch including a driving clutch member, a driven clutch member, one of said clutch members having a friction surface, a coil-type friction spring having respective ends, said coil type friction spring being torsionally wound and pretensioned in itself relative to said friction surface and having one of its ends positively coupled to the other of said clutch members, said coil-type friction spring due to said torsional pretensioning engaging said friction surface by a radially acting friction grip, and an auxiliary torsion spring having its ends positively coupled to the ends of said coil-type friction spring and being arranged to apply a torque load in either direction on said coil-type friction spring to selectively boost or counteract the pretension of said coil-type friction spring; and
an adjusting means for continuously varying the relative angular positions between one of the ends of said coil-type friction spring and the corresponding end of said auxiliary torsion spring, for varying said torque load on said coil-type friction spring, thereby enabling said auxiliary torsion spring to selectively exert on said coil-type friction spring a friction grip boosting or reducing torsional load of the slip clutch.

4,243,130

SELF-CENTERING CLUTCH RELEASE BEARING COMPRISING GUIDE MEANS

Rene Vinel, Bourg la Reine; Jean-Pierre Querton, Maisons Alfort, and Claude Serville, Clamart, all of France, assignors to SKF Compagnie d'Applications Mécaniques, Clamart, France

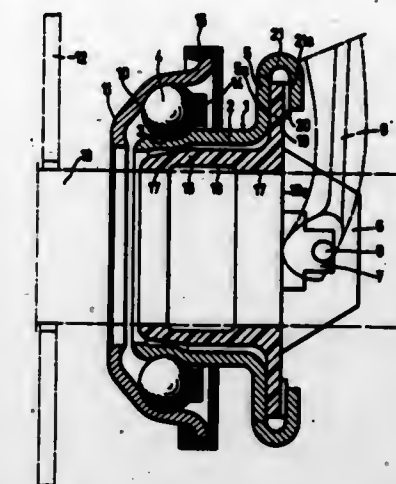
Filed May 10, 1978, Ser. No. 904,707

Claims priority, application France, May 16, 1977, 77 14977
Int. Cl.³ F16D 23/14

U.S. Cl. 192-98

9 Claims

1. A self-centering clutch release bearing assembly comprising an antifriction bearing having a plurality of bearing elements located between an inner ring and an outer ring, said inner ring having a radial extension, an axially slidable supporting element supporting said bearing, said supporting element having an internal guiding surface for contacting a guide tube, said supporting element including a radial flange having one face with a radial surface portion which bears against said radial extension of said inner ring of said bearing, said radial flange having integral elastic means which project from another face which lies opposite to said one face, said radial extension of the inner ring including projecting portions which



ing being movable radially to a centered position after a de-clutching operation.

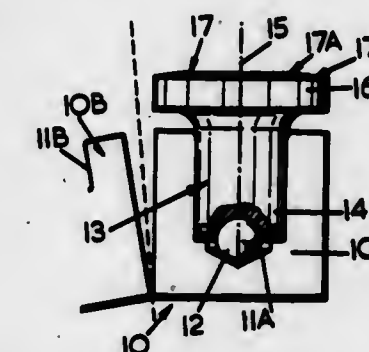
4,243,131

CONVEYING APPARATUS

Andrew Young, Coatbridge, Scotland, assignor to Lamberton & Company Limited, Lanarkshire, Scotland
Filed Oct. 26, 1979, Ser. No. 89,279
Int. Cl.³ B65G 13/12

U.S. Cl. 193-35 MD

7 Claims



1. Apparatus having a conveying surface for supporting and conveying articles between work stations, comprising a support on which a plurality of elements are individually rotatably mounted, the elements being arranged in two adjacent rows in each of which the elements are equally spaced apart, the elements of one row being staggered with respect to the elements of the other row, each element being mounted for rotation about an axis which is inclined at a small angle to the normal to the conveying surface and having a surface portion which is radially spaced from said axis different parts of which surface portion become tangential to said conveying surface according to the rotational position of the element, the inclination of the axes of the elements of said one row with respect to said normal being of opposite sense to the inclination of the axes of the elements of said other row, and the spacing between adjacent elements being such that a substantially continuous conveying surface is formed by the tangential surface-portion parts of adjacent elements.

4,243,132

SPEED CONTROLLER FOR THE ROLLING CYLINDRICAL ARTICLES

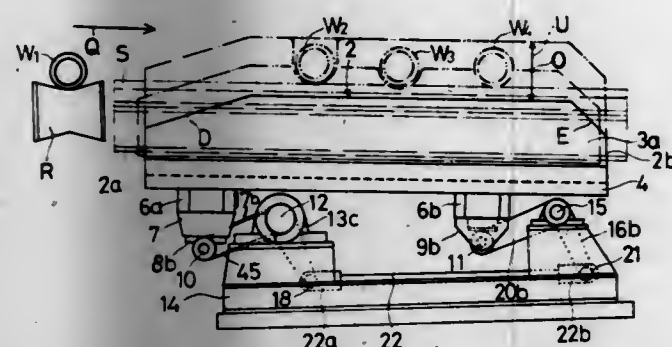
Isamu Miyakoshi, Osaka; Kenji Ito, Fujieda; Hideo Azuma, Otsu; Fukuzo Kitakaze, Takatsuki; Takamichi Tomotaki, Kobe, and Yasuo Takehara, Kashiwara, all of Japan, assignors to Hankyu Zoushi Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jul. 31, 1978, Ser. No. 929,230

Claims priority, application Japan, Sep. 6, 1977; 52-107621; Oct. 4, 1977, 52-134032

Int. Cl.³ B65G 11/20

U.S. Cl. 193—40

9 Claims



1. A speed controlling apparatus for cylindrical articles which are to roll on inclined skid rails from an inlet to an outlet thereof, the apparatus comprising: a control rail, located substantially in parallel to said skid rails and near thereto, said control rail including at least one base plate and thick layer of a soft resilient substance attached to an upper surface of said base plate; a supporting construction composed of a front L-shaped arm having an upper end, an elbow-shaped portion and a lower end located near to said inlet, a rear L-shaped arm having an upper end, an elbow-shaped portion and a lower end located near to said outlet, each said arms being rotatably attached at respective said upper ends to a lower surface of said base plate of said control rail and being rotatably supported by a frame base at respective said elbow-shaped portions, said L-shaped arms being linked to one another at said lower ends by a connecting rod; and means for giving to said control rail a substantially vertical reciprocative motion.

4,243,133

ANTI-STRINGING DEVICE FOR A COIN DETECTING DEVICE

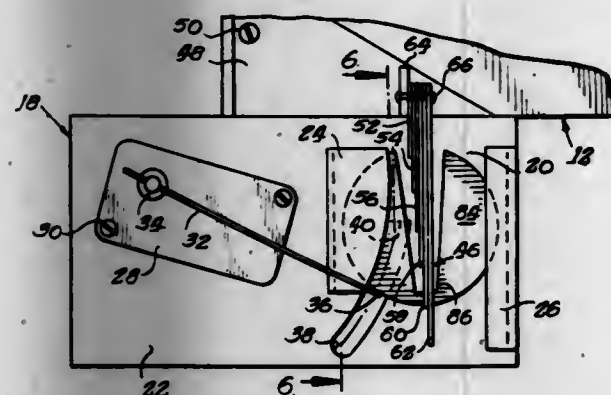
Frank G. Nicolans, Chicago, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Mar. 8, 1979, Ser. No. 18,751

Int. Cl.³ G07F 1/04

U.S. Cl. 194—9 R

12 Claims



1. A coin detecting device comprising: a coin chute defining a path down which a coin travels; a switch having first and second electrical states; actuating means connected to the switch for changing the electrical state of the switch, the actuating means changing the switch to the first electrical state when a coin traveling down the path passes a predetermined

first position along the path, and changing the switch to the second electrical state when either a coin traveling down the path passes a predetermined distance past the first position or a coin which had past the first position is pulled up the path past a predetermined second position along the path; and gating means comprising a plurality of independently movable coin passing gates situated along the path for preventing a coin with a slotted body from being drawn up the path far enough to allow the switch to change to the second electrical state after it had passed the first position along the path and had forced the switch into its first electrical state, thus protecting against multiple actuation of the switch by one coin.

4,243,134

COIN OPERATED VENDING APPARATUS WITH MULTIPLE COIN CHUTES

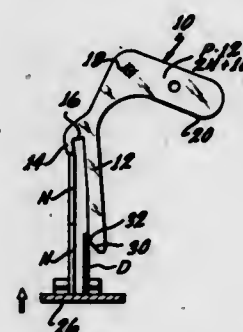
Jack S. Chalabian, Gardena, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.

Filed Feb. 22, 1979, Ser. No. 13,822

Int. Cl.³ G07F 5/08

U.S. Cl. 194—59

13 Claims



1. In a coin-operated door lock of the type in which some movement of the door is possible while the door remains locked, having a curved actuator attached to the door for movement with it past the lower ends of juxtaposed first and second coin chutes and driven as the door is drawn in its direction of opening to unlock the door by contact with the edge of a coin extending beyond the lower end of the second coin chute, the coin being prevented from being pushed by the actuator back up into the chute by a pawl mounted adjacent the chute and having a coin-engaging finger extending into the chute, the pawl being mounted for pivotal motion with respect to the first and second coin chutes and being biased to a first pivotal position relative to the first and second coin chutes, the improvement comprising:

a pawl for enabling the door to be unlocked after a first particular combination of coins has been deposited in the first chute and a second particular combination of coins has been deposited in said second chute, said pawl having a unitary body of substantially uniform thickness and including:

a first finger extending into the first coin chute when said pawl is in the first pivotal position;
a second finger extending substantially parallel to said first finger but spaced from it so that a notch is defined between said first finger and said second finger, said notch being aligned with said second coin chute when said pawl is in the first pivotal position to permit a second particular combination of coins in the second chute to be pushed back up into the chute when said pawl is in the first pivotal position preventing the actuator from being driven to unlock the door;

the tip of said first finger having a shape defining a cam for rotating said pawl to a second pivotal position when the door is drawn in its direction of opening after a first particular combination of coins has been deposited in the first coin chute, the coins in the first chute being forced upwardly against the cam by movement of the curved actuator past the lower end of the first chute;

the rotation of said pawl from the first pivotal position to the

4,243,136

ICING PREVENTION SYSTEM FOR A CONVEYOR BELT

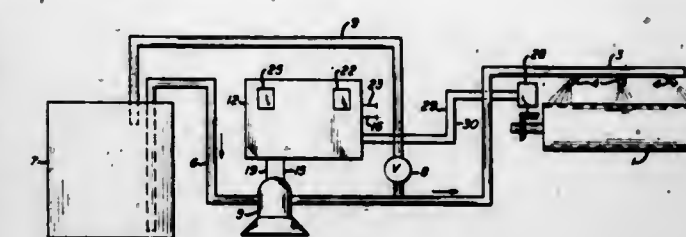
Michael J. Kaufman, R.D. #2, Box 102, Berwyn, Pa. 15531

Filed Mar. 12, 1979, Ser. No. 19,669

Int. Cl.³ B65G 47/22

U.S. Cl. 198—493

5 Claims



1. An icing prevention system for a conveyor belt exposed to freezing temperatures, comprising a tank for an anti-freeze liquid, a pump for withdrawing liquid from the tank and having an outlet, a spray nozzle connected with said outlet and adapted to be located adjacent a conveyor belt to spray the belt, an electric circuit for operating the pump, a timer switch in said circuit, an electrically operated timer for periodically closing said switch while the timer is operating, and a normally open thermostat in said circuit in series with said timer switch and timer for starting the timer when the ambient temperature falls below a predetermined low temperature and the thermostat closes, whereby said pump will be operated only while both the timer switch and the thermostat are closed.

4,243,135

APPARATUS FOR INSERTING PACKS INTO THE GAPS OF A MOVING FILE OF CIGARETTE PACKS OR THE LIKE

Bob Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

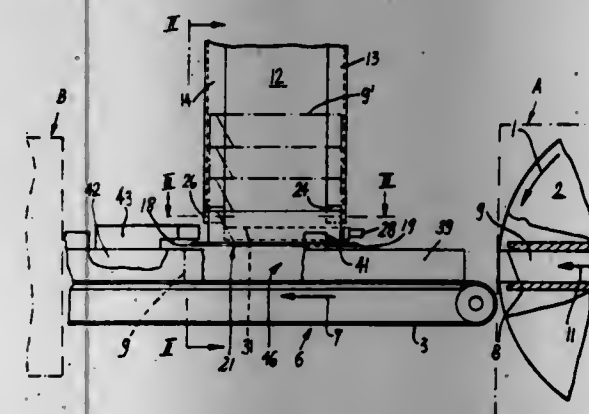
Filed Jan. 22, 1979, Ser. No. 5,323

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804230

Int. Cl.³ B65G 47/10

U.S. Cl. 198—370

9 Claims



1. Apparatus for filling gaps which develop at times in a file of cigarette packs or like block-shaped commodities having a predetermined width and a predetermined length and advancing from a supplying to a processing machine, comprising a conveyor defining an elongated first path along which said file of commodities moves between said machines in a predetermined direction; a magazine adjacent to one side of and partly overlying said path, said magazine being arranged to store a supply of superimposed spare commodities including a lowermost commodity and said magazine including a support for the lowermost commodity, said support being disposed at a level at least slightly above said path and supporting the lowermost commodity for movement to a position of registry with successive commodities as well as with successive gaps in said path; and means for transferring the lowermost commodity from said magazine to said position whence such lowermost commodity can descend by gravity into an oncoming gap of the file in said path, including a device movable along a second path making an acute angle with said first path so that the lowermost spare commodity which is transferred from said magazine to said position preparatory to descending into said first path has a first component of movement along said support in said direction and a second component of movement along said support at right angles to said direction, the distances covered by the lowermost spare commodity on its way from said magazine to said position of registry with a gap therebelow in and at right angles to said direction being respectively less than said predetermined length and width.

4,243,137

BARN OR PIT FLOOR SCRAPER ASSEMBLY AND DRIVE MEANS THEREFOR

Frank R. Laurens, Eagle Butte, S. Dak., assignor to Agricultural Research and Development Inc., Eagle Butte, S. Dak.

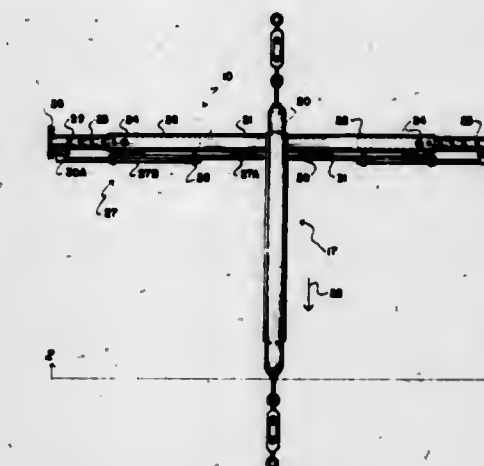
Continuation of Ser. No. 807,663, Jun. 17, 1977, abandoned.

This application Feb. 13, 1979, Ser. No. 11,908

Int. Cl.³ B65G 27/00

U.S. Cl. 198—748

13 Claims



1. A scraper system for barns or pit floors and the like comprising in combination a scraper assembly, and means for operatively connecting said scraper assembly to a source of power to move said scraper assembly back and forth across said floor, said scraper assembly including a hitch component, a frame extending outwardly on each side of said hitch component and a scraper blade component hingedly mounted to said frame and means to mount said scraper blade component for free-floating vertical movement relative to said frame, within limits, said scraper blade component including at least two scraper blades on each side of said hitch operatively connected to said frame, said two scraper blades being attached to said frame with adjacent ends overlapping one another, and means connecting said ends together for free-floating independent vertical movement within limits one relative to the other and each relative to said frame.

4,243,138

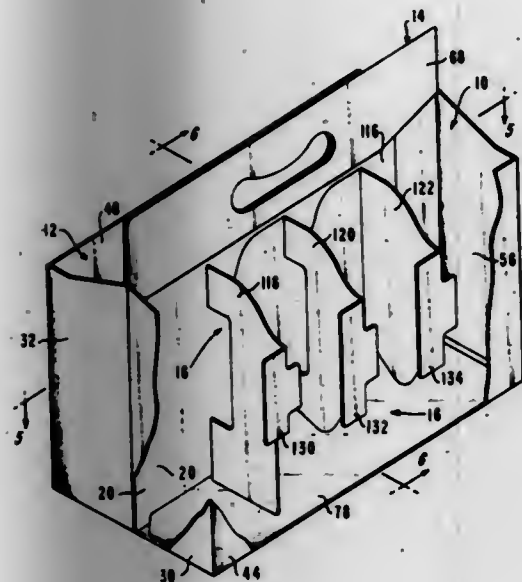
THREE-PIECE FOLDABLE BASKET CARRIER AND BLANK FOR FORMING THE SAME

Jerry F. Wilson, West Monroe, La., assignor to Oliakraft, Inc., Denver, Colo.

Filed Apr. 10, 1979, Ser. No. 28,760
Int. Cl.³ B65D 5/48

U.S. Cl. 206—188

7 Claims



1. A foldable basket carrier comprising front and rear full first center panels; front and rear full second center panels having inner edge portions overlapping and secured to inner edge portions of the respective full first center panels to form front and rear full center members; front and rear left side panels hingedly joined at inner edges thereof to outer edges of the respective front and rear first center panels; front and rear right side panels hingedly joined at inner edges thereof to outer edges of the respective front and rear second center panels; front and rear wall panels hingedly joined at the right and left edges thereof to outer edges of the respective front and rear panels of the right and left side panels; front and rear bottom panel means hingedly joined together at inner edges thereof and hingedly joined at outer edges thereof to respective bottom edges of the front and rear wall panels; said front and rear full center members being hingedly connected together at the top edges thereof, being secured back to back, having finger openings formed through upper portions thereof, and extending substantially the full length and height of the carrier to form a strong full two-ply center support; and separate front and rear partition means adhesively secured between the front surface of the center support and the front wall panel and between the rear surface of the center support and the rear wall panel, respectively, for forming a plurality of front and rear article receiving cells, a portion of the separate front and rear partition means being sandwiched between and being adhesively secured to the front and rear outer handle panels.

4,243,139

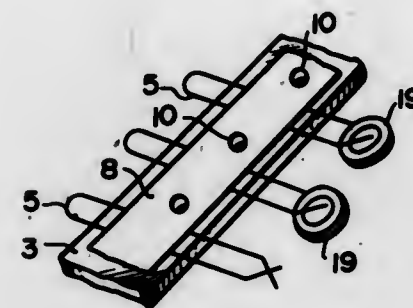
APPARATUS AND PROCESS FOR THE MANUFACTURE OF ELECTRONIC COMPONENTS

Sho Masujima, and Yamamoto Yoshikito, both of Tokyo, Japan, assignors to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 597,933, Apr. 22, 1975, abandoned. This application Apr. 27, 1977, Ser. No. 791,363
Claims priority, application Japan, Jul. 22, 1974, 49-83893
Int. Cl.³ B65D 73/02

U.S. Cl. 206—330

5 Claims



1. A continuous web of a plurality of electronic component having parallel lead wires suitable for inserting each electronic component into openings of a printed circuit board completely automatically by an automatic inserting machine, comprising a support member for supporting and positioning the parallel lead wires, said support member including a continuous support strip and a continuous opposing support tape, the parallel leads of the axial lead electronic components disposed substantially perpendicularly across the support strip, said support tape having an adhesive on the face thereof facing said support strip, said support strip and said support tape cooperating to hold firmly said lead wires therebetween, the width of said support tape being slightly narrower than the width of said support strip, said support tape and support strip having drive-cooperating means for receiving a drive for transporting and positioning said lead wires and attached electronic components, said drive-cooperating means being circular holds perforated through said support strip and support tape together, said circular holes being spaced apart equidistantly between said lead wires of adjacent electronic components and at precisely positioned intervals in the longitudinal direction along the transverse midpoint of said support strip and tape, the reverse side of said support strip being flat

5. A process for the manufacture of a series of electronic components having parallel lead wires, comprising in sequence, the steps of mounting lead wires equidistantly on a support strip having a longitudinal direction, said lead wires being positioned transversely to said support strip and protruding from at least one edge thereof for facilitating attachment to an electronic component, placing the adhesive-coated face on an adhesive tape having a width slightly narrower than that of said support strip coated on only one face against said support strip for fixing firmly and precisely said lead wires therebetween, forming circular holes simultaneously in both said support strip and said adhesive tape at precisely positioned intervals in the longitudinal direction along the transverse midpoint of said support strip equidistantly between said lead wires of adjacent electronic components, moving said support strip in said longitudinal direction by the use of a rotating drive wheel constructed and arranged to meet with said circular holes, and fastening electronic components to said lead wires for support, transport and positioning thereby.

4,243,140

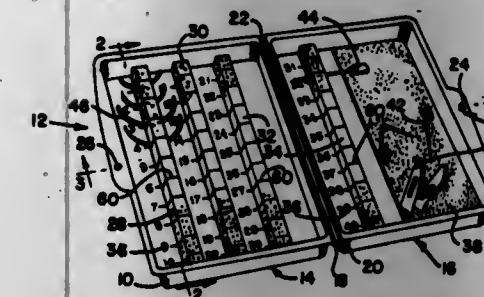
SURGICAL NEEDLE AND SHARPS HOLDING CONTAINER

Robert H. Thran, Lisle, Ill., assignor to Anchor Products Company, Addison, Ill.

Filed Jul. 13, 1979, Ser. No. 57,290
Int. Cl.³ A61L 17/02

U.S. Cl. 206—380

6 Claims



1. In a hinged disposable container for retaining surgical implements, the improvement comprising: an outside shell means for completely containing the implements comprised of two open-topped boxes; a hinge means for pivotally attaching said open-topped boxes to each other so that said open-topped boxes may be disposed against each other to form one continuous enclosure; a closure means to maintain said open-topped boxes in a closed position; an elongated resilient strip of resilient material which is provided with one or more slots, each slot defining resilient surfaces on either side of the slot which make contiguous contact and are slightly deformed upon a surgical implement being inserted into the slot so as to retain the implement by the frictional forces exerted by said surfaces, said strip being attached to an inside surface of at least one open-topped box; and numerical indicia means provided adjacent to said slots so that each slot is indicated with a sequential number.

4,243,141

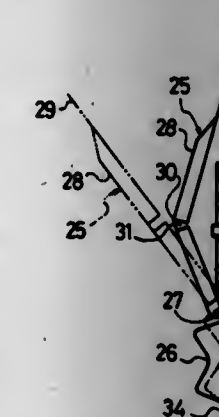
NEEDLE PACK

Masamitsu Takahashi, Hiroshima, Japan, assignor to Bankoku Needle Manufacturing Company Ltd., Hiroshima, Japan

Filed Nov. 8, 1979, Ser. No. 92,338
Int. Cl.³ B65D 85/28

U.S. Cl. 206—380

3 Claims



1. A needle pack comprising a substantially rectangular base member, a needle holder attached to said base member, and a substantially rectangular flexible cover member attached to said base member at one end edge, said flexible cover member comprising

- a first convex portion covering said needle holder portion and any needles held therein;
- engagement means for securing the end edge of said cover member, opposite said attached end edge, to said base member;
- means for opening said first convex portion including a second convex portion and a concave portion separating said second convex portion from said first convex portion,

whereby when pressure is applied to said second convex portion force is transmitted through said concave portion, said concave portion serving as a fulcrum, to disengage said engagement means and to force said first convex portion away from said base member, thereby opening the needle pack for use.

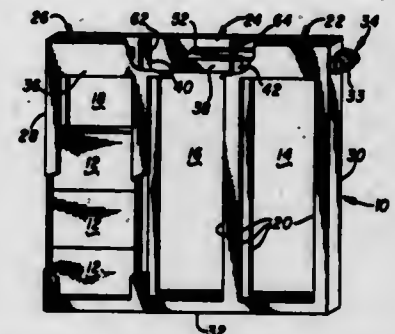
4,243,142

TAPE STORAGE AND DISPLAY APPARATUS

Dave O. Foreman, 606 E. Broadway, Andrews, Tex. 79714

Filed May 25, 1979, Ser. No. 42,454
Int. Cl.³ A45C 11/28; A47F 5/12; E05B 73/00; B65D 85/67
U.S. Cl. 206—387

5 Claims



1. A storage and display apparatus for holding a plurality of tape decks, comprising: a main frame having a front panel spaced from a rear panel by opposed sidewalls and parallel divider walls connected therebetween which cooperate together to form a plurality of tape receiving slots within said main frame, said plurality of slots being arranged adjacent to one another; each said slot having an outwardly directed opening which is closed by a single removable closure means, an end wall opposed to said opening in the slot, said opposed sidewalls extending from said slot opening to said end wall; the main frame has an inner peripheral edge portion which defines a window, said window extends into said slot; a flange formed by the marginal peripheral edge portion of said window for slidably receiving the opposed marginal edges of a tape deck therewithin; so that the removable closure means can be removed from the opening of each said slot, a plurality of tape decks can be placed within each said slot, the removable closure means placed to close the opening, whereupon the tape decks are captured within the main body and may be viewed through the window.

4,243,143

WRAPPER FOR A PLURALITY OF ARTICLES ARRANGED IN ROWS

Rolf Muller, Longnich, Fed. Rep. of Germany, assignor to The Mead Corporation, Dayton, Ohio

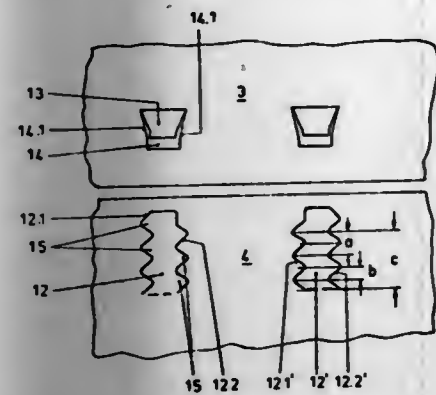
Filed Mar. 12, 1979, Ser. No. 20,103
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810564Int. Cl.³ B65D 65/00, 75/00

U.S. Cl. 206—429

3 Claims

1. A wrapper for a plurality of articles arranged in rows, such as bottles, cans or the like, comprising overlapping panels secured together by at least one locking tab struck from one of said panels and engageable in a correlated locking aperture provided in the other of said panels, said locking tab being provided with lateral projections along the entire length of the side edges thereof to form wavy lines and the side edges of said

locking aperture diverging inwardly with respect to the end edge of said other panel, characterized in that said wavy lines



along the side edges of said locking tab run parallel with respect to each other.

4,243,144

BEND AND PEEL BLISTER STRIP PACKAGE

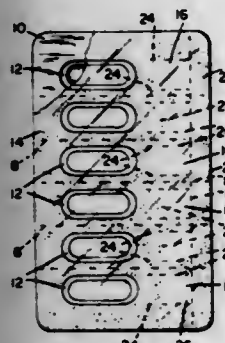
Herman Margulies, Westfield, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,398

Int. Cl.³ B65D 83/04, 85/56, 75/36, 75/58

U.S. Cl. 206—532

21 Claims



1. A blister strip package comprising a relatively stiff sheet, spaced cavities therein, a relatively pliable sheet heat sealed in part to the cavity bearing sheet, and being co-terminous therewith, covering the cavities, said blister strip having along an edge thereof a narrow flexible strip extending along the entire line of the cavities and capable of being flexed along a line of perforations in the covering sheet, said line of perforations defining the inside edge of said flexible strip, an unsealed area between the flexible strip and each cavity, said unsealed areas intersecting the line of perforations and having spaced edges defining lines at the sides thereof, said unsealed areas being spaced, the covering sheet being separable from the sealed flexible strip at the line of perforations to provide a pull tab in the covering sheet which is peelable towards the respective cavity along said edge defining lines, thus forming a peel strip intersecting the respective cavity and providing access thereto.

4,243,145

CASSETTE MODULES AND DISPLAYS FOR TUBULAR ARTICLES

Robert G. Woodhead, Ringoes, N.J., assignor to The American Thread Company, Stamford, Conn.

Filed Jan. 9, 1978, Ser. No. 913,955

Int. Cl.³ A47K 1/08, 1/14; B65D 83/04

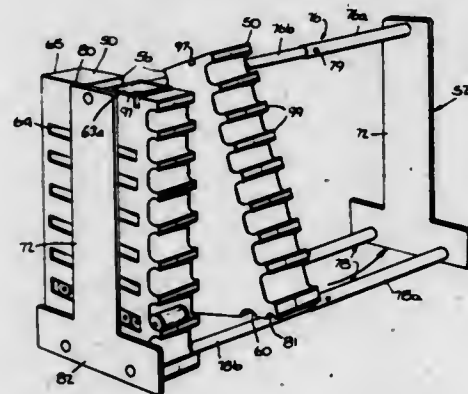
U.S. Cl. 211—49 D

27 Claims

1. A modular cassette display for tubular articles such as spools of thread comprising a plurality of juxtaposed cassette modules,

each of said cassette modules having a top, a bottom, a front

and a rear and a plurality of superposed chambers each for housing a plurality of said articles, each of said chambers including a supporting surface for the articles inclined downwardly towards said front of said cassette module, an opening for each of said chambers at least in said front sized to permit passage of the articles therethrough, each of said openings to said chambers in said front extending along opposed sides of a respective cassette module, and an approximately vertically-extending surface disposed adjacent to said opening for retaining the articles thereat, said surface extending for substantially the width of said opening, said display including means for removably juxtaposing said cassette modules to form said cassette display, said means for juxtaposing comprising a single opening centrally located in the top of each of said cassette modules and two openings located in the bottom of each of said cassette modules oppositely spaced from the central part thereof, respective openings being aligned along the tops and bottoms of juxtaposed cassette modules to form series of openings along the tops and bottoms of the juxtaposed cassette modules, a rod extending through each series of aligned openings, and elongated members disposed at exterior sides of exterior cassette modules for preventing movement of the cassette modules therepast, respective members being connected to the ends of respective rods extending through the respective openings, said elongated members extending substantially flush with exterior sides of exterior modules, the openings in the tops of the mod-



ules being vertically elongated to provide a space below the rod extending therethrough whereby each of the said cassette modules may be raised vertically a sufficient distance to space the openings in the bottom of the cassette modules from the rods extending therethrough and to permit pivoting of individual cassette modules about the rod extending through the openings in the tops thereof.

14. A cassette module for housing tubular articles such as spools of thread, said cassette module having a top, a bottom, a front and a rear and a plurality of superposed chambers each for housing a plurality of said articles,

each of said chambers including a supporting surface for the articles inclined downwardly towards said front of said cassette module, an opening for each of said chambers at least in said front sized to permit passage of the articles therethrough, each of said openings to said chambers extending along opposed sides of the cassette module, and an approximately vertically-extending surface disposed adjacent to said opening for retaining articles thereat, said surface extending for substantially the width of said opening.

said cassette module being adapted to be removably juxtaposed with similar modules in a cassette display, means for removably juxtaposing the cassette modules to form the cassette display comprising at least one opening centrally provided in the top of said cassette module and two openings provided in the bottom of said cassette module oppositely spaced from the central part thereof,

respective openings of juxtaposed cassette modules being adapted to being aligned along the tops and bottoms of the juxtaposed cassette modules to form series of openings, each series of aligned openings being adapted to receive a rod extending therethrough, the opening in the top of said cassette module being elongated to provide a space below the rod adapted to extend therethrough whereby said cassette module may be raised vertically a sufficient distance to separate the openings in the bottom of the cassette module from the rods adapted to extend therethrough and to permit pivoting the cassette module about the rod adapted to extend through the opening in the top of the cassette module.

4,243,146

CUSTOM CHANGEABLE HANGING RACK FOR FINISHING SYSTEM

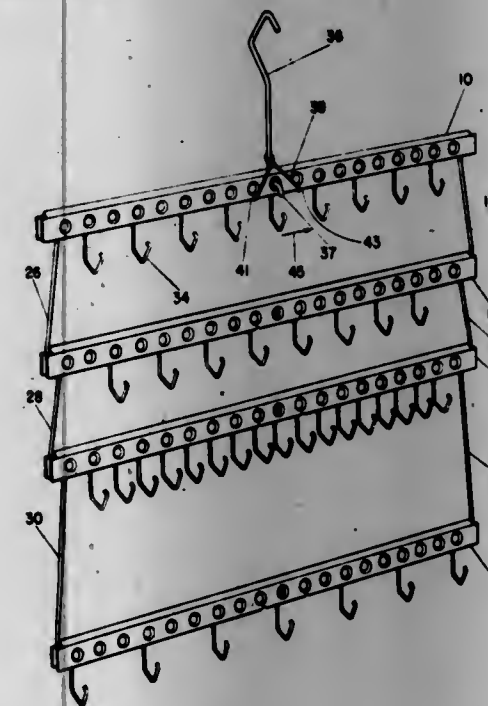
Walter E. Davitz, Columbus, Ohio, assignor to Production Plus Corporation, Columbus, Ohio

Continuation of Ser. No. 28,277, Apr. 9, 1979, This application May 24, 1979, Ser. No. 41,944

Int. Cl.³ A47F 5/08

U.S. Cl. 211—118

9 Claims



1. A support rack of the type having a main frame and workpiece support hooks on which workpieces are hung for transporting the workpieces through a finishing system, said rack, in an operable position, including:

- (a) a plurality of generally horizontal, vertically spaced crossbars each having opposed spaced panels, a cross web extending between and longitudinally along said panels and at least one crossbeam near each end of each crossbar extending between said panels and spaced from said cross web;
- (b) a plurality of manually removable sidebars extending between the adjacent, vertically spaced ends of said crossbars, each sidebar having an upper end for hanging over an upper one of said crossbeams and a lower, inwardly bent leg extending along the underside of a cross web and above a crossbeam of a relatively lower one of said crossbars to a down turned tip; and
- (c) removable retaining means inserted between each of said lower legs and its associated crossbeam for extending from said crossbeam to said leg for preventing significant movement of said leg and interfering with said turned down tip to prevent withdrawal of said leg.

4,243,147

THREE-DIMENSIONAL LIFT

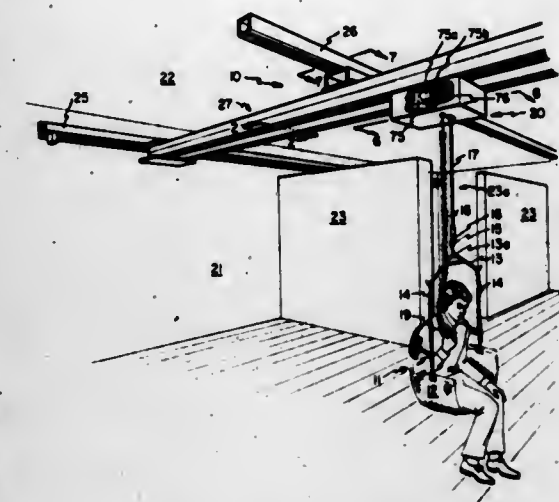
Brent L. Twitchell, 3451 W. - 4400 S., Granger, Utah 84120, and Kendal S. Twitchell, 1569 Shenandoah Cr., Murray, Utah 84107

Filed Mar. 12, 1979, Ser. No. 19,865

Int. Cl.³ B66C 17/06

U.S. Cl. 212—159

21 Claims



1. A three dimensional lift comprising, a traveling bridge arranged to span between opposite sides of a room; channel means secured appropriately in said room for supporting said traveling bridge at its ends such that it can move therealong; trolley means secured to the ends of said traveling bridge arranged to travel along said channel means for supporting said traveling bridge as it travels along said channel means; a head arranged to travel back and forth on said traveling bridge; trolley means secured to said head and arranged with said traveling bridge so as to travel therealong; two chain means each secured at its ends to opposite ends of the channel means and passes across said traveling bridge, said chain means crossing each other at said head; two motor means each secured to said head, each having a sprocket means turned thereby, each sprocket means meshing into, to travel along, one of said chain means; a hoist motor means arranged with said head for turning a pulley means; a sling means for supporting a handicapped person; a cable means attached to said sling means and said pulley means; means for providing power to said two motor means and hoist motor means; and control means for controlling operation of said two motor means and hoist motor means.

4,243,148

COUNTERBALANCED TOWER CRANE

Neil F. Lamson, Kennewick, Wash., assignor to Riggers Manufacturing Company, Kennewick, Wash.

Filed May 18, 1979, Ser. No. 40,234

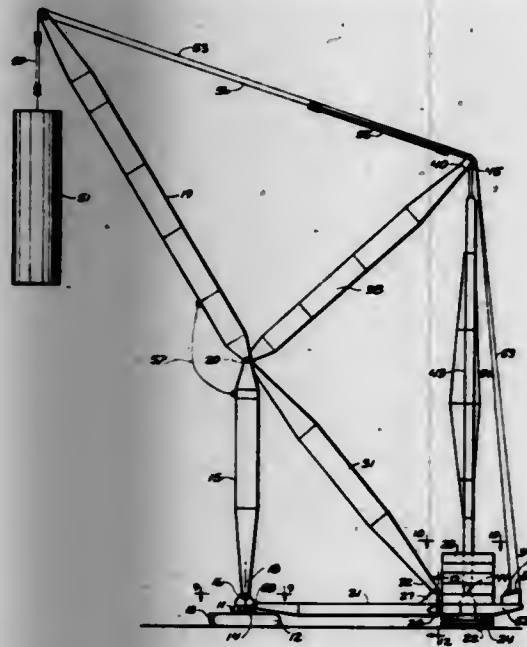
Int. Cl.³ B66C 23/76

U.S. Cl. 212—196

8 Claims

1. A counterbalanced tower crane comprising: a tower platform; vertical tower means having a lower end mounted to said tower platform for rotational movement about a vertical tower axis; boom means pivotally mounted to said tower means at an elevation above said tower platform for pivotal movement relative to said tower means about a horizontal axis, said

boom means being extended radially outward to one side of the vertical tower axis;
 load hoisting means mounted to said boom means;
 a mobile counterweight unit spaced a substantial distance radially from said tower platform in diametric opposition to said boom means with respect to said vertical tower axis;
 power means mounted to said mobile counterweight unit and operably connected thereto for selectively moving the mobile counterweight unit in a circumferential path about said vertical tower axis;
 first rigid spreader link means operably connected to the lower end of said tower means and to said counterweight unit for applying rotational torque to the lower end of said tower means about said vertical tower axis in response to movement of the mobile counterweight unit along said circumferential path;
 second rigid spreader link means having one end operably



connected to said tower means at a location above the connection of the tower means and said first rigid spreader link means and its remaining end operably connected to said mobile counterweight unit for applying rotational torque to said tower means in conjunction with said first rigid spreader link means; said second rigid spreader link means overlying said first rigid spreader link means in a vertical rigid triangular structure completed by said tower means and located diametrically opposite the boom means;
 powered winching means operably connected to said load hoisting means;
 a staymast mounted on said tower means;
 a rigid vertical counterweight strut having a lower end operably mounted by the mobile counterweight unit and an upper end connected to the outer end of said staymast; and
 guying means operably connected between said boom means and said staymast.

4,243,149

RAILROAD CAR DRAFT GEAR AND COUPLER ARRANGEMENT

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jan. 19, 1978, Ser. No. 916,486

Int. Cl.³ B61E 9/00

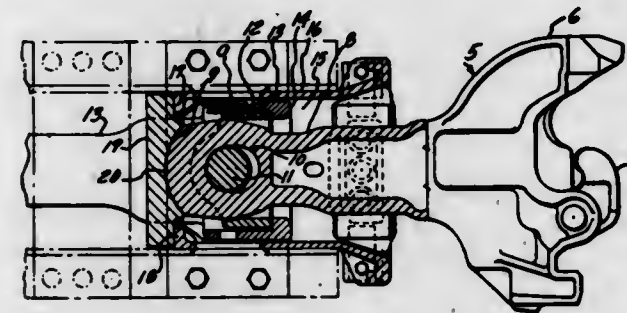
U.S. Cl. 213—42 A

2 Claims

1. A car coupler, comprising:
 - (a) a chambered head, including means for coupling with an opposing head of another like coupler;
 - (b) a shank extending from the head and terminating at a generally spherical butt end, the shank having a pinhole extending transversely therethrough adjacent the butt end

for receiving a pin used to couple the shank to a rotary mechanism;

- (c) a yoke having a pair of opposing longitudinally extending sidewalls between which is an opening in which the butt end of the shank is received, the yoke including (i) a plurality of lugs extending into the opening in spaced relation from the butt end of the shank to restrict movement of a rotary mechanism coupled to the shank, in a rearward direction away from the head, and (ii) an opening in one of the sidewalls through which a pin is inserted into the pinhole which is aligned with the sidewall opening when the shank is rotated about its longitudinal axis generally 90° from its position where the head is in a normal neutral position for coupling with a head of another like coupler;
- (cc) a rotary mechanism mounted in the yoke for rotation about the longitudinal axis thereof, the rotary mechanism disposed between the yoke and the shank, adjacent the butt end thereof, and having a pair of spaced, aligned openings for receiving opposing ends of the pin used to couple the shank and rotary mechanism together;



- (d) a front follower disposed adjacent the butt end of the shank and having a planar portion and a spherical concavity matingly configured to seat the butt end of the shank, the concavity having an area which is at least as large as the area of the butt end of the shank and being bounded by a rim which projects from the planar portion in the direction of the butt end of the shank; and
- (e) means coacting between the yoke and front follower for maintaining the front follower in a predetermined position adjacent the butt end of the shank where the front follower is unbiased against the butt end of the shank, when the coupler is in a neutral position intermediate buff and pull positions thereof, said means including a plurality of stops carried by the front follower and projecting from the planar portion thereof to contact the plurality of lugs carried by the yoke and hold the front follower and butt end of the shank slightly apart so that the shank can be rotated, by hand, about its longitudinal axis after insertion of the pin to couple the shank and rotary mechanism together.

4,243,150

BOTTLE SEAL

Ingemar Gunne, Sollentuna, and Bertil Almgren, Villingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 23, 1978, Ser. No. 871,535

The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.³ B65D 47/36, 49/00

U.S. Cl. 215—247

7 Claims

1. In a bottle seal including a resilient material stopper having a first axial end section adapted to overlie an axial end of a bottle neck and having a radially extending surface for sealingly engaging the axial end of the bottle neck, the stopper having an axial extension for projecting into the bottle neck and sealingly engaging the inner diameter of the bottle neck, with a slit through the stopper for receipt of a liquid with-

4,243,152

TEAR-UP CLOSING DEVICE FOR CONTAINERS

Rolf L. Ignell, Divoane-le-Bains, France, assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

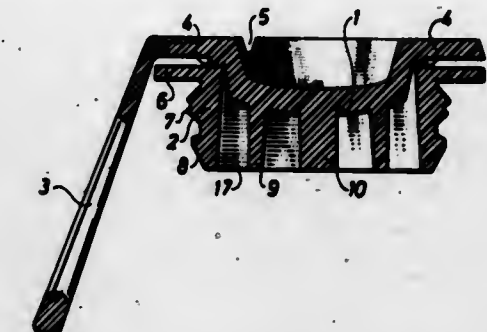
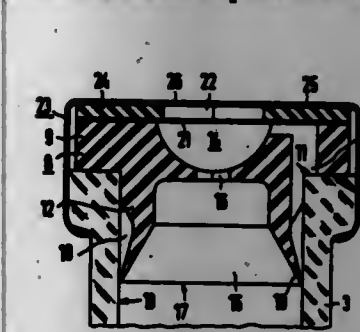
Filed Jan. 24, 1977, Ser. No. 762,137

Claims priority, application Sweden, Jan. 30, 1976, 7600989

Int. Cl.³ B65D 17/34, 39/00

U.S. Cl. 220—270

7 Claims



having a central slit therethrough, the slit aligned with the opening in the metal cap and with the slit in the stopper, the stopper has an axial extension receivable interior of the neck of the bottle, the axial extension terminating interior of the neck of the bottle in a lip seal engageable with an inner diameter wall of the bottle neck, the extension having an annular groove therearound for defining an air spaced between the extension and the inner diameter wall of the neck of the bottle adjacent the lip seal, an air channel communicating the groove to the exterior of the stopper interior of the foil.

1. A closure device for a container for pressurized contents said device being composed of a flexible plastic material and said container having an upper portion provided with an opening therein, said device comprising an outer tubular element with means on the outside thereof for engaging the inner wall of the opening in the container to form a gas tight and mechanically stable seal therewith and to provide a pouring opening for the container, said outer tubular element further having a bottom end surface which is spaced axially inward from said inner wall of the opening in the container, an inner element provided with a pull tab and extending downwardly within said outer tubular element, said outer tubular element and said inner element being connected to each other by a severable connecting wall around the upper inner circumference of said outer tubular element to close the pouring opening, said inner element including a depending peripheral wall portion spaced from said outer tubular element and a depending central portion disposed within and spaced from the depending peripheral wall portion, the bottom end surfaces of said outer tubular element and the peripheral wall and central portions of said inner element, said depending peripheral wall portion being further constructed and arranged to be readily removable from said outer tubular element and to retain said disc member in sealing contact therewith when said inner element and outer tubular element are separated, whereby when the tab is pulled up said inner element is removed from said outer tubular element by severing the connecting wall and said tearable disc member to open the pouring opening.

4,243,151

FLOATING ROOF PENETRATIONS WITH REDUCED VAPOR SPACE SEAL

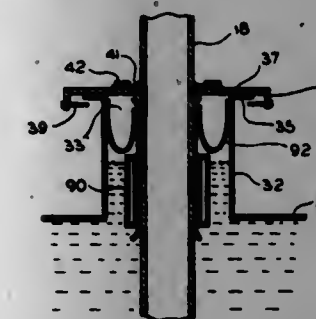
Robert A. Branning, 1541 Chippewa Dr., Naperville, Ill. 60540

Filed Jul. 2, 1979, Ser. No. 54,172

Int. Cl.³ B65D 87/18

U.S. Cl. 220—216

1 Claim



1. In a storage tank for a liquid having a floating roof and at least one stationary vertical member penetrating the floating roof through a well defined by an opening therein surrounded by a well wall partially in and partially above the level of a liquid stored in the tank, the improvement comprising:

a vapor seal means covering the area between the vertical member and well wall positioned about at but above the liquid level in the well to thereby reduce the space in which vapor from the liquid can first accumulate and then be dispersed with vertical movement of the floating roof, with said seal means comprising a vertically displaceable shoe surrounding the stationary vertical member and a flexible membrane extending from the shoe to the well wall.

4,243,153
BOWL AND LID DISPENSER

Phillip E. Mitchell, 8511 Brookside Dr. West, Pewee Valley, Ky. 40056

Filed Apr. 12, 1979, Ser. No. 29,332

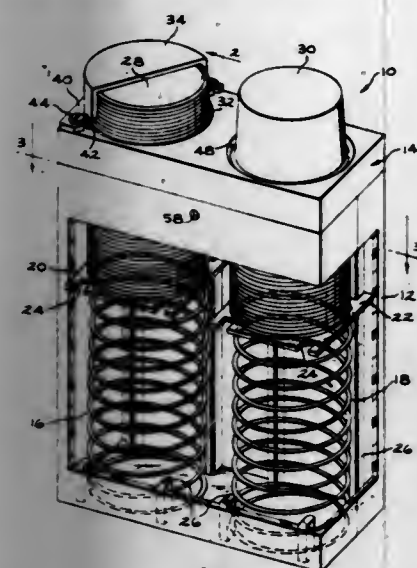
Int. Cl.³ B65H 1/00

U.S. Cl. 221—34

8 Claims

1. A bowl dispenser assembly comprising
 - a housing open at one end,
 - a spring coil disposed in said housing,
 - an article supporting plate resting on said coil,
 - a plurality of raised, elongated ribs formed on and extending along inside walls of said housing, said plate defining slots opening toward said walls, said ribs projecting into said slots to form rails along which said plate can be raised and lowered,
 - a housing cover disposed over the open end of said housing and defining a circular opening through which a stack of bowls supported by said plate may extend, and

at least three ribs of generally elliptical cross-section stationarily attached to and projecting downwardly from a ceiling of said housing cover around and below said opening



and projecting inwardly of the periphery of said opening sufficiently to interfere with a top rim of a top one of said bowls to confine said bowls and maintain said coil in compression against said plate.

4,243,154

SEED PLANTING MACHINES

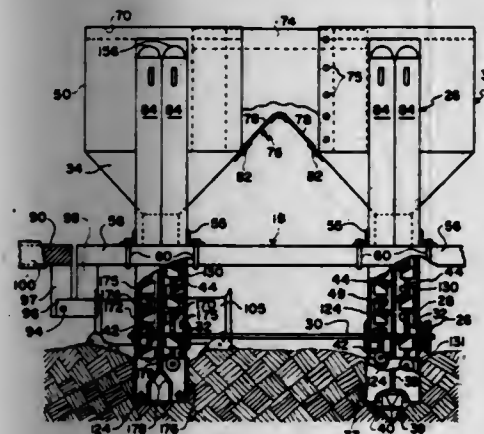
Carl D. Freeman, Idaho Falls, and Melvin G. Grover, Rigby, both of Id., assignors to Logan Farm Equipment Co., Inc., Idaho Falls, Id.

Division of Ser. No. 851,921, Nov. 16, 1977, which is a continuation-in-part of Ser. No. 676,836, Apr. 10, 1976, abandoned. This application Jul. 11, 1979, Ser. No. 56,550

Int. Cl.³ A01C 9/02

U.S. Cl. 221-253

6 Claims



1. A machine for setting seeds including a circulating planting device having a seed discharge tube, one end of which terminates in a seed discharge location at the bottom of the machine, which location in the field operation of the machine is positioned immediately above and is moved substantially parallel to the center-line of a furrow in which seeds are to be planted, said planting device being driven on upper and lower supporting shafts and having seed conveyances mounted thereon in at least one row, and a seed receptacle associated with said planting device, said conveyances each having an open top into which seed is loaded as said conveyances pass upwardly through said seed receptacle, each loaded conveyance thereafter passing around an associated upper one of said shafts, and reversing direction and being inverted, enters said discharge tube and drops its seed up on the bottom surface of the immediately preceding inverted conveyance therein, upon which bottom surface the seed descends supported by the interior wall of said discharge tube to said seed discharge location, said conveyances each having an inclined bottom

surface and being so mounted on said planting device that at said seed discharge location said inclination is transverse with respect to the furrow whereby the seed supported thereon is guided for controlled deposit thereof in the furrow.

4,243,155

VALVING AND AUTOMATIC PRESSURE REGULATOR FOR INHALATION APPARATUS

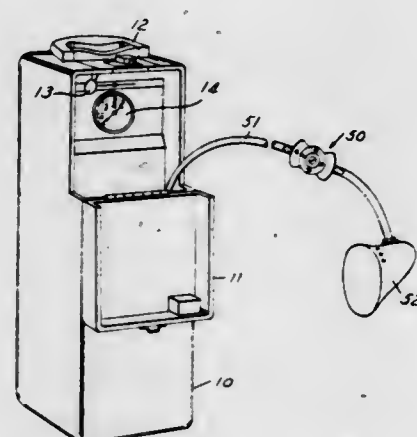
Maurice M. Stewart, West Bloomfield, Mich., assignor to Oxygen Therapy Institute, Inc., Oak Park, Mich.

Continuation of Ser. No. 900,916, Apr. 28, 1978, abandoned, which is a continuation of Ser. No. 761,802, Jan. 24, 1977, Pat. No. 4,109,828. This application May 29, 1979, Ser. No. 43,748 The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.³ B67D 5/22

U.S. Cl. 222-3

8 Claims



1. In an inhalation apparatus, the combination comprising an automatic pressure regulator including a body, said body having an opening for receiving a valve of an oxygen tank, said body having an outlet, said body including two chambers, a connecting passage extending from one chamber to the other, an inlet passage extending to one said chamber, each said chamber having a diaphragm closing one wall thereof, spring means yieldingly urging said diaphragm in one direction,

an orifice associated with said inlet, an orifice associated with said passage, an orifice member for each said orifice, a lever for each said chamber, means for pivoting each said lever to its respective diaphragm, said lever having one end thereof pivotally connected to its respective diaphragm and the other end thereof engaging its respective orifice member, said means for pivoting said lever to its respective chamber comprising spaced groove shaped open recesses in said body, a pin extending through said lever and having its ends engaging said groove shaped recesses, and screw means threaded into said body and having a head removably engaging said pin and comprising the sole means for holding said pin in said recesses against movement out of said recesses.

4,243,156

CLOSURE FOR A BEVERAGE RECEPTACLE

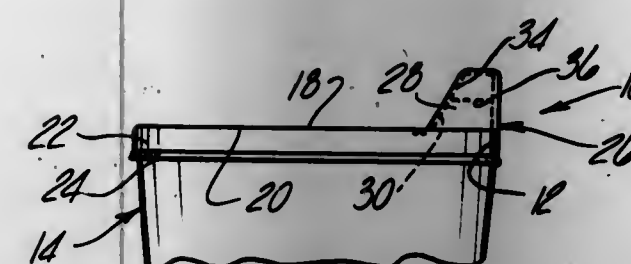
David A. Lobbestael, 1148 Dexter-Packney Rd., Packney, Mich. 48169

Filed Mar. 19, 1979, Ser. No. 21,991

Int. Cl.³ B65D 41/32

U.S. Cl. 222-541

6 Claims



1. A closure for use with a beverage receptacle having an open top, said closure comprising: a substantially planar lid having an upper and a lower side and substantially conforming in shape to the open top of the receptacle; said lid including a rim about its outer periphery, said rim extending outwardly from the lower side of the lid and being dimensioned to frictionally engage the open top of the receptacle to thereby retain said lid to said receptacle; said lid further comprising a tubular spout having a restricted fluid passageway formed adjacent the periphery of said lid and extending outwardly from the upper side of the lid, said spout being open at one end to the lower side of the lid and, at its other end, having a cap integrally formed with and closing said spout; means formed on said spout to permit manual detachment of said cap from said spout; wherein said means further comprises a series of indentations formed between said cap and said spout; and wherein said cap includes a cavity at its end most spaced from spout.

4,243,157

ADJUSTABLE POURING DISPENSER

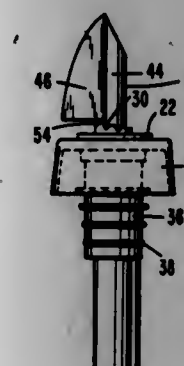
Leonard W. Retberg, Lincolnton, Pa., assignor to Interproduct B.V., Driebergen, Netherlands

Filed Jun. 19, 1979, Ser. No. 49,978

Int. Cl.³ B65D 25/48

U.S. Cl. 222-44

1 Claim



1. An adjustable pouring dispenser for a liquid container comprising a housing including a cylindrical chamber, said chamber having an open upper end bounded above by a substantially helicoid surface and a closed lower end; a ball movably disposed in the chamber, said ball having a diameter approximately equal to that of the chamber; an aperture through the closed lower end of said chamber to admit a controlled flow of liquid into said chamber to control the rate of movement of said ball in said chamber; a plurality of ports extending through said housing into said

chamber intermediate the upper end and the lower end of said chamber to permit liquid to flow into the chamber; a spout having a cylindrical sleeve with a through bore to allow liquid to flow out of the chamber, said sleeve having a lower end positioned movably and sealingly within the upper end at the chamber and partially obstruction said ports to determine the dispensing volume; a seat for said ball formed in the lower end of said sleeve to prevent liquid from flowing through said bore when the ball is in contact with the seat; said helicoid surface having a plurality of detents formed therein at progressively varying heights from said ports; an integral projection extending radially outward from said sleeve to engage any one of said detents thereby to position said sleeve in said chamber, determining the degree to which the sleeve obstructs the ports and determining a corresponding dispensing volume; a circumferential flange extending radially outward from said housing between said helicoid surface and said ports; a plurality of indices representing dispensing volumes ranging from about one-half ounce to about one and one-half ounces formed on the upper surface of said flange, one indicium adjacent each detent; and a vane extending radially outward from said sleeve adjacent said projection and above said flange so as to overlie any one of said indices to indicate a corresponding dispensing volume.

4,243,158

GRANULAR PRODUCT DISPENSER

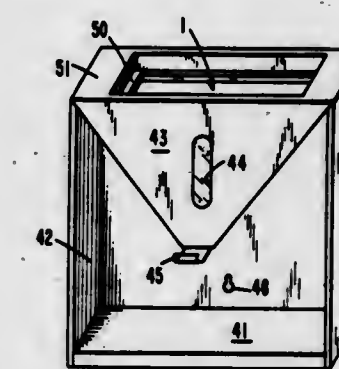
Edward W. Negosta, 4803 Old Branch Ave., Camp Springs, Md. 20031

Filed Feb. 22, 1979, Ser. No. 14,258

Int. Cl.³ B67D 5/38

U.S. Cl. 222-184

8 Claims



1. A combined holder and dispenser for dispensing granular products from their original package comprising: a rectangular package receiving portion said package receiving portion including adaptor means for adapting said package receiving portion to receive an original package of a different size, a funnel portion connected to said rectangular package receiving portion, said funnel portion including a discharge port and a gate valve assembly at the mouth thereof for controlling the discharge of granular products, and a supporting base for supporting said receiving portion and said funnel portion, said base including a shelf disposed below said valve assembly for supporting a granular product receiving cup.

4,243,159

PUMP DEVICES FOR DISPENSING FLUIDS

Walter B. Spatz, Pacific Palisades, Calif., assignor to Spatz Corporation, Los Angeles, Calif.

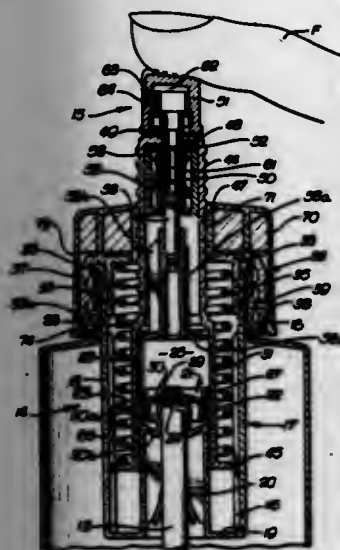
Filed Feb. 22, 1979, Ser. No. 13,878

The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.

Int. Cl.³ B67D 1/08, 5/40

U.S. Cl. 222—188

14 Claims



1. A fluid dispensing device, comprising a container for the fluid, pump means mounted in said container and including a housing fixed with respect to said container, a cylinder in said housing shiftable with respect to said housing, said cylinder having a pump chamber therein, said pump means further including an elastomeric piston fixed to said housing and disposed in said chamber in slidable sealed relation to said cylinder, a first valve means permitting fluid flow from said container into said chamber, but preventing reverse fluid flow, spring means for shifting said cylinder and its chamber in one direction with respect to said piston to cause said cylinder to apply pressure to fluid in said chamber, a second valve means permitting discharge of pressurized fluid from said pump chamber in response to shifting of said cylinder and its chamber in said one direction by said spring means, said housing having a portion embracing a skirt portion of said piston, said skirt portion being subject to the pressure of fluid in said chamber to urge and hold said skirt portion outwardly in firm sealing engagement with said housing portion.

14. A fluid dispensing device, comprising a container member for the fluid, pump means in said container member including a housing member, a piston in said housing member, and a cylinder in said housing member having a pump chamber therein, spring means for moving said piston and cylinder with respect to each other to apply pressure to fluid in said chamber, first valve means permitting fluid flow from said container member into said chamber, but preventing reverse fluid flow, second valve means permitting discharge of pressurized fluid from said pump chamber in response to relative movement between said piston and cylinder, and one-way check valve means including an annular elastomeric sleeve disposed in an annular space between said container member and housing member, means for securing one portion of said sleeve to said container member, said elastomeric sleeve having a thick portion disposed between and simultaneously engaging the opposed cylindrical walls of said container member and housing member and provided with a plurality of longitudinal grooves facing said housing member and through which ambient air can flow, said sleeve further including a circumferentially continuous thinner portion adjacent said thick portion sealingly engaging said housing member, said thinner portion being deflectable from sealing engagement with said housing member by the ambient air upon subatmospheric pressure being present in said container member.

4,243,160

DEVICE FOR FILLING A MEASURED QUANTITY OF A FLOWING MEDIUM INTO A PACKAGE

Wilhelm Reil, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Tetra Pack Development SA, Switzerland

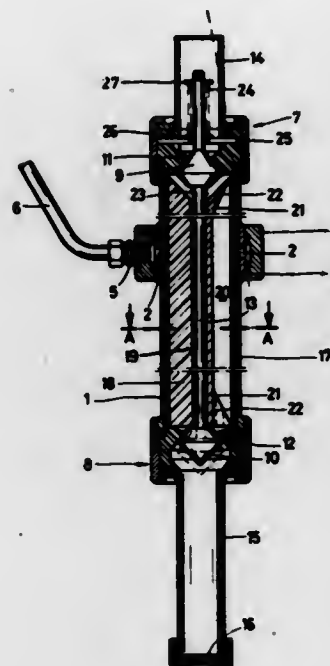
Filed Jul. 17, 1978, Ser. No. 925,175

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734251

Int. Cl.³ G01F 11/08

U.S. Cl. 222—373

3 Claims



1. A device for filling a specified quantity of a flowing medium into packages from a supply of the medium; characterized by

- a tubular housing,
- inlet and outlet fittings on the ends of said housing providing inlet and outlet valve seats,
- a flexible tubular sheath within said housing and clamped in sealed relation at its opposite ends to said housing by said fittings,
- inlet and outlet valves cooperating with said valve seats and arranged to admit the medium into said sheath and to permit discharge of the medium from said sheath and to prevent flow of the medium in the reverse direction,
- a supporting body within said sheath located between said valves and defining with said sheath at least one chamber of precise volume, the interior of said housing exposed to said sheath and the exterior of said supporting body being substantially equal in surface area,
- a rod extending through said body and mounting said inlet and outlet valves,
- said sheath together with said body and said valve seats defining a passageway through said device essentially without crevices and thereby capable of complete cleansing by flowing a cleansing fluid therethrough,
- an opening through said housing to the exterior of said sheath,
- means for selectively supplying gas under pressure through said opening to force said sheath against said supporting body whereby to expel the medium from said chamber through said outlet valve,
- and flexible hoses connected to supply medium to said inlet and to supply compressed gas to said opening and thereby allowing limited movement of the device.

4,243,161

CONTINUOUS SPRAY BUTTON

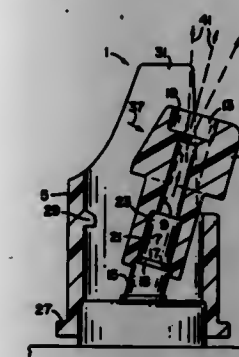
Ronald F. Ewald, Rolling Meadows, Ill., assignor to Seaquist Valve Co., Div. of Pittway Corp., Cary, Ill.

Filed Mar. 17, 1978, Ser. No. 872,236

Int. Cl.³ B65D 83/14

U.S. Cl. 222—402.14

13 Claims



1. A continuous spray button assembly for use with a tilt valve having a valve turret, comprising in combination:

- a tubular sleeve;
- a valve button;
- said tubular sleeve configured and dimensioned to be rigidly attached to the valve turret of the tilt valve;
- said tubular sleeve extending from the valve turret of the tilt valve to at least partially encircle the outer perimeter of said valve button;
- said valve button configured to actuate the tilt valve when moved into a tilted position;
- a retaining means including a latch coacting between said valve button and said tubular sleeve to retain said valve button in said tilted position upon actuation of the tilt valve for enabling continuous spray; and
- said latch configured to release the tilt valve from the tilted position to the non-tilted position upon relative movement between said valve button and said tubular sleeve for interrupting the continuous spray.

4,243,162

VESSEL STRUCTURE

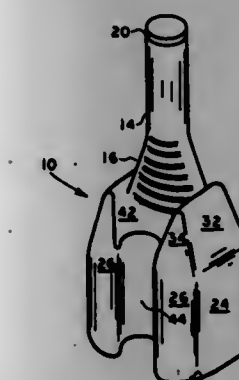
Mindugas J. Klygis, Barrington, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 15, 1979, Ser. No. 66,602

Int. Cl.³ B65D 1/02

U.S. Cl. 222—530

9 Claims



1. A unitary vessel comprising a hollow body for containing a quantity of fluid; an elongated pouring spout integrally associated with said hollow body and communicating with said hollow body, said pouring spout being bendable between a pouring position to permit pouring of the fluid from the hollow body and a storage position substantially along said hollow body to permit efficient storage of said vessel; a flexible neck portion integrally formed connecting the hollow body and the pouring spout, said flexible neck portion being bellows-like to permit freely bending of the spout relative to the body, said bellows-like neck portion including undulations in planes extending generally perpendicular to the longitudinal axis of the spout when in a pouring position so that the spout may be freely and consecutively bent to and from a retained position, said hollow body, spout and neck portion formed from a resilient plastic material and retaining means carried by said hollow body for releasably retaining said spout in said storage position, said retaining means also being integrally formed of the same resilient plastic material and forming part of the outer periphery of the hollow body, at least one wall of the hollow body being contoured to thereby define said retaining means, the retaining means further defining a recessed portion in said at least one wall dimensioned for receiving said spout and including a throat portion with an opening defining a transverse dimension slightly smaller than the maximum transverse dimension of said spout, the maximum transverse dimension of said recessed portion being at least equal to the maximum transverse dimension of the spout thereby adapted to releasably receive the spout through said throat opening when the spout is bent about said neck portion for selectively retaining the spout within the recessed portion.

4,243,163

DEVICE FOR DRAWING A BOOT OFF THE FOOT

Axel Kubelka, Vienna, Austria, assignor to Polyair Produkt Design GmbH, Kittsee, Austria

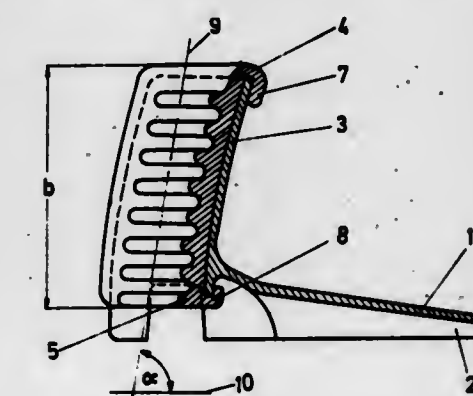
Filed Feb. 27, 1979, Ser. No. 16,342

Claims priority, application Austria, Mar. 3, 1978, 1543/78

Int. Cl.³ A47J 51/02

U.S. Cl. 223—115

15 Claims



1. Device for drawing a boot off the foot, comprising jaws partially embracing the boot, characterized in that the height of the jaws is greater than its inside width, the jaws are provided with a cladding of elastomeric synthetic plastic material which is profiled with ribs arranged one above the other in a direction transverse to the axis of the jaws, the surface of said cladding contacting the boot has a Shore-hardness of maximum 60 Shore A, preferably between 20 and 60 Shore A.

4,243,164

GAME DRAGGING DEVICE

Larry J. Burlison, 7038 N. 3rd St., Turner, Oreg. 97392, and Dale E. Burlison, Rt. 1, Box 66, Jefferson, Oreg. 97352

Filed Jan. 26, 1978, Ser. No. 919,427

Int. Cl.³ B65D 71/00

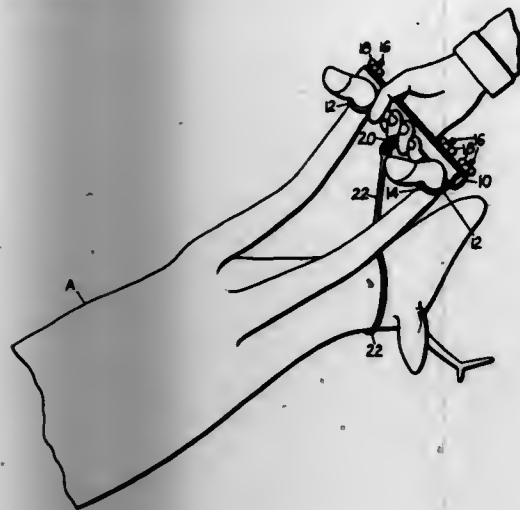
U.S. Cl. 224—52

3 Claims

1. A game dragging device comprising

- (a) a rigid bar having opposite ends,
- (b) a pair of U-bolt clamps on said bar,
- (c) each of said clamps having leg portions extending slidably through said bar,
- (d) said clamps forming loops on one side of said bar and said leg portions projecting from the opposite side of said bar,
- (e) each of said loops projecting in the same direction from said bar and being spaced on opposite sides of the longitudinal center of the bar,
- (f) releasable fasteners adjustably engageable with the projecting leg portions of said clamps,

- (g) said loops being arranged to be enlarged and diminished in size by adjustment of said fasteners for receiving foot portions of a dead game animal and cinching such animal foot portions firmly up against said bar,
 (h) an eye portion extending integrally from said bar at about the longitudinal center thereof and in the same direction as said loops,



- (i) and a flexible line connected at one of its ends to said eye portion and including connecting means at its other end arranged to be secured to the neck or head portion of an animal for holding the head in elevated position while the animal is being dragged.

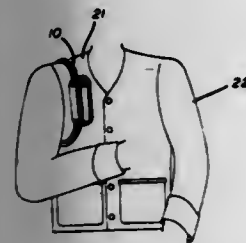
4,243,165

SHOTGUN BUTT CUP

Larry Schuler, 7650 Spring Park Dr., Youngstown, Ohio 44512
 Filed Jan. 22, 1979, Ser. No. 51,432
 Int. Cl.³ F41C 29/00, 7/00

U.S. Cl. 224-149

3 Claims



1. A gun butt cup for attachment to a gun user in a preferred location comprises an elongated ovaloid base member, one end portion of which is narrower than the other so as to match the end configuration of a shotgun stock butt, a substantially perpendicular continuous flexible wall on the peripheral edge of said ovaloid base member defining a gun stock butt shaped receptacle for the reception of a gun stock butt, attachment means on said base member for wrap around engagement on a user's shoulder and cushioning means on said base member within said continuous wall.

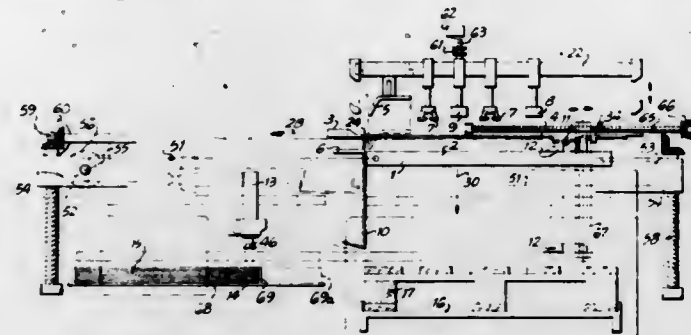
4,243,166
 METHOD FOR SEPARATING AND STACKING SHEETS
 OF PAPER AND THE LIKE

Franz Vossen, Brüggem, and Georg M. Vossen, Niederkrüchten, both of Fed. Rep. of Germany, assignors to Wupa-Maschinenfabrik GmbH, Fed. Rep. of Germany
 Division of Ser. No. 805,418, Jun. 10, 1977, Pat. No. 4,171,081.
 This application Jun. 18, 1979, Ser. No. 49,550
 Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626630; Jul. 3, 1976, 2630094

Int. Cl.³ B26F 3/02

U.S. Cl. 225-1

12 Claims



6. A method of stacking sheets of paper, cardboard and the like, which are delivered from a sheet punching machine and which consists of useful and waste portions connected together by small fillets and, separating said sheets to form separate stack portions, comprising the steps of:
 (a) supplying punched, but not yet separated, sheets onto a severing table;
 (b) severing said sheets into sheet portions to form separate stack portions; and
 (c) depositing said separate stack portions onto a stacking surface after withdrawing said severing table from under said separate stack portions.

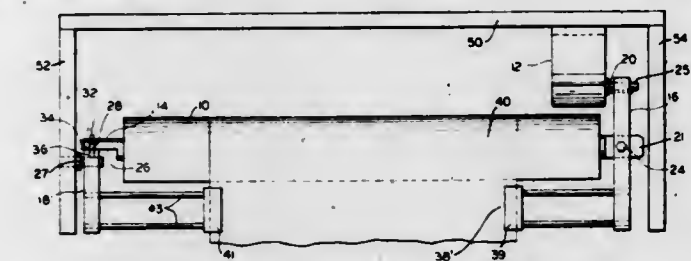
4,243,167

WEB GUIDE SYSTEM

Frank Sander, 4744 N. Kenneth, Chicago, Ill. 60630
 Filed Oct. 23, 1978, Ser. No. 953,951
 Int. Cl.³ B65H 25/26

U.S. Cl. 226-21

8 Claims



1. A web guide system to control the lateral alignment of a continuous moving web of material comprising a drive motor means; a first arm means mounted at one end on a first pivot point located on said drive motor means and extending downward from said drive motor means, said first arm means pivoting in a first vertical plane about said first pivot point when said drive motor is activated; a second arm means mounted on a second pivot point laterally spaced from said first pivot point, said second arm means being L-shaped, with a first leg aligned parallel to said first arm means in said first vertical plane and a second leg aligned perpendicular to said first leg, said second arm means being adapted to pivot about said second pivot point located at the outer extremity of said second leg in a second vertical plane spaced parallel to said first vertical plane; guide roll means over which said moving web of material passes in a 90° wrap; support shaft means upon which said guide roll is rotatably mounted, said support shaft means extending between said first and second arm means, one end of said support shaft pivotally mounted on said first arm means,

and the opposite end pivotally mounted on said second arm means, whereby pivoting movement of said first arm means responsive to said drive motor means will cause the end of said support shaft mounted on said first arm means to move over an arc in said first vertical plane and the opposite end of said support shaft pivotally mounted on said second arm to move over an arc in said second vertical plane, shifting the lateral position of said web of material moving over said guide roll; scanner means extending between said first and second arm means to detect lateral misalignment of said moving web of material and to activate said drive motor means when lateral misalignment of said web is detected.

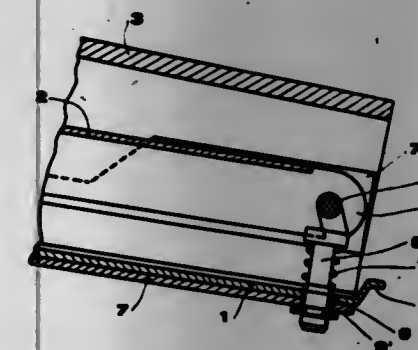
4,243,168

OFFICE STAPLER DEVICE

Giorgio Balma, Viale Umberto 1°, 35, 27058 Voghera Pavia, Italy
 Filed Dec. 22, 1978, Ser. No. 972,251
 Claims priority, application Italy, Jan. 27, 1978, 19744 A/78
 Int. Cl.³ B25C 5/02

U.S. Cl. 227-119

1 Claim

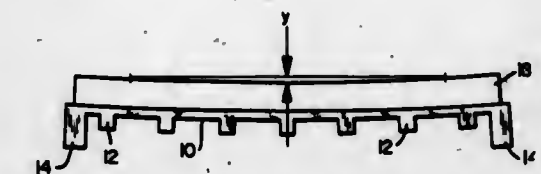


1. In a stapler apparatus having a base, an intermediate elongated body having a U-shaped transverse cross section connected to said base for pivotal movement relative thereto, an elongated guide member supported within said intermediate body and having a transverse cross section disposed to receive staples for use with the stapler apparatus, an elongated counter-guide member carried on said intermediate body and cooperating with said guide member to guide said staples therealong, means on said intermediate body adjacent one end of said guide member and defining with said guide member a passage for the exit of said staples one at a time, an elongated cap member supported by said base for pivotal movement relative thereto and for pivotal movement relative to said intermediate body, and a driver blade carried by said cap member and disposed for insertion into said passage to forcibly eject said staples therethrough, one at a time, the improvement which comprises means connecting said guide member to said intermediate body for limited oscillatory movement relative thereto between a normal operating position of said guide member and a staple-jam-clearing position thereof in which said passage is enlarged to accommodate expulsion therefrom by the action of said driver blade of a staple jammed in the passage, said guide member having a projection accommodating manually imparting said oscillatory movement to the guide member; said counter-guide member being releasably connected to said cap member by a projection extending through a slot in said driver blade to allow pivoting said cap member away from said counter-guide member to facilitate access thereto; V-shaped notches in said intermediate body disposed for receiving engagement with a resiliently biased pin carried by said counter-guide member to releasably connect said counter-guide member to said intermediate body and allow pivoting said counter-guide member away from the intermediate body to provide access to staples on said guide member, said V-shaped notches being disposed to hold said pin to position the counter-guide member at a predetermined clearance distance from staples on the guide member.

4,243,169
 DEFORMATION PROCESS FOR PRODUCING STRESS
 RELIEVED METAL/CERAMIC ABRADABLE SEALS
 Raymond V. Sara, North Olmstead, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
 Filed Dec. 27, 1978, Ser. No. 973,553
 Int. Cl.³ B23K 1/19

U.S. Cl. 228-175

16 Claims



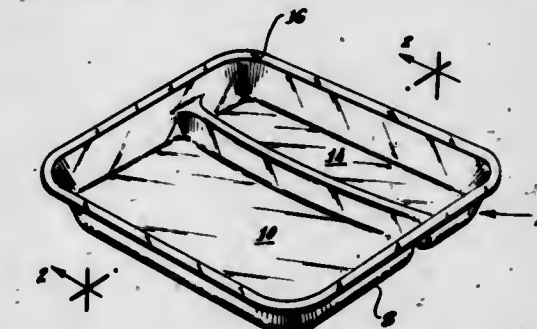
1. Process for bonding a multi-layer metal/ceramic abrasible composite to a deformable metallic substrate which comprises placing said abrasible composite, in the unsintered state, with its metal-rich surface in contact with said substrate, heating said composite and substrate under pressure to a sintering temperature sufficient to sinter said composite and bond to said substrate, maintaining such a temperature until said sintering and bonding are complete, substantially removing said pressure, then cooling the thus formed structure to ambient temperature and then fastening reinforcing members to the back-side of said substrate to rigidify it.

4,243,170

FOOD CONTAINER AND PROCESS FOR MANUFACTURING THE SAME

Michael D. Jones, White Bear Lake, Minn., assignor to Champion International Corporation, Stamford, Conn.
 Filed Jul. 21, 1978, Ser. No. 927,173
 Int. Cl.³ B65D 1/00; H05B 6/64; A23L 3/00; B65D 85/00
 U.S. Cl. 229-254 R

5 Claims



1. A Container especially adapted for use in storing and heating comestibles intended for final preparation in microwave ovens, comprising:
 (a) a tray constructed of a molded pulp member having a continuous inside surface defined by an upstanding side-wall tapered inwardly from an open top to a smoothly rounded corner which joins with a bottom wall, said molded pulp member comprising pulp fiber material defining a multiplicity of interstices in said member to provide said member with sufficient porosity to allow passage of gas therethrough; and
 (b) a continuous thermoplastic film adhered to said inside surface.

4,243,171

CARRIER FOR PACKING AND CARRYING ARTICLES
 Jean-Claude Prin, 44 avenue Gallieni, 10300 - Sainte Savine, France

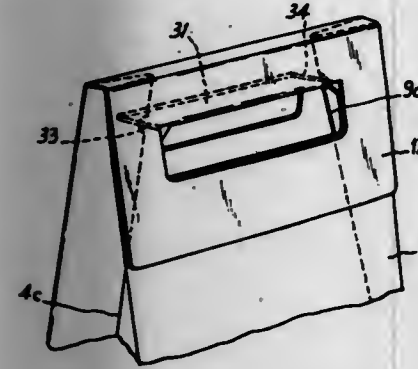
Filed Apr. 26, 1979, Ser. No. 33,803
 Claims priority, application France, May 25, 1978, 78 1552
 Int. Cl.³ B65D 5/46, 33/08

U.S. Cl. 229-52 B

4 Claims

1. In a carrier for packing and carrying articles, of the type

comprising a bag composed of a rectangular or square bottom, two opposite main faces and two extendible side gussets and provided with gripping means at its end opposite said bottom, said carrier being made in the form of a box by folding and gluing a single blank made of a material which is both supple and rigid, such as cardboard, and said gripping means being constituted by a system of openings and a flap, forming an integral part with said blank and ensuring that the upper edges of the opening of the bag come together and that said bag is closed, said extendible side gussets being provided with longitudinal lines of fold, wherein the side gussets are provided with at least one set of intermediate transverse lines of fold enabling them to give the bag, as desired, either a section which tapers



continuously from the bottom to the gripping means, or a constant section between the bottom and said intermediate lines of fold then a section continuously tapering from said intermediate lines of fold to the gripping means, the improvement in which said gripping means comprises three openings in registry, made respectively in the two main faces and the flap while, in the opening of the flap, there is provided a foldable tongue adapted to take a position which is substantially parallel to said bottom, said tongue being joined by a fold line to one margin of said opening in the flap and being locked in the openings in the main faces by cooperative engagement of the opposite end margins of the tongue with notches provided in the folds of the extendible side gussets.

4,243,172

CENTRIFUGES HAVING A BOWL OPENABLE WHILE IN OPERATION

Denis Buffet, Meyzieu, France, assignor to Robatel, S.L.P.I., Genas, France

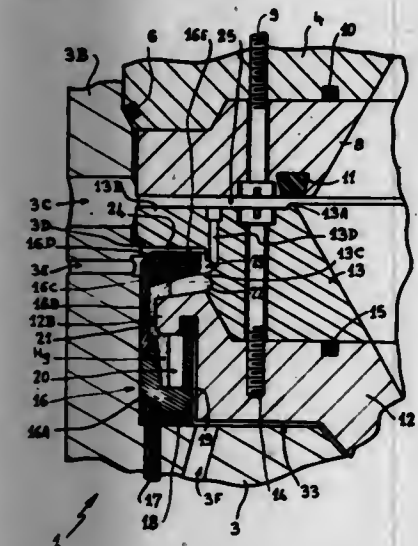
Filed Aug. 25, 1978, Ser. No. 937,001

Claims priority, application France, Sep. 6, 1977, 77 27536

Int. Cl.² B04B 1/14

U.S. Cl. 233-20 A

10 Claims



1. A centrifugal separator for the treatment of a liquid product containing sludge in suspension, comprising:
a bowl rotatably mounted about an axis, said bowl including a bottom, a cover, and a cylindrical intermediate flange

portion disposed between said bottom and said cover, said flange portion having sludge discharge openings;
a movable piston-like member coaxially located in the bowl and forming a secondary bottom, the member being movable along said axis between a first position in which it uncovers said discharge openings and a second position in which it closes said discharge openings;

means to inject a control liquid between said bottom and said piston-like member to cause said piston-like member to move from said first position to said second position against the pressure exerted by the treated product retained between said cover and said piston-like member; and

slidable sealing means disposed between said movable piston-like member and said intermediate cylindrical flange portion, the sealing means comprising an hydraulic seal using a sealing liquid having a higher density than said control liquid, said hydraulic seal comprising annular nose means extending radially outwardly from said piston-like member and an annular gutter-shaped member extending radially inwardly from said cylindrical intermediate flange portion, the gutter-shaped member having radially inwardly extending annular means on opposite sides of said annular nose means and confining said higher density sealing liquid to form a first peripheral column of said higher density sealing liquid which is exposed to the pressure created by said control liquid between said bottom and said piston-like member, and further to form a second peripheral column of said higher density sealing liquid which is vented toward said cover and exposed to atmospheric ambient pressure; and further to define a third peripheral column of said higher density liquid which connects said first and second columns at a location which is radially further from the axis of said bowl.

4,243,173

PNEUMATIC OPTIMIZER

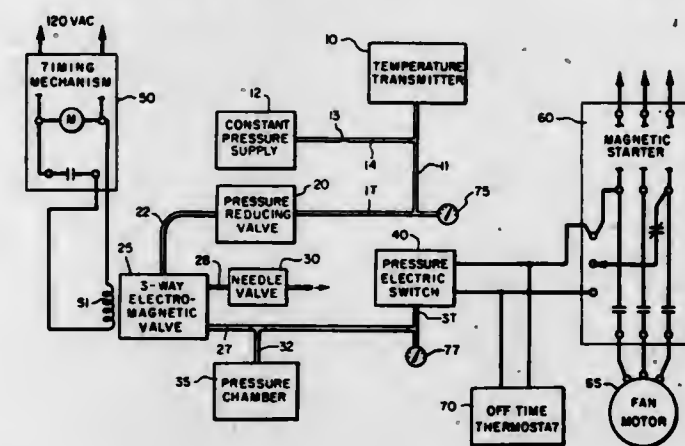
Gaylen V. Atkinson, Salt Lake City, Utah, assignor to Mark Controls Corporation, Evanston, Ill.

Filed Apr. 30, 1979, Ser. No. 34,648

Int. Cl.³ F23N 5/20

U.S. Cl. 236-46 R

10 Claims



1. A pneumatic system for controlling the start-up time of a thermal conditioning system for an enclosed space in response to a sensed temperature, which comprises:
means for sensing a temperature and for generating in response thereto a pneumatic signal;
a pressure chamber for receiving said pressure signal;
bleed means;
valve means having a first position for providing only a communication between said sensing and generating means and said pressure chamber and a second position providing only a communication between said pressure chamber and said bleed means; and
means for transmitting the pressure of the pressure chamber to start said thermal conditioning system when said pressure drops to a predetermined level after said valve means is actuated into said second position.

4,243,174

METHOD AND APPARATUS FOR CONTROL OF AIR FLOW TO A PLURALITY OF ROOMS

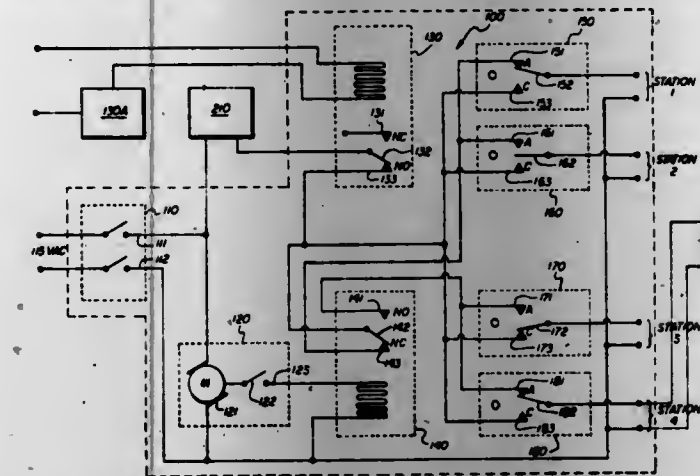
Chris R. Moeller, 211 Axilda, Houston, Tex. 77017, and George L. Slanina, 814 Overland, Stafford, Tex. 77477

Filed Sep. 27, 1979, Ser. No. 79,512

Int. Cl.³ G05D 23/32

U.S. Cl. 236-46 R

10 Claims



1. In a system for maintaining and controlling temperature in rooms of a building including heating and/or cooling means, a thermostat controlling energization of said heating and/or cooling means in response to temperature in said building, means, including air ducts, to circulate air from said heating and/or cooling means to said rooms for heating or cooling the same;
an energy economizing system comprising at least one damper in an air duct controlling air circulation to one of said rooms and biased to a normally open position, electrically operated actuating means operable upon energization to move said damper to a substantially closed position, time operated switch means having contacts operatively connected in circuit with said damper actuating means and operable to close said damper at a selected time, normally open relay switch means positioned in the circuit from said time operated switch means to said damper actuating means and connected for actuation in response to closing of said thermostat, and said time operated switch means being operable to energize said damper actuating means to close said damper only when said thermostat is closed.

4,243,175

TEMPERATURE REGULATED WALL VENTILATOR CONSTRUCTION

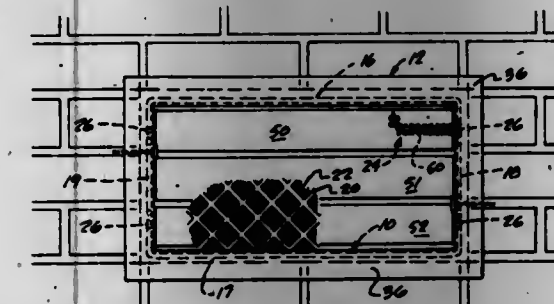
Edward D. McSwain, Rte. 7, Box 325, Lincolnton, N.C. 28092

Filed Aug. 23, 1979, Ser. No. 69,243

Int. Cl.³ F24F 13/08

U.S. Cl. 236-49

8 Claims



1. An improved temperature regulated wall ventilator comprising a housing having peripheral wall means defining an air flow passageway therethrough, a plurality of louvers, means mounting said louvers in side by side relation in said housing

passageway for pivotal movement about their respective individual longitudinal axes to open and close said air flow passageway in response to a predetermined temperature change; said mounting means including an opening through a peripheral wall portion of said housing, a stub shaft extending through and having a head portion engageable with the inside edge of said housing peripheral wall opening to prevent rotational movement of the stub shaft, said stub shaft extending only partially across said air flow passageway along the pivotal axis of one of said louvers, an elongate bimetallic helical spring located in said air flow passageway in surrounding relation to an inner end portion of said stub shaft; means operatively attaching one end of said helical spring to said stub shaft comprising a transversely disposed, elongate slot extending along an inner end portion of said stub shaft and receiving said one end of said spring for sliding movement therealong while preventing its relative rotational movement about said stub shaft; means attaching the other end of said helical spring directly to said one of said louvers whereby contraction and expansion of said spring about its longitudinal axis in response to temperature changes causes corresponding pivotal movement of said louver about its pivotal axis, means interconnecting said louvers to impart pivotal movement to all of said louvers in response to pivotal movement of said one of said louvers by said spring to open and close said air flow passageway of said ventilating housing; and wherein said spring may be contracted or expanded about its longitudinal axis relative to its point of attachment to said one louver by manual rotation of said stub shaft when partially withdrawn from said air flow passageway with its head portion out of engagement with the inside edge of said wall opening.

4,243,176

SEALING AND AIR/FUEL MIXTURE FLOW METERING PLATE FOR GAS FURNACES

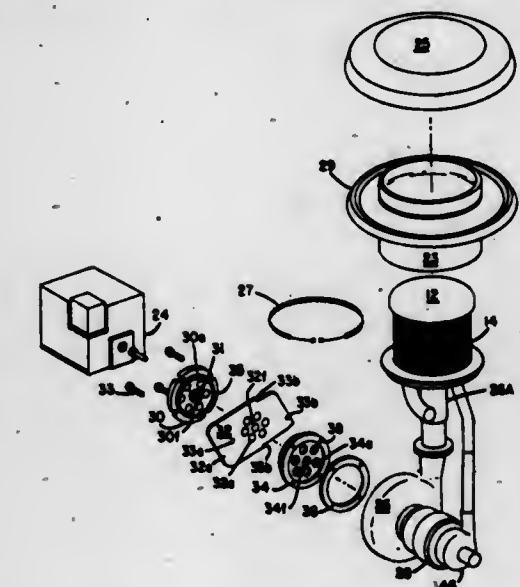
Herbert G. Hays, High Amana, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Continuation-in-part of Ser. No. 902,213, May 2, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,955

Int. Cl.³ F24H 3/08

U.S. Cl. 237-7

10 Claims



9. A heat exchange system for heating air within an enclosure, comprising:
a first heat exchanger;
a second heat exchanger located a distance from the first heat exchanger and disposed such that air from the enclosure can be moved through the second heat exchanger and returned to the enclosure;
a burner positioned in the first heat exchanger for supplying heat to the first heat exchanger;
means for circulating a fluid from the first heat exchanger to

the second heat exchanger and back to the first heat exchanger;
 means for supplying fuel to the system and terminating in a first plate member;
 means for directing a fuel/air mixture to the burner for combustion, said means having a second plate member disposed upstream thereof and facing the first plate member, said first and second plate members having fuel and air apertures formed therein; and,
 a planar sealing member having a first aperture aligned with the fuel apertures formed in the plate members for permitting fuel to move from the supply means to the burner and a second aperture aligned with the air apertures formed in the plate members for permitting air to enter the mixture directing means and to mix with the fuel as the fuel moves to the burner, the planar member being disposed between the plate members and acting to meter and to allow mixing of air and fuel, the planar member being mechanically deformable by the plate members to form a seal between said plate members, the planar member being the only seal between the plate members, the planar member further functioning to allow flow of predetermined quantities of air and fuel to the burner.

4,243,177

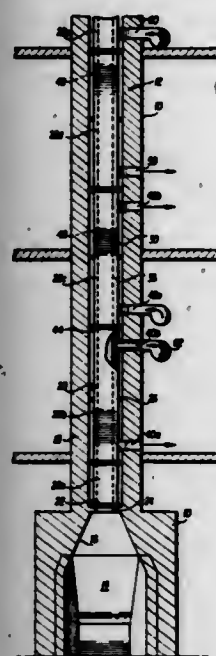
CHIMNEY HEAT CAPTURING SYSTEM

Edgar W. Powers, 1309 Santa Rosa Rd., Richmond, Va. 23229
 Filed Dec. 8, 1978, Ser. No. 967,666

Int. Cl.³ F24B 7/00

U.S. Cl. 237—51

13 Claims



1. A chimney heat capturing system for buildings comprising:

- a fireplace/chimney shell, said fireplace/chimney shell including a means for defining a fireplace at the bottom end thereof and a means for defining a smoke chamber above said fireplace, said smoke chamber having a converging shape for funneling smoke and heat from a fire at said fireplace through a hole in the top of said smoke chamber, said fireplace/chimney shell further defining a chimney-shell passage above said hole in said smoke chamber;
- a flue liner formed of a plurality of similarly sized, individual, toroidally-shaped heat exchangers positioned end-to-end inside said chimney shell to form a continuous central channel above said hole for channeling all smoke and heat exiting from said hole, said individual toroidally-shaped heat exchangers each comprising an outer wall, an inner wall and spacers positioned between said outer and inner walls for maintaining a heat-capturing space between said outer and inner walls, each of said toroidally-shaped heat exchangers being constructed as a separate unit but being supported by a lower such unit, with the exception of the bottom unit which is supported by a portion of the fire-

place/chimney shell defining the smoke chamber, and by spacers positioned between said outer wall and said chimney-shell passage, said outer wall being significantly smaller than said chimney-shell passage, said units including attaching means on the ends thereof for attaching them to the adjacent units;
 a pair of ducts extending from the interior of said building to the outer walls of the units to be in communication with at least one heat-capturing space.

4,243,178

AIR GUN WITH SAFETY NOZZLE

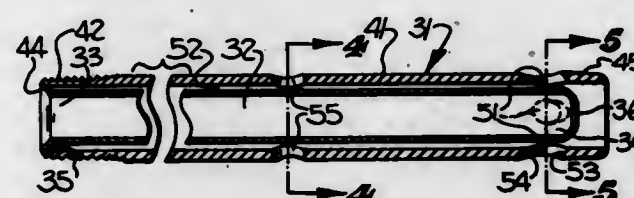
Cecil H. Self, Lawndale, N.C., assignor to John F. Schenck, III, Lawndale, N.C.

Filed Feb. 16, 1979, Ser. No. 12,658

Int. Cl.³ B05B 9/01

U.S. Cl. 239—436

13 Claims



1. In an air gun for delivering a directed stream of high pressure air, wherein there is provided a valve body having air inlet means adapted to be connected to a source of pressurized air and for admitting pressurized air to said body and having air outlet means for egress of the pressurized air from said body, a valve carried by said body and being operably disposed between said inlet means and said outlet means, and means mounted on said body for manual actuation of said valve so as to selectively control the flow of pressurized air out of said body, the combination therewith of

an elongate open-ended flow tube supportingly carried by said valve body and extending outwardly therefrom, said flow tube having respective inlet and outlet ends, said inlet end being in communication with said air outlet means for receiving pressurized air therefrom and said outlet end being adapted for emitting pressurized air in a directed stream from said air gun; and

a sleeve mounted in a surrounding relation with respect to said flow tube and having an inlet end and a discharge end extending beyond said outlet end of said flow tube and terminating closely adjacent thereto so as to serve to protect against blockage or stoppage of said outlet end, said sleeve including exhaust means communicating with the interior of said sleeve and closely adjacent the discharge end of the sleeve and remote from the inlet end thereof and also closely adjacent said outlet end of said flow tube so that under normal operating conditions no material reduction in air pressure between said air inlet means and said discharge end is effected, but in the event said discharge end is blocked or obstructed, pressurized air is released through said exhaust means.

4,243,179

PROCESS FOR PREPARATION OF RAW MATERIAL MINIMIZING THE SIZE DEGRADATION OF ANATASE ORE

Gustavo Magalhães, rua Professor Almei da Cunha No. 196, Belo Horizonte, Minas Gerais, Brazil

Filed Dec. 20, 1978, Ser. No. 971,267

Claims priority, application Brazil, Jan. 31, 1978, 7800586

Int. Cl.³ B02C 23/14

U.S. Cl. 241—24

1 Claim

1. A process for the concentration of anatase ore wherein grain size degradation is minimized comprising:

- (1) wet disaggregation of anatase ore in a rotating drum, wherein the percentage of solids is greater than 40%;

- (2) screening and crushing the wet-disaggregated ore to a grain size having a maximum size of about 19 mm;
- (3) classification, wherein the percentage of solids is greater than 20%;
- (4) screening of the classified product;
- (5) magnetic concentration to remove magnetizable minerals;
- (6) grinding the non-magnetic fraction to liberate anatase from the gangues while avoiding the formation of ultra-fines; and
- (7) desliming the anatase followed by thickening, filtering and drying.

4,243,181

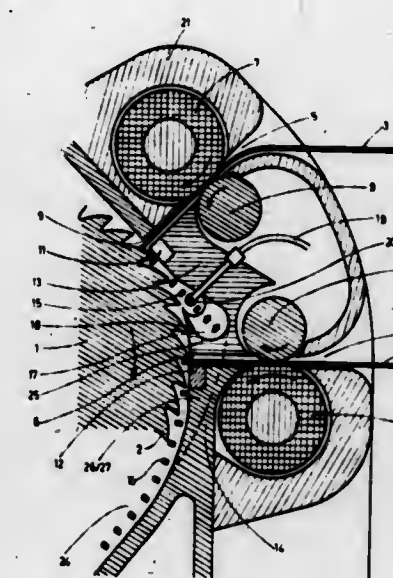
GRANULATION OF MATERIALS

Hans H. W. Hench, Grossostheim, Fed. Rep. of Germany, assignor to Automatik Apparate-Maschinenbau H. Hench GmbH, Ostring, Fed. Rep. of Germany
 Continuation of Ser. No. 801,656, May 31, 1977, abandoned.
 This application Sep. 1, 1978, Ser. No. 938,793
 Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624415

Int. Cl.³ B02C 18/22

U.S. Cl. 241—142

12 Claims



- 1. Apparatus for granulating materials, which comprises a rotatable cutter having a cylindrical periphery with cutting blades thereon;
- a plurality of separate channels for feeding materials to the cylindrical periphery of said cutter, said channels being angularly offset relative to one another about the cylindrical periphery of said cutter;
- and means for limiting the further unwanted cutting of materials cut by said cutter, comprising a separate discharge channel associated with each of the feed channels.

4,243,182

LINER ASSEMBLY FOR BALL MILLS

Charles B. Dugger, Jr., Plymouth, Minn., assignor to Minneapolis Electric Steel Castings Company, Minneapolis, Minn.

Filed Mar. 29, 1979, Ser. No. 25,206

Int. Cl.³ B02C 17/22

U.S. Cl. 241—153

26 Claims



- 1. A device for crushing particles into a finer size comprising:
- means forming a generally vertically disposed chamber, said chamber having an inlet into which the particles to be crushed are loaded and an outlet,
- screening means disposed generally horizontally within said chamber between said inlet and outlet and defining a space between said screening means and said inlet, the porosity of said screening means selectively allowing passage therethrough of crushed particles of different sizes,
- a plurality of knives disposed generally horizontally and stacked one above the other within said defined space and above said screening means for crushing said particles,
- means for rotating at least one of said knives but less than said plurality of knives at a first rotational speed, and
- means for rotating at least one of the remaining said knives at a second rotational speed to create relative movement between said at least one knife and said at least one remaining knife the particles within said defined space being subjected to repeated impacts against the knives until reduced to the fineness required to pass through the screening means to the outlet of the device.

- 1. A multiple zone liner system for the cylindrical shell of a ball mill having an inlet at one axial end and an outlet at the other, the liner system comprising:

- (a) a plurality of liner sections constructed for mounting on the inner shell surface in sequential relation relative to the

- shell rotational axis, each liner section defining a comminution zone;
- (b) each liner section formed with a plurality of elevated ridges extending in general alignment with the shell axis and circumferentially spaced therearound to define a comminuting surface;
- (c) each ridge defining a lifting surface that is disposed at a predetermined angle relative to a radius of the shell, and each ridge having a predetermined lifting dimension;
- (d) the number of ridges of each liner section increasing from section to section from the inlet to the outlet;
- (e) the angle of the lifting surfaces of the ridges increasing from section to section from the inlet to the outlet;
- (f) and the lifting dimension of the ridges being substantially constant in each section but decreasing from section to section from the inlet to the outlet.

4,243,183

PREPARATION AND CRUSHING TOOL

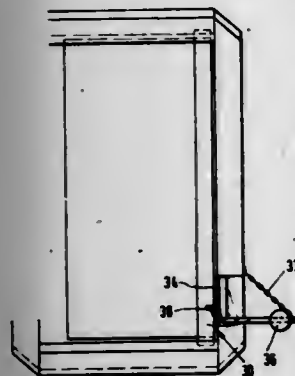
Wilhelm Erich, Bahnhofstr. 19, and Gustav Erich, Walldürnerstr. 41, both of Hardheim, Fed. Rep. of Germany, assignors to Wilhelm Erich and Gustav Erich, both of Hardheim, Fed. Rep. of Germany

Filed Jan. 4, 1979, Ser. No. 1,322

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806315

Int. Cl.³ B02C 13/02

U.S. Cl. 241-186.2



1. A preparation and crushing device, particularly for refuse materials, having a rotatably driven drum and at least one eccentrically disposed high-speed rotor, whose direction of rotation is opposite to that of the drum, characterized in that the drum (1) is driven at a subcritical rotational speed and is provided with a stationary hood (32) in which a feed means (28) is disposed, that a discharge opening (30) is provided in the lower region of the device in the form of a discharge flap (34) pivotally mounted on the stationary hood (32) and prestressed in the closing direction, which flap is inclined in the flow direction of the material (6) and that a plurality of splitting tools (25) are mounted on the at least one rotor (21, 22) along its rotational axis (23, 24), these tools being spaced apart axially from one another.

4,243,184

CUTTING BOARD

Anthony A. Wright, 1801 Diamond St. #3-113, San Diego, Calif. 92109

Filed Jul. 20, 1979, Ser. No. 59,317

Int. Cl.³ B02C 19/20; A47J 43/25

U.S. Cl. 241-273.2

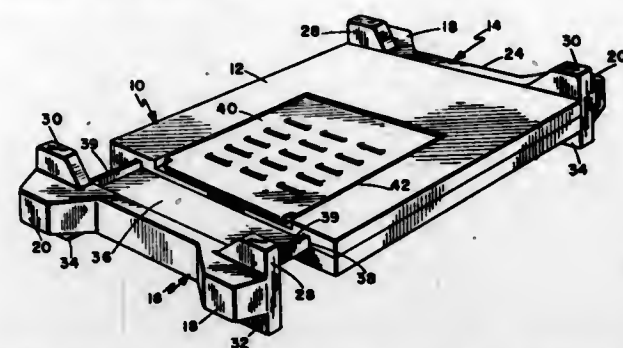
10 Claims

1. An extensible sink mounting cutting board comprising in combination:

a cutting board body having a pair of spaced apart generally planar rectangular surfaces,

a first support member fixed to one end of the board for engaging the periphery of a sink for support of the board over the sink and including means for retaining the board in position relative to the sink,

a tray slidably mounted in the other end of the board and including an open side to catch cuttings, and



a second support member on said tray for engaging the periphery of the sink for support of the board.

4,243,185

LOCKING DEVICE FOR SEATBELT SYSTEMS

Masanao Motonami; Jun Yasumatsu, both of Toyota, and Yoshio Tsujichi, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Tokai-Rika-Deiki Seisakusho, Nishikasugai, both of, Japan

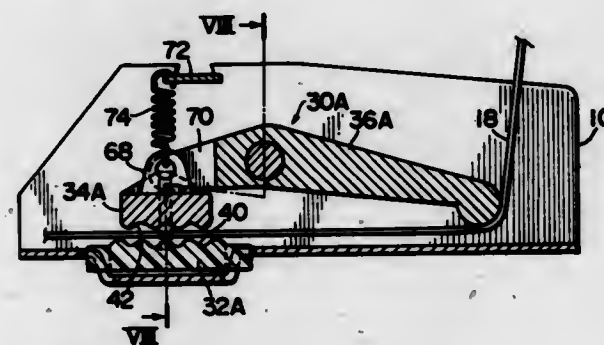
Filed Jan. 4, 1979, Ser. No. 874

Claims priority, application Japan, Mar. 28, 1978, 53-40618[U]

Int. Cl.³ A62B 35/02; B65H 75/48

U.S. Cl. 242-107.2

9 Claims



1. A locking device for a seatbelt system comprising:

a fixed base having a wavy surface;

a locking part having a wavy surface adjacent to said fixed base which under ordinary conditions is separated from the fixed base so that a passenger-restraining seatbelt is allowed to pass freely between the locking part and the fixed base, said wavy surfaces of said fixed base and said locking part cooperating such that when said wavy surfaces approach each other, the seatbelt passing between said wavy surfaces is formed into a wavy shape to thereby clamp the seatbelt between said locking part and the fixed base when said locking part approaches said fixed base;

an arm, one end of which contacts the seatbelt and which causes the locking part to approach the fixed base when the tension on the seatbelt exceeds a given value; and

a coupling device which is installed between the arm and locking part and which will allow the locking part to rotate about a major axis of the seatbelt whereby the locking part is caused to press the seatbelt against the fixed base across the entire width of said seatbelt, said coupling device comprising a biasing means for biasing said locking part into contact with said arm.

4,243,186

LOW PROFILE MAGNETIC TAPE DRIVE WITH VACUUM ACTUATED AUTO-THREADING

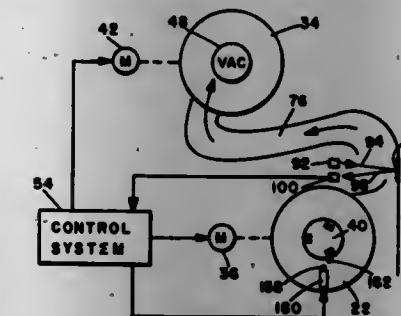
Jack Peter, La Jolla; Karl B. Offerman, San Diego; Larry D. Brown, Del Mar, and Derek J. Stone, San Diego, all of Calif., assignors to Cipher Data Products, Incorporated, San Diego, Calif.

Filed Sep. 25, 1979, Ser. No. 78,845

Int. Cl.³ G03B 1/04; G11B 15/32

U.S. Cl. 242-195

10 Claims



1. An auto-threading low profile magnetic tape drive comprising:

a housing having a substantially horizontal base;

means for supporting a supply reel above the base for rotation about a substantially vertical axis, the supply reel having a length of magnetic tape wound thereabout terminating in a free end portion;

means for supporting a take-up reel above the base for rotation about a substantially vertical axis;

drive means mounted below the base and operatively coupled to the supporting means for selectively rotating the reels;

a tape utilization assembly including at least a tape reading head, the assembly mounted on the base between the peripheries of the reels;

channel means for defining a substantially airtight continuous flowpath between the peripheries of the reels and extending past the tape utilization assembly; and

vacuum means for sucking air through the flowpath to pull and guide the free end portion of the tape from the supply reel to the take-up reel as the supply reel is rotated by the drive means to unwind the tape therefrom.

4,243,187

MISSILE DIRECTOR WITH BEAM AXIS SHIFT CAPABILITY

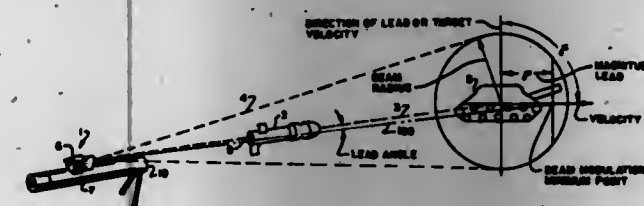
Andrew T. Eaker, St. Louis County, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 1, 1978, Ser. No. 901,501

Int. Cl.² F41G 7/14

U.S. Cl. 244-3.13

15 Claims



1. In a guidance system for providing guidance information to a missile for directing the missile toward a target, including means for projecting a binary coded beam of electromagnetic energy along an axis, reticle means mounted for rotation with respect to said beam so that all beam energy transmitted from said projecting means passes through said reticle, means for orbitally rotating said reticle about said beam axis, the improvement comprising means for cyclicly varying the speed of reticle orbital rotation based upon movement of said projecting means to advance the apparent beam center at said missile an

amount proportional to the rate of movement of said projecting means.

4,243,188

PRECOMPRESSION FIN FOR AXISYMMETRIC INLET ON WINGED HIGH SPEED VEHICLES

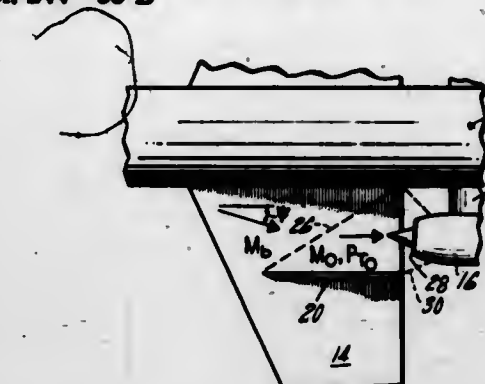
Raymond L. DeBlais, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 2, 1978, Ser. No. 930,467

Int. Cl.² B64D 27/20

U.S. Cl. 244-53 B

3 Claims



1. For a high speed, winged missile having a pair of side mounted axisymmetric inlets having a forward facing opening for leading air to an air breathing power plant, each of said inlets being axially spaced from the trailing edge of each of the wings of said missile and disposed relative to the airstream so as to be at substantially zero flow angularity in the horizontal plane, means for subjecting said inlets to zero flow angularity in the vertical plane, said means including a pair of fins, each fin extending vertically from the undersurface of one of the wings and spaced outboard from one of the inlets so as to form a precompression member and being aligned parallel to the center line of said missile, said precompression member having a trailing edge spaced forwardly of said forward facing opening.

4,243,189

TEMPERATURE STABILIZED LINKAGE

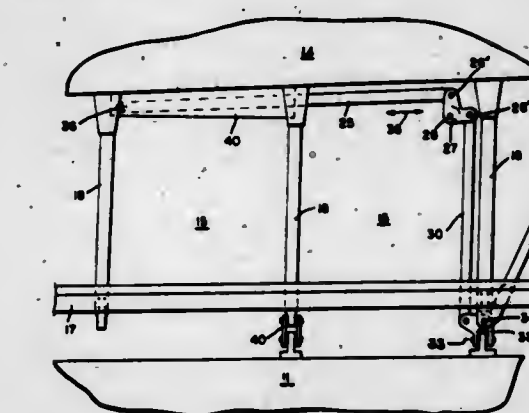
George Y. Ohgi, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 18, 1978, Ser. No. 970,724

Int. Cl.³ B64C 9/02, 19/00

U.S. Cl. 244-75 R

7 Claims



1. In an aircraft of the type having a stabilizer and an elevator following the trailing edge of the stabilizer, the stabilizer and elevator consisting of materials having substantially different coefficients of expansion, a passive linkage for interconnecting the stabilizer and elevator, said linkage comprising:

(a) a strut disposed substantially parallel to the trailing edge of the stabilizer and having one end fixed to the stabilizer;

(b) a bell crank having a fixed pivot point and capable of rotating about said pivot point, said bell crank having two arms, one of said arms being pivoted to the other end of said strut;

- (c) a push rod pivoted to the other arm of said bell crank and extending substantially at right angles to the trailing edge of the stabilizer; and
- (d) a plurality of hinge means on said elevator for connecting the elevator to the stabilizer and permitting it to swing out of the plane of the stabilizer, an outermost one of said hinge means being pivoted to said push rod, whereby said outermost hinge means moves in the direction of said strut in response to temperature variations causing differential expansion or contraction between the elevator and stabilizer.

4,243,190

ROTARY WING DEVICE

Kenneth Sams, 88 Bollean Rd., London W5, England

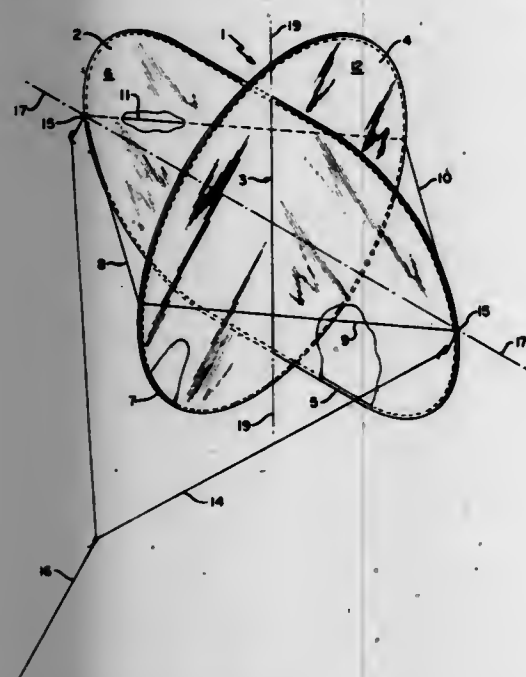
Filed Mar. 8, 1979, Ser. No. 18,451

Claims priority, application United Kingdom, Aug. 30, 1978, 34963/78

Int. Cl.³ B64C 31/06

U.S. Cl. 244-153 A

12 Claims



1. A rotary wing device having
- a flat circular stabilizer disc with a slot along a diameter thereof;
- a flat wing member extending through the said slot and having bilateral symmetry about a first symmetry axis which is perpendicular to the plane of the said stabilizer disc and which passes through the center thereof, and also having bilateral symmetry about a second symmetry axis which is perpendicular to the said first symmetry axis and which coincides with the said slot;
- said stabilizer disc and said flat wing member each comprising a thin, lightweight rod or tubing peripheral frame covered with a lightweight membrane;
- at least one guy wire connecting the frame of the said stabilizer disc to the frame of the said wing member in each quadrant of the device, each said guy wire functioning to transfer stresses from the frame of the said stabilizer disc to the frame of the said flat wing member.

4,243,191

HOODED KITE

John W. Loy, P.O. Box 1281, Bartlesville, Okla. 74003

Filed May 29, 1979, Ser. No. 43,109

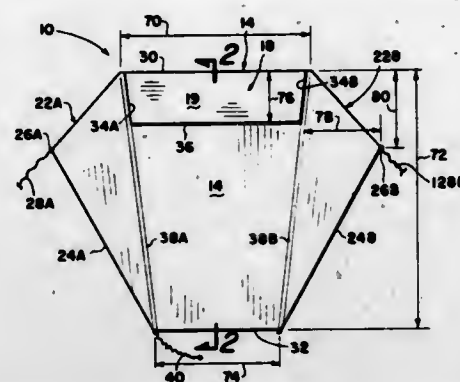
Int. Cl.³ B64C 31/06

U.S. Cl. 244-153 R

9 Claims

1. A kite of the soft sled type comprising:
- (a) a central canopy of thin flexible sheet material of a generally rectangular shape, the longitudinal side being longer

- than the width, and having front and rear surfaces, leading and trailing edges;
- (b) two slender longitudinal battens, one attached to each side of the central canopy;
- (c) a generally trapezoidal flap or hood having a longer base edge thereof secured to and along the leading edge of the canopy, said hood extending downwardly and rearwardly



over a portion of the front surface of the canopy, the ends thereof being attached to the sides of the canopy, the shorter edge opposite the base edge being shorter than the width of the canopy and free of attachment thereto so as to define, in flight, an airspace between said central canopy and said trapezoidal hood which resists collapse of said leading edge; and

- (d) cord bridle means secured to the sides of the said canopy.

4,243,192

BALL PIVOT THRUST BEARING FLEX JOINT

Robert E. Johnson, Los Alamitos, Calif., assignor to McDonnell

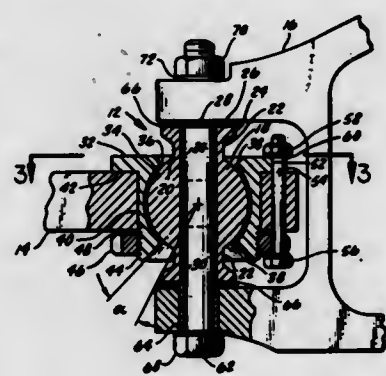
Douglas Corporation, Long Beach, Calif.

Filed Dec. 4, 1978, Ser. No. 966,337

Int. Cl.³ B64C 3/50, 1/00

U.S. Cl. 244-215

10 Claims



1. In an airplane, a flexible joint comprising:
- an outer race, said outer race having a concave, truncated spherical inner surface which terminates in a circle at the plane of the truncation and a cylindrical outer surface;
- an inner race, said inner race having a convex spherical outer surface which is complementary, sliding engagement with said concave inner surface of said outer race, said convex spherical outer surface terminating about an axis in lateral cylindrical extensions provided with necked down sections followed by an enlarged flange essentially equal in diameter to the diameter of said circle at the plane of truncation of said spherical inner surface of said inner race and terminating perpendicular to said axis so as to provide rotational clearance for said outer race oblique to said axis while providing an enlarged bearing surface, and with a through bore provided on said axis;
- a radial bearing provided in said bore; and
- thrust bearing means engaging said enlarged flange ends of said lateral, cylindrical extensions of said inner race whereby rotation about said axis takes place about said

radial and thrust bearings and motion oblique to said axis takes place about said spherical surfaces.

4,243,193

CLAMP

Robert D. Jones, Oskaloosa, Iowa, assignor to Intraco, Inc.,

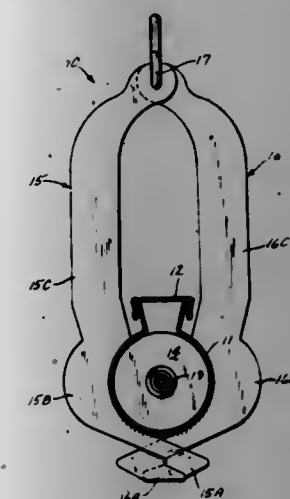
Oskaloosa, Iowa

Filed May 18, 1978, Ser. No. 907,119

Int. Cl.³ F16L 3/10

U.S. Cl. 248-62

4 Claims



1. A tube hanger comprising:
- a pair of substantially identical sheet members, each of said sheet members including a front side, a back side, an inside edge and an outside edge, the width of the front and back sides being substantially wider than the thickness of said inside and outside edges, each of said members including a lower hook portion, a central tube engaging portion and an upper suspension portion, an opening being disposed in the suspension portion, the hook portions of said members being disposed completely below the tube being hung and being in engagement with each other, each said hook portion comprising a horizontally disposed, substantially V-shaped element having one leg extending from the tube engaging portion to an apex and a second leg extending from the apex downwardly at an angle to said first leg and bent slightly from the plane of the member to facilitate engagement with the other hook portion such that the legs of one hook portion are disposed on opposite front and back sides of the other hook portion, said openings being substantially in alignment, said members including an inside contour on the inside edge thereof and an outside contour on the outside edge thereof, the inside contour of the tube engaging portion conforming substantially to the outside contour of the desired tube to be suspended and said inside and outside contours being substantially identical whereby said sheet members can be cut out from a sheet of material without wasting material between members as they are formed; and
- means extending through the openings in said members for connecting said tube hanger to a supporting member and for holding said members together in a tube supporting position.

4,243,194

HOT WATER TANK SUPPORTING LEGS

Henry J. Moore, Jr., Los Angeles, and Myron E. Deneau,

Malibu, both of Calif., assignors to Mor-Flo Industries, Inc.,

Santa Monica, Calif.

Filed May 29, 1979, Ser. No. 43,336

Int. Cl.³ F16M 11/20

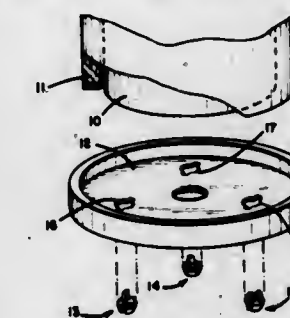
U.S. Cl. 248-188.1

3 Claims

1. Supporting legs for a hot water tank wherein there is provided a bottom pan for said tank, each of said supporting legs comprising:

- (a) a plastic body having a generally tapered cylindrical

shape with a circular top surface, said top surface having an integrally formed raised portion in the shape of a T, the cross portion of the T being coextensive with a diameter of said top surface and the stem of the T terminating short of the circular periphery of the top surface by a given distance, the ends of said cross portions of the T having undercut slots each extending radially inwardly a distance at least equal to said given distance, and an upwardly extending integral projection adjacent to a mid part of said cross portion of the T on the side opposite said stem, said bottom pan having openings formed therein, the radius of each opening being less than the radius of said circular top surface of said plastic body by an amount no greater than said given distance, and each opening having diametri-



cally opposite notches extending the opening in a diametric direction a distance at least equal to the diameter of the circular top surface of said plastic body, whereby the upraised cross portion of said T can be inserted upwardly through the bottom of said opening in said pan, the diametrically opposite ends of the cross portion of the T being received in the diametric opposite notches of the opening, and the plastic body then manually rotated to cause diametrically opposite peripheral edges of the opening in the pan to be received in said undercut slots thereby locking the plastic body to the pan, the upward projection and top surface of the T shape serving to receive and index a peripheral edge of a hot water tank relative to the other legs and thereby support the tank in a position insulated from said pan.

4,243,195

SLIDER FOR TRUCK SEAT

Monroe I. Rosenberg, 1777 Briggs Rd., Middleville, Mich.

49333

Filed Sep. 5, 1978, Ser. No. 939,402

Int. Cl.³ F16M 13/00

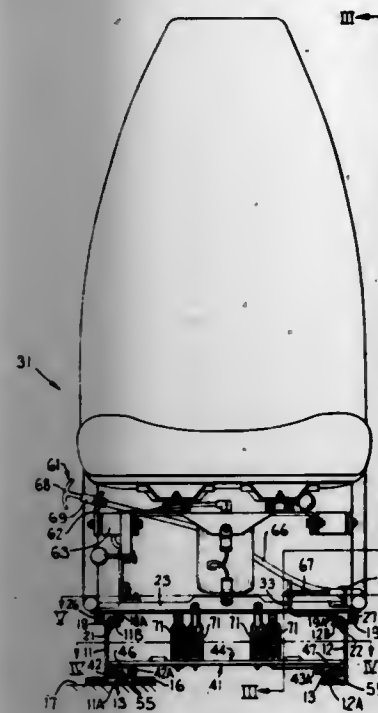
U.S. Cl. 248-429

8 Claims

8. A vehicle seat suspension, comprising:
- frame means having a finite vertical height;
- a pair of vertically spaced guide rail means mounted on said frame means, each of said guide rail means being oriented in two vertically spaced planes;
- a first base member movably mounted on one of said guide rail means;
- a second base member movably mounted on the other of said guide rail means;
- locking means for selectively locking said second base member to said frame means;
- resilient means resiliently connecting said first and second base members together and resiliently holding said first base member in a centered position relative to said second base member so that when said locking means selectively

locks said second base member to said frame means, said first base member will be movable in both directions along

bracket thus retaining said circumferential space concealed.



said one of said guide rail means against the urging of said resilient means; and
a seat mounted on said first base member.

4,243,196

CONSTRUCTION FOR MOUNTING INSIDE REAR VIEW MIRROR IN MOTOR VEHICLE

Tadayoshi Toda; Kazuaki Omote, both of Yokohama, and Mamoru Imai, Fujinawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

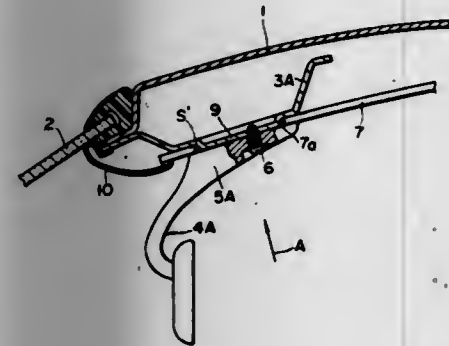
Filed Mar. 26, 1979, Ser. No. 23,651

Claims priority, application Japan, Apr. 14, 1978, 53-49562[U]

Int. Cl.³ A47F 7/14

U.S. Cl. 248-475 R

3 Claims



1. In a vehicle having a passenger compartment, a first relatively thick ceiling member for the ceiling of said passenger compartment, said first ceiling member being formed with an aperture;
a roof rail having a raised portion with an attachment surface, said raised portion being received in said aperture so that said attachment surface is substantially flush with the inner surface of said first ceiling member;
a mirror mounting bracket having a flat surface attached to said attachment surface, said flat surface being greater in area than said aperture so that said roof rail and said flat surface define a concealed circumferential space around said raised portion,
the arrangement of the foregoing being such that said first ceiling member can be replaced with a second thinner one which is sandwiched between said roof rail and said

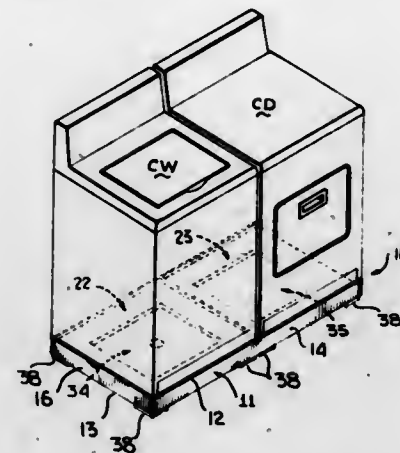
4,243,197 PAD FOR PROTECTING FLOORS AGAINST WATER DAMAGE

Marvin D. Wright, Rte. 2, Box 10, Madisonville, Tenn. 37354
Filed Jun. 25, 1979, Ser. No. 51,546

Int. Cl.³ E04F 15/00; E04B 5/48

U.S. Cl. 248-678

11 Claims



1. A pad for protecting floors against water damage from washers, dryers or like appliances comprising a generally polygonally contoured peripheral wall having an outer surface and generally coplanar spaced upper and lower inner surfaces, said lower inner surface merging generally normally with a lower generally horizontal surface, a pair of upper generally parallel horizontal surfaces vertically offset from each other, a first of said upper horizontal surfaces being wholly inboard of and surrounded by a second of said upper horizontal surfaces, said second upper horizontal surface being of a squared-off annular configuration as viewed from above, said second upper horizontal surface being disposed generally normal to said upper inner surface, a second innermost peripheral surface disposed generally normal to said first and second upper horizontal surfaces and defining the vertical offset therebetween, said second innermost peripheral surface and said first upper horizontal surface defining an upwardly opening polygonal chamber wherein water is adapted to drain and/or accumulate from an associated washer, dryer or like appliance associated with said pad, said second upper horizontal surface and lower horizontal surface outboard of said second innermost peripheral surface defining a reinforced supporting ledge adapted to support thereon inboard of said upper inner surface the legs of an associated washer, dryer or like appliance, said lower inner surface defining four corners beneath said lower horizontal surface, a reinforcing foot at each of said corners beneath said lower horizontal surface, said upper inner surface completely bounding said ledge, and each foot having a bottom face below said lower horizontal surface.

4,243,198

CONCRETE MOLDING APPARATUS

Angelo V. Beretta, Lincoln, R.I., assignor to Durastone Co., Lincoln, R.I.

Filed Mar. 27, 1978, Ser. No. 891,128

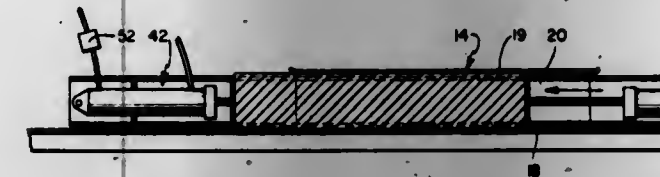
Int. Cl.³ B28B 7/12

U.S. Cl. 249-66 R

1 Claim

1. A molding machine for fabricating concrete members comprising a supporting structure having a discharge end, a mold box supported by said structure, said mold box having upstanding sides, an open top and open ends, a first end plate mounted at the discharge end of said mold box, a second end plate mounted at the other end of said mold box, discharge means for longitudinally forcing said second plate through said mold box in a first direction toward said discharge end so as to discharge a concrete member formed therein, said discharge

means including means for permitting retraction of said first end plate during discharge of said concrete member while simultaneously maintaining said first end plate in pressurized contact with the discharge end of said concrete member at least during initial stages of the movement of said second plate through said mold box, so as to eliminate end distortion of the discharge end of said member as said member is forced longitudinally from between said mold sides, and means for moving said first end plate to an inoperative position out of contact with said member after predetermined movement of the latter



in said first direction, said discharge means including a hydraulic pump operationally connected to both said plates for simultaneously moving said second plate in a discharge direction and maintaining said first plate in pressurized contact with the discharge end of said member, each of said plates having a hydraulic cylinder operationally associated therewith, the return line of said first end plate hydraulic cylinder having a bleed valve mounted therein for controlling the rate at which said first plate may be retracted and accordingly the rate at which said second plate may be forced through said mold.

4,243,199

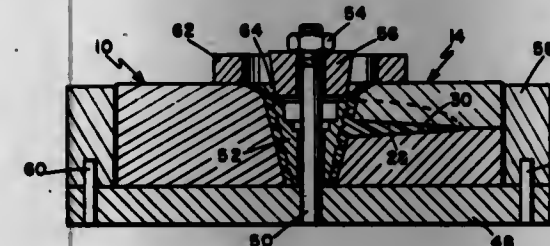
MOLD FOR MOLDING PROPELLERS HAVING TAPERED HUBS

Rodman K. Hill, 2879 Copely Ave., San Diego, Calif. 92116
Filed Dec. 5, 1979, Ser. No. 100,371

Int. Cl.² B29C 5/00

U.S. Cl. 249-142

6 Claims



1. A mold for molding propellers having tapered hubs comprising:
a plurality of radially parted mold segments each having two parting surfaces defining two parting lines; and
cavities in said mold segments that define the shape of a propeller having a tapered hub when said mold segments are joined together along their parting surfaces.

4,243,200

FORM PAN STRUCTURE

Istie M. Beer; Zemon A. Zielinski, and Henry Finkel, all of Montreal, Canada, assignors to Beer-Zas Building Systems, Inc., Quebec, Canada

Filed Dec. 16, 1977, Ser. No. 861,571

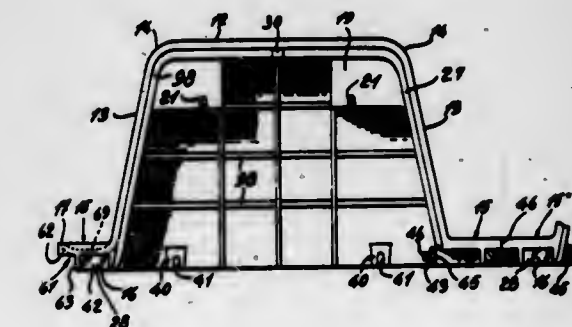
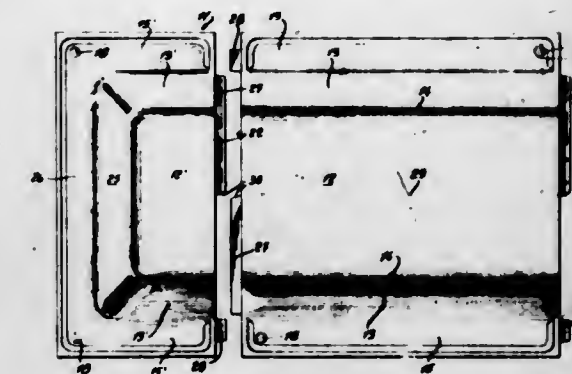
Int. Cl.³ B28B 7/28; E04G 11/46

U.S. Cl. 249-187 R

5 Claims

1. A re-usable form pan section usable with other form pan sections to define an elongated form pan presenting a smooth continuous molding surface for the full length thereof, said form pan section being constructed of molded plastic material and comprising a top wall, opposed side walls depending angularly outwardly from a respective side edge of said top wall, and a support flange extending outwardly along a bottom free edge of each of said side walls, each of said support flanges

including a structural rib-like load supporting bearing section adjacent the respective side wall in underlying relation to a form defining top face, said load supporting bearing sections being capable of freely supporting a vertical load, structural ribs lying in vertical planes formed integral with inner surfaces of said top and side walls and imparting rigidity to said top and side walls to resist vertical and horizontal distortion when said top and side walls are subjected to loads, said form pan section having at least one open end, connecting means adjacent said open end inwardly of said top and side walls for connecting said one open end of said form pan section to a like open end of another form pan section as a longitudinal extension thereof



and in end-to-end abutting relation and with outer surfaces of said top and side walls forming continuations of one another, and alignment means projecting from said open end for interlocking said form pan section with another form pan section in axial alignment therewith, said alignment means including an axial projection on said top wall below the thickness thereof for engagement below the under surface of a top wall of another form pan section and an axial projection on one of said support flanges for engagement within a support flange of another form pan section, said axial projection of said top wall being offset to one side of a longitudinal center of said top wall whereby like axial projections of another form pan section may engage said open end of said form pan section.

4,243,201

DEFLATION VALVE FOR BLOOD PRESSURE MEASURING DEVICE

Blasius Spiedel, Hochmeisterstrasse 33, 7455 Jungingen, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 890,730

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651553

Int. Cl.³ F16K 31/00

U.S. Cl. 251-297

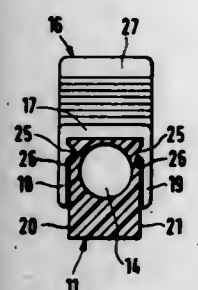
6 Claims

1. In a manually adjustable deflation valve for the controlled release of air from a pressurizable system, such as a blood pressure measuring device, a valve actuating mechanism comprising in combination:

a block-shaped valve housing having two substantially parallel side walls, a longitudinal main axis extending centrally therebetween, and a pivot axis extending perpendicularly thereto;
an actuating lever having a generally U-shaped body profile

constituted by two substantially parallel side wall portions which adjoin a central bridge wall portion and fit over the side walls of the valve housing, at least one of the three wall portions being resiliently deformable in the sense of widening the distance between the distal extremities of the side wall portions, the actuating lever being attached to the valve housing by a pivot connection in its pivot axis, in such a way that the actuating lever straddles the valve housing and its pivotability enables the lever side wall portions to execute a sweeping motion over a surface portion of the side walls of the valve housing with a small lateral clearance therebetween; and

detent means defined between the valve housing and the



actuating lever within said swept surface portion, for the releasable retention of the actuating lever in a pivoted end position, whereby the spring action of the detent means is provided by said resiliently deformable wall portion, or portions, of the actuating lever; and wherein:

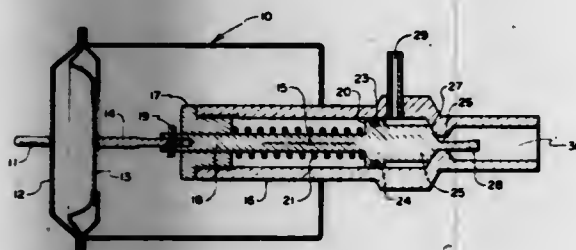
the detent means includes duplicate detent formations in the form of detent depressions and cooperating detent protrusions on opposite sides of the valve housing and actuating lever; and

the detent formations are so arranged, near the margin of said swept surface portion, that initial frictional engagement between the detent formations takes place just a minimal distance ahead of the engaged position of the detent formations.

4,243,202

WATER INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toshio Inamura, 1740 Kenneth Way, Pasadena, Calif. 91103
Continuation-in-part of Ser. No. 786,109, Apr. 11, 1977, Pat. No. 4,125,092. This application Nov. 2, 1978, Ser. No. 957,422
Int. Cl.³ F16K 31/126; F02D 19/00; F16K 47/00
U.S. Cl. 251-61.4 6 Claims



1. A vacuum operated control valve for air-water mixtures comprising a vacuum chamber containing a vacuum responsive diaphragm; a rod interconnecting said diaphragm with a valve needle having a forwardly extending elongated neck, a thickened valve body having a forward portion containing sealing means and a less thick intermediate portion and a rearwardly tapering back portion terminating in a rearwardly extending tail which increases in circumference to a predetermined size; a housing surrounding said valve needle, said housing having a closed forward end through which the elongated neck of the valve needle extends an open rear end and an internally tapered neck defining an exit port which approximates the largest diameter of the valve needle tail, said portion of the housing forward of the tapered neck having the same

diameter as the forward portion of the valve body such that the valve body engages the housing in a fluid tight relationship, said tapered neck being adapted to seat the tapered portion of the valve body with the valve needle tail extending through and rearwardly of the exit port; an inlet port in said housing adjacent the intermediate portion of the valve body and forward of the tapered neck; a valve spring surrounding the elongated neck of the valve needle and positioned in the housing between the closed forward end thereof and the valve body such that the valve needle is tensioned in a closed position sealing the exit port from the inlet port in a fluid tight relationship in the absence of vacuum pressure.

4,243,203

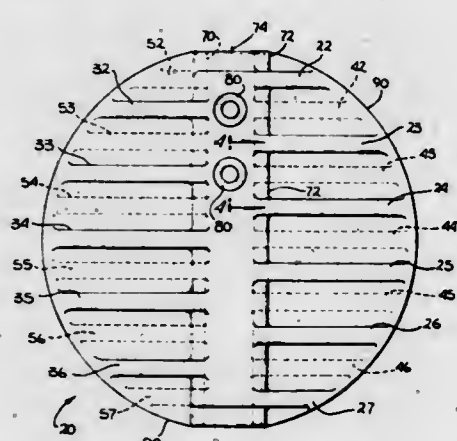
BUTTERFLY VALVE

Lawrence W. Mack, 73285 Bursara Way, Palm Desert, Calif. 92260

Filed Jul. 20, 1979, Ser. No. 59,168
Int. Cl.³ F16K 1/22

U.S. Cl. 251-305

2 Claims



1. In a butterfly valve assembly comprising a valve plate disk having a first side and a second side, said valve plate disk being adapted for rotation about an axis of said valve plate disk whereby said valve assembly may be opened and closed, the improvement comprising:

a valve plate disk provided with a plurality of fluid directing ribs on each side thereof, the length of which lie perpendicular to said axis of rotation, which ribs project perpendicular from the plane of the valve plate disk and which ribs extend only from a location proximate the axis of rotation to a location proximate the edge of said valve plate disk;

wherein the ribs located on one side of said valve plate disk are alternately located on one side of said axis and then the other side of said axis as one proceeds along said axis from one end thereof to the other, each rib being equally spaced from the rib above it and the rib below it, and wherein the ribs located on said second side of said valve plate disk are located opposite the spaces between the ribs located on said first side of said valve plate disk.

4,243,204

VALVE HOUSINGS MADE FROM STEEL, ESPECIALLY FOR GATE VALVES

Walter Siepmann, Warstein-Belecke, Fed. Rep. of Germany, assignor to Forval S.A., Fribourg, Switzerland
Filed Feb. 21, 1979, Ser. No. 13,525

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807740

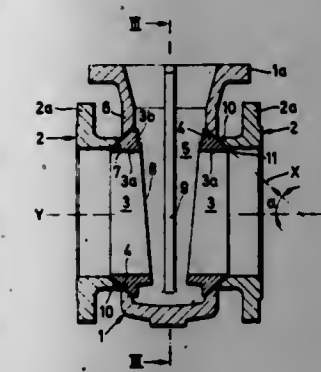
Int. Cl.³ F16K 27/10, 3/00

U.S. Cl. 251-366

12 Claims

1. A steel valve housing comprising a central housing part having an axis and formed in opposite walls thereof with axially aligned openings defined by inner frustoconical surfaces tapering in outward direction at a predetermined angle to the

axis; a pair of connecting sockets axially aligned with said openings of the housing part and having inner end faces which taper at the same angle to the axis of the housing part and in the same direction as said frustoconical openings of the housing part, and with axially extending annular inner surfaces axially aligned with each other and with the openings of the housing part; and a pair of connecting members having each a cross-section substantially in the form of a right-angle triangle connecting said connecting sockets to said central housing part, the hypotenuse of the triangular cross-section of each connecting member forming the generatrix of the frustoconical outer surface inclined at the same angle to the axis of the housing part, the frustoconical outer surface of each of the connecting members having a first portion of its length which extends over



the large diameter region of the frustum and is welded at said angle over the whole circumference to the inner frustoconical surface of the respective opening of the housing part, the frustoconical outer surface of the connecting member having a second portion of its length which extends over the smaller diameter region of the frustum and is welded also at said angle over the whole circumference to the inner tapering end face of the respective socket, each of the connecting members having an axially extending inner annular surface formed by one of the sides of the triangle and forming the continuation of the inner annular surface of the respective socket, each of the connecting members having a transversely extending further annular surface formed by the other side of the triangle and located within the housing part so as to face a central plane of symmetry of the latter.

4,243,205

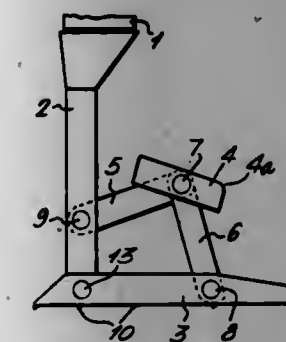
LOG BREAKING DEVICE

Victor A. Dushku, Rackarbergsgatan 34, 2 TR., 752 32 Uppsala, Sweden

Filed Sep. 12, 1979, Ser. No. 74,745
Int. Cl.³ B66F 15/00

U.S. Cl. 254-113

13 Claims



1. A manually operated mechanical log breaking device comprising

- a longitudinally extending lever means;
- a first pressure plate extending from one end portion of said lever means;
- a second pressure plate pivotally coupled to said first pressure plate and having means on one surface thereof for engaging a saw cut in a log;
- at least one pressure member having means for engaging a saw cut; and
- a link system interconnecting said pressure member and said

first and second pressure plates with said pressure member spaced from said first and second pressure plates, said link system comprising

an axle, and

at least two lever members, said pressure member and one end of each of said lever members being pivotally coupled directly to said axle, the other end of each of said lever members being pivotally coupled to said first and second pressure plates, respectively.

4,243,206

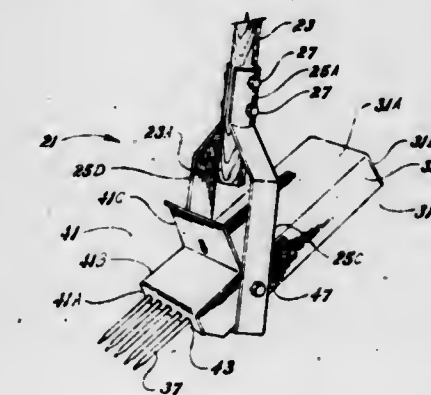
APPARATUS FOR REMOVING WEEDS

Verner E. Heikkinen, 2021 Holt Rd., Arlington, Tex. 76011, and Edward A. Heikkinen, 1217 Columbine Ct., Arlington, Tex. 76013

Filed May 11, 1979, Ser. No. 38,344
Int. Cl.³ B66F 3/00

U.S. Cl. 254-132

9 Claims



1. An apparatus for removing plants from the ground, comprising:

- handle means adapted to be held by a person,
- lever means pivotally coupled to an end portion of said handle means for pivotal movement between first and second positions relative to said handle means,
- said lever means having a rear end and a front end,
- a plurality of spaced apart tines connected to the front end of said lever means and extending therefrom for insertion into the ground for removing plants from the ground,
- clean off means having a plurality of apertures for receiving said plurality of tines respectively,
- said clean off means being movable along said tines between a rearward position near said front end of said lever means and a forward position near the front ends of said tines, when said lever means is in said first position said handle means being out of engagement with said clean off means, means for urging said clean off means toward said rearward position,
- when said lever means is located in said first position, said clean off means is located in said rearward position and said tines extend beyond the end of said end portion of said handle means whereby said tines may be inserted into the ground by applying pressure to said rear end of said lever means with one's foot, said handle means comprising structure adapted to engage said clean off means and move said clean off means to said forward position for removing plants, dirt, etc. from said tines as said handle means is pivoted, relative to said lever means, in a direction to move said structure of said handle means forward.

4,243,207

FREE STANDING PORTABLE STAIRWAY RAILING DEVICE

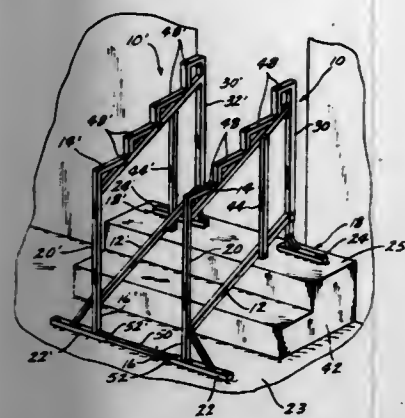
Lambertus Heykants, Rte. 1, Belmond, Iowa 50421

Filed Nov. 20, 1978, Ser. No. 962,331

Int. Cl.² E04H 17/00

U.S. Cl. 256-64

12 Claims



1. A freestanding portable stairway railing device independent of steps or platform and adapted to be placed thereon or removed as an independent unit comprising,
 - a first frame means having forward and rearward ends, and upper and lower portions,
 - a first support foot adapted to engage a stairway surface, said first support foot being secured to said rearward end of said first frame means,
 - a second support foot adapted to engage said stairway surface at a higher level than said first support foot,
 - attachment means to detachably secure said second support foot to said lower portion of said first frame means in spaced apart relation to said first support foot, and the combined surface area of both feet being adequate so that said first and second support feet support said first frame means in a freestanding upright disposition on said stairway surface, and
 - a first hand rail means attached to said upper portion of said first frame means.

4,243,208

CONVERTER PLANT

Friedrich Laimer, Perg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

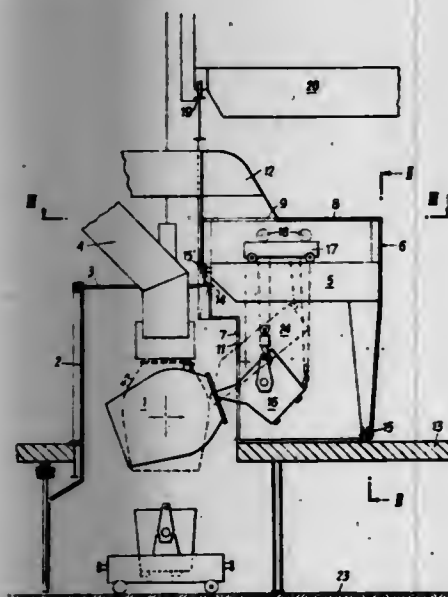
Filed May 17, 1979, Ser. No. 39,750

Claims priority, application Austria, May 24, 1978, 3769/78

Int. Cl.³ C21C 5/38

U.S. Cl. 266-158

5 Claims



1. In a converter plant of the type including a tiltable converter provided in a hall, a casing surrounding said tiltable

converter and having a casing ceiling, a principal discharge conduit for conducting away refining gases connected to said casing ceiling, and a charging device adapted to carry a charging container into a charging position, said casing having a casing part fastened to said charging device and displaceable with said charging device, the improvement which is characterized in that

said charging device is designed as a portal crane displaceable in the direction of the tilting axis of said tiltable converter,

said casing part is designed as a cellular casing part fastened to said portal crane, which cellular casing part has walls open towards said tiltable converter, but otherwise surrounding the portal crane, and has a casing part ceiling, a gas-discharge opening is provided in said casing part ceiling, and

an additional discharge conduit is provided for conducting away secondary emissions, the arrangement being such that, at least in the charging position, said cellular casing part closes said casing and said gas-discharge opening in said casing part ceiling is below said additional discharge conduit.

4,243,209

MULTIPLE LEVEL REFRACTORY HEARTH FOR VERTICAL SHAFT METAL MELTING FURNACES

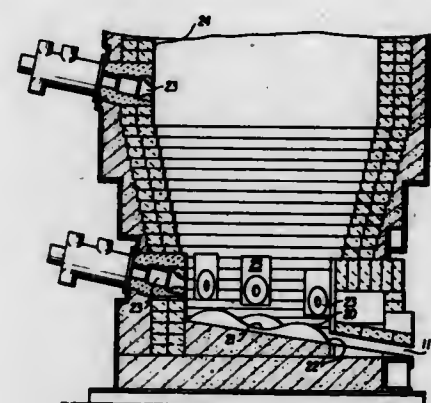
Ronald L. Pariani, Pensacola, Fla., and David F. Arp, Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Oct. 25, 1979, Ser. No. 88,263

Int. Cl.³ F27B 1/14

U.S. Cl. 266-219

6 Claims



1. In a vertical shaft furnace for melting and refining pieces of metal, of the type having an outer furnace wall enclosing an upright melting chamber, a charge entrance opening in the top of said furnace, a plurality of burner openings in the inner surface of said wall for injecting heat into said chamber to melt said metal pieces, and a tapping outlet in the bottom portion of said chamber for discharging molten metal from said furnace, the improvement comprising multiple level hearth means for supporting charge which has descended to the bottom of said melting chamber without being melted and wherein said means comprises a relatively uniform and smooth surfaced multiple level hearth having the shape of multiple domes resting slightly off center in the bottom of said vertical shaft furnace whereby the intersection of said multiple domes and the wall of said furnace is horizontally unlevel so that the point adjacent to said tapping outlet is the lowest level of said multiple level hearth.

4,243,210

TUNDISH FOR THE CONTINUOUS CASTING OF STEEL

Masaru Takashima, Komae, Japan, assignor to Aikoh Co. Ltd., Tokyo, Japan

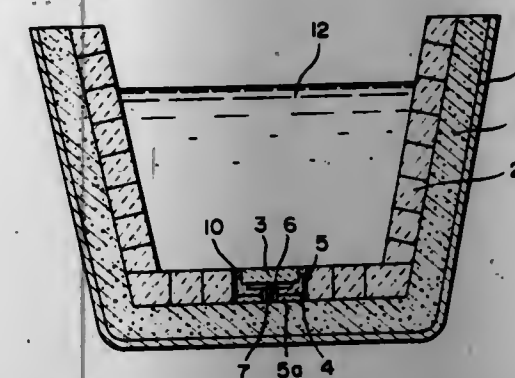
Filed May 29, 1979, Ser. No. 42,886

Claims priority, application Japan, Jan. 5, 1978, 53/66635

Int. Cl.³ C21C 5/48

U.S. Cl. 266-220

11 Claims U.S. Cl. 269-75



1. A tundish for the casting of steel including an outer shell having an open upper end and a closed bottom end and a sidewall therebetween for containing molten metal;
 - a means for introducing gas into molten metal in said tundish positioned on the closed bottom end of said tundish including a generally rectangularly shaped gas permeable refractory molding having an upper and a lower surface with said upper surface being adapted to contact said molten metal, a generally rectangularly shaped gas permeable refractory inner shell engaging said refractory molding in a supporting relationship and having an upper surface and a lower surface with said upper surface being formed so as to provide a cavity between the lower surface of said gas permeable refractory molding and said gas permeable inner shell with said gas permeable inner shell having a permeability which is less than one-fifth that of said gas permeable refractory molding; and
 - a means for directing gas into said cavity between said gas permeable refractory moulding and said gas permeable inner shell.

4,243,211

TUYERE FOR USE IN REFINING LIQUID METALS

Pierre J. Leroy, St. Germain en Laye; Jean P. Bastien, Saint Priest en Jarez, and Emile J. Sprunck, Moyeuvre, all of France, assignors to Cressot-Loire, Paris, France

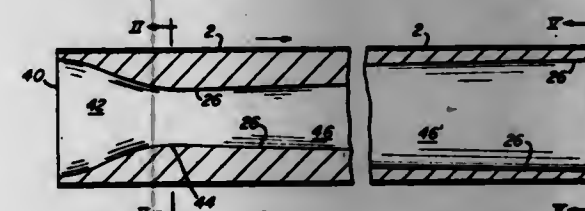
Filed Jul. 18, 1979, Ser. No. 58,452

Claims priority, application France, Jul. 19, 1978, 78 21372

Int. Cl.³ C21B 7/16

U.S. Cl. 266-268

12 Claims



1. In a tuyere for use in refining molten metal in a converter, said tuyere having a passage for refining gas and a passage for protective fluid, an improved construction for said refining gas passage comprising:
 - a transverse section having a continuous outer enclosure and a central opening defining a plurality of radially extending branches whose total perimeter exceeds the circumference of a circle having an area equivalent to said central opening.

4,243,212

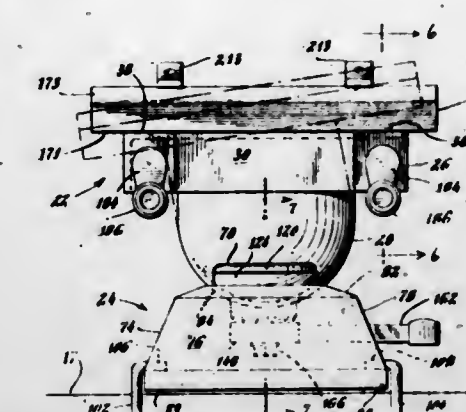
MEANS FOR RESTRAINING A SWIVEL VISE

Roderick F. Bunyea, Cockeysville, and Robert P. Wagster, Greensboro, both of Md., assignors to Black and Decker Manufacturing Company, Towson, Md.

Filed May 29, 1979, Ser. No. 42,787

Int. Cl.³ B23Q 1/04

17 Claims



1. An improved vise comprising:
 - a. first and second workpiece gripping members;
 - b. means supporting said members for relative movement therebetween in a plane for gripping a workpiece;
 - c. said support means including a hollow, bowl shaped body member formed of a polymer plastic and having a lower section thereof;
 - d. said bowl member having three mutually perpendicular axes of rotation;
 - e. said lower section having a spherically curved wall segment and an aperture formed in said wall segment;
 - f. a base support body formed of a polymer plastic and having a cavity formed therein;
 - g. said cavity having a surface configuration which conforms in part with said spherical wall segment;
 - h. said spherical wall segment positioned in said cavity in sliding engagement with said cavity surface for enabling sliding motion and rotation of said bowl body in said cavity about each of said axes;
 - i. said bowl body having an interior thereof which is unobstructed between a location at said gripping member plane and an interior wall surface of said body located adjacent said cavity;
 - j. means for restraining said bowl body and said cavity at a preselected orientation about said axes;
 - k. said restraining means including a lock body positioned within said bowl interior at a location adjacent said cavity in sliding engagement with said interior wall surface;
 - l. said lock body having a spherically shaped segment conforming with said interior wall surface; and,
 - m. means for selectively applying and releasing a force between said lock body and said cavity surface for respectively inhibiting and enabling sliding motion of said bowl surface in said cavity about said axes.

4,243,213

ADJUSTABLE PRECISION GRINDING AND MACHINIST VISE

Michael T. Georgiann, 2554 Capitol, Warren, Mich. 48091

Filed Jan. 18, 1979, Ser. No. 4,546

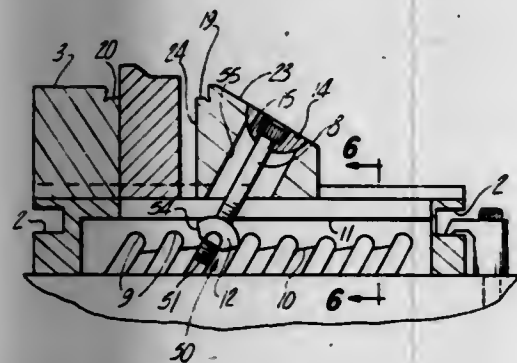
Int. Cl.³ B23Q 3/04

U.S. Cl. 269-137

26 Claims

1. An adjustable precision machinist vise comprising:
 - a base having a flat top, a flat parallel bottom opposite said flat top, a first end disposed at one end of said base, a second end disposed laterally opposite said first end, and guide means formed in said top of said base, said guide means comprising:
 - a first central slot portion with a predetermined width formed in said top of said base said first slot portion fur-

- ther extending longitudinally across said flat top and penetrating said top a first predetermined depth from said flat top toward said bottom;
- a second central slot portion centrally located with said first central slot, said second slot portion further being wider than said predetermined width of said first portion and penetrating a second predetermined depth from said bottom toward said top of said base to intersect said first central slot portion, said second slot portion further extending longitudinally in said base coaxially with said first central slot;
 - a first parallel lateral longitudinal plane formed at the intersection of said first central slot portion with said second central slot portion; and
 - a second flat lateral plane centrally located in said base with said first flat lateral plane, said second plane further being wider than said first flat lateral plane and penetrating said bottom a third predetermined depth which is less than said second predetermined depth for communication with said first flat lateral plane, said second flat lateral plane further having a plurality of lateral notches formed therein, said notches further forming a corrugated surface in said second flat lateral plane;
 - a stationary jaw fixedly mounted on said top of said base and adjacent to said first end of said base, said stationary jaw having a flat face perpendicular to said flat top and said flat face further being disposed facing said second end;
 - a movable jaw mounted on said top of said base and spanning said first slot, said movable jaw having an opposing flat surface disposed opposite to said flat face for coopera-



tion with said flat face of said stationary jaw, an inclined shoulder on the top of said movable jaw slanting down from said opposing flat surface toward said second end of said base, a semi-cylindrical hollow surface formed laterally in said shoulder and an angling slot formed in said hollow surface, said angling slot further being inclined relative to said opposing flat surface and directed toward said first end through said movable jaw;

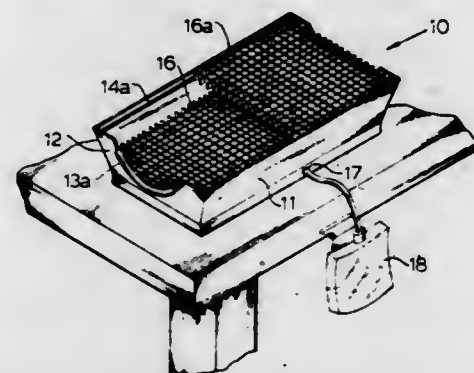
- a swivel clamp mounted to said movable jaw, said clamp having a flat side and an arcuate side opposite said flat side for cooperative engagement with said semi-cylindrical hollow surface, said clamp further having a hole formed through said clamp and extending from said flat side through said arcuate side for communication with said angling slot in said movable jaw, said clamp further having a bore counterbored about said hole in said flat side;
- a guide element mounted adjacent to said first flat lateral parallel plane, said guide element having a wedge portion, a first flange extending laterally of said wedge portion and a second flange extending laterally of said wedge portion opposite to said first flange, said first and second flanges having upper arcuate surfaces for cooperative engagement with said corrugated surface, said wedge portion having thread means and an upper arcuate surface for clamping engagement against said first flat lateral parallel plane; and
- a latching pin disposed through said hole in said swivel clamp, through said angling slot in said movable jaw, through said guide means in said base to threadably engage said thread means in said wedge portion such that

when said pin is threadably tightened said first and second flanges are positioned in one of said plurality of notches in said corrugated surface to clamp said upper arcuate surface of said wedge portion against said first flat lateral parallel plane in said base in order to locate said movable jaw on said flat top relative to said stationary jaw along said first slot portion in said top and such that when said pin is threadably loosened, said first and second flanges are adapted to be positioned in another of said plurality of notches in said corrugated surface in order to locate said movable jaw relative to said stationary jaw along the full longitudinal range of said first slot portion.

4,243,214
IRRIGATION-DEBRIDEMENT-REPAIR CADDY
 Mary A. LaRooka, 514 Charles St., Geneva, Ill. 60134
 Filed Aug. 30, 1979, Ser. No. 71,111
 Int. Cl.³ A61G 13/00

U.S. Cl. 269—327

11 Claims



1. An irrigation-debridement-repair tray for extremities of a human body to assist a physician in treating such extremity, comprising:

- a rigid tray body having side walls, end walls and a bottom wall, said walls being fluid-impermeable and joined to one another in a fluid-impermeable manner and having an open top;
- a plurality of longitudinally extending runner pairs vertically displaced from each other and positioned below a top edge of the side wall of the tray, each runner pair being fixedly attached to the inside of a respective side wall of the tray and extending at least a portion of the length of the tray;
- a plurality of operation support surfaces, each positionable on a separate runner pair to receive an extremity of a human body, said surfaces being fluid-permeable; and an outlet opening at the bottom wall of the tray.

4,243,215
PAPER FOLDING AND CONVEYING APPARATUS AND METHOD

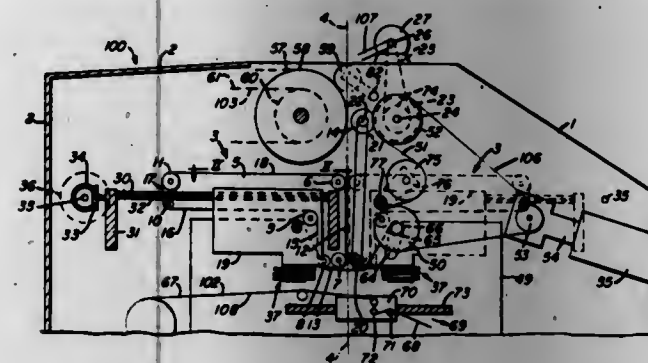
Marc F. S. M. Van den Bergh, Zele, Belgium, assignor to Miller-Johannisberg Druckmaschinen GmbH, Wiesbaden, Fed. Rep. of Germany
 Continuation-in-part of Ser. No. 824,607, Aug. 15, 1977, abandoned. This application Aug. 17, 1978, Ser. No. 934,624
 Claims priority, application Belgium, Sep. 15, 1976, 169,851
 Int. Cl.³ B65H 45/20

U.S. Cl. 493—422

15 Claims

1. A paper strip folding and conveying system for zig-zag folding of a continuously flowing strip of paper to produce a stack of overlying folds, such as a series of business forms, comprising: a plurality of longitudinally spaced continuously orbiting first conveying means for conveying and guiding such strip downwardly between respective vertically extending forward conveyor runs toward longitudinally spaced second conveying means; said second conveying means being sets of conveying and folding spirals spaced rearwardly from respective ones of said forward conveyor runs for producing such

overlying folds and simultaneously conveying such strip downwardly; said first conveying means each including a generally horizontally and longitudinally extending transverse conveyor run having a forward end thereof adjacent a lower end of a respective forward conveyor run and extending horizontally therefrom to a rearward end thereof which is adjacent an upper end of a respective second conveying means, said transverse conveyor runs being operable to aid in the conveying and guiding of such strip from said forward conveyor runs to said second conveying means; and adjusting means cooperable with at least one of said first conveying means to selectively adjust the longitudinal spacing between said second conveying means while simultaneously adjusting the longitudi-



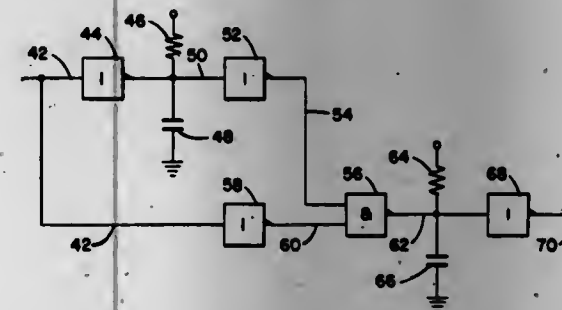
nal extent of said transverse conveyor run of said one of said first conveying means an equivalent amount.

13. In a paper strip folding and conveying system wherein paper strip is alternately directed to a plurality of longitudinally spaced downwardly extending spiral conveying means and wherein the strip is conveyed downwardly by said spiral conveying means and simultaneously folded thereby in an overlapping accordion like fashion, the improvement comprising: said spiral conveying means each include a downwardly extending flight; and cushioning means operative to direct pressurized air to portions of said flight to provide an air cushion intermediate at least some surfaces of said spiral conveying means and adjacent surfaces of such strip which is being conveyed and folded thereby.

4,243,216
DOUBLE DOCUMENT DETECTION SYSTEM
 Ali T. Mazumdar, Waterloo, Canada, assignor to NCR Canada Ltd. - NCR Canada Ltd., Mississauga, Canada
 Filed Jan. 11, 1979, Ser. No. 47,460
 Int. Cl.³ B65H 7/06

U.S. Cl. 271—263

3 Claims



2. In a document handling apparatus, means for detecting the passage of double documents along a path comprising a conductive capacitor type sensing device operable for utilizing a document as the dielectric thereof and for generating a signal upon physically detecting a document, first R-C circuit means for introducing a delay in the generated signal due to the presence of a document, AND gate means for comparing the generated signal with the delayed signal and generating an output signal, second R-C circuit means for introducing a capacitive delay in the output signal of said AND gate means to compen-

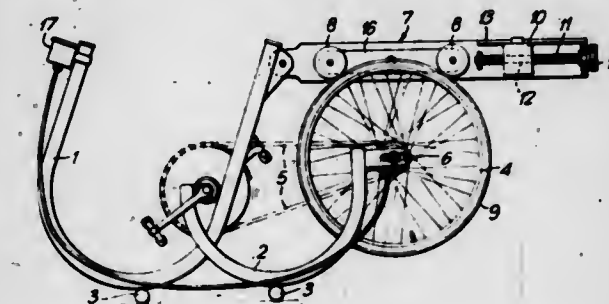
sate for capacitance other than capacitance due to the presence of two or more documents, and means receiving said delayed output signal from said AND gate means for generating a double document signal when said delayed output signal indicates that more than one document is detected by said sensing device.

- 3. A method of detecting double documents comprising the steps of:
 - generating a signal upon physically detecting a document, introducing a capacitive delay in the generated signal due to presence of one or more documents,
 - inverting the generated signal delayed due to presence of more than one document,
 - comparing the generated signal with the delayed signal to generate and output signal,
 - introducing a capacitive delay in the output signal to compensate for capacitance other than capacitance due to the presence of two or more documents, and
 - generating a double document signal when the delayed output signal indicates that more than one document is detected.

4,243,217
EXERCISING APPARATUS
 David J. Gibbs, 6, Linden Close, Green Park, Wootton Bassett, Swindon, Wiltshire, England
 Filed Apr. 13, 1978, Ser. No. 896,336
 Int. Cl.³ A63B 69/16

U.S. Cl. 272—73

5 Claims



1. A cycling exerciser comprising a frame, a wheel rotatably mounted in the frame, a pedal-operated chain drive mechanism for the wheel, a lever pivotally mounted on the frame above the axis of rotation of the wheel, a sub-frame pivotally mounted at its center on the lever directly above the axis of the wheel, two rollers rotatably mounted one at each end of the sub-frame, a weight mounted on the lever to bias the two rollers into engagement with the periphery of the wheel at positions above the axis of the wheel which are equidistantly spaced from the uppermost point of the wheel, and means for moving the weight along the lever for adjustment of the bias.

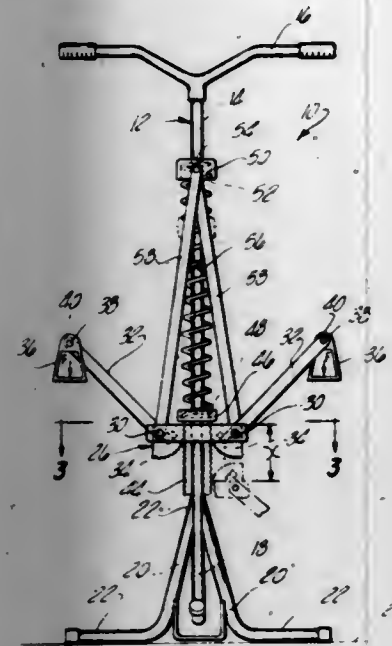
4,243,218
HOPPING VEHICLE
 Egas J. DeSouza, 6152 E. Knoll, Flint, Mich. 48507
 Filed Feb. 21, 1979, Ser. No. 13,459
 Int. Cl.³ A63B 25/08

U.S. Cl. 272—114

10 Claims

1. A hopping vehicle comprising an elongated frame having a lower end adapted to engage a ground support surface; a carriage means longitudinally slidably mounted to the frame; resilient means for urging said carriage means toward an upper end of said frame; and manually powered mechanical advantage means operable on each hop of the vehicle for moving said carriage means

toward the lower end of the said frame and thereby compressing said resilient means with a force greater than the



momentum of a rider on the vehicle directly applied to said resilient means.

4,243,219

PORTABLE LEAN-TO EXERCISING DEVICE

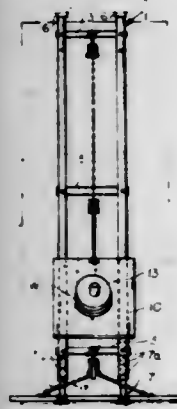
Paul J. Price, 1420 Junior Dr., Pittsburgh, Pa. 15227

Filed Aug. 11, 1978, Ser. No. 932,771

Int. Cl.³ A63B 21/06

U.S. Cl. 272-117

6 Claims

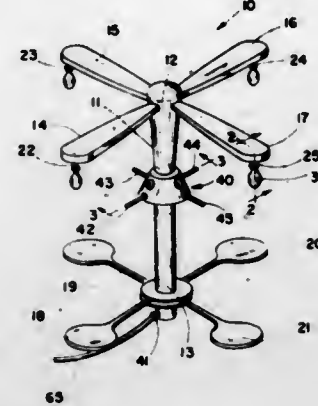


1. A portable exercising device comprising a rectangular frame, which has side frame members, and which is adapted to be leaned and inclined against a door frame and being of greater length than the height of said frame, said rectangular frame being devoid of attaching means either to a wall or floor of a building, said rectangular frame having a weight carrying carriage mounted thereon which is guided along the frame by the inclined side frame members, a line attached at one end to said carriage, a pulley secured at the top portion of said rectangular frame about which said line is entrained, pulley means connected to the intermediate portion of said rectangular frame to enable the intermediate portion of said line to extend at selective heights through the opening of said door frame and substantially at right angles to said rectangular frame, the other end of the line being detachably secured to a sports item held by a user which may be swung forwardly under resistance of the weight of said carriage, whereby a pulling force is applied to said rectangular frame in the direction of said door frame.

4,243,220
WATER BALLOON GAME
Carlton E. Shelley, R.R. 2, Crawfordsville, Ind. 47933
Filed Dec. 11, 1978, Ser. No. 967,903
Int. Cl.³ A63F 9/00

U.S. Cl. 273-1 R

10 Claims



1. A game device for bursting a balloon by pressurized water above any one of the players playing the game comprising: a stand including a base and a plurality of outwardly extending arms, each spaced a distance upwardly from said base defining player areas located beneath and substantially vertically aligned with each of said arms; a water inlet connection on said stand connectible to a source of pressurized water; a plurality of water outlets each located on a separate one of said arms and having surfaces to which balloons may be mounted above said player areas to receive pressurized water, said stand including passageways leading from said outlets toward said water inlet connections; and valve means on said stand and operably disposed between said water inlet connection and said outlets to controllably direct pressurized water through said passageways and burst at least one of said balloons.

4,243,221
TRAINING DEVICE FOR PRACTICING THE SERVICE IN TENNIS

Manuel Ferreira-Godinho, Sedanstrasse 5, D 3250 Hameln 1, Fed. Rep. of Germany

Continuation of Ser. No. 826,922, Aug. 22, 1977, abandoned.

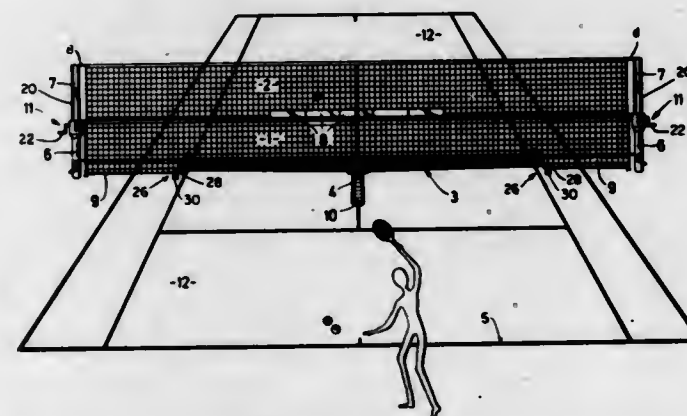
This application Feb. 7, 1979, Ser. No. 9,851

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1976, 2638037

Int. Cl.³ A63B 29/38

U.S. Cl. 273-29 A

11 Claims



1. A device for practicing the serve in tennis and for playing tennis, said device comprising: a pair of spaced, vertical net posts; a tennis net extending between said net posts and positioned for playing tennis in a normal fashion; a pair of side posts, one side post being attached to and extending above each of said net posts;

means interconnecting said side posts to said net posts for raising and lowering said side posts relative to said net posts; a service practice net having an upper longitudinal edge and a lower longitudinal edge, said service practice net being secured to the upper edge of said tennis net along its lower longitudinal edge; and raising means supported on said side posts and operatively connected to said service practice net for raising said practice net from a first position at which tennis may be played with said tennis net to a second position extending between said side posts at which said service practice net extends above and in the same general plane as said tennis net and is positioned for practice of the serve.

4,243,222

SEESAW TARGETS APPARATUS FOR PINBALL GAME

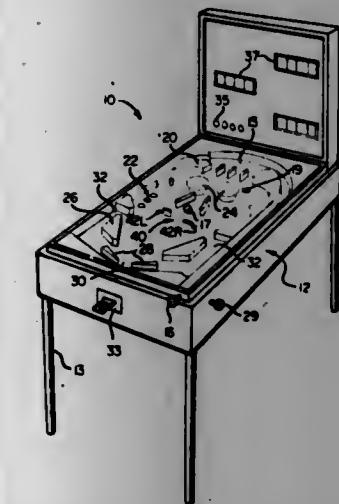
Irwin J. Grabel, Elmwood Park, and Peter J. Hancher, Chicago, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Mar. 23, 1979, Ser. No. 23,083

Int. Cl.³ A63F 7/06

U.S. Cl. 273-127 R

8 Claims



1. An alternate target apparatus for use in a pinball game having a playfield and at least one ball movable on the playfield, said apparatus comprising: a pair of spaced apart targets, each of which can extend through openings in said playfield and be struck by the ball moving on the playfield; linkage means supporting each of said targets; said linkage means being operatively connected to said targets so that one target has portions thereof exposed through one of said openings in position to be struck by said at least one ball moving on the playfield when the other target is hidden below said playfield out of the path of said at least one ball moving on said playfield, said linkage means being adapted to simultaneously move both targets between the exposed and hidden positions; means for shifting said linkage means in response to being driven by a motor means; motor means operatively connected to said shifting means for driving the same; and control means for activating said motor means in response to said exposed target being struck.

4,243,223

SPINNER APPARATUS

Niel Ver Hoef, 300 Pioneer Rd., Des Moines, Iowa 50315, and Donald D. Kurth, 4121-75th St., Des Moines, Iowa 50322

Filed Feb. 15, 1979, Ser. No. 12,352

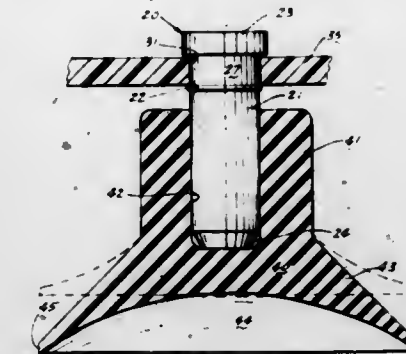
Int. Cl.³ A63B 71/06

U.S. Cl. 273-141 R

5 Claims

1. An improved spinner/indicator device for use on a relatively smooth hard surface comprising:

a rotatable apertured spinner element having a pointed forward section and a bifurcated rearward section; a cylindrical post element having a tapered section on one end, an enlarged cap on the other end, and a resiliently deformable beaded collar portion on its periphery; a flexible, resilient base member having a conical skirted, lower portion, and an apertured cylindrical upper portion, wherein the diameter of the aperture in the spinner element is greater than the diameter of the cylindrical post, substantially less than the diameter of the enlarged cap, and slightly less than the diameter of the resiliently deformable beaded collar portion around the periphery of the cylindrical post; and the diameter of the cylindrical post is greater than the diameter of the aperture in the cylindrical upper portion of the resilient base member.



4,243,224

SCRATCH AND SMELL PUZZLE

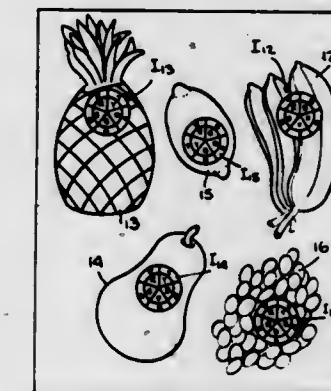
Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Aug. 21, 1979, Ser. No. 68,424

Int. Cl.³ A63F 9/10; G09B 1/06

U.S. Cl. 273-157 R

11 Claims



11. A children's game which exploits both the olfactory and visual senses in effecting a match between a playing element and a selected object, said game comprising:

A. a playing board having printed thereon at distinct positions a plurality of pictures of odoriferous objects having characteristic smells, each object having an identifier including a socket; and
B. a group of playing elements corresponding in number to the objects, each element having a surface which exudes a smell simulating the characteristic odor of a respective object, said playing element when inserted in the socket of a selected object having means to indicate whether there is a match or a mismatch between the smell from the element and the characteristic odor of the selected object.

4,243,225

BOARD GAMES

Maxim D. Levinrad, PO Box 7275, Johannesburg, South Africa (2000)

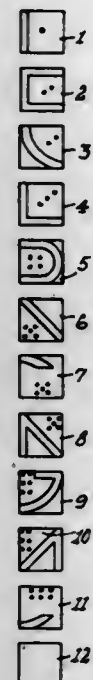
Filed Dec. 6, 1978, Ser. No. 967,104

Claims priority, application South Africa, Dec. 9, 1977, 77/7375

Int. Cl.³ A63F 3/00

U.S. Cl. 273-272

3 Claims



1. A game comprising a plurality of squares tiles, classified into eleven groups identifiable by the configuration and location of a distinguishable band on the face of the tile namely tiles of

- Group 1 wherein the band extends along one edge of the tile;
- Group 2 wherein the band extends along three adjacent edges of the tile;
- Group 3 wherein the band constitutes an arc between two diagonally opposed corners of the tile;
- Group 4 wherein the band extends along two adjacent edges of the tile;
- Group 5 wherein the band constitutes a U-shape on the tile with the two legs of the U extending partially along two opposed edges of the tile and the arcuate section of the U forms a tangent to a third edge of the tile;
- Group 6 wherein the band extends diagonally across the tile between two diagonally opposed corners thereof;
- Group 7 wherein the band extends from one corner of the tile partially along an arc defined between two diagonally opposed corners of the tile;
- Group 8 wherein the band extends between two diagonally opposed corners of the tile and along one edge thereof;
- Group 9 wherein the band constitutes an arc between two opposed corners of the tile, the band further including a segment substantially constituting a segment of the radius of the arc described by the band and extending along one edge of the tile;
- Group 10 wherein the band extends between two diagonally opposed corners of the tile and along one edge thereof, such that the tiles of Group 10 constitute mirror images of tiles of Group 8;
- Group 11 wherein the band extends from one corner of the tile partially along an arc defined between two diagonally opposed corners of the tile, such that tiles of type 7 and type 11 are mirror images of one another;
- and tiles of Group 12 characterised by tiles having blank faces, each of the tiles reflecting a score value, the tiles being suitable for use in the playing of a game in which players take turns to form letters by correctly combining four tiles from the various groups of tiles set out above and achieve a score in the game according to the values reflected on the combined tiles and adjacently disposed completed letters.

4,243,226

CARD GAME

Roy E. Kendall, Flat 4, 20 Crookham Rd., Fulham, London SW6, England

Filed Mar. 12, 1979, Ser. No. 19,341

Int. Cl.³ A63F 1/00

U.S. Cl. 273-292

1 Claim



1. A card game comprising a first suit of 15 cards numbered from 1 to 15 and each of which carries a first distinguishing feature, a second suit of 22 cards numbered from 1 to 15 and containing two of every even numbered card, each card in said second suit carrying a second distinguishing feature, a third suit of 23 cards numbered from 1 to 15 and containing two of every odd numbered card, each card in said third suit carrying a third distinguishing feature and 3 individual wild cards each of which carries a further and different distinguishing feature.

4,243,227

DISC PROJECTING GAME

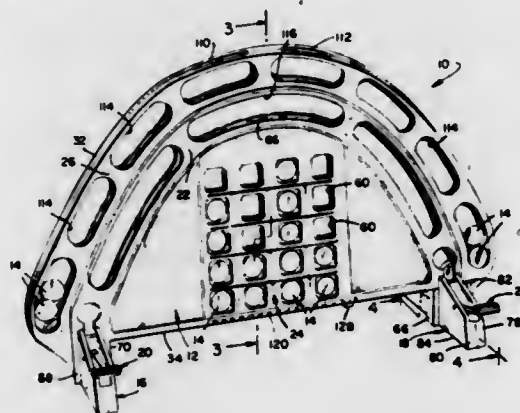
Ned Strongin, 936 Willow Bend Ln., Baldwin, N.Y. 11510

Filed Sep. 17, 1979, Ser. No. 76,372

Int. Cl.³ A63F 9/02

U.S. Cl. 273-357

9 Claims



- 1. An action toy game comprising a hollow frame adapted to rest in an upright vertical position on a support surface, an upwardly-arched arcuate guide channel formed in said frame and extending from one bottom side of the frame to the other bottom side thereof, a pair of manually-operable actuating levers respectively mounted at each side of said frame at the lower end thereof in communication with the ends of said arcuate guide slot, a hollow display section formed in said frame at the central portion thereof, beneath said arcuate guide channel, said display section being divided into a plurality of vertical compartments, the bottom wall of said arcuate guide channel having an elongated gap extending the width of said display section and communicating therewith, and a plurality of disc-like playing pieces each sized for insertion within said frame to a position within one end of said arcuate guide channel overlying the adjacent actuating lever, said playing pieces being also sized for sliding

movement within said guide channel, whereby when said actuating lever is depressed, the playing piece is propelled through the guide channel and falls through said gap into one of the vertical components of said display section.

4,243,228

REMOTELY-PERCEPTIBLE IMPACT-INDICATING PROJECTILE TARGET

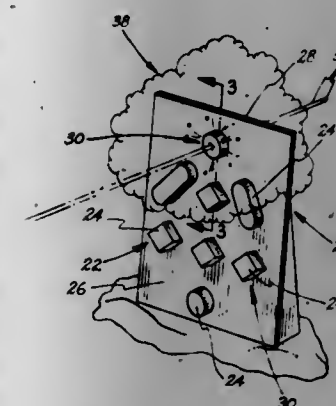
Joseph Marcella, c/o P.O. Box 18948 Dockweiler Station, Los Angeles, Calif. 90007

Filed Oct. 6, 1978, Ser. No. 949,393

Int. Cl.³ F41J 5/00

U.S. Cl. 273-378

2 Claims



- 1. A remotely-perceptible impact-indicating target for a projectile adapted to remotely-perceptibly indicate at a projectile-shooting location the impact of a shot projectile on a remotely located target in a manner clearly visibly perceptibly indicating the impact location of the projectile against the target, comprising: at least one target element comprising a compact closely-assembled quantity of low density impact-expandable target material responsive to projectile impact in an outwardly expandable explosion-simulating extremely visibly perceptible manner creating a cloudburst effect, whereby said shot projectile impacting any portion of said assembly of target material causes only that portion to effectively expand in an explosion simulating manner outwardly from the point of impact of said shot projectile thereon without substantially affecting the composition of adjacent said portions; and target element mounting means for mounting at least one of said target elements for facilitating the positioning thereof at any desired target range location at any desired degree of remoteness from a person intending to shoot one or more projectiles at said target element, wherein a plurality of said target elements are included and are carried by said target element mounting means in a selected target array and wherein said target element mounting means comprises target-material-containing thin sheet means containing a quantity of said target material in a plurality of selected locations and is further provided with a target base sheet positioned relative to said target-material containing thin sheet means in a manner such as to enclose and confine a desired quantity of said target material therebetween in said plurality of target element locations in said selected target array, said base sheet being cooperable with a target-supporting auxiliary structure.

4,243,229

GAME APPARATUS

Melvin Huser, 7400 Dos Rios Way, and Clete Harper, 4124 Granada Ave., both of Bakersfield, Calif. 93309

Filed Jan. 22, 1979, Ser. No. 5,328

Int. Cl.³ A63B 67/06

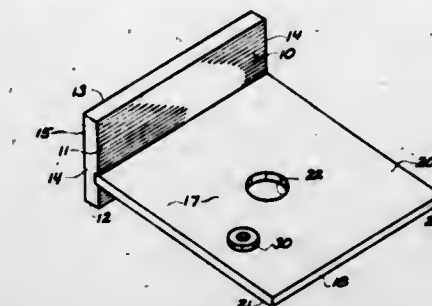
U.S. Cl. 273-402

5 Claims

- 1. In a game apparatus: the combination of: a plurality of circular disks each having a common outer diameter; and a target comprising: an upright rectangular backboard having a transverse front

vertical surface extending between a bottom edge adapted to rest upon a supporting playing surface and an upwardly facing horizontal top edge, the thickness of the backboard across said top edge being greater than one half the outer diameter of said disks;

a square playing board fixed across the front surface of the backboard and having a planar top surface extending forwardly therefrom to a front edge that is adapted to rest on the supporting playing surface;



said playing board intersecting the front surface of the backboard intermediate its top and bottom edges, whereby the top surface of the playing board is forwardly inclined when the target is resting on the supporting playing surface;

and a circular target aperture formed through the top surface of said playing board at the center thereof, the inside diameter of said aperture being slightly greater than the outer diameter of said disks so as to freely pass circular disks dropped therein.

4,243,230

LOW ENERGY TANDEM SEAL

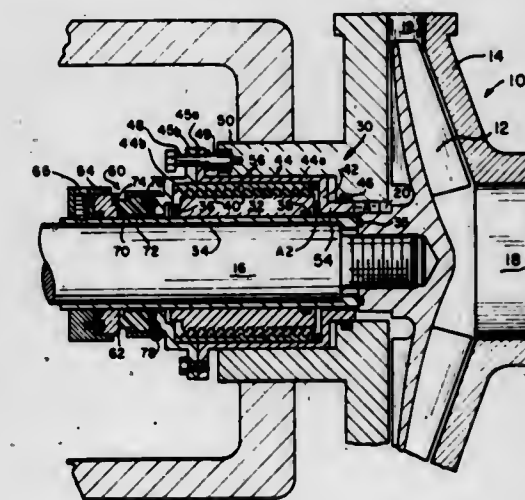
Dorsey L. Baker, West Chicago, and Josef Sedy, Glenview, both of Ill., assignors to Crane Packing Co., Morton Grove, Ill.

Filed Oct. 1, 1979, Ser. No. 80,276

Int. Cl.³ F16J 15/34, 15/40

U.S. Cl. 277-3

20 Claims



1. A tandem, static-dynamic, low energy seal for sealing the space between a housing and a rotating shaft, said seal comprising:

- (a) A first dynamic seal comprising:
 - (1) An axially moveable pressure responsive collar sealingly mounted on said housing concentrically of said shaft;
 - (2) Thread pumping ring means interposed between said collar and said shaft for developing fluid pressure opposing leakage of fluid from said housing and for axially moving said collar upon rotation of said shaft and development of fluid pressure;
- (b) A second static seal for precluding leakage of fluid from said housing when said shaft is not developing sufficient

pressure for axially moving said collar; said seal comprising:

- (1) A first sealing washer sealingly mounted upon said shaft and having a radially extending sealing face;
- (2) A second sealing washer sealingly mounted upon said collar, said second washer having a radially extending sealing face opposing the sealing face of said first washer, said washer being in sealing contact when said shaft is stationary and being separated by said pressure responsive collar upon the development of fluid pressure.

4,243,231

GASKET REINFORCED BY GROMMET IN COMBINATION WITH GRAPHITE SHEET

Minoru Sugawara, Odawara, Japan, assignor to Ishino Gasket Mfg. Co., Ltd., Tokyo, Japan

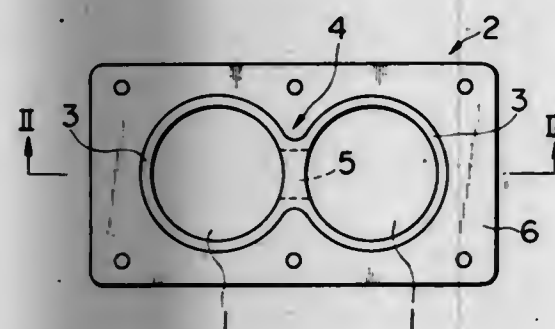
Continuation of Ser. No. 671,687, Mar. 29, 1976, abandoned.

This application Aug. 10, 1979, Ser. No. 65,582

Int. Cl.³ F16J 15/12

U.S. Cl. 277-22

4 Claims



1. A gasket reinforced by grommet in combination with a graphite sheet, comprising:
 - a gasket base sheet with a plurality of holes and having the area between adjoining holes cut out;
 - a graphite sheet mounted in said cut out area between the adjoining holes and having a lamellar crystalline structure; and
 - a grommet mounted on the peripheral edge of said holes and attached to said graphite sheet.

4,243,232

ONE-PIECE OIL SEAL AND BOOT SEAL

James A. Repella, Gastonia, N.C., assignor to Garlock Inc., Longview, Tex.

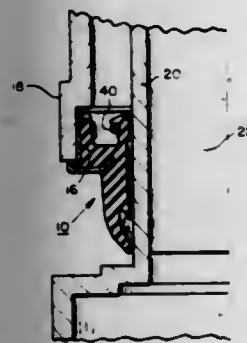
Continuation of Ser. No. 658,775, Feb. 17, 1976, abandoned.

This application Oct. 29, 1979, Ser. No. 89,175

Int. Cl.³ F16J 15/32

U.S. Cl. 277-37

16 Claims



1. Apparatus comprising:
 - (a) a housing having a bore,
 - (b) a shaft extending through said bore and adapted for relative movement with respect to said housing;
 - (c) a seal mounted in said bore for sealing the annular space between said bore and shaft, said seal comprising:
 - (1) an oil seal portion and a boot sleeve portion integral

with said oil seal portion and extending axially outwardly from said oil seal portion;

- (2) said oil seal portion including a mounting portion and a sealing element, said mounting portion including an annular metal shell and said sealing element including an elastomeric body portion bonded to said metal shell, said sealing element also including an annular sealing lip in sealing contact with said shaft;
- (3) said boot sleeve portion including an elongated, shaft-encircling, elastomeric, tubular sleeve extending axially outwardly from said oil seal portion, said elastomeric sleeve being part of an annular, one-piece, elastomeric body which also includes said elastomeric body portion of said sealing element;
- (4) said sleeve having a distal end portion, and said sleeve tapering axially outwardly and radially inwardly toward said distal end portion; said sleeve being flexible and being axially collapsible such that said distal end portion can move axially inwardly by flexing of said sleeve; said distal end portion having an I.D. greater than the I.D. of said shaft such that said distal end portion is spaced away from and out of contact with said distal end portion including the entire end portion of said sleeve including all sleeve surfaces and edges where said surfaces meet and including both the radially outwardly and the radially inwardly facing surfaces thereof;
- (5) said seal also including an annular, elastomeric, intermediate dust lip integral with said elastomeric body and extending radially inwardly and axially outwardly from a radially inner surface of said elastomeric body, said intermediate dust lip being separate from said distal end portion and being located axially inwardly therefrom, and the lip of said intermediate dust lip being located closer to the distal end of said distal end portion than to said sealing lip, said intermediate dust lip being in contact with said shaft; and
- (6) said elastomeric body also including an annular groove directly radially outwardly of said intermediate dust lip in the radially inner surface of said elastomeric body, said groove extending radially outwardly and axially inwardly up into said elastomeric body, whereby said intermediate dust lip can flex radially outwardly into said groove.

4,243,233

SEAL RING HAVING A TAPERED SURFACE, AND A SEALING DEVICE

Yoshio Arai, 1-26-26, Koganehara, Matsudo-shi, Chiba-ken, Japan

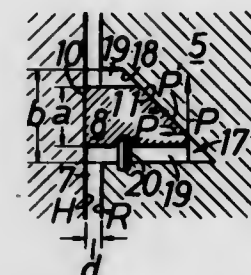
Filed Feb. 6, 1979, Ser. No. 9,834

Claims priority, application Japan, Jun. 12, 1978, 53/70519

Int. Cl.³ F01C 19/08

U.S. Cl. 277-81 P

4 Claims



1. A sealing device adapted to form a seal between the opposing flat surfaces of a stationary member and a rotary member, said device comprising an annular groove formed in said rotary member and having a conical bottom surface spreading radially outwardly toward the flat surface of said rotary member, an annular seal ring accommodated in said annular groove, said seal ring having a flat sealing face formed

4,243,235

COMPOSITE POLYTETRAFLUOROETHYLENE AND ELASTOMER LIP SEAL

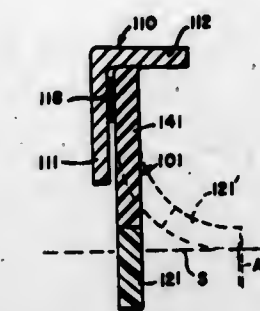
James A. Repella, Southfield, Mich., assignor to The Mather Company, Sylvania, Ohio

Filed Jul. 2, 1979, Ser. No. 54,181

Int. Cl.³ F16J 15/32

U.S. Cl. 277-152

11 Claims



at one end thereof for sealing engagement with said flat surface of said stationary member, and a conical sealing face formed at the other end thereof for sealing engagement with said conical bottom surface of said groove, said seal ring being cut so as to have a radially expanding force, said groove having a radial breadth greater than that of said seal ring, whereby said seal ring is slidable under the action of said radial expanding force along said conical bottom surface of said groove in accordance with a change in the distance between said flat surfaces of said stationary and rotary members or with the increasing wear on said sealing faces of said seal ring to thereby urge at all times said flat and conical sealing faces in intimate sealing contact with the flat surface of said stationary member and the conical bottom surface of said groove of said rotary member, respectively.

4,243,234

SEAL AND SEAL ASSEMBLY

James G. Blaha, Painesville, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US79/00026, 8371 Date Jan. 18, 1979, 8102(e)

Date Jan. 18, 1979, PCT Pub. No. WO 80/01505, PCT Pub.

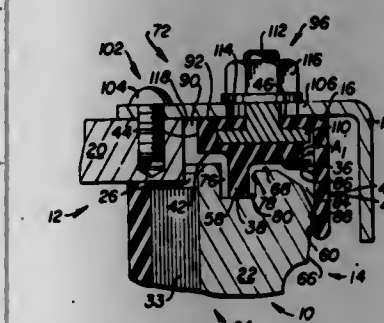
Date Jul. 24, 1980

This PCT application filed Jan. 18, 1979, Ser. No. 12,162

Int. Cl.³ F16J 15/32, 15/34

U.S. Cl. 277-84

22 Claims



1. A seal assembly (10), comprising:
 - a first member (12);
 - a second member (14) having an outer surface (66), a face (68) and a central axis (70), said outer surface (66) being oriented generally along said central axis (70), said face (68) having an annular opening (76) and extending inwardly from said outer surface (66) in a direction toward said central axis (70), said annular opening (76) having sidewalls (78) and a bottom surface (80), said first and second members (12,14) being rotatable one relative to the other;
 - first means (28) for supporting said first and second members (12,14) in rotation one relative to the other;
 - a body (36) having first and second end portions (50,52) and a first side (42) and being positioned adjacent and about said annular opening (76);
 - a first leg (38) having a sealing surface (58) and being connected to the second end portion (52) of the body (36) and extending outwardly from the first side (42) of the body (36) into said annular opening (76), said sealing surface (58) being in sealing, slidable contact with the face (68) of the second member (14) in said annular opening (76);
 - a second leg (40) having a sealing surface (60) and being connected to the second end portion (52) of the body (36) and extending outwardly from the first side (42) of the body (36), said sealing surface (60) being in sealing, slidable contact with the second member (14) radially relative to said central axis (70) at the outer surface (66) of said second member (14); and
 - second means (72) for sealably connecting said body (36) to said first member (12).

4,243,236

SPLIT-JAW LATHE CHUCK WITH ROTARY COUPLING MEMBERS

Gip - öhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

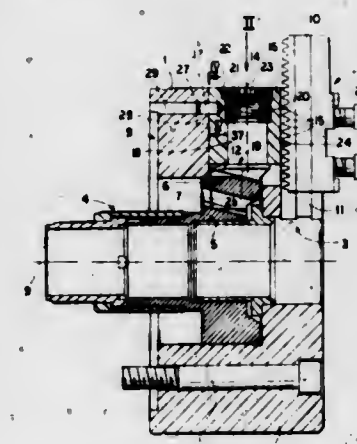
Filed May 18, 1979, Ser. No. 40,127

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821910

Int. Cl.³ B23B 31/14

U.S. Cl. 279-110

9 Claims



1. A lathe chuck comprising:
 - a chuck body rotatable about a chuck axis and formed with a plurality of angularly spaced and radially extending inner guides and with a plurality of angularly spaced and radially extending outer guides;
 - respective inner jaw parts radially displaceable in said body in said inner guides;
 - means including at least one operator engageable with said inner jaw parts for radially displacing same in said chuck body in the respective inner guides;
 - respective outer jaw parts projecting axially forwardly from said chuck body and radially displaceable therein in said outer guides;
 - respective coupling members between said inner jaw parts and the respective outer jaw parts and displaceable rotationally about respective coupler axes generally radial of said chuck axis between coupling positions engaging both of the respective parts and coupling same together for

joint radial displacement and angularly offset decoupling positions for relative radial displacement of the respective parts; and means including respective locking elements operatively engageable between said inner jaw parts and said chuck body for blocking radial displacement of said inner jaw parts except when the respective coupling member is in said coupling position.

4,243,237

FORCE-COMPENSATED SPLIT-JAW LATHE CHUCK
Günter H. Röhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

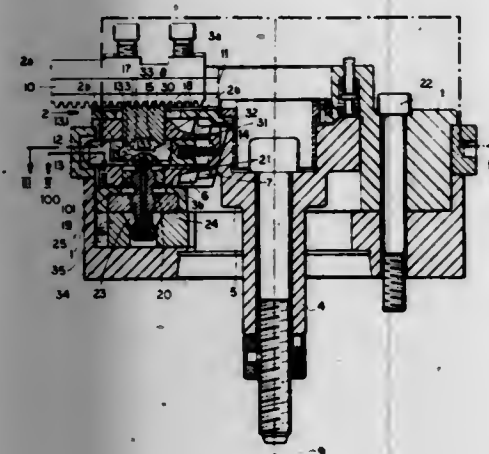
Filed May 18, 1979, Ser. No. 40,128

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836191; Oct. 17, 1978, 2845133

Int. Cl.³ B23B 31/14

U.S. Cl. 279—121

10 Claims



1. A lathe chuck comprising:
a chuck body rotatable about a chuck axis and formed with a plurality of angularly spaced and radially extending inner guides and with a plurality of angularly spaced and radially extending outer guides;
respective inner and outer jaw parts radially displaceable in said chuck body in said inner and outer guides;
means including at least one operating element engageable with said inner jaw parts for radially displacing same in said chuck body in the respective inner guides;
respective coupling members axially displaceable in said inner jaw parts and each displaceable between a coupling position engaging the respective outer jaw part and coupling same to the respective inner jaw part for joint radial movement and a decoupling position for relative radial displacement of the respective jaw parts;
respective cams radially displaceable in said inner jaw parts in engagement with the respective coupling members between radially outer positions holding the respective coupling members in said coupling positions and radially inner positions in which the respective coupling members can assume said decoupling positions;
respective springs braced against said cams and urging same radially outwardly into said outer positions; and
a release ring rotatable on said chuck about said axis and formed with at least one radially inwardly extending projection engageable with said cams to move same into said inner positions against the force of the respective springs.

4,243,238
SLED

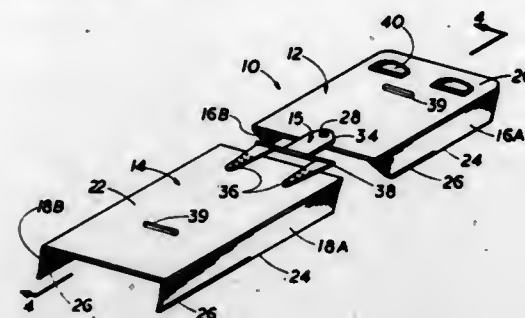
Marvin L. Johnson, 4236 Bayberry, Louisville, Ky. 40216

Filed Jul. 14, 1978, Ser. No. 924,502

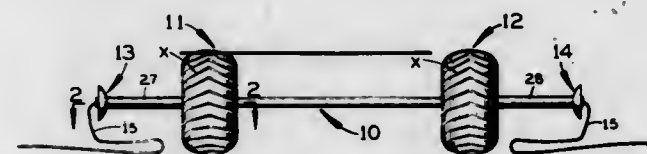
Int. Cl.³ B62B 13/08

U.S. Cl. 280—20

9 Claims



1. A sled comprising
a load supporting forward steerable member,
a load supporting trailing member spaced behind said forward member,
means hingably connecting said forward and trailing members together for turning said members relative to one another in a horizontal plane and for tilting said members relative to one another in a vertical plane,
hand gripping means connected to said forward member for selectively turning and tilting said members relative to one another for respectively altering the direction of movement of said sled for braking the momentum thereof, and
runners formed on opposite side edge portions of said forward and trailing members having bottom surfaces tapered away from a weight supporting surface of each of said members as said surfaces extend from the front to the rear of said runners.



4,243,239

CATAMARAN DOLLY

Russell A. Whitney, 1350 River Reach Dr., Apt. 102, Fort Lauderdale, Fla. 33315

Filed Sep. 29, 1978, Ser. No. 947,267

Int. Cl.³ B60P 3/10; F16C 19/46

U.S. Cl. 280—47.13 B

12 Claims

1. In a dolly for a catamaran, said dolly having an axle and a pair of ground wheels having rims spaced apart along said axle, the improvement wherein:
each of said ground wheels has an inflatable, soft-walled, low pressure tire which under the weight of the catamaran is expandable axially at its ground-engaging tread to maintain a load of less than about 2 pounds per square inch on the tire thereat;
and further comprising plastic anti-friction bearings engaged between the axle and each wheel to permit rotation of the axle within the wheels;
and wherein said anti-friction bearings have metal races comprised of the axle and the rims and are needle bearings of self-lubricating plastic material due to wear and accumulation of plastic on said races.

4,243,240

STEERING STABILIZER FOR MOTOR VEHICLES

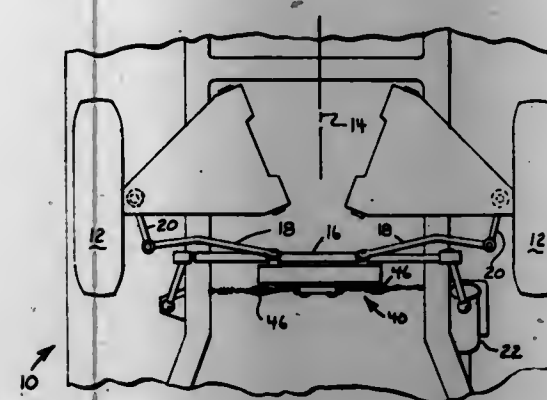
William W. Shepherd, Sr., Lithonia, Ga., assignor to International Safety Industries Ltd., Atlanta, Ga.

Filed Aug. 28, 1978, Ser. No. 937,101

Int. Cl.³ B62D 1/00

U.S. Cl. 280—94

5 Claims



1. A steering stabilizer for a motor vehicle having a steerable wheel rotatably mounted to each side of the vehicle centerline and coupled with a steering mechanism, and with the stabilizer comprising, in combination, a housing mounted to the vehicle steering mechanism; a pair of compression springs positioned within said housing; a coupler movably mounted to said housing with a portion of the coupler positioned between and in spring biasing engagement with said compression springs and with said coupler being fastened to the vehicle frame to each side of the vehicle centerline by fastening means that includes a tension spring located at opposite sides of the vehicle centerline.

4,243,241

BICYCLE REFLECTOR AND SPLASH GUARD

Alden B. Davis, 8022 E. Whitton, Scottsdale, Ariz. 85251

Continuation-in-part of Ser. No. 853,288, Nov. 21, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,134

Int. Cl.³ B60J 1/68

U.S. Cl. 280—158.1

2 Claims



1. A splash guard for use in a bicycle having a frame and at least one uncovered wheel, comprising:
a. a clamp, having a U-shaped cross-section, for attachment to the frame of said bicycle, said clamp extending from said bicycle frame to form a channel, and having a detent extending into said channel from at least one side thereof;
b. an arm pivotally secured at one end to said clamp for pivotal motion between a guard position supported in and

in contact with said channel, and a store position maintained at a substantially right angle to said channel by said detents, said arm pivotal in a plane substantially parallel to the plane of said wheel;

c. said arm including a second end formed into a hook-shaped supporting frame extending in a plane perpendicular to the plane of said wheel, said frame extending over the periphery of said wheel; and
d. a molded reflecting splash guard having a plurality of flexible fingers molded integrally therewith, said splash guard molded in said frame with said fingers extending into contact with the periphery of said wheel when said arm is in said guard position and out of contact with said wheel when said guard is in said store position, said splash guard having a reflecting portion molded in one side thereof to reflect light striking said splash guard when in the store position.

4,243,242

EXPANSIBLE BOAT TRAILER

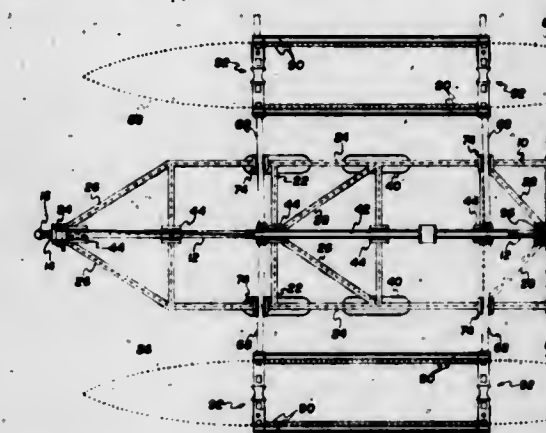
Gregory D. Waits, 766 Galt Dr., San Diego, Calif. 92021

Filed Apr. 24, 1979, Ser. No. 32,530

Int. Cl.³ B60P 3/10

U.S. Cl. 280—414 R

8 Claims



1. A trailer for carrying a vessel having two movable hulls which move from an expanded spaced mode for sailing to a collapsed mode for transport, said trailer comprising:
(a) a rigid vessel support frame mounted on wheels;
(b) a plurality of loadbeam guide pairs longitudinally spaced along and mounted to said frame with the individual guides of each pair being laterally spaced on opposite sides of the longitudinal and centerline of said frame;
(c) a longitudinally extended traveling beam disposed along the centerline of said frame and being mounted to said frame for longitudinal movement;
(d) a plurality of outrigger load beam pairs each comprising a left and right beam and being slidably engaged in said guides and pivoted by their inboard ends at longitudinally spaced positions to said traveling beam;
(e) left and right hull cradle assemblies pivoted respectively to the outer ends of said left and right outrigger beams, whereby a pair of vessel hulls carried in said cradle assemblies can be selectively moved between said expanded mode and said collapsed mode by longitudinal movement of said traveling beam.

4,243,243

STABILIZING HITCH

John H. Edmisten, P.O. Box 293, Boone, N.C. 28607

Filed Jul. 10, 1979, Ser. No. 56,211

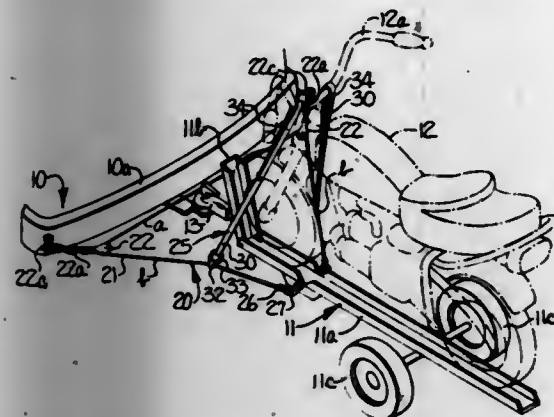
Int. Cl.³ B60D 7/00

U.S. Cl. 280—446 B

10 Claims

1. A load stabilizing hitch arrangement for use with a trailer swivelly connected to a towing vehicle and adapted to support a generally upright load; said hitch arrangement comprising an elongate pliable element having opposite end portions adapted

to be detachably connected to a forward lower portion of the trailer, guide means adapted to be mounted on a lower rear portion of the towing vehicle, and being arranged to impart to the pliable element a generally triangular configuration in plan in which the pliable element includes a front run extending generally laterally of the towing vehicle with a pair of opposing substantially horizontal side runs thereof extending rearwardly from said front run and adjacent opposite sides of the



trailer such that said pliable element may move relative to said guide means and the towing vehicle when the towing vehicle is turning while pulling the trailer through a turn, and tie-down means connected to medial portions of the opposing side runs of said pliable element and adapted to be attached to an upper portion of the upright load, to aid in restraining the upright load from tilting sideways on the trailer when pulled through a turn by the towing vehicle.

4,243,244 SKI BRAKE

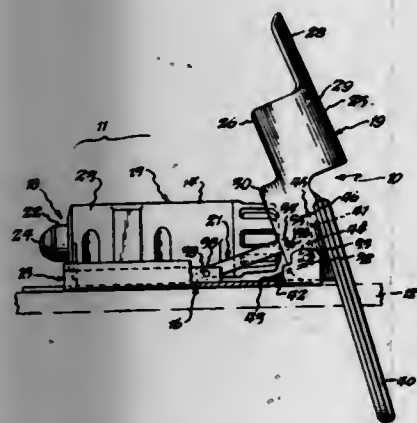
Douglas L. Replogle, Amherst, N.Y., assignor to Moog Recreational Products, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 9,141, Feb. 5, 1979. This application Jan. 14, 1979, Ser. No. 48,645

Int. Cl.³ A63C 5/00

U.S. Cl. 280—605

5 Claims



1. In a resiliently-loaded ski binding wherein a boot assembly is releasably secured to a ski by loading means including a first component engageable with a second component, said ski binding including a slide mount for selectively moving one of said components relative to the other of said components, and wherein said slide mount includes a rail mounted on one of said boot assembly and ski and having a channel aligned with the other of said components, a slide carrying the other of said components and operatively mounted on said rail for movement along said channel relative to said one component, and a lever pivotally mounted on one of said rail and slide and connected to the other of said rail and slide and adapted to be moved between a raised position and a lowered position to move said slide relative to said rail, the improvement which comprises:

a ski brake mounted on said lever and adapted to prevent

unintended travel of said ski after said boot assembly has separated therefrom, said ski brake including at least one link having one marginal end portion pivotally connected to said lever and having another marginal end portion pivotally connected to said other of said rail and slide, the pivotal connection between said link and lever being below the pivotal axis of said lever when said lever is in said lowered position; at least one extension mounted on said lever for movement therewith, said extension being configured to extend below said ski when said lever is in said raised position; and resilient means arranged to urge said lever to move toward said raised position.

4,243,245 SAFETY SKI BINDING

Erwin Krob, Vienna, Austria, assignor to TMC Corporation, Zug, Switzerland

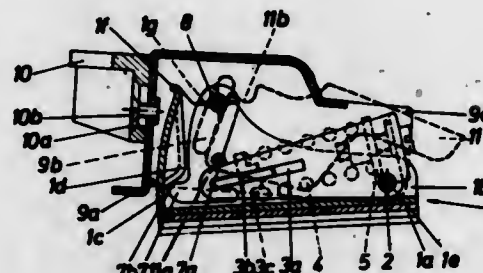
Filed Jan. 5, 1979, Ser. No. 1,363

Claims priority, application Austria, Jan. 5, 1978, 73/78

Int. Cl.³ A63C 9/08

U.S. Cl. 280—626

19 Claims



1. In a safety ski binding having a base member having means defining one of a locking projection and recess thereon, sole holder means pivotally supported to said base member for movement about a first pivot axis, support means pivotally supported to said base member for movement about a second pivot axis, said support means including a movable locking part thereon, a locking member and pivotal support means pivotally supporting said locking member on said sole holder means, said locking member having the other of said locking projections and said recess thereon and engaging said one of said locking projection and said recess when said sole holder means is in a position of use, resilient means mounted on and movable with said support means, said resilient means being positioned between and engaging said support means and said locking part to resiliently urge said locking part into engagement with said locking member so that said locking member is also urged by said resilient means into engagement with said one of said locking projection and said recess, one of said locking projection and said recess being maintained in engagement with said other of said locking projection and said recess by the force of said resilient means, and release lever means pivotally supported on said sole holder means for movement between first and second limit positions about a third pivot axis, the improvement comprising wherein said release lever means includes a locking step means, wherein said sole holder means includes means defining an elongated and arcuate slot having a radius whose center is coincident with said first pivot axis, wherein said pivotal support means includes an elongated bolt extending transversely with respect to the longitudinal axis of said ski and pivotally supporting said locking member, the lateral ends of said bolt being slidably received in said elongated and arcuate slot means, said locking step means blocking a sliding of said bolt in said slot means when said release lever means is at said first limit to restrict the pivotal movement of said sole holder means so that it will be against the urging of said resilient means and wherein yieldable means are provided for yieldably holding said release lever means at said first limit position, whereby a movement of said release lever means to

said second limit will remove said locking step means from a blocking relationship with said bolt so that said bolt will slide in said slot means and said sole holder means will be freely pivotal about said first pivot axis.

4,243,246 SAFETY BINDING FOR SKIING BOOTS

Erwin Weigl, Braun a.Gebirge, Austria, assignor to Polyair Produkt Design GmbH, Kittsee, Austria

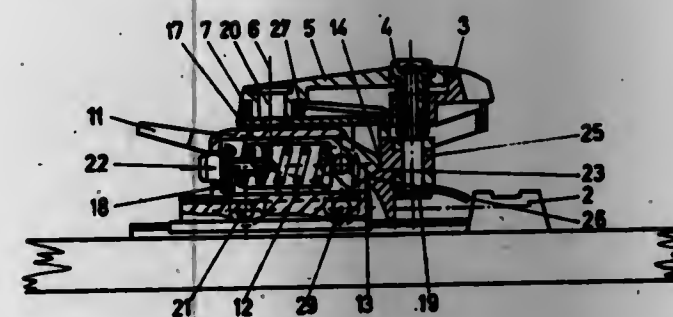
Filed Nov. 8, 1978, Ser. No. 958,821

Claims priority, application Austria, Nov. 11, 1977, 8076/77

Int. Cl.³ A63C 9/08

U.S. Cl. 280—628

7 Claims



1. A safety binding for skiing boots, comprising a toe holder, a heel holder, a spring-loaded locking member, which is mounted to be displaceable in the direction of its longitudinal axis against a spring force and has a convexly curved head which cooperates with a concavely curved surface of a keeper, which is connected to the heel holder and is pivotally movable relative to the longitudinal axis of the locking member, wherein the concavely curved surface of the keeper has different radii of curvature in a vertical plane and in a horizontal plane and the heel holder is pivoted on a horizontal axis and on a vertical axis, characterized in that the head of the locking member is crowned to conform to the concavely curved surface and has an intermediate portion which in a horizontal plane has a larger radius of curvature and is substantially flat, and that the keeper formed with the concavely curved surface is detachably connected to the heel holder, and that the horizontal and vertical pivotal axes of the heel holder cross each other and are spaced different distances from the forward edge of the heel holder, exceeding the smallest distance from the point of contact between the head of the locking member and the keeper to said forward edge which faces the toe holder or the boot, and the distance from the horizontal pivotal axis of the heel holder to the forward edge of the heel holder exceeds the distance from the vertical axis of the heel holder to said forward edge which faces the toe holder or the boot.

4,243,247 SUSPENSION HEIGHT ADJUSTING MECHANISM IN TORSION-BAR SUSPENSION SYSTEM

Shunpei Katsuka, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 28, 1978, Ser. No. 973,887

Claims priority, application Japan, Dec. 29, 1977, 52-199504

Int. Cl.³ B60G 11/18

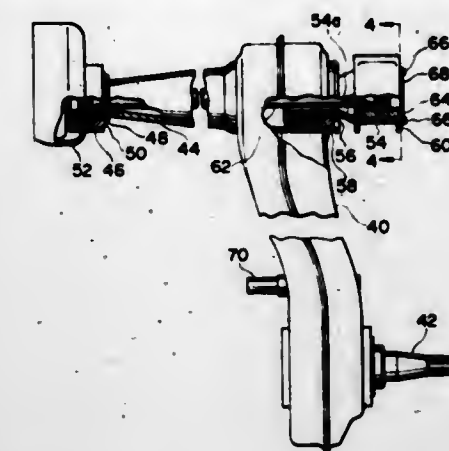
U.S. Cl. 280—700

12 Claims

1. In a torsion-bar suspension system for a wheeled vehicle including a torque tube rotatably connected at its ends to the body of a vehicle, a suspension arm secured at its one end to the torque tube and rotatably carrying at its other end a road wheel of the vehicle, a bracket secured to the vehicle body and a torsion bar disposed within the torque tube and having one end connected to the torque tube and the other end connected to the bracket, a suspension height adjusting mechanism comprising:

a sleeve member receiving therewithin said other end of the torsion bar and secured to said bracket; and a hollow adapter member fittingly interposed between said

other end of the torsion bar and said sleeve member in such a manner as to be axially movable but prevented



from rotating with respect to both said torsion bar and said sleeve member.

4,243,248 AIR BAG SYSTEM FOR THE PROTECTION OF THE PASSENGERS OF MOTOR VEHICLES IN CASE OF ACCIDENTS

Hansjürgen Scholz, Waldenbuch; Hans-Gerd Backhaus, Stuttgart, and Luigi Brambilla, Bülbingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

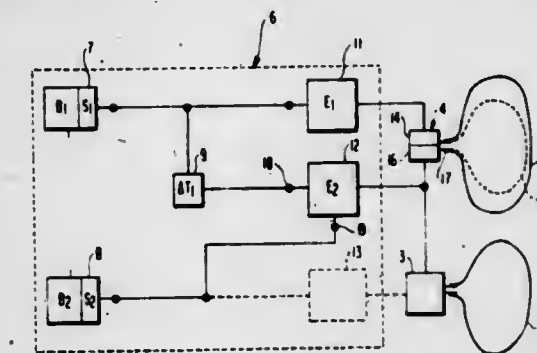
Filed Oct. 6, 1978, Ser. No. 949,243

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2745620

Int. Cl.³ B60R 21/08

U.S. Cl. 280—735

15 Claims



1. In an airbag system for protecting the occupants of an automotive vehicle during collisions, the airbag system including airbags for the driver and front-seat passenger, and a sensor system for detecting the increase in deceleration of the vehicle during a collision and for triggering controlled inflation of the airbags in accordance with the detected increase in deceleration, the airbag associated with the front-seat passenger being inflatable in two stages, the first inflation stage being triggerable in response to an output signal from the sensor system generated when the detected increase in deceleration is one of equal to and greater than a first threshold value, and the second inflation stage being triggerable in response to an output signal from the sensor system generated when the detected increase is one of equal to and greater than a second threshold value which is higher than the first threshold value, the airbag associated with the driver being inflatable only when the second threshold value has been one of equalled and exceeded, the improvement in that the sensor system comprises first delay means for delaying at least the triggering of the first inflation stage by a first predetermined delay time period, the sensor system further comprising detector means for detecting the increase in deceleration of the vehicle and providing an output indicative thereof, threshold means for comparing the detected

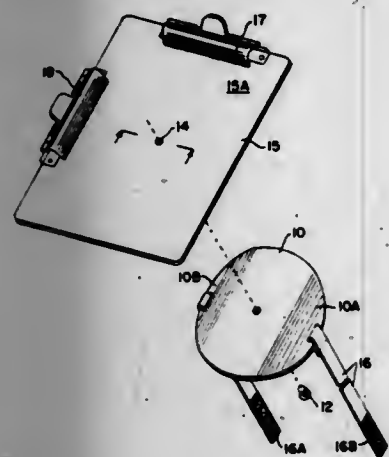
output signal with at least one of the first and second threshold values and providing an output signal when at least one of the first and second threshold values are at least one of equalled and exceeded, and triggering means responsive to the threshold means for controlling triggering of the airbags, the threshold means including a first threshold value means set at the first threshold value and associated with the detector means and a second threshold value means set at the second threshold value and associated with the detector means, and the triggering means including at least first trigger means for triggering the first inflation stage and second trigger means for triggering at least the second inflation stage, the first threshold value means providing an output signal to the first trigger means and to the first delay means, the first delay means providing a delayed output signal to the second trigger means, the second threshold value means providing an output signal to the second trigger means, the second trigger means triggering at least the second inflation stage in response to the delayed signal and the output signal of the second threshold value means.

4,243,249

DOCUMENT HOLDER ASSEMBLY

H. Calvin Gees, 8035 Brittany Pl., Pittsburgh, Pa. 15235
Filed Apr. 20, 1978, Ser. No. 897,974
Int. Cl.³ B42D 17/00

U.S. Cl. 281—1



1. A document holder assembly for use by personnel such as a pilot and navigator on board an aircraft to maintain a log and for access to documents including a flight plan, approach charts or the like, said holder assembly including the combination of:

a support base including bent edge portions at opposite sides each having a strap-receiving opening,
strap means engaging the strap-receiving opening in said support base for attachment thereto for support at a desired location,
a carrier plate having a rigid face surface to support said documents for continuous accessible use by said personnel,

two document clamp members secured to said carrier plate to extend along two adjoining sides thereof to releasably retain individual documents while superimposed on the face surface of the carrier plate whereby lifting of the upper document while retained by one document clamp member exposes an underlying document while retained by the other document clamp member, and

a pivot to interconnect said carrier plate and said support base in a superimposed manner for rotational positioning of documents while retained on the carrier plate by said clamp members relative to said support base.

4,243,250

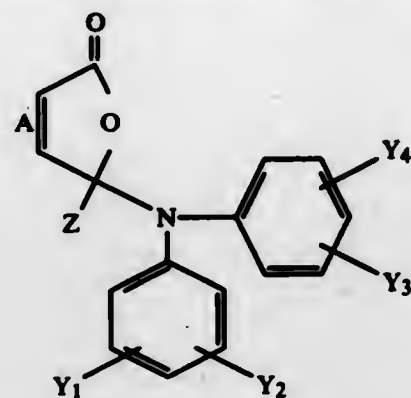
CARBONLESS DUPLICATING SYSTEMS

Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.
Continuation-in-part of Ser. No. 968,082, Dec. 11, 1978, Pat. No. 4,211,872. This application Jan. 14, 1979, Ser. No. 48,534
Int. Cl.³ B41M 5/16, 5/18, 5/22

U.S. Cl. 282—27.5

7 Claims

1. A pressure-sensitive carbonless duplicating system or thermal marking system comprising a support sheet coated with a color-forming compound having the formula

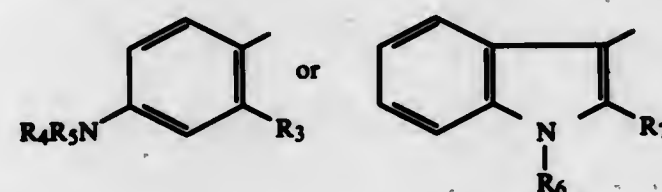


wherein A is



3 Claims

Y₁, Y₂, Y₃ and Y₄ are the same or different and are selected from the group consisting of hydrogen, halo, lower alkoxy, alkyl having from 1 to 9 carbon atoms, phenyl-lower-alkyl and NR₁R₂ where R₁ is hydrogen or lower alkyl and R₂ is hydrogen, lower alkyl, lower alkanoyl, phenylsulfonyl or lower-alkyl-substituted phenylsulfonyl;
Z is



in which:

R₃ is hydrogen, lower alkyl, lower alkoxy, halo or di-lower-alkylamino;
R₄ is lower alkyl;
R₅ is lower-alkyl or benzyl;
R₆ is hydrogen or non-tertiary alkyl having from 1 to 18 carbon atoms; and
R₇ is hydrogen, phenyl or non-tertiary lower alkyl.

4,243,251

FLOOR OR ROOF DRAIN FITTING

William W. Lindquist, 190 Clarencedale Ave., Youngstown, Ohio 44512

Filed Sep. 28, 1979, Ser. No. 80,077

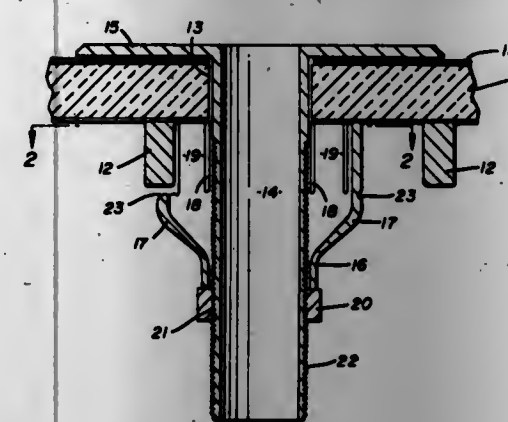
Int. Cl.³ F16L 5/00

U.S. Cl. 285—4

5 Claims

1. A floor or roof drain fitting comprising a tubular member having a flat outwardly extending annular flange about one end thereof, a sleeve slidably disposed on said fitting in spaced relation to said flange and means on said fitting for urging said sleeve towards said flange in a clamping-like action, said sleeve having an area of enlarged diameter incorporating a plurality

of circumferentially spaced slots arranged in parallel relation to said tubular member, the portions of said sleeve between



said slots being adapted to be broken away so as to change the configuration of said sleeve.

4,243,252

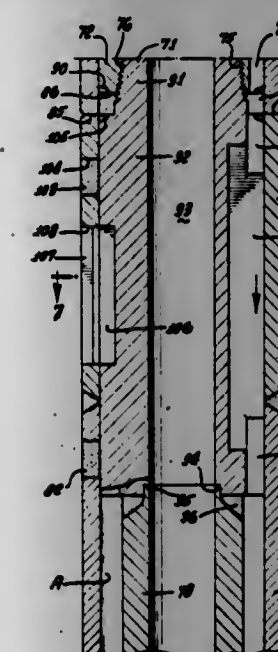
DUAL CONCENTRIC PIPE JOINT

Gary R. Johnson, Yorba Linda, Calif., assignor to Tri-State Oil Tool Industries, Inc., Boulder City, La.
Division of Ser. No. 854,132, Nov. 23, 1977, Pat. No. 4,187,920.
This application Jan. 18, 1979, Ser. No. 4,410

Int. Cl.³ F16L 53/00

U.S. Cl. 285—39

4 Claims



1. Dual concentric drill pipe structure comprising: a pin structure and a box structure; each of said structures including an inner tubular member having a central passage there-through; an outer tubular member disposed about and connected to the inner tubular member; one of said members of each structure having longitudinal fluid passages therein; said inner member of said pin structure having a threaded pin thereon; the inner member of said box structure having a threaded box receiving said pin; said outer members having transverse shoulders in abutting engagement and with said longitudinal fluid passages in communication with each other; said inner members of said structures providing opposed transversely extended surfaces between said pin and box; sealing means between said transversely extended surfaces to prevent fluid flow between said central passages and said longitudinal fluid passages; and longitudinally extended concentric tubular bodies connected to the respective inner and outer tubular members and forming an annular space communicating with said fluid passages; at least one of said pin and box structures having longitudinally extended, outwardly opening radial slots offset from said longitudinal fluid passages defined by walls on both said inner and outer members for receiving a tool.

4,243,253

FLEXIBLE CONDUIT CONSTRUCTION AND METHOD OF MAKING THE SAME

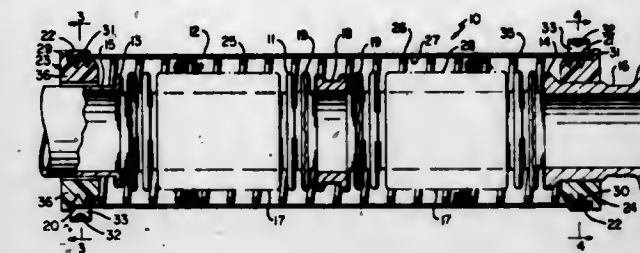
Arden D. Rogers, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 24, 1979, Ser. No. 6,000

Int. Cl.³ F16L 11/12

U.S. Cl. 285—45

11 Claims



1. In a flexible conduit construction having an inner flexible tubular member and having an outer flexible tubular member telescoped about said inner tubular member with the internal peripheral surface of said outer tubular member in spaced relation from the outer peripheral surface of said inner tubular member throughout the length of said inner tubular member to protect the same, said outer tubular member having opposed ends and being formed of a material that radially expands when said opposed ends are placed under axial compression and that radially contracts when said opposed ends are placed under axial tension, said construction having end members respectively secured to said opposed ends of said outer tubular member, the improvement comprising resilient means disposed about said inner tubular member in spaced relation therewith and engaging said internal peripheral surface of said outer tubular member to hold said internal peripheral surface in spaced relation relative to said outer peripheral surface of said inner tubular member even when said tubular members are in an arcuately flexed condition, said resilient means comprising a coiled compression spring having opposed ends respectively secured to said end members, said outer tubular member being under axial tension between said end members and thereby having said internal peripheral surface thereof disposed in radial compression against said coiled compression spring.

4,243,254

SLIP FIT TYPE TUBING COUPLING

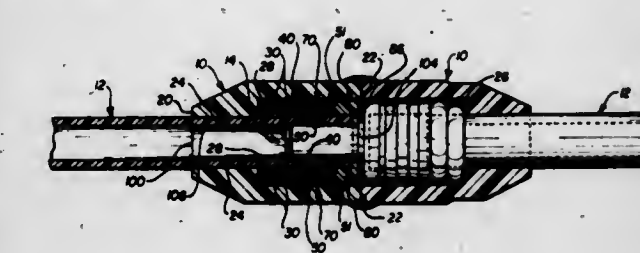
Donald C. Hill, Pasadena, and Robert W. Lyall, Fountain Valley, both of Calif., assignors to R. W. Lyall & Co., Inc., Santa Fe Springs, Calif.

Filed Jan. 2, 1979, Ser. No. 169

Int. Cl.³ F16L 33/18

U.S. Cl. 285—242

13 Claims



1. A threadless slip fit type coupling for connecting an end portion of a smooth wall tubing to fittings or other tubing, comprising:

(a) a generally cylindrical housing member having an outer insert end for tubing and an inner mounting end, said housing member having a tubing receiving bore through a portion of its outer end and a larger diameter bore extending through the remainder of said housing and opening from said tubing receiving bore to said inner end to define a circular cavity with a generally radially extending rear offset wall,

- (b) annular seal means disposed in said cavity adjacent said offset wall,
 (c) seal spacer means located adjacent said seal means,
 (d) at least one annular lock ring means located adjacent said spacer means, said lock ring means having a first radially inwardly extending and concave outer side surface facing said spacer means and a second radially inwardly extending and crowned inner side surface on its opposite side, and further having an internal surface angling from a larger diameter on said first surface to a smaller diameter on said second surface to define a pipe gripping edge, said lock ring also having a peripheral surface in which the external diameter of said first surface is greater than the external diameter of said second surface so that said peripheral surface is disposed at an angle to the wall of said larger bore,
 (e) an annular removable retainer member received in said cavity at the inner end of said housing for holding said seal means and lock ring means in place, and
 (f) cylindrical stiffener means within said housing to be received in said tubing when tubing is inserted in said coupling housing.

4,243,255

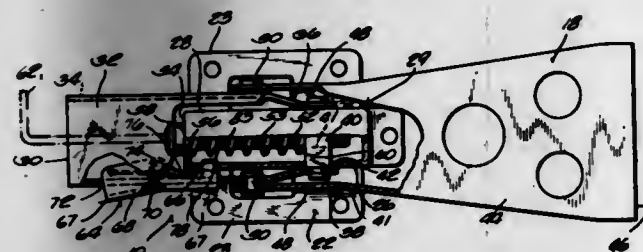
LOW SILHOUETTE ADJUSTABLE LATCH WITH SECONDARY LOCK

Alexander Hornak, Ramsey, N.J., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Apr. 6, 1979, Ser. No. 27,623
 Int. Cl.³ E05C 5/02

U.S. Cl. 292-113

6 Claims



1. In a latch for joining two adjacent members including, an integral base and housing adapted to be secured to one of the members; a handle pivot with its axis transversely disposed and extending through the forward portion of the housing; a handle having a pair of legs attached by their ends to the handle pivot outwardly of the housing and joined rearwardly of the housing by integral side flanges and a top surface to form a channel-like longitudinal opening; a drawhook disposed forwardly of the housing, adapted to engage a catch on the other of the members, and having a pair of rearwardly extending arms each pivotally attached at its end to one of the legs of the handle rearwardly of and nearer the base than the handle pivot; the improvement comprising:

- (1) means in the housing permitting limited longitudinal movement of the handle pivot;
- (2) an end wall closing the rear of the housing;
- (3) an adjustment screw disposed longitudinally within the housing and having one end in threaded engagement with the handle pivot and a headed opposite end journaled in the housing end wall with its head bearing on the outer surface thereof;
- (4) means on the head of the adjustment screw engageable externally of the latch by a tool extending through the channel-like opening in the handle on the axis of the screw for turning the same;
- (5) locking means on the handle generally disposed and operable in a plane through the axis of the adjustment screw parallel to the base and offset laterally from said axis, said locking means adapted to releasably secure the handle to the housing against rotation thereof about the handle pivot.

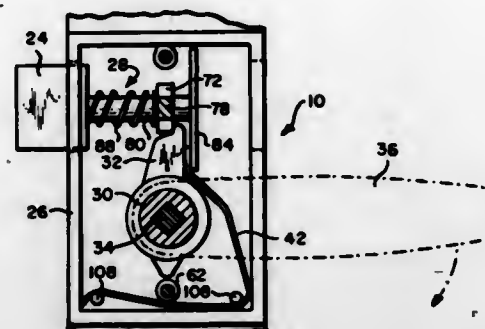
4,243,256 NARROW STYLE SURFACE MOUNTED REVERSIBLE LATCH

Robert R. Frydrych, 71-54 58th Rd., Maspeth, N.Y. 11378
 Filed Oct. 2, 1978, Ser. No. 948,005

Int. Cl.² E05C 1/16

U.S. Cl. 292-245

8 Claims



1. A reversible door latch usable on both right-handed and left-handed doors comprising:
 a housing mountable on the exterior of a door, said housing having confronting side walls, each side wall having an opening therein;
 a latch member including a latch bolt; means for movably supporting said latch member in either a first initial position in which said latch bolt protrudes through one of said openings or a second initial position in which said latch bolt protrudes through the other of said openings;
 a camming member operatively connected to said latch bolt and movable from a first position to a second position for axially moving said latch bolt into said housing through said one opening to a first retracted position when said latch member is in said first initial position and for axially moving said latch bolt into said housing through said other opening to a second retracted position when said latch member is in said second initial position;
 a handle rotatably secured to said housing and operatively connected to said camming member, rotation of said handle from an initial position to a final position effecting movement of said camming member from said first position to said second position; and
 means for biasing said latch member to said initial position, said camming member to said first position and said handle to said initial position.

4,243,257

GRIPPER MECHANISM

Geoffrey G. Shackelford, Basingstoke, England, assignor to Lansing Bagnall Limited, Hampshire, England

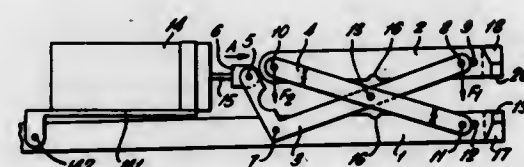
Filed Apr. 5, 1979, Ser. No. 27,602

Claims priority, application United Kingdom, Apr. 4, 1978, 13190/78

Int. Cl.³ B25B 1/00

U.S. Cl. 294-88

5 Claims



1. A mechanical robot gripper hand comprising:
 (a) an elongate support member defining a first jaw;
 (b) a movable member disposed generally parallel to said support member, said movable member including a second jaw in confronting relationship with said first jaw;
 (c) means including a parallel movement mechanical linkage for constraining said movable member to move laterally without rotation so as to open and close said jaws;

- (d) an actuator having a stroke along said support member; and
 (e) means for mechanically coupling said stroke to said linkage for operating said jaws.

4,243,258

TREE HARVESTER

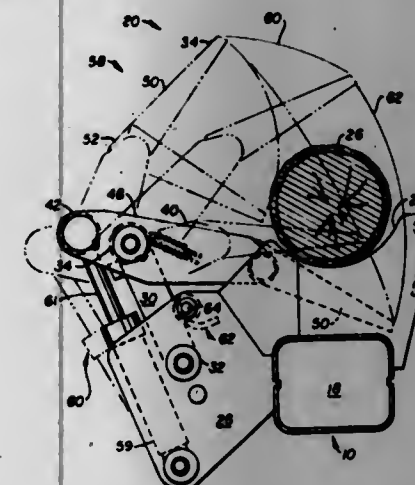
Fred R. Denwelder, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00131, 8371 Date Mar. 5, 1979, 8102(a)
 Date Mar. 5, 1979, PCT Pub. No. WO 80/01865, PCT Pub. Date Sep. 18, 1980

This PCT application filed Mar. 5, 1979, Ser. No. 38,984
 Int. Cl.³ A01G 23/08

U.S. Cl. 294-88

9 Claims



1. A tree accumulating apparatus (20) for a multiple tree harvester (12) for accumulating trees (26) one at a time, said tree harvester (12) having a frame (18) comprising:
 a first member (30) having a first end portion (32) pivotally connected to the frame (18), a second end portion (34), and a longitudinal axis (36);
 a second member (40) having first and second end portions (42,44), a middle portion (46), and a longitudinal axis (48), said middle portion (46), being pivotally connected to the second end portion (34) of the first member (30), said second member (40) being movable relative to the first member (30) between an open position and a closed position;
 means (70) for holding the second member (40) in one of the open and closed positions;
 means (60) for pivotally moving the second member (40) about the second end portion (34) of the first member (30);
 a third member (50) having a first end portion (52) pivotally connected to the second end portion (44) of the second member (40), a second, free end portion (54), and a longitudinal axis (56); and
 biasing means (66) for urging the third member (50) towards a position at which the axes (48,56) of the second and third members (40,50) form a preselected angle.

4,243,259

PET FECES PICK-UP DEVICE

Ralph J. Wright, Emeryville, Calif., assignor to Rita M. Dixon, Emeryville, Calif.

Filed Feb. 21, 1979, Ser. No. 13,127

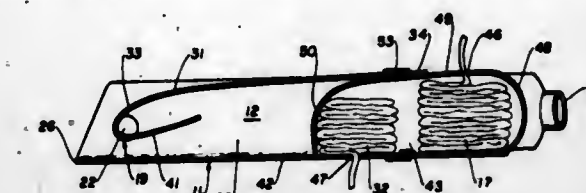
Int. Cl.³ A01K 29/00; A47L 13/52

U.S. Cl. 294-1 B

7 Claims

1. A pet feces pick up device comprising:
 a trough-like member having a concave wall and an unobstructed open end attached for insertion into the open end of a pliable disposable bag, said wall being unobstructed at its internal and external sides at said open end and over a length thereof contiguous to said end;
 said bag having a length extending over said wall length and a width foldable into conforming shape with said wall to

provide an internal lining thereof forming a concave feces-receiving area extending substantially over said wall length; and
 means on said member adjacent its said open end for secur-



ing a mid-length portion of said bag to said member, said means retaining said mid-length bag portion while said open bag end is engaged and rolled back upon itself to an inverted position thus containing feces deposited on said area internally within said bag.

4,243,260

CONVERTIBLE BED FOR PICK-UP TRUCK CAMPER OR THE LIKE

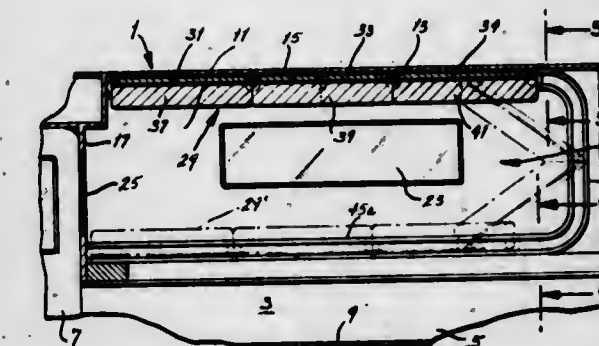
Darrell Gieseking, 119 Scott, St. Louis County, Mo. 63135

Filed Jul. 25, 1979, Ser. No. 60,486

Int. Cl.³ B60P 3/32

U.S. Cl. 296-24 R

9 Claims



1. In a vehicle having a compartment including a ceiling and opposite walls, a convertible bed having a plurality of sections in hinged end-to-end relationship, a pair of track members on said walls, guides carried by said bed at the sides of said sections for guiding movement of said sections along said track members, said track members lying in parallel planes and each defining a track having a first reach proximate said ceiling, a lower reach lowered from said ceiling, and a further reach joining said upper and lower reaches, said bed being selectively movable along each track between a storage position proximate said ceiling and a use position lowered from said ceiling.

4,243,261

BODY FOR MOTOR VEHICLES, ESPECIALLY AUTOMOBILES, WITH A SLIDING ROOF HAVING A FRAME BOTTOM

Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,650

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809379

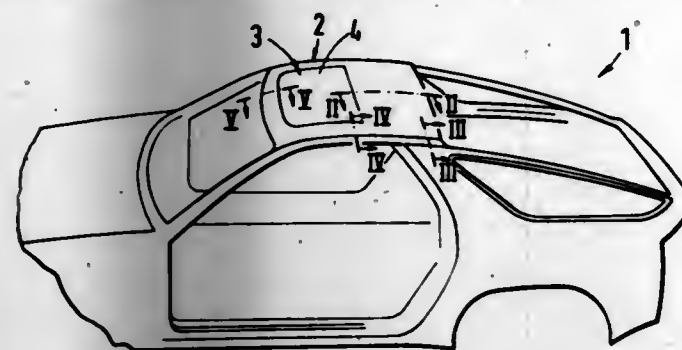
Int. Cl.³ B60J 7/00

U.S. Cl. 296-213

10 Claims

1. A body for motor vehicles such as automobiles comprising a sliding roof provided with a frame bottom and a supporting structure located below the roof of the vehicle, said supporting structure including transverse and longitudinal supports, wherein said frame bottom is reinforced by at least one indentation and is connected with at least a portion of the transverse and longitudinal supports so as to constitute a rigid

supporting structure, and wherein gutter means are provided which delimit an opening provided in the roof of the vehicle



for the sliding roof, said gutter means connecting said frame bottom and roof of the vehicle together.

4,243,262

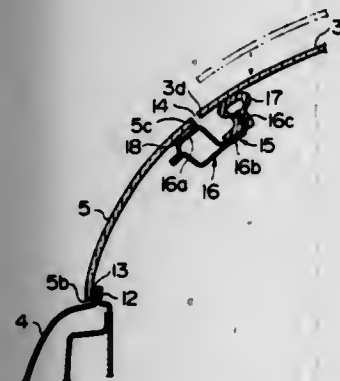
REAR WINDOW STRUCTURE FOR AUTOMOBILE
Yasuo Tokunaga, and Kiyoshige Yamada, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Nov. 9, 1978, Ser. No. 959,244

Claims priority, application Japan, Nov. 11, 1977, 52-151786[U]; Nov. 15, 1977, 52-153579[U]

Int. Cl.³ B60J 1/18

U.S. Cl. 296—146

3 Claims



1. Automobile rear window structure comprising rear window opening means formed in an automobile body and having front and rear edges and opposite sides, a pair of rear pillar means extending along said sides of said rear window opening means and respectively having trough sections, transparent means in said window opening means including a rear section and a pair of side sections at the opposite sides of the rear section, said side sections having transverse curvatures which are contiguous with a transverse curvature of said rear section, said rear section being formed separately from said side sections and arranged to cover said opening means with an upper edge hinged to the body at the front edge of the opening means for swinging movement between closed and open positions, said side sections being secured to the body at transversely outside portions of said rear pillar means with said edges located to extend over the rear pillar means so that said rear section and the side sections provide a contiguous contour when the rear section is in the closed position, seal means provided along said trough section of the rear pillar means for providing weathertight seal along the sides of the opening means.

4,243,263

COLLAPSIBLE SUPPORT STRUCTURE AND DEVICES FORMED THEREFROM

Robert Thiboutot, Lac St. Charles, Canada, assignor to Les Entreprises Rotot Ltée, Comte de Bellechasse, Canada

Filed Nov. 13, 1978, Ser. No. 960,436

Int. Cl.³ A47C 4/00

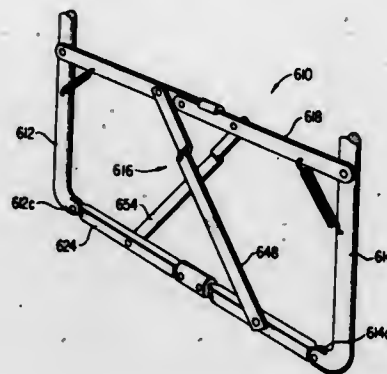
U.S. Cl. 297—42

8 Claims

1. A collapsible support structure for supporting a folding chair comprising two support members interconnected by a

collapsible support mechanism, said support members having arcuate shaped lower ends facing each other, said collapsible support mechanism comprising:

first and second collapsible connecting members having first ends pivotally connected to a first of said two support members and second ends pivotally connected to a second of said two support members, a first of said connecting members being formed of two substantially equal length links having ends pivotally interconnected to each other, said first of said connecting members including locking means operative in an erected position of said support structure for maintaining a predetermined angular relationship between said links, the other of said connecting members being formed of a plurality of pivotally interconnected links, outer ends of said other connecting member



being shaped to mate with and be pivotally interconnected to said lower ends of said support members, at least two of the links of said other connecting member having broad, substantially flat lower surfaces for supporting and distributing the weight of said support structure on a surface; and

first and second cross bars extending between and pivotally connected to said first and second connecting members in such manner that said cross bars in an erected position of said support structure form a substantially X-shape and cooperate with said locking means to hold said support members in spaced-apart upstanding positions, said cross bars having off-set portions intermediate their ends to provide clearance between components of said support structure during collapse thereof.

4,243,264

RECLINING SEAT LATCH

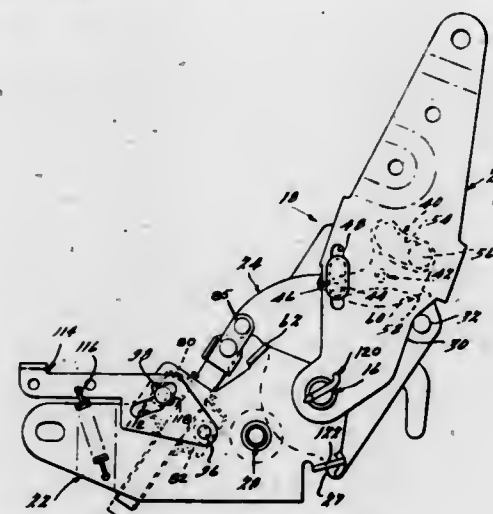
Robert L. Bell, Oxford, Mich., assignor to Fisher Corporation, Troy, Mich.

Filed Mar. 12, 1979, Ser. No. 19,377

Int. Cl.³ A47C 1/025

U.S. Cl. 297—367

8 Claims



1. A latch mechanism for controlling rotation of a vehicle

seat back to a reclining position relative to a vehicle seat, said mechanism comprising

a pivot pin joining said seat and seat back for relative rotation,
a quadrant supported by said pivot pin for rotation relative to both said seat and seat back,
stop means on said quadrant for defining the position of said seat back relative to said quadrant, and,
a link extending between said seat and said quadrant for controlling the position of said quadrant, said link being pivotally connected to said quadrant at a point radially spaced from said pivot pin and having spaced teeth on opposite sides thereof,
a pair of spaced latches on said seat having teeth complementary to the teeth of said link, said latches being movable relative to said link to effect engagement and release thereof, whereby said link is locked against movement when said latches are engaged therewith and movable when released to position said quadrant and seat back at a desired rotational position relative to said seat, and
spring means extending between each of said latches and said link for biasing said link away from said latches.

4,243,265

PATIENT CHAIR SLIPPER

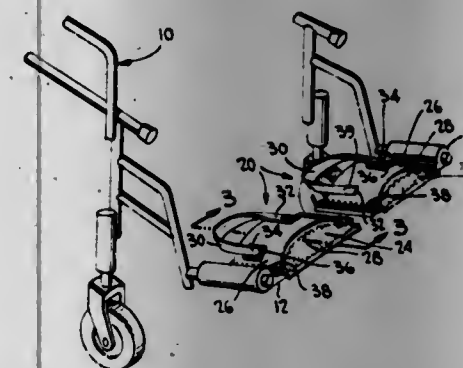
Michael Hanik, 220 Summit Hall Rd., Gaithersburg, Md. 20760

Filed Apr. 17, 1979, Ser. No. 30,804

Int. Cl.³ A47C 7/50

U.S. Cl. 297—423

15 Claims



1. An open-ended slipper suitable for attachment to the footplate of a patient chair or similar device, said slipper being capable of protecting a user's foot from chafing or bruising and maintaining the foot in a generally warm, stable and comfortable condition, said slipper comprising:

(a) a generally rectangular base strip having an upper surface and a lower surface, said base strip adapted for placement upon said footplate;
(b) a first layer of soft protective material attached to said base strip upper surface;
(c) a generally rectangular upper strip having an upper surface and a lower surface, said upper strip being attached along two opposed sides to opposed sides of said base strip, said upper strip remaining unattached to said base strip along its remaining opposed sides to create opposed openings between said strips for receiving a user's foot;
(d) a second layer of soft protective material attached to the lower surface of said upper strip adjacent to said first layer of soft material; and
(e) means for attaching said slipper to said footplate and for snugly retaining said slipper upon said footplate, said means being releasably attached to said base strip and comprising a resilient, generally rectangular band attached along two opposed sides thereof to said base strip, said band remaining unattached along its other opposed sides in order to create opposed openings between said base strip and said band so that said band can be stretched over said footplate in order to prevent the slipper from being accidentally displaced from said footplate.

4,243,266

SEAT BELT SYSTEM AND CONNECTOR THEREFOR
Alexander B. Anderson, Carlisle, England, assignor to Kangol Magnet Limited, Carlisle, England

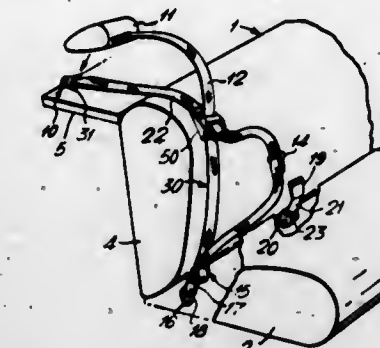
Filed Feb. 22, 1979, Ser. No. 14,029

Claims priority, application United Kingdom, Mar. 31, 1978, 12730/78

Int. Cl.³ A62B 35/00; A47C 31/00

U.S. Cl. 297—483

9 Claims



1. A safety belt system for restraining an occupant in a vehicle seat having a back portion, said system comprising:
a shoulder belt adapted to extend in use diagonally across the front of the occupant from an upper first position above the occupant's shoulder on one side of the seat to a second lower position on the other side of the seat;
an elongate element extending generally upright over said back portion on said one side of said seat; and
connector means adapted to connect together said shoulder belt and said elongate element at a selected position, said connector means comprising:
spaced upper, central and lower bars, said elongate element being receiving through the spaces between said upper, central and lower bars,
a first edge means located outwardly of said elongate element from said back portion and facing outwardly thereof, and
second edge means located below said first edge means and outwardly of said elongate element from said back portion and facing inwardly towards said back portion,
said shoulder belt being received over said first edge means and under said second edge means,
whereby tension in said shoulder belt in use urges said upper bar against said back portion therebeneath, to thereby resist movement of the connector means along said elongate element.

4,243,267

SAFETY SUPPORTING DEVICES FOR REARWARDLY TILTABLE VEHICULAR CARGO BOXES

William G. Meyers, R.R. #1, Gretna, Nebr. 68028

Filed Jul. 24, 1978, Ser. No. 927,654

Int. Cl.³ B60P 1/04

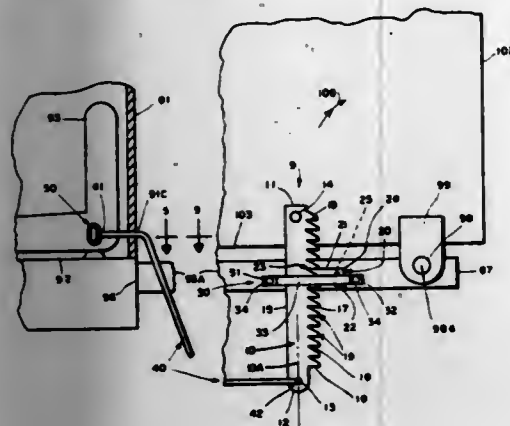
U.S. Cl. 298—17 B

12 Claims

1. In combination with a rearwardly tiltable vehicular cargo box extending longitudinally along a central-axis and including a pair of longitudinal chassis members with the cargo dumping box located thereabove, a safety supporting device to automatically securely maintain the cargo dump box in rearwardly tilted elevated condition until released by vehicular personnel and comprising:

A. an elongate multi-teeth rack extending along a rack-axis and having an upper-end and a lower-end, the rack upper portion being freely pivotally secured with a transversely extending pivot-pin to the dump box forwardly of its transverse-axis connection to the chassis but nearer thereto than to the cargo box transversely extending front-end, the rack lower-end being located below the cargo box base panel;
B. a fixed-elevation and non-rotatable detent attached to the chassis and located wholly below the cargo box base panel

and actuatably engageable with the rack, the configuration of the detent and the rack teeth being such that the teeth of the freely pivotably depending rack slide upwardly but not downwardly against the detent whereby as said rack commences to move downwardly said detent maintains the dump box tilted elevation through the intervening multi-teeth rack;



- C. means attached to the chassis and located below the cargo box base panel for maintaining the rack in longitudinal alignment with the detent; and
D. means for longitudinally directionally withdrawing the rack lower portion whereby the rack pivots at its pivot pin and moves longitudinally away from the detent permitting the tiltably elevated cargo box to descend.

4,243,268

MINERAL MINING INSTALLATION WITH PLANER AND JET CARRIER

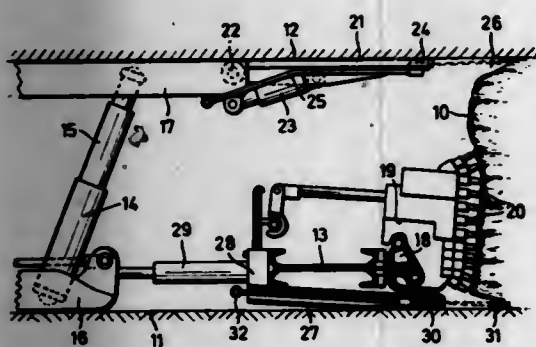
Armin Lübke, Oberaden, and Hans-Th. Grisebach, Unna, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalen, Lünen, Fed. Rep. of Germany
Filed Nov. 13, 1978, Ser. No. 959,864

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751790

Int. Cl.³ E21C 27/18

U.S. Cl. 299—32

13 Claims



1. In a mineral mining installation wherein a mineral winning machine is guided by guide means for movement in a mine working along a mineral face to strip mineral therefrom with the aid of cutters; the improvement comprising carrier means movably interconnected with said guide means for displacement in relation to the mineral face independently of said guide means and said winning machine, and high-pressure fluid nozzles supported on said carrier means, said nozzles emitting high pressure fluid jets capable of producing a channel in an area of the mineral face other than the area being stripped by said cutters.

EDGE LUGGED TIRE CARRYING RIM AND WHEELS

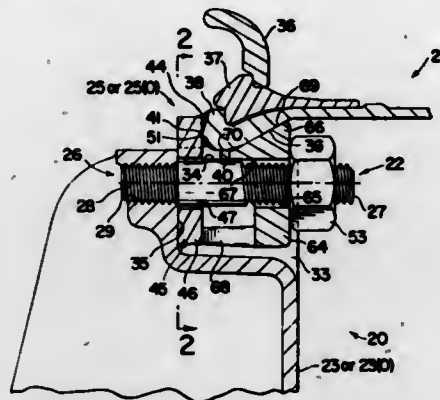
William D. Walther, Kettering, and Robert A. DeRegnaucourt, Bellbrook, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 749,241, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 592,504, Jul. 9, 1975, abandoned. This application Jun. 6, 1978, Ser. No. 913,013

Claims priority, application Canada, Dec. 12, 1977, 292871
Int. Cl.³ B60B 23/10

U.S. Cl. 301—12 R

3 Claims



1. A combination of dual inner and outer tire carrying rims mounted on a vehicle wheel, said outer rim being seated and locked on said wheel by fastening assemblies, said wheel having a plurality of inner and outer spoke members, each said outer spoke member having a felloe comprising spaced-apart axially projecting wing portions providing outwardly facing dual axially oriented surfaces and a radially directed surface extending inwardly between said axially oriented surfaces substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said fastening assemblies, said outer rim having a rim base edge portion with a radially inclined axially inner surface intersecting an axially oriented radially inner surface intersecting a radially directed axially outer surface and a plurality of clamp lugs integrally secured to said radially directed axially outer surface, each said clamp lug having a radially inwardly directed leg portion substantially perpendicular to the rotational axis of said outer rim with a bore therein for receiving said axially projecting component of said fastening assemblies, each said fastening assembly comprising a threaded fastener and a clamp element supported on said threaded fastener, each said clamp element having lateral wing portions providing downwardly facing dual axially oriented surfaces and a radially outer portion with a radially inclined surface, whereby, said outer rim is seated on, and thereafter locked on, said outer spoke members by tightening of said fastening assemblies and the mating engagement of said radially directed surface on each said outer spoke felloe with said radially directed leg portion on each said clamp lug, and by the mating engagement of said axially oriented radially inner surface on said outer rim base edge portion with said outwardly facing dual axially oriented surfaces on each said outer spoke felloe, and by the mating engagement of said radially inclined surface on each said clamp element on each said fastening assembly with said radially inclined axially inner surface on said outer rim base edge portion, said downwardly facing dual axially oriented surfaces on said lateral wing portions of each clamp element on each said fastening assembly being in mating engagement with said outwardly facing dual axially oriented surfaces on each said outer spoke felloe.

4,243,270

WIRE BASKET WHEEL ASSEMBLY

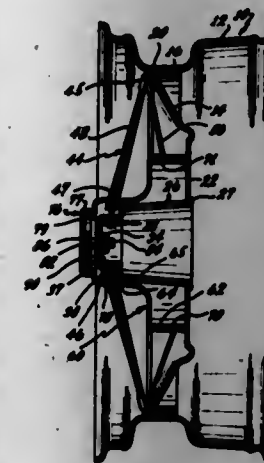
Aaron J. Fenton, Pacific Palisades, and E. J. O. Scott-Ellis, Rancho Palos Verdes, both of Calif., assignors to Fenton Company, Gardena, Calif.

Filed Jul. 31, 1978, Ser. No. 929,832

Int. Cl.³ B60B 7/00

U.S. Cl. 301—37 SS

3 Claims



1. As an article of manufacture, a wire basket unit adapted for use in combination with a wheel to simulate a wire wheel comprising in combination a frame having a circular peripheral wire element, an inner and smaller circular wire element, means forming a pattern of wire elements extending between the first circular element and the inner circular element, a circular cup-shaped member positioned to cover up the bolt holes of a wheel, the said cup-shaped member having a smooth outer surface, the said frame having an additional pattern of wire elements extending between the outer circular member and the periphery of the cup-shaped member for holding the cup-shaped member in position, the cup-shaped member being visible through the said frame being unobstructed by cross-laced wire elements, the said article being constructed to be adapted for use in combination with a wheel having a hub cap the said inner circular wire element of the frame being configured to fit over the outer end of the hub cap, and means for securing the frame by way of securement to the hub cap.

4,243,271

HYDRAULIC BRAKING SYSTEM

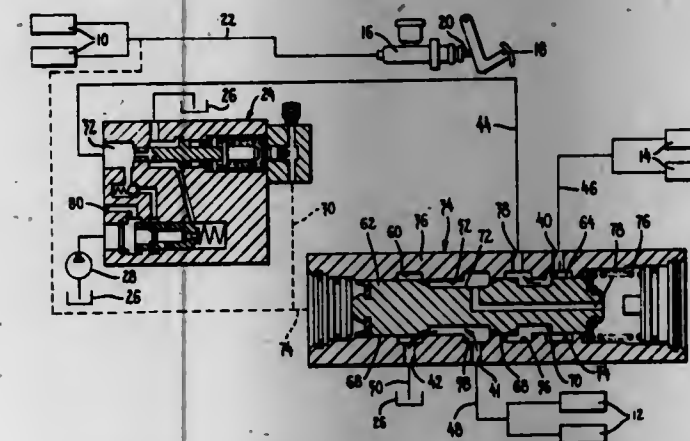
Robert M. Dwyer, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed May 31, 1979, Ser. No. 44,785

Int. Cl.³ B60T 8/26, 11/32

U.S. Cl. 303—7

17 Claims



1. A hydraulic braking system for a vehicle having brakes and a trailer having brakes, the trailer brakes being hydraulically operated at a pressure range proportionately greater than the pressure range required for operating the vehicle brakes; said system comprising:

a brake master cylinder which, when operated, is capable of delivering pressurized fluid within a first pressure range; a source of fluid under pressure; a pilot operated trailer brake valve interconnected with the source of fluid under pressure and which, when operated, is capable of delivering fluid to an outlet port within a second pressure range greater than the first pressure range; and pilot operated control means interconnecting said outlet port with the vehicle brakes and the trailer brakes and which, when operated, is capable of causing the rear vehicle brakes to be hydraulically operated within said first pressure range and the trailer brakes to be hydraulically operated within said second pressure range.

4,243,272

RESILIENT LINKAGE MEANS FOR USE IN VEHICLE FLUID PRESSURE BRAKING SYSTEMS

Alastair J. Young, Kenilworth, England, assignor to Automotive Products Limited, Leamington Spa, England

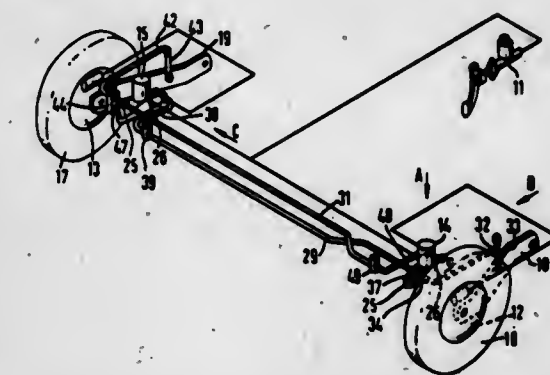
Filed Sep. 18, 1979, Ser. No. 76,809

Claims priority, application United Kingdom, Sep. 20, 1978, 37547/78

Int. Cl.³ B60T 8/18

U.S. Cl. 303—22 R

3 Claims



1. In a vehicle fluid pressure braking system comprising: a driver-controlled source of fluid pressure; one brake for a resiliently suspended wheel on one side of the vehicle; another brake for a resiliently suspended wheel on the other side of the vehicle; one valve device interposed between the source and said one brake; and another valve device interposed between the source and said other brake; each valve device including a plunger which is movable by fluid pressure transmitted to the respective brake against a respective biasing load to prevent the pressure in the respective brake increasing at the same rate as the source when the pressure to the respective brake exceeds a magnitude dependent on the respective biasing load; resilient linkage means for connecting the plungers of the valve devices with suspension components of said wheels to provide biasing loads on the plungers which progressively vary with the vertical positions of said wheel relative to the vehicle body such that each biasing load increases with upward movement of the associated wheel relative to the vehicle body but decreases at a lower rate with upward movement of the non-associated wheel; the resilient linkage means comprising: a pair of torsion bars each having a crank arm on one end; a bearing support adjacent the crank arm and torque reaction means at the other end; the plunger of one of the valve devices in use being connected to the suspension component of one of said wheels through the bearing support of one torsion bar and to the suspension component of the other of said wheels through the torque reaction means of the other torsion bar and the plunger of the other of the valve devices in use being

connected to the suspension component of said other wheel through the bearing support of said other torsion bar and to the suspension component of said one wheel through the torque reaction means of said one torsion bar.

4,243,273

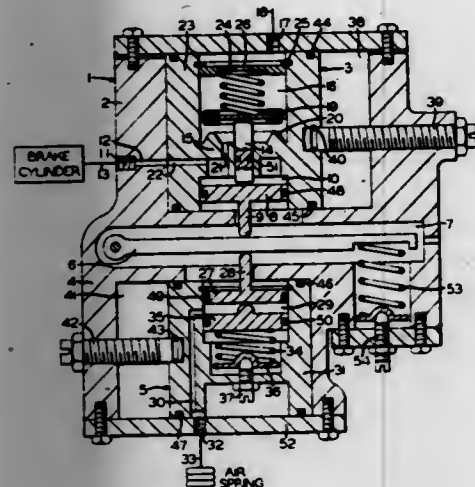
ADJUSTABLE VARIABLE LOAD VALVE DEVICE

Raymond C. Wright, deceased, late of Irwin, Pa. (by Helen A. Wright, executrix), assignor to American Standard Inc., Wilmerding, Pa.

Filed Jan. 19, 1979, Ser. No. 50,045
Int. Cl.³ B60T 8/22

U.S. Cl. 303—22 A

8 Claims



1. An adjustable variable load valve device for use in a railway vehicle having a brake cylinder and air springs, said load valve device comprising:

- a casing having an upper casing portion and a lower casing portion;
- a fulcrum lever operably disposed in said casing between said upper and lower casing portions with one end pivotally anchored to the casing and having its other end free;
- piston-valve means operably disposed in said upper casing portion for controlling supply and cut-off of actuating fluid pressure to and from the brake cylinder and for exerting a downwardly-directed force at a preselected contact point on an upper side of said fulcrum lever commensurate with the pressure of said actuating pressure; and
- control piston means operably disposed in said lower casing portion and subjected to prevailing air spring pressure for exerting an upwardly directed force at a preselected contact point on a lower side of said fulcrum lever commensurate with said air spring pressure, the two forces thus establishing a brake cylinder pressure to air spring pressure ratio in accordance with moment arms determined by the two contact points on the fulcrum lever at which the respective forces act;
- said piston-valve means and said control piston means being axially positionally adjustable relative and parallel to said fulcrum lever for varying the respective contact points and consequently the brake cylinder pressure to air spring pressure accordingly.

4,243,274

HYDRODYNAMIC BEARING WITH RADIAL, THRUST AND MOMENT LOAD CAPACITY

Jerome Greene, 1241 Barclay Ct., Westlake Village, Calif. 91361

Continuation of Ser. No. 757,324, Jan. 6, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,594

Int. Cl.³ F16C 7/04, 17/06, 27/06

U.S. Cl. 308—9

10 Claims

1. A fluid film bearing assembly comprising:

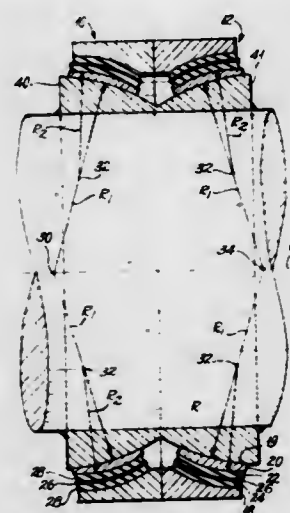
- at least two cylindrically arranged groups of bearing pads

disposed about a longitudinal axis of rotation, one group being longitudinally spaced along said axis with respect to the other group;

- pad support areas located beneath each pad;

- the bearing pads each comprising:

- a face portion having a curved bearing surface facing generally towards said axis, and a spherically curved rear surface facing a concentric surface of a respective bearing support area, the concentric surfaces defining interface surfaces having a center of curvature located between said axis and said bearing surface;
- alternate layers of laminated elastomer-inelastic material between and coextensive with the interface surfaces, the material being bonded to the interface surfaces and being compliant in directions along the inter-



4,243,275

BEARING AND LUBRICATION SYSTEM

Charles C. Czusak, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 29, 1979, Ser. No. 24,831

Int. Cl.³ B61F 17/16

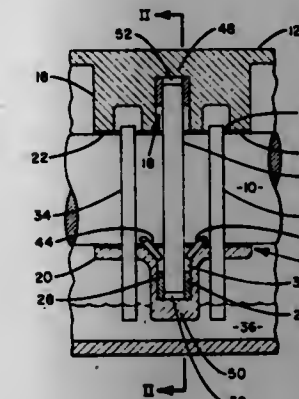
U.S. Cl. 308—128

5 Claims

1. A bearing and lubrication system for a rotatable shaft comprising:

- a journal bearing assembly for supporting the shaft;
- a thrust bearing assembly for limiting axial movement of the shaft and including
- a cavity defined by surfaces of the journal bearing assembly, a thrust collar supported by the shaft and radially extending outward therefrom into the cavity, and thrust plate means positioned within the cavity between the thrust collar and the surfaces of the journal bearing assembly defining the cavity, and radially spaced from the shaft;
- a ring surrounding the shaft and having a portion of the inner surface thereof drivingly engaged by the shaft wherein rotation of the shaft causes rotation of the ring;
- a supply of lubricant disposed beneath the ring in the path of

travel thereof as the ring rotates under the influence of the shaft, wherein rotation of the ring causes lubricant to cling thereto and be elevated thereby, and wherein a first portion of the elevated lubricant is introduced to the journal bearing assembly to lubricate surfaces thereof and a second portion of the elevated lubricant is radially thrown outward by the ring; and trough means for collecting lubricant radially thrown outward by the ring; and



4,243,276

ROLLING BODY RETAINER

Stig Persson, and Sture Östling, both of Katrineholm, Sweden, assignors to Aktiebolaget SKF, Gothenburg, Sweden

Continuation of Ser. No. 934,711, Aug. 21, 1978, abandoned.

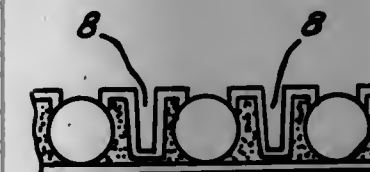
This application Mar. 4, 1980, Ser. No. 127,029

Claims priority, application Sweden, Sep. 22, 1977, 7710607

Int. Cl.³ F16C 33/38

U.S. Cl. 308—187

3 Claims



1. A unitary one-piece rolling element retainer for roller bearings consisting of inner and outer rings and rolling elements between the rings, comprising a one-piece body member made of a foamed plastic material consisting of at least one homogeneous liquid impermeable hard and rigid outer peripheral surface portion and at least one porous portion of the same material, said porous portion being filled with a lubricant, means defining at least one pocket for a rolling element in said body member, the rolling element contacting said porous portion to draw lubricant therefrom during operation, said rolling element also contacting said outer surface portion at the periphery of the pocket to prevent escape of lubricant from the retainer except through contact with the rolling element.

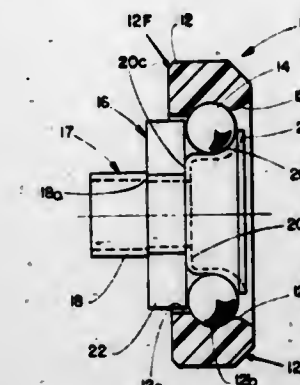
4,243,277

BALL BEARING

John E. Fortuna, Cedar Springs, Mich., assignor to Knappe & Vogt Manufacturing Co., Grand Rapids, Mich.
Filed Aug. 8, 1979, Ser. No. 64,386
Int. Cl.³ F16C 33/38

U.S. Cl. 308—195

2 Claims



1. A ball bearing comprising: an outer race, an inner race subassembly, and a plurality of balls therebetween; said outer race comprising a polymeric annulus having three axial portions of different internal diameters, including an inner portion of smallest diameter, an intermediate portion of largest diameter, and an outer portion; said intermediate portion forming a curvilinear, radially-outer, ball track, and said inner portion forming a ball retention shoulder; said outer portion having an annular resilient convex snap rib blending axially inwardly into said curvilinear ball track and blending axially outwardly in a chamfer; said inner race subassembly comprising a hollow spindle and a washer thereon; said hollow spindle having a cylindrical stem and a body with a flared wall forming a radially inner ball track; an integral shoulder between said stem and said body; said washer being on said stem against said shoulder in engagement with said balls to axially trap said balls between said annulus and said flared wall; and said stem being swaged at said annulus to so retain it on said annulus while also forming a mounting member for attachment of said bearing to a support.

4,243,278

LINEN TOWEL CABINETS

Douglas W. Gray, Chester, England, assignor to Saltney Engineering Company Limited, Deva Works, United Kingdom

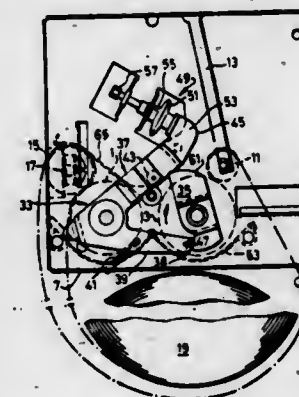
Filed Jul. 19, 1978, Ser. No. 925,956

Claims priority, application United Kingdom, Sep. 2, 1977, 36734/77

Int. Cl.³ B65H 19/00

U.S. Cl. 312—38

28 Claims



1. A mechanism for a towel cabinet, said mechanism including a frame, a rear roller, means mounting said rear roller in said frame so that it is able frictionally to engage a portion of

dirty towel which is to be wound onto an idler roller, a front roller, means mounting said front roller in said frame whereby clean towel may be entrained over said front roller before passing over a pinch roller and emerging for withdrawal from a cabinet in which the mechanism may be housed, drive means between said front and rear rollers so that said rear roller is rotated by a different angular amount from said front roller on rotation of said front roller, a stop arm rotatable with said rear roller each time a length of towel is withdrawn, and a latch movable into engagement with said stop arm on rotation of said rear roller to prevent further rotation of said front roller, thereby preventing further towel withdrawal wherein the stop arm does not rotate at the same speed as the rear roller but is capable of rotating about the same axis as said rear roller but relative thereto.

4,243,279

STACKING DEVICE

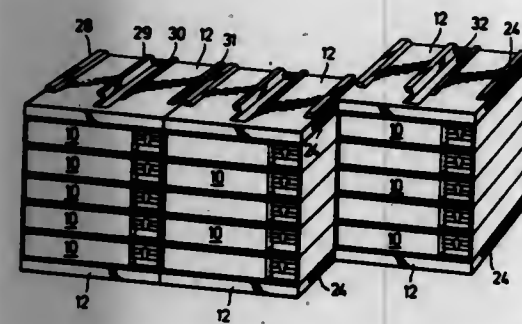
Peter Ackeret, Künzacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Switzerland
Filed Jan. 12, 1979, Ser. No. 2,960

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802460

Int. Cl.³ A47B 87/00; F16B 12/00

U.S. Cl. 312-107

5 Claims



1. A connecting device for the combined vertical and side-by-side stacking of rectangular containers which have complementary interlocking stacking elements only on their upper and lower surfaces, the device comprising a plurality of rectangular connector plates of minimal thickness and arranged in edge to edge relation with each other, the connector plates having upper and lower surfaces to confront the bottoms and tops of such containers, and also having lateral sides to confront adjacent lateral sides of adjacent connector plates, the connector plates having complementary interlocking type stacking elements on their upper and lower surfaces to interlock with similar stacking elements of the containers, such that they can be connected between any two containers in a stack, such plates further having complementary interlocking elements on their lateral sides and rigidly securing the lateral sides of adjacent plates together, such that aligned plates in adjacent container stacks can be detachably interconnected, to thereby lock together a plurality of container stacks in a compact block.

4,243,280

FURNITURE ASSEMBLY WITH SYNTHETIC RESIN MEMBERS

Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation, Société Anonyme, Grenoble, France

Filed Apr. 5, 1979, Ser. No. 27,389

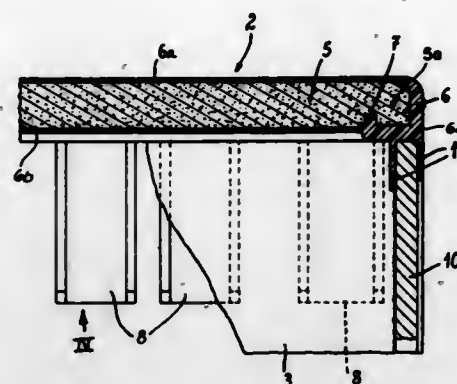
Int. Cl.³ A47B 81/00; A47F 3/00

U.S. Cl. 312-140

5 Claims

1. An article of furniture comprising at least two upright walls and a top spanning said walls and connected thereto, said top comprising a planar composition panel sheath with a synthetic resin injection molded in situ around said panel and forming a frame along the edges thereof, said frame being provided unitarily with at least one group of downwardly extending tongues molded unitarily with said frame and fitting

into one of said walls, another edge of the top being formed with a pair of downwardly extending flanges formed unitarily



with the synthetic resin and defining a groove receiving another of said walls.

4,243,281

TYPEWRITER CABINET

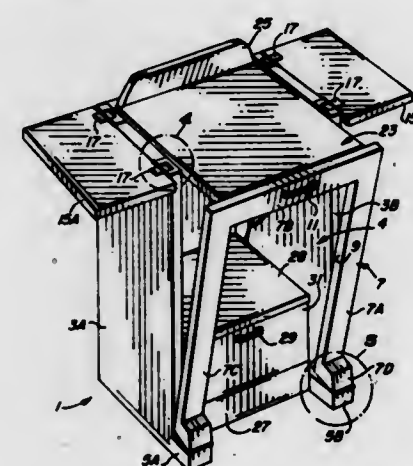
Paul R. Egger, 10616 Campana Dr., Sun City, Ariz. 85351

Filed Aug. 23, 1979, Ser. No. 68,941

Int. Cl.³ A47B 21/00, 81/00

U.S. Cl. 312-208

12 Claims



1. A cabinet for supporting a typewriter, said cabinet comprising in combination:

- (a) a wall partially enclosing an interior volume of said cabinet;
- (b) base means for supporting said wall;
- (c) front means pivotally connected to said base means, said front means having an upper edge;
- (d) support means for supporting the typewriter in a retracted position and in a raised, level position, said support means having a front edge pivotally connected to the upper edge of said front means said support means having a first connecting point spaced from said front edge;
- (e) arm means pivotally connected to the first connecting point for guiding the first connecting point through an arcuate path during raising and lowering of said support means, said arm means having a first pivot point pivotally connected to a first fixed point within the interior volume, said arm means also having a second pivot point spaced from the first pivot point, the second pivot point being pivotally connected to the first connecting point of said support means, the second pivot point being located substantially below and forward of the first fixed point when said support means is in the retracted position, the second pivot point being located substantially above and rearward of the first fixed point when said support means is in the raised, level position; and
- (f) means for urging rotating of said arm means as said support means moves between the retracted position and the raised, level position.

4,243,282

KNOCK DOWN CABINET

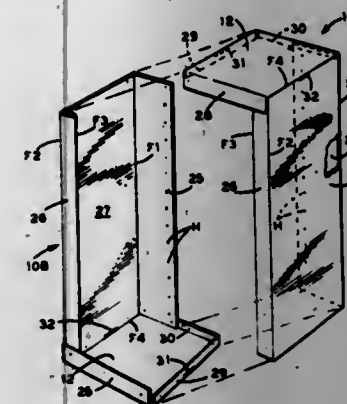
Mark S. Demsen, Summit, N.J., assignor to Eastern Packaging and Display Co., Bloomfield, N.J.

Filed Feb. 22, 1979, Ser. No. 14,257

Int. Cl.³ A47B 43/02, 61/00

U.S. Cl. 312-259

9 Claims



1. An inexpensive cardboard storage cabinet for clothes comprising primarily of two like die-cut pieces, one piece comprising a top, side, about one-half of the back and horizontal front, side and back flaps, the other like piece being reversed forming the bottom, the opposite side, the other half of the back and the other front, side and back flaps, top and bottom track means extending transversely along the front of said cabinet, a door slidably mounted on said track means, matching holes on said back and said flaps, means secured in said aligned matching holes for holding said backs and said flaps together, in which there are opposed thin metal plates bent over the top edges of said cabinet, each of said plates having a hole formed therein, a hanger rod having projecting end pins, said end pins being received in the holes of said opposed plates for supporting said hanger rods therebetween.

4,243,283

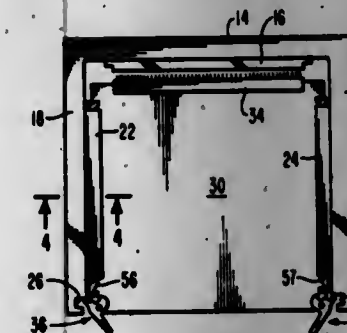
CIRCUIT BOARD GUIDE AND GROUND CONNECTOR
Joseph F. McSparran, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,141

Int. Cl.³ H05K 1/07

U.S. Cl. 339-14 R

4 Claims



1. The combination of:
a printed circuit board having an electrical connector plug on one end edge of the board, and having a printed circuit ground plane conductor on at least one surface on at least one side edge of the board,
a chassis supporting an electrical connector socket, and supporting channels to guide the side edges of the board so that the plug engages the socket, at least one of said channels being resilient, conductive and provided with internal protrusions spaced along the length of the channel,
a drawbar within said resilient conductive channel and having gibs for engagement with said protrusions to normally

hold the conductive channel out of electrical contact with said ground plane conductor on the board,
means to move the plug on the board into engagement with the socket on the chassis, and
means to move the drawbar longitudinally to disengage the gibs from the protrusions to thereby allow the resilient conductive channel to move into electrical contact with the ground plane conductor on the board.

4,243,284

ELECTRICAL DISTRIBUTION SYSTEM

Michael Humphreys, 135 Cavendish Ave., Ealing, London W.13, England

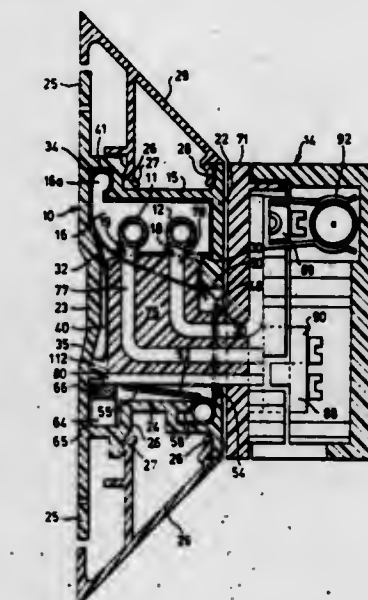
Filed Jul. 13, 1979, Ser. No. 57,540

Claims priority, application United Kingdom, Jul. 21, 1978, 30620/78

Int. Cl.³ H01R 13/44, 25/00

U.S. Cl. 339-21 R

28 Claims



1. An electrical distribution system, comprising a hollow conduit, a plurality of continuous electrical conductors disposed within a first region of the conduit, a longitudinally-extending aperture in one wall of a second region of the conduit spaced from said first region, said aperture communicating with and allowing access to said second region of the interior thereof opposite the conductors at any one of a number of locations, the conductors being transversely offset from a reference axis extending perpendicular to the aperture and into said second region of the conduit, and gate means located within the conduit and being movable from a normally closed position in which the gate means protectively partitions the first region of the conduit from the second region thereof to deny access to the conductors, but in which access to the second region of the conduit via the aperture can be achieved, to an open position in which access to the conductors via the aperture can be achieved.

4,243,285

CLAMP-PLUG TYPE CONNECTOR

Charles F. Crowley, Peabody, and Albert R. Pratt, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 26, 1978, Ser. No. 973,487

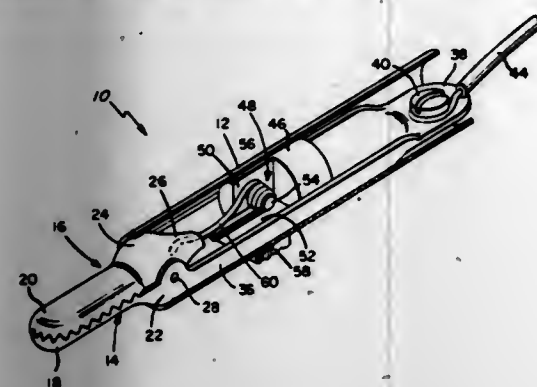
Int. Cl.³ H01R 13/62, 11/22

U.S. Cl. 339-32 R

8 Claims

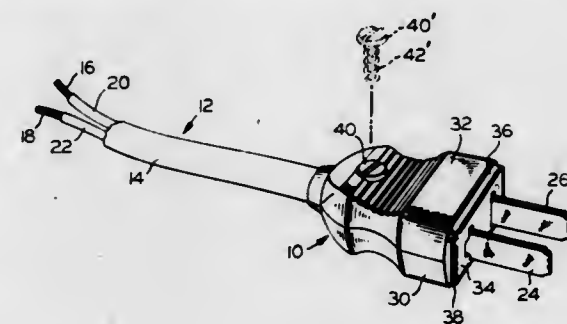
1. A pressure connective device comprising:
a pair of opposing jaw members having respective clamping portions disposed adjacent one another and respective other portions disposed for relative pivotal movement about an axis, one of said other portions having a surface provided with reverse angled portions disposed on respective opposing sides of the axis; and
means disposed between said other portions and movable to

either side of said axis for pivotally biasing said clamping portions relative to one another in a selected direction, said means including adjustable pressure means urged



4,243,287
DEAD FRONT PLUG WITH INSULATION PENETRATING CONTACTS
Donald F. Smith, Warwick, R.I., and Michael J. Ostrellich, Easton, Conn., assignors to General Electric Company, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,172
Int. Cl.³ H01R 4/02
U.S. Cl. 339—99 R 6 Claims

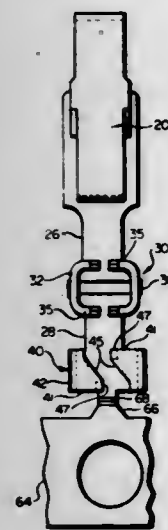


1. An electrical connector adapted for insulation penetration comprising,
an insulating body having a center section and two side sections adapted to fold together in valise-like formation, a pair of power blades extending through the center section of said body, the side surfaces of the inner portions of said blades having insulation penetrating cutting edges, wire receiving troughs in one side section of said insulating body, said troughs being aligned with the cutting edges of said power blades, and the cutting edges extending at least partially into said troughs, means for urging said blades into said troughs and for holding them in place therein.

4,243,288
CONNECTOR ASSEMBLY FOR MASS TERMINATION
John E. Lucius, Etters, and Leon T. Ritchie, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jun. 28, 1979, Ser. No. 53,150
Int. Cl.³ H01R 13/514, 13/58

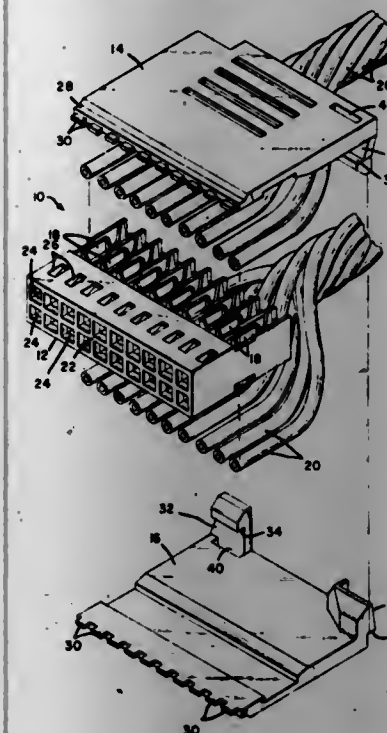
- U.S. Cl. 339—99 R 7 Claims
1. An electrical connector assembly comprising:
a housing having a plurality of terminal passageways extending from a rear end through said housing to open on a front mating face, each said passageway being fully enclosed at the mating face end and outwardly directed open channel shaped at the rear end remote from said mating face;
a plurality of terminals each mounted in a respective one of said passageways, each said terminal having a forwardly directed mating portion lying in said fully enclosed portion of said passageway, and an insulation displacing rear portion lying in and accessible from said rear channel shaped portion; and
a pair of hermaphroditic cover members each having a forward end profiled to be receivable in said fully enclosed portions of said passageways to hold said cover

4,243,286
INSULATION DISPLACEMENT CONNECTOR
Vincent B. Brown, Prospect Heights; Charles A. Kozel, McHenry, and John T. Scheitz, Palatine, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.
Filed Feb. 21, 1979, Ser. No. 13,238
Int. Cl.³ H01R 4/26, 13/50
U.S. Cl. 339—97 R 11 Claims



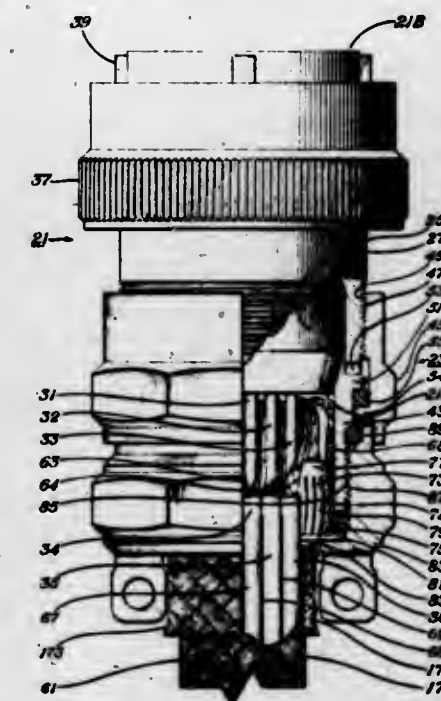
1. An insulation displacement connector for an electric wire having a conductive core and an insulation overwrap, comprising the combination of a housing having walls defining an elongate channel and a terminal adapted to fit within the channel and present an exposed wire securing end having a base and first and second pairs of opposed jaws upstanding therefrom at axially spaced locations along the base, the first pair of jaws including knife edges converging to opposed gripping edges adjacent the base that are spaced apart transversely of the channel a distance slightly less than the diameter of the conductive core, the second pair of jaws having opposed tabs angled toward the base and each other, said tabs terminating along adjacent edges that extend partially transverse to the channel and thereby terminate at axially offset endmost projections disposed approximately halfway across the channel and spaced above the base distances corresponding approximately to the diameter of the insulation overwrap, whereby when said wire with the overwrap thereon is aligned over the exposed pairs of jaws and forced transversely therebetween and against the base, said knife and gripping edges of the first pair of jaws displace the insulation overwrap and frictionally contact the conductive core to establish an electrical connection between the terminal and wire and also to axially restrain the wire relative to the terminal, and the tabs on said second pair of jaws

members in assembly therewith and intermating rear latching portions to hold said cover members together, on said center layer section for mounting said male connector assembly,



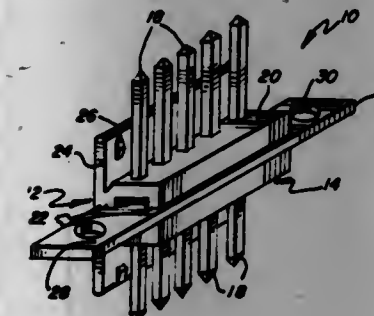
4,243,290
SHIELD TERMINATION MEANS FOR ELECTRICAL CONNECTOR
Robert A. Williams, 55 Bounty Rd. East, Fort Worth, Tex. 76116

Filed Oct. 30, 1978, Ser. No. 955,910
Int. Cl.³ H01R 13/698, 17/18
U.S. Cl. 339—143 R 25 Claims



whereby terminals pre-loaded in said housing can be terminated by a low forced insulation displacing movement and enclosed by application of the hermaphroditic cover members.

4,243,289
ELECTRICAL MALE CONNECTOR ASSEMBLY
Charles A. Kozel, McHenry, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.
Continuation of Ser. No. 871,341, Jan. 23, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,540
Int. Cl.³ H01R 13/514
U.S. Cl. 339—126 RS 8 Claims



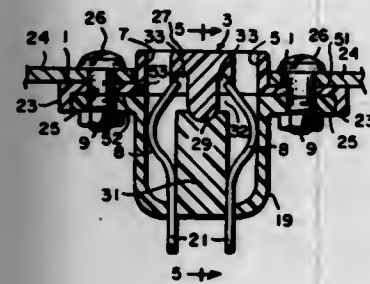
1. An electrical male connector assembly comprising, in combination, a first header body member of insulating material having a plurality of pin openings therein, a plurality of rigid electrically conductive parallel pins extending through said first header body member, a center layer section of insulating material having a plurality of pin openings therein, said center layer section being mounted on said plurality of pins adjacent said first header body member, and a second header body member of insulating material having a plurality of pin openings therein, said second header body member being mounted on said plurality of pins adjacent said center layer section on a side opposite said first body member whereby said first and second body members are disposed on opposite sides of said center layer section and held together in assembled relation at least in part by a frictional fit with said common set of conductive pins, said conductive pins being of a length substantially greater than the thickness of said first and second body members and said center layer section and being positioned relative to said first and second body members so as to project substantially beyond the outer surfaces of both of said first and second body members for mating with female connection contacts or to serve as wire wrap termination posts, and mounting means

1. Electrical connector means, comprising:
a body having a central opening for receiving electrical leads through a first end, an electrical connector coupled to the opposite end of said body, said electrical leads being connected to said electrical connector, shield means surrounding said electrical leads, and annular shield termination means comprising a plurality of axially extending flexible fingers located around said leads in said opening at said first end of said body with a portion of said shield means being held against the inner wall of said body by the outer portions of said fingers of said annular shield termination means, said fingers defining a portion of said shield termination means having an outside diameter greater than that of one end of said shield termination means, said shield termination means being located within said opening of said body such that said one end is closer to said electrical connector than the other end thereof.

4,243,291
POLARIZED ELECTRICAL OUTLET
Robert D. Leighton, Brockton, Mass., assignor to Alden Research Foundation, Brockton, Mass.
Filed Nov. 3, 1978, Ser. No. 957,461
Int. Cl.³ H01R 13/64, 13/50

- U.S. Cl. 339—184 M 8 Claims
1. A polarized electrical outlet for receiving a male plug with polarized blades of dissimilar widths comprising:
a body and a cap, said body and said cap each being formed of a thermoplastic material;
said cap including a plate with first and second planar surfaces disposed on opposite sides thereof, said first planar surface adapted to butt against the rear of a panel;
a crown having a generally rectangular rim integrally molded and disposed on the first planar surface;

a first cap-aperture and a second cap-aperture disposed in said crown and passing through said plate, said first cap-aperture being wider than said second cap-aperture so as to receive the wider of said polarized blades;
 a web disposed between the exterior edges of said first cap-aperture and the rim of the crown, the width of the web between the ends of the first cap-aperture and the rim of the crown being substantially the same as the width of the web between the side of the first cap-aperture and the rim of the crown;
 said body having a central cavity therein and a mouth disposed at one end thereof and a pair of body-apertures disposed at the other end thereof;
 two arcuate contacts movably disposed within said cavity with their convex surfaces respectively in abutment with the opposed sides of said cavity and arranged directly beneath said cap-apertures, said contacts being narrowed



at one end thereof to form shoulders with tabs extending therefrom, said shoulders being arranged to rest on the cavity and said tabs extending through said body-apertures;
 slotted recesses disposed in said cap for slidably engaging first ends of said contacts and the other ends of said contacts resting against the interior of said body, said contacts being free to expand lengthwise into said slotted recesses as the blades of a mating plug are inserted between the convex surfaces of the contacts and the opposed sides of the cavity;
 a third planar surface integrally molded and disposed on opposite sides of said mouth and arranged to butt said second planar surface in a parallel face-to-face association; and
 sealing means disposed on said second and/or third planar surface for bonding said second and third planar surfaces together and form the connector.

4,243,292

LOW PROFILE BATTERY CONNECTOR

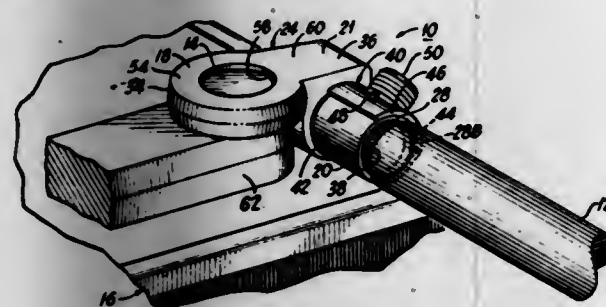
Joseph D. Kincaid, Western Springs, Ill., assignor to Brad Harrison Company, LaGrange, Ill.

Filed Sep. 10, 1979, Ser. No. 73,606

Int. Cl.³ H01R 11/28

U.S. Cl. 339-224

9 Claims



1. A battery cable connector comprising a body formed of lead and partially encapsulating a core assembly formed of copper, the core assembly including a ring and a tube contacting one another with a point on the ring periphery adjacent one end of the tube and with the ring lying in a plane generally tangent to the tube, said body including a first washer-like portion entirely enclosing said ring and defining a battery post

receiving opening, the thickness of said washer-like portion being smaller than the inside diameter of said tube, said body including a second portion integral and homogeneous with said first portion enclosing said one end of said tube, the other end of said tube extending from said second body portion to define a cable receiving socket.

4,243,293

HOLOGRAPHIC SCANNER INSENSITIVE TO MECHANICAL WOBBLE

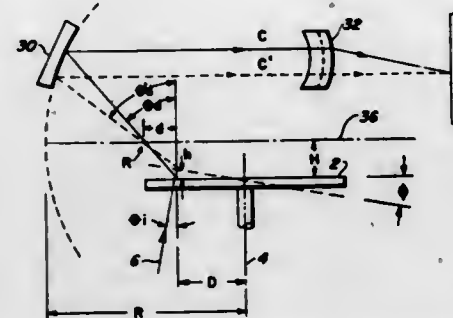
Charles J. Kramer, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 3, 1978, Ser. No. 921,409

Int. Cl.³ G02B 27/17

U.S. Cl. 350-3.71

1 Claim



1. In a holographic scanning system which includes a holographic spinner disposed in the path of a light ray from a source of coherent light; said holographic spinner having at least one holographic facet formed on its surface, a method of creating a condition whereby the spinner is insensitive to tilting caused by mechanical wobble during rotation including the steps of:

- directing said light ray incident upon the holographic spinner at an angle of incidence θ_i , said spinner diffracting said ray at a first order diffraction angle θ_d ;
- disposing a spherical mirror in the path of said diffracted ray, said mirror having an axis which is perpendicular to the spinner axis and having its center of curvature lying on said spinner axis;
- selecting a spacing D of the holographic facet from the spinner axis and a spacing H of the mirror axis from the spinner surface so as to satisfy the following Equation:

$$D = - \left[1 + \frac{\cos(\theta_i + \phi)}{\cos(\theta_d + \phi)} \right] \frac{H}{\sin \theta_d \cos \phi_d}$$

where ϕ is the nominal angle about which the spinner is tilted and where the upper signs apply to transmission type spinners and the lower to reflection type and
 (d) focusing the diffracted rays which are reflected in parallel paths from the mirror upon an imaging surface.

4,243,294

METHOD AND APPARATUS FOR GENERATING SYNCHRONIZING SIGNAL FOR A BEAM SCANNER

Masaru Noguchi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 29, 1977, Ser. No. 811,222

Claims priority, application Japan, Jul. 1, 1976, 51/77018

Int. Cl.³ G02B 27/17

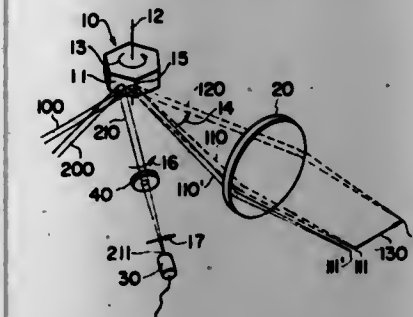
U.S. Cl. 350-6.8

8 Claims

1. A method for generating a synchronizing signal for a light beam scanner including a rotary, multi-surfaced mirror, comprising:

- directing a first, scanning beam of light at a surface of the mirror for reflection and deflection thereby;
- directing a second, synchronizing signal generating beam

of light at the same surface of the mirror for reflection and deflection thereby;
 (c) said second beam of light striking said mirror surface at a position in advance of said first beam of light, and
 (d) detecting the presence of the reflected and deflected



second beam of light at a first predetermined position corresponding in time to the presence of the reflected and deflected first beam of light at a second predetermined position in the vicinity of the start point of an information scan line, whereby the detection output constitutes a synchronizing signal.

4,243,295

POLARIZATION-INDEPENDENT OPTICAL DIRECTIONAL COUPLER SWITCH/MODULATOR

Rodney C. Allerness, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 19, 1979, Ser. No. 77,892

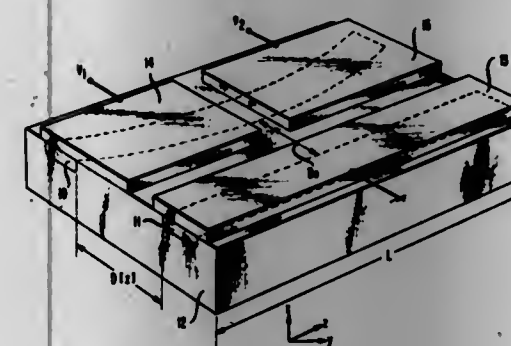
Int. Cl.³ G02B 5/14; G02F 1/137

U.S. Cl. 350-96.14

3 Claims

U.S. Cl. 350-96.15

20 Claims



1. A switch/modulator comprising:
 a pair of optical waveguides (10,11) supportive of TE and TM propagating modes having an interaction length L and coefficients of coupling for said modes that taper from a minimum at the ends of said waveguides to a maximum at a point therebetween;
 and means (13,14,15) for impressing voltages (V_1 , V_2) across selected portions of said waveguides;
 characterized in that:
 the waveguide parameters are such that the resulting normalized integrated coupling strengths $2s_{TE}/\pi$ and $2s_{TM}/\pi$ for said modes are between 1 and 1.3 or between 2.7 and 3;
 and in that $s_{TM} > s_{TE}$ in the region 1 to 1.3; and $s_{TM} < s_{TE}$ in the region of 2.7 to 3.

4,243,296

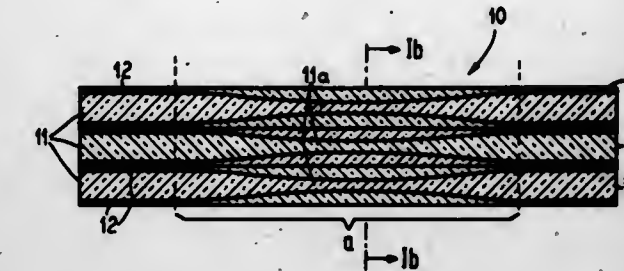
OPTICAL UNIT HAVING A LONGITUDINAL SIDE COUPLING ZONE

Hubert Anlich, Franz Aueracher, and Hans H. Witte, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
 Continuation-in-part of Ser. No. 946,521, Sep. 27, 1978, abandoned. This application Mar. 22, 1979, Ser. No. 22,708
 Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743368

Int. Cl.³ G02B 5/14

U.S. Cl. 350-96.15

4 Claims



1. In an optical unit having at least one longitudinal side coupling zone, said unit comprising at least one glass fiber having a glass core, a glass cladding layer surrounding the core with a step in the index of refraction from a greater to a lower value occurring at the junction between the glass core and the cladding layer, the improvement comprising the cross section of each glass fiber remaining uniform with constant outer dimensions along the entire length of the fiber and the core having at least one constriction to form the longitudinal coupling zone for each fiber.

4,243,297

OPTICAL WAVELENGTH DIVISION MULTIPLEXER MIXER-SPLITTER

Glenn R. Elson, Natick, Mass., assignor to International Communications and Energy, Inc., Natick, Mass.

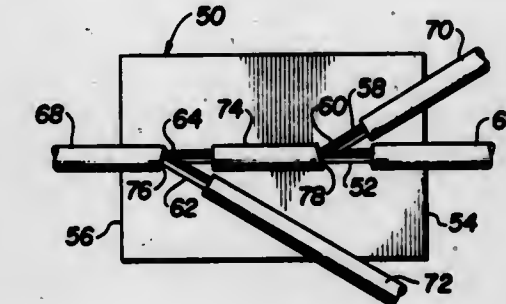
Filed Jun. 27, 1979, Ser. No. 52,895

Int. Cl.³ G02B 5/14

3 Claims

U.S. Cl. 350-96.15

20 Claims



1. An optical wavelength division multiplexer-splitter comprising:
 a substrate chip comprising a substantially flat wafer member having,
 a first groove fashioned with an upper surface of said wafer and extending in a straight line across the wafer from one edge to another edge thereof, and
 a second groove fashioned within the upper surface of said wafer and extending in a straight line from a third edge position thereof to a point intersecting said first groove at a generally central portion of said wafer;
 first optical fiber means for conducting light waves aligned upon and extending at least partially within said first groove from said one edge of said wafer and terminating in a position adjacent the intersection of said second groove with said first groove;
 second optical fiber means for conducting light waves

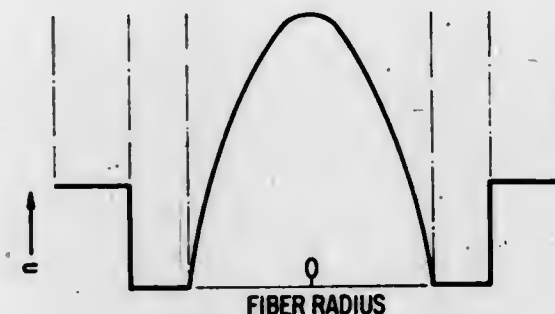
aligned upon and extending at least partially within said first groove and from said another edge of said wafer and terminating in a position adjacent the intersection of said second groove with said first groove and generally opposed to the terminating end of said first optical fiber means, the terminating end of said second optical fiber means being finished with a face at an angle relative to a central longitudinal axis of said second optical fiber means and the magnitude of the angle of said face with respect to a line drawn perpendicular to the central longitudinal axis of said second optical fiber means being approximately one half the magnitude of the angle formed between the central longitudinal axes of said first and third optical fiber means;

third optical fiber means for conducting light waves aligned upon and extending at least partially within said second groove and terminating in a position adjacent the intersection of said second groove with said first groove; optical coating means applied directly upon the face of said second optical fiber means; and means for mounting said first and second and said third optical fiber means at least partially within said first and second grooves respectively.

4,243,299
OPTICAL FIBERS FOR COMMUNICATION TRANSMISSION HAVING HIGH STABILITY TO NUCLEAR RADIATION
Georg Gliemerth, Mainz-Finthen; Lothar Meckel, Oestrich-Winkel, and Peter Heinemann, Wiesbaden, all of Fed. Rep. of Germany, assignors to JEnAer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany
Filed Sep. 12, 1978, Ser. No. 941,691
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741314

Int. Cl.² G02B 5/14
U.S. Cl. 350—96.34

15 Claims

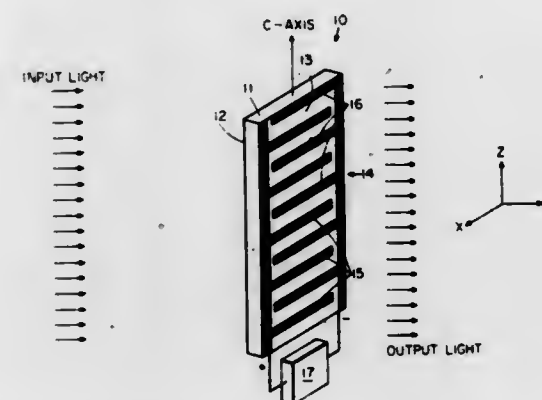


1. In an optical fiber comprising a light-conducting core and a borosilicate glass optical insulation cladding thereon, the improvement wherein the core and the cladding contain an amount of Sb_2O_3 effective to harden the fiber against nuclear radiation.

4,243,300
LARGE APERTURE PHASED ELEMENT MODULATOR/ANTENNA
William E. Richards, Silver Springs, Md., and Henry F. Taylor, Newbury Park, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 19, 1978, Ser. No. 970,828
Int. Cl.³ G02F 1/03

U.S. Cl. 350—150

8 Claims



1. A larger apertured apparatus for modulating impinging collimated optical signals in the tunable diffraction grating mode comprising:

an electro-optical crystal slab selected from the group of materials including acoustic grade lithium niobate and lithium tantalate having parallel, optically polished lateral faces dimensioned in at least of an order of magnitude greater than the crystal's thickness and fabricated from a material to orient the crystal's optic axis parallel to the lateral faces;

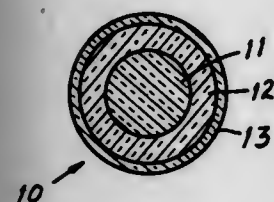
a first set of interdigital metallic electrodes orthogonally disposed with respect to the optic axis to extend across one of the lateral faces in an interdigital grating pattern, the dimensions of and the spacing between adjacent electrodes being such as to define a diffraction grating;

4,243,298
HIGH-STRENGTH OPTICAL PREFORMS AND FIBERS WITH THIN, HIGH-COMPRESSION OUTER LAYERS
Charles K. Kao, and Mokhtar S. Makiad, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 807,868, Jun. 20, 1977, abandoned. This application Oct. 6, 1978, Ser. No. 949,351

Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.33

17 Claims



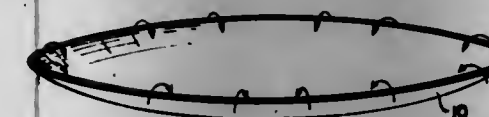
1. An optical light-transmitting structure having high tensile strength comprising:

a solid cylindrical core of a first doped silica material; a concentric cladding layer of a second doped silica material surrounding said core; said core and layer materials being selected for good optical transmission characteristics and also for a relatively high average coefficient of thermal expansion and a relatively low average glass transition temperature; and at least one additional concentric layer of a silica material surrounding said cladding layer; the outermost layer being substantially thinner than the enclosed layers and consisting of a silica material having a relatively low coefficient of thermal expansion and a relatively high glass transition temperature as compared to those of the layer which it encloses.

a second set of interdigital metallic electrodes disposed on the other one of the lateral surfaces in an interdigital grating pattern orthogonally disposed with respect to the crystal's optic axis and substantially identically spaced with respect to the first set of interdigital electrodes, the second set of interdigital metallic electrodes help provide a more uniform linear transverse Pockel's effect and like the first set of interdigital electrodes each electrode has a width less than the separation between adjacent electrodes to create predictable diffraction orders; and a source of potential coupled to both sets of the interdigital electrodes, the magnitude of the potential is maintained within a predetermined range to change the intensity of the zeroth diffraction order within preestablished limits and to prevent arcing between adjacent electrodes, to drive alternating electrodes in each set plus and minus producing changing electric fields in alternating directions substantially parallel to the optic axis to permit the selective change of index of refraction in the crystal, the changing electric fields in alternating directions create a linear transverse Pockel's effect for redistributing the diffraction orders of the impinging optical signals across a spatial period of a phase shift equal to twice the electrode spacing, the crystal and the electrodes are orientated to receive, modulate and transmit optical signals impinging from within an angle of incidence centered about the normal to the lateral faces; and an input linear polarizer disposed to receive the impinging optical signals having its transmission axis parallel to the crystal.

4,243,301
ELASTICALLY DEFORMED REFLECTORS
Roger A. Powell, 1589 Vernon Rd., Norristown, Pa. 19401
Filed Apr. 9, 1979, Ser. No. 28,124
Int. Cl.³ G02B 7/18, 5/10
U.S. Cl. 350—296

5 Claims



1. A reflector comprising a flexible planar member having a reflective surface and a substantially circular shape, and means for engaging said planar member, after said member has been flexed within its elastic limits to assume an arcuate shape having a desired radius of curvature, at various locations along the periphery thereof and for maintaining said planar member in its flexed state, said engaging and maintaining means comprising a substantially rigid and circular frame having inclined surfaces and a diameter less than the diameter of said planar member when said planar member is unflexed, and means for clamping portions of said planar member, adjacent the edges thereof, to said inclined surfaces on the frame, said inclined surfaces being tangent to said arcuate shape.

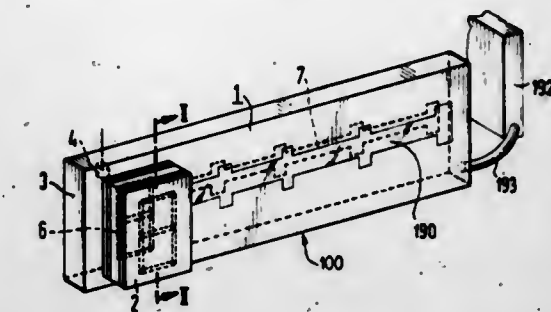
4,243,302
OPTICAL DISPLAY DEVICE
Otto Hanner, Auzing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Feb. 24, 1978, Ser. No. 881,043
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712325
Int. Cl.³ G02F 1/133

U.S. Cl. 350—345

2 Claims

1. An optical display device comprising a first fluorescent plate containing fluorescent particles, light outlet windows in the form of indentations on two regions of a rear surface of said first plate, the indentations in the first region being in the shape of at least one digit, the indentations in the second region being

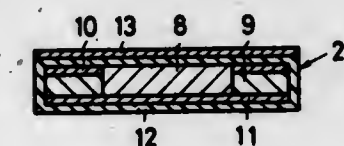
in the shape of a scale having a plurality of graduations, said indentations having frequency selective dielectric coatings for reflecting frequencies in the emission spectrum of the fluorescent particles, reflective layers on the side surfaces of the plate, a lamp embedded within said plate, a twisted nematic liquid crystal cell adjacent the front surface of said plate aligned with



only said first region, said liquid crystal cell having electrodes in the shape of segments being aligned with the indentations in said first region, a second fluorescent plate for collecting light, and a bundle of light conductive fibers for transferring light from said second fluorescent plate to said first fluorescent plate.

4,243,303
DISPLAY DEVICE FOR ELECTRONIC TIMEPIECES
Tadao Enomoto, Higashimurayama, and Nobuo Ito, Tokyo, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Mar. 1, 1979, Ser. No. 16,570
Claims priority, application Japan, Mar. 2, 1978, 53-23951
Int. Cl.³ G02F 1/133
U.S. Cl. 350—345

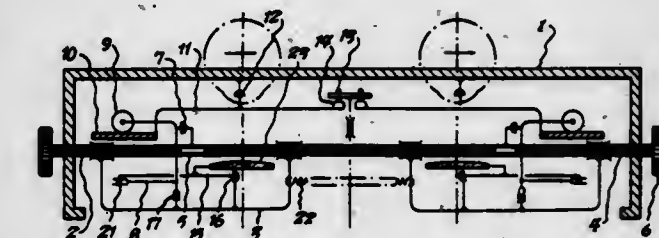
9 Claims



1. A display device for electronic timepieces comprising a liquid crystal display device and an illuminating device provided adjacent said liquid crystal display, said illuminating device comprising a light emitting element including tritium and a sealing member made of resin without hydrogen atoms for sealing said light emitting element.

4,243,304
CONVERGENCE MECHANISM FOR BINOCULAR REFRACTING INSTRUMENT
Rato R. Buhler, Dudley, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 28, 1979, Ser. No. 16,456
Int. Cl.³ A61B 3/02, 3/10
U.S. Cl. 351—27

5 Claims



1. A mechanism for converging a pair of lens batteries used for binocular refraction of patient's eyes at near and far distances which comprises, a frame, a straight fixed track supported by said frame, a shaft rotatably supported by said frame,

and shaft having a left-hand threaded portion and a right-hand threaded portion and extending parallel to said track, a pair of nuts threadably engaging a respective portion of said shaft, a pair of straight, selectively movable tracks mounted on said frame, each of said pair of straight movable tracks having a normal position and an alternate position, said normal position being parallel to said fixed track, said alternate position being spaced from and at a chosen angle to said normal position, a pair of carriages slidably mounted on said fixed track, a carriage connecting lever pivotably mounted on each of said pair of nuts, contact means extending from each lever and engaging a respective one of said movable tracks for rotating each lever when said movable tracks change from one of said positions to the other, support means pivotably mounted on each of said carriages for supporting a respective one of the lens batteries, connection means for transferring pivotal motion of each lever to said support means in each case, and positioning means for selectively moving said pair of movable tracks from said normal position to said alternate position.

4,243,305

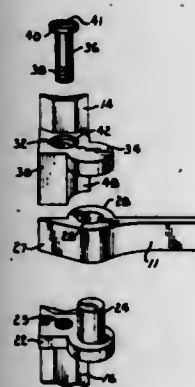
BOW AND HINGE MOUNTING ASSEMBLY FOR EYEGLASSES FRAMES

Engene E. Elder, 121 Belmont, Hebron, Neb. 68370
Filed May 1, 1978, Ser. No. 901,425

Int. Cl.³ G02C 5/14

U.S. Cl. 351-121

3 Claims



1. In an eyeglass structure having a bow and a split frame which includes a lens encasement having upper and lower lens engaging members separated from one another at a split portion of the frame, the improvement comprising:

- upper and lower mounting plates connected with and extending outwardly from the respective upper and lower lens engaging members at locations adjacent said split frame portion;
- a mounting aperture in said bow having upper and lower ends and presenting an opening extending between said ends, said mounting aperture being interposed between said mounting plates with said upper and lower ends disposed against the respective upper and lower mounting plates;
- a pin rigidly connected with one of said mounting plates in projection therefrom substantially through said opening of the mounting aperture to one of said upper and lower ends to mount the bow to said lens encasement for pivotal movement relative thereto about a hinge axis defined by said pin; and
- a fastening element extending between said mounting plates at a location offset from said pin to hold said lens engaging members together at said split portion of the frame and to secure said mounting plates against the ends of said mounting aperture with said pin extending substantially through said opening of the mounting aperture to pivotally mount the bow to the frame.

4,243,306

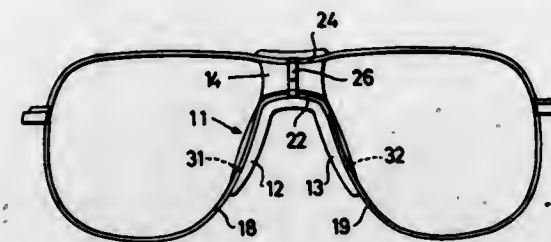
PAD DEVICE

Walter H. Bononi, Zeppelinstrasse 9, 7012 Fellbach-Schmidlen, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 731,737, Oct. 12, 1976, abandoned. This application May 30, 1978, Ser. No. 910,486
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.³ G02C 5/12

U.S. Cl. 351-136

12 Claims



1. A pad to be applied to the root area of the nose of a person wearing spectacle frames, comprising a homogenous material body having a closed, substantially smooth surface, said body material being permanently bondable to material used for spectacle frames, said body material being age-resistant and wear-resistant when worn, said material body having a lustrous surface and can be made translucent, said body material softness within a range of 10 to 30 measured according to DIN 53 505 on the Shore D hardness scale.

4,243,307

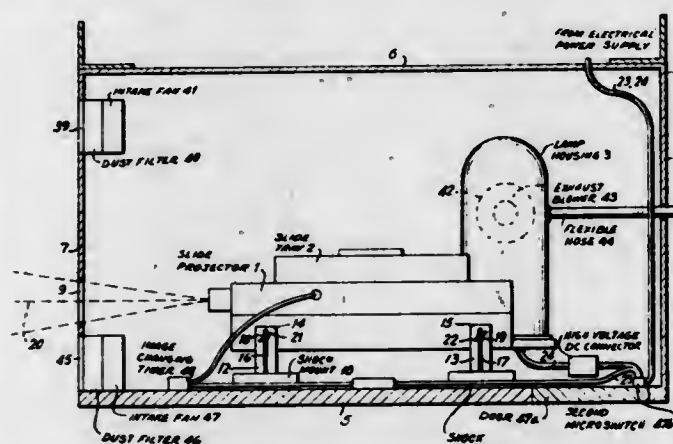
IMAGE PROJECTION SYSTEM

Dennis Rizzuto, 162-31 9th Ave., Whitestone, N.Y. 11357
Filed Dec. 11, 1978, Ser. No. 968,486

Int. Cl.³ G03B 21/16

U.S. Cl. 353-57

7 Claims



1. An image projection system having a slide projector with a slide tray and a lamp housing, said image projection system comprising a system housing having a bottom, a top, a front, a back and sides, said front having a window therein; shock mounting means in said system housing affixed to the bottom thereof; projector support means extending from said shock mounting means; securing means for releasably securing the slide projector to said projector support means in a manner whereby said slide projector is selectively adjustable in position relative to said bottom of said system housing and light transmitted from said slide projector is transmitted through said window; electrically conductive means extending through said system housing and electrically connected to said slide projector

- for supplying electrical energy for energizing said projector;
- a screen spaced from the front of said system housing for receiving light transmitted from said slide projector and presenting an enlarged reproduction of an image on a slide in the slide tray of said slide projector;
- timing means interconnected in said electrically conductive means for controlling the operation of said slide projector to operate the slide tray thereof in a manner whereby slides in said slide tray are positioned for projection of their images onto said screen in a predetermined sequence for predetermined periods of time; and
- a power supply housing mounted on said system housing, said power supply housing having first and second spaced opposite walls each with a hole formed therethrough, a disposable dust filter removably mounted in said power supply housing over the hole of one of the first and second walls and an exhaust fan mounted in said power supply housing over the hole of the other of said first and second walls for drawing air out of said power supply housing through said hole of said other of said walls.

4,243,308

EXPOSURE COMPUTATION CIRCUIT

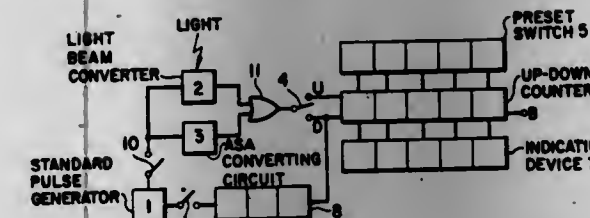
Sadao Yamada; Isao Arita, both of Kawasaki; Tadaaki Ito, Kanagawa, and Seichi Nakamoto, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Tokyo Shibaura Electric Co., Ltd., Kanagawa, both of Japan
Continuation of Ser. No. 746,205, Dec. 1, 1976, Pat. No. 4,139,289, which is a continuation of Ser. No. 521,876, Nov. 7, 1974, abandoned. This application Jan. 29, 1978, Ser. No. 920,254

Claims priority, application Japan, Nov. 8, 1973, 48/125735; Nov. 15, 1973, 48/128652

Int. Cl.³ G03B 17/18

U.S. Cl. 354-60 E

6 Claims



1. An exposure indication circuit comprising:

- (a) single exposure information forming means for forming an electrical signal corresponding to a preset exposure value, said forming means producing an electrical signal corresponding to a preset shutter time value when the shutter time value is preset and produces an electrical signal corresponding to a preset aperture value when the aperture value is preset;
- (b) circuit means for producing an electrical signal corresponding to an object brightness;
- (c) computing means having an input part for receiving said electrical signal corresponding to the intensity of light, said computing means being coupled to said single exposure information forming means for producing a first electrical signal indicative of shutter time value by computing the electrical signal from said information forming means and the electrical signal corresponding to the intensity of light when aperture value is preset and for producing a second electrical signal indicative of aperture value by computing the electrical signal from said information forming means and the electrical signal corresponding to the intensity of light when the shutter time value is preset; and
- (d) indication means connected to said computing means for displaying at least the shutter time value based on the first electrical signal and for displaying at least the aperture value based on the second electrical signal.

4,243,309

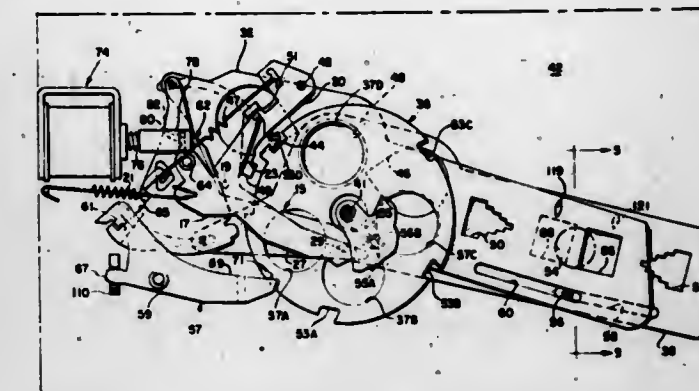
WALKING BEAM LATCH AND LENS DISC ACTUATOR ARRANGEMENT

Bruce K. Johnson, Andover, and George D. Whitsett, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 5, 1979, Ser. No. 17,196
Int. Cl.³ G03B 3/00, 17/30

U.S. Cl. 354-197

7 Claims



1. A camera having means for defining a focal plane, said camera comprising: a plurality of discrete lens elements each having a different focal length; means for holding said plurality of lens elements in circumferentially spaced apart relation with respect to each other for rotation about a center axis, rotation of said lens holding means from an initial position operating to sequentially move each of said lens elements into position to focus an image onto the camera focal plane of a photographic subject located at a different camera-to-subject distance; a blade mechanism; means for mounting said blade mechanism for movement between one arrangement in which said blade mechanism blocks scene light from being transmitted to the film plane and another arrangement in which said blade mechanism unblocks the passage of scene light to the film plane; actuable drive means for displacing said blade mechanism between its said one and other positions to define a photographic exposure interval; and means for latching said blade mechanism in its said scene light blocking arrangement and for rotatably driving said lens holding means to sequentially move each of said lens elements into its said focus position, said blade latching and lens driving means being movable from one blade mechanism latching position to another blade mechanism unlatching position to enable said drive means to displace said blade mechanism from its said scene light blocking arrangement to its said scene light unblocking arrangement to define said exposure interval, said movement of said blade latching and lens driving means from its said blade mechanism latching position to its said blade mechanism unlatching position simultaneously operating to actuate said lens holding means so as to rotatably drive said lens holding means to sequentially move each of said lens elements into its said focus position.

4,243,310

HIGH SPEED, LOW TEMPERATURE DIAZO PROCESSOR

Peter E. Herborn, Menlo Park, Calif., assignor to Quantar Corporation, Mountain View, Calif.

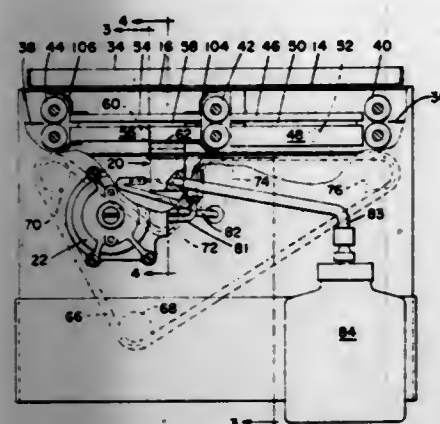
Filed Apr. 19, 1979, Ser. No. 31,695
Int. Cl.³ G03D 7/00

U.S. Cl. 354-299

14 Claims

1. A diazo film developing system comprising a first chamber for preheating said film, a second chamber for developing said preheated film, means for heating said second chamber,

means for moving said film through said first and said second chambers,
means defining a cavity adjacent said second chamber for receiving aqueous ammonia in controlled manner, and thermal control means comprising a heat resistant spacer element connecting said second chamber and said cavity



for maintaining a temperature differential therebetween, said cavity means having a temperature lower than the temperature of said second chamber whereby said aqueous ammonia is vaporized and the ammonia vapor contacts the emulsion of said film, the temperature differential causing the ammonia to separate from the water prior to contact with said film.

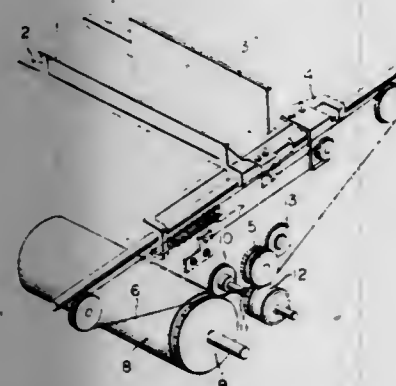
4,243,311

IMAGE FORMING APPARATUS

Yoshikuni Tohyama, Yokohama; Yoshimasa Kimura, Kawasaki; Masato Ishida, Yokohama, and Koichi Miyamoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 29, 1978, Ser. No. 937,871
Claims priority, application Japan, Sep. 2, 1977, 52-108574
Int. Cl.³ G03G 15/28

U.S. Cl. 355-8

19 Claims



12. A scanning exposure apparatus comprising:
a scanning exposure means;
means for causing forward and reverse displacement of said scanning exposure means;
means maintained in constant rotation; and
means for controlling the drive force of said displacing means by driving said displacing means with low acceleration at the initial stage of driving, said control means including a plurality of alternatively operable electromagnetic clutches for connecting said displacing means with said rotating means, wherein said control means is adapted to provide a voltage at the initial stage of driving which is lower than that provided during exposure, said voltage being applied to one of the different clutches according to the desired magnification of the exposure;
whereby an initial slip connection and low acceleration of said displacing means may be achieved.

4,243,312

ELECTROPHOTOGRAPHIC COPYING APPARATUS

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

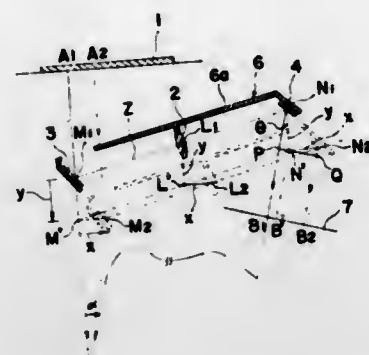
Filed Sep. 28, 1978, Ser. No. 946,831

Claims priority, application Japan, Oct. 11, 1977, 52-122107; Oct. 11, 1977, 52-122108; Dec. 19, 1977, 52-153205; Dec. 19, 1977, 52-171196[U]

Int. Cl.³ G03G 15/28, 15/32

U.S. Cl. 355-8

17 Claims



1. An electrophotographic copying apparatus which is capable of copying an original at different copying magnifications, said copying apparatus comprising:

an original supporting surface on which the original to be copied is placed, said original supporting surface being at a stationary original plane;
a stationary projecting plane on which an image of said original is to be projected;
a photosensitive member movable along said projecting plane;

optical means between said original supporting surface and said projecting plane for projecting an image of the original from said original supporting surface onto said photosensitive member, said optical means including an optical unit having a frame with a lens and at least one reflective member attached to said frame to form a single unit, and said optical unit being positioned with the optical axis of said lens at the entry of said optical unit in non-parallel relation to an optical axis of said lens at the exit of said optical unit; and said optical unit being movable from a first position corresponding to a first magnification to a different position corresponding to a second magnification for changing the ratio of the length of said optical axis between said original supporting surface and said lens to the length of said optical axis between said lens and said projecting plane and thereby changing the copying magnification of said image of original projected on said projecting plane.

4,243,313

IMAGE FORMING DEVICE

Shunichi Masuda, Tokyo, and Katsuichi Shimizu, Hoya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1978, Ser. No. 966,748

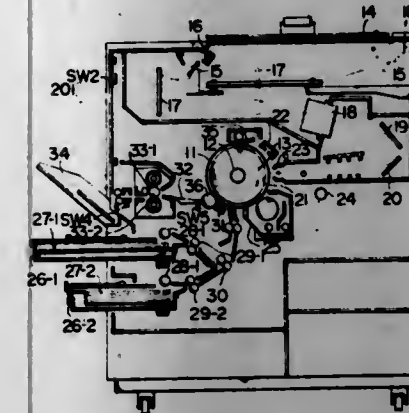
Claims priority, application Japan, Dec. 6, 1977, 52/146928
Int. Cl.³ G03G 15/00

U.S. Cl. 355-14 R

44 Claims

1. An image forming apparatus, comprising:
process means for forming an image on a recording member;
power switch means for supplying power to said image forming apparatus;
setting means for setting instructions for repetitive image forming operations;
first control means for completing the repetitive image forming operations instructed by said setting means, and for storing and indicating a number relating to the image forming operation; and
second control means for turning off the power supply at least for the storing or indicating operation in response to

the turning-off of said power switch means before the start or after the termination of the image forming operation, and for maintaining the power supply for the storing or



indicating operation despite the turning-off of said power switch means, upon the interruption of the image forming operation caused by trouble in the apparatus.

4,243,314

ADJUSTABLE WIDTH PUNCH MARKING APPARATUS FOR PHOTOGRAPHIC PRINTER

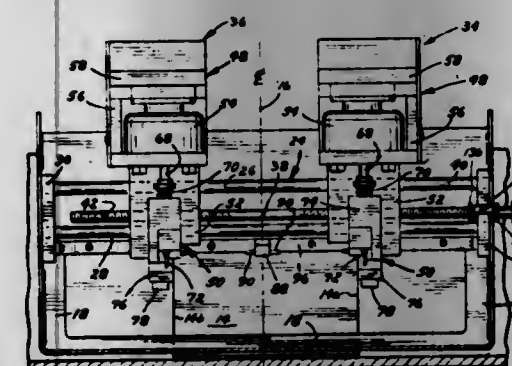
Gerald R. Bowe, Blaine, and James F. Stewart, St. Paul, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Aug. 6, 1979, Ser. No. 64,131

Int. Cl.³ G03B 29/00

U.S. Cl. 355-29

9 Claims



1. In a photographic printer in which a photographic print paper strip is transported along a paper path and is exposed to light from a photographic film original at a print mask location, and in which print mask means located at the print mask location defines first and second transverse masking edges of an exposure area, adjustable indicia producing apparatus for providing indicia at selected locations of the print paper and being adjustable to accommodate print paper strips of different widths, the adjustable indicia producing apparatus comprising:
guide means positioned proximate the print mask location and defining a guide path transverse to the paper path and parallel to the first transverse masking edge;
first and second carriage means movable along the guide path on opposite sides, respectively, of a center line of the paper path slidably supported by the guide means;
carriage positioning means for moving the first and second carriage means along the guide path essentially symmetrically and simultaneously about the center line of the paper path; and
first indicia producing means carried by the first carriage means for providing indicia at selected longitudinal positions as the print paper is advanced along the paper path, the first indicia producing means having a position transverse to the paper path which is adjustable by movement of the first carriage means to accommodate print paper strips of different widths.

4,243,315

DEVICE FOR SELECTIVELY DISTORTING REFLECTED IMAGES AND THE METHOD OF PERFORMING SAME

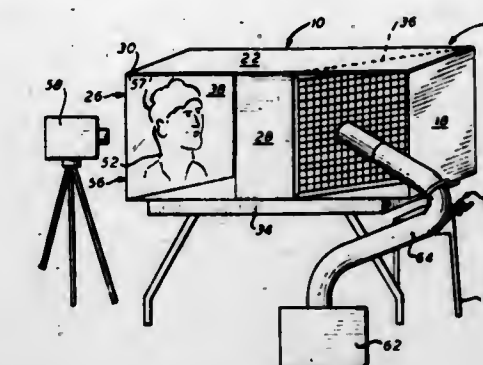
Clifford R. Wolf, 33 Glacier Dr., Morris Plains, N.J. 07950

Filed Aug. 21, 1978, Ser. No. 935,164

Int. Cl.³ G03B 27/68

U.S. Cl. 355-52

19 Claims



1. A device for producing recordable visual effects in which a selected visual field is to be recorded by a television camera, movie camera, or other recording device, said device comprising:

(a) a housing;
(b) a first mirror secured to said housing, the reflective surface of said mirror presenting the reflected visual field to the recording device; and
(c) a device for distorting said reflecting surface of said mirror so as to provide at least one predetermined area of distortion with reference to the reflected visual field, said device being randomly positionable and movable with reference to said reflecting surface thereby providing predetermined visual distortion at any desired location within said visual field.

16. The process of selectively distorting an image for recording, comprising:

(a) providing an object for recording;
(b) providing means for reflecting the image of the object;
(c) providing means for recording the image;
(d) distorting a portion of the reflecting means so as to present a visually distorted part of said reflected image with respect to the remainder of the image without substantially distorting other portions of the image.

4,243,316

REGISTRATION MECHANISM

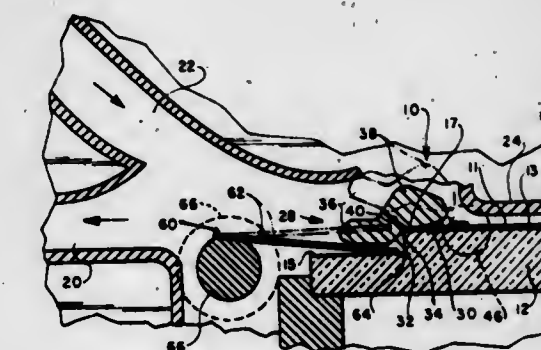
Gary B. Gustafson, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,542

Int. Cl.³ G03B 27/62

U.S. Cl. 355-75

7 Claims



1. In a copier having a frame, a platen supported by the frame, the platen having an edge and an upper surface, and sheet feeding apparatus mounted on the frame for movement between a first position directly over the platen and a second position away from the platen, the sheet feeding apparatus

when in its first position being effective to move a document sheet across the platen surface (1) in a first direction wherein the leading edge of a document sheet is advanced toward the edge of the platen and (2) in a second direction wherein the leading edge of a document sheet is advanced in the opposite direction and away from the edge of the platen, and the sheet feeding apparatus when in its second position being spaced from the platen by a distance sufficient to allow document sheets, books or the like to be placed manually on the platen for copying, the improvement comprising:

a gate member comprising an elongate bar having a first surface and a second surface, the bar surfaces meeting along a line extending along the length of the bar and defining an obtuse angle;

means mounting the bar on the frame independent of the document feeder for pivotable movement about an axis extending along the platen surface parallel to the platen edge and spaced from the platen edge;

means for moving the bar about the axis between (1) a first position wherein the line between the bar surfaces extends along the platen edge and the first surface of the bar is above the platen surface and defines with the platen surface a small acute angle, and (2) a second position wherein the bar is raised from its first position so that the first and second surfaces are above the platen surface to allow movement of a document sheet along the platen surface and past the edge of the platen in either the first direction or the second direction; and

a sheet deflector comprising an elongate member having a guide surface located alongside the platen, the deflector having an edge at the end of the deflector surface that is adjacent the edge of the platen, the deflector being movable between (1) a first position wherein the deflector edge is beneath the platen edge so that sheets advanced in the first direction past the platen edge pass over the deflector edge and (2) a second position wherein the deflector edge is above the platen edge so that sheets advanced in the second direction over the deflector surface and onto the platen surface pass over the platen edge.

4,243,317

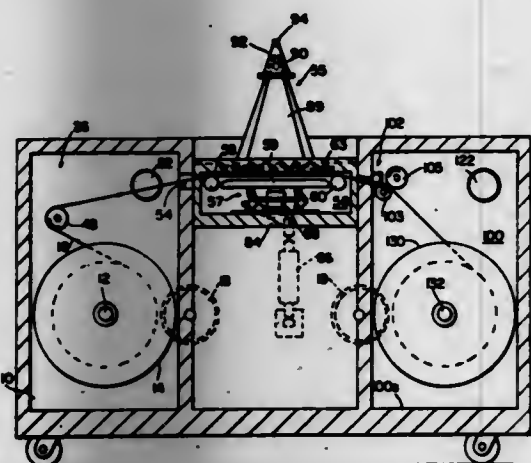
CONTACT PRINTING APPARATUS

William F. Garbe, and Joseph J. Wrobel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 27, 1979, Ser. No. 52,537

Int. Cl.³ G03B 27/20

U.S. Cl. 355-91

13 Claims



1. Apparatus for use in contact printing information from a master record carrier onto a replicate material that emits a gas during the contact print exposure, said apparatus comprising: means for bringing the master record carrier and replicate material into contact;

an isolating member resistant to stretch and compression disposed so as to be sandwiched between said contacting means and the contacted master record carrier and replicate material, thereby isolating the master record carrier

and replicate material from strain forces from said contacting means; and

a source of radiation for making the contact print exposure that does not expose the master record carrier and replicate material to radiation of a type that would cause significant relative thermal expansion of the master record carrier and replicate material.

4,243,318

FLUORESCENCE ANALYSIS OF STAINED PARTICLES

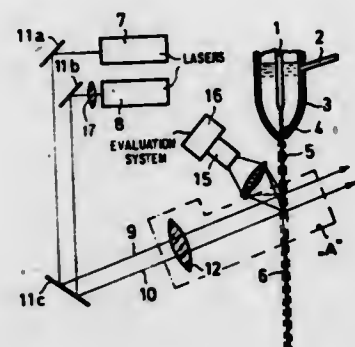
Michael Stühr, Heidelberg, Fed. Rep. of Germany, assignor to Deutsches Krebsforschungszentrum, Heidelberg, Fed. Rep. of Germany
Filed Jul. 13, 1978, Ser. No. 924,382

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732272

Int. Cl.³ G01J 21/64

U.S. Cl. 356-39

3 Claims



1. In apparatus for effecting fluorescence analysis of particles, dyed with two different dyestuffs in a continuous flow-through procedure, by suspending the particles in a carrier fluid, forming the particle-containing carrier fluid into a sample stream and encasing the sample stream in a sheath stream, conducting the resulting composite stream in laminar flow through an intensive laser light zone where fluorescent light pulses are generated by the laser light and emanate from the particles, and detecting and processing the fluorescent light pulses in real time in an electronic evaluation system, the improvement comprising a focussing lens system for producing the laser light zone by focussing at least two laser beams of respectively different wavelengths, each wavelength being matched to a respectively different dyestuff or its fluorescence spectrum, on two points located at the center of the sample stream and spaced at a given distance apart along the path of the particle-containing fluid in the composite stream, said lens system being arranged to direct the laser beams normal to the sample stream with a slight divergence from one another, which divergence determines the spacing between the points at which the beams are focussed, and pivotally mounted deflection mirrors located upstream of said lens system for reflecting the laser beams onto said system and for adjusting the spacing between such points, and wherein said electronic evaluation system comprises means for correlating the fluorescent light pulses emanating from the two points on the basis of the spacing between the two points and of the flow speed of the stream, in order to evaluate only those pulses which correspond to the travel time of individual particles between the two points.

4,243,319

OPTICAL PROPERTY MEASUREMENT SYSTEM AND METHOD

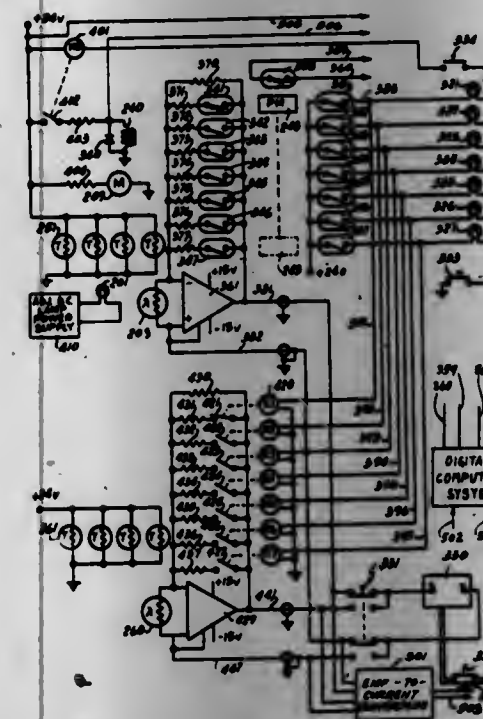
Fred P. Lodzinski, Port Edwards, Wis., assignor to Nekooos Papers, Inc., Port Edwards, Wis.

Continuation-in-part of Ser. No. 429,637, Dec. 28, 1973, abandoned, said Ser. No. 540,251, said Ser. No. 543,902. This application Jan. 24, 1977, Ser. No. 761,595

Int. Cl.³ G01N 21/17, 21/86

U.S. Cl. 356-73

1 Claim



1. Apparatus for obtaining a quantitative measure of a paper optical property, which optical property is defined on the basis of reflectance measurement alone with specified backing and with respect to a given spectral response function of substantial bandwidth, said apparatus comprising:

(a) an optical measuring device having a receiving region for receiving in operative relation thereto a single thickness of paper sheet material,

(b) said optical measuring device having an optical system with at least two substantially independent photometric sensors and at least partly distinct light energy paths each including at least light source and spectral response filter means and a respective one of said photometric sensors, and each intersecting said receiving region prior to the respective associated photometric sensor,

(c) each of said at least two distinct light energy paths having substantially a common spectral response characteristic sufficient to characterize said paper optical property and substantially corresponding to said spectral response function of substantial bandwidth, but being respectively arranged for collecting reflected and transmitted light energy from the receiving region after impingement of the light energy on a single thickness of paper sheet material at said region to provide reflectance and transmittance output signals, and

(d) means (361, 370-377) connected with the photometric sensor (203) supplying said reflectance output signal for individually calibrating the same to provide a calibrated reflectance measurement correlated with an absolute reflectance of said paper sheet material, and means (429, 430-437) connected with the photometric sensor (260) supplying said transmittance output signal for individually calibrating the same to provide a calibrated transmittance measurement correlated with an absolute transmittance of said paper sheet material, with said calibrated reflectance and transmittance measurements together essentially characterizing the exclusively reflectance based paper optical property of the paper sheet material, whereby the paper optical property whose definition involves reflectance measurement alone is characterized with substantially

greater accuracy than any characterization of said paper optical property by either a reflectance or a transmittance measurement on single thickness sheet material taken by itself.

4,243,320

METHODS FOR TESTING OPTICAL FIBRES

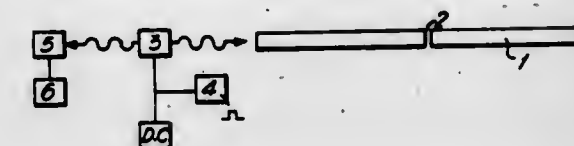
Kevin S. Gordon, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 20, 1979, Ser. No. 22,433

Int. Cl.³ G01N 21/88

U.S. Cl. 356-73.1

3 Claims



1. A method for determining the position of a reflective discontinuity in an optical fibre comprising the steps:

applying the output of an electrical pulse generator to a semiconductor laser to generate a train of recurrent light pulses;

directing the train of recurrent light pulses into one end of the fibre;

monitoring the level of lasing activity in the laser;

varying the pulse repetition frequency of the electrical pulse generator until a frequency obtains at which light pulses self couple into the laser after reflection from the reflectivity discontinuity, the laser then undergoing a marked change in the level of changing activity owing to interference of the reflected light with light being generated within the laser;

successfully halving the pulse repetition frequency obtained; after each frequency reduction, monitoring the level of lasing activity to determine the lowest frequency, F, at which said change in lasing activity exists; and thereby determining the distance of the reflective discontinuity from the formula $2L = vT$ where

T is the period at frequency F;

v is the speed of light in the fibre; and

L is the distance between the fibre end and the reflective discontinuity.

4,243,321

HANDY REFRACTOMETER

Minoru Okuda, Akatsukashinmachi, and Mikio Ito, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 27, 1979, Ser. No. 69,925

Int. Cl.³ G01N 21/43

U.S. Cl. 356-135

7 Claims

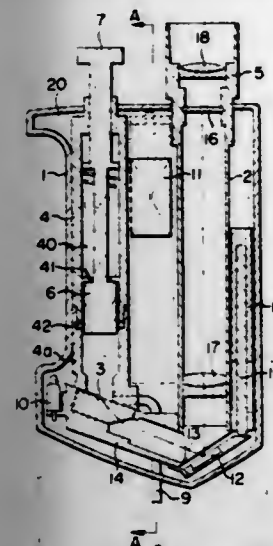
1. A refractometer of the type in which a sample is introduced onto a prism by a pump device, whereafter the sample is illuminated so that the critical angle of the sample is measured, said refractometer comprising:

a substantially rectangular parallelepiped frame member of relatively short length, width and thickness thereof;

a cylinder provided within said frame member in such a manner that the longitudinal axis of the cylinder is parallel to that of said frame member, a piston being slidably disposed at the upper end of said cylinder, the end of said piston being projected from said frame member;

an observation lens barrel disposed laterally within said frame member and in juxtaposed relationship with said cylinder, said lens barrel having an eyepiece portion which is projected from said frame member so as to be in juxtaposed relationship with the end of said piston;

prism holding means for holding said prism adjacent to the lower end of said cylinder within said frame member; and



reflector means for directing a light beam emergent from said prism to said observation lens barrel.

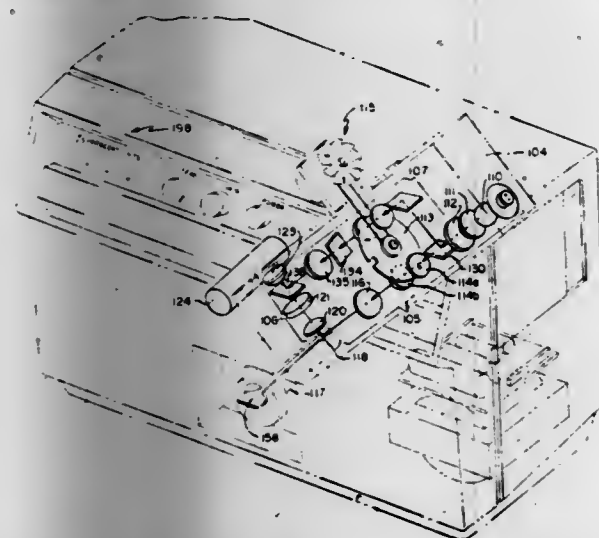
4,243,322 METHOD AND APPARATUS FOR PHOTOLUMINESCENT DETECTION AND MEASUREMENT

Thomas J. Ingals, San Jose, Calif., assignor to International Diagnostic Technology, Santa Clara, Calif.
Continuation of Ser. No. 703,578. This application Apr. 24, 1978, Ser. No. 899,545

Int. Cl.³ G01N 21/01, 21/09

U.S. Cl. 356-244

3 Claims



1. An apparatus for analyzing a sample by photoluminescent techniques comprising:

a sample being supported as an exposed layer by a surface portion of a carrier member;

test stage means for supporting said carrier member at an analysis location in said apparatus, said test stage means being provided with an elongate slot adapted to removably receive said carrier member, the end of said slot within said test stage having a stop thereat for establishing the fully inserted position of said carrier member, said test stage means further has a means for urging said carrier member toward said stop in the fully inserted position of said carrier member within said test stage;

illumination means forming a first optical system intersecting said analysis location for delivering excitation radiation to the sample surface thereat;

photoluminescent collection means forming a second optical system intersecting said analysis location for receiving photoluminescence emitted from the sample surface thereat;

said illumination means, collection means and test stage

means being constructed and arranged whereby the illumination radiation impinges upon said surface to excite the same and said collection means focuses upon said surface to receive radiation emitted therefrom from the same exposed side; and,

means for supporting said illumination and collection means and said test stage means to form therewith a quiescent enclosure about the sample layer contained therein whereby said sample surface is substantially isolated from conditions external to said enclosure.

4,243,323 INTERFEROMETER

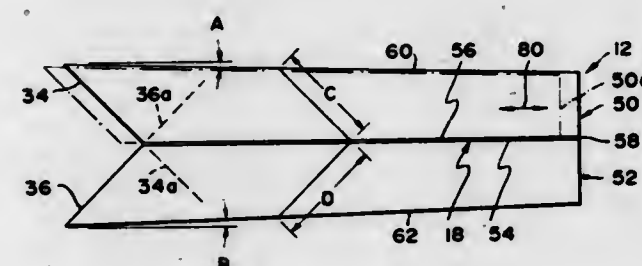
Robert A. Froesch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and James B. Breckinridge, La Canada, Calif.

Filed Nov. 30, 1978, Ser. No. 965,368

Int. Cl.³ G01B 9/02

U.S. Cl. 356-345

12 Claims



8. In an interferometer which includes a detector for detecting the interference pattern formed by combined light beam components, the improvement of a beam splitter device comprising:

first and second optical elements having facewise adjacent surfaces; and

a film of liquid lying substantially between and in contact with said surfaces, and defining the separation between said element surfaces;

said liquid film having a thickness less than 20 microinches, whereby to pass a largely uniformly high proportion of light of a range of wavelengths that are directed at said film.

4,243,324

FEEDBACK SYSTEM FOR CONTROLLING LOCK-IN IN SPRING SUSPENDED RING LASER GYROSCOPE

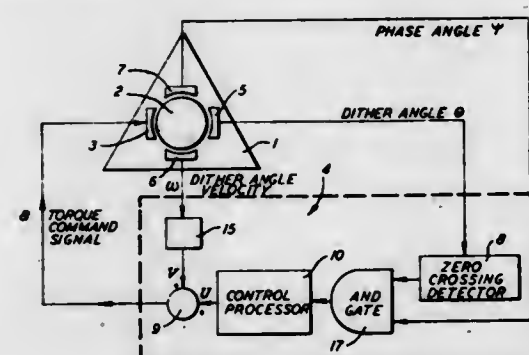
Bernard Friedland, West Orange, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Mar. 21, 1979, Ser. No. 22,557

Int. Cl.³ G01C 19/64

U.S. Cl. 356-350

16 Claims



1. In combination with a spring suspended ring laser gyroscope for providing a gyroscope readout which is proportional to angular input, the gyroscope being suspended by springs from a support;

a torquer for dithering the gyroscope relative to the support in response to a control signal;

means for measuring the optical phase angle of the gyroscope and providing a signal proportional thereto;

means for measuring the movement of the gyroscope relative to the support and providing a signal proportional to dither angle and a signal proportional to dither angular velocity;

a feedback unit for generating a control signal which is a function of the optical phase angle signal, the dither angle signal, and the dither angular velocity signal.

4,243,325

OPTICAL DISTANCE MEASURING INSTRUMENT

Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,249

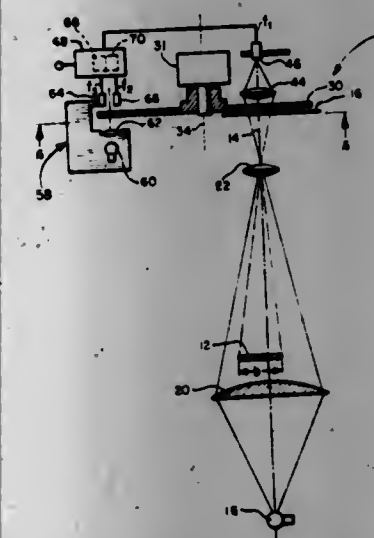
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758853

The portion of the term of this patent subsequent to Oct. 16, 1996, has been disclaimed.

Int. Cl.³ G01B 11/00, 11/02; G02B 27/17

U.S. Cl. 356-372

11 Claims



1. In a device for measuring a dimension of an object, said device including first means for defining an opaque rotatable disc provided with at least one translucent spiral slit; second means for defining an opaque diaphragm provided with a translucent slit, wherein the diaphragm is arranged to form an overlap zone between the diaphragm slit and the spiral slit, which zone moves along the diaphragm slit as the disc turns; means for generating an image of the object near the diaphragm slit with the dimension to be measured in the region of and substantially parallel to the diaphragm slit; means responsive to the light passing through the overlap zone for generating a measuring signal; and means for evaluating the measuring signal, the improvement comprising:

the spiral slit of the disc is formed substantially in the shape of an involute that proceeds from a base circle centered at the center of rotation of the disc; and

the diaphragm slit is substantially linear and is arranged substantially on a line tangent to the base circle of the spiral slit of the disc.

4,243,326

NICKEL ANALYSIS DEVICE

Tin B. Yee, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 4, 1979, Ser. No. 81,998

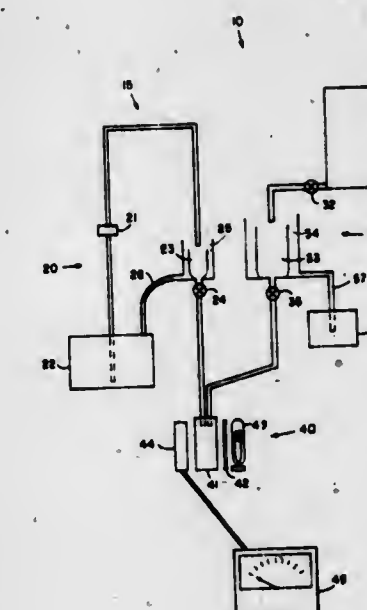
Int. Cl.³ G01N 21/27

U.S. Cl. 356-414

2 Claims

1. A device for colorimetric analysis of nickel in an acidic chemical plating solution comprising: an automatic measuring

system having a first and second automatic measuring system, said first measuring system having a container for holding acidic chemical plating solution, pumping means having an inlet and outlet member, said inlet member connected to said container for receiving said solution, a volumetric cup disposed to receive said solution discharged from said outlet member of said pump, said cup having an inner and an outer section, said inner section being connected to a first means for draining said solution, said outer section disposed for receiving any overflow from said inner section and means connecting said outer cup to said container; said second automatic measuring system having a second container for holding standardized ammonium hydroxide solution and positioned so that flow of said standardized ammonium hydroxide solution is gravity fed, a second volumetric cup having an inner and outer section, means for flow control connected between said second container and said cup, said inner section of said cup being disposed to receive said standardized ammonium hydroxide solution from said second container, said inner section of said cup



having drain means at bottom for draining said standardized ammonium hydroxide solution, said outer section being disposed for receiving any overflow from said inner section and means connecting said outer section to an overflow container for receiving any overflow; a colorimeter measuring system having an absorption cell for receiving a desired solution from said first and second cups, a filter positioned adjacent to said cell, a lamp for providing a source of light positioned adjacent to said filter for receiving and transmitting said source of light, said filter yielding a monochromatic light, near the 580 millimicrons wavelength when said filter is a yellow filter or near 525 millimicrons wavelength when said filter is a green filter, which is transmitted through said absorption cell, a detector and amplifier means positioned on the side of the cell opposite said filter and in line with said light, and an indicator attached to said detector for indicating the amount of light received by said detector through said filter and said cell wherein the nickel content of said chemical plating solution is determined by comparison with detector indication of the amount of said light transmitted through a standard sample.

4,243,327

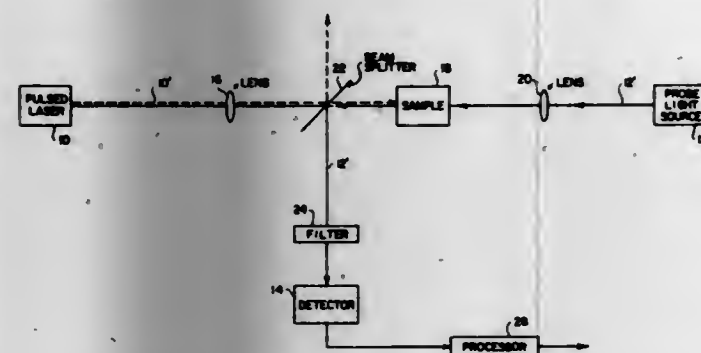
DOUBLE-BEAM OPTICAL METHOD AND APPARATUS FOR MEASURING THERMAL DIFFUSIVITY AND OTHER MOLECULAR DYNAMIC PROCESSES IN UTILIZING THE TRANSIENT THERMAL LENS EFFECT
Robert A. Froeh, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Froeh; Jovan Moacanin, Los Angeles; Amitava Gupta, Pasadena, and Sudeen Hong, Temple City, all of Calif.

Filed Jan. 31, 1979, Ser. No. 8,211

Int. Cl.³ G01N 21/01

U.S. Cl. 356-432

16 Claims



1. An apparatus for measuring thermal diffusivity of a sample material comprising:

a pulsed laser light source for providing a pulsed laser light beam directed to irradiate said sample material whose thermal diffusivity is to be measured, said pulsed laser light beam characteristics being chosen to cause formation of a thermal lens in said sample material;

a probe light beam source for providing a probe light beam directed to irradiate said thermal lens;

a probe light beam focusing lens located between said probe light beam source and said sample material, said focusing lens providing a converging/diverging beam with a focal point at a predetermined location with respect to said thermal lens thereby resulting in an intensity alteration of said probe light beam as a result of irradiating said thermal lens; and

means for detecting the intensity of at least a portion of said probe light beam after having irradiated said thermal lens during a portion of the dissipation time of said thermal lens, thereby providing an intensity versus time profile related to the thermal diffusivity of said sample material.

4,243,328

TRAILER TRANSIT MIXER

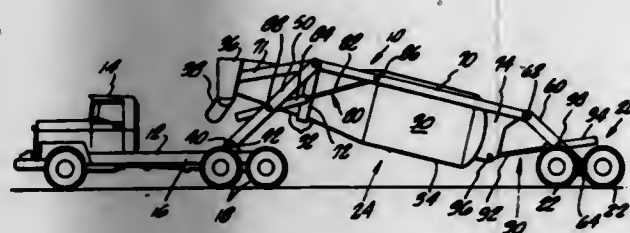
Evan S. Prichard, Newport Beach, Calif., assignor to Challenge-Cook Bros. Incorporated, Industry, Calif.

Filed Jul. 16, 1979, Ser. No. 57,650

Int. Cl.³ B28C 5/20, 5/42

U.S. Cl. 366-62

12 Claims



1. In a trailer transit mixer for use with a truck having a fifth wheel assembly, the improvement comprising, a mixer drum assembly including a mixer drum and means operatively supporting said drum, a trailer wheel assembly, means supporting one end of said mixer drum assembly on said trailer wheel assembly and selectively operable to shift the longitudinal position of said drum relative to said trailer wheel assembly, means supporting the other end of said mixer drum assembly on the truck fifth wheel assembly and selectively operable to

shift the longitudinal position of said drum relative to the truck, the selective operation of said supporting means causing the said other end of said mixer drum to extend over the front of the truck without obstructing movement of the truck, and said other end having an opening and means associated therewith for discharging the contents of said mixer drum beyond the front of the truck.

4,243,329

WATCH MOVEMENT CONSTRUCTION

Yasuaki Nakayama, Hanno, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

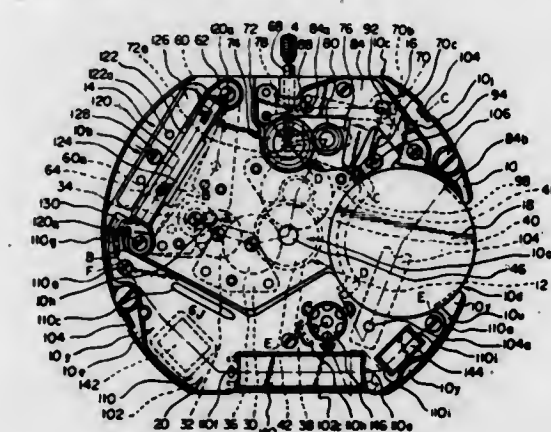
Filed Oct. 25, 1978, Ser. No. 954,501

Claims priority, application Japan, Nov. 1, 1977, 52-131140; Nov. 24, 1977, 52-141031; Dec. 6, 1977, 52-163592[U]; Dec. 13, 1977, 52-149777; Dec. 13, 1977, 52-149778; Dec. 13, 1977, 52-167283[U]; Dec. 14, 1977, 52-150009; Dec. 14, 1977, 52-168202[U]; Dec. 21, 1977, 52-153714; Dec. 21, 1977, 52-153717; Dec. 23, 1977, 52-155131; Dec. 27, 1977, 52-175179[U]; Mar. 29, 1978, 53-40547[U]

Int. Cl.³ G04B 19/00, 29/04; G04C 23/04

U.S. Cl. 368-76

74 Claims



1. A movement construction for an electronic timepiece powered by a battery and having an electronic circuit section arranged to provide drive signals indicative of time information, and an electro-mechanical transducer responsive to said drive signals to actuate time-indicating hands adjacent a time dial to display said time information, comprising:

a base plate having its one side fixedly supporting said time dial and having a thickness substantially equal to a thickness of said movement construction, said base plate including a central region and first and second marginal regions;

a wheel train mechanism disposed in said central region of said base plate substantially within the thickness of said base plate, said wheel train mechanism being driven by said electro-mechanical transducer for actuating said time-indicating hands;

said electro-mechanical transducer being disposed in said first marginal region of said base plate substantially within the thickness of said base plate; and

said electronic circuit section including a circuit substrate and a plurality of electronic components disposed in said second marginal region of said base plate substantially within the thickness of said base plate.

4,243,330

DOT PRINTER ADJUSTABLE ENDLESS LOOP RIBBON CARTRIDGE TRANSPORT APPARATUS

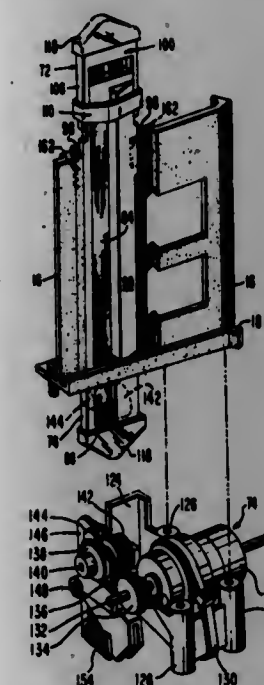
Harry L. Wallace, Livonia; Anthony Horak, Detroit; Frederick G. Krebs, Rochester, and Louis R. Brown, Livonia, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 15, 1979, Ser. No. 3,496

Int. Cl.³ B41J 33/10

U.S. Cl. 400-194

3 Claims



1. A demountable, disposable ribbon cartridge for use with a dot printer for printing on check item documents comprising: a flat, thin, elongated, rigid member having integral means for deflecting the documents relative thereto, the rigid member including means for guiding a single loop of inked ribbon from end to end thereof;

means, operably associated with the ribbon guiding means, for adjusting the length of the ribbon cartridge effectively placing the ribbon loop under suitable tension for printing therefrom, wherein the ribbon cartridge length adjusting means includes a u-shaped member having a plurality of serrations along a substantial portion of each parallel leg of the u-shaped member and wherein the rigid member is provided with a similar plurality of serrations along the external edges thereof for mating engagement with the serrations of the u-shaped member effective to provide an adjusting mechanism; and

means, integral with the rigid member, for operably positioning the cartridge relative to an associated drive means and to a printing mechanism with which the cartridge is employed.

4,243,331

APPARATUS FOR ADJUSTING A CARRIAGE RELATIVE TO A PLATEN

James G. Savage, Newark, and Brian E. Jagger, Union City, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 28, 1979, Ser. No. 24,804

Int. Cl.³ B41J 11/20

U.S. Cl. 400-59

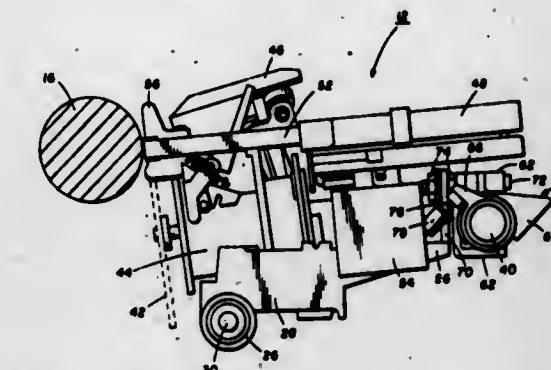
5 Claims

1. Apparatus for adjusting a carriage assembly in a printing relationship to a platen, said apparatus comprising:

a printing mechanism supported on said carriage assembly and including a print element and a print hammer assembly;

a first support rail located in a first plane, means for connecting said carriage to said first support rail for linear and rotational movement with respect to said first support rail,

a second support rail substantially parallel to said first support rail, support means extending from said carriage assembly and oriented in a second plane substantially perpendicular to said first plane, an elongate tubular housing having opposing normally open ends through which said second support rail is disposed in contacting relatively movable relation, said elongate tubular housing includes at least two trough-shaped depressions of different depths formed at predetermined locations in the outer surface thereof and a cutout portion



forming another depression located at a different predetermined location in the outer surface thereof, and a generally C-shaped member positioned to fit around said tubular housing in a supporting relationship and capable of relative rotational movement therebetween, said C-shaped member being supported from said support means for pivotal movement therefrom in said first plane and supported therefrom for translational movement in said second plane,

whereby the distance between said carriage assembly and said platen is varied upon relative rotational movement between said tubular housing and said C-shaped member.

4,243,332

ELECTRODE GUIDE

Kurt Hartmann, Calw-Hausnaden, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

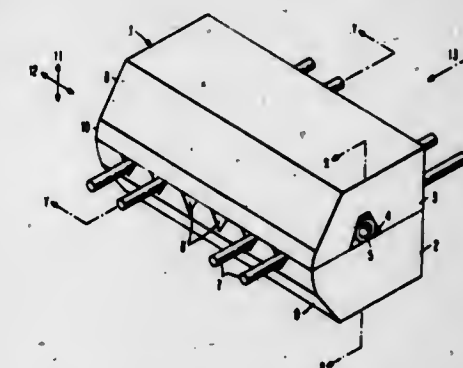
Filed Jan. 25, 1979, Ser. No. 51,770

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834868

Int. Cl.³ B41J 3/20

U.S. Cl. 400-119

3 Claims



1. A guide for electrodes in a metallized paper printer comprising:

support means having a plurality of parallel grooves in a first surface thereof in which electrodes may be placed; cover means having a second surface overlying said first surface in mutual contact therewith enclosing the grooves thereof, said cover means having a recess in said second surface transversely of said grooves; and a resilient tubular element in said recess deformable by the

joining of said first and second surfaces to extend into said grooves and engage any electrodes therein.

4,243,333

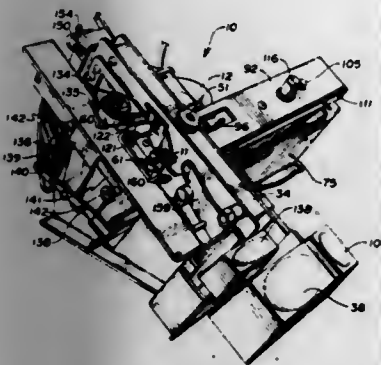
PRINTING APPARATUS

Franklin C. Bradshaw, St Paul; Thomas P. Conroy, Lino Lakes, and Dennis A. Deutch, Stillwater, all of Minn., assignors to Kroy Industries, Inc., Stillwater, Minn.

Filed Jul. 7, 1978, Ser. No. 922,566
Int. Cl.² B41J 1/28, 3/20, 3/30, 9/26

U.S. Cl. 400—158

29 Claims



1. A dry lettering printing apparatus comprising:
a printing station;
means for providing a color carrying ribbon and an image carrying tape at said printing station;
means for advancing said ribbon and tape into printing alignment at said printing station;
means for providing a raised character into printing alignment at said printing station; and
force generating means for exerting a printing force at said printing station to transfer an image of said raised character from said ribbon to said tape, said force generating means including an elongated print bar pivotally connected at one end to the frame of said printing apparatus and having a printing pad thereon defining said printing station, said force generating means further including a first toggle link pivotally connected between its ends to the frame of said printing apparatus at a first point, said first toggle link including a roller member rotatably mounted near one end of said link at a second point, said roller adapted to engage said print bar and move the same into printing engagement toward said raised character upon pivotal movement of said first toggle link about said first point, said force generating means further including a second toggle link being pivotally connected to the frame of said printing apparatus and a force transfer link extending between portions of said first and second toggle links.

4,243,334

RIBBON CARTRIDGE

Yojiro Shigemori, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Japan

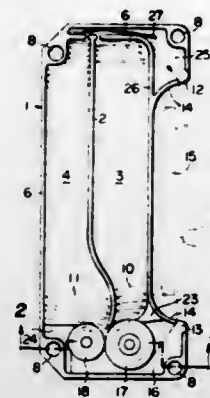
Filed Aug. 30, 1978, Ser. No. 937,993
Int. Cl.³ B41J 33/36

U.S. Cl. 400—247

5 Claims

1. A ribbon cartridge comprising: an ink ribbon in the form of an endless loop; an endless tape loop having substantially the same width as the ribbon and formed as a film; a housing including a first cavity and a second cavity which receive the ribbon and the tape, respectively, both cavities being located on the same plane, the housing being formed with a common outlet and a common inlet for both the ribbon and the tape, an outlet passageway for connecting one end of the respective cavities with the common outlet, and an inlet passageway for connecting the other end of the cavities with the common inlet; a pair of guide members for guiding the ribbon and tape across the common outlet and the common inlet in spaced relationship from the housing; a set of rollers disposed within the inlet passageway for receiving the ribbon and the tape from

one of the guide members and feeding them into their associated cavities; and friction means disposed in the outlet passageway for feeding the ribbon and the tape to the other guide member from the respective cavities while applying a braking



action thereto; said guide members, rollers and friction means coacting to maintain the ribbon and tape in overlapping and face-to-face contacting relationship when the ribbon and tape are between the pair of guide members.

4,243,335

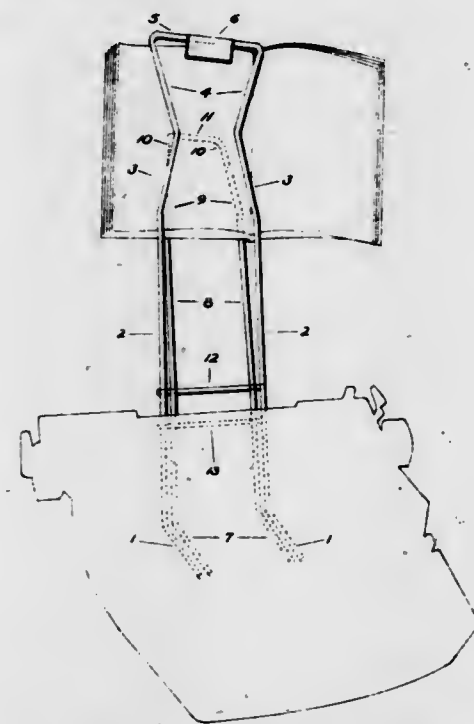
TYPEWRITER COPY HOLDER

Ariel J. Singley, 1715 Spruce St., Napa, Calif. 94558
Filed Jan. 8, 1979, Ser. No. 1,895

Int. Cl.³ B41J 29/00

U.S. Cl. 400—718

1 Claim



1. A holding device for firmly holding flexible, yieldable information carriers such as paper; soft and solid backed yieldable information carriers such as books, magazines and tablets in a correct straight forward readable position, eliminating light glare, comprising:

a first, upright, outer, taller, metal frame of generally U-shaped configuration having a topmost connecting portion and a downwardly projecting leg extending from each opposite end of said connecting portion, each said legs being provided with identical inward and then outward bends adjacent said connecting portion, said legs then extending generally parallel to each other downwardly to their free ends, said connecting portion being provided with a short oblong metal surface fastened to the connecting portion at the center thereof, a second, upright, metal frame of generally U-shaped configuration, said second frame being shorter and narrower than said first metal frame so as to fit within said first frame, the legs

of said second frame adjacent the connecting portion thereof being provided with an outward bend corresponding to said outward bend of the legs of said first frame, the portion of said second frame adjacent its upmost connecting portion being provided with a rearwardly protruding bend so that said second frame connecting portion lies in a plane rearwardly of the plane of said first metal frame, while the legs of the second frame beyond the said outward bend are parallel to and generally in the plane of the first frame legs, the free ends of the legs of both said first and second frames being provided with a substantially right angle bend out of the plane of the first frame so as to enable the free ends to rest on a support surface and maintain the remainder of said frame in substantially upright position, and wherein

said holding device becomes operational by combining the above mentioned elements, the second said shorter metal frame is set inside first said taller metal frame; by fastening two metal rods across the backs of said frames, leaving a narrow width between said frames, both said frames thus become a common frame allowing the first said frame to remain rigid; the identical inward and outward angle bends on two opposite sides near the top of first said frame serves as stable backing for different sizes and types of yieldable information carriers, the second said frame is allowed to be moved freely back and forth serving as a movable holder and pressure retaining device for the soft and solid backed yieldable information carriers when backings of said carriers are slid between first and second said frames; the one piece plastic magnet holder with handle, a magnetic tape surface fastened to holder serves as a securing device for clamping the flexible, yieldable information carriers in a freely supported reading position when fastened to said short oblong metal surface, the bent free ends of the legs of said first and second frames serve for firm stabilization and proper reading angle alignment of said holding device, eliminating light glare on yieldable information carriers when said holding device is placed under most business machines from the rear.

4,243,336

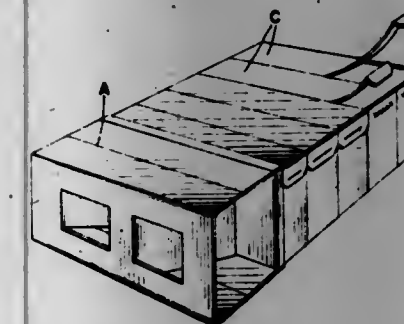
CONSUMABLE PACKAGE WITH COLLAPSIBLE HANDLE

Robert G. McMullan, Oakville, Canada, assignor to SCM (Canada) Limited, Don Mills, Canada

Filed Feb. 8, 1979, Ser. No. 10,389
Int. Cl.³ A46B 5/02; B43K 19/14

U.S. Cl. 401—6

3 Claims



1. A handle assembly for a generally rectangular box-like container-applicator for a solid gel paint or adhesive, said handle being disposed at one end of the container and being normally collapsed until the container is to be used, but being expandable so that it can be used as a means for gripping the container at one end thereof by said handle when applying paint or adhesive from the opposite end, said handle comprising in its expanded state, as assembled for use:

a generally U-shaped body of sheet material that has a base portion and two arms extending from the opposite sides of said base portion, each arm having a lip portion capable of being attached to the rectangular box-like container, and two support flaps extending from the base portion capable

of engaging a rigidifying V-shaped internal support positioned within the U-shaped body, and a rigidifying V-shaped internal support disposed within said U-shaped body comprising a central hinge portion and two arms extending from said hinge portion at its opposite sides, said hinge portion being disposed against and secured substantially at the center of the inner face of the base portion of said U-shaped body and extending transversely of said base, the arms of said V-support extending toward the end face of said container and engaging against it, each arm of the V-support having a tab member at the end where the arm portion engages the container, said tab extending internally within the V-support and engaging the end face of said container to support the handle in its expanded state, opposite edges of both of said arms being engaged against the confronting inner faces of the arms of said U-shaped body, and

the base of said U-shaped body being formed with a pair of flaps cut therefrom and hinged thereto, which flaps are projected toward said container, to engage the V-shaped support said flaps being disposed at opposite sides of the hinge portion of said rigidifying sheet respectively, and when projected from said base leaving a pair of openings in said base adapted to receive fingers therein, said handle in its collapsed state having said flaps seated in the openings in the base of the U-shaped body, the rigidifying sheet being flattened out and lying against the base portion of said U-shaped body, and the arms of said U-shaped body being accordion-folded, whereby the handle assembly has the appearance of flat sheets disposed at one end of said container.

4,243,337

FOUNTAIN PEN WITH INK REFILL CARRIER

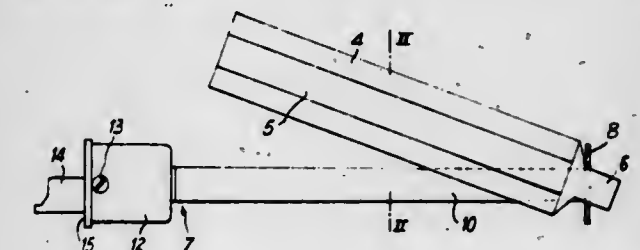
Robert Hocq, Boulogne, France, assignor to Societe Anonyme dite: INTERLIGHT, Villars-sur-Glane, Switzerland

Filed Oct. 24, 1978, Ser. No. 954,321

Claims priority, application France, Oct. 26, 1977, 77 32194
Int. Cl.³ B43K 5/00, 5/14, 11/00

U.S. Cl. 401—132

10 Claims



1. An ink refill fountain pen comprising, a body with a writing head at one end thereof and defining an opening at its other end, a removable loading clip adapted to accommodate the ink refill and to be introduced into the body via its open end, and wherein said loading clip comprises, a base plate defining an aperture in which a front, sealed end of the ink refill can be inserted, two strips each connected at one end to the base plate and extending substantially parallel for accommodating and holding the refill between them, and connecting means which connects the other ends of the said strips, said connecting means of the loading clip including a pivotable flap which can be pivoted between an open, raised position and a folded-down position closing the open end of the fountain pen, said flap in its raised position providing manually grippable means for withdrawing the refill.

4,243,338

WRITING INSTRUMENT AND HOLDER ASSEMBLY
James K. Williams, 7 Peasehall La., Cincinnati, Ohio 45208
Filed Sep. 18, 1978, Ser. No. 943,661
Int. Cl.³ B43K 29/00

U.S. Cl. 401—195

9 Claims



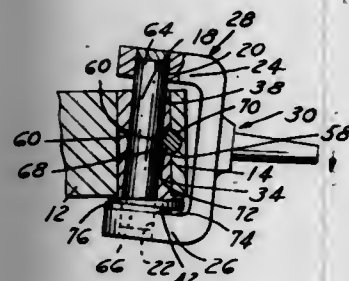
1. A writing instrument comprising a ballpoint pen assembly having a writing tip and an elongated cylindrical ink cartridge, a holder for said assembly having two substantially flat outer surfaces secured in opposed parallel spaced relationship, the spacing of said outer surfaces being such that the thickness of said holder ranges from about 1 to about 4 mm, and a web having an elongated channel enclosed between said outer surfaces in which said cartridge is secured with said writing tip projecting outwardly from said holder, said outer surfaces and said web having a width at least about ten times the thickness of said holder and a length exceeding that of said pen assembly, both said flat outer surfaces having imprinted indicia and the like thereon.

4,243,339

ADJUSTABLE KINGPIN ASSEMBLY
Carroll D. Dickerson, New Hudson, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 9, 1979, Ser. No. 28,626
Int. Cl.³ B62D 17/00

U.S. Cl. 403—4

10 Claims



7. An adjustable kingpin assembly comprising:
a yoke with a first and second arm spaced apart from each other, each arm having a hole therethrough;
a knuckle support operably attached to a supportive member of a vehicle;
said knuckle support sized to fit within the space between the two arms and having an aperture extending therethrough and aligned with said holes in the two arms;
a sleeve rotatably fitting within the aperture through the knuckle support;
said sleeve having an aperture extending therethrough from a top opening in the top end to a bottom opening in the bottom end of said sleeve;
said aperture through said sleeve being angled with respect to the axis of said aperture through said knuckle support;
a kingpin sized to extend through said angled aperture and having its ends rotatably received in said holes of said arms of said yoke for rotatably mounting said yoke to said knuckle support;
said sleeve rotatably mounted within said aperture of said knuckle support to angle said kingpin with respect to the normal axis of said aperture through said knuckle support,

said kingpin assembly constructed to angle said yoke with respect to said knuckle support for adjusting said camber or castor;
locking means for locking said sleeve in said aperture of said knuckle support for fixedly mounting said yoke at a selected camber or castor with respect to said knuckle support;
said bottom end of said sleeve lying in a plane perpendicular to the axis of said angled aperture such that a top surface of said bottom arm of said yoke is substantially parallel to said end;
a bearing assembly operably interposed between said bottom end and said top surface of said bottom arm of said yoke.

4,243,340

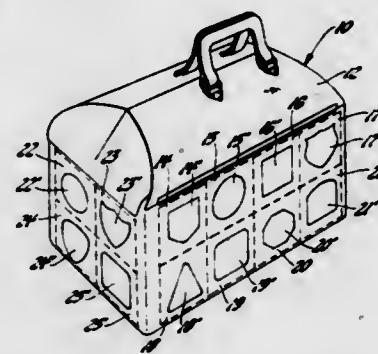
APPARATUS FOR THE DISPLAY AND PROTECTION OF AWARDS

Donald D. MacGregor, 411 N. Madison, Bay City, Mich. 48706, assignor to Donald Dewayne MacGregor and Jean Ann MacGregor, both of Bay City, Mich.

Filed Jan. 2, 1979, Ser. No. 509
Int. Cl.³ G09F 3/08

U.S. Cl. 40—312

13 Claims



1. Apparatus for display and protection of an award comprising a container having at least one wall and having an inner surface and an outer surface, at least one slit formed in said wall, said slit being large enough to allow passage of said award through said slit; a substantially transparent sheet; attachment means securing said sheet to said outer surface of said wall whereby a substantially enclosed pocket is formed between said sheet and said outer wall surface, said sheet being dimensioned so as to substantially overlay at least one of said slits; pocket sealing means secured to said inner surface for selectively sealing said pocket, said pocket sealing means having a first position in which said award may be passed through said slit into said pocket and a second position in which said slit is sealed closed so as to prevent passage of objects through said slit.

4,243,341

PIVOT CONSTRUCTION

Steve Kabay, Novelty, and Ralph E. Nemecek, Lyndhurst, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1979, Ser. No. 82,612
Int. Cl.³ F16C 11/00

U.S. Cl. 403—16

2 Claims

1. A pivot construction for connecting a pair of relatively movable members, one of said members including a pair of laterally spaced plates and the other of said members being located between said spaced plates, each of said pair of spaced plates and said other member having a circular opening formed therein with the centers thereof aligned along an axis extending transversely to the longitudinal axis of each of said pair of members, a cylindrical pin formed with an enlarged head and a shank portion, said shank portion having a stepped diameter consisting of an intermediate portion and an end portion, a bar

member fixed to the outer end of the enlarged head, the enlarged head being located in the circular opening in one of the plates, means fastening said bar member to said one of the plates, an end cap member having a bore formed therein defined by a cylindrical wall and an end wall, said end cap member being located in the circular opening in the other of said plates and supporting the end portion of said shank, a bearing assembly including a pair of inner race members and a pair of

in said attachment mounting plate or disengaged from said opening in said attachment mounting plate.

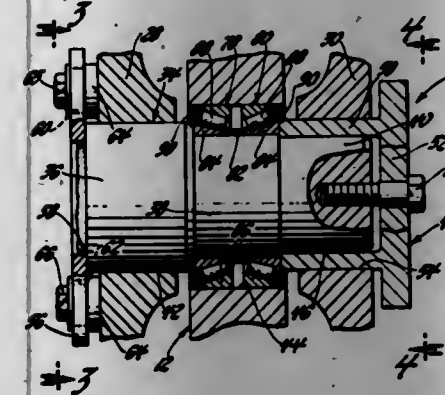
4,243,343

CONNECTOR

Jan H. Wier, "Burleigh" Bulls, New Zealand
Filed Sep. 22, 1978, Ser. No. 944,770
Int. Cl.³ F16B 7/04

U.S. Cl. 403—397

9 Claims



outer race members and tapered roller bearings interposed therebetween, said outer race members being fixedly mounted in said circular opening in said other member and said inner race members being supported on said intermediate portion of the shank between said enlarged head and the cylindrical wall of said end cap member, and fastener means connecting said end cap member to said end portion of the shank for preloading said bearing assembly between said enlarged head and said cylindrical wall.

1. A connector for transversely positioning two elongate members in juxtaposition, comprising a shaped strip member being resiliently deformable by compression from a natural position, to a compressed position where its two ends are in juxtaposition; a pair of holes provided through said strip member and adapted to receive a first elongate member therethrough when said body portion is in a compressed position; characterized in that the body portion is constrained against returning to its natural position by the first member when located through the pair of holes, to thereby secure the strip member by a frictional engagement to a required position on the first elongate member; an enclosure being formed in said connector between said first elongate member and the ends of the strip member when in juxtaposition, in which enclosure a second elongate member is locatable so as to be freely moveable both axially and relative to said first elongate member within the limits defined by said enclosure.

4,243,342

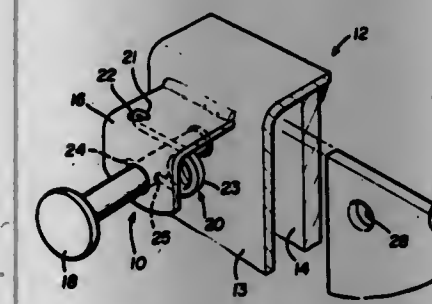
SNAP FAST FASTENER

John H. Marto, Oshkosh, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 27, 1979, Ser. No. 61,346
Int. Cl.³ F16B 21/00

U.S. Cl. 403—324

3 Claims



1. A fastener assembly for connecting an attachment having a mounting plate to a frame comprising:
a pin holder mounted to a leg portion of said frame;
a latch pin movable through an opening in said frame leg portion for insertion in and engagement with an opening in said attachment mounting plate, said latch pin being secured to said pin holder by torsion spring means;
said torsion spring means including a first leg portion, a coil portion, and a second leg portion, said coil portion being between and integral with said leg portions, said first leg portion being rotatably mounted to said pin holder and said second leg portion being rotatably mounted to said latch pin, said first leg portion is generally "J" shaped and having a curled end portion which is rotatably mounted within an opening in said pin holder, and said second leg portion being elongated and rotatably mounted within a transverse opening in said latch pin; and
said torsion spring means applying a force to said latch pin when said latch pin is either engaged within said opening

4,243,344

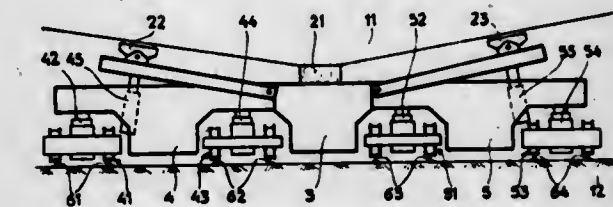
INSTALLATION FOR CONVEYANCE OF A BOAT
Maurice Gardon, Abbeville, France, assignor to Delattre-Levivier, Paris, France

Filed May 11, 1979, Ser. No. 38,305

Claims priority, application France, May 31, 1979, 78 16175
Int. Cl.³ B63C 3/08

U.S. Cl. 405—2

6 Claims



1. An installation for conveyance of a boat including on the one hand trolleys equipped each with a hydraulic jack and roller members and on the other hand parallel supporting-beams which support the boat which is arranged so that its longitudinal axis is perpendicular to these beams which bear each upon the jacks of two trolleys running on two parallel tracks, the jacks forming at least three groups of jacks connected hydraulically so that the resultants of these groups are located at the corners of a triangle, characterized by the fact that it includes at least three parallel tracks upon which the trolleys run which support the supporting-beams which are arranged so as to form at least two lines of beams which are displaced perpendicularly to the longitudinal axis of the boat.

4,243,345

PIPE HANDLING APPARATUS FOR REEL PIPE LAYING SYSTEM

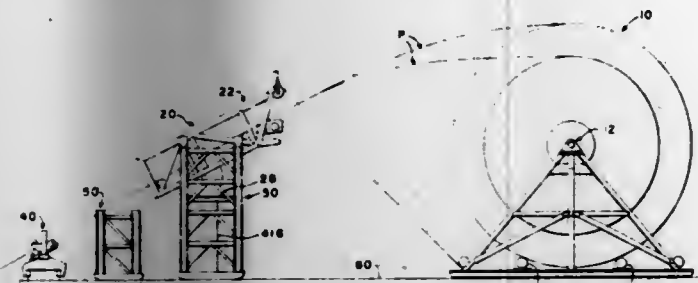
John H. Cha; Wesley A. Brown, both of Orange, Calif.; Harry P. Weldon, London, and Daniel G. Whyte, Amersham, both of England, assignors to Santa Fe International Corporation, Orange, Calif.

Filed Jul. 18, 1979, Ser. No. 58,523

Int. Cl.³ B63B 35/04; F16L 1/00

U.S. Cl. 405-168

19 Claims



1. In an offshore system for laying a continuous length of pipe on the sea bottom, including a pipe-carrying reel adapted to be mounted on a carrier vessel; reel support means for rotatably mounting said reel to a sufficiently large clear-deck area of said carrier vessel; means for driving said reel in a first direction for spooling pipe onto said reel and for exerting a desired braking action on the reel while unspooling pipe from the reel in a second direction to maintain the unspooled pipe under desired tension; improved pipe handling and conditioning means for working on said unspooled pipe, comprising:

straightener assembly support means adapted to be mounted to the carrier vessel downstream of the reel in the direction of pipe unspooling;

pipe straightening means for imparting a reverse plastic bending moment to the unspooled pipe passing there-through sufficient to remove at least a substantial portion of the plastic bending moment imparted to the pipe during spooling to thereby substantially straighten the unspooled pipe;

straightener carriage means mounting said pipe straightening means to said straightener assembly support means for movement

(1) about a pivot axis substantially parallel to the rotational axis of said pipe carrying reel,

(2) in a substantially vertical direction relative to the deck of said carrier vessel, and

(3) in a direction substantially parallel to the rotational axis of said reel; and

straightener drive means for driving said pipe straightening means in a direction substantially parallel to the rotational axis of said reel to level wind pipe being spooled onto said reel.

4,243,346

UNLOADER FOR TAKING FEED FROM A HORIZONTAL SILO

Johann Wolf, Scharnstein, Austria, assignor to Johann Wolf Gesellschaft m.b.H. KG, Scharnstein, Austria

Filed Feb. 27, 1979, Ser. No. 15,737

Claims priority, application Austria, Mar. 22, 1978, 2040/78
Int. Cl.³ B65G 53/40, 25/02

U.S. Cl. 406-57

11 Claims

1. In an unloader for taking feed from a body of silage in a horizontal silo, comprising

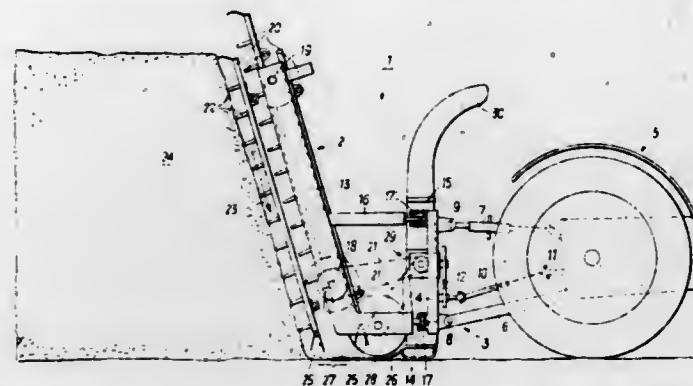
conveyor means for conveying feed out of said silo and a removing apparatus for detaching feed from said body of silage and for conveying detached feed to said conveyor means, said removing apparatus comprising two vertically spaced apart, horizontal crankshafts having a plurality of cranks,

a plurality of juxtaposed crank-operated rods, which are

pivoted to the cranks of said crankshafts and have one side adapted to face said body of silage,

drive means for rotating said crankshafts in the same sense to move said rods up and down and toward and away from said body of silage,

working tools carried by said rods on said one side thereof and adapted to enter said body of silage and to detach feed therefrom and to move the detached feed downwardly during the downward movement of the respective rods and to leave said body of silage during the movement of the respective rods away from said body; the improvement comprising



a bottom plate extending under all of said crank-operated rods and on said one side and the opposite side thereof and arranged to receive feed which has been moved downwardly by said tools, said bottom plate having one said opposite side a trough-shaped portion associated with said conveyor means, and

conveying time means secured to each of said rods at the lower end thereof and adapted to move over in closely spaced relation to said bottom plate at least during part of the movement of the respective rod away from said body of silage.

4,243,347

BROACHING ASSEMBLY HAVING DISPOSABLE CARBIDE INSERTS

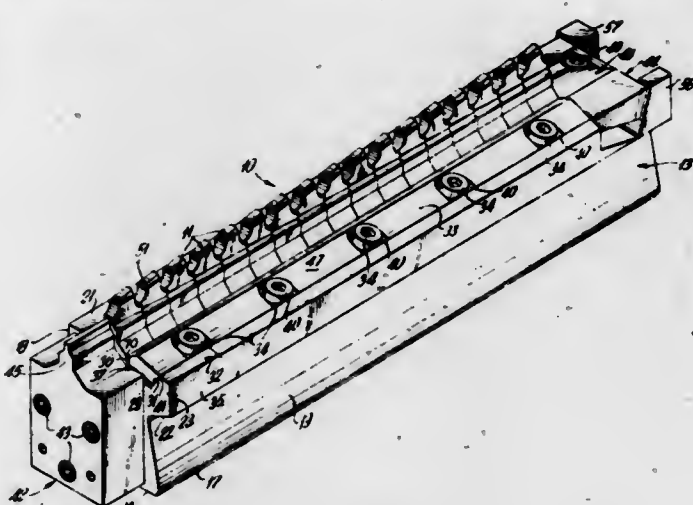
Keith A. Clapp, Troy, Mich., and Donald A. Stewart, Boxford, Mass., assignors to General Electric Company, Worthington, Ohio

Filed Feb. 28, 1979, Ser. No. 16,278

Int. Cl.³ B26D 1/12

U.S. Cl. 407-15

14 Claims



1. A broach assembly comprising:

an elongated holder member including: a longitudinal, substantially U-shaped slot for receiving a plurality of cutting inserts, said slot having a support portion and first and second upstanding wall members, each of said cutting inserts having a base, a pair of end walls, and a pair of side walls, one side wall of each insert including a clamping

wall portion extending from said insert base to a point intermediate said one side wall, each clamping wall portion sloping from its insert base towards the other side wall of its respective insert; a clamp support surface sloping downwardly and outwardly from said second slot wall member; and a clamp stop wall extending upwardly from said clamp support surface;

an elongated first clamp member releasably mounted on said clamp support surface and in slideable engagement with said clamp stop wall such that said first clamp member slopes downwardly and outwardly relative to said holder member slot, said first clamp member having a clamping surface disposed adjacent said holder member slot for engaging the sloped clamping wall portion of each of said inserts and exerting a downward and lateral force against said inserts so as to firmly cam said inserts against the support portion and first wall member of said holder member slot;

means for tightening said first clamp member against the clamping wall portions of said inserts and said clamp stop wall;

a stop member mounted to the holder at one end of said slot; a second clamp member mounted on the other end of said slot for firmly positioning said inserts longitudinally against said stop member; and means for tightening said second clamp member against said inserts.

4,243,348

TOOL HOLDER

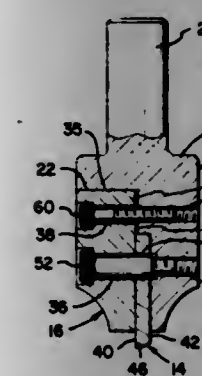
Earle J. Paige, 1030 Blue Horizon Dr., Deltona, Fla. 32725

Filed Aug. 9, 1979, Ser. No. 65,264

Int. Cl.³ B23B 51/00; B26D 1/12; B23B 31/10

U.S. Cl. 408-186

7 Claims



1. A tool holder for use with a machine tool, the holder comprising a head, a cutter, a clamp member and a first screw, the head including a first shoulder portion, the first shoulder portion having bed surface, the cutter having a first flat, a second flat, a cutting edge, and a first opening formed through the first and second flats, the first and second flats in spaced parallel relation to each other, a first aperture formed through the bed surface, the aperture having an internal shoulder, an upper portion and a lower portion, the upper and lower portions separated by the internal shoulder, the lower portion being tapered, the first screw having a head and shank, the shank including an external shoulder, a top portion and a threaded bottom portion, the external shoulder positioned between the top portion and bottom portion, the clamp member having a face and a first hole formed therethrough, the second flat of the cutter in superposed relation to the bed surface, the first opening of the cutter in axial alignment with the first aperture formed in the bed surface, the face of the clamp member in superposed relation to the first flat of the cutter and the first hole of the clamp member in axial alignment with the first opening in the cutter, the head of the screw in superposed, abutting relation with the clamp member adjacent the hole thereof and the shank of the screw positioned within the first hole of the clamp member, the first opening of the cutter and the first aperture of the first shoulder portion with the top portion of the shank slip engaged with the upper por-

tion of the aperture, the bottom portion of the shank threaded into the lower portion of the first aperture and the external shoulder of the shank in superposed relation to the internal shoulder of the first aperture.

4,243,349

CONTAINERS FOR GOODS

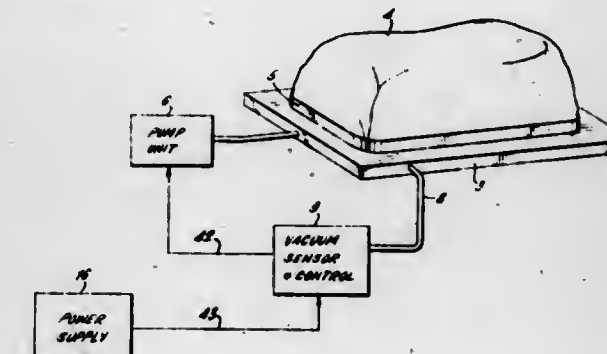
Christopher D. D. Hickey, 5 Heathside, Hinchley Wood, Esher, Surrey, and Harold J. Clements, 20 St. Michael's Close, Harbledown, Canterbury, CT2 9BN, Kent, both of England
Continuation-in-part of Ser. No. 806,101. This application Mar. 13, 1979, Ser. No. 20,015

Claims priority, application United Kingdom, Jan. 14, 1976, 24575/76

Int. Cl.³ B64D 9/00

U.S. Cl. 410-77

6 Claims



1. A container of the kind having a rigid impermeable base and a flexible impermeable cover sealed to the base wherein there is provided a vacuum sensor arranged to sense the difference of pressure between the inside of the container and the ambient atmosphere, means for establishing a partial vacuum inside the container, an electrical energising circuit arranged for actuating said vacuum establishing means, said energising circuit being operatively controlled by the pressure sensor to actuate the vacuum establishing means when the pressure difference is below a predetermined value, means controlled by said sensor to inhibit the operation of the vacuum establishing means when the pressure difference reaches another predetermined value, and a relief valve operatively controlled by said sensor to prevent the pressure difference exceeding said other predetermined value, said sensor comprising a bellows unit arranged to operate at least one mechanically movable contact which controls the electrical energising circuit, the interior of said bellows unit being connected to the interior of the container and said relief valve comprising a resilient diaphragm arranged to close at least one aperture in the movable end of the bellows unit, the diaphragm being constructed to have only a limited travel so that excessive pressure difference causes the bellows to contract and the end of the bellows unit to move away from the diaphragm thereby admitting ambient air into the container through said aperture.

4,243,350

WINCH LOAD FASTENING APPARATUS

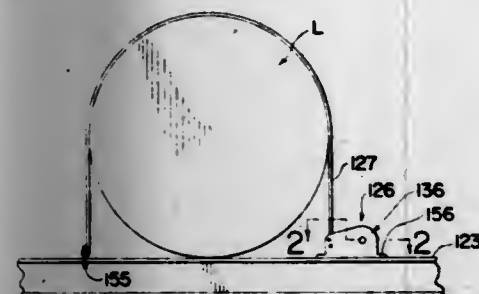
Robert E. Hall, 3760 Olmsted Dr., Kent, Ohio 44240
Continuation-in-part of Ser. No. 658,409. This application Feb. 6, 1978, Ser. No. 875,636

Int. Cl.³ B60P 7/08; B61D 45/00; B65D 63/00; B66D 1/04
U.S. Cl. 410-100

3 Claims

1. A load fastening apparatus for use on a platform and for applying a releasable tension to a strap anchored at the outer end when securing a load carried on the platform, comprising: a housing for said strap when coiled, said housing having a base element adapted for attachment to said platform, opposed side plates, and a conforming cover plate having an opening therethrough for reciprocal movement of said strap;

a torsion element within said housing providing a torque for strap recoil into said housing;
 a unitary elongated rotatable rotor extending transversely of and journaled in said housing and coaxially through said torsion element, said rotor having, (i) means for the connection of the inboard end of said strap thereto, and (ii) means for the connection of said torsion element thereto, and (iii) means for applying a torque thereto from externally of said housing; and,



a strap clamping means having a pivotable cam pawl and through which said strap is tensioned and pulled into said housing solely by a rotation of said rotor, while automatically locking said strap against extractive movement from within said housing until said clamping means is manually actuated to release said strap;
 wherein said anchored strap is first tensioned and pulled into said housing by the action of said torsion element on said rotor, and whereby said anchored strap is further tensioned and pulled into said housing by an external torque applied to said rotor.

4,243,351

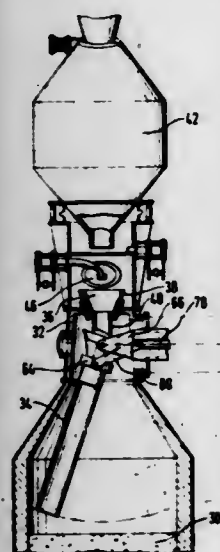
METHOD OF AND APPARATUS FOR CHARGING A FURNACE

Edouard Legille, Luxembourg; Rene Mahr, Howard-Hesperange, and Pierre Mailliet, Howald, all of Luxembourg, assignors to Paul Werth S.A., Luxembourg, Luxembourg
 Filed May 31, 1978, Ser. No. 911,189

Claims priority, application Luxembourg, Jun. 6, 1977, 77547
 Int. Cl.³ C21B 7/20; F27B 1/20

U.S. Cl. 414-206

19 Claims



1. In a shaft furnace, improved charge distribution apparatus comprising:
 elongated distribution chute means;
 support means for said chute means, said support means extending through the furnace wall at a single location and being rotatable about a first axis, said support means including a base portion and a pair of arms extending therefrom;
 means pivotally coupling said chute means to said support means arms adjacent a first end of said chute means, said

coupling means defining a second axis transverse to said first axis, said first and second axes intersecting at a point; means for rotating said support means to pivot said chute means about said first axis; and
 drive means connected to said chute means for imparting motion to said chute means to cause said chute means to pivot about said coupling means defined second axis, said motion imparting means in part extending through the furnace wall at said single location.

4,243,352

SUSPENSION FOR SILO UNLOADERS

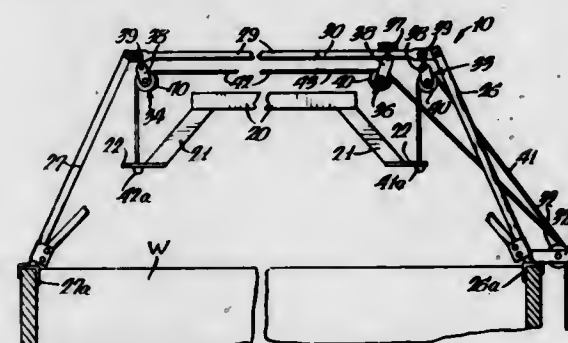
Cary L. Sizelove, and Donald G. Wells, both of Harvard, Ill., assignors to Chromalloy American Corporation, Madison, Wis.

Filed May 10, 1979, Ser. No. 37,906

Int. Cl.³ B65G 65/00, 1/00

U.S. Cl. 414-313

7 Claims



1. In a silo unloader of the type having a tripod surmounting the wall of a cylindrical silo, said tripod having inwardly and upwardly inclined legs including a main leg and lateral legs at opposite sides of said main leg, cross arms connecting the upper ends of said inclined legs, a suspension sheave adjacent the upper end of each tripod leg, each sheave being journaled in a freely suspended yoke, distribution sheave means journaled in a fixed bracket at the bottom of the main leg, a winch mounted on the exterior of the silo below said distribution sheave means, three suspension cables operatively connected to the winch and trained over the distribution sheave means, each of said cables extending transversely from the distribution sheave means and being trained over one of said suspension sheaves, and a silo unloader mechanism having three effectively horizontal and generally radially extending support arms each of which receives one of said cables to suspend the unloader mechanism in the silo, the weight of the unloader displacing the sheave yokes from the vertical, the improvement comprising:

each of said support arms has an outer end portion which is directly below the suspension point of one of the sheave yokes at the upper ends of the tripod legs, the outer end portion of the arm below the main tripod leg is constructed and arranged for securement thereto of a suspension cable at a first predetermined securement point, and the outer end portion of each of the arms below the lateral tripod legs is constructed and arranged for securement thereto of a suspension cable at another predetermined securement point which is located to compensate for the displacement of the sheave yoke thereabove so as to cause each cable to hang effectively vertically from the sheave over which it is trained.

4,243,353

COTTON MODULE TRANSPORT APPARATUS

Floyd W. Reed, P.O. Drawer O, Glenn Allen, Miss. 38744

Filed Feb. 14, 1979, Ser. No. 12,146

Int. Cl.³ B60P 1/38

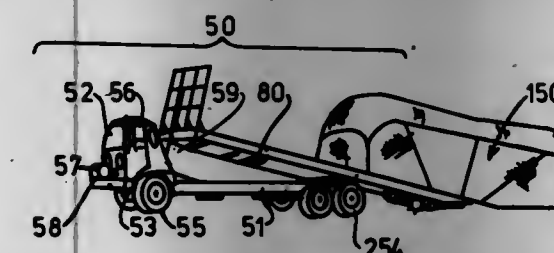
U.S. Cl. 414-439

5 Claims

1. A tilt bed trailer with a mobile support therefor, comprising a rigid longitudinally extending wheeled support frame and

a chain bed, the chain bed pivotally attached to the rear portion of said support frame, an extensible piston assembly connected to raise and lower the chain bed relative to said support frame,

the chain bed comprising a longitudinally and transversely extending rigid chain bed frame, a set of toothed link chains and a chain driving assembly, each toothed chain attached at its front end to a drive means therefor, lift wheels rotatably supported on the rear end of said frame and operatively connected to said chains,
 the chain bed driving assembly comprising, in operative combination, a rotatable metering wheel, a resilient metering wheel support assembly, a servo control means, and chain power output means, said metering wheel support assembly comprising a rigid assembly support arm, a metering wheel support arm, a tension spring, a pivot shaft, said metering wheel support arm pivotally supported by said assembly support arm, said metering wheel



rotatably supported on said metering wheel support arm, said metering wheel having an axis parallel to the width of said bed frame, said spring means attached to said arm to said wheeled support frame, said metering wheel attached to the input of said servo means, the output of said servo control means connected to said chain output means,
 a cleated wheel assembly comprising a plurality of like cleated wheels each supported rotatably on a shaft therefor extending transversely of said frame at the rear end of said frame means, and power means operatively connected to said cleated wheel assembly, power control means connected to said power means, said metering wheel having a path of travel along the path of one of said cleated wheels,
 a remote hand control means operatively connected to said power control means, and means connecting said metering wheel and said chain drive whereby the linear movement of said toothed chains along said bed equals the linear movement of said metering wheel.

4,243,354

DRUM LIFTER FOR FORK LIFT TRUCK

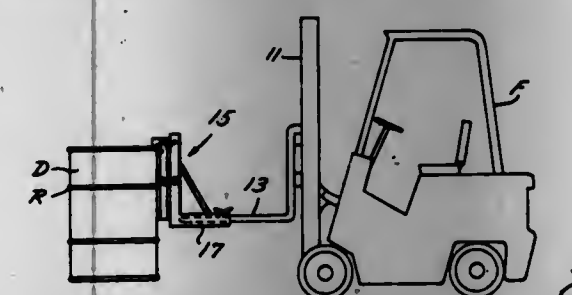
Jose M. Garcia, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed May 4, 1979, Ser. No. 35,882

Int. Cl.³ B66F 9/18

U.S. Cl. 414-607

26 Claims



1. A drum lifter comprising a base including a pair of parallel spaced fork tubes adapted for receiving at one end and positioning over a pair of vertically adjustable forks of a fork lift truck, and a support plate spanning and secured to the other ends of said tubes;

an upright mount plate supported upon and secured to said support plate;
 means fixedly securing said mount plate to said fork tubes;
 an upright drum support plate parallel to and arranged forwardly of said mount plate, pivotally mounted intermediate the ends upon said mount plate;
 a first arcuate drum grip at the lower end of said drum support plate;
 a second arcuate drum grip adjacent the upper end of said drum support plate, said first and second drum grips adapted to operatively engage the exterior of a drum to be lifted and transported;
 a forwardly extending latch link pivotally supported upon said mount plate adjacent its upper end, loosely and pivotally mounting said drum support plate;
 and a third arcuate drum grip depending from the forward end of said latch link adapted to operatively and retainingly engage over and against the interior of said drum.

4,243,355

LIFT TRUCK ROTATOR WITH PRESSURE-RELIEVED VALVING

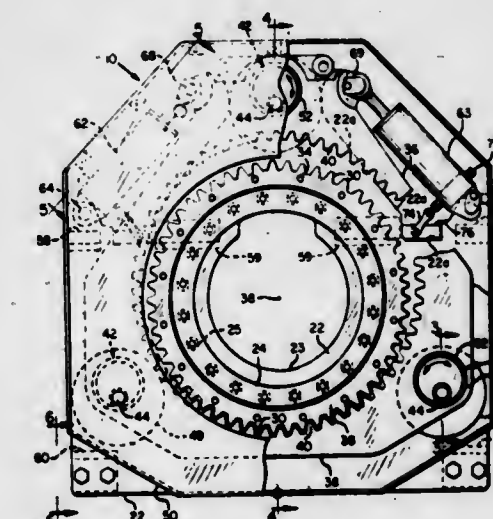
Ronald A. Brudi, and Daniel F. Chase, both of Longview, Wash., assignors to Brudi Equipment Co., Inc., Longview, Wash.

Division of Ser. No. 928,590. This application Sep. 24, 1979, Ser. No. 78,017

Int. Cl.³ B66F 9/18

U.S. Cl. 414-620

24 Claims



1. In a rotator attachment for a lift truck of the type including an inner gear means with external teeth and surrounding outer gear means with a greater number of internal teeth engaging said external teeth, the teeth of both gear means being in surrounding relationship to an axis of rotation, one of the gear means being mounted by rotational mounting means for rotation about said axis for rotating a connected load, the other gear means being mounted by eccentric mounting means to a frame for movement in a gyratory eccentric path about said axis to rotate said one gear means about said axis;
 a drive means for moving said other gear means in said gyratory eccentric path comprising:
 multiple hydraulic cylinders connected at one set of ends to said frame and at their opposite set of ends to said other gear means at an angular relationship to one another,
 position-responsive control valve means responsive to the position of said other gear means in its said gyratory eccentric path for controlling sequentially the flow of hydraulic fluid under operating pressure to said multiple cylinders,
 and fluid pressure-responsive relief valve means in association with said control valve means and operable in response to a predetermined excessive fluid pressure in any of said hydraulic cylinders to relieve said excessive pressure and prevent pressure-locking therein,
 said control valve means including a valve body, a valve

cavity within said body, a rotary valve member within said cavity and coupled to one of said mounting means for rotation therewith, multiple fluid passage means within said body connecting said cavity to a source of pressure fluid and to the opposite sides of said hydraulic cylinders, said rotary valve member being operable upon its rotation to distribute fluid under operating pressure from said cavity sequentially to said hydraulic cylinders through said passage means, said relief valve means being incorporated within said valve member.

4,243,356

QUICK COUPLER

Hyoichi Takojima, Yokohama, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

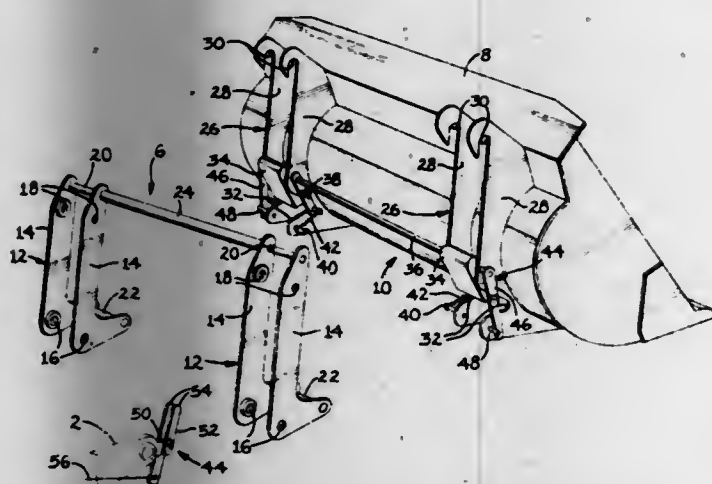
Filed Feb. 5, 1979, Ser. No. 8,983

Claims priority, application Japan, Mar. 30, 1978, 53-036089

Int. Cl.³ E02F 3/81

U.S. Cl. 414-723

9 Claims



1. A quick coupler for detachably attaching an implement to an earthworking vehicle which is provided with a pair of lift arms and a pair of tilt links, said coupler comprising:

a hitch assembly including a pair of transversely spaced hitch members one of which hitch members having upper and lower end portions thereof rotatably linked to one of said tilt links and one of said lift arms, respectively, and the other one of said hitch members similarly having upper and lower end portions thereof rotatably linked to the other one of said tilt links and the other one of said lift arms, respectively, said hitch members each having upper and lower coupling elements respectively in the upper and lower end portions thereof;

a hook assembly fixedly mounted on the back of said implement and including a pair of transversely spaced hook members each having upper and lower end portions, an upper receiving portion in the upper end portion shaped to receive from beneath one upper coupling element of said hitch assembly for engagement with the front, top and rear surface portions thereof and a lower receiving portion in the lower end portion shaped to receive from behind one lower coupling element of said hitch assembly for engagement at least with the front surface portion thereof, a locking member rotatably mounted in the vicinity of the lower receiving portion of each hook member and normally having at least one portion thereof disposed in a normal position interfering with a path of movement taken by said lower coupling element of said hitch member when moved toward said lower receiving portion of said hook member for engagement therewith, said locking member being rotatable into a released position clear of said path of movement when engaging said lower coupling element of said hitch member with said lower receiving portion of said hook member and into a locking position same as or proximal to said normal position as soon as said lower coupling element is engaged by said lower receiving portion of said hook member, said locking

member being adapted to be held in said locking position by a force transmitted thereto from said lower coupling element of said hitch member and acting in a direction to disengage said lower coupling element from said lower receiving portion; and

an unlocking mechanism linked to each locking member of said hook assembly to rotate said locking members from said locking position to said released position; wherein said unlocking mechanism is provided with a stopper member rotatably mounted on said lift arm and including means operable at the operator's station of said earthworking vehicle for rotating said stopper member between a nonoperative and an operative position thereof, the fore end of said stopper member being abutted against said locking member of said hook assembly when moved into said operative position, whereupon said implement is tilted forward to cause said locking member to rotate from said locking position into said released position under the influence of the force applied thereto by the abutment of said stopper member.

4,243,357

TURBOMACHINE

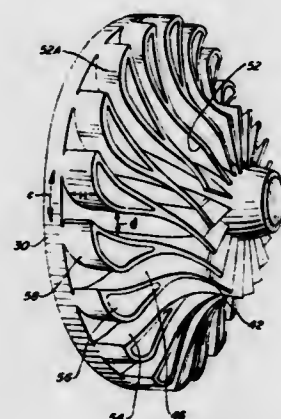
Patrick F. Flynn; Harold G. Weber, and John M. Mulloy, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 936,695. This application Aug. 6, 1979, Ser. No. 63,669

Int. Cl.³ F04D 29/28

U.S. Cl. 415-215

16 Claims



1. A turbomachine for compressible fluids comprising a rotor mounted for rotation about a substantially central transverse axis, said rotor including a hub, and a plurality of vanes mounted on and projecting from one surface of said hub, each vane being between the rotor axis and the rotor periphery and having a generally rounded vane end at said periphery smoothly merging with said vane, adjacent vanes coacting to define at least in part a fluid passageway having a generally axially oriented section adjacent the rotor axis and a generally radially oriented section extending from said axially oriented section to the rotor periphery; a predetermined number of passageways each having a reference station provided with a generally tangentially oriented construction and disposed within the radially oriented section thereof, the passageway configuration at said reference station having a mean tangential dimension that is no more than about 60% of the mean circumference of the rotor measured at said reference station divided by the number of vanes intersecting said circumference.

4,243,358

CONTROL SYSTEM FOR REDUNDANT SWASHPLATE DRIVE

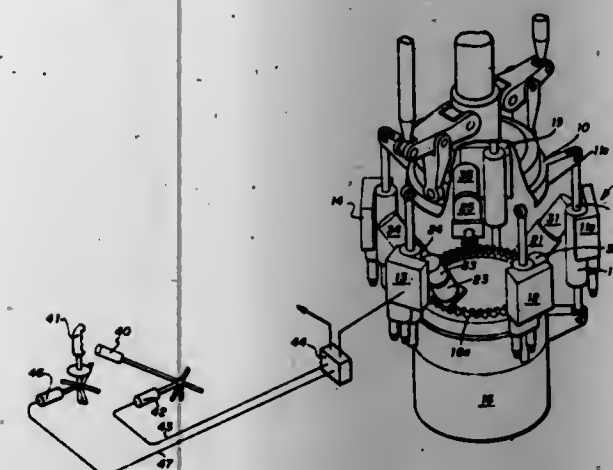
Gaylord W. Carlock, Joshua; William L. McKeown; James R. Goodman, both of Enless, and Chester Skrodzki, Watanga, all of Tex., assignors to Textron, Providence, R.I.

Filed Oct. 11, 1978, Ser. No. 930,456

Int. Cl.³ B64C 27/72

U.S. Cl. 416-114

12 Claims



1. In a helicopter having a rotor driving mast which in turn is driven by a transmission and wherein a swashplate is individually linked to pitch horns on each rotor blade with at least four actuators coupled to said swashplate, three of which normally control the attitude and position of said swashplate, the combination comprising:

- (a) a separate power unit for each said actuator, each power unit being independently driven from said transmission; and
- (b) means to shift control of said swashplate from one of said three actuators to a fourth actuator upon said one becoming disabled.

4,243,359

ROTOR STRUCTURE, ESPECIALLY FOR HINGELESS ROTARY WING AIRCRAFT

Alois Schwarz, Putzbrunn; Karlheinz Mautz, Ottobrunn, and Michael Stephan, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

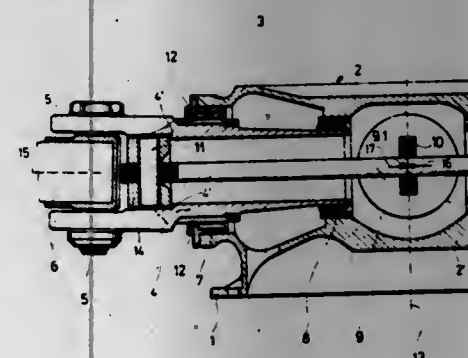
Filed Dec. 26, 1978, Ser. No. 972,878

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801943

Int. Cl.³ B64C 27/48

U.S. Cl. 416-138

5 Claims



1. A hingeless rotor structure, especially for rotary wing aircraft, comprising at least one pair of rotor blades having a longitudinal blade axis and arranged diametrically opposite each other, rotor head means having an axis of rotation, securing means operatively connecting said rotor blades to said rotor head means, said securing means comprising blade root sleeve means, blade angle bearing means and respective blade angle bearing bushing means, and tensionally resistant, torsion-

ally yielding connecting means including connecting holding means for operatively interconnecting the rotor blades of a pair, bearing means capable of taking up pressure loads in the direction of said longitudinal blade axis operatively arranged between only one of said blade root sleeve means and the corresponding blade angle bearing bushing means, said torsionally yielding connecting means having a center which is displaced radially off-center relative to said axis of rotation toward the respective pressure load bearing means by a distance corresponding substantially to one half of an elongation to which the respective torsionally yielding connecting means are subject in operation, whereby the securing means are centered in a manner substantially free of unbalances which are compensated by the off-center displacement of the center of the torsionally yielding connecting means.

4,243,360

CANTILEVERED STRUCTURES

William B. Wright, Kegworth near Derby, England, assignor to Rolls-Royce Limited, London, England

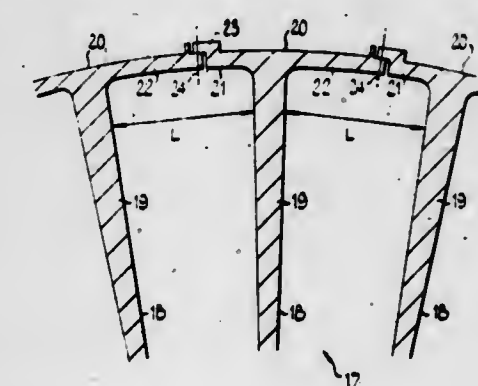
Filed May 29, 1979, Ser. No. 43,421

Claims priority, application United Kingdom, Jul. 25, 1978, 31023/78

Int. Cl.³ F01D 5/22

U.S. Cl. 416-191

4 Claims



1. A cantilevered structure comprising:

- a pair of spaced encastres;
- a pair of cantilevers, one cantilever extending from one encastre and the other cantilever extending from the other encastre so that both cantilevers span a gap between said encastres, said cantilevers, when loaded, being arranged so that one cantilever is partially supported by the other cantilever and a load transfer takes place therebetween;
- a Youngs Modulus, a cross-sectional shape and an applied load per unit length of one of said cantilevers being the same as a Youngs Modulus, a cross-sectional shape and an applied load per unit length respectively of the other of said cantilevers; and
- said load transfer between said cantilevers having a line of action spaced a distance from said encastre of said one cantilever partially supporting said other cantilever in the order of 21% of a distance between said spaced encastres of said cantilevers.

4,243,361

STANDING VALVE ASSEMBLY FOR AN OIL WELL PUMP

Henry C. Groff, Bakersfield, Calif., assignor to Oil Extractors, Inc., Fort Worth, Tex.

Filed Sep. 20, 1978, Ser. No. 943,965

Int. Cl.³ F04B 21/04, 21/02

U.S. Cl. 417-554

5 Claims

1. An improved apparatus for use with a well pump, the pump being of the type having reciprocating pump means located at the end of a string of production tubing and actuated by a sucker rod within the tubing, the apparatus comprising in combination:

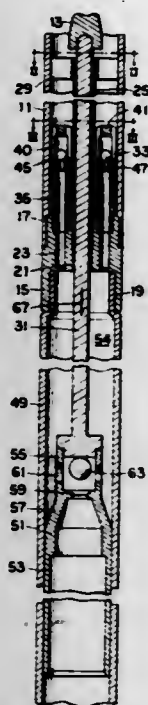
a sub connected to and closing the lower end of the tubing to confine a column of production fluid therein; the sub having a first passage extending axially through the center of the sub and a second passage to the side of and parallel to the first passage;

a single straight metal tube of single-piece construction secured to the sub and extending away from the first passage in alignment with the first passage;

a piston closely and reciprocally received in the tube, the upper end of the piston being connected to the sucker rod for reciprocating the piston in the tube, the lower end of the piston being connected to the pump means for reciprocating the pump means in unison with the piston; the dimensions of the piston and tube being selected so as to seal the hydrostatic pressure resulting from the column of production fluid; and

standing valve means in communication with the second passage for permitting upward flow of production fluid during upstroke of the pump means through the second passage and into the tubing, but preventing reverse flow therethrough during downstroke of the pump means; and

centralizer means secured to the tube above the sub and in contact with the production tubing to maintain it in the center of the production tubing.



cating the pump means in unison with the piston; the dimensions of the piston and tube being selected so as to seal the hydrostatic pressure resulting from the column of production fluid; and

standing valve means in communication with the second passage for permitting upward flow of production fluid during upstroke of the pump means through the second passage and into the tubing, but preventing reverse flow therethrough during downstroke of the pump means; and

centralizer means secured to the tube above the sub and in contact with the production tubing to maintain it in the center of the production tubing.

4,243,362

COMPOSITE MOLDING APPARATUS FOR ARTICLES FROM TWO MATERIALS HAVING A ROTARY MOLD BLOCK WHICH INCLUDES PINS FOR PROVIDING CORE AREAS

Herbert Rees, Willowdale, and James D. Nevrel, Bramalea, both of Canada, assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Jan. 4, 1979, Ser. No. 45,540
Int. Cl.³ B29C 1/14; B29F 1/00

U.S. Cl. 425-130

20 Claims

1. In an apparatus for molding composite articles from two materials, including a stationary first material mold half; a second material mold half disposed spaced from and in parallel facing relation to said first material mold half and movable linearly toward and away therefrom; a mold block disposed between said first and second material mold halves, movable linearly in response to movement of said second material mold half and rotatable about an axis between first and second material mold halves and parallel to their faces; and, two material mold means attached to said mold block and adapted to form, respectively and in response to sequential linear movements of said second material mold half and said mold block and rotary movement of said mold block, a mold closed position including:

a. a first material-receiving mold cavity with the face of said

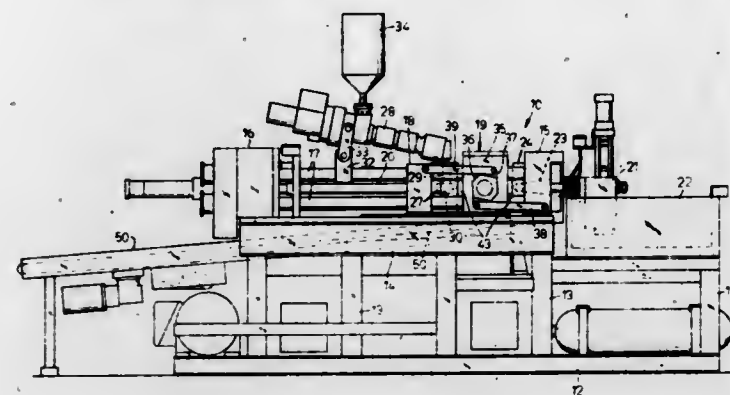
two material mold means in contact with the face of said first material mold half; and,

b. a two material-receiving mold cavity with the face of said two material mold means in contact with the face of said second material mold half; the improvement comprising:

(1) mold core means movably attached to said mold block and extending through said two material mold means generally perpendicular to its face;

(2) said mold core means having:

(a) an extended position with mold core end portions disposed within parts of said first material-receiving mold cavity to block the receipt of the first material into said parts; and,



(b) a retracted position with said mold core end portions at least partially retracted from said extended position and disposed with said first material within said two material-receiving mold cavity to allow the receipt of the second material into said parts and into the remainder of said two material-receiving mold cavity; and,

(3) indexing means on said mold block for moving said mold core means from said extended position to said retracted position in response to rotation of said mold block and linear movement of said second material mold half and said mold block to the mold closed position.

4,243,363

CONTROL OF TUBULAR FILM SIZE

John J. Mulcahy, Beverly, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Mar. 12, 1979, Ser. No. 19,486
Int. Cl.³ B29D 23/04

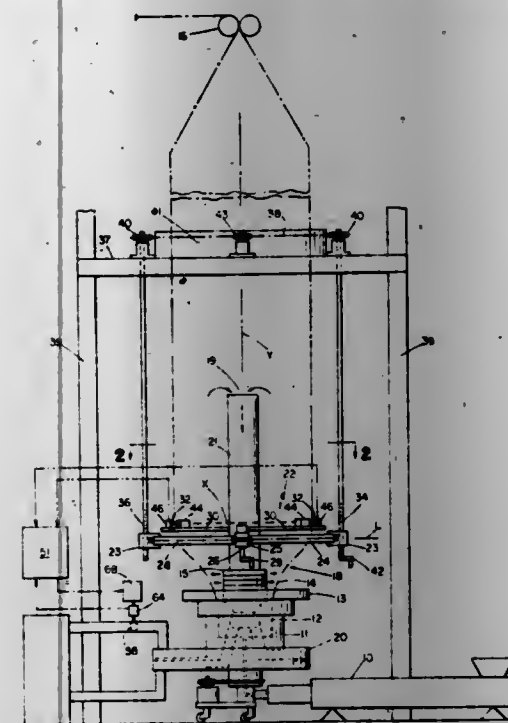
U.S. Cl. 425-140

11 Claims

1. In apparatus for maintaining a desired circumference of a longitudinally extending thin-wall expanded plastic tube being extruded from an annular die, comprising means for producing a flow of air to establish the volume of the tube, a flow control means to adjust the flow rate of said air, an actuator for said flow control means and control apparatus for said actuator, said control apparatus including at least one tube wall position sensor for producing a circumference-deviation signal dependent upon the deviation in tube circumference from a desired set point, the improvement wherein said control apparatus comprises:

valve position sensing means responsive to changes in actual position of said flow control means for generating a valve position signal that is dependent upon said actual position; processing means responsive to said circumference-deviation and valve-position signals for generating an error signal dependent upon the difference between said signals; driving means responsive to said error signal for generating a control signal for driving said actuator, said sensing means, processing means, driving means, and

actuator thereby defining an inner feedback loop that feeds back valve position to said processing means,



whereby the presence of said inner loop permits said control apparatus to rapidly and stably correct deviations in the circumference of said tube.

4,243,364

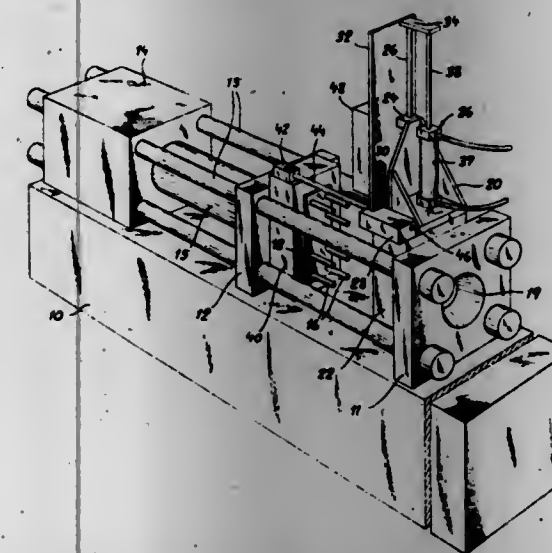
SAFETY MECHANISM FOR INJECTION-MOLDING MACHINE PROVIDED WITH TAKE-OFF MEMBER

Herbert Rees, Willowdale, Paul Brown, Orangeville, and Mirosław Grud, Brampton, all of Canada, assignors to Husky Injection Molding Systems Inc., Bolton, Canada

Filed Nov. 15, 1979, Ser. No. 94,455
Int. Cl.³ B29C 7/00; B29F 1/14

U.S. Cl. 425-153

5 Claims



1. In a workpiece-shaping machine provided with a pair of relatively movable holders carrying respective mold portions displaceable between a mold-open position and a mold-closed position, the combination therewith of:

a take-off member adjacent one of said holders provided with drive means for moving same from a retracted position into an inserted position between said mold portions in the mold-open position of said holders for extracting freshly molded workpieces from one of said mold portions; and

lockout means for preventing any significant movement of said take-off member from said retracted position toward said inserted position with said holders displaced from said mold-open position and preventing any significant displacement of said holders from said mold-open position with said take-off member moved out of said retracted

position, said lockout means including a control element on the other of said holders with a trajectory intersecting the path of a coating element on said take-off member.

4,243,365

CARBON BLACK PELLET AND METHOD AND APPARATUS FOR PRODUCING SAME

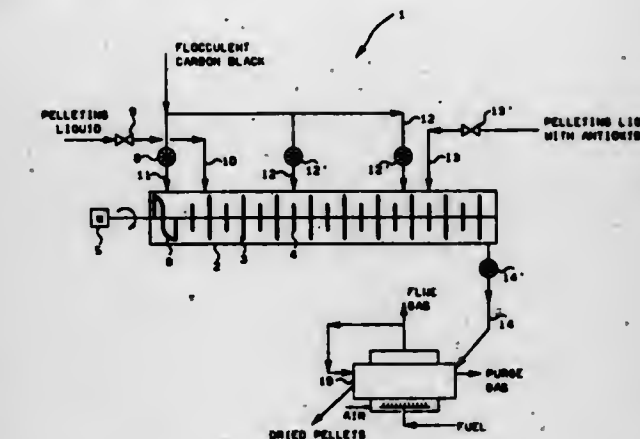
Harold R. Hunt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 853,715. This application Apr. 20, 1979, Ser. No. 31,704

Int. Cl.³ B01J 2/10

U.S. Cl. 425-222

3 Claims



1. An apparatus for producing carbon black pellets including:

a housing defining a chamber having first and second ends; agitating means in said chamber; means operably connected to said agitating means and operable for effecting operation of said agitating means; first inlet conduit means opening into said chamber adjacent said first end;

a source of flocculent carbon black connected to said first inlet conduit means;

a first outlet opening into said chamber adjacent said second end;

second inlet conduit means opening into said chamber at a position between the position the first inlet conduit means opens into the chamber and the position the first outlet opens into said chamber;

a source of antioxidant connected to said second inlet conduit means;

third inlet conduit means opening into said chamber adjacent the position the first inlet conduit means opens into the chamber; and

a source of pelletizing liquid connected to said third inlet conduit means.

4,243,366

APPARATUS FOR FORMING STARTING TAIL FOR FILM ROLLS

Lloyd E. Lefevre, Bay City, and Mark A. Weguhs, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

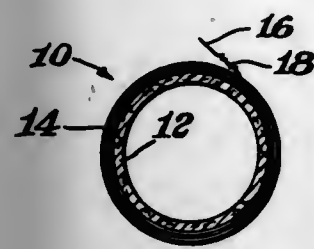
Division of Ser. No. 968,140, is a division of Ser. No. 849,137, Nov. 7, 1977, Pat. No. 4,169,122. This application Sep. 17, 1979, Ser. No. 76,518

Int. Cl.³ B65C 9/04; B32B 3/02; B26D 7/10; B29C 17/14
U.S. Cl. 425-303

3 Claims

1. An apparatus for on-line forming of an embossed film roll tail, said apparatus comprising a main bed roll acting in combination with a cut-off roll, said main bed roll including an embossing lifting means for raising the film from the surface of the bed roll, the cut-off roll including a cutting means intersecting the lifting means when raised to cut the film passing thereover, a heating means immediately adjacent the cutting means up-

stream thereof, means to engage said lifting means against said heating means to secure the tail end of film therebetween as the



film is severed by the cutting means, and means to wrap the film up on a roll core upon forming of the tail.

4,243,367

DEVICE FOR PRESSING OBJECTS MADE FROM A THERMOPLASTIC MATERIAL, AND PARTICULARLY PHONOGRAPHIC RECORDS

Robert A. Renoux, Poissy, France, assignor to Societe Anonyme de Techniques Audio-Visuelles S.A.T.A.V., France

Filed Oct. 29, 1979, Ser. No. 89,211

Claims priority, application France, Nov. 16, 1978, 78 32344

Int. Cl.² B29C 3/00, 17/00; B29D 17/00

U.S. Cl. 425—385

2 Claims



1. A device for pressing objects made from a thermoplastic material, of the type comprising a mould with a die support plate floatably mounted on an elastomer, characterized in that said plate is formed from at least two parts movable in relation to each other, each of these parts supporting a distinct die and bearing separately on the elastomer.

4,243,368

APPARATUS FOR MAKING A STRESS-FREE PLASTIC ARTICLE

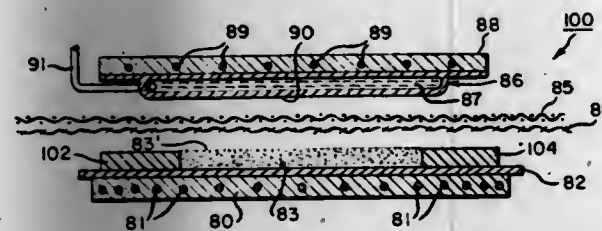
Armen Garabedian, 9-22 Astoria Blvd., Long Island City, N.Y. 11102

Continuation-in-part of Ser. No. 647,832, Jan. 9, 1976, and a continuation-in-part of Ser. No. 817,048, Jul. 19, 1977. This application Jul. 31, 1978, Ser. No. 929,304

Int. Cl.³ B29C 3/00

U.S. Cl. 425—405 R

8 Claims



1. Apparatus for producing a plastic sheet from plastic material in comminuted form in which the plastic sheet has on a major face thereof the characteristics of one surface of a master layer, comprising a master layer means on the surface of which there is disposed a layer of plastic material in comminuted form, a micro-porous parting sheet disposed over said comminuted plastic material, an air releasing wire screen sheet disposed over said micro-porous parting sheet, the arrangement

thereby forming a multiple layer sandwich which includes said wire screen sheet, said micro-porous parting sheet, said comminuted plastic material, and said master layer means, two flexible spaced diaphragm means between which said multiple layer sandwich is disposed, melting means for heating said plastic material as the latter is disposed in said multiple layer sandwich array between said spaced diaphragm means, and means for applying a fluid pressure to said diaphragm means to evenly impress a fluid-like pressure to said multiple layer sandwich with a force sufficient to cause the melted plastic material to fuse to a coherent mass defining a plastic sheet as said major face takes on the characteristics of said one surface of the juxtaposed master layer means.

4,243,369

MOULD CLOSING, CLAMPING AND OPENING MEANS

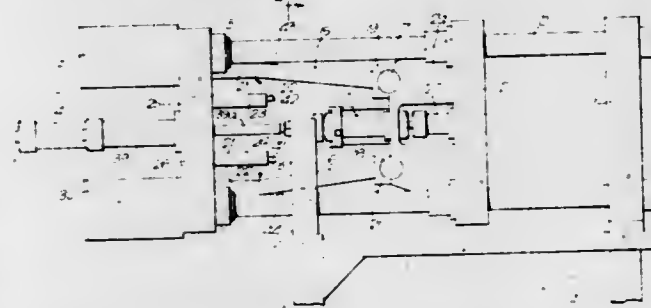
Michael J. James, Cheltenham, England, assignor to Micro & Precision Mouldings (Cheltenham Limited), England

Filed Dec. 5, 1978, Ser. No. 966,557

Int. Cl.² B29F 1/00

U.S. Cl. 425—451.2

14 Claims



1. Mould closing, clamping and opening means for the split mould of a pressure moulding machine, comprising: a plurality of spaced parallel tie bars; a moving platen which is movable along the tie bars, together with one part of the split mould, to open or close the mould; a clamping platen spaced from the moving platen and also movable along the tie bars; a plurality of hydraulic clamping piston and cylinder means, acting respectively between each tie bar and the clamping platen and supplied with oil under pressure from a common source; further hydraulic piston and cylinder means acting between the clamping platen and the moving platen, for effecting mould opening or closing movement of the moving platen; at least one elongate element pivotally mounted at one end thereof on the moving platen, the opposite end of the elongate element being free; an abutment on the clamping platen; an opening through the clamping platen; and means for pivotally moving the elongate element relative to the moving platen between an operative position in which the free end thereof engages the abutment on the clamping platen, so that the elongate element acts as a strut to transmit a clamping load, applied by said plurality of clamping hydraulic piston and cylinder means, from the clamping platen to the moving platen, and an inoperative position in which the free end of the elongate element registers with said opening through the clamping platen, to permit movement of the moving platen, under the action of the further hydraulic piston and cylinder means, towards and away from the clamping platen during a mould opening or closing operation.

4,243,370

DIE FOR EXTRUDING A HONEYCOMB STRUCTURAL BODY

Noboru Higuchi, Nagoya, and Shoji Futamura, Kawasaki, both of Japan, assignors to NGK Insulators, Ltd. and Institute of Technology Precision Electrical Discharge Works, both of, Japan

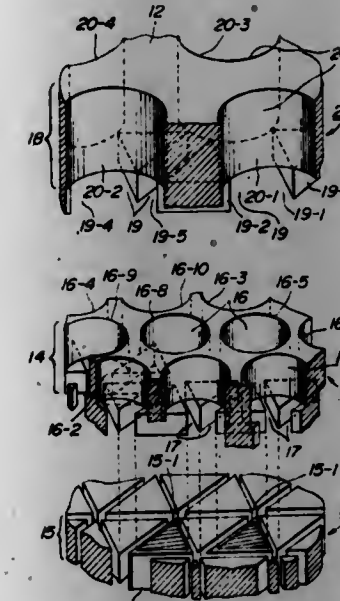
Filed Dec. 4, 1978, Ser. No. 966,220

Claims priority, application Japan, Dec. 7, 1977, 52-146906

Int. Cl.³ B29F 3/04

U.S. Cl. 425—462

1 Claim



1. In a die for extruding a honeycomb structural body comprising: discharge slits having a cross-sectional shape corresponding to that of the honeycomb structural body and having a given depth towards the rear surface of the die from the front surface, and an opening portion having a plurality of openings which are connected to the discharge slits at intersecting portions or side portions thereof, an improvement further comprises at least one set of a throttle portion having a plurality of openings and a reservoir portion secured to the rear surface of the opening portion in such an arrangement that the reservoir portion is provided between the throttle portion and the opening portion, the openings in the throttle portion in one set of the throttle portion and the reservoir portion, which set is arranged at the rear side of the opening portion, being larger in diameter and smaller in number than those in the opening portion, said reservoir portion being constituted with a plurality of guide channels connecting adjacent openings of the throttle portion with one another and the openings in the opening portion;

4,243,371

FLASH LAMP ARRAY CONSTRUCTION

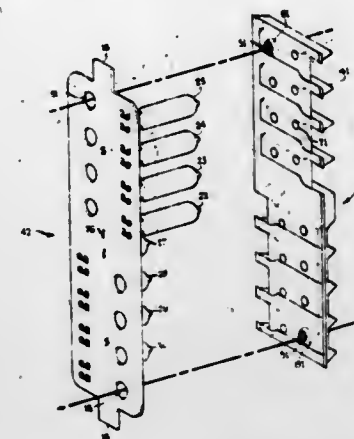
Norman E. Kewley, Pepper Pike, and Andrew Smetana, Mentor, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,577

Int. Cl.³ F21K 5/00

U.S. Cl. 431—13

6 Claims



4. A method of making a multiple flash lamp array, comprising the steps of providing a circuit board having flash indicator openings therethrough, providing a plurality of flash lamps and connecting their lead-in wires to said circuit board with the flash lamps extending substantially perpendicularly to said circuit board, providing a reflector unit and positioning same over said circuit board, said reflector unit having flash indicator openings corresponding in position with those of said circuit board, at least one of said flash indicator openings of the reflector unit being provided with a rearwardly extending rim which extends into the respective flash indicator opening of the circuit board, and thereafter bending the lamps by their lead-in wires so that the lamps are substantially parallel to the circuit board and the reflector unit.

4,243,372

BURNER CONTROL SYSTEM

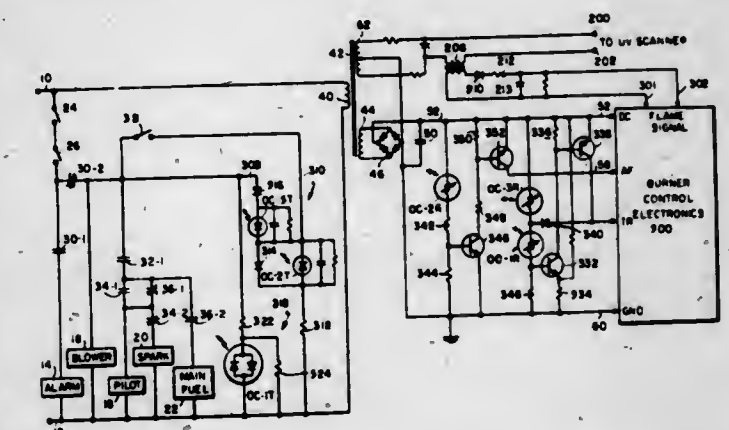
Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Feb. 5, 1979, Ser. No. 9,307

Int. Cl.³ F23N 5/00

U.S. Cl. 431—31

5 Claims



1. Burner control apparatus for use with a fuel burner installation having an operating control to produce a request for burner operation, an air flow sensor which provides an air flow signal to indicate the presence of an adequate air flow through the burner, a flame sensor to produce a signal when flame is present in said fuel burner installation, and means responsive to said burner control apparatus for controlling fuel flow, said burner control apparatus comprising: a control device for actuating said fuel control means; an electronic timing circuit for providing an ignition cycle having successive timing intervals including in sequence a

purge interval, a pilot ignition interval, a pilot stabilization interval and a main fuel ignition interval;
 means responsive to a request for burner operation to initiate said ignition cycle by actuating said electronic circuit timing means;
 air means operative during said ignition cycle for providing an air flow through the burner during said purge interval;
 means for disabling said timing circuit to prevent further ignition cycle operation if said air flow signal is present before said air means is operative;
 means for disabling said timing circuit to prevent further ignition cycle operation if said air flow signal is not present within a predetermined time after said air means is operative; circuit responsive to said actuated timing means for energizing said control device at the end of said pilot stabilization interval to actuate said fuel control means and initiate fuel flow;
 flame signal responsive means responsive to a signal from said flame sensor to maintain said control device energized;
 means responsive to failure to establish pilot flame during said pilot stabilization interval for preventing the production of further timing intervals by said timing circuit; and
 means responsive to loss of said signal from said flame sensor after said pilot stabilization interval to terminate all fuel flow and disable said timing circuit to prevent further ignition cycle operation.

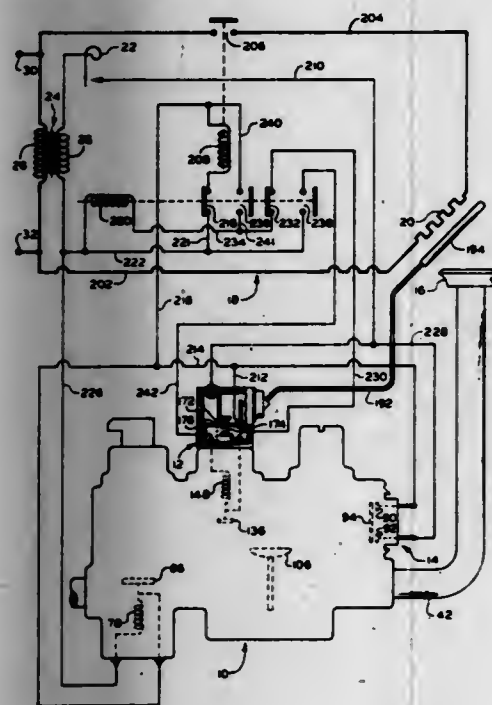
4,243,373

DIRECT IGNITION GAS BURNER CONTROL SYSTEM
 Carl F. Fernstrom, and Charles D. Vlaso, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 9, 1979, Ser. No. 28,338
 Int. Cl.³ F23N 5/00

U.S. Cl. 431-66

12 Claims



1. In a gas burner control system, a burner;
 an electrical resistance igniter for igniting said burner;
 a gas valve device including first and second valves connected fluidically in series;
 a thermostatically actuated switch means including a switch having a cold contact position and a hot contact position, and including a temperature sensing portion;
 said temperature sensing portion being positioned with respect to said igniter so as to cause said switch to be in said cold position when said igniter is below a predetermined temperature sufficient to ignite gas and in said hot position when said igniter is above said predetermined temperature, and being positioned with respect to said burner so as

to be impinged by a burner flame for maintaining said switch in said hot position;
 first circuit means including said switch in said cold position for effecting energizing of said igniter;
 second circuit means including said switch in said cold position for effecting opening of said first valve;
 a pressure actuated switch electrically connected in parallel with said thermostatically actuated switch in said cold position and in series with said thermostatically actuated switch in said hot position;
 said pressure actuated switch being actuated to a closed contact position in response to gas pressure when said first valve is open for providing a hold-in circuit for maintaining said first valve open; and
 third circuit means including relay means, said thermostatically actuated switch in said hot position, and said pressure actuated switch in said closed contact position for effecting de-energizing of said igniter and for effecting opening of said second valve,
 said igniter having sufficient mass to remain above said predetermined temperature for a short time after being de-energized for effecting ignition of said burner.

4,243,374

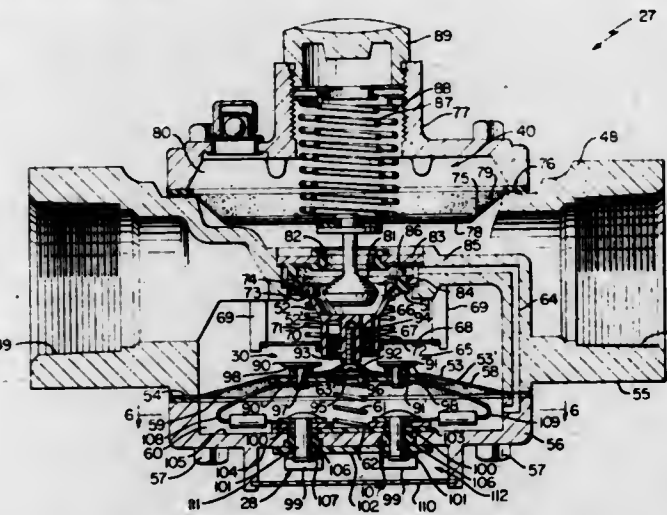
FLUID FLOW SENSING SWITCH DEVICE AND METHOD OF MAKING THE SAME

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 23, 1978, Ser. No. 936,114
 Int. Cl.³ F23N 1/00

U.S. Cl. 431-89

18 Claims



1. In a fluid flow sensing switch device having a self-contained housing means provided with a fluid flow passage therethrough defined by an inlet for receiving a fluid and an outlet disposed in spaced coaxially aligned relation in said housing means and separated by a main valve seat controlled by a movable main valve member that has means adapted to be operated by a pressure differential that is adapted to be created between said inlet and said outlet, said device having an electrical switch construction operatively associated with said main valve member and having contact means thereof adapted to be actuated by said pressure differential, the improvement comprising a pressure regulator disposed in said housing means for regulating the pressure of said fluid that passes from said inlet to said outlet of said housing means, said pressure regulator being disposed downstream from said main valve seat so as to act on said fluid after the same passes through said main valve seat from said inlet, said pressure regulator having a valve seat and a valve member for controlling said valve seat thereof, said valve seat of said pressure regulator and said main valve seat being disposed in spaced coaxially aligned relation in said housing means and substantially transverse to the coaxially aligned inlet and outlet.

4,243,375

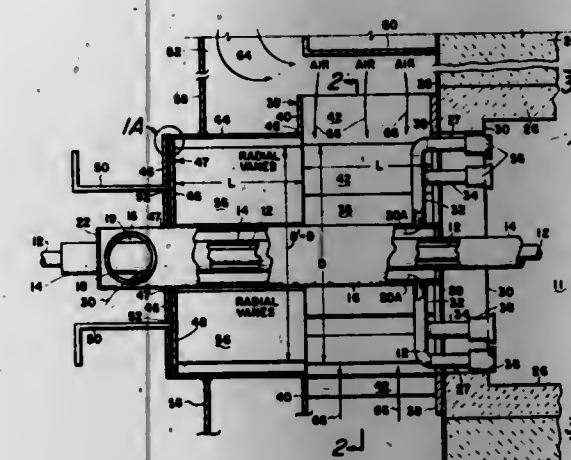
GAS OR LIQUID FUEL BURNER WITH AIR REGISTER CONTROL OF TANGENTIAL/AXIAL COMBUSTION AIR MOVEMENT

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Jun. 8, 1978, Ser. No. 913,606
 Int. Cl.³ F23C 5/00

U.S. Cl. 431-174

5 Claims



1. A burner system for gaseous or liquid fuel, adapted for insertion through a circular tile opening in a furnace wall; comprising:

- (a) a burner tube means to supply gaseous fuel to at least one gaseous fuel burner, and to supply liquid fuel to at least one liquid fuel burner; said burner tube means coaxial with, and inserted into said circular opening;
- (b) a first annular vane assembly comprising a pair of spaced coaxial annular plates of substantially equal dimension, a plurality of tangentially-inclined vanes, equally angularly spaced, and rigidly attached in a fixed position to said annular plates at each end, the inner diameter of said tangentially-inclined vanes of selected value D;
- (c) said first vane assembly mounted coaxial with said opening to the outer wall of said furnace;
- (d) a circular cylindrical wall of selected axial length, and diameter attached to the outer one of said two annular plates; the annular space between said cylindrical wall and said burner tube closed off by a first annular wall;
- (e) a second vane assembly comprising a second annular wall adapted to slide about said burner tube and inside said cylindrical wall, and a plurality of angularly and equally-spaced substantially planar radial vanes each located in a plane extending through the axis of the burner tube, rigidly attached in a fixed position at one end axially to said second annular wall, said assembly of diameter less than D;
- (f) means to axially move said second vane assembly from and between a first position inside said cylindrical wall to a second position into the space inside said tangential vanes; and
- (g) means to force combustion air into the space between said tangential vanes;
 whereby when said second vane assembly is in said first position, said combustion air will flow in a swirling helical flow downstream past said burners into said furnace; and
 when said second vane assembly is in its second position, said tangential flow of air set up by said tangential vanes will flow into said radial vanes, and will flow axially past said burners into said furnace.

4,243,376

FLARE

Robert A. Cambell, Weybridge, and Rodney E. Witheridge, London, both of England, assignors to The British Petroleum Company Limited, London, England

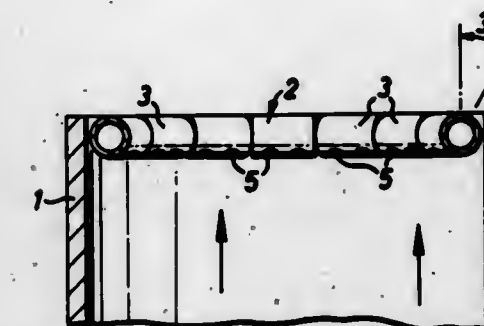
Filed May 9, 1978, Ser. No. 904,271

Claims priority, application United Kingdom, May 9, 1977, 19290/77

U.S. Cl. 431-202

Int. Cl.³ F23D 13/20

10 Claims



1. A flare comprising a substantially vertically disposed pipe adapted to be supplied with a flow of combustible gas, the pipe having a flame stabiliser comprising a ring within the pipe at or near the outlet of the pipe, the ring being hollow and having a plurality of first holes positioned in said ring upstream of the flow of combustible gas and a plurality of second holes positioned in said ring downstream of the flow of combustible gas, said plurality of first holes and said plurality of second holes being adapted to permit a portion of the flow of said combustible gas through said ring.

4,243,377

FLUID FLOW CONTROL VALVE

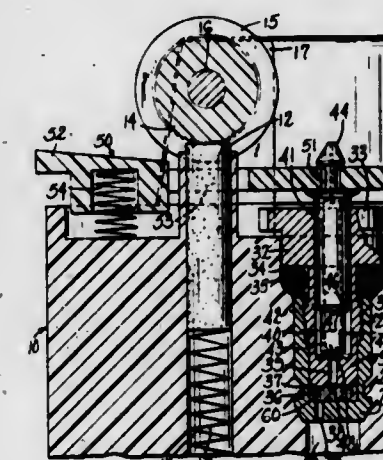
Paul Schmid, 71 Lakeview Dr., Milford, Conn. 06460

Filed Mar. 27, 1978, Ser. No. 890,379

Int. Cl.³ F23D 13/04

U.S. Cl. 431-344

8 Claims



1. A fluid flow control device for use in a liquified gas lighter having a body containing a fuel reservoir and a fuel supply passage, comprising:

- a cup-shaped stationary member fixed in said fuel supply passage and provided internally with a circular bottom, a fuel vent passage located eccentrically in said circular bottom, a lower cylindrical wall portion and an upper threaded zone, said fuel vent passage being out of contact with said cylindrical wall portion,
- a first piston having a bottom end, a lower cylindrical portion slidable in the lower cylindrical portion of the stationary member, a threaded portion engaged with said threaded zone and a manually accessible upper portion, whereby the piston may be rotated to adjust the distance

between its bottom end and the circular bottom of the stationary member,
 said first piston being provided with an axially disposed cylindrical chamber and an axially disposed passage traversing the bottom of the piston to connect the cylindrical chamber with a space between said bottom end and circular bottom,
 a second piston slidable in said cylindrical chamber and having a burner nozzle at its upper end, a longitudinal passage leading to said nozzle and means at its lower end for selectively obturating the passage in the bottom of the first piston, said longitudinal passage being in fluid communication with said cylindrical chamber,
 and a compressible filter mass substantially filling the space between the first piston bottom end and the circular bottom of the stationary member and resting directly against said bottom end and circular bottom.

4,243,378

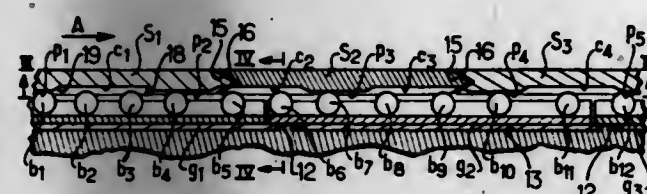
PROCESS AND DEVICE FOR DISPLACING FIRING PLATES THROUGH A TUNNEL KILN

Sten Chronberg, Arnières-sur-Iton, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France
 Filed Nov. 16, 1978, Ser. No. 961,181

Claims priority, application France, Nov. 22, 1977, 77 35056
 Int. Cl.³ F27D 3/11

U.S. Cl. 432—11

11 Claims



2. In a device for ensuring the displacement in tunnel kilns, in particular for high-temperature firing of ceramic products, of firing plates which traverse the kiln while supporting the products to be fired including a row of plates adapted to be pushed at one end of the kiln, a plurality of balls supported in rolling paths on which balls the plates roll, and parallel grooves with the same spacing as that of the said paths formed on the lower face of the plates to receive the balls which simultaneously ensure a lateral guiding of the plates, the said rolling paths being substantially horizontal, the improvement comprising protruded portions formed within said grooves and extending longitudinally therewithin defining skids on which the said plates roll when a ball is present in the rolling path vertically beneath said skid.

4,243,379

SHAFT PREHEATER

Hannes S. Horn, Dortmund, and Heinrich Buchner, Bochum-Weitmar, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany
 Filed Mar. 8, 1979, Ser. No. 18,631

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2900078

Int. Cl.³ F27B 15/00

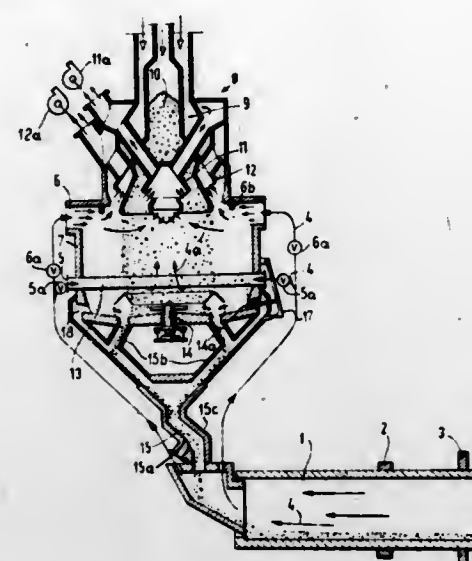
U.S. Cl. 432—14

18 Claims

14. The method of preheating separate first and second limestone fractions of different sizes for a rotary kiln or the like, comprising the steps:

feeding the first fraction downwardly forming a core and feeding the second fraction downwardly outwardly annularly surrounding the core;
 directing an upper flow of hot gas into the fractions radially to penetrate the outer second fraction and thereafter the

inner first fraction with the gas first heating the annular outer fraction;



directing a lower flow of hot gas into the inner core of the first fraction shortly before mixing the fractions so that additional heat energy is directed into the inner core; and mixing the fractions and directing them to a kiln.

4,243,380

METHOD AND DEVICE FOR DISTRIBUTING LIQUID FUEL TO A FLUIDIZED BED

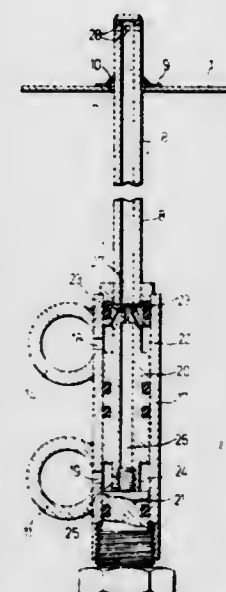
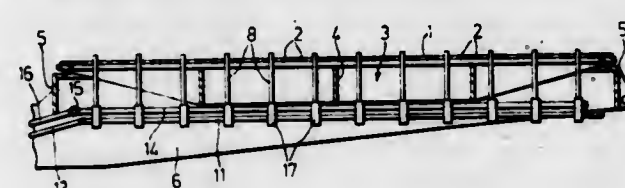
Dag Vareide, Nedre Mollenberggate 83, and Odd E. Solheim, Chatarina Lysholms vei 6B, both of N-7000 Trondheim, Norway

Filed Feb. 16, 1979, Ser. No. 12,748

Claims priority, application Norway, Feb. 17, 1978, 780549
 Int. Cl.³ F27B 15/00

U.S. Cl. 432—15

2 Claims



1. A method for distributing liquid fuel in a fluidized bed incinerator having a constriction plate supporting a fluidized bed of refractory particles, said constriction plate having a plurality of tuyeres therethrough for supplying fluidizing and primary combustion air to said bed from a windbox provided below the constriction plate, comprising the steps of:

forming closed pipe loops through which the liquid fuel circulates below said constriction plate;
 extending a plurality of substantially vertical risers through the constriction plate;
 supplying pressurized liquid fuel in atomized form to said risers at the lower end thereof by means of fuel nozzles connecting each of said risers to the closed pipe loop;
 introducing small quantities of a high pressure gaseous driving agent to the risers at the lower end thereof below the constriction plate through one or more driving agent nozzles associated with each fuel nozzle, said driving agent nozzles being in close proximity to the associated fuel nozzle for intimately admixing said supplied driving agent and said supplied fuel at the lower end of the riser and driving the intimate admixture of driving agent and fuel to the fluidized bed through said riser.

4,243,381

CONTINUOUS RING FURNACES

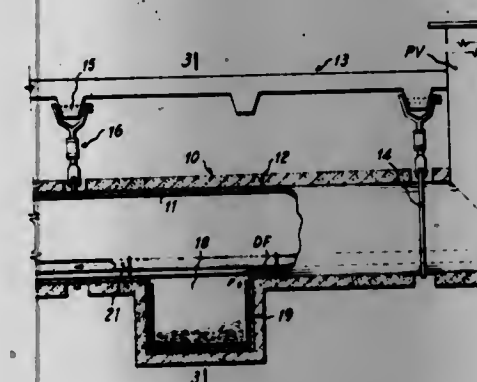
Jean L. Genevois, Corso Sempione 3, Milano; Presti Paolo, Via della Baduina 133, Roma, and Giuseppe De Stefani, Via Novara, 55, Abbiategrasso, all of Italy

Filed Mar. 28, 1979, Ser. No. 24,566

Claims priority, application Italy, Mar. 30, 1978, 48681 A/78
 Int. Cl.³ F27D 23/00

U.S. Cl. 432—75

4 Claims



1. Smoke cleaning apparatus for use with a fuel-burning furnace, comprising an elongated tubular smoke channel, means supporting said channel in a position slightly inclined from the horizontal, means connecting the apparatus to a source of products of combustion and heating means in the lower part of the channel adapted to fluidize combustion products deposited therein, whereby said products may flow along the channel, the smoke channel is provided with at least one spaced outlet in its bottom to permit outward passage of said fluidized products, a tank integral with the channel being associated with each outlet and a removable container being fitted within each tank to receive said fluidized deposits.

4,243,382

MATERIAL DISTRIBUTING MEANS FOR ROTARY DRUM TYPE HEAT TREATMENT APPARATUS

Takeshi Suzuki, Mikio Murao, Masahiro Uchida, and Minoru Nezuka, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 9, 1979, Ser. No. 10,799

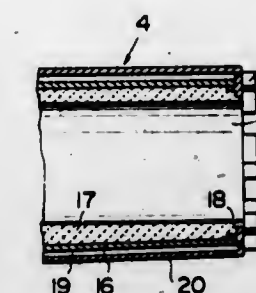
Claims priority, application Japan, Feb. 10, 1978, 53/14672
 Int. Cl.³ F27D 15/02

U.S. Cl. 432—78

7 Claims

1. Rotary drum type heat treatment apparatus comprising a rotary drum rotatable about a longitudinal axis and having an

outlet end and a cooling section including grate means having one end disposed beneath the outlet end of the rotary drum for receiving material from the drum, said drum being provided at the outlet end with a plurality of circumferentially spaced distribution members, each of said distribution members having at least one side surface which is extending longitudinally



outwardly beyond the outlet end and inclined with respect to a radial line of the drum for engagement with the material being discharged through the outlet end to deflect the same, said side surface being provided by a plate which is mounted on the drum for angular adjustment about an axis parallel with the longitudinal axis of the drum.

4,243,383

Patent Not Issued For This Number

4,243,384

ROTARY KILN

Erik Reinhardt, Copenhagen, Denmark, assignor to F. L. Smidth & Company, Cresskill, N.J.

Filed Apr. 10, 1979, Ser. No. 28,842

Claims priority, application United Kingdom, Apr. 11, 1978, 14121/78

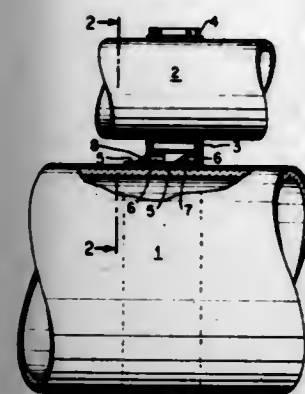
Int. Cl.³ F27D 15/02; F27B 7/02; F27D 1/00

U.S. Cl. 432—80

17 Claims

1. A rotary kiln having a plurality of cooler tubes arranged in a planetary fashion therearound, the cooler tubes being supported by a ring-shaped member disposed and spaced radially from the kiln, the ring-shaped member being attached to the kiln by a plurality of support members for supporting said ring-shaped member, at least one of said support members having first and second flange means, said first flange means being attached to inner surface portions of the ring-shaped member, said second flange means being attached to outer

surface portions of the kiln, and an intermediate web member connecting said first and second flange means, said support



members being arranged so as to permit movement of the cooler tubes in directions generally parallel to the longitudinal axis of the rotary kiln.

4,243,385

END BLOCK

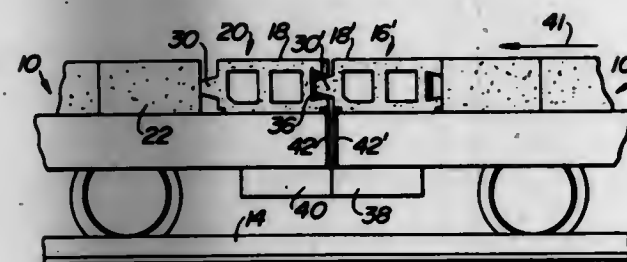
Ernest H. Jeffries, Jr., Greensboro, N.C., assignor to Resco Products, Inc., Norristown, Pa.

Filed Feb. 26, 1979, Ser. No. 15,038

Int. Cl.³ F27D 3/12

U.S. Cl. 432-241

2 Claims



1. Apparatus comprising a kiln car, a row of end blocks aligned adjacent an end of said car, each of said end blocks comprising a refractory body having a horizontal transverse recess extending into a face of said block adjacent said end of said car, said recess having a shape wherein the innermost surface of said recess has a vertical dimension greater than the vertical dimension of any other portion of said recess, said row being formed of blocks wherein said recess of each block is aligned with said recess of each adjacent block, and a layer of resilient refractory material retained in said recesses of said blocks without the use of fastening means by retaining means comprising said shape of said recess, said refractory material having a length sufficient to be threaded through all of said recesses, and further comprising one other row of end blocks aligned adjacent an opposite end of said car, each of said end blocks of said other row comprising a refractory body having a horizontally transverse projection extending from an end face adjacent said opposite end of said car and vertically aligned with said recess, the smallest vertical dimension of said recess being greater than the largest vertical dimension of said projection.

4,243,386

ORTHODONTIC APPLIANCE

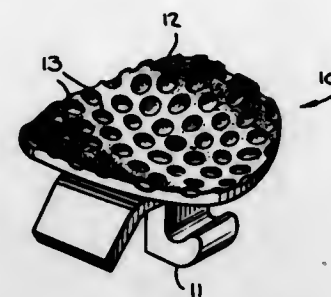
Kozo Kawaguchi, Okkuma, Japan, assignor to GAC International, Inc., Commack, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,062

Int. Cl.³ A61C 7/00

U.S. Cl. 433-9

10 Claims



1. An orthodontic appliance adapted to be adhered directly to the surface of a tooth which comprises an orthodontic bracket suitable for supporting a wire, and a base member connected to the lower portion of said orthodontic bracket and forming a flange extending from said lower portion of said bracket, said base member having in the rear surface thereof a plurality of indentations which extend into the thickness of said base member but do not protrude onto the other surface thereof, said indentations including a sufficiently roughened surface to facilitate a locking relation with an adhesive so as to enable said appliance to be directly adhered to the surface of said tooth, said roughened surface having a finish of approximately 6 to 10 microns in depth with a spacing between irregularities of approximately 5 to 13 microns.

4,243,387

ADJUSTABLE ORTHODONTIC BRACKET

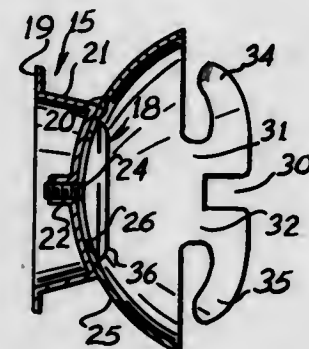
Steven P. Prins, 531 Tomahawk Trail, Woodstock, Ga. 30188

Filed Apr. 16, 1979, Ser. No. 30,101

Int. Cl.³ A61C 3/00

U.S. Cl. 433-16

4 Claims



1. An orthodontic appliance comprising at least one bracket carried by a tooth, and a wire fixed to said bracket for exerting a force on said bracket so that the force is exerted on the tooth, characterized in that said bracket includes a base fixed with respect to said tooth, a force receiving member selectively receivable on said base and movable with respect thereto, said force receiving member defining means for receiving said wire, retainer means for selectively fixing said force receiving member with respect to said base, said force receiving member defining an opening therein, said retainer means including a shank receivable through said opening and engageable with said base, said force receiving member being selectively rotatable about said retainer means for changing the angular position of said means for receiving said wire, and further characterized in that said base includes a concave surface for receiving said force receiving member, said force receiving member includes a convex surface complementary to said concave surface, and said opening is generally central of said force receiving member, the arrangement being such that said means for receiving said wire can be angularly disposed with respect

to said base by motion of said force receiving member with respect to said base.

4,243,388

DENTAL HAND ENGINE

Toshio Arai, Tokyo, Japan, assignor to Kabushiki-Kaisha Dentronics, Tokyo, Japan

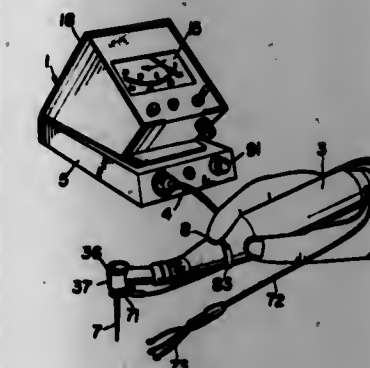
Filed Apr. 20, 1979, Ser. No. 32,241

Claims priority, application Japan, Apr. 20, 1978, 53-52345

Int. Cl.³ A61C 1/00

U.S. Cl. 433-27

1 Claim



1. A dental hand engine for driving a reamer for widening a root canal of tooth, which comprises a body containing the engine and operable by fingers, switch means provided on said body for selectively operating the engine and the reamer connected to said engine, means for passing a micro current through the reamer, and electric circuit means for sensing electric resistances of the micro current passing through the reamer and for stopping the engine and reamer in response to a specific electric resistance said micro current has when the reamer reaches a radical apex.

4,243,389

DENTAL DOWEL PIN PLACEMENT APPARATUS

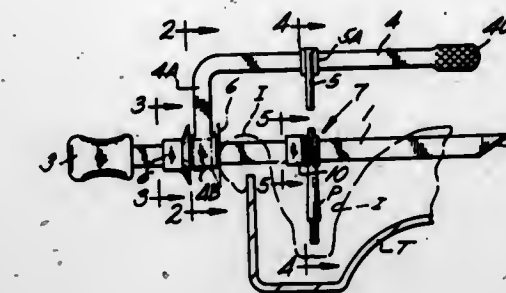
Jeffrey W. Elmer, 464 W. Shenandoah, Roseburg, Oreg. 97470

Filed Dec. 11, 1979, Ser. No. 102,380

Int. Cl.³ A61C 19/00

U.S. Cl. 433-74

6 Claims



1. An apparatus for retaining a dowel pin in partial embedment within a settable jaw reproduction cast within a dental impression, said apparatus comprising, an elongate base for supported engagement adjacent its ends with the impression, a guide for base installation carried by said base and positionable above a tooth impression, a dowel pin holder supported by and positionable along said base into alignment with the desired dowel pin location whereat the lower portion of the dowel pin will be subsequently embedded in the jaw reproduction, and indicator means positionable along said base to mark the desired location of said dowel pin holder when the latter is reinstalled on the base after impression and jaw reproduction vibration.

4,243,390

PROCESS FOR DYEING OR PRINTING FIBROUS MATERIAL USING QUATERNARY POLYMERIZED AMMONIUM SALTS AS ASSISTANTS

Paul Schiffer, Riehen; Hans-Ulrich Berendt, Allschwil, and Jaroslav Haase, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,115
Claims priority, application Switzerland, Dec. 29, 1978, 13278/78

Int. Cl.³ C09B 67/00; D06P 1/62

U.S. Cl. 8—553

18 Claims

1. A process for dyeing or printing organic fibrous material using a dyeing or printing assistant which contains, as quaternary ammonium salt,

(a) a reaction product of a copolymer of maleic anhydride and ethylene, propylene or styrene, with a N,N-disubstituted 1,2-ethylenediamine or 1,3-propylenediamine, in which the substituents are alkyl of 1 to 4 carbon atoms or together with the nitrogen atom form a 5- or 6-membered ring which optionally contains an oxygen atom as second heteroatom,

(b) a homopolymer of a 4-vinylpyridine which is unsubstituted or substituted at a ring carbon atom by methyl or ethyl,

(c) a copolymer of the above vinylpyridine and styrene, and the reaction product (a), the homopolymer (b) and the copolymer (c) are quaternised with an alkyl or alkenyl halide containing up to 6 carbon atoms alone, or with a halomethylnaphthalene, halomethyldiphenyl, chloroacetamide, chloroacetonitrile, or with a haloacetic acid or an alkali metal salt or alkyl ester of haloacetic acid containing 1 to 12 carbon atoms in the alkyl moiety, or with a benzyl halide which is unsubstituted or substituted by halogen, methyl or ethyl, alone or in admixture with each other or with an alkyl or alkenyl halide containing up to 4 carbon atoms, or

(d) a homopolymer of a 2- or 4-vinylbenzyl chloride which is quaternised with a tertiary monoamine containing up to 20 carbon atoms, whilst two substituents of the monoamine are alkyl of 1 to 4 carbon atoms or together with the nitrogen atom form a 5- or 6-membered ring which optionally contains an oxygen atom as second heteroatom, and the third substituent of the monoamine is alkyl, alkenyl or aryl containing up to 18 carbon atoms which is unsubstituted or substituted by alkyl or alkylene.

4,243,391

PROCESS FOR BLEACHING TEXTILES IN THE MECHANICAL LAUNDRY DRIER

Rolf Puchta, Haan; Karl Schwadtke, Leverkusen; Hans Harder, and Rudolf Weber, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,439
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744457

Int. Cl.³ D06L 3/02, 3/14, 3/16

U.S. Cl. 8—111

13 Claims

1. A process for bleaching textiles in a mechanical laundry drier consisting of the steps of adding a sufficient amount of an aqueous hydrogen peroxide solution and an aqueous solution of a textile softening quaternary ammonium salt dispersible in water to previously washed textiles before heating the same, so that the residual moisture adhering to the textiles contains from 0.05 to 1 gm/liter of hydrogen peroxide and from 0.05 to 2 gm/liter of said textile softening ammonium salt, heating said damp textiles under mechanical agitation and hot air flow in such a manner that the temperature of said damp textiles is from 55° C. to 80° C. for a period of at least 5 minutes, and recovering dried, bleached textiles.

4,243,392

PROCESS FOR SOLAR CONCENTRATION OF LITHIUM CHLORIDE BRINE

Patrick M. Brown, Exton, and Daniel A. Boryta, Downingtown, both of Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed Apr. 11, 1979, Ser. No. 28,976

Int. Cl.² B01D 1/00, 9/02

U.S. Cl. 23—295 S

6 Claims

1. In a process for producing a relatively concentrated solution of lithium chloride from a relatively dilute solution of such compound through evaporation by means of solar energy, the improvement which comprises providing a pond system consisting of a series of shallow ponds of relatively large surface area, flowing a dilute solution of lithium chloride into one end of said pond system, regulating the flow of said lithium chloride solution through said pond system so that through evaporation by means of solar energy the concentration of said solution, at a point intermediate the points of introduction to and withdrawal of said solution from said pond system, is increased to provide a solution whose concentration has a vapor pressure which under ambient conditions is substantially in equilibrium with the partial pressure of moisture in the atmosphere at the geographic location of said pond system, and further regulating the flow of said more concentrated lithium chloride solution through the remainder of said pond system so that through solar energy the temperature of said solution for at least a substantial portion of the daylight hours exceeds that of the air immediately above said pond system, whereby the vapor pressure of said solution exceeds the partial pressure of moisture in the atmosphere above said pond system and additional water is thereby evaporated from said solution to increase further the concentration of lithium chloride in said solution.

4,243,393

COAL ARTICLE

Miles W. Christian, Plymouth, Ohio, assignor to Banner Energy Corporation, Plymouth, Ohio

Filed Oct. 13, 1977, Ser. No. 841,937

Int. Cl.³ C10L 5/36

U.S. Cl. 44—14

12 Claims

1. A restructured coal article comprising a tube-like formation of coal, said tube-like formation of coal having a hollow core and relatively easily burnable igniter material at least substantially filling said core, said igniter material being capable of producing sufficient heat to ignite the article substantially completely along the inner surface of the wall circumscribing said hollow core.

3. A restructured coal article comprising a tube-like formation of coal having an axis, a hollow core and opening means in said formation extending radially relative to such axis through from said core to the outer surface of the article for enabling air flow to enter said core and for increasing the surface area from which volatile gases may issue from the article thereby to facilitate obtaining burning over substantially the entire length of the article.

5. A restructured coal article comprising a tube-like formation of coal, the outer surface of said tube-like formation of coal being generally cylindrical and the interior surface of said tube-like formation of coal having rib-like protrusions in the same, each of said protrusions having a sharp edge extending longitudinally along the length of the article and the inner wall of the article circumscribing said hollow core including circumferential portions separating respective adjacent protrusions along the longitudinal extent of the article.

4,243,394

PIE SEGMENT SHAPED FLAMMABLE ARTIFICIAL FIRELOG

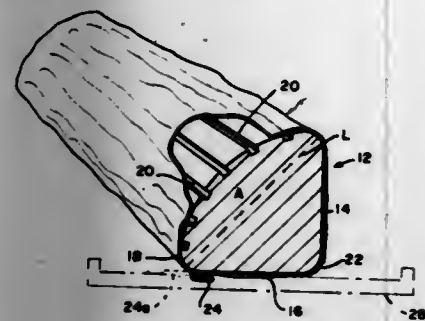
Thomas R. Kincaid, Sacramento, Calif., assignor to DG Shelter Products Company, Sacramento, Calif.

Filed Feb. 14, 1979, Ser. No. 12,210

Int. Cl.³ C10K 5/36

U.S. Cl. 44—14

7 Claims



1. An artificial composite flammable firelog of generally pie segment shaped transverse cross section formed by two generally flat elongate substantially perpendicular intersecting sides and a third elongate curved side of predominantly convex configuration.

3. The firelog of claim 1 together with a wrapper surrounding all sides of the firelog in which the wrapper is at least partially flame retardant in the portions of the wrapper adjacent to both of the flat sides.

4,243,395

METHOD FOR PRECISION GRINDING OF HARD, POINTED MATERIALS

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 13, 1979, Ser. No. 48,166

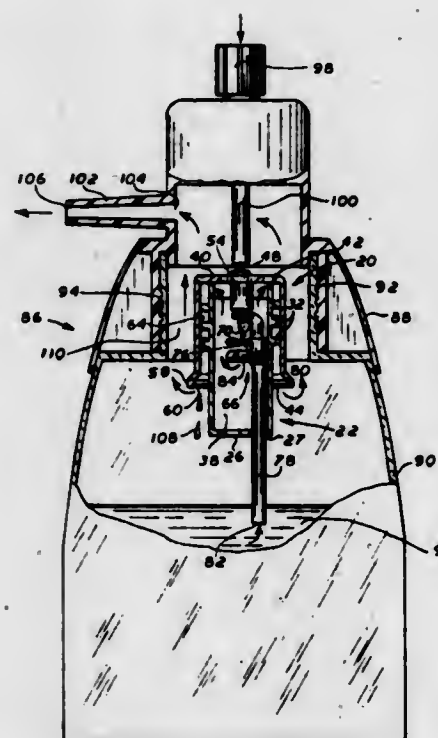
Int. Cl.³ B24D 3/34

U.S. Cl. 51—293

7 Claims

1. In a method of lapping the tip of a hard material having a sharp point to provide a flattened tip of a predetermined length comprising the steps of

rotating a substrate having an abrasive layer of amorphous SiO₂ thereon, said abrasive layer formed by a glow discharge of a silicon compound, and contacting the abrasive layer and the tip, the improvement which comprises using an abrasive layer that is thick enough such that the tip can not penetrate through the abrasive layer to the underlying substrate.



the inlet section having means thereon for removable connection to a source of gas and the liquid container having a reservoir of liquid therein forming a source of liquid; the nozzle of the separator positioned in the liquid container in communication with the liquid therein and positioned with respect to the inlet section so that gas entering the container is directed to the nozzle through the means on the separator for connection to a source of gas thereby permitting the nozzle to aspirate liquid from the container and cooperate in formation of a mixture of liquid and gas; the separator being positioned in the liquid container in a position so that the mixture of desired consistency communicates with the outlet section of the container for passage therethrough for transmittal to the patient; the liquid container including a hollow base for housing the liquid with an open top end and a removable cap coupled with the open top end of the base, the separator being removably mounted in the cap, the inlet section being located in the cap; and the separator being positioned in the container so that the separated drops of liquid exiting from the tortuous path will fall by gravity through the opening to the exterior of the separator and drain into the reservoir of the liquid container for reuse.

connection to a source of liquid so that when the separator is connected to a source of gas and a source of liquid gas will be directed by the nozzle to aspirate liquid and cooperate therewith to form a desired mixture of liquid and gas;

surfaces on the inner member and the outer member forming a passageway between the hollow interior of the inner member and the exterior thereof so that the mixture of gas and liquid produced within the inner member is directed into engagement with the helical radial surface between the inner and outer members and the mixture passes along the tortuous passageway in the separator in contact with the radial surface whereupon the larger droplets of liquid are removed from the mixture for drainage through the opening to the exterior of the separator leaving a remaining mixture of desired consistency to be supplied to a patient;

the separator being mounted in a liquid container to form a nebulizer or humidifier for introducing therapeutic fluids to a patient;

the liquid container having an inlet section and an outlet section;

4,243,396

HUMIDIFIER SEPARATOR

Richard A. Cronenberg, Ramsey, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Continuation of Ser. No. 856,397, Dec. 1, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,127

Int. Cl.³ A61M 11/02

U.S. Cl. 55—238

6 Claims

1. A hand size separator for a medical fluid dispenser system for supplying inhalable fluids, the system including a liquid source, a gas source and supporting structure, the separator comprising:

means for connection to a source of gas; means for connection to a source of liquid; a hollow inner member having a helical radial surface extending outwardly therefrom; an outer casing surrounding a portion of the inner member and the helical radial surface extending into engagement with the inner surface of the outer casing so as to form a tortuous passageway therebetween communicating with an opening to the exterior of the separator; a nozzle mounted within the hollow interior of the inner member and positioned to be in communication with the means for connection to a source of gas and means for

4,243,397

AIR CLEANER WITH REPLACEABLE FILTER ELEMENT

Joseph C. Tokar, Apple Valley, and Frank A. Janerich, Richfield, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

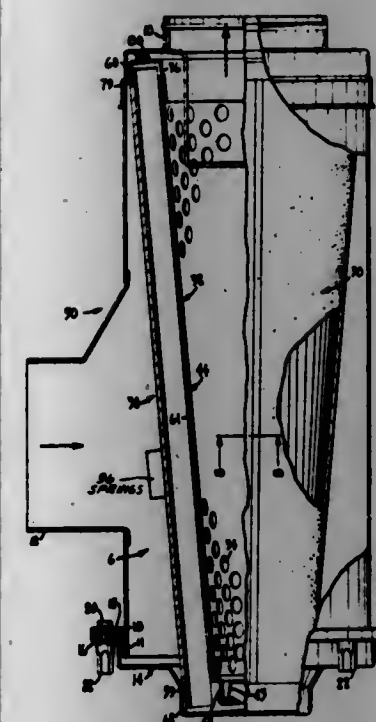
Continuation-in-part of Ser. No. 898,906, Apr. 24, 1978. This application Jan. 27, 1979, Ser. No. 52,552

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.³ B01D 50/00

U.S. Cl. 55—487

4 Claims



1. An improved filter element assembly for use in an air cleaning device having a filter body which defines a filter chamber, said filter element assembly being releasably contained in said filter body, wherein said filter element assembly comprises:

- (a) an elongated perforated liner assembly, said liner assembly being made from a material which is sufficiently durable to enable said liner assembly to be reused during successive air cleaning operations over the life of the air cleaning device;
- (b) a disposable and elongated filter element which includes a filter medium having a plurality of pleats, said filter medium being made from a material which is substantially porous to air and substantially nonporous to predetermined particulate matter suspended in the air, whereby said filter medium removes the particulate matter from the air;
- (c) locking means for releasably coupling said filter element to said liner assembly with said filter medium surrounding said liner assembly in a face-to-face relationship, whereby said filter element may be detached from said liner assembly when said filter medium becomes plugged with the particulate matter to allow said liner assembly to be reused; and
- (d) an elongated porous outer liner surrounding and engaging said filter medium, wherein said outer liner has means for applying a radially inward force to said filter medium to press said pleats into engagement with said liner assembly.

4,243,398

METHOD OF PRODUCING DIELECTRIC DIFFRACTION GRATINGS OR DIELECTRIC MULTILAYER INTERFERENCE FILTERS

Hidenori Nomura, Hiroshi Honma, and Shigeo Matsushita, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

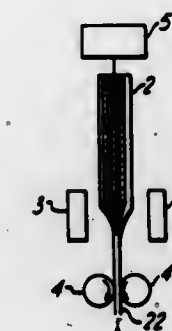
Filed Feb. 2, 1979, Ser. No. 8,979

Claims priority, application Japan, Feb. 9, 1978, 53/14428; Mar. 2, 1978, 53/24097; Mar. 2, 1978, 53/24101; Jun. 28, 1978, 53/78973

Int. Cl.³ C03B 37/00

U.S. Cl. 65—2

3 Claims



1. A method of producing dielectric diffraction gratings comprising
 - (a) depositing films of two kinds of glass which differ in refractive index alternately at a given period on the inside wall of or around a tubular or rod-shaped starting member, thereby producing a tubular preform,
 - (b) cutting said preform diametrically, thereby producing a flat member,
 - (c) heating and drawing said flat member until the thickness of said films of glass is reduced to a desired value, and,
 - (d) cutting said drawn member into minute pieces of diffraction gratings.

4,243,399

METHOD OF PRODUCING A COUPLING ELEMENT FOR AN OPTICAL TRANSMISSION FIBER

Glok D. Khoe, Robert G. Gossink, and Cornelis M. G. Jochem, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

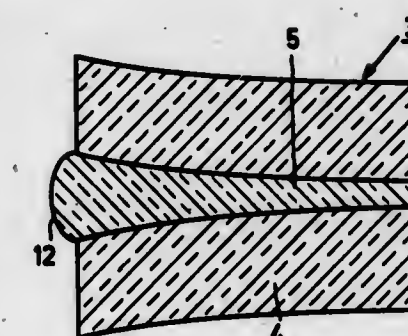
Filed Jan. 7, 1978, Ser. No. 913,293

Claims priority, application Netherlands, Jan. 10, 1977, 7706379

Int. Cl.³ C03B 23/09

U.S. Cl. 65—4 B

3 Claims



1. A method of producing a coupling element used for coupling a radiation source in the form of a laser to a monomode optical transmission fiber, said fiber having a glass core material and a glass cladding material, wherein the method comprises the steps of:
 - selecting the glass core material and the glass cladding material such that at a temperature, known as the flattening temperature, the core material has a viscosity of between 10⁷ and 10^{8.5} poises and the cladding material has a viscosity of between 10¹⁰ and 10¹¹ poises;

heating the optical transmission fiber to the flattening temperatures; and monotonically flattening the fiber so that the end of the core has an elliptical cross-section; whereby the core material emerges from the cladding during flattening and the emerged portion assumes, under the influence of its surface tension, a semi-ellipsoidal form which, on cooling, becomes a fixed lens coupling element on the end of the core.

4,243,400

APPARATUS FOR PRODUCING FIBERS FROM HEAT-SOFTENING MATERIALS

Nobuyoshi Ohnato; Keiichi Tanaka, and Eiji Mizushima, all of Itami, Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan

Division of Ser. No. 715,648, Aug. 18, 1976, Pat. No. 4,135,903.

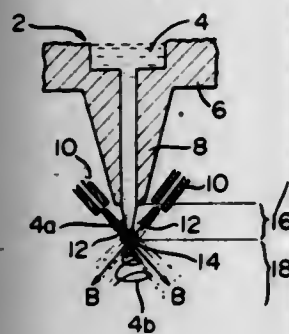
This application Nov. 7, 1978, Ser. No. 958,444

Claims priority, application Japan, Aug. 20, 1975, 50-101618

Int. Cl.³ C03B 37/06

U.S. Cl. 65-16

19 Claims



1. An apparatus for producing fibers from a glass material, said apparatus comprising a melt crucible having flow-out nozzles of 0.5-2.5 mm in effective hole diameter of heating a glass material to form a viscous melt and flowing said melt continuously through said flow-out nozzles; and a gas jet comprising at least 3 jet nozzles around each of said flow-out nozzles in which at least 2 of the angles formed between the central axial lines of adjacent jet nozzles are from 95° to 135°, the central axial line of said each gas jet nozzle not crossing the central axial line of said flow-out nozzle and being positioned in the same direction relative to the central axial line of said flow-out nozzle when viewed from each gas jet nozzle, whereby at least 3 high-speed gas streams having a component which gradually approaches the central axial line of the melt toward the flowing direction of the melt and a component in a direction which then gradually departs from said central axial line are formed, and by these high-speed gas streams, said melt is rotated around its central axial line and formed into a substantial conical shape in which the cross section gradually decreases toward the direction of flow in a first zone which ranges from the flow-initiating part of the melt to the part at which the gas stream most closely approaches the central axial line of the melt, and in a second zone subsequent to the first zone, the melt is allowed to fly in a fibrous form from the tip of the conical shape in a vortex form in the direction of flow and outwardly in the radial direction.

4,243,401 APPARATUS FOR PRODUCING DOUBLE-WALLED HEAT INSULATING CONTAINERS

Franz Guenther, Mainz, Fed. Rep. of Germany, assignor to Jenaer Glaswerk Schott & Gen., Fed. Rep. of Germany

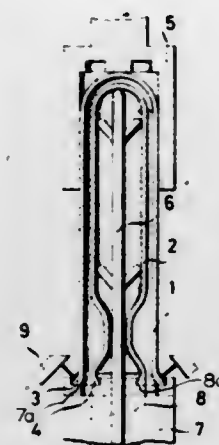
Filed Apr. 18, 1979, Ser. No. 31,188

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818259

Int. Cl.³ C03B 23/13

U.S. Cl. 65-153

9 Claims



1. An apparatus for producing a double-walled heat insulating container, comprising:
a first clamping chuck means for supporting an open-ended inner bulb, said first chuck means having a support surface for the open end edges of said inner bulb and an expandable mandrel means axially moveable through a bore in said support surface to engage inner surface areas of said inner bulb;
a second clamping chuck means for supporting an open-ended outer bulb, said second chuck means having a support surface for the open end edges of said outer bulb, said second chuck means support surface being arranged concentrically with the first chuck support surface;
gripping means positioned away from said second chuck support surface and being pivotally moveable toward said second chuck support surface for gripping outer edge portions of the outer bulb adjacent the open end thereof against said second chuck support surface;
a third clamping chuck means spaced apart from said first and second chuck means and coaxially aligned with said first and second chuck means for supporting said outer bulb on the opposite end from the open end thereof; and
a heating-deforming means positioned between said third and said first and second chuck means and being selectively moveable at least toward and away from said first and second chuck means.

4,243,402 APPARATUS FOR MEASURING TEMPERATURES IN MOLTEN METAL

John E. Sensi, Arnold, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 13, 1978, Ser. No. 941,879

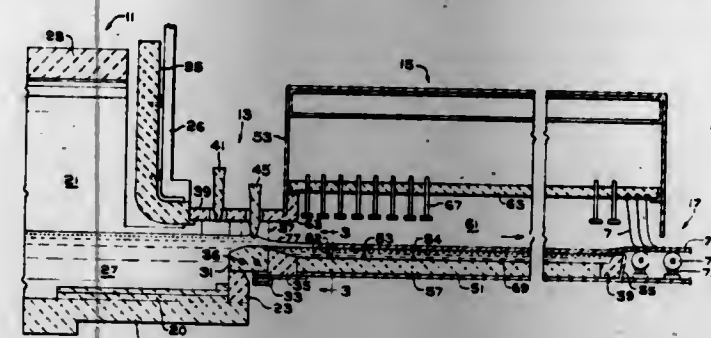
Int. Cl.² H01L 35/02; C03B 18/02

U.S. Cl. 65-29

23 Claims

1. Apparatus for measuring temperatures below the surface of liquids comprising temperature sensing means, high density weighting means and woven material impervious to said liquid surrounding said temperature sensing means and said

weighting means with the proviso that said woven material comprises a fabric having fibers of a material selected from the



group consisting of ceramic fibers, carbon fibers, metal fibers and mixtures thereof.

4,243,403

3-ISOTHIAZOLONES

Sheldon N. Lewis, Willow Grove; George A. Miller, Glenside, and Andrew B. Law, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

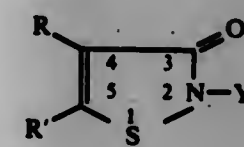
Division of Ser. No. 368,168, Jun. 8, 1973, Pat. No. 4,105,431, which is a continuation-in-part of Ser. No. 836,660, Jun. 25, 1969, Pat. No. 3,761,488, which is a continuation-in-part of Ser. No. 672,437, Oct. 3, 1967, Pat. No. 3,523,121, which is a continuation-in-part of Ser. No. 621,280, Mar. 9, 1967, abandoned. This application May 30, 1978, Ser. No. 910,730

Int. Cl.³ A01N 43/78; E05B 67/38

U.S. Cl. 71-67

8 Claims

1. A coating composition with or without a pigment which comprises a film-forming agent, a solvent or carrier, and a compound of the formula



wherein

Y is an unsubstituted or substituted alkyl, alkenyl, or alkynyl group of 1 to 18 carbon atoms, an unsubstituted or substituted cycloalkyl group having a 3 to 6 carbon atom ring and up to 12 carbon atoms, an unsubstituted or substituted aralkyl group of up to 10 carbon atoms, or an unsubstituted or substituted aryl group of up to 10 carbon atoms, R is hydrogen, halogen or a (C₁-C₄)alkyl group, and R' is hydrogen, halogen, or a (C₁-C₄)alkyl group, or a salt of a compound of the above formula with a strong acid, said compound being present in an amount which is effective to adversely affect the growth of bacteria, fungi, or algae.

4,243,404

1,2,3-THIAZIAZOLE-3-IN-5-YLIDENE-UREA DERIVATIVES, PROCESS FOR MAKING THE SAME AND COMPOSITIONS CONTAINING THE SAME HAVING GROWTH REGULATING ACTIVITY FOR PLANTS

Hans-Rudolf Krüger; Friedrich Arndt, and Reinhart Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

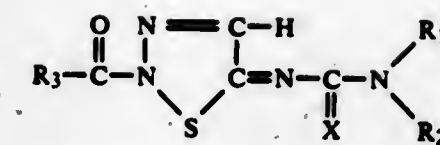
Filed Apr. 4, 1978, Ser. No. 893,357

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2716324

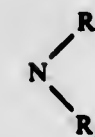
Int. Cl.³ A01N 47/36; C07D 285/06

U.S. Cl. 71-73

1. A compound of the formula



wherein R₁ is hydrogen or C₁-C₂ alkyl;
R₂ is C₁-C₄ alkyl, C₃-C₈ cycloalkyl, or phenyl or pyridyl optionally substituted in one or more positions by the same or different substituents selected from the group consisting of C₁-C₄ alkyl, C₁-C₄ alkoxy, halogen, nitro and CF₃;
R₃ is hydrogen, C₁-C₁₈ alkyl which may also be substituted by halogen or phenyloxy, C₁-C₆ alkoxy, C₃-C₈ alkenyl, C₃-C₆ alkenyloxy, C₃-C₆ alkinyloxy, C₃-C₈ cycloalkyl optionally substituted by one or more C₁-C₆ alkyl, C₁-C₄ alkylthio, an aromatic residue selected from the group consisting of phenyl, naphthyl, phenylthio, phenyloxy and phenylalkyl, having up to two carbons in the alkyl moiety, said aromatic residue being optionally substituted in the aromatic moiety by one or more substituents which are the same or different and are selected from the group consisting of C₁-C₂ alkyl, C₁-C₆ alkoxy, halogen, nitro and CF₃, furyl, or an amino group of the formula



wherein R₄ and R₅ are the same or different and are hydrogen or C₁-C₆ alkyl, phenyl, optionally substituted by one or more substituents which are the same or different and are selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, nitro, halogen and CF₃; and X is oxygen or sulfur.

53. A composition having growth regulating activity for plants, the said composition comprising about 10 to 80% by weight of the active agents of claim 1, about 90 to 20% by weight of the liquid or solid carrier material in which latter percentage there may be included 20% by weight of surface active agents.

54. A process for defoliating plants and/or increasing the formation of off-shoots, the said process comprising applying to the plants a composition as defined in claim 53.

4,243,405

FUNGICIDAL COMPOUNDS

Sugavanam Balasubramanyam, Wokingham, and Margaret C. Shephard, Maidenhead, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 19, 1977, Ser. No. 826,263

Claims priority, application United Kingdom, Aug. 19, 1976, 34590/76; Sep. 1, 1976, 36152/76; Nov. 16, 1976, 47667/76; Feb. 8, 1977, 5139/77; Jun. 2, 1977, 23443/77

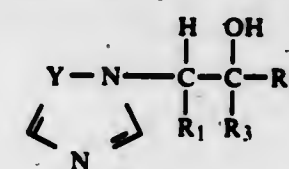
The portion of the term of this patent subsequent to Jul. 14, 1995, has been disclaimed.

Int. Cl.³ A01N 43/50, 43/64, 55/02; G07D 249/08

U.S. Cl. 71-76

55 Claims

1. A compound having plant fungicidal and/or plant growth regulating activity and the formula



wherein Y is =N-, R₁ is allyl or is benzyl optionally ring substituted with one or two substituents selected from the class consisting of halogen, C₁-4 alkyl, halo (C₁-4 alkyl), C₃-6 cycloal-

kyl, nitro, cyano, C₁₋₄ alkoxy and (C₁₋₄ alkylene)dioxy, and/or optionally substituted on the α-carbon atom with one C₁₋₄ alkyl, R₂ is propyl or butyl and R₃ is hydrogen or methyl; or an alkanate ester, an acid addition salt or a copper, zinc, manganese or iron complex thereof.

29. A method of combating fungal diseases in, or regulating the growth of, a plant, the method consisting essentially of applying to the plant, to seed of the plant or to the locus of the plant or seed, a fungicidally or plant growth regulating effective amount of a compound, ester, salt or metal complex as claimed in claim 1.

4,243,406

5-ARYL-4-ISOXAZOLECARBOXYLATE-SAFENING AGENTS

Lawrence H. Brannigan, Olivette; John E. Franz, Crestwood, and David E. Schafer, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

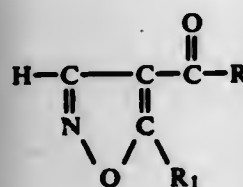
Filed Dec. 26, 1978, Ser. No. 973,413

Int. Cl.³ A01N 43/26, 37/22, 37/24

U.S. Cl. 71-88

43 Claims

1. A composition comprising a herbicidally effective amount of an alpha-haloacetanilide herbicide and an effective safening amount of a compound having the formula



wherein R is selected from the group consisting of hydroxyl, lower alkoxy, lower alkoxyalkoxy, lower alkoxyalkoxyalkoxy, lower haloalkoxy, amino and halogen; and R₁ is selected from the group consisting of phenyl and phenyl substituted with up to three groups individually selected from the class consisting of lower alkyl, lower alkoxy, lower haloalkyl, nitro and halogen.

4,243,407

2-ACYLAMINOTHIAZOL-4-YLACETAMIDES AS POST EMERGENT SELECTIVE HERBICIDES

Roger P. Cahoy, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 937,290, Aug. 28, 1978. This application

Aug. 23, 1979, Ser. No. 69,026

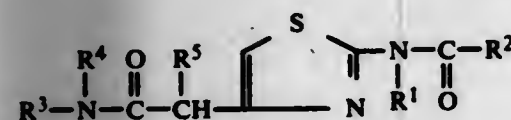
The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.

Int. Cl.³ A01N 43/78

U.S. Cl. 71-90

7 Claims

1. The method of selectively combating unwanted vegetation which comprises applying to the locus of the unwanted vegetation an effective amount of a selectively phytotoxic compound having the general structural formula



in which R¹ is hydrogen or methyl, R² is ethyl, isopropyl, cyclopropyl, tert-butyl, methylamino, dimethylamino, ethylamino or methoxymethylamino, R³ is phenyl, 4-chlorophenyl, 3,4-dichlorophenyl, 4-methylphenyl or 4-methoxyphenyl, R⁴ is hydrogen or C₁ to C₃ lower alkyl and R⁵ is hydrogen or methyl, with the further stipulation that either, but not both R⁴ and R⁵ may be hydrogen.

4,243,408 HERBICIDAL N-TRIAZOLYMETHYL-SUBSTITUTED ALPHA-HALOACETANILIDE

David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

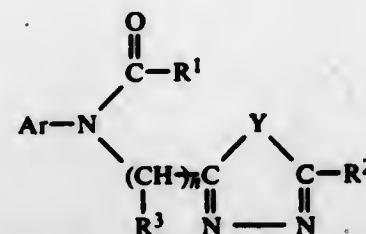
Filed May 11, 1978, Ser. No. 904,955

Int. Cl.³ C07D 249/08

U.S. Cl. 71-092

11 Claims

1. A compound of the formula



wherein Ar is phenyl or phenyl substituted with 1 to 3 of the same or different substituents selected from fluoro, chloro, bromo, iodo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or haloalkyl of 1 to 4 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo, R¹ is halomethyl of 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo, or iodo, R² is hydrogen; alkyl of 1 to 6 carbon atoms; alkenyl of 2 to 6 carbon atoms; alkynyl of 2 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; haloalkyl of 1 to 4 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo; alkoxy of 1 to 6 carbon atoms; alkylthio of 1 to 6 carbon atoms; alkenylthio of 2 to 6 carbon atoms; alkynylthio of 2 to 6 carbon atoms; phenyl; phenyl substituted with 1 to 3 of the same or different substituents selected from fluoro, chloro, bromo, iodo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or haloalkyl of 1 to 4 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo; or NR⁵R⁶ wherein R⁵ and R⁶ individually are hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or alkynyl of 2 to 6 carbon atoms, R³ is hydrogen or alkyl of 1 to 6 carbon atoms, n is 1 or 2, and Y is NR wherein R is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or alkynyl of 2 to 6 carbon atoms with the proviso that Ar is not 3,4-dichlorophenyl.

10. An herbicidal composition comprising an herbicidally effective amount of the compound defined in claim 1 and a biologically inert carrier.

4,243,409 1,2,4-OXADIAZOLE DERIVATIVES AND HERBICIDE COMPOSITION CONTAINING SAME

Erich Schmidt, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, DEX

Filed Jan. 4, 1979, Ser. No. 1,157

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801509

Int. Cl.³ A01N 43/82; C07D 271/06

U.S. Cl. 71-92

7 Claims

1. A selective herbicidal composition comprising about 5 to 95% by weight of at least one of compounds selected from the group consisting of 3-[3-(cyclopropylcarbonylamino)-phenyl]-5-tert-butyl-1,2,4-oxadiazole, 3-[3-(butylamino)-phenyl]-5-tert-butyl-1,2,4-oxadiazole, 5-chloromethyl-3-(3-cyclopropylcarbonylamino-phenyl)-1,2,4-oxadiazole, 3-(3-cyclopropylcarbonylamino-phenyl)-5-methyl-1,2,4-oxadiazole, and 3-(3-cyclopropylcarbonylamino-phenyl)-5-trifluoromethyl-1,2,4-oxadiazole; and about 95 to 5% by weight of a liquid or solid carrier material.

4,243,410

HERBICIDALLY ACTIVE

α-(4-PHENOXYPHENOXY)PROPIONIC ACID ALKOXYALKYL AMIDES, HERBICIDAL COMPOSITIONS CONTAINING THEM AND THEIR USE
Beat Bühner, Binningen, and Otto Rohr, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,515

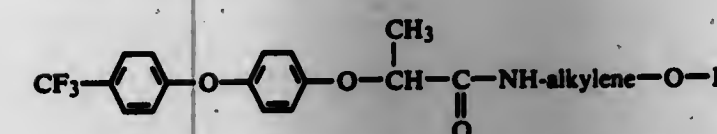
Claims priority, application Switzerland, Jan. 10, 1978, 223782/78

Int. Cl.³ A01N 37/18; C07C 103/178

U.S. Cl. 71-118

8 Claims

1. A herbicidally active 4-(p-trifluoromethylphenoxy)-α-phenoxypropionic acid alkoxyalkyl amide of the formula I



wherein "alkylene" represents a straight or branched saturated hydrocarbon chain of 1 to 4 carbon atoms and R represents an alkyl radical of 1 to 4 carbon atoms.

4,243,411

REDUCTION OF METAL SULFIDES

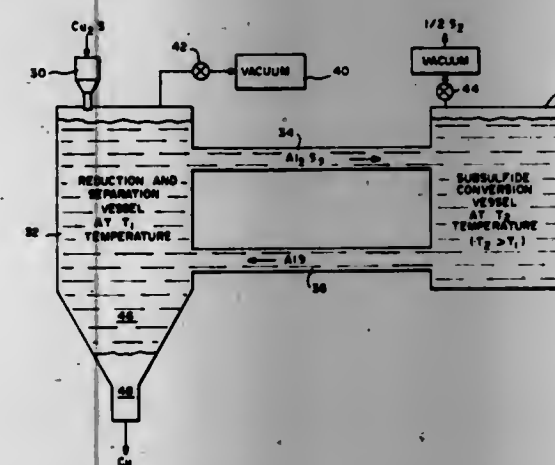
Robert N. Anderson, Palo Alto, Calif., assignor to Parlee-Anderson Corporation, Redwood City, Calif.

Filed May 14, 1979, Ser. No. 38,382

Int. Cl.³ C22B 31/00

U.S. Cl. 75-69

19 Claims



1. A process for the recovery of a desired metal in reduced form from a sulfide compound of the desired metal, comprising the steps of reducing said desired metal sulfide in its lowest valence state to metallic form by reaction with a process metal in the subsulfide form in a liquid or molten bath, said process metal being capable of forming a higher oxidation state process metal high sulfide compound stable in a lower predetermined first temperature range and a lower oxidation state process metal subsulfide compound stable in a higher predetermined second temperature range, said process metal being more reactive than said desired metal and forming a more stable sulfide compound than said desired metal, said reducing reaction being performed in said first temperature range so that a substantial portion of said process metal compound is converted to its high sulfide form while said desired metal sulfide is reduced to its metallic form.

4,243,412

DENTAL ALLOY

Dinesh C. Tandon, Canton, Mich., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jan. 7, 1979, Ser. No. 46,325

Int. Cl.³ C22C 19/05

U.S. Cl. 75-171

5 Claims

1. A corrosion resistant biocompatible dental alloy which

exhibits good porcelain to metal bond strength which consists of the following constituents:

	Percent by Weight
Chromium	10-20
Molybdenum	4-10
Iron	3-6
Columbium	2-6
Aluminum	up to 2.0
Silicon	1.0-3.0
Carbon	0.05-0.5
Nickel	Balance.

4,243,413

INTEGRATED AG-SNO ALLOY ELECTRICAL CONTACT MATERIALS

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Japan

Continuation-in-part of Ser. No. 807,910, Jun. 20, 1977,

abandoned. This application Feb. 26, 1979, Ser. No. 14,915

Int. Cl.³ B22F 3/00; C22C 1/05, 29/00

U.S. Cl. 75-234

5 Claims

1. An electrical contact material of comparatively large dimensions, formed from a plurality of generally similarly shaped pieces of silver-base alloy, which are of such dimensions that they are substantially smaller than the material having said large dimensions, and are such that said pieces are readily and completely internally oxidizable without depleted zones, each of said pieces of silver-base alloy, prior to being formed into said contact material, having silver grain matrices with metal oxides dispersedly precipitated therein, and said matrices being defined by metal oxides concentratedly precipitated along silver grain boundaries arranged generally in a tortoise-shell pattern as the result of internal oxidation for a comparatively short period of time, and comprising 1.5 to 10% by weight of tin, 0.5 to 6% by weight of indium, and a trace amount of less than 0.5% by weight of iron family element metals, and said pieces of the alloy being metallurgically integrated with each other by pressure rolling or extrusion conducted at a temperature higher than 700° C., and at about the melting point of silver, thereby to eliminate said grain boundaries in said pieces by causing precipitated metal oxides to migrate from said boundaries into said grain matrices, and to cause said matrices to coalesce to each other to form said contact material with said metal oxides being distributed uniformly throughout said material.

3. A method of making a Ag-SnO alloy electric contact material of comparatively large dimensions, which comprises providing a desired number of pieces of silver-base alloy of such dimensions that they are internally oxidizable within a comparatively short period of time, each of said pieces comprising 1.5 to 10% by weight of tin, 0.5 to 6% by weight of indium, and a trace amount of less than 0.5% by weight of nickel or cobalt, and internally oxidizing said pieces to form throughout each piece silver grain matrices defined by boundaries created by concentrations of precipitated metal oxides, and metallurgically integrating said pieces to each other by simultaneously subjecting them to extreme pressure at a temperature higher than 700° C. and sufficient to induce at least partially the melting of said pieces of said alloy without decomposing or breaking down the metal oxides precipitated in said pieces, thereby to eliminate the concentrations of said metal oxides around the silver grain matrices in said metallurgically integrated pieces, and to disperse the formerly concentrated metal oxides uniformly throughout the silver matrices of the integrated pieces.

4,243,414

SLIDABLE MEMBERS FOR PRIME MOVERS

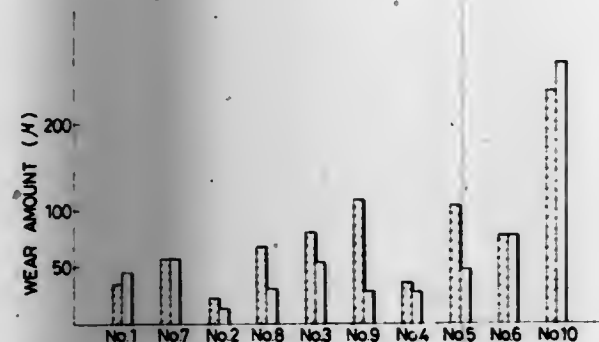
Kentaro Takahashi; Yoshikatsu Nakamura, both of Ohmiya, and Masajiro Takeshita, Yomo, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,445

Claims priority, application Japan, Oct. 27, 1977, 52-128120
Int. Cl.³ B22F 5/00

U.S. Cl. 75—244

4 Claims



1. A slidable member for a prime mover made of an abrasion resistant liquid-phase sintered alloy, containing 0.5 to 4.0% by weight of carbon, 8.0 to 30.0% by weight of chromium, and 0.1 to 5.0% by weight of at least one of phosphorus, boron and silicon which permit liquid-phase sintering at not more than 1,250° C. and the balance iron, said alloy having 0.2 to 10% by volume of sintering pores at least 40% of which consist of pores having a pore size of not more than 150 μ.

4,243,415

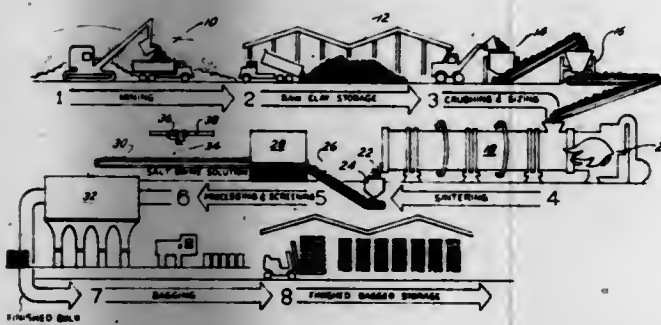
DEICING AND TRACTION FORMING COMPOSITION AND METHOD OF MAKING SAME

Henry E. Lowe, Jr., 348 S. Columbia St., South Bend, Ind. 46601.

Continuation-in-part of Ser. No. 884,914, Mar. 8, 1978, abandoned. This application Nov. 15, 1978, Ser. No. 960,733
Int. Cl.³ C09K 3/18

U.S. Cl. 106—13

9 Claims



1. A deicing and traction forming composition comprising moisture softening clay particles heat-dried at a temperature below the point at which bound water is removed, said particles retaining absorptive properties and being readily disintegratable by the pressure of foot and vehicular traffic when softened by absorption of water from melting ice, and a chloride salt impregnating and coating said particles and being releasable from said particles initially by solution of the salt coating in water from an icy surface and thereafter by solution of the salt absorbed in said clay particles as said particles disintegrate and are softened by the water from the melting ice.

4,243,416

CORROSION-INHIBITING METHOD USING LATEX PAINTS AND ARTICLE

Martin J. Grouke, Lansdale, and Roy W. Flynn, Chalfont, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 412,234, Nov. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 296,466, Oct. 10, 1972, abandoned. This application Oct. 8, 1975, Ser. No. 620,685
Int. Cl.³ C08J 3/00; C09K 3/00

U.S. Cl. 106—14.13

16 Claims

1. In a method of maintenance painting clean or rusty ferrous metal, the steps of applying one or more coats, to a coated or uncoated ferrous surface, of a corrosion-inhibiting aqueous latex paint containing a synthetic or natural polymer dispersed therein, said polymer consisting essentially of one being insoluble in an aqueous system at a pH of between about 3 and 11, any unsaturated acid monomer contained in said polymer being present in an amount of less than 5% of the monomers, and, dissolved in said paint, a water-soluble complex of a polyvalent metal, a volatile complexing agent, and a corrosion-inhibiting anion, said complex having the formula $M(Z)_xAn$, wherein M is a polyvalent metal cation, An is a corrosion-inhibiting anion, Z is a complexing volatile component, and x is the number of moles of volatile complexing agent per mole of M and being from 2 to 6, M and An being such that upon evaporation of the volatile complexing agent, M and An form an insoluble corrosion-inhibiting material, in which the quantity of said complex is from about 0.2 to about 20 millimoles per mole of water in the latex paint, the polymer on a solids basis being present in an amount of 10 to 30%, in which a pigment is present in an amount of 15 to 55%, said pigment including at least one metal oxide, at least one dispersant or surfactant being present in an amount of 0.1–2.5%, in which a bodying agent is present in an amount of 0.1–5%, and in which water and any optional ingredients are present in an amount to make the total of the ingredients 100%, all parts being by weight unless otherwise stated, and air-drying the coating, whereby the ferrous metal is protected from flash rusting and, upon evaporation of the volatile complexing agent, is provided with long-term rust resistance and blistering resistance by the insoluble complex of M and An, the latex pH being alkaline.

4,243,417

CORROSION-INHIBITING LATEX PAINTS

Martin J. Grouke, Lansdale, and Roy W. Flynn, Chalfont, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 430,449, Jan. 3, 1974, abandoned, which is a division of Ser. No. 412,234, Nov. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 296,466, Oct. 10, 1972, abandoned. This application Nov. 17, 1975, Ser. No. 632,344

Int. Cl.³ C08J 3/00; C09K 3/00

U.S. Cl. 106—14.13

10 Claims

1. A corrosion inhibiting aqueous latex paint containing a synthetic or natural polymer dispersed therein, said polymer consisting essentially of one being insoluble in an aqueous system at a pH of between about 3 and about 11, and, dissolved therein, a water soluble complex of a polyvalent metal, a volatile complexing agent, and a corrosion inhibiting anion, said complex having the formula $M(Z)_xAn$, wherein M is a polyvalent metal cation, An is a corrosion inhibiting anion, Z is a volatile complexing component, and x is the number of moles of volatile complexing agent per mole of M, x is from 2 to 6, M and An being such that upon evaporation of the volatile complexing agent, M and An form an insoluble corrosion inhibiting material, in which the quantity of said complex is from about 0.2 to about 20 millimoles per mole of water in the latex, the polymer on a solids basis being present in an amount of 10–30%, in which a pigment is present in an amount of 15–55%, said pigment including at least one metal oxide, at least one surfactant being present in an amount of 0.1–2.5%, in

which a bodying agent is present in an amount of 0.1–5%, and in which water and any optional ingredients are present in an amount to make the total of the ingredients 100%, all parts being by weight unless otherwise specified, the latex pH being alkaline.

4,243,418

COMPOSITIONS FOR FIREPROOFING POLYESTER FIBER MATERIALS WITH SUBSTITUTED SULPHURYLAMIDES

Hermann Nachbur, Dornach; Armin Hiestand, Binningen, and Peter Rohringer, Schönenbuch, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 808,006, Jan. 20, 1977, Pat. No. 4,128,687.

This application Sep. 21, 1978, Ser. No. 944,662

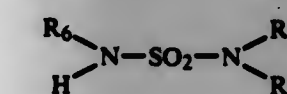
Claims priority, application Switzerland, Jun. 25, 1976, 6153/76

Int. Cl.³ C09K 3/28

U.S. Cl. 106—18.22

8 Claims

1. A fireproofing composition, which contains at least (a) one substituted sulphurylamide of the formula



wherein

R_6 is phenyl, naphthyl, phenylethyl, benzyl, cyclohexyl or hydrogen; and R_7 and R_8 each have the meanings given for R_6 , with at most two of the radicals R_6 , R_7 and R_8 being hydrogen, and (b) a dispersing agent selected from the group consisting of lignin sulphonates, aromatic sulphonic acids, saturated-aliphatic dicarboxylic acids substituted with higher alkyl radicals, condensation products from aromatic sulphonic acids and formaldehyde, alkyl-phenol/ethylene oxide adducts, ethylene oxide adducts from fatty acids, fatty amines or fatty alcohols, sulphurated substituted benzimidazoles and sulphonated fatty acid amides.

4,243,419

FIRE RETARDANT COMPOSITION

Seymour Hartman, Mahopac, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 626,253, Oct. 28, 1975, abandoned.

This application Dec. 13, 1978, Ser. No. 969,249

Int. Cl.³ C09D 5/18

U.S. Cl. 106—18.23

2 Claims

1. A composition for imparting fire retardance to a cellulosic substrate consisting of a substantially anhydrous solution of the products obtained by reacting the solution formed by digesting a mixture consisting of a dry plant material and chlorosulfonic acid with a lower alkyl alcohol in an amount at least sufficient to deactivate excess of said acid.

4,243,420

PARTICULATE MATERIAL FOR FORMING MOLDS AND METHOD FOR PRODUCING SAME

Junji Sakai, Minomachi; Syogo Morimoto, Matsudo, and Takashi Shimaguchi, Minorimachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 17, 1979, Ser. No. 30,924

Claims priority, application Japan, Apr. 17, 1978, 53-44259

Int. Cl.³ B23B 7/34

U.S. Cl. 106—38.3

4 Claims

1. A method for producing a precision casting mold comprising the steps of:

mixing refractory material in particulate form with a coating material selected from the group consisting of colloidal silica, colloidal alumina, colloidal zirconia and ethyl silicate to form a mix;

further adding an aqueous solution of ammonium carbonate to the mix when the coating material is ethyl silicate; drying said mix and allowing the dried mix to set; crushing the mix to form a particulate composition; admixing the resultant particulate composition with a binder comprising an aqueous solution of hydrolysed ethyl silicate and with a hardening and gelling agent to form a slurry; forming the slurry into a mold having a desired shape and allowing the mold to gel; and immersing the gelled mold in a hardening liquid to allow the mold to completely harden and thereafter drying and firing the mold.

4,243,421

ALKALI-RESISTANT GLASS COMPOSITION

Makoto Kume, Ashiya, Japan, assignor to Nippon Sheet Glass Co., Ltd., Japan

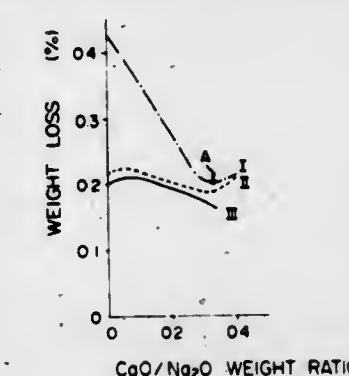
Filed Jul. 5, 1979, Ser. No. 54,884

Claims priority, application Japan, Jul. 8, 1978, 53-83174

Int. Cl.³ C03C 13/00, 3/04, 3/10

U.S. Cl. 106—50

3 Claims



1. An alkali-resistant glass composition consisting essentially of

SiO ₂	51.0–61.0%
ZrO ₂	18.0–24.0%
CaO	0.8–5.0%
BaO	5.0–13.0%
Na ₂ O	8.0–17.0%
K ₂ O	0–5.0%
B ₂ O ₃	0–3.0%
Al ₂ O ₃	0–3.0%

all percentages based on the weight of the glass composition, the total amount of CaO and BaO being 5 to 15% based on the weight of the glass composition, and the mole ratio of BaO/(CaO + BaO) being from 0.2 to 0.8.

4,243,422

GRANULAR QUARTZ GLASS PRODUCT

Arnold Lenz, Köln-Stammheim; Gerhard Kreuzburg, Niederkaasel, and Rainer Haase, Bokel, Oldenburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 752,715, Dec. 20, 1976, Pat. No. 4,098,595. This application Dec. 14, 1977, Ser. No. 860,523

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2557932

The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.³ C03C 3/06

U.S. Cl. 106—52

4 Claims

1. A quartz glass consisting essentially of silica, said quartz glass containing alkoxy groups, said alkoxy groups present in an amount of less than 1 weight percent, said quartz glass having a total impurity content of less than 1 part per million,

said quartz glass having a surface area, measured in accordance with BET, of approximately 400 to 800 square meters per gram prepared by a process consisting essentially of:

- Forming a silicic acid ester of an alcohol selected from the group consisting of a C₁-C₃ aliphatic alcohol, a C₂-C₈ alkanol wherein the carbon chain of the alkyl group can be interrupted by one or more oxygen atoms and a C₂-C₃ glycol by reacting silicon or ferrosilicon with said alcohol;
- Hydrolyzing said silicic acid ester by contacting the same with 105-500 percent of the stoichiometrically necessary amount of water, said water having a pH of 2-5 to thereby form a silica gel;
- Gelling said silica sol by subjecting it to an elevated temperature up to 100° C.; and
- Drying said gel by heating it at increasing temperatures up to 300° C. until the silica gel achieves a free flowing state.

4,243,423

GLASS MANUFACTURING

Charles M. Holman, Granville, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 912,659, Jun. 5, 1978, abandoned. This application Oct. 10, 1979, Ser. No. 83,727

Int. Cl.³ C03C 3/04

U.S. Cl. 106-54

10 Claims

1. In a glass manufacturing method comprising combining batch ingredients and water into agglomerates, heating said agglomerates, discharging said agglomerates to a melting furnace for melting, the improvement wherein said glass is a B₂O₃ containing glass and wherein said batch ingredients contain an uncalcined, mineral sodium calcium borate as a major source of B₂O₃.

9. A B₂O₃ glass forming pellet having a temperature in excess of about 500° C., said pellet having been formed by combining batch ingredients and water and wherein said batch ingredients contain an uncalcined, mineral sodium calcium borate with in excess of 5 moles of chemical water.

4,243,424

PROCESS FOR THE PRODUCTION OF DEAD BURNED REFRACTORY MAGNESIA

Jack B. Reynolds, Midland, and Charles R. Amos, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 13, 1978, Ser. No. 960,382

Int. Cl.³ C01F 5/02

U.S. Cl. 106-58

8 Claims

1. A method for producing in a single burning step a high density, dead-burned, refractory magnesia from an aqueous slurry of magnesium hydroxide comprising:

- simultaneously thermally dehydrating and mechanically working said aqueous slurry with a compressive-shearing force to form coherent compacts of magnesium hydroxide containing about 75 to about 85 percent by weight solids; and
- sintering said compacts at a sufficient temperature to form a dead-burned refractory magnesia.

4,243,425

METHOD OF REFINING THE SILICATIC SLAG PHASE OBTAINED IN THE THERMAL RECOVERY OF PHOSPHORUS FROM PHOSPHATES

Walter Kerstna, Bonn, Fed. Rep. of Germany, assignor to Wesel-Werk Gesellschaft mit beschränkter Haftung, Bonn, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,824

Claims priority, application Austria, Dec. 20, 1977, 9131/77

Int. Cl.³ C04B 7/14

U.S. Cl. 106-117

20 Claims

1. Method for the refining of the silicatic slag phase produced in the thermal recovery of phosphorus from phosphates, which method comprises treating the slag, in the form of finely

granular solid material, with steam at a temperature between 600° C. and the softening temperature of the slag.

4,243,426

ASPHALT COMPOSITIONS MODIFIED WITH ORGANO-SILANE COMPOUNDS

Alfred Marzocchi, Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

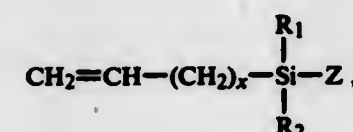
Continuation-in-part of Ser. No. 852,772, Nov. 18, 1977, abandoned. This application Aug. 13, 1979, Ser. No. 66,207

Int. Cl.³ C08L 95/00

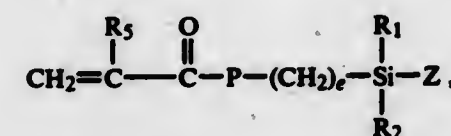
U.S. Cl. 106-273 R

5 Claims

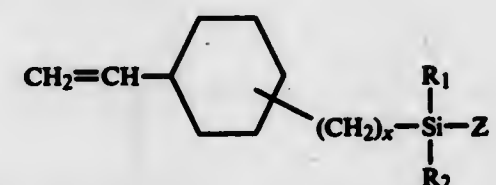
1. A silicon-modified bitumen composition prepared by reaction of (1) a bitumen selected from the group consisting of a bitumen and a bitumen chemically modified with a modifying agent selected from the group consisting of steam and air, and (2) an organo silicon compound selected from the group consisting of a compound having the formula:



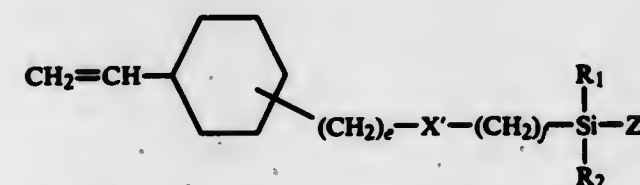
a compound having the formula:



a compound having the formula:



and a compound having the formula:



wherein x is 0 or an integer from 1-3, Z is a readily hydrolyzable group; R₁ and R₂ are selected from the group consisting of Z and a non-hydrolyzable organic group; R₅ is hydrogen or methyl; P is O or -NH-; e is an integer from 2-6 and the hydrolysis products of said organo silicon compound, in the presence of a catalyst to promote the reaction between the ethylenic unsaturation of said organo silicon compound with ethylenic unsaturation in the bitumen.

4,243,427

HIGH CONCENTRATION PHOSPHORO-SILICA SPIN-ON DOPANT

Raymond DiBagnara, Huntington Beach, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Nov. 21, 1977, Ser. No. 853,345

Int. Cl.³ H01L 21/22

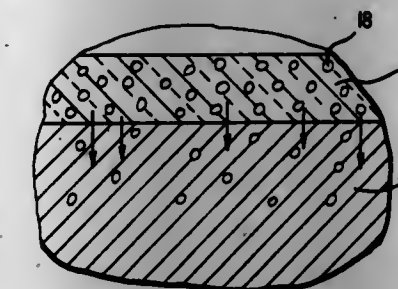
U.S. Cl. 106-287.16

6 Claims

1. A coating composition useful for forming a high concen-

tration phosphoro-silica spin-on dopant, said composition formed by the steps of:

- heating an aqueous solution of Al(H₂PO₄)₃·XH₂O;
- adding at least 25 percent by volume of an alcohol to said hot solution;



- permitting the Al(H₂PO₄)₃·XH₂O alcohol solution to cool; and
- mixing the solution formed from steps (a) through (c) with an alcohol solution of tetraethylorthosilicate so as to form said coating composition.

4,243,428

PROCESSES FOR THE MANUFACTURE OF PRECIPITATED SILICA

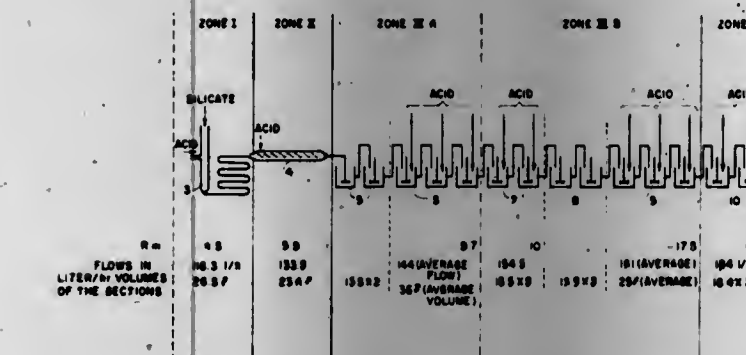
Jean-Baptiste Donnet, 29, rue Zundel, 68 Didenheim; Bernard Bandru, 5 allée Maurice Ravel, 38 Echirolles; Maurice Coudurier, 30 rue Tutor Hauges, 69 Maysieu, and Georges Vrisakis, 4 quai de la Plage, 69 Collonges, all of

Continuation of Ser. No. 685,512, May 12, 1976, abandoned, which is a continuation of Ser. No. 542,654, Jan. 21, 1975, abandoned, which is a continuation of Ser. No. 260,412, Jun. 7, 1972, abandoned. This application Jan. 24, 1979, Ser. No. 6,153

Int. Cl.³ C01B 33/18; C09C 1/28

U.S. Cl. 106-288 B

6 Claims



1. A process for the preparation of stable precipitated silicas having surface areas ranging from between about 100 to 600 square meters per gram which do not substantially vary on drying which comprises the steps of:

- forming an alkali metal silicate solution having a concentration of between about 100 to 200 grams per liter of alkali metal silicate and having an SiO₂/Na₂O molar ratio of between 1 and 4;
- adding sulfuric acid to said alkali metal silicate solution in a first stage at a temperature of about 40°-95° C. wherein the silicon dioxide to alkali metal oxide molar ratio is in the range of about 4.5 to 5.5 and wherein gellification does not occur;
- continuing the addition of said sulfuric acid in a second stage at a constant rate of addition at a temperature of about 40°-95° C. until a point at which the reaction medium then reaches a molar ratio of silicon dioxide to alkali metal oxide of about 5.5 wherein the monomer silicate continues to be transformed into oligomers;
- interrupting the addition of said sulfuric acid for a period of between about 5 and 30 minutes;
- resuming the addition of said sulfuric acid in a third stage at a constant rate of addition and a temperature of about

40°-95° C. until a point at which the reaction medium reaches a molar ratio of silicon dioxide to metal oxide in a range of about 10 to 25;

- interrupting the addition of said acid for a period of between about 5 and 30 minutes;
- resuming the addition of said acid in a fourth stage at a temperature of about 40°-95° C. until the medium reaches a pH value of 5, wherein all of the silica is in the form of a precipitate and all alkali metal hydroxide is neutralized;
- stopping the addition of said acid; and
- recovering the precipitated silicas.

4,243,429

PROCESS FOR PRODUCING TOBERMORITE AND ETTRINGITE

Hideo Tamura, Takarazuka, and Seiro Ibuki, Kusatsu, both of Japan, assignors to Kubota Ltd., Osaka, Japan

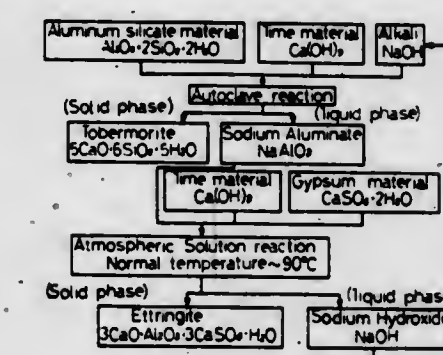
Filed Jun. 22, 1979, Ser. No. 51,057

Claims priority, application Japan, Jan. 22, 1978, 53-76143; Jun. 22, 1978, 53-76145

Int. Cl.³ C09C 1/02; C01B 33/24; C01F 7/76

U.S. Cl. 106-306

7 Claims



1. A process for producing ettringite by adding an alkali solution to siliceous material and gypsum material and reacting the mixture at room temperature or hydrothermally, characterized by the steps of:

admixing an alumina-containing siliceous material and a lime material with an alkali solution, subjecting the resulting mixture to hydrothermal reaction with water vapor at a pressure of 4 to 40 kg/cm² to form tobermorite, filtering off the tobermorite from the reaction mixture, and admixing a lime material and a gypsum material with the resulting alkali reaction product in the filtrate and reacting the mixture at room temperature to a temperature of up to 90° C. to form ettringite.

7. A process for producing ettringite by adding an alkali solution to siliceous material and gypsum material and reacting the mixture at room temperature or hydrothermally, characterized by the steps of:

admixing an alumina-containing siliceous material and a lime material with an alkali solution, subjecting the resulting mixture to hydrothermal reaction with water vapor at a pressure of 4 to 40 kg/cm² to form tobermorite, and admixing a lime material and a gypsum material with the resulting alkali reaction product in the reaction mixture containing the tobermorite and reacting the mixture at room temperature to a temperature of up to 90° C. to form ettringite.

4,243,430

PIGMENT DISPERSANT FOR AQUEOUS PAINTS

Peter R. Sperry, Doylestown, and Richard J. Wiersma, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 21, 1977, Ser. No. 835,262
Int. Cl.³ C08L 33/10

U.S. Cl. 106—308 M

14 Claims

1. A pigment paste, adapted for use in a wide variety of aqueous latex paints, comprising a water-compatible suspension of a finely divided pigment and, for dispersion thereof, an effective amount of a water soluble dispersant comprising (1) an addition copolymer of greater than about 30 % by weight of an α , β -unsaturated monovinylidene carboxylic acid or a mixture of such acids and (2) at least one other ethylenically unsaturated monomer, the copolymer having an apparent pKa between 6.0 and 7.5 and a number average molecular weight between about 500 and about 15,000; the copolymer being characterized by forming a water soluble salt with a zinc ammonia complex ion at a pH of 9.6.

4,243,431

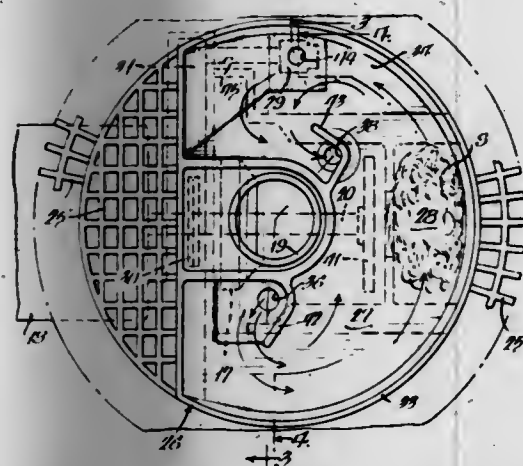
DISHWASHER SOIL SEPARATOR

Geoffrey L. Dingler, St. Joseph Township, Berrien County, Mich., and Philip P. Johnson, Conway, Ark., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 14, 1979, Ser. No. 48,443
Int. Cl.³ B08B 3/02

U.S. Cl. 134—104

17 Claims



1. In a dishwasher apparatus having a dishwashing liquid circulating means defining a flow passage having an intake portion and a discharge portion, pump means for causing dishwashing liquid flow through said flow passage from said intake portion to said discharge portion, means defining a bypass passage having an inlet and an outlet each communicating with said flow passage downstream of said intake portion to bypass a portion of the liquid through said bypass passage as an incident of flow of the liquid through said flow passage, the improvement comprising:

collecting means in said bypass passage means for collecting soil from the liquid flowed through said bypass passage and depositing the collected soil at a collecting position within said bypass passage intermediate said inlet and said outlet;

means defining a drain port communicating with said bypass passage spaced from said collecting position to be free of collected soil during bypass flow of the liquid through said bypass passage from said inlet to said outlet;

means for selectively closing said drain port to permit said liquid flow through said bypass passage past said closed drain port for collecting said soil at said collecting position; and

means for concurrently opening said drain port and causing liquid flow from said flow passage inwardly through each of said inlet and outlet into said bypass passage for flow therethrough to transfer the collected soil from said col-

lecting position to said drain port for facilitated elimination of the soil through the drain port.

4,243,432

SOLAR CELL ARRAY

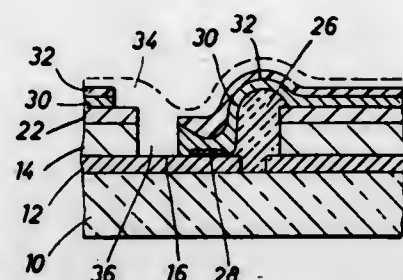
John F. Jordan, and Curtis M. Lampkin, both of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Division of Ser. No. 831,544, Sep. 8, 1977, Pat. No. 4,181,476.
This application Sep. 25, 1978, Ser. No. 945,312

Int. Cl.³ H01L 31/06

U.S. Cl. 136—244

22 Claims



1. A large area panel of photovoltaic cells, comprising: a transparent vitreous substrate member having at least one flat surface,

a plurality of spaced photovoltaic cells formed in a backwall configuration on said flat surface, each of said cells having facing edges with adjacent ones of said cells;

each of said cells having a transparent electrically conductive film adjacent said substrate, a semiconductor film containing elements from Groups II and VI of the Periodic Table and overlying said transparent film, a heterojunction formed on said semiconductor film, and a continuous solid conductive layer having a first portion overlying said heterojunction;

said transparent film having an exposed portion along the length of one of said facing edges;

said continuous solid conductive layer further having a second portion deposited in physical and series electrical contact conterminous along the length of said exposed portion of said transparent film of an adjacent photovoltaic cell.

4,243,433

FORMING CONTROLLED INSET REGIONS BY ION IMPLANTATION AND LASER BOMBARDMENT

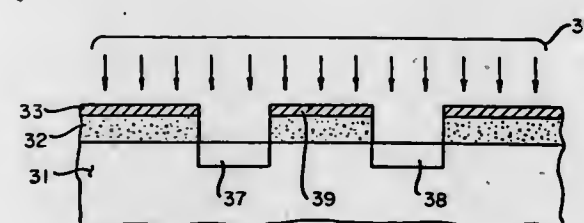
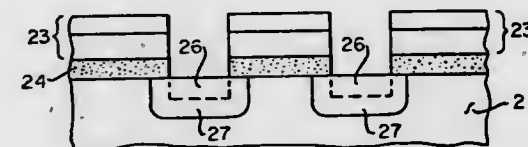
James F. Gibbons, 320 Tennyson Ave., Palo Alto, Calif. 94301

Filed Jan. 18, 1978, Ser. No. 870,432

Int. Cl.³ H01L 21/26

U.S. Cl. 148—1.5

8 Claims



3. The method of forming a semiconductor structure having inset regions of predetermined conductivity type and predetermined area and depth comprising the steps of forming a mask having openings of said predetermined area on one surface of

the device, forming by ion implantation through said openings an amorphous region of predetermined area and depth, implanting by ion implantation through said openings to a depth less than said depth impurities characterizing said conductivity type, and striking said region through said mask openings with a laser beam having sufficient energy to anneal the damage produced by the implantation but not sufficient to cause significant diffusion of impurities from said amorphous region.

4,243,434

COMPOSITION FOR COATING METAL-WORKING TOOLS

David Hartley, Normanton; Michael D. Barrett, Sutton Coldfield, and Paul Wainwright, Horsforth, all of England, assignors to Rocol Limited, England

Filed May 30, 1978, Ser. No. 910,340

Int. Cl.³ C23F 7/10

U.S. Cl. 148—6.15 R

2 Claims

1. An aqueous composition for coating a metal-working tool, comprising by weight

- (a) molybdenum disulphide or graphite solid lubricant in an amount of 5 to 60 parts,
- (b) an aluminum phosphate binder, in an amount of 1 to 5 parts calculated as aluminum hydroxide,
- (c) ortho-phosphoric acid, in an amount of 3 to 25 parts calculated as the 88 to 93% acid,
- (d) optionally a chromate or dichromate, in an amount of up to 5 parts calculated as chromium trioxide.

4,243,435

BIPOLAR TRANSISTOR FABRICATION PROCESS WITH AN ION IMPLANTED EMITTER

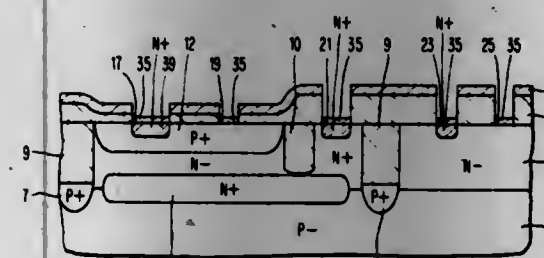
Conrad A. Barile, Wappingers Falls; George R. Goth, Poughkeepsie; James S. Makris; Arunachala Nagarajan, both of Wappingers Falls, and Raj K. Raheja, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,078

Int. Cl.³ H01L 21/22, 21/26

U.S. Cl. 148—1.5

26 Claims



15. A method of forming semiconductor devices in a semiconductor substrate comprising;

forming emitter and base contact windows through a mask on said substrate and a collector and Schottky barrier diode anode and cathode contact windows partially through said mask while protecting the remainder of said mask with a resist layer, said mask comprising a composite layer of silicon dioxide under silicon nitride, the silicon dioxide being thicker in the region of the collector and Schottky barrier anode and cathode contact windows than in the region of the emitter window;

removing said resist layer,

forming the remainder of the collector contact window and the Schottky barrier diode anode and cathode contact windows through said mask while protecting said emitter and base contact windows with a second resist layer;

removing said second resist layer;

forming a thin protective layer over at least said emitter window;

forming a third resist layer which covers said base and Schottky barrier diode anode windows and leaves said

emitter and Schottky barrier diode cathode windows exposed, and; introducing impurities through said emitter window and said Schottky barrier diode cathode contact window by ion implantation.

4,243,436

INSTANTANEOUS SCARFING BY MEANS OF A PILOT PUDDLE

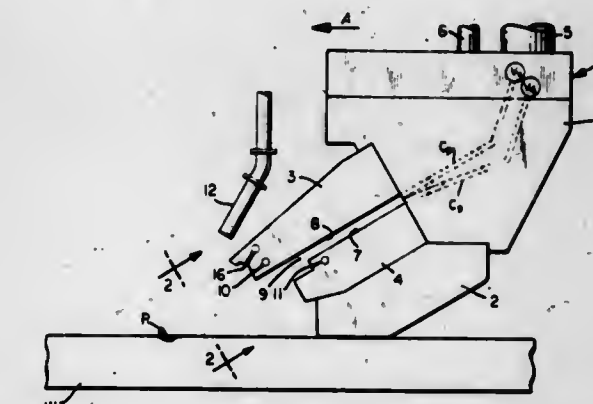
Stephen A. Engel, Granite Springs, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 24,597, Mar. 28, 1979, abandoned. This application Nov. 5, 1979, Ser. No. 91,162

Int. Cl.³ B23K 7/00

U.S. Cl. 148—9.5

16 Claims



1. A process for spot scarfing the surface of a metal workpiece comprising:

- (a) impinging a stream of pilot oxygen gas upon a portion of the workpiece which is at least at its oxygen ignition temperature, said stream of pilot oxygen gas being narrower than the width of a desired scarfing cut,
- (b) causing relative motion between said workpiece and said stream of pilot oxygen gas, so as to continuously produce a pilot puddle of molten metal along a chosen path on the surface of the workpiece,
- (c) contacting said pilot puddle with a high intensity stream of oxygen gas so as to spread the puddle to a preselected width when said puddle reaches an area to be spot scarfed on said workpiece, and
- (d) scarfing said area by impinging a stream of scarfing oxygen gas on the spread puddle, said stream of scarfing oxygen gas being wider than the pilot oxygen stream.

4,243,437

PROCESS FOR FORMING ARTICLES FROM LEADED BRONZES

James L. Chill; Harry H. Taylor, and Everett H. Granger, all of Marion, Ohio, assignors to Marion Bronze Company, Marion, Ohio

Continuation-in-part of Ser. No. 702,286, Jul. 2, 1976. This application Nov. 20, 1978, Ser. No. 962,397

Int. Cl.³ C22F 1/08

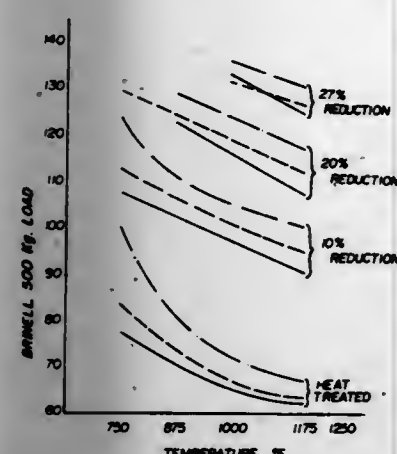
U.S. Cl. 148—11.5 C

11 Claims

1. A method of forming bearing articles from chill-cast high lead bronze alloy having low melting point constituents including lead which is in the proportion of at least 4% comprising the steps of alternately

- (A) mechanically cold working a casting of the lead bronze alloy to effect a predetermined dimensional reduction, up to 30 percent to avoid fracturing and

(B) annealing the casting of the lead bronze alloy at a predetermined temperature for a predetermined period of time



to increase the alloy's ability to be worked into a bearing configuration and affect mechanical properties of the alloy such as tensile strength and hardness.

4,243,438

PRODUCTION OF ALUMINUM IMPACT EXTRUSIONS
Kiyomi Yamagata, Suita; Harumi Magasa, Gifu, and Akihiko Takahashi, Nagoya, all of Japan, assignors to Sumitomo Aluminium Smelting Co., Ltd., Osaka and Nihon Atsuen Kogyo K.K., Itami, both of Japan

Filed Jul. 18, 1979, Ser. No. 58,661

Claims priority, application Japan, Jul. 21, 1978, 53-89708; Feb. 21, 1979, 54-19523; Feb. 21, 1979, 54-19524

Int. Cl.³ C22F 1/04

U.S. Cl. 148—11.5 A

11 Claims

1. In a method of producing an aluminum impact extrusion by impact extruding a slug stock of an aluminum base alloy using an impact extrusion press and then annealing the extruded product, the improvement for producing an impact extrusion having excellent ductility, increased amenability to repeated flexure, enhanced strength against rupture and improved subsequent fabrication characteristics, which comprises using, as the slug stock, an aluminum base alloy consisting essentially of aluminum and 0.2 to 2.0% by weight of cobalt, or an aluminum base alloy consisting essentially of aluminum and 0.2 to 2.0% by weight of nickel and annealing the extruded product at a temperature of 150° to 600° C.

4,243,439

PROCESS OF QUENCHING METAL PIECES AND PRODUCT PRODUCED

Joseph Ranch, Vitry-sur-Seine, France, assignor to Societe de Vente de l'Aluminium Pechiney, Paris, France

Division of Ser. No. 843,499, Oct. 19, 1977, abandoned. This application Aug. 21, 1979, Ser. No. 68,480

Claims priority, application France, Oct. 19, 1976, 76 32035

Int. Cl.³ C21D 1/44

U.S. Cl. 148—20.6

7 Claims

1. In the process of heat treating metallic pieces of quenchable alloys, the improvement comprising subjecting the pieces as removed from a dissolving treatment furnace to quenching in a composition comprising an aqueous suspension of a binder and a pulverulent filler component to selectively modify the density, viscosity and heat conductivity of the composition to thereby assure an improved low level of internal stresses in the heat treated pieces.

4,243,440
COATED SOFT SOLDER BAR OR INGOT

Gordon F. Arbib, Hemel Hempstead, England, and Mervin Baranick, Long Island City, N.Y., assignors to Multicore Solders Limited, Hemel Hempstead, England

Filed May 22, 1979, Ser. No. 41,423

Claims priority, application United Kingdom, May 23, 1978, 21635/78

Int. Cl.³ B23K 35/34

U.S. Cl. 148—23

9 Claims

1. A soft solder alloy in the form of an extruded or cast bar or ingot substantially completely coated with a coating material essentially comprising:

- (I) at least one neutral ester selected from the group consisting of an ester derived from a polyhydric alcohol and at least one saturated fatty acid, an ester derived from a polyhydric alcohol and at least one unsaturated fatty acid and an ester derived from a polyhydric alcohol and a monocarboxylic aromatic acid, said ester having a molecular weight of at least 300, and
- (II) at least one ester selected from the group consisting of an ester derived from a polyhydric alcohol and a rosin and an ester derived from a polyhydric alcohol and a modified rosin.

4,243,441

METHOD FOR METAL STRIP TEMPERATURE CONTROL

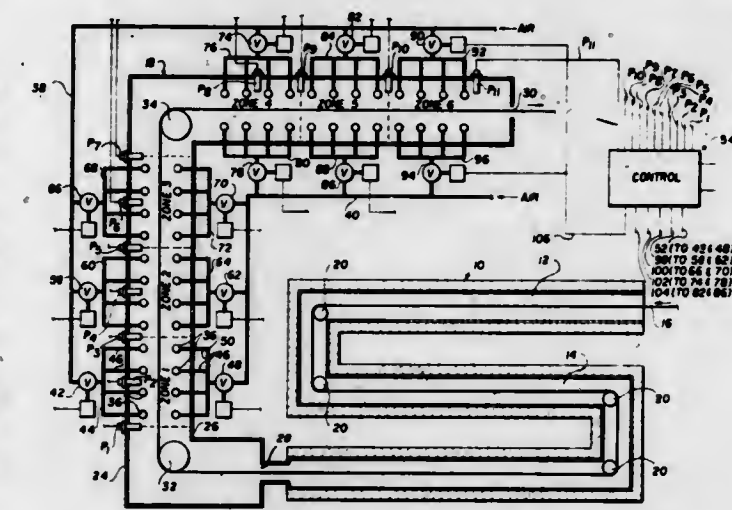
Walter A. Wilson, Pittsburgh, Pa., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed May 9, 1979, Ser. No. 37,529

Int. Cl.³ C21D 1/26

U.S. Cl. 148—128

17 Claims



1. A process for treating a running length of material by transferring heat to or from the material under controlled conditions, the process comprising, moving the material longitudinally through an elongated treatment station including a plurality of contiguous treatment zones, sensing the temperature of the moving material at a plurality of sensing points including the entrance and exit of each treatment zone and at least one intermediate point in at least selected ones of the treatment zones, comparing the temperature measurements at successive sensing points through the treatment station and generating a temperature change signal proportional to the temperature change between successive sensing points, averaging the temperature change signals from each of said selected ones of said treatment zones and generating an average temperature change signal proportional to the average of the temperature change signals from each of said selected ones of said treatment zones, and utilizing the average temperature change signal to control the transfer of heat to or from the material moving in that zone.

4,243,442

PRE-SOLUTION PREPARATION OF DOUBLE BASE PROPELLANT BINDER

Robert J. Armantrout, Salt Lake City, Utah, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1979, Ser. No. 38,761

Int. Cl.³ C06B 45/10

U.S. Cl. 149—19.92

4 Claims

1. A method for readying a combination of nitrocellulose and liquid polyester which contains traces of water for use as a binder in a double base propellant, said method comprising the steps of:

- A. adding granular stabilizer material to said combination and forming a suspension by subjecting the granular stabilizer material, nitrocellulose and polyester to low shear mixing;
- B. combining the suspension with a plasticizer and forming a plasticized suspension by means of dry sparge air mixing; and
- C. stripping the traces of water from the plasticized suspension by continuing dry sparge air mixing and, at the same time, applying heat for a predetermined length of time.

4,243,443

AZIDE AND DOPED IRON OXIDE GAS GENERATING COMPOSITION

Lechoslaw A. M. Utracki, Pierrefonds, Canada, assignor to C-I-L Inc., Montreal, Canada

Filed Jan. 4, 1979, Ser. No. 45,584

Claims priority, application Canada, Jul. 17, 1978, 307563

Int. Cl.³ C06B 35/00

U.S. Cl. 149—35

4 Claims

1. A solid nitrogen gas generating composition comprising a substantially stoichiometric admixture of an alkali metal azide or an alkali earth metal azide and a doped iron oxide, said doped iron oxide comprising an acicular iron oxide particle having an amount of up to 1.0% by weight of other metal oxide selected from nickel oxide and cobalt oxide impregnated into the iron oxide lattice, said doped iron oxide further having a particular size of less than 10 microns.

4,243,444

BALLISTIC MODIFIERS, SYNTHESIS . . . PROPELLANTS

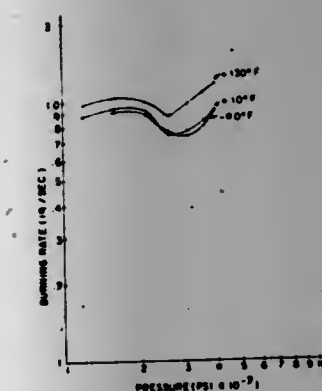
Bernard J. Alley, Huntsville; James D. Duke, Redstone Arsenal, and Hiram W. H. Dykes, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 11, 1970, Ser. No. 58,133

Int. Cl.³ C06B 25/26

U.S. Cl. 149—98

9 Claims



1. A solid propellant composition comprising, double base type propellant ingredients including nitrocellulose and nitroglycerine and a ballistic modifier composition, said ballistic modifier composition consisting of the reaction product formed by mixing different metal ions selected from the group consisting of lead, copper, silver, cobalt, nickel, zinc and bis-

moth with from one to two chelating agents in the pressure of a reaction liquid selected from the group consisting of water, acetone and alcohol to produce a reaction slurry; stirring said reaction slurry until a constant pH is obtained; and filtering said reaction slurry to separate the reaction product as said ballistic modifier composition to be added to the other propellant ingredients.

4,243,445

METHOD FOR MAKING A REMOTE CONTROL CABLE
Pierre Seguin, Pont-de-Cheruy, France, assignor to Chavanoz SA, Chavanoz, France

Division of Ser. No. 769,338, Feb. 16, 1977, Pat. No. 4,135,056. This application Jul. 7, 1978, Ser. No. 922,548

Claims priority, application France, Feb. 16, 1976, 76 04378

Int. Cl.³ H01B 13/06; B29F 3/10; H01B 7/00

U.S. Cl. 156—55

1 Claim

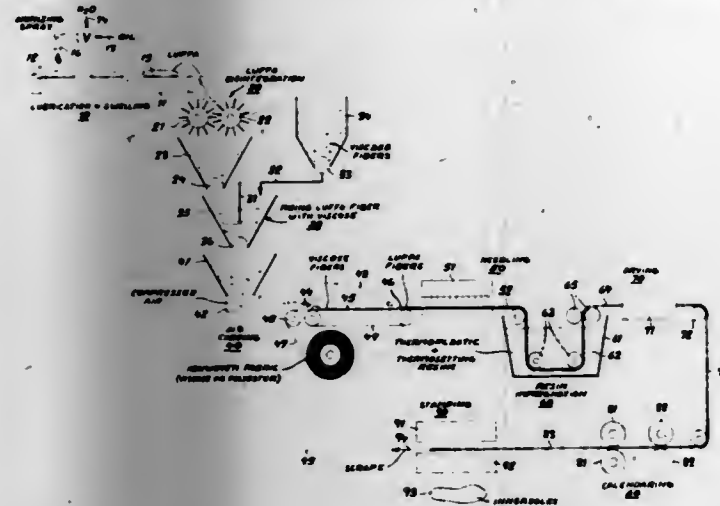


1. A process for the manufacture of a remote control cable having two conducting wires separated and held by an insulating central element, reinforcing wires parallel to the said conductors, at least one layer of lapping covering these elements and at least one external coating layer, said process comprising the steps of:

passing the conducting wires into a bath of molten material of an insulating product having a low dielectric constant; gauging the coated wires by passing them through a die of elliptical cross section by leading the wires horizontally to the gauging die and holding the wires in contact with the walls of the said die with the portion of the wires in contact with the walls of the die being less than half of the peripheral surface of the wires; wherein the conducting wires are led into the bath spaced at a distance from one another and converged toward one another adjacent the gauging die; wherein the conducting wires are maintained at the desired spacing from one another within said die to form a central dielectric element comprising two longitudinal recesses arranged symmetrically relative to a central solid portion, each recess enclosing a conductor over more than half of its periphery, the remainder of the periphery forming a free surface, the external surface of the central dielectric element forming with each of the free surfaces of each of the conductors a central element having a continuous surface of generally elliptical cross-section shape, covering the central element thus formed with a bundle of parallel reinforcing yarns such that the reinforcing yarns enclose the continuous surface of said central element, said continuous surface of the central element including the surface of the insulated central dielectric element and less than half of the peripheral surface of the wires, and then providing lapping and coating layers on said covered central element.

4,243,446

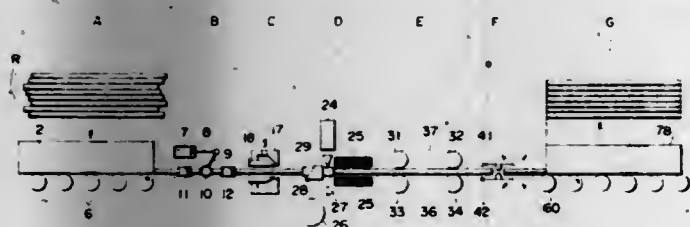
METHOD OF MAKING A LUFFA COMPOSITE
 Jean M. Mathey, Saint Rambert d'Albon, France, assignor to Allibert Exploitation, Societe Anonyme, Grenoble, France
 Filed Dec. 8, 1978, Ser. No. 967,851
 Claims priority, application France, Dec. 14, 1977, 77 38538
 Int. Cl.³ B32B 17/00; A43B 13/38; D01B 1/10, 3/04
 U.S. Cl. 156—62.4 8 Claims



1. A method of forming a composite material of high absorbency and cushioning effect, comprising the steps of:
 - (a) disintegrating luffa sponges to form fibers therefrom;
 - (b) carding the fibers resulting from step (a);
 - (c) needling said fibers to a textile support of a nonwoven fabric to form a web;
 - (d) impregnating the needled web produced in step (c) with a mixture of thermoplastic and thermosetting synthetic resins;
 - (e) drying the resin-impregnated web formed in step (d); and
 - (f) calendaring the dried impregnated web to form a foil, the luffas being lubricated with an aqueous solution containing a lubricant prior to disintegration such that the fibers of the luffas prior to its disintegration absorb between 5 and 15% of their weight of water to at least partially swell the fibers, the luffa fibers formed by disintegration being mixed with substantially lighter fibers and the fiber mixture being carded in step (b).

4,243,447

METHOD FOR CONTINUOUSLY FORMING A COATING LAYER ON UNBONDED PC STEEL BARS
 Tetsukazu Fukuhara, Hiratsuka, Japan, assignor to Neteuren Company Ltd., Tokyo, Japan
 Filed Dec. 28, 1978, Ser. No. 974,513
 Claims priority, application Japan, May 19, 1978, 53-58874
 Int. Cl.³ B65H 81/00
 U.S. Cl. 156—64 5 Claims



1. A method for continuously coating unbonded PC steel bars, said method comprising:
 - (a) continuously supplying steel bars along an axial feed path and regulating the intervals between said steel bars at an axial interval regulating station of the type including downstream and upstream pairs of spaced rollers and a spacer oscillating back and forth between first and second points along said path upstream and downstream of said upstream pair of rollers, said step of regulating comprising dislocating said upstream pair of rollers out of said path, detecting the passage of the trailing end of a first steel bar

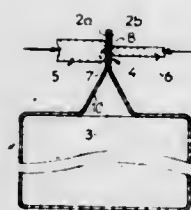
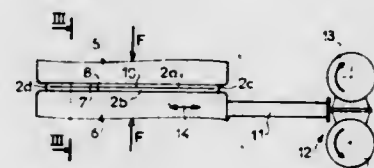
past a position upstream of said upstream pair of rollers and thereupon moving said spacer to said first point and positioning said spacer between said trailing end of said first steel bar and a leading end of a second steel bar, feeding said second steel bar at a speed V_0 , moving said pairs of rollers at a speed V_1 , moving said spacer at a speed V_2 , such that $V_0 > V_1$, and $V_1 \approx V_2$, whereby with further movement said second steel bar abuts said spacer and said spacer abuts said first steel bar, thereby spacing said first and second steel bars at an interval equal to the size of said spacer in the direction of said path, then moving said upstream pair of rollers back to said path, then conveying said second steel bar by said upstream pair of rollers and conveying said first steel bar by said downstream pair of rollers, both at speed V_1 , and when said spacer has been advanced to said second point, moving said spacer from between said steel bars, and thereafter conveying said steel bars with said interval therebetween; then coating said steel bars only on parallel unthreaded portions thereof at a coating station utilizing an outflow path of a coating agent such as asphalt, epoxy resin or grease, said outflow path being cleared upon arrival of the leading end of said parallel portion of a steel bar and blocked upon arrival of the trailing end of said parallel portion;

then continuously wrapping the thus coated steel bars with an endless thermo-shrinking tape unwound from a tape unwinder at a taping station to thereby form an endless unit of steel bars joined by said tape; and

then separating the thus coated and taped steel bars by cutting the hollow taped portions between adjacent axially spaced steel bars.

4,243,448

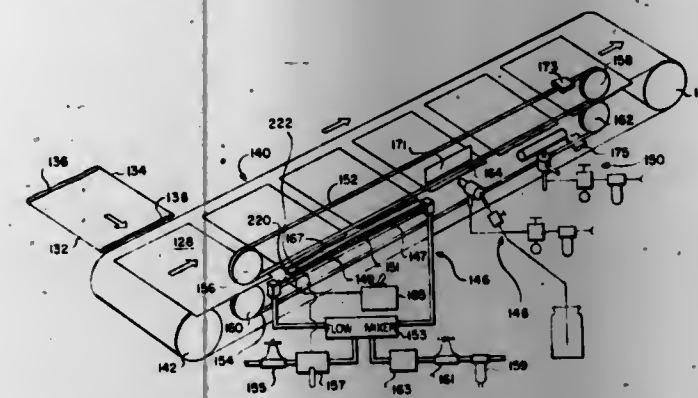
METHOD AND APPARATUS FOR SEALING A TUBE OF THERMOPLASTICS MATERIAL BY WELDING
 Gaston Fagniat, Valenciennes, and Jean-Pierre Lemaire, Maing, both of France, assignors to Societe Anonyme dite: Vacuum Capatainer International, Paris, France
 Filed Mar. 23, 1979, Ser. No. 23,272
 Int. Cl.³ B29C 27/08; B65B 51/10
 U.S. Cl. 156—73.5 4 Claims



1. A method for sealing a tube of flexible thermoplastics material by welding, comprising flattening the tube in the area to be welded so as to give it the configuration of two walls placed face-to-face and connected by two flat folds extending parallel to the general direction of the tube in said area, pressing the two walls one against the other under pressure in said area, imparting alternating relative movement to the two walls in said area in a direction transverse to the general direction of the tube and parallel to the interface between said walls, whilst continuing to press them together, so as to bring about friction heating of the opposed faces of said walls in said area and their localized melting, then interrupting said movement and bringing about welding of the molten areas by cooling of the latter.

4,243,449

PROCESS FOR SEALING A PLURALITY OF POLYBUTYLENE SHEETS
 Jeffrey L. Swartz, Brighton, Mass., assignor to Microseal Plastics Corporation, Chestnut Hill, Mass.
 Continuation-in-part of Ser. No. 763,819, Jan. 31, 1977, abandoned. This application May 22, 1978, Ser. No. 907,994
 Int. Cl.³ B29C 25/00; B32B 31/24
 U.S. Cl. 156—82 15 Claims



1. A process for sealing a plurality of polybutylene sheets, said process comprising:
 - (a) clamping edgewise portions of said polybutylene sheets between a pair of elements to establish a skirt;
 - (b) heating said skirt to provide a molten weld having a tacky surface along an edge of said polybutylene sheets; and
 - (c) subjecting said weld to an aqueous solution of a surfactant in order to cause said weld to have a non-tacky surface.

4,243,450

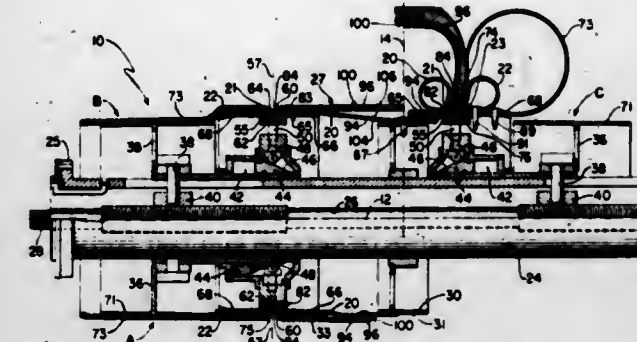
METHOD OF MANUFACTURING TUBELESS TIRES FOR BICYCLES AND MOTORCYCLES
 Jean-Paul Ferrary, Paris, France, assignor to Wolber, Soissons, France
 Filed Nov. 28, 1978, Ser. No. 964,444
 Claims priority, application France, Mar. 28, 1978, 78 08859
 Int. Cl.³ B29H 17/22; B60C 5/02
 U.S. Cl. 156—123 R 2 Claims



1. A method of manufacturing a tubular tire for bicycles and motorcycles, said method comprising the steps of:
 - (a) laying bead steel wires longitudinally on a first or inner casing sheet of a tire casing to be formed and adjacent the edges thereof;
 - (b) folding the longitudinal marginal portions of said first or inner casing sheet around said bead wires in order to cover said wires completely;
 - (c) laying a second or intermediate casing sheet on top of said first or inner casing sheet, the longitudinal edges of said second casing sheet projecting well beyond the in-turned longitudinal edges of said first casing sheet;
 - (d) laying a casing tread on the thus superposed sheets;
 - (e) shaping the tire assembly thus obtained by imparting a horse-shoe configuration thereto, as seen in cross section;
 - (f) introducing an uncured inner air tube into said casing;
 - (g) closing the tire by assembling by welding the side edges of said second or intermediate casing sheet projecting from said casing; and
 - (h) vulcanizing the assembly, and thereby forming an enclosed tubular tire.

4,243,451

BUILDING AND SHAPING A TIRE
 Jan C. Kortman, Mertzig, Luxembourg, assignor to The Good-year Tire & Rubber Company, Akron, Ohio
 Filed Feb. 21, 1979, Ser. No. 13,593
 Int. Cl.³ B29H 17/24, 17/26
 U.S. Cl. 156—132 12 Claims



10. A method of building and shaping a tire comprising providing flat cylindrical surface means including a center envelope terminating in spaced planes normal to an axis and turnout bladders respectively abutting and extending oppositely outward coaxially from said envelope; forming a precarcase band in flat cylindrical form on said surface means; positioning a pair of preformed inextensible bead cores in radially and coaxially spaced relation to lie respectively in said planes and about said band; expanding said band first at circumferential locations respectively coplanar with the termini of said envelope and with the bead cores to initiate conformation of the band about said bead cores; expanding portions of said band then at locations immediately adjacent to and respectively inward and outward of each bead core to roll said portions simultaneously progressively radially outward of each bead core to enclose at least partially each bead core respectively between said portions while moving said bead cores axially toward each other sufficiently only to accommodate such expansions; thereafter shaping said band with said envelope between said bead cores to a toroidal form having a shape ratio of radial height to axial width at least approximately that of the tire after the same has been cured by applying to said envelope radially outward pressure and by concurrently moving said bead cores toward each other to the spacing therebetween desired in the tire after curing the same; and subsequently completing and curing the tire.

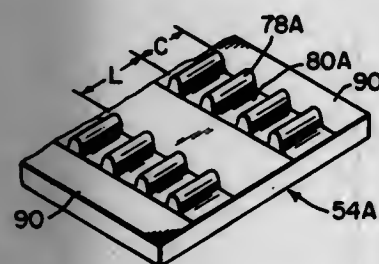
4,243,452

METHOD AND APPARATUS FOR MAKING WRAPPED, MOLDED, TOOTHED BELTS
 Kenneth D. Richmond; Joseph P. Miranti, Jr., both of Nixa, and Dewey D. Henderson, Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio
 Filed Sep. 14, 1979, Ser. No. 75,612
 Int. Cl.³ B29H 7/22 15 Claims

1. In a process for producing a molded V-belt having a tension section, a load-carrying section, and a compression section, said compression section having a plurality of projections and recesses therein, which comprises the steps of providing an uncured belt body and curing said belt body in a ring mold having at least one belt molding cavity within and between the rings of said mold for receiving the outer periphery and sides of said belt body, said cavity having one open side whereby the inner periphery of said belt body is exposed, said ring mold also having in association therewith means for confining said belt body within said cavity and for applying pres-

sure to said inner periphery of said belt body, the improvement which comprises:

- (a) providing an uncured belt body;
 - (b) assembling said belt body upon a ring mold having at least one cavity within and between the rings of said mold for receiving the outer periphery and sides of said belt body, said cavity having one open side whereby the inner periphery of said belt body is exposed, said mold having a plurality of axially-running projections and recesses in the circumferential surface of said mold having said cavity opening, said ring mold also having an expandable elastomeric sleeve in association therewith, said sleeve having a plurality of axially-running recesses and projections which align and mate with said projections and recesses, respectively, of said mold when said sleeve is inflated;
 - (c) expanding said sleeve, thereby applying molding pressure upon said inner periphery of said belt body; and,
 - (d) curing said belt body.
7. In an apparatus for molding endless belts comprising:
- (a) a plurality of stacked mold rings forming the inner peripheral walls and side walls of annular cavities within and between said rings for receiving the outer peripheries and sides, respectively, of individual belts, the outer periphery



of said cavity extending between said side walls, being open whereby the entire inner peripheries of said belts are exposed;

- (b) means for clamping said rings together;
- (c) a substantially cylindrical elastomeric sleeve positioned in association with said rings and adapted to close the entire peripheral openings of said cavities and to contact the entire inner peripheries of said belts;
- (d) a substantially cylindrical metal sleeve positioned in association with said elastomeric sleeve;
- (e) means for sealing the ends of said elastomeric sleeve to said metal sleeve to provide an expansion chamber therebetween; and,
- (f) means for admitting a fluid under pressure into said expansion chamber;

the improvement comprising a plurality of axially running projections and recesses on the mold-contacting surface of said elastomeric sleeve and a plurality of mateable recesses and projections in the sleeve-contacting peripheral surfaces of said mold rings, wherein said projections and recesses of said elastomeric sleeve mate with said recesses and projections, respectively, of said mold rings when said elastomeric sleeve is expanded into contact with said rings.

4,243,453

METHODS FOR APPLICATION AND USE OF A COMPOSITE PRESSURE SENSITIVE ADHESIVE CONSTRUCTION

Jack M. McClintock, Stow, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Division of Ser. No. 837,828, Sep. 29, 1977, Pat. No. 4,157,410. This application May 14, 1979, Ser. No. 39,098

Int. Cl.³ B32B 31/00

U.S. Cl. 156—152

6 Claims

1. A method of adhering one item to another item through a composite pressure sensitive adhesive construction, comprising the steps of:

releasably attaching a first pressure sensitive adhesive layer

to a first exterior release liner having a release coating thereon;

releasably attaching a central release liner to said first pressure sensitive adhesive layer, releasably attaching a second pressure sensitive adhesive layer to a second exterior release liner having a release coating thereon,

removing said first exterior release liner from said first pressure sensitive adhesive layer,

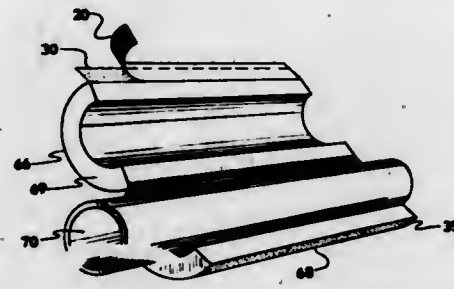
applying said first pressure sensitive adhesive layer to one item,

removing said second exterior release liner from said second pressure sensitive adhesive layer,

applying said second pressure sensitive adhesive layer to another item, and

removing said central release liner and contacting said first adhesive layer and said second adhesive layer to form a bond.

3. A method of adhering one item to another item through a composite pressure sensitive adhesive construction, comprising the steps of;



unwinding a self-wound pressure sensitive roll construction to release a second pressure sensitive adhesive layer from an external release liner, said construction having a first pressure sensitive adhesive layer releasably attached to both said external release liner and a central release liner, said construction also having said second pressure sensitive adhesive layer releasably attached to both the remaining side of said central release liner and the remaining side of said external release liner,

removing said exterior release liner to expose said first pressure sensitive adhesive layer,

applying said first pressure sensitive adhesive layer to one item,

applying said second pressure sensitive adhesive layer to another item and

removing said central release liner and contacting said first adhesive layer and said second adhesive layer to form a bond.

4,243,454

SOLAR HEATING PANEL FORMING APPARATUS AND METHOD

Richard O. Rhodes, San Francisco, Calif., assignor to Fafco, Inc., Menlo Park, Calif.

Division of Ser. No. 813,226, Jul. 5, 1977, abandoned. This application Jul. 14, 1978, Ser. No. 924,724

Int. Cl.³ B29C 19/00

U.S. Cl. 156—162

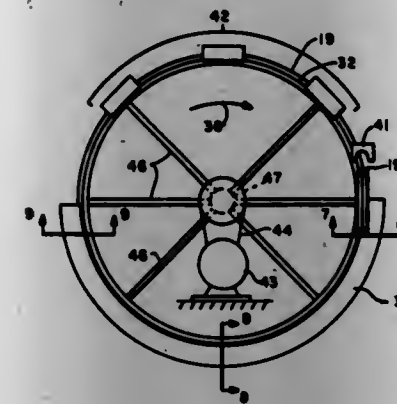
5 Claims

1. The method of forming cylindrical sections having walls formed of a continuous length of hollow tubing, comprising the steps of extruding the hollow tubing at a first predetermined speed, drawing the extruded hollow tubing at a second predetermined speed, said second speed being greater than said first speed by a predetermined speed differential, whereby the hollow tubing is sized, tensioning the continuous length of hollow tubing,

- rotating a drum,
- feeding the tensioned hollow tubing to said drum so that it winds in spiral fashion on the drum,
- heating one side surface only of the hollow tubing to bring

the outer surface to a fusion point immediately prior to reaching the drum,

heating the opposite side surface only of the last wound turn of tubing in the spiral to bring the outer surface to a fusion point,



forcing the spiral of hollow tubing axially on the drum surface so that as it is wound onto the drum the fused outer surfaces of adjacent turns are forced into contact, whereby adjacent turns in the spiral are fused together, and cutting the hollow tubing at the periphery of the drum when the fused spiral reaches a predetermined width.

4,243,455

METHOD OF FORMING ELECTRODE CONNECTOR FOR LIQUID CRYSTAL DISPLAY DEVICE

Hiroshi Shibata, and Katsuhiko Murata, both of Ohtsu, Japan, assignors to Nippon Graphite Industries, Ltd., Ohtsu, Japan

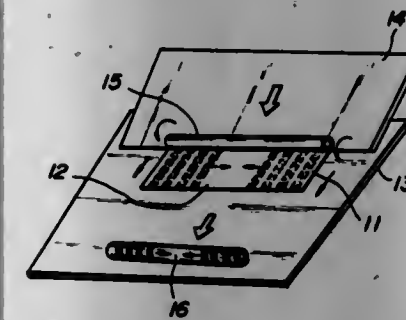
Filed Jul. 20, 1978, Ser. No. 926,341

Claims priority, application Japan, Jul. 29, 1977, 52-90505; Oct. 14, 1977, 52-123072

Int. Cl.³ B65H 81/00

U.S. Cl. 156—187

2 Claims



1. A method of forming an electrode connector for liquid crystal display device comprising the steps of:

(A) printing a plurality of parallel electroconductive strips with a predetermined width and spacing for the electrode connector on one side of a sheet of flexible polyester film with a special suspension ink consisting essentially of (a) 20-80% by weight of at least one fine powder selected from the group consisting of graphite powder having a grain size of 0.1-60μ, carbon black powder having a grain size of less than 0.1μ and silver powder having a grain size of 0.1-60μ, (b) 5-30% by weight of at least one binding material of rubber and thermoplastic resin selected from the group consisting of chloroprene rubber, chlorosulphonated rubber, polyurethane resin and polyester resin and (c) 15-80% by weight of at least one organic solvent selected from the group consisting of dimethyl formamide, dimethyl acetamide, diethyl carbitol, butyl carbitol, isophorone and turpentine oil, and having an apparent specific gravity of 0.9-1.9 and an apparent viscosity of 150-1,200 poise, and drying the printed ink on said polyester film;

(B) applying a hot-setting adhesive suspension consisting essentially of (i) 30-60% by weight of at least one hot-setting adhesive resin selected from the group consisting of

chloroprene rubber-phenol resin, ethylene-vinyl acetate copolymer resin and polyester resin, (ii) 1-10% by weight of at least one fine powder selected from the group consisting of aluminum powder, iron oxide powder and sericite powder and (iii) 30-70% by weight of at least one organic solvent selected from the group consisting of toluene, xylene, ethyl acetate, isophorone, butyl carbitol and diethyl carbitol, and having an apparent specific gravity of 0.9-1.3 and an apparent viscosity of 100-800 poise to all over another side of said polyester film by spraying, and drying a thin layer of said adhesive suspension on said polyester film;

(C) cutting a rectangular piece having the desired size out of the resulting film having an adhesive coating layer on the surface in the step of (B); and

(D) putting a length of film with the adhesive layer coated on the upper side thereof on a flat plate heated at the temperature of 100° C.-200° C., and rolling a rubber tube consisting essentially of silicone rubber, chloroprene rubber or natural rubber, and having the size of 1.0-4.0 mm in outer diameter, 0.5-2.0 mm in inner diameter and 10-100 mm in length on said film in contact with the adhesive and in the direction of said vertical strips printed on the lower side so as to adhere said film around said rubber tube.

4,243,456

LAMINATING METHOD AND APPARATUS

Franco Cesano, Pinerolo, Italy, assignor to G.O.R. Applicazioni Speciali S.p.A., Turin, Italy

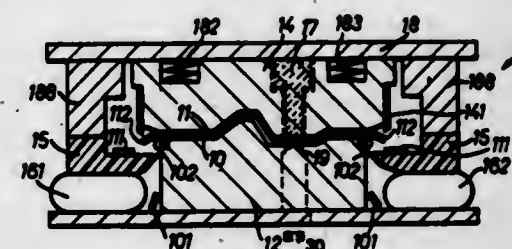
Filed Jan. 26, 1979, Ser. No. 52,106

Claims priority, application Switzerland, Jan. 28, 1978, 7027/78

Int. Cl.³ B32B 31/00; B32C 17/08; B26D 5/08; B29C 17/14

U.S. Cl. 156—214

12 Claims



1. A method for producing a shaped stratiform and self-supporting laminate having a substantially rigid thermoplastic substrate and a coating layer of a flexible sheet material adhering on said substrate, said method comprising the steps of:

(A) providing a molding press comprising (a) an upper mold member and a lower mold member, each of said mold members having a molding surface, said mold members being movable in a reciprocating manner relative to each other between a mutually distanced first position and a second position in which said molding surfaces are near each other to define a mold substantially corresponding with said shaped laminate; (b) a first cutting member on said lower mold member; (c) a second cutting member on said upper mold member; and (d) a generally annular peripheral member reciprocatingly movable relative to said upper and said lower mold members; said generally annular member having (1) a cutting edge for contact with said first cutting member to form a first cutting means and (2) a surface for contact with said second cutting member to form a second cutting means;

(B) holding said upper and said lower mold member in said distanced first position thereof while holding said annular member in a position removed from said first cutting member and said second cutting member;

(C) introducing a thermally plastified sheet of said thermoplastic substrate between said lower mold member and said annular member, said sheet extending over said mold-

ing surface of said lower mold member; and introducing a sheet of said flexible material for said coating layer between said upper mold member and said surface of said annular member; said sheet of said coating layer extending over said molding surface of said upper mold member and onto said surface of said annular member;

- (D) moving said upper mold member towards said lower mold member into said second position for molding said substrate and said flexible sheet material while maintaining said annular member in a press-cutting position where said second cutting member contacts said surface of said annular member to peripherally cut said molded flexible sheet material and to produce predetermined free edge portions thereof;
- (E) pressing said upper mold member against said lower mold member for laminatingly connecting said peripherally cut and molded sheet material with said molded and thermally plastified sheet of said thermoplastic substrate;
- (F) moving said annular member from said sheet cutting position through a shear-cutting position where said cutting edge of said annular member cooperates with said shearing edge of said lower mold member to peripherally cut said sheet of said substrate while leaving said predetermined free edge portions of said flexible sheet to extend at least in part over edge portions of said cut substrate;
- (G) moving said upper and said lower mold member into said mutually distanced first position and removing an integrally molded laminate formed of said flexible sheet material and said substrate and having laterally protruding edge portions of said flexible sheet material for subsequently covering at least a part of said edge portions of said substrate.

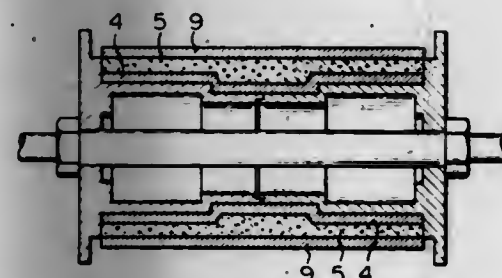
4,243,457

METHOD OF MOLDING PIPE JOINTS OF REINFORCED RESIN

Masakatsu Mayumi, Osaka; Kenji Mitooka, and Sigeharu Fujiwara, both of Okayama, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Aug. 30, 1978, Ser. No. 938,100
Claims priority, application Japan, Sep. 2, 1977, 52-106058; Sep. 19, 1977, 52-126434[U]; Dec. 1, 1977, 52-144796
Int. Cl.³ B32B 33/00

U.S. Cl. 156-245

2 Claims



1. A process for molding a pipe joint of a reinforced resin, which comprises

- (1) forming an uncured inside surface layer composed of a resin-impregnated reinforced molding material on the peripheral surface of a core mold;
- (2) coating a resin mortar on the inner surface of a split mold and molding the surface of the coated resin mortar by a former having a contour substantially corresponding with that of the inside surface layer;
- (3) forming an incompletely cured interlayer composed of resin mortar by capping the split mold containing the molded resin mortar on the inside surface layer and removing the split mold after the curing of the resin mortar has proceeded to a certain extent;
- (4) forming an uncured outside surface layer composed of a resin-impregnated reinforced molding material on the

peripheral surface of the incompletely cured interlayer; and

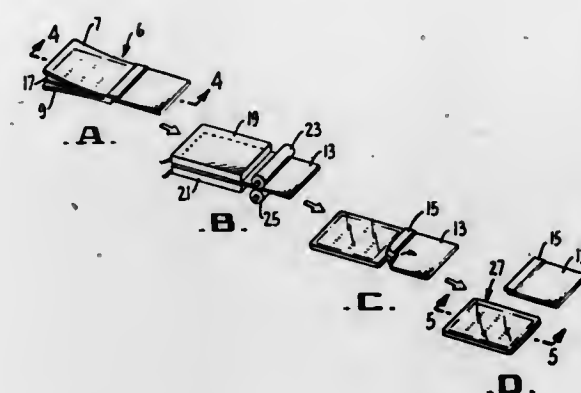
- (5) completing the curing of all the layers.

4,243,458

METHOD OF MAKING PREFABRICATED LAMINATING PACKET WITH TAB

Joe D. Giulie, Palo Alto, Calif., assignor to General Binding Corporation, Northbrook, Ill.
Division of Ser. No. 784,668, Apr. 5, 1977, Pat. No. 4,185,405.
This application Aug. 29, 1979, Ser. No. 70,836
Int. Cl.³ B32B 31/20; G09F 3/00
U.S. Cl. 156-247

9 Claims



1. A method for laminating an object comprising the steps of:

- (a) providing a laminating machine having a heating means and pressure means;
- (b) providing a laminating packet having first and second sheets of a heat laminating material, said first and second sheets being of substantially the same size, lying over each other, and being connected together along one marginal edge, a detachable tab extending from the marginal edge away from the sheets;
- (c) inserting an object to be laminated between the first and second sheets;
- (d) inserting the packet and object into the heating means of the laminating machine, and then heating the packet;
- (e) pulling the laminating packet and object through the pressure means by pulling on the tab until the packet is removed from the machine; and
- (f) tearing away the detachable tab.

4,243,459

LOOSE LEAF BINDERS

Michael J. A. Lawes, 11 Jew St., Brighton, Sussex, BN1 1UT, England
Division of Ser. No. 475,126, May 31, 1974, Pat. No. 4,138,143, which is a continuation of Ser. No. 100,310, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 21,652, Mar. 23, 1970, abandoned. This application Jan. 10, 1979, Ser. No. 2,700

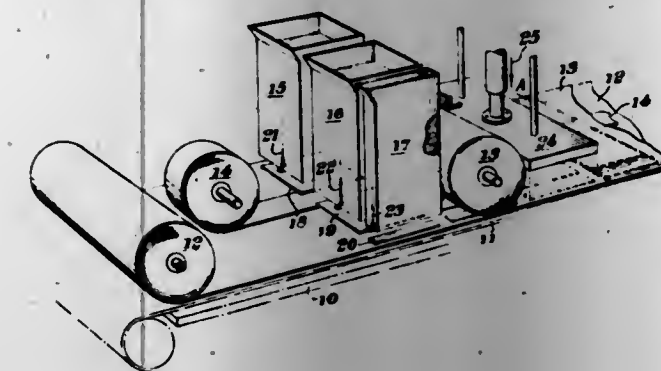
Claims priority, application Canada, Mar. 19, 1970, 077831; Fed. Rep. of Germany, Mar. 10, 1970, 2011111; Mar. 10, 1970, 7008623[U]; France, Mar. 18, 1970, 70 09745; Italy, Mar. 12, 1970, 21847 A/70; Japan, Mar. 26, 1970, 45/24947; Netherlands, Jun. 9, 1970, 7008341; United Kingdom, Jan. 5, 1970, 400/70; Jul. 22, 1970, 35453/70
Int. Cl.³ B29C 19/02

U.S. Cl. 156-272

18 Claims

1. A method of manufacturing a loose leaf binder comprising the steps of
placing two rigid cardboard boards and a strip of semi-rigid weldable material between two sheets of flexible weldable material with the adjacent edges of the boards spaced from one another, and with the strip of semi-rigid material located between the boards,
enclosing a strip of cardboard in flexible weldable material

to form a second assembly comprising an inner spine and having two extending edges of weldable material,
welding the two sheets of flexible weldable material together about the periphery of the boards and the strip to form a first assembly comprising an outer spine and two covers,



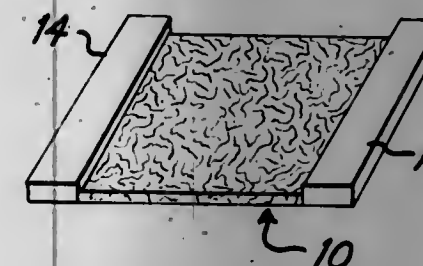
urging the two spaced boards towards one another to cause the semi-rigid material to assume a curved shape, and welding the second assembly to the first assembly by means of weld lines extending along the extending edges of the second assembly and closely adjacent to the adjacent edges of the boards in the first assembly to maintain the curved shape of the semi-rigid material.

4,243,460

CONDUCTIVE LAMINATE AND METHOD OF PRODUCING THE SAME

Robert T. Nagler, Prairie du Sac, Wis., assignor to Lundy Electronics & Systems, Inc., Glen Head, N.Y.
Filed Aug. 15, 1978, Ser. No. 934,049
Int. Cl.³ B32B 31/24, 5/16; G21F 1/12
U.S. Cl. 156-275

17 Claims



1. A method of improving the conductivity of a laminate of resinous insulating material having dispersed therein metallic articles selected from the group consisting of metal-coated glass fibers, strips of aluminum foil, wire and flakes comprising the step of passing electrical energy through the laminate of sufficient strength to break down the dielectric resistance of the insulating material at points of contact of the metallic articles.

4,243,461

PROCESS FOR RELEASING LAMINATES

Richard F. Jaisle, Batesville, Ind., and Kenneth D. Bunkowski, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio
Filed Nov. 13, 1979, Ser. No. 93,414
Int. Cl.³ B32B 31/12, 31/20

U.S. Cl. 156-288

10 Claims

1. A method of releasing laminates from one another in a heat and pressure consolidated press pack which comprises
(1) arranging a plurality of thermosetting synthetic resin-impregnated fibrous core sheets in superimposed relationship in groups of at least two stacks,
(2) separating said stacks from one another with a separator sheet comprising a web of phenol-formaldehyde resin-free paper having a water absorption of at least about 200 seconds, at least one side of which has been sized with a

water-soluble salt of an alkaline earth metal or earth metal in an amount sufficient to provide a solids content of said salt distributed throughout the sized surface of said web ranging from about 0.001% to about 10%, by weight, based on the dry weight of the sized web, and then coated on its sized side with a film of a mixture of a salt of alginic acid and a triglyceride, lecithin or hydrolyzed lecithin
(3) consolidating said stacks of core sheets by the application of heat and pressure thereto and,
(4) separating the resulting laminates from one another at the locus of said separator sheet.

4,243,462

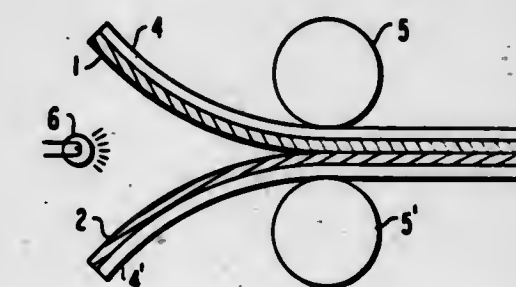
HEAT-CURABLE COMPOSITE SHEET AND PROCESS FOR FORMING THE SAME

Yutaka Hori; Hidekazu Takahashi; Makoto Sunakawa; Ichiro Ijichi, and Kiyohiro Kamel, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan
Continuation of Ser. No. 877,523, Feb. 13, 1978, abandoned, which is a division of Ser. No. 655,198, Feb. 4, 1976, Pat. No. 4,091,157. This application May 4, 1979, Ser. No. 35,967
Claims priority, application Japan, Mar. 27, 1975, 50/37611; Apr. 16, 1975, 50/46663

Int. Cl.³ B32B 7/00

U.S. Cl. 156-310

37 Claims



1. A process for preparing a heat-curable multilayer composite sheet, which comprises coating a layer-forming material containing a normally solid or liquid free radical reactive unsaturated compound on a first strippable sheet to form an unsaturated compound material layer on the first strippable sheet, coating another layer-forming material containing a normally solid or liquid free radical initiator on a second strippable sheet to form a free radical initiator layer on the second strippable sheet, bringing the unsaturated compound material layer into contact with the free radical initiator layer, and bonding them to each other at a temperature at which the free radical initiator layer does not lose its free radical reaction initiating ability, essentially no free radical initiator being in said layer-forming material and essentially no free radical reactive unsaturated compound being in said another layer-forming material.

4,243,463

METHOD OF PRODUCING CROSS LAMINATES

Duggan J. Gash, Lower Froyle, near Bentley, England, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands
Filed Oct. 25, 1977, Ser. No. 844,864
Claims priority, application United Kingdom, Oct. 27, 1976, 44725/76

Int. Cl.³ B29D 7/24; B32B 31/02

U.S. Cl. 156-324

5 Claims

1. A method of producing cross laminates from a set of substantially monaxially oriented, solid polyolefin film which comprises bonding together said set of films in a properly crossed position, annealing said cross laminate by subjecting it to a temperature within the range of from 60° to 180° C., but below the melting temperature of the lowest melting of the

thermoplastic materials present therein, excluding any adhesive or extruded bonding layer, and then recovering a polyolefin film cross laminate having improved impact strength.

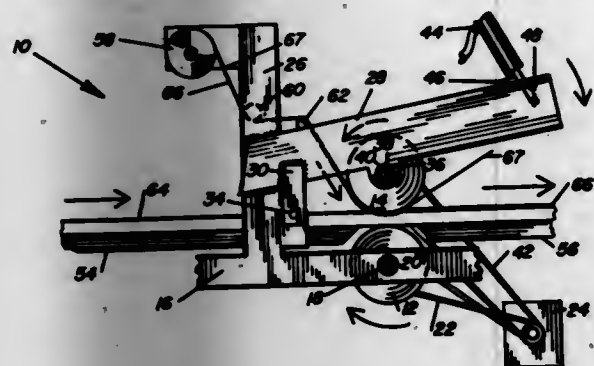
4,243,464

LAMINATING METHOD

Thomas M. Potchen, and Jessie M. Potchen, both of 2909 Banchory Rd., Winter Park, Fla. 32792
Filed Jan. 30, 1978, Ser. No. 873,266
Int. Cl.³ B31F 5/00

U.S. Cl. 156—324

21 Claims



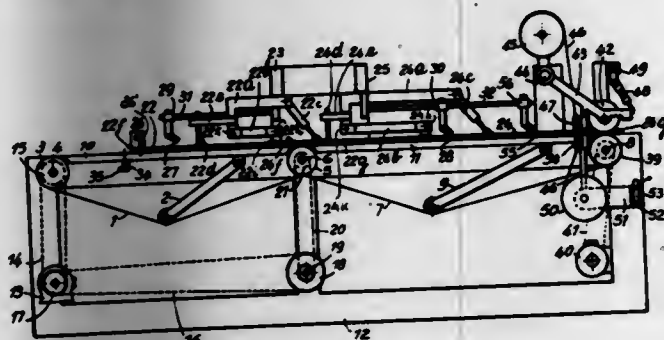
1. A method for laminating a thin film onto a rough, porous surface of a sheet of wood, particle board, fiber board and the like of the type having resins therein, comprising the steps of: providing a pair of opposing members, each disposed so as to define a continuous pressure line therebetween; providing means for moving one of said members toward and away from the other member so as to permit variation of the space between said two members; feeding said sheet into said space in a first direction; feeding said film onto said surface and with said sheet in said first direction; applying pressure between said two members in an amount substantially above 50 lbs. per lineal inch along said pressure line and against said film-sheet combination, and less than 400 lbs. per lineal inch in order to effect the desired bonding of said film to said sheet without destroying said sheet; heating said film-sheet combination while between said members to render said resins amorphous; and wherein said amorphous resins are smoothed under pressure to calendar said rough, porous surface of said sheet to facilitate lamination of said film thereto.

4,243,465

APPARATUS FOR JOINING PIECES OF LAMINAR MATERIAL AND IN PARTICULAR PLYWOOD CORE STRIPS

Ilia Gozzi, Via Milano, 147, Cogozzo di Viadana, Mantova, Italy
Filed Jan. 11, 1979, Ser. No. 2,779
Int. Cl.³ B27D 3/04; B30B 5/04
U.S. Cl. 156—362

8 Claims



1. An apparatus for joining pieces of laminar material, in particular wooden strips for plywood cores, including a stationary frame structure, supported on said frame structure a plurality of successive coplanar conveyor floors having a

longitudinal extension, each consisting of a series of coplanar and parallel conveyor belts arranged in spaced side-by-side relationship, said plurality of successive coplanar conveyor floors including at least one feeding conveyor floor and at least one crowding conveyor floor arranged after the feeding conveyor floor and having its conveyor belts moving at a speed slower than that of the feeding conveyor floor belts to allow the crowding thereon of the strips to be joined, and pressure mechanisms for holding the strips in contact with the conveyor floors, wherein the pressure mechanisms comprise at least one rod-like element arranged over at least part of the longitudinal extension of said successive conveyor floors, said rod-like element having a smooth lower surface facing the conveyor floors and suspension means for the rod-like element and wherein according to the improvement said suspension means comprise for each rod-like element an articulated link connection allowing limited transitory and angular adaptation movements for said rod-like element and wherein said pressure mechanisms include a controlled pressure fluid operated piston-cylinder group acting on said rod-like element allowing said rod element to adapt itself under controlled pressure against the strips to be joined entrained by the conveyor floors, the apparatus further comprising alignment means arranged between said rod-like elements for aligning the strips to be joined in a direction perpendicular to the longitudinal extension of the conveyor floors and jointing material applying means.

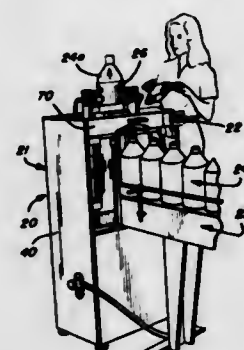
4,243,466

LABELING APPARATUS

Scott A. Lindee, Mokena, Ill., assignor to Sterling Manufacturing, Inc., Westmont, Ill.
Filed Jan. 29, 1979, Ser. No. 53,221
Int. Cl.³ B65C 9/40

U.S. Cl. 156—363

9 Claims



1. Apparatus for applying band labels to containers comprising: loading station means including a horizontal platform receptive of individual unlabeled containers, elevator means operable to elevate and lower said platform vertically between loading and labeling positions, clamp means mounted adjacent said platform for movement therewith and operable to hold individual containers in label receiving position on said platform, manually loaded label gripper means located remotely above said platform and operable to grip and hold a band label in stationary open condition substantially coaxially over a container on said platform, power actuated means for individually actuating said gripper means, clamp means and elevator means; control means for operating said power actuated means in predetermined sequence whereby to hold a label in open container receptive position above said platform, to elevate said platform and move an unlabeled container thereon upwardly through said open label, to open said gripper means and release said label to the exterior of said container as the latter moves upwardly therethrough, and to lower the labeled container to its original elevation at said loading station; power actuated conveyor means mounted adjacent said platform and having the upper run thereof in coplanar relation with said platform for receiving labeled containers discharged therefrom

in the lowered position of said elevator means, and periodically actuated stop gate means extending across said conveyor means for interrupting the movement of containers therealong; said stop gate means being positioned to locate an unlabeled container centrally of said platform when a previously labeled container is stopped against said gate means.

4,243,467

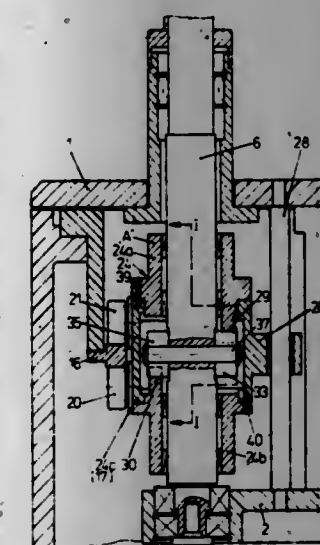
LABELING MACHINE, ESPECIALLY FOR BOTTLES

Rudolf Zedrow, Duesseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,464
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740656

Int. Cl.³ B65C 9/16; B65H 3/20
U.S. Cl. 156—568

4 Claims



1. In a labeling machine for bottles and the like, having a revolving carrier on which at least one pickup element having a convexly curved receiving surface is eccentrically journaled between the receiving surface and the center of curvature thereof, and having a drive for imparting an oscillatory movement to each pickup element for each revolution of the carrier, comprising a stationary cam fixedly mounted in the machine such that the carrier is rotatable with respect to the cam and a drive shaft for each pickup element, the improvement comprising: the stationary cam comprising a cylindrical cam track and means disposed around each drive shaft and axially movable thereabout for coupling the drive shaft for each pickup element with the cam track, each coupling means comprising a cam axially movable along the shaft including two opposite, parallel cam sections sloping axially along the periphery of the shaft, cam followers associated with the cam sections and connected to the drive shaft to be rotatable therewith, means for adjusting the distance between the two cam sections to eliminate any free play present between the two cam sections and the cam followers and a guide rod disposed parallel to the drive shaft and fixed to the carrier and along which the coupling means is axially slidable for preventing rotation of the coupling means around the shaft.

4,243,468

ROOFING MACHINE

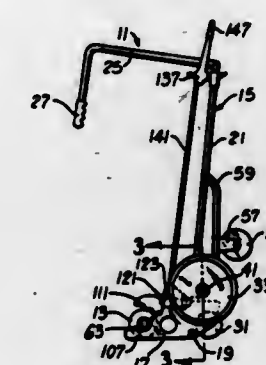
Walter K. Boyd, Riverside, Calif., assignor to Mechanization Systems Company, Laguna Hills, Calif.

Filed Jan. 7, 1979, Ser. No. 46,216
Int. Cl.³ B44C 7/00; B65N 75/38, 75/18, 17/02
U.S. Cl. 156—577

18 Claims

1. A machine for laying a roll of sheet material wherein the roll has a central opening, said machine comprising: a frame;

wheel means adapted to rollingly engage a supporting surface; means for mounting said wheel means on said frame for rotational movement about a first rotational axis whereby the machine can be rolled along the supporting surface; expandable roll mounting means insertable into the central opening of the roll of sheet material; means for radially expanding the roll mounting means into tight engagement with the roll;



first means for mounting said roll mounting means on said frame for rotation about a second rotational axis, said first and second rotational axes being parallel whereby the sheet material can be accurately unrolled from the roll as the machine moves along the supporting surface; and a wheel means including an elongated roller for pressing the sheet material unrolled from the roll into the supporting surface.

4,243,469

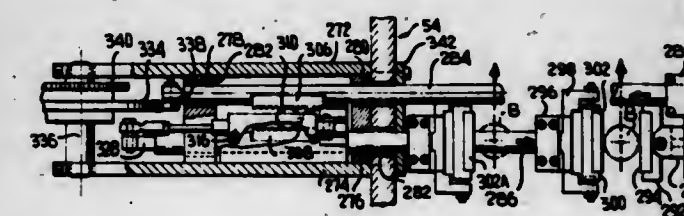
HEAT SEALER MECHANISM

Jack R. Evers, Torrance, and Michael I. Bauerkemper, Cerritos, both of Calif., assignors to Developak Corporation, Redondo Beach, Calif.

Filed Sep. 17, 1979, Ser. No. 76,448
Int. Cl.³ B30B 5/02

U.S. Cl. 156—583.1

10 Claims



1. A heat sealer for closing bags and the like, said heat sealer comprising a pair of parallel members, means mounting said parallel members for separate axial movement, said parallel members having spaced adjacent ends facing in the same direction, a first bracket carried by one of said parallel members and having a first heat sealing member thereon facing in the same direction as said parallel member ends, a second bracket carried by the other of said parallel members and having a second heat sealing member thereon facing in the opposite direction and opposing said first heat sealing member, coupling means coupling said parallel members together for movement in unison and in opposite directions, pressure means reacting on one of said parallel members urging said heat sealing members under a controlled force, mechanical means for reacting on the other of said parallel members to urge said heat sealing members apart against the resistance of said pressure means, and drive means for actuating said mechanical means.

4,243,470

DEVICE FOR THERMALLY APPLYING STICKERS OR MARKS TO ARTICLES

Shigehiko Higashiguchi, 4-2 Honjo 3-chome, Sumida-ku, Tokyo, Japan

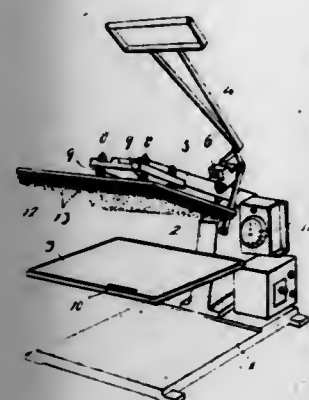
Filed Jul. 24, 1978, Ser. No. 927,123

Claims priority, application Japan, Nov. 11, 1977, 52-136168[U]

Int. Cl.³ B30B 5/02; D06F 71/40

U.S. Cl. 156—583.9

9 Claims



1. In a device for thermally applying a sticker or mark to an article, sticker application means having first and second platens with working faces relatively movable apart and together to apply heat and pressure to the sticker and article, at least one of the platens being heated, and the first platen having holding means on the working surface thereof to aid holding the article in place, characterized in that said holding means includes a plurality of needles extending toward said second platen on a majority of the area of the working surface of said first platen to engage the article.

4,243,471

METHOD FOR DIRECTIONAL SOLIDIFICATION OF SILICON

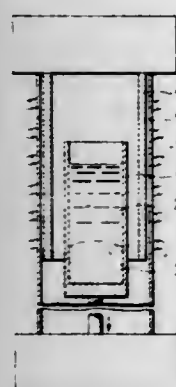
Theodore F. Cizek, Salt Point, and Guenter H. Schwuttke, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1978, Ser. No. 902,206

Int. Cl.³ C30B 11/02

U.S. Cl. 156—616 R

7 Claims



1. Method for growing silicon crystal comprising: providing molten silicon in a graphite container; said container having an average thermal expansion coefficient of between about 3.0 to $4.3 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ between 20° and 650°C ., density of about 1.8 grams per cubic centimeter and grain size of less than about 50 microns; and solidifying said molten silicon sequentially from the enclosed regions to the open region of said container to form crack-free silicon crystal.

4,243,472

METHOD FOR LIQUID PHASE EPITAXY MULTIPLE DIPPING OF WAFERS FOR BUBBLE FILM GROWTH

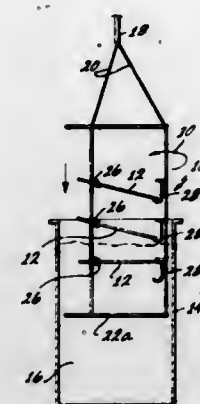
Charles F. O'Neill, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 2, 1979, Ser. No. 16,883

Int. Cl.³ C30B 19/04

U.S. Cl. 156—624

5 Claims



1. A batch process for growing films onto nonmagnetic substrates by liquid phase epitaxy comprising: supporting a plurality of substrates spaced apart from each other in a tilted position, above one another and above a flux material to be deposited on said substrate, lowering said spaced apart substrates into the flux material where said substrates assume a horizontal position as they enter said flux material, continually moving said substrates while in said flux in an up and down motion and oscillating motion.

4,243,473

METHOD FOR DETECTING CRYSTAL DEFECTS IN SEMICONDUCTOR SILICON AND DETECTING SOLUTION THEREFOR

Hisayoshi Yamaguchi, and Itsuo Kuroyanagi, both of Annaka, Japan, assignors to Shin-Etsu Handatai Co. Ltd., Tokyo, Japan

Filed Dec. 20, 1977, Ser. No. 862,490

Claims priority, application Japan, Dec. 27, 1976, 51/157741

Int. Cl.³ C30B 33/00; H01L 21/30, 21/306

U.S. Cl. 156—626

2 Claims

1. A method for detecting crystal defects in semi-conductor silicon comprising treating a preliminary mirror etched crystal of semi-conductor silicon for about 5 to 20 minutes with a detecting solution which is a mixture of about 50 percent hydrofluoric acid solution and concentrated nitric acid in a ratio of 1000 to 0.1–20 by volume added with an anionic surfactant, and thereafter, applying renewedly a mirror etching thereto.

4,243,474

PROCESS OF PRODUCING A PRINTED WIRING BOARD

Haruo Shirai; Yoshikatsu Tanaka, both of Kyoto; Zinzo Kosuga, and Kiyoshi Osaka, both of Hikone, all of Japan, assignors to Shin-Kobe, Electric Machinery Co., Ltd., Tokyo and Shirai Denshi Kogyo Co., Ltd., Kyoto, both of Japan

Filed Mar. 26, 1979, Ser. No. 23,883

Claims priority, application Japan, Mar. 28, 1978, 53-35689

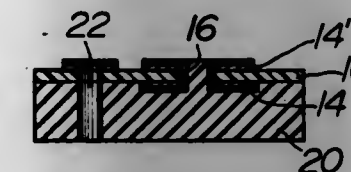
Int. Cl.³ B44C 1/22; C03C 15/00, 25/06; C23F 1/02

U.S. Cl. 156—630

10 Claims

1. A process of producing a printed wiring board having two electrically conductive circuit layers provided on an insulating laminate, said process comprising the steps of: preparing a first insulating layer having a metal foil provided on each side of said first insulating layer; forming a first electrically conductive circuit layer of pre-

terminated pattern by treating one of said metal foils by printing and etching; forming connecting through-holes in said first insulating layer for connecting said first electrically conductive circuit layer and the other metal foil to each other; providing an electrically conductive member in said connecting through-holes so as to connect said first electrically conductive circuit layer and said other metal foil;



attaching a second insulating layer by heat and pressure to said first insulating layer so as to cover said first electrically conductive circuit layer whereby said insulating laminate is formed; and thereafter forming a second electrically conductive circuit layer of predetermined pattern by treating said other metal foil by printing and etching.

4,243,475

METHOD FOR ETCHING APHOSPHORUS-NITROGEN-OXYGEN COATING
Pei-Ching Li, Hopewell Junction, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

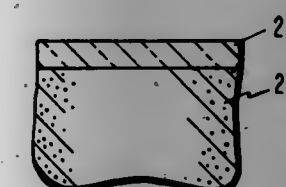
Division of Ser. No. 772,804, Feb. 28, 1977, Pat. No. 4,172,158.

This application May 25, 1979, Ser. No. 42,488

Int. Cl.³ B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 156—643

4 Claims



1. A method of etching an amorphous phosphorus-nitrogen-oxygen coating comprising application of concentrated H_2SO_4 at elevated temperatures through a suitable masking layer.

4. A method of etching an amorphous-phosphorus-nitrogen-oxygen coating comprising using reactive ion etching through a suitable masking layer.

4,243,476

MODIFICATION OF ETCH RATES BY SOLID MASKING MATERIALS

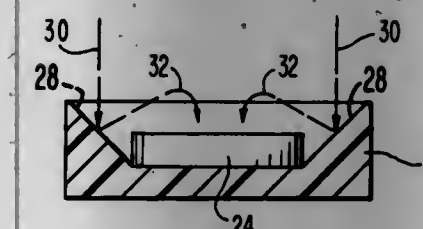
Kie Y. Ahn, Chappaqua, and Daniel E. Cox, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,488

Int. Cl.³ C23F 1/00

U.S. Cl. 156—643

7 Claims



1. A method for etching a sample of material using a reactive gas species, including the steps of: locating a sample within a chamber in the close proximity of

a non-metallic solid source which surrounds said sample and which is capable of releasing said reactive gas species when struck by an ion beam created externally from said chamber and accelerated into said chamber, wherein said sample and said solid source are struck by said ion beam, directly striking said sample and said solid source with said ion beam to release said reactive gas species from said solid source, said reactive gas species traveling to said sample, etching said sample of material with said released gas species, which chemically reacts with said sample to form volatile species that leave said sample, thereby causing etching of said sample.

4,243,477

DEVICE FOR AN INSTALLATION OF A QUARTZ TUBE IN A DEVICE FOR CONCENTRATION OF MINERAL ACIDS

Hans Broberg, and Lars Douren, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

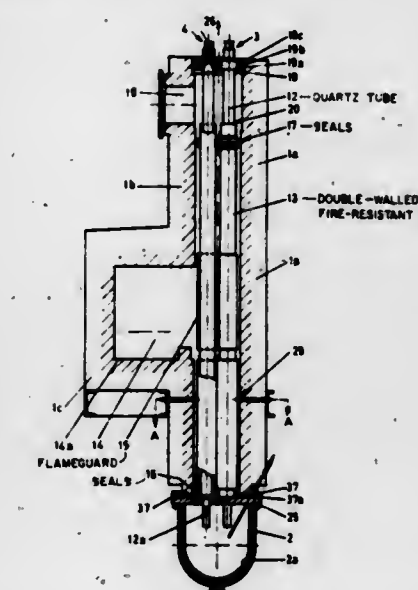
Filed May 21, 1979, Ser. No. 41,140

Claims priority, application Sweden, Jun. 21, 1978, 7807069

Int. Cl.³ B01D 1/22

U.S. Cl. 159—13 A

16 Claims



1. Apparatus for supporting an elongated evaporating tube in a system for purifying mineral acids, said apparatus comprising:

a double-walled tube unit having an outer flow channel for heating gases between its inner and outer walls, said evaporating tube being arranged within said tube unit and spaced therefrom to define an inner flow channel for heating gases between said evaporating tube and said inner wall;

means connecting said inner and outer flow channels in flow through relationship at the lower portion of said tube unit whereby flow of heating gases in said inner channel is opposite in direction to flow in said outer channel;

shoulder means extending from the lower end of said evaporating tube and having a spherical exterior contact surface;

seal means situated about said evaporating tube, against which said spherical contact surface seals;

a reduced diameter portion formed in the lower end of said evaporating tube below said spherical contact surface said portion extending through said seal means;

a collection vessel into which said reduced diameter portion extends; and

means for supporting said evaporating tube against radial movement near its upper end.

4,243,478

PROCESS FOR TREATING WASTE PAPER WITH HARDENED WATER

Lothar Pfalzer, and Siegfried Fischer, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

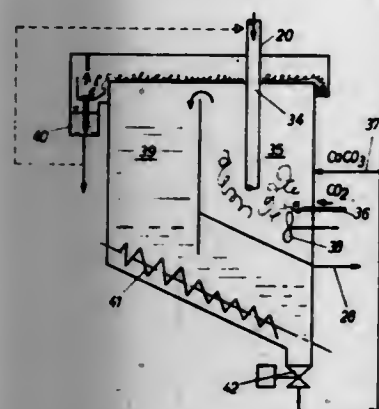
Filed Nov. 24, 1978, Ser. No. 963,321

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752413

Int. Cl.³ D21C 5/02

U.S. Cl. 162—4

5 Claims



1. A process for the treatment of waste paper, comprising the steps of:
 - mixing hardened water and other chemicals with paper to be dissolved;
 - treating the paper with the mixture of water and chemicals and then removing the treating water for recycling;
 - hardening the removed water by dissolving in the water calcium carbonate and carbon dioxide, thereby forming calcium bicarbonate;
 - mixing the hardened water again with other chemicals and paper to be dissolved, whereby recycled water is used in the mixing.

4,243,479

NOVEL STARCH ETHER DERIVATIVES, A METHOD FOR THE PREPARATION THEREOF AND THEIR USE IN PAPER

Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

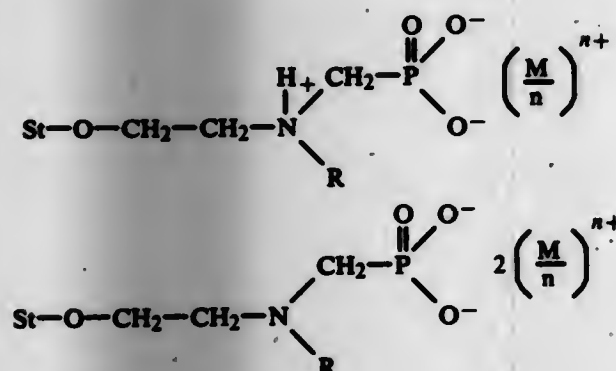
Filed Aug. 15, 1979, Ser. No. 66,526

Int. Cl.³ D21H 3/28

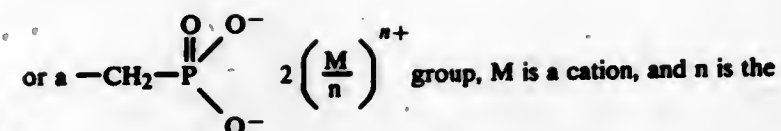
U.S. Cl. 162—175

4 Claims

1. A paper containing pigment and having dispersed therein as a pigment retention aid a starch ether derivative of the general structure



or a combination of (i) and (ii), wherein St—O represents a starch molecule, R is a C₁—C₆ alkyl group, a C₃—C₆ cycloalkyl group,



valence of M and wherein said paper is prepared from a paper-making stock containing from about 0.05 to 2.0% of said starch derivative by weight of dry pulp.

4,243,480

PROCESS FOR THE PRODUCTION OF PAPER CONTAINING STARCH FIBERS AND THE PAPER PRODUCED THEREBY

Henry R. Hernandez, Somerville; Donald S. Greif, Bound Brook; Albert N. Barna, Plainfield, all of N.J., and Douglas S. Thornton, Hinesdale, Mass., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 670,360, Mar. 25, 1976. This application Oct. 17, 1977, Ser. No. 842,543

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.³ D21H 5/12

U.S. Cl. 162—141

18 Claims

1. In a process for manufacturing paper and paperboard comprising the steps of introducing an aqueous slurry of a fibrous pulp material onto a screen in such a manner that the water is removed thereby forming a sheet of consolidated fibers which, upon pressing and drying, yields the final paper product, the improvement comprising the step of replacing from 1 to 100% by weight of said pulp material with water-insensitive starch fibers of 10 to 500 microns in diameter, said fibers being produced by extruding a thread-like stream of a colloidal dispersion containing starch at 5–40% by weight solids, wherein said starch is present in an amount more than 50% by weight of the fiber forming ingredient, into a moving coagulating bath comprising an aqueous solution of a coagulating salt selected from the group consisting of ammonium sulfate, ammonium sulfamate, mono-basic ammonium phosphate, di-basic ammonium phosphate and mixtures thereof, the solution containing the coagulating salt in an amount at least sufficient to coagulate the starch, said starch fibers further characterized in retaining fiber integrity when dispersed in an aqueous medium.

4,243,481

SIZING COMPOSITIONS

David H. Dumas, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 9, 1978, Ser. No. 932,103

Claims priority, application United Kingdom, Aug. 19, 1977, 34909 Aug. 23, 1977, 35285

Int. Cl.³ D21H 3/02, 3/48

U.S. Cl. 162—158

9 Claims

1. In the method of internally or externally sizing paper with a hydrophobic cellulose-reactive sizing agent selected from the group consisting of ketene dimers, acid anhydrides, and organic isocyanates wherein there is employed in combination therewith a sizing accelerator, the improvement wherein there is employed as the sizing accelerator a cationic polymer selected from the group consisting of (i) a cationic polymer obtained by reacting an epihalohydrin with (i) a condensate derived by the condensation of bis-aminopropylpiperazine and dicyandiamide in a mole ratio of bis-aminopropylpiperazine to dicyandiamide of from about 0.5:1 to 1:0.5 or (ii) a condensate derived by the condensation of bis-aminopropylpiperazine and cyanamide in a mole ratio of bis-aminopropylpiperazine to cyanamide of from about 0.5:2 to 1:1, the amount of epihalohydrin employed being from 0.3 mole to 2 moles for each mole of amine nitrogen present in the condensate and (2) a cationic polymer obtained by the condensation of bis-aminopropylpiperazine and an epihalohydrin in a mole ratio of bis-aminopropylpiperazine to epihalohydrin of 1:3 to 1:8, the amount of

sizing accelerator employed being an amount sufficient to increase the off-the-machine sizing properties of the sizing agent.

4,243,482

FORMING PAPER USING A CURVED FIN TO FACILITATE WEB TRANSFER

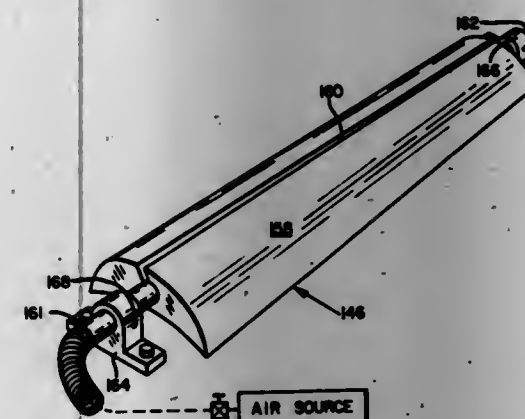
Erkki O. Seppanen, 11104 NE. 29th, Vancouver, Wash. 98665

Filed Nov. 27, 1978, Ser. No. 963,974

Int. Cl.³ D21F 1/36, 1/38, 2/00

U.S. Cl. 162—202

6 Claims



1. A process for facilitating the transfer of a continuous, wet, fibrous web from the outer surface of a foraminous conveyor having opposed inner and outer surfaces, said process comprising the steps of:
 - supporting a fin adjacent said inner surface of said conveyor at a position immediately upstream of a location where a continuous, wet fibrous web is to be transferred from the outer surface of said foraminous conveyor so that a surface of said fin gradually approaches said inner surface of said conveyor, said fin surface, in transverse cross-section being a smooth convex curve that diminishes in radius toward the downstream end of said fin;
 - extending said fin across the width of said conveyor; and
 - moving said conveyor for elevating gas pressure between said conveyor and said fin surface to urge said web off of said conveyor.

4,243,483

HEAD BOX FOR A PAPER MAKING MACHINE WITH A GUIDE SURFACE ADJUSTABLY TENSIONED

Christian Schiel, Heidenheim, and Heinrich Schmalstieg, Gengen, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

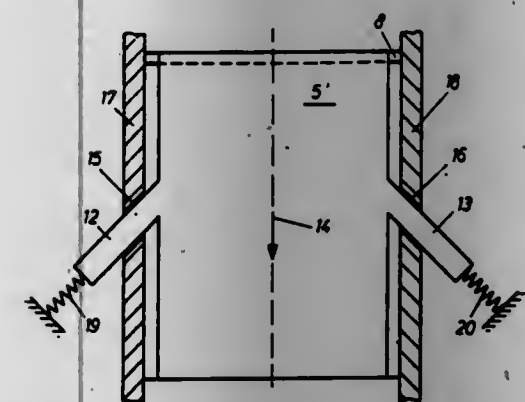
Filed Jun. 8, 1979, Ser. No. 46,663

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825612

Int. Cl.³ D21F 1/02

U.S. Cl. 162—343

20 Claims



1. A head box for spouting fiber suspension, for use in a paper making machine, or the like, said head box comprising: said head box being defined by spaced apart top and bottom

walls and by two opposite side walls; said head box having an outlet opening at one end thereof, which is surrounded and defined by said walls; a channel in and through said head box leading to said outlet opening;

a guide surface placed in said channel; said guide surface extending across said head box in the direction between said side walls; said guide surface being spaced away from the said top and bottom walls; said guide surface dividing said channel into two separate channels, with one of the two channels being at the side of the guide surface facing toward the top wall and with the other of the two channels being at the side of the guide surface facing toward the bottom wall; said guide surface having an upstream end, which is upstream in said head box with respect to the direction of flow through said head box; said upstream end of said guide surface being anchored in a fixed position to said side walls of said head box;

said guide surface having side edges; fastening means elastically fastening at least one said side edge in said head box; said fastening means being adjustably tensioned such that the pressure of flow, in a downstream direction, through said channel upon said guide surface in said head box is elastically resisted.

4,243,484

METHOD AND APPARATUS FOR USE TO EXCHANGE O-RING INTERPOSED BETWEEN IN-CORE HOUSING AND IN-CORE FLANGE IN NUCLEAR REACTOR

Tetsuki Tsuji, and Shigeru Watanabe, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

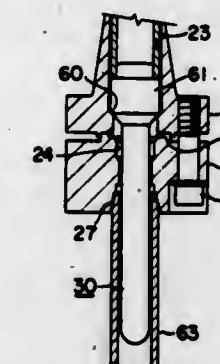
Filed Nov. 29, 1978, Ser. No. 964,667

Claims priority, application Japan, Dec. 5, 1977, 52/145893

Int. Cl.³ G21C 19/00

U.S. Cl. 176—30

5 Claims



1. In apparatus for use to exchange an O-ring interposed between an in-core housing disposed at the lower end of a guide tube for an in-core monitor used for monitoring the operation of a nuclear reactor and an in-core flange attached to said housing, said in-core monitor being suspended from an upper grid disposed in the reactor pressure vessel towards said flange through a lower grid and said guide tube attached to said lower grid, the improvement which comprises a drain system adapted to be connected to the lower end of said flange for draining reactor water, a split cylindrical guide member adapted to be suspended from said upper grid after said in-core monitor has been removed from said upper grid, an operating mechanism to be inserted into said guide member, and a tubular repairing tool secured to the lower portion of said operating mechanism to extend into said guide member therealong as said operating mechanism is lowered, said operating mechanism comprising a base plate, a guide rod attached to said base plate and engaged with said upper grid for positioning said operating mechanism, frame plates attached to the lower surface of said base plate and extending downwardly therefrom into said guide member, a stationary pawl attached to said frame plate, a movable pawl, and means secured to said frame plate for moving said movable pawl through a lever to be slidable on said stationary pawl, said movable pawl being provided with a

groove at its free end for securing the upper shank portion of said repairing tool.

4,243,485

RECIRCULATING DRAINAGE CHANNEL FOR THE SAFETY CIRCUITS OF A NUCLEAR REACTOR

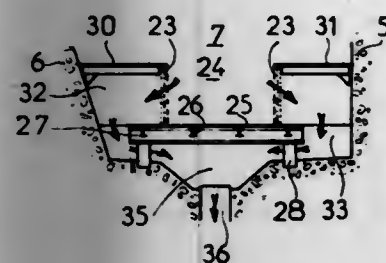
Michel Chablin, Paris, France, assignor to Societe Franco-Americaine de Constructions Atomiques-Framatome, Paris, France

Filed Mar. 10, 1978, Ser. No. 886,915

Int. Cl.³ G21C 19/20

U.S. Cl. 176—37

2 Claims



1. A recirculating drainage channel for collecting fluid for recirculation in the safety injection and spray circuit of a nuclear reactor, said channel being located in an annular gap between substantially vertical walls, wherein said fluid flows in a horizontal direction, said channel comprising:

- a central horizontal solid lower panel arranged at the bottom of said gap;
- a pair of lateral horizontal solid upper panels supported by the sides of the annular gap and arranged laterally of and above said central panel, said upper and lower horizontal panels being parallel to the direction of flow of the fluid;
- a plurality of adjacent filter panels extending vertically between said lateral upper panels and said central lower panel to define with said central lower panel a central chamber having vertical lateral filter walls,
- whereby said vertical walls, said upper horizontal panels said filter panels and the bottom of said gap define a pair of lateral chambers on opposite sides of said central channel each communicating with said central channel through respective filter walls;
- means defining a central collecting chamber beneath said central lower panel;
- substantially horizontal passage means communicating with a respective one of said lateral chambers and said central collecting chamber; and
- outlet means for said central collecting chamber and for connection to said safety circuit; and wherein said lateral filter walls approach each other so that the cross section of said central channel decreases in the direction of the flow of fluid therealong.

4,243,486

METHOD OF MOUNTING FILTER ELEMENTS AND MOUNTING THEREFOR

Gerhard M. Neumann, and Jochen Karel, both of Berlin, Fed. Rep. of Germany, assignors to Delbag-Luftfilter GmbH, Berlin, Fed. Rep. of Germany

Division of Ser. No. 725,006, Sep. 20, 1976, Pat. No. 4,193,844.

This application Sep. 29, 1977, Ser. No. 837,810

Int. Cl.³ G21C 19/20

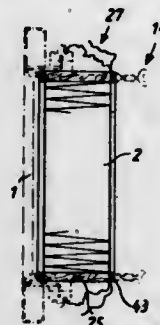
U.S. Cl. 176—37

1 Claim

1. Process for the insertion and exchange of filter elements for suspended matter for nuclear installations, where the filter elements having side walls are tightly enclosed in a frame by tightening devices, which can be swung down, which frame consists of frame parts, which are made of angle iron and which frame parts are tightly connected in rows next to each other and one above each other, and which frame is located in an opening in the brick wall, characterized by the fact, that the

insertion and the exchange of the filter elements for suspended matter is performed from the clean air side, that during the insertion of the filter element a tube of plastic material, which encircles the circumference of the filter element, and which tube exceeds many times in its length the layer thickness of the filter element, is at its middle section tightly connected with the side walls, which form the border of the filter element, and then the open tube end which faces the frame is by squeezing tightly connected with a ring which surrounds the opening of the frame, the ring having first and second circumferential grooves spaced one behind the other when viewed in the direction of flow which frame serves to receive the filter element comprising the steps of:

- swinging the tightening devices away from the filter;
- pulling the outer free end of the tube over the filter;



- heat sealing the outer free end of the tube;
- loosening and pulling the filter away from the frame;
- heat sealing the tube between the filter element and the frame;
- installing a new filter element and tube by squeezing the new tube to the first groove overlapping a remaining portion of the old tube, in the second groove the middle portion of the new tube squeezed to the new filter element;
- releasing the remaining portions of the old tube from the second groove and pulling the remaining portion into the new tube;
- connecting the new filter tightly to the frame using the tightening device;
- releasing the new tube from the first groove and reinstalling the new tube in the second groove.

4,243,487

GAS-COOLED HIGH TEMPERATURE NUCLEAR REACTORS

Fritz Schweiger, Hagen, Fed. Rep. of Germany, assignor to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europäisches Unternehmen, Hamm-Uentrop, Fed. Rep. of Germany

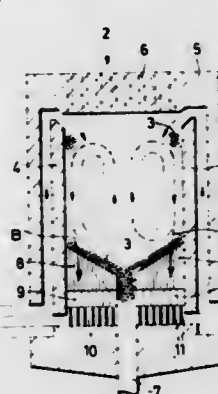
Filed Apr. 25, 1978, Ser. No. 899,970

Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719613

Int. Cl.² G21C 9/00

U.S. Cl. 176—38

15 Claims



1. In a gas-cooled, graphite-moderated high temperature nuclear reactor comprising a pressure vessel, a reactor core comprising fuel elements in said pressure vessel, graphite com-

ponents in said pressure vessel, and a primary coolant gas circuit including a steam generator and coolant gas blowers, the improvement wherein said steam generator is disposed outside said pressure vessel and said steam generator includes a heat exchanger and means mounting said heat exchanger with at least a portion of said heat exchanger located at a level above the level of said reactor core, said primary coolant gas circuit including flow passage means for conveying the primary coolant gas between the reactor core and the heat exchanger, said flow passage means including a first flow passage located below the lower end of said reactor and below the lower end of said heat exchanger for conveying the hot coolant gases from the lower end of said reactor core to the lower end of said heat exchanger, an upwardly extending second flow passage connected at the lower end thereof to said first flow passage and containing at least a portion of said heat exchanger for conducting the hot coolant gases from said reactor core upwardly over said heat exchanger to the upper end of the passage located above the top of the reactor core with the upper end of the heat exchanger in said second flow passage located above the upper end of the reactor core, an upwardly arranged third flow passage for receiving the coolant gas after its passage through said second flow passage for conveying the coolant gas downwardly to a location below said heat exchanger and below the lower end of said core, and a fourth flow passageway for conveying the coolant gas to below the lower end of said reactor core; and a fifth flow passage located around said reactor core and connected at its lower end to said fourth flow passage for conveying the coolant gas upwardly to a location above said reactor core and for introducing the coolant gas into the reactor core for downward flow therethrough, said flow passage means arranged to generate a natural convection flow from said reactor core to said heat exchanger and back to said reactor core and for avoiding the reversal of flow direction and ensuring a sufficient cooling gas flow after reactor core shutdown or failure of the blowers.

4,243,488

COKE COMPOSITIONS AND PROCESS FOR MANUFACTURING SAME

Hidehiko Sugimura, and Ketschiro Koba, both of Tokyo, Japan, assignors to Mitsui Coke Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 670,959, Mar. 26, 1976, abandoned.

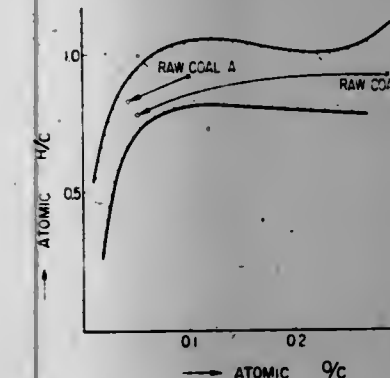
This application Jul. 17, 1978, Ser. No. 925,327

Claims priority, application Japan, May 21, 1975, 50/59767

Int. Cl.² C10B 53/04, 53/08; C10G 1/04

U.S. Cl. 201—6

15 Claims



1. A process for manufacturing a high-strength metallurgical coke, having a drum index (DI₁₅³⁰) of at least 92, comprising the steps of:

- (a) dissolving at least one first coal component selected from the group consisting of bituminous coal, sub-bituminous coal, brown coal and lignite in a hydrocarbon solvent under hydrogenation conditions sufficient to depolymerize coal to produce a solution;
- (b) distilling said solution and recovering a reformed coal as a distillation bottoms product;
- (c) blending said reformed coal with a second coal compo-

nent, which is a coal composition, comprising at least one high rank coal and which itself, upon carbonization, yields a high-strength metallurgical coke, having a drum index (DI₁₅³⁰) of at least 92; and

(d) subjecting said blended coal to coking conditions at a temperature sufficient to produce high-strength coke.

4,243,489

PYROLYSIS REACTOR AND FLUIDIZED BED COMBUSTION CHAMBER

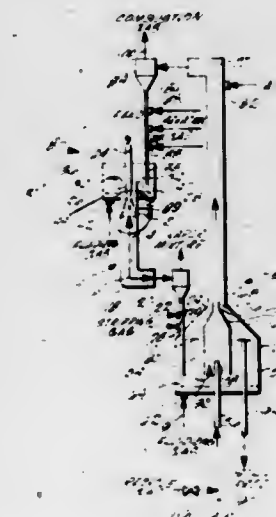
Norman W. Green, Upland, Calif., assignor to Occidental Petroleum Corp., Los Angeles, Calif.

Continuation of Ser. No. 848,132, Nov. 3, 1977, abandoned, which is a continuation of Ser. No. 699,999, Jun. 25, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 960,028

Int. Cl.² C10B 1/00; C10G 1/00; C10B 49/16

U.S. Cl. 201—12

60 Claims



43. In a process for pyrolysis of particulate solid carbonaceous materials in which a particulate solid carbonaceous material is pyrolyzed by heat transferred thereto by a particulate source of heat to yield a particulate carbon containing solid residue as a product of pyrolysis and in which the particulate source of heat is formed by oxidizing at least a portion of the particulate carbon containing solid residue, the improvement which comprises forming the particulate source of heat by the steps of:

- (a) transporting at least a portion of the particulate carbon containing solid residue formed by pyrolysis of the particulate solid carbonaceous material to a fluidized bed around a substantially vertically oriented, open conduit in open communication with a substantially vertically oriented riser, the conduit and riser comprising a first combustion zone;
- (b) educting particulate carbon containing solid residue upward from the fluidized bed directly into the first combustion zone by injecting a transport gas upwardly into the conduit to transport particulate carbon containing solid residue to a second combustion zone; and
- (c) generating the particulate source of heat by combustion of the particulate carbon containing solid residue in a combustion zone in the presence of oxygen.

4,243,490

RADIAL CUTTER TYPE CLEANING APPARATUS FOR COKE OVEN DOOR BOTTOM SURFACE

Akira Tsuzuki, Yokohama, and Atsushi Miura, Chiba, both of Japan, assignors to Koritsu Kikai Kogyo Company Limited, Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,458

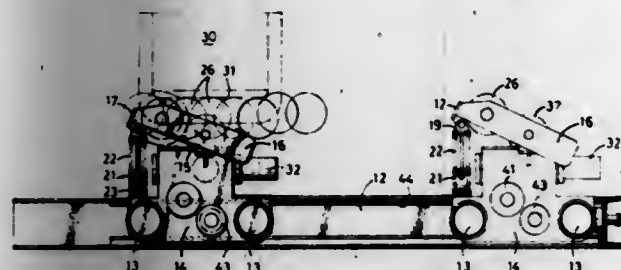
Int. Cl.³ C10B 43/04

U.S. Cl. 202—241

6 Claims

1. A door bottom surface cleaning apparatus comprising in combination:

a pair of parallel horizontal members;
 a carriage actuable along said horizontal members and having front and rear portions;
 a pair of rigid supporting plates having first and second ends, said plates linked at said first ends by a connecting plate and mounted at locations spaced from said first ends to the rear portion of the carriage for pivotal movement about a first axis transverse to the direction of carriage travel;
 a radial cutter device mounted to the supporting plates adjacent said first ends for rotation about a second axis parallel to said first axis, said radial cutter device being



cylindrical and having thereon several cutting blades extending radially therefrom and aligned parallel to said second axis;
 a pair of axially compressible coil spring devices having upper and lower ends, said devices pivotally mounted at said lower ends to the front portion of the carriage and at said upper ends to the first ends of the supporting plates, yieldingly urging the radial cutter device upwardly relative to the carriage; and
 drive means for rotating the radial cutter device and moving the carriage along said horizontal members.

4,243,491

CONTINUOUS METHOD FOR DETERMINING RESIDUAL VINYL CHLORIDE CONTENT IN A BOILING AQUEOUS POLYMER DISPERSION

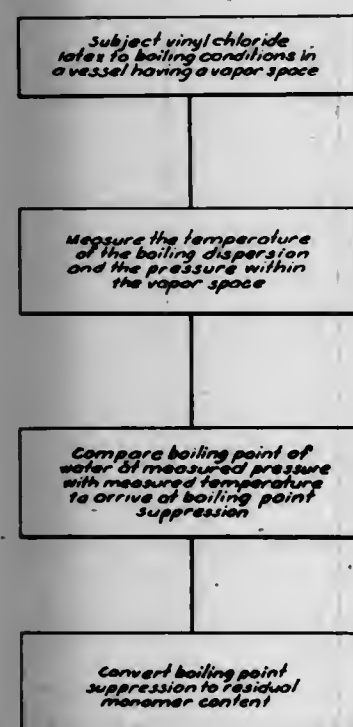
Engene R. Moore, and John S. Kowalczyk, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 11, 1978, Ser. No. 923,593

Int. Cl.³ B01D 3/42; C08F 6/10

U.S. Cl. 203—2

3 Claims



1. In a process for removing residual vinyl chloride monomer from an aqueous dispersion of a synthetic polymer prepared from vinyl chloride and, optionally, an ethylenically unsaturated comonomer having a boiling point greater than vinyl chloride, wherein the dispersion is subjected to boiling conditions while being maintained in a vessel having a vapor

space above the liquid level of the dispersion, the improvement consisting of continuously monitoring the content of vinyl chloride monomer in the dispersion by the steps comprising:

- (a) measuring the temperature of the boiling dispersion;
- (b) measuring the pressure of the vapor above the boiling dispersion; and
- (c) comparing the boiling point of water at the pressure measured in step (b) with the temperature measured in step (a) to ascertain the boiling point suppression of the dispersion.

4,243,492

PROCESS FOR PURIFYING CRUDE OLEFIN OXIDES

Toshio Yamamura, Yoshiro Osawa, Isao Ouchi, Nobuteru Oda; Mitsuyoshi Yamazaki, and Yukio Nishiyama, all of Yokohama, Japan, assignors to Showa Denko K.K., Japan
 Filed Nov. 8, 1977, Ser. No. 849,535

Claims priority, application Japan, Nov. 15, 1976, 51/136338

Int. Cl.³ B01D 3/34; C07D 301/32

U.S. Cl. 203—8

7 Claims

1. In a process for purifying a crude olefin oxide containing high-boiling ingredients by ordinary fractional distillation, the improvement which consists essentially of distilling the crude olefin oxide in the presence of an additive selected from the group consisting of NaCl and Na₂SO₄, said additive being added in an amount sufficient to maintain the pH of the liquid phase in the distillation system at 4 to 6.8, and separating the olefin oxide from the high-boiling ingredients.

4,243,493

PROCESS FOR TRANSPORTATION AND DISTILLATION OF PETROLEUM WITH METHANOL

Kurt Gruber, Monchen-Gladbach; Willi Keim, Aachen-Walheim, and Klaus Hentschel, Hanau-Gross Anheim, all of Fed. Rep. of Germany, assignors to Mannesmannröhren-Werke A.G., Düsseldorf, Fed. Rep. of Germany

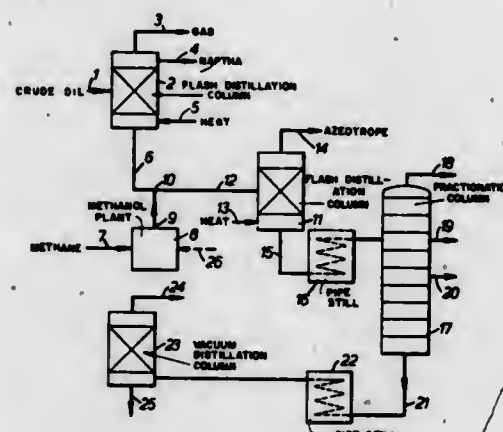
Continuation of Ser. No. 645,305, Dec. 29, 1975, abandoned.

This application Feb. 3, 1978, Ser. No. 874,760

Int. Cl.³ B01D 3/36; C10G 7/00; F17D 1/16

U.S. Cl. 203—66

6 Claims



1. In a process for the production of petroleum products which includes the steps of recovering crude petroleum from an oil well, transporting recovered crude petroleum to a refinery location remote from the oil well, refining crude petroleum at the refinery location, and recovering a petroleum distillate fraction having utility as a motor fuel, and wherein a difficult to transport fossil fuel selected from natural gas, coal and a difficult to transport crude petroleum is available in the vicinity of the oil well, the improvement comprising converting said difficult to transport fossil fuel to methanol, admixing the resulting methanol with recovered crude petroleum in an amount to form a stable, pumpable emulsion consisting essentially of only methanol and crude petroleum, transporting the recovered crude petroleum to the remote refinery location in the form of said stable, pumpable, methanol-crude petroleum

emulsion, breaking the emulsion at the refinery location by distillation, and recovering from the distillation step a methanol-hydrocarbon azeotrope fraction having utility as a motor fuel, having a boiling point of about 63° C., and containing in addition to methanol at least 50% by weight of hydrocarbons boiling in the range of from about 70° C. to about 120° C.

4,243,494

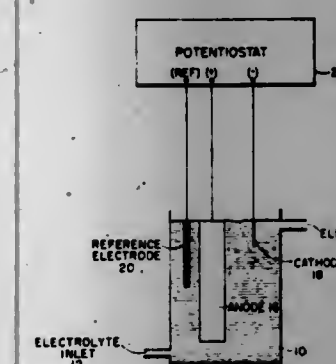
PROCESS FOR OXIDIZING A METAL OF VARIABLE VALENCE BY CONTROLLED POTENTIAL ELECTROLYSIS

Olen L. Riggs, Jr., Bethany, and Dennis A. Brunsell, Oklahoma City, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Apr. 19, 1979, Ser. No. 31,319

Int. Cl.³ C25C 1/22

U.S. Cl. 204—1.5



1. A process for changing the valence of a metal of variable valence state in a solution to a higher valence state which comprises:

providing an electrolytic cell containing an electrolyte comprising the solution containing the metal of variable valence and having an anode and a cathode positioned therein, said anode and cathode having an anode surface area to cathode surface area ratio of at least about 100:1 exposed to said electrolyte in said cell, said cell having no separate anode and cathode compartments within said cell;

providing a reference electrode in ionic contact with said electrolyte in said electrolytic cell; and
 electrolyzing said electrolyte within said electrolytic cell by potentiostatic means wherein the electrochemical potential measured between the anode and the reference electrode is maintained in a preselected potential range to change the valence of the metal of variable valence state to a higher valence state.

4,243,495

CONTINUOUS ELECTROFORMING OF METAL SHEETS WITH LINES OF WEAKNESS FOR BENDING AND/OR BREAK OUT PORTIONS

William A. Trott, 350 Waverley St., Winnipeg, Manitoba, Canada (R3M 3L3)

Filed Aug. 6, 1979, Ser. No. 63,948

Claims priority, application Australia, Aug. 18, 1978, PD5549

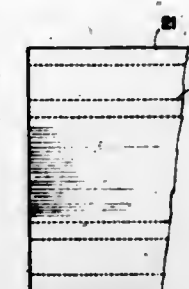
Int. Cl.³ C25D 1/04, 1/08; B23B 25/06; B23P 17/00

U.S. Cl. 204—11

7 Claims

1. An electroformed flat sheet of metal having at least one line of weakness formed therethrough during the electroforming thereof, said line of weakness comprising a plurality of

apertures formed through said sheet and constituting the removal of between 50% and 90% of the metal along the line of



weakness, said apertures being in the same plane as the sheet and flush with both surfaces thereof.

4,243,496

PROCESS FOR THE FORMATION OF PROTECTING COATINGS ON ZINC SURFACES

Robert H. Rosset, Paris, and Alain P. Jardy, Montrouge, both of France, assignors to Chaffoteaux et Maury, Montrouge, France

Filed May 18, 1979, Ser. No. 40,454

Claims priority, application France, May 19, 1978, 78 14950

Int. Cl.³ C25D 11/36

U.S. Cl. 204—56 R

15 Claims

1. A process for forming on a zinc surface a coating formed from zinc pyrophosphate, wherein the articles whose zinc surfaces are to be coated, are placed in contact with an electrolyte consisting essentially of pyrophosphate ions or phosphate ions capable of giving pyrophosphates, and are subjected to electrolytic surface oxidation of the zinc thereby causing precipitation of the zinc pyrophosphate.

4,243,497

PROCESS FOR THE ELECTROLYTIC PRODUCTION OF HYDROGEN IN AN ALKALINE

Edgard Nicolas, and Louis Bourgeois, both of Brussels, Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Aug. 22, 1979, Ser. No. 68,521

Claims priority, application France, Aug. 24, 1978, 78 24757

Int. Cl.³ C25B 1/04, 1/34, 11/04

U.S. Cl. 204—98

9 Claims

1. Process for the electrolytic production of hydrogen in an alkaline medium, in which process hydrogen is liberated in the gaseous form at the active surface of a cathode, characterized in that the cathode employed has an active surface which essentially consists of oxide compounds of the spinel type.

4,243,498

NICKEL ELECTROWINNING USING REDUCED NICKEL OXIDE AS A FLUIDIZED CATHODE

William G. Sherwood, Golden; Donald R. Hodges, Denver, both of Colo., and Cvetko Nikolic, Harvey, La., assignors to Amax Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 12,778, Feb. 16, 1979. This

application Feb. 16, 1979, Ser. No. 12,777

Int. Cl.³ C25C 1/08

U.S. Cl. 204—112

21 Claims

1. A process for extracting nickel from electrolytes in a fluid bed electrolysis cell which comprises:

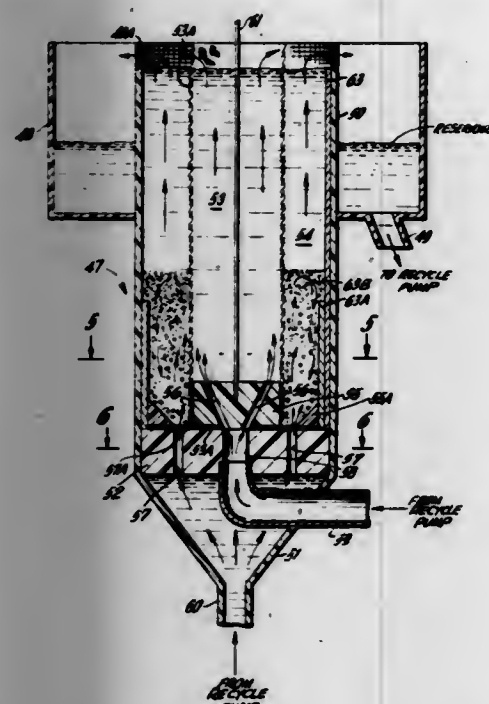
establishing said nickel electrolyte bath in a fluid bed electrolysis cell comprising:

an anode disposed axially in said cell within an anode chamber surrounded by a porous diaphragm,

a cathode surrounding the porous diaphragm of said anode chamber, said cathode defining an annular cathode chamber relative to said porous diaphragm and

containing a fluidizable cathode bed of nickel pellets of at least about 95% purity ranging in size from about 150

microns to 2000 microns isolated from said anode chamber, maintaining a flow of said electrolyte through said cell by passing said electrolyte axially through said cell beneath said fluidizable cathode bed of nickel pellets at a rate to maintain said cathode bed in a substantially uniform fluidized electro-chemically active cathodic state at an expanded bed volume ranging from about 5% to 20% greater than its static volume, said electrolyte also passing through said anode chamber via said porous diaphragm, electrolytically activating said cell at a current density ranging from about 0.5 to 25 amps/sq. meter to effect deposition of nickel from said solution onto the surface of said nickel pellets during which gas bubbles are formed by electrolysis, causing said flow of electrolyte leaving said cell to collect in a reservoir to permit disengagement and removal of said gas bubbles from said electrolyte, recycling said electrolyte from said reservoir to said cell and through said anode and cathode chambers, and continuing said electrolysis for a time sufficient to remove the nickel from said solution and provide a substantially high purity particulate nickel product containing at least about 95% nickel.

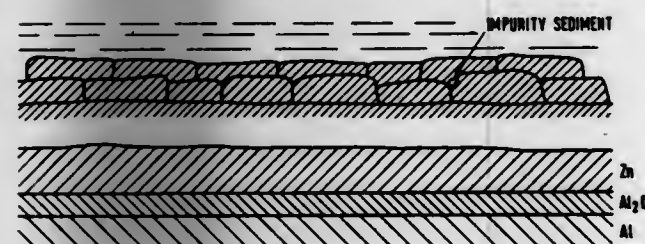


4,243,499 PROCESS FOR ELECTROLYTIC RECOVERY OF ZINC FROM ZINC SULFATE SOLUTIONS

Seppo O. Heimala, Pori, Finland, assignor to Outokumpu Oy, Helsinki, Finland

Filed Dec. 20, 1979, Ser. No. 105,557
Claims priority, application Finland, Dec. 22, 1978, 783984
Int. Cl.³ C25C 1/16

U.S. Cl. 204—119
Zn—ELECTROLYSIS FROM A Cu—Zn—CONTAINING SOLUTION



1. A process for electrolytic recovery of zinc from zinc sulfate solutions according to the electrowinning principle, using an aluminum cathode comprising using a zinc sulfate

solution which is devoid of any organic substance and to which cobalt, nickel or both has been added, but at such a rate that the solution contains nickel less than 2 mg/l and cobalt less than 5 mg/l.

4,243,500 PRESSURE SENSITIVE ADHESIVES

Alfred E. Glennon, Anaheim, Calif., assignor to International Coatings, Co., Inc., Compton, Calif.

Continuation-in-part of Ser. No. 873,869, Jan. 31, 1978, abandoned. This application Dec. 4, 1978, Ser. No. 965,800
Int. Cl.³ C08F 2/50; C08L 53/02

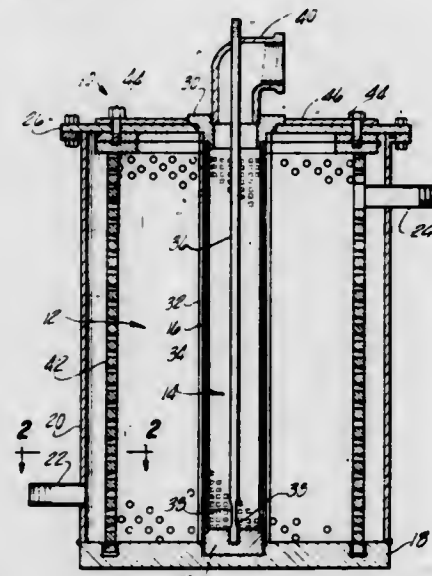
U.S. Cl. 204—159.12 41 Claims
1. A composition for forming a pressure sensitive adhesive, comprising by weight:
about 100 parts monofunctional unsaturated acrylate ester monomer;
between about 50 and 250 parts essentially saturated thermoplastic tackifying resin polymer dissolved in said acrylate ester monomer;
between about 4 and 150 parts non-crystallizing elastomeric block copolymer dissolved in said acrylate ester monomer; and
initiator responsive to radiation to induce copolymerization of the acrylate ester monomer and the non-crystallizing elastomeric block copolymer.

4,243,501 PROCESS AND APPARATUS FOR THE REGENERATION OF CHROMIC ACID BATHS

Leslie S. Wright, Jr., Greenfield, Ind., assignor to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

Filed Mar. 30, 1979, Ser. No. 25,381
Int. Cl.³ B01D 13/02; C02C 5/12

U.S. Cl. 204—180 P 12 Claims



1. In an electrochemical process of treating baths containing trivalent chromium, to convert such trivalent chromium to hexavalent chromium in which a bath containing trivalent chromium is circulated in the anode compartment of an electrolysis cell, is in contact with an anode, and is separated from a cathode compartment having a cathode therein by a cation permeable membrane, the improvement comprising an aqueous catholyte mixture in contact with the cathode and consisting essentially of a mildly acidic and water soluble inorganic salt and electrically energizing the cell with a sufficient potential difference between the anode and the cathode such that any dissolved foreign metal ions in the used chromic bath will move through the membrane and into the catholyte mixture and trivalent chromium in the chromium bath is reoxidized into hexavalent chromium.

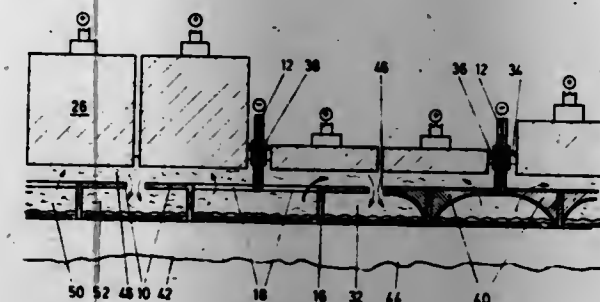
4,243,502 CATHODE FOR A REDUCTION POT FOR THE ELECTROLYSIS OF A MOLTEN CHARGE

Tibor Kugler, Thayngen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 11, 1979, Ser. No. 47,017
Claims priority, application Switzerland, Apr. 7, 1978, 7258/78

Int. Cl.³ C25C 3/08, 3/16, 7/02

U.S. Cl. 204—243 R 26 Claims



13. An electrolytic cell for the electrolysis of a molten electrolyte having anode and cathode elements and an electrolyte, in particular for the production of aluminum, said cell having exchangeable cathode elements each having at least one component thereof for the supply of electrical power connected to an active surface thereof which in turn is connected to a supporting plate thereof, wherein the cathode elements are connected electrically via said supporting plate by molten metal separated out in the electrolytic process, wherein at least some of the cathode elements have at least one recess or opening through which electrolyte can flow.

4,243,503 METHOD AND ELECTRODE WITH ADMIXED FILLERS

Donald F. Lieb, and Mary R. Suchanski, both of Mentor, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 29, 1978, Ser. No. 937,724
Int. Cl.³ C25B 11/16, 11/06, 1/36

U.S. Cl. 204—290 F 5 Claims

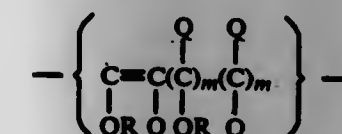
1. An electrode for use in an electrolytic cell comprising: a valve metal substrate selected from the group consisting of aluminum, molybdenum, niobium, tantalum, titanium, tungsten, zirconium, and alloys thereof having on the surface of at least a portion of said valve metal substrate, an electrocatalytically active coating selected from the group consisting of oxides of manganese, iron, cobalt, and nickel having incorporated therein electrically conducting particles selected from the group consisting of tin and antimony oxides, titanium oxides, manganese oxide and valve metals.

4,243,504 FLUOROVINYL ETHER POLYMERS

James C. Fang, Media, Pa., and Carl G. Krespan, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 2, 1979, Ser. No. 54,240
Int. Cl.³ C25B 13/08; C07C 43/12

U.S. Cl. 204—296 30 Claims
1. A fluorovinyl ether polymer consisting essentially of 60 to 99.9 mole percent of monomeric units —CF₂CFY— and 0.1 to 40 mole percent of the structural units



wherein

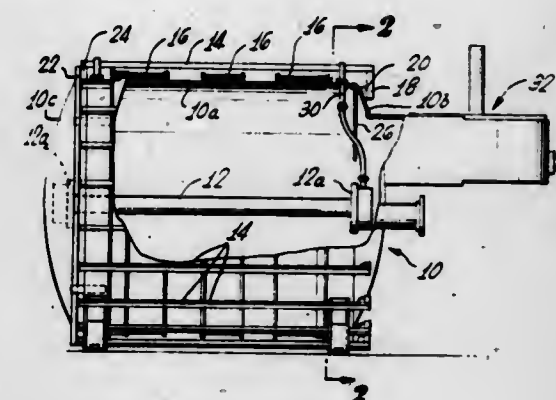
each Y independently is F, H, Cl, Br, R₁ or OR₁ in which R₁ is a perfluoroalkyl of 1-3 carbon atoms, R is an alkyl of 1-8 carbon atoms, each Q independently is F or OR, and m is 0 or 1, and having a number average molecular weight in the range of 1,000 to 1,000,000.

4,243,505 MAGNETIC FIELD GENERATOR FOR USE IN SPUTTERING APPARATUS

Alan S. Penfold, Playa del Rey, Calif., assignor to Telic Corporation, Santa Monica, Calif.

Filed Jun. 18, 1979, Ser. No. 49,455
Int. Cl.³ C23C 15/00

U.S. Cl. 204—298 7 Claims



1. Magnetic field generation apparatus for use in a magnetron sputtering system, said apparatus comprising:
a vacuum chamber having a generally cylindrical wall of non-magnetic material and end walls of magnetic material;
a post cathode disposed in said vacuum chamber and aligned with the longitudinal axis thereof;
a plurality of bars of magnetic material oriented in parallel relationship with the longitudinal axis of said vacuum chamber and arranged in a generally cylindrical pattern outside said cylindrical wall;
means for connecting corresponding ends of said bars to said end walls; and
solenoid means disposed between said cylindrical wall and said bars, to provide a magnetomotive force in a magnetic circuit that includes said bars, said end walls, and said post cathode, whereby a substantially uniform magnetic field is generated in the vicinity of said post cathode, and said solenoid means can be cooled by convection.

4,243,506 PLASMA-ETCHING APPARATUS

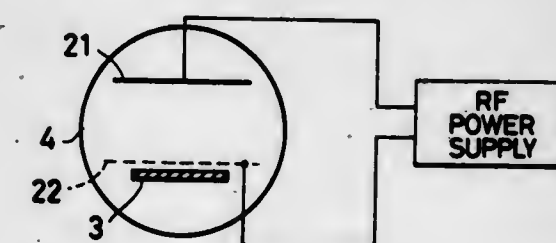
Kiyoji Ikeda, Hachioji, and Tetsuya Hayashida, Hinodemachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 23, 1979, Ser. No. 69,058

Claims priority, application Japan, Aug. 28, 1978, 53-103942

Int. Cl.³ B01K 1/00

U.S. Cl. 204—298 10 Claims



1. In a plasma-etching apparatus comprising a reaction tube, first and second electrodes disposed in said reaction tube, a radio-frequency power source electrically connected to said first and second electrodes and support means in the reaction

tube for supporting a work piece while it is etched by plasma generated by applying radio-frequency power across said first and second electrodes, the improvement wherein said first and second electrodes consist of a metallic plate and a mesh electrode, respectively, arranged substantially in parallel and in opposition to each other, and said support means for said work piece is placed outside the space between said mesh electrode and said metallic plate, adjacent said mesh electrode and spaced therefrom.

4,243,507

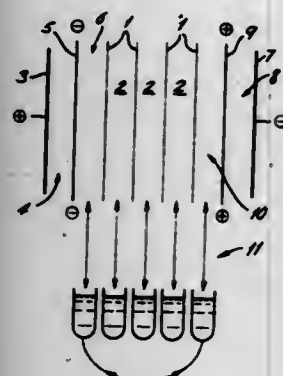
MEMBRANE ELECTROPHORESIS

Archer J. P. Martin, Elstree, and Frank Hampson, Lewes, both of England, assignors to National Research Development Corporation, England

Filed Feb. 15, 1979, Ser. No. 12,445
Int. Cl.³ G01N 27/40, 27/26

U.S. Cl. 204—301

17 Claims



1. An electrophoresis membrane for use in electrophoresis according to the method of isoelectric focusing in which substances are transported into and out of the membrane across the thickness thereof, said membrane having attached to it acidic and basic groups in such relative amounts as to confer on the membrane a buffering capacity at a specific pH or over a specific narrow pH range at or in which the membrane is isoelectric whereby the tendency for electroendosmosis to occur during electrophoresis is reduced.

4,243,508

ELECTROCHEMICAL APPARATUS

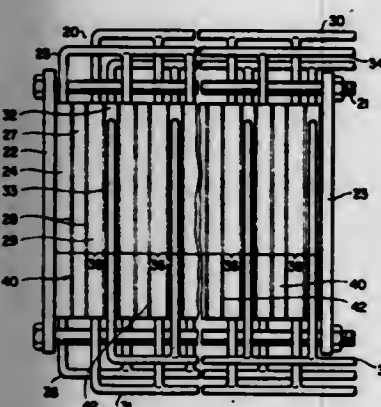
Joseph P. Dankese, 17 Arcadia St., Dorchester, Mass. 02122

Filed Apr. 26, 1979, Ser. No. 33,394

Int. Cl.³ B01D 13/02; C25B 13/04, 1/26

U.S. Cl. 204—301

18 Claims



1. In electrochemical apparatus of the type comprising a stack of ion-exchange-moderated cells, the improvement wherein said ion-exchange members are formed of at least two polymeric components, a first component forming a chemically-resistant matrix structure comprising ion exchange functionality, the second component being a solid polymer material infused into said matrix formed by said first component in conjunction with solvent-etching of material from the matrix structure said membranes forming means compared to mem-

branes of untreated matrix material, to substantially improve the performance of said stack by providing means to simultaneously decrease electroresistivity properties through the membranes in said stack while reducing permeability characteristics of said membranes to fluid.

4,243,509

COAL HYDROGENATION

Jerry E. Sisor, Longmont, Colo., assignor to Rockwell International Corporation, El Segundo, Calif.

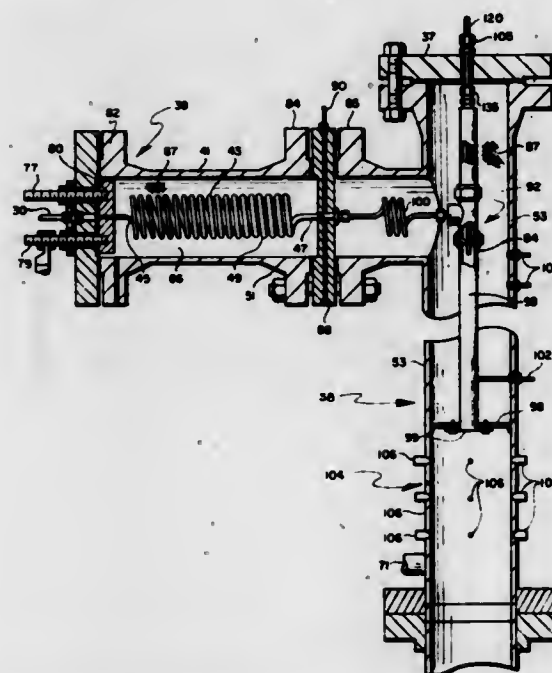
Continuation of Ser. No. 689,002, May 24, 1976, abandoned.

This application Jan. 20, 1978, Ser. No. 871,163

Int. Cl.³ C10G 1/00; B01J 8/18; F27B 15/08

U.S. Cl. 208—8 R

10 Claims



1. A process of reacting a pulverized carbonaceous material with hydrogen at a desired hydrogenation reaction temperature in a single reaction zone to form desired gaseous and liquid hydrocarbon reaction products comprising:

introducing thermally separated streams of gas-entrained pulverized carbonaceous material and of hot hydrogen into the single reaction zone, the hot hydrogen stream being injected at a high velocity of at least several hundred feet per second in excess of that of the carbonaceous material stream so as to provide an intimately mixed reaction mixture having a high entrained flow cross-sectional throughput through said reaction zone of pulverized carbonaceous material in said hydrogen stream, said carbonaceous material and hydrogen having a residence time in the reaction zone substantially equal to the reaction time, said introduced hot hydrogen stream prior to contact with the carbonaceous material being at a temperature several hundred degrees Fahrenheit above that of the carbonaceous material and that of the desired hydrogenation reaction temperature and in an amount sufficient to raise the temperature of said intimately mixed reaction mixture to said desired hydrogenation reaction temperature, maintaining said high velocity entrained flow reaction mixture at said desired reaction temperature for a residence-reaction time of about 10 to 500 milliseconds whereby desired gaseous and liquid hydrocarbon reaction products are formed, and

immediately thereafter quenching the products of said reaction and collecting said reaction products.

4,243,510

SHALE RETORTING PROCESS AND APPARATUS

Roland O. D'Amico, Long Beach, Calif., assignor to Union Oil Company of California, Brea, Calif.

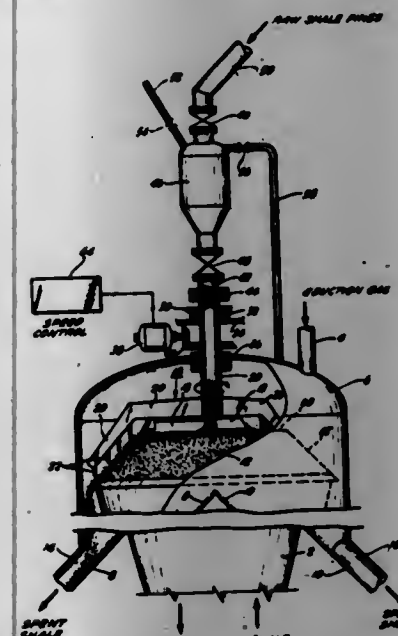
Continuation-in-part of Ser. No. 891,280, Mar. 29, 1978, Pat. No. 4,162,960. This application Mar. 26, 1979, Ser. No. 23,721

The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.

Int. Cl.³ C10G 1/02; C10B 31/02, 49/06, 53/06

U.S. Cl. 208—11 R

16 Claims



1. In a shale retorting process wherein a bed of granular crushed oil shale substantially free of particles having a diameter less than about 1/16 inch and above about 4 inches is passed upwardly through a retort, countercurrently to a preheated downflowing oxygen-free reduction gas to reduce product oil and gas therefrom, and wherein spent shale is allowed to overflow by gravity from the top perimeter of said retort thereby forming the bottom portion of a free-standing cone-shaped bed of spent shale extending above the top of said retort through which said preheated downflowing reduction gas passes, the improved method for retorting raw crushed oil shale fines substantially free of particles having a diameter greater than about 1/4 inch which comprises:

- leveling the top of said free-standing bed so as to form a free-standing truncated cone extending above the top of said retort and having a substantially horizontal, planar top surface and a cone-like inwardly sloping surface;
- feeding said raw shale fines onto said planar surface and controllably transporting said fines in a generally radial direction across said planar surface to said sloping surface, said raw shale fines being fed at a rate no greater than about 15 weight percent of the total raw shale including fines being fed to said retort; and
- controlling the flow rate and temperature of said reduction gas so as to produce product gas and oil from said granular oil shale and said raw shale fines.

4,243,511

PROCESS FOR SUPPRESSING CARBONATE DECOMPOSITION IN VAPOR PHASE WATER RETORTING

Victor D. Allred, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 26, 1979, Ser. No. 23,852

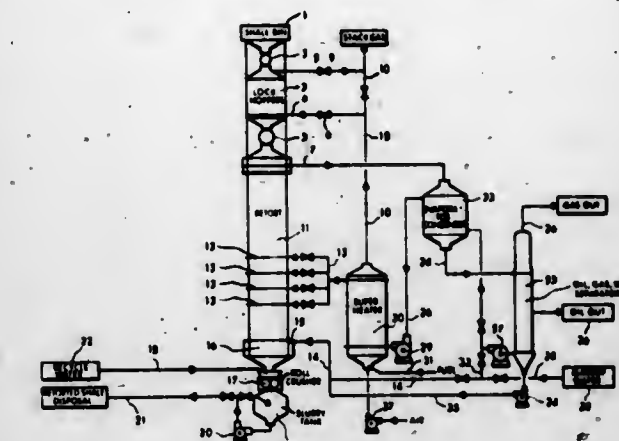
Int. Cl.³ C10G 1/02

U.S. Cl. 208—11 R

7 Claims

1. In a process for the recovery of organic values from oil shale containing alkaline metal carbonates by contacting said oil shale with superheated water vapor in a retort wherein the recovery of said hydrocarbon values is enhanced by contacting particles of said oil shale with said superheated water vapor at a superficial gas velocity of at least 10 cm per second and at a

pressure in the range of from about 6.9 to about 1,034 kPa and by providing said contact with said superheated water vapor at a temperature of from about 425° C. to about 510° C. to produce an effluent stream comprising superheated water vapor,



hydrocarbon vapors, hydrogen, and carbon oxides, the improvement comprising: providing a carbon dioxide partial pressure during said contacting which is sufficient to effectively suppress thermal decomposition of said carbonates to oxides.

4,243,512

PROCESS FOR PREPARATION OF PITCH FOR PRODUCING CARBON FIBER

Ikuro Seo, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1979, Ser. No. 49,890

Claims priority, application Japan, Jun. 28, 1978, 53-78339

Int. Cl.³ C10C 1/00

U.S. Cl. 208—39

2 Claims

1. A process for preparing a pitch suitable for use in producing carbon fibers comprising:

- filtering at a temperature of 250° to 300° C. a heavy petroleum pitch, containing 20 to 45% by weight of compounds insoluble in benzene and having a softening point of 150° to 200° C., to remove fractions non-liquefying or infusible at a temperature higher than 250° to 300° C. therefrom using more than one filter net of meshes finer than 200 mesh at a rate of 0.5 to 2 g/min/cm², introducing the thus filtered pitch at a temperature of 250° to 300° C. in the form of laminar flow of 1 to 30 mm in thickness into a vessel at a reduced pressure of 300 to 500 mm Hg of an inert gas to remove volatile fractions and bubbles from said filtered pitch in the laminar flow, thereby obtaining a treated pitch containing substantially no bubbles and no components non-liquefying or infusible at a temperature of 250° to 300° C., containing less than 5% by weight of low-molecular weight fractions boiling at a temperature lower than 500° C.

4,243,513

METHOD OF INCREASING YIELD OF PETROLEUM PITCH

Samuel I. Horowitz, Verona, and Henry T. Ingram, Roselle, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Nov. 10, 1975, Ser. No. 630,850

Int. Cl.³ C10G 37/06

U.S. Cl. 208—44

2 Claims

1. A process for making petroleum pitch from clarified slurry oil comprising refluxing the clarified slurry oil in the absence of air at temperatures from about 390° C. to about 410° C. for a period of from about 2 to about 10 hours whereby above 70% by weight of petroleum pitch based on the weight

of clarified slurry oil is recovered, said pitch having a Mettler Softening Point in the range of about 70°-130° C.

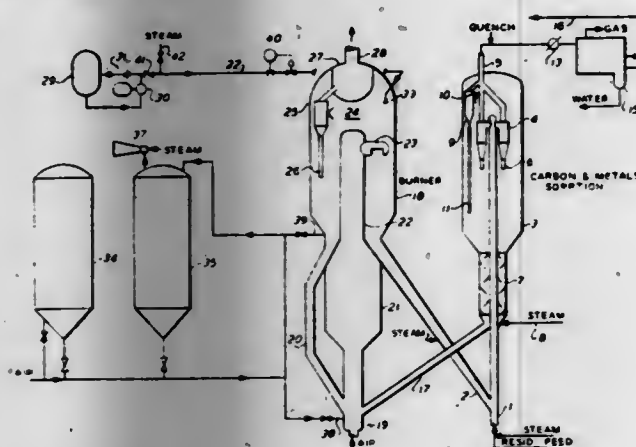
4,243,514

PREPARATION OF FCC CHARGE FROM RESIDUAL FRACTIONS

David B. Bartholic, Watchung, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.
Continuation-in-part of Ser. No. 875,326, Feb. 6, 1978. This application May 14, 1979, Ser. No. 38,928
Int. Cl.³ C10G 25/09

U.S. Cl. 208-91

15 Claims



1. In a process for preparing premium products from petroleum hydrocarbon feedstock having a substantial Conradson Carbon number and metals content, the improvement which comprises contacting said feedstock in a decarbonizing zone with an inert fluidizable solid material having a micro activity for catalytic cracking not substantially greater than 20 at low severity, including a temperature of at least 900° F., for a period of time less than that which induces substantial thermal cracking of said feedstock, at the end of said period of time separating from said inert solid a decarbonized hydrocarbon fraction of reduced Conradson Carbon number and metals content as compared with said feedstock, reducing temperature of the said separated fraction to a level below that at which substantial thermal cracking takes place, subjecting said inert solid after contact with said feedstock to air at elevated temperature in a separate burning zone to thereby remove combustible deposit from said solid and heat the solid, and recycling at least a portion of said inert solid from the burning zone to the decarbonizing zone for further decarbonizing of said feedstock, at least a portion of said inert solid so recycled to the decarbonizing zone being formed in said burning zone by spraying a slurry of precursor of said inert solid into said burning zone under conditions such that the heat produced by burning of said combustible deposit on cycled inert solid material causes the sprayed material to form solid droplets of inert solid particles of fluidizable particle size.

4,243,515

REFORMING PROCESS

Roy T. Mitsche, Wauconda, and George N. Pope, McHenry, both of Ill., assignors to UOP Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 880,749, Feb. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 788,376, Apr. 18, 1977, Pat. No. 4,098,874. This application May 24, 1979, Ser. No. 42,264
Int. Cl.³ C10G 35/08

U.S. Cl. 208-138

10 Claims

1. A process for reforming a naphtha feedstock which comprises contacting said feedstock at reforming conditions with a catalyst comprising from about 0.01 to about 2 wt. % platinum group metal and from about 0.01 to about 5 wt. % Group IV-A metal selected from the group consisting of germanium and tin composited with an alumina support prepared by admixing a finely divided alpha-alumina monohydrate with an aqueous ammoniacal solution having a pH of at least about 7.5 and forming a stable suspension, commingling a metal salt of a

strong acid with said suspension and converting the suspension to an extrudable paste or dough, extruding the paste or dough, drying, and thereafter calcining the extruded alumina at a temperature of from about 450° to about 850° C.

4,243,516

CATALYTIC HYDROREFORMING PROCESS

Germain Martino, Poissy, and Jean Miquel, Paris, both of France, assignors to Societe Francaise des Produits pour Catalyse, Rueil-Malmaison, France
Filed Dec. 6, 1977, Ser. No. 858,126
Claims priority, application France, Dec. 6, 1976, 76 36918
Int. Cl.³ C10G 35/08

U.S. Cl. 208-139

8 Claims

1. In a catalytic reforming process conducted under reforming conditions and yielding a gasoline having a clear octane number of at least 103, the improvement wherein the process is conducted in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst carrier:

- (a) 0.2 to 0.4% of a first metal which is ruthenium,
- (b) 0.03 to 0.08% of a second metal which is palladium,
- (c) 0.07 to 2% of a third metal which is indium, and
- (d) 0.1 to 10% of a halogen.

3. In a catalytic reforming process conducted under reforming conditions and yielding a gasoline having a clear octane number of at least 103, the improvement wherein the process is conducted in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst carrier:

- (a) 0.2 to 0.4% of a first metal which is ruthenium,
- (b) 0.03 to 0.08% of a second metal which is osmium,
- (c) 0.07 to 2% of a third metal which is indium, and
- (d) 0.1 to 10% of a halogen.

5. In a catalytic reforming process conducted under reforming conditions and yielding a gasoline having a clear octane number of at least 103, the improvement wherein the process is conducted in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst carrier:

- (a) 0.2 to 0.4% of a first metal which is rhodium,
- (b) 0.03 to 0.08% of a second metal which is ruthenium,
- (c) 0.07 to 2% of a third metal which is indium, and
- (d) 0.1 to 10% of a halogen.

6. In a catalytic reforming process conducted under reforming conditions and yielding a gasoline having a clear octane number of at least 103, the improvement wherein the process is conducted in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst carrier:

- (a) 0.2 to 0.4% of a first metal which is iridium,
- (b) 0.03 to 0.08% of a second metal which is ruthenium,
- (c) 0.07 to 2% of a third metal which is indium, and
- (d) 0.1 to 10% of a halogen.

4,243,517

INTERNAL METHOD FOR REDUCING TRANSVERSE OXYGEN GRADIENTS IN FCCU REGENERATION

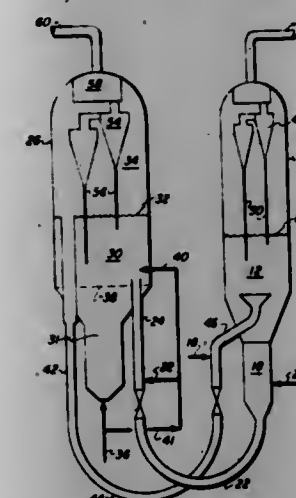
Edward C. Luckenbach, Mountainside, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 867,782, Jan. 3, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,490
Int. Cl.³ C10G 11/18

U.S. Cl. 208-164

17 Claims

1. In a fluidized catalytic cracking process which comprises: (A) contacting a hydrocarbon feedstock with cracking catalyst in a reaction zone under cracking conditions to produce cracked hydrocarbon vapors and coke contaminated catalyst; (B) stripping said coke contaminated catalyst with a stripping gas to remove volatile hydrocarbons therefrom,

thereby forming a mixture of coke contaminated catalyst and unstripped volatile hydrocarbons;
(C) passing the mixture through a transfer line having a terminus in the dense phase catalyst bed of a regeneration zone;
(D) regenerating said coke contaminated catalyst by contacting said mixture in the regeneration zone under regeneration conditions with an upwardly flowing oxygen-con-



taining regeneration gas, the catalyst in the regeneration zone being fluidized by the upward flow of said regeneration gas to form a dense phase catalyst bed and a dilute catalyst phase, the improvement which comprises providing additional oxygen to the localized area of the terminus of the transfer line in the dense phase catalyst bed to at least partially combust the volatile hydrocarbons in the mixture.

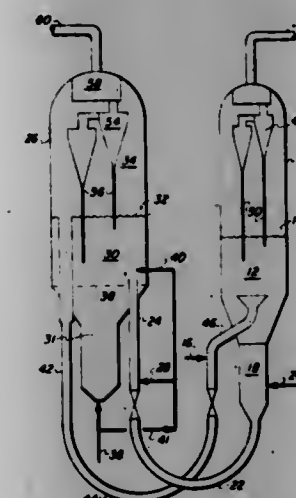
4,243,518

EXTERNAL METHOD FOR REDUCING TRANSVERSE OXYGEN GRADIENTS IN FCCU REGENERATION

Edward C. Luckenbach, Mountainside, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Continuation-in-part of Ser. No. 866,496, Jan. 3, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,491
Int. Cl.³ C10G 11/18

U.S. Cl. 208-164

19 Claims



1. In a fluidized catalytic cracking process comprising: (A) contacting a hydrocarbon feedstock with cracking catalyst in a reaction zone under cracking conditions to produce cracked hydrocarbon vapors and coke contaminated catalyst; (B) contacting the coke contaminated catalyst with a stripping gas to partially remove volatile hydrocarbons therefrom, thereby forming a mixture of coke contaminated catalyst and unstripped volatile hydrocarbons; (C) passing the mixture from the reaction zone through a

transfer line into the dense phase catalyst bed of a regeneration zone having a dense phase catalyst bed and a dilute catalyst phase;
(D) regenerating the coke contaminated catalyst by contacting the mixture under regeneration conditions with an oxygen-containing regeneration gas, the improvement which comprises: injecting a minor portion of the regeneration gas into the transfer line to at least partially combust the remaining volatile hydrocarbons from the mixture, the minor portion of the regeneration gas being injected into the transfer line at a point relatively close to the regeneration zone to minimize the effect of the injection of the minor portion of regeneration gas on the catalyst flow rate through the transfer line;
(E) monitoring the temperature of the gas in the dilute phase in at least two points; and,
(F) adjusting the amount of the minor portion of the regeneration gas injected into the transfer line to regulate the temperature difference between the two points.

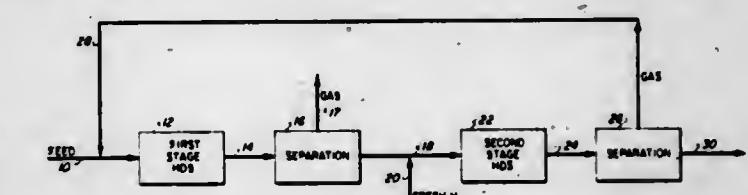
4,243,519

HYDROREFINING PROCESS

James J. Schorffelde, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Feb. 14, 1979, Ser. No. 12,217
Int. Cl.³ C10G 65/04, 65/06

U.S. Cl. 208-210

13 Claims



1. A naphtha hydrorefining process which comprises: (a) contacting a feed consisting essentially of a sulfur-containing naphtha in a first hydrorefining stage with a hydrogen-containing catalyst and with a hydrogen-containing gas consisting essentially of a hydrogen-containing gas recycled from step (d) at hydrorefining conditions including a temperature ranging from about 500° to about 700° F., to produce a first hydrorefining stage effluent comprising a partially desulfurized normally liquid naphtha product and a gaseous product comprising hydrogen and hydrogen sulfide;
(b) separating at least a portion of the hydrogen sulfide from said first hydrorefining stage effluent;
(c) contacting at least a portion of the first hydrorefining stage effluent resulting from step (b) in a second hydrorefining stage at hydrorefining conditions with added fresh hydrogen in the presence of a sulfided hydrorefining catalyst to produce a second stage hydrorefining effluent comprising a normally liquid naphtha having a decreased sulfur content relative to said partially desulfurized naphtha and a hydrogen-containing gas comprising hydrogen sulfide, and
(d) recycling at least a portion of the hydrogen-containing gas including said hydrogen sulfide of step (c) to said first hydrorefining stage.

4,243,520

METHOD FOR SEPARATION OF LARGE SIZED SALT CONTAINING MINERALS

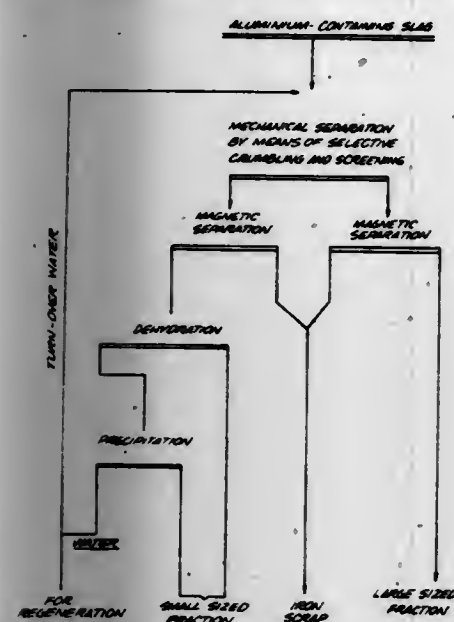
Stoyan I. Denev, and Nadejda G. Datcheva, both of Sofia, Bulgaria, assignors to Kalpi "Niporoda", Sofia, Bulgaria
Filed Aug. 10, 1978, Ser. No. 932,654
Int. Cl.³ B03B 7/00

U.S. Cl. 209-10

2 Claims

1. A method of separation of large sized minerals containing salt, low hardness mineral inclusions and iron products, com-

prising subjecting said minerals to a preliminary screening under intensive water-spraying conditions to divide said minerals into an unscreened fraction and a first screened fraction, selectively and mechanically crumbling said unscreened fraction to crumble said low hardness mineral inclusions, and further screening under intensive water spraying conditions said selectively crumbled unscreened fraction to divide said



minerals into a second screened fraction and an unscreened fraction removing said iron products from each of said second screened fraction and of said selectively crumbled unscreened fraction by magnetic separation, dehydrating each of said fractions and recovering the spray water from said second screened fraction during said dehydrating, and subjecting the thus-recovered spray water to salt extraction.

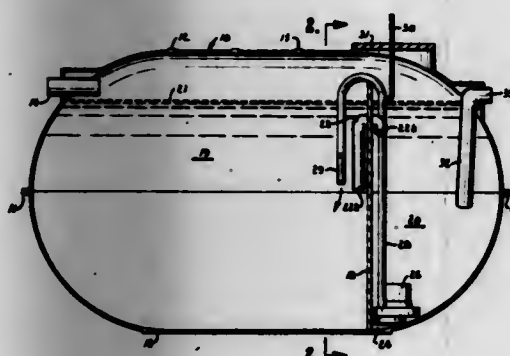
4,243,521
METHOD AND APPARATUS FOR AEROBICALLY
TREATING WASTEWATER

Charles E. Sharp, Lake Saint Louis, and Clark M. Campbell, Columbia, both of Mo., assignors to Environmental Dynamics, Inc., Columbia, Mo.

Filed Apr. 9, 1979, Ser. No. 28,051
Int. Cl.³ C02F 3/20

U.S. Cl. 210-626

8 Claims



1. A process of treating wastewater comprising the steps of:
directing the wastewater to an aeration chamber;
aerating the wastewater in said aeration chamber to aerobically treat same;
transferring the aerobically treated wastewater to a settling chamber wherein the sludge settles;
pumping the sludge through a sludge return passage extending from said settling chamber to said aeration chamber to return the sludge to the aeration chamber for further aeration therein;
drawing outside air into said sludge return passage by aspiration effected by the flow of sludge through said passage, thereby mixing the outside air with the sludge before the sludge reaches the aeration chamber; and

discharging the aerobically treated wastewater from said settling chamber to a drainage area.

4. Apparatus for aerobically treating wastewater comprising:

- a tank having an inlet for receiving wastewater and an outlet for discharging treated liquid;
- partition means separating said tank into an aeration chamber communicating with said inlet and a settling chamber communicating with said outlet;
- aeration means for effecting aeration of the wastewater in said aeration chamber to aerobically treat same;
- a transfer conduit extending from said aeration chamber to said settling chamber to direct treated liquid therebetween;
- means defining a sump region in said settling chamber for receiving sludge;
- a sludge return conduit having an intake end disposed in said sump region and a discharge end disposed in said aeration chamber;
- a pump disposed in said settling chamber and operable to pump sludge into said intake end of the return conduit and through the return conduit from said sump region to said aeration chamber for aeration therein; and
- means for supplying air to said sludge return conduit to aerate the sludge flowing therethrough.

4,243,522
METHOD AND APPARATUS FOR UTILIZING HEAT
CONTENT IN WASTE WATER

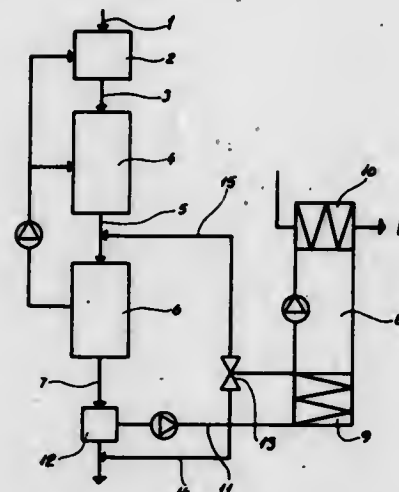
Poul E. Ter-Borch, Roskilde; Per Baumgarten, Hvidovre, and Ernst K. Jorgensen, Valby, all of Denmark, assignors to I. Kruger A/S, Denmark

Filed Jun. 21, 1979, Ser. No. 50,537

Claims priority, application Denmark, Jun. 22, 1978, 2820/78

U.S. Cl. 210-774

3 Claims



1. A method for utilizing the heat content of waste water which has passed through a biological waste water purification plant at a variable flow rate from which an average flow rate can be obtained, the last operation in said plant comprising directing the waste water into a sedimentation tank wherein the waste water is substantially purified, comprising the steps of:

directing a flow of the substantially purified waste water from the sedimentation tank to the evaporator of a heat pump having a capacity substantially corresponding to the average flow rate so that the evaporator is heated; and during periods in which the flow rate of the waste water is below said average flow rate, recirculating at least a portion of the waste water flowing through the evaporator back into the settlement tank which thereby functions as a heat reservoir.

4,243,523

WATER PURIFICATION PROCESS AND SYSTEM

John P. Pelander, Saratoga, Calif., assignor to Allied Water Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 842,613, Oct. 17, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,846

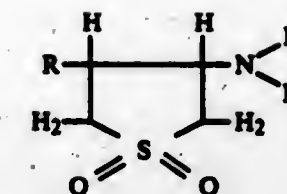
Int. Cl.² B01D 13/00, 31/00

U.S. Cl. 210-452

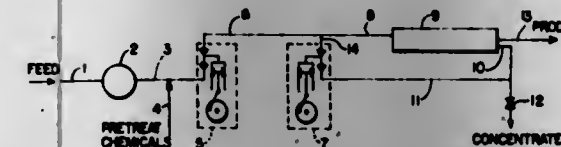
9 Claims

U.S. Cl. 210-652

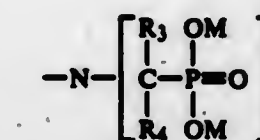
9 Claims



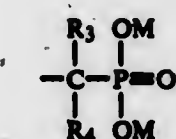
wherein R is hydrogen or



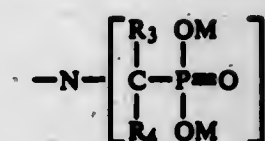
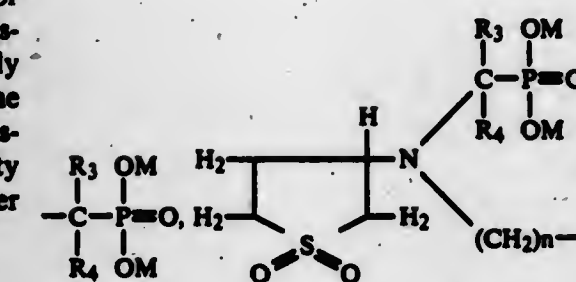
1. A method for the desalination of sea water and the like to produce potable water, comprising, providing a membrane element with an inlet and an outlet and having a flow cross-section with a width to height ratio of greater than fifty, establishing a feed flow at a pressure in excess of the osmotic pressure to one side of the membrane element, which feed flow is at a rate less than sufficient to maintain the design minimum flow velocity in the flow cross-section of the membrane, recirculating a portion of the concentrate from the outlet to the inlet of the membrane element at a pressure in excess of the osmotic pressure and in excess of the feed flow pressure at a rate sufficient to cause the flow velocity at the surface of the membrane to exceed the design minimum flow velocity, said concentrate being recirculated at a rate which itself is less than the design minimum flow velocity in the flow cross-section of the membrane, recovering permeate product passing through said membrane while maintaining said feed flow at a rate which is sufficient to maintain salinity in said permeate product at or below a maximum acceptable level, and continuously discharging an amount of said concentrate at a rate substantially equal to the difference between the feed flow rate and the recovery permeate product flow rate, said concentrate discharge rate being less than the design minimum flow velocity in the flow cross-section of the membrane and being greater than



where R_1 is hydrogen or



R₂ is an alkyl group containing 1 to 4 carbon atoms, 2-hydroxyethyl, 2-hydroxypropyl, 3-chloro-2-hydroxypropyl,



where P is the product flow rate and R is the theoretical recovery rate of product in a system not employing recirculation wherein the theoretical feed flow rate is equivalent to the sum of the actual feed flow rate and the actual recirculation rate.

R₃ and R₄
may be the same or different and are selected from the group consisting of hydrogen and an alkyl group containing 1 to 4 carbon atoms; n is 1 or 2; M is hydrogen or an alkali metal; with the proviso that when R is

4,243,524
AMINOALKYLENEDIPHOSPHONIC ACIDS AND SALTS
THEREOF AND THEIR USE IN AQUEOUS SYSTEMS

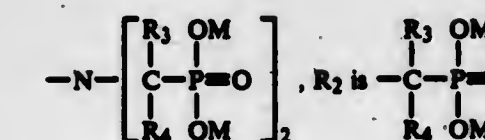
Joseph G. E. Feyses, Germantown, and John D. Pera, Memphis, both of Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Division of Ser. No. 914,250, Jun. 9, 1978, Pat. No. 4,181,806.
This application Aug. 2, 1979, Ser. No. 63,275

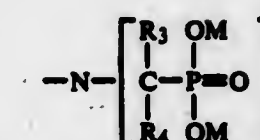
U.S. CL. 210-700

17 Claims

1. A process for inhibiting the deposition of scale and sludge on heat transfer surfaces of cooling water systems and boilers which comprises adding to said systems an aminoalkylene-phosphonic acid or an alkali metal salt in an amount sufficient to inhibit the deposition of scale and sludge on said surfaces thereof having the formula:



5. and with the further proviso that R_1 is hydrogen only when R_2 is



4,243,525

METHOD FOR REDUCING THE FORMATION OF TRIHALOMETHANES IN DRINKING WATER

Edward S. Greenberg, East Windsor, N.J., assignor to FMC Corporation, Philadelphia, Pa.

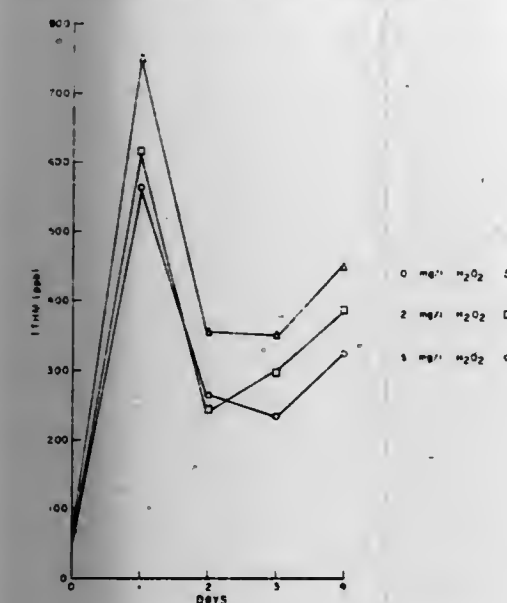
Filed Mar. 29, 1979, Ser. No. 25,179

Int. Cl.³ C02F 1/72, 1/76

U.S. Cl. 210—754

5 Claims

FIG. 1 FLORIDA GROUND WATER-TOTAL TRIHALO METHANES



1. A method of treating water to disinfect the water and reduce the formation of trihalomethanes which comprises first adding to the water from about 0.1 to about 50 parts per million hydrogen peroxide to oxidize organic substances present therein and thereafter adding to the water sufficient chlorine to react with any hydrogen peroxide present and maintain a residual amount of chlorine sufficient to disinfect the water, whereby the formation of trihalomethanes present in the water amounts to less than 295 parts per billion.

4,243,526

PROCESS FOR PURIFYING LIQUIDS AND A DEVICE FOR CARRYING OUT THE PROCESS

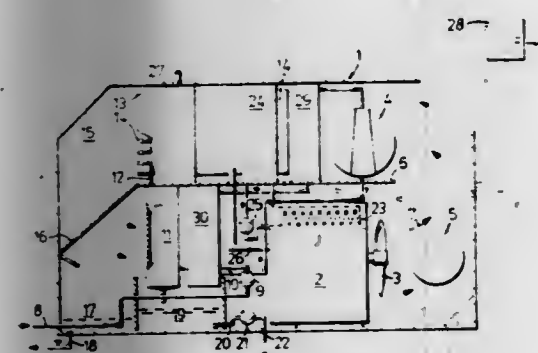
Sven-Erik L. Ransmark, 7 Askholmogatan, 213 63 Malmö, Sweden

Continuation of Ser. No. 882,535, Mar. 1, 1978, abandoned. This application Feb. 15, 1979, Ser. No. 12,405

Int. Cl.³ C02F 1/12

U.S. Cl. 203—10

2 Claims



1. A process for purifying a liquid, preferably water, comprising the steps of:

- providing a sealed chamber,
- providing a source of heat and motive power within said chamber,
- forcing air under control of said source over said source to heat said air,
- providing a cooling chamber and cooling said cooling chamber under control of said source,

- guiding said liquid through said cooling chamber to cool same,
- spraying said cooled liquid in a spraying area in said sealed chamber,
- passing said heated air through said spraying area to collect liquid, and
- passing said thusly damped air through said cooling chamber to condense out said collected and purified liquid.

4,243,527

PARTICULATE MATERIAL SEPARATOR AND METHOD

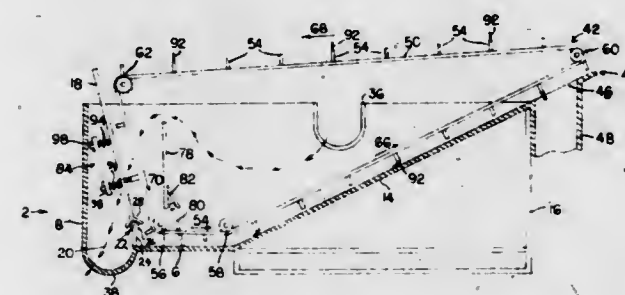
Martin Leonard, 108 Glen Oak Dr., Lafayette, La. 70503

Filed Mar. 29, 1979, Ser. No. 25,038

Int. Cl.³ B01D 21/04, 23/00, 33/00

U.S. Cl. 210—785

15 Claims



1. A device suitable for filtering earth drilling fluids containing particulate material, comprising:

- container means for containing said fluid, said container means having a base and at least one inclined wall mounted with said base, and extending upwardly at an incline away from said base;
- screening means operatively connected to said container means for separating said particulate material from said fluid to produce a screened fluid, said screening means being inclined away from said inclined wall and remote from said inclined wall;
- fluid inlet means operatively connected to said container means for admitting said fluid into said container means at a location laterally remote from said screening means;
- baffle means mounted between said fluid inlet means and said screening means and within said container means substantially over said base for preventing at least a substantial proportion of said particulate material from coming into contact with said screening means, said baffle means directing the flow of said fluid over the top of said baffle means, and in a generally downward direction in the region of said screening means to urge particulate material in the region of said screening means towards said base, while substantially reducing the flow of said particulate material beneath said baffle means toward said screening means;
- fluid outlet means operatively connected to said container means for carrying said screened fluid away from said container means;
- separate particulate material outlet means operatively connected to said container means for directing separated particulate material out of said container means;
- movable screen engaging means operatively connected to said container means for engaging said screening means and removing particulate material lodged in said screening means, said screen engaging means cooperating with said base and said inclined wall to carry separated particulate material to said separated particulate material outlet means and out of said container means; and
- biasing means connected to said screening means for movably urging said screening means in a generally upward direction to move against said screen engaging means.

4,243,528

TREATER FOR MECHANICALLY BREAKING OIL AND WATER EMULSIONS OF A PRODUCTION FLUID FROM A PETROLEUM WELL

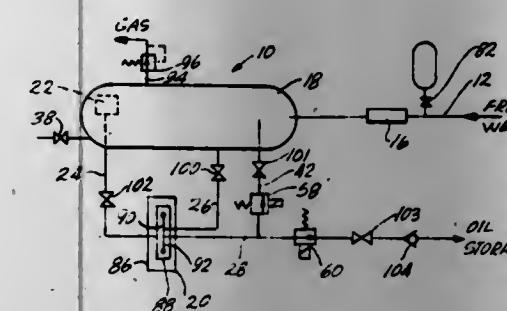
Martin G. Hubbard, Corona Del Mar, and William E. Jackson, Newport Beach, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Jan. 25, 1979, Ser. No. 51,545

Int. Cl.³ B01D 17/04

U.S. Cl. 210—104

17 Claims



10. An improvement in the apparatus for breaking the emulsion of oil and water in a production fluid stream from an oil well, the production fluid stream having a water phase, a phase of an oil-water emulsion, and an oil with oil and water emulsion phase, the improvement comprising:

- a settling vessel;
- means to introduce production fluid into the settling vessel;
- means to introduce a chemical emulsion breaker into the production fluid;
- the settling vessel being of sufficient capacity to stratify the phases of the production fluid in accordance with their density from the bottom towards the top of the vessel in the order of water, oil-water emulsion, and oil with oil and water emulsion;
- a weir box within the settling vessel and having a weir edge disposed to permit oil-with-emulsion to flow into the box over the edge;
- a centrifugal separator in fluid series circuit with the interior of the weir box, the centrifugal separator including means to centrifugally separate the oil with water emulsion into separate oil and water streams;
- means for introducing the water stream from the centrifugal separator into the settling vessel;
- control means responding to the level of oil-with-emulsion in the weir box such that upon a predetermined small quantity of oil-with-emulsion in the weir box the control means diverts oil from the oil stream exiting the centrifugal separator back into the settling vessel; and
- water level control means to remove water from the settling vessel upon the water reaching a predetermined excessive level.

4,243,529

OIL COLLECTING APPARATUS

William A. Strauss, Mason, N.H., assignor to Oil Recovery Systems, Inc., Greenville, N.H.

Continuation-in-part of Ser. No. 659,421, Feb. 9, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,597

Int. Cl.³ E02B 15/04

U.S. Cl. 210—109

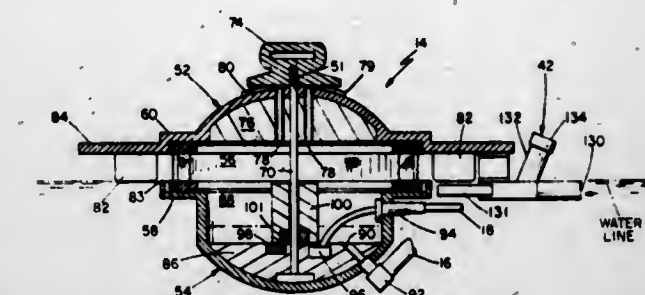
4 Claims

1. In an oil collection system including a buoyant collection unit comprising

- a housing defining an interior cavity and having an annular opening in the side thereof to permit flow of oil into said cavity, and
- a hydrophobic cleophilic filter mounted at said opening to permit oil but not water to flow therethrough into said cavity,

said filter comprising a pair of spaced seal rings and a generally annular screen coated with a hydrophobic cleophilic

material supported between said seal rings, said housing comprising a top cover and a base held respectively against said spaced seal rings, and an annular array of floats carried by said housing, that improvement wherein a draw bolt extending centrally between said cover and base draws said cover and base together about said sealing rings and screen to form said housing,



said central bolt also serves as a guide shaft for a control float of a pump of said system, said control float carrying a switch-actuating magnet, and said control float slideably engaged upon said bolt to move therealong between lower, pump de-actuating and upper, pump actuating positions in response to the level of oil collected in the volume of said buoyant housing.

4,243,530

HAEMOFILTRATION WITH FILTRATE FLOW CONTROL BY ADJUSTABLE VENTING

Kurt Lehnhoff, Oberursel, and Wilfried Schael, Bad Homburg, both of Fed. Rep. of Germany, assignors to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

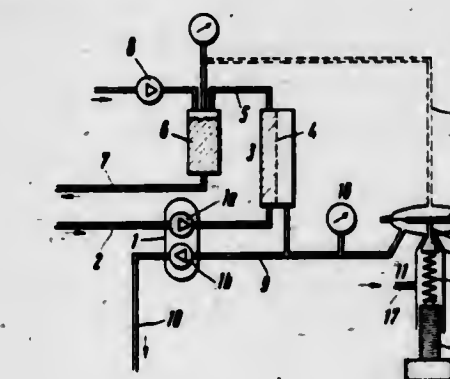
Filed Dec. 4, 1978, Ser. No. 966,495

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2754810

Int. Cl.³ B01D 31/00

U.S. Cl. 210—137

9 Claims



1. A hemofiltration apparatus comprising filter housing means including blood chamber means and filtrate chamber means, filter means separating said blood chamber means from said filtrate chamber means, inlet and outlet means operatively connected to said blood chamber means, first blood hose pump means (1a) including a pump head operatively connected to said blood chamber means for establishing a blood circulatory flow through said blood chamber means, second filtrate hose pump means (1b) operatively arranged to be driven by said pump head together with said first blood hose pump means, said second filtrate hose pump means (1b) having a suction side directly operatively connected to said filtrate chamber means, bias adjustable valve means (11) operatively connected to said suction side of said second filtrate hose pump means (1b), and to an air supply, for controllably connecting said suction side of said second filtrate hose pump means with said air supply, whereby said second filtrate hose pump means may entrain

through said bias adjustable valve means a quantity of air which is determined by the bias adjustment of said bias adjustable valve means to reduce the filtrate conveying capacity of said second filtrate hose pump means thereby simultaneously determining the reduced pressure in said filtrate chamber means so that the adjustment of said bias adjustable valve means determines the volume of conveyed filtrate and hence the pressure differential across said filter means.

4,243,531

CARDIOTOMY RESERVOIR

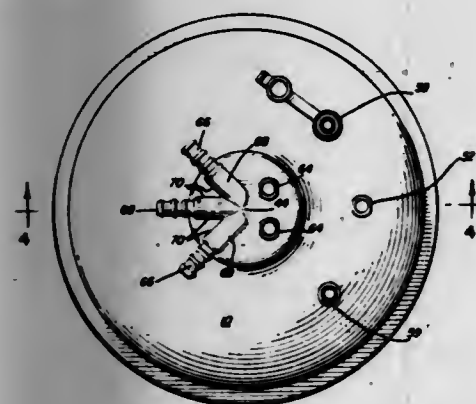
Thomas W. Crockett, Burlington, Wis.; Patrick N. Huehls, Highland Park, and Barry G. Slotnick, Des Plaines, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 30, 1978, Ser. No. 910,323

Int. Cl.³ B01D 19/02

U.S. Cl. 210—188

7 Claims



1. A blood reservoir which comprises: a rigid casing, a perforated tubular member positioned within said casing and extending between the ends thereof; inlet aperture means positioned at the upper end of said reservoir in communication with the bore of said tubular member to provide fluid communication from the exterior to said bore; flow aperture means positioned at the lower end of said tubular member to provide fluid communication between said bore and the casing interior, said bore containing blood defoaming means, and said tubular member carrying blood filter means to filter flow through the perforations of the tubular member and the flow aperture means, said inlet aperture means defining a plurality of tubular apertures having open ends which are outwardly directed normally of the longitudinal axis of the tubular member, said apertures inwardly terminating in open-bottom, downwardly curved end wall means to direct fluid flow inwardly through said apertures and then downwardly by means of a gentle, curved flow into said defoaming means, and outlet aperture means positioned adjacent the bottom of said casing in exterior relation to said tubular member.

4,243,532

BLOOD TREATING SYSTEM

Nobuaki Tsuda; Naoya Kominami; Kenji Inagaki, and Tamotsu Imamiya, all of Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 726,193, Sep. 24, 1976, abandoned. This application Dec. 13, 1978, Ser. No. 968,914

Claims priority, application Japan, Sep. 26, 1975, 50-115662; Mar. 29, 1976, 51-33562

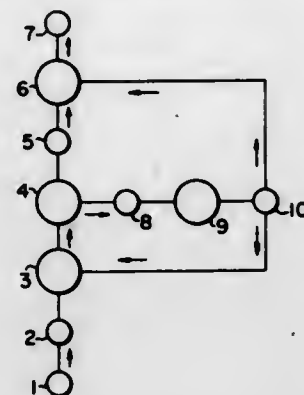
Int. Cl.³ B01D 31/00

U.S. Cl. 210—196

7 Claims

1. A blood treating system having a path for causing blood to flow formed in series comprising a blood introducing part; an element for mixing blood with blood plasma; a blood plasma-separating element having a porous membrane which passes blood plasma in blood but does not pass any blood corpuscle therein; an element for mixing the resulting concentrated blood with

blood plasma; and a purified blood-withdrawing portion in the system; and also a path for causing blood plasma to flow comprising means for transporting blood plasma separated in said blood plasma-separating element comprising a pump; means for purifying blood plasma separated in said blood plasma-separating element and having at its inlet and exit, a filter having a purifying agent for removing unnecessary substances in blood plasma, filled therein and capable of preventing the purifying agent from flowing out; and



a three-way cock, said path for blood plasma to flow being formed between said blood plasma-separating element, said element for mixing blood with blood plasma, and said element for mixing the resulting concentrated blood with blood plasma and is so constructed that blood plasma separated in said blood plasma-separating element and purified in said means for purifying blood plasma can be sent optionally to either of said element for mixing blood with blood plasma or said element for mixing the resulting concentrated blood with blood plasma.

4,243,533

FILTERS WITH FILTRATE CHAMBER OVERFLOW PARTITIONS HAVING PLURAL OUTLETS

Jaakko Savolainen; Holger Engdahl; Yrjö Laakkainen, Martti Toivanen; Jorma Surakka, all of Savonlinna, Finland, assignors to Enso-Gutzeit Oskakeyhtio; Helsinki, Finland

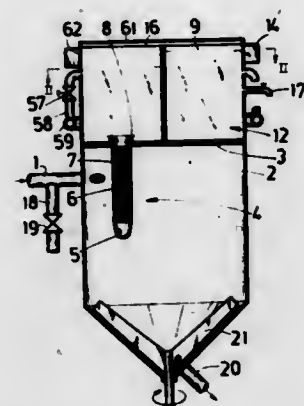
Filed Mar. 12, 1979, Ser. No. 19,622

Claims priority, application Finland, Mar. 13, 1978, 780792

Int. Cl.³ B01D 29/38

U.S. Cl. 210—247

3 Claims



1. Improvement in a periodically operating pressure filter for the concentrating of a solid matter suspension and separating a filtrate, comprising a filtering tank comprising a bottom, first side walls extending upwardly from said bottom and a ceiling extending across the upper ends of said first side walls with an input conduit means connected to said first side walls for introducing the suspension to be filtered under pressure, a first drain conduit in said bottom for removal of the concentrated sludge from said tank, and a number of cylindrical filtering elements dependently supported from said ceiling and extending downwardly into said tank so that the filtrate flows under pressure from said tank through said filtering elements, a filtrate collect-

ing tank located above said filtering tank with said ceiling of said filtering tank forming the bottom of said collecting tank, said collecting tank including second side walls extending upwardly from said ceiling so that the filtrate flows from said filtering element into said collecting tank said filtering elements arranged to collect sludge on the outer surfaces to be periodically detached by making the pressure inside said filtering elements higher than within said filtering tank, wherein the improvement comprises that said collecting tank is arranged to maintain the filtrate under atmospheric pressure, said input conduit means being arranged for releasing the pressure acting in the said filtering tank so that the sludge can be periodically detached from the outer surfaces of said filtering elements by backflow from said collecting tank through said filtering elements into said filtering tank wherein the pressure has been released, means in said second side walls of said collecting tank for forming an overflow therefrom at a location spaced upwardly from said ceiling forming the bottom of said collecting tank, means for collecting the filtrate flowing from said overflow means, plural partitions within said collecting tank for dividing said collecting tank into a plurality of sections with said overflow means being located in each of said sections, said overflow means comprising an overflow opening from each of said sections located in said second side walls, a separate normally closed second drain conduit connected to said second side walls in each of said sections with said second drain conduit opening through said second side walls below said overflow opening and above the bottom of said collecting tank, so that by opening said second drain conduit associated with a particular one of said sections the filtrate therein can be drained to a level below said overflow opening.

4,243,534

BLOOD SEPARATION

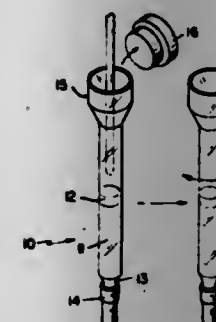
George F. Bulbenko, Langhorne, Pa., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Jan. 25, 1979, Ser. No. 6,450

Int. Cl.³ B01D 15/08

U.S. Cl. 210—656

21 Claims



1. A chromatographic device for separating blood components, comprising:

a chromatographic column, said column including an adsorbing agent for adsorbing blood components which is preconditioned in a buffer to the operating pH for chromatographic separation, a liquid comprising a blood lysing agent which lies above said adsorbing agent in an amount sufficient to hemolyze a whole blood sample which is to be subsequently introduced into the column; and closure means for the column to maintain the liquid and adsorbing agent in the column prior to use thereof, whereby upon use of the column a whole blood sample introduced into the column is hemolyzed in the column by the lysing agent prior to flowing through the adsorbing agent.

4,243,535

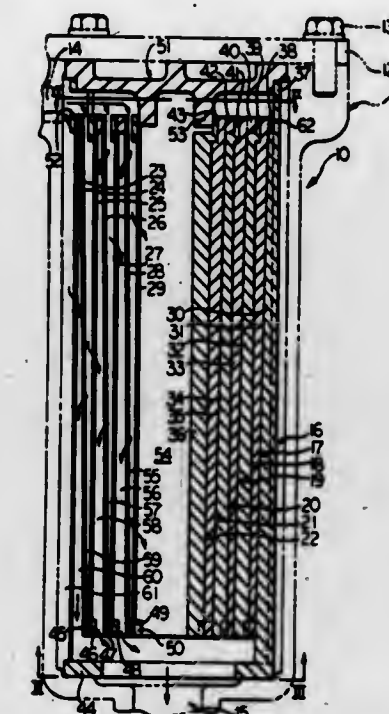
FILTER ASSEMBLY WITH TELESCOPIC ELEMENTS
Bertwin E. Behrens, East Peoria, and David A. Diebel, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1976, Ser. No. 754,811

Int. Cl.³ B01D 29/26

U.S. Cl. 210—315

12 Claims



1. A filter assembly comprising a plurality of telescopically disposed separate filter elements, each of said filter elements comprising a separate tubular screen having a plurality of longitudinally extending and uninterrupted ribs secured in a circumferentially spaced relationship therearound and wherein a first filter element of each adjacent pair of filter elements is telescopically disposed within a second filter element of said pair of filter elements with each rib of said first filter element being disposed in aligned relationship with a respective rib of said second filter element throughout the length thereof to space the screens of said pair of filter elements radially from each other to define a flow passage between circumferentially adjacent pairs of said ribs whereby a series of circumferentially disposed and isolated flow passages are defined throughout the length of said filter assembly, said pair of filter elements defining a first flow passage of said flow passages therebetween communicating directly with an inlet of said filter assembly disposed at a first end of said filter assembly and wherein another filter element spaced radially inwardly from said first filter element and said first filter element define a second flow passage of said flow passages therebetween communicating directly with an outlet of said filter assembly whereby fluid flow ingressing into the first flow passage of said filter assembly from said inlet will be forced through one of the filter elements of said pair of filter elements prior to its egress into said second flow passage and to said outlet.

4,243,536

CROSS-FLOW FILTRATION APPARATUS

Ludwig Pröles, Bellach, Switzerland, assignor to Kilcher-Chemie AG, Rechterswil, Switzerland

Filed Nov. 27, 1978, Ser. No. 963,994

Claims priority, application Switzerland, Dec. 1, 1977, 14689/77

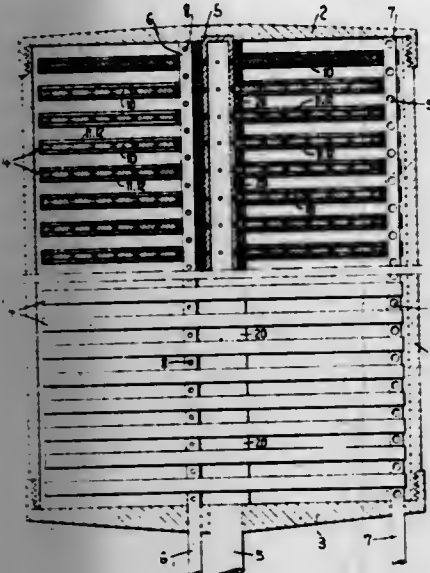
Int. Cl.³ B01D 29/34, 31/00

U.S. Cl. 210—321.1

8 Claims

1. Apparatus for cross-flow filtration of a fluid, comprising: a tubular housing; a filtrate collecting pipe centrally disposed within said housing; a plurality of disc-shaped filter elements stacked one upon

the other within said housing so as to provide spaces between adjacent pairs of filter elements, said elements being spaced from said housing and supported by said filtrate collecting pipe for supplying the filtrate of said elements therethrough; and
at least one inlet pipe and at least one outlet pipe extending generally parallel to said filtrate collecting pipe within said housing, one of said inlet and outlet pipes being disposed adjacent said filtrate collecting pipe and extending through said filter elements, and the other of said inlet and



outlet pipes being disposed adjacent the periphery of said filter elements, each of said inlet and outlet pipes defining a plurality of axially spaced aperture means, one located in the space between each adjacent pair of filter elements for parallel feed of fluid across said filter elements; said aperture means of said inlet pipe being oriented with respect to said filter elements for feeding fluid tangentially onto said filter elements to establish a helical fluid flow simultaneously across the surface of each of said filter elements.

4,243,537

SYNTHETIC METAL WORKING LUBRICANT

James E. Knapp, William G. Johnston, both of Pittsburgh, Pa., and Myron J. Jursich, Chicago, Ill., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 8, 1978, Ser. No. 932,006

Int. Cl.³ C10M 1/06, 1/32

U.S. Cl. 252—49.3

3 Claims

1. A synthetic lubricant for metal working dispersible or miscible in water comprising:

- 5 to 15 parts by weight triethanolamine;
- 5 to 15 parts by weight 16 to 18 carbon atom aliphatic acid;
- 10 to 55 parts by weight polyoxyalkylene alcohol and dihydric alcohols;
- an aliphatic carboxylic acid ester in amount not more than 20 parts by weight; and
- 10 to 35 parts by weight water.

4,243,538

FUEL AND LUBRICATING COMPOSITIONS CONTAINING N-HYDROXYMETHYL ALIPHATIC HYDROCARBYLAMIDE FRICTION REDUCERS

Ronald L. Shubkin, West Bloomfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Jan. 7, 1979, Ser. No. 46,257

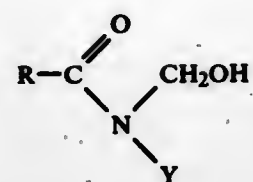
Int. Cl.³ C10M 1/32

U.S. Cl. 252—51.5 A

6 Claims

1. A lubricating oil composition formulated for use in the crankcase of an internal combustion engine, said composition comprising a major amount of a hydrocarbon lubricating oil and a minor friction-reducing amount of an oil-soluble ali-

phatic N-hydroxymethyl hydrocarbylamide having the structure



wherein R is an aliphatic hydrocarbon group containing 11–35 carbon atoms and Y is selected from the group consisting of hydrogen, lower alkyls containing 1–4 carbon atoms and hydroxymethyl.

6. A liquid hydrocarbon fuel suitable for use in an internal combustion engine comprising a major amount of liquid hydrocarbon fuel and a minor friction-reducing amount of an oil-soluble aliphatic N-hydroxymethyl C₁₂–36 hydrocarbylamide.

4,243,539

ANTIOXIDANT STABILIZED LUBRICANT COMPOSITIONS

Malvina Farcasin, Princeton, and Susan D. Brandes, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

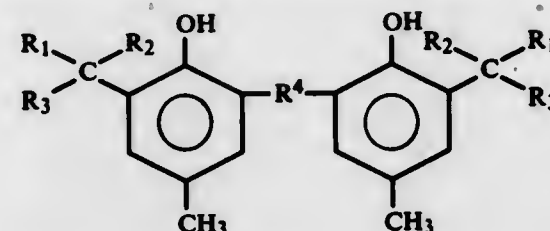
Filed Aug. 6, 1979, Ser. No. 64,143

Int. Cl.³ C10M 1/20

U.S. Cl. 252—52 R

11 Claims

1. A lubricant composition comprising a major amount of a lubricating oil or grease prepared therefrom and a minor amount sufficient to impart antioxidant or stabilization properties thereto of the reaction product of singlet oxygen and a hindered bis phenol having the general formula:



where R¹, R² and R³ are C₁–C₂₀ alkyl and R⁴ is C₁–C₁₂alkylene.

8. A process for preparing singlet oxidation products suitable for use as antioxidant additives comprising reacting in a suitable reaction medium singlet oxygen with a hindered bis-p-methylphenol as described in claim 1 by exposing same to strong visible light for periods of from about 1 to 3 hours, at temperatures of from about 10° to about 30° C and, optionally, in the presence of a photosensitizer.

4,243,540

ORGANIC ESTERS FOR LUBRICATING COMPOSITIONS

Giuseppe Mancini, Melegnano, and Luigi Imperato, Milano, both of Italy, assignors to Snamprogetti S.p.A., Milanese, Italy

Continuation of Ser. No. 971,823, Dec. 21, 1978, abandoned, which is a continuation of Ser. No. 908,356, May 22, 1978, abandoned, which is a continuation of Ser. No. 756,403, Jan. 3, 1977, abandoned, which is a continuation of Ser. No. 486,868, Jul. 9, 1974, abandoned. This application Oct. 30, 1979, Ser. No. 89,468

Claims priority, application Italy, Jul. 9, 1973, 26335 A/73 Int. Cl.³ C09F 5/08; C11C 3/00

U.S. Cl. 252—56 S

9 Claims

1. A mixture of esters for a lubricating composition that is prepared by a process which consists of the esterification of:
A. a mixture of bifunctional and trifunctional neopentyl-

polyols wherein the molar ratio of the bifunctional neopentylpolyols to the trifunctional neopentylpolyols is in the range of 1:2.5 to 1:10; and

B. a mixture of linear monocarboxylic acids containing from 6 to 8 carbon atoms, wherein the molar average is C₇, and of linear monocarboxylic acids containing from 12 to 18 carbon atoms, the molar ratio of the C₆ to C₈ acids and the C₁₂ to C₁₈ acids being in the range from 4:1 to 19:1.

5. A lubricating composition containing at least one of the esters defined in claim 1.

4,243,541

PIEZOELECTRIC CERAMICS

Hiroshi Takeuchi, Matsudo; Yukio Ito, Kokubunji; Shigeru Jyomura, Hachioji; Kunio Yamashita, Hachioji; Kazuyuki Nagatsuma, Hachioji; Sakichi Ashida, Fucha, and Mitsuru Ishii, Higashi-yamato, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 6, 1978, Ser. No. 940,219

Claims priority, application Japan, Sep. 7, 1977, 52-106606; Sep. 7, 1977, 52-106607

Int. Cl.³ C04B 35/46

U.S. Cl. 252—62.9

1 Claim

1. Piezoelectric ceramics comprising 42.7 to 49.5 mol-% of PbO, 45.2 to 53.1 mol-% of TiO₂, 0.5 to 3.7 mol-% of Nd₂O₃, 0.3 to 3.3 mol-% of In₂O₃, and 0.2 to 1.5 mol-% of MnO₂, the total mol-% of PbO, TiO₂, Nd₂O₃, In₂O₃ and MnO₂, being 100 mol-%.

4,243,542

ELECTRICAL INSULATING COMPOSITIONS CONTAINING ZINC OXIDE AND AN ORGANOSILICON COMPOUND CONTAINING AT LEAST ONE SILICON-HYDROGEN BOND

Katsutoshi Mine, Ichihara, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

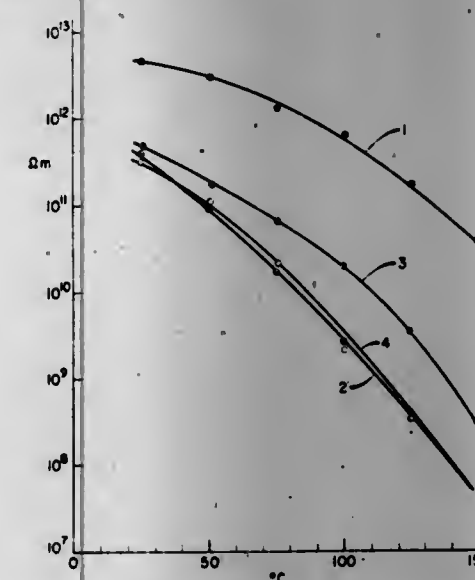
Filed Sep. 13, 1979, Ser. No. 74,852

Claims priority, application Japan, Oct. 3, 1978, 53-121721

Int. Cl.³ H01B 3/46, 3/10

U.S. Cl. 260—375 B

14 Claims



- An electrical insulating material comprising
(A) 100 parts by weight of an organic electrical insulating material;
(B) 5–300 parts by weight, based on 100 parts by weight of (A), of zinc oxide powder and,
(C) 1–30 weight percent based on the weight of components (B) and (C) of an organosilicon compound in which there is at least one silicon atom having a hydrogen atom bonded thereto.

4,243,543

STABILIZED LIQUID ENZYME-CONTAINING DETERGENT COMPOSITIONS

C. Carol Guilbert, St. Paul, and William H. Scepaniak, Burnsville, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed May 11, 1979, Ser. No. 38,020
Int. Cl.³ C11D 7/54, 7/42

U.S. Cl. 252—105

14 Claims

1. A two-part, cleaning system consisting essentially of a first, proteolytic enzyme-containing part and a second, relatively more alkaline part associated therewith, each part being separately packaged to assure maximum potency of the proteolytic enzyme until the two parts are blended together, comprising:

- In a first, proteolytic enzyme-containing part, the composition comprising:
 - 20–90% by weight of water;
 - a proteolytically effective amount of a proteolytic enzyme uniformly distributed throughout said water; said proteolytically effective amount ranging from about 0.001 to about 1% by weight on a pure enzyme basis;
 - 1–70% by weight of a detergent selected from the group consisting of anionic surfactants, nonionic surfactants, and mixtures thereof; said detergent being uniformly distributed throughout said water;
 - 0.5–30% by weight of a water-dispersible stabilizing system for said enzyme, dissolved in said water, said system comprising the combination of:
 - a proteolytic enzyme-stabilizing amount ranging from about 0.1 to about 5% by weight of a water-dispersible antioxidant having a single electrode potential, at 25° C., for the oxidation of said antioxidant to an oxidized species, which is at least equal to that of ascorbic acid but less than that of sodium hydrosulfite;
 - about 1 to about 25% by weight of an organic, hydrophilic, water-soluble polyol containing from 2 to 6 hydroxyl groups and having a molecular weight less than about 500;
 - a buffering amount of a weak base for maintaining the pH of said composition within the range of 5.2 to 9.0 and for preventing spontaneous downward pH shifts of said first part, which shifts would result from the spontaneous oxidation of said anion;
- In a second, relatively more alkaline part, formulated for blending with said first, proteolytic enzyme-containing part to increase the cleaning effectiveness of said first part, a composition comprising a chelating or sequestering agent for sequestering alkaline earth metal cations.

4,243,544

PRODUCTION OF ALUMINO-SILICATE-CONTAINING DETERGENT COMPOSITION

Thomas Taylor, Northwich, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,062

Claims priority, application United Kingdom, Feb. 1, 1978, 4052/78

Int. Cl.³ C11D 7/02, 7/14, 11/02

U.S. Cl. 252—135

13 Claims

1. In a process for preparing a powdered detergent composition having an effective amount of a sodium aluminosilicate detergency builder, said process comprising the steps of forming a detergent slurry containing the sodium aluminosilicate detergency builder in a slurry mixing vessel and spray drying the slurry through a spray nozzle, the improvement wherein an aqueous solution or suspension of sodium silicate in an amount sufficient to provide from 0.1 to 50% by weight in the detergent composition is admixed with the detergent slurry at a point between the slurry mixing vessel and the spray nozzle and the contact time between the detergent slurry and the solution or suspension of sodium silicate is less than 5 minutes.

4,243,545

DETERGENT COMPOSITIONS WITH SILANE-ZEOLITE SILICATE BUILDER

Thomas C. Campbell, Paoli, Pa.; Elliot P. Hertzberg, Wilmington, Del., and Howard S. Sherry, Cherry Hill, N.J., assignors to PQ Corporation, Valley Forge, Pa.
Division of Ser. No. 967,537, Dec. 7, 1978, Pat. No. 4,138,363, which is a continuation-in-part of Ser. No. 842,425, Oct. 14, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 102,288

Int. Cl.³ C02F 1/42; C11D 3/08, 3/12, 11/02

U.S. Cl. 252-140

6 Claims

1. A builder system for detergents, consisting of:
 - (a) 5 to 60 parts by weight of a hydrophilic silane-zeolite composite, wherein the composite consists of 0.05 to 3.35% by weight of hydrophilic silane, and the remainder to 100% crystalline sodium aluminosilicate containing 15 to 35% water; and
 - (b) 8 to 25 parts by weight of water soluble alkali metal silicate solids with a molar composition equivalent to 1.0 4.0 moles of SiO₂ per mole of Na₂O.

4,243,546

STABLE AQUEOUS COMPOSITIONS CONTAINING ENZYMES

Elias H. Shaer, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Filed Mar. 23, 1979, Ser. No. 23,363

Int. Cl.³ C11D 7/42, 3/386

U.S. Cl. 252-174.12

19 Claims

1. A stabilizing aqueous enzyme composition consisting essentially of:

- (1) from about 1% to about 90% by weight of water;
- (2) from about 0.01% to about 6% by weight of an acid selected from the group consisting of saturated or unsaturated organic monoacids and diacids having from 1 to 18 carbon atoms;
- (3) from 0.1% to about 25% by weight of an alkanolamine selected from the group consisting of monoethanolamine, diethanolamine and triethanolamine;
- (4) from about 0.006% to about 5.0% by weight of an enzyme selected from the group consisting of proteases and alpha amylases; and
- (5) from about 1% to about 55% by weight of a surfactant selected from the group consisting of nonionic surfactants, anionic surfactants, and mixtures of nonionic and anionic surfactants.

4,243,547

COMPOSITION AND METHOD FOR REMOVING WATER AND AQUEOUS LEAK TRACER SOLUTIONS FROM FUEL TANKS

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 15, 1979, Ser. No. 66,608

Int. Cl.³ C09K 3/32; B65B 1/04; G01M 3/04

U.S. Cl. 252-194

14 Claims

1. A composition for removing residual water or aqueous leak tracer solution from a fuel tank of a vehicle and/or fuel lines and components associated with said tank, which consists essentially of about 25 to about 90% by weight of a nonionic surfactant, said nonionic surfactant being an oxyalkylated aliphatic alcohol or mixtures thereof, formed of an aliphatic primary or secondary alcohol carrying ethoxy or propoxy groups, or mixtures thereof, and about 75 to about 10% of a petroleum-based hydrocarbon fuel, by volume.

4,243,548

PRESSURIZED AEROSOL FORMULATION AND PROCESS FOR THE MANUFACTURE THEREOF

Dieter Heeb, Uwe Bergemann, and Claus-Dieter Frenzel, all of Hamburg, Fed. Rep. of Germany, assignors to Hans Schwarzkopf GmbH, Hamburg, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 964,010

Claims priority, application Switzerland, Nov. 25, 1977, 14492/77

Int. Cl.³ C09K 3/30; B65B 7/00, 31/10

U.S. Cl. 252-305

18 Claims

1. A pressurized aerosol formulation, which is in the form of a mixture, to be sprayed as a cosmetic, room or medicinal spray, of a propellant gas and organic solvents for the propellant gas, as the propellant, and also active compounds and solvents for the active compounds, wherein the mixture is in the form of a homogeneous solution and the solution contains at least 50 percent by weight of non-combustible constituents relative to the total weight of the mixture and contains, as propellant gases, carbon dioxide and dimethyl ether, and, as non-combustible constituents, at least water, carbon dioxide, methylene chloride, 1,1,1-trichloroethane, or a mixture of methylene chloride and 1,1,1-trichloroethane, wherein said organic solvents are selected from the group consisting of acetone, ethyl methyl ketone, diethyl ether, dimethoxymethane, diethyl carbonate, ethyl alcohol, n-propanol, isopropanol, methyl acetate, ethyl acetate, methoxyacetone, hydroxyacetone, methyl isopropyl ketone, diethyl ketone, diisopropyl ketone, dipropyl ketone, dichloroethylene, ethyl chloride, 1,1-dichloroethane, 1-chlorobutane, and mixtures thereof.

12. A process for the manufacture of the pressurized aerosol formulation according to claim 1, characterized in that organic solvents for the propellant gases, in order to form the propellant and also as solvents for the active compounds, and, as non-combustible constituents, at least water, methylene chloride and/or trichloroethane are filled into a pressurized container and, after a spray valve has been fitted, dimethyl ether and then carbon dioxide are passed in, the nature and amount of the constituents being qualitatively and quantitatively so matched, taking into account the intended use, that the pressurized packing contains at least 55 percent by weight of non-combustible constituents and the liquid phase is in the form of a homogeneous solution under a pressure of about 5 to 7 bars after filling.

4,243,549

CONCENTRATED AQUEOUS SURFACTANT COMPOSITIONS

Edward T. Messenger, Workington; Douglas E. Mather, and Brinley M. Phillips, both of Whitehaven, all of England, assignors to Albright & Wilson Ltd., Warley, England

Filed Jul. 25, 1978, Ser. No. 927,832

Claims priority, application United Kingdom, Jul. 26, 1977, 31350/77; May 26, 1978, 31350/78

Int. Cl.³ B01F 17/16

U.S. Cl. 252-355

21 Claims

1. A pourable aqueous surfactant composition consisting essentially of water and an active mixture dilutable to a fluid active concentration between 5 and 30% by weight, said mixture consisting essentially of at least 10% based on the weight of said active mixture of at least one amphoteric surfactant, and at least 10% by weight of said active mixture of at least one anionic surfactant, the total weight of surfactants forming said active mixture being sufficient so that said composition is, at least predominantly, in the G phase.

4,243,550

CATALYST DEMETALLIZATION WITH A REDUCTIVE SO₂ WASH

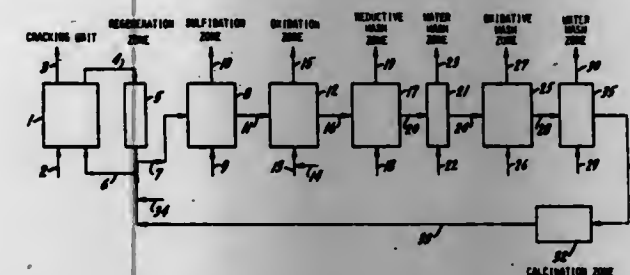
Emmett H. Burk, Glenwood; Jin S. Yoo, South Holland; John A. Karch, Chicago, and Jui-Yuan Sun, South Holland, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jan. 14, 1976, Ser. No. 695,602

Int. Cl.³ B01J 21/20, 29/38; C10G 11/04, 11/00

U.S. Cl. 252-412

24 Claims



1. In a process for treating a metal poisoned-containing catalyst which has been poisoned in a hydrocarbon conversion process, wherein a feedstock containing at least one of said metals is contacted with catalyst to convert hydrocarbon and deposit carbonaceous material is removed from said catalyst, the improvement which comprises:

- (i) contacting said metal poison-containing catalyst with at least one sulfiding agent to convert at least a portion of said poison metal to metal-sulfur-containing compound and form a sulfided catalyst;
- (ii) contacting said sulfided catalyst with an oxygen-containing medium at conditions to promote subsequent metals removal and form a promoted catalyst;
- (iii) contacting said promoted catalyst with an aqueous, SO₂ reductive wash medium to remove at least a portion of the metal poison from said promoted catalyst, said contacting being effected in a contact time of about 0.5-15 minutes;
- (iv) subjecting said reductively washed catalyst to an aqueous oxidative wash; and
- (v) recovering a catalyst of reduced metal poison content and improved catalytic activity.

2. A process as in claim 1 wherein the reductive wash medium is a saturated SO₂ solution.

5. A process as in claim 1 wherein the oxidative wash medium is an aqueous solution of hydrogen peroxide.

4,243,551

CATALYST FOR OXIDIZING MERCAPTANS AND MERCAPTIDE COMPOUNDS AND METHOD FOR PREPARING

Clifford Ward, Louisa, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 830,514, Sep. 6, 1977, abandoned, which is a division of Ser. No. 753,400, Dec. 22, 1976, Pat. No. 4,090,954. This application Dec. 4, 1978, Ser. No. 966,163. The portion of the term of this patent subsequent to May 23, 1995, has been disclaimed.

Int. Cl.³ B01J 31/22

U.S. Cl. 252-428

18 Claims

1. A metal complex or substituted derivative thereof obtained from reacting at a temperature between about 190° C. and about 220° C. a mixture containing 3,3',4,4'-benzophenone-tetracarboxylic dianhydride, a metal salt of the desired metal, urea, boric acid and ammonium molybdate wherein said metal is selected from the group of iron, manganese, chromium, magnesium, copper, nickel, zinc, titanium, hafnium, thorium, tin, lead, columbium, tantalum, antimony, bismuth, molybdenum, palladium, platinum, silver, mercury, vanadium, and cobalt, the mole ratio of urea to 3,3',4,4'-benzophenone-tetracarboxylic dianhydride being between about 20 and about 1, and correspondingly the mole ratio of metal salt being between about 1.0 and about 0.1, the mole ratio of boric acid being

between about 1.0 and about 0.1 and the mole ratio of ammonium molybdate being between about 1.0 and about 0.002.

4. A catalyst for oxidizing alkali mercaptide compounds to disulfides in an aqueous alkaline solution obtained by reacting the complex or derivatives thereof of claim 1 with an acid or base to thereby provide a catalyst which is soluble in aqueous alkaline solution.

7. The catalyst of claim 4 being impregnated on a caustic inert carrier.

4,243,552

POLYMERIZATION CATALYST AND PROCESS

Melvin B. Welch, and Richard E. Dietz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 11, 1978, Ser. No. 968,156

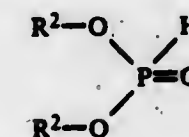
Int. Cl.³ C08F 4/64

U.S. Cl. 252-429 B

21 Claims

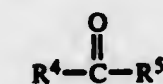
1. A catalyst which forms on mixing:

- A. a catalyst component A formed by milling
 - (1) a magnesium halide or manganous halide with
 - (2) at least one catalyst adjuvant selected from
 - (a) hydrocarbyl metal oxides of the formula M(OR)_n, wherein M is aluminum, boron, magnesium, titanium or zirconium, n is an integer representing the valence of M and ranges from 2-4, and R is a hydrocarbyl group having from 1 to 24 carbon atoms per molecule,
 - (b) organo phosphites of the formula



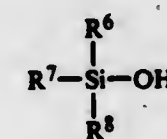
wherein R² is an aryl, alkaryl, alkaryl or haloaryl having from 6 to 20 carbon atoms,

- (c) aromatic phenols of the formula HOR³ wherein R³ is an aryl group containing from 6 to about 20 carbon atoms,
- (d) aromatic ketones of the formula



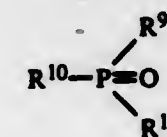
wherein R⁴ is a thiophene, aryl or alkyl group and R⁵ is an aryl group containing from 6 to 20 carbon atoms,

- (e) organo silanols of the formula



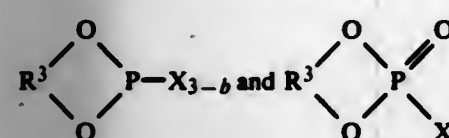
wherein R⁶, R⁷, R⁸ are the same or different and are hydrocarbyl groups containing from 4-20 carbon atoms,

- (f) organo phosphates and phosphines of the formula



wherein each R is the same or different hydrocarbyl or hydrocarbyloxy group containing from 1 to 20 carbon atoms,

- (g) oxygenated terpenes selected from among carvone, dihydrocarvone, carvenone and carvomenthane, (h) triarylphosphites having from 6 to 24 carbon atoms in each aryl group, and (i) halogen-containing organo phosphorus compounds of the formula $PX_3 \cdot (OR^3)_a$,



where R^3 is an aryl group containing from 6 to 20 carbon atoms, X is a halogen, a is 1 or 2, and b is 0 or 2 to form a milled composite wherein the molar ratio of (1) to (2) ranges from 4:1 to 100:1;

- (3) treating the composite thus obtained from (1) and (2) with a tetravalent titanium halide for a period of time sufficient to incorporate titanium tetrahalide on at least a portion of the surface of said milled composite; and B. a cocatalyst component B comprising at least one organo-aluminum compound wherein the molar ratio of component B to titanium compound ranges from 0.5:1 to 2,000:1 and the amount of titanium present in the finished catalyst ranges from about 0.1 to about 10 weight percent based on the dry composite.

4,243,553

PRODUCTION OF IMPROVED MOLYBDENUM DISULFIDE CATALYSTS

Alfred W. Naumann, Charleston, W. Va., and Albert S. Behan, Bronxville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 11, 1979, Ser. No. 47,238

Int. Cl.³ B01J 27/02, 27/24, 31/12; C01G 37/00

U.S. Cl. 252-439

30 Claims

1. A process for the production of improved, sulfur resistant catalysts comprising thermally decomposing a thiomolybdate salt having the formula $B_2[MoO_4S_{4-x}]$, where B is a substituted aliphatic ammonium or a cyclic amine containing one or more basic N atoms, and x is 0, 1 or 2, at a decomposition temperature of from about 300° C. to about 800° C., said substituted ammonium thiomolybdate salt being heated to said decomposition temperature slowly, in an essentially oxygen-free atmosphere, through the temperature interval in which a substantial portion of said substituted ammonium thiomolybdate salt decomposes, said salt decomposing to form a molybdenum disulfide, MoS_2 , product having desirable properties for use as a catalyst for water gas shift and methanation reactions and for catalyzed hydrogenation or hydrotreating reactions.

4,243,554

MOLYBDENUM DISULFIDE CATALYST AND THE PREPARATION THEREOF

Alfred W. Naumann, Charleston, W. Va., and Albert S. Behan, Bronxville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 11, 1979, Ser. No. 47,239

Int. Cl.³ B01J 27/02, 27/24; C01G 37/00

U.S. Cl. 252-439

24 Claims

1. A process for the production of improved, sulfur resistant catalysts comprising thermally decomposing an ammonium salt of molybdenum-sulfur cluster anions or an ammonium thiomolybdate salt having the formula $(NH_4)_x[MoO_4S_{4-x}]$, where x is from about 0.8 to about 2.2, at a decomposition temperature of from about 300° C. to about 800° C., said salt being heated to the decomposition temperature rapidly at a rate in excess of about 15° C./min. in an essentially oxygen-free atmosphere, said salt decomposing at said temperature to form a high surface area, bulk molybdenum disulfide, MoS_2 , having desirable properties for use as a catalyst for water gas shift and

methanation reactions and for catalyzed hydrogenation or hydrotreating reactions.

4,243,555

COMPOSITION FOR RECOVERY OF Mg^{++} FROM BRINES

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 939,544, Sep. 5, 1978, Pat. No. 4,183,900, which is a division of Ser. No. 812,542, Jul. 5, 1977, Pat. No. 4,116,857. This application Aug. 31, 1979, Ser. No. 71,920

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.³ C01B 9/00

U.S. Cl. 252-441

5 Claims

1. A composition of matter comprising crystalline $MgX_2 \cdot 2Al(OH)_3$, where X is a halide.

4,243,556

SULFUR OXIDES CONTROL IN CRACKING CATALYST

William A. Blanton, Jr., Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 4, 1978, Ser. No. 966,190

Int. Cl.³ B01J 29/04

U.S. Cl. 252-455 Z

4 Claims

1. A composition of matter for use in a process for cracking hydrocarbons in the absence of externally supplied molecular hydrogen, comprising:

from 75 to 99 weight percent of an acidic particulate cracking catalyst including at least 20 weight percent of a silicon component, calculated as silica and excluding silicon in the form of zeolitic crystalline aluminosilicate; and from 1 to 25 weight percent of a particulate solid including at least 75 weight percent alumina and from 100 parts per million, by weight, to 1.0 weight percent, relative to the amount of alumina in said particulate solid and calculated on an elemental basis, of a promoter comprising at least one element or compound of an element selected from sodium, manganese and phosphorus, said particulate solid containing less than 20 weight percent silicon, calculated as silica.

4,243,557

SULFUR TRANSFER CRACKING CATALYST

Elroy M. Gladrow; William L. Schuette, both of Baton Rouge, and Terry A. Reid, Slaughter, all of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 26, 1978, Ser. No. 973,000

Int. Cl.³ B01J 29/08, 29/12

U.S. Cl. 252-455 Z

15 Claims

1. A catalyst composition for catalytically cracking a sulfur-containing hydrocarbon feed, and for the fixation of sulfur by the catalyst and transfer thereof from the catalytic regeneration zone to the catalytic cracking zone of a catalytic cracking unit, between which zones the catalyst composition is circulated, which comprises an admixture of composite particles, a major component particle in concentration of greater than 50 percent, based on the total weight of the catalyst, constituted of a Group VIII noble metal composited on an aluminosilicate zeolite-containing refractory inorganic oxide support in concentration ranging from about 1 part to about 50 parts, per million parts by weight of total catalyst, for providing principally cracking and combustion promoting functions, and a minor component particle present in the admixture in concentration of less than 50 percent, based on the total weight of the catalyst, constituted of a Group II-A metal composited with a refractory inorganic oxide support in concentration ranging from about 1 percent to about 50 percent, based on the weight of the minor component particles.

4,243,558

NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos; Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 945,035, Sep. 22, 1978, which is a division of Ser. No. 827,651, Aug. 25, 1977, Pat. No. 4,136,127, which is a continuation-in-part of Ser. No. 810,321, Jan. 27, 1977, Pat. No. 4,110,200, which is a continuation-in-part of Ser. No. 713,020, Aug. 9, 1976, Pat. No. 4,036,742, which is a continuation-in-part of Ser. No. 656,925, Feb. 10, 1976, Pat. No. 4,025,418, which is a continuation-in-part of Ser. No. 550,083, Feb. 14, 1975, Pat. No. 3,939,059. This application Jul. 27, 1979, Ser. No. 61,209

Int. Cl.³ B01J 21/04, 23/58, 23/62, 23/64, 23/78, 23/82, 23/84

U.S. Cl. 252-466 B

13 Claims

1. A nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 2 wt. % rhenium, about 0.1 to about 5 wt. % cobalt, about 0.1 to about 5 wt. % alkali metal or alkaline earth metal, and about 0.001 to about 1 wt. % germanium; wherein the platinum group metal, rhenium, catalytically available cobalt, germanium and alkali or alkaline earth components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the rhenium and catalytically available cobalt components are present in the elemental metallic state or in a state which is reducible to the elemental metallic state or in a mixture of these states; and wherein substantially all of the germanium and alkali or alkaline earth components are present in an oxidation state above that of the corresponding elemental metal.

4,243,559

LIQUID DETERGENT COMPOSITIONS CONTAINING ALKANOLAMINES AND POLYOXYALKYLENE ALKYL ETHERS

Tetsuya Imamura, and Takashi Hiraide, both of Tokyo, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,800

Claims priority, application Japan, Jan. 5, 1978, 53-67530

Int. Cl.³ C11D 3/43, 3/30, 3/20

U.S. Cl. 252-548

3 Claims

1. A liquid detergent composition consisting essentially of: 0.5 to 30% by weight of one or a mixture of two or more alkanolamines having the formula



wherein n is an integer of from 1 to 3 and m is an integer of from 1 to 3; 0.5 to 30% by weight of one or a mixture of two or more polyoxyalkylene mono- or di-lower alkyl ethers having the formula



wherein R and R' are hydrogen, methyl or ethyl, with the proviso that both of R and R' are not hydrogen simultaneously, the mean value of x plus y is from 3.0 to 10.0 and $0.0 \leq x \leq 0.25y$; 0.1 to 20% by weight of one or a mixture of water-soluble, synthetic, organic surfactants; and the balance is essentially water.

4,243,560

METHOD OF RECOVERING POLYOLS FROM SCRAP POLYURETHANE FOAM

Augusto Balestrini, Turin, Italy, assignor to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Apr. 4, 1979, Ser. No. 27,136

Claims priority, application Italy, Apr. 7, 1978, 67768 A/78

Int. Cl.³ C07C 29/74; C08J 11/04

U.S. Cl. 260-2.3

6 Claims

1. A method of recovering polyols from scrap polyurethane

foam by thermal treatment, comprising the steps of: pyrolyzing a comminuted scrap foam of a flexible or semi-rigid polyurethane at a temperature of from about 450° C. to about 800° C. with a residence time at the temperature of from about 3 minutes to about 1 hour in the absence of air in the absence of any added reactive agents or catalysts; at the same time collecting and condensing the gaseous decomposition products evolving from the mass being pyrolyzed, thereby obtaining a liquid condensate comprising a heavy aqueous phase and a light organic phase; and recovering the organic phase.

5. A method according to claim 1, 2 or 3, wherein the method includes reacting the recovered organic phase without purification treatment with an organic diisocyanate to produce a polyurethane resin.

4,243,561

COMPOSITION AND METHOD OF IMPROVING THE GREEN STRENGTH OF UNVULCANIZED [ELASTOMER] RECLAIMED RUBBER ELASTOMER BLENDS

Joginder Lal, Akron, and Sandra J. Walters, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 779,382, Mar. 21, 1977, Pat. No. 4,198,324

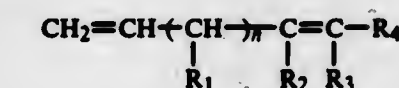
This application May 24, 1979, Ser. No. 42,275

Int. Cl.³ C08L 7/00, 9/00

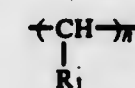
U.S. Cl. 260-4 R

4 Claims

1. A prevulcanization process for producing elastomer blends having improved green strength, comprising: mixing a semi-crystalline butene polymer having a number average molecular weight of from about 30,000 to about 500,000 with an elastomer and reclaimed rubber to produce the blend, said butene polymer selected from the class consisting of polybutene and interpolymers made from 1-butene monomer and at least one monomer selected from the class consisting of alpha-olefins having 2 through 16 carbon atoms; non-conjugated dienes having the general formula:



where R_1 , R_2 , and R_3 is a hydrogen, a lower alkyl group containing from one to four carbon atoms, or an aryl group; where R_4 is an aryl group or a lower alkyl group containing from one to nine carbon atoms, and n is an integer having a value of from 1 to 6, and wherein the said R_1 's in the



group may be similar to dissimilar; and non-conjugated alpha, omega-polyenes having from 6 to 36 carbon atoms which may or may not contain internal unsaturation, wherein butene in said interpolymers comprises from 99.9 to 65 mole percent of the total monomers,

said elastomer selected from the group consisting of natural cis-1,4-polyisoprene and elastomers made from monomers selected from the group consisting of conjugated dienes having from 4 to 10 carbon atoms, interpolymers of said dienes among themselves or with monomers selected from the group consisting of vinyl substituted aromatic hydrocarbon compounds having from 8 to 12 carbon atoms, and polyalkenylenes, the amount of said butene polymer ranging from about 2 parts to about 25 parts per 100 parts of said elastomer and said reclaimed rubber, the amount of said elastomer based upon said elastomer and said reclaimed rubber being greater than 5 percent by weight.

4,243,562

PROCESS FOR THE POLYMERIZATION OF VINYL CHLORIDE IN AQUEOUS SUSPENSION UTILIZING AN OIL-SOLUBLE INITIATOR AND SUBSEQUENTLY A WATER-SOLUBLE INITIATOR AND USE OF THE POWDERS OBTAINED THEREBY

Andre Petit, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Jan. 2, 1978, Ser. No. 911,811

Claims priority, application France, Jan. 7, 1977, 77 17798
Int. Cl.³ C08F 2/20, 14/06

U.S. Cl. 260—17 A

10 Claims

1. Process for the production of polyvinyl chloride powder suitable for making battery separators by the polymerization of vinyl chloride in aqueous suspension in the presence of an oil-soluble free radical polymerization initiator and a dispersing agent system comprising a cellulose ether and an anionic emulsifying agent, and separation of the polyvinyl chloride powder in a conventional manner after termination of polymerization, consisting essentially of: carrying out the polymerization initially with an oil-soluble initiator, and adding a water-soluble free radical polymerization initiator during polymerization after conversion reaches at least 60%.

4,243,563

CALCIUM POLYSULFIDE SOIL STABILIZATION METHOD AND COMPOSITIONS

Richard L. Fern, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 826,220, Aug. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 730,486, Oct. 7, 1976, abandoned. This application Mar. 16, 1979, Ser. No. 21,134

Int. Cl.³ C08L 1/28; E01C 3/04

U.S. Cl. 260—17 R

28 Claims

1. A soil stabilizing composition comprising an aqueous solution of calcium polysulfide containing sufficient emulsifier compatible with calcium polysulfide to aid the composition in soil penetration and dispersed particles of an organic polymer of number average molecular weight of about 5,000 to 600,000 and having an average particle size of from about 0.005 to 10 microns, wherein said calcium polysulfide contains an average of from about 2 to about 7 atoms of sulfur per atom of calcium.

4,243,564

REACTION PRODUCTS OF A HYDROLYZED STYRENE-MALEIC ANHYDRIDE COPOLYMER AND A DISPERSED HIGH AMYLOPECTIN STARCH PRODUCT NEUTRALIZED WITH A VOLATILE ALKALI, METHOD OF MAKING SAME, AND COATING COMPOSITIONS COMPRISING SAME

Robert C. Mavis, Lodi, N.J., assignor to Moses-Kouigsberg, Tenafly, N.J.; Henry A. Fremont, Wyoming, Ohio and G. Howard Kingsley, New London, N.H.

Filed May 18, 1979, Ser. No. 40,228

Int. Cl.³ C08L 3/12

U.S. Cl. 260—17.4 ST

11 Claims

1. The volatile alkali salt of a reaction product in an aqueous medium of a hydrolyzed styrene-maleic anhydride copolymer and a dispersed high amylopectin starch product.

4,243,565

AQUEOUS DISPERSION TYPE COATING COMPOSITION

Sakae Nishino, Komaki; Takao Sakakibara, Kasugai, and Haruhiko Okazaki, Iwakura, aliof, Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 863,147, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 670,006, Mar. 24, 1976, abandoned. This application Aug. 10, 1979, Ser. No. 65,753
Claims priority, application Japan, Mar. 28, 1975, 50-37662; Mar. 9, 1976, 51-25224

Int. Cl.³ C08L 91/00; C09D 3/52

U.S. Cl. 260—22 CQ

23 Claims

11. A heat curable aqueous dispersion coating composition comprising (a) 90 to 30 parts by weight of an aqueous medium, (b) 10 to 70 parts of water-insoluble synthetic resin particles having a softening point of 5° to 120° C. and an average particle size of 1 to 30μ, (c) separate particles of a scaly aluminum pigment in which the short diameter: long diameter ratio in the particles is 1: at least 10 and the long diameter is not larger than 100μ, in an amount of 0.05 to 30% by weight based on the resin particles and (d) a water-dilutable resin in an amount of up to 30% by weight based on the resin particles, said resin particles being selected from (1) a mixture in the respective particles of at least two types of synthetic resins capable of reacting with each other upon heating or (2) a mixture in the respective particles of a synthetic resin and a curing agent for said resin capable of causing curing of said resin upon heating.

4,243,566

PREPARATION OF LATEX FROM SOLVENT DISPERSED POLYMER COMPOSITION

Oliver W. Burke, Jr., deceased, late of Fort Lauderdale, Fla. (by Norma Scala, administratrix), assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 323,381, Jan. 15, 1973, Pat. No. 3,862,078, which is a continuation-in-part of Ser. No. 226,419, Feb. 15, 1972, Pat. No. 3,879,327, which is a continuation-in-part of Ser. No. 817,494, Apr. 18, 1969, abandoned, and a continuation-in-part of Ser. No. 621,997, Mar. 7, 1967, Pat. No. 3,502,917, Ser. No. 691,823, Dec. 19, 1967, abandoned, Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,644,263, and Ser. No. 784,596, Dec. 18, 1968, Pat. No. 3,622,127. This application Jan. 8, 1975, Ser. No. 539,607

Int. Cl.³ C08L 23/16, 7/02

U.S. Cl. 260—29.6 R

34 Claims

1. In the formation of the latex from a solvent dispersed polymer composition, by a process which comprises
(1) providing a dispersion of the polymer composition in essentially water-immiscible volatile solvent which itself or as an azeotrope with water has a boiling point lower than that of water at atmospheric pressure,
(2) adding water and emulsifier to said dispersion in proportions to form an emulsion having water as its continuum and emulsifying the same so that the discontinuous phase thereof is in particles of precursor latex size,
(3) stripping the solvent from the emulsion to form an essentially solvent free latex, and
(4) recovering the latex product,
the improvement which consists in the combination in the process of the further steps of
(5) providing a moving flow of gas comprising steam as an initial continuous phase,
(6) dispersing the emulsion formed in step (2) into said flow of gas as the initial continuous phase while subjecting the phases to a decrease of pressure and maintaining the temperature thereof below the limiting temperature for stability of the emulsion, thereby vaporizing solvent from the dispersed droplets and forming essentially solvent free droplets of latex and vapor,
(7) establishing a separating zone maintained at a pressure below the decreased pressure attained in step (6),
(8) establishing a flow of latex of the selected high polymer

other than the flow of steps (5) and (6) through said separating zone,
(9) introducing into said separating zone the droplets of latex and vapor produced by step (6) and impinging said droplets upon the flow of latex therein,
(10) withdrawing vapor from said separating zone,
(11) withdrawing the combined latex from said separating zone, and
(12) during step (6) and prior to the practice of step (9),
(a) essentially avoiding impacting of the dispersed droplets on solid surfaces at high velocities capable of effecting agglomeration of polymer of the droplets, and
(b) maintaining on the flowing dispersion, until the solvent vaporization from the dispersed droplets is essentially complete, a pressure gradient which is not so large as to destabilize the latex being formed.

4,243,567

MEDICAL COMPOSITIONS

William D. Potter, Bishop's Stortford, England, assignor to Smith & Nephew Research Limited, Harlow, England

Filed Dec. 2, 1977, Ser. No. 856,938

Claims priority, application United Kingdom, Dec. 3, 1976, 50578/76; Jan. 3, 1977, 23789/77; Nov. 18, 1977, 48193/77

Int. Cl.³ C08L 33/02

U.S. Cl. 260—29.6 MM

28 Claims

1. A method for the production of a cement which comprises bringing into contact (a) a phosphate or borate glass containing at least one multivalent metal, said glass being present in particulate and/or fibrous form and being wholly or substantially soluble in aqueous conditions to form at least one reactive component capable of crosslinking a poly (carboxylic acid) and (b) a poly (carboxylic acid) or precursor thereof or partially crosslinked form thereof and (c) an aqueous medium.

4,243,568

ETHYLENE COPOLYMER COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF

Peter Brown, Harlow, England, assignor to Polymer Investments N.V., Curacao, Netherlands Antilles, Netherlands Antilles

Filed Feb. 23, 1979, Ser. No. 14,452

Claims priority, application United Kingdom, Feb. 23, 1978, 7361/78

Int. Cl.³ C08L 31/04, 23/08

U.S. Cl. 260—29.6 R

26 Claims

1. A process for preparing a composition comprising an ethylene copolymer and a liquid hydrocarbon, the process comprising mixing an ethylene copolymer which is in the form of a solid powder with from 40 to 220 parts by weight per 100 parts by weight of ethylene copolymer of a liquid hydrocarbon to form a blend of discrete solid particles comprising at least two ingredients, the resulting composition being capable of flowing freely, said liquid hydrocarbon being one which does not exude from a fused mass of ethylene copolymer and liquid hydrocarbon obtained by mixing 50 g of powdered copolymer with the liquid hydrocarbon in the range specified in a metal dish, heating the dish at 120° C. to fuse the polymer, cooling the dish, holding the dish at minus 20° C. for 18 hours and then allowing the dish to warm to room temperature.

4,243,569

HIGH SOLIDS COMPOSITIONS CONTAINING ESTER DIOL ALKOXYLATE AND AQUEOUS ACRYLIC LATEX
Joseph V. Koleske, Charleston; Robert J. Knopf, Saint Albans, and Oliver W. Smith, South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 837,731, Sep. 29, 1977, Pat. No. 4,158,652
This application Feb. 26, 1979, Ser. No. 15,424

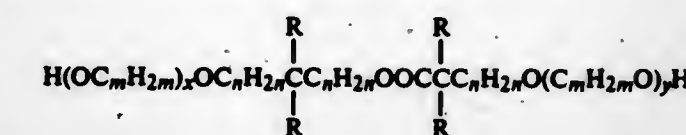
Int. Cl.³ C08L 33/08, 33/14

U.S. Cl. 260—29.6 TA

4 Claims

1. A high solids composition comprising a blend of (I) from

5 to 50 weight percent, based on the total solids content of the latex, of an ester diol alkoxyolate of the formula:



wherein m is an integer having a value of from 2 to 4; n is an integer having a value of from 1 to 5; x and y are integers each having a value of from 1 to 20 and R is an unsubstituted or substituted alkyl group having from 1 to 8 carbon atoms and (II) an aqueous acrylic latex.

4,243,570

PLASTICIZED POLYCARBONATE COMPOSITION
Victor Mark, Evansville, Ind., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

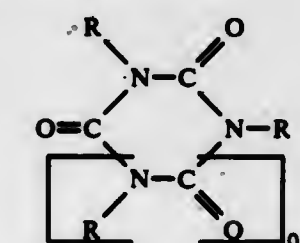
Continuation-in-part of Ser. No. 958,247, Nov. 6, 1978, abandoned, which is a continuation of Ser. No. 811,063, Jun. 29, 1977, abandoned. This application Jul. 25, 1979, Ser. No. 60,667

Int. Cl.³ C08K 5/34

U.S. Cl. 260—30.2

7 Claims

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of an organic isocyanurate plasticizer consisting of the following formula:



R is independently selected from the group consisting of C₁ to C₃₀ alkyl; cycloalkyl or 4 to 10 carbon atoms; hydroxyl free aryl of 6 to 14 carbon atoms and substituted hydroxyl free aryl wherein the substituents are C₁ to C₃₀ alkyl, halogen, C₁ to C₃₀ alkoxy, aryloxy of 6 to 14 carbon atoms, alkylthio of 1 to 30 carbon atoms and arylthio of 6 to 14 carbon atoms.

4,243,571

STAIN-RESISTANT VINYL CHLORIDE POLYMER COMPOSITIONS PLASTICIZED WITH ALKYL BENZYL SUCCINATES, GLUTARATES OR MIXTURES THEREOF
James D. Gabbard, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1978, Ser. No. 972,763

Int. Cl.³ C08K 5/09

U.S. Cl. 260—31.8 H

14 Claims

1. A vinyl chloride polymer composition comprising a plasticizing amount of prime ester at least about 40% by weight of which is diester selected from alkyl benzyl succinates, glutarates and mixtures thereof in which said alkyl is from about C₃ to about C₆, said amount being less than 35 phr.

4,243,572

ALKYL ALKYLARYL ADIPATE PLASTICIZERS FOR POLYVINYL BUTYRAL

Daniel Dages, Les Mureaux, France, assignor to Saint-Gobain Industries, Aubervilliers, France

Filed Nov. 19, 1979, Ser. No. 95,786

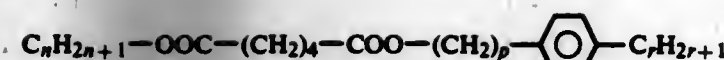
Claims priority, application France, Nov. 21, 1978, 78 32737

Int. Cl.³ C08K 5/11

U.S. Cl. 260—31.8 R

20 Claims

1. A method for plasticizing polyvinyl butyral which comprises admixing polyvinyl butyral and alkyl alkylaryl adipate of the formula:



where n is an integer greater than 0 and p and r integers whose sum is greater than 0.

4,243,573

ACRYLIC GRAFT COPOLYMERS AND COATING COMPOSITIONS THEREOF

John A. Simms, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

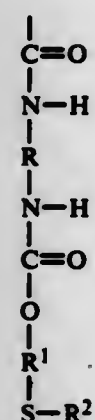
Division of Ser. No. 972,426, Dec. 22, 1978, which is a division of Ser. No. 820,879, Aug. 1, 1977, Pat. No. 4,151,227. This application Nov. 7, 1979, Ser. No. 91,891

Int. Cl.³ C08F 283/02

U.S. Cl. 260—33.6 UA

8 Claims

1. A coating composition comprising 5–60% by weight of a film forming constituent of a graft copolymer and 50–95% by weight of a liquid, wherein the graft copolymer consisting essentially of about 25–95% by weight of a polyester backbone and about 5–75% by weight of acrylic side chains; wherein the backbone contains pendent hydroxyl groups before the attachment of side chains by replacement of a hydrogen of at least one of the hydroxyl groups by the formula



where R is an aliphatic group, a cycloaliphatic group or an aromatic group; R¹ is an alkylene group having 2–6 carbon atoms, R², which forms a side chain, is an acrylic polymer segment.

4,243,574

POLY(META-PHENYLENE ISOPHTHALAMIDE) MOLDING COMPOSITIONS

Carl H. Manwiller, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 30, 1979, Ser. No. 25,565

Int. Cl.³ C08K 3/04, 3/30

U.S. Cl. 260—37 N

9 Claims

1. A coalescible and densifiable powder of poly(meta-phenylene isophthalamide) having good flow characteristics, a density of about from 1.0 to 1.3 g/cc when pressed into a preform and a density when sintered of at least about 1.24 g/cc and containing about from 1–75% by weight, based on the total weight of the composition, of a particulate additive, the additive having been present during the precipitation of the poly(meta-phenylene isophthalamide, and the precipitant having been maintained at a temperature of about from 10°–30° C. during the precipitation.

4,243,575

FILLED THERMOPLASTIC RESIN COMPOSITIONS

Donald C. Myers, Stephentown, N.Y., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Filed Jul. 25, 1979, Ser. No. 60,742

Int. Cl.³ C08L 67/00

U.S. Cl. 260—37 PC

24 Claims

1. A filled polycarbonate composition comprising an admixture of a high molecular weight aromatic polycarbonate resin and a particulate filler in an amount of about 2–40% by weight of the total weight of said polycarbonate composition, said particulate filler consisting essentially of an amorphous, aluminosilicate glass recovered from flyash with the magnetite portion thereof removed and in the form of solid spheres having a specific gravity of about 2.4, a bulk density of about 75–80 lbs./ft.³, a mass median diameter of about 5–6 microns, and a pH of about 3–8.

4,243,576

BLENDS OF ETHYLENE-VINYL ACETATE COPOLYMER RUBBERS WITH ELASTOMERS

Joseph Fischer, and John M. Hoyt, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,149

Int. Cl.³ C08L 23/16

U.S. Cl. 260—42.15

9 Claims

1. A polymer blend demonstrating improved Mooney viscosity and green strength comprising from about 90% to about 60% by weight of an amorphous ethylene-vinyl acetate copolymer containing from about 40% to about 60% copolymerized vinyl acetate by weight, and from about 10% to about 40% by weight of a modifying elastomer having a Mooney viscosity of from about 65 to about 115 ML₁₊₄ at 100° C. wherein the modifying elastomer is selected from the group consisting of high viscosity ethylene propylene rubber and ethylene-propylene diene monomer terpolymer.

4,243,577

MODIFIED THERMOPLASTIC RESINS

Cherry C. Chiao, San Ramon, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 942,094, Sep. 13, 1978, abandoned. This application Jan. 18, 1979, Ser. No. 49,701

Int. Cl.³ C08K 3/04

U.S. Cl. 260—42.47

9 Claims

1. A nitrile rubber, carbon black concentrate composition comprising (1) from about 2 to about 50 weight % carbon black, (2) from about 20 to about 40 weight % of a butadiene-acrylonitrile rubbery copolymer, with the balance being essentially (3) ABS terpolymer.

4,243,578

DENTAL FILLING COMPOSITION

Denis J. O'Sullivan; Bernard J. Bolger, and T. Eisirt Casey, all of Dublin, Ireland, assignors to Loctite Corporation, Newington, Conn.

Continuation of Ser. No. 800,599, May 25, 1977, abandoned, which is a continuation of Ser. No. 415,454, Nov. 16, 1972, abandoned. This application Jan. 17, 1980, Ser. No. 112,878

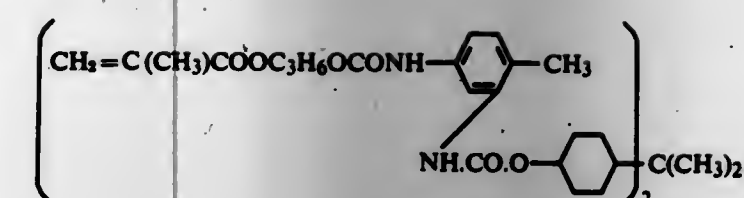
Claims priority, application Ireland, Nov. 16, 1972, 1580/72

Int. Cl.³ C08K 3/40

U.S. Cl. 260—42.52

1 Claim

1. A dental filling composition which comprises: a mixture of (1) polymerizable acrylate ester monomers, the structure of one of which conforms to (a) the formula



and the other structure which conforms to (b) the formula



wherein PR represents a propylene triol oligomer residue; (2) about 0.1 to about 7 percent by weight of a free radical polymerization initiator, based upon the weight of the mixture of the two monomers; and (3) about 40 to 95 percent by weight glass powder filler, based upon the weight of the composition.

4,243,579

FLAME RETARDANT ALKYLENE-ALKYL ACRYLATE COPOLYMER COMPOSITION

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,336

Int. Cl.³ C08K 3/16

U.S. Cl. 260—45.7 R

25 Claims

1. A flame retardant alkylene-alkyl acrylate copolymer composition comprising alkylene-alkyl acrylate copolymer, from about 1 to 30 weight percent of halogenated flame retardant additive and from about 0.5 to 20 weight percent of at least one of calcium or magnesium oxide, carbonate, hydroxide or sulfate; said weight percents based on the total weight of the composition.

4,243,580

ELASTOMERIC

COPOLYETHER-ESTER/POLYOXYMETHYLENE

David M. Gale, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 749,219, Dec. 10, 1976, abandoned.

This application Jan. 8, 1979, Ser. No. 1,931

Int. Cl.³ C08K 5/34; C08L 67/06; C08K 5/20, 5/18

U.S. Cl. 260—45.8 NT

19 Claims

1. An elastomeric molding composition comprising a mixture of:

- about 10–40 percent by weight of an oxymethylene polymer consisting essentially of about 95–100 percent by weight of oxymethylene units and 0 to about 5 percent by weight of oxyalkylene units of 2–8 adjacent carbon atoms in the main chain, said polymer having a number average molecular weight of about 1000–500,000;
- about 90–60 percent by weight of a copolyether-ester having an inherent viscosity of at least 1, as measured in m-cresol in 0.1 g/dl concentration at 30° C., said copolyether-ester consisting essentially of a multiplicity of recurring intralinear long-chain and short-chain ester units connected head-to-tail through ester linkages, said long-chain ester units having the formula:



wherein

G is a divalent radical remaining after removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol

having a carbon-to-oxygen mole ratio of about 2–4.3 and a molecular weight of about 400–6000; and R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid having a molecular weight less than about 300; and said short-chain ester units having the formula:



wherein

D is a divalent radical remaining after removal of hydroxyl groups from a low molecular weight diol having a molecular weight less than about 250; and

R is as defined above;

with the proviso that the short-chain ester units constitute about 15–95 percent by weight and the long-chain ester units constitute about 85–5 percent by weight of the copolyether-ester.

4,243,581

STABILIZED POLYPROPYLENE COMPOSITION

Motonobu Minagawa; Mitsuo Akutsu, both of Urawa; Hiroshi Fujiwara, Omiya, and Masayuki Kashiki, Soka, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Aug. 17, 1978; Ser. No. 934,654

Claims priority, application Japan, Aug. 17, 1977, 52-98928

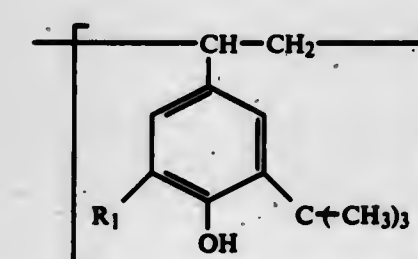
Int. Cl.³ C08K 5/36

U.S. Cl. 260—45.85 S

6 Claims

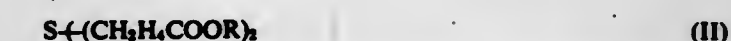
1. A propylene polymer composition stabilized against oxidative degradation comprising

- 100 parts by weight of a propylene polymer,
- 0.001 to 5 parts by weight of a poly(tert-butylated p-vinylphenol) composed substantially of monomeric units of the formula (I)



wherein R₁ represents a hydrogen atom or a tertiary butyl group, and

- 0.001 to 5 parts by weight of a dialkylthiodipropionate of the formula (II)



wherein R represents an alkyl group containing 10 to 20 carbon atoms.

4,243,582

NOVEL GLYCOPROTEINS FROM BOVINE CARTILAGE

Curtis A. Spillburg, St. Louis, and James M. Schuck, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1979, Ser. No. 33,346

Int. Cl.³ C07G 7/00

U.S. Cl. 260—112 R

3 Claims

1. A high purity glycoprotein isolated from bovine cartilage selected from the group consisting of Component A and Component B and having the following characteristics:

- amino acid composition as follows:

Amino Acid	Number of Residues	
	Component A	Component B
LYS	25	19
HIS	10	9
ARG	13	12
ASP	39	35
THR	23	20
SER	31	24
GLU	47	40
PRO	28	23
GLY	22	19
ALA	34	28
↓ CYS	10	4
VAL	31	27
MET	5	4
ILE	15	14
LEU	37	35
TYR	10	8
PHE	16	15

said number of residues for each amino acid being subject to a variation of about $\pm 10\%$ from the number stated;
 (b) carbohydrate composition comprising hexose, fucose, sialic acid and hexosamine;
 (c) molecular weight of about $65,000 \pm 10,000$;
 (d) isoelectric point of about 3.8; and
 (e) having activity as an inhibitor of endothelial cell growth and as a trypsin inhibitor.

4,243,583

PROCESS FOR THE PREPARATION OF AZO DYES
 Robert Portmann, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 25, 1979, Ser. No. 42,696

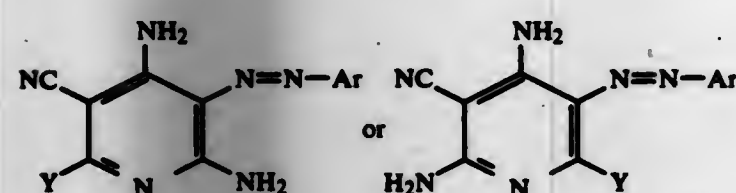
Claims priority, application Switzerland, Jun. 2, 1978, 6077/78

Int. Cl.³ C07C 27/04, 120/00, 121/82

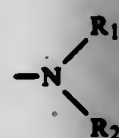
U.S. Cl. 260—156

13 Claims

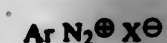
1. A process for the preparation of an azo dye of the formula



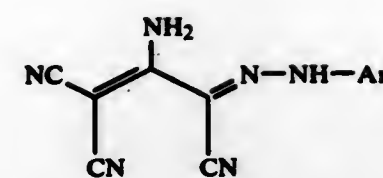
or of a mixture thereof, in which Ar is a substituted or unsubstituted phenyl, naphthyl or aromatic heterocyclic radical and Y is a group of the formula $-O-R$, $-S-R$ or



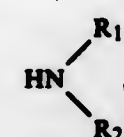
in which R is a substituted or unsubstituted alkyl, aryl or heterocyclic radical and R₁ and R₂ independently of one another are hydrogen or a substituted or unsubstituted alkyl, aryl or heterocyclic radical, and the groups R₁ and R₂, together with the nitrogen atom to which they are bonded, can form a ring, which comprises coupling a diazonium salt of the formula



in which Ar is as defined above and X⁻ is an anion, with dimeric malonodinitrile to give an intermediate of the formula



in which Ar is as defined above, and cyclising this intermediate with an alcohol or thioalcohol of the formula ROH or RSH or an amine of the formula



in which formulae R, R₁ and R₂ are as defined above, it being necessary for the amine to be present in the form of the ammonium salt during the reaction.

4,243,584

MONOAZO DYESTUFFS CONTAINING DIAZO COMPONENT SUBSTITUTED BY DISULFIDE AND TRIFLUOROMETHYL GROUPS

Richard Sommer, Leverkusen; Gerhard Wolfram, Bergisch-Neukirchen, and Gerhard Büttner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 486,907, Jul. 9, 1974, abandoned. This application Jan. 27, 1978, Ser. No. 919,482

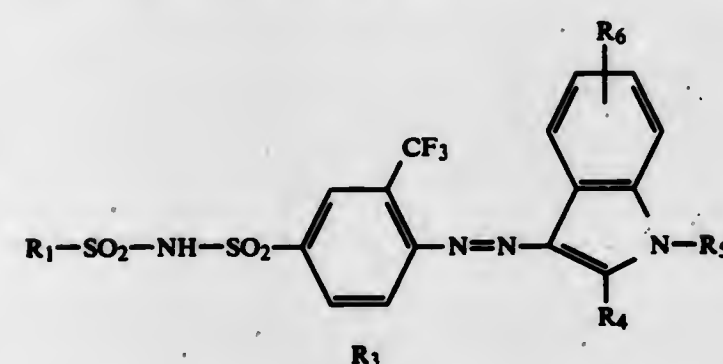
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1973, 2335849

Int. Cl.³ C09B 29/08, 29/36, 29/38; D06P 3/26

U.S. Cl. 260—165

4 Claims

1. Monoazo dyestuff having the formula



in which

R₁ is phenyl; naphthyl; phenyl substituted with alkyl of 1-4 carbon atoms, alkoxy of 1-4 carbon atoms, halogen, cyano or nitro; alkyl of 1-4 carbon atoms; or dialkylamino in which the alkyl groups contain 1-4 carbon atoms;

R₃ is hydrogen, halogen, alkyl with 1-4 carbon atoms; alkoxy with 1-4 carbon atoms or trifluoromethyl;

R₄ is alkyl of 1-4 carbon atoms; phenyl; naphthyl; or phenyl or naphthyl substituted by halogen, alkyl of 1-4 carbon atoms or phenyl;

R₅ is hydrogen or unsubstituted alkyl with 1-4 carbon atoms; and

R₆ is hydrogen, cyano, halogen, alkyl with 1-4 carbon atoms or alkoxy with 1-4 carbon atoms.

4,243,585

BENDODIAZOCINE DERIVATIVES AND PROCESS OF MAKING THE SAME

Wolfgang Milkowski, Burgdorf; Renke Budden, Peine; Siegfried Funke, Hanover; Rolf Hilschens, Hanover; Hans-Günther Liepmann, Hanover; Werner Stühmer, Eldagsen, and Horst Zeugner, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 588,969, Jan. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 355,986, May 1, 1973, Pat. No. 3,994,809, Ser. No. 355,987, May 1, 1973, abandoned, and Ser. No. 355,989, May 1, 1973, abandoned. This application Jan. 23, 1978, Ser. No. 871,741

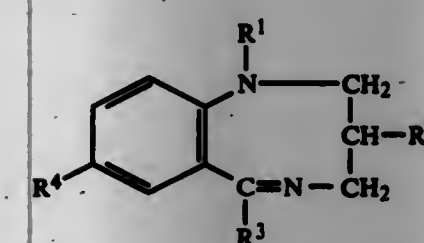
Claims priority, application Fed. Rep. of Germany, May 3, 1972, 2221558

Int. Cl.³ A61K 31/55; C07D 245/06

U.S. Cl. 260—239 BD

19 Claims

1. A bendodiazocine having the formula



in which

R¹ is methyl,

R² is a hydroxy, chloro, acetoxy or benzyloxy radical,

R³ is a phenyl, 2-chlorophenyl or 3,4,5-trimethoxyphenyl radical, and

R⁴ is a hydrogen or chloro radical.

4,243,586

STEROIDAL-17-SPIRO-DIHYDROFURANONES

Sam T. Chao, East Windsor, and Ravi K. Varma, Belle Mead, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

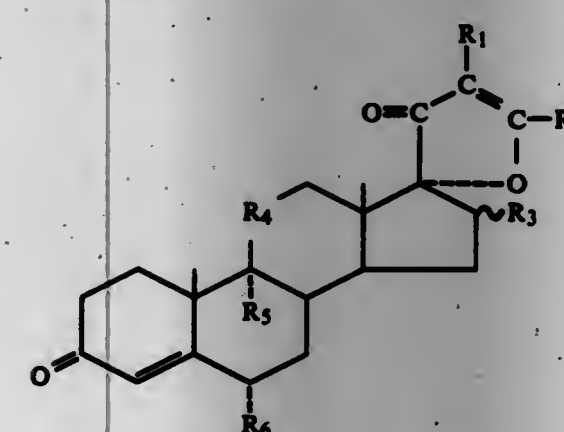
Filed Jan. 18, 1980, Ser. No. 113,153

Int. Cl.³ C07J 71/00

U.S. Cl. 260—239.55 R

11 Claims

1. A steroid having the formula



or the 1,2-dehydro derivative thereof, wherein R₁ is bromine, chlorine, or fluorine; R₂ is alkyl, aryl, or arylalkyl; R₃ is hydrogen, α-methyl, β-methyl, hydroxy or a conventional hydrolyzable ester thereof; R₄ is carbonyl or β-hydroxymethylene; R₅ is bromine, chlorine or fluorine; and R₆ is hydrogen, bromine, fluorine or methyl.

4,243,587

PROCESS FOR 3β-AMINOAZETIDIN-2-ONES

Robin D. G. Cooper, Gary A. Koppel, and Lawrence J. McShane, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

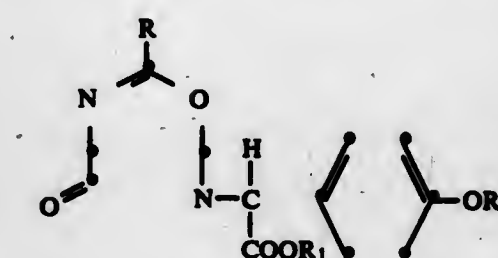
Division of Ser. No. 933,707, Aug. 15, 1978, Pat. No. 4,180,507, which is a division of Ser. No. 775,240, Mar. 7, 1977, Pat. No. 4,127,568. This application May 21, 1979, Ser. No. 41,282

Int. Cl.³ C07D 498/04

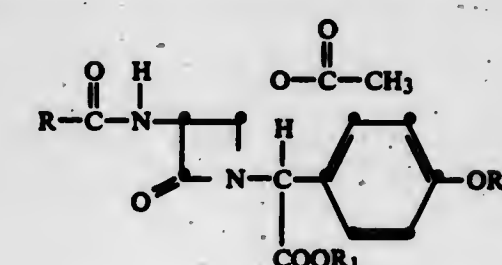
2 Claims

U.S. Cl. 260—245.4

1. The process for preparing the oxazolineazetidinone of the formula



wherein R is C₁-C₃ alkyl, phenyl or benzyl; and R₁ and R₂ independently are benzyl, 4-methoxybenzyl, or diphenylmethyl; which comprises treating in an inert solvent a 3-acylamino-4α-acetoxyazetidinone ester of the formula



wherein R, R₁, and R₂ have the above-defined meanings with hydrogen chloride at a temperature between about -10° C. and about 25° C. and recovering said oxazolineazetidinone.

4,243,588

PROCESS FOR NOVEL OXAZOLINOAZETIDINONES

Wayne A. Spitzer, and Theodore Goodson, Jr., both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

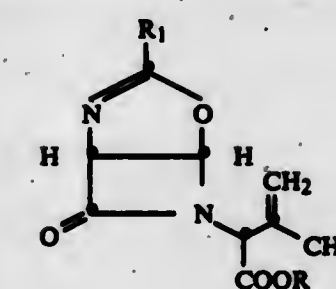
Filed Jun. 19, 1979, Ser. No. 50,041

Int. Cl.³ C07D 498/04

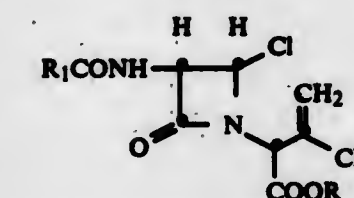
U.S. Cl. 260—245.4

5 Claims

1. The process for preparing a compound of the formula



which comprises reacting a chloroazetidinone compound of the formula



with lead difluoride in dimethyl sulfoxide at about 0° to about

60° C. wherein in the above formulas R is hydrogen or a carboxylic acid protecting group and R₁ is

- hydrogen, C₁-C₄ alkyl or halo(C₁-C₄ alkyl);
- a group R₆ wherein R₆ is phenyl or phenyl substituted by 1 or 2 groups selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, C₁-C₄ alkyl, C₁-C₄ alkoxy, protected hydroxy, carbamyl, trifluoromethyl and methanesulfonamido;
- a group of the formula



wherein m is 1 or 0 and R₆ is as defined above;

- a group of the formula



wherein R₆ is cyclohexadienyl, 2-furyl, 2-thienyl, or 3-thienyl; or

- a group of the formula —COOR wherein R is as defined above.

4,243,589

TRIAZOLOBENZAZEPINES AND PROCESSES FOR THEIR PRODUCTION

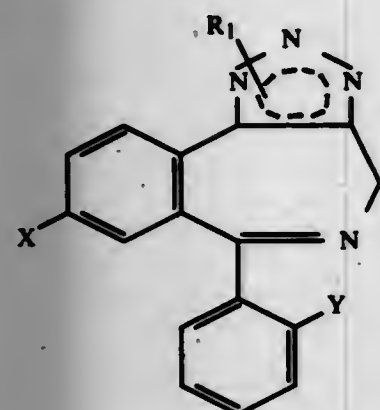
Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 30, 1979, Ser. No. 99,109

Int. Cl.³ C07D 249/04; A61K 31/55; C07D 487/04

U.S. Cl. 260—245.5

- A compound of the formula



wherein R₁ is hydrogen or lower alkyl and X and Y are hydrogen or halogen and the pharmaceutically acceptable salts thereof.

- The compound: 8-chloro-6-(2-fluorophenyl)-2H,4H-[1,2,3]triazolo[4,5-a][2]benzazepine.

4,243,590

PROCESS FOR MAKING INDOLE

Kurt Handrick, Essen-Steele, and Georg Kölling, Essen-Bredency, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed May 22, 1979, Ser. No. 41,516

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822907

Int. Cl.³ C07D 209/08

U.S. Cl. 260—319.1

7 Claims

1. In a process for making indole of the type wherein 1,2,3,4-tetrahydroquinoline is reacted with steam in a reactor filled with an inert material, the improvement comprising introducing a mixture of 1,2,3,4-tetrahydroquinoline and steam, in a mol ratio between 1:3 and 1:12, at a reaction temperature of about 650° to 750° C., at such speed that the necessary residence time of the starting and reaction products in the main reaction zone is limited to about 1 to 2 seconds, and then isolating and recovering the indole from the reaction product, whereby a high

yield of indole is obtained and formation of byproducts is suppressed.

4,243,591

POLY(VINYL PHOSPHONOMETHYLENE AMINO CARBOXYLATES) AND PROCESS FOR PREPARATION

Ralph W. Magin, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 783,360, Mar. 31, 1977,

abandoned, and a continuation-in-part of Ser. No. 723,390, Sep. 15, 1976, abandoned, and a continuation of Ser. No. 630,231,

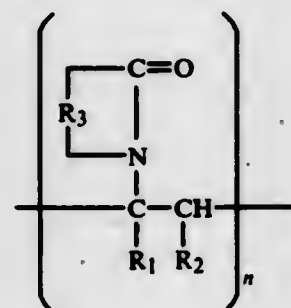
Nov. 10, 1975, abandoned. This application Mar. 2, 1979, Ser. No. 16,859

Int. Cl.³ C07D 401/14, 403/14

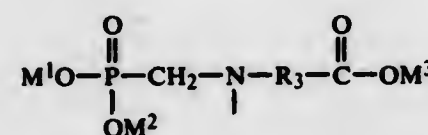
U.S. Cl. 260—326.22

18 Claims

- A polyvinyl compound having the formula:



wherein R₁ and R₂ are individually selected from hydrogen, phenyl and alkyl having from 1 to about 4 carbon atoms; R₃ is selected from benzylene, phenylene, naphthylene and alkylene, radicals having from about 3 to about 15 carbon atoms, said radicals being unsubstituted or substituted with C₁-C₆ alkyl, hydroxyl, chlorine, fluorine or bromine; and n is an integer from about 4 to about 2,000; wherein each of from one to n of the cyclic amide group in said compound has been replaced with a phosphonomethylene amino carboxylate having the formula:



wherein M¹, M², and M³ are individually selected from hydrogen, a metallic element, ammonium and alkyl ammonium having up to about 10 carbon atoms.

4,243,592

9,11-DIDEOXY-10-OXA-TXB COMPOUNDS

Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

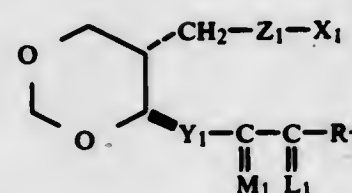
Filed Mar. 12, 1979, Ser. No. 19,752

Int. Cl.³ C07D 319/04

U.S. Cl. 260—340.7

3 Claims

- A thromboxane analog of formula III,



wherein Y₁ is

- trans—CH=CH—,
- cis—CH=CH—,
- CH₂CH₂—, or
- C=C—,

4,243,593

PREPARATION OF FURAN COMPOUNDS

Joseph M. Fremont, Glen Mills, Pa., and Donald I. Garnett, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

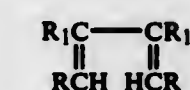
Division of Ser. No. 29,101, Apr. 10, 1979. This application Jan. 18, 1980, Ser. No. 109,264

Int. Cl.³ C07D 307/36

U.S. Cl. 260—346.11

20 Claims

1. A process for preparing a furan compound comprising: contacting a catalyst consisting essentially of a support having deposited thereon copper chloride; optionally, an alkali metal chloride; and at least one of palladium chloride and an iodide, in a reaction zone with (1) a molecular oxygen-containing gas, (2) a diolefin of the formula:



where each R is H or an alkyl group of 1-4 carbon atoms, and each R₁ is H, a halide or an alkyl group of 1-4 carbon atoms, with proviso that the total number of carbon atoms does not exceed 8, and (3) water vapor containing about 0.5-5% by weight HCl.

4,243,594

PROCESS FOR THE 13-DEOXYGENATION OF A 3,13-DEHYDROXY-GIBBERELLIN

Michael H. Beale, Vancouver, Canada, and Jake MacMillan, Bristol, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 27, 1978, Ser. No. 963,743

Int. Cl.³ C07D 307/00

U.S. Cl. 260—343.3 G

8 Claims

1. A process for the 13-deoxygenation of a 3,13-dihydroxy-gibberellin which comprises esterifying the 13-hydroxy group in a 3,13-dihydroxy gibberellin by reaction with a sulphonic acid or a carboxylic acid or a thiocarboxylic acid or an esterifiable derivative of one of said acids to form a 13-ester and then treating the 13-ester with a trialkyltin hydride in the presence of a free-radical initiator to reduce the 13-ester and form a 13-deoxygenated gibberellin, provided that when the esterifiable derivative is the acid chloride, the 6-carboxy group of the 3,13-dihydroxy gibberellin, which is converted to the corresponding acid chloride, is reinstated by treatment with an alkali, and further provided that the 3-hydroxy group and any further hydroxy group in the gibberellin is protected by a protecting group before esterification of the 13-hydroxy group, and each protecting group is removed after the 13-deoxygenation.

4,243,595

15-SUBSTITUTED-OMEGA-PENTANORPROSTAGLANDINS

Hans-Jürgen E. Hess, Old Lyme; Michael R. Johnson, Gates Ferry; Jasjit S. Bindra, Groton, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 485,491, Jul. 3, 1974, Pat. No. 3,974,213, which is a continuation-in-part of Ser. No. 425,519, Dec. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 271,220, Jul. 13, 1972, abandoned. This application Jul. 15, 1976, Ser. No. 705,769

Claims priority, application New Zealand, Jul. 4, 1973, 171269

Int. Cl.³ C07D 309/12, 317/44

U.S. Cl. 260—345.7 P

4 Claims

- A compound of the structure:

wherein M₁ is α-R₃:β-OH, α-OH:β-R₃, or α-H:β-H, wherein R₃ is hydrogen or methyl;

wherein L₁ is α-R₃:β-R₄, α-R₄:β-R₃, or a mixture of α-R₃:β-R₄ and β-R₃:α-R₄, wherein R₃ and R₄ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R₃ and R₄ is fluoro only when the other is hydrogen or fluoro;

wherein Z₁ is

- cis—CH=CH—CH₂—(CH₂)_g—CH₂—,
- cis—CH=CH—CH₂—(CH₂)_g—CF₂—,
- cis—CH₂—CH=CH—(CH₂)_g—CH₂—,
- (CH₂)₃—(CH₂)_g—CH₂—,
- (CH₂)₃—(CH₂)_g—CF₂—,
- CH₂—O—CH₂—(CH₂)_g—CH₂—,
- (CH₂)₂—O—(CH₂)_g—CH₂—, or
- trans—CH₂—(CH₂)_g—CH₂—CH=CH—;

wherein g is one, 2, or 3;

wherein R₇ is

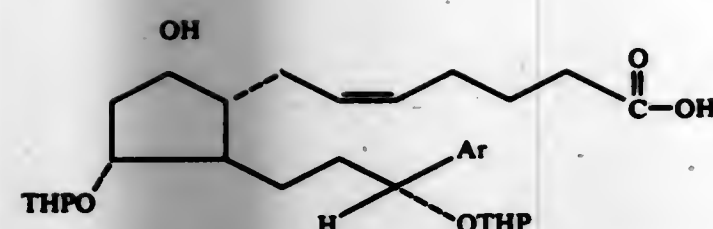
- (CH₂)_m—CH₃, wherein m is an integer from one to 5, inclusive;
- phenoxy;
- phenoxy substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
- phenyl;
- phenyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
- phenylmethyl, phenylethyl, or phenylpropyl; or
- phenylmethyl, phenylethyl, or phenylpropyl substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R₇ is phenoxy or substituted phenoxy, only when R₃ and R₄ are hydrogen or methyl, being the same or different;

wherein X₁ is

- COOR₁, wherein R₁ is
 - hydrogen;
 - alkyl of one to 12 carbon atoms, inclusive;
 - cycloalkyl of 3 to 10 carbon atoms, inclusive;
 - aralkyl of 7 to 12 carbon atoms, inclusive;
 - phenyl;
 - phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms;
 - phenyl substituted in the para position by
 - NH—CO—R₂₅
 - CO—R₂₆
 - O—CO—R₂₇
 - CH=N—NH—CO—NH₂

wherein R₂₅ is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH₂; R₂₆ is methyl, phenyl, —NH₂, or methoxy; and R₂₇ is phenyl or acetamidophenyl, inclusive, or a pharmacologically acceptable salt thereof when R₁ is hydrogen;

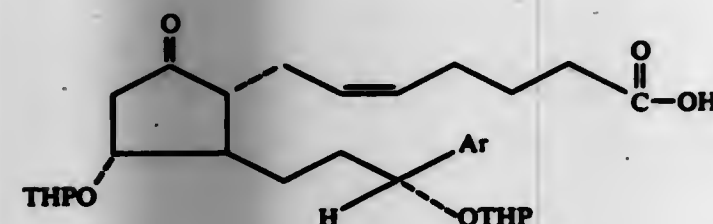
- CH₂OH; or
- CH₂NL₂L₃, wherein L₂ and L₃ are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, or a pharmacologically acceptable acid addition salt thereof wherein X₁ is —CH₂NL₂L₃.



wherein

Ar is α - or β -naphthyl; phenyl; 3,4-dimethoxyphenyl; 3,4-methylenedioxyphenyl; 3,4,5-trimethoxyphenyl; or mono-substituted phenyl wherein said substituent is halo, trifluoromethyl, phenyl, lower alkyl or lower alkoxy and THP is 2-tetrahydropyranyl.

2. A compound of the structure:



wherein

Ar is α - or β -naphthyl; phenyl; 3,4-dimethoxyphenyl; 3,4-methylenedioxyphenyl; 3,4,5-trimethoxyphenyl; or mono-substituted phenyl wherein said substituent is halo, trifluoromethyl, phenyl, lower alkyl or lower alkoxy and THP is 2-tetrahydropyranyl.

4,243,596

(5-NITRO-2-FURYL)VINYLENE-2-TRIMETHYLAMMONIUM BROMIDE AND METHOD OF PREPARING SAME

Daniel Vegh, and Jaroslav Kovac, both of Bratislava, Czechoslovakia, assigns to Rektorát Slovenskej vysokej školy technickej, Bratislava, Czechoslovakia

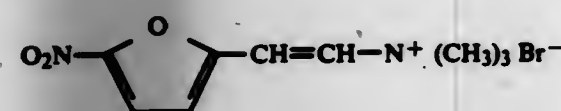
Continuation-in-part of Ser. No. 860,977, Dec. 15, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,831 Claims priority, application Czechoslovakia, Dec. 15, 1976, 8191-76

Int. Cl.³ C07D 307/73

U.S. Cl. 260—347.7

1 Claim

1. (5-Nitro-2-furyl)vinylene-2-trimethylammonium bromide having the formula



4,243,597

VOLATILE URANYL COMPOUNDS

Richard B. Hall, Clark; Andrew Kaldor, Watchung; George M. Kramer, Berkeley Heights, all of N.J., and Martin B. Dines, Santa Ana, Calif., assigns to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 868,450, Jan. 10, 1978, abandoned, which is a continuation of Ser. No. 751,901, Dec. 17, 1976, abandoned. This application Nov. 16, 1978, Ser. No. 961,363

Int. Cl.³ C07D 307/12; C07F 5/00

U.S. Cl. 260—347.8

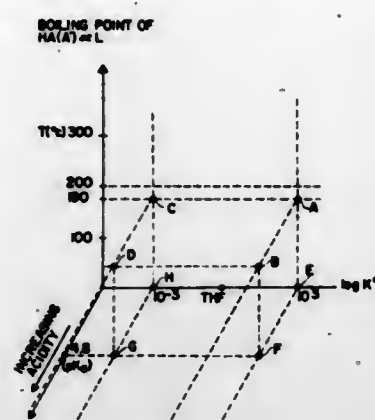
14 Claims

1. A composition of matter having the formula:



n being 0 or 1, wherein A and A' comprise anions whose conjugate acids have boiling points of less than about 200° C.

and pK_a values of 4.8 or lower, L comprises a neutral ligand having a boiling point of less than about 190° C. and an equilibrium constant for exchange with tetrahydrofuran ranging from about 10⁻³ to 10³, and A, A' and L combine to satisfy five or six coordination sites of said uranium atom.



* K BEING THE EQUILIBRIUM CONSTANT FOR THE REACTION
UO₂(CF₃CO₂)₂·THF + B ⇌ UO₂(CF₃CO₂)₂·B + THF
HClO₄

5. The composition of matter of claim 1 wherein n equals 1, and L comprises a neutral ligand selected from the group consisting of isopropanol, ethanol, isobutanol, tert-butanol, ethylacetate, n-propanol, methanol, tetrahydrofuran, acetone, dimethylformamide, and dimethylsulfoxide.

4,243,598

SYNTHESIS OF VITAMIN E

Gary L. Olson, Union County, and Gabriel Sancy, Essex County, both of N.J., assigns to Hoffmann-La Roche Inc., Nutley, N.J.

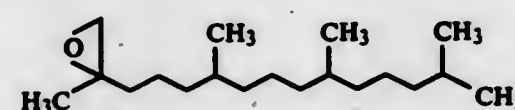
Division of Ser. No. 941,512, Sep. 11, 1978, which is a division of Ser. No. 797,713, May 17, 1977, Pat. No. 4,127,608. This application Sep. 10, 1979, Ser. No. 74,191

Int. Cl.³ C07D 303/04

U.S. Cl. 260—348.11

1 Claim

1. A compound of the formula:



4,243,599

PROCESS FOR SIMULTANEOUSLY PRODUCING P-TOLUIC ACID AND ALKYLENE OXIDE

Nobuo Isogai; Takashi Okawa, and Takako Takeda, all of Nii-gata, Japan, assigns to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 16, 1976, Ser. No. 696,761

Claims priority, application Japan, Jun. 30, 1975, 50-80734

Int. Cl.³ C07D 301/14

U.S. Cl. 260—348.25

11 Claims

1. A process for simultaneously producing p-toluic acid and an alkylene oxide by epoxidizing a lower olefin with per-p-toluic acid, which comprises adding dipicolinic acid as a stabilizer for peracid to a per-p-toluic acid solution.

4,243,600

PROCESS FOR THE MANUFACTURE OF 1,4-DIAMINOANTHRAQUINONE-2-CARBOXYLIC ACID

Athanasios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 26, 1979, Ser. No. 33,405

Claims priority, application Switzerland, Apr. 28, 1978, 4649/78

Int. Cl.³ C07C 103/75

U.S. Cl. 260—377

7 Claims

1. A process for the manufacture of 1,4-diaminoanthraquinone-2-carboxylic acid, which comprises reacting 1-nitroanthraquinone-2-carboxylic acid or derivatives thereof with hydroxylamine or derivatives thereof, in alcohol/water mixtures at basic value pH values.

4,243,601

CYANO SUBSTITUTED DIPHENOQUINONES AND A PROCESS FOR PREPARING THEM

Zen-ichi Yoshida; Shigeo Yoneda, both of Kyoto; Hideki Marata, Hachioji; Yutaka Yasuda, Nagaoka, and Saburo Nagakura, Musashino, all of Japan, assigns to Ajinomoto Company Incorporated, Tokyo and Zen-ichi Yoshida, Kyoto, both of Japan

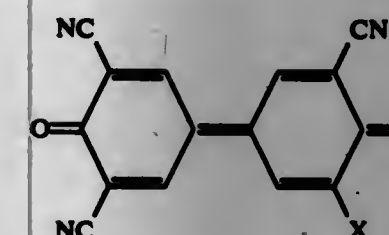
Filed Mar. 7, 1979, Ser. No. 18,261

Claims priority, application Japan, Jul. 12, 1978, 53-84761

Int. Cl.³ C07C 120/00, 121/48

U.S. Cl. 260—396 N

1. A compound of the formula



wherein X is a bromine atom or a cyano group.

4,243,602

NOVEL QUATERNARY COMPOUNDS

Anthony J. O'Leick, Jr., Fairlawn, and Raymond L. Mayhew, Summit, both of N.J., assigns to Mona Industries, Paterson, N.J.

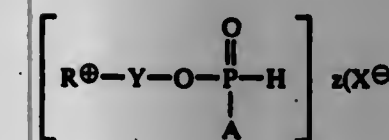
Filed Nov. 30, 1978, Ser. No. 965,457

Int. Cl.³ A23J 7/00; C07F 9/02; C11C 3/00

U.S. Cl. 260—403

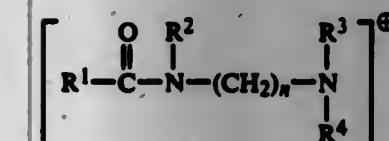
16 Claims

1. Quaternary compound of the formula



wherein

R is an amidoamine moiety of the formula



wherein

R¹ is alkyl, alkenyl, alkoxy, or hydroxyalkyl of from 5 to 22 carbon atoms each, or aryl or alkaryl of up to 20 carbon atoms;

R² is hydrogen or alkyl, hydroxyalkyl or alkenyl of up to 6 carbon atoms each or cycloalkyl of up to 6 carbon atoms,

preferably of from 2 to 5 carbon atoms, or polyoxyalkylene of up to 10 carbon atoms;

R³ and R⁴, which may be the same or different, are selected from alkyl, hydroxyalkyl, carboxyalkyl of up to 6 carbon atoms in each alkyl moiety, and polyoxyalkylene of up to 10 carbon atoms;

n is an integer from 2 to 12;

Y is alkylene, optionally interrupted by up to 3 oxygen atoms, of up to 12 carbon atoms, optionally containing a substituent selected from lower alkyl, alkoxy, hydroxy or hydroxyalkyl of not more than 10 carbon atoms each;

A is selected from OM or OYR⁺ wherein Y and R are defined as above and

M is an organic radical selected from alkyl or hydroxyalkyl of up to 6 carbon atoms, polyhydroxyalkyl of up to 10 carbon atoms, glyceryl, cycloalkyl of up to 6 carbon atoms, aryl or alkaryl of up to 10 carbon atoms;

X⁻ is an anion;

z is an integer from 1 to 2, with the proviso that when A is OM, z is 1 and when A is OYR⁺, z is 2.

4,243,603

PROCESS FOR THE PRODUCTION OF A LIQUID EDIBLE OIL FROM FATTY MATERIALS HAVING A HIGH CONTENT OF SATURATED FATTY ACIDS AND THE OIL PRODUCED BY THE PROCESS

Jean M. Kleis, Coudersbourg-Branches, and Albert Lacombe, Dunkerque, both of France, assigns to Lesieur-Cotelle & Associes S.A., Hauts de Seine, France

Filed May 31, 1979, Ser. No. 43,935

Claims priority, application France, May 31, 1979, 78 16182

Int. Cl.³ C11C 3/02

U.S. Cl. 260—410.7

16 Claims

1. A process for the production of an edible oil from natural fatty substances having a high content of saturated fatty acids, comprising in a first stage, interesterification of the natural fatty substance to be treated at a temperature in the range 20° to 80° C. in the presence of a suitable interesterification catalyst and, in a second stage, subjecting the interesterified fatty material to at least one fractionating step at a temperature in the range -20° to +35° C., by means of a suitable solvent for fractionating fats in order to produce, in a yield of higher than 35%, a fluid fraction substantially comprising unsaturated triglycerides free of trans isomers and having an iodine number of more than 75, an end-of-clouding point lower than 12° C., a content of triunsaturated triglycerides less than 0.6%, a content of disaturated-monounsaturated triglycerides less than 10%, and a solidification/liquefaction time at +15° C. comparable to that of peanut oil.

4,243,604

ALIPHATIC METAL CLUSTER COMPOUNDS

Jan G. Noltes, Huis ter Heide; J. T. B. H. Jastrzebski, De Bilt, and Gerard van Koten, Bilthoven, all of Netherlands, assigns to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 7, 1979, Ser. No. 18,373

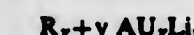
Int. Cl.³ C07F 1/12

U.S. Cl. 260—430

7 Claims

1. A process for the preparation of an aliphatic metal cluster compound of the formula R_{x+y}Au_zLi_y where R is alkyl of 3-12 carbon atoms, x and y are each 1-4 and x+y is 2-8, comprising reacting an alkyl lithium wherein the alkyl group contains 3-12 carbon atoms, with AU or AUMXL wherein X is chlorine or bromine, and L is an organic ligand, in a hydrocarbon solvent.

7. An aliphatic metal cluster compound having the formula



where R is alkyl of 3-12 carbon atoms, x and y are each 1-4, and x+y is 2-8, and etherates thereof.

4,243,605

NOVEL ISOCYANATES

William A. Eisenhardt, Jr., Yorktown Heights; Eddie Hedaya, White Plains, and Spyros Theodoropoulos, Yorktown Heights, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

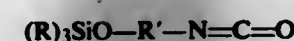
Division of Ser. No. 687,149, May 17, 1976, Pat. No. 4,115,539. This application Jul. 3, 1978, Ser. No. 921,809

Int. Cl.² C07F 7/18

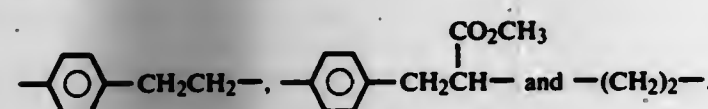
U.S. Cl. 556-414

4 Claims

1. Isocyanates having the structural formula:



wherein R is a member selected from the group consisting of lower alkyl, alicyclics, aryl, alkaryl and aralkyl, each having no more than about 10 carbon atoms and R' is a radical selected from the group consisting of



4,243,606

N-SUBSTITUTED ANILINES

Paul M. C. Bourdauducq, Franqueville St Pierre; Claude M. H. E. Brouard, St Pierre les Elbeuf; Claude L. E. Moerel, Biherel, and Jean-Pierre H. Stiot, St Pierre les Elbeuf, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Sep. 30, 1977, Ser. No. 838,438

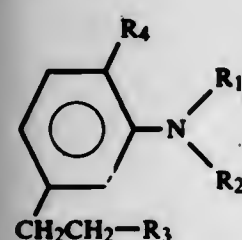
Claims priority, application France, Oct. 12, 1976, 76 30578

Int. Cl.³ C07C 101/447, 103/28, 121/78

U.S. Cl. 260-465 D

10 Claims

1. A compound of the formula:



in which R₁ and R₂ each represents unsubstituted alkyl containing 1 to 4 carbon atoms or alkyl containing 1 to 4 carbon atoms monosubstituted by halogen, hydroxy, alkoxy containing 1 to 4 carbon atoms, acetoxy, propionyloxy, carbomethoxy or carboethoxy;

R₃ is cyano, carbamoyl, carboxy or carbalcoxy containing 2 to 5 carbon atoms; and

R₄ is hydrogen, halogen, alkyl containing 1 to 4 carbon atoms or alkoxy containing 1 to 4 carbon atoms.

4,243,607

PROCESS FOR THE PREPARATION OF TETRACHLOROALKANES

Minoru Takamizawa; Haruo Okamoto; Mitsuo Umemura, and Kazuo Kooyza, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Nov. 5, 1976, Ser. No. 739,049

Claims priority, application Japan, Nov. 10, 1975, 50/134902

Int. Cl.³ C07C 17/28

U.S. Cl. 570-257

11 Claims

1. A process for the preparation of a tetrachloroalkane having more than two carbon atoms which comprises reacting an ethylenic hydrocarbon with carbon tetrachloride in the presence of a catalytically effective amount of a mixture composed of an alkyl phosphite, an iron chloride and a nitrile compound.

4,243,608

3-(4-HYDROXYPHENYL)PENTANEDIOIC ACID, MONOHYDRAZIDE, DERIVATIVES AND ANALOGS

Ravi K. Varma, Belle Mead, N.J., and B. Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

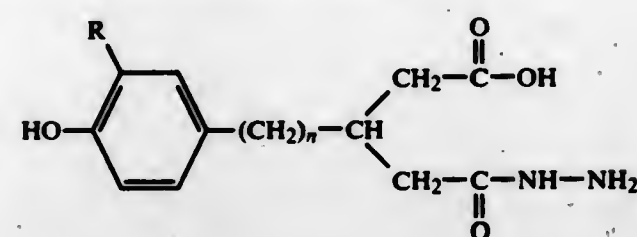
Filed May 14, 1979, Ser. No. 38,593

Int. Cl.² C07C 109/10, 101/00; C07J 1/00

U.S. Cl. 260-501.11

4 Claims

1. A compound having the formula



or an acid addition salt thereof, wherein R is hydrogen or alkyl of 1 to 3 carbon atoms and n is 0, 1, 2, 3, or 4.

4,243,609

RING-FLUORINATED 4-(HEXADECYL-AMINO) N-SUBSTITUTED BENZAMIDE COMPOUNDS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

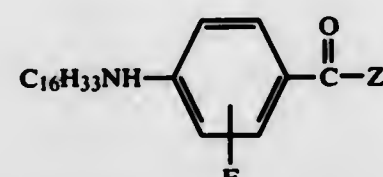
Filed Feb. 2, 1978, Ser. No. 874,433

Int. Cl.³ C07C 101/58, 127/15, 157/19, 143/83

U.S. Cl. 564-91

2 Claims

1. A compound selected from the group of the formula:



wherein C₁₆H₃₃ represents unbranched or branched hexadecyl and Z is selected from the group consisting of loweralkanesulfonylamino, phenylsulfonylamino, loweralkanesulfonylamino, phenylsulfonylamino, loweralkanesulfonylamino, benzoylamino and carboxyalkylamino; and the pharmacologically acceptable acid-addition and cationic salts thereof.

4,243,610

COBALT-GOLD PROMOTER FOR RUTHENIUM HYDROGENATION CATALYST AS IN HYDROGENATION OF UNSATURATED DINITRILES

Charles A. Drake, and Timothy P. Murtha, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 960,798, Nov. 14, 1978, Pat. No. 4,215,019. This application Nov. 8, 1979, Ser. No. 92,778

Int. Cl.³ C07C 85/12

U.S. Cl. 564-491

15 Claims

1. A method for the hydrogenation of a compound which comprises subjecting said compound to hydrogenation conditions in the presence of a catalyst comprising ruthenium, cobalt and gold.

4,243,611

2-DECARBOXY-2-HYDROXYMETHYL-19,20-DIDEHYDRO PG₂ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

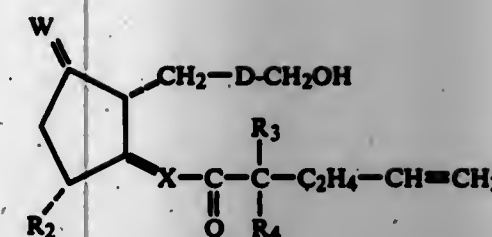
Filed Apr. 2, 1979, Ser. No. 26,066

Int. Cl.³ C07C 177/00

U.S. Cl. 568-379

172 Claims

1. A compound of the formula

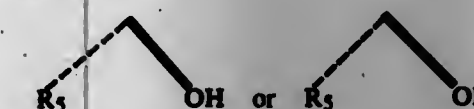


wherein D is

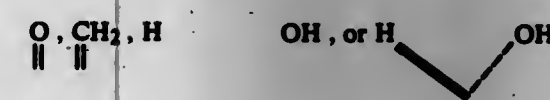
- (1) $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CH}_2\text{---}$
- (2) $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CF}_2\text{---}$
- (3) $\text{cis-CH}_2\text{-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{---}$, or
- (4) $\text{trans-(CH}_2\text{)}_g\text{-CH=CH-}$

wherein g is zero, one, two, or three;

wherein Q is



wherein R₅ is hydrogen or methyl, wherein W is



wherein X is cis- or trans-CH=CH- or -C=C-; wherein R₂ is hydrogen, hydroxyl, or hydroxymethyl wherein R₃ and R₄ are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R₃ and R₄ is fluoro only when the other is hydrogen or fluoro.

4,243,612

BENZYLIC OXIDATION PROCESS

Peter E. Throckmorton, Plain City; Gary E. Sltz, Marysville, and Robert A. Grimm, Upper Arlington, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 13, 1979, Ser. No. 66,196

Int. Cl.³ C07C 45/36

U.S. Cl. 568-431

5 Claims

1. In a catalytic vapor phase process for the oxidation of toluene by reaction with molecular oxygen in the presence of a heterogeneous catalyst system of uranium and molybdenum oxides to effect conversion thereof to benzaldehyde; the improvement wherein said catalyst system has the gram-atom empirical formula:



in which M¹ is lead, tin, zirconium, cadmium, antimony or nickel; M² is sodium or potassium and x represents the amount of oxygen bound to the other elements in their respective states of oxidation in the catalyst system.

4,243,613

PROCESS FOR THE MANUFACTURE OF MIXTURES OF FORMALDEHYDE AND METHANOL BY PARTIAL OXIDATION OF METHANE

Rudolf Brockhaus, Marl, and Hans-Jürgen Franke, Dorsten, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,397

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743113

Int. Cl.³ C07C 47/48, 27/14

U.S. Cl. 568-482

10 Claims

1. In a continuous process for the partial oxidation of methane to formaldehyde and methanol using oxygen or oxygen containing oxidizing gases, by allowing methane or a methane-

inert gas mixture and oxidizing gas to flow together in a combustion tube under a pressure of more than 5 bars after the methane or the methane/inert gas mixture has been heated separately to 300° to 600° C., reacting the gas mixture resulting from the combination of said gases in a reaction zone of said combustion tube in the form of a flame by self-ignition at 300° to 600° C. to produce methanol and formaldehyde, cooling the reaction mixture and separating the resulting products, the improvement which comprises feeding the oxidizing gas concentrically into a stream of methane or a methane/inert gas mixture, the velocity of which, measured in the cylindrical section of the combustion tube, is 1 to 15 m. second⁻¹, the velocity of the oxidizing gas being 50 to 300 m. second⁻¹ higher than that of the methane or methane/inert gas mixture and the volume of the stream of methane gas being 3 to 100 times greater than that of the stream of oxidizing gas, said inert gas being a gas inert under the reaction conditions.

4,243,614

PROCESS FOR PRODUCING HEXANITROSTILBENE
Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 23, 1979, Ser. No. 69,216

Int. Cl.³ C07C 79/10

U.S. Cl. 568-931

10 Claims

1. A process for producing 2,2',4,4',6,6'-hexanitrostilbene, which comprises reacting 2,2',4,4',6,6'-hexanitrobenzyl with copper sulfate in a solvent consisting essentially of hexamethylphosphoric triamide.

4,243,615

PROCESS FOR PREPARING POLY-DICARBON MONOFLUORIDE

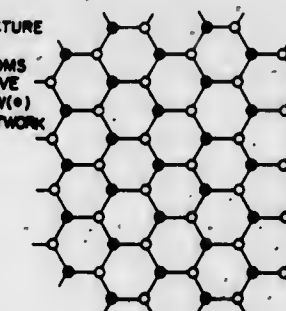
Nobutsu Watanabe, No. 136, Ugusu-dai, Nagaokakyo-shi, Kyoto, Japan, and Yasushi Kita, Hiroshima, Japan, assignors to Watanabe Applied Science Research Institute and Nobutsu Watanabe, both of Kyoto, Japan
Continuation of Ser. No. 941,668, Sep. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 824,911, Aug. 15, 1977, Pat. No. 4,139,474. This application Jan. 29, 1979, Ser. No. 53,212

Claims priority, application Japan, Feb. 22, 1977, 52-017823
Int. Cl.³ C07C 19/08

U.S. Cl. 570-150

16 Claims

LAYER STRUCTURE OF (C₂F)_n WITH FLUORINE ATOMS BONDING ABOVE (○) AND BELOW (●) A CARBON NETWORK



1. A process for preparing a chemical compound polydicarbon monofluoride represented by the formula



and having a crystalline structure in which a layer structure is stacked with an interlayer spacing of about 9.0 Å to form a packing structure, said crystalline structure exhibiting a peak at about 10° in terms of an angle of 2θ in the X-ray diffraction powder pattern, comprising reacting a particulate carbon material having Franklin's P-value of about 0 to about 0.6 with fluorine at a temperature of 300° to 500° C. until complete fluorination of the particulate carbon material is accomplished.

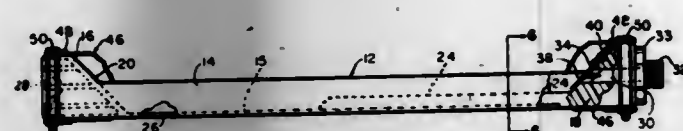
4,243,616

AIR DIFFUSER

Ronald Wyss, R.R. 1, Box 1, Ada, Ohio 45810
Filed Feb. 15, 1979, Ser. No. 12,317
Int. Cl.³ B01F 3/04

U.S. Cl. 261-122

19 Claims



1. Diffuser apparatus comprising a frame including end portions interconnected by and integrated with an elongate intermediate portion, said frame being adapted to mount a diffuser sleeve, said intermediate portion of said frame being reduced as to its cross sectional area as compared to that of said end portions so that in application of a sleeve to said frame it will define therewith a diffuser chamber, one of said end portions having an inlet passage for directing air under pressure to the diffuser chamber, the discharge end of which inlet passage is bridged by means forming a plurality of discharge openings which in the operative function of said apparatus are continuously open and arranged to produce a discharge therefrom of the air under pressure in a plurality of jet-like streams, the most adjacent ends of said end portions of said frame including facing surfaces one of which embodies the discharge extremities of said plurality of discharge openings and is oriented to incline to and outwardly from said intermediate portion of said frame and away from the facing surface of the remote end portion of said frame.

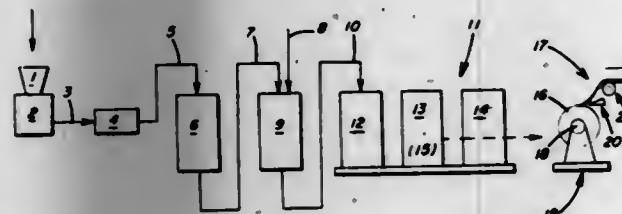
4,243,617

FLEXIBLE FOAM REBONDING PROCESS AND APPARATUS

Russell W. Burge, Covina, Calif., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.
Filed Nov. 16, 1979, Ser. No. 95,134
Int. Cl.³ B29D 27/00; B29C 29/00

U.S. Cl. 264-39

60 Claims



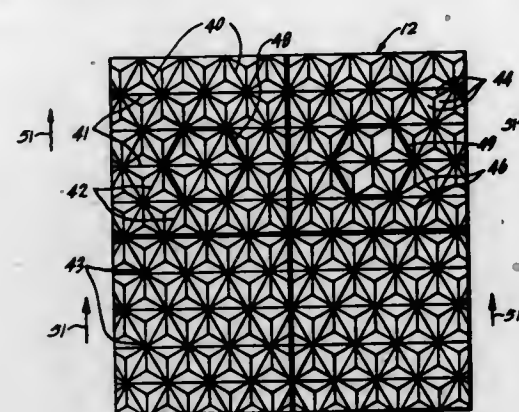
1. A process for the production of rebonded foam comprising
(A) filling a mold at a first station with a mixture of foam particles and binder and thereafter precompressing said mixture in said mold,
(B) transporting a filled mold to a second station,
(C) at said second station,
(i) passing gas through the bottom of said filled mold in order to fluff the mixture,
(ii) compressing the fluffed mixture, and
(iii) curing said binder while said mixture is in the compressed state, thereby forming a cured product,
(D) transporting a mold containing cured product to a third station,
(E) at said third station,
(i) lifting said mold away from the cured product,
(ii) removing said cured product from under said mold, and
(iii) lowering the empty mold, and
(F) transporting said empty mold to said first station, wherein the operation of steps (A); (C) and (E) occurs substantially simultaneously, and wherein the transporting steps of (B), (D), and (F) occur simultaneously.

4,243,618
METHOD FOR FORMING RETROREFLECTIVE SHEETING

Donald E. Van Arman, Ontario, Calif., assignor to Avery International Corporation, San Marino, Calif.
Filed Oct. 23, 1978, Ser. No. 953,555
Int. Cl.² B29D 11/00; B29C 1/02

U.S. Cl. 264-1

18 Claims



13. A method for forming retroreflective sheeting having a plurality of retroreflective cube-corner trigonal prisms distributed over one of its surfaces, the prisms disposed in a planar array having a plurality of zones of prisms having differing angular orientation, comprising the steps of:
a. forming at least one bundle of pins by clamping pins together along their longitudinal axes, said pins each having a top surface, such top surfaces combining to form a substantially planar surface on the bundle of pins;
b. inscribing on said planar surface a continuous pattern of cube-corner trigonal pyramids;
c. releasing the bundle of pins for allowing removal and rotation of the pins;
d. rotating the pins within the bundle about their longitudinal axes for providing differing angular orientation of the pyramid pattern;
e. rebundling the pins by reclamping the rotated pins together;
f. forming at least one mold from the disoriented pattern of cube-corner trigonal pyramids on the bundle of pins;
g. forming from said mold retroreflective sheeting having a plurality of retroreflective cube-corner trigonal prisms disposed in a planar array having a plurality of zones of prisms having differing angular orientations.

4,243,619

PROCESS FOR MAKING FILM FROM LOW DENSITY ETHYLENE HYDROCARBON COPOLYMER

William A. Fraser, Princeton, and Gary S. Cieloszyk, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 892,324, Mar. 31, 1978, abandoned. This application Feb. 16, 1979, Ser. No. 12,795
Int. Cl.³ B29D 7/04, 7/22

U.S. Cl. 264-40.6

25 Claims

1. A process for forming blown tubular film essentially free of melt fracture from an extrudate formed from molten ethylene hydrocarbon copolymer, said copolymer having been made from ≥ 90 mol percent of ethylene and ≤ 10 mol percent of at least one C_3 to C_8 alpha olefin monomer with a transition metal based catalyst and having a narrow molecular weight distribution and a melt index of about ≥ 0.1 to about ≤ 5.0 and being susceptible to melt fracture in blown tubular film form when extruded into such form through an extrusion die having a die gap of 15 to ≤ 45 mils, which comprises extruding said copolymer into such form through an extrusion die having a die gap of greater than about 50 mils and at a drawdown ratio of greater than about 2 to less than about 250.

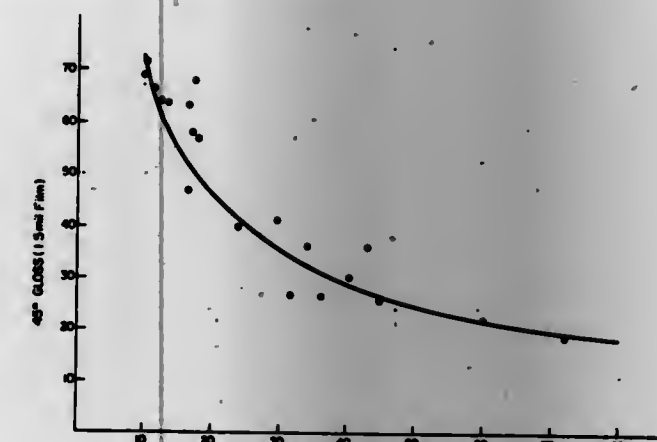
25. A process as in claim 1 wherein the extruded copolymer is cooled to form a frost line providing improved optical properties in the film product according to the following relationships:

$$45^\circ \text{ specular gloss} = 336.4 \phi - 0.664$$

wherein

$$\phi \text{ is a cooling rate parameter}$$

$$\phi = \tau (MI)^{0.29} [(T_m - T_c)/T_m]^{-1}$$



T_c = resin crystallization temp. (K°)
 T_m = compound temp. (K°)

MI = resin melt index (grams/10 min.)
 τ = residence time of extrudate between the die and the frost line (sec.), and wherein

τ is calculated assuming, that to a first approximation, extrudate extension between the die and the frost line height is a constant strain rate deformation, wherein

$$\tau = \frac{FLH}{V_1 - V_0} \ln \frac{V_1}{V_0}$$

where

FLH = frost line height (cm.)
 V_1 = linear nip roll velocity (cm/sec)

V_0 = average linear extrudate velocity at the die exit (cm/sec) and is calculated as

$$V_0 = Q/\rho m \pi DG$$

where

Q = extruder output rate (grams/sec)

ρm = melt density (grams/cm³)

D = die diameter (cm) and

G = die gap (cm).

4,243,620

METHOD OF MANUFACTURING AN OBJECT IN PLASTICS MATERIAL AND OBJECT OBTAINED THEREBY

Ennio G. Caretti, Grand-Lancy, and Andre M. Collombin, Aully, both of Switzerland, assignors to Motosacoche S.A., Carouge, Switzerland

Continuation of Ser. No. 692,508, Jun. 3, 1976, abandoned. This application Jul. 7, 1978, Ser. No. 923,084
Claims priority, application Switzerland, Jun. 13, 1975, 7666/75

Int. Cl.³ B29C 17/07; B29D 23/02; B29F 1/10

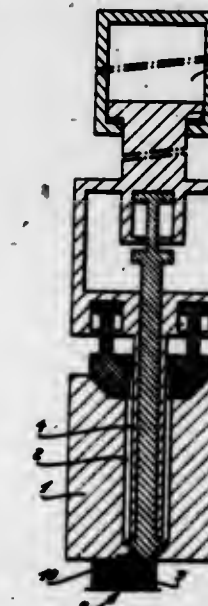
U.S. Cl. 264-45.1

11 Claims

1. A method of producing an object made of plastic material in a mold in which the material is introduced into the space between a punch and a die surrounding said punch through the open end of said die, which can be connected to a device for the supply of plastic material under pressure, said punch and die comprising said mold, the method comprising the steps of:
(1) connecting a supply of hot plastic material, at a temperature higher than the temperature of the mold, with said

open end whilst the front part of the punch is positioned in said open end, in order to close said open end to restrain the introduction of hot plastic material with low viscosity, into the empty space surrounding the punch within the die,

(2) progressively withdrawing the punch to progressively increase the flow section of the hot plastic material into the space between punch and die, whilst simultaneously progressively filling said space with plastic material of increased viscosity due to the cooling by the punch and die until the front part of the punch reaches a position of maximum distance from the open end with maximum flow section for the plastic material,



(3) subjecting the punch to a preset restraining action such that its longitudinal position is automatically balanced and it offers resistance to the flow of material in such a way as to control the introduction of material to achieve laminar flow, uniform filling, and symmetrical distribution of residual stresses,
(4) disconnecting the connection between said plastic material supply device and said open end, and then
(5) compressing the cooled-down plastic material contained in the space between punch and die, by progressively reducing the distance between the front part of the punch and the said open end of the mold.

4,243,621

 β -SIALON SINTERED BODY AND A METHOD FOR MANUFACTURING THE SAME

Masaaki Mori, Okazaki; Tamotsu Ogawa, Kariya, and Norihira Takai, Yokohama, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1978, Ser. No. 878,393
Claims priority, application Japan, Sep. 28, 1977, 52-116336; Sep. 28, 1977, 52-116337

Int. Cl.³ C04B 35/44

12 Claims

1. A method for manufacturing a β -sialon sintered material comprising the steps of
(a) adding 10 to 1,000 wt. parts of metal silicon powder to 100 wt. parts of mixed powder composed of 20 to 80 wt.% silica powder and 80 to 20 wt.% aluminum powder and thoroughly mixing said powders to obtain a powdery starting material;
(b) molding said powdery starting material into a green compact, and,
(c) sintering said green compact in a nitrogenous non-oxidative gas atmosphere at a temperature of from about 1200° to about 1550° C. to form a β -sialon sintered body.

4,243,622

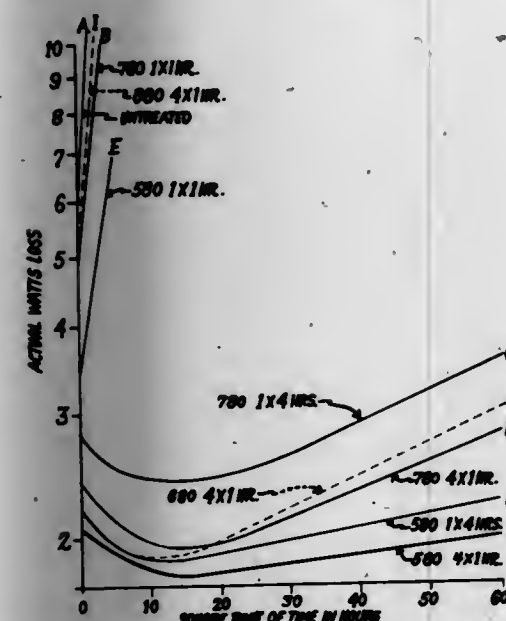
METHOD FOR MANUFACTURING ZINC OXIDE VARISTORS HAVING REDUCED VOLTAGE DRIFT

James S. Kresge, Pittsfield, Mass., assignor to General Electric Company

Continuation of Ser. No. 836,765, Sep. 26, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,196
Int. Cl.³ C04B 33/30

U.S. Cl. 264—66

7 Claims



1. A method for treating a zinc oxide varistor after sintering to reduce voltage drift comprising steps of: heating the varistor for not more than one cycle in air at a temperature range from 580° to 750° C. for a period of from two to six hours; and cooling the varistor to room temperature at a rate of from 50° to 200° C. per hour.

4,243,623

METHOD OF ENCAPSULATING ELECTRICAL APPARATUS

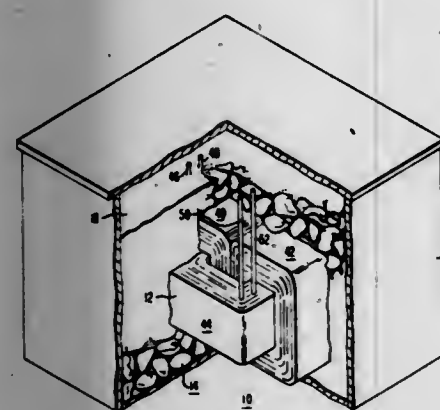
Gerhard R. Sprengling, Derry Township, Westmoreland County, and Louis A. Carguel, Unity Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 870,896, Jan. 19, 1978, Pat. No. 4,164,619. This application Mar. 27, 1979, Ser. No. 24,341

Int. Cl.³ B29C 6/02

U.S. Cl. 264—69

6 Claims



1. A method of encapsulating an electrical apparatus comprising the steps of: positioning said electrical apparatus in a case; filling the space between said case and said electrical apparatus with a first particulate filler material, having a first predetermined particle size range, to a predetermined level in the case; pouring a second particulate filler material, having a second predetermined particle size range, onto the first filler

material, with the first and second predetermined particle size ranges being selected such that vibration of the case will cause substantially uniform dispersion of the second filler material in the first filler material, and with the particles of the second filler material each being coated with a dry "B" stage thermosetting resin; vibrating said case until said second filler material is substantially evenly dispersed through said first filler material; pouring a predetermined quantity of a liquid into said case, with said liquid being a solvent for the resin coating on the particles of the second filler, to liquefy the dry resin on the particles of said second filler material and provide direct particle-to-particle contact between adjacent particles of said first and second filler materials with the contact points being surrounded by beads of said liquefied resin; and solidifying said liquefied resin to form an interstitial mass of said first and second filler materials around said electrical apparatus.

4,243,624

METHOD OF MAKING CATHODES DERIVED FROM AMMONIUM-METAL-CHALCOGEN COMPOUNDS

Allan J. Jacobson, Princeton; Russell R. Chianelli, Somerville, and M. Stanley Whittingham, Fanwood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 933,451, Aug. 14, 1978, Pat. No. 4,166,160, which is a continuation-in-part of Ser. No. 883,919, Mar. 6, 1978, abandoned. This application May 21, 1979, Ser. No. 40,482

Int. Cl.³ C04B 15/14

U.S. Cl. 264—82

12 Claims

1. A method of making a cathode, comprising: (a) forming cathode structure of a predetermined shape with a mixture comprising: (i) about 50 to about 100% by weight of one or more ammonium metal chalcogen compounds and complexes, wherein said metal is selected from the group consisting of Ti, V, Cr, Mn, Fe, Nb, Mo, Ta, and W, and wherein said chalcogen is selected from the group consisting of O, S, and Se; and (ii) about 50 to about 0% by weight of a binder; and (b) thermally decomposing and thereby activating said cathode structure at a temperature of about 200° to about 500° C. in a non-oxidizing atmosphere.

4,243,625

FLEXIBLE FOAM BONDING PROCESS

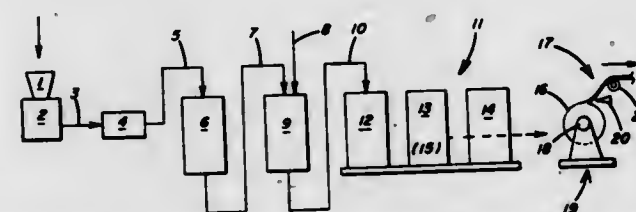
Russell W. Burge, Covina, Calif., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1979, Ser. No. 95,116

Int. Cl.³ B29C 29/00

U.S. Cl. 264—120

10 Claims



1. A process for bonding foam particles together comprising (A) compressing a mixture of foam particles and binder in a mold, (B) fluidizing the mixture after releasing compression, (C) recompressing the fluidized mixture in said mold and, (D) curing the binder while said mixture is in the compressed state to bond said foam particles together.

4,243,626

METHOD OF MAKING ORNAMENTAL JEWELRY STONES

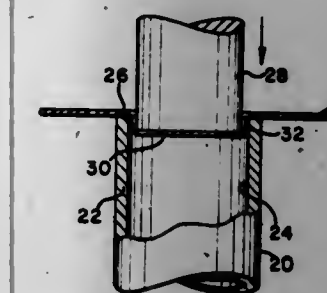
John E. Prete, 34 Tanglewood Dr., Cumberland, R.I. 02864

Filed May 21, 1979, Ser. No. 41,191

Int. Cl.³ B29C 13/00, 21/00

U.S. Cl. 264—153

11 Claims



1. The process of forming an ornamental article comprising forming a photographic film transparency having substantially transparent areas and at least one image thereon, reshaping said film so as to provide at least one substantially planar film image portion having an upwardly directed peripheral lip, depositing a sufficient amount of a first at least translucent plastic hardenable resin in a substantially fluid state on the upper surface of said thus formed film portion such that said resin covers said upper surface and said lip thereof retains said resin on said upper surface but permits a minor portion thereof to slump over said lip so as to form a peripheral bead having portions radially extending beyond said film portion lip, permitting said first resin to harden to thus form one segment of said article, and thereafter reversing said partially formed article such that the bottom surface of said film portion is uppermost and depositing a sufficient amount of a second at least translucent plastic hardenable resin in a substantially fluid state on said film portion bottom surface such that said second resin substantially covers said bottom surface and contacts at least a portion of said bead so as to essentially encapsulate said film portion and thereafter permitting said second resin to harden to thus form another segment of said article and so as to complete the formation of said article, said segments and said substantially transparent areas of said film portion visually merging so that only said image of said film portion is substantially observable in such completed article.

4,243,627

PROCESS FOR MANUFACTURING THERMOPLASTIC COMPOSITIONS AND CONTAINERS MADE OF SUCH COMPOSITIONS

Simon Kornbaum, Caluire, France, assignor to Ato Chimie, Courbevoie, France

Division of Ser. No. 844,310, Oct. 21, 1977. This application Jan. 31, 1979, Ser. No. 8,082

Claims priority, application France, Oct. 29, 1976, 76 32792

Int. Cl.³ B29D 7/04

U.S. Cl. 264—171

11 Claims

1. A process of manufacturing a sheet-like thermoplastic structure having a reduced permeability to gases comprising a continuous phase consisting essentially of polyvinyl chloride and a discontinuous phase consisting essentially of polyvinyl alcohol, incompatible with the polyvinyl chloride phase, comprising lamellar layers distributed in the continuous polyvinyl chloride phase parallel to the surface of said sheet-like structure, which comprises: (a) mixing polyvinyl chloride with polyvinyl alcohol to provide a polymer mixture; (b) gelling said mixture under the combined effects of pressure and heat, and (c) extruding the gelled mixture by subjecting the gelled mixture to laminar flow through at least one die, said die providing between a die inlet and a die outlet a flow path for said mixture, at least a portion of which flow path is defined by the interval between two spaced parallel sur-

faces, the ratio of the length of said surfaces in the direction of flow to the distance between said surfaces being greater than 10.

4,243,628

METHOD FOR THE MANUFACTURE OF PLASTIC INSULATORS WITH SCREENS FOR INDOOR AND OUTDOOR USE

Georg Herold, Lichtenfels, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,307

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742042

Int. Cl.³ B29F 1/10

U.S. Cl. 264—275

11 Claims



1. A method for manufacturing plastic insulators with screens for indoor and outdoor use, comprising providing a first-fabricated screen part within a mold and injection-molding or transfer molding onto said part one or more injection-moldable, electrically high quality, hydrophobic, leakage-current-resistant, erosion and temperature resistant molding compounds having a high notch impact strength, said injection molding comprising plasticizing said molding compound under heat and injecting said compound into the mold under pressure, said molding compound comprising a thermosetting plastic, thermoplastic or elastomeric material comprising from 0 to 60% by weight thereof of filler materials.

4,243,629

METHOD AND APPARATUS FOR THE CONTINUOUS EXTRUSION AND BLOWING OF THIN FILMS OF PLASTIC MATERIAL IN PARTICULAR RIGID PVC

Gleancarlo Tramezzani, Ponte Tresa, Switzerland, assignor to P.W.T. Plastic World Technology Limited, Triltsen, Liechtenstein

Filed Mar. 13, 1979, Ser. No. 20,019

Claims priority, application Switzerland, Mar. 29, 1978, 3323/78; Jan. 19, 1979, 531/79

Int. Cl.³ B29D 23/04

U.S. Cl. 264—563

3 Claims



1. A method for the continuous extrusion and blowing of thin films of plastic material, comprising introducing the raw material into an extruder having a screw, precompressing the material continuously in the cold state in the screw, plasticizing the material by heating, leading the material through a throttling opening along a further portion of the screw, decompressing the material along a subsequent portion of the screw, degassing the material along still another portion of the screw, again increasing the pressure along a still further portion of the screw, and then extruding the material to a thin film.

2. Apparatus for the continuous extrusion of thin films of plastic material, comprising an extrusion screw, means for feeding the raw material to the extrusion screw, the extrusion screw having, along its length, in the extrusion direction, a compression section in which the screw has a constant outer diameter and an increasing inner diameter and constant pitch, a homogenization zone in which the screw has constant inner and outer diameter and pitch, a plasticization zone in which the material is forced through at least one orifice, a decompression zone in which the screw has constant outer diameter and decreasing inner diameter and constant pitch, a degasification zone in which the screw has constant outer diameter and constant inner diameter and constant pitch with the inner diameter reduced in respect of the preceding diameters, a compression zone in which the screw has constant outer diameter and an increasing inner diameter and a constant pitch, and an expulsion zone from which the extruded material is expelled.

4,243,630

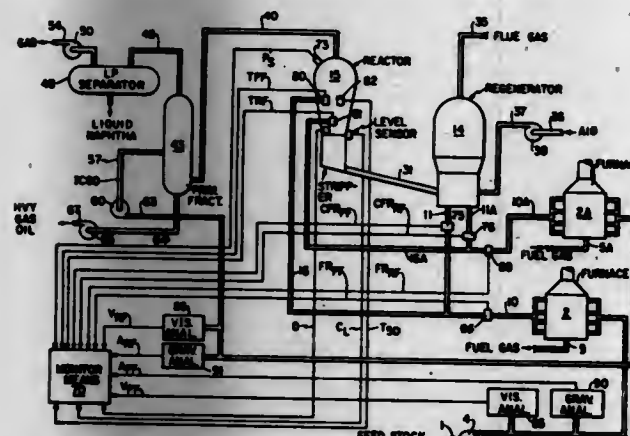
FLUID CATALYTIC CRACKING UNIT YIELD MONITOR
Howard C. Klesch, Thousand Oaks, Calif.; Daniel N. McWilliams, Baton Rouge, La.; Roy E. Pratt, Groves, Tex., and Donald H. Schmale, Trumbull, Conn., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,651

Int. Cl.³ C10G 21/00; G06G 7/58

U.S. Cl. 422-62

11 Claims



1. A yield monitor for a fluid catalytic cracking unit including furnaces preheating fresh feed, which is a gas oil, and recycle feed, which is recycle gas oil, a regenerator which regenerates and provides catalyst, a reactor receiving catalyst from the regenerator and the preheated fresh feed through a fresh feed riser and receiving catalyst from the regenerator and the preheated recycle feed through a recycle feed riser and providing the cracked feed to a fractionator which provides at least two product streams and which provides the recycle feed to one of the furnaces, comprising means for sensing the outlet temperature of the fresh feed riser, the outlet temperature of the recycle feed riser, the top pressure of the reactor, the flow rate of the catalyst being mixed with the fresh feed, the flow rate of the catalyst being mixed with the recycle feed, the catalyst's bed temperature, the level of the catalyst and the density of the catalyst, and the flow rates of the fresh feed and the recycle feed, and providing signals TFF, TRF, TBD, P, CFRFF, CFRRF, CL, D, FRFF, FRRF, respectively, corresponding thereto; means for analyzing the fresh feed and the recycle feed and providing signals AFF and ARF corresponding to the API gravity of the fresh feed and the recycle feed, respectively, and for providing signals VFF and VRF corresponding to the viscosity of the fresh feed and the recycle feed, respectively; K signal means connected to the analyzing means for providing a signal K corresponding to the Watson K factor of the fresh feed, the recycle feed and the catalyst in accordance with signal AFF, ARF, VFF, VRF, D and CL; means connected to the sensing means, to the analyzer means and to the K signal means for providing signals corresponding to the yields of constituents of the product streams in accordance with signals TFF, TRF, TBD, P, CFRFF, CFRRF, CL, D, FRFF,

AFR, ARF, and K; and means connected to the yield signal means for displaying values of the yields of the constituents in accordance with the yield signals.

4,243,631

SOLID STATE SENSOR

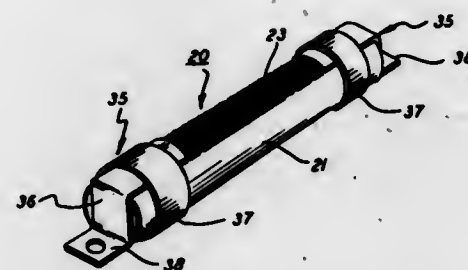
John D. Ryerson, Holland Patent, N.Y., assignor to Energy for Independence, Inc., Holland Patent, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,207

Int. Cl.³ G01N 27/04; H01C 7/00

U.S. Cl. 422-90

19 Claims



10. A detector for sensing the presence of ozone in an atmosphere including a quartz substrate granules of a lower valence oxide of a multi-valence metal oxide that is capable of sensing the presence of ozone in an atmosphere randomly fused to the quartz substrate and to each other to provide a rough textured sensing coating on said substrate, and a pair of electrical connections in contact with the coating to permit a current to be passed therethrough.

4,243,632

CONTACT LENS DISINFECTOR WITH TEMPERATURE INDICATOR

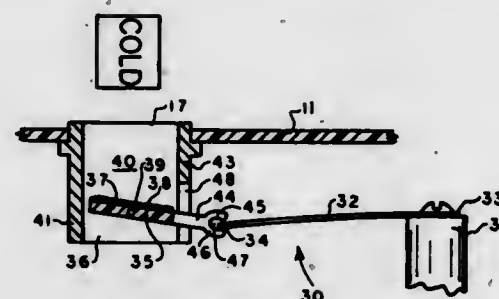
Francis E. Ryder, Arab, Ala., assignor to Ryder International Corporation, Arab, Ala.

Filed Jun. 22, 1979, Ser. No. 51,121

Int. Cl.³ C01D 1/32; C01F 1/00; C01B 25/10

U.S. Cl. 422-119

10 Claims



1. A disinfector unit for disinfecting contact lenses comprising: a housing; heating means arranged to heat the contact lenses to a disinfecting temperature; and temperature indicating means for indicating first and second temperature ranges with respect to a portion of said housing, said temperature indicating means comprising a prismatic lens means, first and second temperature indicia behind said prismatic lens means, and a pivotally mounted member carrying said prismatic lens means and said temperature indicia, said prismatic lens means being arranged for movement such that said first temperature indicia is viewable and the second temperature indicia is obscured when said prismatic lens means is at a first position, and said second temperature indicia is viewable and said first temperature indicia is obscured when said prismatic lens means is at a second position, and temperature responsive means for moving said pivotally mounted member and said prismatic lens

means between said first and second positions as a function of the temperature of said housing portion.

4,243,633

REACTOR FOR THE THERMAL CRACKING OF HEAVY OIL

Hiroshi Hozuma; Hisatoshi Ohwada; Masaharu Tomizawa; Seiki Sanada, and Hideo Kikuchi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Chiyoo Chemical Engineering and Construction Co., Ltd., Kanagawa, both of Japan

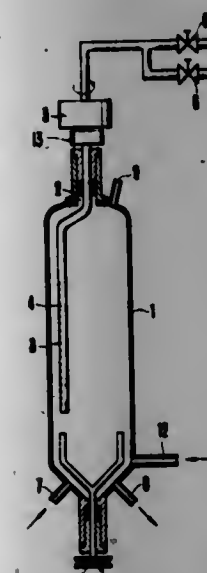
Continuation-in-part of Ser. No. 733,911, Oct. 19, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 845,303

Claims priority, application Japan, Oct. 22, 1975, 50-126276

Int. Cl.³ C10G 9/04, 9/12

U.S. Cl. 422-129

3 Claims



1. In a reactor for the thermal cracking of a heavy oil raw material comprising means defining a cracking reactor and an injection pipe, the improvement comprising:

said injection pipe being inserted into said reactor through a top opening in said reactor, said injection pipe having two vertically extended portions offset from one another, one of said portions being located on the axis of said reactor and the other of said portions extending along an interior wall surface of said reactor at a closely spaced distance from said wall surface, said injection pipe being provided with a multitude of spouting jets longitudinally spaced along its length, each of said spouting jets being formed in the wall of said injection pipe at an angle of 25° to 90° with respect to the longitudinal axis of the injection pipe; means for rotating said injection pipe within said reactor; a first conduit for feeding an inert fluid to said injection pipe; a second conduit for feeding the preheated raw material at a temperature of 300° to 350° C. to said injection pipe; switching means for connecting said injection pipe to said first conduit during thermal cracking and to said second conduit for decoking subsequent to the thermal cracking; and means for reciprocating movement of the injection pipe axially therein.

4,243,634

FLUID CATALYST REGENERATION APPARATUS
Anthony G. Vickers, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 969,607, Dec. 14, 1978. This application Nov. 5, 1979, Ser. No. 91,328

Int. Cl.³ F27B 15/08; B01J 21/20, 29/38; C10G 11/18

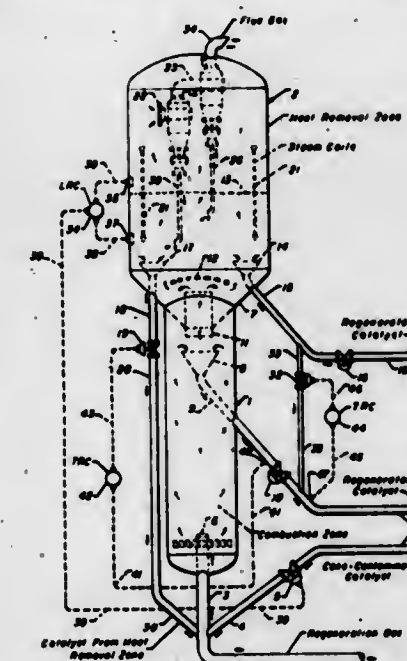
U.S. Cl. 422-144

6 Claims

1. Apparatus for regenerating a coke-contaminated, fluid catalyst which apparatus comprises in combination:

(a) a vertically-oriented combustion chamber; and
(b) a spent catalyst inlet conduit for gas and fluid catalyst

connecting with the lower portion of said combustion chamber;
(c) fluid catalyst collecting means disposed within an upper portion of said combustion chamber;
(d) a first catalyst withdrawal conduit, connecting with said catalyst collecting means, for withdrawal of collected regenerated fluid catalyst from said combustion chamber;
(e) a heat removal chamber located superadjacent to said combustion chamber and in communication therewith;
(f) heat removal means disposed within said heat removal chamber;



4,243,635

WASTE INCINERATOR EXHAUST GAS TREATMENT AND APPARATUS

Hans Aeberli, Meggen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

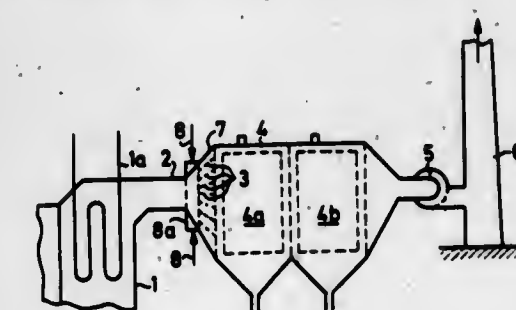
Filed Feb. 3, 1978, Ser. No. 874,803

Claims priority, application Switzerland, Feb. 24, 1977, 2331/77

Int. Cl.³ B01J 8/00; B03C 3/01; C01B 7/00; F01N 3/08

U.S. Cl. 422-176

4 Claims



1. A waste incinerator comprising:
means defining a combustion chamber;

means defining an exhaust gas passageway in communication with said combustion chamber and having a flow therethrough away from said combustion chamber of exhaust gases generated by combustion in said combustion chamber;

filter means disposed in said exhaust gas passageway for separating particulate material from said exhaust gas flow, said filter means having an input side and an output side, said output side having a gas pressure lower than the gas pressure of said input side;

filter elements disposed within said filter means and having filter surfaces formed thereon, said filter surfaces being adapted to receive deposits of said particulate material thereon, at least some of said filter surfaces being nonplanar and being so oriented that exhaust gases passing over said some of said filter surfaces are subject to sudden directional changes in a regular manner resulting in turbulence intensifying pulsations;

spray nozzle means disposed adjacent said input side of said filter means for introducing into said exhaust gas flow a dry, finely divided scrubbing agent for removing constituents of said exhaust gas flow, said scrubbing agent being distributed onto said filter surfaces to form a coating thereon; and

means defining a second passageway providing gaseous communication between said spray nozzle means and said exhaust gas passageway at a point prior to said input side of said filter, said second passageway defining means branching off a portion of said exhaust gas flow and conducting said portion of said exhaust gas flow to said spray nozzle means to supply a gaseous vehicle for propelling said scrubbing agent through said spray nozzle means and onto said filter surfaces.

4,243,636

APPARATUS FOR THE CONTINUOUS LIQUID-PHASE CATALYTIC OXIDATION OF ALKYL-SUBSTITUTED AROMATIC COMPOUNDS

Shigemi Shiraki, Iwakuni, and Ryoichi Yamamoto, Yamaguchi, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

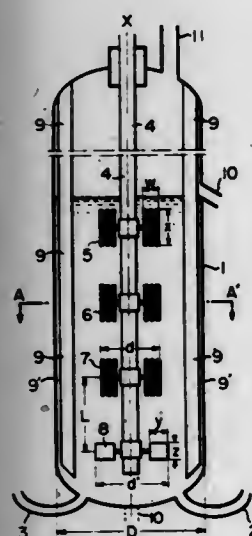
Filed Feb. 9, 1979, Ser. No. 10,914

Claims priority, application Japan, Feb. 15, 1978, 53/15335

Int. Cl.³ B01F 7/16; B01J 19/18; C07C 51/16

U.S. Cl. 422—225

11 Claims



1. In an apparatus for oxidizing an alkyl-substituted aromatic compound in the liquid phase with a molecular oxygen-containing gas in a lower aliphatic carboxylic acid solvent in the presence of an oxidation catalyst, said apparatus comprising a reaction vessel, a gas exhaust port at the top of the vessel, an inlet at the bottom of the vessel for feeding said molecular oxygen-containing gas, an inlet for feeding said solvent, an inlet for feeding said catalyst, an inlet for withdrawing the oxidation reaction product, and an agitator within the vessel,

said agitator consisting of a rotating shaft provided along the axial direction of the vessel and a plurality of stages of agitating blades secured to said rotating shaft at spaced intervals; the improvement wherein at least one stage of the agitating blades consists of comb-like flat blades each of which is composed of a plurality of comb-like pieces aligned at spaced intervals; wherein the total area of said plurality of comb tooth-like pieces is about 0.83 to about 3 times the total area of the spaces among said comb tooth-like pieces in each comb-like flat blade when taken on a flat plane.

4,243,637

URANIUM RECOVERY FROM PRE-TREATED PHOSPHORIC ACID

James L. Bradford, Brea, and Fernando Ore, Whittier, both of Calif., assignors to Occidental Petroleum Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 688,265, May 20, 1976, Pat. No. 4,053,564. This application Oct. 11, 1977, Ser. No. 840,791

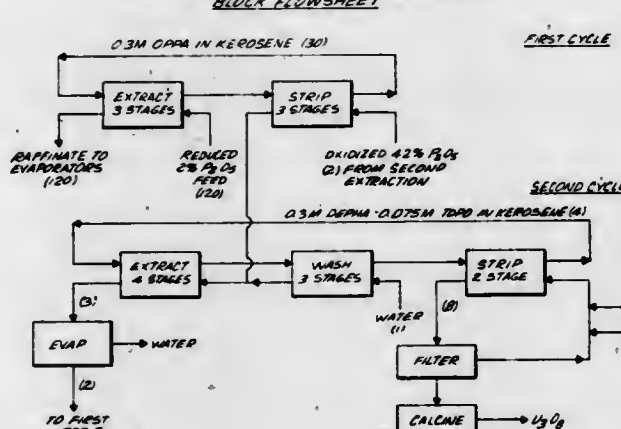
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.² C01G 43/00, 43/02

U.S. Cl. 423—10

16 Claims

URANIUM RECOVERY FROM PHOSPHORIC ACID BLOCK FLOWSHEET



1. A process for recovering uranium values from phosphoric acid which comprises:

(a) contacting an aqueous phosphoric acid phase containing uranium values, from 1% to about 55% P_2O_5 values by weight and impurities with a first water immiscible organic extractant phase comprising a water immiscible organic solvent containing at least one water immiscible organic sulfonic acid dissolved therein to form:

(i) a pretreated phosphoric acid phase containing uranium values; and

(ii) a loaded organic extractant phase containing impurities;

(b) separating the pretreated aqueous phosphoric acid phase from the loaded organic extractant phase;

(c) contacting pretreated aqueous phosphoric acid phase with a second water immiscible organic extractant phase comprising a water immiscible organic solvent containing at least one water immiscible organophosphorus uranium-extracting agent dissolved therein to form:

(i) a uranium-depleted phosphoric acid phase; and

(ii) an organic extractant phase containing uranium values;

(d) separating the uranium-containing organic extractant phase from the uranium-depleted phosphoric acid phase; and

(e) recovering uranium values from the uranium-containing second organic extractant phase.

4,243,638

IRON EDTA CHELATE CATALYZED OXIDATION OF URANIUM

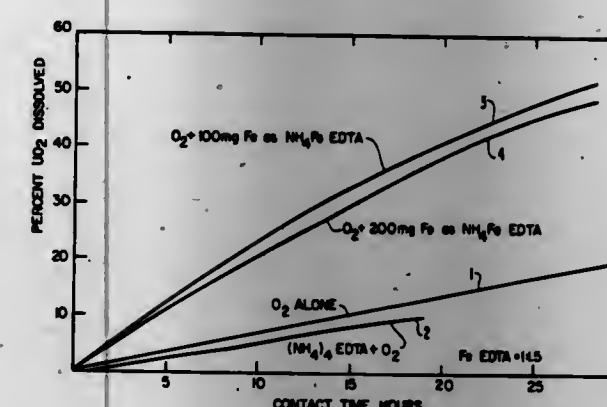
John F. Jackovitz, Monroeville; Armand J. Panson, Pittsburgh, and Earl A. Pantier, Verona, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1978, Ser. No. 915,648

Int. Cl.² C06G 43/00; E21B 43/28

U.S. Cl. 423—17

12 Claims U.S. Cl. 423—132



1. In the process of leaching and recovering of uranium from ore in which the uranium is the present in the tetravalent state, the steps comprising:

- applying to the ore an aqueous leach solution comprising essentially from about 0.3 to 5 grams per liter of ammonium bicarbonate, from about 0.1 to 3 grams per liter of H_2O_2 and ferric ammonium EDTA wherein the EDTA:Fe ratio is at least about 1.25:1, the ferric ammonium EDTA providing from 3 to 100 ppm of iron in the solution, the pH of the solution being about 7.4 to 9.5, the leach solution converting tetravalent uranium with which it comes in contact to the hexavalent state which then readily dissolves in the solution,
- withdrawing from the ore leach solution enriched in uranium, and
- stripping the uranium from the withdrawn uranium enriched solution.

4,243,640

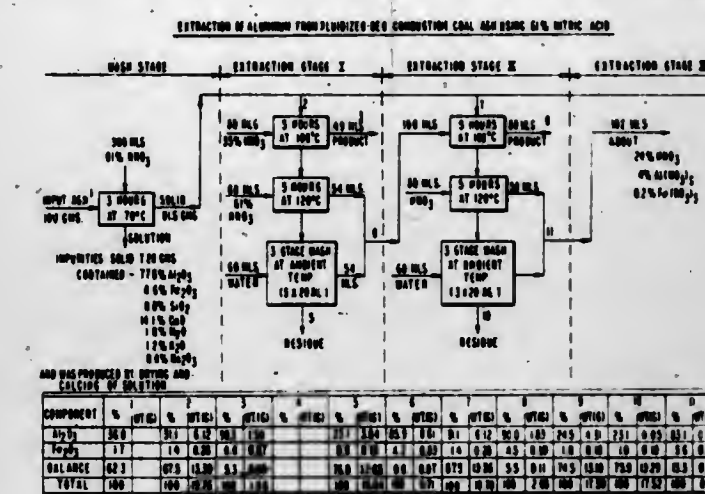
PROCESS OF EXTRACTION OF ALUMINUM VALUES FROM COAL ASH

Robert O. Hill, 24, Torwood Rd., Forest Town, Johannesburg, South Africa, and Bernard Ralstrick, 24 Wheatlands Rd. East, Harrogate, Yorkshire, England (HG2 8PX)

Filed May 23, 1978, Ser. No. 908,862

Int. Cl.³ C01F 7/66

10 Claims



1. A process for preparing a solution of high aluminum content from the combustion residue of a solid carbon-containing fuel obtained by a combustion procedure wherein said residue is formed at a temperature substantially above about 800° C. and wherein said residue has a carbon content of 2% or less by weight and an iron content calculated as Fe_2O_3 of 4% or less by weight which comprises:

- pretreating said residue with an amount of nitric acid substantially equivalent to about 100 to 300% of that required to dissolve all the Al_2O_3 present in the combustion residue for a time to effect substantial dissolution of calcium, magnesium, sodium, potassium and titanium impurities and to leave aluminum substantially undissolved, separating the residual, and then
- extracting said treated residue with nitric acid of strength about 30% to 65% by weight strength at about 100° to 225° and in a quantity equivalent to 300 to 600% of the amount of nitric acid solution necessary to dissolve the aluminum cations taken up from the residue during extraction, said temperature being higher than that employed in the pretreatment step.

4,243,641

METHOD FOR RECOVERING LITHIUM FROM SEA WATER

Tomitaro Ishimori, Sekimachi, and Kaoru Ueno, Katsuta, both of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 944,696

Claims priority, application Japan, Nov. 7, 1977, 52/132441

Int. Cl.³ C22B 26/12

3 Claims

4,243,639

METHOD FOR RECOVERING VANADIUM FROM PETROLEUM COKE

Frank C. Haas, Arvada, and William K. Hesse, Boulder, both of Colo., assignors to Tosco Corporation, Los Angeles, Calif.

Filed May 10, 1979, Ser. No. 37,493

Int. Cl.³ C01G 31/00

U.S. Cl. 423—63

11 Claims

1. A method for recovering at least about 70 weight % of the vanadium contained in petroleum coke which comprises: heating a mixture of petroleum coke containing inorganic compounds including vanadium and an alkali metal salt gasification catalyst in the presence of steam at a sufficient temperature to gasify the carbon in the coke with said steam and produce a combustible gas and inorganic ash composed predominantly of said inorganic compounds and a water soluble alkali metal vanadate, adding said inorganic ash to water to dissolve said water soluble alkali metal vanadate and recovering said dissolved vanadate from said water.

U.S. Cl. 423—179.5

1. A method of recovering lithium from sea water comprising repeatedly concentrating sea water and removing from the brine concentrates the salts including common salt which are separated as a result of the concentration to produce a brine which has a specific gravity of about 1.4 when measured at a temperature of from 23° to 27° C., diluting said brine of about 1.4 specific gravity with water, thereafter passing the diluted brine through an ion exchange resin to accumulate lithium and magnesium ions on the resin, and treating said resin having lithium and magnesium ions thereon with an aqueous hydrochloric acid solution to elute lithium from said resin while magnesium ions remain on said resin.

4,243,642

METHOD FOR THE SYNTHESIS OF BORACITES
 Michaelangelo Delfino, Spring Valley; Philip S. Gentile, Mt. Vernon, both of N.Y.; Gabriel M. Loiacono, Franklin Lakes, N.J., and Wallace A. Smith, Ossining, N.Y., assignors to North American Phillips Corporation, New York, N.Y.
 Filed May 23, 1979, Ser. No. 42,254
 Int. Cl.³ C01B 35/00

U.S. Cl. 423—277

4 Claims

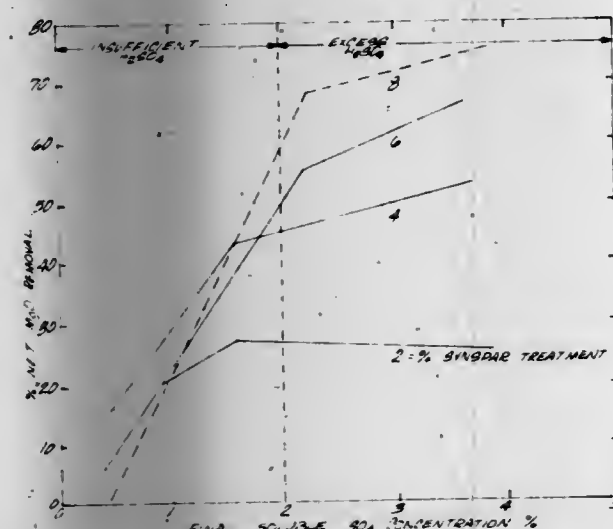
1. A method for the production of boracites of the formula $M_3B_7O_{13}X$ wherein M is a bivalent metal and X is an element selected from the group consisting of Br, I and Cl, comprising heating at a temperature of 200° to 300° C. and at a pressure of 5 to 33 atmospheres, a mixture of a compound of the formula GBO_2 wherein G is an element of Col. 1A of the Periodic Table and a compound of the formula MX_2 where M is a bivalent metal and X is an element selected from the group consisting of Br, I and Cl in an inert atmosphere with the provision that the reaction is carried out in an aqueous solvent when G is other than hydrogen.

4,243,643

METALLIC ION REMOVAL FROM PHOSPHORIC ACID
 Harold E. Mills, Lake City, Fla., assignor to Occidental Chemical Company, Houston, Tex.
 Continuation-in-part of Ser. No. 810,484, Jun. 27, 1977, Pat. No. 4,136,199. This application Oct. 25, 1978, Ser. No. 954,647
 Int. Cl.³ C01B 25/18

U.S. Cl. 423—319

48 Claims



1. A process for the removal of at least one metallic ion impurity from impure phosphoric acid comprising the steps of:
 (a) adding to the impure phosphoric acid a solid precipitant comprising calcium and fluorine and having a dry basis analysis of at least 20% by weight calcium oxide and at least 19% by weight F, said precipitant prepared by treatment of wet process phosphoric acid plant pond water with a calcium containing compound;
 (b) allowing the formation of a precipitate containing the impurity to yield a purified phosphoric acid; and
 (c) separating at least a portion of the precipitate from the purified phosphoric acid.

4,243,644

PROCESS TO SYNTHESIZE AMMONIA
 Herbert R. Lukens, Jr., La Jolla; Donald P. Snowden, and Richard L. Voigt, both of San Diego, all of Calif., assignors to IRT Corporation, San Diego, Calif.
 Filed Jan. 13, 1979, Ser. No. 48,224
 Int. Cl.³ C01C 1/00

U.S. Cl. 423—352

8 Claims

1. A process for synthesizing ammonia comprising:
 (a) making a mixture of carbon and magnesium metal,
 (b) forming a melt of said mixture by heating said mixture

above the melting point of magnesium metal in an atmosphere substantially free of nitrogen,
 (c) cooling said melt to solidify same,
 (d) exposing said solidified melt to moist air to form ammonia, and
 (e) recovering the ammonia thereby produced.

4,243,645

ALL DRY SOLID POTASSIUM SEED REGENERATION SYSTEM FOR MAGNETOHYDRODYNAMIC POWER GENERATION PLANT

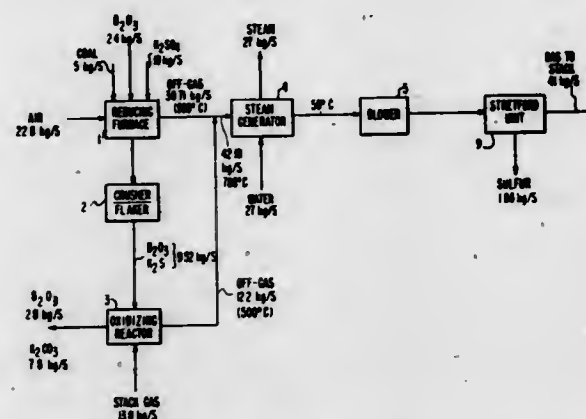
Edward J. Lahoda, Edgewood, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1979, Ser. No. 77,802

Int. Cl.³ C01D 7/00; C01B 7/00; G21D 7/02

U.S. Cl. 423—428

10 Claims



1. A process for converting K_2SO_4 into K_2CO_3 comprising:
 (A) reacting said K_2SO_4 with a reducing agent in the presence of 0.1% to about 40% B_2O_3 at about 800° to about 1300° C. for at least about one hour to produce K_2S ;
 (B) reacting said K_2S with carbon dioxide and steam at about 450° to about 750° C. for at least about one hour to produce hydrogen sulfide and said K_2CO_3 ; and,
 (C) separating said K_2CO_3 and said hydrogen sulfide.

4,243,646

TREATMENT OF CARBON FIBRE

David J. Lind, Breadsall; Valerie J. Coffey, Long Eaton, and Joyce Hallam, Milford, all of England, assignors to Rolls-Royce Limited, London, England

Filed Aug. 29, 1978, Ser. No. 948,293

Claims priority, application United Kingdom, Oct. 4, 1977, 41140/77

Int. Cl.³ D01F 9/12

U.S. Cl. 423—447.1

2 Claims

1. A method of treating carbon fibre to enhance the strength thereof when incorporated in a resin matrix, said method consisting essentially of:

- (1) subjecting the fibre to a surface removal step in which the surface layer of the fibre is removed together with any flaws therein, and subsequently
- (2) subjecting the fibre to a surface deactivation step in which at least some of the functional groups on the surface of said fibre are either removed or rendered incapable of forming a chemical bond with the resin matrix material by heating said fibre in an inert atmosphere of nitrogen.

4,243,647

PROCESS FOR REMOVAL OF HYDROGEN SULFIDE FROM GAS STREAMS

Robert H. Haas, Fullerton, and Rowland C. Hansford, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 602,416, Aug. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 528,845, Dec. 2, 1974, abandoned. This application Jan. 28, 1976, Ser. No. 700,513

Int. Cl.³ C01B 17/04

U.S. Cl. 423—573 G

11 Claims

1. A process for the desulfurization of a feed gas containing at least one sulfur component selected from the class consisting of SO_2 , COS, CS_2 , CH_3SH , SO_3 , and sulfur vapor, which process, being carried out for at least 30 days, comprises the steps of:

- (1) contacting said feed gas at a temperature between about 300° and 800° F. with a hydrofining catalyst comprising a combination of a Group VIB metal oxide and/or sulfide with an iron group metal oxide and/or sulfide, said feed gas being contacted with said catalyst at a space velocity correlated with temperature, and in the presence of sufficient of one or more components selected from the class consisting of water vapor, H_2 , and CO, so as to convert at least about 80% of said sulfur components to H_2S by hydrolysis and/or hydrogenation;
- (2) dehydrating the resulting hydrofined gas to a water vapor content of less than about 15 volume percent;
- (3) contacting, at a temperature between about 250° and 450° F., a mixture of said dehydrated hydrofined gas and a gaseous oxidant comprising sufficient elemental oxygen to oxidize at least 80% of said H_2S to sulfur with a catalyst comprising a vanadium oxide and/or sulfide supported on a non-alkaline porous refractory oxide, said contacting being carried out at a space velocity correlated with temperature so as to oxidize at least 80% of the H_2S contained in said dehydrated hydrofined gas to elemental sulfur vapor, with said catalyst maintaining substantially undiminished activity for oxidizing H_2S to sulfur under essentially the same conditions for at least 30 days of contacting; and
- (4) separating free sulfur from the resulting gaseous effluent, and recovering a purified product gas.

4,243,648

METHOD FOR REMOVING HYDROGEN SULFIDE FROM GAS STREAMS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Jan. 20, 1979, Ser. No. 50,170

Int. Cl.³ C01B 17/04

U.S. Cl. 423—573 R

20 Claims

1. A method for removing hydrogen sulfide from a hydrogen sulfide-containing gas stream and converting said hydrogen sulfide to elemental sulfur, which comprises:

- (a) contacting said gas stream with an aqueous regenerable washing solution capable of converting absorbed hydrogen sulfide to hydrophobic sulfur particles, said contacting being conducted under conditions selected to absorb said hydrogen sulfide into said washing solution and to convert the absorbed hydrogen sulfide substantially exclusively to hydrophobic elemental sulfur particles;
- (b) allowing said absorbed hydrogen sulfide to react with the constituents of said washing solution to thereby form said sulfur particles;
- (c) oxidatively regenerating the washing solution from step (b) to form a regenerated washing solution;
- (d) transferring said hydrophobic sulfur particles from said washing solution to a nonaqueous carrier liquid so as to form a substantially nonaqueous sulfur slurry comprised of said sulfur particles entrained in said carrier liquid; and

(e) heating said sulfur slurry so as to melt said sulfur particles and thereby form a liquid elemental sulfur product.

4,243,649

PROCESS FOR THE MANUFACTURE OF ZIRCONIUM OXIDE FROM TECHNICAL CALCIUM ZIRCONATE
 Wilhelm Brugger, Ratingen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany
 Filed Nov. 21, 1979, Ser. No. 96,424

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854200

Int. Cl.³ C01G 25/02

U.S. Cl. 423—608

5 Claims

1. A method for the manufacture of zirconium oxide suitable for the manufacture of electro-ceramics from technical grade calcium zirconate comprising

- (a) dissolving the calcium zirconate in hydrochloric acid, adjusting the fluorine content of the solution to 0.1 to 0.15 moles of fluorine per mole of zirconium by the addition of an alkali or an alkaline earth fluoride and then freeing the solution from insoluble components;
- (b) mixing the solution with 0.6 to 0.75 moles of sulfuric acid per mole of zirconium and heating it to temperatures of $\geq 80^\circ$ C. and maintaining this temperature for at least 10 minutes;
- (c) diluting the suspension obtained with approximately an equal volume of water, allowing the suspension to stand at least 2 hours, and filtering and washing the precipitate;
- (d) mixing the precipitate with an ammonium carbonate solution which contains at least equimolar amounts of ammonium carbonate based on the zirconium;
- (e) passing carbon dioxide into this suspension at 20° to 30° C. for at least 30 minutes and filtering, washing and drying the precipitate; and
- (f) calcining the dried precipitate at 1,000° to 1,100° C.

4,243,650

HEAT AND VOLATIZED SALT RECOVERY FROM REACTION EFFLUENT

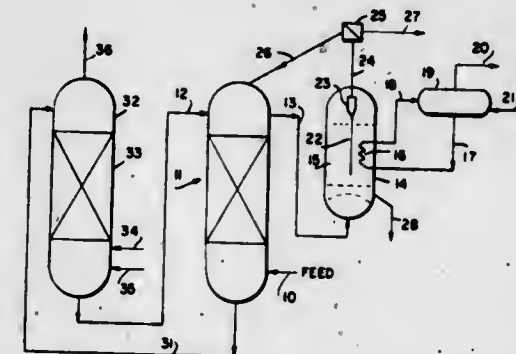
Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 870,351, Jan. 18, 1978, abandoned, and Ser. No. 25,278, Mar. 29, 1979, abandoned. This application Jan. 13, 1979, Ser. No. 48,147

Int. Cl.³ B01D 5/00; C07C 17/00

U.S. Cl. 423—659

27 Claims



1. A process for recovering vaporized salt from a gaseous reaction effluent withdrawn from a reaction system employing the salt while simultaneously recovering heat from the reaction effluent, comprising:

contacting the gaseous reaction effluent with solid particles by suspending the solid particles in flowing gaseous reaction effluent to provide dilute phase transport contact, said solid particles being at a temperature at which vaporized salt condenses from the gas onto the solid particles, said solid particles being heated and said gaseous reaction effluent being cooled by said contact;
 separating gaseous reaction effluent from the solid particles;

cooling separated solid particles in a fluidized bed, said fluidized bed being fluidized by a fluidizing gas, said particles being cooled in the fluidized bed to a temperature at which vaporized solid condenses onto the solid particles; employing cooled solid particles for contacting the gaseous reaction effluent; and recovering and recycling to the reaction system solid salt fines attrited from the solid particles and present in the fluidizing and reaction effluent gases, said solid salt fines being attrited in equilibrium with the condensation of vaporized salt onto the solid particles.

4,243,651

ALLERGY TEST

Donald J. Nalebuff, 89 Lake Shore Dr., Oakland, N.J. 07436
Filed Apr. 13, 1978, Ser. No. 896,135

Int. Cl.² G01N 33/16

U.S. Cl. 424—1

7 Claims

1. A method of determining the sensitivity to a specific allergen which comprises

- determining the measurable bound radioactivities for a given unit of time of a first sample of known total IgE concentration and a plurality of dilutions thereof by effecting radioallergosorbent (RAST) tests on said first sample and each of said dilutions and measuring bound radioactivity for said unit of time;
- effecting a RAST test on a second sample of known total IgE concentration to determine the length of time required to measure a given amount of bound radioactivity;
- effecting a RAST test on a test sample and measuring bound radioactivity for said length of time;
- effecting a RAST test on a negative control sample and measuring bound radioactivity for said length of time;
- determining whether said test sample is specific allergen positive by comparing the measured bound radioactivities of said test sample with said negative control sample, said test sample being positive when said former measurement is more than double the latter measurement; and
- comparing the measured bound radioactivities of positive test sample with said first sample of known total IgE content and dilutions thereof.

4,243,652

GASTROINTESTINAL SCANNING AGENT

Marion D. Francis, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 14, 1978, Ser. No. 924,608

Int. Cl.³ A61K 49/00, 43/00; G01T 1/00

U.S. Cl. 424—1

20 Claims

20. A process for visualizing the GI tract of humans and lower animals, comprising introducing into the GI tract of a human or lower animal a radiodiagnostic agent comprising a gamma radiation emitting radionuclide in substantially permanent association with a pharmaceutically-acceptable, substantially physiologically insoluble, particulate inorganic phosphate carrier.

4,243,653

NON-IONIC POLYIODO SUGAR SUBSTITUTED ANILINES

Milos Sovak, Rancho Santa Fe, and Ramachandra Ranganathan, San Diego, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 27, 1979, Ser. No. 34,099

Int. Cl.³ A61K 29/02; C07H 15/18

U.S. Cl. 424—5

27 Claims

1. Symmetrical triodobenzenes having at least one non-glycosidyl carbohydrate ether group and at least one acylated amino group, wherein the carbohydrate group is of from about three to six carbon atoms and the acylated amino group is of from about one to six carbon atoms, all of the annular carbon atoms being substituted.

24. An X-ray contrast medium formulation containing a

sufficient amount to provide sufficient X-ray contrast of a compound according to any of claim 1, 4, 7, and 13 in a physiologically acceptable carrier.

4,243,654

OXAZEPAM DERIVATIVES FOR IMMUNOASSAY REAGENTS

Richard S. Schneider, Saratoga, Calif., and Steven J. Gould, Swindham, Conn., assignors to Syva Company, Palo Alto, Calif.

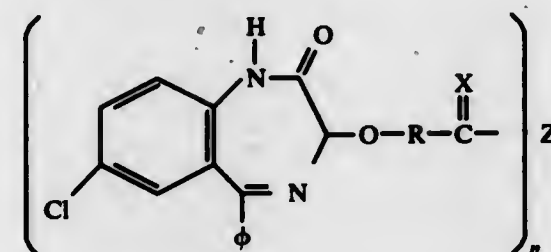
Division of Ser. No. 793,973, May 5, 1977, abandoned, which is a continuation of Ser. No. 612,425, Sep. 11, 1975, Pat. No. 4,043,989. This application Sep. 11, 1978, Ser. No. 941,438

Int. Cl.² C07G 7/00; A61K 29/00; G01N 33/16

U.S. Cl. 424—12

3 Claims

1. Antibodies prepared in response to an antigen of the formula



wherein:

- R is a linking group of from 0 to 8 carbon atoms and 0 to 1 oxygen atom bonded solely to carbon as non-oxo carbonyl;
Z is an antigenic poly(amino acid);
n is at least 1 and not greater than the molecular weight of Z divided by 500; and
X is chalcogen or nitrogen.

4,243,655

DENTAL HEALTH-CARE AIDS

Roland E. Gunther, R.D. 1, Box 282, New Berlin, N.Y. 13411

Continuation-in-part of Ser. No. 960,106, Nov. 13, 1978, abandoned, Ser. No. 960,107, Nov. 13, 1978, abandoned, Ser. No. 960,108, Nov. 13, 1978, abandoned, Ser. No. 960,109, Nov. 13, 1978, abandoned, Ser. No. 960,110, Nov. 13, 1978, abandoned, Ser. No. 960,111, Nov. 13, 1978, abandoned, and Ser. No. 960,112, Nov. 13, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 71,997

Int. Cl.³ A61K 7/16, 7/26, 31/415, 35/54

U.S. Cl. 424—19

40 Claims

1. Dental Health-care Aids compositions selected from the group consisting of dentifrice toothpastes dentifrice toothpowders mouthwashes chewing gums confections tooth-coating concentrates and extended-release buccal tablets comprising effective amounts optimum for a biotin-uptake blocking regimen unfavorable for biotin-requiring micro-organisms implicated in the human mouth mini-ecosystem production of dental caries plaque, and acid formation, in the mouth of Biotin-antagonists.

4,243,656

BIOSYNTHETIC POLYMERIC COMPOSITIONS

Erwin G. Walliczek, 13 Biarritz Ave., Beaumaris 3193, Victoria, Australia

Filed May 9, 1979, Ser. No. 37,474

Claims priority, application Australia, May 19, 1978, PD4440; Oct. 30, 1978, PD6580

Int. Cl.³ A61K 31/78; A61L 15/00

U.S. Cl. 424—28

7 Claims

1. A biosynthetic polymeric composition adapted to form a vapor permeable film, said composition including: (a) 10% to 40% by weight of a water dispersible acrylic polymer contain-

ing from 50 to 500 monomeric units; (b) 2% to 30% by weight of a humectant selected from the group consisting of glycerol, polyethylene glycol, and propyl 1, 2 diol; (c) 0.5% to 20% by weight of a material selected from a group consisting of gelatin, gum acacia, and albumin; and (d) 30% to 87.5% by weight water.

4,243,657

HAIR COSMETIC

Takeo Okumura, Sakura; Atsuo Ishida, Chiba, and Shizuo Hayashi, Saitama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 730,350, Oct. 7, 1976, abandoned. This application Sep. 1, 1978, Ser. No. 938,838

Claims priority, application Japan, Oct. 14, 1975, 50-123392

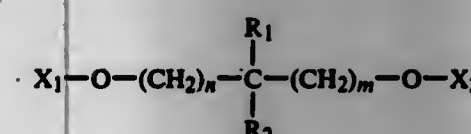
Int. Cl.³ A61K 7/06, 7/11

U.S. Cl. 424—47

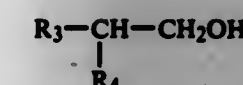
12 Claims

1. A homogeneous liquid hair cosmetic composition consisting essentially of

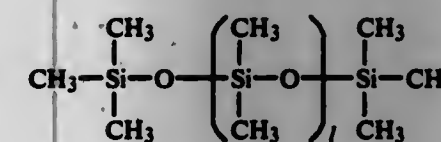
- from 0.5 to 40 weight percent of a substance having a solidification temperature lower than minus 20° C. and selected from the group consisting of
- a compound having the formula

wherein X₁ is R- orand X₂ is

- or H, in which R is branched alkyl having 6 to 12 carbon atoms, R₁ is H, CH₃, C₂H₅ or C₃H₇, R₂ is H, CH₃, C₂H₅ or OH, and n and m each is an integer of from one to 3, and mixtures thereof,
- a compound having the formula



- wherein R₃ is a linear or branched alkyl having 8 to 10 carbon atoms and R₄ is a linear or branched alkyl having 6 to 8 carbon atoms, and mixtures thereof, and
- mixtures of component (1) and component (2),
- from 0.5 to 10 weight percent of a compound or mixture of compounds having the formula



wherein l is an integer of from 3 to 14 and the viscosity of component B is from 2 to 10 cps, the weight ratio of components B/A being in the range of from 1/10 to 8/1, C. and the balance consists essentially of an alcohol solvent effective for dissolving components A and B and selected from the group consisting of ethanol, propanol and isopropanol.

4,243,658

COMPOSITIONS AND METHODS FOR REDUCING ELUTION OF THERAPEUTIC AGENTS FROM TEETH

Robert W. H. Chang, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 865,681, Dec. 29, 1977,

abandoned. This application Apr. 2, 1979, Ser. No. 26,402

Int. Cl.³ A61K 7/18

U.S. Cl. 424—52

6 Claims

1. A dentifrice composition for substantially effectively coating previously fluoride-treated teeth and thereby reducing elution of said fluoride from said teeth, said composition comprising

- a fluoride-containing caries prophylactic agent provided that said agent is substantially free from polyvalent metal atoms; and
- at least about 0.05% by weight of an anionic, water-dispersible, membrane-forming material which, when applied to the surface of said previously fluoride-treated teeth in an oral environment, complexes with the calcium of said teeth and forms a substantially continuous hydrophobic barrier thereon which substantially reduces the elution of said previously applied fluoride from said teeth, and which, when at equilibrium with the complex, has a formation constant in the range of about 0.5 to 8, said membrane-forming material having the formula



wherein R₁ is a monovalent, stable, inert, fluorinated, saturated, non-polar radical containing from about 4 to 16 carbon atoms; R₂ is selected from hydrogen and alkyl groups containing from about 2 to 3 carbon atoms; R₃ is selected from alkylene and alkarylene groups that contain from about 1 to 10 carbon atoms; and M is selected from hydrogen, alkali metal, ammonium, and amine groups.

4,243,659

COMPOSITIONS FOR IMPROVING HAIR BODY AND METHOD OF USE

Angelina T. Balingit, Chicago, and Anthony A. Scaffidi, Bellwood, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed May 24, 1979, Ser. No. 41,945

Int. Cl.³ A61K 7/06, 7/11

U.S. Cl. 424—70

20 Claims

1. Liquid shampoo composition for increasing hair body by permanently swelling hair shafts with reduced loss of tensile strength, consisting essentially of an aqueous solution of a hair cleaning synthetic detergent, which is compatible with the other ingredients, in an effective hair washing concentration for undiluted application which contains on a parts by weight basis from 4 to 10% of bisulfite salt selected from the class consisting of sodium, potassium, ammonium bisulfite, and mixtures thereof, and from 2 to 12% of N,N'-dimethyl urea, said detergent being compatible with said bisulfite and said dimethyl urea, and said composition having a pH from 4.0 to 6.9.

4,243,660

COMPOSITE INSECT ATTRACTANT FOR MALE CABBAGE MOTHS AND A PROCESS FOR PREPARING ITS ACTIVE AGENTS

Csaba Szantay; Lajos Novak; Miklos Toth; Jozsef Balla; Bela Stefkó, all of Budapest, and Attila Kis-Tamas, Pilisvörösvár, all of Hungary, assignors to Egyt Gyógyszervegyészeti Gyár, Budapest, Hungary

Filed Apr. 19, 1979, Ser. No. 31,583

Claims priority, application Hungary, Apr. 21, 1978, EE 2558

Int. Cl.³ A01N 25/00, 37/06

U.S. Cl. 424—84

5 Claims

1. A composite insect attractant for male cabbage moths (*Mamestra brassicae*), which comprises

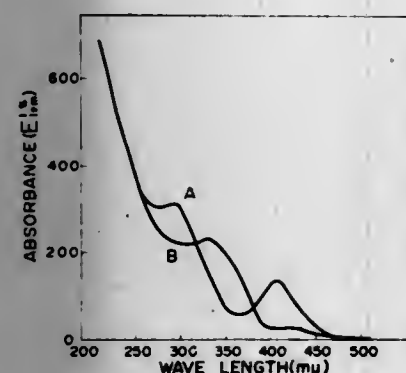
- (a) (Z)-11-hexadecyl acetate as a first active agent A and
(b) (Z)-11-heptadecyl acetate as a second active agent B in a weight ratio of 70 to 99 parts A: 30 to 1 parts B.

4,243,661

GROWTH INCREASING AGENTS

Eisuke Ishihara, Miyazonishi; Hiroshi Yonehara, Tokyo; Katsuyuki Akasaki, Shimizu; Masao Minowa, and Katsumi Kobayashi, both of Shizuoka, all of Japan, assignors to Kamiai Chemical Industry Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 830,773, Sep. 6, 1977, abandoned, which is a continuation of Ser. No. 736,523, Oct. 28, 1976, abandoned, which is a continuation of Ser. No. 681,198, Apr. 28, 1976, abandoned. This application Apr. 23, 1979, Ser. No. 32,253
Claims priority, application Japan, Oct. 28, 1975, 50-128910
Int. Cl.³ A61K 35/00

U.S. Cl. 424—117



1. A method for promoting the growth of domestic animals which comprises administering to said animal a growth promoting effective amount of multithiomycin.

6. The method according to claim 1, wherein said multithiomycin is administered to said animal in an amount of 0.1 to 500 ppm admixed in the feed or drinking water for said animal.

4,243,662

PLANT-VIRUS CONTROLLING AGENT

Kiro Asano, Kakizaki; Tsuyoshi Saito, Tokyo; Masayoshi Hatanaka, and Susumu Ikeda, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 943,474, Sep. 18, 1978. This application Apr. 12, 1979, Ser. No. 29,546

Claims priority, application Japan, Sep. 16, 1977, 52-111968
Int. Cl.³ A61K 31/73; C07H 5/06

U.S. Cl. 424—180

3 Claims

1. A method of protecting a plant from infection by a plant virus of the group consisting of tobacco mosaic virus, cucumber mosaic virus and cucumber green mottled mosaic virus, which comprises treating a plant of the species belonging to the Solanaceae family or to the Cucurbitaceae family with an aqueous solution of a product consisting essentially of nitrogen-containing polysaccharides having the elementary composition of 38 to 50% carbon, 2.5 to 10% nitrogen, 5.5 to 7.5% of hydrogen, the balance being oxygen, having a molecular weight between 500 and 10,000 and showing a characteristic infrared absorption band at about 1620 cm⁻¹, obtained by bringing a culture product of Basidiomycetes fungus into reaction with an aqueous ammoniacal solution of a normality of 0.03 to 17 N, at a temperature of 150° to 250° C., under pressure of said aqueous ammoniacal solution at said reaction temperature by filtering the reaction product to obtain a filtrate and then, after purifying said filtrate, by drying said purified filtrate.

4,243,663

GLYCOLIPID COMPOSITIONS FOR TRANSPLANTED TUMOR IMMUNOTHERAPY

Ichiro Azuma, 1-2, Aoyamada, Suita-shi, and Yuichi Yamamura, 1-9-22, Nikawa-takada, Takarazuka-shi, both of Japan

Continuation-in-part of Ser. No. 809,884, Jun. 24, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,050
Claims priority, application Japan, Jun. 25, 1976, 51-75866; Aug. 9, 1977, 52-95404
Int. Cl.³ C07H 13/02; A61K 31/71, 31/72

U.S. Cl. 424—181

11 Claims

1. An adjuvant composition for enhancing immunization against a transplanted tumor which comprises a glycolipid as active ingredient in concentration of from 10 γ to 10 mg/ml of composition, the saccharide moiety of said glycolipid being selected from fructose, sucrose and glucose, said composition further containing a pharmaceutically acceptable carrier.

6. A method for imparting immunotherapy against a transplanted tumor in an animal subject, which comprises administering into the body of a tumor-carrying animal a composition containing as an active ingredient a glycolipid, having a saccharide moiety selected from the group consisting of fructose, sucrose and glucose, said composition additionally containing a pharmaceutically acceptable carrier.

4,243,664

NOVEL CORTICOIDS

Klaus Annen; Henry Laurent; Helmut Hofmeister; Rudolf Wiechert; Hans Wendt, and Joachim F. Kapp, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

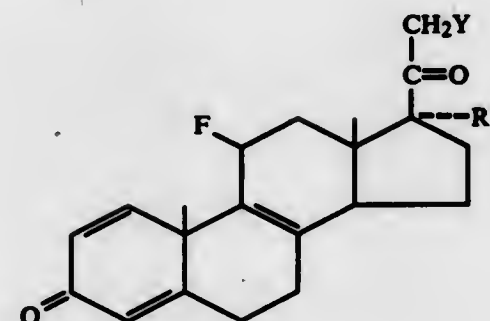
Division of Ser. No. 839,486, Oct. 4, 1977, Pat. No. 4,176,126. This application Mar. 13, 1979, Ser. No. 20,154

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1976, 2645104
Int. Cl.³ C07J 5/00

U.S. Cl. 424—243

5 Claims

1. A corticoid of the formula



wherein

Y is acyloxy of 1-10 carbon atoms; and
R₁ is acyloxy of 1-10 carbon atoms.

5. A method of treating inflammation in mammals which comprises topically administering an anti-inflammatorily effective amount of a corticoid of claim 1.

4,243,665

2-HETEROCYCLYLALKYL-6-METHOXY-NAPHTHALENES

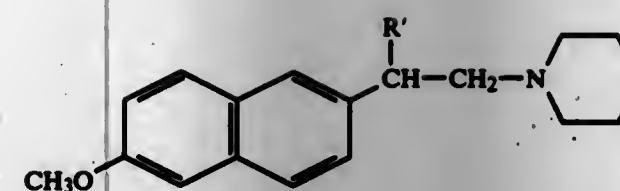
Thomas A. Purcell, Fontenay aux Roses; Braham Shroott, Cachan, and Daniel J. M. Galtier, Saint Cyr l'Ecole, all of France, assignors to Synthelabo, Paris, France

Filed Nov. 21, 1978, Ser. No. 962,760
Claims priority, application France, Nov. 24, 1977, 77 35307; Oct. 16, 1978, 78 29413
Int. Cl.³ C07D 241/04, 275/00; A61K 31/54, 31/495

U.S. Cl. 424—246

7 Claims

1. A compound of the formula:



wherein

R' is hydrogen or methyl;
Z is O, S, S→O, SO₂ or NR₁;
R₁ is hydrogen, alkyl, CONR₂R₃, COOR₂, COR₂ or SO₂R₃; each of R₂ and R₃ is independently hydrogen, alkyl, phenyl or CF₃; wherein each alkyl has 1 to 4 carbon atoms; in the form of racemate or enantiomer when R' is CH₃, or a pharmaceutically acceptable salt thereof.

7. A method of treating a subject having an inflammatory condition comprising administering to said subject suffering therefrom a therapeutically effective dose of a compound according to one of claims 2 to 4, 1 and 5.

4,243,666

4-AMINO-2-PIPERIDINO-QUINAZOLINES

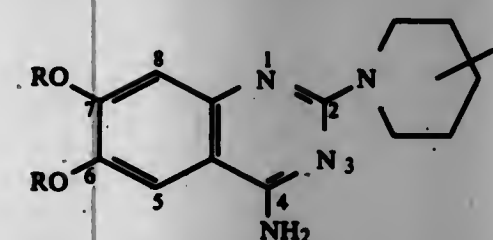
Simon F. Campbell, Deal; John C. Dauliewicz, Ash; Colin W. Greengrass, Sandwich, and Rhona M. Plewa, Canterbury, all of England, assignors to Pfizer Inc., New York, N.Y.

Filed May 14, 1979, Ser. No. 38,509
Claims priority, application United Kingdom, May 18, 1978, 20351/78
Int. Cl.³ A61K 31/505; C07D 401/04

U.S. Cl. 424—248,54

10 Claims

1. Compounds having the general formula:



wherein

R is lower alkyl;
X, which is attached to the 3- or 4- position of the piperidino group, is selected from the group consisting of —(CH₂)_nCONR¹R², —O(CH₂)_nCONR¹R² and



wherein

n is 0 or an integer from 1 to 2;
R¹ is selected from the group consisting of hydrogen and lower alkyl;
R² is selected from the group consisting of phenyl, mono-lower alkylphenyl, mono- and di-lower alkoxy phenyl, mono- and di-chlorophenyl, C₃₋₇ cycloalkyl, lower alkenyl, lower alkynyl, lower alkyl and mono-substituted lower alkyl wherein the substituent is selected from the group consisting of C₃₋₇ cycloalkyl, hydroxy, lower alkoxy, lower alkoxy carbonyl, phenyl, mono-lower alkylphenyl, mono- and di-lower alkoxyphenyl, mono- and di-chlorophenyl, phenoxy, chloro and NR³R⁴ wherein R³ is selected from the group consisting of hydrogen and lower alkyl and R⁴ is selected from the group consisting of lower alkyl, lower alkanoyl and lower alkylsulfonyl; with the proviso that any O, N or chloro atom in R² is separated by at least two carbon atoms from the nitrogen atom to which R² is attached;
R¹ and R² taken together with the nitrogen atom to which they are attached are selected from the group consisting of

morpholino, 1,2,3,4-tetrahydroisoquinolyl and mono- and dimethoxy substituted 1,2,3,4-tetrahydroisoquinolyl; and the pharmaceutically acceptable acid addition salts thereof.

9. A pharmaceutical composition comprising antihypertensive amount of a compound of claim 1 or a pharmaceutically acceptable acid addition salt thereof, together with a pharmaceutically acceptable diluent or carrier.

4,243,667

2-BENZHYDRYLIMINO-1,3-DIAZACARBOCYCLIC COMPOUNDS AS INHIBITORS OF GASTRIC SECRETION

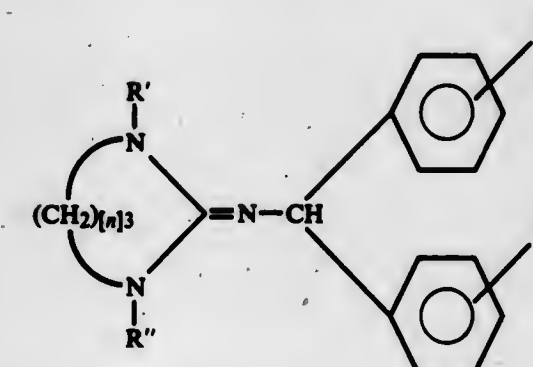
Chris R. Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Division of Ser. No. 815,393, Jul. 13, 1977, Pat. No. 4,174,401. This application Jan. 30, 1979, Ser. No. 7,758
Int. Cl.³ A61K 31/415; C07D 239/14

U.S. Cl. 424—251

2 Claims

2. A method for inhibiting gastric secretion which comprises administering to a subject with gastric hyperacidity an effective antisecretory amount of a compound of the formula



wherein R' and R'' independently are selected from the group consisting of hydrogen and methyl, X and Y independently are selected from the group consisting of hydrogen, lower alkoxy, lower alkyl having up to five carbon atoms and halo; and the pharmaceutically-acceptable acid addition salts thereof in admixture with a pharmaceutical carrier.

4,243,668

OCTAHYDRO-1H-BENZO[4,5]FURO[3,2-E]ISOQUINOLINE ANALGESIC AND NARCOTIC ANTAGONISTIC COMPOUNDS

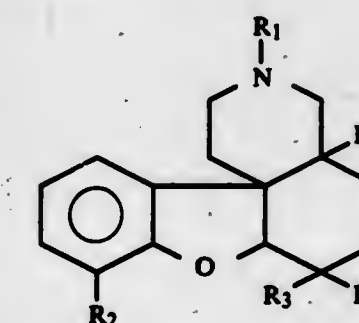
Engelbert Ciganek, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 948,038, Oct. 2, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 54,447
Int. Cl.³ A61K 31/47; C07D 217/04

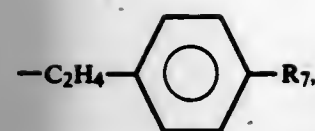
U.S. Cl. 424—258

39 Claims

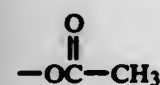
1. An octahydro-1H-benzo[4,5] furo[3,2-e]isoquinoline compound of the formula



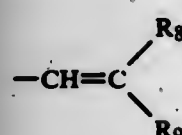
wherein the perhydro isoquinoline has a trans configuration, R₁ is selected from the group consisting of —H, C₁₋₁₀alkyl, —CH₂R₆,



and $(CH_2)_nCN$ in which $n=1-3$;
 R_2 is selected from the group consisting of H, $-OH$, C_{1-12} alkoxy and C_{2-12} acyloxy of an alkanic acid;
 R_3 is separately selected from the group consisting of $-H$, $-OH$, $-CH_3$, C_{1-2} alkoxy, C_{2-12} acyloxy of an alkanic acid, $-F$ and $-N_3$;
 R_4 is separately selected from the group consisting of $-H$ and $-F$;
 $R_{3,4}$ in combination are selected from the group consisting of methylene and keto;
 R_5 is selected from the group consisting of $-H$, $-OH$,



and $-OCH_3$;
 R_6 is selected from the group consisting of



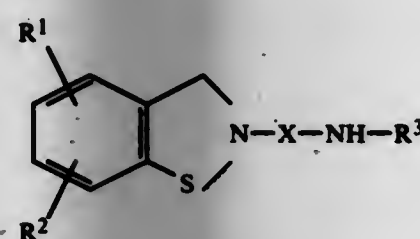
$-C=CH$, C_{3-6} cycloalkyl, 2-thienyl, 2-furyl and tetrahydrofuryl;
 R_7 is selected from the group consisting of C_{1-3} alkyl, $-OCH_3$, $-Cl$, $-Br$ and $-F$; and
 R_8 and R_9 are independently selected from the group consisting of $-H$, $-CH_3$ and $-Cl$; or a pharmaceutically suitable acid addition salt thereof.
 27. A method for the treatment of pain in a mammal comprising administering internally to the mammal an analgesically effective amount of a compound of claim 1.

4,243,669

2-SUBSTITUTED BENZISOTHAZOLONES

Keith H. Baggaley, Redhill, England, assignor to Beecham Group Limited, England
 Division of Ser. No. 936,861, Aug. 25, 1978, which is a division of Ser. No. 850,786, Nov. 11, 1977, which is a division of Ser. No. 738,000, Nov. 2, 1976, Pat. No. 4,113,728. This application Aug. 20, 1979, Ser. No. 67,949
 Claims priority, application United Kingdom, Nov. 17, 1978, 47373/75

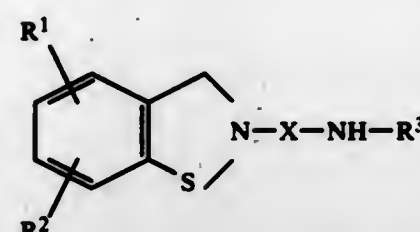
Int. Cl.³ A61K 31/425; C07D 417/02
 U.S. Cl. 424-263
 1. A compound of the formula (V)



or a pharmaceutically acceptable non-toxic acid addition salt thereof where there is a basic nitrogen in the molecule wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen; or R^1 and R^2 when attached to adjacent carbon atoms from an alkylene moiety of 3 to 6 carbon atoms or an oxyalkylene moiety of 1 to 3 carbon atoms; R^3 is a nitrogen-containing heterocyclic ring unsubstituted or

substituted by lower alkyl, carboxy or alkoxycarbonyl; and X is a bond or straight or branched chain alkylene of 1 to 12 carbon atoms.

6. A pharmaceutical composition useful for the inhibition of platelet aggregation and thrombus formation and for the treatment of arterial thromboses in humans and animals which comprises a platelet-aggregation-inhibitory amount, an amount sufficient to inhibit the formation of thrombs or an anti-arterial thrombotically effective amount of a compound of the formula



or a pharmaceutically acceptable nontoxic acid addition salt thereof when there is a basic nitrogen atom in the molecule, wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen; or R^1 and R^2 when attached to adjacent carbon atoms form an alkylene moiety of 3 to 6 carbon atoms or an oxyalkylene moiety of 1 to 3 carbon atoms; X is a bond or a straight or branched chain alkylene of 1 to 12 carbon atoms; and R^3 is a nitrogen-containing heterocyclic ring unsubstituted or substituted by lower alkyl, carboxy or alkoxycarbonyl; in combination with a pharmaceutically acceptable carrier.

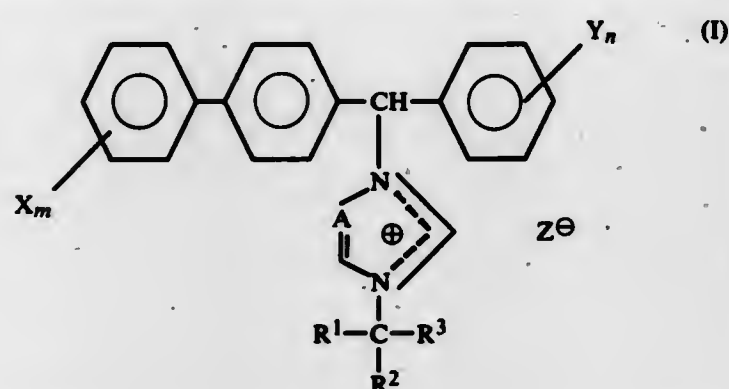
7. The composition according to claim 6, wherein said compound is 2-[2'-pyridylaminomethyl]-1,2-benzisothiazol-3-one.

4,243,670

α -(4-BIPHENYL)-BENZYL-AZOLIUM SALTS AND THEIR USE FOR COMBATING MICRO-ORGANISMS
 Erik Regel; Wilfried Draber; Karl H. Büchel, and Manfred Plempel, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
 Continuation of Ser. No. 833,630, Sep. 15, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,783

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 2643563

Int. Cl.³ A01N 43/26, 43/28; C07D 233/56, 249/08
 U.S. Cl. 424-269
 1. An α -(4-Biphenyl)-benzylazolum salt of the formula



in which

A represents the CH group or a N atom,
 R^1 and R^2 are identical or different and each represents hydrogen, alkyl with 1 to 4 carbon atoms, unsubstituted phenyl or phenyl substituted by halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, nitro or cyano,
 R^3 represents unsubstituted or substituted phenyl or biphenyl, phenylalkyl with 1 to 4 carbon atoms in the alkyl part,

phenylcarbonyl or phenylcarbonylalkyl group with 1 to 4 carbon atoms in the alkyl part the substituents being fluorine, chlorine, bromine, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, nitro or cyano,

X represents halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, nitro or cyano,

Y represents X or unsubstituted phenyl or phenyl substituted by halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, nitro or cyano,

m and n each represents 0 or an integer of from 1 to 5 and Z represents the anion of an inorganic or organic acid.

4. A method of combatting micro-organisms which comprises applying to the micro-organisms or to a habitat thereof, an effective amount of a compound of claim 1 alone or in admixture with a diluent or carrier.

4,243,671

INHIBITION OF THROMBOXANE SYNTHETASE FORMATION AND ARACHIDONIC ACID-INDUCED PLATELET AGGREGATION AND BRONCHOCONSTRICTION

Don N. Harris, Somerset; Marie B. Phillips, Skillman, and Roland Greenberg, Princeton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 16, 1979, Ser. No. 30,420
 Int. Cl.³ A61K 31/415

U.S. Cl. 424-273 R 7 Claims

1. A method of inhibiting thromboxane synthetase activity, and thus inhibiting arachidonic acid-induced platelet aggregation and broncho-constriction, which comprises administering to the circulatory system of a mammalian host in need thereof an effective amount of 1-(3-phenyl-2-propenyl)-1H-imidazole or a pharmaceutically acceptable acid addition salt thereof.

4,243,672

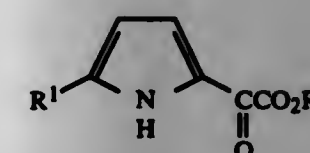
5-SUBSTITUTED 2-PYRROLEGLYOXYLIC ACIDS, 5-SUBSTITUTED 2-PYRROLYLGLYCINES AND DERIVATIVES THEREOF

Ian T. Barnish, Ramsgate; Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, all of England, assignors to Pfizer Inc., New York, N.Y.

Filed Aug. 28, 1979, Ser. No. 70,396
 Claims priority, application United Kingdom, Aug. 30, 1978, 34985/78; Feb. 1, 1979, 03635/79
 Int. Cl.³ C07D 207/333; A61K 31/40

U.S. Cl. 424-274 21 Claims

1. A compound of the formula



and pharmaceutically acceptable cationic salts thereof, wherein R is hydrogen or alkyl having from one to four carbon atoms;

R^1 is a member selected from the group consisting of alkenyl having from three to six carbon atoms, cycloalkylthio having from five to seven carbon atoms and AR^3 where A is a member bonded to the pyrrole ring and is selected from the group consisting of alkylene and alkylthio having from one to four carbon atoms, and alkenylene having from two to four carbon atoms and R^3 is a member selected from the group consisting of cycloalkyl having from three to seven carbon atoms, cycloalkenyl having from five to seven carbon atoms and $C_6H_4R^4$ where R^4 is a member selected from the group consisting of H, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms.

4,243,673

ANALGESIC COMPOSITIONS AND METHODS OF USE
 Robert J. Capetola, Doylestown, Pa., and John L. McGuire, White House Station, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

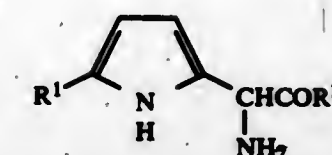
Filed Dec. 20, 1978, Ser. No. 971,472
 Int. Cl.² A61K 31/38, 31/165

U.S. Cl. 424-275 5 Claims

1. A method of controlling pain in mammals which comprises administering to a mammal an effective amount of a

Br, I and alkyl and alkoxy having from one to four carbon atoms.

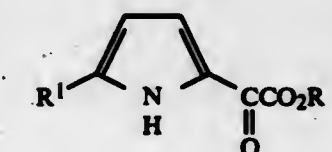
8. An L- or DL-compound of the formula



and pharmaceutically acceptable cationic and acid addition salts thereof wherein R^2 is hydroxy, amino or alkoxy having from one to four carbon atoms;

R^1 is a member selected from the group consisting of alkenyl having from three to six carbon atoms, cycloalkylthio having from five to seven carbon atoms and AR^3 where A is a member bonded to the pyrrole ring and is selected from the group consisting of alkylene and alkylthio having from one to four carbon atoms and alkenylene having from two to four carbon atoms and R^3 is a member selected from the group consisting of cycloalkyl having from three to seven carbon atoms, cycloalkenyl having from five to seven carbon atoms and $C_6H_4R^4$ where R^4 is a member selected from the group consisting of H, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms.

16. A method of treating a mammalian subject suffering from a disease or condition attributable to reduced blood flow, reduced oxygen availability or reduced carbohydrate metabolism in the cardiovascular system which comprises orally or parenterally administering to said subject a cardiovascular blood flow, oxygen availability or carbohydrate metabolism increasing amount of a compound of the formula



or a pharmaceutically acceptable cationic salt thereof, wherein R is hydrogen or alkyl having from one to four carbon atoms; and

R^1 is a member selected from the group consisting of alkyl and alkylthio having from one to ten carbon atoms, alkenyl having from three to six carbon atoms, cycloalkylthio having from five to seven carbon atoms and AR^3 where A is a member bonded to the pyrrole ring and is selected from the group consisting of alkylene and alkylthio having from one to four carbon atoms, and alkenylene having from two to four carbon atoms and R^3 is a member selected from the group consisting of cycloalkyl having from three to seven carbon atoms, cycloalkenyl having from five to seven carbon atoms and $C_6H_4R^4$ where R^4 is a member selected from the group consisting of H, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms.

18. The method according to claim 16 wherein said compound is 2-(5-cyclopropylmethyl-2-pyrrolyl)glyoxylic acid.

composition comprising from about 0.5 mg/kg to about 22 mg/kg of α -methyl-4-(2-thienylcarbonyl) benzene acetic acid and from about 1 mg/kg to about 200 mg/kg of N-(4-hydroxyphenyl) acetamide.

4,243,674

9-HYDROXYDIBENZO[b,d]PYRANS AND INTERMEDIATES THEREFORE

Jaajit S. Bindra, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

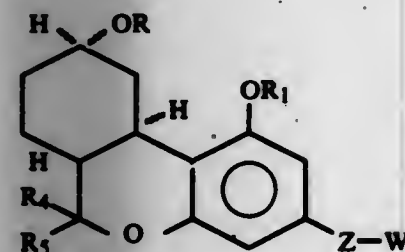
Continuation of Ser. No. 819,471, Jul. 27, 1977, Pat. No. 4,143,139, which is a continuation of Ser. No. 730,672, Oct. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 628,210, Nov. 3, 1975, abandoned. This application Jun. 12, 1978, Ser. No. 914,664

Int. Cl.³ A61K 31/35; C07D 311/04

U.S. Cl. 424-283

16 Claims

1. A compound having the formula



wherein

R is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms;

R₁ is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms

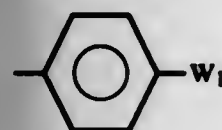
each of R₄ and R₅ is selected from the group consisting of hydrogen, methyl and ethyl;

Z is $-(alk_1)_m-X-(alk_2)_n$ wherein each of (alk₁) and (alk₂) has from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk₁) plus (alk₂) is not greater than 9;

each of m and n is 0 or 1;

X is selected from the group consisting of O, S, SO and SO₂; and

W is



wherein W₁ is selected from the group consisting of hydrogen, fluoro and chloro;

12. A process for producing an anti-hypertensive effect in a mammal which comprises administering to the mammal an anti-hypertensive producing quantity of a compound of claim 1.

4,243,675

(BIS)DITHIOCARBAMATE SALTS

Charles W. Martin, Lake Jackson, and Eldon L. Ward, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 951,915, Oct. 16, 1978, Pat. No. 4,203,999. This application May 21, 1979, Ser. No. 41,159

Int. Cl.³ A01N 47/10; A61K 31/325

U.S. Cl. 424-286

7 Claims

1. A compound of the formula



wherein X and Y are not the same and both represent a bivalent transition metal cation of the group consisting of Zn, Mn,

Cu, Co, Fe and Ni and a+b=1, with the proviso that a+b are, individually, greater than 0.

6. A method for controlling fungi which comprises applying to said fungi or their habitat an antifungal amount of a compound of claim 1.

4,243,676

PROCESS FOR PREPARING OVERBASED NAPHTHENIC MICRONUTRIENT COMPOSITIONS

Wahid R. Ali, Pointe-a-Pierre, Trinidad and Tobago, assignor to Texaco Trinidad, Inc., Pointe-a-Pierre, Trinidad and Tobago

Filed May 17, 1979, Ser. No. 40,008

Int. Cl.³ A01N 55/02, 37/00, 59/20, 59/16

U.S. Cl. 424-294

6 Claims

1. In a process for preparing a micronutrient composition containing an overbased oil soluble naphthenate of a metal selected from the group of molybdenum, copper, manganese and iron by reacting in a reactor having discharge lines at ambient temperature and pressure a solution of naphthenic acids having a molecular weight ranging from about 200 to about 600 in a light aromatic solvent of low viscosity having a boiling point ranging up to about 300° F. with an alcoholic solution of alkali metal hydroxide and an aqueous solution of the sulfate of the selected metal, the ratio of equivalents of metal to naphthenic acids being from about 1 to about 20; the steps of distilling at atmospheric pressure substantially all of the alcohol from the reaction mixture, some of the aromatic solvent and some of the water present but retaining enough water in the system to keep the resulting alkali metal sulfate in aqueous solution; continuing said distillation until the distillation temperature reaches the boiling point of the resulting aromatic solvent-water azeotrope, and separating an aqueous phase containing the alkali metal sulfate from an organic phase containing the desired overbased naphthenate whereby cake formation tending to block said discharge lines is eliminated.

4,243,677

INSECTICIDAL

PERHALOALKYL VINYL CYCLOPROPANECARBOXYLATES

John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

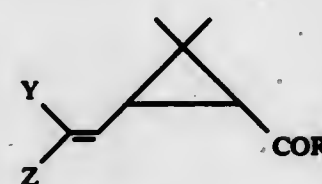
Continuation of Ser. No. 927,198, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 870,973, Jan. 20, 1978, abandoned. This application Jul. 30, 1979, Ser. No. 65,257

Int. Cl.³ A01N 53/00; C07C 79/22

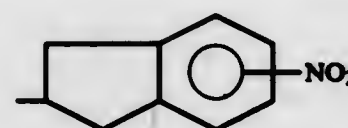
U.S. Cl. 424-305

3 Claims

1. A compound of the formula



wherein one of Y and Z is trihalomethyl and the other is halogen and R is $-OR^1$ where R¹ is represented by the formula



3. A method for insect control which comprises applying to the locus where control is desired an insecticidally effective amount of the compound of claim 1 or 2.

4,243,678

ACYLHYDROCARBYLAMINOALKANOIC ACIDS, COMPOSITIONS AND USES

Walter Krastnat, Constance, Fed. Rep. of Germany, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,701

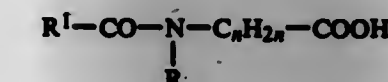
Claims priority, application Luxembourg, Dec. 30, 1977, 78365; Switzerland, Jan. 14, 1978, 6504/78; Jan. 14, 1978, 6505/78

Int. Cl.³ A01N 37/12; C07C 101/44, 101/16, 101/04

U.S. Cl. 424-319

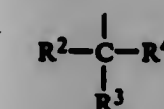
100 Claims

1. An acyl(γ , δ - or ϵ -)aminoalkanoic acid of the formula



wherein

R is a member selected from the group consisting of optionally-substituted and optionally-hydrogenated biphenyl, optionally-substituted and optionally-hydrogenated bicyclic aryl with from 8 to 12 ring carbon atoms and a radical of the formula



R¹ is aliphatic hydrocarbyl, alicyclic hydrocarbyl, phenyl or substituted phenyl;

R² is $-H$, alkyl, alkenyl or alkynyl;

R³ is $-H$, alkyl, cycloalkyl, phenyl, substituted phenyl or, together with R⁴, alkylene;

R⁴ is alkyl, cycloalkyl, phenyl, substituted phenyl, phenalkyl, substituted phenalkyl or, together with R³, alkylene;

R⁴ has at least 3 carbon atoms when R⁴ is alkyl, R² is $-H$ or methyl, R³ is $-H$, and R¹ is alkyl, phenyl or substituted phenyl;

or R², R³ and R⁴, together with the carbon atom to which each is bound, are adamantyl; and

n is 3, 4 or 5;

any substituent on a ring carbon atom being a member selected from the group consisting of halo, lower alkyl, hydroxy, lower alkoxy, lower alkylmercapto, lower aliphatic hydrocarbyl carbonyloxy, amino, monosubstituted amino, disubstituted amino, nitro, trifluoromethyl; any substituent of monosubstituted amino or of disubstituted amino being independently selected from the group consisting of lower alkyl and lower aliphatic hydrocarbyl carbonyloxy; and any substituent of substituted phenylalkyl being a nuclear substituent;

a salt of such acylaminoalkanoic acid with a base or an ester of such acid with a lower alkanol, a phenalkanol or a nuclearly-substituted phenalkanol.

51. A pharmacologically-active and physiologically-acceptable pharmaceutical composition comprising from 0.5 to 1000 milligrams of at least one pharmacologically-active and physiologically-acceptable compound according to claim 2 in combination with a substantially-inert carrier therefor.

4,243,679

S-(3-METHYL-2-BUTENYL)CYSTEINE

Jorge D. Adara, 41, calle Dalmases, Barcelona-17, Spain; Silvano Casadio, 11, via Tantarini, Milano, Italy; Jose M. B. Ribalta, 125 bis, calle Mayor de Sarria, and Leonida Brusoghin, 53, calle Mayor de Sarria, both of Barcelona-17, Spain

Filed Apr. 19, 1979, Ser. No. 31,612

Claims priority, application Spain, Apr. 22, 1978, 469,060

Int. Cl.³ A61K 31/195

U.S. Cl. 424-319

1 Claim

1. A method of treating a patient for fluidification and re-

moval of tracheobronchial mucus, pathological substances and foreign bodies from the respiratory tract comprising administering orally, by inhalation or per rectum daily dosages of 200 mg to 3.00 g S-(3-methyl-2-butenyl)-cysteine.

4,243,680

METHOD OF REDUCING INFESTATION OF CITRUS RUST MITES ON CITRUS TREES

James L. Taylor, DeLand, Fla., assignor to Thompson-Hayward Chemical Company, Kansas City, Kans.

Filed Feb. 7, 1979, Ser. No. 10,274

Int. Cl.³ A01N 47/28

U.S. Cl. 424-322

15 Claims

1. A method of reducing infestation of citrus crops by citrus rust mites comprising subjecting the developmental stages of said mites located on said citrus crops to the action of a composition comprising a miticidally effective amount of a compound selected from the group consisting of

N-(2,6-difluorobenzoyl)-N'-(3-fluoro-4-chlorophenyl) urea;

N-(2,6-dichlorobenzoyl)-N'-(4-chlorophenyl) urea;

N-(2,6-dichlorobenzoyl)-N'-(4-trifluoromethylphenyl) urea;

N-(2,6-difluorobenzoyl)-N'-(3,4-dichlorophenyl) urea;

N-(2,6-dichlorobenzoyl)-N'-(3-fluoro-4-bromo-phenyl) urea;

N-(2,6-dichlorobenzoyl)-N'-(3-fluoro-4-iodophenyl) urea;

N-(2,6-dichlorobenzoyl)-N'-(ethyl)-N'-(4-bromophenyl) urea;

N-(2,6-dichlorobenzoyl)-N'-(2-fluoro-4-iodophenyl) urea;

N-(2,6-dichlorobenzoyl)-N'-(methyl)-N'-(4-chlorophenyl) urea;

N-(2,6-dichlorobenzoyl)-N'-(ethyl)-N'-(4-chlorophenyl) urea;

N-(2,6-difluorobenzoyl)-N'-(4-bromophenyl) urea;

N-(2,6-difluorobenzoyl)-N'-(4-trifluoromethylphenyl) urea;

N-(2,6-difluorobenzoyl)-N'-(3-trifluoromethylphenyl) urea;

and

N-(2,6-difluorobenzoyl)-N'-(methyl)-N'-(4-fluorophenyl) urea

and a finely divided inert carrier therefor.

4,243,681

ALKYLTHIOPHENOXYPROPANOLAMINES AND PHARMACEUTICAL COMPOSITIONS AND USES THEREOF

Duane F. Morrow, and William L. Matier, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

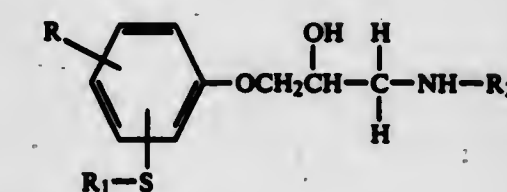
Continuation-in-part of Ser. No. 942,222, Sep. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 841,168, Oct. 11, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,497

Int. Cl.³ A61K 31/135; C07C 83/00, 91/00, 93/06

U.S. Cl. 424-330

15 Claims

1. A compound of the formula



or an acid addition salt thereof wherein

R is hydrogen or methyl;

R₁ is alkyl of 1 to 4 carbon atoms inclusive;

R₂ is straight chain alkyl of 6 to 12 carbon atoms inclusive, or cyclohexylalkyl having 2 to 4 carbon atoms in the alkylene chain.

11. The therapeutic process for treating a mammal requiring vasodilation which comprises administering to said mammal an effective vasodilating amount of a compound as claimed in claim 1.

4,243,682

FLUORONAPHTHYLONES

Alexander C. Goudie, Harlow, and Laramie M. Gaster, Sawbridgeworth, both of England, assignors to Beecham Group Limited, England

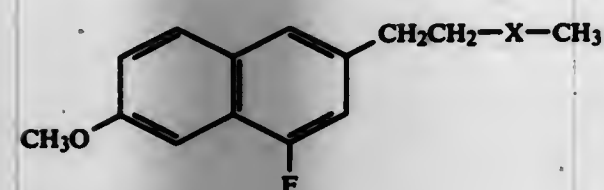
Filed Oct. 23, 1978, Ser. No. 953,465

Claims priority, application United Kingdom, Nov. 3, 1977, 45712/77

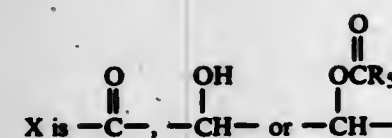
Int. Cl.³ A01N 35/00; C07C 49/23

U.S. Cl. 424—331

1. A compound of the formula:



wherein



wherein R₅ is alkyl of from 1 to 4 carbon atoms.

5. A pharmaceutical composition which comprises an anti-inflammatory effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier therefor.

4,243,683

TERTIARY ALCOHOLS

Barbara J. Broughton, Croydon; Michael P. L. Caton, Upminster, and David J. Hambling, Hornchurch, all of England, assignors to May & Baker Limited, Essex, England

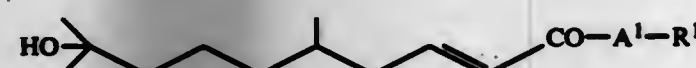
Filed Oct. 3, 1978, Ser. No. 948,156

Claims priority, application United Kingdom, Oct. 5, 1977, 41482/77

Int. Cl.³ C07C 43/23, 49/835

U.S. Cl. 424—331

1. A tertiary alcohol of the formula:



wherein either

- A¹ represents a direct bond and R¹ represents a phenyl group or a phenyl group carrying one or two substituents selected from halogen atoms, alkyl and alkoxy groups, each containing from 1 to 4 carbon atoms, and the trifluoromethyl group or
- A¹ represents an alkylene group containing from 1 to 10 carbon atoms and R¹ represents a phenyl, phenoxy, or phenylthio group carrying one or two substituents selected from halogen atoms, alkyl and alkoxy groups, each containing from 1 to 4 carbon atoms, and the trifluoromethyl group.

14. A composition suitable for use against insects and acarines which comprises, as active ingredient, a tertiary alcohol as claimed in claim 1 in association with one or more diluents compatible with the said compound.

4,243,684

PREPARATION OF CHEESE WITH ROPY LACTIC ACID BACTERIA

Hans-Dieter Pruss, Cologne, and Lütje-Wilhelm Bahrs, Halstenbek, both of Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 806,964, Jun. 16, 1977, abandoned. This application May 4, 1978, Ser. No. 903,647

Claims priority, application United Kingdom, Jun. 18, 1976, 25342/76

Int. Cl.³ A23C 19/02

U.S. Cl. 426—40

2 Claims

1. In the process for preparing a soft cheese comprising the steps wherein:

- milk, a milk-by-product, or a mixture thereof is subjected to a membrane filtration to form a concentrate;
- said concentrate is admixed with a lactic acid bacteria culture;
- said admixture is fermented until a precheese is formed; and
- said precheese is converted into a soft cheese, the improvement comprising said lactic acid bacteria culture being a ropy culture having a thread length of at least 5 centimeters by the quick pipette test, wherein a pipette is dipped into a sour milk produced with said ropy culture, sour milk is sucked into said pipette, and the pipette is pulled out from the surface of the sour milk to form said thread between the pipette and the surface of the sour milk.

4,243,685

PROCESS FOR THE PREPARATION OF FERMENTATION MEDIA SUITABLE FOR CULTURING YEAST FOR ANIMAL CONSUMPTION AND MICROSPORES AND/OR FOR THE PRODUCTION OF PROTEIN FROM VEGETABLE WASTE MATTER

Agoston Simon, and Zoltan Lengyel, both of Budapest, Hungary, assignors to Chincin Gyógyszer és Vegyszeri Termékek Gyara Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 689,345, May 24, 1976, abandoned. This application Jun. 28, 1978, Ser. No. 919,982

Claims priority, application Hungary, Jun. 2, 1975, CI 1581

Int. Cl.³ A23K 1/14

U.S. Cl. 426—53

2 Claims

1. A process for the preparation of fermentation media suitable for producing yeast for animal consumption and/or proteins starting from a vegetable waste matter, comprising the steps of:

- hydrolyzing comminuted vegetable waste matter containing polysaccharides and selected from the group which consists of cornstalks, sunflower stalks, leaves, algae and reeds with a dilute aqueous solution of sulfuric acid at a pH of about 1.5 and at a temperature of about 80° to 140° C., separating the resulting liquid phase, adjusting the separated liquid phase to a pH of 3.0 to 6.0, and supplementing the liquid phase with an effective amount of a compound selected from the group which consists of ammonium hydroxide or ammonium sulfate and potassium dihydrogen phosphate as inorganic ammonium phosphate nutrients to give a fermentation medium suitable for producing yeast for animal consumption;
- boiling the solid phase obtained after the acid hydrolysis of the comminuted vegetable matter with a dilute alkaline metal hydroxide base for 5 to 20 minutes, and repeating this alkaline boiling step at least once;
- separating the solid and liquid phases obtained in step (b) from each other;
- adjusting the pH of the separated liquid phase obtained in step (c) to about 1.5 to obtain a precipitate containing protein which is separated from the mother liquor, and recovering the separated protein;
- adjusting the pH of the mother liquor to 3.0 to 6.0; and
- supplementing the mother liquor with effective amounts

of inorganic ammonium and phosphate compounds suitable for culturing fungi and combining said fermentation medium of step (a) therewith.

4,243,686

PROCESS FOR IMPROVING THE PALATABILITY OF STRAW FOR ANIMAL FEED

Cleanthes Ierallides, Eugene; Youn W. Han, and Arthur W. Anderson, both of Corvallis, all of Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,975

Int. Cl.³ A23K 1/22

U.S. Cl. 426—53

6 Claims

1. A process for increasing the palatability, digestibility, and protein content of straw, which comprises

- mixing the straw with an aqueous solution containing 0.1–0.5 normal hydrochloric acid and 0.1–0.5 normal phosphoric acid in the proportion of one part of straw to about 2–4 parts of aqueous solution at a temperature of about 100°–125° C. for a period of about 30–60 minutes;
- adding to the acid treated straw an amount of ammonia to provide a pH of about 4.0–4.5;
- aerobically fermenting the ammoniated acid-treated straw with a microorganism at a temperature of about 25°–30° C. for a period of about 1–7 days; and
- drying the fermented product.

4,243,687

FREEZE-DRIED NATURAL SOUR DOUGH STARTER

Leo Kline, 1828 Mendocino St., Richmond, Calif. 94804

Division of Ser. No. 805,681, Jun. 13, 1977, Pat. No. 4,140,800. This application Jan. 10, 1979, Ser. No. 2,476

The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.

Int. Cl.³ A21D 8/04

U.S. Cl. 426—62

16 Claims

1. A freeze-dried bakery composition comprising *Lactobacillus sanfrancisco* in a flour culture media which has been subjected to incubation conditions suitable for the growth of said bacteria prior to freeze-drying, said *Lactobacillus sanfrancisco* being initially present in said culture media to provide an initial count of at least about 5×10^6 viable cells per gram of culture media prior to being subjected to said incubation conditions, at least about 20% of the viable bacteria produced during incubation being recoverable after freeze drying, the weight ratio of flour to water in said culture media prior to freeze-drying being about 1:1 to 1:2.5, the gluten of said flour being substantially undeveloped during said incubation, said culture media containing at least about 6% by weight of at least one disaccharide stabilizer prior to freeze-drying to improve recovery of viable *Lactobacillus sanfrancisco*, and a residue of water of not over about 4% by weight.

4,243,688

FLAVORING WITH

2-SUBSTITUTED-4,5-DIMETHYL-Δ³-THIAZOLINES

Manfred H. Vock, Locust; Christopher Giacino, Califos; Anne Hruza, Bricktown; Donald A. Withycombe, Lincoft; Braja D. Mookherjee, Holmdel, and Cynthia J. Massinan, Bricktown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 17,806, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 730,536, Oct. 7, 1976, abandoned. This application Dec. 5, 1979, Ser. No. 100,535

Int. Cl.³ A23L 1/234, 1/226

U.S. Cl. 426—535

1 Claim

1. A flavor composition for increasing the sweet milk chocolate and nut-like notes of chocolate foodstuffs comprising a 50:50 mixture of 2-(2-methyl-n-propyl)-4,5-dimethyl-Δ³-thiazoline:2-n-propyl-2,4-trimethyl-Δ³-thiazoline and the remainder of said composition being a mixture of:

2-Methyl pyrazine;
2,6-Dimethyl pyrazine;
2,3,5,6-Tetramethyl pyrazine; and
3-Phenyl-4-pentenal.

4,243,689

NON-FRIED INSTANT COOKING DRY NOODLES AND A METHOD FOR PRODUCING SUCH NOODLES

Sadao Kokoguchi, Ibaragi; Hiroshi Takahashi, Suita; Ken Okada, and Sanpei Murakami, both of Osaka, all of Japan, assignors to Kanebo Foods Ltd., Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 1,352

Claims priority, application Japan, Jan. 12, 1978, 53/3063

Int. Cl.³ A23L 1/16

U.S. Cl. 426—557

17 Claims

1. A method of manufacturing non-fried oil-free instant cooking dry noodles, comprising the steps of:

- preparing a mixture of raw noodle material consisting essentially of at least one starch-containing component comprised mainly of wheat flour and having a water content of at least 25% by weight relative to the weight of the starch-containing component while avoiding to the extent possible kneading the mixture during mixing;
- forming the mixture of step (a) into a web;
- steaming said web until said starch therein has an α-conversion degree of at least 93% as measured by the diastase enzyme process;
- subjecting the steamed web to preliminary drying to adjust the water content of said web to 15–35% by weight;
- shaping said web into individual noodles, and then
- further drying said individual noodles until the water content of said noodles is reduced to at most 10% by weight relative to the weight of the noodles thus dried.

4,243,690

INSTANT-COOKING DRY MACARONI AND LIKE DRY FOODS AND A METHOD OF THEIR MANUFACTURE

Sanpei Murakami, Osaka; Sadao Kokoguchi, Ibaragi; Hiroshi Takahashi, Suita, and Ken Okada, Osaka, all of Japan, assignors to Kanebo Foods Ltd., Tokyo, Japan

Filed Jan. 16, 1979, Ser. No. 3,934

Claims priority, application Japan, Jan. 19, 1978, 53/4865

Int. Cl.³ A23L 1/16

U.S. Cl. 426—557

20 Claims

1. A method of manufacturing instant-cooking dry macaroni products, comprising the steps of:

- preparing a mixture containing from 25 to 35% by weight of water by mixing, with substantially no kneading, a starting material consisting essentially of a starch-containing component selected from wheat flour and wheat flour with other grain powders, starch or both and of water; then
- subjecting the mixture of step (a) to a preliminary steaming step until said starch attains an α-conversion degree of from 60% to 80% as measured by the diastase enzyme process; then
- shaping the resulting material into individual molded pieces of a desired configuration; thereafter
- subjecting the molded pieces to a further steaming step until said starch attains an α-conversion degree of at least 90%; and then
- drying the steamed, molded pieces of step (d) until the water content of the molded pieces is reduced to at most 10% by weight relative to the weight of the molded pieces thus dried.

4,243,691

SODIUM-FREE SALT SUBSTITUTE

Marvin J. Mohlenkamp, Jr., Cincinnati, and George D. Hiller, Harrison Township, Montgomery County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 18, 1979, Ser. No. 40,353

Int. Cl.³ A23L 1/237

U.S. Cl. 426-649

18 Claims

1. An edible, substantially sodium-free salt substitute, comprising:

- (a) about 2% to about 6% by weight of a 5'-nucleotide component selected from the group consisting of 5'-nucleotide free acids, physiologically acceptable non-sodium salts of said acids, and mixtures thereof;
- (b) about 10% to about 40% by weight of a potassium phosphate component;
- (c) about 5% to about 20% by weight of a sugar component;
- (d) about 15% to about 50% by weight of potassium chloride; and
- (e) about 10% to about 40% by weight of an amino acid mixture having the flavor-enhancing characteristics of hydrolyzed vegetable protein.

4,243,692

PROCESS FOR THE PRODUCTION OF SILICIC ACID HETEROPOLYCONDENSATES USEFUL AS COATING MATERIALS

Horst Scholze, Würzburg, and Helmut Schmidt, Hückberg, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,559

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758414

Int. Cl.³ C08G 77/56

U.S. Cl. 427-2

23 Claims

1. A process for the production of a silicic acid heteropolycondensate, comprising: simultaneously condensing (a) at least one substituted silane corresponding to the general formula



in which R is selected from the group consisting of hydrogen, halogen, alkoxy and $-\text{NR}'_2$, wherein R' is hydrogen and/or lower alkyl, R'' is selected from the group consisting of alkyl, alkenyl, aryl and aralkyl and n is an integer of from 1 to 3;

(b) at least one functional silane corresponding to the general formula



in which R is as defined above, R''' is selected from the group consisting of alkylene, phenylene, alkyl phenylene and alkylene phenylene; Y is selected from the group consisting of halogen, amino, anilino, aldehyde, keto, carboxy, hydroxy, mercapto, cyano, hydroxyphenyl, diazo, carboxylic acid alkyl ester, sulphonic acid ($-\text{SO}_3\text{H}$) and phosphoric acid ($-\text{PO}_3\text{H}_2$) groups and n is an integer of from 1 to 3;

(c) at least one hydrolyzable silicic acid derivative corresponding to the general formula



in which R is as defined above, with the proviso that not all the radicals R are hydrogen; and

(d) optionally at least one compound selected from the group consisting of substantially involatile oxides of elements selected from the group consisting of Groups Ia to Va, IVb and Vb of the Periodic System and compounds of elements selected from the group consisting of Groups Ia to Va, IVb and Vb of the Periodic System which form a substantially involatile oxide in the presence of at least the

quantity of water stoichiometrically required for hydrolysis and in the presence of a condensation catalyst and/or a solvent, the quantities in which said components (a) to (d) are used being selected in such a way that the silicic acid heteropolycondensate formed contains, based on oxide units from 60 to 90% by weight of said component (a), from 1 to 15% by weight of said component (b), from 1 to 30% by weight of said component (c) and from 0 to 40% by weight of said component (d), thereby producing a relatively nonporous coating containing a quantity of reacting coupling sites sufficient to fixedly attach a biological, chemical or biochemical material thereto.

4,243,693

METHOD AND COMPOSITION FOR THE PRESERVATION OF PLANTS

Sven B. L. Nordh, Malmö, Sweden
Filed May 30, 1979, Ser. No. 43,630

Int. Cl.³ A01G 5/06; A01N 1/00, 3/00

U.S. Cl. 427-4

25 Claims

1. In a method for preserving a living plant with a mixture of glycerin and water, the improvement wherein:

- (a) the mixture has a volume ratio of glycerin to water of approximately from 18:82 to 35:65;
- (b) the mixture has a tartrazine concentration of at least 2 grams per liter;
- (c) the mixture is maintained at a temperature of from 15° to 33° C.;
- (d) the living plant is maintained at a temperature of from 15° to 33° C. in air having a relative humidity of at most 60 percent during the method.

4,243,694

JET INK PROCESS AND INK COMPOSITION FLUORESCENT IN ULTRAVIOLET LIGHT

Ishwar R. Manukhian, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Jan. 26, 1978, Ser. No. 919,228

Int. Cl.³ B05D 1/04

U.S. Cl. 427-14.1

6 Claims

1. A process for information recording comprising producing a fine jet of colorless aqueous liquid containing at least one resin and at least one dye which is invisible in ordinary light, directing the jet of colorless liquid onto a recording medium, modulating the density of the applied jet by an electric field in accordance with the information to be recorded, thereby recording said information, and subsequently applying steam to said recorded information.

4,243,695

DOUBLE MASK RASTER METHOD FOR APPLYING SLURRY IN A DISCRETE PATTERN

Rolf Wengert, Munich, and Wilhelm Huber, Goldach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,837

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804127

Int. Cl.³ H01J 9/227

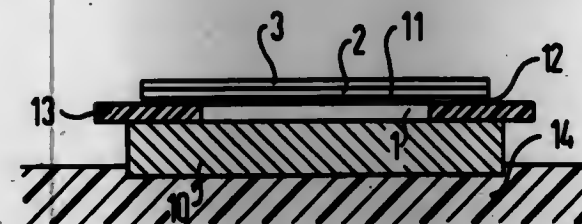
U.S. Cl. 427-14.1

13 Claims

1. A method for applying a plurality of different slurries to a glass television picture screen comprising the steps of:

- maintaining a base mask having a plurality of apertures immovably in position adjacent the glass screen;
- placing a second mask associated with a slurry to be applied over said base mask, said second mask having a plurality of apertures which is less than the plurality of apertures in said base mask;
- aligning the apertures in said second mask with apertures in said base mask;
- applying a slurry evenly over said second mask;
- rinsing away excess slurry;

removing said second mask;
repeating said method with a second mask associated with



each slurry to be applied, each said second mask having apertures therein which do not overlap apertures in masks associated with other slurries.

4,243,696

METHOD OF MAKING A PARTICLE-CONTAINING PLASTIC COATING

William L. Toth, Trumbull, Conn., assignor to W. S. Rockwell Company, Fairfield, Conn.

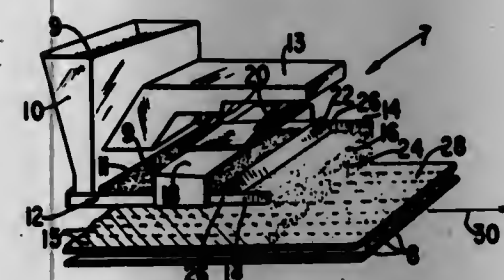
Continuation of Ser. No. 788,264, Apr. 18, 1977, abandoned.

This application Jan. 22, 1979, Ser. No. 5,379

Int. Cl.³ B05D 5/02, 1/28, 1/30, 3/02

U.S. Cl. 427-27

12 Claims



1. The method of making particulate matter-containing plastic coatings upon articles for producing a coating selected from the group consisting of anti-slip coatings, reflective coatings and electrical insulating coatings comprising the steps of: preparing the surface of the articles by cleansing and etching;

mixing dry powdered resin and dry particulate matter together with each other before application to the prepared surfaces of the articles, said dry powdered resin being a finely divided grade of resin powder selected from the group consisting of free-flowing fluidizable bed grade or electrostatic powder spraying grade,

said particulate matter being selected from the group consisting of alumina grit, silicon carbide grit, silica sand grit, glass particles, quartz grit, and fiberglass particles less than one-eighth of an inch long, and mixtures thereof, said dry particulate matter having a particle size in the range from No. 50 to No. 100 grit size,

the loading of the dry particulate matter in said mixture being in the range from 5 to 14 parts by weight of the particulate matter per part of the dry powdered resin, advancing said dry mixture of resin and particulate matter along a trough having a downwardly inclined wide, flat bottom surface terminating in a cascade lip, levelling the advancing dry mixture in said trough to a predetermined uniform thickness before the advancing mixture reaches said cascade lip,

allowing said dry mixture of uniform thickness to cascade over said lip, moving the prepared articles beneath said cascade lip and allowing the cascading dry mixture to fall directly onto the prepared surface of each article,

providing a vertical spacing between said cascade lip and the

prepared surfaces of the articles to be coated which is in the range from approximately 1/8th to 1/2 of an inch, and adhering the dry mixture to the article by heating for forming a tough, durable coating having a thickness of from approximately 30 mils to 80 mils.

4,243,697

SELF BIASED FERRITE RESONATORS

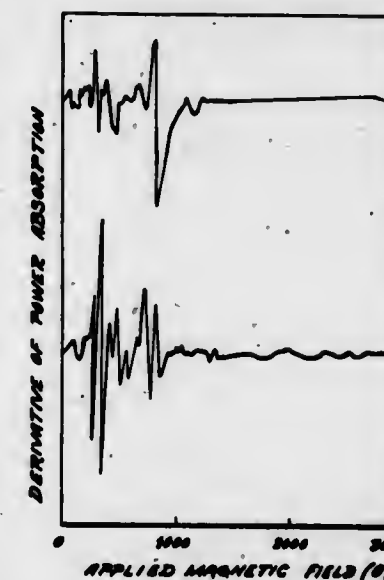
Howard L. Glass, Orange, Jlin-Herny W. Liaw, and Tsutsumo Kobayashi, both of Placentia, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 14, 1979, Ser. No. 20,299

Int. Cl.³ C04B 35/26; H01F 1/10; B05D 5/12

U.S. Cl. 427-47

1 Claim



1. A method for preparing an M-type, self-biased, hexagonal ferrite resonator composed of single crystals of barium hexaferrite on a spinel substrate which comprises the steps of:

- A. forming a homogenized, supersaturated melt composition by dissolving a solute composed of a mixture of BaO, Fe₂O₃ and ZnO into a molten flux composed of BaCO₃ and B₂O₃ in which the mole ratio of BaCO₃:B₂O₃ is 1.75, the mole ratio of Fe₂O₃:(BaCO₃+B₂O₃) is 0.164, and the mole ratio of ZnO:Fe₂O₃ is 0.100;
- B. maintaining said melt composition at a temperature of from about 911° C. to 921° C. while simultaneously immersing a Mg (In, Ga)₂O₄ spinel substrate into said melt composition for a period of time sufficient to effect the deposition on the surface of said substrate of barium hexaferrite single crystals that are substantially free of defects which can act as nucleation sites for magnetic domains;
- C. subjecting said single crystals to a magnetic field that is directed along the easy axis of anisotropy of said crystals and of sufficient magnitude to produce magnetic saturation in said crystals; and
- D. reducing said magnetic field to zero to produce single crystals capable of being maintained in a metastable state of magnetic saturation with zero applied field.

4,243,698

METHOD FOR PRODUCING A PIGMENT COATING

Otto Marnel, Illerrieden; Wilhelm Schwedes, Ulm-Ermingen, and Alfred Wilhelm, Ulm, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 65,882

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835432

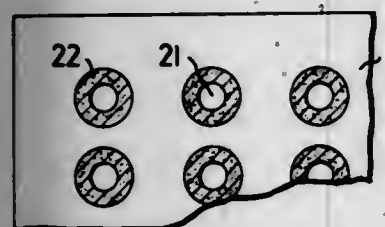
Int. Cl.³ B05D 1/32, 1/38; C09K 11/06, 11/08

U.S. Cl. 427-157

21 Claims

1. A method for producing a coating of pigment on a substrate, comprising:

- (a) providing said substrate with a first coating of a chemically hardenable polymer, and then drying said first coating;
- (b) contacting said dried first coating with a hardening agent compatible with said polymer in an amount sufficient to completely harden said polymer and to leave excess hardening agent on the surface of said polymer;
- (c) subsequently providing said first coating with a second coating comprising a polymer which is compatible with said agent and a pigment suspended therein, such that a portion of said second coating is hardened by said excess agent;
- (d) removing the non-hardened portion of said second coating; and
- (e) heating the coated substrate for a time and at a temperature sufficient to pyrolyze said hardened polymer, but insufficient to decompose said pigment, to leave a substrate covered only with pigment.



12. A method for producing a coating of pigment on a substrate, comprising:

- (a) providing said substrate with a first coating of a chemically hardenable polymer, and then drying said first coating;
- (b) contacting said dried first coating with a hardening agent compatible with said polymer in an amount sufficient to completely harden said polymer and to leave excess hardening agent on the surface of said polymer;
- (c) subsequently providing said first coating with a second coating comprising a polymer which is compatible with said agent and an organic or organometallic pigment suspended therein, such that a portion of said second coating is hardened by said excess agent;
- (d) removing the non-hardened portion of said second coating; and
- (e) drying the coated substrate at a temperature of about 100° to 150° to remove solvent components.

4,243,699

METHOD OF POWDER COATING THE INSIDE OF PIPES WITH A CONTINUOUS FILM OF PLASTIC MATERIAL

Jack E. Gibson, 4905 Pepperidge Pl., Odessa, Tex. 79762

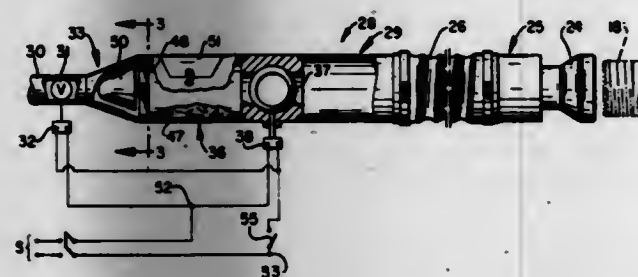
Filed Dec. 20, 1977, Ser. No. 862,261

The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.

Int. Cl.³ B05D 1/12, 3/02

U.S. Cl. 427-183

14 Claims



1. Method of powder coating the interior of a tubular element with a synthetic plastic resin material comprising the steps of:

- (1) preheating the element to a temperature in excess of the fusion temperature of a plastic resin powder;
- (2) rotating the preheated element about its longitudinal axis at a speed which enables any subsequently fused plastic resin to spread into a continuous film;
- (3) making a pocket-forming apparatus by providing a chamber with an inlet and an outlet; and, connecting one end of the element to the outlet of the pocket-forming apparatus while leaving the other end of the element unobstructed so that flow can occur therethrough;
- (4) placing a charge of plastic powder within said pocket-forming apparatus; said charge being slightly in excess of the amount of plastic required to uniformly coat the entire interior of said tubular element in a single pass of the charge through the element;
- (5) forming a pocket of plastic powder which is smaller in volume than the interior of said element and forcing said pocket into the interior of said element by flowing a stream of compressible fluid through the inlet of said pocket-forming apparatus to simultaneously move the entire charge from the chamber into said element, thereby coating the interior of said preheated, rotating element in a single pass;
- (6) said pocket, as it flows through the interior of said element, is limited to a length which is less than the length of said tubular element.

4,243,700

METHOD OF RENDERING AN INK STRIPPABLE

John R. Piazza, East Amwell Township, Hunterdon County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 879,324, Feb. 21, 1978, Pat. No. 4,157,936.

This application Mar. 7, 1979, Ser. No. 18,378

Int. Cl.³ B05D 3/12, 1/36

U.S. Cl. 427-195

12 Claims

1. A method of rendering an ink, selected from the group consisting of an oil-modified alkyd ink and a drying oil vehicle ink, strippable from a surface upon which it is applied, dried, and stripped which comprises:

- (a) applying the ink;
- (b) prior to the drying of the applied ink, applying thereto a modifying powder comprising a petroleum resin;
- (c) fusing said modifying powder which overlies said ink; and
- (d) stripping the resultant fused coat.

4,243,701

PREPARATION OF GAS SEPARATION MEMBRANES

Robert L. Riley, La Jolla, and Richard L. Grabowsky, Bakersfield, both of Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 31,910, Apr. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 855,096, Nov. 25, 1977, abandoned. This application Nov. 8, 1979, Ser. No. 92,382

Int. Cl.³ B05D 5/00

U.S. Cl. 427-244

11 Claims

1. A process for the production of a membrane for the separation of gases which comprises forming a thin film of a non-porous semi-permeable membrane selectively permeable to glass having a thickness in the range of from about 250 Angstroms to about 10,000 Angstroms directly on the surface of a porous support member by passing one finely porous surface of said porous support member through a solution of a halogenated hydrocarbon solvent containing a semi-permeable membrane forming prepolymer and a cross-linking agent, withdrawing the coated porous support member from said solution, and thereafter cross-linking said prepolymer by treatment at an elevated temperature to form the resultant membrane comprising said porous support member coated with a thin film of a semi-permeable membrane.

4,243,702

HEAT FUSIBLE POLYESTER AND POLYAMIDE DISPERSIONS

Robert M. Walsh, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 29, 1979, Ser. No. 53,450

Int. Cl.³ B05D 5/00; C08L 93/04; C09D 11/08

U.S. Cl. 427-256

20 Claims

1. A composition of matter in paste form comprising discrete solid particles of a thermoplastic polymeric material selected from polyesters and polyamides having a crystallinity below about 20%, a glass transition temperature or crystalline melting point above room temperature and a particle diameter between about 0.5 micron and about 50 microns, said discrete solid particles of polymeric material being dispersed in a tackifying, cohesion-increasing material whose softening point is at or below room temperature, said polymeric material and said cohesion-increasing material being present in said composition in a ratio of polymeric material to cohesion-increasing material of between about 1:6 to about 1:1.

19. A process comprising printing onto the surface of a substrate a composition in paste form comprising (1) a colorant, (2) discrete solid particles of a thermoplastic polymeric material selected from polyesters and polyamides having a crystallinity below about 20%, a glass transition temperature or crystalline melting point above room temperature and a particle diameter between about 0.05 micron and about 50 microns, and (3) a tackifying, cohesion-increasing material whose softening point is at or below room temperature, said polymeric material and said cohesion-increasing material being present in said composition in a ratio of polymeric material to cohesion-increasing material of between about 1:6 to about 1:1 and heating the surface of the substrate for a length of time at a temperature sufficient to fuse the composition.

4,243,703

PESTICIDE-CONTAINING PLASTIC COVERINGS FOR AGRICULTURAL CULTIVATIONS, AND PROCESS FOR OBTAINING SAID COVERINGS AND FOR PROTECTING THE CULTIVATIONS FROM INFESTANT PESTS

Attilio Palvarini, Menaggio; Simone Lorusso, S. Giuliano Milanese, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 783,270, Mar. 31, 1977, abandoned.

This application Dec. 11, 1978, Ser. No. 968,565

Claims priority, application Italy, Apr. 1, 1976, 21835 A/76

Int. Cl.³ B05D 5/00; A01G 13/02; B32B 33/00

U.S. Cl. 427-276

4 Claims

1. Method for protecting agricultural cultivations from infesting pests, which method consists in covering the cultivations with films of plastic material containing, in the surface facing the cultivation at least one pesticide in quantities corresponding to from 0.2 to 10 kg/ha of soil covered for each pesticide used and in a form such that the pesticide is caused to slowly migrate from the covering film to the cultivation and the soil in which it is grown.

4,243,704

AUTODEPOSITION COATING PROCESS

Wilbur S. Hall, Plymouth Meeting, and Harry M. Leister, Ambler, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 608,967, Aug. 29, 1975, abandoned. This application Feb. 17, 1978, Ser. No. 878,863

Int. Cl.³ B05D 3/02, 1/18

U.S. Cl. 427-327

3 Claims

1. In an autodepositing coating process wherein an acidic aqueous solution having coating forming organic resin particles dispersed therein is applied to a worked or roughened ferrous metal surface by immersing said surface in a coating bath containing said solution to produce on the surface a coating which increases in thickness during the time the surface is immersed in the solution, the rate at which the coating in-

creases in thickness being greater at high temperatures, and wherein the coating is fused to form a film having surface defects including pinholes and craters; the improvement comprising carrying out the coating process by maintaining the temperature between about 65° F. and about 75° F. by cooling the coating composition by means of a heat exchanger immersed in the bath or surrounding the bath only at times when the temperature has a tendency to rise thereby to eliminate pinholes and craters in the fused coating.

4,243,705

PROCESS FOR COATING HIGH SOLIDS COATING COMPOSITIONS

William J. Yapp, Park Forest, and Robert E. McDonald, Calumet City, both of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 577,830, May 15, 1975, Pat. No. 4,169,825.

This application Dec. 8, 1977, Ser. No. 858,914

Int. Cl.³ B05D 3/02

5 Claims

1. A method for preparing a hard flexible film on a substrate which comprises coating the substrate at temperatures ranging up to about 250° F. with an effective amount of a high-solids coating composition and subsequently curing the coated substrate at temperatures ranging up to about 400° F.; said high-solids coating composition comprising from about 50 to 80 parts by weight of a polyester having an average molecular weight ranging up to about 1200 and a hydroxy content ranging from 2.0 to 12% by weight, about 10 to 40 parts by weight of at least one crosslinking agent selected from the class consisting of lower alkoxy methyl melamines, and condensation products of an aldehyde with an aminotriazine, aldehyde with urea, aldehyde with guanamine and said condensation products alkylolated with alcohol having 1 to 4 carbon atoms, about 2.0 to 10 parts by weight of a polyepoxide, about 2.0 to 8.0 parts by weight of a copolymer obtained by copolymerizing styrene or an alkyl-substituted styrene with at least one hydroxy compound selected from the class consisting of hydroxyalkyl acrylates and allyl alcohol, and up to about 5.0 parts by weight of an acid catalyst.

4,243,706

ONE PACKAGE STABLE ADHESIVE AND METHOD OF USING THE ADHESIVE

Charles E. Williams, Bloomfield Hills, Mich., assignor to Grow Group, Inc., New York, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,236

Int. Cl.³ B05D 3/02

U.S. Cl. 427-386

9 Claims

1. A one package adhesive stable at ambient temperature and pressure consisting essentially of:

- a. a liquid phase consisting essentially of a polymerizable epoxy resin in the liquid state, an organic plasticizer capable of solubilizing the epoxy resin in an amount sufficient to impart flow to the adhesive; and
- b. a solid phase consisting essentially of a carboxy reactive polyvinyl chloride and an effective catalytic amount of the reaction product of a saturated aliphatic polyamine and a saturated aliphatic carboxylic acid or anhydride or an aromatic or cycloaliphatic acid or anhydride.

4,243,707

ADHESION PROMOTER FOR ACRYLONITRILE COPOLYMER LATEX COATINGS

Wayne T. Wiggins, Aurora, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Jan. 11, 1979, Ser. No. 47,509

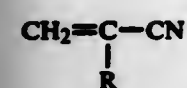
Int. Cl.³ B05D 3/02

U.S. Cl. 427-388.4

4 Claims

1. In the process for coating at least one side of a metal

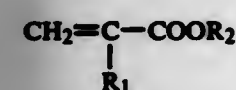
structure with a layer of a polymer latex and then heating the resulting coating for a short time at a temperature in the range of from 150° to 300° C. wherein the polymer is prepared by the polymerization in aqueous emulsion of 100 parts by weight of (A) from 60 to 90% by weight of at least one nitrile having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

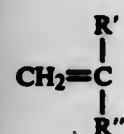
(B) from 10 to 40% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

(1) an ester having the structure



wherein R₁ is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R₂ is an alkyl group having from 1 to 6 carbon atoms,

(2) an alpha-olefin having the structure



wherein R' and R'' are alkyl groups having from 1 to 7 carbon atoms,

(3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

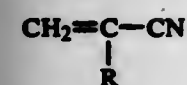
(4) vinyl acetate,

(5) styrene, and

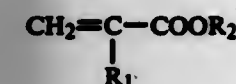
(6) indene,

in the presence of from 0 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



wherein R has the foregoing designation, and an ester having the structure



wherein R₁ and R₂ have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer,

the improvement comprising including in said polymer latex before it is used for coating the metal surface a complex of a phosphate emulsifier, said emulsifier being a mixture of R-O-(CH₂CH₂O)_nPO₃M₂ and [R-O-(CH₂CH₂O)_n]₂PO₂M wherein n is a number of from 1 to 40, R is an alkyl or aralkyl group and preferably a nonyl phenyl group, and M is hydrogen, ammonia or an alkali metal, and at least one member selected from the group consisting of aluminum hydroxide;

magnesium hydroxide, calcium hydroxide, zinc hydroxide, and zinc borate.

4,243,708 METALLIZED TEXTURED SURFACE POLYPROPYLENE FILM

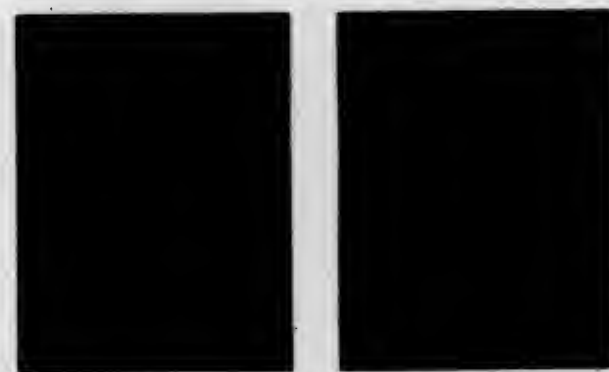
John W. Eastance, South Glens Falls; Stanley Y. Hobbs, Scotia, and Emilie L. Carley, Hartford, all of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Continuation-in-part of Ser. No. 686,834, May 17, 1976, abandoned, which is a division of Ser. No. 554,070, Feb. 28, 1975, Pat. No. 3,964,735. This application Apr. 16, 1979, Ser. No. 30,282.

Int. Cl.³ B32B 15/08

U.S. Cl. 428—141

12 Claims



1. A metallized film with improved surface impregnation properties for dielectric fluids which comprises a thin polypropylene film having one predetermined textured surface which is coextensively and uniformly covered by an overlapping pattern of fibroid irregularities comprising predominantly a stretched layer of Type I and Type II crystal structure, said film being characterized by a space factor of greater than about 5% and a haze measurement of greater than about 20%, and said film having an electrically conductive metallic coating on one surface.

4,243,709 CAMOUFLAGE

Kenneth I. Morton, DeLand, Fla., assignor to Brunswick Corporation, Skokie, Ill.

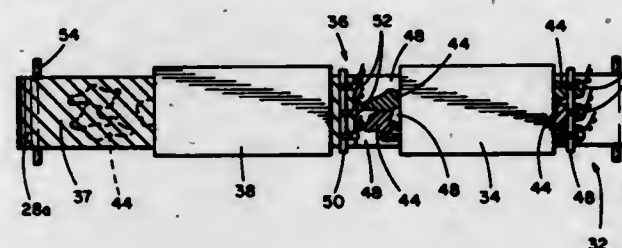
Continuation of Ser. No. 734,531, Oct. 21, 1976, abandoned.

This application Jun. 30, 1978, Ser. No. 920,958

Int. Cl.² B32B 3/10; B05D 1/36, 3/02

U.S. Cl. 428—195

12 Claims



1. A process for preparing a camouflage sheet having a multi-colored surface, comprising the steps of

(a) randomly applying one or more colored plastisol agents in unpredictably irregular shaped patches to a substantially flat surface of a carrier web so that only randomly preselected portions of said web surface are covered by the agents,

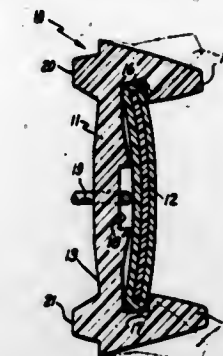
(b) overcoating the previously colored patches of said web surface and any uncoated portions of the web with a colored plastisol agent having a color different than the color of the one or more plastisol agents previously applied to the web,

(c) forming the agents into a film characterized by a top

surface having a single color and a bottom surface immediately adjacent the web which is substantially flat and has a randomly distinct, irregular and non-repetitive multi-colored pattern, and

(d) transferring and securing the film to the sheet to be colored so that the single color film surface abuts the sheet surface and the multi-colored pattern is exposed to view.

3. A camouflage comprising an assembly of strips having a colored surface corresponding to the color of the terrain in which the camouflage is to be deployed, said strips being made by a process wherein a continuous multi-colored film having a randomly distinct, irregular and non-repetitive pattern is formed on a carrier web by sequentially applying at least two film-forming plastisol agents of different colors to the surface of the carrier web, the first of said agents being applied in a plurality of unpredictably irregular-shaped patches on the carrier, and the second of said agents being applied to cover the patches of the first applied agent and the remaining portion of the carrier not covered by the patches of the first applied agent, heat curing the agents to form the multi-colored film, and transferring and securing the film to a base sheet to form said strips.



rails are flexed outwardly to facilitate insertion of said decorative strip, said rails extending forwardly of said strip.

4,243,712 SHRINKABLE POLYETHYLENE TEREPHTHALATE FILM

Klaus Hobeisel, and Siegfried Janocha, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 848,685, Nov. 4, 1977, abandoned, which is a continuation of Ser. No. 640,723, Dec. 15, 1975, abandoned. This application Dec. 28, 1978, Ser. No. 973,997. Claims priority, application Fed. Rep. of Germany, Dec. 20, 1974, 2460394

Int. Cl.³ F16L 11/06

U.S. Cl. 428—35

7 Claims

1. A stretched shrinkable film comprising a mixture of polyethylene terephthalate and about 2 to 35 percent by weight of polybutylene terephthalate, said film having a shrinkage which begins below 70° C. and is above 8 percent at 75° C.

5. A film according to claim 1 which is a seamless tubular film stretched in the longitudinal direction and multiaxially at the circumference.

4,243,710 THERMOPLASTIC ELECTRODE INK FOR THE MANUFACTURE OF CERAMIC MULTI-LAYER CAPACITOR

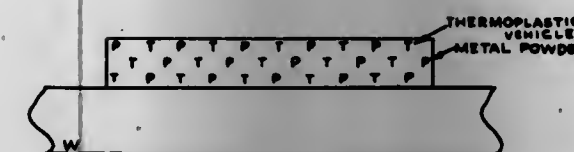
Kenneth H. Magrini, Pittsburgh, Pa., and Raymond B. Jones, Bay Village, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation of Ser. No. 831,251, Sep. 9, 1977, abandoned. This application Dec. 6, 1978, Ser. No. 966,859

Int. Cl.³ H01B 1/02; H01G 4/12; B05D 5/12

U.S. Cl. 428—208

4 Claims



1. A ceramic multi-layer capacitor comprising a plurality of layers of a dielectric substrate having an electrode ink composition diffused thereon, said ink composition consisting of a mixture of metal powders and a thermoplastic vehicle, said powders being a ternary system having a percentage by weight to the ink of 40 percent and which comprises a mixture of 20 parts platinum, 20 parts palladium and 60 parts gold, and wherein the percentage by weight of the vehicle to the ink is 60 percent and comprises a mixture of 68 parts cetyl alcohol, 18 parts spermaceti wax and 14 parts methacrylate resin.

4,243,711 TWO PIECE TRIM STRIP

Brian A. Wenrick, Dayton, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Filed Dec. 12, 1977, Ser. No. 859,749

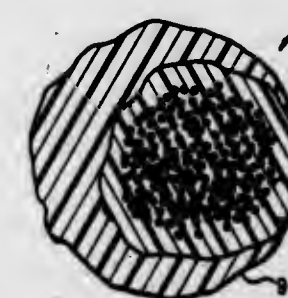
Int. Cl.³ B32B 3/30, 7/06

U.S. Cl. 428—31

10 Claims

1. A two piece trim strip comprising a soft resilient elongated carrier which, in cross-section, includes a lateral support carrying a pair of forwardly protruding protective rails, one rail on each side of said support, each of said rails being formed with an outwardly extending lateral channel adjustment said

13. A substantially planar fabric having a textured multi-color appearance comprising a plurality of woven threads, each thread comprising a multifilament core yarn, a first plastisol coating surrounding said core yarn, a second plastisol coating, having a different color than said first plastisol coating, around said first plastisol coating and eccentric therewith so as to form relatively thick and thin regions around the first plastisol coating, said first plastisol coating expanding through the thin regions of said second plastisol coating during heat activated foaming of said woven threads to form a textured, multicolor fabric.



4,243,714

STEEL CORD REINFORCEMENT FOR ELASTOMERS AS WELL AS THUS REINFORCED ELASTOMERS

Roger Vanasseche, and Germain Verbaanwede, both of Zwevegem, Belgium, assignors to N.V. Bekasert S.A., Zwevegem, Belgium

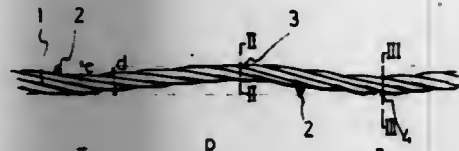
Filed May 2, 1978, Ser. No. 902,231

Claims priority, application Belgium, Sep. 30, 1977, 859230

Int. Cl.³ D03D 13/00; B65G 15/34

U.S. Cl. 428—258

6 Claims



1. A fabric for reinforcing rubber or elastic materials comprising zig-zag crimped steel cord in the warp direction wherein the crimps of adjacent warp cords lie in phase and within the wavelength p of the crimp deformation and the crimp amplitude c are defined by $0.02p \leq c \leq 0.07p$, and wherein k meets the relationship $0.7 \leq k \leq 3$ in the expression $10^4 N [\sum D_i^4 \times n_i] = k p^2$ with D_i being the diameter of wires i , n_i being the number of wires i per warp cord and N being the number of warp cords per mm width of the fabric and wherein the steel cord diameter d is chosen between 0.5 mm and 3 mm and wherein $0.25 \leq N \leq 1$, the curvature radius of the zig-zag warp cords being at least 1 mm in the crimp crests and troughs, and adjacent warp cords being twisted alternately in S-direction and Z-direction.

4,243,715

METALLIZED AMORPHOUS SILICA FABRIC FOR HIGH TEMPERATURE USE

Mack Gordon, Cleveland, Ohio, assignor to Aerodyne Development Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 928,854, Jul. 28, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 33,953

Int. Cl.³ B01D 39/08, 39/20

U.S. Cl. 428—263

11 Claims

1. A fabric for use in bag collectors at high temperatures, consisting of said fabric made solely of amorphous silica fibers and each of said fibers having a thin coating of gold directly covering the surface of the amorphous silica fibers.

4,243,716

THERMAL SENSITIVE PAPER MINIMIZED IN RESIDUE DEPOSITION ON THERMAL HEAD

Takao Kosaka, and Yukio Tahara, both of Takasago, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jul. 18, 1978, Ser. No. 925,883

Claims priority, application Japan, Jul. 29, 1977, 52-91011

Int. Cl.³ B41M 5/18

U.S. Cl. 428—327

4 Claims

1. A heat sensitive paper comprising a support and a heat sensitive layer thereon containing a colorforming lactone compound and color-developing phenol compound, characterized in that a finely divided urea-formaldehyde resin having an oil absorption of 370–380 ml/100 g as measured according to the JIS K-5101 method is incorporated in at least one of the heat sensitive layer, support and between said heat sensitive layer and support.

4,243,717

EXPANDABLE POLYSTYRENE WITH STABILIZED CELL STRUCTURE

Herbert M. Gahmig, Bad Dürkheim, Fed. Rep. of Germany, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation of Ser. No. 964,112, Nov. 27, 1978, which is a continuation of Ser. No. 805,377, Jun. 10, 1977, abandoned. This application Feb. 1, 1980, Ser. No. 117,682

Int. Cl.³ C08J 9/14, 9/20

U.S. Cl. 428—402

22 Claims

1. Beads of expandable polystyrene having a diameter of about 0.1 to 5 millimeters and containing 500 to 10,000 parts per million by weight based upon styrene of a Fischer-Tropsch wax having a congealing point of 86° to 110° C. and an amount of n-pentane as a blowing agent effective to permit said beads to be expanded in a first step to a density of 10 to 250 grams per liter, said n-pentane being present in a proportion of 5 to 9 weight percent.

4,243,718

PRIMER COMPOSITIONS FOR SI-H-OLEFIN PLATINUM CATALYZED SILICONE COMPOSITIONS

Bunjiro Mural, and Yasuji Matsumoto, both of Ohta, Japan, assignors to Toshiba Silicone Co. Ltd., Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,490

Int. Cl.³ B32B 9/04

U.S. Cl. 428—411

19 Claims

1. A primer composition for adhering silicone compositions to substrates comprising: (a) an epoxy functional silane of the formula $R^1aR^2bSi(OR^3)_{4-(a+b)}$ where R^1 represents an epoxy functional hydrocarbon radical, R^2 and R^3 are alkyl radicals, a has a value of 1 or 2, and b has a value of 0 to 1 and wherein said silane is present at a concentration of 0.5 to 50 weight percent of the total amount of ingredients of (a) to (d); (b) from 0.1 to 50 weight percent based upon the total of ingredients (a) to (d) of an alkenyl-containing organosilicon compound; (c) a vinyl acetate type organic polymer present in the amount of from 0.1 to 50 weight percent of the total amount of ingredients (a) to (d); (d) platinum or a platinum compound, present in the amount of from 0.001 to 1 weight percent of the total weight of ingredients (a) to (d); and (e) an ester-type organic solvent present in the amount of from 60 to 90 percent by weight of the total primer composition.

7. A process for forming a primer composition useful for adhering SiH-olefin platinum catalyzed compositions to various substrates comprising mixing (a) an epoxy functional silane of the formula $R^1aR^2bSi(OR^3)_{4-(a+b)}$, where R^1 represents an epoxy functional hydrocarbon radical, R^2 and R^3 are alkyl radicals, a has a value of 1 to 2, and b has a value of 0 or 1 and wherein said silane is present at a concentration of 0.5 to 50 weight percent of the total amount of ingredients of (a) to (d); (b) from 0.1 to 50 weight percent based upon the total of ingredients (a) to (d) of an alkenyl-containing organosilicon compound; (c) a vinyl acetate type organic polymer present in the amount of from 0.1 to 50 weight percent of the total amount of ingredients (a) to (d); (d) platinum or a platinum compound, present in the amount of from 0.001 to 1 weight percent of the total weight of ingredients (a) to (d); and (e) an ester type organic solvent present in the amount of from 60 to 90 percent by weight of the total primer composition.

13. A laminate of a silicone composition to a substrate comprising (i) a substrate selected from the class consisting of metals, inorganics and plastics; (ii) a primer composition comprising (a) an epoxy functional silane of the formula $R^1aR^2bSi(OR^3)_{4-(a+b)}$ where R^1 represents an epoxy functional hydrocarbon radical, R^2 and R^3 are alkyl radicals, a has a value of 1 or 2, and b has a value of 0 or 1 and wherein said silane is present at a concentration of 0.5 to 50 weight percent of the total amount of ingredients of (a) to (d); (b) from 0.1 to 50 weight percent based upon the total of ingredients (a) to (d) of an alkenyl-containing organosilicon compound; (c) a vinyl acetate type organic polymer present in the amount of from 0.1 to 50 weight percent of the total amount of ingredients (a) to (d)

(d); (d) platinum or a platinum compound, present in the amount of from 0.001 to 1 weight percent of the total weight of ingredients (a) to (d); and (e) an ester type organic solvent present in the amount of from 60 to 90 percent by weight of the total primer composition, and (iii) an SiH-olefin platinum catalyzed composition having as its basic ingredients (1) a vinyl-containing polysiloxane polymer varying from 500 to 30,000,000 centipoise viscosity at 25° C., where the organo groups other than vinyl in the polysiloxane are selected from the class consisting of monovalent hydrocarbon radicals, and halogenated monovalent hydrocarbon radicals; (2) a hydrogen-containing polysiloxane compound having a viscosity varying from 5 to 5,000 centipoise at 25° C., where the organo groups in such polysiloxane are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, and (3) a platinum catalyst.

19. A process for forming a laminate of a silicone composition with a substrate comprising (i) applying to a substrate selected from the class consisting of plastic substrates and metal substrates a primer composition having therein (a) an epoxy functional silane of the formula $R^1aR^2bSi(OR^3)_{4-(a+b)}$ where R^1 represents an epoxy functional hydrocarbon radical, R^2 and R^3 are alkyl radicals, a has a value of 1 or 2, and b has a value of 0 or 1 and wherein said silane is present at a concentration of 0.5 to 50 weight percent of the total amount of ingredients of (a) to (d); (b) from 0.1 to 50 weight percent based upon the total of ingredients (a) to (d) of an alkenyl-containing organosilicon compound; (c) a vinyl acetate type organic polymer present in the amount of from 0.1 to 50 weight percent of the total amount of ingredients (e) to (d); (d) platinum or a platinum compound, present in the amount of from 0.001 to 1 weight percent of the total weight of ingredients (a) to (d); and (e) an ester organic solvent present in the amount of from 60 to 90 percent by weight of the total primer composition; (ii) evaporating the solvent to form a primer film; (iii) applying over the primer film a silicone composition having therein (1) a vinyl-containing organopolysiloxane polymer having a viscosity varying from 500 to 30,000,000 centipoise at 25° C., where the organo groups other than vinyl are selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals; (2) a hydrogen-containing polysiloxane polymer having a viscosity varying from 5 to 5,000 centipoise at 25° C., where the organo groups other than hydrogen in the polysiloxane are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals; and (3) a platinum catalyst; and (iv) heating the silicone composition so as to cure it to form a silicone elastomer.

4,243,719

LAMINATES

Alan Holmes, Riding Mill, England, assignor to Romag Holdings Ltd., Blaydon-on-Tyne, England

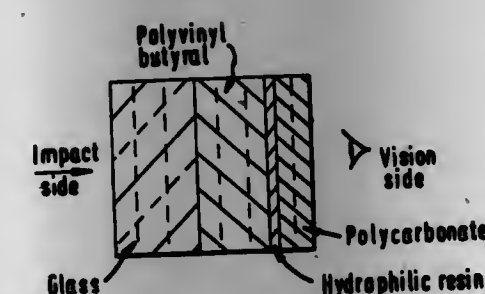
Filed Jan. 29, 1979, Ser. No. 7,762

Claims priority, application United Kingdom, Jan. 30, 1978, 3645/78

Int. Cl.³ B32B 27/36, 27/30, 27/42, 17/10

U.S. Cl. 428—411

10 Claims



1. A reinforced glass laminate, comprising a non-hydrophilic synthetic resin selected from the group consisting of polycarbonates, polysulphones, and polyether sulphones, at least one surface of which has been rendered hydrophilic by bonding

thereon a layer of a hydrophilic synthetic polymeric material, a layer of a hydrophilic synthetic resin being bonded to said layer of hydrophilic synthetic polymeric material and a layer of glass being bonded to said layer of hydrophilic synthetic resin.

8. A process for producing a reinforced glass laminate, wherein a non-hydrophilic synthetic resin selected from the group consisting of polycarbonates, polysulphones, and polyether sulphones is coated with a solution capable of forming a layer of a hydrophilic synthetic polymeric material thereon, the solvent medium is then removed, a hydrophilic synthetic resin is placed on the layer of hydrophilic synthetic polymeric material and glass is then placed on the hydrophilic synthetic resin, whereafter bonding together of the layers is achieved either by applying an increased pressure at an elevated temperature or by heating under reduced pressure.

4,243,720

SILICONE COATED ABRASION RESISTANT POLYCARBONATE ARTICLE

Siegfried H. Schroeter, Schenectady, and Daniel R. Olson, Clifton Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 1, 1978, Ser. No. 956,809

Int. Cl.³ B32B 27/36

U.S. Cl. 428—412

21 Claims

1. A shaped non-opaque coated polycarbonate article having improved abrasion and chemical solvent resistance comprising a polycarbonate substrate having deposited on the surface thereof (i) an adhesion promoting primer layer consisting essentially of a thermoplastic substantially non-crosslinked acrylic polymer containing functional groups; and (ii) a tenaciously and uniformly adhered top coat consisting of a thermoset organopolysiloxane disposed on said primer layer.

4,243,721

FLEXIBLE COATING RESINS FROM SILOXANE RESINS HAVING A VERY LOW DEGREE OF ORGANIC SUBSTITUTION

Ronald H. Baney, Midland, and Len A. Harris, Rhodes, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 903,467, May 8, 1978, Pat. No. 4,197,230, which is a continuation-in-part of Ser. No. 863,970, Dec. 23, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,638

Int. Cl.³ B32B 27/36; G03B 1/00

U.S. Cl. 428—412

12 Claims

1. An article comprising a solid substrate coated with a pigment-free aqueous coating composition comprising a dispersion of colloidal silica in lower aliphatic alcohol-water or an ether ester of ethylene or propylene glycol-water solution, of the partial condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 inclusive carbon atoms and phenyl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, at least 1 weight percent of the silanol being $\phi Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition containing sufficient acid to provide a pH in the range of 2.8 to 6.0.

4,243,722

NON-COLORING, ABRASION RESISTANT, ADHERENT COATING FOR GOLD AND SILVER SURFACES

Loren A. Hahnke, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 863,969, Dec. 23, 1977. This application Mar. 28, 1979, Ser. No. 24,637

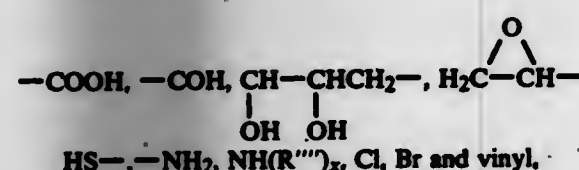
Int. Cl.³ B32B 15/08

U.S. Cl. 428—450

5 Claims

1. An article comprising a solid substrate coated with a pigment-free aqueous coating composition comprising a dispersion of colloidal silica in a lower aliphatic alcohol-water solution, or a dispersion of colloidal silica in an ether alcohol-water solution, of a partial condensate of a mixture of silanols of the formula $\text{RSi}(\text{OH})_3$ in which R is selected from the group consisting of alkyl radicals of 1-3 inclusive carbon atoms and R' wherein R' selected from $\text{R}''(\text{S})_n\text{R}'''$ and $(\text{HS})_n\text{R}'''$ wherein

R'' is a substituted or unsubstituted monovalent hydrocarbon radical of 1 to 6 carbon atoms wherein the hydrocarbon radical is substituted by radicals selected from the group consisting of



n has a value of 1-4 and a has a value of 1 or 2, R''' is a divalent or trivalent hydrocarbon radical containing 1-6 carbon atoms,

R''' is an alkyl radical of 1-4 carbon atoms, x is 1 or 2,

at least 50 weight percent of the silanol being $\text{CH}_3\text{Si}(\text{OH})_3$ and at least 0.4 weight percent of the silanol being $\text{R}'\text{Si}(\text{OH})_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition containing sufficient acid to provide a pH in the range of 2.8 to 5.5.

4,243,723

AGENT FOR THE SURFACE TREATMENT OF FLAT INSULATING MATERIALS

Heinz Hacker, Nuremberg, and Ernst Helwig, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 25, 1977, Ser. No. 818,855

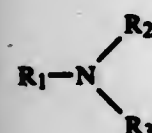
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1976, 2634664

Int. Cl.³ B32B 27/06, 27/34

U.S. Cl. 428—474.4

7 Claims

1. A method for improving the bonding between an impregnating resin and a flat insulating material having a base comprised of an aromatic polyamide, said method comprising treating said insulating material with a compound of the structure



wherein the radical R_1 contains a reactive group which chemically incorporates into the impregnating resin, said group being selected from the group consisting of a reactive hydrogen atom and an ethylenically or acetylenically unsaturated grouping; and wherein the radicals R_2 and R_3 are selected from the group consisting of a hydrogen atom and alkyl radicals having 6 to 24 carbon atoms, with the proviso that R_2 and R_3 are not both hydrogen atoms.

4,243,724

THERMOPLASTIC MULTI-LAYER FILM

Hans Strutzel, Klaus Hobeisel, and Siegfried Janocha, all of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1978, Ser. No. 910,143

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724253

Int. Cl.³ B32B 27/34, 27/32

U.S. Cl. 428—474.7

20 Claims

1. A multi-layer film having two or more layers, comprising at least one first layer of a polymer comprising a linear polyamide, and, adjacent to said first layer, at least one second layer of a polymer comprising a major portion of a linear polyamide containing from about 2 to 40 percent by weight of a hydrophilic substance compatible with the polyamide, said hydrophilic substance comprising polyvinyl alcohol.

4,243,725

TIE LAYER FOR CO-EXTRUDED ACRYLONITRILE COPOLYMERS

Wayne T. Wiggins, Aurora, and Frank S. Gerry, Hudson, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Nov. 29, 1979, Ser. No. 99,113

Int. Cl.³ B32B 27/28, 27/32

U.S. Cl. 428—517

10 Claims

1. A laminated structure comprising
(I) a first outer layer composed of a nitrile barrier resin,
(II) a second intermediate layer comprising a mixture of
(1) a nitrile barrier resin (I),
(2) a rubber-modified high impact polystyrene, and
(3) a styrene-butadiene-styrene block copolymer elastomer, and
(III) a third outer layer composed of a rubber-modified high impact polystyrene.

6. The co-extrusion process wherein there are adhered together in the molten phase at a temperature in the range of 300° to 450° F. and passed through a shaping die to form a laminate of

(I) a first outer layer composed of a nitrile barrier resin,
(II) a second intermediate layer comprising a mixture of
(1) a nitrile barrier resin (I),
(2) a rubber-modified high impact polystyrene, and
(3) a styrene-butadiene-styrene block copolymer elastomer, and
(III) a third outer layer composed of a rubber-modified high impact polystyrene.

4,243,726

STRUCTURED DONOR SHEET FOR HIGH-RESOLUTION NON-IMPACT PRINTER

Donald J. J. Lennon, Acton, and Roger E. Clapp, Cambridge, both of Mass., assignors to EPP Corp., Boston, Mass.

Division of Ser. No. 710,283, Jul. 30, 1976, Pat. No. 4,156,036. This application Jun. 28, 1978, Ser. No. 919,816

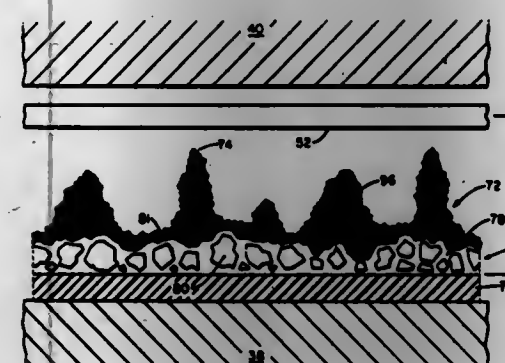
Int. Cl.³ B22F 3/00

U.S. Cl. 428—545

13 Claims

4. A donor sheet useful in pulsed electrical printing, comprising a conductive base sheet having a microcavernous surface with pits or valleys of about 0.5-50 microns across and 0.5-50 microns deep and ridges and peaks of about 0.5-50 microns across and 0.5-50 microns high, and print particles having a conductivity at least that of a semi-conductor lying in irregular mounds and towers on said surface, said particles being about 0.25-15 microns across and present in quantity sufficient to effect printing by transfer of particles to an adjacent recipient sheet upon imposition of an electrical pulse of about 500 volts for two microseconds, said donor sheet having

a lateral surface D.C. resistivity less than 100,000 ohms per square.



8. A donor sheet as defined by claim 4 wherein the base sheet is metallic and has a metal coating plated thereon, said coating being microcavernous.

4,243,727

SURFACE SMOOTHED TOOL JOINT HARDFACING

Allen E. Wisler, Houston, and Leo D. Lane, Pearland, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Apr. 25, 1977, Ser. No. 790,795

Int. Cl.³ B22F 7/04

U.S. Cl. 428—558

5 Claims



1. A tool joint for drill pipe used in earth boring operations, the tool joint having annular bands of hardfacing on the exterior, the hardfacing comprising sintered tungsten carbide granules in an alloy steel matrix, the improvement comprising said hardfacing being deposited in a single application by rotating the tool joint while providing an arc between a metal wire and the tool joint to create a weld puddle, and feeding the granules into the weld puddle from an orifice, the application being at a temperature and speed effective to precipitate the granules toward the bottom of the matrix and prevent substantial protrusion of granules from the surface.

4,243,728

DOUBLE-METAL-COATED METAL SULFIDE POWDER AND PROCESS OF PRODUCING THE SAME

Haruki Sato, and Yoshio Kawasaki, both of Urawa, Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,231

Claims priority, application Japan, Dec. 1, 1977, 52-143276

Int. Cl.³ B22F 00/00

U.S. Cl. 428—570

17 Claims

1. A process of producing a double-metal-coated metal sulfide powder, which comprises the steps of forming a platinum group metal layer on metal sulfide particles by thermal decomposition of a plating composition which includes at least one platinum group metal compound containing a radical selected from the class consisting of NO , NO_2 , NO_3 , and NOCl ; and forming an outer layer of at least one metal or alloy selected from the group consisting of iron, copper, nickel and cobalt or an alloy thereof on said metal sulfide particles coated

with the platinum group metal layer by adding and mixing the powder of a metal or alloy, less noble than said selected metal or alloy and further adding an acidic solution containing the ions of said selected metal(s) to the mixture obtained in the preceding step while stirring to thereby coat said platinum group metal layer with said selected metal(s) that results from a cementation reaction.

4,243,729

METALLIC HERMETIC SEALING COVER FOR A CONTAINER

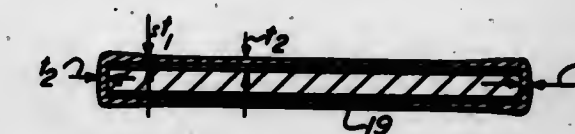
Norman Hascoe, Larchmont, N.Y., assignor to Semi-Alloys, Inc., Mount Vernon, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,836

Int. Cl.³ B21C 1/00; B32B 3/00, 1/04

U.S. Cl. 428—577

5 Claims



1. A metallic hermetic sealing cover for a container comprising: a metallic plate-like cover element stamped from a continuous sheet having at least one surface plated with a material comprising preponderantly a precious metal of a minimum uniform thickness not exceeding 100 microinches and its side edges electroplated with said material to a thickness which is within the range of 3 to 15 microinches.

4,243,730

STEEL SHEET HAVING A ZINC COATING ON ONE SIDE

Motohiro Nakayama, Aichi, and Kazutsugu Nakajima, Tokai, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

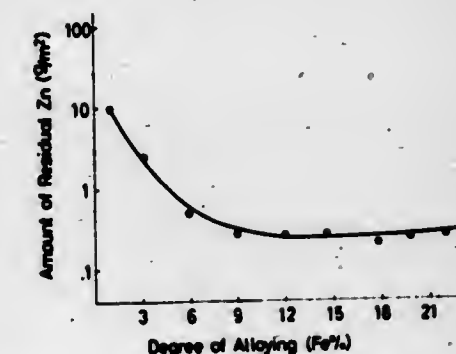
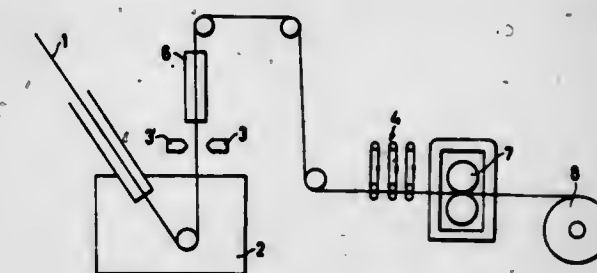
Division of Ser. No. 797,737, May 17, 1977. This application Apr. 4, 1979, Ser. No. 27,106

Claims priority, application Japan, May 19, 1976, 51/57611; Nov. 12, 1976, 51/136076; Mar. 23, 1977, 52/31725

Int. Cl.³ B32B 15/00, 15/18

U.S. Cl. 428—659

6 Claims



1. A steel sheet having a zinc coating on one side and a uniformly Fe-Zn alloyed layer on the other side, said alloyed layer being present in an amount corresponding to 0.001 g/m²

to 1 g/m² of Zn and containing from about 6 to 20 percent by weight iron.

4,243,731

METHOD AND DEVICE FOR FEEDING A FUEL CELL WITH FLUID REACTANTS

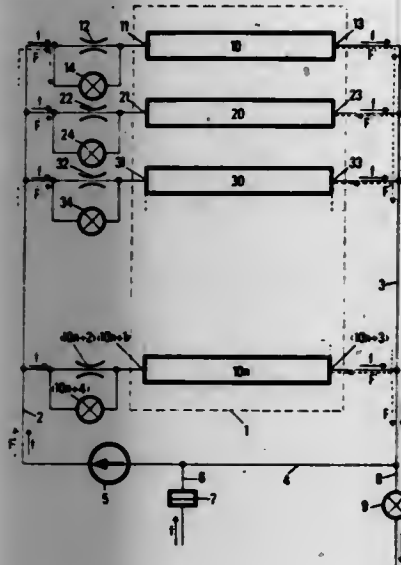
Jacques Cheron, Maisons-Laffitte, France, assignor to Institut Francais du Pétrole, Rueil-Malmaison, France

Filed Nov. 26, 1979, Ser. No. 97,277

Claims priority, application France, Nov. 24, 1978, 78 33505
Int. Cl.³ H01M 8/06

U.S. Cl. 429-13

10 Claims



1. A method for feeding with the same fluid a plurality of chambers of a fuel cell block, each of these chambers communicating with a fluid feed pipe and with a fluid discharge pipe, the flow rate of the fluid admitted into each chamber being limited by flow rate control means, comprising at least one step of scavenging at least one chamber with fluid during the operation of the fuel cell, by-passing during a limited time interval the flow regulator associated with said at least one chamber.

4,243,732

CHARGE TRANSFER COMPLEX CATHODES FOR SOLID ELECTROLYTE CELLS

Robert A. Powers, Lakewood, and Demetrios V. Louzos, Rock River, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,846

Int. Cl.³ H01M 4/36

U.S. Cl. 429-105

11 Claims

1. A cathode for use in an electrochemical cell comprising a charge transfer complex in which the complex is the reaction product of at least one halogen with mesophase pitch and wherein the donor component is the mesophase pitch and the acceptor component is the at least one halogen.

4,243,733

ELECTRODE STRUCTURES

Michael P. J. Brennan, Helsby, England, assignor to Chloride Silent Power Limited, London, England

Division of Ser. No. 861,924, Dec. 19, 1977, Pat. No. 4,176,447.
This application Aug. 27, 1979, Ser. No. 70,065

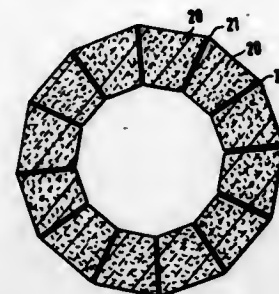
Int. Cl.³ H01M 4/00

U.S. Cl. 429-94

8 Claims

1. In an electro-chemical cell, an annular cathodic electrode structure having a porous matrix of electronically-conductive material impregnated with an electro-chemical reactant material which is solid at room temperature and comprising a plurality of segments shaped as elongated members of trapezoidal

form in cross-section, each of which segments is joined to at least one of its neighbouring segments along a longer edge of



the segment, which edge is an edge defined by the end of the longer parallel side of the trapezoid in cross-section.

4,243,734

MICRO-DOT IDENTIFICATION

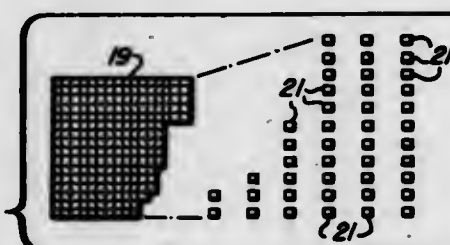
George A. Dillon, 1120 E. Buntiful La., Phoenix, Ariz. 85040

Filed Jul. 10, 1978, Ser. No. 923,074

Int. Cl.³ G03C 5/08, 5/00

U.S. Cl. 430-8

10 Claims



1. In the production and use of micro-dots for owner identification purposes, the method comprising the steps of:

- printing a plurality of indicia identifying a particular owner on a plate;
- reducing images of said indicia by step-reduction photographic process, terminating with negatives of the images of indicia on a glass slide;
- printing said images produced in step (b) on a strip of photographic film;
- cutting said strip into individual micro-dots;
- immersing said micro-dots in a carrier fluid; and
- applying said fluid with the micro-dots suspended therein to goods to be protected.

4,243,735

METHOD OF PRODUCING LIGHT-ABSORBING EDGING ABOUT PHOSPHOR DOTS ON COLOR IMAGE SCREENS

Manfred Kobale, Faistenhaar; Hans-Peter Lorenz, Feldkirchen, and Rolf Wengert, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

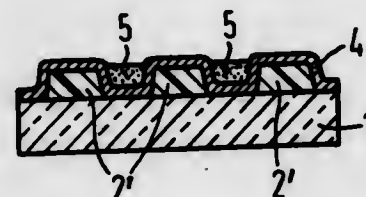
Filed Feb. 15, 1979, Ser. No. 12,348

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806436

Int. Cl.³ H01J 29/32, 29/28, 9/227

U.S. Cl. 430-25

14 Claims



1. A method of producing light-absorbing edging of select conductivity on colour image screens, comprising the steps of:

- applying a substantially uniform photo-formable coating onto an entire surface area of a glass screen substrate, said coating being formed from a slurry composed of glass-forming substances dispersed in a photolacquer;
- developing the so-applied photo-formable coating via photoform techniques to that windows are formed in such coating at areas thereof corresponding to desired locations of color phosphors to be later applied; and
- tempering the so-developed coating in a reducing atmosphere at a temperature in the range of 350° to 500° C. so as to attain a light-absorbing edging having windows therein for receiving color phosphors.

4,243,736

LIQUID DEVELOPER AND COPOLYMER POLARITY CONTROL AGENT FOR USE THEREWITH

Heinz Herrmann, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,601

Int. Cl.³ G03G 9/12

U.S. Cl. 430-115

14 Claims

1. In a liquid developer for the development of electrostatic charge images, comprising an electrically insulating carrier liquid in which pigments or dyestuffs, resinous binders, a polarity control agent, and conventional additives are dispersed or dissolved,

the improvement that the polarity control agent is a negative charging copolymer which is soluble in the carrier liquid and is composed of 1 to 50 percent by weight of N-vinyl-2-pyrrolidone and 50 to 99 percent by weight of a methacrylic acid ester with an alcohol component which contains at least 6 carbon atoms in a straight or branched chain.

4,243,737

IMAGE FORMING COMPOSITION AND ELEMENTS WITH CO(III) COMPLEX, CONJUGATED π BONDING COMPOUNDS AND PHOTOREDUCTANT

Thap DeMinH, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

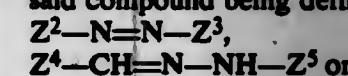
Division of Ser. No. 627,416, Oct. 30, 1975, Pat. No. 4,075,019, which is a continuation-in-part of Ser. No. 461,172, Apr. 15, 1974, abandoned. This application Nov. 25, 1977, Ser. No. 854,573

Int. Cl.² G03C 1/60, 1/72

U.S. Cl. 430-170

12 Claims

1. A radiation-sensitive composition exhibiting upon exposure an internal gain comprising, in admixture, a compound containing a conjugated π -bonding system capable of forming a tridentate chelate with cobalt(III), said compound being defined by one of the formula:



wherein Z^2 , Z^3 , Z^4 , Z^5 , Z^6 and Z^7 are independently chosen from among 2-hydroxy, carboxy or amino substituted naphthyl or phenyl; 2-pyridyl; 2-quinolyl; 2-thiazolyl; 2-benzothiazolyl; 2-oxazolyl; and 2-benzoxazolyl groups, and are each capable of forming chelate ligands, and

an inert cobalt(III) complex capable of being reduced by a cobalt(II) complex containing said chelating compound, whereby the cobalt(II) converts to a stable cobalt(III) complex,

and a photoreductant capable of forming spontaneously when exposed to activating radiation, or upon subsequent application of heat, a reducing agent capable of reducing said inert cobalt(III) complex,

less than 50 mole percent of any acid anions of said composition being those having pKa values greater than 3.5.

5. An image-forming element as defined in claim 1 wherein said coating is a composite coating comprising two contiguous layers, one of which contains said quinone photoreductant and

the other of which contains said cobalt(III) complex and said compound containing said II bonding system.

4,243,738

AMPLIFICATION PROCESS

Paul B. Gilman, Jr., Pittsford, and Jan R. Hanse, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1979, Ser. No. 35,161

Int. Cl.³ G03C 5/32

U.S. Cl. 430-202

10 Claims

1. A process for amplifying an imagewise exposure of a photographic element containing an imagewise exposed silver halide emulsion layer having associated therewith a release compound capable of releasing a spectral sensitizing dye as a function of silver halide development, the release compound being selected from the group consisting of ortho and para sulfonamidophenol and naphthol release compounds, nitrobenzene release compounds, quinone release compounds, hydroquinone release compounds and benzisoxazolone release compounds, the process comprising the steps of:

- developing the element to release spectral sensitizing dye as a function of silver halide development;
- adsorbing the spectral sensitizing dye to undeveloped silver halide grains;
- exposing the element overall to radiation from a region of the spectrum which is absorbed by the released spectral sensitizing dye to render developable silver halide grains to which the released spectral sensitizing dye has been absorbed; and
- developing silver halide grains rendered developable in step (c).

4,243,739

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroyuki Mifune; Shunji Takada; Yoshitaka Akimura, and Shigeo Hirano, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

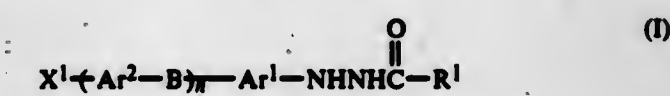
Filed Oct. 11, 1979, Ser. No. 83,750

Claims priority, application Japan, Oct. 12, 1978, 53-125602
Int. Cl.³ G03C 5/30, 1/28

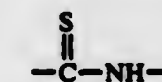
U.S. Cl. 430-266

30 Claims

1. A silver halide photographic light-sensitive material having at least one silver halide photographic emulsion layer comprising substantially surface latent image silver halide grains, and containing in said photographic emulsion layer or at least one of other hydrophilic colloid layers a compound represented by the following general formula (I):



wherein X^1 represents a group containing a



moiety, Ar^1 and Ar^2 each represents a substituted or unsubstituted aromatic group, B represents a divalent linking group, n is 0 or 1, and R^1 represents a hydrogen atom, an unsubstituted alkyl group, or a substituted or unsubstituted aryl group.

4,243,740

LIGHT SENSITIVE COMPOSITIONS OF POLYMETHYL ISOPROPENYL KETONE

Minora Tsuda, Ischura; Yoichi Nakamura; Hideo Nagata, both of Samukawa, and Hisashi Nakane, Kawasaki, all of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

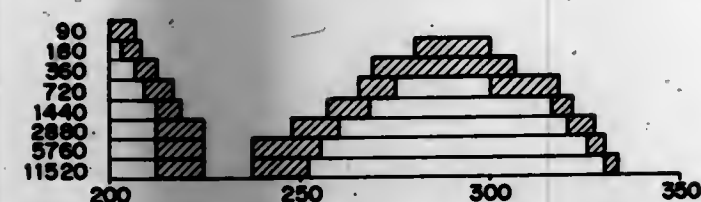
Filed Mar. 16, 1979, Ser. No. 21,253

Claims priority, application Japan, Mar. 22, 1978, 53-32501

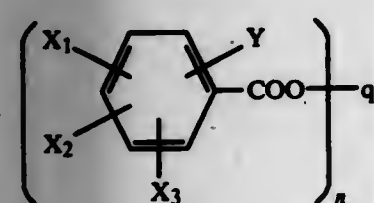
Int. Cl.³ G03C 1/68; C08F 8/00

U.S. Cl. 430-270

22 Claims



1. A light sensitive composition consisting essentially of (1) polymethyl isopropenyl ketone of a molecular weight of about 10,000-about 1,000,000 and (2) from 0.1 to 50 parts by weight per 100 parts by weight of the polymethyl isopropenyl ketone of a compound having the general formula:



wherein X₁, X₂ and X₃ independently represent hydrogen atom, an alkyl group, hydroxyl group, an alkoxy group or a halogen atom, Y represents hydrogen atom or a group having the formula —COOR, R being hydrogen atom or an alkyl group; Q represents hydrogen atom, an alkyl group or a lower hydrocarbon chain which may be substituted with hydroxyl group and n represents an integer of at least 1.

4,243,741

NEGATIVE TONABLE SYSTEMS CONTAINING DIHYDROPYRIDINES AND PHOTOOXIDANTS

Werner Abele, Neu-Isenburg, and Mario Grossa, Dreieich, both of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1978, Ser. No. 971,664

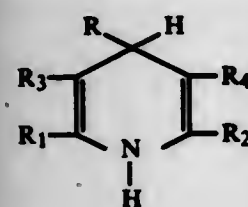
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758209

Int. Cl.³ G03C 1/68

U.S. Cl. 430-270

12 Claims

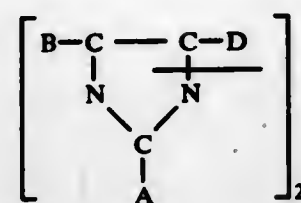
1. A negative working photosensitive element for the preparation of negative tonable images which comprises a support bearing a photosensitive layer comprising at least one thermoplastic binder and a photosensitive system, the improvement being that the photosensitive system consists essentially of I. at least one dihydropyridine compound of the formula



wherein

R is alkyl, alkenyl of 3 to 11 carbon atoms, phenylalkyl, phenylalkenyl, unsubstituted aryl of 6 to 10 carbon atoms or unsubstituted heteroaryl,

R₁ and R₂, which can be the same or different, are alkyl, and
R₃ and R₄, which can be the same or different, are COOR', COR', CN, R' is alkyl; and
II. at least one hexaarylbiimidazole compound of the formula



wherein the radicals A, B and D are either identical or different and are optionally substituted aryl groups derived from carbocyclic or heterocyclic compounds.

4,243,742

RADIATION-SENSITIVE POSITIVELY ACTING MATERIALS

Jürgen Hersener, and Alfred Wilhelm, both of Ulm, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 972,801

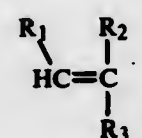
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757932

Int. Cl.³ G03C 1/68

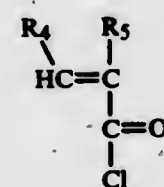
U.S. Cl. 430-270

15 Claims

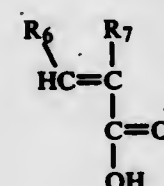
1. A radiation-sensitive positively acting material for ultraviolet, electron beam or X-ray lithography, which material comprises a depolymerizable linear non-crosslinked copolymer having side chains of different length and which copolymer consists essentially of monomers A, B, and C, in which monomer A represents one or more compounds of the formula:



monomer B represents a compound of the formula:



and monomer C represents a compound of the formula:



in which R₁, R₂, R₄, R₅, R₆, R₇ are hydrogen atoms, acrylic or alkyl groups and R₃ are ester or ketone groups.

4,243,743

PHOTOSENSITIVE COMPOSITIONS

Hiroo Hiramoto, Otsu, and Masuichi Eguchi, Kyoto, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,154

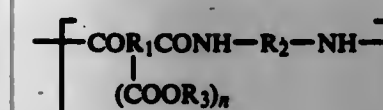
Claims priority, application Japan, Apr. 14, 1978, 53-43288

Int. Cl.³ G03C 1/68

U.S. Cl. 430-281

14 Claims

1. A photosensitive composition comprising (1) a polymer [I] containing a repeating unit [II] of the formula



wherein R₁ and R₂ each comprise a carbocyclic or heterocyclic nucleus; R₃ is selected from the group consisting of hydrogen, an alkali metal ion and an ammonium ion; n is 1 or 2, and COOR₃ is located in an ortho or peri position with respect to the amide linkage.

(2) an organic compound [III] having a photo-di- or polymerizable olefinic double bond and an amino radical or a quaternary ammonium salt.

4,243,744

MICROWAVE CURING OF PHOTORESIST FILMS

Harry F. Lockwood, New York, and Thomas F. McGee, Harrison, both of N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 22, 1978, Ser. No. 972,259

Int. Cl.³ G03C 5/00

U.S. Cl. 430-325

4 Claims

1. A process for curing at least a portion of a photoresist film which comprises:

- applying a photoresist film having a thickness of about 1.4 microns to a surface of a substrate wherein said surface comprises an oxide layer;
- curing the film by subjecting the photoresist-coated substrate to microwave radiation of a nominal power of about 400 watts for a period of time ranging about two minutes to about five minutes;
- subjecting portions of the photoresist film either to electromagnetic radiation of sufficient intensity or to a beam of appropriately energetic electrons to expose portions of the photoresist film; and
- developing the photoresist film to remove portions thereof.

4,243,745

ELECTROLYTIC PRODUCTION OF ACTIVE DIAZINE SPECIES

Michael W. Fry, Ilford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 25, 1979, Ser. No. 33,365

Claims priority, application United Kingdom, May 25, 1978, 22729/78

Int. Cl.³ G03C 5/30

U.S. Cl. 430-433

9 Claims

1. A process for developing an imagewise exposed photographic material containing in a layer a photosensitive silver halide or silver oxalate which comprises developing said imagewise exposed silver salts in an acid processing solution containing a 1,4-diazine compound reduced at most to the dihydro stage, wherein the said reduced diazine compound is produced during the development process from a 1,4-diazine or a 1,4-diazine-N-oxide by electrolytic reduction.

4,243,746

DISPERSION IMAGING MATERIAL AND METHOD OF PRODUCING IMAGE THEREON

Takeshi Ueda; Shozo Kinoshita, both of Fuji; Kichiro Sasaguri, Tokyo, and Hidehiko Kobayashi, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1979, Ser. No. 17,661

Claims priority, application Japan, Sep. 3, 1978, 53/25976

Int. Cl.³ G03C 5/04, 5/24, 1/76

U.S. Cl. 430-346

9 Claims

1. A dispersion imaging material comprising a substrate; a sublayer formed on the substrate and having a thickness of 5 Å to 200 Å, said sublayer consisting of a member selected from the group consisting of palladium, gold, germanium and combinations thereof, or at least 70% by weight of a member selected from the group consisting of palladium, gold, germanium and combinations thereof, and one or more other metals selected from tin, bismuth, lead, antimony, zinc, aluminum and indium; and a main imaging layer formed on the sublayer and consisting of tin, or at least 50% by weight of tin and a member selected from the group consisting of zinc, aluminum, antimony, indium, lead, bismuth, cadmium and combinations thereof.

4,243,747

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kotaro Nakamura; Keiichi Adachi, and Akira Ogawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 17, 1979, Ser. No. 4,134

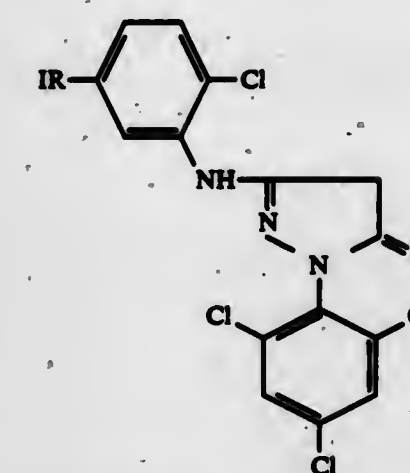
Claims priority, application Japan, Jan. 17, 1978, 53-3451

Int. Cl.³ G03C 1/40

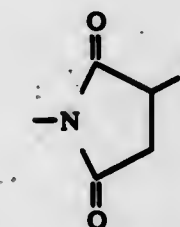
U.S. Cl. 430-551

12 Claims

1. A color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing 2,5-bis(1',1'-dimethylbutyl)hydroquinone or a precursor thereof and a 3-anilino-5-pyrazolone type magenta coupler represented by the following general formula (II):



wherein IR represents RCONH—, RNHCO—, ROCO—, RNHSO₂—, RSO₂NH—



wherein R represents a hydrogen atom, an alkyl group, an alkenyl group or an aralkyl group, which groups can be substituted or unsubstituted.

4,243,748

LIGHT-SENSITIVE SILVER HALIDE REPRODUCTION MATERIAL

Götz Elsner, Schwalbach; Rudolf F. Legler, Rödermark, and Margarete Popovici, Langen, all of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

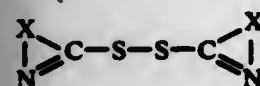
Filed May 29, 1979, Ser. No. 42,938

Int. Cl.³ G03C 1/06, 1/28, 1/34

U.S. Cl. 430-600

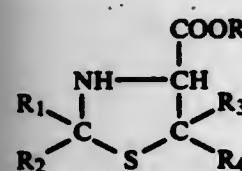
5 Claims

1. A light-sensitive silver halide reproduction material which consists essentially of
 a support film,
 at least one light-sensitive silver halide emulsion layer, and
 (a) a disulfide compound of the formula



and

- (b) a thiazolidine compound of the formula



wherein X represents the atoms necessary to complete a substituted heterocyclic ring selected from the group consisting of oxazol, thiazol, imidazol, pyrimidine, oxadiazol, thiadiazol, triazol, and tetrazol; and R₁, R₂, R₃, and R₄ are the same or different, and represent hydrogen, alkyl radicals of 1-4 carbon atoms, and aryl radicals.

4,243,749

IMMUNOASSAY EMPLOYING AN ENZYME LABEL

Dora Sadeh, Tel Aviv, and Charles S. Hexter, Rehovot, both of Israel, assignors to Miles Yeda Ltd., Rehovot, Israel and Hypolab S.A., Colmar, Switzerland

Filed Mar. 16, 1978, Ser. No. 887,328

Claims priority, application Israel, Mar. 16, 1977, 51667

Int. Cl.² G01N 31/00, 31/14, 33/16

U.S. Cl. 435-7

11 Claims

1. A quantitative assay method for the determination of an unknown quantity of a hapten, hereinafter designated hapten X, which method comprises:
 a. preparing a conjugate of the hapten X which conjugate is adapted to elicit antibody formation, and injecting a mammal with said conjugate so as to result in a specific antibody against said hapten, anti-X;
 b. preparing a conjugate of the hapten X and of another entity Y, which is either another hapten or a larger molecule;
 c. injecting a mammal with the entity Y if it is a larger molecule, or with a conjugate thereof if it is a small molecule which does not by itself elicit antibody formation, so as to form anti-Y antibodies;
 d. preparing a conjugate of an enzyme and the antibody against Y to form enzyme-labelled anti-Y antibody;
 e. adsorbing the anti-X antibodies on a solid support;
 f. contacting said solid support with a mixture containing the unknown quantity of hapten X and a known quantity of the X-Y conjugate so as to cause all anti-X sites to be occupied;
 g. removing unreacted X and X-Y, leaving all anti-X sites occupied;
 h. contacting the support carrying occupied anti-X sites with enzyme-labelled anti-Y antibody;
 i. contacting the resulting support carrying occupied anti-X sites and enzyme-labelled anti-Y antibody with a substrate for the enzyme which when acted upon by the enzyme

produces a color reaction and measuring the resulting intensity of color so as to determine the quantity of bound enzyme and deducing from calibration curve the quantity of the hapten X.

4,243,750

PROCESS FOR THE HYDROLYSIS OF STARCH AND THE CONTINUOUS FERMENTATION OF THE SUGARS OBTAINED THEREFROM TO PROVIDE ETHANOL

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed May 29, 1979, Ser. No. 43,193

Int. Cl.³ C12P 7/14

U.S. Cl. 435-162

36 Claims

1. A process for the hydrolysis of starch and the continuous fermentation of the fermentable sugars therefrom to provide ethanol which comprises:
 (a) liquefying an aqueous slurry of starch in the presence of a liquefying agent selected from the group consisting of strong acid and liquefying enzyme to provide sterile liquefied starch;
 (b) saccharifying the sterile liquefied starch in a primary saccharification vessel or vessels in the presence of a saccharifying enzyme to provide an aqueous solution of sterile saccharified starch containing from about 60 to about 80 weight percent of the original starch in the form of fermentable sugar, the remaining portion of the starch being present in the form of partial hydrolysate; and
 (c) continuously fermenting the fermentable sugar, with or without partial hydrolysate therein having been previously further saccharified in a secondary saccharification vessel or vessels, in a series of fermentation vessels in which the ethanol content of the fermentation medium is progressively increased in each fermentation vessel as the fermentable sugar is consumed therein, the fermentation employing at least two different strains of ethanol-producing yeast, one of which provides a high rate of ethanol production in a fermentation medium containing a relatively low concentration of ethanol and a relatively high concentration of sugar and the other of which provides a high rate of ethanol production in a fermentation medium containing a relatively high concentration of ethanol and a relatively low concentration of fermentable sugar.

4,243,751

ELECTROCHEMICAL PROCESS AND APPARATUS TO CONTROL THE CHEMICAL STATE OF A MATERIAL

Mitchell R. Swartz, Malden, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

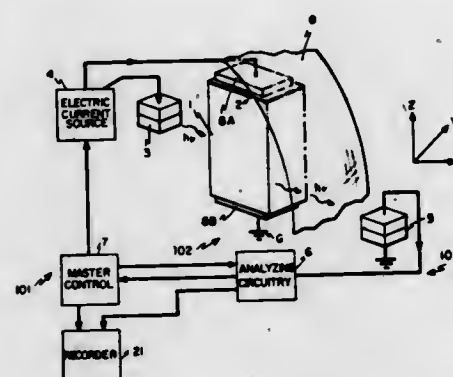
Division of Ser. No. 636,290, Nov. 28, 1975, Pat. No. 4,139,348.

This application Jun. 1, 1978, Ser. No. 911,625

Int. Cl.³ G01N 27/26, 27/28, 33/16; A61B 10/00

U.S. Cl. 435-168

30 Claims



8. A system that comprises, in combination: material means that is subjected to a reaction or an environment which effects or tends to effect deterioration thereof by virtue of chemical processes, which deterioration is caused by a reversible reac-

tion which can be counteracted by introducing appropriate charge carriers into the electronic states of said material means, said material means containing small amounts of an electroactive mediator to facilitate introduction of the charge carriers into the electronic states of said material means, said material means containing an enzyme used to effect the chemical reaction or reactions; means to contain the enzyme; means permitting a substrate to come in contact with the enzyme to produce a product; porous means permeable to the substrate and to the product to enable the product to be removed from the region of the enzyme; means to subject the material means to an electric field of sufficiently high intensity to counteract said deterioration and cause the material means to assume or to retain a desired state by the introduction of said charge carriers to said electronic states and yet sufficiently low in intensity and sufficiently high in efficiency that no substantial electrolysis occurs; and means to direct electromagnetic radiation upon the material means to enhance the effect of the electric field in introducing the charge carriers to the electronic states.

4,243,752

PRODUCTION OF INCREASED YIELDS OF CELLULOLYTIC ENZYMES FROM THIELAVIA TERRESTRIS AND SEPARATING METHODS THEREFOR

Wilfred A. Skinner, Portola Valley, Calif., and Shigeyuki Takenishi, Nara, Japan, assignors to SRI International, Menlo Park, Calif.

Filed Apr. 9, 1979, Ser. No. 28,500

Int. Cl.³ C12N 9/42

U.S. Cl. 435-209

4 Claims

1. A method for increasing the yields of cellulase enzymes from *Thielavia terrestris* whereby there is added from about 0.5% to about 5% of glycerol to the standard media employed to produce said cellulase enzymes.

4,243,753

APPARATUS FOR ENZYME DETECTION

Frederick E. Regaler, West Lafayette, Ind., and Shung-Ho Chang, St. Louis, Mo., assignors to Purdue Research Foundation, West Lafayette, Ind.

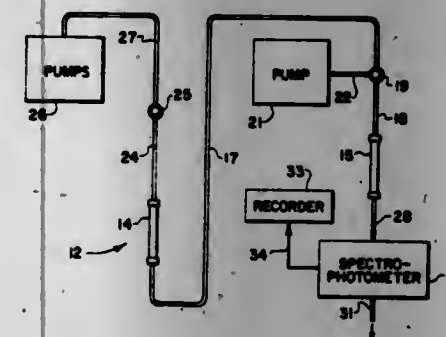
Continuation of Ser. No. 674,510, Apr. 7, 1976, abandoned. This

application Feb. 27, 1978, Ser. No. 881,577

Int. Cl.² C12M 1/40, 1/34

U.S. Cl. 435-288

13 Claims



1. A detection apparatus, comprising:
 mixing means for receiving and mixing, in liquid form, a compound having at least one enzyme to be detected and reacting material for said enzyme;
 fluid inlet means for receiving, in liquid form, said mixed compound and reacting material from said mixing means;
 reaction enabling means including a chamber substantially filled with particles the surface of each of which is nonporous and inorganic with said reaction enabling means being connected with said fluid inlet means for receiving said compound and reacting material therefrom in liquid form with the mixture thereof being caused to pass through said chamber of said reaction enabling means in a continuous flow whereby said mixture is brought into containing contact with the surface of said particles while in said chamber and whereby reaction of said enzyme with

said reacting material continues for a predetermined period of time, said reaction enabling means providing a reaction product output after said predetermined period of time with said reaction product output having a characteristic indicative of detected enzyme; and
 monitoring means connected with said reaction enabling means to receive said output therefrom, said monitoring means responsive to said characteristic in said output providing an indication of said detected enzyme.

4,243,754

VISCIOUS, FLOWABLE, PRESSURE-COMPENSATING FITTING COMPOSITIONS

Jack C. Swan, Jr., Boulder, Colo., assignor to Hanson Industries Incorporated, Boulder, Colo.

Continuation of Ser. No. 723,911, Sep. 16, 1976, abandoned, and

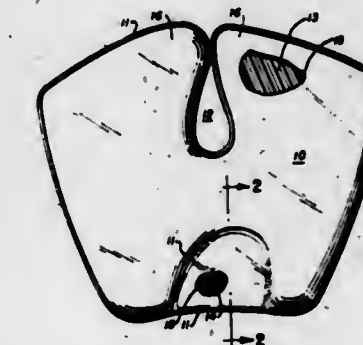
a continuation-in-part of Ser. No. 663,213, Mar. 2, 1976,

abandoned. This application Sep. 5, 1978, Ser. No. 939,400

Int. Cl.² C08J 9/22

U.S. Cl. 521-55

43 Claims



1. A viscous, flowable, pressure-compensating fitting composition, which essentially consists of:
 a major proportion by weight of a substantially homogeneous, substantially stable, viscous, flowable, continuous phase formed of the combination of wax, which although deformable under pressure, is substantially incompressible and is an essentially non-flowable solid at temperatures below about 110° F., and liquid oil in a weight ratio of about 21.2 to 76.5 parts by weight of wax and about 78.8 to 23.5 parts by weight of oil, and having substantially uniformly distributed therethrough, a minor proportion by weight of a discontinuous phase of discrete, lightweight, hollow, monocellular, sturdy, resilient, resin particles in the form of microbeads having a specific gravity which lowers the overall specific gravity of the fitting composition, which together provide a viscous, flowable and thus deformable, substantially homogeneous, substantially stable, pressure-compensating fitting composition having a specific gravity in the vicinity of about 0.8, or less;
 said continuous phase having the combination of wax and oil being present in an amount sufficient (a) to more than merely thinly coat substantially the entire outer surface of essentially each of said microbeads or to more than merely form a film over the surface of essentially each of said microbeads, and (b) to provide a volume that is substantially more than the volume of the interstitial spaces of the quantity of microbeads alone;
 said fitting composition being further characterized by having a substantially homogeneous consistency and not substantially changing in volume responsive to ambient temperatures or ambient temperature changes, being resistant to sag, flowing in response and conformance to continuously applied pressure, and flowing under shear stress after its yield point is reached, and, when confined during conditions of use, being resistant to flow in response to instantaneously applied pressure, being virtually resilient in that it is momentarily or slowly, at least in part, recov-

erable from deformation upon or following the relief of deforming pressure loads, and undergoing flow and deformation away from areas of highest pressure loads.

4,243,755

PROCESS FOR THE MANUFACTURE OF REINFORCED POLYURETHANE FOAMS

Matthias Marx, Bad Dürkheim; Dietmar Nissen, Heidelberg, and Wolfgang Jarre, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,375

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850610

Int. Cl.³ C08G 18/14

U.S. Cl. 521—99

9 Claims

1. A process for the manufacture of reinforced foamed polyurethane plastics based on organic polyisocyanates, polyols, fillers, catalysts, foaming agents and possibly chain extending agents and additives wherein fine particle dispersions are used as fillers, said fillers are produced by in situ crushing with high local energy density to particle sizes of less than 7 microns and simultaneous dispersion of organic and/or inorganic fillers and polyols or organic polyisocyanates.

4,243,756

STABLE-LIQUID ISOCYANURATE-MODIFIED POLYISOCYANATE COMPOSITIONS

Moses Canker, Trenton, and Thirumurti Narayan, Grosse Ile, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

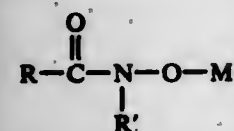
Filed Aug. 27, 1979, Ser. No. 69,729

Int. Cl.³ C08G 18/14

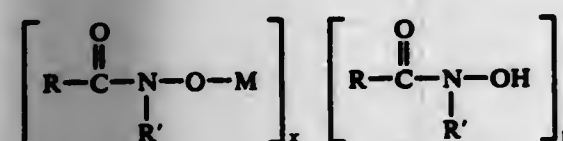
U.S. Cl. 521—125

10 Claims

1. A highly stable liquid isocyanurate-modified polyisocyanate composition prepared by heating an organic polyisocyanate at a temperature between 25° C. and 250° C. for a period of from one-half to five hours in the presence of a catalytic amount of an alkali metal or an alkaline earth metal hydroxamate selected from the group consisting of a compound described by the following formula:



wherein R is alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms, phenyl, tolyl, or benzyl, R' is H, alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms, phenyl, tolyl, or benzyl, M is an alkali metal or an alkaline earth metal, and a compound described by the following formula:



wherein R, R' and M are as defined above, x is 1 and y is any number from 0 to 2.

4,243,757

PROCESS FOR THE PRODUCTION OF ALKALI METAL-CELLULOSE-SILICATES AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif. Division of Ser. No. 29,202, Apr. 12, 1979, Pat. No. 4,220,757. This application Jan. 15, 1980, Ser. No. 112,290

Int. Cl.³ C08J 9/00

U.S. Cl. 521—154

5 Claims

1. The process for the production of polyurethane-cellulose-silicate cellular solid or solid product by the following steps: (a) mixing 3 parts by weight of a cellulose-containing plant with 1 to 2 parts by weight of an oxidated silicon compound and 2 to 5 parts by weight of an alkali metal hydroxide, (b) heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes, thereby (c) producing a water-soluble alkali metal-cellulose-silicate condensation product; adding water to produce 10 parts by weight of an aqueous solution, containing 20% to 60% by weight of the alkali metal-cellulose-silicate condensation product, then (e) mixing the aqueous alkali metal-cellulose-silicate solution with 10 to 100 parts by weight of an isocyanate-terminated polyurethane prepolymer and 0.001 to 0.01 parts by weight of an amine allowed to react, thereby (f) producing a polyurethane-cellulose-silicate solid or solid product.

4,243,758

PROCESS FOR THE PRODUCTION OF REACTION PRODUCTS USING AQUEOUS FORMOSE WHICH HAS BEEN PREPARED WITH THE USE OF A LEAD CATALYST WHICH LEAD CATALYST HAS BEEN REMOVED FROM THE FORMOSE PRODUCT BY CATHODIC ELECTROCHEMICAL DEPOSITION

Edgar P. Möhring, Bergisch-Gladbach, and Hanns P. Müller, both of Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 934,579, Aug. 17, 1978, Pat. No. 4,175,015. This application May 21, 1979, Ser. No. 41,263

Int. Cl.³ C08G 18/14

U.S. Cl. 521—158

4 Claims

1. In a process for the production of polyurethane resins where polyisocyanates are reacted with compounds containing active hydrogen atoms, the improvement which comprises using as the active hydrogen containing compounds aqueous formose which has been prepared with the use of a lead catalyst, which lead catalyst has been removed from the formose product by cathodic electro-chemical deposition.

4,243,759

TOLUENE DIAMINE INITIATED POLYETHER POLYOLS

James L. Haas, Pittsburgh, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 946,259, Sep. 27, 1978, which is a continuation of Ser. No. 849,196, Nov. 7, 1977, abandoned. This application Dec. 12, 1979, Ser. No. 103,835

Int. Cl.³ C08L 71/02; C08G 18/14

U.S. Cl. 521—167

2 Claims

1. In the production of polyurethane foam by reacting an organic polyisocyanate with an active hydrogen containing material in the presence of a blowing agent, the improvement wherein said active hydrogen containing material comprises (a) from 10 to 100 percent by weight of an adduct obtained by sequentially reacting toluene diamine with from 3 to 5 moles of ethylene oxide and then with from 1 to 5.1 moles of a vicinal alkylene oxide of from 3 to 9 carbon atoms, the total number of moles of ethylene oxide plus vicinal alkylene oxide being at least five and no more than 8.1,

(b) from 0 to 90 percent by weight of an organic material containing from 2 to 8 hydroxyl groups.

4,243,760

REACTION INJECTION MOLDED POLYURETHANE

Kenneth G. McDaniel, Round Rock; Doris M. Rice, and Michael Cascarida, both of Austin, all of Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed May 23, 1979, Ser. No. 41,837

Int. Cl.³ C08G 18/14, 18/48, 18/32

U.S. Cl. 521—176

12 Claims

1. A reaction injection molded polyurethane elastomer having improved moldability and other improved properties comprising the reaction product of an aromatic polyisocyanate, a high molecular weight triol containing an internal mixed propylene oxide-ethylene oxide segment comprising 2-35% by weight of ethylene oxide and 65-98% by weight of propylene oxide and an ethylene oxide cap such that said triol has a primary hydroxyl content greater than 50% and a chain-extending agent.

7. A method of making a polyurethane elastomer of improved moldability which comprises injecting via a RIM machine into a mold cavity of the desired configuration a foam formulation and demolding the molded article, said formulation being the reaction product of an aromatic polyisocyanate, a high molecular weight triol containing an internal mixed propylene oxide-ethylene oxide segment comprising 2-35% by weight of ethylene oxide and 65-98% by weight of propylene oxide and an ethylene oxide cap such that said triol has a primary hydroxyl content greater than 50%, and a chain-extending agent.

4,243,761

PANEL FORMED FROM A PHENOLIC RESIN AND A METHOD FOR ITS MANUFACTURE

Claude Savy, 21 Route Nationale, Bernée, Nord, France

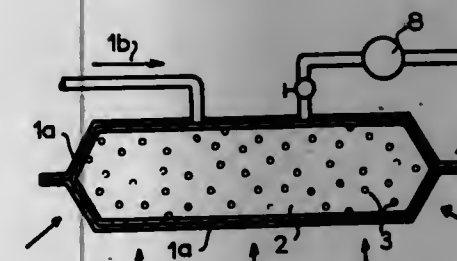
Filed Jan. 11, 1979, Ser. No. 2,729

Claims priority, application France, Jan. 16, 1978, 7801947

Int. Cl.³ B29D 27/04

U.S. Cl. 521—181

13 Claims



1. A process of making a panel which comprises: forming a fluid mixture of phenolic resin, a hardening agent, a surface active agent, a finely divided hydrophilic material and a volatile liquid pore forming agent having a boiling point above ambient temperature during mixing and below the polycondensation temperature of said mixture, uniformly mixing said mixture with solid fillers in particulate form, partially filling a mould with said fluid mixture with said fillers therein and closing said mould, progressively raising the temperature of said mixture to a first temperature in the vicinity of the boiling point of said pore forming agent and maintaining said mixture at said temperature to produce maximum expansion of said mixture to fill said mould, and thereafter progressively raising the temperature of said mixture to a second temperature equal to the polycondensation

tion temperature of said mixture to effect polycondensation of said mixture.

11. A panel made by the method defined in claim 1.

4,243,762

ALKANOLAMINE PROCESSING AID FOR ETHYLENE-VINYL ESTER INTERPOLYMER PARTICLES PRESENT IN AQUEOUS DISPERSIONS THEREOF

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,217

Int. Cl.³ C08K 5/16; C08L 33/06

U.S. Cl. 525—6

11 Claims

1. In a process for recovering finely divided ethylene-vinyl acetate interpolymer particles containing at least about 25% by weight, but not more than about 95% by weight, of copolymerized vinyl acetate from aqueous dispersion media in which the particles are present in admixture with a surface active dispersing agent, the improvement which comprises adding an anti-coalescing amount of water soluble alkanolamine processing aid to the said interpolymer particles in said aqueous dispersion media or to the wash water employed in the recovery of said interpolymer particles from said dispersion media and recovering the so-produced interpolymer particles to provide substantially aggregate-free, alkanolamine-wet ethylene-vinyl acetate interpolymer particles.

4,243,763

TERTIARY AROMATIC AMINE ACCELERATORS IN ACRYLIC RESIN

Harold Argenter, Rockville, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

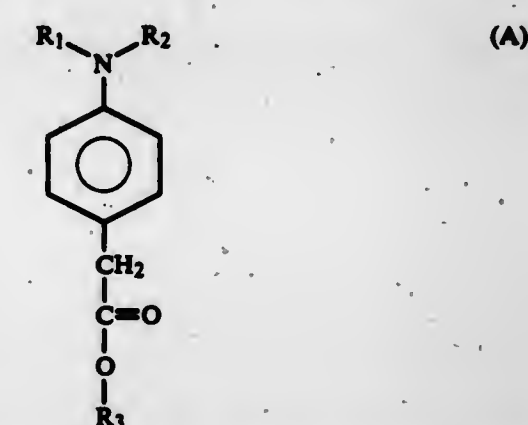
Filed Mar. 10, 1978, Ser. No. 885,275

Int. Cl.² C08K 3/00; C08G 63/30; C08L 67/06; A61K 5/02

U.S. Cl. 525—27

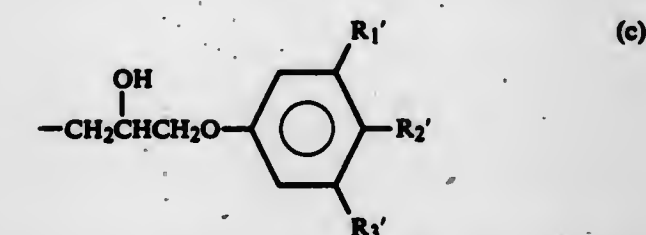
14 Claims

1. A composition of matter comprising a polymerizable monomer selected from the group consisting of an acrylate ester and a methacrylate ester, a peroxide catalyst, and a tertiary aromatic amine accelerator having the following structure:



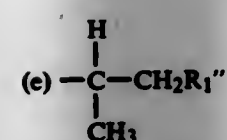
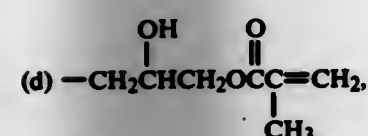
where R₁ and R₂ are the same or different and are selected from the following groups:

- (a) —CH₃,
(b) —CH₂CH₂C_nH_{2n+1} with n varying between 0 and 18,



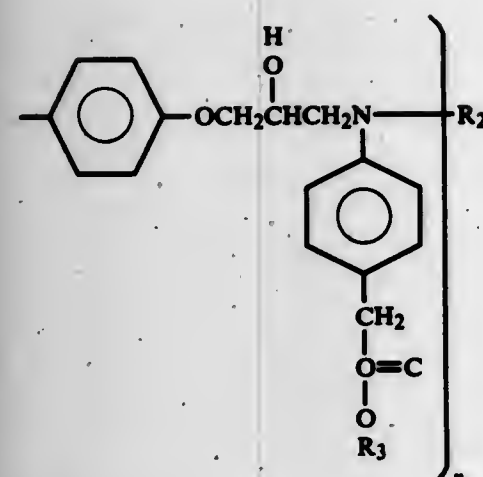
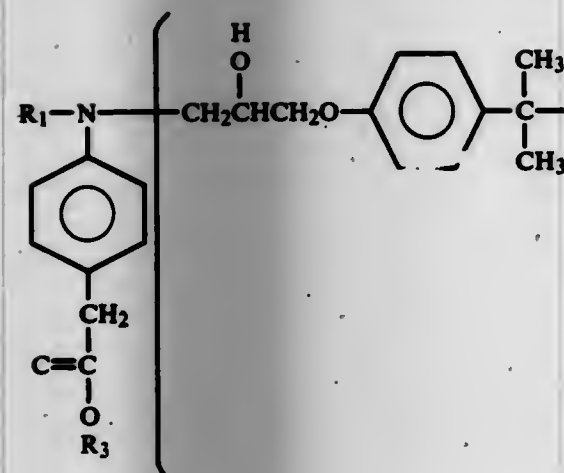
where R₁', R₂' and R₃' are each either hydrogen, nor-

mal alkyl, $-C_nH_{2n+1}$, with n varying between 1 and 20, or *t*-butyl, but if one R' is *t*-butyl, then the adjacent R' is hydrogen,

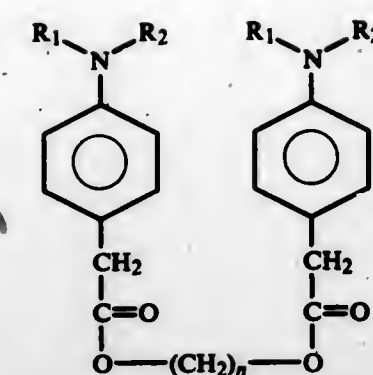


where R_1'' is $-C_nH_{2n+1}$ with n varying from 0 to 17, or

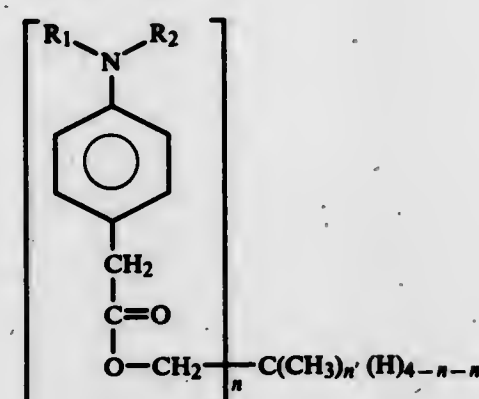
- (f) $-CH_2CH_2OH$; or
 (B) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (A) in which R_1 and R_2 are each hydrogen with the diglycidyl ether of a bisphenol A, or the hydrolysis product of this polymeric amine, in which each of the two epoxide groups is replaced by two hydroxyl groups, one on each carbon; or
 (C) a polymeric amine having a chain as in (B) but having terminal amine groups as in (A), where R_1 or R_2 for these terminal groups is as defined in (A), viz.:



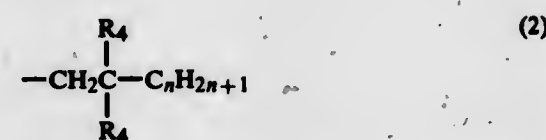
- where n varies from 1 to 10; or
 (D) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (B) with methacrylic or acrylic acid; or
 (E) an amine having the formula



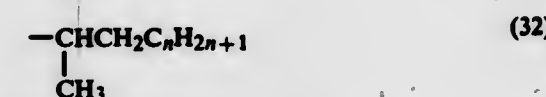
where R_1 and R_2 are as defined in subpart (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1 and R_2 , and where n varies between 1 and 20; or
 (F) a polymeric amine having the formula



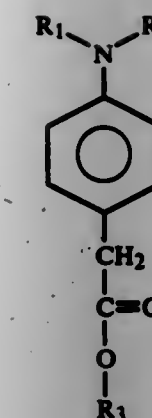
where R_1 and R_2 are as defined in subpart (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1 and R_2 , and where n varies between 2 and 4, and n' varies between 0 and $4-n$; and where R_3 is in each instance selected from one of the following groups:
 (1) $-CH_3$,



where R_4 is hydrogen or methyl and n varies between 0 and 18,

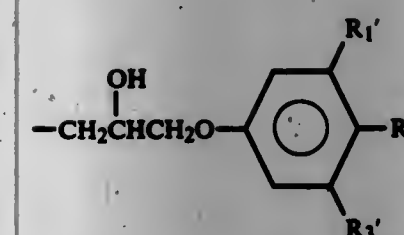


- where n varies between 0 and 17, or
 (4) the substituents of subparts (A)(c), (A)(d) and (A)(f), and
 (5) in the case of amines as in (A), $-H$.
 7. A composition of matter comprising an unsaturated polyester, a peroxide catalyst, and a tertiary aromatic amine accelerator having the following structure:

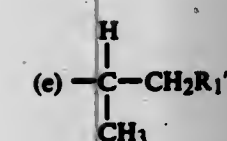
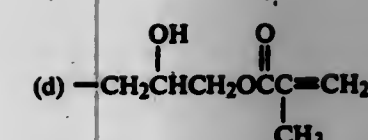


where R_1 and R_2 are the same or different and are selected from the following groups:

- (a) $-CH_3$,
 (b) $-CH_2CH_2C_nH_{2n+1}$ with n varying between 0 and 18,

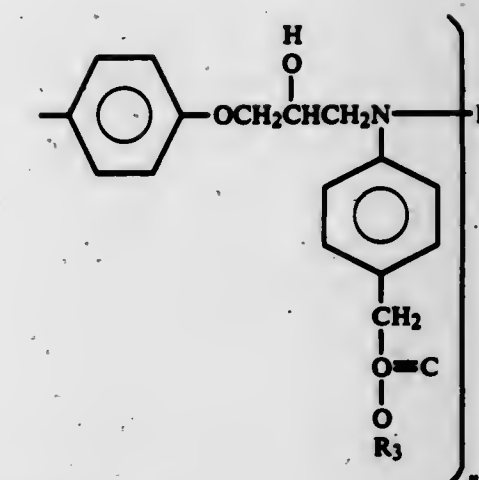
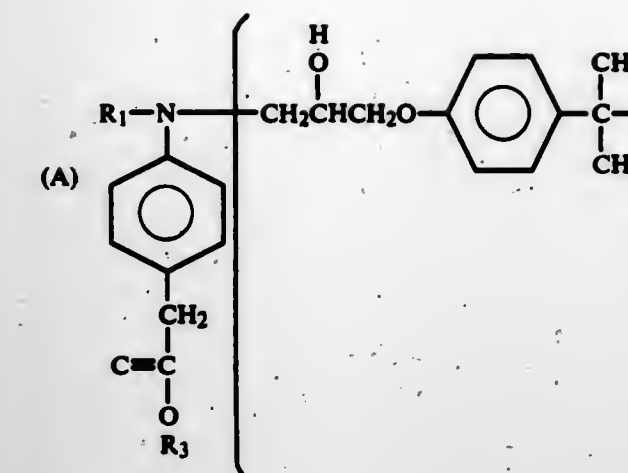


where R_1' , R_2' and R_3' are each either hydrogen, normal alkyl, $-C_nH_{2n+1}$, with n varying between 1 and 20, or *t*-butyl, but if one R' is *t*-butyl, then the adjacent R' is hydrogen,

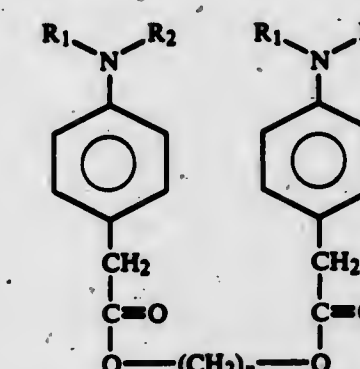


where R_1'' is $-C_nH_{2n+1}$ with n varying from 0 to 17, or

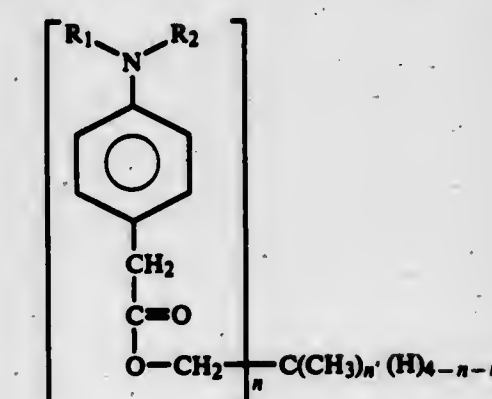
- (f) $-CH_2CH_2OH$; or
 (B) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (A) in which R_1 and R_2 are each hydrogen with the diglycidyl ether of a bisphenol A, or the hydrolysis product of this polymeric amine, in which each of the two epoxide groups is replaced by two hydroxyl groups, one on each carbon; or
 (C) a polymeric amine having a chain as in (B) but having terminal amine groups as in (A), where R_1 or R_2 for these terminal groups is as defined in (A), viz.:



- where n varies from 1 to 10; or
 (D) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (B) with methacrylic or acrylic acid; or
 (E) an amine having the formula



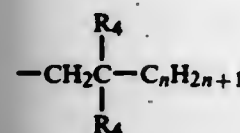
where R_1 and R_2 are as defined in subpart (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1 and R_2 , and where n varies between 1 and 20; or
 (F) a polymeric amine having the formula



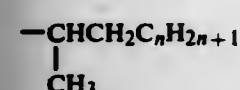
where R_1 and R_2 are as defined in subpart (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1

and R_2 , and where n varies between 2 and 4, and n' varies between 0 and 4— n ;
and where R_3 is in each instance selected from one of the following groups:

(1) $-\text{CH}_3$,



where R_4 is hydrogen or methyl and n varies between 0 and 18,



where n varies between 0 and 17, or

(4) the substituents of subparts (A)(c), (A)(d) and (A)(f), and
(5) in the case of amines as in (A), $-\text{H}$.

4,243,764

BLEND OF PHENOLPHTHALEIN POLYCARBONATES WITH POLYENE RUBBER-MODIFIED MONOVINYLDENE AROMATIC COPOLYMERS

John F. Rudd, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 806,990, Jun. 16, 1977, Pat. No. 4,163,762. This application Jun. 15, 1979, Ser. No. 48,953

Int. Cl.³ C08L 67/00

U.S. Cl. 525—67

11 Claims

1. A heterogeneous blend comprising at least about 10 and not more than about 90 weight percent of the following components: (1) a polycarbonate of an ar,ar'-dihydroxytrityl compound and (2) a rubber-modified copolymer of a monovinylidene aromatic monomer and an α,β -ethylenically unsaturated comonomer having a pendant polar group, said rubber-modified copolymer containing (a) an interpolmer of ethylene-higher α -monoolefin polyene rubber, (b) a random copolymer of the monovinylidene aromatic monomer and the polar comonomer and (c) a graft copolymer containing the rubber grafted or blocked with a copolymerized mixture of the monovinylidene aromatic monomer and the polar comonomer, said random copolymer having a solubility parameter within the range from about 9.2 to about 11.2.

4,243,765

IMPACT-RESISTANT POLYMERS AND RUBBER CONCENTRATES THEREFOR

Heeno Keakkula, and Frederick A. Miller, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 29, 1976, Ser. No. 755,319

Int. Cl.³ C08F 279/04

U.S. Cl. 525—86

6 Claims

1. An improved rubber concentrate for the preparation of rubber reinforced copolymers containing styrene and acrylonitrile, the rubber concentrate comprising a plurality of grafted diene-rubber latex particles having chemically attached thereto an attached styrene-acrylonitrile polymer, the attached styrene-acrylonitrile polymer being in admixture with a matrix copolymer of acrylonitrile and styrene at least approximating the chemical composition of the attached styrene-acrylonitrile polymer, with the further limitation that the matrix copolymer of acrylonitrile and styrene, chemically unattached to the diene rubber, has an intrinsic viscosity of from about 0.15 to about 0.5 deciliters per gram as determined in a solution of a 2 to 1 by volume mixture of acetonitrile and dimethylformamide at 25° C., and the number average diameter of the diene-rubber particles lie between about 500 Angstroms and 2800 Angstroms and

that the ratio of the chemically attached or graft styrene-acrylonitrile polymer to diene rubber lie between about 0.1 and 1.0 with the further limitation that the styrene-acrylonitrile of the attached and chemically unattached polymer contains from about 50 to 75 parts by weight of acrylonitrile and 50 to 25 parts by weight of styrene.

4,243,766

THERMOPLASTIC MOLDING COMPOSITIONS OF VINYL AROMATIC COMPOUND α,β -UNSATURATED CYCLIC ANHYDRIDE COPOLYMERS

Visvaldis Abolins, Delmar, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 477,435, Jun. 7, 1974, Pat. No.

4,124,654. This application Aug. 23, 1978, Ser. No. 935,919

Int. Cl.² C08L 53/02

U.S. Cl. 525—92

6 Claims

1. A thermoplastic molding composition which comprises: (a) from 40-95 parts by weight of a copolymer of a vinyl aromatic compound and an α,β -unsaturated cyclic anhydride; (b) from 10-50 parts by weight of a block copolymer of the A'-B'-A' type wherein A' is a polymerized mono-alkenyl aromatic hydrocarbon block and B' is a polymerized conjugated diene hydrocarbon block, the block B' being of higher molecular weight than that of the combined molecular weight of terminal block A'; and (c) from 5-30 parts by weight of a polyphenylene ether resin.

4,243,767

AMBIENT TEMPERATURE CURABLE HYDROXYL CONTAINING POLYMER/SILICON COMPOSITIONS

Lawrence G. Kaufman, North Bergen, and Charles N. Merriam, Martinsville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

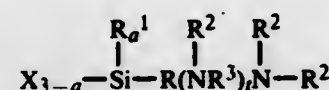
Filed Nov. 16, 1978, Ser. No. 961,473

Int. Cl.³ C08F 8/32, 8/42; C08C 19/00

U.S. Cl. 525—102

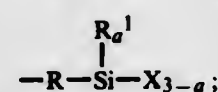
41 Claims

1. A substantially anhydrous, acid-free, room temperature curable composition which comprises (A) an organic thermoplastic polymer containing at least two hydroxyl radicals which are directly bonded to non-carboxylic carbon atoms of said polymer; and (B) a hydrolyzable aminosilicon compound selected from the class consisting of aminosilicon compounds having the average formula



and mixtures thereof wherein:

X is an alkoxy radical having 1 to 6 carbon atoms; R is a divalent alkylene radical having 1 to 4 carbon atoms; R^1 is hydrogen or an alkyl radical having 1 to 4 carbon atoms, R^2 is a radical selected from the group consisting of hydrogen, an alkyl radical having 1 to 4 carbon atoms and a silyl radical of the formula



wherein R, R^1 , and X are the same as defined above; and wherein R^3 is a divalent alkylene radical having 2 to 4 carbon atoms; a has a value of 0 to 2 and t has a value of 0 to 4; and wherein said composition contains about 5 to 50 parts by weight of said hydrolyzable aminosilicon compound (B) per 100 parts by weight of said organic polymer (A).

4,243,768

SAG-RESISTANT COMPOSITIONS

Jon H. Simpson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1977, Ser. No. 783,350

Int. Cl.³ C08L 75/04, 35/02

U.S. Cl. 525—127

8 Claims

1. A sag-resistant, pumpable, curable composition comprising an isocyanate-terminated prepolymer dispersed throughout a synthetic, continuous, crosslinked polymer matrix.

4,243,769

COMPATIBILIZATION OF BLENDS AND COMPOSITES

Ervin G. Pritchett, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Continuation-in-part of Ser. No. 600,332, Jul. 30, 1975,

abandoned. This application Oct. 4, 1977, Ser. No. 839,234

Int. Cl.³ C08L 23/00, 27/00

U.S. Cl. 525—222

20 Claims

1. A method for providing a grossly homogeneous, permanently miscible mixture of polymers which has properties not evident in a simple blend of the polymers and which does not separate spontaneously into the component polymers, which comprises uniformly mixing (a) a polymer component containing a nitrile functionality with (b) a polymer component containing hydroxyl or esterified hydroxyl functional groups condensable with nitriles, said polymer components (a) and (b) tending to spontaneously separate from a simple blend thereof, in the presence of from about 0.001 to 8 percent by weight of the mixture of nitriles and acid of an acid compatibilizing agent and for a period sufficient to provide the aforesaid permanently miscible mixture of polymers which, at ambient temperature, is in the form of a solid.

4,243,770

CROSS LINKABLE FLUORINE-CONTAINING POLYMER AND ITS PRODUCTION

Masayoshi Tatemoto, Osaka; Takeshi Suzuki, Kyoto; Masayasu Tomoda, Osaka; Yasuyoshi Furukawa, Osaka, and Yutaka Ueta, Osaka, all of Japan, assignors to Dainippon Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 7, 1978, Ser. No. 894,256

Claims priority, application Japan, Apr. 8, 1977, 52-40543

Int. Cl.³ C08F 14/16, 14/22

U.S. Cl. 525—331

20 Claims

1. An easily cross linkable free radical catalyzed fluorine-containing polymer substantially comprising: (1) a polymeric chain comprising one or more polymer segments, of which at least one polymer segment consists of units of vinylidene fluoride alone or units of vinylidene fluoride and one or more other fluoroolefins, the content of vinylidene fluoride units being not less than about 10 mol% based on the polymeric segment and not less than 10% by weight based on the polymeric chain, and (2) at least one iodine atom liberated from an iodinated compound of the formula: R_1I_x (wherein R_1 is a saturated or unsaturated fluoroalkyl or chlorofluoroalkyl residue having 1 to 8 carbon atoms and x is an integer of 1 or 2 corresponding to the bonding valency of the residue R_1) in an amount of 0.001 to 10% by weight based on the polymer and bonded at a terminal position of the polymeric chain and (3) a fragment of the iodinated compound excluding the said liberated iodine atom therefrom which are bonded to the polymeric chain and being prepared by polymerizing vinylidene fluoride with or without one or more of the other fluoroolefins in the presence of a radical producing source and the iodinated compound (a), the other fluoroolefins being selected from the group consisting of tetrafluoroethylene, chlorotrifluoroethylene, trifluoroethylene, vinyl fluoride, hexafluoropropylene, pentafluoropropylene, perfluoro(methyl vinyl ether), perfluoro(ethyl vinyl ether) and perfluoro(propyl vinyl ether).

4,243,771

NITRILE RUBBER ADHESION

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 19, 1979, Ser. No. 95,866

Int. Cl.³ C08F 8/12

U.S. Cl. 525—340

15 Claims

1. A method for converting a dilute nitrile rubber substrate surface into a bondable surface for metals, wood, and rubbers which comprises hydrolyzing said nitrile substrate surface in the presence of a mineral acid under such mild conditions that said hydrolyzing does not affect the unsaturation of said nitrile substrate surface.

4,243,772

POLYMERS WITH CONTROLLED SULFONIC ACID OR SULFONATE GROUP CONTENT AND A METHOD FOR THEIR SYNTHESIS

Swaraj Paul, Subhash Nagar, Bareilly, India, and Bengt Ranby, Stenbocksvägen 21, Djursholm, Sweden

Continuation of Ser. No. 735,494, Oct. 26, 1976, abandoned.

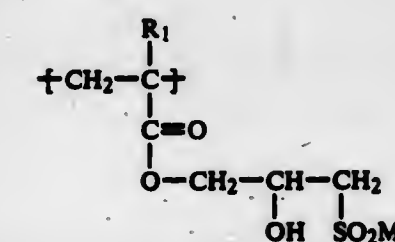
This application Nov. 6, 1978, Ser. No. 958,133

Int. Cl.³ C08F 8/36

U.S. Cl. 525—344

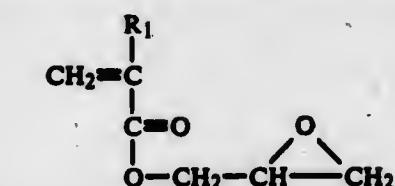
6 Claims

1. A process for the preparation of polymers with a controlled amount of sulfonic acid or sulfonate groups, said polymers having chain units of the formula:



where M is selected from the group consisting of alkali metal atoms and hydrogen, said process being characterized by the following steps:

A. copolymerizing a monomer selected from the group consisting of ethylene, propylene, vinyl acetate, styrene, acrylonitrile, methacrylate, and methyl methacrylate by a method known per se with a controlled amount of an epoxy group containing monomer of the formula:



where R_1 is selected from the group consisting of hydrogen and a methyl radical; thereafter,

B. sulfonating via epoxy ring opening by reacting the polymer produced in step a) with an alkali sulfite in aqueous solution at the temperature within the range of 20°-150° C. and in the presence of a tetra, lower alkyl quaternary ammonium salt phase transfer catalyst, and
C. when M is hydrogen, passing the sulfonated product through a cationic ion exchange resin.

4,243,773

VOLATILE LIQUID SUPPLY EQUIPMENT AND PROCESSES AND APPARATUS FOR INTRODUCING VOLATILE CROSS-LINKING AGENTS INTO POLYOLEFIN COMPOUNDS AND FOR THE EXTRUSION OF CROSS-LINKING POLYOLEFIN COMPOUNDS

Claude J. Arnaud, Riom; Jean M. Quemner, Clermont-Ferrand, and Gaston P. Roche, Riom, all of France, assignors to Societe Anonyme de Telecommunications, Paris, France

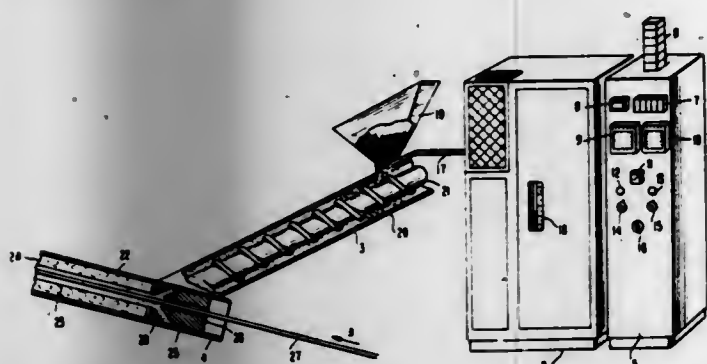
Division of Ser. No. 851,953, Nov. 16, 1977, Pat. No. 4,198,374. This application Jun. 21, 1979, Ser. No. 50,789

Claims priority, application France, Jan. 17, 1975, 75 01432

Int. Cl.³ C08F 8/06, 8/08; C08C 19/04

U.S. Cl. 525—387

3 Claims



1. A method of dispersing and admixing highly volatile, flammable, tertiary butyl peroxide, whose boiling point is approximately 110° C. at 760 mm of mercury pressure, as a cross-linking agent in a polyethylene compound, comprising the steps of:

continuously introducing, at ambient temperatures and under atmospheric pressures, a mass of particulate polyethylene material directly into an input of an extruder; concurrently injecting at ambient temperatures and under atmospheric pressures, an incremental supply of said liquid peroxide directly into the input of the extruder; continuously producing a first electrical signal representative of the rate of consumption of the materials passing through the extruder; continuously producing a second electrical signal representative of the incremental rate at which said liquid peroxide is directly injected into the extruder; and continuously controlling the rate of injection of said liquid peroxide in accordance with the relative magnitudes of said first and second electrical signals, to assure the flow rate at which said liquid peroxide is injected has a substantially constant correspondence to the rate of consumption of the material through the extruder, so that the percentage of said cross-linking agent to said polyethylene compound in the extruder remains at a substantially constant predetermined value, regardless of extruder speed variations.

4,243,774

RUBBER COMPOSITION

Masaaki Inagami, Kamakura, and Hiroshi Fukushima, Zushi, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,818

Claims priority, application Japan, Apr. 13, 1978, 53-43464

Int. Cl.³ C08L 61/10, 71/02

U.S. Cl. 525—405

8 Claims

1. A rubber composition capable of giving a vulcanizate having superior adhesiveness, comprising 100 parts by weight of an unsaturated epoxide-copolymerized epichlorohydrin-type rubber, which is a copolymer rubber composed of 25 to 97 mole% of epichlorohydrin, 0 to 60 mole% of ethylene oxide and 3 to 15 mole% of an unsaturated epoxide 0.1 to 5 parts by weight of a di- or tri-mercaptop-s-triazine, 1 to 20 parts by

weight of a phenolic resin, and 5 to 50 parts by weight of a finely divided silicic acid or its salt.

4,243,775

SYNTHETIC POLYESTER SURGICAL ARTICLES

Michael N. Rosensaft, Monsey, N.Y., and Richard L. Webb, Darien, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 799,836, May 23, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,264

Int. Cl.³ C08L 67/04; C08G 63/08

U.S. Cl. 525—415

12 Claims

1. In a method for the manufacture of sterile surgical articles fabricated from a synthetic absorbable copolymer formed by copolymerizing glycolide as the predominant monomer with a cyclic ester monomer other than glycolide, the improvement comprising employing sequential addition of the monomers in the polymerization, wherein said glycolide monomer, said cyclic ester monomer, or a combination of said monomers is substantially completely polymerized before the addition of the other monomer or said combination.

4,243,776

PREPARATION OF NON-THROMBOGENIC POLYMERIC MATERIAL ARTICLE WITH PLATELET ANTI-AGGREGATIVE AGENT

Walter Marconi, San Donato Milanese; Francesco Pittalis; Francesco Bartoli, both of Rome, and Franco Morisi, San Giovanni In Persiceto, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Jun. 21, 1978, Ser. No. 917,568

Claims priority, application Italy, Jul. 27, 1977, 26191 A/77

Int. Cl.³ C08G 69/46

U.S. Cl. 525—420

6 Claims

1. A method for rendering an article made from a polymeric material non-thrombogenic comprising chemically binding a platelet anti-aggregative agent selected from the group consisting of 4,5-diphenyl-2-bis-(2-hydroxyethyl)amino oxazole and 4,8-dipiperidino-2,6-diethanolamino-pyrimido-5, 4-d pyrimidine to the surface of said polymeric material.

4,243,777

POLYPYRROLIDONE ALLOYS

W. Alan Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 4, 1978, Ser. No. 930,945

Int. Cl.³ C08L 77/02

U.S. Cl. 525—425

6 Claims

1. A process for preparing a polymer alloy of poly-2-pyrrolidone and a linear polymer additive selected from the group consisting of polyesters, polyamides and mixtures thereof which comprises dissolving said poly-2-pyrrolidone for about from 2% to 40% by weight, based on total polymer, of said polymer additive in an inert organic solvent, thereby forming a solution of said poly-2-pyrrolidone and said polymer additive in said solvent and coprecipitating, said poly-2-pyrrolidone with said polymer additive from said solvent, thereby yielding an intimate coprecipitate polymer alloy, and wherein said polymer additive has a number average molecular weight of about from 15,000 to 50,000, a melting point of about from 150° to 300° C. and a moisture regain, measured at standard conditions, of from 0.2 to 2.5 %wt.

4,243,778

THERMOSETTING HEAT BONDABLE LACQUER

Peter Heim, Basel; Karl Borer, Grindel, and Werner Allemann, Breitenbach, all of Switzerland, assignors to Schweizerische Isola-Werke, Breitenbach, Switzerland

Filed Jun. 14, 1979, Ser. No. 48,400

Claims priority, application Switzerland, Jun. 21, 1978, 6765/78

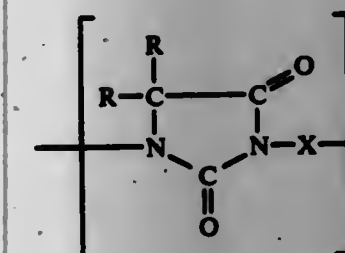
Int. Cl.³ C08G 71/04; C08L 63/00

U.S. Cl. 525—454

17 Claims

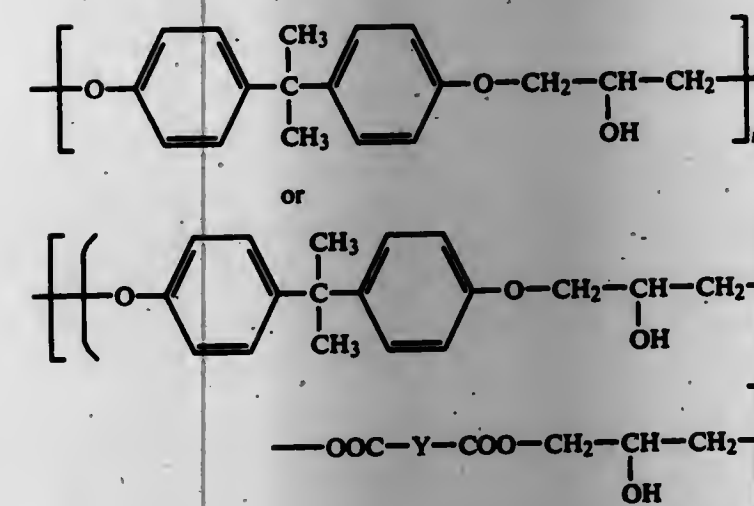
1. Thermosetting heat bondable lacquer which comprises a solution of a thermosetting mixture in a liquid selected from the group consisting of solvents boiling at a temperature in the range of 50° to 230° C. and mixtures of such solvents, said thermosetting mixture consisting of—based on the resin solids—

(a) 20 to 80% by weight of polyhydantoin resin of linear, branched or mixed linear and branched structure and having the formula:



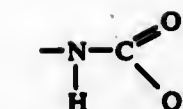
wherein the R's are the same or different and are hydrogen or alkyl radicals containing from 1 to 4 carbon atoms and the X's are the same or different and are selected from the group consisting of aliphatic, cycloaliphatic, heterocyclic and aromatic linkage groups and combinations thereof, and n is a positive number having a value corresponding to the specific viscosity, a one percent solution of the resin in cresol DAB V having a specific viscosity between 0.2 and 1.5 at 20° C.,

(b) 5 to 65% by weight of polyhydroxy polyether or phenoxo resin of linear, branched or mixed linear and branched structure and having the formula:



wherein Y is a linking group selected from the group consisting of bivalent aliphatic, cycloaliphatic, heterocyclic and aromatic groups and combinations thereof, m is a positive number having a value corresponding to the specific viscosity, p is a positive number having an average value of 1 to 30 and q is a positive number with a value corresponding to the specific viscosity, a one percent solution of the resin in cresol DAB V having a specific viscosity between 0.2 and 1.5 at 20° C., and

(c) 3 to 40% by weight of polyurethane resin of linear, branched or mixed linear and branched structure, at least 4% by weight of the resin consisting of the urethane grouping having the formula:



and a one percent solution of the resin in cresol DAB V having a specific viscosity between 0.1 and 1.0 at 20° C.

4,243,779

POLYCARBONATES STABILIZED BY HALOHYDROCARBON, HALOCARBON OR SILANE GROUPS

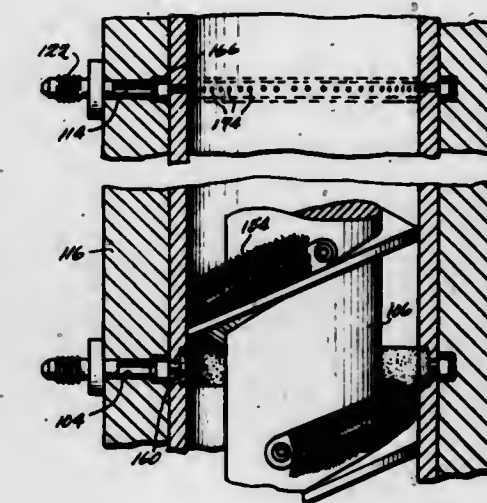
Roy E. McAllister, 5285 Red Rock North, Phoenix, Ariz. 85018

Filed Apr. 23, 1979, Ser. No. 32,633

Int. Cl.³ C08G 63/76; C08L 69/00

U.S. Cl. 525—462

38 Claims



1. A polycarbonate resin having the phenolic hydrogen end atoms replaced by stress corrodant preventive groups which are halohydrocarbon groups, halocarbon groups or a silane groups.

4,243,780

METHOD OF PREPARING CARBAMIDE-FURAN RESIN

Anatoly A. Kruglikov, ulitsa Vyazovskaya, 9, kv. 9; Militina A. Nikolaeva, ulitsa Vyazovskaya, 13, kv. 15, both of, Nizhny Tagil; Jury P. Vasin, ulitsa Lenina, 74, kv. 62, Chelyabinsk; Zoya Y. Itkis, ulitsa Svobody, 145, kv. 1, Chelyabinsk; Vladimir A. Shirinkin, ulitsa Ternopolakaya, 4, kv. 433, Chelyabinsk; Ida A. Zimina, ulitsa B. Pirogovskaya, 35, kv. 2, Moscow; Vladimir A. Strupinsky, ulitsa Tsolkovskogo, 11, kv. 26, and Valery V. Kopysov, ulitsa Tsolkovskogo, 11, kv. 51, both of, Nizhny Tagil, all of U.S.S.R.

Filed Jul. 11, 1978, Ser. No. 923,733

Int. Cl.³ C08L 45/00

U.S. Cl. 525—518

6 Claims

1. A method for preparing a carbamide-furan resin suitable for use as a binder in the manufacture of high strength foundry molds and cures by cold curing, said method comprising the steps of:

- reacting an unlimitedly water-soluble urea-formaldehyde resin with urea at a temperature from about 50° to 85° C., whereby the free formaldehyde content of the urea-formaldehyde resin is reduced;
- modifying the resulting urea-formaldehyde resin by adding furyl alcohol in an amount by weight of from about 0.2 to 2 times the weight of the urea-formaldehyde resin at a temperature of from about 50° to 85° C. and a pH of from about 7.2 to 8.9; and
- simultaneously dehydrating the resulting resin under vacuum while conducting the modification step (b), whereby a carbamide-furan resin having an unlimited

miscibility in water and a high cold curing rate is produced.

4,243,781

PROCESS FOR THE PREPARATION OF STYRENE AND ACRYLONITRILE CONTAINING POLYMERS

Raymond W. Kent, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1979, Ser. No. 51,940

Int. Cl.³ C08F 2/00

U.S. Cl. 526—68

8 Claims

1. In a method for the preparation of styrene and acrylonitrile containing polymers wherein styrene and acrylonitrile are introduced into a recirculating polymerization zone to form a polymerizing mass, the polymerizing mass being of generally constant composition, removing a portion of the polymerizing mass from the polymerization zone, separating volatile components from the mass to thereby recover a styrene and acrylonitrile containing polymer therefrom and returning at least a portion of the volatile components to the polymerization zone, the improvement which comprises maintaining a level of oxygen in feed to the polymerizing zone at a level not greater than 20 parts by weight per million parts by weight of the polymerizing mass wherein the styrene and acrylonitrile prior to entering polymerization zone are sparged with nitrogen and/or are passed through a vacuum chamber to remove oxygen.

4,243,782

TRANSITION METAL COMPOUND

Ashley D. Bye, and Alan B. Newton, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 16, 1976, Ser. No. 696,822

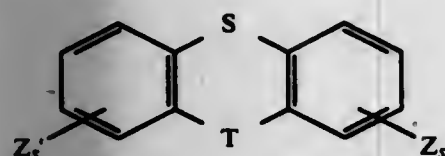
Claims priority, application United Kingdom, Jun. 16, 1975, 25534/75; Jan. 23, 1976, 2697/76

Int. Cl.³ C08F 4/66, 10/06

U.S. Cl. 526—140

16 Claims

1. A process for the production of a transition metal composition in which at least one compound of a transition metal of Groups IVA to VIA of the Periodic Table is mixed with at least one organo-compound of aluminum or of a non-transition metal of Groups IA or IIA of the Periodic Table to obtain a solid reaction product, and the solid reaction product is contacted with at least one sulphur-containing organic compound of the formula



in an amount of from 0.01 up to 2.00 moles, of the sulphur-containing organic compound for each gramme atom of the transition metal which is present in the solid reaction product, and at a temperature which is in the range from 60° C. up to 160° C., for at least a part of the period of contacting wherein

Z', or each Z', is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio or arylthio group, or a group —NR³R⁴;

R³ is a hydrogen atom or a hydrocarbyl group;

R⁴ is a hydrocarbyl group;

each s is, independently, an integer from 0 up to 5; and T is an oxygen or a sulphur atom.

FLUOROALIPHATICSULFONYL SUBSTITUTED ETHYLENES CATALYSTS IN POLYMERIZATION PROCESSES

Robert J. Kosar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

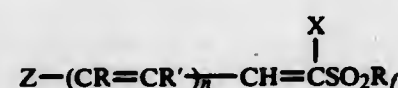
Division of Ser. No. 794,745, May 9, 1977, Pat. No. 4,156,696, which is a division of Ser. No. 684,167, May 7, 1976, Pat. No. 4,069,233, which is a division of Ser. No. 455,141, Mar. 27, 1974, Pat. No. 3,984,357, which is a division of Ser. No. 300,754, Oct. 25, 1972, Pat. No. 3,932,526. This application Sep. 8, 1978, Ser. No. 940,557

Int. Cl.³ C08F 4/00, 16/14, 16/18

U.S. Cl. 526—225

7 Claims

1. A process comprising contacting monomer selected from the group consisting of epoxides, vinyl ethers, and N-vinyl compounds with a catalytic amount to effect polymerization of said monomer of a fluoroaliphaticsulfonyl ethylene compound having the formula



wherein R_f is a monovalent, saturated perfluoroalkyl radical having 1–18 carbon atoms; X is a monovalent, nonionic, electron withdrawing radical at least as electron withdrawing as a benzoyl radical; R is hydrogen, an alkyl group, or a phenyl group; R' is the same as R with at least one being hydrogen; n is an integer from 0 to 7 depending on Z; n is 1 to 7 when Z is hydrogen, alkyl, alkenyl, aryl, arylalkyl, or alkylaryl; n is zero when Z is aryl, arylmethyl, furyl, thenyl or 1H-pyrrolyl.

4,243,784

PROCESS FOR PRODUCING POWDERED COPOLYMERS OF ETHYLENICALLY UNSATURATED COMPOUND AND MALEIC ANHYDRIDE OR AN ESTER THEREOF

Tosio Akima; Etsuzaburo Kudou, both of Ichihara; Tetsuo Kaneyasu, Hitachi, and Hiromi Kochi, Fukuyama, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Jun. 27, 1978, Ser. No. 919,609

Claims priority, application Japan, Jun. 30, 1977, 52-78667

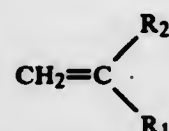
Int. Cl.³ C08F 2/00, 222/06, 222/08; B01F 7/00

U.S. Cl. 526—88

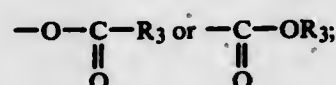
14 Claims

1. A process for producing a powdered copolymer of an ethylenically unsaturated compound having a terminal double bond and maleic anhydride or an ester derivative thereof, which comprises

polymerizing a polymerizable reactant mixture comprising an ethylenically unsaturated compound having a terminal double bond and being represented by the general formula:

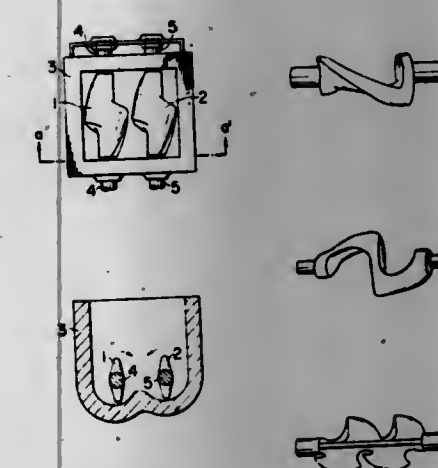
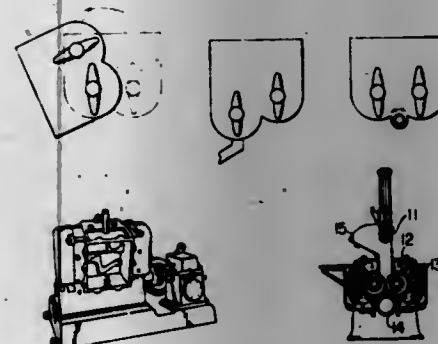
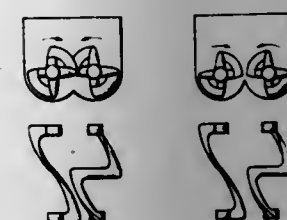


wherein R₁ is hydrogen, an alkyl group having 1 to 15 carbon atoms, an aryl group, —OR₃,



and R₂ and R₃ are independently hydrogen or an alkyl group having 1 to 10 carbon atoms, and maleic anhydride or an ester derivative thereof in a kneading machine with continuous kneading of the reactant mixture in the presence or absence of a poor solvent for the copolymer to form a highly viscous resin phase containing the copoly-

mer produced and remaining polymerizable reactant mixture at least one reactant of which is capable of dissolving the copolymer, further kneading the highly viscous resin phase, effecting further polymerization of the resin phase while kneading is continued with tearing of the resin phase to produce solid resin aggregates containing said copolymer, and



continuing the kneading to effect powdering of the solid resin aggregates to produce a powdered copolymer; the internal free volume of the kneading machine being about twice or more of the volume of the reactant mixture or the total volume of the reactant mixture and the poor solvent for the copolymer.

4,243,785

HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Donald F. Birkelbach, Angleton, and George W. Knight, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1978, Ser. No. 939,638

Int. Cl.³ C08F 4/02, 10/02

U.S. Cl. 526—115

19 Claims

1. In a process for the polymerization of an α-olefin under the conditions characteristic of Ziegler polymerization wherein the polymerization is conducted in the presence of, as a catalyst for said polymerization, a catalytic reaction product of (A) a tetravalent titanium compound or a complex of a trivalent titanium compound with an electron donor, (B) an organomagnesium component selected from (1) an organomagnesium compound or (2) a complex of an organomagnesium compound and an organometallic compound in an amount sufficient to solubilize the organomagnesium com-

pound in a hydrocarbon solvent and (C) a halide source selected from (1) an active non-metallic halide, said non-metallic halide corresponding to the formula R'X wherein R' is hydrogen or an organic group at least as active as sec-butyl and X is halogen or (2) a metallic halide corresponding to the formula MR_y—aX_a wherein M is a metal of Group 2B, 3A or 4A of Mendeleev's Periodic Table of Elements, R is a hydrocarbyl or hydrocarbyloxy radical having from 1 to 20 carbon atoms, X is halogen, y is a number corresponding to the valence of M and a is a number having a value of from 1 to y; provided that the proportions of the foregoing components of said catalytic reaction product being such that the atomic ratio of Mg:Ti is from about 1:1 to about 2000:1; the atomic ratio of Al:Ti is from about 0.1:1 to about 2000:1; the atomic ratio of excess X:Al is from about 0.0005:1 to about 10:1; and further provided that when the organomagnesium compound and/or the halide source provides insufficient quantities of aluminum, there is also present an aluminum compound represented by the formula AlR_yX_y wherein R and X are as defined above and y' and y'' each have a value of from zero to three with the sum of y' and y'' being three; the improvement which comprises employing as an additional component in the catalyst composition so as to broaden the molecular weight distribution, (D) an anhydrous divalent nickel compound such that the atomic ratio of Ni:Ti is from about 0.01:1 to about 500:1.

4,243,786

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Akinobu Shiga; Yoshiharu Fukui; Kazuhiro Matsumura; Toshio Sasaki, and Masahisa Okawa, all of Niihama, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 831,630, Sep. 8, 1977, Pat. No. 4,165,298.

This application Apr. 13, 1979, Ser. No. 30,046

Claims priority, application Japan, Sep. 8, 1976, 51-108276; Oct. 22, 1976, 51-127705

Int. Cl.³ C08F 4/64

U.S. Cl. 526—137

2 Claims

1. A method for preparing a highly crystalline olefin polymer, which comprises polymerizing at least one olefin in the presence of a catalyst system consisting essentially of:

(A) the solid titanium trichloride catalyst obtained by treating at about —30° to about 200° C. for about 5 minutes to about 5 hours a titanium trichloride composition or a pulverized product thereof with a mixture of

(1) about 0.001 to about 2.0 moles per mole of titanium chloride in the titanium trichloride composition of at least one halogen or halogen compound selected from the group consisting of (a) a halogen expressed by the general formula



wherein X represents Cl, Br or I, (b) an interhalogen compound expressed by the general formula

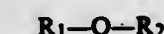


wherein X and X', which are different, each represents Cl, Br or I, and a is 1 or 3, and (c) an iodinated hydrocarbon compound expressed by the general formula



wherein R₃ represents a straight-chain or branched-chain alkyl group containing 2 to 18 carbon atoms, and

(2) about 0.001 to about 5.0 moles per mole of titanium trichloride in the titanium trichloride composition of an ether compound expressed by the general formula



wherein R₁ and R₂, which may be the same or different,

each represents a straight-chain or branched-chain alkyl group containing 1 to 8 carbon atoms; and
(B) an activator expressed by the general formula $R'AlY_3$,

wherein R' represents a straight-chain or branched-chain alkyl group containing 1 to 8 carbon atoms, Y represents a halogen atom, a hydrogen atom or an alkoxy group, and e is a number of from 2 to 3.

4,243,787

BULK ANIONIC POLYMERIZATION PROCESS USING AN ALKALI METAL AMIDE AND THE SALT OF THE SAME ALKALI METAL WITH A HYDROXYLIC COMPOUND

Sylvie L. Boileau, Paris; Paul J. Canbere, Nancy; Gilberte Ndebeka, Vandoeuvre; Serge L. Lecolier, Janville sur Juine, and Serge F. Raynal, Draveil, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France
Filed Nov. 6, 1978, Ser. No. 957,889

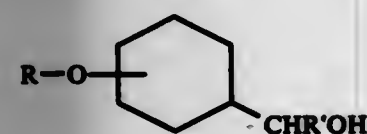
Claims priority, application France, Nov. 23, 1977, 77 35221
Int. Cl.³ C08F 4/48

U.S. Cl. 526—180

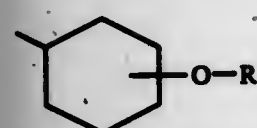
6 Claims

1. Process for the polymerisation or copolymerisation of vinyl and dienic monomers, which consists of carrying out the reaction in the absence of solvent and in the presence of an initiator consisting of a molecular combination of an alkali metal amide which is sodium amide, potassium amide or lithium amide with at least one hydroxylic compound which is a member selected from the group consisting of primary alcohols of the formula $R-OH$ in which R is a linear alkyl group, preferably containing more than 2 carbon atoms, or a branched alkyl group or an alkyl group containing a cycloalkyl group or a cyclic ether group, or a linear alkyl group containing at least one ethylenic unsaturation and at least 2 carbon atoms or containing at least one aromatic group,

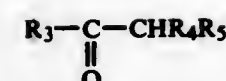
secondary or tertiary alcohols of the formula $R'-OH$ in which R' is a linear or branched alkyl group or a cycloalkyl group or a polycycloalkyl group, aromatic alcohols of the formula $R''-OH$ in which R'' is an aryl or polyaryl group which is optionally substituted by alkyl, alkoxy or aminoalkyl groups, bis-tertiary glycols having an alkyl chain, in which the hydroxyl groups are in the 1,2-, 1,3- or 1,4-positions, ether-alcohols, aminoalcohols, polyether-alcohols, polyaminoalcohols and polyaminoether-alcohols of the formula $R-Y-CH(R_1)-CH(R_2)-OH$ (I) in which R is an alkyl, cycloalkyl, arylalkyl, alkylaryl or aryl group, Y is an oxygen atom or a nitrogen atom substituted by an alkyl group, the symbol Y being all oxygen or all substituted nitrogen atoms or, being both oxygen atoms and substituted nitrogen atoms, R₁ and R₂ are identical or different and are a hydrogen atoms, a methyl group or an ethyl group, Y being oxygen when at least one of R₁ and R₂ is a methyl or ethyl group, and n is an integer from 1 to 10, the ether-alcohols of the formula:



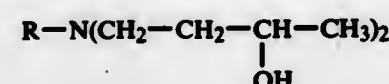
in which R has the above meaning and R' is a hydrogen atom or a group



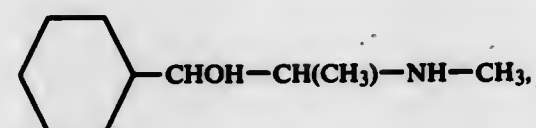
enols of the ketones of the formula



in which R₃ is a hydrocarbon group and R₄ and R₅ are identical or different and are a hydrogen atom or a hydrocarbon group, diolamines such as those of the formula



in which R=alkyl, aminoalcohols of the formula



industrial mixtures of monoethers of polyalkoxyglycols of the formula (I) in which Y is oxygen and n has a value such that the chains contain up to 100 carbon atoms, trialkylsilanols, other than trimethylsilanol, and thiols and, said initiator being prepared by employing 2-3.5 moles of.

4,243,788

ISOCYANURATE SOLUTIONS

Erich Kuehn, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

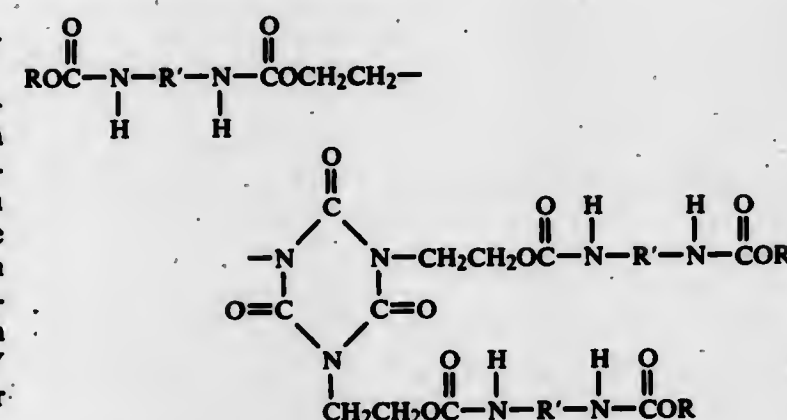
Division of Ser. No. 819,239, Jul. 27, 1977, Pat. No. 4,159,376.
This application Jan. 29, 1979, Ser. No. 7,065

Int. Cl.³ C08F 226/06

U.S. Cl. 526—261

4 Claims

1. A solution of an ethylenically unsaturated isocyanurate characterized by the formula:



wherein R is a monovalent radical obtained by removing the hydroxyl group from hydroxypropyl methacrylate, hydroxyethyl methacrylate, hydroxyethyl acrylate, or hydroxypropyl acrylate and R' is a divalent organic radical free of a group which is reactive with an isocyanate group and is obtained by removing two isocyanate groups from an aromatic diisocyanate, dissolved in a solvent selected from the group consisting of styrene, methylmethacrylate, divinylbenzene, ethylmethacrylate, ethylacrylate, methylacrylate, 2-ethylhexylacrylate, 2-ethylhexyl-methacrylate, butylacrylate, butylmethacrylate, cyclohexylmethacrylate, cyclohexylacrylate, t-butyl styrene, chlorostyrene, acrylonitrile, vinylidene chloride, vinyl acetate, vinyl toluene, tetrahydrofurfuryl methacrylate, vinyl pyrrolidone, diethylene-glycoldiacrylate, triethylene-glycoldiacrylate, allylmethacrylate, diallylfumarate, 1,3-butyleneglycoldimethacrylate, polyethylene glycol diacrylate, and mixtures thereof.

4,243,789 HYDROXYL-CONTAINING LIQUID POLYMERS AND PRESSURE-SENSITIVE ADHESIVES PREPARED THEREFROM

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 829,699, Sep. 1, 1977, Pat. No. 4,145,511.
This application Jan. 22, 1979, Ser. No. 5,549

Int. Cl.³ C08G 18/62; C07D 207/06; C08G 18/69; B32B 27/40
U.S. Cl. 526—263

15 Claims
1. A liquid hydroxyl containing alkyl acrylate copolymer comprising copolymerized therein at least about 85 weight percent of an alkyl acrylate of acrylic acid wherein the alkyl group contains 3 to 10 carbon atoms with about 2 to about 10 weight percent N-vinyl-2-pyrrolidone and a monomer containing hydroxyl groups or groups convertible to hydroxyl groups and said copolymer contains an average from about 1.4 to 6 terminal and random hydroxyl groups per molecule.

4,243,790

STYRENE/HYDROXY ALKYL ACRYLIC ACID ESTER COPOLYMER FOR CONTACT LENSES

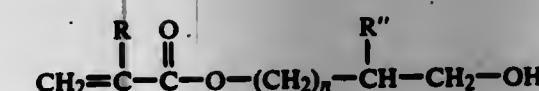
William M. Foley, Jr., 2551 Sleepy Hollow, Glendale, Calif. 91206

Continuation-in-part of Ser. No. 797,005, May 16, 1977, abandoned. This application Jan. 30, 1978, Ser. No. 920,670
Int. Cl.³ C08F 212/08, 220/20; G02C 7/04

U.S. Cl. 526—320

7 Claims

1. A contact lens consisting essentially of the polymerization product of from about 5% to about 93.5% of styrene monomer, from about 4% to about 94% of acrylic monomers of the general formula



wherein n is 0 or 1, R is hydrogen or methyl, and R' is hydrogen when n is 0 and hydrogen or hydroxyl when n is 1, and an effective amount of cross-linking monomer and optionally up to about 10% methacrylic acid.

4,243,791

ANAEROBIC ADHESIVES

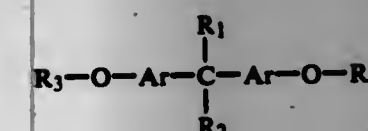
Keith Hargreaves, Huby, Near Leeds; David Hartley, and Paul Wainwright, both of Leeds, all of England, assignors to Rocol Limited, Leeds, England

Filed Jan. 23, 1979, Ser. No. 5,728
Int. Cl.³ C08F 236/06

U.S. Cl. 526—320

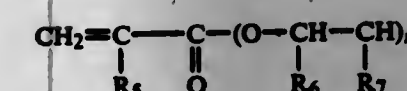
15 Claims

1. An anaerobic adhesive comprising as a bond forming system a polymerizable aromatic-based acrylate monomer and a compatible liquid butadiene acrylonitrile copolymer, together with a latent initiator for the polymerization, said aromatic-based acrylate monomer having the general formula



where:

Ar is a divalent aromatic residue;
R₁ and R₂ represent hydrogen, alkyl, aryl, or hydroxyalkyl groups, or halogen; and
R₃ and R₄ represent



where m is an integer of from 1 to 20 and R₅, R₆, and R₇ is about 1:2.

represent hydrogen, alkyl, or alkoxy groups, the same or different.

4,243,792

MOISTURE CURING POLYURETHANE TOPCOAT PAINT WITH IMPROVED GLOSS STABILITY

William T. Short, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1977, Ser. No. 795,798
Int. Cl.³ C08G 18/38

U.S. Cl. 528—73

5 Claims

1. A paint composition characterized by the ability to provide a cured finish over a base material, the finish being gloss stable when exposed to ultraviolet radiation, said paint comprising as a binder resin an aliphatic isocyanate terminated polyurethane prepolymer containing chemically incorporated in the molecular chains thereof a bis-2,2,6,6-tetraalkyl group hindered piperidiny ester of an aliphatic dicarboxylic acid ultraviolet stabilizer, the stabilizer thus being distributed uniformly throughout said paint composition and prevented from separating from said binder.

4,243,793

PREPOLYMERS FOR PHOTOCURABLE COMPOSITIONS

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

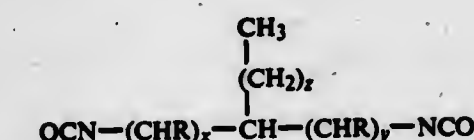
Division of Ser. No. 629,946, Nov. 7, 1975, Pat. No. 4,119,510.
This application Jul. 28, 1978, Ser. No. 929,082

Int. Cl.³ C08G 18/67

U.S. Cl. 528—75

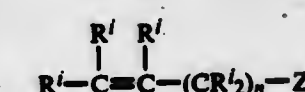
15 Claims

1. A composition formed by the reaction of
(A) an aliphatic diisocyanate having from 9 to 32 carbon atoms per molecule and at least one alkyl side-chain characterized by the formula



where each R is individually selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms; x and y are, individually, integers having values in the range of 2 to 16; z is an integer having a value in the range of 0 to 5; and the sum of (x+y) is in the range of 5 to 23; and

(B) an unsaturated compound having a maximum of 12 carbon atoms per molecule characterized by the formula



wherein each R' is individually selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms, n is an integer having a value in the range of 1 to 6, and Z is selected from the group consisting of —OH, —SH, and —NH—R'' wherein R'' is selected from the group consisting of R' and alkenyl having from 1 to 6 carbon atoms; wherein the reactant ratio of said diisocyanate (A) to said unsaturated compound (B) is about 1:2.

4,243,794

MIXTURE OF ROUGH AND SPHEROIDIZED RESIN PARTICLES

James L. White, Maplewood, and James G. Berg, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 825,925, Aug. 19, 1977, Pat. No. 4,154,871, which is a continuation of Ser. No. 612,639, Sep. 12, 1975, abandoned. This application Oct. 10, 1978, Ser. No. 949,956
Int. Cl.² C08J 3/12; C08G 59/00
U.S. Cl. 528—112



1. Resin powder for applying protective coatings, which powder consists of a mixture of resin particles which as stored are free flowing at ordinary room temperature and would pass through a screen having openings not exceeding 200 micrometers, which particles have a softening point of at least 60° C. but fuse, flow and harden quickly when heated to moderately elevated temperatures, 30–80% of the particles being rounded and at magnifications of 100 to 250X having a glossy appearance comparable to that of polished granite and correspondingly 70–20% being rough and at magnifications of 100 to 250X having a granular appearance comparable to that of rough-hewn granite, which mixture of rough and rounded particles enhances electrostatic coating operations.

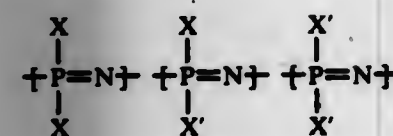
4,243,795

POLYPHOSPHAZENE COPOLYMERS CONTAINING N-SUBSTITUTED PYRROLE SUBSTITUENTS

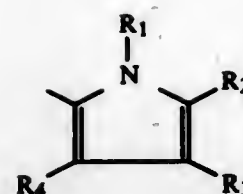
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sep. 4, 1979, Ser. No. 71,900
Int. Cl.³ C08G 83/00

U.S. Cl. 528—168

1. A polyphosphazene copolymer containing units represented by the formulas:



wherein X is the same or mixtures of different radicals represented by:



wherein R₁ is selected from the group consisting of substituted and unsubstituted alkyl and aryl radicals and R₂, R₃ and R₄ are selected from the group consisting of hydrogen and substituted and unsubstituted alkyl, alkenyl, aryl, alkoxy, aryloxy, and heterocyclic radicals; and X' is selected from the group consisting of halogen and substituted alkoxy, aryloxy, amino and mercapto radicals and mixtures thereof.

6 Claims

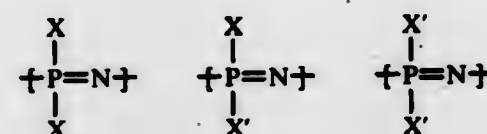
4,243,796

POLYPHOSPHAZENE POLYMERS CONTAINING SUBSTITUENTS DERIVED FROM ALDEHYDES OR KETONES

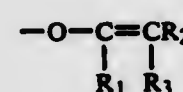
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sep. 8, 1978, Ser. No. 941,108
Int. Cl.³ C08L 83/00

U.S. Cl. 528—224

1. A method of preparing polyphosphazene polyphosphazene polymers comprised of units represented by the formulas:



wherein X is



in which R₁, R₂, and R₃ are independently selected from a group consisting of hydrogen, substituted and unsubstituted alkyl radicals containing from 1 to 15 carbon atoms, and substituted and unsubstituted cycloalkyl, aryl, arylalkyl, and heterocyclic radicals; and wherein X' is selected from a group consisting of substituted and unsubstituted alkoxy, aryloxy, mercapto and amino radicals, or mixtures thereof; said method comprising reacting a poly(dichlorophosphazene) polymer having a formula $\text{—(NPCl}_2\text{)}_n\text{—}$, where n is from 20 to 50,000 with a first compound selected from the group consisting of an aldehyde containing at least two carbon atoms, a ketone, a mixture of aldehydes or ketones, and a mixture of an aldehyde and a ketone, and a second compound selected from a group consisting of substituted and unsubstituted alkanol, aryl alcohol, amines and mercaptans or mixtures thereof, in the presence of a tertiary amine.

9 Claims

4,243,797

PROCESS FOR THE MANUFACTURE OF SOFT AND HARD RESINS OF UREA, FORMALDEHYDE AND A CH-ACIDIC ALDEHYDE, AND THEIR USE

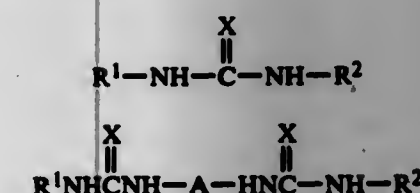
Harro Petersen, Frankenthal; Kurt Fischer, Ludwigshafen; Hans Klug, Mutterstadt; Werner Trimborn, Limburgerhof, and Horst Schmidt, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Dec. 20, 1978, Ser. No. 971,187
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757220

Int. Cl.³ C08G 12/12

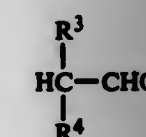
U.S. Cl. 528—239

7 Claims

1. A process for the preparation of soft and hard resins from an urea, formaldehyde and a CH-acidic aldehyde, by reacting an urea of formula (I) or (II).



where R¹ and R² are hydrogen or identical or different alkyl of 1 to 18 carbon atoms, A is alkylene of 1 to 6 carbon atoms and X is oxygen or sulfur, with formaldehyde and a CH-acidic aldehyde of formula (III).



where R³ and R⁴ are identical or different alkyl, aryl or alkyl-aryl, the urea, formaldehyde and CH-acidic aldehyde being employed in a molar ratio of from 1:2:2 to 1:4:4, at from 60° to 150° C., in the presence of an acid, wherein the product is then after treated with an alkali metal alcoholate in an anhydrous medium.

4,243,798

PROCESS FOR THE PRODUCTION OF A POLYMERIC CARBAMATE

Frederick C. Franklin, Pinole, and Robert A. Lewis, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 9, 1979, Ser. No. 65,247

Int. Cl.³ C08G 71/04

U.S. Cl. 528—371

15 Claims

1. A process for the production of a poly(oxyalkylene) carbamate comprising the steps of:

(a) contacting and mixing at a temperature of about 0° C. to about 150° C. reactant streams of poly(oxyalkylene) chloroformate and polyalkylene polyamine, wherein said polyamine contains from 2 to 10 carbon atoms and from 2 to 5 nitrogen atoms, to form a product mixture; wherein said reactant stream of chloroformate contains from 20 to 80 weight percent chloroformate in a hydrocarbon solvent, and said reactant stream of polyamine contains about 6–35 weight percent water, and the mol ratio of polyamine to chloroformate in said streams is from about 5:1 to about 45:1; and, (b) allowing said product mixture to separate at a temperature from about 20° C. to about 120° C. into two phases, a hydrocarbon phase principally comprising hydrocarbon solvent, polymeric carbamate and polyamine, and a polyamine phase principally comprising water, polyamine and polyamine hydrochloride.

4,243,799

POLYMERIZATION OF TETRAHYDROFURAN

Herbert Mueller, Frankenthal; Otto H. Huchler, Limburgerhof, and Herwig Hoffmann, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 974,118, Dec. 29, 1978, Pat. No. 4,189,566. This application May 18, 1979, Ser. No. 40,202
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801578; Jan. 17, 1978, 2801792; European Pat. Off., Jan. 8, 1979, 79100032.6; Japan, Jan. 16, 1979, 54-2312

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ C08G 65/20

U.S. Cl. 528—409

11 Claims

1. In a process for the preparation of polybutylene glycol carboxylic acid diesters of the formula



where R and R¹ are identical or different and each is alkyl, a carboxyl-containing aliphatic radical which may or may not be ethylenically unsaturated, or a carboxyl-containing aromatic radical and n is an integer from 2 to 200, by polymerizing tetrahydrofuran, wherein the tetrahydrofuran, after removal of the catalyst used in the preparation of the tetrahydrofuran, is treated, before polymerization, with a strong mineral acid, an organic sulfonic acid, silica gel and/or a bleaching earth, the treating agent is removed from the tetrahydrofuran, and the tetrahydrofuran is then polymerized in the presence of one or more carboxylic acid anhydrides and a polymerization catalyst, the improvement which comprises: using the polymerization catalyst a bleaching earth containing less than 3% by weight of water, said catalyst being arranged in a fixed bed, and passing a mixture of pretreated tetrahydrofuran and carboxylic anhydride through said fixed bed.

4,243,800

STRIPPABLE COATING RESIN FROM NITROALKANOL AND POLYAMINE

Jerry H. Hunsucker, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.
Filed Mar. 30, 1979, Ser. No. 25,641

Int. Cl.³ C08G 73/00

U.S. Cl. 528—422

4 Claims

1. A composition comprising (1) 2-amino-2-methyl-1-propanol and (2) the resinous reaction product of (a) tris(hydroxymethyl)nitromethane and (b) an aliphatic polyamine selected from the group consisting of ethylene diamine, propylene diamine, butylene diamine, hexamethylene diamine and tetraethylene pentamine, wherein the reaction is conducted in the presence of the 2-amino-2-methyl-1-propanol in a ratio of up to 1:1 per mole of nitrohydroxy compound.

4,243,801

6"-AMINO DERIVATIVES OF 4-O-AMINOGLYCOSYL-6-O-GAROSAMINYL-1,3-DIAMINOCYCLOITOLS

John J. Wright, Cedar Grove, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Jul. 12, 1979, Ser. No. 57,136

Int. Cl.³ A61K 31/71; C07H 15/22

U.S. Cl. 536—17 R

11 Claims

1. The 6"-amino derivative of a 4-O-aminoglycosyl-6-O-garosaminyl-1,3-diaminocyclitol antibacterial agent, and the pharmaceutically acceptable acid addition salts thereof.

4,243,802

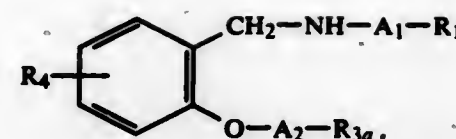
SURFACTANT-SOLUBLE CELLULOSE DERIVATIVES
Leo M. Landoll, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 6, 1979, Ser. No. 45,819
Int. Cl.³ C08B 11/193

U.S. Cl. 536-91

5 Claims

1. A cellulose ether having a sufficient degree of nonionic substitution selected from the class consisting of methyl, hydroxyethyl, and hydroxypropyl radicals to cause it to be normally soluble in water and which is further substituted with a long chain alkyl radical having 10 to 24 carbon atoms in an amount between that which renders said ether water-insoluble and about 8% by weight based on the total weight of the modified cellulose ether.



wherein R₁ is alkyl, cycloalkyl or aryl; R_{3a} is 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, or 4-alkyl-1-piperazinyl; R₄ is alkoxy; A₁ is a saturated bond or an alkylene group having 1 to 4 carbon atoms; and A₂ is an alkylene group having 2 to 5 carbon atoms; wherein alkyl and alkoxy are groups having 1 to 6 carbon atoms; cycloalkyl is a group having 3 to 7 carbon atoms; and aryl is phenyl or phenyl substituted with a halogen, alkyl, alkoxy, trifluoromethyl, nitro or amino group.

4,243,803

PRODUCTION OF 7-(2-AMINOMETHYLPHENYLACETAMIDO)-3-(1-CARBOXYMETHYLTETRAZOL-5-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

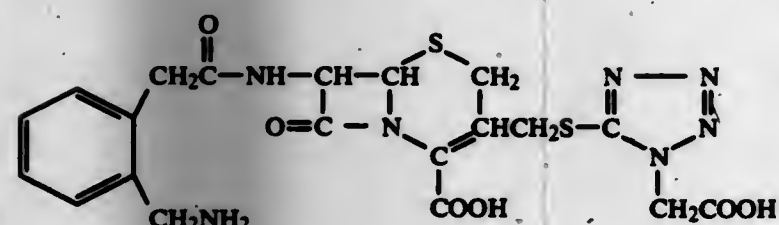
Gary M. F. Lim, and Masaki Eado, both of Candiac, Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,733
Int. Cl.³ C07D 501/04

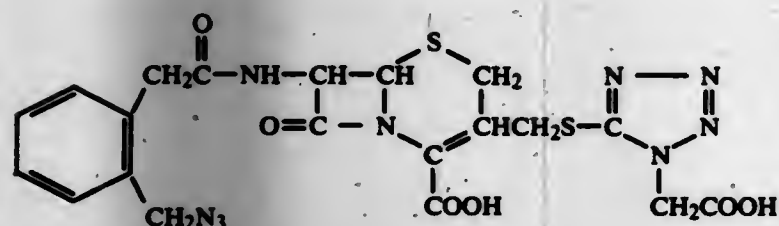
U.S. Cl. 544-26

40 Claims

1. The process for the production of the cephalosporin having the formula



which comprises the consecutive steps of
(a) mixing an aqueous solution having a pH of about 7 of the starting compound of the formula



with water-washed, neutral Raney nickel and then
(b) adding to the mixture thus formed a small molar excess compared to said starting material of a borane-amine complex and
(c) stirring the mixture at about room temperature until said starting compound has been substantially completely converted to the desired final product.

4,243,804

HETEROCYCLIC CONTAINING AMINES

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 973,197, Dec. 26, 1978, which is a division of Ser. No. 916,979, Jan. 19, 1978, Pat. No. 4,156,079. This application Apr. 30, 1979, Ser. No. 34,515

Int. Cl.³ C07D 295/12

U.S. Cl. 544-162

4 Claims

1. A compound having the formula

4,243,805

3 FLUORO-10-PIPERAZINO-8-SUBSTITUTED 10,11-DIHYDRODIBENZO(b,f) THIEPINS AND METHOD FOR THE PREPARATION THEREOF

Miroslav Protiva; Miroslav Rajsner; Karel Sindelar; Jiri Jilek; Václav Bartl; Jirina Metysova; Antonín Diabac; Leon Langsád; Josef Pomykacek, and František Mlýnský, all of Prague, Czechoslovakia, assignors to SPOFA, spol. s r. o., Prague, Czechoslovakia
Filed Dec. 22, 1978, Ser. No. 972,323

Claims priority, application Czechoslovakia, Dec. 22, 1977, 8728/77

Int. Cl.³ H61K 31/38; C07D 409/04

U.S. Cl. 544-375

7 Claims

1. 3-Fluoro-8-isopropyl-10-[4-methylpiperazino]-10,11-dihydrodibenzo(b,f)thiepin.

4,243,806

5-[4-(DIARYLMETHYL)-1-PIPERAZINYLAALKYL]BENZIMIDAZOLE DERIVATIVES

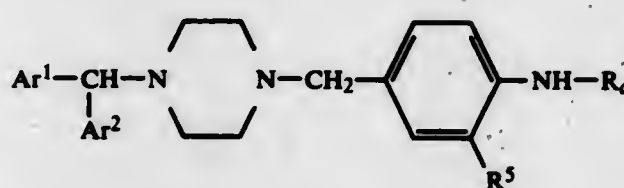
Alfons H. M. Raeymaekers, Beerse; Josephus L. H. Van Gelder, Tielen; Gustaaf M. Boeckx, Oud-Turnhout, and Lodewijk L. Van Hemeldonck, Rijkvorsel, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium
Division of Ser. No. 866,882, Jan. 4, 1978, Pat. No. 4,179,505, which is a continuation-in-part of Ser. No. 782,651, Mar. 30, 1977, abandoned. This application Jun. 13, 1979, Ser. No. 48,216

Int. Cl.³ C07D 295/06, 295/08

U.S. Cl. 544-396

9 Claims

1. A chemical compound having the formula:



wherein:

Ar¹ and Ar² are each independently selected from the group consisting of phenyl, halophenyl, (lower alkyl)phenyl, (lower alkoxy)phenyl, nitrophenyl, thienyl and pyridinyl;

R₄ is a member selected from the group consisting of hydrogen, lower alkyl, aryl(lower alkyl), hydroxy(lower alkyl), cycloalkyl and (lower alkyl)oxy(lower alkyl) wherein said aryl is selected from the group consisting of phenyl, substituted phenyl, thienyl and pyridinyl, said substituted phenyl being phenyl having from 1 to 2 substituents independently selected from the group consisting of halo, lower alkyl and lower alkoxy; and

R₅ is a member selected from the group consisting of nitro and amino.

4,243,807

4-PHENOXYMETHYL-PIPERIDINES

Walter-Gunar Friebe, Darmstadt; Max Thiel, Mannheim, both of Fed. Rep. of Germany; Kurt Stach, deceased, late of Mannheim-Waldhof, Fed. Rep. of Germany, and by Werner Plattner, administrator, Linz, Austria, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Nov. 1, 1976, Ser. No. 737,518

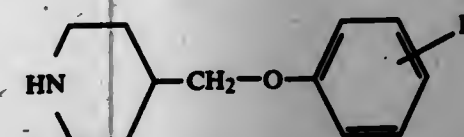
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2549999

Int. Cl.³ C07D 211/22

U.S. Cl. 546-232

12 Claims

1. A 4-phenoxyethyl-piperidine of the formula



wherein R is hydrogen, halogen, nitro, alkyl of up to 4 carbon atoms or alkoxy of up to 4 carbon atoms.

4,243,808

4-PYRIDINAMINE DERIVATIVES

Edwin T. Edington, Cookham, and Alan C. White, Windsor, both of England, assignors to John Wyeth & Brother Limited, Taplow, England

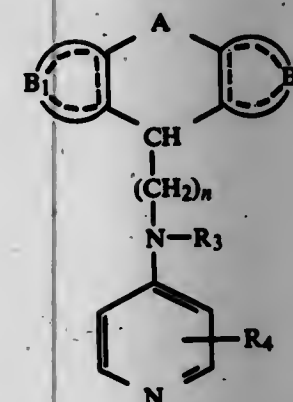
Continuation-in-part of Ser. No. 873,192, Jan. 30, 1978, Pat. No. 4,180,670. This application Jun. 22, 1979, Ser. No. 51,076
Claims priority, application United Kingdom, Feb. 2, 1977, 4354/77; Jul. 9, 1977, 28579/77

Int. Cl.³ C07D 213/38

U.S. Cl. 546-285

3 Claims

1. A compound selected from these having the formula



and their pharmaceutically acceptable acid addition salts, wherein A is alkylene of 2 to 3 carbon atoms, each of B₁ and B₂ together with the two carbon atoms attached thereto independently represents a member selected from the group consisting of phenylene; phenylene substituted by one or two substituents selected from lower alkyl, lower alkoxy, lower alkenedioxy, halogen and trifluoromethyl; R₃ and R₄ are independently selected from hydrogen and lower alkyl and n is selected from 0 to 1.

4,243,809

PROCESS FOR THE PRODUCTION OF PYRIDONE COMPOUNDS

Karl Seitz, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

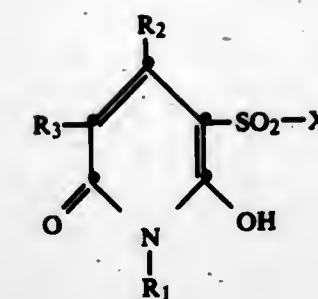
Filed Oct. 26, 1978, Ser. No. 954,820

Claims priority, application Luxembourg, Nov. 4, 1977, 78454
Int. Cl.³ C07D 213/81, 213/71

U.S. Cl. 546-291

5 Claims

1. A process for the production of a compound of the formula

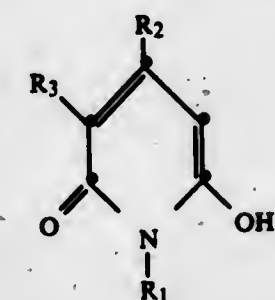


wherein

R₁ is hydrogen, alkyl of 1 to 4 carbon atoms, aminoethyl, hydroxyethyl, isopropoxypropyl, cyclohexyl or phenyl; R₂ is hydrogen, alkyl of 1 to 4 carbon atoms, methoxymethyl, sulfomethyl or phenyl unsubstituted or substituted by sulfo and methoxy;

R₃ is hydrogen or carbamoyl; and

X is alkyl of 1 to 6 carbon atoms which is unsubstituted or substituted by fluoro, chloro, bromo, alkoxy of 1 to 12 carbon atoms, phenyl or naphthyl; or is cyclohexyl, vinyl or allyl; which comprises reacting a compound of the formula



in a medium consisting of an aqueous alkaline medium having a pH of 8 to 14, with a compound of the formula

Y-SO₂-X

where Y is fluoro, chloro or bromo.

4,243,810

PYRIDONE-ACETIC ACID DERIVATIVE

Rolf Gericke; Werner Rogalski; Rolf Bergmann, all of Darmstadt; Walter Hamelster, Berlin, and Helmut Wahlg, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 503,705, Sep. 6, 1974, Pat. No. 4,153,693. This application Feb. 1, 1979, Ser. No. 8,893

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1973, 2345402

Int. Cl.³ C07D 213/78

U.S. Cl. 546-295

1 Claim

1. 3,5-Dichloro-4-pyridone-1-acetic acid.

4,243,811

2,2,4-TRIMETHYL-4-HYDROXYMETHYL-3-DICHLOROACETYL OXAZOLIDINE

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

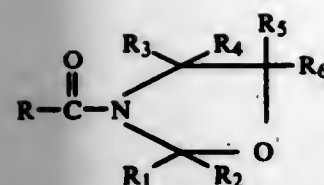
Division of Ser. No. 655,938, Feb. 6, 1976, Pat. No. 4,186,130, which is a continuation-in-part of Ser. No. 484,514, Jul. 11, 1974, abandoned, which is a continuation of Ser. No. 356,548, May 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 297,582, Oct. 13, 1972, abandoned. This application Jun. 18, 1979, Ser. No. 49,812

Int. Cl.³ C07D 263/06

U.S. Cl. 548-215

1 Claim

1. A compound having the formula



in which R is dichloromethyl, R₁, R₂ and R₃ are each methyl, R₄ is methylol and R₅ and R₆ are each hydrogen.

4,243,812

PROCESSES FOR THE PREPARATION OF GLYOXAL-2-OXIMS

Takaji Honna; Motoaki Tanaka; Syozo Yamada, and Hidekazu Miyake, all of Tokushima, Japan, assigns to Taiho Pharmaceutical Company, Tokyo, Japan

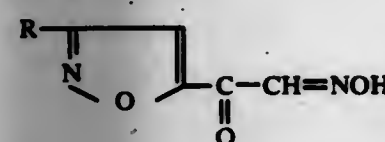
Division of Ser. No. 16,281, Mar. 2, 1979. This application Aug. 20, 1979, Ser. No. 67,889

Claims priority, application Japan, Mar. 9, 1978, 53-27300 Int. Cl.³ C07D 261/12

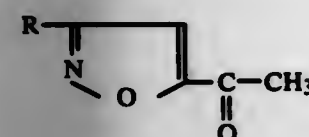
U.S. Cl. 548-248

3 Claims

1. A process for the preparation of a glyoxal-2-oxim derivative represented by the formula,



wherein R represents hydrogen, C₁₋₄ alkyl or phenyl, which comprises reacting a compound of the formula,



wherein R is defined as above, with a compound of the formula, R'ONO [IV] wherein R' represents hydrogen or lower alkyl selected from the group consisting of methyl, ethyl, propyl, butyl and amyl, at a temperature of -10° C. to 50° C.

4,243,813

SUBSTITUTED 1-SULFONYLBENZIMIDAZOLES

Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assigns to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 887,391, Mar. 16, 1978, Pat. No. 4,196,125, which is a division of Ser. No. 760,803, Jan. 19, 1977, Pat. No. 4,118,573, which is a division of Ser. No. 634,942, Nov. 24, 1975, Pat. No. 4,018,790, which is a continuation-in-part of Ser. No. 574,202, May 8, 1975, abandoned, which is a

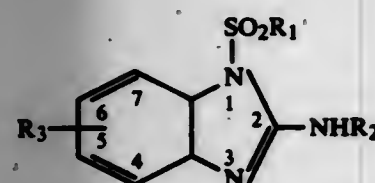
continuation-in-part of Ser. No. 484,841, Jul. 1, 1974, abandoned. This application Aug. 13, 1979, Ser. No. 66,353

Int. Cl.³ C07D 235/30, 413/12

U.S. Cl. 548-306

3 Claims

1. A compound of the formula



wherein R₁ is R₄R₅N-, wherein R₄ and R₅ are independently C₁₋₃ alkyl and when taken together with the nitrogen atom to

which they are attached, are pyrrolidino, piperidino or morpholino;

R₂ is hydrogen, formyl, acetyl or propionyl;

R₃ is hydroxymethyl, and R₃ is at the 5 or 6 position.

4,243,814

PROCESS FOR THE CHEMICAL CATALYTIC HYDROLYSIS OF AN α-AMINONITRILE OR OF ONE OF THE SALTS THEREOF

Robert Pascal, rue des Brucres Batiment F la Satem, Montpellier, France (34000); Monique Lasperas nee Marnier, Ploch 2 Baillou - Route de St-Clement, Montferrier sur Lez, France (34); Alain Roussel, 314 rue de l'Aiguillon, Montpellier, France (34000); Auguste Commeyras, Impasse des Ecoles, Clapiers, France (34170); Jacques Taillades, and Louis Mion, 477 rue d'Alco, Montpellier, France (34000)

Filed Dec. 1, 1977, Ser. No. 856,320

Claims priority, application France, Dec. 3, 1976, 76 36520

Int. Cl.³ C07D 233/26, 209/20, 207/09; C07C 99/10

U.S. Cl. 548-344

11 Claims

1. In a process for the preparation of an α-amino-acid by alkaline hydrolysis of an α-amino-nitrile or one of the salts thereof, the improvement wherein said α-amino-nitrile or salt is submitted to a chemical catalytic hydrolysis by reaction in an aqueous medium of at least one ketone therewith in the presence of hydroxide ions, the ketone being introduced into said aqueous reaction medium in a proportion of from 0.1 mole to 2 moles of ketone per mole of α-amino-nitrile, and the hydroxide ions being introduced into the aqueous reaction medium so as to attain substantially the equimolarity of the hydroxide in proportion to the starting α-amino-nitrile, and wherein, after formation of the salt of α-amino-acid, the free α-amino-acid corresponding to the starting α-amino-nitrile is extracted.

4,243,815

PREPARATION OF METHYLENE-BIS(4-PHENYLCARBAMIC ACID ESTERS)

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assigns to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 22, 1980, Ser. No. 114,362

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904917

Int. Cl.³ C07C 125/07

U.S. Cl. 560-25

6 Claims

1. A process for the preparation of methylene-bis-(4-phenylcarbamic acid esters), wherein a N-phenylcarbamic acid ester is reacted with a formaldehyde-acetal in the presence of an acid at up to 200° C.

4,243,816

PHENOL-ACETALS

Andreas Schmidt, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 739,179, Nov. 5, 1976, Pat. No. 4,134,879, which is a continuation of Ser. No. 542,632, Jan. 10, 1975, abandoned. This application Jul. 17, 1978, Ser. No. 925,067

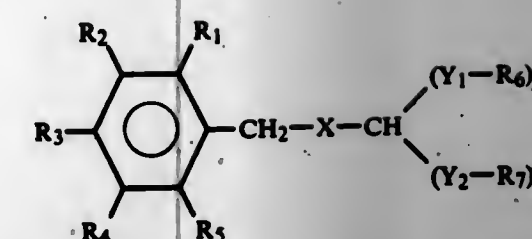
Claims priority, application Switzerland, Jan. 21, 1974, 787/74

Int. Cl.³ C07C 69/76, 65/02

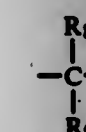
U.S. Cl. 560-60

9 Claims

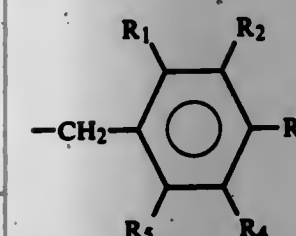
1. A compound of the formula



in which R₁ and R₅ independently of one another denote hydrogen or lower alkyl, one of R₂ and R₃ denotes hydroxyl and the other denotes alkyl, cycloalkyl or aralkyl, R₄ denotes hydrogen or, if R₃ denotes hydroxyl, additionally also denotes alkyl, cycloalkyl or aralkyl, X denotes a group



wherein R₈ is alkyl, aralkyl or phenyl and R₉ is alkyl, aralkyl, phenyl or the group



or R₉ and R₈ together are alkylene, Y₁ and Y₂ independently of one another denote oxygen or sulphur, p denotes 1 or 2, q denotes 0 or 1, with the proviso that p+q=2, and R₆ denotes hydroxycarbonylalkyl, alkoxycarbonylalkyl, cycloalkoxycarbonylalkyl, aralkoxycarbonylalkyl or aryloxy carbonylalkyl.

4,243,817

PROSTENOIC ACIDS AND ESTERS

Allan Wissner, Monsey, N.Y.; Martin J. Weiss, Oradell, and Karel F. Bernady, South Somerville, both of N.J., assigns to American Cyanamid Company, Stamford, Conn.

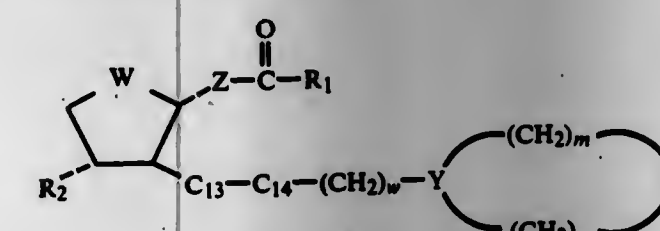
Filed Mar. 30, 1977, Ser. No. 783,032

Int. Cl.² C07C 177/00

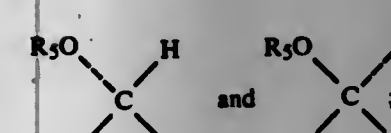
U.S. Cl. 560-62

54 Claims

1. An optically active compound of the formula:

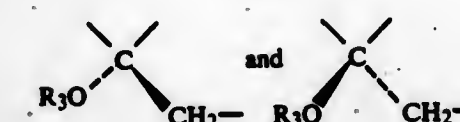


wherein W is a moiety selected from the group consisting of

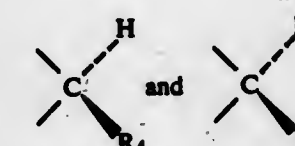


R₅ is selected from the group consisting of hydrogen, tri-(C₁₋₄)alkylsilyloxy and C₂₋₅ alkanoyl; R₁ is selected from the group consisting of hydroxy, tri-(C₁₋₄)alkylsilyloxy and C₁₋₆ alkoxy; R₂ is selected from the group consisting of hydrogen, hydroxy, tri-(C₁₋₄)alkylsilyloxy and C₂₋₅ al-

kanoyloxy; Y is a trivalent radical selected from the group consisting of a moiety of the formula



wherein R₃ is selected from the group consisting of hydrogen, tri-(C₁₋₄)alkylsilyloxy and C₂₋₅ alkanoyl; X is a divalent radical selected from the group consisting of a moiety of the formula



wherein R₄ is selected from the group consisting of C₁₋₇ alkyl, hydrogen, phenoxy and phenoxy substituted with a compound selected from the group consisting of halogen, trifluoromethyl and methoxy; n is zero or an integer from 1 to 4; m is zero or an integer from 1 to 4, with the proviso that the sum of n and m has the value of 2 to 4; the moiety C₁₃₋₁₄ is ethylene or trans-vinylene; w is zero or 1; Z is a divalent radical selected from the group consisting of a moiety of the formulae: -(CH₂)p-,



-(CH₂)t-O-CH₂- and -(CH₂)t-S-CH₂; wherein p is an integer from 5 to 7, q is an integer from 1 to 3, and t is an integer from 3 to 5; the racemic mixture thereof; and the pharmacologically acceptable cationic salts thereof when R₁ is hydrogen.

4,243,818

HIGH MOLECULAR WEIGHT PRODUCTS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

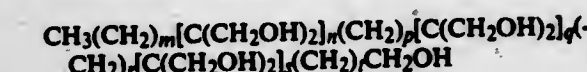
Filed Oct. 4, 1979, Ser. No. 82,183

Int. Cl.³ C07C 69/52; C09F 5/08

U.S. Cl. 560-224

9 Claims

1. The unsaturated esters of a member selected from the group consisting of an alcohol of the formula:



and a diol of the formula:



wherein n plus q plus s are integers the sum of which is from 1 to 3, k and t are 3 or greater and m through t are integers the sum of which is from 12 to 20 and h plus k are non-zero integers the sum of which is from 12 to 20.

4,243,819

SUBSTITUTED AMINO ACIDS

Clive A. Henrick, Palo Alto, and Barbara A. Garcia, Boulder Creek, both of Calif., assignors to Zeecon Corporation, Palo Alto, Calif.

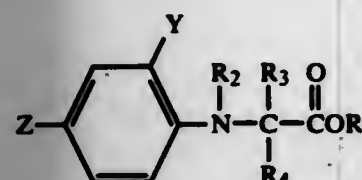
Continuation-in-part of Ser. No. 824,947, Aug. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 779,886, Mar. 21, 1977, abandoned. This application Feb. 16, 1978, Ser. No. 878,091

Int. Cl.³ C07C 101/447; A61K 31/195

U.S. Cl. 562—433

29 Claims

1. A compound of the formula:



and the salts thereof of strong organic or inorganic acids, wherein:

R is a metal cation or hydrogen;

R₂ is hydrogen, methyl or ethyl;

R₃ is isopropyl;

R₄ is hydrogen or fluoro;

Y is hydrogen, trifluoromethyl, fluoro, chloro, bromo, lower alkoxy of one to four carbon atoms, lower alkylthio of one to three carbon atoms or lower alkyl of one to four carbon atoms;

Z is lower alkyl of one to four carbon atoms, chloro, fluoro, bromo, trifluoromethyl, alkylthio having from one to four carbon atoms, lower alkylcarbonyl having one to four carbon atoms, lower haloalkylthio having from one to four carbon atoms, or cyclopropyl.

4,243,820

METHOD FOR THE PREPARATION OF CARBOXYMETHYLOXYSUCCINIC ACID

Vincent Lambert, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed May 15, 1978, Ser. No. 905,628

Int. Cl.³ C07C 59/235

U.S. Cl. 562—583

4 Claims

1. A method for the conversion of calcium carboxymethyloxysuccinate to carboxymethyloxysuccinic acid, comprising:

(a) reacting calcium carboxymethyloxysuccinate with sodium carbonate in an aqueous medium;

(b) removing the resulting precipitate of calcium carbonate from the aqueous medium to form a solution of the trisodium salt of carboxymethyloxysuccinic acid;

(c) acidifying the separated solution of the trisodium salt of carboxymethyloxysuccinic acid with sulfuric acid to form a solution of carboxymethyloxysuccinic acid;

(d) extracting the carboxymethyloxysuccinic acid from said aqueous solution with an alcoholic solvent selected from the group consisting of n-butanol, sec-butanol, isobutanol, tertbutanol, pentanol-1, pentanol-2, pentanol-3, 2-methylbutanol-2, 2-methylbutanol-3, 2-methylbutanol-4, 2,2-dimethylpropanol-1, cyclohexanol and mixtures thereof; and

(e) separating the solvent from the extracted carboxymethyloxysuccinic acid.

4,243,821

PROCESS FOR THE PREPARATION OF SYMMETRICAL DICUMYL PEROXIDES

Ronald E. MacLeay, Williamsville, and Robert T. Kazmierczak, Cheektowaga, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 13, 1979, Ser. No. 75,356

Int. Cl.³ C07C 179/06

U.S. Cl. 568—561

5 Claims

1. A process for preparing symmetrical dicumyl peroxides which process consists essentially of:

(a) reacting an olefin, a reactive organic halide and aqueous hydrogen peroxide under relatively non-aqueous conditions in the absence of a free acid and in the presence of a phenol catalyst at a temperature in the range of 10°–50° C. where,

(b) said olefin is α -methylstyrene or a substituted α -methylstyrene where the substituents are inert groups substituted on the phenyl ring of the α -methylstyrene and is selected from alkyl of 1 to 6 carbons, Cl-, Br-, F-, aryl of 6 to 12 carbons, alkoxy of 1 to 5 carbons or aryloxy of 7 to 10 carbons,

(c) said reactive halide is t-cumyl chloride or t-cumyl bromide or a substituted t-cumyl chloride or t-cumyl bromide where the substituents are inert groups substituted on the phenyl ring of the t-cumyl halide and the reactive halide is the addition product of hydrogen chloride or hydrogen bromide to the particular olefin employed,

(d) said aqueous hydrogen peroxide is an aqueous solution containing from about 25% to 98% hydrogen peroxide and such that the total amount of water in the reaction system is not above 20%,

(e) said phenol catalyst is phenol or naphthol, a mono substituted phenol or naphthol or a di or tri substituted phenol or naphthol where the phenol or naphthol is not substituted simultaneously in the 2 and 6 positions where the substituents are inert groups selected from alkyl of 1 to 6 carbons, alkoxy of 1 to 6 carbons, aryloxy of 6 to 10 carbons, Cl-, Br-, F-, or aryl of 6 to 10 carbons,

(f) the mole ratio of olefin to hydrogen peroxide is in the range 0.5:1 to 5:1 and,

(g) the reactive halide is charged in an amount of about 5–15 mole percent based on the olefin charged.

4,243,822

PROCESS FOR THE MANUFACTURE OF 4,4'-DIHYDROXYDIPHENYL

Walter R. Demler, Hamburg; Krishen L. Nagpal, Williamsville; Richard M. Dollard, W. Seneca; Eugene Odia, Williamsville, and Donald T. Donahue, Kenmore, all of N.Y., assignors to Buffalo Color Corporation, West Paterson, N.J.

Filed Aug. 31, 1979, Ser. No. 71,572

Int. Cl.³ C07C 4/02, 2/58

U.S. Cl. 568—769

44 Claims

1. In a process for the preparation of the alkali metal salt of 4,4'-dihydroxydiphenyl by fusion reaction of an alkali metal hydroxide with an alkali metal diphenyldisulfonate, the improvement which comprises providing a total of from 4 to less than 6 moles of hydroxide to the fusion per mole of alkali metal diphenyldisulfonate provided to the fusion said fusion being free from additives to enhance fluidity.

4,243,823

2,6,6-TRIMETHYL- α -(ISO)PROPENYL-1-CYCLOHEX-ENE-1-METHANOLS AND -1,3-CYCLOHEXADIENE-1-METHANOLS AND ORGANOLEPTIC USES THEREOF

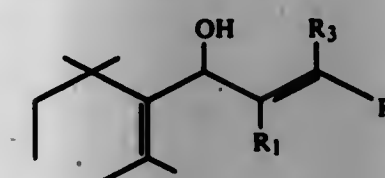
Richard A. Wilson, Westfield; William L. Schreiber, Jackson; Braja D. Mookherjee, Holmdel, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Joaquin F. Vinals, Red Bank, N.J.; Manfred H. Vock, Locust, N.J.; Gilbert Stork, Englewood, N.J., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 15, 1979, Ser. No. 39,361

Int. Cl.³ C07C 33/14

U.S. Cl. 568—824

1. The compound having the structure:



wherein one of R₁, R₂ or R₃ is methyl and the other two of R₁, R₂ and R₃ represents hydrogen; wherein the dashed line represents a carbon-carbon double bond or a carbon-carbon single bond with the proviso that when R₁ is hydrogen, the dashed line represents a carbon-carbon double bond.

4,243,824

ZERO-VALENT RHODIUM CATALYST HYDROGENATION

Jan G. Noltes, Huis Ter Heide; Gerard van Koten, Bilthoven, both of Netherlands, and Murray S. Cohen, Convent Station, N.J., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 10,459, Feb. 8, 1979, which is a continuation-in-part of Ser. No. 827,278, Aug. 24, 1977, Pat. No. 4,152,303. This application Oct. 25, 1979, Ser. No. 88,242

Int. Cl.³ C07C 5/08; C07N 5/03

U.S. Cl. 585—259

2 Claims

1. A process for the hydrogenation of aromatic, olefinic and acetylenic compounds comprising treating such compounds with hydrogen in the presence of a zero-valent rhodium catalyst prepared by a process comprising reacting a hydrocarbyl-lithium compound with a rhodium halide complex of the formula Rh X_aL_b where X is a chlorine or bromine, L is an olefinic hydrocarbon ligand, a is 1–3 and b is 1–4 in a hydrocarbon solvent.

4,243,825

DEHYDROCOUPLING OF TOLUENE

Alex N. Williamson, Greensboro, N.C., and Samuel J. Tremont, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,930

Int. Cl.³ C07C 2/72

U.S. Cl. 585—428

17 Claims

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 450° C. and about 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:



where M¹ is thallium and M² is at least one element selected from arsenic, antimony, thorium, uranium, the lanthanides, Groups 3b, 4b, 5b, and 7b of the Periodic Table of the Elements, and mixtures thereof, and wherein a is 1, b is 0.01 to 10, and x is a number taken to satisfy the average valences of M¹ and M² in the oxidation states in which they exist in the composition to yield the dehydrocoupled toluene product.

4,243,826

HYDROCARBON DEHYDROGENATION WITH A NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 936,428, Aug. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 786,744, Apr. 11, 1977, Pat. No. 4,110,201, which is a division of Ser. No. 621,718, Oct. 14, 1975, abandoned. This application Aug. 16, 1979, Ser. No. 67,084

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.³ C07C 5/41

U.S. Cl. 585—434

21 Claims

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at hydrocarbon dehydrogenation conditions, with a nonacidic catalytic composite consisting essentially of a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.1 to about 5 wt. % alkali metal or alkaline earth metal and about 0.01 to about 5 wt. % cadmium; wherein the platinum group, catalytically available cobalt, cadmium, and alkali or alkaline earth components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the cadmium and alkali or alkaline earth components are present in an oxidation state above that of the corresponding elemental metal; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under the hydrocarbon dehydrogenation conditions or in a mixture of these states.

4,243,827

PROCESS FOR THE CONVERSION OF AROMATIC HYDROCARBONS

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 6, 1979, Ser. No. 28,015

Int. Cl.³ C07C 2/70

U.S. Cl. 585—463

16 Claims

1. A process for the catalytic conversion of an aromatic hydrocarbon comprising contacting the aromatic hydrocarbon with a reactant in the presence of a catalyst which contains ESR active Ti³⁺ species and is prepared by subjecting alumina to anhydrous tetravalent titanium fluoride complexes of an organic compound selected from the group of organic compounds containing at least one methoxy group per molecule or organic compounds having at least one electron donor atom and double bond per molecule, and heat treating the resulting impregnated alumina in an inert atmosphere, and recovering a converted aromatic hydrocarbon as a product of the process.

4,243,828

ALKYLATION OF AROMATICS USING A HIGH SILICA ZEOLITE

George T. Kerr, Lawrenceville; Charles J. Plank, Woodbury, and Edward J. Rosinski, Pedericktown, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 752,227, Dec. 20, 1976, abandoned, which is a division of Ser. No. 546,863, Feb. 3, 1975, Pat. No. 4,011,278, which is a continuation of Ser. No. 296,370, Oct. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 821,980, May 5, 1969, abandoned, which is a continuation-in-part of Ser. No. 494,846, Oct. 11, 1965, Pat. No. 3,442,795, which is a continuation-in-part of Ser. No. 261,494, Feb. 27, 1963, abandoned. This application Jun. 5, 1978, Ser. No. 912,649

Int. Cl.³ C07C 2/68, 37/12

U.S. Cl. 585—467

11 Claims

1. In the process of alkylating a ring alkylatable monocyclic aromatic compound with an aliphatic organic compound reac-

tive with said alkylatable aromatic compound through at least one unsaturated carbon atom therein to produce the alkylation reaction product thereof by contacting such at a temperature of about 70° to 1400° F. with a solid crystalline aluminosilicate zeolite acidic catalyst having a pore size sufficient to permit diffusion of said reactant aromatic and aliphatic compounds thereto; the improvement which comprises utilizing as said catalyst a chelated zeolite Y having a silica to alumina ratio greater than 10 to 1.

4,243,829

PRODUCTION OF 1,7-OCTADIENE FROM BUTADIENE
Charles U. Pittman, Jr., Department of Chemistry, Box H, University of Alabama, University, Ala. 35486, and Ronald Hanes, Athens, Ga., assignors to Charles U. Pittman, Jr., University, Ala.

Filed Oct. 4, 1976, Ser. No. 729,465

Int. Cl.³ C07C 11/12

U.S. Cl. 585—511

15 Claims

1. A process for preparing 1,7-octadiene which comprises dimerizing butadiene in the presence of a catalytic amount of palladium acetate and a tertiary phosphine, a tertiary amine, formic acid and a solvent in an amount sufficient to maintain the catalyst, tertiary amine, formic acid and butadiene in solution wherein:

the molar ratio of the tertiary amine to the formic acid is 1:1-2;

the mole ratio of tertiary phosphine to palladium is at least 1; the amount of tertiary amines present is such that the pH of the reaction medium is from about 7.5 to 10.5; and

the solvent is at least one member selected from the group consisting of aromatic hydrocarbons, lower alkyl substituted aromatic hydrocarbons, halogenated aromatic hydrocarbons, halogenated lower aliphatic hydrocarbons, nitriles, amides, diether alkyl ethers, lower alkyl phenyl ethers, cyclic ethers, diethers, lower alkyl esters or lower alkanolic acids, ketones, and lower alkanols.

4,243,830

ALKYLATION PROCESS

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 899,601, Apr. 24, 1978, Pat. No. 4,167,535. This application Aug. 27, 1979, Ser. No. 69,682

Int. Cl.³ C07C 2/56, 2/58

U.S. Cl. 585—717

11 Claims

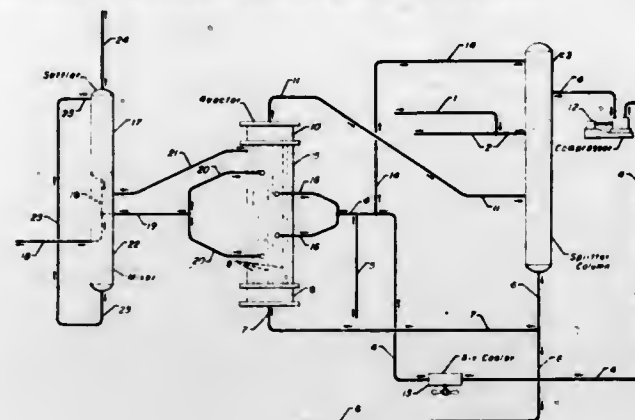
1. A process for the acid catalyzed alkylation of an isoparaffin with an olefinic feedstock which comprises the steps of:

(a) admixing an olefinic feedstock with an isoparaffin-containing paraffinic feedstock;

(b) separating said mixture in a fractionation means at conditions of temperature and pressure to provide (i) an isoparaffin-olefin fraction having an isoparaffin/olefin mole ratio of from about 1:1 to about 10:1, and (ii) a higher

boiling, substantially liquid, olefin-containing normal paraffin fraction which is vaporous at about 60° F. under atmospheric pressure conditions;

(c) increasing the pressure and reducing the temperature of said isoparaffin-olefin fraction, and reacting said fraction in admixture with a hydrofluoric acid catalyst in a reaction vessel at alkylation reaction conditions selected to produce a normally liquid alkylate product;



(d) introducing at least a portion of said olefin-containing normal paraffin fraction into indirect heat exchange means within said reaction vessel, and vaporizing said fraction in said heat exchange means via indirect heat exchange with the warm reaction mixture of step (c); and

(e) recovering the normally liquid alkylate product of step (c).

4,243,831

REMOVAL OF PEROXIDES AND COLOR BODIES FROM INTERNAL OLEFINS BY SOLID ADSORBENTS

Thomas P. Malloy, Lake Zurich, and George W. Lester, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 30, 1979, Ser. No. 62,097

Int. Cl.³ C07C 7/12

U.S. Cl. 585—824

2 Claims

1. A process for reducing the peroxide number and color of internal aliphatic olefins possessing a carbon content of from about 8 carbon atoms to about 20 carbon atoms which process comprises contacting said internal aliphatic olefins with an adsorbent selected from the group consisting of charcoal, alumina, silica, diatomaceous earth, montmorillonite clays and kaolin minerals at a temperature of from about 10° C. up to about 80° C., wherein said adsorbent is present in a quantity by weight of from about 0.5% to about 10% per unit weight of said internal aliphatic olefins and separating said internal aliphatic olefins of reduced peroxide number and improved color from said adsorbent.

ELECTRICAL

4,243,832

ELECTRIC ARC FURNACES

Charles H. Parsons, Benoni, and Badenhorst H. Casper, Verwoerd Park Extension 3, both of South Africa, assignors to Infurnaco (Proprietary) Limited, Transvaal, South Africa

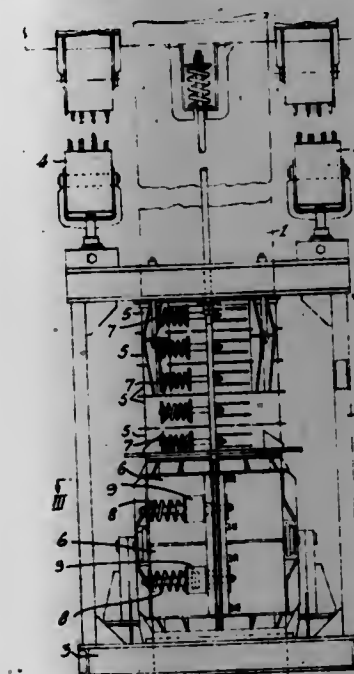
Filed Mar. 8, 1979, Ser. No. 18,799

Claims priority, application South Africa, Mar. 9, 1978, 78/1382

Int. Cl.³ H05B 7/1 01

U.S. Cl. 13—16

5 Claims



1. Electrode support gear for an electric arc furnace incorporating a consumable electrode including frame support means, first clamping means mounted on the frame support and incorporating springs biasing the clamping means into clamping association with the electrode whereby the electrode is supported against movement under gravity, power operated second clamping means movable into or out of clamping association with the electrode, and a power operated lever arm also mounted on the frame support and adapted for raising and lowering the said second clamping means, the power operated lever and second clamping means being operable in a first sequence to effect electrode advance and in a second sequence to effect electrode retraction by slipping the electrode in relation to the first clamping means.

4,243,833

CARBON ELECTRODE FOR ARC LAMP

Nagaichi Suga, 2 Toyama-cho, Shinjuku-ku, Tokyo, Japan

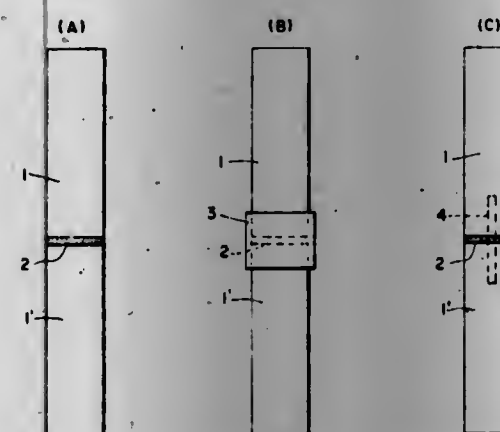
Filed Jul. 2, 1979, Ser. No. 55,197

Claims priority, application Japan, Apr. 13, 1979, 54-044187

Int. Cl.³ H05B 31/08, 7/07

U.S. Cl. 13—18 C

8 Claims



1. A carbon electrode for an arc lamp employed in weathering tests which comprises a plurality of carbon rods joined together lengthwise by the use of an adhesive, said adhesive

comprising a metal powder, a binder resin bondable to carbon and a solvent for said resin,

said adhesive increasing in resistance with increasing temperature so as to compensate for the decrease in resistance with reduction in length of said electrode as it is consumed, whereby a stable spectral distribution is emitted.

4,243,834

CABLE CLOSURE REHABILITATION APPARATUS

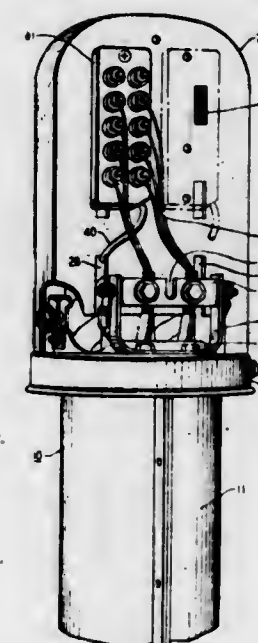
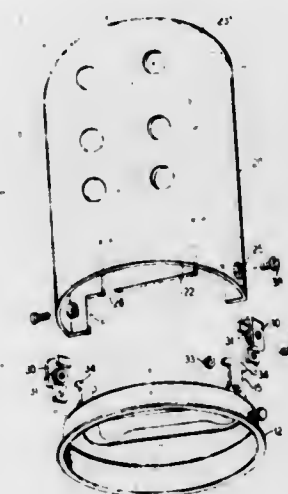
John W. Logioco, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 12, 1979, Ser. No. 2,989

Int. Cl.³ H02G 9/02

U.S. Cl. 174—38

10 Claims



1. In combination:
a pedestal cable closure including
a base member;
first and second preselected numbers of cable conductors supported on said base member;
a cover, affixable to said base member, for enclosing said cable conductors; and
means for converting said pedestal cable closure from a ready access configuration to a limited access configuration, said converting means including
a hoodlike member having
a planar sidewall;
a curved sidewall, vertical edges of which are integrally joined to vertical edges of said planar sidewall;
a truncated semispherical cap, edges of which are integrally joined with top edges of said planar sidewall and said curved sidewall; and
a pair of spaced-apart oppositely directed recesses in

said curved sidewall, said recesses positioned near the points of juncture of said vertical edges of said curved sidewall with said vertical edges of said planar sidewall; and

means, juxtaposed said recesses, for securing said hoodlike member to said base member under said cover such that access to said first preselected number of cable conductors by an unauthorized craftsman is inhibited, said securing means comprising

a hooklike-shaped mounting bracket having one end thereof adapted for affixation to said base member, said bracket having affixed thereto in a central region a threaded member; and

threaded means, extendable through and sealable in said oppositely directed recesses, for engaging said mounting bracket threaded member such that said hooklike member is securable to said base member.

9. Apparatus for converting a pedestal cable closure from a ready access configuration to a limited access configuration, said apparatus having component parts capable of being assembled in the field to a base of said pedestal cable closure, said apparatus comprising the combination of:

a hoodlike member having a planar sidewall; a curved sidewall, vertical edges of which are integrally joined to vertical edges of said planar sidewall; a truncated semi-spherical cap, edges of which are integrally joined with top edges of said planar sidewall and said curved sidewall; and a pair of spaced apart oppositely directed recesses in said curved sidewall, said recesses positioned near the points of juncture of said vertical edges of said curved sidewall with said vertical edges of said planar sidewall;

a hooklike-shaped mounting bracket having one end thereof adapted for affixation to said pedestal cable closure base, said bracket having affixed thereto in a central region a threaded member; and

threaded means, extendable through and sealable in said oppositely directed recesses, for engaging said mounting bracket threaded member such that said hoodlike member is securable to said pedestal cable closure base.

4,243,835

NON-RIGID MECHANICAL COUPLING FOR A FIRE-RATED FEED-THROUGH FITTING AND METHOD OF MAKING

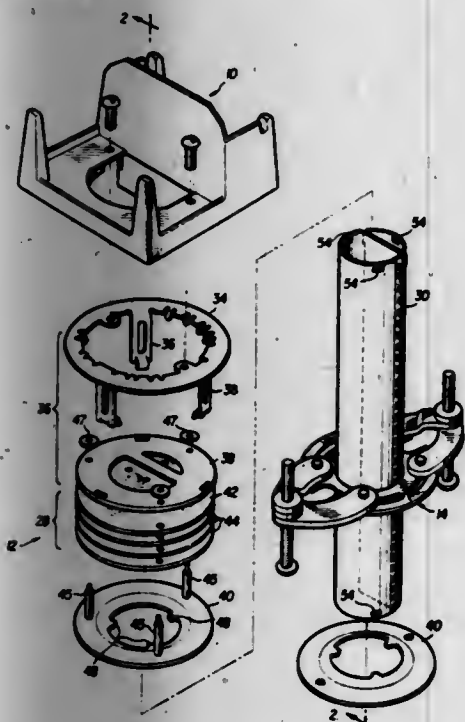
Alfred L. Ehrenfels, Cheshire, Conn., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Filed Jan. 15, 1979, Ser. No. 48,824

Int. Cl.³ H02G 3/22

U.S. Cl. 174-48

8 Claims



1. In a fire-rated feed-through fitting for transferring insulated wires through a conduit disposed in a circular opening formed in a floor of a building by which electrical power and other signals are transmitted from a source located at one face of said floor via said wires, through said fitting mounted in said opening to respective circuits connected to said wires and mounted on a head assembly disposed on the opposite face of said floor, an improved non-rigid joint for loosely mechanically coupling said head assembly to said conduit, comprising:

at least one conduit flange having a peripheral portion coupled to said head assembly, said peripheral portion circumscribing an aperture having an outline shaped in correspondence to the cross-sectional dimensions of said conduit, but larger than the conduit, and plural tabs integrally formed with said peripheral portion and extending radially inwardly into said aperture at approximately common intervals around the circumference of said aperture; and

said conduit having a plurality of slots formed in the vicinity of one end of the conduit, said slots spaced substantially in a common transverse plane at intervals corresponding to the spacing intervals of said conduit flange tabs; and wherein said tabs extend into said conduit slots and are loosely retained therein, holding said conduit and head in assembled relationship via said conduit flange, with the peripheral portion of the flange held spaced from the conduit by limited spaced contact between the tabs and slots, thus significantly reducing thermal conductivity between the conduit, flange and head assembly.

4,243,836

DIGITAL AUTOSTART CIRCUIT

James A. Scharfe, Jr., P.O. Box 338, South Pasadena, Calif. 91030

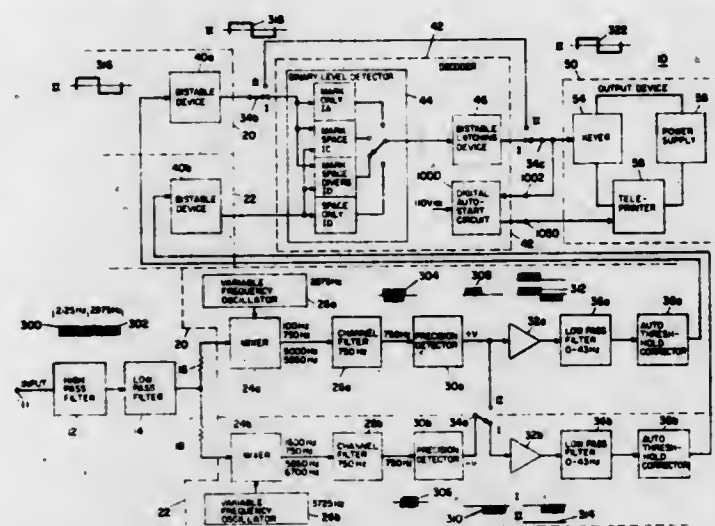
Continuation of Ser. No. 962,762, Nov. 21, 1978, abandoned.

This application Aug. 16, 1979, Ser. No. 67,169

Int. Cl.³ H04L 7/10; H04M 11/00

U.S. Cl. 178-4.1 R

44 Claims



1. An autostart circuit for energizing an output device in response to at least one Space character in a series of signals representative of information characters, the information characters including groups of information characters each separated from other such groups by Space characters, each said information character and Space character having the same number of bits and a unique combination of binary states, said autostart circuit comprising:

- means for sensing the reception of each Space character; and
- means for generating a first output signal in response to at least one sensed Space character for energizing the output device.

4,243,837

TELEPHONE TRANSMISSION INSTALLATION BETWEEN INTERLOCUTORS IN A NOISY ENVIRONMENT

Philippe P. Bartholon, Boulogne-Billancourt, France, assignor to Electronique Marcel Dassault, Paris, France

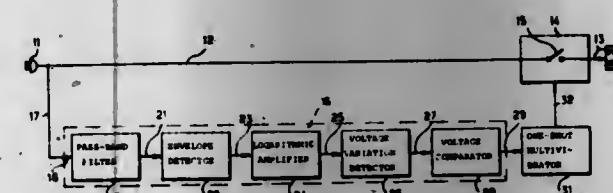
Filed Aug. 15, 1978, Ser. No. 933,917

Claims priority, application France, Aug. 18, 1977, 77 25338

Int. Cl.³ H04M 1/19

U.S. Cl. 179-1 VC

15 Claims



1. A speech detection device having an input receiving an electrical signal comprising noise and/or speech signals and an output assuming a first state when said electrical signal consists of said noise signal and a second state when said electrical signal comprises said speech signal, said device comprising: a first band-pass filter having an input linked to said input of said device and an output, a rectifier means having an input and an output, a logarithmic amplifier with an input and an output, a second band-pass filter with an input and an output, said rectifier means having its input linked to said output of said first band-pass filter and its output linked to said input of said logarithmic amplifier, said second band-pass filter having its input linked to said output of said logarithmic amplifier and its output linked to said input of said voltage comparator, the output of said voltage comparator being linked to said device output.

4,243,838

STIFFNESS VARIATION DEVICE

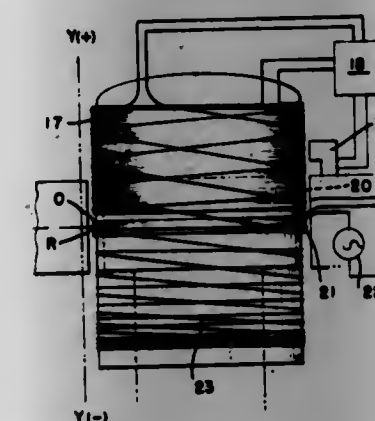
Dennis K. Coffey, 2220-1 Elba St., Durham, N.C. 27705

Continuation of Ser. No. 818,094, Jul. 22, 1977, abandoned. This application Aug. 23, 1978, Ser. No. 936,282

Int. Cl.³ H04M 1/00; H04R 9/00

U.S. Cl. 179-1 F

17 Claims



1. An electromechanical apparatus for reducing stiffness comprising: a magnetic flux generating means having a magnetic gap, a current producing means, a group of windings displaceable relative to said flux generating means and cut by magnetic flux of said flux generating means, said group of windings including a first helically wound coil which is densely wrapped at one end and is more loosely wrapped at the opposite end, said first coil conducting an electrical current component for producing in conjunction with said flux generating means an electrodynamic first force in an axial direction on said group of windings which tends to pull the more densely wrapped end of said first coil into said gap, said group of windings including a second coil, said second coil producing a second force acting on said group of windings and directed opposite said first force, said first force increasing with displacement of said group of windings relative to said flux gener-

ating means in the direction of said first force, said first force and said second force opposing each other, and including at least one member having stiffness acting on said group of windings whereby the stiffness of said stiffness member is reduced.

4,243,839

TRANSDUCER WITH FLUX SENSING COILS

Kenichi Takahashi; Tatsuo Fukuyama, both of Kyoto; Takafumi Ueno, Moriguchi; Yasuomi Shimada, Hirakata, and Shinichiro Ishii, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

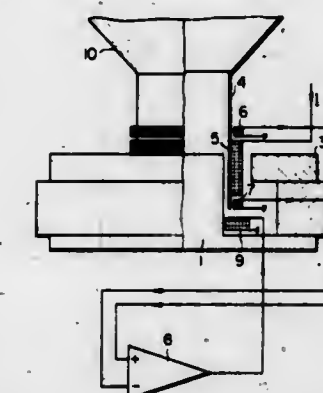
Filed Dec. 12, 1978, Ser. No. 968,679

Claims priority, application Japan, Dec. 14, 1977, 52-150799; Dec. 14, 1977, 52-150800

Int. Cl.³ H04R 9/06

U.S. Cl. 179-1 F

14 Claims



1. In a transducer of the type wherein a bobbin about which a main coil is wound is movably mounted between a pole piece and a plate and the inter-conversion is effected from the current flowing through the main coil to the movement of the bobbin or vice versa, the improvement which comprises upper and lower magnetic flux sensing coils for detecting magnetic flux across the upper and lower end surfaces of said main coil, respectively, a feedback coil, said sensing coils and feedback coil being disposed in a magnetic circuit comprises of said pole piece, plate and main coil, and means for applying a difference between induced electromotive forces or output currents induced thereby in said upper and lower magnetic flux sensing coils to said feedback coil through an amplifier.

4,243,840

LOUDSPEAKER SYSTEM

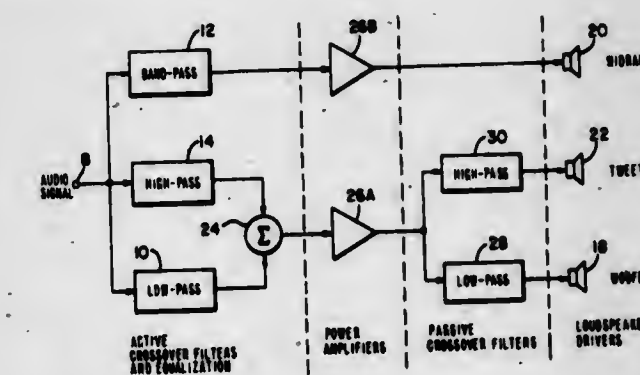
James M. Kates, Andover, Mass., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 22, 1978, Ser. No. 972,248

Int. Cl.³ H04R 3/14

U.S. Cl. 179-1 D

12 Claims



1. A loudspeaker system comprising: a first filter network for dividing the signal energy of an input audio signal into at least three frequency ranges, two

of said frequency ranges being separated by at least the third frequency range;
 means for summing at least the signal energy in said two frequency ranges so as to produce a first component signal, the signal energy in said third frequency range forming at least a part of a second component signal;
 amplification means for independently amplifying said first component signal and said second component signal;
 means including a second filter network for dividing the signal energy of the amplified component signals into at least three output signals, respectively including the signal energy in said frequency ranges; and
 a plurality of speaker drivers connected respectively to be driven by said output signals.

4,243,841

DIGITALLY ACTIVATED COIN CONTROL CIRCUIT

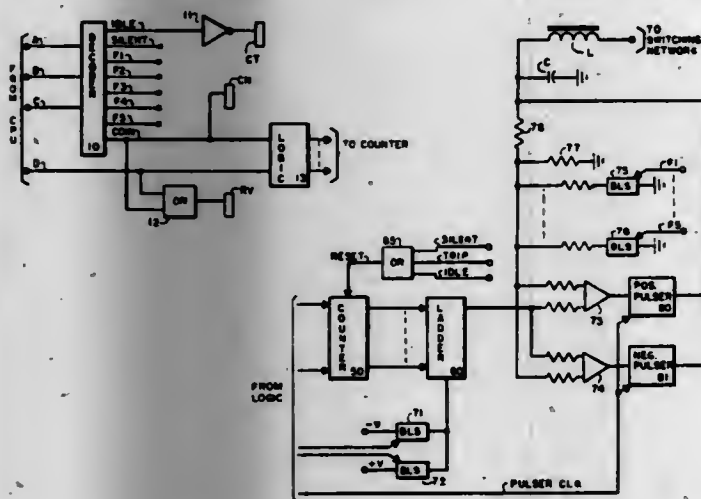
John S. Young, Scottsdale, Ariz., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 24, 1979, Ser. No. 78,414

Int. Cl.³ H04M 17/00

U.S. Cl. 179-6.3 R

8 Claims



1. A digitally activated coin control circuit for use in combination with a digitally activated ringing circuit for common manipulation of a prepaid coin station to collect and alternatively to refund deposited coins, said coin control circuit connected between a telephone central processor and a telephone switch network operated in response to binary coded signals from said telephone central processor to produce direct current signals of a first, a second and a third characteristic, said signals of said first and second characteristics for performing said coin collection and alternatively said coin refund operations, said coin control circuit comprising:

decoding means connected to said telephone central processor and operated in response to said binary coded signal to detect whether a coin control operation is required and further operated to detect which of said particular coin control operations is required;

circuit logic means connected to said decoding means and operated in response to said detection of said required coin control operation to produce a first output signal and a second output signal;

counting means connected to said circuit logic means and operated in response to said first output signal to produce a plurality of output signals representative of said first output signal;

circuit switching means connected to said circuit logic means and operated in response to said second output signal to produce a sign output of a first characteristic and alternatively of a second characteristic;

resistive network means connected to said counting means and to said circuit switching means, operated in response to said sign output signal of a first characteristic and alternatively operated in response to said sign output signal of a second characteristic to transmit said sign output signal; said resistive network means further operated in response to

said plurality of output signals to sum said plurality of signals to produce a single signal representative of said direct current signal of a first characteristic and alternatively to produce a single signal representative of said direct current signal of a second characteristic; and
 circuit coupling means connected between said resistive network means and said telephone switching network, and operated in response to said single signal representative of said direct current signals of said first and alternatively of said second characteristic and said sign output signal to transmit a final output signal to said telephone switching network whereby said prepaid coin station is operated to collect a deposited coin and alternatively operated to refund a deposited coin.

4,243,842

TELEPHONE LINE CIRCUIT

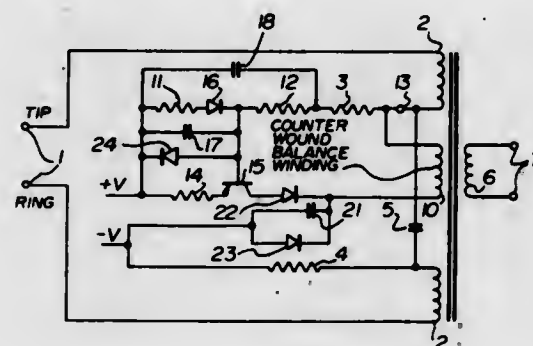
William D. Gibb, Belleville, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 24, 1979, Ser. No. 32,866

Int. Cl.³ H04Q 1/28

U.S. Cl. 179-18 FA

10 Claims



1. A line circuit for supplying an energizing current to a communication line, comprising:

a transformer having a split primary winding for conducting the energizing current and a balance winding connected in series with and poled opposite to the split primary winding;

a current regulator connected in series combination with the balance winding for conducting a fraction of the energizing current through the balance winding;

means connected in parallel across the series combination of the balance winding and the current regulator for conducting the remainder of the energizing current; whereby the direct current flux associated with the energizing current in the split primary winding is reduced by the flux associated with the current in the balance winding.

4,243,843

COARSE POSITION DIGITIZER

Richard T. Rocheleau, Danbury, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.

Filed Feb. 22, 1979, Ser. No. 14,137

Int. Cl.² G06C 21/00

U.S. Cl. 178-19

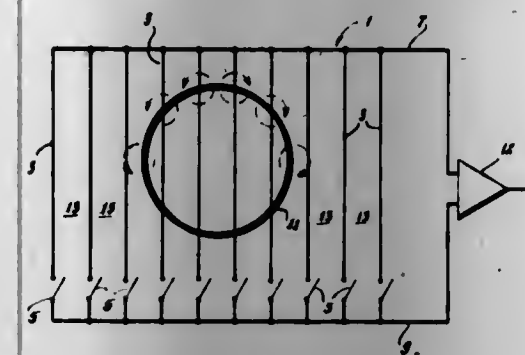
11 Claims

1. Apparatus for determining the distance of a point on a surface from an axis on said surface comprising a cursor having a magnetisable element adapted to be energized by an alternating voltage,

a grid of substantially parallel spaced conductors, said cursor being movable thereover and inductively coupled thereto, means for sequentially enabling only one of said conductors to conduct a current induced by said alternating voltage at any one time,

means for comparing percentages of the amplitudes of currents induced in successively enabled conductors, means for sensing a change in the phase of said induced

current, and means responsive to said comparing means and said sensing means for counting the number of con-



ductors which have been enabled at the time a phase change is sensed.

4,243,844

HOLD CIRCUIT FOR TELEPHONE SYSTEM

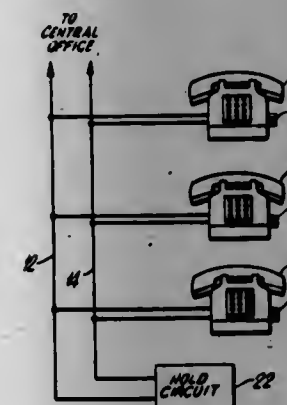
Herbert H. Waldman, 1739 52nd St., Brooklyn, N.Y. 11204

Filed Sep. 19, 1978, Ser. No. 943,679

Int. Cl.³ H04M 1/00

U.S. Cl. 179-81 R

51 Claims



1. A telephone line hold circuit connected with a telephone line and at least one telephone instrument connected to said telephone line for establishing a hold condition on the telephone line, said telephone instrument having an on-hook state and an off-hook state, said telephone instrument including switch means for imposing an electronic actuating signal onto said telephone line independent of said hold circuit upon manual actuation of said switch means, said hold circuit comprising, in combination, responsive means and line-seizure means, said actuating signal causing said responsive means to produce an output voltage, said output voltage affecting activation of said line-seizure means to seize said telephone line for establishing said hold condition, and said manual actuation of said switch means being operative to affect said hold condition only in said off-hook state.

4,243,845

REPERTORY TELEPHONE DIALING APPARATUS

Martin H. Feinberg, Montvale; John DeFilippis, South Amboy, and Ting W. Wong, Ocean Port, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,540

Int. Cl.³ H04M 1/274

U.S. Cl. 179-90 B

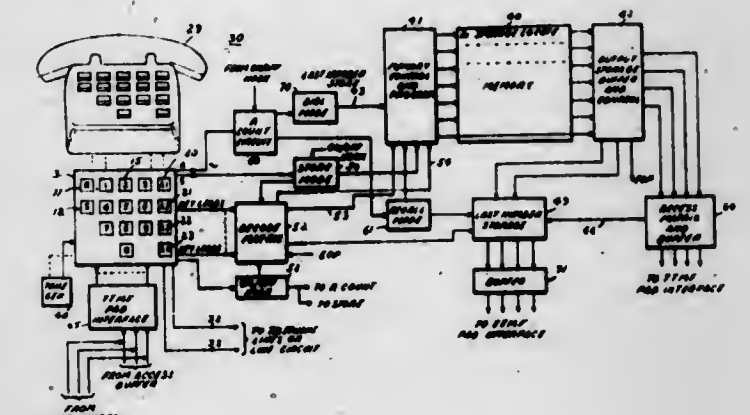
9 Claims

1. A repertory dialing system for a telephone subset comprising:

a keyboard array having a first set of 0 to 9 digit keys, a second set of digit keys, and an R key and an S key, memory means having a plurality of accessible storage loca-

tions, each one capable of having stored therein a plurality of digits indicative of a telephone number, first control means coupled to said memory means and responsive to the operation of said S key and the selection of either at least one of said first digit keys or one of said second digit keys to cause said memory to store, at a selected location indicative of said selected digit key or keys, a telephone number subsequently dialed by said first digit keys,

second control means coupled to said memory and responsive to a single operation of said R key and the selection of either at least one of said first digit keys or one of said second digit keys to cause said memory to retrieve a stored telephone number from a location indicative of said selected digit key or keys,



signal generating means responsive to said number as retrieved to generate a signal capable of transmission via a telephone line and indicative of said telephone number, additional memory means operative to store therein a telephone number dialed solely by the operation of said first digit keys,

logic means coupled to said additional memory means and responsive to the multiple operation of said R key to cause said additional memory means to retrieve said telephone number as stored, and

means for coupling said logic means to said signal generating means to generate another signal indicative of said dialed telephone number as stored in said additional memory means whereby the last number dialed by said first digit keys is always stored in said additional memory means.

4,243,846

PUSHBUTTON SWITCH ASSEMBLY FOR TELECOMMUNICATIONS AND OTHER INPUT APPARATUS

George V. Lenserts, London; Roger Perks, Kanata, and Phillip J. Dudley, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 5, 1979, Ser. No. 9,656

Int. Cl.³ H04M 1/50; H01H 3/12

U.S. Cl. 179-90 K

11 Claims

1. A pushbutton switch assembly comprising:

a steel sheet circuit member having upper and lower surfaces;

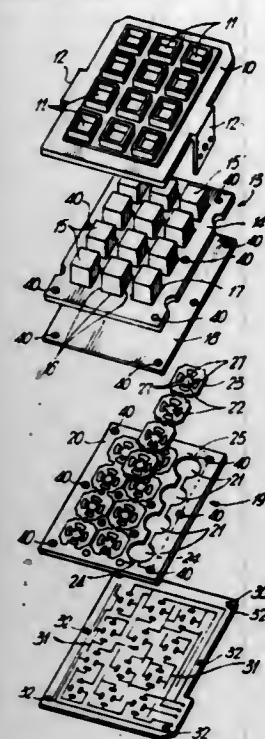
a porcelain layer on at least said upper surface;

a contact circuit on said porcelain layer, said circuit including a plurality of switch positions, each position including a plurality of contact areas;

a spring contact assembly mounted on said upper surface and including a plurality of contact members each contact member aligned with a switch position of said contact circuit and including contact means for electrical contact with the contact areas at the related switch position and having a snap action for rapid making and breaking of contact with said contact areas;

a pushbutton assembly mounted on said spring contact assembly, said pushbutton assembly comprising a flat sheet

member and a plurality of pushbuttons integral with said flat sheet member, a pushbutton for each contact member and related switch position; and



circuit means associated with said lower surface of said steel sheet circuit member, said circuit means comprising an electrical circuit pattern and electrical devices connected to said circuit pattern.

4,243,847

AUTOMATIC RESTORAL MECHANISM FOR A PUSHBUTTON KEY TELEPHONE INSTRUMENT

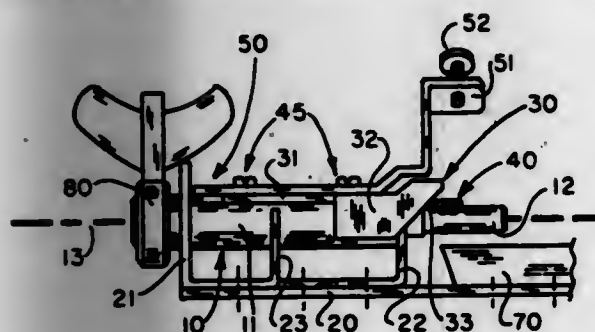
Babul V. Gala, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 30, 1979, Ser. No. 34,522

Int. Cl.³ H04M 1/08

U.S. Cl. 179—99 R

13 Claims



1. Pushbutton restoring means for a key telephone instrument, said key telephone instrument including a base and at least one pushbutton mounted on said base, said pushbutton selectively operable between a restored and activated position, said pushbutton manually activated and retained in said activated position by a latch bar engaging said pushbutton, said restoring means comprising:

rotating means including first and second sections said rotating means disposed to be manually rotated in a first direction;

actuating means including a cam edge, selectively mounted on said rotating means first section and disposed to be manually moved into a first position enabling said pushbutton restoring means and alternatively manually moved into a second position disabling said pushbutton restoring means;

motion translating means pivotally mounted and including first and second ends, said first end arranged to be movable between a first and second position, said motion translating means first end resting on said rotating means

second section adjacent to and in contact with said actuating means cam edge in said first position when said actuating means is selected into said pushbutton restoring enabling position and said cam edge moved away from said motion translating means first end when said actuating means is selected into said pushbutton restoring disabling position; and

motion transfer means including a first end mounted to said motion translating means second end and an opposite end communicating with said latch bar;

said actuating means selected into said pushbutton restoring enabling position and said rotating means manually rotated in said first direction and said actuating means simultaneously following said rotating means, said actuating means cam edge moving said motion translating means first end to said second position, translating said rotational motion to a horizontal motion, said motion translating means second end simultaneously moved in an opposite direction and said motion transfer means following said opposite motion and applying mechanical force on said latch bar to disengage said latch bar from said pushbutton, thereby releasing said pushbutton to said restored position, and alternatively said actuating means selected into said pushbutton restoring disabling position and said rotating means manually rotated in said first direction, said actuating means simultaneously following said rotating means and said actuating means cam edge falling short of said translating means first end failing to move said translating means first end to said second position, thereby retaining said pushbutton in said activated position.

4,243,848

FOCUS CONTROL SYSTEM FOR OPTICAL READ-OUT APPARATUS

Yoshihiro Utsumi, Musashino, Japan, assignor to TEAC Corporation, Tokyo, Japan

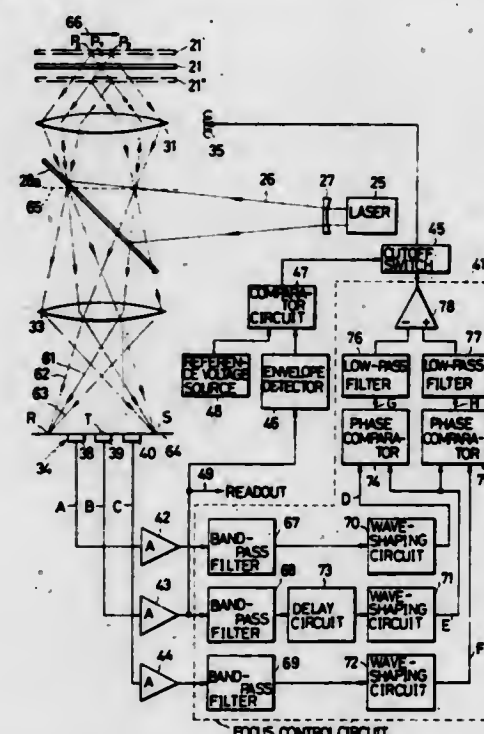
Filed Mar. 12, 1979, Ser. No. 19,596

Claims priority, application Japan, Mar. 20, 1978, 53/32019

Int. Cl.³ G11B 7/12

U.S. Cl. 369—45

5 Claims



1. In apparatus for reading a record carrier on which information is recorded in the form of a succession of optically readable regions disposed along a predetermined track, in combination:

- (a) a light source for emitting a beam of light;
- (b) an objective for focusing the light beam on the record carrier;
- (c) means for creating a relative scanning motion between the record carrier and the light beam so that the light

beam follows the predetermined track on the record carrier and so is modulated by the information recorded thereon;

(d) first, second, and third photodetector elements arranged to be irradiated by the information-modulated light beam and aligned in such a direction that the successive images of the optically readable regions on the record carrier travel thereover, so that the three photodetector elements produce electrical outputs having a phase relationship varying in accordance with the distance between the record carrier and the objective;

(e) a time-delay circuit, connected to the second photodetector element which is disposed intermediate the first and the third photodetector elements, for delaying the output therefrom for a prescribed length of time;

(f) a first phase comparator, connected to the first photodetector element and to the time-delay circuit, for producing an output representative of the phase difference between the outputs therefrom;

(g) a second phase comparator, connected to the time-delay circuit and to the third photodetector element, for producing an output representative of the phase difference between the outputs therefrom;

(h) a differential amplifier, connected to the first and the second phase comparators, for producing an output representative of the difference in magnitude between the outputs therefrom; and

(i) means responsive to the output from the differential amplifier for controllably varying the distance between the record carrier and the objective in order to hold the light beam focused on the record carrier.

4,243,849

SIGNAL RECORDING DEVICE

Takeshi Goshima, Tokyo; Hideaki Sato, Yokohama, and Takao Tsuji, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

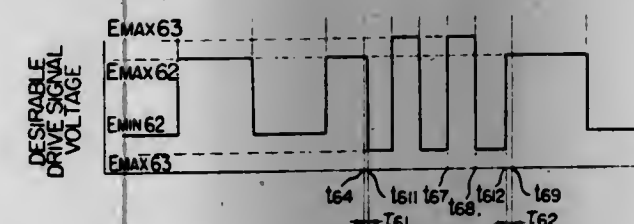
Continuation of Ser. No. 837,912, Sep. 29, 1977, abandoned, which is a continuation of Ser. No. 576,268, May 12, 1975, abandoned. This application May 7, 1979, Ser. No. 36,512

Claims priority, application Japan, May 15, 1974, 49-54167; Sep. 20, 1974, 49-108576

Int. Cl.³ H04N 5/76; G11B 11/12

U.S. Cl. 369—62

6 Claims



1. Apparatus for recording information on an information recording medium using a beam, comprising:

beam forming means operative in response to modulating signals applied thereto for forming a corresponding modulated beam having a predetermined cross section and energy profile, said information recording medium being sensitive to the beam impinging thereon from said beam forming means;

information means for introducing an information signal to be recorded on said information recording medium;

pulse width control means, having the information signal coupled thereto as an input, for altering the pulse widths of the information signal, wherein said pulse width control means provides an altered output signal, said control means comprising delay means for altering the time of occurrence of the leading edges of pulses included in the information signal in accordance with the wavelength of the information signal; and

means coupled to said beam forming means and said pulse width control means for applying the altered output signal

to said beam forming means as a modulating signal, wherein variations in the exposure of said recording medium which would otherwise occur as a result of said predetermined beam cross section and energy profile are prevented.

4,243,850

APPARATUS FOR TRACKING A RECORD TRACK ON A VIDEO DISC

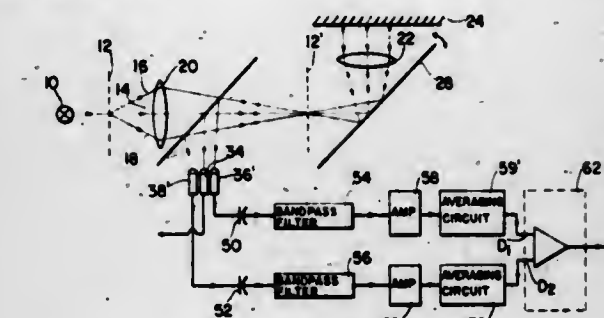
Evan A. Edwards, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,104

Int. Cl.³ G11B 21/10

U.S. Cl. 369—46

4 Claims



1. Apparatus for use in maintaining proper tracking of a record track on a record carrier, said record track having an information signal recorded thereon in the form of optical structure, said apparatus comprising:

a source of radiation for producing a pair of tracking spots impinging on said record carrier and nominally disposed toward opposite sides of said record track;

means for detecting each of said tracking spots after they interact with said record carrier, and for producing respective tracking signals indicative of such interaction;

means for isolating respective alternating signal components from each of said tracking signals, said signal components corresponding to the recorded information signal or a portion thereof; and

means for comparing said respective signal components and for producing a tracking error signal based upon such comparison, said signal component comparing means being comprised of means for determining the average amplitudes of said isolated signal components, and means for comparing said average amplitudes and for producing a tracking error signal based upon such comparison.

4,243,851

EAR CUSHIONING DEVICE FOR HEADPHONES

Robert B. Forney, Star Rte. 607, Muir Beach, Calif. 94965

Filed Jul. 16, 1979, Ser. No. 57,742

Int. Cl.³ H04R 1/02

U.S. Cl. 179—156 R

6 Claims



1. An ear cushioning device for use with headset-mounted plug type earphones, comprising:
a one-piece integrally formed pad of soft, resilient foam material having two ear cushions, one at each end, for placement against the ears;
each ear cushion having an earphone-receiving opening

located generally centrally, to be positioned over the ear opening of the user; and
said pad including a stretchable band connecting the two ear cushions, for extending over the top of the user's head and for helping support the ear cushions in place against the ears;

whereby the user may position the ear cushioning device over the head, with the two cushions against the ears, with the earphone headset to be received with the plug type earphones springingly engaged within the openings.

5. An ear cushioning device for use with headset-mounted plug type earphones, comprising:

a semi-rigid, springably yieldable generally U-shaped head band, having an elongated slotted opening near each end; a pair of ear cushions formed of a soft, resilient foam material for placement against the ears, each ear cushion being generally round in shape and having a generally diametral slot through which an end of the head band passes and is received in frictional engagement whereby the ear cushions are adjustable as to position on the head band and thus as to user size; and

each ear cushion also having an earphone-receiving opening positioned generally centrally and aligned with the elongated slotted opening of the head band;

whereby the ear cushioning device may be positioned on the user's head with the head band over the top of the head and the ear cushions adjusted to engage resiliently against the ears, with an earphone headset to be received with its earphone plugs springingly engaged within the earphone-receiving openings.

4,243,852

MEMBRANE SWITCH WITH MEANS FOR IMPEDING SILVER MIGRATION

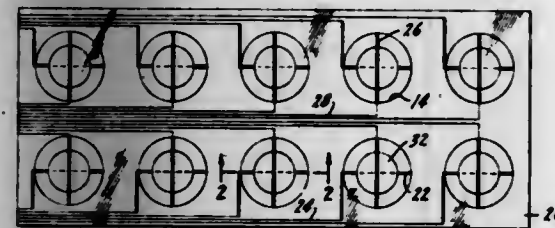
Willis A. Larson, Crystal Lake, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Apr. 16, 1979, Ser. No. 30,470

Int. Cl.³ H01H 13/70

U.S. Cl. 200—5 A

11 Claims



1. In a membrane switch, a substrate, a first silver conductor formed on said substrate, a flexible membrane, a second silver conductor formed on said membrane, a spacer positioned between said substrate and membrane, an opening in said spacer in register with said first and second conductors, said membrane moving toward said substrate through said opening to cause contact between said first and second conductors in response to pressure upon the exterior of said membrane, and means for impeding migration of silver between said first and second conductors by maximizing the silver migration path therebetween.

4,243,853

ROTARY CODED SWITCH

W. Bard-Turner, Lexington, Mass., assignor to C & K Components, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 894,599, Apr. 7, 1978, abandoned. This application Mar. 16, 1979, Ser. No. 21,562

Int. Cl.³ H01H 19/56

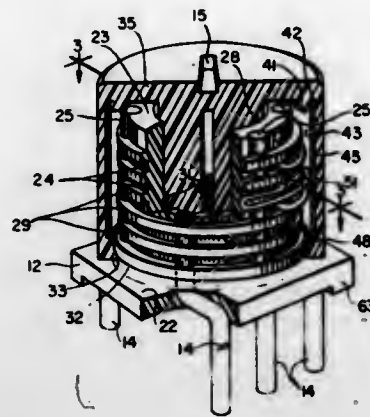
U.S. Cl. 200—8 R

49 Claims

1. A rotary coded switch comprising:
a body member;
a cover rotatably mounted to said body member;

a plurality of terminals within said body member and projecting therefrom;

printed circuit means mounted to said cover and surrounding said body member, said printed circuit means rotating with said cover; and



means for making sliding contact between said terminals and said printed circuit means for simultaneous selective coding circumferentially and longitudinally on the surface of said printed circuit means by said contact making means.

4,243,854

QUICK-BREAK ATTACHMENT FOR A POLE-TOP AIR-BREAK SWITCH

Richard B. Pahl, P.O. Box 8485, Stockton, Calif. 95208

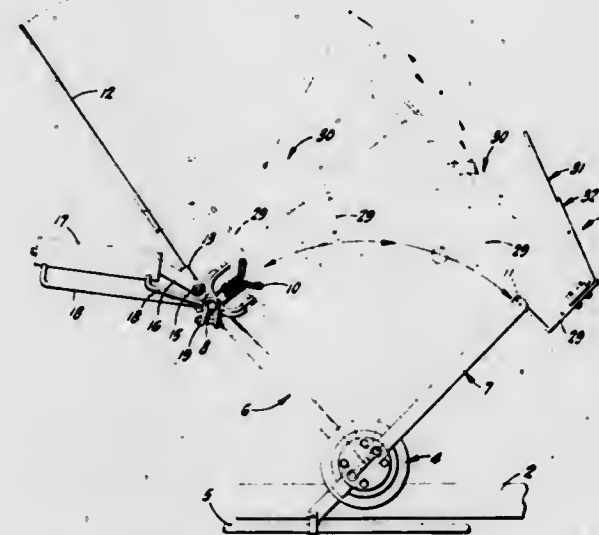
Continuation of Ser. No. 2,999, Jan. 12, 1979, abandoned. This

application Nov. 5, 1979, Ser. No. 91,104

Int. Cl.³ H01H 31/00

U.S. Cl. 200—48 R

9 Claims



1. An improved quick-break attachment for a pole-top air-break switch which includes a fixed switch arm and a movable switch arm in normally adjacent switch-closed relation, the movable switch arm being swingable in a direction away from the fixed switch arm to open the switch; the quick-break attachment comprising a flexible but resilient whip, means mounting the whip at its inner end and in connection with and projecting from the fixed switch arm, a catch including a cradle, and means fixedly mounting the catch in connection with and projecting from the movable arm, the whip being engaged with the catch cradle when the switch is closed, the whip being swung, bowed, and spring-loaded by the catch cradle, progressively sliding towards its tip on the catch cradle, and thence snap-disengaging at the tip from the catch cradle, all upon and in response to the movable switch arm swinging in said direction to open the switch; characterized by the inclusion of an elongated finger which projects from the catch cradle in a position intersecting the path of the whip beyond the point of its snap-disengagement from the catch cradle whereby after said snap-disengagement the whip spring-

unloads, straightens, and engages and rides said intersecting finger, and hence prolongs electrical contact until the whip escapes said finger.

4,243,855

HYDRAULIC SYSTEM FOR SIMULTANEOUS CONTROL, ESPECIALLY FOR THE CONTROL OF ELECTRIC CIRCUIT BREAKERS

Claude A. Gratzmuller, 97 avenue Victor Hugo, 75016 Paris, France

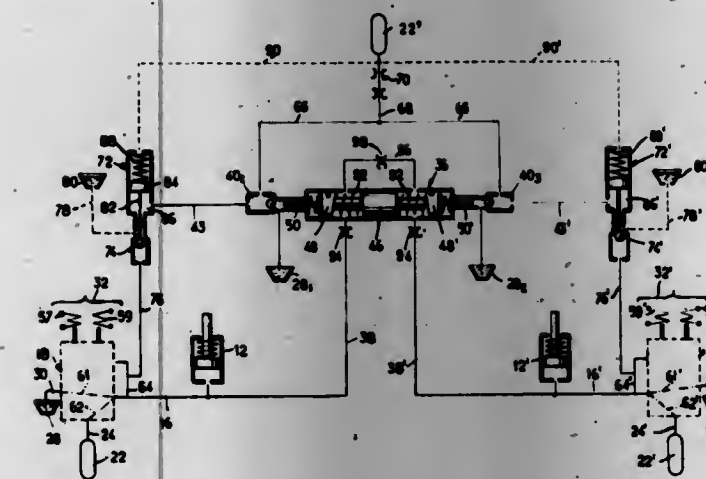
Filed Nov. 15, 1978, Ser. No. 960,742

Claims priority, application France, Dec. 2, 1977, 77 36277

Int. Cl.³ H01H 35/24; F15B 11/16

U.S. Cl. 200—81.4

13 Claims



1. A fluid control installation for simultaneously bringing at least two motors driven by fluid under pressure from a rest position to a work position, especially at least two hydraulic jacks so arranged that each jack actuates a circuit breaker module for bringing said modules either to the closed position or to the open position and for preventing any non-simultaneous operation of said motors, said installation being provided in the case of each motor with a system of two-position servo-controlled valves which establish a connection in the first position between an active chamber of the corresponding motor and a source of fluid under pressure in order to bring said motor to the work position and which are intended in the second position to initiate the return of said motor to its rest position, said valve systems being servo-controlled at least in order to change over from the second to the first position by means of a single work control device having at least temporary action, wherein said installation comprises at least one differential pressure detector which connects said motors together in pairs, and wherein said installation comprises a rest control device which is operated in dependence on said detector and comes into action in response to a pressure difference, said rest control device aforesaid being connected to all said valve systems in order to return all the valves to the second position when said at least one detector measures a pressure difference.

4,243,856

PISTON-TYPE HYDROPNEUMATIC ACCUMULATOR EQUIPPED WITH A GAS SHORTAGE DETECTION DEVICE

Jean L. Gratzmuller, 66 Boulevard Maurice Barrés, 92200 Neuilly sur Seine, France

Filed Feb. 15, 1979, Ser. No. 12,447

Claims priority, application France, Feb. 27, 1978, 78 05511

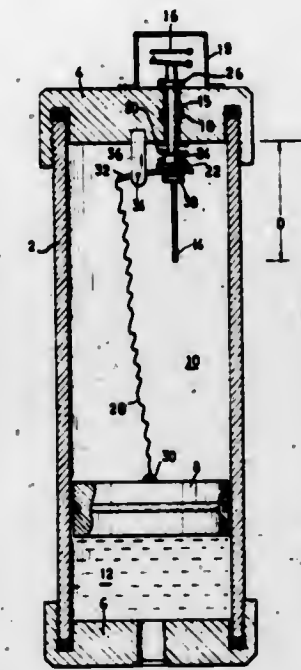
Int. Cl.³ H01H 35/38

U.S. Cl. 200—81.5

7 Claims

1. A hydropneumatic piston accumulator comprising a cylinder, two cylinder ends and a free piston, which divides the cylinder into a liquid compartment and a gas compartment, of the type comprising a gas shortage detection device provided with a movable member which is placed within the gas compartment and on which a thrust is exerted by the piston or a

member in rigidly fixed relation thereto when said piston comes closer to the cylinder end on the gas side than a first predetermined distance, said movable member being adapted to actuate a gas shortage warning system when displaced under the action of the thrust exerted by said piston, wherein motion-reversal coupling means working in traction are interposed between said piston and said movable member, and



wherein said coupling means have a dead range of travel of predetermined value so that said movable member is also displaced in the same direction as when it is displaced directly under the action thrust exerted by the piston and therefore in the direction of operation of the warning system when said piston moves away from the cylinder end on the gas side beyond a second predetermined distance.

4,243,857

CONTROL DEVICE

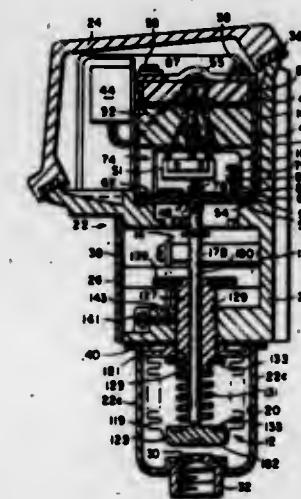
Robert D. Reis, Hingham, Mass., assignor to United Electric Controls Company, Watertown, Mass.

Filed Sep. 21, 1978, Ser. No. 944,413

Int. Cl.³ H01H 35/32

U.S. Cl. 200—83 C

19 Claims



1. In a control device switch means, a sensor, a kinematic train for transmitting the response of the sensor to a change in ambient condition to effect actuation of the switch means and an enclosure for said components comprising the switch means, sensing means and kinematic train, said enclosure being weather-tight and containing chambers within which are, respectively, mounted said switch means, sensing means and a kinematic train, a hermetically-sealed receptacle in the cham-

ber containing the switch means, said switch means comprising two switches, a grounded barrier plate in the chamber containing the hermetically sealed receptacle dividing it into two compartments, each of which contains, in electrical isolation, a terminal block and a conductor therefrom to the switch means in the hermetically-sealed receptacle and means for transmitting operation of the kinematic train to the switch means within the hermetically-sealed receptacle without penetration of the latter.

19. In a control device, an enclosure containing chambers separated by walls, switch means, sensing means and kinematic means mounted in the respective chambers; said chambers separating said components from each other, but permitting access to each independently of the other, a flexibly displaceable wall separating one of the chambers from the others, a flexibly displaceable wall having a flexible portion exposed at one side to the chamber containing the switch means and at its other side to the chamber containing the kinematic means such that actuation of the kinematic means through the intermediary of the flexibly displaceable wall portion will effect operation of the switch means in the chamber containing the switch means, said means being situated between the sensing means and the switch means and means in said kinematic train comprising a Belleville washer actuatable at a predetermined pressure to spring from an inoperative to an operative position and wherein when the pressure drops below said predetermined pressure, the Belleville washer springs back to its inoperative position and means operable by movement of the Belleville washer to said operative position to displace the flexible wall portion.

4,243,858

SNAP DISC OPERATED PRESSURE SWITCH

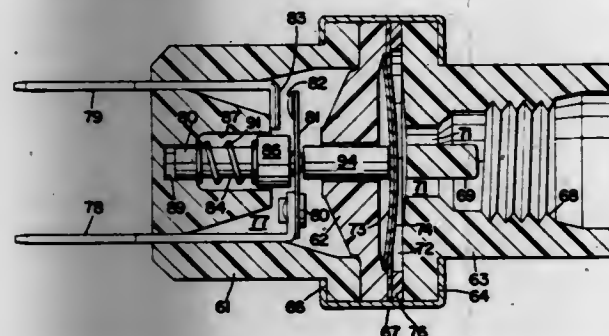
Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Continuation-in-part of Ser. No. 905,887, May 15, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 4,743

Int. Cl.³ H01H 35/34

U.S. Cl. 200—83 P

10 Claims



1. A condition sensing switching device comprising a housing, a snap disc means in said housing movable with snap action between two positions of stability in response to predetermined operating conditions, a switch in said housing including a cantilever spring movable contact arm biased toward its switch-closed position, spring-biased operator means in said housing engaging said movable contact arm and operable to apply a spring force thereto in a direction toward a switch-open position moving it to its switch-open position in response to disc means movement to one of said positions of stability, said snap disc means being incapable of applying stress to said movable contact arm in a switch-closed direction while it is in its switch-closed position.

4,243,859

VACUUM SWITCH

Gerhard Peche, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

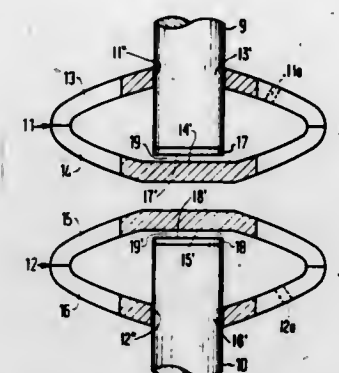
Filed Sep. 11, 1978, Ser. No. 941,310

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2740994

Int. Cl.³ H01H 33/66

U.S. Cl. 200—144 B

17 Claims



1. An improved vacuum switch having a fixed and a movable electrical contact operably mounted in a vacuum housing: the improvement comprising a pair of deformable contact disks, one mounted at the contact end of each electrical contact;

each of said contact disks having an interconnected top and bottom member with said top member being fixedly attached to the body portion of one of the contacts near the contact end and with each said bottom member being adjacent to but not in contact with a contact surface of the contact end to which said contact disk is fixedly attached and adjacent to but not in contact with said other bottom member when the contacts are separated from one another;

whereby when the contacts are driven toward one another, to close the switch, said bottom members are brought into contact with one another and said disks deform slightly to permit each of the contact surfaces to move into contact with a said adjacent bottom member, and as the electrical contacts start to move apart, due to the switch opening, the contact surfaces separate from each of said bottom members of said contact disks before said bottom members of said contact disks separate from one another due to each of said disks returning to its undeformed shape.

4,243,860

CIRCUIT INTERRUPTER WITH PRESSURE LIMITING

Masami Kii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1978, Ser. No. 889,959

Claims priority, application Japan, Mar. 24, 1977, 52-32911; Mar. 24, 1977, 52-32914; Mar. 24, 1977, 52-32924; Mar. 24, 1977, 52-32927; Mar. 24, 1977, 52-32930

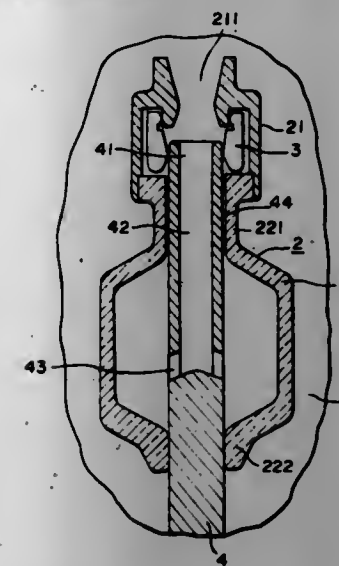
Int. Cl.³ H01H 33/70

U.S. Cl. 200—148 R

3 Claims

1. A circuit interrupter comprising:
a housing containing an interrupting fluid;
an interrupting chamber in said housing;
a fixed contact in said interrupting chamber;
an elongated movable contact normally located with one end contacting said fixed contact in said interrupting chamber, the remainder of said movable contact extending away from said interrupting chamber in one directional sense with respect to said interrupting chamber;
a pressure chamber disposed adjacent to said interrupting chamber in said one directional sense, said pressure chamber normally surrounding a portion of said movable contact, said pressure chamber communicating with said

interrupting chamber through a first passage, said first passage being normally closed by said movable contact; a second passage communicating said interrupting chamber with said housing in a directional sense opposite said one directional sense; and



means for moving said movable contact away from said fixed contact in said one directional sense, whereby an arc is formed between said contacts and a portion of said interrupting fluid is pressurized and passes out from said interrupting chamber through said second passage.

4,243,861

TOUCH SWITCH AND CONTACTOR THEREFOR

Peter Strandwitz, Neenah, Wis., assignor to The Cornelius Company, Anoka, Minn.

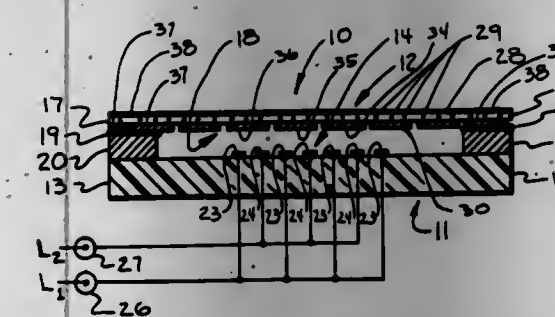
Continuation of Ser. No. 809,820, Jun. 24, 1977, abandoned.

This application Nov. 20, 1978, Ser. No. 962,540

Int. Cl.³ H01H 13/14, 1/02

U.S. Cl. 200—159 B

5 Claims



1. An electrical touch switch, comprising:
(a) an electrically non-conductive base board;
(b) an electrically conductive contact grid upon said board, said grid having
(1) a first circuit pattern having means for electrical connection to a first electrical lead, and
(2) a second circuit pattern electrically isolated and spaced a predetermined distance from said first pattern, and having means for electrical connection to a second electrical lead;
(c) means for securing a contactor sheet to said base board and atop of said grid;
(d) a contactor sheet secured to said board by said securing means, said contactor sheet having an inner surface facing towards, exposed to and spaced from said grid, and being resiliently flexible with respect to said board such that a portion of the contactor sheet facing directly against the grid may be manually depressed for biasing said sheet inner surface toward said grid; and
(e) a plurality of discrete electrically isolated and electrically conductive contactor dots on the inner surface of said contactor sheet and facing directly against said first and

second circuit patterns and being normally spaced from said patterns, said contactor dots each having a major distance thereacross which is greater than said predetermined distance between said first and second circuit patterns for providing electrical continuity between said patterns upon physical contact of any one of said contactor dots against said patterns, with every pair of adjacent contactor dots being identically equidistant from each other, and in which a minor distance across each contactor dot is greater than the combined distance of the spacing between said first and second circuit patterns and the width of a contact element of either circuit pattern.

4,243,862

ARC CUTTING DEVICE WITH MECHANICAL MATERIAL REMOVAL

Walter Wetzels, Eynatten, Belgium, assignor to Schumag GmbH, Aachen, Fed. Rep. of Germany

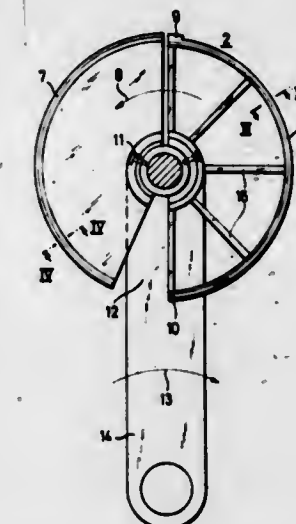
Filed Oct. 6, 1978, Ser. No. 949,150

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 2746241

Int. Cl.³ B23P 1/10

U.S. Cl. 219—68

23 Claims



1. Arc cutting device with a revolving electrode forming an intermittent arc with a workpiece for cutting a groove therein, comprising a revolving narrow disc having a peripheral edge, at least one part of said peripheral edge being on a portion of said disc which is electrically alive for forming the arc, and at least another part of said peripheral edge being on a portion of said disc which is electrically dead for mechanically carrying away material that is to be removed from the cutting groove formed in the workpiece being cut by the arc.

4,243,863

ELECTRICAL DISCHARGE MACHINING APPARATUS WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES

Georges Wyss, Niederrohrdorf, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Division of Ser. No. 696,712, Jun. 16, 1976, Pat. No. 4,104,500, and Ser. No. 696,713, Jun. 16, 1976, Pat. No. 4,104,501. This application Jul. 3, 1978, Ser. No. 921,784

Claims priority, application Switzerland, Jun. 18, 1975, 7932/75

The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.

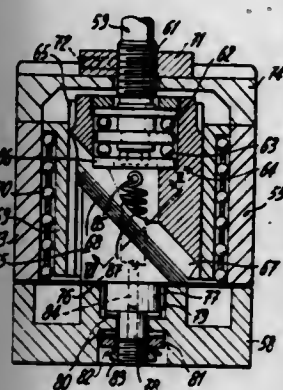
Int. Cl.³ B23P 1/12

U.S. Cl. 219—69 V

11 Claims

1. In an electrical discharge machining arrangement for machining the surface of a recess in a workpiece electrode, in which relative movements of the electrodes are controlled to maintain given sparking conditions in a machining zone com-

prised between the electrodes, and comprising a device for controlling a translational displacement of one electrode relative to the other both in the direction of an axis of penetration of one of said electrodes into the other electrode and in a plane perpendicular to said axis, said device comprising a support for said one electrode, first means for moving the support in translation along said axis, and second means for moving the support in translation according to a predetermined amplitude in a plane perpendicular to said axis to provide a combined translational movement of the support along said axis and in said perpendicular plane, said second means comprising an eccentric member having, parallel to said axis of penetration, an axis in relation to which said support is fixed in position, the improvement comprising a rotatable shaft having an axis parallel



to said axis of penetration, said eccentric member cooperating with said shaft for sliding in relation to said shaft in a direction forming an angle with said axis of penetration and for rotating with said shaft about the axis of said shaft, means for sliding said eccentric member relative to said shaft in response to movement of the support along said axis by said first means such that the amplitude of said translation of said support in said plane progressively varies as a function of the translational movement, along said axis beyond a predetermined distance, wherein said eccentric member and said shaft have facing faces, linear guide means are disposed between said facing faces allowing sliding of said facing faces relative to one another along said direction, and means are provided for holding said eccentric member and shaft together while allowing relative radial and axial displacements therebetween.

4,243,864

MULTIPLE WIRE ELECTRODE FEED MECHANISM FOR ELECTROEROSION MACHINE

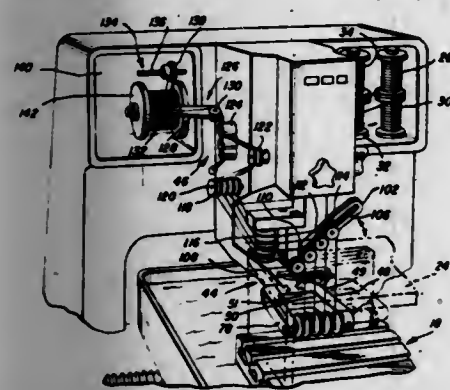
Richard R. Vieau, 314 S. Emerson, Itasca, Ill. 60143, and Robert A. Vieau, 315 E. Berkshire, Roselle, Ill. 60012

Filed Jan. 15, 1979, Ser. No. 3,115

Int. Cl.³ B23P 1/02

U.S. Cl. 219—69 W

12 Claims



1. In an electroerosion machine which cuts a metal by means of electrical discharge between an electrically conductive wire and metal, said machine having a frame, a table for carrying metal movably mounted on the frame, a head mounted on the frame, and an electrical system connected to the electrically conductive wire and the metal, the improvement comprising; a

plurality of supply spools of electrically conductive wire, each of said supply spools having a wire continuously removed therefrom, a tension assembly receiving a wire from each of the supply spools, a cutting guide assembly receiving each of said wires and holding the wires parallel to each other adjacent to the metal while there is electrical discharge between each of the wires and the metal, and a take-up assembly receiving the wires from the cutting guide assembly.

4,243,865

PROCESS FOR TREATING MATERIAL IN PLASMA ENVIRONMENT

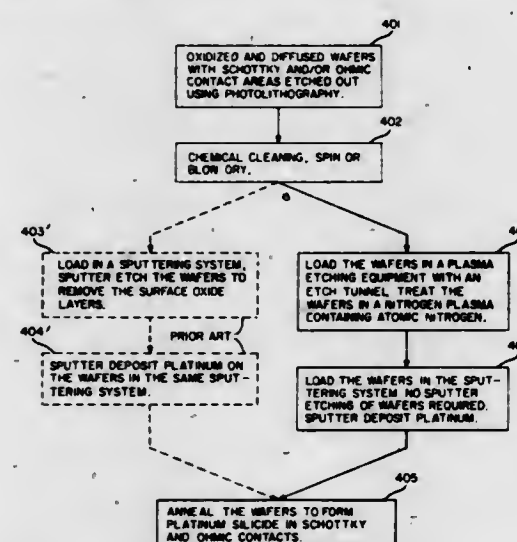
Arjun N. Saxena, Palo Alto, Calif., assignor to Data General Corporation, Westboro, Mass.

Filed May 14, 1976, Ser. No. 684,206

Int. Cl.³ B23K 9/00

U.S. Cl. 219—121 P

2 Claims



1. A process for passivating the surface of a semiconductor material in a plasma environment comprising the step of: exposing the material to a gaseous plasma consisting of atomic, neutral nitrogen to obtain said passivated surface on said material, said surface being free from nascent oxide.

4,243,866

METHOD AND APPARATUS FOR FORMING A VARIABLE SIZE ELECTRON BEAM

Hans C. Pfeiffer, Ridgefield, Conn.; Philip M. Ryan, Hopewell Junction, and Edward V. Weber, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 771,235, Feb. 23, 1977, abandoned.

This application Jan. 11, 1979, Ser. No. 2,499

Int. Cl.³ B23K 15/00; G21K 1/08

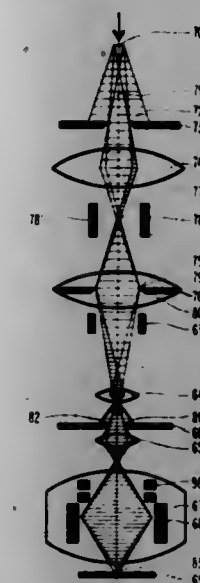
U.S. Cl. 219—121 EK

28 Claims

1. In electron beam apparatus having a source of electrons for providing an electron beam adapted for generating integrated circuit patterns upon a target positioned in a target area toward which said electron beam is directed, electron beam forming means along the path from said source to said target area comprising:

- a first beam shaping member having a first spot shaping aperture formed therein;
- a second beam shaping member having a second spot shaping aperture formed therein;
- means for focusing the image of said first aperture in the plane of said second spot shaping aperture to thereby form a composite spot shape defined by said image and said second aperture;
- means for focusing the image of said composite spot in the plane of said target;
- means for focusing the image of said source in a plane between said source and said image of said first aperture,

means for deflecting said electron beam, so as to deflect said image of said first aperture laterally with respect to said second aperture to thereby vary the shape and dimensions of said composite spot selectively to enable imaging of variable shapes upon said target, and



means for locating the focused image of said source in a plane substantially perpendicular to said path and coincident with the virtual center of said deflection.

4,243,867

APPARATUS FOR FUSIBLY BONDING A COATING MATERIAL TO A METAL ARTICLE

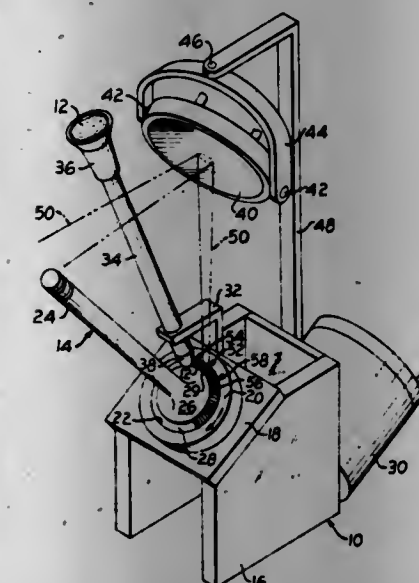
Michael Earle, Mapleton, and Glenn H. Lenz, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 543,191, Jan. 24, 1975, Pat. No. 4,117,302, which is a continuation-in-part of Ser. No. 447,971, Mar. 4, 1974, abandoned. This application Jun. 26, 1978, Ser. No. 919,349

Int. Cl.³ B23K 27/00

U.S. Cl. 219—121 LC

7 Claims



1. An apparatus for fusibly bonding a substantially solid powder coating material to a metal article, comprising: a frame; holding means for supporting the article and for moving the article at a preselected rate relative to the frame; depositing means for metering and depositing the substantially solid powder coating material onto a surface of the article in the form of a levelled band of powder in response to movement of the article by the holding means; and laser beam means for liquifying a portion of the band of powder and thereafter liquifying the juxtaposed surface of the article, controlling the heat transmission into said article, thereafter rapidly hardening a trailing part of the liquified portion of the band of powder while progres-

sively moving the band of powder past the laser beam means, and generating a surface layer having properties based substantially solely on the coating material and a relatively thin, strong region of interstitial bond between the surface layer and the article.

4,243,868

ORBITAL ARC-WELDING APPARATUS OF SPLIT CONSTRUCTION

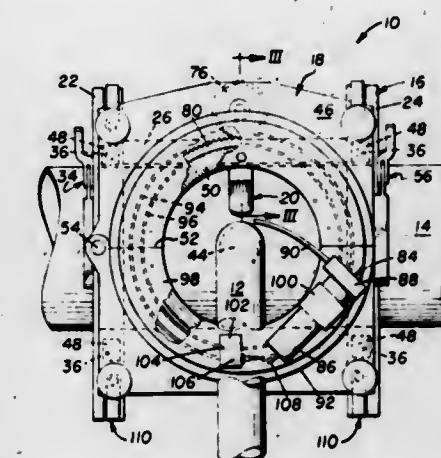
Weldon C. Graham, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed May 2, 1979, Ser. No. 35,226

Int. Cl.³ B23K 9/02, 9/12

U.S. Cl. 219—125.11

8 Claims



1. Welding apparatus for welding a tube to a sidewall opening in a larger pipe or the like and facilitating removal of the welding apparatus after completion of the weld, comprising a locating fixture including clamping means for securing the locating fixture to a pipe adjacent the side opening in the pipe, and a welding head adapted for mounting upon the locating fixture to weld a tube to the pipe with the tube being in communication with the interior of the pipe through the sidewall opening, the welding head including orbital guide means of split construction to facilitate its assembly and disassembly in coaxial relation to the tube, means for securing the orbital guide means to the locating fixture in coaxial alignment with the tube, a welding torch assembly mounted upon the orbital guide means and positioned for effecting a weld between the tube and pipe, and means for rotating the welding torch assembly upon the orbital guide means and for operating the welding torch to complete the weld between the tube and pipe.

4,243,869

FUSING DEVICE FOR ELECTROSTATIC COPIER

Albert W. Scribner, Darien, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed May 16, 1979, Ser. No. 39,473

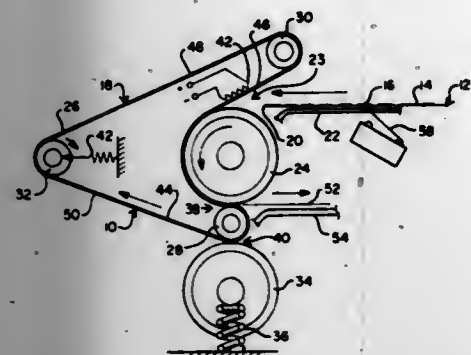
Int. Cl.³ H05B 1/00; G03G 15/00

U.S. Cl. 219—216

15 Claims

1. A fusing apparatus for applying pressure and heat to an unfused copy sheet bearing a developed electrostatic image on at least one surface thereof in order to fuse the image on the copy sheet, comprising: first and second, oppositely driven, mutually biased, pressure fixing feed rollers; a third roller laterally supporting the first and second pressure fixing rollers and driven oppositely from said second roller; a flexible, thermally conductive web for contacting the image bearing surface of said copy sheet, said web disposed about and contacting a portion of said first roller and passing through a first nip defined by the first and

second rollers, said web being further disposed about and contacting the portion of the second roller between the first nip and a second nip defined by the second and third rollers in an opposite direction from the contact with said first roller, wherein the area of contact between the web and the first roller defines a concave path for the unfused copy sheet; and



means for heating only said web, whereby when the unfused copy sheet is fed between said heated web and said first roller, the developed image on the copy sheet is gradually melted until said image is finally pressed and fixed on the copy sheet by passing between the first and second pressure fixing rollers.

4,243,870

VAPORIZER WITH ELECTRODE HOUSING INTERLOCK

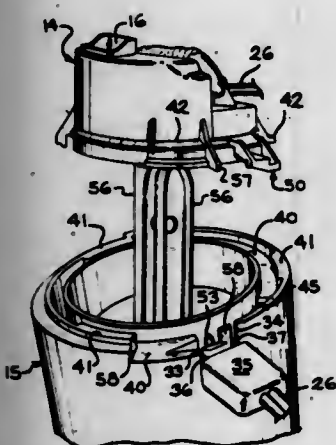
Thomas E. Grime, Temperance, Mich., and Frank A. Robinson, Jr., Toledo, Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Feb. 9, 1978, Ser. No. 876,467

Int. Cl.³ H05B 3/60; B65D 55/02; E05B 11/00

U.S. Cl. 219—295

6 Claims



1. An electrical device comprising:
 - a base containing an exposed electrical element, said base having a series of spaced projections and a stop member located thereon;
 - a removable protective sleeve enclosing said electrical element and having a series of spaced lips located thereon, said lips adapted to be brought into mating relationship with said projections on said base by movement of said base and said protective sleeve relative to each other, said lips engaging said projections on said base to secure said protective sleeve to said base, said protective sleeve defining at least one aperture;
 - an integral resilient interlock member positioned on the interior of said protective sleeve in alignment with the sleeve aperture, said integral interlock member engaging said stop member to prevent relative movement between said base and said sleeve, thereby precluding disengagement of said projections and lips once said protective sleeve has been secured to said base;
 - key means for insertion into the aperture on said protective

sleeve to contact and deflect said resilient interlock member from engagement with said stop member on said base to allow relative movement between said base and said sleeve, thereby allowing removal of said protective sleeve from said base by disengagement of said projection and said lips, said key means defining a locking recess, and key locking means comprising a releasable spring-biased pin positioned on said sleeve adjacent the aperture in said protective sleeve; and actuator means on said base for releasing said spring-biased pin to engage the locking recess in said key means in response to said interlock member being deflected by said key means and said protective sleeve being disengaged from said base.

4,243,871

FLUID HEATING SYSTEM WITH STORAGE OF ELECTRIC HEAT

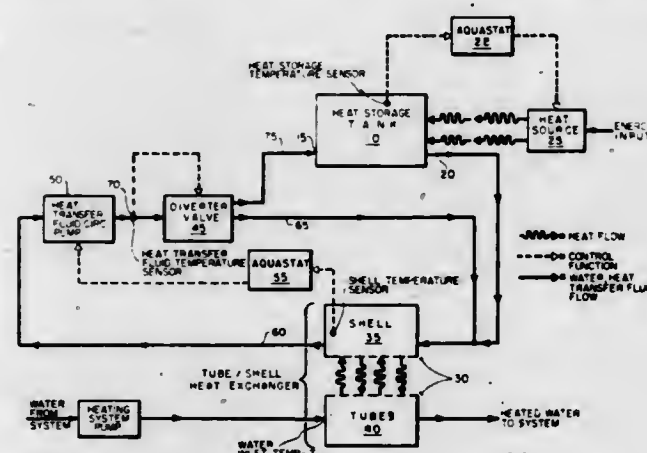
James L. McKenney, Norwell, Mass., assignor to Vapor Corporation, Chicago, Ill.

Filed Jan. 3, 1978, Ser. No. 866,554

Int. Cl.³ H05B 1/02; G05D 23/13; F24H 7/04

U.S. Cl. 219—326

16 Claims



1. Apparatus for heating liquids and having heat storage at temperature substantially different from said liquid comprising:
 - storage means for storing heat;
 - means admitting heat to said storage means;
 - a fluid for transferring heat between said storage means and a liquid to be heated;
 - first heat exchange means thermally communicating said fluid with said storage means at a first fluid temperature;
 - second heat exchange means in thermal communication with said liquid at a second fluid temperature;
 - means thermally coupling said first and second heat exchange means at a third fluid temperature;
 - means activating said thermal coupling in response to said third fluid temperature; and
 - means controlling said fluid communication in response to said third fluid temperature;
- said activating means and said controlling means being so constructed and arranged that, in sequence, said activating means establishes thermal coupling between said first and second heat exchange means prior to establishment of thermal communication between said storage means and fluid, thereby allowing utilization of stored heat without flashing of said liquid in said second heat exchange means.

4,243,872

ELECTRICAL HEATING ELEMENT

Lorne A. Best, West Bloomfield, Mich., assignor to National Element, Inc., Troy, Mich.

Filed Mar. 14, 1979, Ser. No. 20,594

Int. Cl.³ H05B 3/00

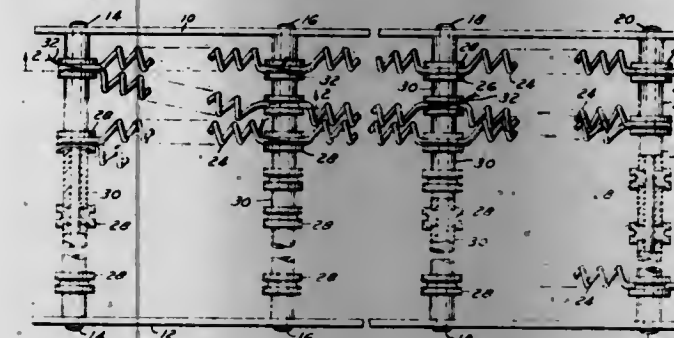
U.S. Cl. 219—375

1 Claim

1. An improved electrical heating element providing for an

increased amount of electrical wire per unit space for plug-type convection heaters comprising:

- an elongated generally rectangular-shaped metal frame structure opened at its ends and having a pair of laterally spaced apart support elements defining the longer sides of the rectangle, each support element extending parallel to the direction of the longitudinal axis of the frame structure and being of generally rectangular transverse cross section throughout its longitudinal extent;
- a pair of removable end rods made from metal extending through said support elements from one side of the frame structure to the other side thereof in a direction generally perpendicular to the longitudinal axis of the structure;
- a plurality of removable intermediate rods made from metal located between and arranged parallel to said pair of end rods, said intermediate rods extending through said support elements from said one side of the frame structure to the other side; the spacing between a pair of adjacent rods being equal to provide for air flow therethrough;
- fastening means carried by said support elements for removably connecting said end and intermediate rods to said support elements;



- a plurality of ceramic spools each of circular configuration spaced along each of said end and intermediate rods; each spool being provided with an annular endless groove midway between the end faces thereof; each of the end faces of each spool being provided with an annular recess forming an abutment stop surface; each spool having a centrally located opening through said end faces through which the corresponding metal rod extends;
- a plurality of ceramic insulating spacers on each of said end and intermediate rods, each spacer being of generally cylindrical configuration and having an axially extending bore so that the spacer may be slidably attached along one of said intermediate and metal rods; a pair of said spacers being positioned on opposite sides of said spools to space said spools from said support elements; the end portion of a spacer opposite a spool being received in the annular recess and abutting the corresponding abutment stop surface;
- a continuous electrical resistance heating wire having coil wound segments separated by straight wire segments, with the straight wire segments of said wire being located and retained in the grooves of said spools; and clamping retaining wires for tying the straight wire segments of said wire to said spools.

4,243,873

COMPATIBLE CERAMIC ELECTRIC HEATER FOR FOOD HANDLING VESSELS

Paul E. Helgesen, Seven Valleys, Pa., assignor to Susquehanna Broadcasting Co., York, Pa.

Filed Jan. 29, 1979, Ser. No. 7,421

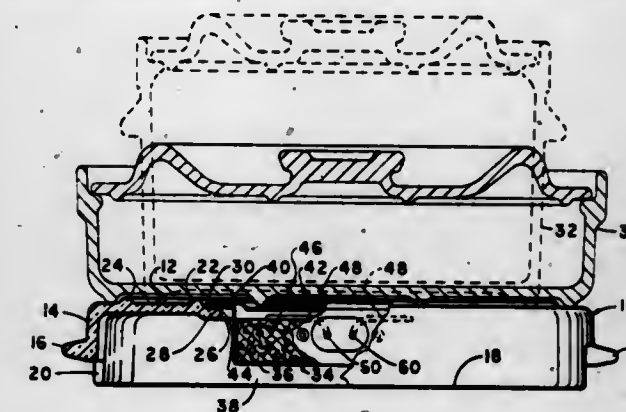
Int. Cl.³ H05B 3/68

U.S. Cl. 219—386

2 Claims

1. An electrical heating device for use in heating an article of a compatible set of ceramic food preparation and serving vessels of various shapes and kinds, said heating device comprising in combination, a unitary ceramic base having a horizontal top and depending sides provided with an aesthetic finish similar to and compatible with ceramic vessels of a compatible

set thereof, an opening in said top of smaller diameter than said top and including a peripheral seat spaced below the upper surface of said top and said top also having a plurality of radially spaced short annular ridges having rounded surfaces and being concentric with said opening and the innermost ridge comprising a wall of said seat, an electrical resistance heating unit connectable to a source of electric current to cause the same to generate heat, said unit having a cup-shaped metallic shell substantially complementary in size to said opening and seat in said top of said base and also having the upper end of said shell terminating in a laterally extending peripheral flange



engaging and resting upon said seat in said base by gravity to support said unit thereby, and said cup-shaped shell also being closed by a flat metal top secured to said flange and having an upper surface no higher than said innermost ridge of said ceramic base and having a heating element therein adjacent the inner surface of said metal top and disposed on top of insulation in said shell to afford maximum efficiency of heating and insulation, said unit being readily separable from said base without the use of tools by simply lifting it from said seat in said base to permit cleansing of said base when said unit is removed therefrom.

4,243,874

RADIANT HEATING UNIT

Karl Fischer, Am Gaensberg 8, 7519 Oberderdingen, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,300

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729929; May 9, 1978, 2820138

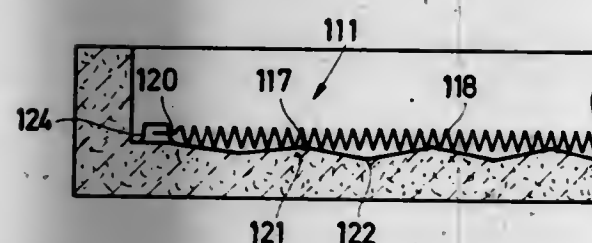
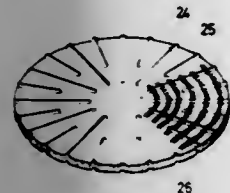
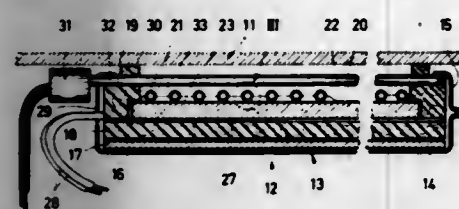
Int. Cl.³ H05B 3/74, 3/76

U.S. Cl. 219—467

36 Claims

1. A radiant heating unit comprising an insulating support which is substantially plate-shaped in a heating region and heating resistances arranged on the insulating support, the insulating support having elevations shaped from it and the heating resistances being partially embedded within the insu-

lating support, only at the elevations, and unembedded elsewhere on the surface of the insulating support, the elevations



being spaced from one another in the longitudinal direction of the heating resistances.

4,243,875

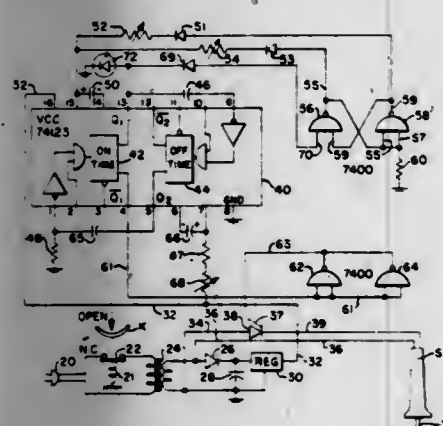
TEMPERATURE CONTROL FOR RESISTANCE HEATING ELEMENT

Daniel C. Chang, 110-22 64th Rd., Forest Hills, N.Y. 11375
Filed Nov. 13, 1978, Ser. No. 959,809

Int. Cl.³ H05B 1/02

U.S. Cl. 219-497

2 Claims



1. A control circuit for controlling the temperature of an electric soldering iron including a cradle-operated switch for connecting a power supply to the circuit when the iron is raised from the cradle and disconnecting the supply when the iron rests on the cradle, the control circuit comprising:

- an ON/OFF switching member connecting the power supply to the soldering iron and enabling the flow of current thereto when conductive;
- a first monostable means having a stable state and a non-stable state and connected to render said ON/OFF switching member conductive when in said non-stable state, said first monostable means having two separate time constants each energizable separately from the other to determine when energized a longer and a shorter duration of said non-stable state;
- a second monostable means having a stable state and a non-stable state of constant duration, the first and second monostable means being mutually interconnected and

operative so that as each returns to its stable state it triggers the other to begin its non-stable state;

- a bistable flip-flop having two stable states and having two output terminals respectively connected to said two separate time constants of the first monostable means, and the flip-flop having separate input terminals for triggering the flip-flop into one or the other of its stable states, one of said inputs being operative upon raising of the iron from the cradle and closing of said switch connecting the power supply to the circuit to energize the longer duration time constant, and the other input being coupled to the first monostable means to be triggered by the return thereof to stable state to trigger the flip-flop to energize the shorter duration time constant as long as the iron remains raised from the cradle, brief manual depressing of the cradle and release thereof actuating said one input to trigger the flip-flop to re-energize the longer time constant and raise the operating temperature of the iron.

4,243,876

BACKGROUND LIGHT INTENSITY COMPENSATION CIRCUIT FOR A LINE SCAN CAMERA SYSTEM

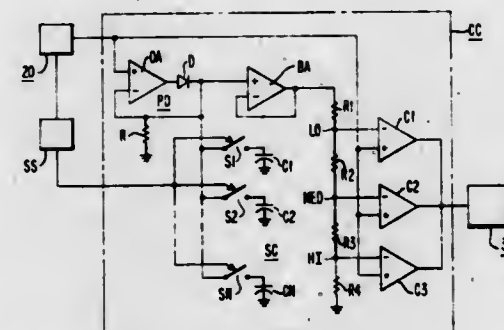
Joseph C. Engel, Monroeville; Leonard C. Vercellotti, Oakmont, both of Pa., and Dale W. Schroeder, Iowa City, Iowa, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 25, 1979, Ser. No. 60,511

Int. Cl.³ G06K 7/14, 7/10

U.S. Cl. 235-455

12 Claims



1. A method for compensating a document scanning system for variations in background and ambient light conditions and/or aberrations produced by optics associated with a scanning device employed by the system to extract information on a line-by-line basis from a document, comprising the steps of, scanning said document on a line-by-line basis with a scanning device, said device generating a scan line output signal which is a function of the light intensity of the scan line, storing peak signal levels of each of a predetermined number of segments of a scan line output signal, and comparing the scan line output signals of said document to the corresponding stored peak signal levels to compensate said scan line output signals on a segment-by-segment basis for variations in document background light conditions and/or lens vignetting.

4,243,877

ELECTRO-OPTICAL TARGET FOR AN OPTICAL ALIGNMENT SYSTEM

Jose C. Cruz, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Mar. 5, 1979, Ser. No. 17,434

Int. Cl.³ G01J 1/20

U.S. Cl. 250-201

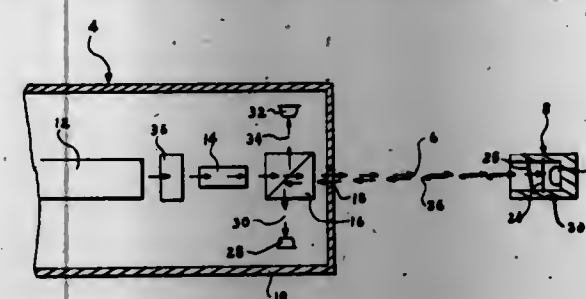
12 Claims

1. Apparatus for optically determining the translational and rotational orientation of portions of an object with respect to a system reference position, comprising

- a base means for defining a system reference position when mounted on a stable support,
- an optical beam forming means mounted on said base

mean for forming and projecting an optical beam along an optical axis having a predetermined relationship with the system reference position, and

- target means for receiving the optical beam when mounted on the object and for redirecting a first portion



of said beam to indicate the rotational position of the target means relative to the system reference position and for producing an electrical signal indicative of the translational position of the target means relative to the system reference position.

4,243,878

ULTRA-FAST FRAMING CAMERA TUBE

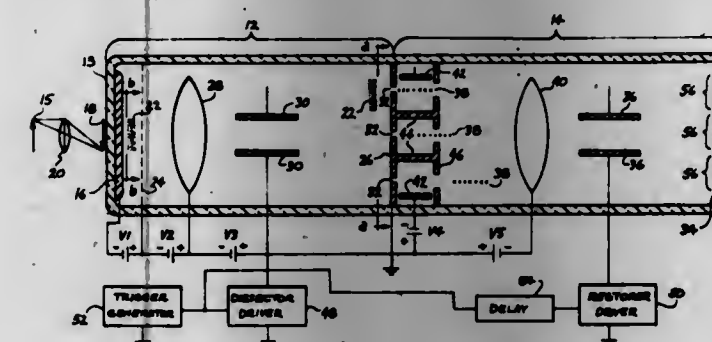
Ralph Kalbfleiss, 1051 Batavia Ave., Livermore, Calif. 94550

Filed Jul. 7, 1977, Ser. No. 813,762

Int. Cl.² H01U 31/30

U.S. Cl. 250-213 VT

14 Claims



9. An ultra-fast framing camera tube, comprising the following combination housed within an evacuated envelope:

- a photoemissive cathode for converting an incident time-varying photon image into a corresponding time-varying electron density image;
- an aperture plate having a plurality of slits therein;
- means for focusing said time-varying electron density image onto said aperture plate, said focusing means being maintained at a negative voltage with respect to said aperture plate;
- means for sweeping said focused time-varying electron density image across the slits in said aperture plate, thereby forming a time-sequential series of electron line-images;
- means for restoring said time-sequential electron line-images into two-dimensional electron framed images; and
- means for displaying said electron framed images in a form suitable for recording.

4,243,879

TOUCH PANEL WITH AMBIENT LIGHT SAMPLING

Arthur B. Carroll, St. Joseph; Vladeta D. Lazarevich, Boudville, and Mark R. Gardner, Champaign, all of Ill., assignors to Carroll Manufacturing Corporation, Champaign, Ill.

Filed Apr. 24, 1978, Ser. No. 899,258

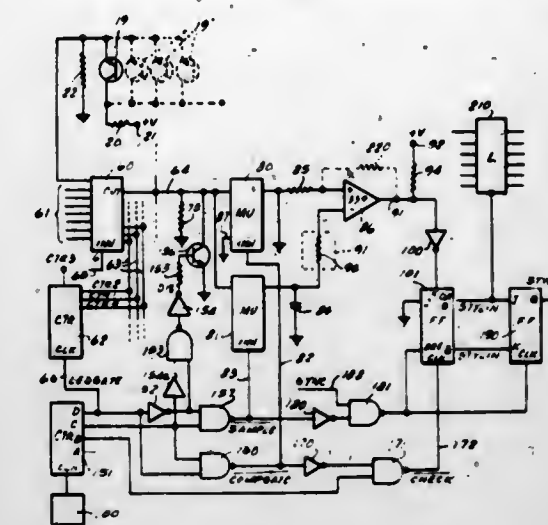
Int. Cl.³ G01V 9/04

U.S. Cl. 250-221

22 Claims

1. In a touch input device having a panel and means for defining a plurality of beams of radiant energy arranged parallel to the panel, each of said beams being defined by an energy emitter and an energy detector, the improvement comprising sampling means for sampling the ambient output level of one of

said detectors immediately prior to the energization of its associated emitter, storage means for temporarily storing a signal representative of said ambient output level, and compar-



ator means for comparing the instantaneous output of said detector with said stored signal during a subsequent interval while said emitter is energized for deriving a signal manifesting the interruption or noninterruption of said beam.

4,243,880

METHOD FOR MEASURING TIME DETERMINATION IN A RADIATION MEASURING INSTRUMENT

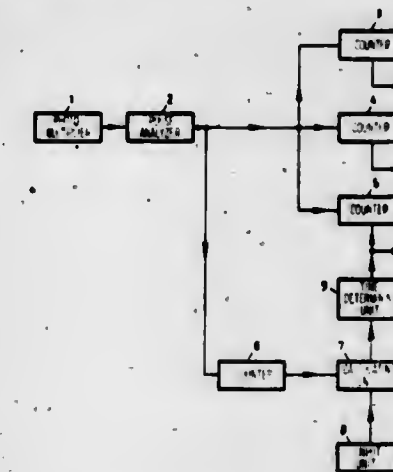
Roger P. Ekias, Dorking, England, and Erkki Soini, Turku, Finland, assignors to LKB-Produkter AB, Bromma, Sweden

Filed Jan. 18, 1978, Ser. No. 870,571

Int. Cl.² G01D 18/00; G01T 1/00, 1/20

U.S. Cl. 250-252

3 Claims



1. Method for determining the total measuring time t necessary for measuring the radiation from a specific radioactive sample with an instrument which registers the electrical pulses produced by radioactive decay of a sample, comprising the steps of:

- counting said electrical pulses for a period of time considerably shorter than the measuring time required but long enough to register a number of pulses for estimating the time t ;
- Calibrating the instrument which registers the pulse by the channels ratio method using two channels of a standard radiation source to obtain the experimental error, and;
- Obtaining a value for time t as a function of the member of pulses from the count produced by the samples and as a function of the experimental error.

4,243,881

TIME-RESOLVED INFRARED SPECTRAL PHOTOGRAPHY

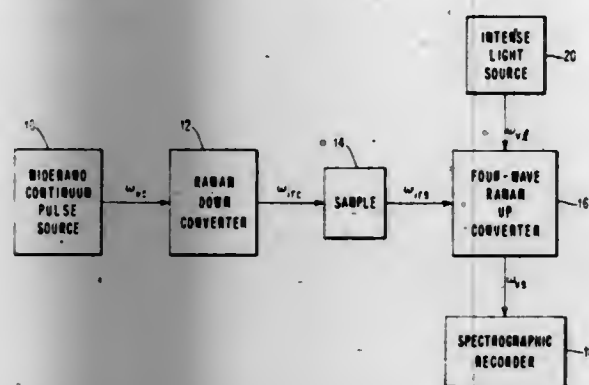
Donald S. Bethune, Mount Kisco; John R. Lankard, Jefferson Valley; Michael M. Loy, Mount Kisco, and Peter P. Sorokin, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,245

Int. Cl.³ G01J 1/00

U.S. Cl. 250—338

11 Claims



1. Apparatus for recording a spectrum produced by interacting a light beam with a sample, comprising:

- a first intense light source for producing a first continuum light beam;
- a Raman down converter cell responsive to said first continuum beam for generating a second continuum light beam of lower frequency;
- means for irradiating a sample with said second continuum beam to produce a third interaction beam carrying spectral information;
- a second intense light source for producing a fourth light beam;
- a four-wave Raman up converter cell responsive to said fourth light beam and to said third interaction beam for generating a final fifth light beam of higher frequency carrying the same spectral information; and
- means for recording said final fifth beam.

4,243,882

INFRARED MULTILAYER FILM THICKNESS MEASURING METHOD AND APPARATUS

Akitaka Yasujima, Yokohama; Naoyuki Shiratori, Tokyo, and Shingo Ishikawa, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

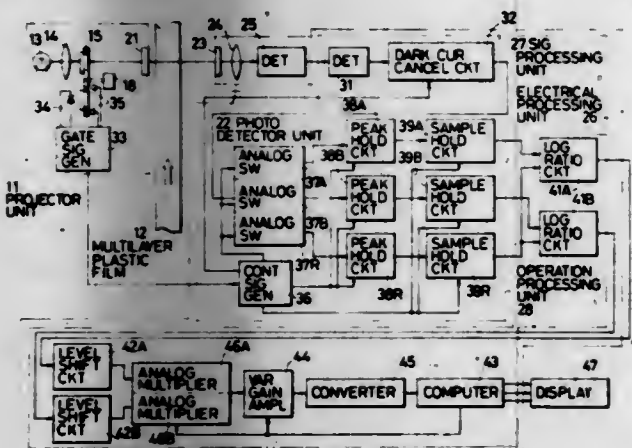
Filed Mar. 2, 1979, Ser. No. 16,754

Claims priority, application Japan, Mar. 10, 1978, 53/266

Int. Cl.³ G01J 1/00

U.S. Cl. 250—339

21 Claims



1. An infrared multilayered film thickness measuring method comprising the steps of:

- projecting an infrared ray including a plurality of sample wavelengths and at least one reference wavelength onto a composite multilayer film or sheet composed of a plurality

of film layers of different synthetic resins, the infrared absorption wavelengths of each of the film layers coinciding with at least one of the sample wavelengths and the reference wavelength being selected not to coincide with the infrared absorption wavelength of each film layer;

obtaining ratios between the amounts of infrared rays of the respective sample wavelengths transmitted through the multilayer film and the amount of infrared rays of the reference wavelength transmitted through the multilayer film;

performing an operation for solving a simultaneous equation including the ratios and the infrared absorption coefficients of the film layers at the sample and reference wavelengths as coefficients and the thicknesses of the film layers as unknowns, thereby obtaining the thicknesses of the film layers.

4,243,883

BLOOD HEMATOCRIT MONITORING SYSTEM

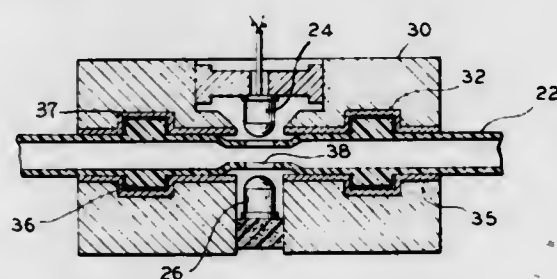
Frank Schwarzmann, Colgate, Wis., assignor to Midwest Cardiovascular Institute Foundation, Wauwatosa, Wis.

Filed Jan. 19, 1979, Ser. No. 4,758

Int. Cl.³ G01J 1/00; G01N 33/48

U.S. Cl. 250—343

11 Claims



1. A system for monitoring and controlling the level of blood hematocrit comprising:

- an infra-red light source means;
- an infra-red sensitive photo-transistor detector means opposing said light source means, said detector means being selected so as to produce a change in voltage dependent upon the amount of light impinging thereupon and having a spectral sensitivity at the wavelength of the light source means;
- lumen means intermediate said light source means and said detector means, said lumen means being substantially optically transparent to the light emitted by said light source means; and
- meter means responsive to the voltage emitted from said detector means for indicating the quantity of hematocrit within a moving column of blood when said column is passed through said lumen means;
- a three-way valve means downstream of said detector means and said light source means, said valve means being coupled to said lumen means, a first outlet of said valve means and a second outlet from said valve means; and
- means within said meter means for causing blood to flow from said lumen means to said first outlet when the blood hematocrit level is above a preselected value and to flow from said lumen to said second outlet when the blood hematocrit level is below said preselected value.

4,243,884

PROBE ASSEMBLY

C. Bert Avera, Jr., Cincinnati, Ohio, assignor to Actus, Inc., Florence, Ky.

Filed Nov. 9, 1978, Ser. No. 959,243

Int. Cl.² G01T 1/20

U.S. Cl. 250—361 R

32 Claims

1. A hand-held radiation monitor probe assembly comprising a substantially cylindrically shaped probe handle having an

4,243,886

APPARATUS AND METHOD FOR THE MEASUREMENT OF NEUTRON MODERATING OR ABSORBING PROPERTIES OF OBJECTS

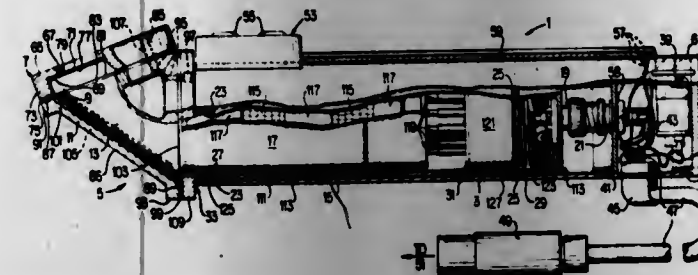
Samuel Untermyer, II, Portola Valley, Calif., assignor to National Nuclear Corp., Redwood City, Calif.

Filed Jun. 19, 1978, Ser. No. 916,873

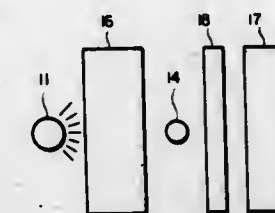
Int. Cl.² G01T 3/00

U.S. Cl. 250—390

11 Claims



optical coupler supported within said probe head, a detecting crystal for detecting radiation and for converting the radiation to light, and means for supporting said detecting crystal adjacent said optical coupler, wherein a face of said detecting crystal is at an angle with respect to the major axis of the cylindrically shaped probe body.



1. Apparatus for measuring the neutron moderation or absorption characteristics of materials, said apparatus adapted to be disposed entirely on one side of said materials comprising a source of fast neutrons, thermal neutron detecting means adapted to be disposed adjacent said materials, thermal neutron absorbing material disposed between the source of fast neutrons and said thermal neutron detecting means for passing fast neutrons to said materials, and means connected to said detecting means to provide an indication of the number of thermal neutrons received from said materials by said detecting means.

4,243,885

CADMIUM TELLURIDE PHOTOVOLTAIC RADIATION DETECTOR

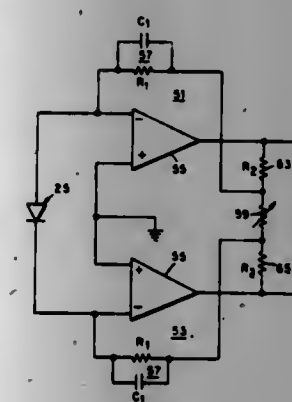
Dimitrios C. Agouridis, and Richard J. Fox, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 25, 1979, Ser. No. 78,759

Int. Cl.³ G01T 1/24

U.S. Cl. 250—370

4 Claims



1. A radiation dosimeter for detecting low-level ionizing radiation comprising:

- a photovoltaic semiconductor diode-detecting element including a thin wafer of chlorine-doped cadmium telluride p-type semiconductor material having a front radiation-receiving surface and a rear surface, a film of n-type material coating said front surface of said wafer forming a p-n photovoltaic junction and an electrically conductive film coating said rear surface forming a current collector;
- a current-to-voltage converter means for converting a photocurrent generated by said detecting element when placed in an ionizing radiation flux to a voltage at the output thereof proportional to the radiation dose rate; and
- means for measuring said output voltage of said converter means.

4,243,887

PROCESS AND APPARATUS FOR ANALYZING A SAMPLE WITH THE AID OF PULSED LASER IRRADIATION

Franz Hillenkamp, Frankfurt; Raimund Kaufmann, Düsseldorf; Eberhard Unsöld, Oberschleissheim; Rainer Nietsche, Frankfurt; Reiner Wechsung, Cologne; Henning Vogt, Cologne; Walter Bank, Cologne in, and Lothar Aberle, Sindorf, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

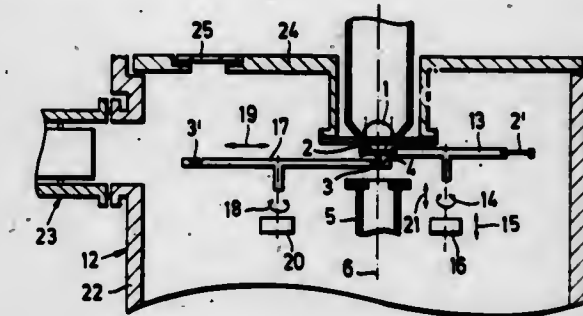
Filed May 1, 1979, Ser. No. 35,089

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819711

Int. Cl.³ H01J 27/00

U.S. Cl. 250—423 P

16 Claims



1. A method of analyzing a sample comprising the steps of: irradiating a selected area of said sample with a first burst of energy from a pulsed laser, said selected area being vaporized by the energy impinging thereon; condensing the vaporized sample material on the surface of an intermediate carrier; and analyzing the condensed sample material deposited on said intermediate carrier.

4,243,888

LASER BEAM ALIGNMENT APPARATUS AND METHOD

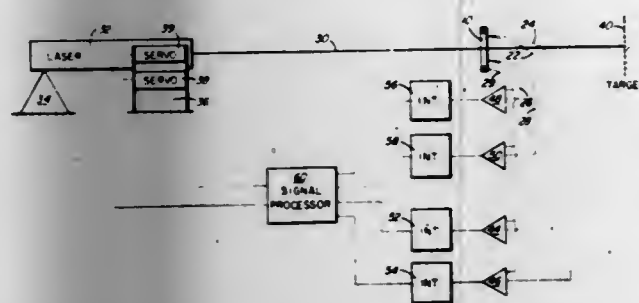
Charles R. Grahn, Martinez, Calif., and Robert B. Hammond, Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 10, 1979, Ser. No. 37,982

Int. Cl.³ G01N 21/00, 23/00

U.S. Cl. 250-491

11 Claims



1. A method for determining the alignment of a laser beam comprising the steps of: intercepting the beam with a planar material substantially incident perpendicular thereto, said material having thermoelectric properties and a known placement relative to the laser, the material having a plurality of ohmic electrical contacts disposed on a surface thereof at selected locations, the contacts being operably connected to electrical conductors, the beam producing thermoelectric effects from pulsed heat diffusion in the material; carrying voltage signals representative of the thermoelectric effects in the material through the conductors within no more than about 100 milliseconds; integrating the thermoelectric voltage signals over a selected period of time; and processing the integrated voltage signals to provide an output representative of the beam's position on the surface of the material.

4,243,889

STORAGE RACK FOR ELONGATED FUEL ASSEMBLIES

Robert Weber, Utsunomiya, Fed. Rep. of Germany, assignor to Kraftwerk Union AG, Mülheim an der Ruhr, Fed. Rep. of Germany

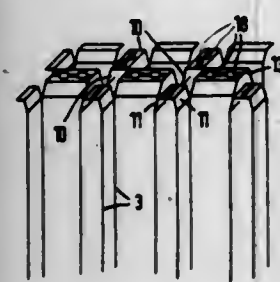
Filed Nov. 24, 1978, Ser. No. 963,230

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753468

Int. Cl.² G21F 5/00

U.S. Cl. 250-507

4 Claims



1. Storage rack for elongated nuclear reactor-fuel assemblies having a polygonal cross section comprising an array of elongated sheetmetal shells of corresponding polygonal cross section for receiving respective fuel assemblies therein at locations of the rack at which the fuel assemblies are to be positioned, said shells being spaced from one another and neutron-absorbing material of given thickness being disposed in the space therebetween, an inlet funnel being formed of bent, upper marginal portions of the respective sheetmetal shells, mutually adjacent shells of said array having the bent, upper marginal portions thereof facing edgewise towards one another and,

being directly connected to one another by a weld only at the respective edges of said marginal portions, said space between said shells being greater than said given thickness of said neutron-absorbing material and being bridged at said weld connection, for the most part, by sheetmetal extending transversely to the longitudinal direction of said shells, and means defining openings at corners of the polygonal cross sections of said shells and communicating with said spaces between said shell for providing passage therethrough of medium for cooling the fuel assemblies.

4,243,890

ISOLATOR/SWITCHING ASSEMBLY FOR DATA PROCESSING TERMINAL

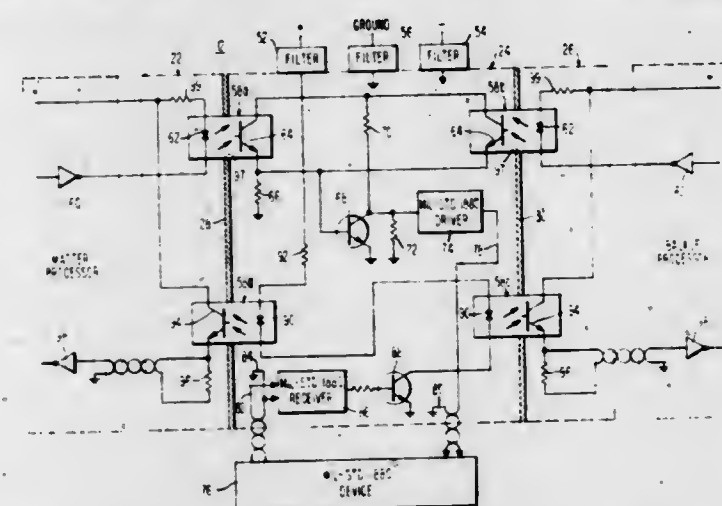
Bruce J. Miller, 13 Doe La., Malvern, Pa. 19355; Gus C. Gado-nas, R.D. #2, Phoenixville, Pa. 19460, and Frank C. Donofrio, 720 Buttonwood St., Norristown, Pa. 19401

Filed Aug. 23, 1976, Ser. No. 717,001

Int. Cl.³ G02B 27/00; H05K 5/00

U.S. Cl. 250-551

9 Claims



1. An isolator/switching assembly for permitting confidential communications among a plurality of electronic data processors and a common peripheral device comprising: at least one metal box-like isolator/switching unit having a plurality of compartments separated from each other by metal bulkheads, said unit being closed by a lid fastened to one edge thereof by hinge means and clamped to the unit by latch means engaging the other edge thereof; a plurality of metal enclosures fastened to said unit including a plurality of wire manifolds associated respectively with said data processors, each of said manifolds having an opening coincident with that of a first-type compartment of said unit and another opening for providing external access to the manifold in order to convey a first set of signal carrying conductors from its associated processor to said last mentioned compartment; a second-type compartment of said unit having an opening therein for permitting the entry therethrough of a second set of signal carrying conductors coupled to said peripheral device; a plurality of optical couplers mounted respectively in apertures formed in said bulkheads, the input leads of each coupler associated with its light source and the output leads thereof associated with its light sensor being situated on opposite sides of said bulkhead within respective adjacent compartments of said unit; said first and second sets of signal carrying conductors being electrically coupled to predetermined leads of said optical couplers to effect communications among said processors and said common peripheral device while maintaining the electrical isolation of said compartments from one another.

4,243,891

APPARATUS FOR DETECTING HOLES IN WEBS OF PHOTOGRAPHIC PAPER OR THE LIKE

Rudolf Dobler, Fürstentfeldbruck, and Klaus Weber, Leverkusen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

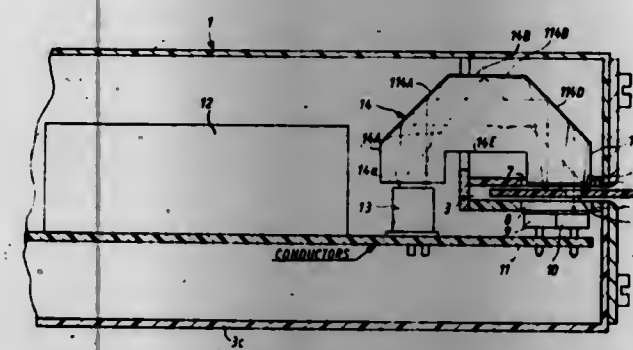
Filed Jun. 26, 1978, Ser. No. 919,286

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728728

Int. Cl.³ G01K 21/86

U.S. Cl. 250-571

18 Claims



1. Apparatus for scanning a running web for the presence of holes, particularly for monitoring a web of exposed and developed photographic paper for the presence of holes which are associated with successive prints, comprising means for advancing the web lengthwise along a predetermined path; photoconductive detector means adjacent to one side of said path; a light source remote from and located at said one side of said path; and means for optically coupling said source with said detector means, said coupling means having a light admitting portion adjacent to said source and a light emitting portion located opposite said detector means at the other side of said path so that said detector means is exposed to light when a hole is located between said light emitting portion and said detector means.

4,243,892

ENERGY-EFFICIENT FLUID MEDIUM PUMPING SYSTEM

Nils-Eric Andersson, Västana, and Bengt Sinner, Västana, both of Sweden, assignors to ASEA Aktiebolag, Västana, Sweden

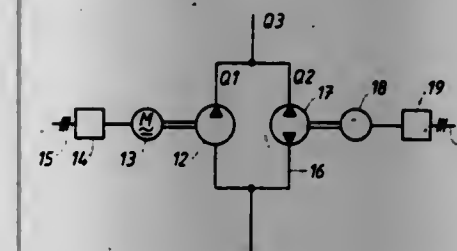
Filed Sep. 7, 1979, Ser. No. 73,195

Claims priority, application Sweden, Sep. 11, 1978, 7809513

Int. Cl.³ H02P 9/04

U.S. Cl. 290-1 R

4 Claims



1. A system for pumping or compressing a fluid medium from a lower level to a higher level or from a fluid medium source at a lower pressure to a reservoir at a higher pressure which includes means forming a fluid medium input for carrying fluid medium from a lower level fluid medium source or from a fluid medium source at a lower pressure, means forming a fluid medium output for conveying the fluid medium to a reservoir at a higher level or at a higher pressure, means forming at least two parallel fluid medium flowpaths between said fluid medium input means and said fluid medium output means, means forming a pump or compressor in one of said flow-

path-forming means for pumping or compressing the fluid medium from said input means to said output means, and means operable as either a pump or a turbine in each of the remainder of said flowpath-forming means, and a means connected to each said pump or turbine means operable as either a drive motor or an electrical generator, such that when said means connected to said pump or turbine means is operated as a drive motor, the means operable as either a pump or a turbine will act as a pump and fluid medium will be pumped from said input means to said output means, whereas when fluid medium is allowed to return flow from said output means to said input means, said means operable as either a pump or a turbine will act as a turbine and said means operable as either a drive motor or an electrical generator will operate as an electrical generator and feed power to an electrical network.

4,243,893

SUPPLEMENTAL COOLING SYSTEM FOR PORTABLE ELECTRIC POWER PLANTS

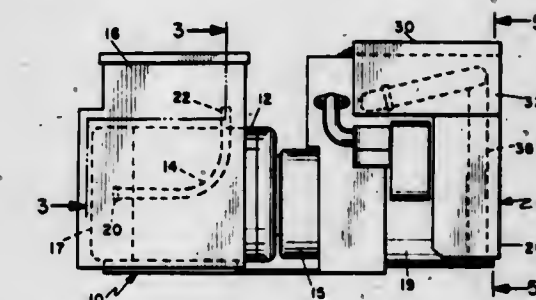
Nathan Sten, Chula Vista, Calif., assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 3, 1978, Ser. No. 957,644

Int. Cl.³ F01P 1/06

U.S. Cl. 290-1 B

12 Claims



1. A cooling system for power plant enclosures incorporating means for generating cooling air flow for cooling the primary components of the power plant, including an engine cooling blower in a blower housing, the invention comprising: a diverter means for diverting a portion of the cooling air flow away from the primary components, said diverter means comprising an opening in the blower housing, duct means for ducting the diverted air flow to an enclosure mounted on said power plant, and into heat transfer relationship with heated elements associated with said enclosure, discharge means for exhausting said diverted air flow from said enclosure.

4,243,894

SOLID STATE MOTOR CONTROL UNIVERSAL ASSEMBLY MEANS AND METHOD

Richard J. Kuntner, Milwaukee, and James C. Van der Meer, Brookfield, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 2, 1978, Ser. No. 947,739

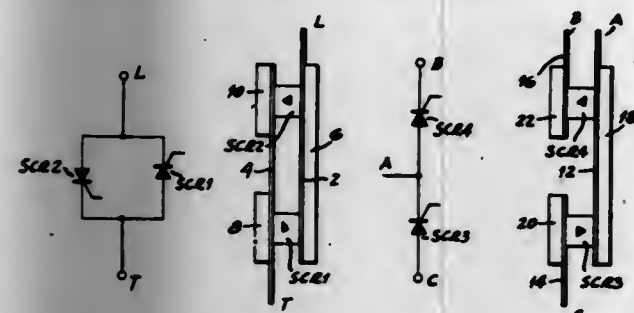
Int. Cl.³ H02B 13/00; H05K 7/02

U.S. Cl. 307-147

12 Claims

1. Solid state power pole universal assembly means comprising: a pair of semiconductors of the type having flat opposite faces serving as power terminals separated by lateral sides adapting them for pressure mounting at said faces and being arranged in spaced apart side-by-side relation in reversed directions so that different power terminals face in the same direction; first mounting and connecting means comprising a first long bus bar against the faces of both said semiconductors that

face in the same direction and having a terminal end extending in a first lateral direction;
 second mounting and connecting means comprising a selected one of two interchangeable bus bar means including (a) bus bar means having a second long bus bar like the aforesaid first long bus bar against the faces of both said semiconductors that face in the other direction and having a like terminal end extending in the opposite lateral direction, and (b) bus bar means having two like short bus bars against the faces of respective semiconductors that face in the other direction and having like terminal ends extending in said first and said opposite lateral directions;



a long heat sink engaging said first long bus bar and heat sink means engaging the selected bus bar means of said second mounting and connecting means;
 a pair of clamps extending through said heat sink and said first long bus bar and said bus bar means of said second mounting and connecting means and said heat sink means for clamping the respective semiconductors therebetween to provide a power pole sub-unit;
 and supporting and electrical connecting means attached to said bus bar terminals for mounting and insulating said power pole sub-unit on a panel and affording connection thereof along or in combination with other like power pole sub-units in a power control system.

4,243,895

INTEGRATED INJECTION CIRCUIT

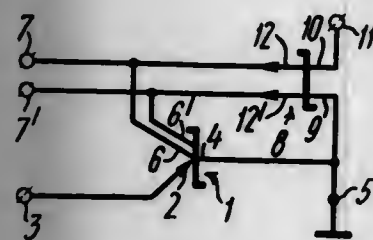
Artashes R. Nazarian, ploschad Junosti, 3, kv. 16; Vyacheslav Y. Kremlev, korpus 423, kv. 81; Vilyam N. Kokin, korpus 441, kv. 115; Viktor I. Sladkov, Berezhovaya alleya, 6, kv. 77; Boris V. Venkov, korpus 206, kv. 46, all of Moscow, and Vadim V. Lavrov, ulitsa 8 Marta, 7, kv. 125, Khimki Moskovskoi oblasti, all of U.S.S.R.

Filed Jan. 4, 1978, Ser. No. 866,821

Int. Cl.³ H03K 19/017, 19/094, 19/20; H01L 29/80

U.S. Cl. 307-205

11 Claims



1. An integrated injection circuit comprising: a current generator connected to a supply source and to ground; a normally cutoff n-channel field-effect transistor comprising a gate connected to said current generator and comprising at least one non-injecting rectifying contact, a source connected to ground, and a drain; an input electrode of the circuit connected to said gate of said FET and to said current generator; and, an output electrode of the circuit connected to the drain of said FET.

4,243,896

I²L CIRCUIT WITH AUXILIARY TRANSISTOR

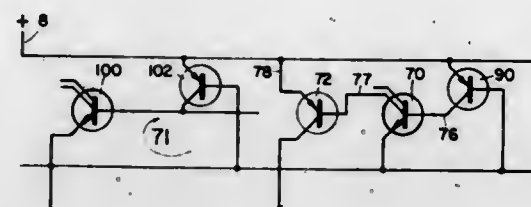
Claude Chapron, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 675,605, Apr. 9, 1976, abandoned. This application May 23, 1977, Ser. No. 799,678

Claims priority, application France, Apr. 14, 1975, 75 11504 Int. Cl.³ H03K 19/091

U.S. Cl. 307-213

10 Claims



1. An integrated circuit comprising: controlling and controlled transistors of a first conductivity type having bases and collectors; associated biasing current injectors connected to at least some of said transistors to bias same; said associated biasing current injectors each having at least first, second and third zones with said first and second zones forming a first rectifying junction and said second and third zones forming a second rectifying junction; means connecting said controlling transistor collectors to said controlled transistor bases; said transistors and associated current injectors forming plural elementary groups in which said transistors require substantially the same supply current and each with a current injector;

two terminals for connection to a current source means; means connecting said plural groups in series across said two terminals for said current source means so as to include a first in the series defined as the highest stage, a last in the series defined as the lowest stage, higher and lower stages being defined as the higher stage being closer to the beginning of the series than a lower stage;

said series connecting means including means connecting the current injector first zone of the group of transistors in the highest stage, without the interconnection of further stages, to said current source means terminal for biasing the first rectifying junction in the forward direction; means connecting the current injector second zone of the group of transistors in said lowest stage, without the interposition of further stages, to the other current source means terminal;

means connecting the current injector second zone of the highest stage to the current injector first zone of the next lower stage; and means providing a signal connection between a controlling transistor collector of a higher stage and a controlled transistor base of a lower stage;

said signal connection means comprising a signal controlled current source means for actuating said control transistor to which it is connected by supplying base drive current thereto and including a transistor of a second conductivity type complementary to said controlling and controlled transistors, said control transistor base to which said signal connection is provided being free of any other current source drive capable of actuating said controlled transistor in the absence of current flow along said signal connection;

said second conductivity type complementary transistor

having emitter, base and collector, and being located in said higher stage;
 means connecting said transistor emitter to the current injector first zone of said higher stage;
 means connecting said transistor base to the controlling transistor collector;
 means connecting said complementary transistor collector to the controlled transistor base; and
 an auxiliary transistor of the same conductivity type as said controlled and said controlling transistors in a stage lower than said highest stage, connected to an associated current injector and being connected parallel to the emitter base junction of said controlled transistor, said auxiliary transistor being connected so as to be rendered conductive at least during the period in which said controlled transistor is conductive for bringing said controlled transistor more rapidly into a non-conductive state.

4,243,897

CHARGE COUPLED SEMICONDUCTOR DEVICE
STORING 2-BIT INFORMATION

Kazuyasu Fujishima; Michihiro Yamada, and Kouichi Nagasawa, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

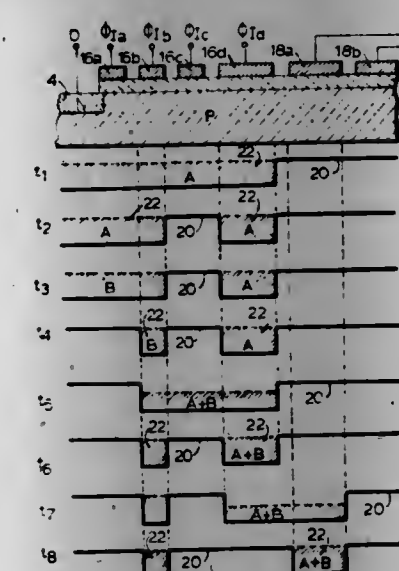
Filed Apr. 28, 1978, Ser. No. 901,258

Claims priority, application Japan, Apr. 28, 1977, 52/49231

Int. Cl.³ G11C 19/28; H01L 29/78

U.S. Cl. 307-221 D

3 Claims



1. A method of driving a charge coupled semiconductor device comprising a semiconductor layer of a first type conductivity including a main face, an electrically insulating film disposed on said main face of said semiconductor layer, an electrode array of a plurality of transfer electrodes disposed in a consecutive spaced relationship at predetermined intervals on said electrically insulating film for storing an electric charge thereunder and for transferring said electric charge in a predetermined direction along said main face of said semiconductor layer, charge injection means composed of an electrically conductive region of a second type conductivity disposed to form a PN junction with said semiconductor layer, said electrically conductive region being responsive to an input signal applied thereto to produce an electric charge in said semiconductor layer, an input gate unit consisting of a first, a second, a third and a fourth input gate electrode disposed on said electrically insulating film between said electrically conductive region and the transfer electrode on the input side of said electrode array, said fourth input gate electrode being disposed adjacent to said transfer electrode on said input side of said electrode array to form a predetermined spacing therebetween and having an area larger than that of said second input gate electrode, which method comprises the first step of applying gate signals to said first, second, third and fourth input gate electrodes during the time of application of a first input signal to said charge injection means for injecting a charge into said

4,243,898

SEMICONDUCTOR TEMPERATURE SENSOR

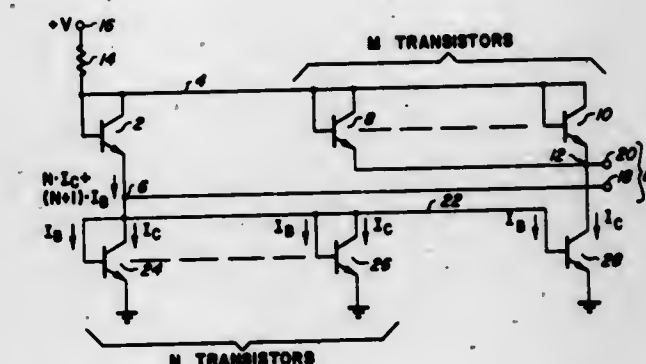
Walter C. Seelbach, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 16, 1978, Ser. No. 961,307

Int. Cl.³ H01L 31/00; H03K 3/26; G06G 7/24

U.S. Cl. 307-310

9 Claims



1. A temperature sensor circuit for providing an indication of temperature comprising:

- a first semiconductor junction means for conducting a first current therethrough and for generating a first voltage thereacross;
- at least second semiconductor junction means for conducting a second current therethrough and for generating a second voltage thereacross;
- third means coupled to said first and at least second semiconductor junction means and adapted for coupling to a power supply for providing said first and second currents;
- fourth means coupled to said first and at least second semiconductor junction means for maintaining said predetermined relationship; and
- output means coupled to said first and said at least second semiconductor junction means, respectively, for providing said first and second voltages as a differential output voltage having a magnitude which is linearly proportional to temperature;
- said first semiconductor junction means having a predetermined junction area and said at least second semiconductor junction means having a junction area equal to M times said predetermined junction area.

4,243,899

LINEAR MOTOR WITH RING MAGNET AND NON-MAGNETIZABLE END CAPS

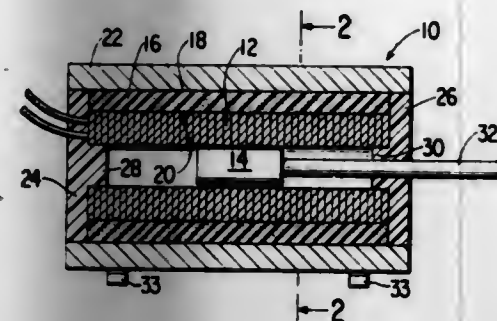
Wolfgang Jaffe, Roselle Park, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 8, 1979, Ser. No. 18,553

Int. Cl.³ H02K 41/00

U.S. Cl. 310-14

6 Claims



1. A linear motor comprising a casing of ferromagnetic material, a coil within said casing, a plunger which is wholly in a passageway in the coil and which is movable by the coil in opposite directions to selected positions in the passageway, a permanent magnet in the casing concentric with the coil and plunger, and having oppositely polarized magnetic poles on outer and inner surfaces, fixed end caps of non-magnetizable material which seal ends of the longitudinal passageway wherein the plunger is wholly located and provide an in-line face to face relationship between the ends of the plungers and the end caps extending from the plunger in the directions of movement thereof by the coil only to the non-magnetizable material of the end caps; and an output shaft of non-magnetizable material attached to the plunger and extending from the plunger to and through an end cap.

4,243,900

MULTIPLE STAGE MINIATURE STEPPING MOTOR

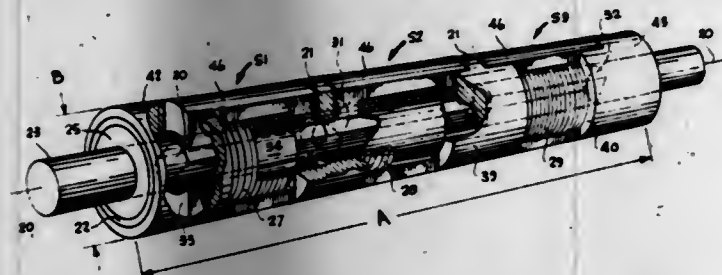
William A. Niven, Livermore; S. David Shikany, Danville, and Michael L. Shira, Fremont, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 3, 1978, Ser. No. 957,621

Int. Cl.³ H02K 37/00

U.S. Cl. 310-49 R

4 Claims



1. A miniature stepping motor composed of a plurality of selectively controlled stages arranged longitudinally along a common centrally located rotor shaft and having nonmagnetic spacer means positioned intermediate each of said plurality of stages, such that sequential activation of the stages results in successive rotor steps of about 60° to provide partial or full rotation of said rotor shaft; each of said stages consisting of an annular bobbin constructed of nonmagnetic material positioned in spaced relationship about said rotor shaft, a pair of longitudinally extending soft iron pole pieces mounted on opposite sides of said annular bobbin, each of said pole pieces having an inner cutaway section, a coil of electrically conductive material wound on said bobbin at said cut-away sections of said pole pieces, and an insert of magnetic material positioned in and exposed on opposite sides of said rotor shaft and extending along the longitudinal length of said pole pieces; said non-magnetic spacer means being constructed to retain said pair of

pole pieces of each adjacent stage on opposite sides of said bobbin of each adjacent stage; said inserts of magnetic material in said plurality of stages being located in said common rotor shaft at an angle with respect to said pole pieces and with respect to one another.

4,243,901

EDDY CURRENT MACHINE BRAKE CONTROL DEVICE

Ilya I. Vorona, Volkovsky pereulok, 26, korpus 1, kv. 16; Rikhard A. Ioganson, Kutuzovskiy prospekt, 4, kv. 6; Mark B. Perchenok, ulitsa Chasovaya, 27/12, kv. 16; Evgeny V. Chegodaev, ulitsa Novgorodskaya, 34, kv. 317, and Valentin I. Chulin, ulitsa Novo-Petrovskaya, 18, kv. 49, all of Moscow, U.S.S.R.

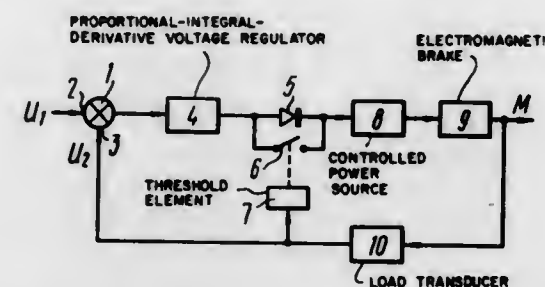
Filed Jul. 26, 1978, Ser. No. 928,317

Claims priority, application U.S.S.R., Aug. 31, 1977, 2512801

Int. Cl.³ H02K 49/04

U.S. Cl. 310-94

6 Claims



1. An eddy current machine load control device for controlling the load of an eddy current machine having a controlled power source, said device comprising:

comparator means having a first input for the supply of voltage of a predetermined magnitude, a second input, and an output, for comparing said first input and said second input, and producing a comparison signal at said output when said first and second inputs are equal in magnitude; voltage regulator means responsive to said output of said comparator means for issuing an output controlling said controlled power source, and accordingly said eddy current machine, in accordance therewith, said eddy current machine producing an actual load value indicative of mechanical stresses therein;

transducer means responsive to said actual load value of said eddy current machine for converting said mechanical stresses to an electrical signal output, and for providing said electrical signal output as said second input of said comparator means;

diode means for providing said output of said voltage regulator means to said controlled power source when said output of said voltage regulator means has a first polarity, and for blocking said output of said voltage regulator means from said controlled power source when said output of said voltage regulator means has a second polarity;

shunt means normally in an open circuit condition for blocking said output of said voltage regulator means from said controlled power source, and selectively actuatable to a closed circuit condition for providing said output of said voltage regulator means to said controlled power source when said output of said voltage regulator means is of said second polarity; and

threshold means responsive to said electrical output signal of said transducer means for selectively actuating said shunt means to said closed circuit condition so long as said braking moment of said eddy current machine is greater than a minimum moment value, and for selectively actuating said shunt means to said open circuit condition when said braking moment of said eddy current machine equals said minimum moment value.

4,243,902

DIRECT CURRENT MOTOR WITH NON-SUPERPOSED ARMATURE WINDINGS

Itsuki Ban, 829 Higashi-Otsumimachi, Nerima-ku, Tokyo; Masabu Shiraki, 4451-171 Shimotsurama, Yamato-shi, Nerima-ku, Kanagawa-ken, and Kazuhito Egami, 2-44-1 Chuo, Nakano-ku, Tokyo, all of Japan

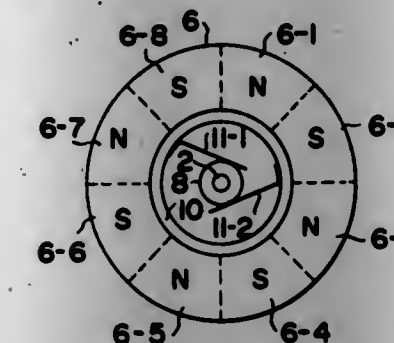
Filed Aug. 29, 1978, Ser. No. 937,848

Claims priority, application Japan, Dec. 22, 1977, 52-153628

Int. Cl.³ H02K 23/54

U.S. Cl. 310-154

2 Claims



1. A direct current motor having armature windings that are non-superposed with respect to each other comprising: a field magnet having 4 mn poles that are magnetized into alternate N and S polarities in equal angular spaces wherein m is a positive integer of 1 or more and n is a positive integer of 2 or more; a magnetic-material member for closing the magnetic path of said field magnet; and armature having m(2n+1) armature windings disposed thereon in a non-superposed manner in equal pitches with respect to said field magnet poles, said windings each being formed such that the angular spacing of those conductor portions thereof that contribute to the generation of torque is equal to the angular width of a field magnet pole.

4,243,903

PERMANENT MAGNET STATOR FOR A DC DYNAMO ELECTRIC MACHINE USING BLOCKING MAGNETS

Matsuo Mishima, Tokyo, Japan, assignor to Micro Technology Laboratory Co., Ltd., Japan

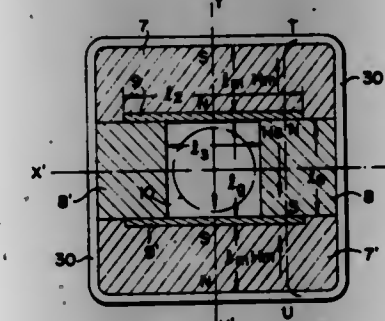
Filed Oct. 3, 1978, Ser. No. 948,208

Claims priority, application Japan, Oct. 6, 1977, 52-120240

Int. Cl.³ H02K 21/28

U.S. Cl. 310-154

15 Claims



1. A stator for a DC dynamo electric machine comprising: a square-shaped yoke; a pair of main magnets oppositely disposed in said square-shaped yoke for forming a magnetic field in an air gap defined between said two magnets; a non-magnetic or substantially non-magnetic, columnar solid body rotor positioned between said two magnets for establishing an extremely large air gap between said two magnets; plate-like pole pieces mounted on respective opposing areas

of said main magnets facing said rotor for establishing a double-pole intensified magnetic field in said extremely large air gap parallel to leakage magnetic fields developed on both sides of said extremely large air gap between said main magnets; and

a pair of blocking magnets oppositely disposed in said yoke between said two main magnets on the sides of said extremely large air gap for generating magnetic fields reverse in direction and equal in intensity to said leakage magnetic fields developed on the sides of said extremely large air gap, wherein said blocking magnets cancel the leakage magnetic flux to provide an effective strong magnetic field in said extremely large air gap.

4,243,904

IMAGE INTENSIFIER TUBE WITH INSULATOR SHIELD

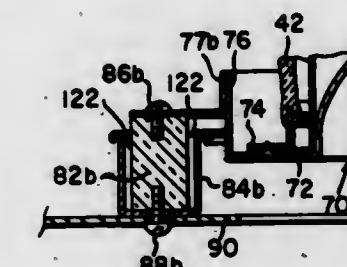
James R. Caraber, Stamford, Conn., assignor to The Machlett Laboratories, Inc., Stamford, Conn.

Filed Jan. 2, 1978, Ser. No. 911,857

Int. Cl.³ H01J 40/04, 40/02

U.S. Cl. 313-99

9 Claims



1. An image intensifier tube comprising: an evacuated envelope; tubular means in the envelope for supporting therein a source of vaporous conductive material; electrode means in the envelope including a first electrode disposed adjacent the tubular means and an axially spaced second electrode for establishing adjacent electrostatic fields; dielectric spacer means having first portions connected to the first electrode and second portions attached to the second electrode for insulatingly securing the electrodes to one another; and cup-shaped conductive hood shielding means electrically connected to the first electrode and disposed about the first portions of the dielectric spacer means for protecting the first portions from the vaporous conductive material and the adjacent electrostatic fields, the cup-shaped conductive hood shielding means including closed end portions disposed in interfacing relationship with the first portions and having extended therefrom wall portions laterally spaced from the first portions and terminating in open end portions outwardly curled rims.

4,243,905

METHOD OF MAKING THE CATHODE OF A DIODE IMAGE INTENSIFIER TUBE, AND IMAGE INTENSIFIER TUBE HAVING A CATHODE MADE BY THIS METHOD

Lambertus K. van Goest, Roden, and Johannes J. Houtkamp, Delft, both of Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Netherlands

Filed Jul. 20, 1978, Ser. No. 926,252

Claims priority, application Netherlands, Jul. 27, 1977, 7708321

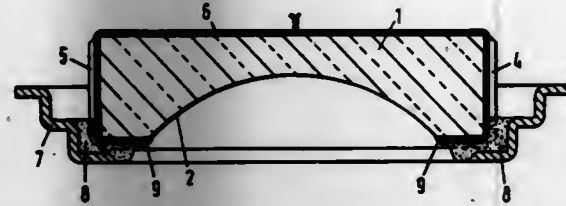
Int. Cl.³ H01J 43/28

U.S. Cl. 313-102

8 Claims

1. In a method for making a cathode of a diode image intensifier tube wherein alkali metals and antimony are evaporated onto an inner surface of a cathode window and wherein said

cathode window is joined by a layer of frit to a metallic cathode flange coupled to a cathode housing, said diode image intensifier tube having an electrical resistance of a pre-determined value such that at light levels whereat there is a danger of anode burn out, said diode image intensifier tube is caused to



be defocused or cut off, the improvement characterized by applying an alkali-resistant and insulating layer to said frit layer after joining said cathode to said cathode flange and by protecting an area extending around said cathode and said cathode flange prior to evaporating said alkali metals and antimony whereby no antimony is present.

4,243,906

HIGH PRESSURE MERCURY VAPOR DISCHARGE LAMP

Ian L. Wilson, Hannover, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

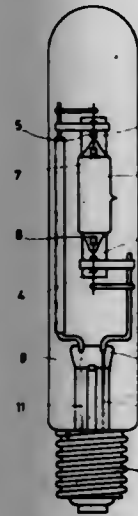
Filed Jan. 22, 1978, Ser. No. 917,978

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725297

Int. Cl.³ H01J 61/20, 61/22

U.S. Cl. 313-229

7 Claims



1. A high pressure mercury vapor discharge lamp which comprises: a discharge vessel and means for maintaining the discharge in said vessel, said discharge vessel containing mercury, at least one rare gas as a starting gas, at least one of the halogens iodine, bromine and chlorine, at least one of the metals selected from the group consisting of calcium, strontium, barium and the rare earth metals, each of said metals being wholly or partly in the form of their halides, said discharge vessel containing in addition at least one metal halide selected from the group consisting of the halides of iron, of cobalt and of nickel.

4,243,907

LAMP HAVING REDUCED WIDTH PRESS-SEAL
Clyde B. Kohl, Winchester; George B. Kendrick, and Raymond T. Fleming, both of Lexington, all of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 54,769

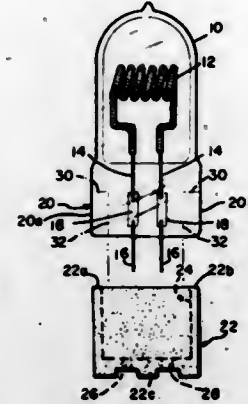
Int. Cl.³ H01J 5/48, 5/50

U.S. Cl. 313-318

6 Claims

1. A lamp comprising:
a sealed envelope of vitreous material having a press-seal at one end;

a pair of lead-in wires hermetically sealed through said press-seal in spaced-apart relationship to one another and extending beyond said press-seal;
a filament connected across the inner ends of said lead-in wires; and



at least a portion of said press-seal of vitreous material having a reduced width as provided by removing right-angled sections from opposite lower corners thereof, whereby said lamp press-seal is adapted to fit a base smaller than that conventionally matched with said envelope.

4,243,908

ELECTRICAL CONNECTIVE MEANS FOR A CRT MASK-PANEL ASSEMBLY

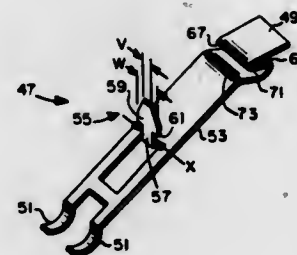
Kurt H. Brenner, Jr., Seneca Falls, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 16, 1979, Ser. No. 30,249

Int. Cl.³ H01J 29/07

U.S. Cl. 313-407

9 Claims



1. An improvement in the electrical connective means effecting interconnection between the mask electrode and a discrete area of the panel in a color cathode ray tube mask-panel assembly whereof the glass panel component includes a viewing area having a cathodoluminescent screen interiorly formed thereon and a perimetrical sidewall therearound whereon an electrically conductive film is interiorly disposed on at least a portion of the panel; and whereof the mask electrode component of said assembly, spatially supported within said panel, includes a viewing area-related foraminous portion peripherally affixed to a rigid framing member having a side portion spatially and substantially parallelly related to said panel sidewall, said framing member having a contiguous ledge portion terminally instanding from said side portion, said interconnection improvement comprising: an electrical contactor formed as a longitudinal resilient conductive member having an attachment portion affixed to said framing member, an opposed contact portion and an intermediate flexural portion therebetween, said flexural portion having an integral structure bent angularly therefrom to form a tab-like projecting retention-release element extending toward said framing member; and a discretely configured aperture formed in the side portion of said framing member, said aperture being dimensioned to receive and interact in a cooperating manner with a section of

said projecting retention-release element to effect a retract-release mechanism whereby said contactor is desirably retained in a retracted position proximal to said framing member and upon subsequent manipulation of said projecting element is released permitting flexural movement of said contactor to make positive pressured contact with an area of conductive film discretely disposed on said panel sidewall.

4,243,909

FLUORESCENT LAMP ALKALINE EARTH HALOPHOSPHATE PHOSPHOR WITH PROTECTIVE $\text{NaCs}_2\text{PrCl}_6$ COATING

Charles Brecher, Lexington, and Daniel W. Obias, Bedford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 5, 1979, Ser. No. 1,117

Int. Cl.³ H01J 63/04, 61/63

U.S. Cl. 313-487

1 Claim



1. A fluorescent lamp comprising:
a tubular envelope;
a phosphor layer on the interior surface of said envelope, said layer consisting essentially of finely-divided phosphor particles of a cool white alkaline earth halophosphate phosphor, each particle having a thin protective coating consisting of $\text{NaCs}_2\text{PrCl}_6$ of about 10 Angstroms thickness;
said protective coating being essentially opaque to ultraviolet radiation of wavelengths less than about 250 nanometers but excited thereby to emit visible radiation;
mercury vapor within said envelope; and
a pair of electrodes spaced apart within said tubular envelope and being adapted for connection, at those portions thereof extending outside of said envelope, to means for producing an electric discharge within said tubular envelope.

4,243,910

FILAMENT SUPPORT ASSEMBLY FOR DISPLAY DEVICE

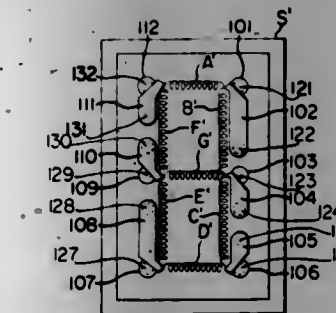
Kiyoshi Nagai, Urawa, Japan, assignor to Wako Corporation, Tokyo, Japan

Filed Aug. 25, 1978, Ser. No. 936,770

Int. Cl.³ H01K 1/18, 7/04

U.S. Cl. 313-522

8 Claims



1. A filament support assembly for a filament type display device, comprising:
a plurality of first leadwires extending through the bottom of the display device;
a plurality of second leadwires extending through said bottom a greater distance than said plurality of first leadwires;
a plurality of first electrode plates each connected to a respective one of said plurality of first leadwires;

a plurality of second electrode plates each connected to a respective one of said plurality of second leadwires;
a plurality of first filaments extending in a first direction and each said first filament including end portions connected between respective ones of either said first or second electrode plates in substantially a first plane;
a plurality of second filaments extending in a second direction and each said second filament including end portions connected between respective ones of the other of said first or second electrode plates in substantially another plane parallelly spaced from said first plane; and
the points of interconnection of respective ones of said first filaments with said first or said second electrode plates and the points of interconnection of respective ones of said second filaments with the other of said first or second electrode plates being in substantially superposed relationship in a direction substantially transverse to said first and second planes.

4,243,911

RESISTIVE LENS ELECTRON GUN WITH COMPOUND LINEAR VOLTAGE PROFILE

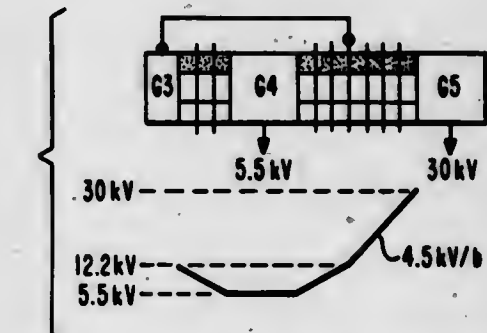
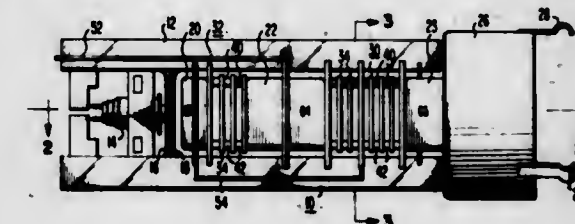
Norman D. Winarsky, Princeton; Roger W. Cohen, Trenton; David P. Bortfeld, Kendall Park, and Leon J. Vieland, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1979, Ser. No. 70,645

Int. Cl.³ H01J 29/96, 29/62

U.S. Cl. 315-3

14 Claims



1. An electron gun comprising first, second and third lens electrodes spaced along a beam path, and a plurality of resistive lens structures, each comprising a stack of alternate electrode plates and resistive spacer blocks secured together so that each stack is electrically continuous from one end to the other,
a first one of said resistive lens structures physically disposed between said second and third lens electrodes and having one end thereof electrically connected to said second lens electrode and the other end thereof electrically connected to said third lens electrode,
a second one of said resistive lens structures electrically paralleled with a first portion of said first resistive lens structure, and
lead-in terminal means to said second and third lens electrodes whereby potentials applied to said terminal means produces bleeder currents through said resistive lens structures so that said first portion of said first resistive lens structure experiences less bleeder current than the remaining portion of said first resistive lens structure whereby to provide a compound linear potential profile along said first resistive lens.

4,243,912

SIMPLIFIED RESISTIVE LENS ELECTRON GUN WITH COMPOUND LINEAR VOLTAGE PROFILE

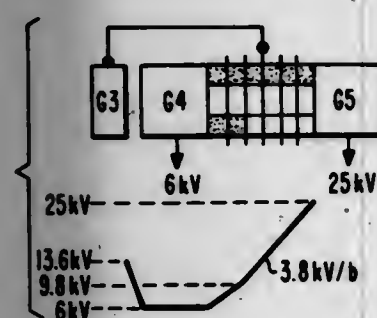
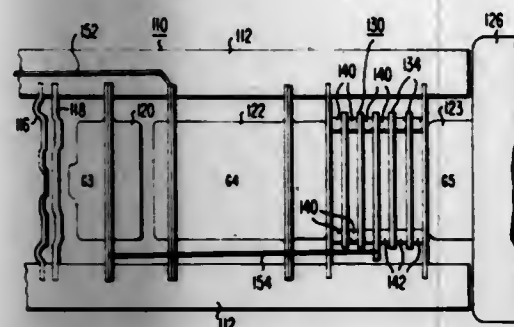
David P. Bortfeld, Kendall Park, and Leon J. Vieland, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1979, Ser. No. 70,538

Int. Cl.³ H01J 29/96, 29/62

U.S. Cl. 315—3

5 Claims



1. An electron gun comprising a plurality of lens electrodes spaced along a beam path, and a resistive lens structure physically disposed between said lens electrodes and having one end thereof electrically connected to one of said lens electrodes and the other end thereof electrically connected to the other of said lens electrode,

said resistive lens structure comprising a plurality of apertured electrode plates alternately stacked with a plurality of equal resistance resistive spacer blocks so that said stack is electrically continuous from one end to the other, said stack comprising a first section having a given number of resistive blocks between each adjacent pair of electrode plates, and a second section having fewer than said given number of resistive blocks between each adjacent pair of electrode plates, and

lead-in terminal means to said lens electrodes whereby potentials applied to said terminal means produces bleeder currents through said resistive lens structure so that the axial potential gradient established in said first section of said resistive lens structure is less than the axial potential gradient established in said second section, whereby to provide a compound linear potential profile along said resistive lens.

4,243,913

COLOR PICTURE TUBE MAGNETIC SHIELDING AND DEGAUSSING STRUCTURE

Leroy W. Nero, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,904

Int. Cl.³ H01J 29/06

U.S. Cl. 315—8

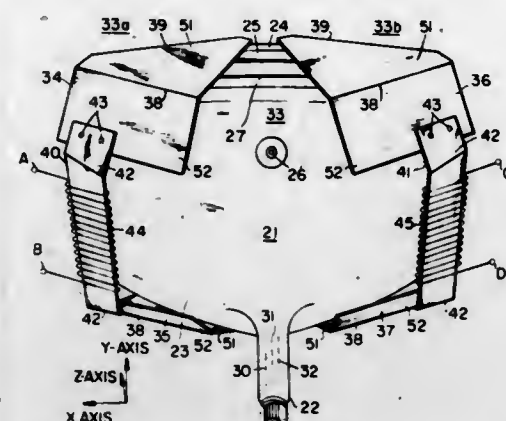
13 Claims

9. A magnetic shielding and degaussing structure for a color picture tube having a shadow mask and faceplate, funnel and neck regions, comprising:

a magnetizable shielding plate located at each corner of said color picture tube, entirely external to said color picture tube, for collecting stray magnetic flux, each shielding plate extending over a respective region of said shadow mask and over a funnel region adjacent thereto that are

unshielded by other magnetizable structures within said color picture tube;

a pair of vertically oriented magnetizable collimator strips, each connecting upper and lower corner shielding plates on a side of said color picture tube to provide a low reluctance path substantially in a magnetizable material between an upper and a lower corner shielding plate, said upper and lower corner shielding plates guiding said stray



magnetic flux into said collimator strips away from the interior of said color picture tube to provide magnetic shielding for said color picture tube; and

a pair of degaussing windings with conductor turns of said windings wound around the vertical axes of said collimator strips, said shielding plates cooperating with said collimator strips to form a low reluctance path for directing degaussing flux generated by said degaussing windings into said shadow mask.

4,243,914

CIRCULATING FLUID COOLED DELAY LINE FOR HIGH FREQUENCY TUBES, AND HIGH FREQUENCY TUBES HAVING SUCH A DELAY LINE

Bernard Delory, Georges Fleury, and Jean-Claude Kuntzmann, all of Paris, France, assignors to Thomson-CSF, Paris, France

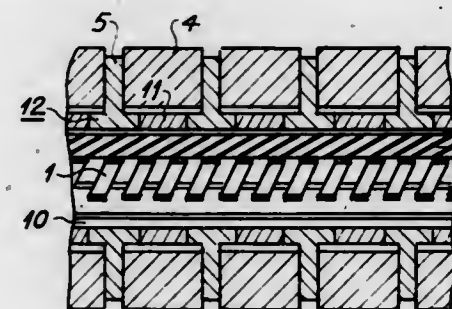
Filed Mar. 20, 1979, Ser. No. 22,302

Claims priority, application France, Mar. 24, 1978, 78 08673

Int. Cl.³ H01J 25/34

U.S. Cl. 315—3.5

8 Claims



1. A delay line having a cooling duct comprising

a delay line;

supports;

a first sleeve;

a second sleeve;

said supports having a face in contact with the outer surface of said delay line and another face in contact with an inner surface of said first sleeve;

said first sleeve being vacuum tight on its inside and impervious to a cooling fluid on its outside;

said second sleeve surrounding said first sleeve, and spaced therefrom to provide at least one duct between the two sleeves;

said supports of dielectric material being equally spaced about said line and parallel to said line axis;

said first sleeve being of non magnetic material and coaxial with said delay line, and being in contact with said supports and linking to adjacent supports in a straight line or plane; and

said second sleeve being circular in cross section, and impervious to a cooling fluid, and being in contact with said first sleeve in front of said supports.

4,243,915

DELAY LINE COMPRISING COUPLED CAVITIES AND COOLED BY FLUID-CIRCULATION

Georges Fleury, Paris, France, assignor to Thomson-CSF, Paris, France

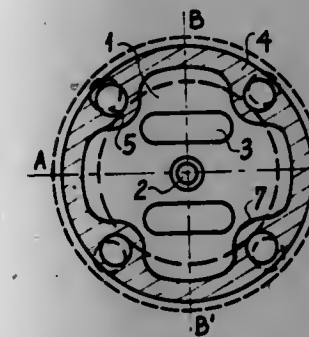
Filed Apr. 25, 1979, Ser. No. 33,056

Claims priority, application France, May 2, 1978, 78 12903

Int. Cl.³ H01J 25/34

U.S. Cl. 315—3.5

3 Claims



1. A delay line comprising coupled cavities and cooled by fluid-circulation, said cavities being substantially defined by discs (1) and walls (4), which consists of:

said discs (1) being aligned parallel to one and the same axis (O—O') constituting the axis of the line, these discs (1) forming the wall common to two adjacent cavities and comprising a central aperture (2) for the electron beam, focussed on the axis of the line, to pass through, and having at least one inter-cavity coupling aperture (3);

said walls (4) longitudinally bounding the cavities, the external shape of a transverse section of these walls being circular, these walls being traversed by ducts (5) in which a cooling fluid circulates; and the direct distance from the axis (O—O') to the internal side of said walls being shorter in those regions of the walls having ducts, than to those regions not having the ducts.

4,243,916

MAGNETIC MIRROR FOR BEAMS OF CHARGED PARTICLES ACCELERATED IN AN ACCELERATOR

Hubert Leboutet, and Dominique Tronc, both of Bac, France, assignors to C.G.R.MeV, Bac, France

Filed Apr. 17, 1979, Ser. No. 30,937

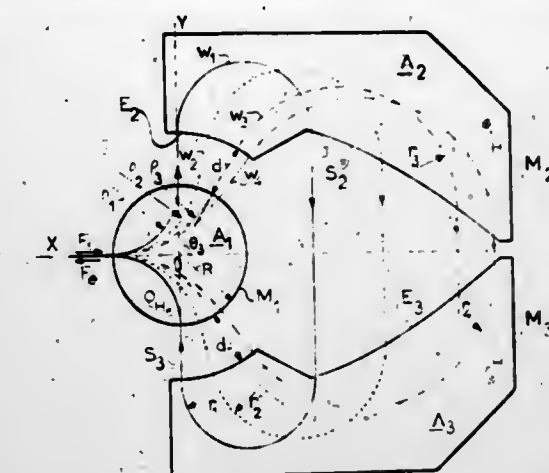
Claims priority, application France, Apr. 21, 1978, 78 11856

Int. Cl.³ H01T 7/24; H05B 31/26

U.S. Cl. 315—111.8

11 Claims

1. A magnetic mirror for reflecting a beam of charged particles along its mean incident path of axis XX, said magnetic mirror which is designed to be associated with a linear particle accelerator comprising at least a first, a second and a third magnetic deflector, said first magnetic deflector being provided with two circular polepieces having a radius R and delimiting a circular air-gap, the center of which is located on said axis XX, a magnetic field H₁ of predetermined value being created within said circular air-gap; said second and third magnetic deflector being provided respectively with a pair of polepieces, the pair of polepieces of said second magnetic deflector and the pair of polepieces of said third magnetic deflector being identical and delimiting two air-gaps in which is created a magnetic field H having a direction opposite to that of magnetic field H₁, said pair of polepieces of said second magnetic deflector being arranged symmetrically on either side of said axis XX; said air-gaps of the polepieces of said



of said first deflector, said exit face of said second magnetic deflector being defined in such a way that the different paths of the particles, the lengths of which depend on the momentum of said particles, emerge from said exit face of said second magnetic deflector normal to said axis XX.

4,243,917

FLASH LAMP DRIVE CIRCUIT

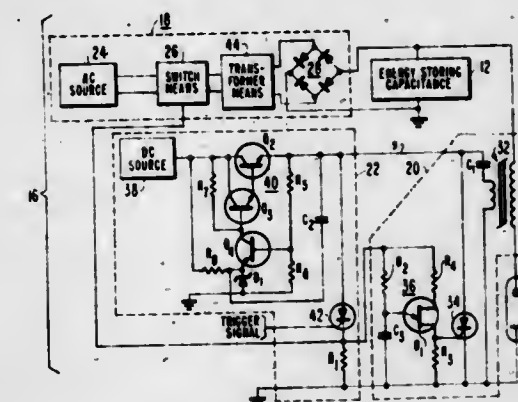
Fausto Caprari, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,558

Int. Cl.³ H05B 41/34

U.S. Cl. 315—241 R

6 Claims



1. In a flash lamp drive circuit of the type wherein energy is stored by a capacitance and is supplied to the lamp when an ionization pulse is applied thereto, the improvement comprising:

control means for charging the capacitance to a threshold energy level in response to a trigger signal, and for applying the ionization pulse to the lamp to discharge the capacitance therethrough in response to and at some predetermined time after receiving said trigger signal, said control means so responding to each of said trigger signals applied thereto.

4,243,918

SIGNAL INTEGRATOR WITH TIME CONSTANT CONTROLLED BY DIFFERENTIATING FEEDBACK

William H. Meise, Wrightstown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,084

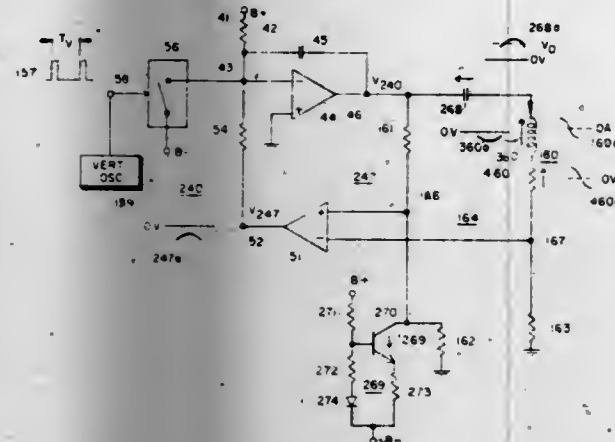
Int. Cl.³ H01J 29/72

U.S. Cl. 315—389

12 Claims

1. A signal integrating circuit, comprising:
a source of signal current;

a signal integrating capacitance; integrating means coupled to said source and to said signal integrating capacitance for generating at an output terminal a voltage which consists essentially of a voltage representative of the time-integration of said signal current; shunting means coupled to said signal integrating capacitance for bypassing a portion of said signal current from said signal integrating capacitance;



differentiating means coupled to said output terminal for developing a differentiated output signal; and feedback means coupled to said differentiating means and to said shunting means for applying said differentiated output signal to said shunting means in a degenerative manner for increasing the effective time constant associated with said signal integrating capacitance relative to the time constant associated therewith in the absence of said feedback means.

4,243,919

MOTOR BRAKING ARRANGEMENT

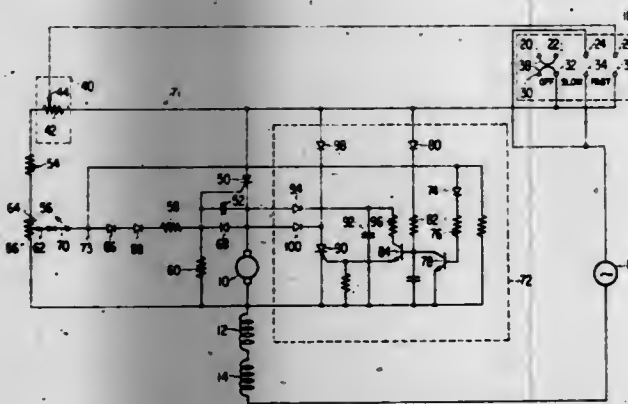
Jack Brown, Union, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 31, 1980, Ser. No. 136,004

Int. Cl.³ H02P 3/14

U.S. Cl. 318—269

5 Claims



1. In combination with a motor control system for operating a motor at preselected speeds, said motor having serially connected armature and field windings, and including means for connecting said system to a cyclically varying power supply, a phase control circuit connected between said motor and said power supply, and a firing circuit coupled to said phase control circuit for phase firing said phase control circuit to supply power to said motor during a portion of the cycle of said power supply, said firing circuit including operator actuable speed control means for providing a speed control signal indicative of an operator desired speed for said motor, said speed control signal varying in phase with said power supply and at a level corresponding to said desired speed, said phase control circuit requiring at least a minimum level of said speed control signal in order to supply power to said motor,

wherein the improvement comprises an arrangement for electrically braking the motor comprising:

a controllable switch connected across the armature winding of the motor and between the field windings and said power supply; and timing means enabled when the motor is run and thereafter responsive to said speed control signal being below said minimum level for closing said controllable switch for a predetermined time, whereby said controllable switch simultaneously short circuits said armature winding and provides a path between said field windings and said power supply.

4,243,920

CONTROL DEVICE FOR MONITORING MACHINES DRIVING REVOLVING DEVICES AND METHOD FOR OPERATING THE DEVICE

Emil Brehm, Am Nussbaum 16, 6710 Frankenthal 5, Fed. Rep. of Germany

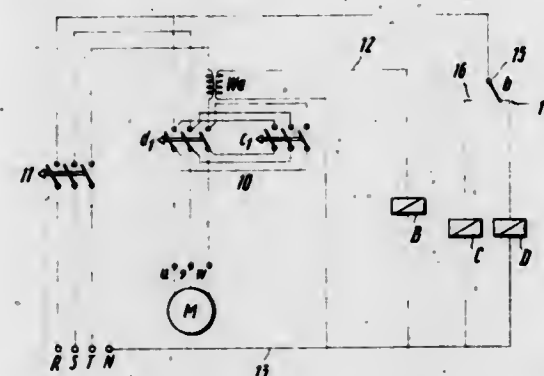
Filed Jul. 27, 1978, Ser. No. 928,531

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742216

Int. Cl.³ H02P 1/40

U.S. Cl. 318—285

7 Claims



1. Method of operating a control device in a waste crushing machine, which comprises switching a drive motor from forward to reverse rotation by actuating a second overcurrent relay of a pair of overcurrent relays connected in series in a supervisory circuit coupled to the load circuit of the motor, after pausing to disconnect the motor from its source when a given first current value is reached, and switching the drive motor to forward rotation after a predetermined duration of reverse rotation and again pausing to disconnect.

4,243,921

DIGITAL SERVO SYSTEM FOR ROTATING MEMBER

Masaaki Tamura, Fujisawa, and Shigeo Tanaka, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

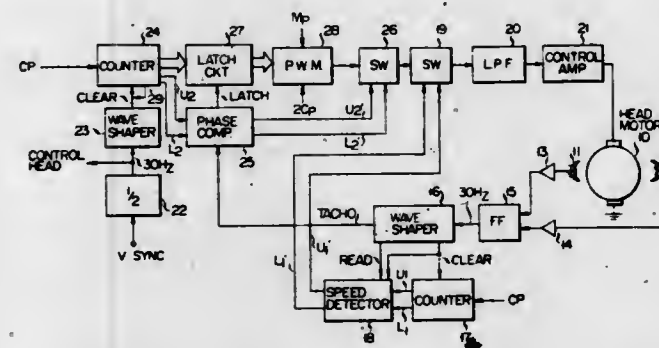
Filed Aug. 15, 1978, Ser. No. 933,911

Claims priority, application Japan, Aug. 22, 1977, 52-100315

Int. Cl.³ A02P 5/16

U.S. Cl. 318—314

10 Claims



1. A digital servo control system for a rotating member in which the phase difference between a reference signal having

a predetermined period and a rotation phase information signal related to the rotating member is detected and utilized to control the rotation of the rotating member, said system comprising:

a counter for counting clock signals and arranged to be cleared at the period of said reference signal; a latch circuit responsive to a latch signal for latching an instantaneous count determined by said counter; pulse width modulation circuit means for producing an output pulse signal having a pulse width which is a function of the count information latched by said latch circuit; driving means having an input coupled to an output of said pulse width modulation circuit means for controlling the rotation of said rotating member in accordance with the pulse width of output pulse signal of said pulse width modulation circuit means; and digital phase comparing means responsive to outputs of said counter and said rotation phase information signal for producing said latch signal only when said rotation phase information signal occurs during a time interval between a time at which said counter counts a first predetermined count number and a time at which said counter counts a second predetermined count number.

4,243,922

AIRCRAFT CONTROL SYSTEM

Werner Sobotta, Brinkum, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

Continuation of Ser. No. 314,764, Dec. 13, 1972, abandoned.

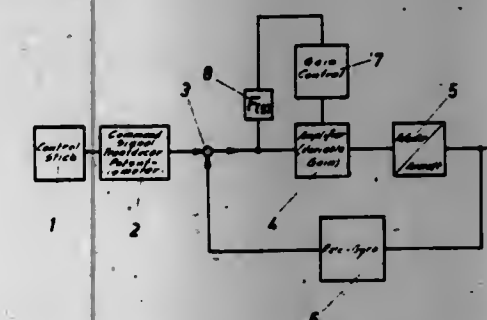
This application Aug. 28, 1978, Ser. No. 937,513

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1971, 2165894

Int. Cl.³ G05B 13/00

U.S. Cl. 318—561

3 Claims



1. Apparatus for controlling and stabilizing an aircraft using a controller which is responsive to signals introduced into the controller as command signals, the controller including feedback means which are responsive to reaction of the aircraft to any changes by and of an actuator means, the feedback means providing a particular signal representative as such reaction, the controller including means for comparing the command signal as provided in any instant with the particular signal then provided, for forming an error signal, the controller includes additionally amplifier means for amplifying the error signal, the output of the amplifier means operating the actuator means in the craft in response to comparison of the command signals with the reaction-responsive signals, the improvement comprising:

an adjusting and control circuit connected to be additionally responsive to the instantaneous, un-integrated error signal as formed and applied to the amplifier means for amplification but not yet modified by the amplifier means, for changing parameters in the controller, said adjusting and control circuit being connected to said amplifier means for consistently increasing or decreasing the gain of amplification of the amplifier means non-linearly with the error signal as formed, so that the gain is consistently low for zero and small error signals as formed and applied to the amplifier means for amplification and relatively high for relatively large instantaneous error signals as formed and so applied, so that the gain varies with the instantaneous

error signal as formed and applied to the amplifier means for amplification accordingly.

4,243,923

SERVO-CONTROLLED MOBILITY DEVICE

Daniel E. Whitney, Arlington, and James L. Nevins, Jr., Burlington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

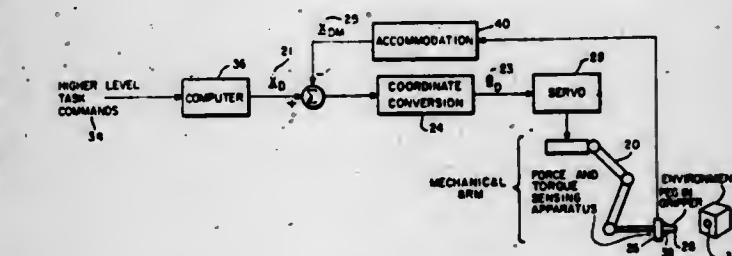
Continuation of Ser. No. 474,342, May 29, 1974, Pat. No. 4,156,835. This application Jan. 22, 1979, Ser. No. 5,483

The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.

Int. Cl.³ G05B 13/00

U.S. Cl. 318—561

12 Claims



1. Motion controlling apparatus comprising a first element controllable in at least two dimensions, a servo loop including said controllable element which directs motions of said controllable element in an environment, said servo loop comprising means for sensing interactions between said controllable element and said environment to provide sensory information, and task-related transfer function means for utilizing said sensory information to control the trajectory of said controllable element, whereby said controllable element produces motion, force and torque appropriate to the accomplishment of a predetermined task.

4,243,924

SYSTEM FOR INTERPOLATING AN ARC FOR A NUMERICAL CONTROL SYSTEM

Fumio Onoda, and Yutaka Kakizoe, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

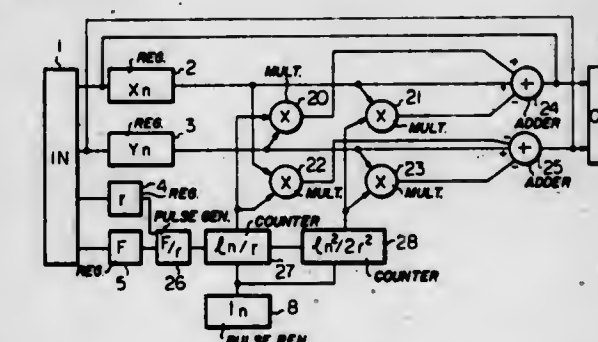
Filed Jun. 16, 1978, Ser. No. 916,225

Claims priority, application Japan, Jun. 28, 1977, 52/76065

Int. Cl.³ G05B 19/25

U.S. Cl. 318—573

1 Claim



1. In a numerical control machine for generating a curve a system for controlling a variable speed motor having a starting position and a finish position with a predetermined time period between the initial and finish positions which comprises (a) means for generating said predetermined time period; (b) means for providing a signal corresponding to the initial speed and position of said variable speed motor; (c) means coupled to said generating means and said signal providing means for determining the values of the coordinates of the final position at the end of said time period; (d) means for varying the speed of said variable speed motor

whereby at the end of said time period said motor reaches said final position, and
(e) means for feeding back said coordinate values of said final position to said signal providing means whereby said coordinate values become the coordinate values of the next initial position.

4,243,925

REGISTER CONTROL SYSTEM FOR WEB OPERATING APPARATUS

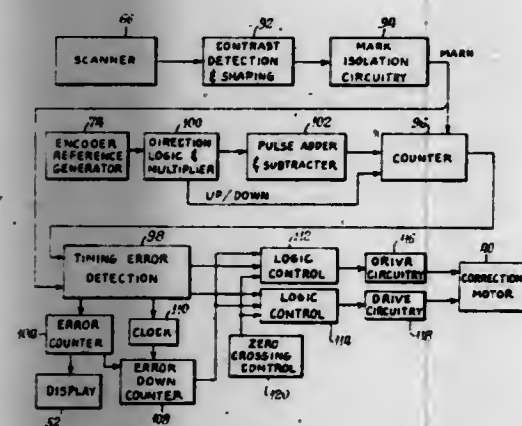
Herman C. Ganechtel, Chicago, Ill., assignor to Web Printing Controls Co., Inc., Bensenville, Ill.

Filed Sep. 27, 1978, Ser. No. 946,380

Int. Cl.³ G05B 19/29

U.S. Cl. 318—603

20 Claims



1. A method of acquiring and maintaining a register condition for successive repeat lengths of a web that is acted on by work applying means of a web operating apparatus which also has adjusting means that can advance or retard the position of said repeat lengths relative to said work applying means, comprising the steps of:

scanning the web and producing a mark signal that corresponds to the occurrence of a distinctive contrast change on each repeat length of the web;

producing pulses during rotation in either direction of a shaft that is operatively connected to said work applying means, including producing a first predetermined number of pulses for each revolution of the shaft in a single direction;

producing a direction signal indicating the direction of rotation of the shaft;

employing a counting means for maintaining a running count of the net number of pulses that are produced wherein the count increases when the shaft is rotating in a direction corresponding to the web moving forwardly and decreases when the shaft is rotating in the opposite direction and producing a terminal count when said first predetermined number is reached;

measuring any difference between the occurrences of the mark signal and the terminal count and producing an error signal corresponding to the difference;

driving said adjusting means to selectively advance or retard the position of said repeat lengths in response to said error signal, the driving being effective to reduce the error signal.

4,243,926

LOAD RESPONSIVE VOLTAGE CONTROLLED MOTOR

Charles A. Phillips, Rte. 1, Box 54-B, Ardmore, Tenn. 38449

Continuation-in-part of Ser. No. 906,688, May 16, 1978. This

application Aug. 10, 1978, Ser. No. 932,672

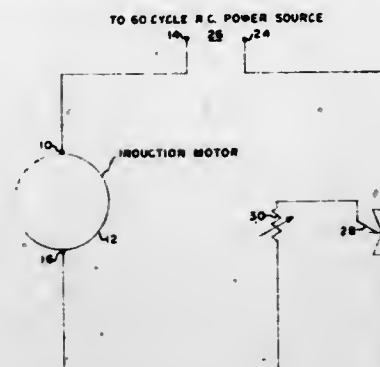
Int. Cl.³ H02P 5/40

U.S. Cl. 318—796

5 Claims

1. A motor control circuit comprising:
an alternating current induction motor having at least one winding connected to first and second terminals;

a triac having first (MT1) and second (MT2) power terminals and a gate terminal;
a source of alternating current voltage having first and second terminals; and
a non-capacitive impedance having first and second terminals;
wherein said first terminals of said triac, motor, and impedance are connected together, said second terminal of said



impedance is connected to said gate terminal of said triac, said second terminal of said motor is connected to said first terminal of said source of A.C. power, and said second terminal of said triac is connected to said second terminal of said source of A.C. power, the firing point of said triac being controllable by current flow through the motor and then through said impedance and gate of said triac without the necessity of other, reactive, circuitry coupled to the gate of said triac.

4,243,927

GAIN NORMALIZATION TECHNIQUE FOR CONTROLLED CURRENT INDUCTION MOTOR SYSTEM

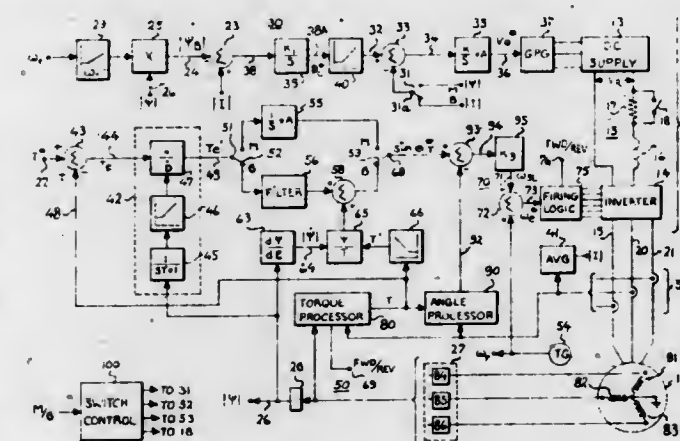
John D. D'Atre, Ballston Lake, N.Y., assignor to General Electric Company, Erie, Pa.

Filed Oct. 2, 1978, Ser. No. 948,192

Int. Cl.³ H02P 5/40

U.S. Cl. 318—803

5 Claims



1. In an a-c electric motor control system including a source of excitation comprising electric power conversion apparatus that supplies a-c power of variable frequency and magnitude via electric conductors to a stator of a motor in order to effect movement of a rotor of the motor relative to the stator due to interaction of current and flux in the motor when excited, said control system being a feedback control system having a primary input terminal for receiving a command signal representative of a desired torque to be developed by the motor and having a plurality of feedback signal input terminals with each of said feedback signal input terminals being connected for receiving selected ones of a plurality of feedback signals developed by monitoring means operatively connected to the motor for generating said feedback signals representative of motor torque, motor flux, stator current and rotor angular velocity,

said control system being responsive to said feedback signals and to said torque command signal for adjusting the magnitude and frequency of the a-c power supplied to the motor whereby the magnitude of the torque developed by the motor approximates said desired torque, the improvement comprising means for varying the gain of said control system as an inverse function of the magnitude of said flux developed in the motor, said control system gain representing the amount of frequency change of said a-c power per unit of difference between said torque command signal and said motor torque feedback signal.

4,243,928

VOLTAGE REGULATOR FOR VARIANT LIGHT INTENSITY PHOTOVOLTAIC RECHARGING OF SECONDARY BATTERIES

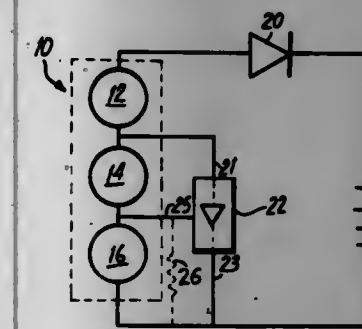
Kenneth Nazimek, Flemington, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 29, 1979, Ser. No. 42,790

Int. Cl.³ H02J 7/00

U.S. Cl. 320—2

9 Claims



1. A photovoltaic recharging system for voltage regulated charging of secondary batteries under substantially varying light illumination levels, said system comprising:

at least one secondary battery;

a recharger array comprising a plurality of photovoltaic cells connected in power supplying relation to said battery and interconnected in a manner providing at least four serially spaced voltage terminals defining at least three subarrays each subarray containing a predetermined number of serially connected photovoltaic cells;

a blocking diode interposed between said recharger array;

a switching device having a main current conduction path coupled in parallel with at least two of said subarrays and having at least one subarray coupled between a control terminal of said switching device which is connected to one of said voltage terminals and the main current conduction path of said switching device, said switching device being responsive to a photovoltage developed across said subarray whereupon attaining a predetermined voltage said switching device is rendered conductive, electrically disabling a voltage contribution to battery recharging by the subarrays coupled in parallel with said switching device.

4,243,929

RECHARGING ACCUMULATOR BATTERIES

Tibor Lénárt, Älvå, Sweden, assignor to Aktiebolaget Multilab, Sweden

Filed Jan. 17, 1978, Ser. No. 870,072

Claims priority, application Sweden, Jan. 19, 1977, 7700535; Jun. 8, 1977, 7712063

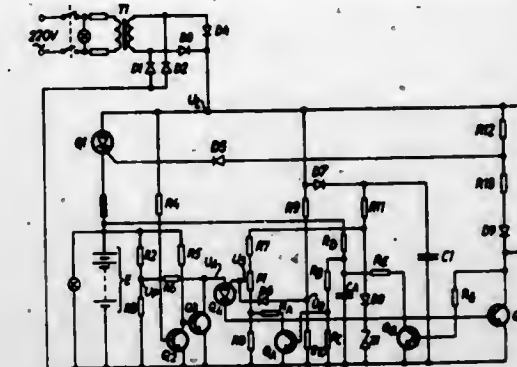
Int. Cl.³ H02J 7/04

U.S. Cl. 320—23

10 Claims

1. A battery charging circuit for recharging an accumulator battery with charging current comprising: a power supply for supplying power to the battery to charge same, said supply being operable at two voltage levels; a current monitoring device for monitoring the charging current drawn by the battery; and a regulation circuit for receiving information from the current monitoring device and responding thereto to

change the mode of operation of the power supply from the higher to the lower of said voltage levels when said charging current at said higher voltage level falls below a predetermined high current value, characterized by means in the regulation



circuit for changing the mode of operation of power supply to said higher voltage level whenever said charging current, as sensed by said current monitoring device, rises above a predetermined low value, which is lower than said high current value, at said lower voltage level.

4,243,930

METHOD AND MEANS FOR TRANSMITTING LOW SPEED SIGNALS OVER A PCM FRAMING CODE

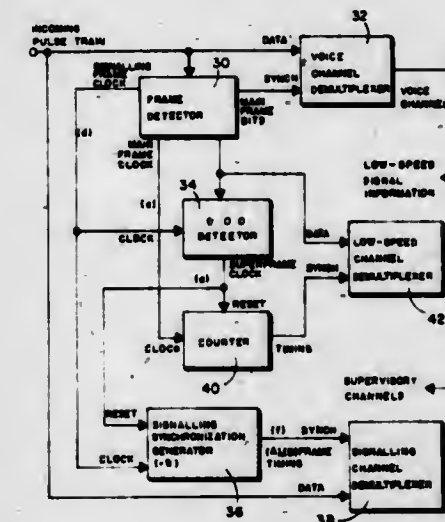
Calvin H. DeCoursey, Reno, Nev., assignor to Lynch Communication Systems, Inc., Reno, Nev.

Filed May 23, 1979, Ser. No. 41,865

Int. Cl.³ H04J 1/14

U.S. Cl. 370—110

6 Claims



1. The method of superimposing low-speed data onto a PCM carrier framing pattern of the D3 type, comprising the steps of:
(a) substituting, for a superframe consisting of n consecutive aaabbb sequences of the D3 signalling frame bit pattern, a pattern of the form aaabxx... bxxbxb, in which a represents a first logic level; b represents another logic level; x represents a logic level which can be either a or b; and . . . represents n-2 sequences of bxxbxx; and
(b) separately encoding the x bits of said substituted pattern with low-speed information.

4,243,931

CURRENT ISOLATOR

Moises A. dela Cruz, Cottage Grove, Minn., assignor to Rosemount Inc., Minneapolis, Minn.

Filed Mar. 28, 1979, Ser. No. 24,868

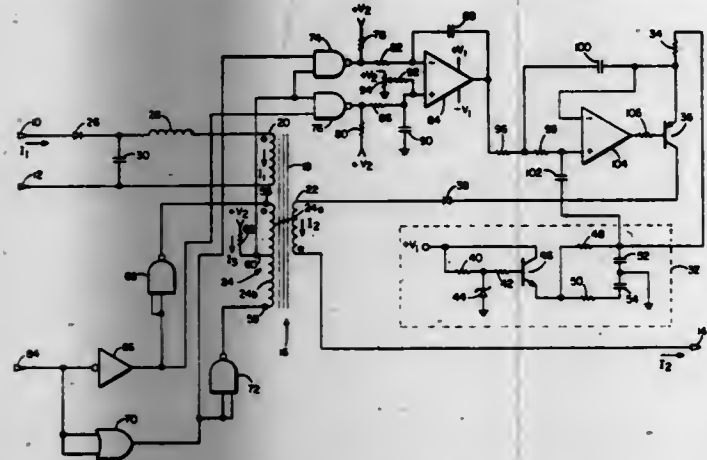
Int. Cl.³ H01F 40/14

U.S. Cl. 323—302

11 Claims

1. A current isolator for electrically isolating a first current and a second current having a predetermined relationship, the current isolator comprising:

a transformer having a core and first, second, and third windings, the first winding having the first current flowing therethrough, the second winding having the second current flowing therethrough, and the third winding being connected to receive a periodic drive signal; wherein the periodic drive signal alternately drives the transformer between first and second opposite magnetically saturated states; and wherein changes in magnetizing current in the third winding cause differences between a first saturation time required to drive the transformer from the first to the second magnetically saturated state and a second saturation time required to drive the transformer from the second to the first magnetically saturated state;



means for providing a control signal as a function of changes in magnetizing current in the third winding resulting from changes in the first and second currents; wherein the means for providing a control signal senses differences between the first and second saturation times and provides the control signal as a function of the sensed differences; the means for providing a control signal comprising: first and second integrating means for providing first and second integrated signals representative of the first and second saturation times, respectively; and comparing means for comparing the first and second integrated signals and providing the control signal as a function of the comparison; and means for controlling the second current as a function of the control signal.

4,243,932

METHOD AND SYSTEM FOR CHECKING SEALED CONTAINERS FOR PINHOLES BY COMPARING TWO DISCHARGE CURRENTS

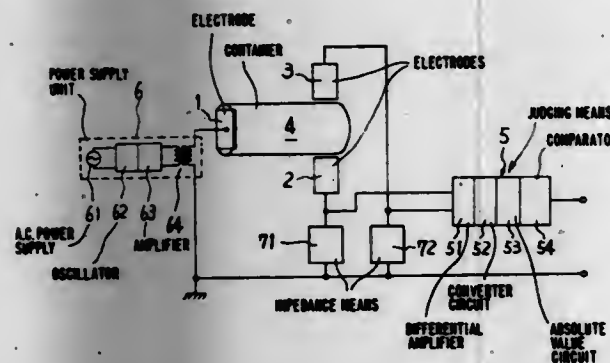
Michio Kakimoto, Naruto; Eizi Oe, Tokushima, and Hiroshi Nakagawa, Naruto, all of Japan, assignors to Otsuka Pharmaceutical Factory Inc., Japan

Filed Mar. 27, 1978, Ser. No. 890,686

Claims priority, application Japan, Nov. 30, 1977, 52/144308
Int. Cl.³ G01R 31/12; G01M 3/40

U.S. Cl. 324—54

6 Claims



2. A system for checking sealed containers of electrical insulating material for pinholes with conductive contents so

enclosed therein as to permit no grounding, said system comprising:

a first electrode having at least one electrode element and two second electrodes each including at least one electrode element;
first impedance means connected at its one terminal to one of the second electrodes;
second impedance means connected at its one terminal to the other second electrodes;
an AC power supply unit connected to the first electrode and to the other terminals of the first and second impedance means, the first and second impedance means and AC power supply unit being all adapted so that when a sealed container is placed between the first electrode and the two second electrodes, discharge current flows are generated between the first electrode and one of the second electrodes and between the first electrode and the other of the second electrodes respectively, and wherein, with a container free of any pinhole, the two discharge current flows being generated as corona discharge currents, and wherein, with a container having a pinhole, one of the discharge current flows being generated as a spark discharge current corresponding to the pinhole; and judging means for individually detecting the discharge current flows generated between the first electrode and one of the second electrodes and between the first electrode and the other of the second electrodes respectively, and judging whether the container has a pinhole or pinholes, or not based on the difference between the detected values.

4,243,933

CAPACITANCE MEASUREMENT APPARATUS

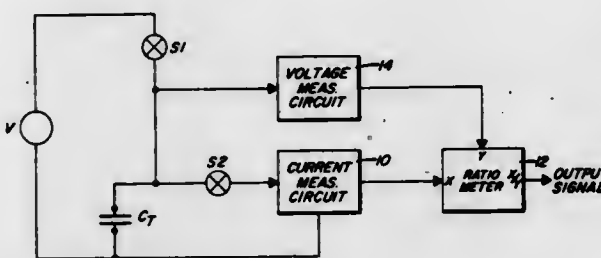
Charles D. Rollman, Concord, Mass., assignor to Analogic Corporation, Wakefield, Mass.

Filed Sep. 20, 1978, Ser. No. 944,160

Int. Cl.³ G01R 27/26

U.S. Cl. 324—60 CD

23 Claims



1. Capacitance measuring apparatus comprising:
means for connection of a capacitor to be measured;
means for charging said capacitor to any first voltage level and for discharging said capacitor to any second voltage level;
means for providing a first signal representative of the difference between said first and second voltage levels;
means for providing a second signal representative of the average current from said capacitor during the discharge thereof;
means for obtaining the ratio of said second signal to said first signal and providing an output signal which is representative of the capacitance of said capacitor.

4,243,934

COMPOSITE SIGNAL GENERATOR

Robert G. Brasfield, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 1, 1979, Ser. No. 8,312

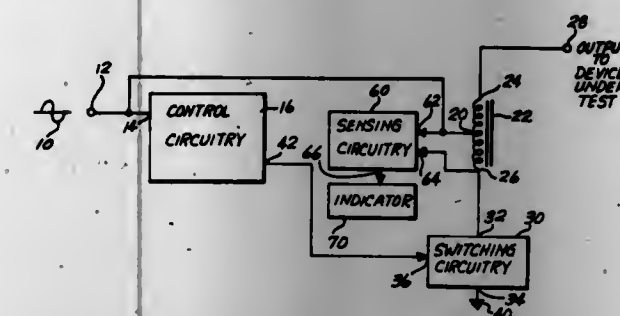
Int. Cl.³ G01R 31/02

U.S. Cl. 324—72

6 Claims

1. A composite signal generator comprising:
means for providing a periodic waveform;

transformer means having first and second end taps and a central tap; said taps being in a predetermined electromagnetic circuit configuration;
means for coupling the periodic waveform to said transformer central tap; and



control means for sensing the periodic waveform and, in response to a predetermined condition thereof, coupling the transformer second end tap to a reference potential such that the signal appearing at the transformer first end tap is the periodic waveform with a predetermined transient signal superimposed thereon.

4,243,935

ADAPTIVE DETECTOR

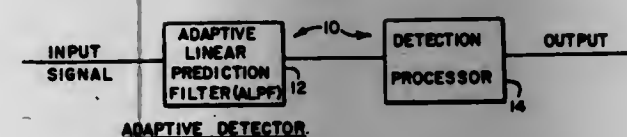
John M. McCool, El Cajon; Bernard Widrow, Stanford; Robert H. Hearn; James R. Zeldner, both of San Diego, all of Calif.; Douglas M. Chabries, Provo, Utah, and Randall H. Moore, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1979, Ser. No. 40,251

Int. Cl.³ G01R 23/16

U.S. Cl. 324—77 R

4 Claims



1. An adaptive detector comprising:
an adaptive linear prediction filter (ALPF), which comprises:
an input delay line, adapted to receive an input signal $x(k)$ and delay it by a time Δ ;
an L-point, that is, L-tap, adaptive filter, having an input connected to the output of the input delay line, at the output of which appears a signal $r(k)$;
a means for summing, having two inputs, one for receiving the signal $x(k)$ and the other for receiving an inverted signal from the adaptive filter, the output of the summing means being an error signal $e(k)$;
feedback means, whose input is connected to the output of the summing means, for taking a portion, 2μ , of the output signal $e(k)$ and feeding it back to the adaptive filter, thereby modifying the tap weights;
the adaptive detector further comprising a detection processor which comprises:
means, whose input is connected to the output of the adaptive filter, to receive the signal $r(k)$, for performing a K-point discrete Fourier transform (DFT) on $r(k)$; and
means, whose input is connected to the output of the DFT means, for performing a spectral analysis on the output signal of the DFT means.

4,243,936

METHOD FOR MAGNETO-OPTICAL CURRENT MEASUREMENTS

Alfred Papp, and Hauke Harms, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

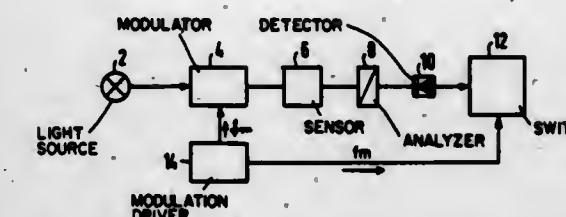
Filed Dec. 18, 1978, Ser. No. 970,218

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758723

Int. Cl.³ G01R 31/02, 33/02

U.S. Cl. 324—96

2 Claims



1. In a method for the magneto-optical measurement of currents which includes the step of rotating the plane of polarization of a linearly polarized light beam in dependence on the current to be measured, there being a modulation signal superimposed on the measurement signal, the improvement comprising the steps of:

switching the light beam in alternation, by polarization modulation at the frequency of the modulation signal, to each of two orthogonal directions of polarization, detecting, and the intensity signal associated with each direction of polarization and sequentially directing the resulting signals into separate electronic channels at the frequency of the modulation signal, and combining the separate electronic signals to eliminate the noise component of the measurement signal.

4,243,937

MICROELECTRONIC DEVICE AND METHOD FOR TESTING SAME

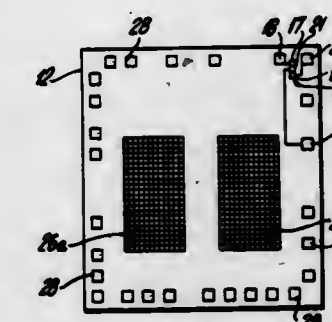
Jagir S. Multani, and Jagtar S. Sandhu, both of Dix Hills, N.Y., assignors to General Instrument Corporation, New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 27,842

Int. Cl.³ G01R 31/22

U.S. Cl. 324—158 T

10 Claims



9. In combination with a microelectronic circuit of the type having a plurality of circuit elements the improvement which comprises means for appraising a first characteristic of said circuit elements while the circuit elements are simultaneously being tested to determine a second characteristic.

4,243,938

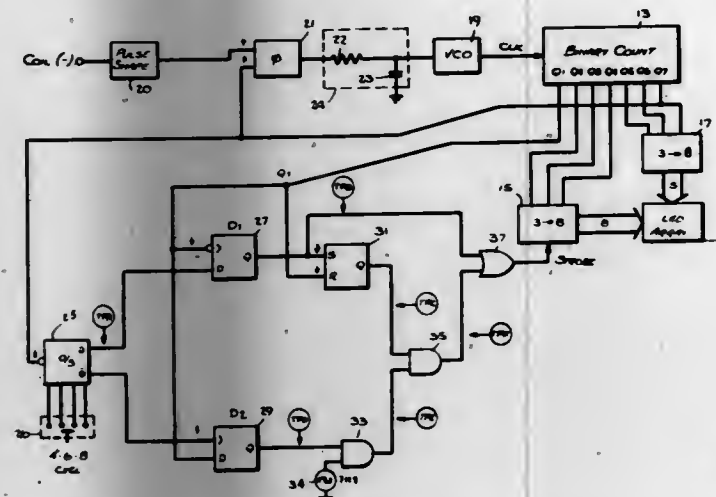
DIGITAL BAR GRAPH TACHOMETER

Andrew W. Bliven, II, and Peter J. Kindmann, both of Northford, Conn., assignors to The Echlin Manufacturing Company, Branford, Conn.

Filed Oct. 16, 1978, Ser. No. 951,465
Int. Cl.³ G01P 3/48

U.S. Cl. 324-169

34 Claims



1. A digital tachometer comprising:

- a row of a plurality of closely adjacent light emitting diodes each representing, in order, an equal increment of speed;
- means to sense the rotational speed of rotating apparatus and develop a first signal representative thereof;
- means to convert said first signal into a plurality of signals of a maximum number equal to the number of said plurality of diodes, each associated with a diode and thus a speed increment such that a signal is present for each diode representing a speed equal to, or less than the sensed rotational speed;
- means coupling said plurality of signals to their associated diodes; and
- means to cause the next adjacent diode to the last one for which a signal is generated to blink when the sensed speed exceeds the value associated with said last one by at least one half the increment between diodes.

4,243,939

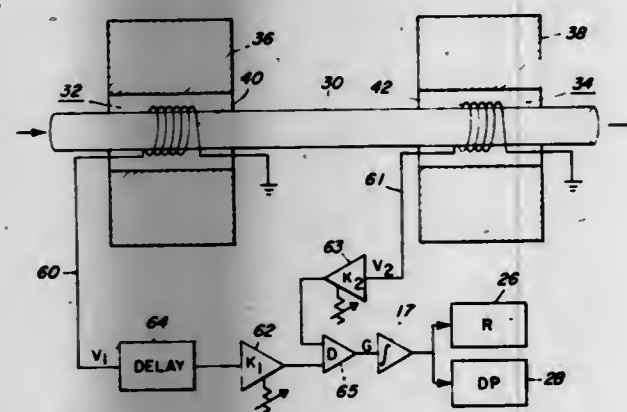
DETERMINING PARAMAGNETIC ADDITIVE CONTENT OF A BASE PARAMAGNETIC MATERIAL CONTAINING FERROMAGNETIC IMPURITY

Leonard N. Grossman, Wrightville Beach, N.C.; Alan M. Portis, Berkeley; Henry Bernatowicz, Menlo Park, both of Calif., and Frederick C. Schoenig, Jr., Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 7, 1978, Ser. No. 931,670
Int. Cl.² G01R 33/16

U.S. Cl. 324-201

33 Claims



1. A method of detecting a paramagnetic additive in a base paramagnetic material having an appreciably different suscep-

tibility and containing ferromagnetic impurities comprising the steps of:

- establishing first and second direct current magnetic fields of different strengths;
- disposing in each magnetic field respective first and second inductive means for producing signals indicative of changes in susceptibility of material moved adjacent thereto;
- moving said material through said magnetic fields and adjacent said first and second inductive means in sequence, the strengths of said magnetic fields in the regions adjacent said first and second inductive means being sufficient to substantially saturate said ferromagnetic impurities throughout each incremental portion of said material; and
- processing the signals from said first and second inductive means to provide signals representative of the differential susceptibility changes of said material in the two magnetic fields.

4,243,940

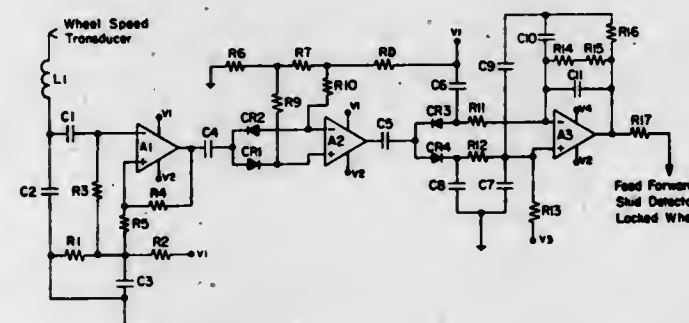
AC TO DC CONVERTER FOR ANTISKID SYSTEMS

Edgar J. Ruof, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 7, 1978, Ser. No. 967,193
Int. Cl.³ H03K 9/06; H03L 7/00

U.S. Cl. 328-140

11 Claims



1. In an antiskid system having a wheel speed transducer producing a sinusoidal signal, the improvement of an AC to DC converter, comprising:

- a squaring circuit receiving the sinusoidal signal and producing a corresponding square wave output;
- a pulsing circuit connected to said squaring circuit and producing pulses of a frequency determined by the frequency of said square wave output;
- an integrator having first and second inputs, each connected to said pulsing circuit through a uniquely associated resistor and capacitor, said integrator converting said pulses to a DC output having an amplitude corresponding to the frequency of said pulses, said integrator tending to create a phase lag between variations in amplitude of said DC output signal and changes in frequency of the sinusoidal signal; and
- a capacitor connected in a positive feedback loop across said integrator for compensating for said phase lag.

4,243,941

DIGITAL SIGNAL RECEIVER HAVING A DUAL BANDWIDTH TRACKING LOOP

Kenneth J. Zdunek, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

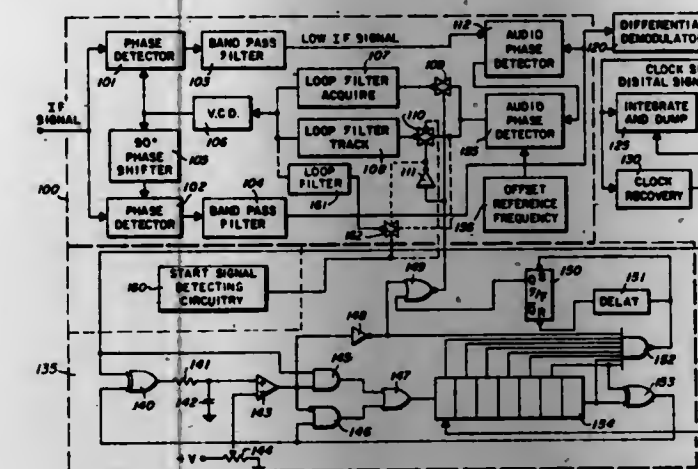
Filed Dec. 7, 1978, Ser. No. 967,183
Int. Cl.³ H03D 3/18; H03L 7/10

U.S. Cl. 329-50

11 Claims

11. In a receiver for a digital signal modulated on a carrier signal, the digital signal transmitted in a serial bit stream at a predetermined bit frequency by a clock signal, the digital signal including at least one predetermined start signal followed by a message signal, the start signal having a predeter-

mined number of bits organized in a predetermined bit pattern, said receiver including tracking phase-locked loop means for recovering the digital signal from the carrier signal, and digital demodulating means for demodulating the digital signal and recovering the clock signal from the demodulated digital signal, a method for controlling the bandwidth of the tracking loop means, said method comprising the steps of:



detecting at least a minimum number of bits of the start signal and providing an indication signal when the minimum number of bits have been detected; and switching the bandwidth of the tracking loop from an acquire bandwidth to a narrower tracking bandwidth in response to the indication signal.

4,243,942

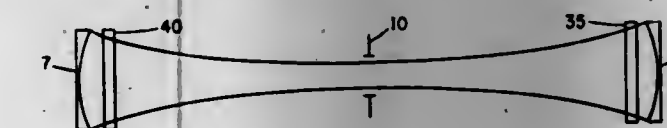
FULLY RELAYED REGENERATIVE AMPLIFIER

Alexander J. Glass, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1978, Ser. No. 868,642
Int. Cl.³ H01S 3/10, 3/05

U.S. Cl. 330-4.3

21 Claims



1. A regenerative laser apparatus comprising:
a first focusing means for focusing laser light;
a second focusing means for focusing laser light with said first and second focusing means being spaced apart to form a common focusing region therebetween;
a first reflective means for reflecting laser light;
at least one second reflective means for reflecting laser light; said first and second reflecting means being positioned and optically aligned to form a closed optical path of aperture in excess of 20 cm. wherein laser light traversing said optical path also traverses the common focusing region;
a spatial filtering means for suppressing the effects of beam breakup, the spatial filtering means being located at the common focusing region;
optical relay means for forming an optical relay of substantially zero optical path difference by positioning and maintaining the optical alignment of the first and second focusing means and the first and second reflective means in the closed optical path whereby laser light in a regenerative amplifier can be reimaged in the optical relay;
switch means for switching laser light into and out of the closed optical path
amplifier means for amplifying light in the closed optical path until the laser light is in excess of 4 J/cm².

4,243,943

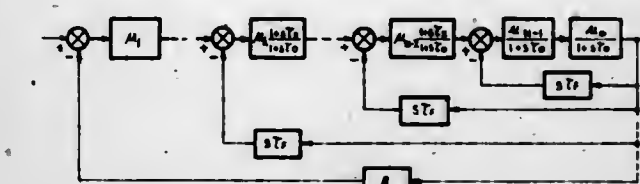
FEEDBACK SYSTEMS

Edward M. Cherry, Glen Waverley, Australia, assignor to Monash University, Clayton, Australia.

Filed Jul. 31, 1978, Ser. No. 929,793
Claims priority, application Australia, Feb. 1, 1978, PD3221
Int. Cl.³ H03F 1/34

U.S. Cl. 330-100

42 Claims



1. A low pass feedback amplifier system, comprising:
a multi-stage amplifier constituting the forward path of the low pass feedback amplifier system, said amplifier having a plurality of stages operatively connected in cascade, said stages having respective predetermined gains, poles, and zeros; and
at least two feedback networks operatively connected to said forward path to form a set of nested feedback loops, said loops being nested one within the next, each said feedback network having a predetermined transfer function in complex frequency notation of the approximate form s^n , and
wherein the gains, poles and zeros of the individual stages of the forward path, and the transfer functions of the feedback networks are predetermined such that the stage or stages within the innermost of the feedback loops has a return difference which changes at a rate greater than Bode's limit for unconditional stability.

4,243,944

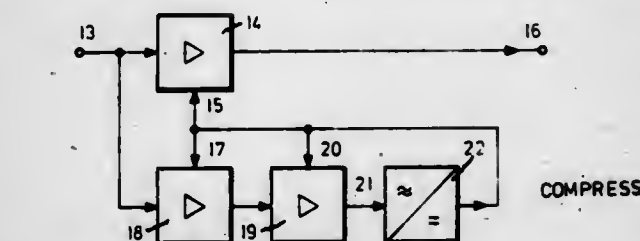
CIRCUIT FOR AUTOMATIC DYNAMIC COMPRESSION OR EXPANSION

Ernst Schröder, Hanover, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,841
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743279
Int. Cl.³ H03G 7/00

U.S. Cl. 330-135

7 Claims



1. A circuit for the automatic dynamic compression or expansion of an input signal, comprising
input and output terminal;
first controllable adjusting means coupled across said input and output terminals to form a useful signal path between said terminals;
a branch path including second controllable adjusting means and a control generator connected to the output thereof, the output of said control generator being coupled to said first controllable adjusting means for varying the gain of said useful signal path and to said second controllable adjusting means for varying the gain of said branch path, the variation in the gain of said branch path being in a direction opposite to the direction of change in the magnitude of said input signal; wherein the improvement comprises

means for coupling the input of said second controllable adjusting means to one of said input and output terminals, said input signal being compressed when the input of said second controllable adjusting means is connected to said input terminal and being expanded when the input of said second controllable adjusting means is connected to said output terminal.

4,243,945

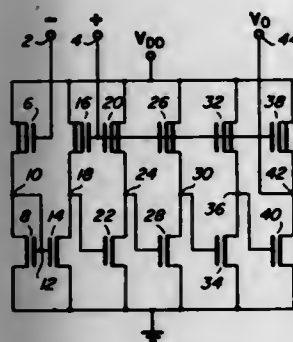
DIFFERENTIAL AMPLIFIER

Kim Eckert, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1979, Ser. No. 35,039
Int. Cl.³ H03F 3/45

U.S. Cl. 330—253

12 Claims



1. A differential amplifier circuit for receiving first and second potentials and amplifying the difference therebetween, comprising:

- an input stage for receiving said first and second potentials; and
- a plurality of amplifying stages coupled in sequence for amplifying said difference each having a first input coupled to one of said first and second potentials for reducing common mode gain and a second input coupled to an output of a previous stage.

4,243,946

CLASS-B CURRENT SOURCE AMPLIFIER

Chien S. Wang, 1201 Hudson St., Denver, Colo. 80220
Filed May 19, 1978, Ser. No. 907,803

Int. Cl.³ H03F 3/30

U.S. Cl. 330—265

18 Claims



1. A feedback current source amplifier receptive of an audio signal for amplifying said audio signal and for driving a load with said amplified audio signal, said amplifier comprising:

- means for generating a dc bias current;
- a positive amplifier half receptive of said audio signal for applying an amplified positive audio signal to the input of said load, said positive amplifier half also being simultaneously receptive of said dc bias current for applying an amplified positive dc current to said load input, said positive amplifier comprising:

(a) first, second, and third transistors direct current coupled in tandem for amplifying said positive signal and

said dc bias current, both said positive signal and said dc bias current being received at the input of the aforesaid first transistor, the aforesaid third transistor being a power transistor, having its output coupled to said load input,

- (b) a temperature sensitive diode physically placed near the outer casing of the aforesaid power transistor for sensing the temperature of said outercasing, said diode being interconnected across the output of said generating means for reducing said dc bias current in proportion to a temperature increase in said outercasing due to increasing load demands on said power transistor, said reduced dc bias current being sufficient to substantially deliver said amplified positive dc current, and
- (c) a thermistor physically placed in the ambient environment surrounding said amplifier for sensing the temperature of said environment, said thermistor being interconnected across the output of said generating means for reducing said dc bias current in proportion as the temperature of said ambient environment increases, said reduced dc bias current being sufficient to substantially deliver said amplified positive dc current,

means for generating a predetermined dc voltage level, the first input of a differential amplifier being connected to said load input and receptive of any dc voltage potential at said load input and the second input of said differential amplifier being receptive of said predetermined dc voltage level for comparing said dc voltage potential to said predetermined dc voltage level and for generating a control current whose variation is proportional to the difference between said predetermined dc voltage level and said dc voltage potential, and

- a negative amplifier half receptive of said audio signal for applying an amplified negative audio signal to said load input, said negative amplifier half also being simultaneously receptive of said control current for applying an amplified negative dc current to said load input, said negative dc current combining with said positive dc current from said positive amplifier at said load input to maintain a zero dc voltage level at said load input, said amplified negative audio signal combining with said amplified positive audio signal to form said amplified audio signal, said negative amplifier comprising:

first, second, and third transistors direct current coupled in tandem for amplifying said negative signal and said dc control current, both said negative signal and said dc control current being received at the input of the aforesaid first transistor, the aforesaid third transistor being a power transistor having its output coupled to said load input.

4,243,947

RADIO FREQUENCY AMPLIFIER WITH GAIN CONTROL

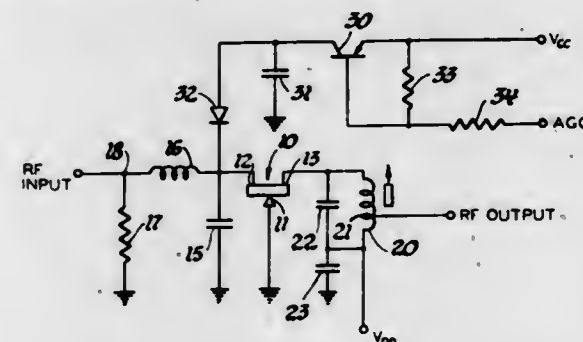
Timothy P. Glennon, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 28, 1979, Ser. No. 24,706

Int. Cl.³ H03F 3/16; H03G 3/30

U.S. Cl. 330—284

2 Claims



1. A radio frequency amplifier with gain control comprising:

a field effect transistor having source, gate and drain; means effective to bias the transistor as an amplifier with grounded gate, source input and drain output, said bias means including a bias resistor between source and ground effective to establish a source bias voltage to normally bias the field effect transistor near pinch-off;

- a current source;
- a diode having a dynamic impedance at radio frequencies which varies inversely with direct current therethrough, the diode having an anode connected to the current source flows and a cathode connected in series with the bias resistor, whereby increased current from the current source flows through the bias resistor, thus increasing the transistor source voltage and reducing amplifier gain, but whereby the diode prevents the current source from adversely affecting the amplifier input impedance;
- a radio frequency signal shunt coupled to the diode anode, whereby increasing direct current through from the current source through diode causes increasing shunt of input radio frequency signal away from the transistor source through the diode to provide further gain reduction and improve the amplifier overload characteristics.

4,243,948

SUBSTANTIALLY TEMPERATURE-INDEPENDENT TRIMMING OF CURRENT FLOWS

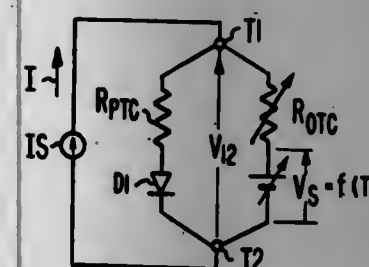
Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 8, 1979, Ser. No. 37,139

Int. Cl.³ H03F 3/04

U.S. Cl. 330—289

44 Claims



- 1. In combination:

current source having a first and second terminals between which a current of predetermined temperature coefficient respective to a temperature T is generated;

adjustable zero-temperature-coefficient resistance means between said first and second terminals for conducting an adjustable, small portion of said current as a trim current;

a path between said first and second terminals for conducting the trimmed remainder of said current, said path being through a series connection essentially consisting of at least one semiconductor diode means poled for forward conduction and maintained at a temperature close to T, and

positive-temperature-coefficient first resistance being maintained at a temperature close to T and being of such value that the potential across said series connection exhibits the same temperature coefficient as the current generated by said current source, causing said trim current to be a substantially temperature-independent fraction of the current generated by said current source.

4. In combination with a source of current with temperature-independent quiescent value,

a current mirror amplifier comprising:

input and common terminals connected to receive said current with temperature-independent quiescent value;

an output terminal;

a bipolar master mirroring transistor and a bipolar slave mirroring transistor of like type, each having respective emitter and base and collector electrodes, having a respective emitter-base circuit between its emitter and base

electrodes, having a respective emitter-collector circuit between its emitter and collector electrodes;

direct coupled feedback means between the emitter-collector circuit of said master mirroring transistor and its emitter-base circuit for applying a potential across its emitter-base circuit that conditions its emitter-collector circuit to conduct substantially all of any current thereto applied which is of the polarity associated with normal transistor action;

means for applying a potential across the emitter-base circuit of said slave mirroring transistor like unto that appearing across the emitter-base circuit of said master mirroring transistor;

means connecting the emitter-collector circuit of said slave mirroring transistor between said common and output terminals;

means connecting the emitter-collector circuit of said master mirroring transistor between said common and output terminals in a poling such that said current with temperature-independent quiescent value is conducted by normal transistor action, which means includes

positive-temperature-coefficient resistance being in first series connection with the emitter-base circuit of said master mirroring transistor, and being of such value that a voltage with temperature-independent quiescent value appears across said first series connection.

4,243,949

FREQUENCY STABILIZATION TECHNIQUE FOR MICROSTRIP OSCILLATORS

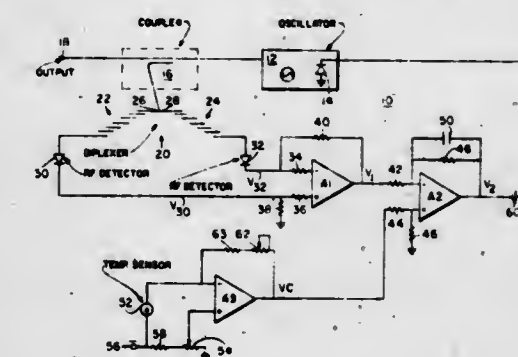
David L. Saul, El Cajon, and David Rabin, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 17, 1978, Ser. No. 961,580

Int. Cl.³ H03L 7/04

U.S. Cl. 331—9

5 Claims



1. A millimeter wave frequency stabilized MIC oscillator network comprising:

an MIC oscillator having an input and an output;

a signal coupler coupled to said output;

a frequency diplexer coupled to said coupler, said diplexer having first and second passbands of frequencies;

first means for detecting the power output of said diplexer in said first passband;

second means for detecting the power output of said diplexer in said second passband;

feedback means connected to said first and second means and to said input for varying the voltage to said input to thereby control the operating frequency of said oscillator, said feedback means further comprising heat-to-current transducer means disposed in thermal proximity to said diplexer for varying the voltage to said input commensurately with variation in the temperature of said diplexer.

4,243,950

RANDOM NOISE GENERATORS

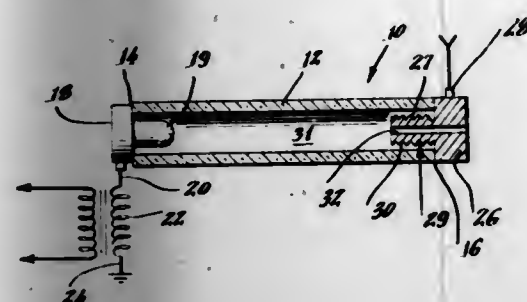
Joseph M. Proud, Jr., Wellesley, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 4, 1977, Ser. No. 784,032

Int. Cl.³ H03B 29/00

U.S. Cl. 331—78

21 Claims



1. A radio frequency random noise generator comprising:
 - a. an elongated hollow housing open at both ends, said housing being a rigid, electrical insulating, low leakage material;
 - b. cathode means adapted to cooperate with and seal one end of said housing, said cathode means being provided with an external terminal and an elongated portion extending into said housing, said cathode means terminal being adapted to be coupled to the negative terminal of a DC source of power;
 - c. anode means adapted to cooperate with and seal the other end of said housing, said anode means being provided with external terminal and an elongated portion extending into said housing, said anode and cathode means being spaced apart at least 3 centimeters; and
 - d. output means, said output means having one end connected to said anode means terminal and the other end thereof adapted to be coupled to electrical ground.

4,243,951

HIGH REPETITION RATE DRIVER CIRCUIT FOR MODULATION OF INJECTION LASERS

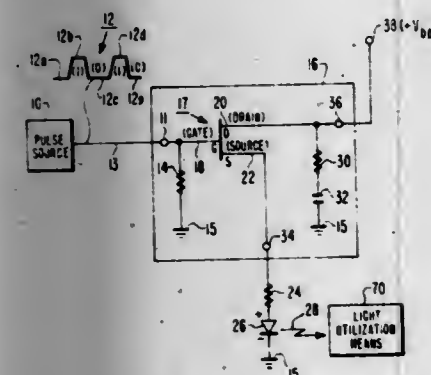
Herbert J. Wolkstein, Livingston; Brian R. Dornan, Bridgewater, and Jitendra Goel, Kendall Park, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,902

Int. Cl.³ H01S 3/13

U.S. Cl. 331—94.5 H

6 Claims



1. An injection laser including a modulator for driving said injection laser in response to modulating signals, said modulator comprising:
 - a. a current conducting device for controlling the flow of current through said laser, said device having input, output and control electrodes, said modulating signals being applied to said control electrode, and one of said input and output electrodes being coupled to said laser; and
 - b. biasing means coupled to one of said input and output electrodes for biasing said current conducting device at a first current level and for biasing said laser at a predetermined

value near but below the lasing threshold of said laser, said biasing means including:

- a first resistor in series with said laser; and
- a serially connected inductor and second resistor connected in parallel across said laser and said first resistor, said inductor being of a value to present an isolating impedance at the frequency of said modulating signals, and said current conducting device being responsive to said modulating signals at said control electrode for, in response to each signal, increasing the current through said laser to a value above its lasing threshold.

4,243,952

TEMPERATURE COMPENSATED BIAS CIRCUIT FOR SEMICONDUCTOR LASERS

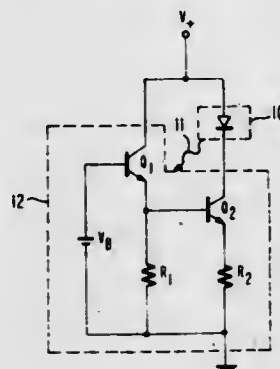
David R. Patterson, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,625

Int. Cl.³ H01S 3/13

U.S. Cl. 331—94.5 S

11 Claims



1. In a circuit of the type wherein power is supplied to a semiconductor laser from a voltage source, the improvement comprising:
 - a. temperature-dependent current supply means for applying current to the laser from said voltage source, said current supply means being responsive to the temperature thereof for varying the current magnitude directly with temperature in such degree as to maintain the light output of the laser more constant with change in the laser operating temperature; and
 - b. means for thermally coupling said temperature-dependent current supply means with the laser so that continuously related temperatures exist therebetween.

4,243,953

VOLTAGE CONTROLLED OSCILLATOR PRESENTING HIGH IMPEDANCE TO PARALLEL RESONANT TANK CIRCUIT

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,811

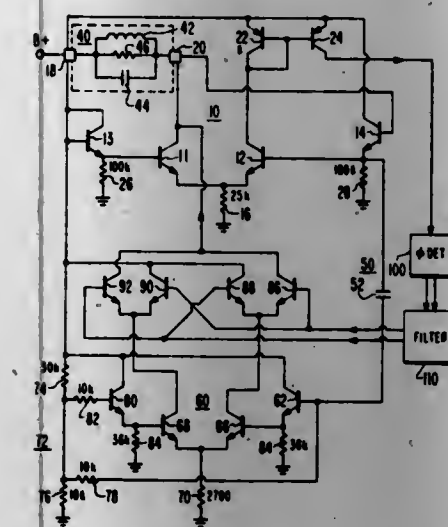
Int. Cl.³ H03B 5/12; H03L 7/08

U.S. Cl. 331—117 R

10 Claims

1. A variable-frequency oscillator adapted to be controlled by a control voltage source, comprising:
 - a. first and second transistors each including base, emitter and collector electrodes, said emitter electrodes of said first and second transistors being coupled together and to a source of current;
 - b. third and fourth transistor means each including base and emitter electrodes, the emitter electrodes of said third and fourth transistor means being coupled to said base electrodes of said first and second transistors, respectively, the base of said third transistor means being coupled to a source of energizing voltage, and the base of said fourth transistor being coupled to said collector of said first

transistor for forming a regenerative circuit loop capable of oscillation;
 a parallel-resonant circuit coupled between said collector of said first transistor and said source for establishing a frequency-sensitive phase characteristic in said loop; and
 variable phase-shifting means having an input coupled to a



first point on said regenerative loop and an output coupled to a second point on said regenerative loop for extracting an oscillatory signal from said regenerative loop at said first point and for injecting a phase-shifted version of said oscillatory signal at said second point on said loop under the control of the control voltage source for establishing an oscillation frequency.

4,243,954

LOW LEVEL LC OSCILLATOR

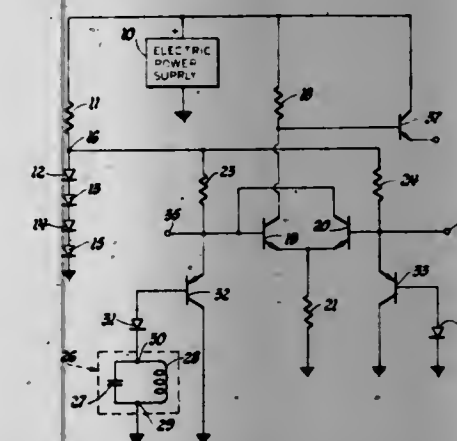
Burton D. Schertz, Kokomo, and Frederick A. Aldridge, Russville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1979, Ser. No. 50,074

Int. Cl.³ H03B 5/12

U.S. Cl. 331—117 R

1 Claim



1. A low level oscillator suitable for use as a radio receiver local oscillator and adaptable to integrated circuit construction comprising, in combination:

- a. first and second differentially connected transistors, each having a base and the second having a collector connected to the base of the first;
- b. first means including a third transistor with a base-emitter junction effective to establish a first reference voltage relative to ground on the second transistor base and supply electric current thereto;
- c. a fourth transistor having an emitter connected to the first transistor base, a grounded collector and a base;
- d. an LC tank coupled between the fourth transistor base and ground;
- e. second means cooperating with the fourth transistor base-emitter junction to maintain the voltage on the first transistor base higher by the first reference voltage, in spite of

temperature variation, than the voltage across the tank, whereby alternate conduction of the first and second transistors is timed to tank oscillation;
 a source of electric power having a second reference voltage higher than the first and being effective to deliver electric current;
 impedance means connecting the electric power source to the first transistor base, whereby current is supplied alternately to the tank and the second transistor in proper timing and phase to maintain tank oscillation, the fourth transistor reducing the magnitude of tank voltage oscillation to a low level.

4,243,955

REGULATED SUPPRESSED CARRIER MODULATION SYSTEM

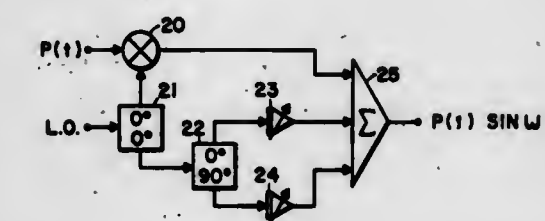
Sam M. Daniel, and Kenneth M. Peterson, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1978, Ser. No. 920,048

Int. Cl.³ H03C 1/52; H04B 1/12

U.S. Cl. 332—37 D

14 Claims



12. A method of regulating modulator apparatus to substantially eliminate carrier signal feedthrough, said method comprising the steps of:

- (a) providing first and second substantially orthogonal versions of a carrier signal;
- (b) modulating one of the first and second versions of the carrier with a selected modulating signal;
- (c) weighting portions of the first and second versions of the carrier so that a combined value of the first and second versions of the carrier is substantially equal to the carrier signal feedthrough; and
- (d) combining the modulated signal and the weighted first and second versions of the carrier to provide an output signal wherein carrier signal feedthrough is substantially suppressed.

4,243,956

AUTOMATIC EQUALIZER FOR A SYNCHRONOUS DIGITAL TRANSMISSION SIGNAL

Michel Lemoussu, Saint Michel sur Orge, and Claude Cardot, Gif-sur-Yvette, both of France, assignors to Compagnie Industrielle des Telecommunications cit Alcatel, Paris, France

Filed Mar. 9, 1979, Ser. No. 19,245

Claims priority, application France, Mar. 10, 1978, 78 06953

Int. Cl.³ H04B 3/08

U.S. Cl. 333—18

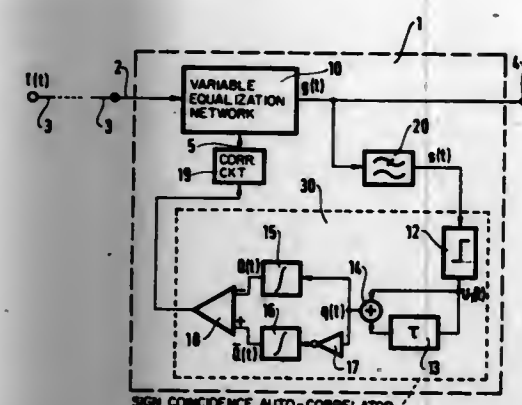
5 Claims

1. An automatic equalizer for compensating for the linear distortion experienced by a digital signal when transmitted over a transmission channel 3, said digital signal comprising a train of digital pulses of a constant unit time interval, the equalizer comprising:

- (a) a variable equalization network 10 having a feedback control loop comprising:

- (1) a sign-coincidence auto-correlator 30 for correlating

the polarities of a first and a second version of the equalized signal; and



(2) means for delaying 13 the second version of the equalized signal with respect to the first version by an integer multiple of said unit time interval.

4,243,957

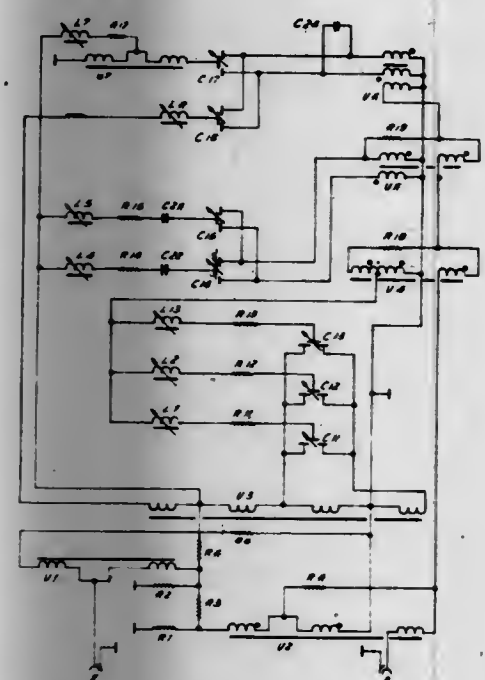
UNIVERSAL EQUALIZER

Hans-Joachim Schmidt, Nuremberg, Fed. Rep. of Germany, assignor to Te ka De Felten & Guillaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany
Continuation of Ser. No. 881,510, Feb. 27, 1978, abandoned, which is a continuation of Ser. No. 724,614, Sep. 20, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 928,884
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1975, 2541977

Int. Cl.³ H03H 7/03

U.S. Cl. 333—28 R

3 Claims



1. An equalizer of the type operative for equalizing the attenuation-versus-frequency curve of a signal carrier transmission system within a predetermined frequency range by providing a compensatory attenuation-versus-frequency transfer function compensating for the unequalized attenuation-versus-frequency curve of the signal carrier transmission system, the equalizer comprising
input circuit means;
output circuit means;
N compensating means connected between the input and output circuit means of the equalizer and operative for establishing a compensatory attenuation-versus-frequency transfer function comprised of N compensatory attenuation-versus-frequency curve bumps,
each of the N compensating means comprising a respective reactor-resistor circuit stage operative for establishing a

respective one of the N bumps of the compensatory transfer function of the equalizer,
each reactor-resistor circuit stage including amplitude-selecting means adjustable for changing the amplitude of the respective compensatory bump,
each reactor-resistor circuit stage furthermore including frequency-selecting means adjustable for shifting the frequency of the extreme-amplitude point of the respective compensatory bump between the minimum and maximum end frequencies of a respective one of N different frequency ranges,
each of the N different frequency ranges including a middle frequency midway between the minimum and maximum end frequencies of that frequency range,
the difference between the middle frequency and the end frequencies within each frequency range being in excess of one half the difference between the middle frequency of that frequency range and the middle frequency of the adjoining frequency range,
the flanks of each two adjoining compensatory bumps overlapping and intersecting at a point which is at least 0.6 of the amplitudes of the two adjoining bumps whenever the amplitudes of the two adjoining bumps are set to equal values,
the N middle frequencies being substantially equidistantly spaced when measured along a normalized frequency axis the constituent portions of which have been expanded and compressed in correspondence to the function d^* , wherein

$$d^* = k \cdot 10^{[3.76q - 5.32 \sqrt{q + 2.07}]}$$

k is a simple proportionality constant and
q is normalized frequency f/f_{max} .

4,243,958

PHASE-MULTIPLEXED CCD TRANSVERSAL FILTER

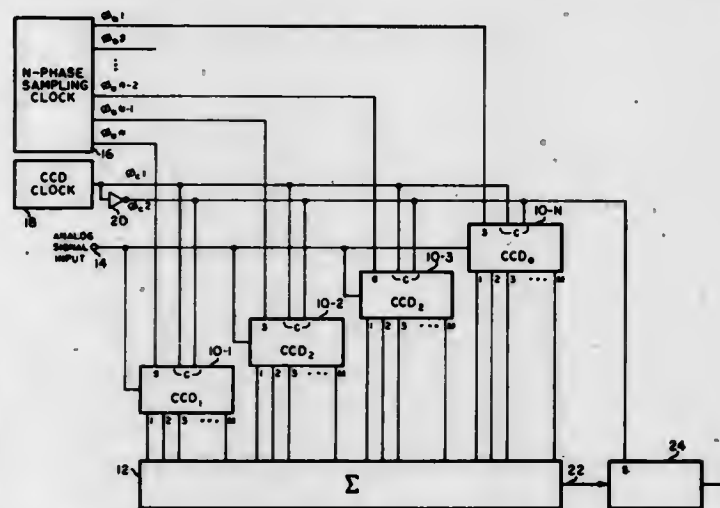
Doran K. Wilde, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 26, 1979, Ser. No. 33,361

Int. Cl.³ H03H 15/02; G11C 19/28, 27/00

U.S. Cl. 333—165

1 Claim



1. A phase-multiplexed CCD transversal filter, comprising:
a multi-phase sampling clock source for producing a plurality of sampling clock signals having a predetermined frequency and different predetermined phases of a single clock cycle;
a plurality of charge coupled devices defining serially arranged delay elements, each of said charge coupled devices receiving a different sampling clock signal so that said charge coupled devices acquire samples of an input signal in a predetermined consecutive order;
means for sensing the value of the charge stored in said

serially arranged delay elements and combining predetermined weighting coefficients therewith; and
means for summing said sensed and weighted values to provide an output signal which is related to the input signal in accordance with a predetermined transfer function,
wherein said plurality of charge coupled devices consists of N CCD's connected in parallel, said multiphase sampling clock source produces N clock signals having the same frequency f_c so that the apparent sampling frequency $f_s = Nf_c$, and each CCD has M taps so that said filter appears to comprise a single CCD having a length of N times M elements.

4,243,959

ADAPTIVE FILTER WITH TAP COEFFICIENT LEAKAGE

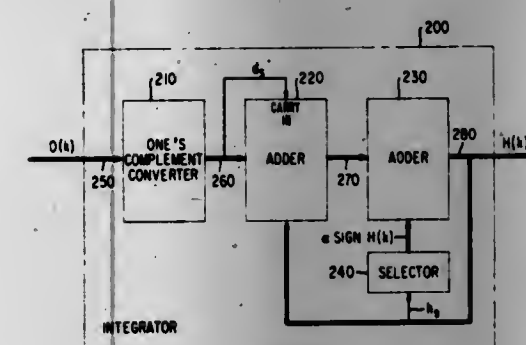
Donald L. Duttweiler, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 21, 1979, Ser. No. 50,890

Int. Cl.³ H03A 15/00, 17/00

U.S. Cl. 333—166

4 Claims



1. A digital adaptive filter including a tapped delay line and apparatus coupled to said delay line for providing a tap coefficient signal, said tap coefficient providing apparatus (100, 200, 300, 400) including leak apparatus (40, 240) for introducing leakage in said tap coefficient signal and CHARACTERIZED IN THAT said digital filter further comprises means (50, 60) for controlling the strength of said tap coefficient leakage, said controlling means including means for weakly driving said tap coefficient signal toward zero said driving means including means (410, 420) responsive to an updating component (450) of said tap coefficient and responsive to said tap coefficient (470, 480) for intermittently introducing leakage.

4,243,960

METHOD AND MATERIALS FOR TUNING THE CENTER FREQUENCY OF NARROW-BAND SURFACE-ACOUSTIC-WAVE (SAW) DEVICES BY MEANS OF DIELECTRIC OVERLAYS

David J. White; Carl N. Helmick, Jr., and Robert E. Hunt, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1978, Ser. No. 933,395

Int. Cl.³ H03H 9/64, 9/42, 9/25; H01L 41/22

U.S. Cl. 333—196

8 Claims



1. A surface acoustic wave device comprising:
a substrate, for supporting the propagation of surface acoustic waves;

an input transducer formed on said substrate for producing surface acoustic waves;
an output transducer formed on said substrate, for receiving surface acoustic waves; and
an electrically nonconducting film deposited on and in contact with said substrate and transducers, said film having a predetermined thickness to obtain a desired center frequency of said surface acoustic waves.

4,243,961

APPARATUS FOR SELECTING THE RESONANCE FREQUENCY OF A MICROWAVE DEVICE COMPRISING A PLURALITY OF CAVITIES

Georges Faillon, and Claude Carreyre, both of Paris, France, assignors to Thomson-CSF, Paris, France

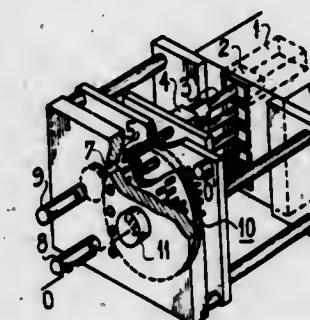
Filed Jun. 25, 1979, Ser. No. 51,957

Claims priority, application France, Jun. 29, 1978, 78 19503

Int. Cl.³ H01P 7/06

U.S. Cl. 333—233

10 Claims



1. Apparatus for selecting the resonance frequency of a microwave device comprising n aligned microwave cavities, each including means for varying the volume and hence the resonance frequency of the cavity, said n volume varying means bearing against n stops, said n stops being aligned on one and the same support, the degree of penetration of each stop within the support being adjustable, said support carrying a plurality of lines of n stops against which the volume varying means may be successively applied.

4,243,962

DIGITAL TUNING ELEMENT AND METHOD OF MAKING SAME

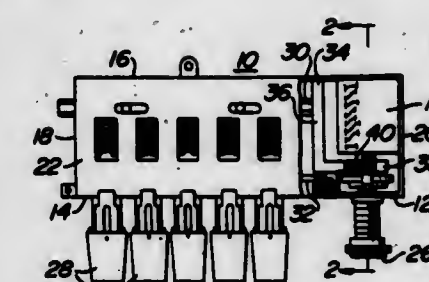
Joseph F. Larkin, Holland; Harold M. Cassidy, Hatboro, both of Pa.; John W. Woodcock, Bellmawr, N.J., and William M. Dunn, Philadelphia, Pa., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 18, 1978, Ser. No. 897,420

Int. Cl.³ H03J 5/06, 5/08

U.S. Cl. 334—7

34 Claims



14. The method of claim 13 in which the cylindrical sections have indexing pins and mating openings, and the sections are assembled and secured together by inserting the indexing pins of one of said sections into the mating openings of the next section during the step of assembling the sections in said predetermined order.

15. The method of claim 14 in which said segments are aligned and secured with each of their axes along a common axis for said body, and including the step of securing to the body an end portion having a central shaft along the common axis of said sections for rotation of said body thereabout.

4,243,963

CONSTRUCTION OF A PRINTED WIRING CARD MOUNTABLE REED RELAY

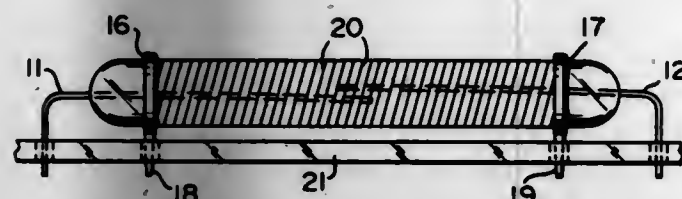
Khaja M. Jameel, Glen Elynn, and James V. Koppensteiner, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, North Lake, Ill.

Filed Apr. 2, 1979, Ser. No. 26,141

Int. Cl.³ H01H 1/66

U.S. Cl. 335—151

5 Claims



1. An electromagnetic switching device including an elongated capsule of dielectric material and a plurality of switching contacts located within and supported by said capsule, said electromagnetic switching device comprising;

a helix of conductive material bonded to a substantial portion of the exterior periphery of said capsule, said helix including first and second termination ends; and first and second terminals bonded to said first and second termination ends respectively.

4,243,964

ELECTROMAGNETICALLY OPERATED SWITCH, PARTICULARLY STARTER SWITCH FOR AUTOMOTIVE STARTER MOTORS

Karl-Heinz Bögner, Neuhausen, and Martin Sprenger, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

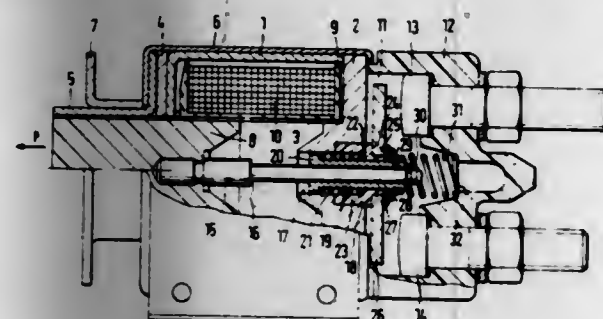
Filed Feb. 7, 1979, Ser. No. 10,051

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813699

Int. Cl.³ H01H 7/16, 75/00

U.S. Cl. 335—156

13 Claims



1. Electromagnetically operated switch having a housing (6, 12) defining a switching chamber (11) therein; a solenoid coil (10) located within the portion of the housing and having a central opening; a core (1, 2) located against an end face of the coil and at least in part across said opening; an armature element (8) longitudinally movable in the opening of the coil against a return force (P); at least one fixed switch terminal (13, 14) located in the housing and extending into the switching chamber; a movable contact carrier (26, 49) located in the housing; a contact release spring (31) engaging the contact carrier and tending to push the contact carrier away from, and out of engagement with, the at least one switch terminal; and connecting means coupling the armature element and the contact carrier together, comprising a switching rod (15) connected to the armature element and movable therewith; contact engagement force transmission means (16, 19, 33, 35, 45) engageable with both the switching rod (15) and the contact carrier (26, 49) and transmitting movement of the armature, and hence of the switching rod upon energiza-

tion of the solenoid to move the contact carrier in the direction of the fixed switching terminal to effect closing of the switch, said armature and switching rod being movable over a path length in excess of the length of the path of the contact carrier upon engagement thereof with the fixed terminal, thereby providing over-travel of the armature and the switching rod;

and contact release force transmission means (27, 28, 29, 30, 50, 51) secured to the switching rod (15) and engageable with the contact carrier upon deenergization of the solenoid and return movement of the armature (8) under the return force (P) after the switching rod and hence the armature have travelled over said excess path length to tear the contact carrier from the fixed switch terminal (13, 14) in case of sticking of the contact carrier thereto and failure of the contact release spring (31) to push the contact carrier away from the fixed switch terminal.

4,243,965

DEFLECTION COIL

Norio Yoshikawa, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

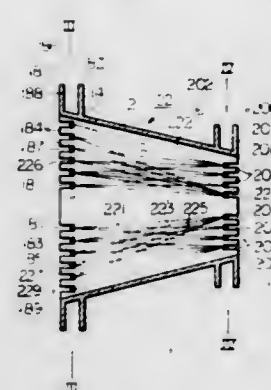
Filed Mar. 8, 1978, Ser. No. 884,401

Claims priority, application Japan, Mar. 8, 1977, 52-277793[U]

Int. Cl.³ H01F 7/00

U.S. Cl. 335—213

3 Claims



1. A deflection coil comprising:

(a) a coil frame having a flared coil bobbin and guides provided at the front and rear ends of the coil bobbin and integrated therewith, wherein the guide at the front end of the coil frame has a first plurality of circumferentially spaced coil winding insertion slots therein and the guide at the rear end of the coil frame has a second plurality of circumferentially spaced coil winding insertion slots therein, the first plurality of slots being greater than the second plurality of slots, and

(b) saddle-type coil means along the inside surface of the coil frame having a plurality of wires passing through predetermined coil winding insertion slots in the guide at the front and rear ends of the coil frame, and having a distribution in said slots for producing a magnetic field having a strong pin-shaped field at the front end thereof and a barrel-shaped field at the rear end thereof and for reducing misconvergence.

4,243,966

ELECTROSTATIC SHIELDING OF NONSEQUENTIAL DISC WINDINGS IN TRANSFORMERS

Robert C. Degeneff, Pittsfield, Mass., and John C. Crouse, Rome, Ga., assignors to General Electric Company, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,157

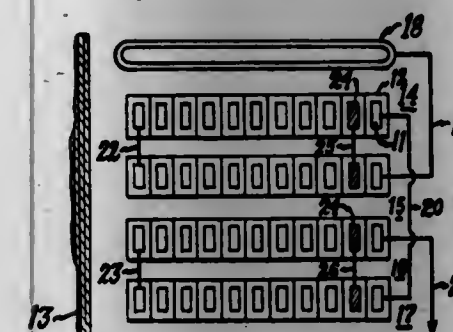
Int. Cl.³ H01F 15/14

U.S. Cl. 336—70

2 Claims

1. A disc coil winding arrangement for a transformer comprising: a plurality of turns of insulated electrical conductors radially

disposed around a winding form in a disc winding configuration; a plurality of winding sections of said radially disposed conductors linearly arranged along said winding form; an electrostatic ring shield adjacent one of said winding sections and electrically connected with another of said winding sections; said winding sections being electrically inter-connected in a nonsequential arrangement wherein a first one of said winding sections is electrically connected with a second one of said winding sections and a third one of said wind-



ing section is electrically connected with a fourth one of said winding sections, said first and said fourth winding sections being electrically connected together, said second section being electrically connected to the electrostatic ring shield and said third winding section being adapted for connection to a terminal of the transformer; at least one electrostatic shield within said first winding section electrically connected with at least one electrostatic shield in said second section; and at least one electrostatic shield in the third winding section being electrically connected with at least one electrostatic shield in said fourth winding section.

4,243,967

THERMOSTAT AND METHOD OF OPERATING

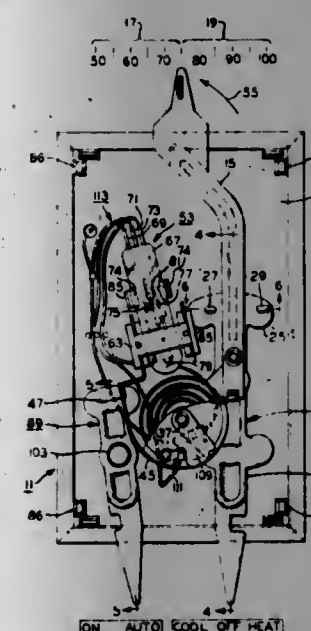
James P. Frank, Rock Falls, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jan. 22, 1979, Ser. No. 5,236

Int. Cl.³ H01H 37/52

U.S. Cl. 337—340

26 Claims



1. A thermostat adapted to control the energization of a conditioning system operable generally in a heating mode and a cooling mode so as to effect the regulation of the temperature of a given space in which the thermostat may be located, the thermostat comprising: a casing including a base; a post rotatably mounted to said base; a bimetal means movable in respective ones of a plurality of

adjusted positions for sensing the temperature of the space, said bimetal means having a generally spiral configuration with generally radially spaced inner and outer ends and said inner end being secured to said post so as to be conjointly rotatable therewith; means mounted to said base for selecting an operating mode of the thermostat and movable between an off position, a heating mode position and a cooling mode position; a switch device mounted to said base and including means operable generally for switching between a pair of switching positions effecting the energization and the deenergization of the conditioning system when said mode selecting means is in the heating mode position and the cooling mode position thereof, respectively; means secured generally to said outer end of said bimetal means and associated with said switch device for translating the temperature sensing movement of said bimetal element so as to effect the operation of said switching means between its switching positions; a temperature selector manually movable with respect to said base within a pair of predetermined temperature ranges so as to set a preselected temperature for the given space and operably connected with said post so as to conjointly rotate said post and said bimetal means to a respective one adjusted position of the plurality thereof correlative with the preselected temperature setting of said temperature selector within one of the predetermined temperature ranges upon the manual movement of said temperature selector; a pair of predeterminedly spaced apart abutments on one of said mode selecting means and said temperature selector; and abutment means on the other of said mode selecting means and said temperature selector, one of said abutment pair and said abutment means being movable with lost motion with respect to the other of said abutment pair and said abutment means so as to drivingly engage one of said abutments of said pair thereof and said abutment means upon the manual movement of said temperature selector from the preselected temperature setting thereof within the one predetermined temperature range toward another preselected temperature setting thereof within the other of the predetermined temperature ranges, the driving engagement of said one abutment and said abutment means effecting the conjoint movement with said temperature selector of said mode selecting means from one of the heating mode position and the cooling mode position thereof through the off position to the other of the heating position and the cooling position and the lost motion movement between said abutments and said abutment means defining a manual movement of said temperature selector across at least a part of each of the one and other predetermined temperature ranges when said mode selecting means is in its off position.

4,243,968

TEMPERATURE SENSING UNIT, PARTS THEREOF AND METHODS OF MAKING THE SAME

Douglas R. Scott, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 25, 1979, Ser. No. 33,331

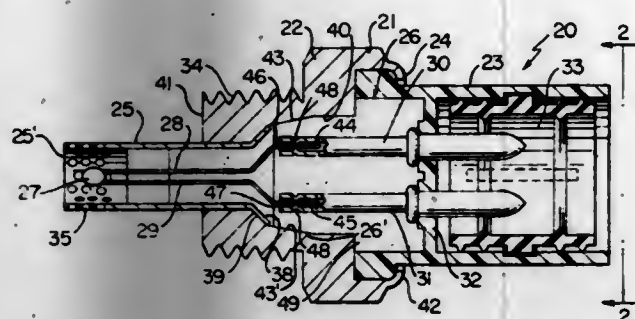
Int. Cl.³ H01C 3/04

U.S. Cl. 338—28

40 Claims

1. In a temperature sensing unit having a housing means provided with a chamber therein leading from a temperature sensing area of said housing means to a connector area of said housing means and having an electrical temperature sensor disposed in said sensing area and interconnected by lead means to electrical connector means disposed in said connector area with sealing means being disposed in said chamber to sealingly fill the same and secure said sensor, lead means and connector

means in place, the improvement wherein said sealing means comprises a preformed one-piece resilient member that was



formed separately from said lead means, connector means, sensor and housing means.

4,243,969

LAYER RESISTOR ELEMENT

Wolf-Erhard Steigerwald; Heinz-Jürgen Siede; Bela Rösner, all of Bad Neustadt, and Jürgen Zimmermann, Fuchsstadt, all of Fed. Rep. of Germany, assignors to PREH, Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

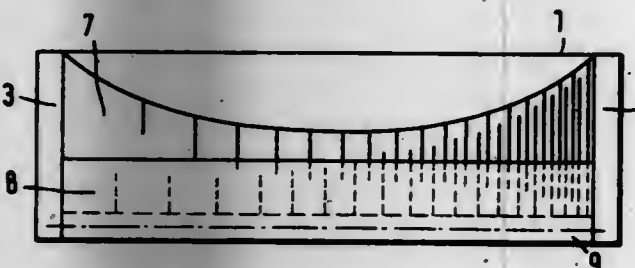
Filed Apr. 17, 1979, Ser. No. 30,801

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816665

Int. Cl.³ H01C 1/012

U.S. Cl. 338-309

11 Claims



1. A layer resistor element for use in a variable resistor having a non-linear resistance characteristic, comprising

- (a) an insulating substrate,
- (b) two terminal electrodes provided at opposite ends of the substrate,
- (c) a first resistance layer disposed on the substrate in contact with said terminal electrodes,
- (d) two comb-like sets of separating slots cut into said first resistance layer alternatingly from opposite sides thereof so as to mesh with each other, the area of the slots being negligible relatively to the area of the first resistance layer, and the lengths and spacings of the slots of each set being defined in accordance with said non-linear characteristic, and
- (e) a second resistance layer disposed on the first resistance layer and having a greater resistivity than the first resistance layer, the second resistance layer extending beyond the first resistance layer at a side thereof to form a slide way for a wiper of said variable resistor.

4,243,970

OPEN CIRCUIT ALARM

Patrick C. Hardee, 6923 S. Cherry St., and Malin L. Jacobs, 7022 S. Dexter St., both of Littleton, Colo. 80122

Filed Apr. 6, 1979, Ser. No. 27,607

Int. Cl.³ G08B 21/00

U.S. Cl. 340-52 D

5 Claims

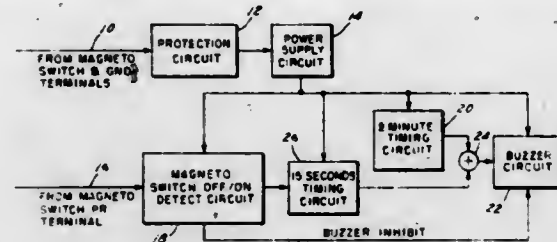
1. An alarm circuit for indicating a main power switch on with the magneto switch off in a light aircraft comprising:

- (a) power line means connected to the battery, ground and magneto power terminals of a magneto switch,
- (b) power divider circuit means electrically connected in

said power line means providing a reference voltage powering an audio alarm circuit,

(c) magneto on-off detector circuit means electrically connected with the power line means to inhibit the audio alarm circuit when the power switch and magneto switch are in the on position thereby providing an inhibiting voltage that the voltage to it is above the reference voltage,

(d) long period timing circuit means electrically connected to a reference voltage line to the audio alarm circuit for inhibiting the audio alarm circuit while in a charged high state from the current in the power line above the refer-



ence voltage when the power and magneto switches are on and to discharge after a predetermined time when the power switch is turned on and the magneto switch is off so as to activate the audio alarm circuit

(e) short period timing circuit means, electrically connected with the power line means and an output line from the detector circuit means providing a current output after a predetermined time when the inhibiting voltage in said magneto on-off detector circuit means drops below the reference voltage, when the magneto switch is turned off and the main power switch is in the on position, and

(f) said audio alarm circuit means activated by current output from said short period timing circuit means.

4,243,971

TEST CIRCUIT FOR AUTOMOTIVE PASSENGER RESTRAINT SYSTEMS

Wadym Suchowskyj; Berthold Seibel, both of Schwieberdingen, and Peter Werner, Wiernsheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

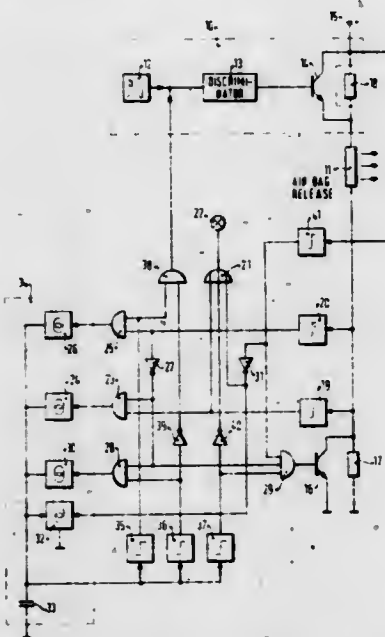
Filed Oct. 9, 1979, Ser. No. 82,572

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851333

Int. Cl.³ G08B 21/00

U.S. Cl. 340-52 H

10 Claims



1. A test circuit for automotive passenger safety systems, said safety system including a trigger signal discriminator and a power output stage actuated by said discriminator, said

power output stage serving to actuate said safety system, and wherein, according to the invention, said test circuit comprises a semiconductor switch (16) which may be placed in electrical series connection with said power output stage (14) and said safety system (11), said test circuit including means for preventing simultaneous conduction of said switch (16) and said power output stage (14) during a test.

4,243,972

METHOD OF AND APPARATUS FOR SIGNATURE CODED TARGET RECOGNITION

Stephen M. Toussaint, Elkhart, Ind., assignor to Esmark, Incorporated, Mishawaka, Ind.

Filed Mar. 29, 1979, Ser. No. 25,266

Int. Cl.³ G09F 9/30

U.S. Cl. 340-146.3 SY

8 Claims



1. In a method for signature coded target recognition, the steps of assigning to each of multiple targets a unique binary characteristic, selecting a particular target from among the multiplicity of targets, causing each target to successively assume its unique characteristic binary state, sensing the binary state characteristic of the selected target by sensing means, storing the sensed binary state of the selected target, repeating the process for each digit of the binary code of the target, comparing the sensed (characteristic) and stored multiple digit code to a record of the binary characteristics of all of the targets to find a correlation between the sensed and stored binary code characteristic of the selected target and (a) the correlated characteristic of said record, and thereby securing identification of the selected target as the target to which the correlated recorded binary characteristic had been assigned.

4,243,973

HOME INTEGRATED SIGNAL SYSTEM

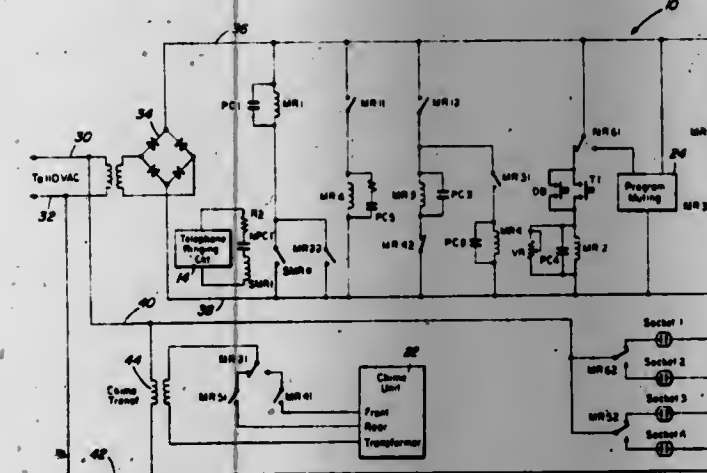
David H. Sandidge, Midland, Tex., assignor to Gordon B. Arnold, Midland, Tex., a part interest

Filed Mar. 27, 1979, Ser. No. 24,326

Int. Cl.³ H04Q 9/16; H04M 11/00

U.S. Cl. 340-148

9 Claims



1. A system for producing an audible output upon the occurrence of certain events, comprising:

first input means for providing a first input signal upon the occurrence of a first event;

second input means for providing a second input signal upon the occurrence of a second event;

coordinating circuit means connected to said first input

means and said second input means for receiving said first and second input signals and producing first and second control signals respectively in response thereto;

a first output means controlled by said coordinating circuit means for providing an audible signal in response to one of said control signals;

a second output means which is switched between a first, energized state and a second, deenergized state in response to one of said control signals;

a third output means comprising a muting circuit for reducing the volume of competing sounds in response to one of said control signals; and

a fourth output means comprising at least one normally energized electrical socket and further wherein said coordinating circuit means includes an oscillator circuit means for periodically interrupting the electrical supply to said socket for producing periodic energization of any load device connected to said socket.

4,243,974

WIDE DYNAMIC RANGE ANALOG TO DIGITAL CONVERTER

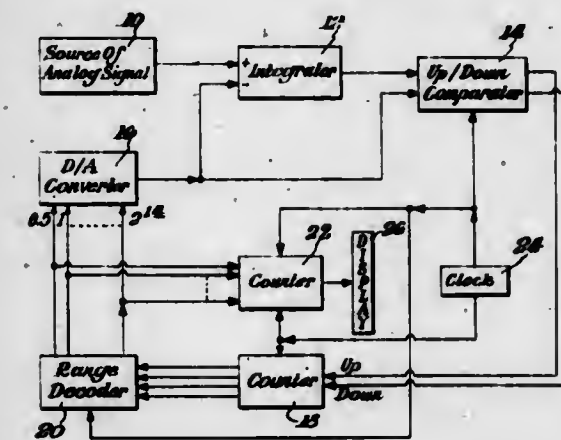
Rodney L. Mack, Los Gatos, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 24, 1978, Ser. No. 880,947

Int. Cl.³ H03K 13/02

U.S. Cl. 340-347 NT

8 Claims



1. A method of geometrically converting an input analog signal to an output signal comprising the steps of:

integrating said input signal in a first sense to provide an integrating signal,

simultaneously therewith integrating a reference signal in a second sense opposite said first sense to reduce the amplitude of said integrated signal,

periodically comparing the amplitudes of said integrated and reference signals,

geometrically adjusting a digital signal according to each comparison,

converting each said adjusted digital signal to analog form to provide said reference signal, and

totalizing, over a predetermined measuring interval, the values of each said adjusted digital signal at the time of each comparison, thus to provide said output digital signal.

4,243,975

ANALOG-TO-DIGITAL CONVERTER

Eiji Masuda, Kawasaki, and Yasuji Suzuki, Ayase, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

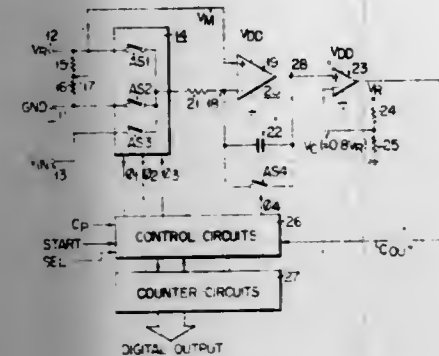
Filed Sep. 25, 1978, Ser. No. 945,641

Claims priority, application Japan, Sep. 30, 1977, 52/117533

Int. Cl.² H03K 13/20

U.S. Cl. 340-347 NT

8 Claims



1. An analog-to-digital converter comprising:
 - an integrator having first and second inputs and powered from first and second potentials for integrating a difference between input voltages applied to said first and second inputs, said first input being supplied with a medium voltage between a first reference voltage and a second reference voltage of which the magnitude is larger than the first reference voltage;
 - a comparator powered from said first and second potentials for comparing the output voltage of said integrator with a comparison reference voltage, the magnitude of the comparison reference voltage ranging between said first and second potentials;
 - switching means connected to said second input of said integrator and selectively applying said first reference voltage, said second reference voltage, and an unknown analog signal to said second input of said integrator;
 - means for setting the output of said integrator to the level of said comparison reference voltage at the start of an integrating operation;
 - clock means for producing clock pulses and timing control pulses at predetermined time intervals from the point of time that said integrator commences its integration operation;
 - means for causing said switching means to couple said second reference voltage to said second input of said integrator during a first period with a given duration, said first period terminating upon occurrence of a first timing control pulse;
 - means responsive to the occurrence of said first timing control pulse to cause said switching means to couple said unknown analog signal to said second input of said integrator during a second period, said second period terminating when the output voltage of said integrator reaches said comparison reference voltage when said unknown analog signal is smaller in magnitude than said first reference voltage;
 - means responsive to the occurrence of said second timing control pulse to cause said switching means to couple said first reference voltage to said second input of said integrator during a third period, said third period terminating when the output voltage of said integrator equals said comparison reference level;
 - first counting means for counting the number of clock pulses occurring during said third period to provide a digital value corresponding to said unknown analog signal; and
 - second counting means for counting, when said unknown analog signal is smaller than the first reference voltage, the clock pulses occurring during a time interval in said second

and period from the time the output voltage of said integrator reaches said comparison reference voltage level to the time said second timing control pulse occurs to provide a digital value corresponding to the difference between said unknown analog signal and said first reference voltage.

4,243,976

TERNARY TO BINARY CONVERTER

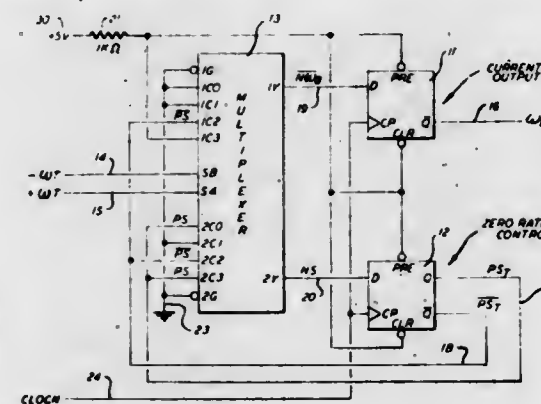
Richard C. Warner, Morris Plains, and Donald J. Weber, North Caldwell, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Mar. 12, 1979, Ser. No. 19,545

Int. Cl.² H03K 13/24

U.S. Cl. 340-347 DD

5 Claims



1. A circuit for converting ternary information coded as first and second binary input signals in which a first binary state on one signal and second state on the other signal represent no input, a first binary state on the one and a first binary state on the other represent a positive input and second binary state on one and a second binary state on the other a negative input, into an output signal which, when alternating between two binary states, represents no input, when at a first binary state represents a positive input and when at a second binary state represents a negative input, comprising:
 - (a) means generating a clock signal synchronous with said first and second input signals;
 - (b) a multiplexer having as first and second inputs said first and second binary input signals, and providing said first and second signals to first and second outputs, said multiplexer also having control inputs operative to selectively couple said first and second inputs to said first and second outputs;
 - (c) a first D-type flip flop having said clock signal as a clock input and said first output as a data input and providing said output signal at its output; and
 - (d) a second D-type flip flop having said clock signal as a clock input and said second output as a data input and providing its outputs to said control inputs of said multiplexer.

4,243,977

DELTA SIGMA TO PCM CONVERTER

John D. Everard, Ipswich, England, assignor to The Post Office, London, England

Filed Jan. 31, 1978, Ser. No. 873,972

Claims priority, application United Kingdom, Feb. 7, 1977, 5014/77

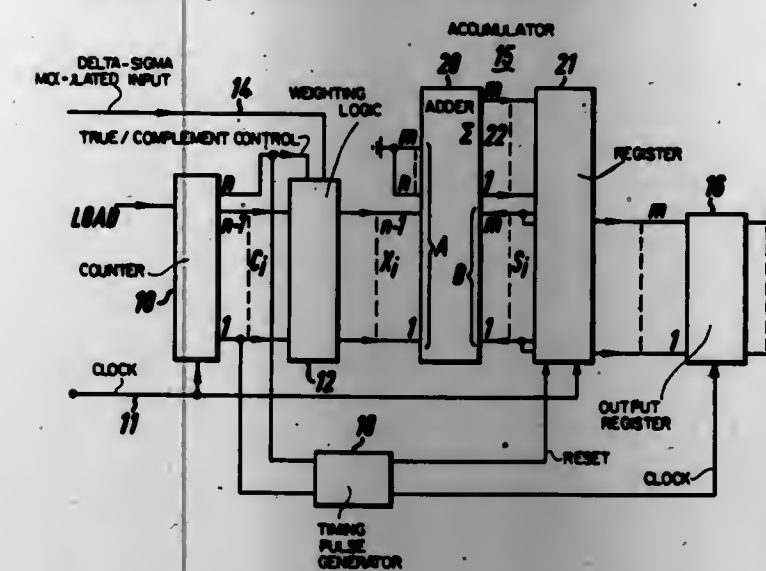
Int. Cl.² H04L 3/00

U.S. Cl. 340-347 DD

18 Claims

1. A converter for converting a supplied delta sigma modulated signal to a pulse code modulated signal comprising:
 - an n bit counter connected to count supplied clock pulses and to supply n binary-valued output bits representing the number of clock pulses counted during a predetermined time interval,
 - a true/complement, zero one logic element connected for

logically operating on the output bits of the counter in accordance with the pulse density modulation input to produce output samples weighted in accordance with the instantaneous contents of the counter, and



an m bit accumulator connected for accumulating said samples over a predetermined time interval to produce pulse code modulated signal samples corresponding to the supplied delta sigma modulated signal.

4,243,978

DISPLAY OR INDICATING DEVICE WITH MAGNETIC STOP

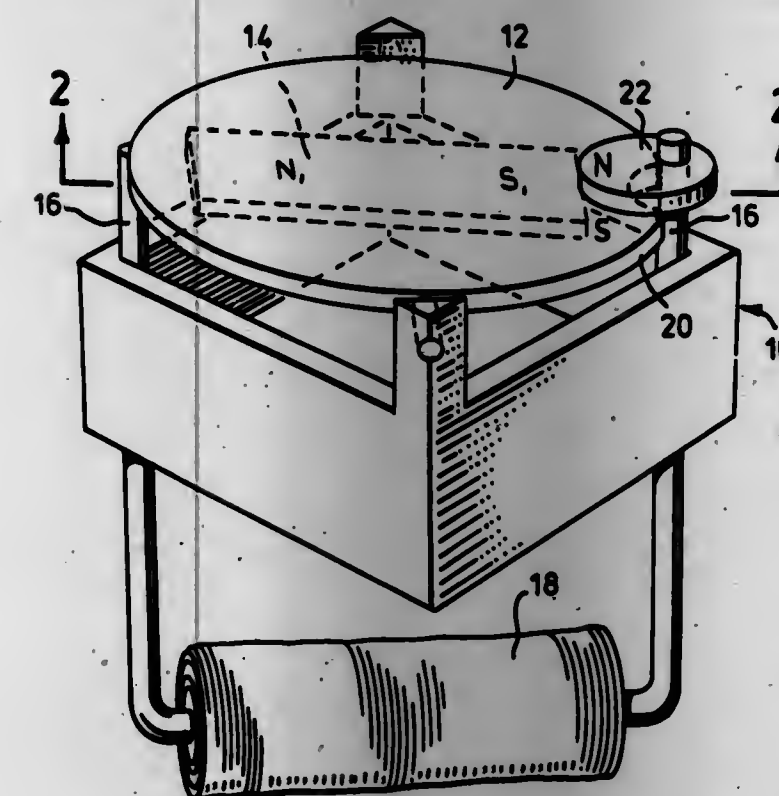
Donald Winrow, Weston, Canada, assignor to Ferranti-Packard Limited, Mississauga, Canada

Filed Oct. 5, 1979, Ser. No. 82,067

Int. Cl.³ G08B 5/24

U.S. Cl. 340-373

4 Claims



1. In an electronic display or indicating element, wherein a rotatably mounted disc is designed to provide visually contrasting surfaces on opposite sides, means mechanically limiting the rotation of the disc between two limiting positions $>90^\circ$ and $<180^\circ$ apart, in which limiting positions, the respective contrasting surfaces are displayed in a viewing direction, a first permanent magnet mounted for rotation with said element, arranged to produce a field having a component transverse to the rotational axis of said disc, at least one reversibly magnetizable pole piece and energizing means therefor, exterior to said disc, designed and connected to provide a first

exterior magnetic field that in the absence of a second exterior magnetic field, each reversal of energization of said pole piece would rotate said permanent magnet and said disc from one limiting position to the other.

a second permanent magnet, of less magnetic field strength than that associated with said at least one pole piece, and mounted adjacent thereto, said second permanent magnet being designed and located relative to the locus of said first magnet during rotation of said disc to produce with said pole piece, in either magnetization, a magnetically stable position for said rotatable disc spaced by a small angle from the mechanical limiting position toward the other limiting position, whereby upon reversal of said pole piece magnetization, said disc is attracted from its former magnetically stable position toward the other magnetically stable position.

4,243,979

BURGLAR ALARM SECURITY CIRCUIT ARRANGEMENT

Peter Kleinschmidt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

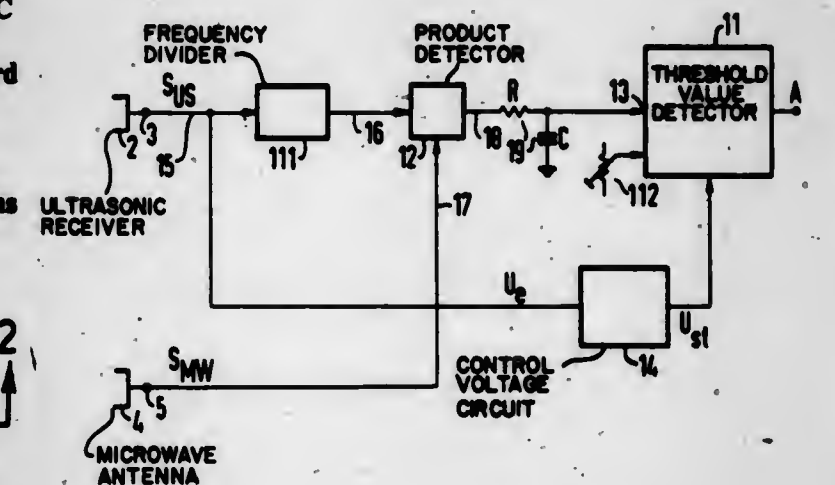
Filed Dec. 7, 1977, Ser. No. 858,156

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1976, 2656399

Int. Cl.² G08B 13/16, 13/18

U.S. Cl. 340-554

5 Claims



1. A circuit arrangement for a security device, which circuit arrangement receives ultrasonic and radio Doppler-frequency signals, comprising:
 - a first input for receiving an ultrasonic Doppler-frequency signal;
 - a second input for receiving a radio Doppler-frequency signal;
 - a frequency converter connected to one of said inputs for normalizing the frequency of the respective received signal to the frequency of the other received signal;
 - a product detector connected to said frequency converter and to the other of said inputs for providing the difference frequency of the signals applied thereto;
 - a low pass filter connected to said product detector and having a frequency-dependent attenuation characteristic;
 - a threshold value detector connected to said low pass filter for providing output signals in response to signals above a threshold value; and
 - a control voltage circuit connected to one of said inputs and to said threshold value detector to derive a control signal having a frequency which is dependent upon the frequency received at said one input,
- said threshold value detector including means responsive to said control voltage signal to adjust the threshold value in accordance with the frequency-dependent attenuation characteristics of said low pass filter.

4,243,980

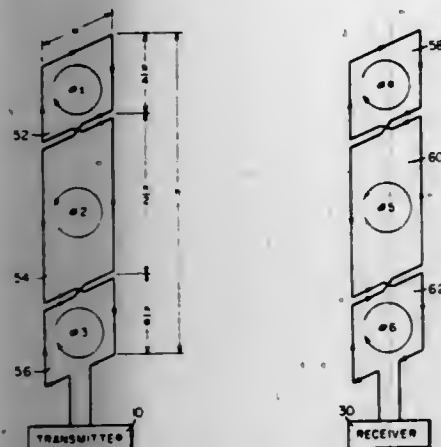
ANTENNA SYSTEM FOR ELECTRONIC SECURITY INSTALLATIONS

George J. Lichtblau, 13 Tannery Hill Rd., Ridgefield, Conn. 06877

Filed Feb. 17, 1978, Ser. No. 878,753
Int. Cl.³ G08B 13/24

U.S. Cl. 340—572

7 Claims



- An antenna system for use in an electronic security system for detection of unauthorized removal of items containing a resonant tag circuit, said antenna system comprising: a transmitting antenna coupled to the security system transmitter and a receiving antenna coupled to the security system receiver, said antennas being disposed in spaced parallel relationship and between which said items must pass for detection;
- each of said antennas including three coplanar loops lying successively along an antenna axis, each loop being twisted 180° with respect to each adjacent loop to be in phase opposition, the center loop being of one phase and the outer loops each being of opposite phase to that of the center loop;
- the effective total loop area of one phase being equal to the effective total loop area of opposite phase.
- The antenna system of claim 4 wherein each of said antennas has a loop configuration substantially identical to that of the other antenna.

4,243,981

IONIZATION FIRE-SIGNAL DEVICE

Hartwig Beyersdorf, Konsulweg 29, D-2409 Scharbeutz, Fed. Rep. of Germany

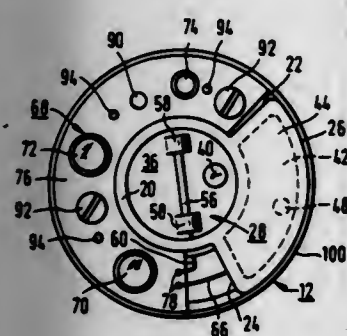
Filed Nov. 17, 1978, Ser. No. 961,642

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752690

Int. Cl.² G08B 17/10

U.S. Cl. 340—629

34 Claims



- An ionization fire-signal device, comprising: a housing including an axially-extending tubular outer wall and a transversely-extending front wall, the axial dimension of said housing being less than the transverse dimension thereof;
- an insulator positioned inside said housing and including a tubular inner wall positioned coaxially relative to said tubular outer wall;

said housing including a concentric section between said tubular inner wall and said tubular outer wall; the outer transverse dimension of said tubular inner wall being less than the inner transverse dimension of said tubular outer wall, and the axial dimension of said tubular inner wall and of said tubular outer wall being approximately equal;

said tubular inner wall forming an enclosure for a measuring chamber, said measuring chamber including at least one opening in the front wall of said housing for access of ambient air, said measuring chamber containing two electrodes;

two spaced-apart insulating walls positioned in said concentric section and extending radially between said tubular inner wall and said tubular outer wall and forming an enclosure for a reference chamber;

said reference chamber extending around a part of said measuring chamber;

said reference chamber containing two electrodes electrically connected in series with the two electrodes of said measuring chamber;

at least one radiation source for ionizing said measuring chamber and said reference chamber;

an electrical alarm signal circuit electrically connected to the electrodes of said measuring and reference chambers; and

the circuit elements of said signal circuit being disposed in said concentric section between said tubular inner wall and said tubular outer wall, and insulated from said reference chamber by said insulating walls.

4,243,982

CURRENT MONITOR

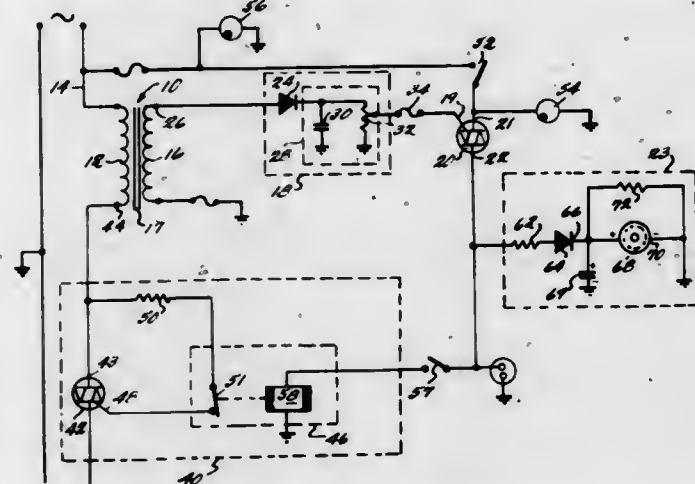
John K. Yarbrough, Rte. 2, Box 79, Indianola, Miss. 38751

Filed Feb. 26, 1979, Ser. No. 15,432

Int. Cl.³ H02H 3/10

U.S. Cl. 340—664

5 Claims



- An A.C. current monitor having solid state components which develops an alarm signal when the A.C. current in a load line equals or exceeds a predetermined A.C. current magnitude, said current monitor comprising: a high Q transformer having a primary winding adapted to be series connected in a load line, a secondary winding and a magnetic core, said secondary winding being inductively coupled to said primary so as to develop a voltage across said secondary winding which is directly proportional to the current through said primary winding;
- a triac switch including a gate and two main terminals, said triac switch being automatically turned on and off by a voltage applied at said gate, said switch being automatically turned on when the magnitude of said voltage exceeds a predetermined value, said switch being automatically turned off when the magnitude of said voltage is less than said predetermined value;
- means for developing a gate voltage, said gate voltage including a D.C. component proportional to the magnitude of said secondary voltage, said D.C. component being less than said predetermined value;

than said predetermined voltage value by a predetermined voltage amount when the magnitude of said A.C. current equals said predetermined A.C. current magnitude, said gate voltage being applied at said gate;

first rectifier means for rectifying the current through said switch; and

alarm means, series connected to said triac switch at one of said main terminals and responsive to the rectified current through said switch, for emitting an audible alarm;

said voltage developing means including second rectifier means for rectifying said secondary voltage, resistor means and capacitor means together forming RC network means for periodically and automatically turning said switching means on and off so that said alarm means emits a chirping sound at a rate equal to the rate of said turning on and off when the magnitude of the difference between the magnitude of said A.C. current and said predetermined A.C. current magnitude is less than a predetermined current amount, the frequency of said chirping varying with the value of said difference so as to indicate the amount of overload in the load line.

4,243,983

METHOD AND APPARATUS FOR DETECTING THE MULTIPLE FEEDING OF DOCUMENTS

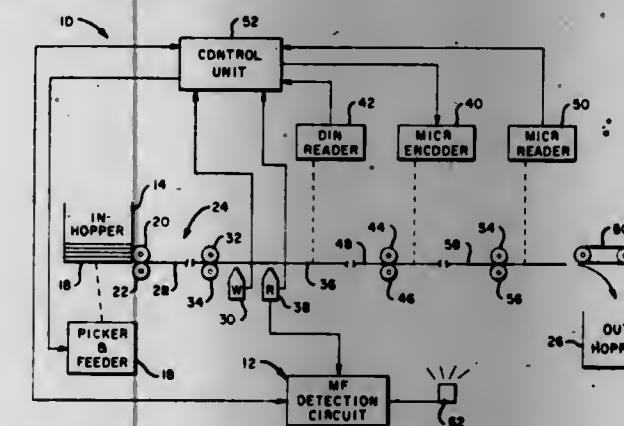
Arvind C. Vyas, Waterloo, Canada, assignor to NCR Canada Ltd. - NCR Canada Ltee, Mississauga, Canada

Filed Aug. 9, 1979, Ser. No. 65,384

Int. Cl.³ G08B 21/00; B65H 7/12

U.S. Cl. 340—674

16 Claims



- An apparatus for detecting a multiple-feed situation with regard to documents having encoding arranged thereon in a predetermined manner and with said documents being moved along a transport path, comprising: sensing means positioned along said transport path in operative relationship with said encoding on said documents for generating a first signal in response to a character of said encoding which is in moving relationship with said sensing means;
 - first circuit means for receiving said signal and also for generating a first time frame;
 - second circuit means for generating a second time frame beginning upon the expiration of said first time frame; and
 - third circuit means for generating an output signal indicative of a said multiple-feed situation when a subsequent signal from said sensing means occurs during said second time frame.
- A method for detecting a multiple-feed situation with regard to documents being moved along a transport path, said documents having encoding arranged thereon in a predetermined manner with adjacent characters thereof having a spacing therebetween; said method comprising the steps of: (a) generating a first signal in response to a character of said encoding as a said document is moved in operative relationship with a means for sensing said encoding;
 - (b) generating a first time frame in response to said first signal, with said first time frame bearing a relationship to

the times that characters of said encoding are in operative relationship with said sensing means;

(c) generating a second time frame beginning upon the completion of said first time frame, with said second time frame bearing a relationship to the times that the spaces between adjacent characters of said encoding are in operative relationship with said sensing means;

(d) generating an output signal indicative of a said multiple-feed situation when a subsequent signal from said sensing means occurs during said second time frame.

4,243,984

VIDEO DISPLAY PROCESSOR

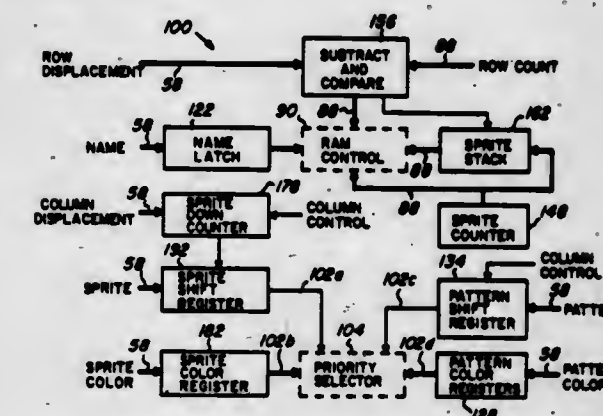
David A. Ackley, Stafford; Gerald D. Rogers, Sugarland; Peter H. Macourek, Needville; Karl M. Guttag, and Ki Suk Chang, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1979, Ser. No. 18,540

Int. Cl.³ G06F 3/153

U.S. Cl. 340—703

8 Claims



- In a video display system for use with a raster-scanned video display unit, the system including: a random access memory having stored therein a first ordered array of digital code elements which map a set of video color codes into the M columns of N rows of video display elements comprising a first video image; a second ordered array of digital code elements which map said set of video color codes into the S columns of T rows of video display elements comprising a second video image; and a third array containing a column displacement U and a row displacement V for the display of the second video image relative to the first video image, where $1 \leq S \leq M$, $1 \leq T \leq N$, $1 \leq U \leq M$ and $1 \leq V \leq N$;
- a video display processor for providing a composite video signal for application to the video display unit, whereby the first video image may be displayed with the second video image superimposed thereon at said column and row displacements, the video display processor comprising: sequence control means providing a cyclic column count X and a cyclic row count Y indicative of the time sequential position of the raster scan;
- memory control means for selectively retrieving from the random access memory, portions of the first, second and third arrays;
- overlay control means, cooperating with the memory control means in synchronization with the column and row counts, for providing a first pattern signal comprising the digital code element in the first array which maps the video display element in the column X of the row Y of the first video image when $1 \leq X \leq M$ and $1 \leq Y \leq N$, and for providing a second pattern signal comprising the digital code element in the second array which maps the video display element in the column $(X-U+1)$ of the row $(Y-B+1)$ of the second video image when $U \leq X < (U+S)$ and $(V \leq Y < (V+T))$;
- priority selector means connected to the overlay control means for receiving the first and second pattern signals,

selecting the second pattern signal in response to receiving the second pattern signal, selecting the first pattern signal when the second pattern signal is not selected, and providing a video control signal comprised of the video color codes mapped by the digital code elements comprising the selected pattern signal; and composite video-generating means, cooperating with the priority selector means in synchronization with the column and row counts, for generating said composite video signal in accordance with the video color codes of the video control signal.

4,243,985

ANALOGUE VOLTAGE INDICATOR WITH SEQUENCE OF LIGHT-EMITTING DIODES

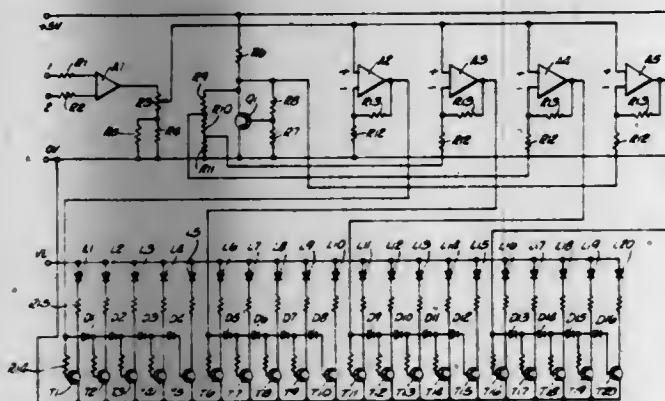
Ian H. Quayle, Needingworth, England, assignor to Chronolog Systems Limited, London, England

Filed May 4, 1978, Ser. No. 902,663

Int. Cl.² G06F 3/14

U.S. Cl. 340—753

8 Claims



1. Analogue voltage display means comprising: an analogue voltage input for receipt of an analogue voltage signal to be displayed; a plurality of sets of light emitting diodes, said sets being together arranged to provide a display of a single sequence of light emitting diodes; a plurality of signal offsetting elements, there being one such element for each set of light emitting diodes, each signal offsetting element being connected with said input to receive the analogue voltage signal; offset voltage means supplying a different offset voltage to each signal offsetting element whereby the elements provide, over respective contiguous ranges of the analogue voltage signal, respective offset analogue voltage signals which are indicative of the analogue voltage signal to be displayed and which vary within voltage ranges which are similar as between the signal offsetting elements; and a plurality of control means, there being one such control means for each set of light emitting diodes, each control means being connected to receive the offset voltage signal from the corresponding signal offsetting element and comprising reference means which defines levels of the said offset voltage signal corresponding respectively with the light emitting diodes of the associated set and a semiconductor switch for each light emitting diode of the associated set, each semiconductor switch being actuatable selectively to enable or inhibit current flow through the light emitting diode, the semiconductor switches for each set being respectively actuated as the corresponding offset analogue voltage signal reaches the levels defined for the respective light emitting diodes of the set, so that the light emitting diodes of the sequence are illuminated at unique levels of the analogue voltage signal to provide a visual indication thereof.

4,243,986

DISPLAY ARRANGEMENTS

Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Oct. 3, 1979, Ser. No. 81,386

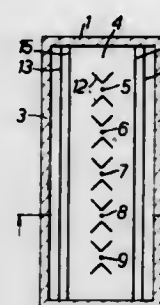
Claims priority, application United Kingdom, Oct. 4, 1978, 39286/78

Int. Cl.³ G08B 5/36

U.S. Cl. 340—756

6 Claims

1. A display arrangement including an envelope having a pair of opposite display surfaces characterised in that the envelope is evacuated and the display surfaces are constituted by fluorescent screens, the envelope having an electron beam emissive cathode structure positioned between the two fluorescent screens and arranged to irradiate both screens with a flood beam of electrons, and a segmented mesh electrode structure mounted adjacent to each fluorescent screen so as to intercept the electrons from the cathode structure, the different segments of the electrode structure being selectively addressable to control passage of electrons through selected portions thereof.



4,243,987

DISPLAY PROCESSOR FOR PRODUCING VIDEO SIGNALS FROM DIGITALLY ENCODED DATA TO CREATE AN ALPHANUMERIC DISPLAY

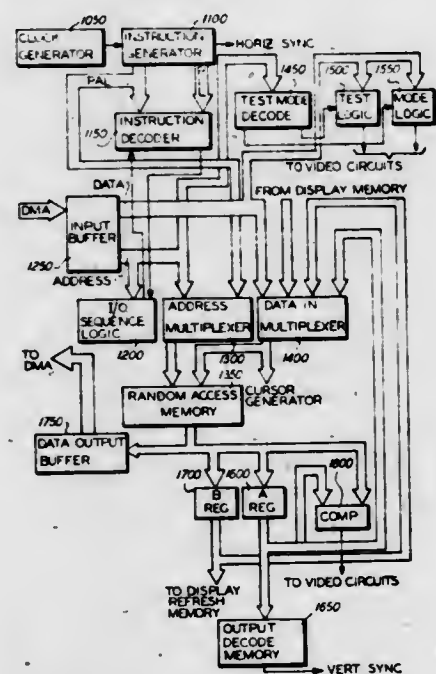
Thomas W. Bobick, Richardson, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 27, 1978, Ser. No. 919,652

Int. Cl.³ G06F 3/14

U.S. Cl. 340—799

6 Claims



1. A display processor for producing video display data to form video images of dot matrix text characters in a format that emulates a typewritten page of text, which comprises: a display refresh memory for storing text character codes and text manipulative codes, said refresh memory including a plurality of random access memories arranged to store a number of eight-bit data words; logic means for coordinating the addressing of said random access memories;

programmable read-only memories for modifying text character codes read out of said refresh memory and designating text manipulative codes read out of said refresh memory; a high-speed text buffer for storing modified text character codes and text manipulative codes from said programmable read-only memories; control means for operating said text buffer such that data is written into the text buffer during the first half of a character time, and data is read out during the last half of the character time; a character generator for receiving text character codes and text manipulated codes read out of the display refresh memory and providing coded data words representative of portions of dot matrices for the coded text characters; a video output register connected to the character generator for transforming the coded data words into serial data to be outputted in real time for display; and microprogrammed control logic operating on a repeating cycle of specified instruction steps for writing text character codes and text manipulative codes into the display refresh memory and reading the same out of the display refresh memory, and for generating output signals to coordinate the display of the serial data from the video output register.

4,243,988

MEANS FOR IMPROVING ANGULAR RESOLUTION OF INCOHERENT PULSE RADAR SYSTEMS

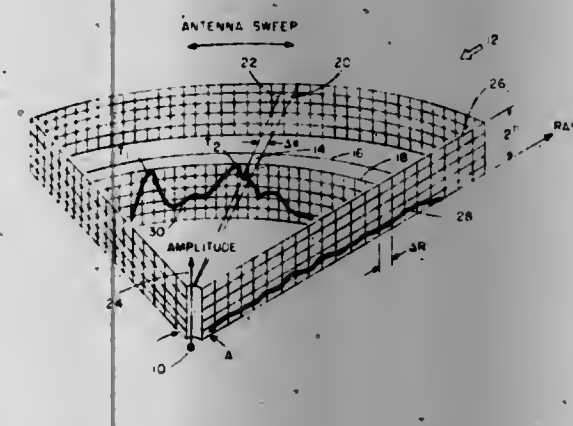
Eyung W. Kang, Margate; Ruy L. Brandao, Ft. Lauderdale; Jaromir R. Bares, Lighthouse Point, all of Fla., and Delmar V. Payne, Ferndale, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1979, Ser. No. 16,575

Int. Cl.³ G01S 13/00, 13/10

U.S. Cl. 343—5 VQ

8 Claims



1. Means for improving the angular target resolution of an incoherent pulse radar system wherein the antenna beam is scanned back and forth through a field of interest and wherein the radar return signals are converted into elements of digital data, and where-in said field of view is divided into lines of increasing range cells and lines of constant range cells, comprising: means for generating first signals relating to the second derivatives of the elements of digital data corresponding to radar return signals from at least one line of constant range cells, each said first signal being associated with a particular range cell; means for summing a plurality of said first signals associated with each particular range cell; and means for combining each sum of said first signals with an element of digital data corresponding to the same range cell to provide a new element of digital data, a plurality of said new elements corresponding to range cells in a line of constant range cells thereby exhibiting improved angular target resolution.

4,243,989

VEHICLE ANTENNA

Bert W. Piper, 36051 Goddard Rd., Romulus, Mich. 48174, assignor to Bert William Piper, Belleville, Mich.

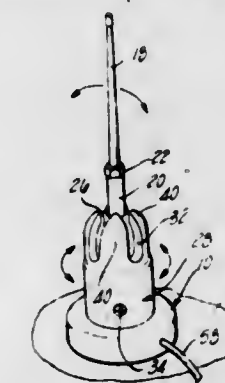
Filed Oct. 29, 1979, Ser. No. 88,831

Int. Cl.³ H01Q 1/20, 1/32

U.S. Cl. 343—715

16 Claims

1. A vehicle antenna comprising a base member adapted to be mounted on a support surface of a vehicle, said base member having an upwardly concave socket at its upper end defined generally by a segment of a hemisphere, an antenna rod having a generally spherical ball member fixedly attached to its lower end, said ball member having a diameter corresponding generally to the diameter of said hemisphere and being seated in said socket, a cap overlying said ball member and having an annular skirt extending downwardly past said socket, means connecting said cap with said base and permitting said cap to rotate in a horizontal plane around a vertical axis concentric with said ball, said cap having a central opening at its upper end through which the antenna rod extends, said opening having a transverse dimension less than the diameter of said hemisphere, said cap having a plurality of circumferentially spaced slots extend-



ing downwardly from the periphery of said opening to a level below the center of said ball member, said slots having a width sufficient to accommodate the portion of the antenna rod adjacent its connection with said ball member and means acting between said ball member and said seat for yieldably retaining the antenna rod in a position extending vertically upwardly from said base.

4,243,990

INTEGRATED MULTIBAND ARRAY ANTENNA

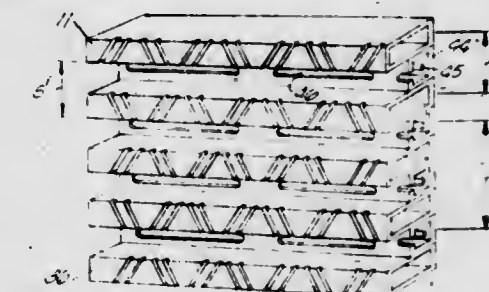
Jeffrey T. Nemt, Canoga Park; George A. Hockham, Valencia, and Ronald I. Wolfson, Northridge, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,548

Int. Cl.³ H01Q 13/10

U.S. Cl. 343—771

5 Claims



1. An integrated multi-band antenna array comprising: a first two-dimensional subarray comprising a plurality of first linear rectangular waveguide arrays each having a plurality of narrow wall slot radiators, said linear waveguide arrays being spaced between facing broad walls of adjacent ones of said linear waveguide arrays thereby generating a plurality of intervening spaces; means defining a conductive walled continuous enclosure open substantially only toward the aperture of said array, within each of said intervening spaces; a second two-dimensional subarray comprising a second

plurality of linear arrays, each within a corresponding one of said intervening spaces, the number of said second linear arrays being not greater than the number of said first linear arrays and said second linear arrays being of a type selected from a group comprising meander lines and square, coaxial line, longitudinally-slotted linear arrays; and first and second feed arrangements for independently feeding said first and second subarrays, respectively, according to separate corresponding excitation programs.

4,243,991

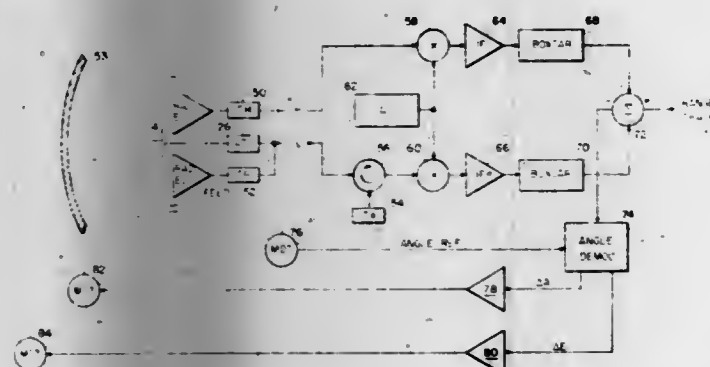
ANTENNA FEED FOR SCAN-WITH-COMPENSATION TRACKING

Elmer D. Woodward, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 30, 1978, Ser. No. 910,260
Int. Cl.³ H01Q 3/10

U.S. Cl. 343-777

19 Claims



1. An antenna feed comprising:
first means for receiving signals from a transmitter and for generating a single, on-axis unmodulated transmit radar pencil beam therefrom; and
second means for receiving echo signals reflected by a target within said transmitted pencil beam, for forming first and second pencil beams squinted equally off-axis in opposite directions, and being operably coupled to said first means such that upon reception of echo signals from an off-axis target, said first pencil beam produces a first signal in said first means, said second pencil beam produces a second signal in said first means and said first and second signals are orthogonal.

4,243,992

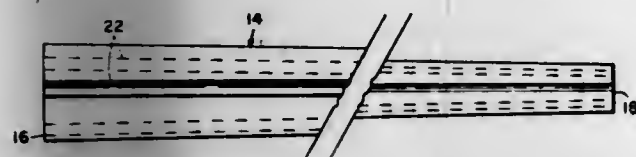
METHOD AND APPARATUS FOR FABRICATING A WIDE-BAND WHIP ANTENNA

Donald B. Forman, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1979, Ser. No. 30,187
Int. Cl.³ G08B 13/00

U.S. Cl. 343-873

9 Claims



1. A method of fabricating a highly flexible, low profile, wideband whip antenna comprising the steps of:
fabricating a solid rod of highly flexible material having a plurality of longitudinal open grooves spaced around its periphery;
inserting radiating elements into respective grooves on said rod of a size so as to be loosely positioned therein; and
bonding an outer protective jacket to the periphery of said rod whereby the radiating elements are free to slide longi-

tudinally within their respective grooves between the rod and jacket when the rod is bent.

4,243,993

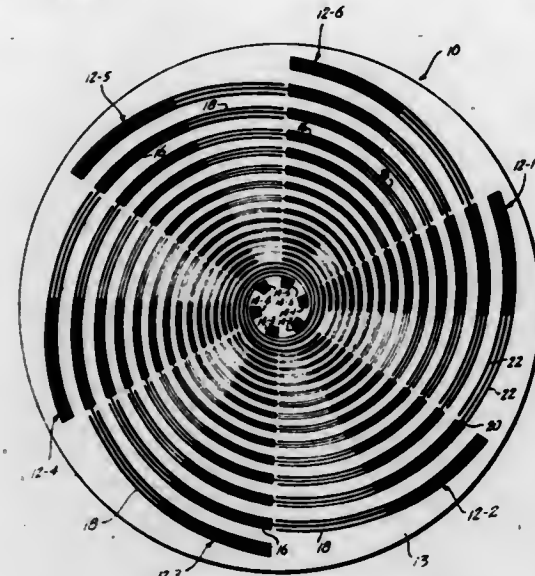
BROADBAND CENTER-FED SPIRAL ANTENNA

Bernard J. Lamberty, and George S. Andrews, both of Kent, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 13, 1979, Ser. No. 93,183
Int. Cl.³ H01Q 1/36

U.S. Cl. 343-895

28 Claims



1. A spiral antenna comprising at least one electrically conductive antenna arm, each said antenna arm extending outwardly about an axis of rotation, each said antenna arm including at least one choke element serially disposed between adjoining innermost and outermost regions of said antenna arm, each said choke element corresponding to a section of transmission line and including a central conductive region extending between said adjoining innermost and outermost regions of said antenna arm, each said choke element including at least one outer conductive region that is electrically interconnected with said central conductive region and extends in spaced-apart relationship therewith, each said choke element being dimensioned for resonance at a predetermined signal frequency and positioned along the associated antenna arm to reflect signal currents having a predetermined phase relationship relative to signal currents flowing within adjacent antenna arms.

4,243,994

LIQUID RECORDING MEDIUM

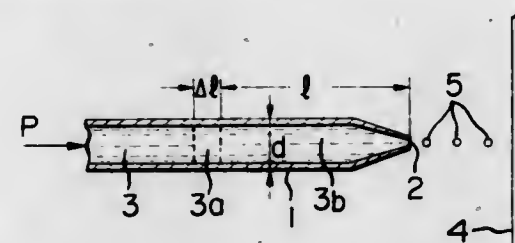
Hajime Kobayashi, Mitaka; Noboru Koumura, Narashino, and Shigeru Ohno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,985

Claims priority, application Japan, Mar. 3, 1978, 53-24627
Int. Cl.³ G01D 15/18

U.S. Cl. 346-140 R

11 Claims



1. Liquid recording medium for use in a recording method, in which the liquid recording medium is ejected from an orifice of a nozzle by the action of heat energy, and the thus ejected liquid recording medium is caused to impinge toward an image recording member in the form of droplets for image recording, said liquid recording medium comprising:
(a) recording agent which is a component to form a recorded image; and

(b) carrier liquid to dissolve or disperse said recording agent, a difference ΔT between a decomposition temperature of a substance having the lowest decomposition temperature among the substances constituting the recording agent and a boiling point of said liquid recording medium, exclusive of said recording agent, being at least 30° C.

4,243,995

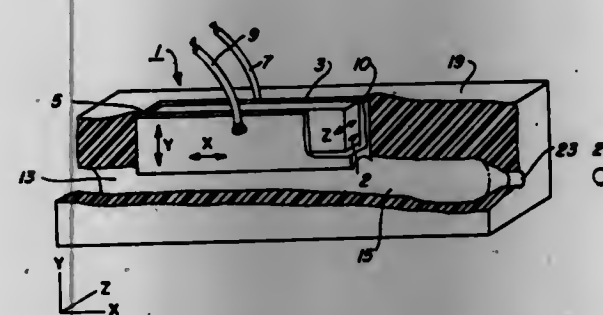
ENCAPSULATED PIEZOELECTRIC PRESSURE PULSE DROP EJECTOR APPARATUS

Allen T. Wright, Lewisville, and Kenneth H. Fischbeck, Dallas, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 1, 1979, Ser. No. 44,800
Int. Cl.³ G01D 15/18

U.S. Cl. 346-140 R

2 Claims



1. A pulsed liquid droplet ejecting apparatus wherein a substantially rectangular piezoelectric transducer is utilized in the in-plane extensional mode, comprising a piezoelectric transducer having conductive sidewalls connectable to a source of electrical voltage through electrical leads, a channel positioned to be acted upon by a first substantially linear edge of said piezoelectric transducer upon application of electrical voltage to said sidewalls to expel ink from an orifice, said piezoelectric transducer and said channel being encapsulated, and said piezoelectric transducer being positioned abaxially to said channel; characterized in that said piezoelectric transducer is at least partially coated with a material which will allow shear relief between said piezoelectric transducer and said encapsulating material.

4,243,996

ELECTROLUMINESCENT SEMICONDUCTOR DEVICE

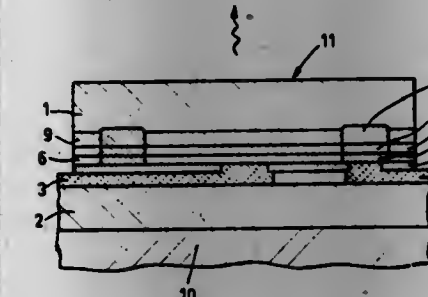
Jacques Lebaillly, Caen, and Jacques Varon, Troarn, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,242

Claims priority, application France, Apr. 21, 1978, 78 11857
Int. Cl.³ H01L 33/00

U.S. Cl. 357-17

12 Claims



1. A semiconductor device for generating electromagnetic radiation, comprising a semiconductor body having successively at least a first semiconductor layer of a first conductivity type, a second electroluminescent semiconductor layer and a third semiconductor layer of the second opposite conductivity type, the first and the third semiconductor layer having a larger forbidden bandwidth than the second semiconductor layer, characterized in that the first semiconductor layer has a partially reflecting surface through which the radiation ema-

nates, that the second layer shows a direct band structure and a compensation factor smaller than 1, and has a thickness between 0.1 and 3 absorption lengths for the radiation, that the third semiconductor layer has a reflecting surface situated opposite to the said partially reflecting surface and having two contact pads on which electrodes are provided, a highly doped contact zone of the first conductivity type extending from one of the contact pads down to the first layer.

4,243,997

SEMICONDUCTOR DEVICE

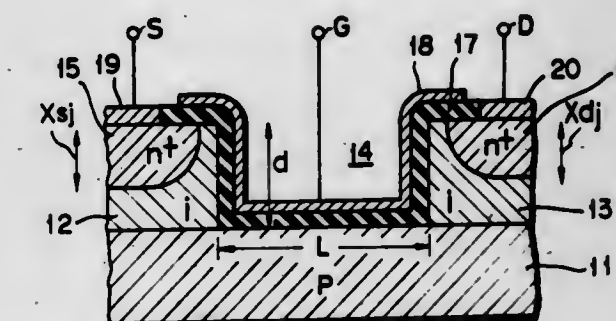
Kenji Natori, Kamakura, and Fujio Masuoka, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 781,382, Mar. 25, 1977, abandoned.
This application Oct. 30, 1978, Ser. No. 955,879

Claims priority, application Japan, Mar. 25, 1976, 51/31932; Mar. 25, 1976, 51/31933; Jul. 10, 1976, 51/81487
Int. Cl.³ H01L 27/78

U.S. Cl. 357-23

12 Claims



1. A semiconductor device comprising a semiconductor substrate of one conductivity type, a source region and a drain region of opposite conductivity type separately provided on the semiconductor substrate to form a conductive channel therebetween, a U-shaped groove provided above said channel between the source and drain regions, said U-shaped groove having side walls of depth d and having a base of breadth L substantially parallel to the direction of said channel, said semiconductor device further having an insulating layer on said groove and a gate electrode installed above the channel on said insulating layer, wherein a depth X_{sj} of said source region is selected to be calculated by the following formula,

$$X_{sj} \leq d - \sqrt{\frac{2\epsilon}{qN}} (\sqrt{|V_{SUB}| + V_B} - \sqrt{|V_{SUB}| + 2\phi_F})$$

where

d =depth of groove
 ϵ =dielectric coefficient of silicon
 N =concentration of impurity of silicon
 ϕ_F =Fermi level
 V_B =built-in electric field
 V_{SUB} =voltage of said substrate, and
 q =elementary charge.

4,243,998

SAFETY CIRCUIT FOR A SEMICONDUCTOR ELEMENT

Heinrich Schlangenotto, Neu-Isenburg; Friedhelm Sawitzki, Frankfurt am Main, and Ronald Henson, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,326

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2757295

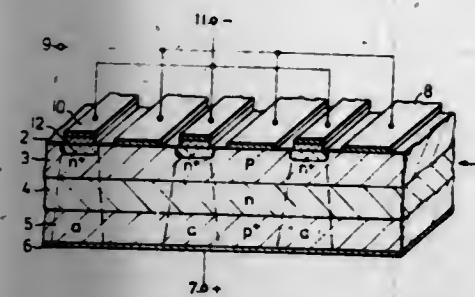
Int. Cl.³ H01L 23/56

U.S. Cl. 357-28

7 Claims

1. A thermally protected semi-conductor element compris-

ing, a plurality of connected semi-conductor layers forming a semi-conductor structure having at least two surfaces, a metal contact layer for supplying current to said surfaces connected to each of said surfaces for establishing a "on" condition in said semi-conductor structure, and a positive temperature coefficient resistor layer directly connected to one of said surfaces and one of said metal contact layers, said positive temperature coefficient resistor layer disposed between said one surface and



said one metal contact layer and made of a material having the characteristics of causing a relatively low voltage drop thereacross at temperatures below a critical temperature of said resistor layer and said semi-conductor structure when said semi-conductor structure is in the "on" state, and an increasing voltage drop thereacross at temperatures above the critical temperature sufficient to prevent the temperature to increase to a destruction temperature sufficient to damage said semi-conductor structure.

4,243,999

GATE TURN-OFF THYRISTOR

Makoto Azuma, Yokohama, and Akio Nakagawa, Hiratsuka, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

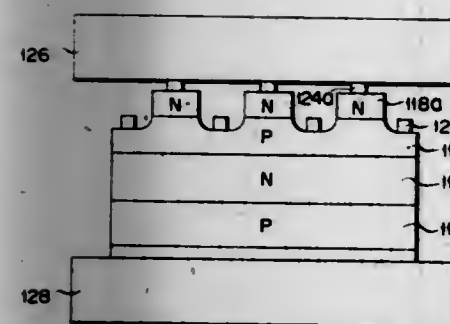
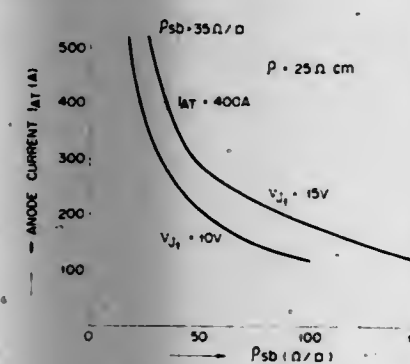
Continuation-in-part of Ser. No. 792,398, Apr. 29, 1977, abandoned. This application Jul. 16, 1979, Ser. No. 58,128

Claims priority, application Japan, Mar. 8, 1977, 52-24489

Int. Cl.³ H01L 29/74

U.S. Cl. 357-38

8 Claims



1. A gate turnoff thyristor which comprises a semiconductor body having at least four contiguous layers, namely, a first diffused layer of a first conductivity type, second layer lying contiguous to the first layer and having a second conductivity type, a third diffused layer lying contiguous to the second layer and having said first conductivity type, and a fourth diffused

layer lying contiguous to the third layer and having said second conductivity type;

an anode electrode mounted on said first layer;
a gate electrode formed on said third layer; and
a cathode electrode deposited on said fourth layer, and in which the following two equations are satisfied:

$$\rho \cdot V_j / \rho_{sb} \geq 10.5 (V \cdot \text{cm}) \text{ and } \rho_{sb} \leq 35 (\Omega / \text{cm})$$

where:

ρ_{sb} = sheet resistance (Ω / cm) at the normal temperature of the third layer

V_j = backward withstanding voltage (V) at a PN junction between the third and fourth layers

ρ = specific resistance ($\Omega \cdot \text{cm}$) of the second layer.

4,244,000

PNPN SEMICONDUCTOR SWITCHES

Jun Ueda; Haruo Mori; Kazuo Hagimura, all of Tokyo, and Kotaro Kato, Chofu, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Oki Electric Industry Company, Ltd., both of Tokyo, Japan

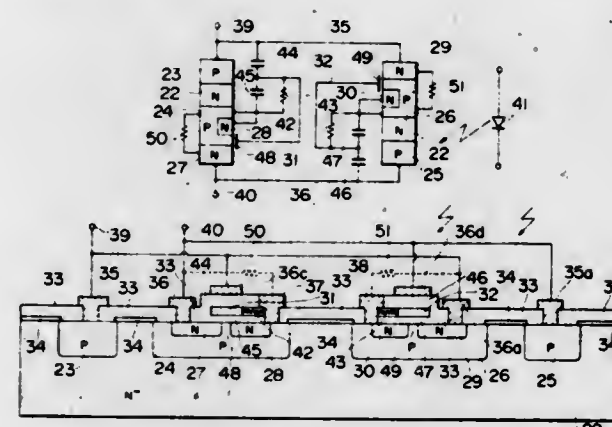
Filed Nov. 20, 1979, Ser. No. 96,165

Claims priority, application Japan, Nov. 28, 1978, 53/146058

Int. Cl.³ H01L 29/74

U.S. Cl. 357-39

10 Claims



1. A PNPN semiconductor switch comprising:
 - (a) an N conductivity type semiconductor substrate,
 - (b) a P conductivity type P gate region,
 - (c) a P conductivity type anode region formed in said semiconductor substrate at a position which is a predetermined distance from said P gate region,
 - (d) an N conductivity type cathode region formed in said P gate region,
 - (e) an N conductivity type drain region formed in said P gate region at a position which is spaced from said N conductivity type cathode region,
 - (f) a first insulating layer formed on the surface of said substrate between said cathode region and said drain region,
 - (g) a first gate electrode formed on said first gate insulating layer,
 - (h) a second gate insulating layer formed on said first gate electrode,
 - (i) a third insulating layer formed on the surface of said substrate between said anode region and said P gate region,
 - (j) a P gate electrode electrically connected to said drain region and said P gate region,
 - (k) a resistance region connected between said first gate electrode and said P gate electrode,
 - (l) a second gate electrode mounted on said second gate insulating layer,
 - (m) a cathode electrode electrically connected to said cathode region, and
 - (n) an anode electrode electrically connected to said anode region.

4,244,001

FABRICATION OF AN INTEGRATED INJECTION LOGIC DEVICE WITH NARROW BASEWIDTH

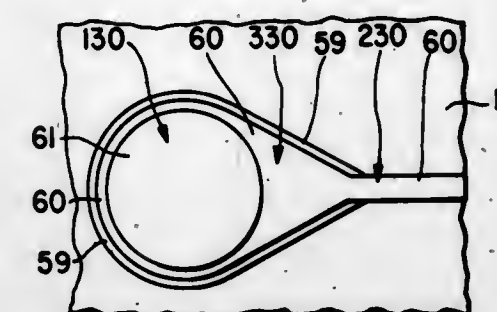
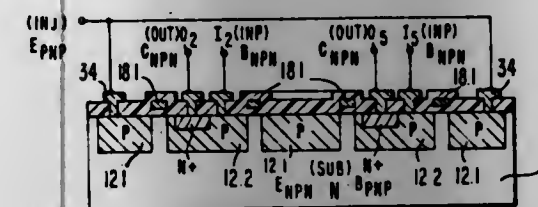
Alfred C. Ipri, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 914,901, Jan. 12, 1978. This application Sep. 28, 1979, Ser. No. 80,101

Int. Cl.³ H01L 27/04, 21/22

U.S. Cl. 357-44

4 Claims



connecting layer preventing breaking of said semiconductor substrate due to thermal pressure gang bonding applied to said bump terminal electrode.

1. A method of fabricating an Integrated Injection Logic device having a lateral PNP transistor with a narrow base width region and a vertical NPN transistor, comprising the steps of:

- providing a semiconductor body of a given conductivity type, the body having a common boundary surface;
- depositing a layer of oxide on the common boundary surface;
- depositing a layer of polycrystalline silicon on the oxide layer;
- depositing a layer of apertured masking material on the polycrystalline silicon layer;
- etching the unmasked portions of the polycrystalline silicon layer to expose unetched edges of polycrystalline silicon under the masking layer;
- doping the exposed edges of the unetched polycrystalline silicon layer to form a narrow line of doped polycrystalline silicon in the polycrystalline silicon layer, the narrow doped line defining the limits of the width of the base region of the PNP transistor;
- modifying regions of the semiconductor body to an opposite conductivity type to form the emitter and collector regions of the PNP transistor, the collector of the PNP transistor also functioning as the base region of the NPN transistor;
- depositing a layer of apertured masking material on the layer of oxide, the exposed portions thereof aligned with portions of the collector region of the PNP transistor;
- modifying the exposed portion of the collector region of the PNP transistor to the given conductivity type to form the collector region of the NPN transistor, the remaining portion of the body of semiconductor material being common to the base region of the PNP transistor and the emitter region of the NPN transistor; and
- providing each region with respective ohmic contact.

4,244,002

SEMICONDUCTOR DEVICE HAVING BUMP TERMINAL ELECTRODES

Susumu Sato, and Hideo Tsunemitsu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1978, Ser. No. 952,543

Claims priority, application Japan, Oct. 19, 1977, 52/126318

Int. Cl.³ H01L 23/48

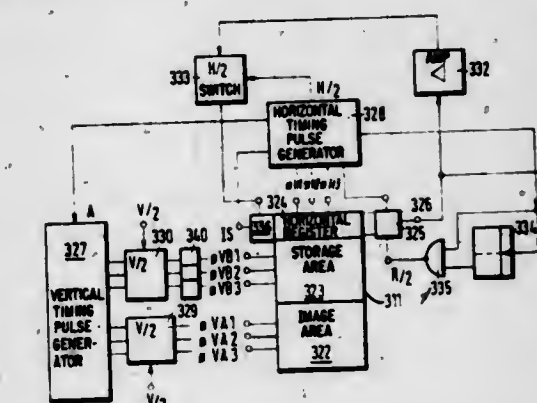
U.S. Cl. 357-68

10 Claims

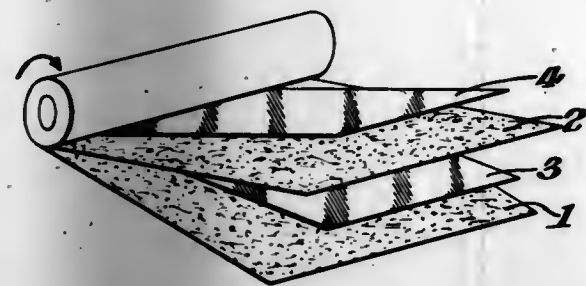
1. A semiconductor device comprising a semiconductor substrate; an insulating film covering at least a part of a major surface of said semiconductor substrate; a bump terminal electrode provided on said insulating film and having an edge; a wiring layer connected to a region formed in said semiconductor substrate and extending on said insulating film, said wiring layer having a width smaller than the length of said edge of said bump terminal electrode; a conductive connecting layer, provided on said insulating film, and having one end connected to an end of said wiring layer and the other end connected to

2. In the color television imaging method in which several primary color signals are formed with the use of at least two sets of opto-electronic converters by combining, within sequential scanning intervals the charges which develop in proportion to the quantity of light incident upon the converters, the improvement comprising the steps of:

- providing a plurality of row-shaped opto-electronic converters, one row-shaped converter providing charges for each primary color signal desired,
- periodically scanning each row-shaped converter to detect the charges and thereby develop each primary color signal from the charges, and
- combining the blue primary color charges over a time period greater than the scanning period for the other primary color signals.



feeding said electrode strips into said winding between said spacer strips with the leading edges of said electrode strips in



substantially even alignment, and then continuing to wind the section to the desired size, thereby reducing the power factor of an AC capacitor employing such a section:

4,244,011

RECHARGEABLE FLASHLIGHT

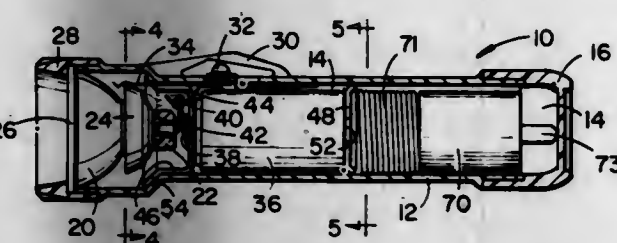
Ronald O. Hammel; William J. Barcus, both of Englewood, and Irwin C. Cone, Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 27, 1979, Ser. No. 69,952

Int. Cl.³ F21L 9/00, 7/00

U.S. Cl. 362—183

21 Claims



1. A rechargeable portable electric light such as a flashlight comprising:

a housing and a chamber defined therein;
first and second partition members extending transversely of the chamber at least one of which is integrally attached to the housing;

at least one rechargeable electrochemical cell disposed between the first and second partition members within the housing, the cell(s) having opposite generally planar end surfaces making respective substantial abutting contact with the first and second partition members;

a self-contained charger circuit electrically connected to the cell(s) and positioned in the chamber adjacent one of the partition members, and means for coupling the charger circuit to a power source exteriorly of the housing; and means carried by the housing for selectively producing a light beam energizable by the cell.

4,244,012

LAMP HOLDER FOR PROJECTION ALIGNER

Magnus B. Hansen, and Walter T. Novak, both of San Jose, Calif., assignors to Computervision Corporation, Bedford, Mass.

Filed Jun. 29, 1978, Ser. No. 920,289

Int. Cl.³ F21S 5/00

U.S. Cl. 362—216

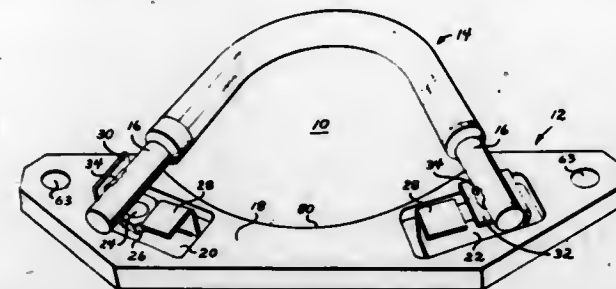
8 Claims

1. A lamp holder for a capillary, gas discharge arcuate lamp having electrical contacts at each end thereof, said lamp holder comprising:

a generally planar base means capable of being fixed in position relative to an optical system;

a first electrically conductive, current carrying lamp support adapted to secure one end of the arcuate lamp with respect to said base means, said first electrically conductive, current carrying lamp support having a generally planar,

relatively flexible portion that lies in a plane generally perpendicular to the plane of said base means; and, a second electrically conductive, current carrying lamp support adapted to secure the other end of the arcuate lamp with respect to said base means in spaced relation to



said first electrically conductive, current carrying lamp support, said second electrically conductive, current carrying lamp support having a generally planar, relatively flexible portion that lies in a plane generally parallel to the plane of said base means, whereby the arcuate lamp is free to distort relative to the base means during operation.

4,244,013

CIRCULAR FLUORESCENT LIGHT UNIT

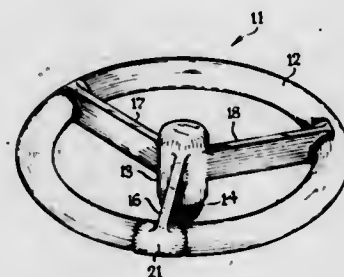
Joseph P. Wotowicz, Cuyahoga Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,650

Int. Cl.³ F21S 5/00

U.S. Cl. 362—216

7 Claims



1. A light unit comprising a circular light source of which the opposed circular edges respectively lie in a pair of spaced apart parallel planes, and three or more individual elongated light baffle members extending radially from the central axis of said circular light source and toward said light source, the widths of said light baffle members being at least as great as the thickness of said circular light source and extending completely between or beyond both planes of said pair of planes such as to cause said light unit when lighted to substantially uniformly illuminate the surface of a shade positioned around said light unit, there being spaces between said elongated light-baffle members through which a lamp harp can pass.

4,244,014

LIGHT MOUNTING TAPES

John C. Van Ess, Chicago, Ill., assignor to Walter A. Ross, Schiller Park, Ill.

Filed Dec. 4, 1978, Ser. No. 966,493

Int. Cl.³ F21V 21/00

U.S. Cl. 362—249

2 Claims

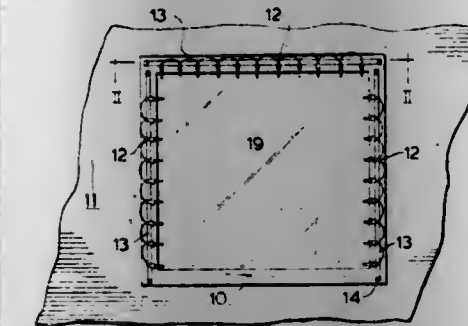
1. A mounting device for electric light sockets adapted to be strung along window frames and the like to position light bulbs in the sockets projecting transversely from the device for display in the window which comprises:

an elongated flexible plastic tape;

a means for mounting the tape along a structure to be illuminated;

a plurality of extruded ribs transversely disposed at intervals

on one side of said tape, each rib having a flattened flanged top;
a retainer strip releasably mounted on said ribs having a plurality of longitudinal slits disposed along a longitudinal axis thereof in a pattern coordinated to receive said ribs in said slits; and



said retainer strip cooperating with said ribs to define loops for draping over said sockets to press the sockets against the tape thereby securing the sockets transversely in the loops against shifting relative to the tape.

4,244,015

PULSE WIDTH MODULATED INVERTER

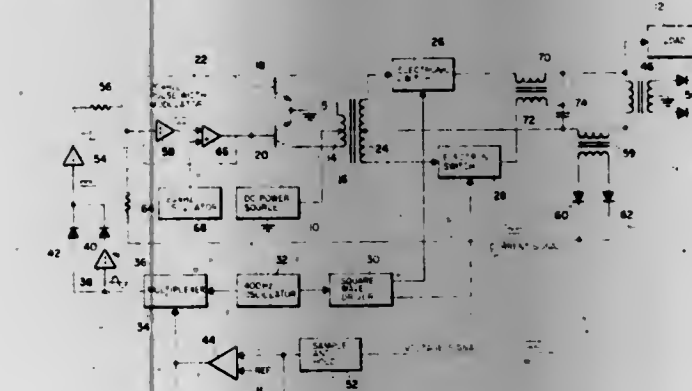
Ronald F. Beebe, Simi Valley, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 24, 1979, Ser. No. 42,387

Int. Cl.³ H02P 13/20; H02M 7/537

U.S. Cl. 363—8

5 Claims



1. Apparatus for inverting DC power into power at an alternating power frequency comprising:

an oscillator at said power frequency;

a high frequency oscillator for generating signals at a frequency substantially higher than said power frequency;

a pulse width modulator connected to receive signals from said high frequency oscillator and having at least two signal inputs for receiving modulating signals;

means for rectifying the output of said power frequency oscillator;

means for applying said rectified power frequency oscillator signal to one of said signal inputs to said modulator;

a DC source of power;

means connected to be responsive to the output of said pulse width modulator for switching said DC at said high frequency to produce a train of pulse width modulated power pulses;

means connected to said source of power frequency to switch said train of power pulses back and forth between opposite polarities in synchronism with the polarity of said power frequency oscillator; and

means for removing frequencies at said high frequency from said train of power pulses to produce a load voltage.

4,244,016

SINE-WAVE STATIC CONVERTER

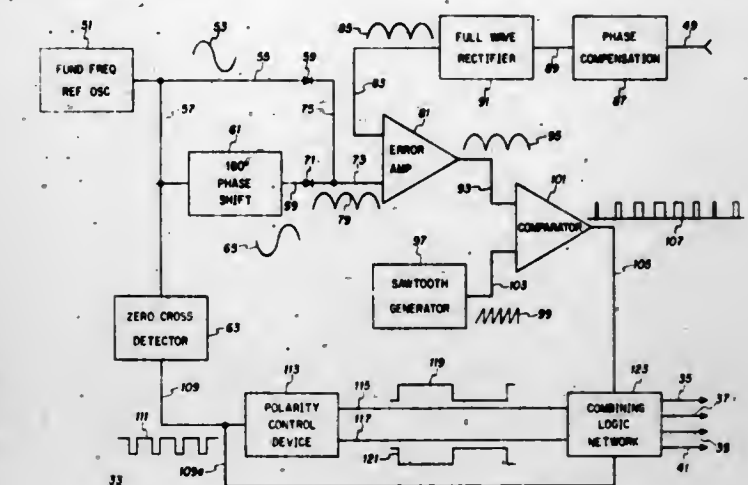
Daniel M. Mitchell, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 20, 1978, Ser. No. 962,252

Int. Cl.³ H02P 13/20

U.S. Cl. 363—98

4 Claims



1. Signal converter means, comprising:

controllable four port signal pass means having two input ports, two output ports and at least a pair of control terminals;

full wave rectifier means connected across the two output ports;

means for generating a rectified alternating current reference frequency signal;

first arithmetic means connected to the means for generating the rectified alternating current reference signal and the full wave rectifier means to provide an error signal that is the difference between the rectified alternating current reference frequency signal and the output of the full wave rectifier means;

means for generating a first signal whose amplitude repeatedly increases from a reference level with time for a predetermined period and then returns to the reference level; comparator means for comparing the first signal with the error signal and to provide a first state output when the first signal is less than the error signal and to provide a second state output when the first signal is greater than the error signal;

polarity control means for controlling the polarity of the signal on the two output ports;

means for combining the output of the comparator means with the output of the polarity control means, the output of which provides at least two control signals; and

means for applying the control signals to the control terminals whereby in response to the control signals, the controllable four port signal pass means transfers a signal on the input ports of the output ports.

4,244,017

THIRD HARMONIC AUXILIARY COMMUTATED INVERTER HAVING SELECTABLE COMMUTATION CAPACITANCE AS A FUNCTION OF LOAD CURRENT

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,251

Int. Cl.³ H02M 7/515, 1/06

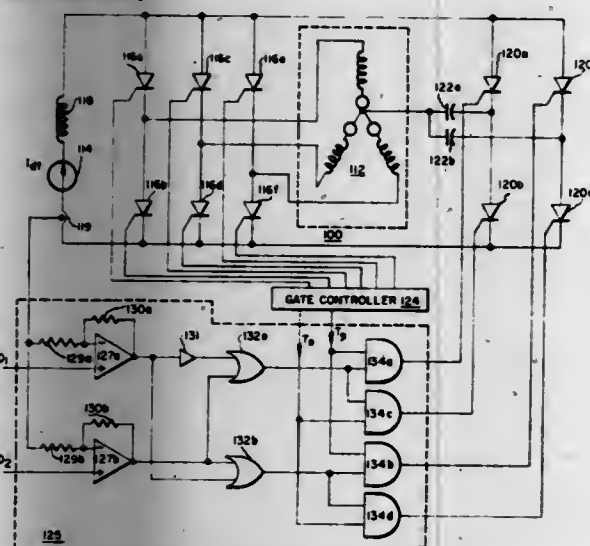
U.S. Cl. 363—138

6 Claims

5. For use with a third harmonic auxiliary commutated inverter configured of a plurality of pairs of main solid state switching devices, each of the solid state switching devices of said pairs being coupled in series aiding fashion, each pair being coupled across a source of unidirectional current and having the junction therebetween coupled to a respective phase of a wye-connected, polyphase, inductive load, each of

the solid state switching devices of said pairs being rendered conductive by a main solid state switching device gate controller circuit in a predetermined sequence to supply alternating current to said wye-connected, polyphase, inductive load, main gate controller circuit generating auxiliary gating signals to command commutation of a then conductive inverter main solid state switching device comprising:

- a first pair of auxiliary solid state switching devices coupled in series-aiding fashion across said source of unidirectional current;
- a first commutating capacitance coupled to the junction between solid state switching devices of said first pair of auxiliary solid state switching devices and adapted for coupling to the neutral of said wye-connected, polyphase, inductive load;
- a second pair of auxiliary solid state switching devices coupled in series-aiding fashion across said source of unidirectional current;



- a second communicating capacitance coupled to the junction between switching devices of said second pair of auxiliary solid state switching devices and adapted for coupling to the neutral of said wye-connected, polyphase, inductive load; and
- an auxiliary gate controller circuit coupled to said main gate controller circuit and to each of the solid state switching devices of said first and said second pair of auxiliary solid state switching devices for rendering conductive, responsive to conduction of one of the solid state switching devices, one of the solid state switching devices in each of said first and said second pairs of auxiliary solid state switching devices in accordance with inverter current to commutate a then conductive one of the solid state switching devices of said pairs of inverter main solid state switching devices.

4,244,018

INTERLOCK CONTROL OF ASYNCHRONOUS DATA TRANSMISSION BETWEEN A HOST PROCESSOR AND A PLURALITY OF MICROPROCESSORS THROUGH A COMMON BUFFER

Wing F. Mai, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 15, 1978, Ser. No. 906,167

Int. Cl.³ G06F 1/00

U.S. Cl. 364-200

6 Claims

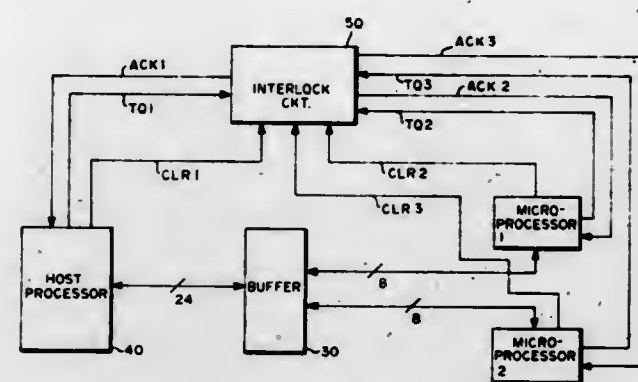
1. An interlock circuit providing for bidirectional control of asynchronous data transfer, via a common buffer element, between a host processor operable to transmit a transfer request signal and at least one of two microprocessors each operable to transmit a transfer request signal when said processors are in operation to transfer data between any two of said processors, said interlock circuit comprising:

first latching means connected to said host processor and normally operated in response to said transfer request

signal transmitted from said host processor to store and acknowledge said request signal;

second latching means connected to a first microprocessor and connected to said first latching means and normally operated in response to said transfer request signal transmitted from said first microprocessor to store and acknowledge said request signal; and

third latching means connected to a second microprocessor and connected to said first and to said second latching means and normally operated in response to said transfer



request signal transmitted from said second microprocessor to store and acknowledge said request signal; said storage and acknowledgement of said transfer request signal from a first one of said processors to transmit its transfer request signal being effective to inhibit acceptance and acknowledgement of said transfer request signals from any other processors by inhibiting said transmission of signals acknowledging acceptance and storage of said transfer request signals of said other processors, whereby attempted simultaneous data transfer through said buffer element is controlled by said interlock circuit.

4,244,019

DATA PROCESSING SYSTEM INCLUDING A PROGRAM-EXECUTING SECONDARY SYSTEM CONTROLLING A PROGRAM-EXECUTING PRIMARY SYSTEM

David L. Anderson, and Richard L. Bishop, both of Sunnyvale, Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

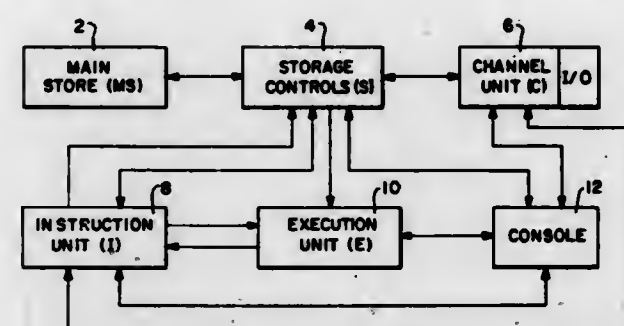
Continuation of Ser. No. 693,552, Jun. 7, 1978, Pat. No. 4,149,244. This application Jun. 29, 1978, Ser. No. 920,398

The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.

Int. Cl.³ G06F 15/16

U.S. Cl. 364-200

9 Claims



1. A data processing system comprising,
 - a primary system constructed from a plurality of primary circuits to form a general-purpose programmable computer including primary storage apparatus, primary instruction-handling apparatus and primary instruction-execution apparatus and including means for interconnecting said primary storage apparatus, said primary instruction-handling apparatus and said primary instruction-execution apparatus wherein the primary system processes informa-

tion by executing a primary program of instructions, said primary program of instructions processed in said primary instruction handling apparatus to cause data manipulations in said execution apparatus and to cause fetching and storing of information from and to said primary storage apparatus in connection with the processing of information by the primary system and wherein said instruction handling apparatus includes selected ones of said primary circuits used for the execution of said primary program in said primary system, said primary system including primary interface control means having primary interface inputs and having connection means for providing circuit outputs from said selected ones of said primary circuits in response to said interface inputs and independently of said primary program, said primary system including channel apparatus connected between said primary storage apparatus and a plurality of I/O controllers where the I/O controllers are connected to input/output devices, and a secondary system including a programmable secondary computer, said secondary computer operable to process a secondary program of instructions, said secondary system including one of said I/O controllers connected as an input/output device to said secondary computer whereby said secondary computer is connected to said primary system as an input/output device, said secondary system including secondary interface control means connected to said secondary computer and controllable by said secondary program, said secondary interface control means having secondary outputs connected to said primary interface inputs for selecting said selected ones of said primary circuits to access said circuit outputs.

4,244,020

CALORIC AND/OR CARBOHYDRATE CALCULATOR

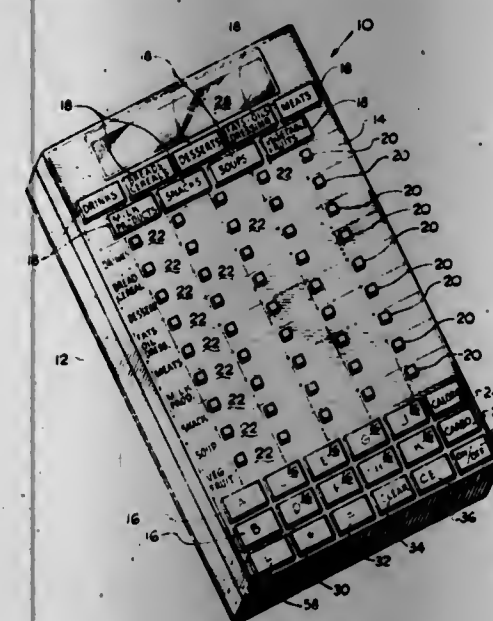
Lloyd P. Ratcliff, 306 Bayou Oaks Dr., Monroe, La. 71203

Filed Jan. 15, 1979, Ser. No. 3,741

Int. Cl.³ G06F 15/42; G01G 19/04

U.S. Cl. 364-413

34 Claims



1. A caloric and carbohydrate calculator, comprising:
 - (a) a calculator case;
 - (b) a standard numerical calculator electrical operation circuit contained within the case and the standard circuit containing at least a memory add circuit and an equal circuit, as well as other circuits and contacts;
 - (c) a modified calculator keyboard having a plurality of first, second, third and fourth groups of contacts and whereby:
 - (1) the plurality of first contacts are numerical in function and indicate visually alphabetical letters and are electrically connected to the standard numerical calculator electrical circuit so that each visual alphabetical letter represents and contacts, when pushed, a different numerical from 0 to 9 in the calculator electrical circuit;
 - (2) the plurality of second contacts are numerical in func-

tion and indicate pre-determined food and drink items and are electrically connected to the calculator electrical circuit in such a manner that each second contact has a predetermined numerical value and each second contact is electrically connected in parallel to other similar second numerical contacts and to the similar first numerical contact in the standard numerical calculator;

- (3) the plurality of third contacts are multiplier contacts and have located in proximity thereto indications of predetermined alphabetical letters corresponding to caloric and carbohydrate values of varying portions of food and drink items, the third contacts being electrically connected together and to the standard calculator circuit multiplier contact;
- (4) the plurality of fourth contacts are equal contacts in the electrical circuit and indicate the wording calories and carbohydrates; and
- (d) a standard numerical readout positioned in the calculator case and electrically connected to the circuit.

4,244,021

ERGOMETRIC EXERCISER

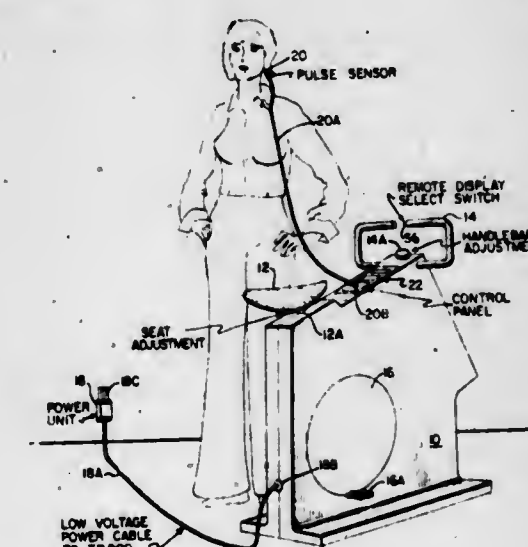
Robert E. Chiles, III, Sterling, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,734

Int. Cl.³ G01L 5/02; G06F 15/42

U.S. Cl. 364-413

25 Claims



1. An ergometric exercise device having a pedal assembly operated by a user, a work generator coupled to the pedal assembly for providing a controlled amount of resistance to operation of the pedal assembly, and a control panel for inputting and outputting data from said device in a plurality of selected data modes, the improvement comprising:
 - numerical display means for indicating the magnitude of data for each of said selected data modes;
 - signal means for indicating which of said data modes has been selected and the units of the data displayed on said numerical display means, said signal means including a signal lamp associated with each of said data modes and circuit means for imparting a different energization state to a selected signal lamp associated with a selected data mode than to the signal lamps associated with the other data modes, said different energization state of said selected signal lamp signifying to a user that said numerical display is displaying units corresponding to said selected data mode; and
 - selector switch means constraining said circuit means to sequentially transfer said different energization state from one signal lamp to another in response to each actuation of said selector switch means, said transfer occurring in a predetermined sequence; and
 - data input means for at least two of said data modes for enabling the user to preset input data into said circuit means.

4,244,022

IRRIGATION CONTROL SYSTEM

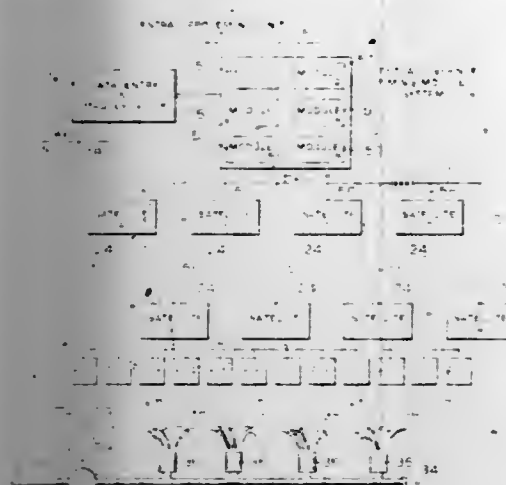
Thomas L. Kendall, Big Bear City, Calif., assignor to The Toro Company, Minn.

Filed Feb. 5, 1979, Ser. No. 9,304

Int. Cl. G01V 1/00

U.S. Cl. 364-420

4 Claims



1. An irrigation control system comprising:

- master controller means for maintaining a master real-time clock, for continuously comparing the value of said master real-time clock to entries in uniquely identified groups of pre-stored master start-time values to find matches therebetween, and for outputting at an output thereof a master control signal including an identifier of the unique group wherein the matching one of said values was found when a match is found; and,
- satellite controller means connected to selectively receive said output from said master controller means for maintaining a satellite real-time clock, for continuously comparing the value of said satellite real-time clock to entries in a group of satellite pre-stored start-time values to find matches therebetween, for selectively recognizing ones of said output signals from said master controller means having an identifier associated with a particular one of said groups of satellite pre-stored values, and for selectively outputting a satellite control signal for operating an irrigation solenoid valve in response to a match being found between said satellite real-time clock value and an entry in said satellite group of pre-stored values or upon receipt of a said output master control signal from said master controller means associated with said particular group of values, said satellite controller means including means for selectively causing said satellite controller means to output said satellite control signal in response to said matches of said satellite real-time clock values, receipt of said unique group identified master control signals, or neither, and further including an output whereat said output satellite control signal appears, said latter named output being adapted for operable connection to an irrigation solenoid valve.

4,244,023

MICROPROCESSOR-BASED ENGINE CONTROL SYSTEM WITH ACCELERATION ENRICHMENT CONTROL

Edwin A. Johnson, Clarkston, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,924

Int. Cl. F02B 3/10; F02D 5/00; F02M 7/06

U.S. Cl. 364-431

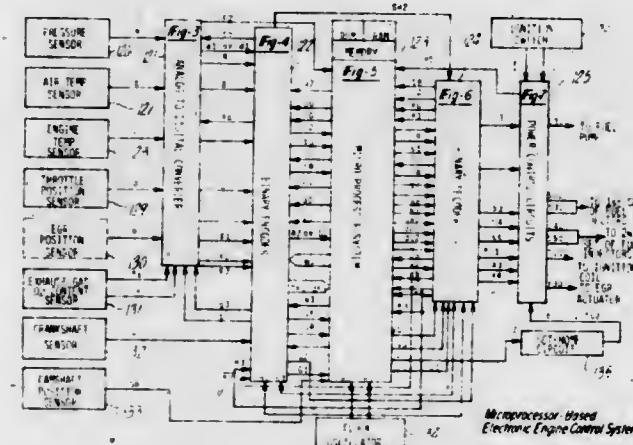
15 Claims

- In an internal combustion engine having an intake system, an exhaust system, an engine block, a plurality of cylinders disposed in said engine block, a piston mounted for reciprocal movement within each of said plurality of cylinders, throttle means disposed in said intake system for controlling the air

flow into said plurality of cylinders, means generating a fuel control signal in response to sensed engine parameters, an electronic engine control system including means responsive to said fuel control signal for selectively supplying a controlled quantity of fuel into selected one or more of said plurality of cylinders, and means for controlling the timing and duration of the ignition timing of said air and fuel supplied to said selected one or more cylinders;

said electronic engine control system comprising program-controlled computing means, memory means for storing data representative of look-up tables of control schedules and control means for implementing a predetermined fuel control law;

means for sensing at least one engine-operating parameter for detecting a need for acceleration enrichment and for generating an acceleration enrichment command in response thereto;



means responsive to said acceleration enrichment command for transmitting an acceleration enrichment interrupt request signal to said computing means, said computing means being responsive to said acceleration enrichment interrupt request signal for generating signals to implement said fuel control law stored in said memory means and generating an acceleration enrichment fuel pulse command word signal in response thereto; and means responsive to said acceleration enrichment fuel pulse command word signal for initiating the immediate generation of a separate one-time acceleration enrichment fuel control pulse in response thereto or, if a normal fuel control pulse is currently being generated at the time of said acceleration enrichment interrupt request, for initiating the generation of said additional onetime acceleration enrichment fuel control pulse immediately upon the completion of said currently-generated normal fuel control pulse.

4,244,024

SPECTRUM ANALYZER HAVING ENTERABLE OFFSETS AND AUTOMATIC DISPLAY ZOOM

Michael S. Marzalek, Cotati, and Lynn M. Wheelwright, Santa Rosa, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 10, 1978, Ser. No. 932,691

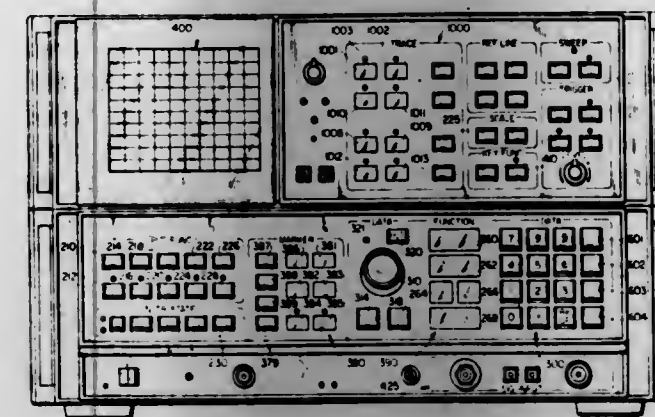
Int. Cl. G01R 23/00

U.S. Cl. 364-485

7 Claims

- Apparatus for use in the spectrum analysis of an input signal, said apparatus comprising:
 - input means, having inputs for receiving said input signal and a sampling signal, for providing an intermediate frequency signal in response to said input signal and a sampling signal;
 - signal processing means coupled to said input means for providing a first digital signal in response to said intermediate frequency signal;
 - memory means coupled to said signal processing means for

storing electrical representations of said digital signal in response to a memory control signal; memory control means coupled to said memory means for providing said memory control signal; display means coupled to said memory means for providing a waveform display of amplitude values over a preselected range of frequency values in response to display control signals and said electrical representations of said digital signal;



4,244,026

VELOCITY MEASURING CORRELATION SONAR

Frank R. Dickey, Jr., Dewitt, N.Y., assignor to General Electric Company, Syracuse, N.Y.

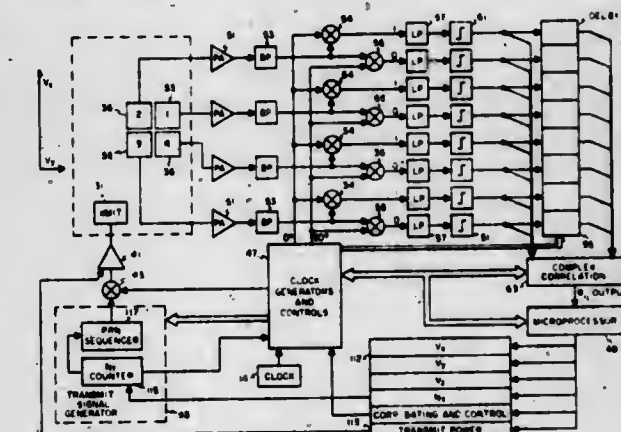
Filed Nov. 6, 1978, Ser. No. 957,908

Int. Cl. G01P 3/42; G06F 15/336; G01S 15/58

U.S. Cl. 364-565

10 Claims

operator controls for providing operator control signals and for providing an offset signal in response to operator manifestations indicating it is desired to include an offset of a preselected display parameter; and display control means coupled to said memory means, said operator controls and to said display means for providing said display control signals in response to said operator control signals and said offset signal.



1. Apparatus for measuring the relative velocity of a wave energy source-sensor combination with respect to a field of scatterers separated therefrom by a medium through which the wave energy is propagated, comprising:

- a plurality of wave energy transducers included in said source-sensor combination, said transducers having directivity in the general direction of the scattering field and comprising an array of at least two receiving transducers separated from each other by known distances in a plane perpendicular to the major axis of directivity;
- means for energizing at least one of said transducers to emit a wave energy pulse train comprising first and second pulses having a predetermined pulse repetition period;
- means for sampling simultaneously the echo returns from said scatterer field to the receiving transducers of said array at predetermined sampling intervals;
- means for computing a set of measured values of complex correlation using time-delayed samples of echo returns from said first pulse and undelayed samples of echo returns from said second pulse, as sensed at a selected plurality of said receiving transducers, the period of delay of said time-delayed samples being equal to an integral number of sampling intervals and equal to said predetermined pulse repetition period;
- means for processing each of said measured values of complex correlation as a sample of a continuous function of position with each such sample being associated with a location equal to the vector spacing between the pair of receiving transducers from which the samples were obtained, and curve fitting such samples to said continuous function to provide an estimate of the location in vector space of the peak value of correlation magnitude; and
- means for deriving an output measure of velocity in each of two directions of relative motion by dividing the components of the location of the correlation magnitude peak along each of said directions by twice said predetermined interpulse interval.

4,244,025

ROLLING MILL GAUGE CONTROL SYSTEM

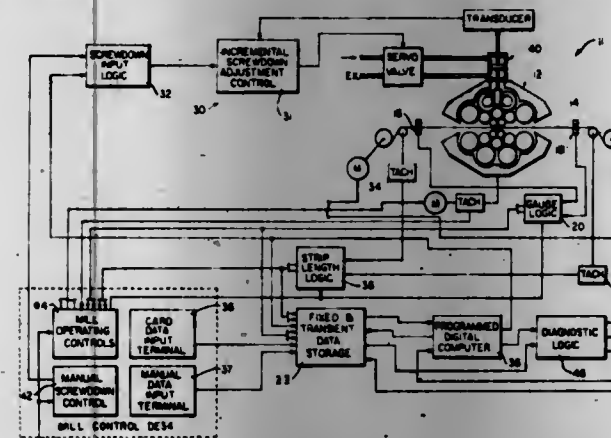
Thomas J. Alshuk, Fenn Rd., Newington, Conn. 06111

Filed Mar. 20, 1979, Ser. No. 22,313

Int. Cl. B21B 37/12; G05B 13/04

U.S. Cl. 364-472

16 Claims



14. A method of providing output gauge control of a rolling mill having at least one mill stand with an adjustable screwdown for controlling the roll opening thereof through which a sheet metal workpiece is fed during a rolling mill run for reducing the thickness of the workpiece from an input gauge to an output gauge, comprising the step of measuring the input gauge (G_I) of each of a plurality of successive samples of the sheet metal workpiece as they approach the rolling mill, measuring the output gauge (G_O) of corresponding sheet metal samples leaving the rolling mill, using computing means for determining corrective incremental screwdown adjustments for achieving a desired output gauge (G_{NO}) by employing a predetermined mill screwdown adjustment model using rolling mill running variables comprising primarily measured input gauge (G_I) and measured output gauge (G_O), and by determining feed-backward incremental screwdown adjustments (ΔSDB) by employing an input gauge average (G_{AI}) and an output gauge average (G_{SO}), and adjusting the mill screw-

4,244,027

DIGITAL OPEN LOOP PROGRAMMABLE FREQUENCY MULTIPLIER

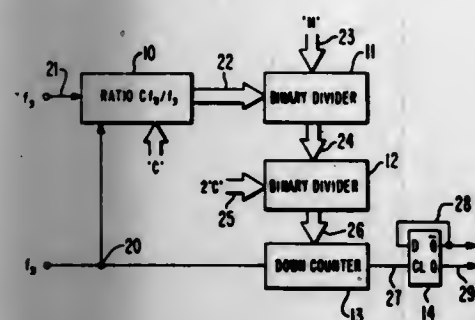
Sol Shai, Edison, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,837

Int. Cl.³ G06F 7/52; H03K 5/00

U.S. Cl. 364-703

4 Claims



1. A frequency multiplier comprising:
 - means for supplying an input signal having an input frequency;
 - means for supplying a reference signal having a reference frequency;
 - means for supplying a first group of binary signals representing a multiplication factor by which said input frequency is to be multiplied;
 - means responsive to said input and reference signals for generating a second group of binary signals representing the number of cycles of said reference signal in a predetermined number cycles of said input signal;
 - means responsive to said first and second groups of binary signals for dividing said number of cycles of said reference signal in said predetermined number of cycles of said input signal by a divisor proportional to said multiplication factor to produce a third group of binary signals representing the quotient of said division; and
 - means responsive to said reference signal and said third group of binary signals for dividing said reference frequency of said quotient to produce an output signal having a frequency substantially equal to the product of said input frequency times said multiplication factor.

4,244,028

DIGITAL MICROPROCESSOR HAVING A TIME-SHARED ADDER

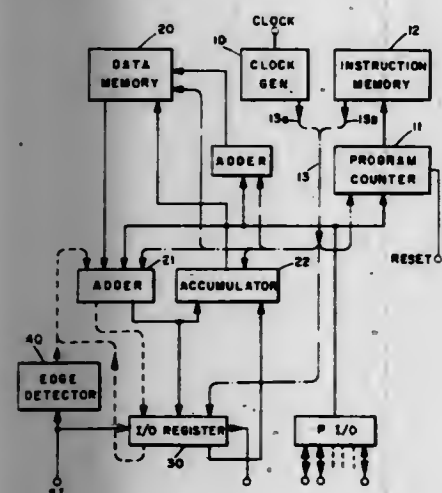
Ralph W. Haines, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 8, 1979, Ser. No. 18,752

Int. Cl.³ G06F 7/50

U.S. Cl. 364-712

8 Claims



1. A digital microprocessor chip including:

an adder, a data memory, an accumulator, and an I/O register;

timing generator means for generating interleaved first and second clock pulses;

edge detection means having an input connected to an I/O pin for receiving an externally supplied digital signal, and having an output for generating thereon a single pulse synchronized with said first clock pulses each time said digital signal makes a predetermined transition;

phase one input control means for coupling the output of said edge detection means and said I/O register to inputs on said digital adder when said first clock pulses are true;

phase two input control means for coupling said digital memory and said accumulator to said inputs on said digital adder when said second clock pulses are true; and

output control means for selectively coupling the output of said adder to said I/O register when said first clock pulses are true and to said accumulator when said second clock pulses are true.

4,244,029

DIGITAL VIDEO CORRELATOR

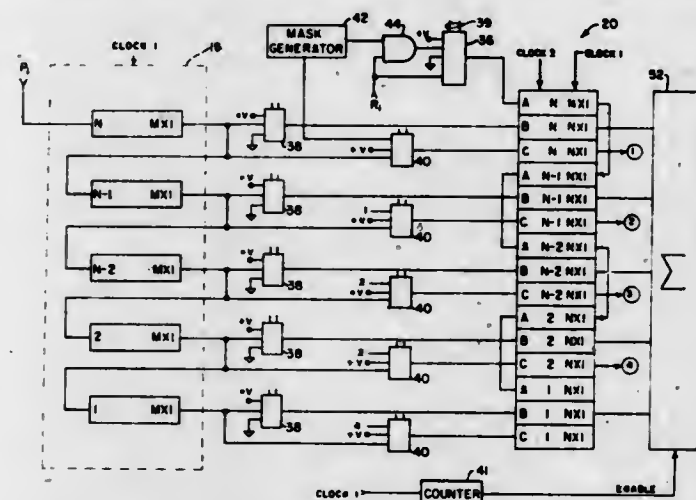
James J. Hogan; Charles O. Lambert, and Gene A. Wallace, all of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 12, 1977, Ser. No. 859,403

Int. Cl.³ G06F 15/336; G06K 9/62

U.S. Cl. 364-728

19 Claims



1. A digital video correlator for comparing a live image with a reference image, comprising:
 - digitizing means for dividing the live and reference images into pixels and digitizing said pixels into bits of binary data;
 - a first shift register connected to said digitizing means for receiving, in sequential order, said bits of binary data of the digitized pixels of the live image;
 - correlator means interconnected between said digitizing means and said first shift register for receiving and maintaining in sequential order the digitized pixels of the reference image and receiving the digitized pixels of the live image from first shift register; said correlator means comprising second, third, and fourth shift registers, corresponding bits of which are interconnected to a plurality of logic circuit means for producing an output corresponding to an exclusive OR function between corresponding bits of said second and third shift registers logically ANDed with the corresponding bit of said fourth shift register; and
 - gating circuit means connected to said first, second, third, and fourth shift registers for gating selectable inputs to said registers, said gating means being interconnected between said first shift register and said third shift register for selectively gating binary ones, binary zeros, or the bits of binary data of the live image to said third shift register.

4,244,030

MULTIPLEXED FILTERING DEVICE

Alain Albarcello, Paris, France, assignor to Thomson-CSF, Paris, France

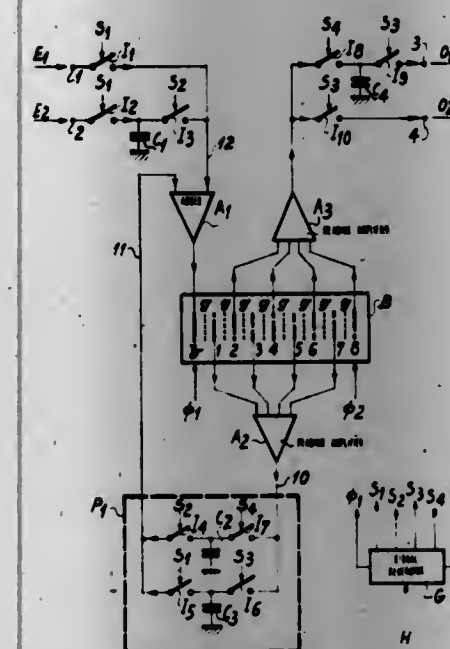
Filed Nov. 27, 1978, Ser. No. 963,945

Claims priority, application France, Nov. 30, 1977, 77 36040

Int. Cl.³ H03H 15/02, 9/64; H01L 29/78

U.S. Cl. 364-825

5 Claims



1. A multiplexed filtering device comprising:
 - multiplexing means for producing a multiplexed output signal and having a first and a second input for receiving respectively a first and a second analog signal to be filtered, a control input for receiving sampling signals having a predetermined frequency and an output;
 - a first adder having two inputs and an output, the first input being coupled to the output of said multiplexing means to receive said multiplexed output signal;
 - demultiplexing means for producing demultiplexed outputs and having a signal input, a control input for receiving sampling signals at said predetermined frequency, and two outputs on which outputs filtered signals are produced which correspond to said analog signals;
 - a second adder having an input and an output;
 - switching and storage means for coupling the output of said second adder to the second input of said first adder;
 - an amplifier; and
 - a charge transfer filter of split and interlaced electrode type, including a series of split electrodes alternating with another series of electrodes, in alignment arrangement with a signal electrode connected to said output of said first adder, said split electrodes being divided into two groups odd-numbered and even-numbered, the electrodes of one group being connected to the input of said amplifier and the output of said amplifier being connected to said demultiplexing means input, and the electrodes of the other group being connected to the input of said second adder.

4,244,031

WORD PROCESSOR

Masaki Ishizima; Shintaro Abe, and Tomoyuki Haganuma, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 13, 1977, Ser. No. 841,830

Claims priority, application Japan, Oct. 18, 1976, 51-24604; Oct. 21, 1976, 51-126641

Int. Cl.³ G06F 3/02, 3/12, 3/153

U.S. Cl. 364-900

15 Claims

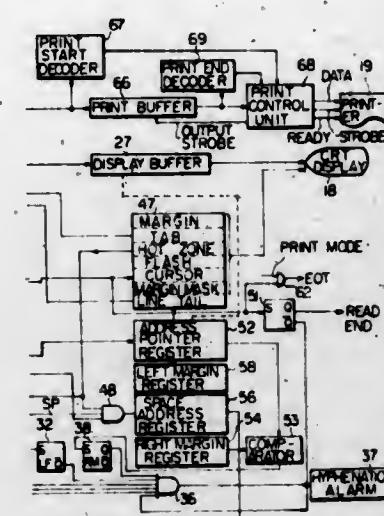
1. A word processor comprising:
 - an input keyboard;
 - a memory for storing word data input from the keyboard;

a display unit for displaying one line of data from the memory;

a printer for printing the line of data;

a display buffer for storing the line of data for display by the display unit;

a print buffer for storing the line of data for printing by the printer; and



control means for decoding data transmitted from the memory to the display buffer and causing the line of data to be transmitted from the memory to the print buffer for printing in response to a predetermined data code;

the memory being constructed to store a subsequent line of data, the display buffer being constructed to store the subsequent line of data and the display unit being constructed to display the subsequent line of data while the printer is printing the line of data stored in the print buffer.

4,244,032

APPARATUS FOR PROGRAMMING A PROM BY PROPAGATING DATA WORDS FROM AN ADDRESS BUS TO THE PROM DATA TERMINALS

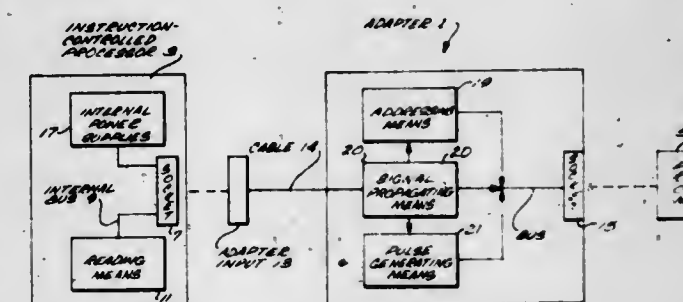
Douglas E. Oliver, 1143 N. Poinsettia Dr., Los Angeles, Calif. 90046

Filed Dec. 16, 1977, Ser. No. 861,186

Int. Cl.³ G06F 13/00; G11C 7/00

U.S. Cl. 364-900

8 Claims



1. An adapter for use in connection with an instruction-controlled processor to form an apparatus for carrying out a programming operation to program a PROM having a plurality of locations and a plurality of terminals defining a set of address terminals and a set of data terminals, at least one of the terminals being a program control terminal, the processor having processor socket means for having a pre-programmed PROM inserted therein for use in normal operation of the processor, an internal address bus connected to the processor socket means, and reading means for use in such normal operation to read out such a pre-programmed PROM, the reading means including means for causing the internal address bus to carry a multibit signal, the encoding of which in normal operation of the processor is such as to define an address each time the processor executes a predetermined instruction, the reading means further including means for supplying timing signals

asymmetrically positioned between two of the adjacent harmonics;
means for modulating the first carrier signal with digital data at a baud rate so that the spectral density nulls of the modulated carrier signal in the frequency domain coincide with said two adjacent harmonics;
means for generating at least one additional carrier signal whose frequency is also positioned between said two adjacent harmonics but is different from that of the first carrier signal and whose frequency separation from any adjacent carrier signal is equal to the baud rate or some multiple thereof, and
means for modulating each additional carrier signal with digital data at said baud rate.

4,244,048

CHIP AND WAFER CONFIGURATION AND TESTING METHOD FOR LARGE-SCALE-INTEGRATED CIRCUITS

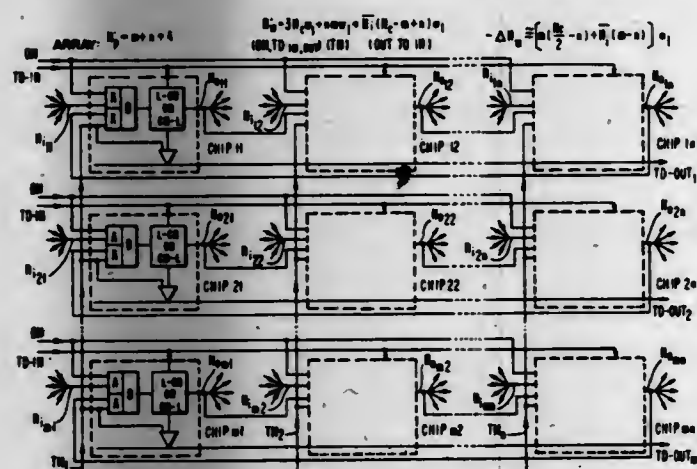
Frank F. Tsai, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,641

Int. Cl. G01R 31/28; G06F 11/00

U.S. Cl. 371-15

17 Claims



1. A circuit configuration for facilitating the testing of individual chips fabricated on wafers produced by large-scale-integrated circuit manufacturing techniques, wherein each wafer is composed of a plurality of individual chips arranged in an array configuration along two axes of said wafer, said array comprising M rows and N columns of chips, each said chip comprising a chip image which includes a chip core containing the functional circuitry to be utilized on-module subsequent to the dicing of the wafer, each said chip core comprising at least one combinatorial network, and at least one set of LSSD storage latches, wherein an LSSD storage latch set is defined as a storage register capable of being selectively operated in a parallel or serial mode, said chip images being larger than the contained chip cores and being located contiguously on said wafer in said array configuration so as to define chip image boundaries therebetween, each said chip image further containing, exterior to said chip core, connection means and logic circuitry for selectively gating test data to and from said latches located within the chip cores, said connection means being interconnected on said wafer and between the respective chip images to also selectively transmit data stored in said latches in individual chips serially across selected chip image boundaries along at least one axis of the wafer, said connection means being configured to interconnect said latches along said at least one axis and across said chip image boundaries to effectively form a single serial shift register having a plurality of sets of latches and means for serially shifting the entire contents of the said shift register out of said wafer for LSSD testing purposes.

4,244,049 METHOD AND APPARATUS FOR ENHANCING I/O TRANSFERS IN A NAMED DATA PROCESSING SYSTEM

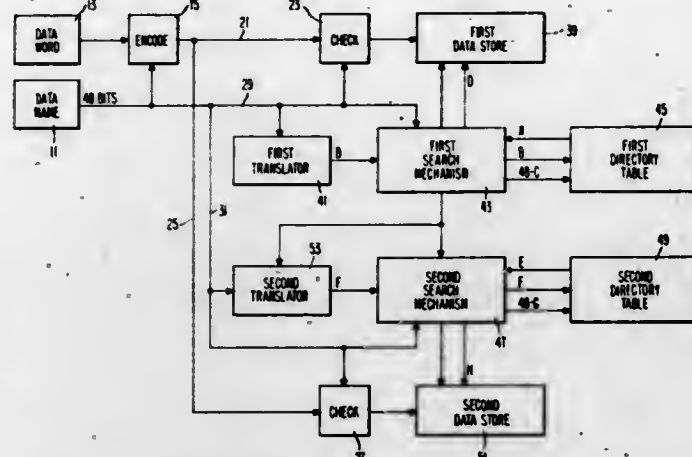
Kenneth L. York, Huntingdon Valley; Peter R. Annal, West Chester, and John E. Legory, Paoli, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 2, 1979, Ser. No. 9,250

Int. Cl. G06F 11/10

U.S. Cl. 371-38

4 Claims



1. In a named data processing system, a method for securely storing a data record through an Input/Output channel comprising the steps of:
appending a unique permanent record identification to said data record;
generating an encoded check code covering said data record and said appended unique permanent record identification;
appending said encoded check code to said data record and said appended unique permanent record identification;
transferring said data record, said appended unique permanent record identification and said appended encoded check code through said Input/Output channel;
supplying independently for verification purposes said unique permanent record identification;
checking said transferred data record and said appended unique permanent record identification by decoding said appended encoded check code and by verifying that said appended unique permanent record identification is identical to said independently supplied unique permanent record identification; and
storing said checked data record with said appended unique permanent identification and said appended encoded check code.

4,244,050

DUAL VOLTAGE REGULATOR WITH LOW VOLTAGE SHUTDOWN

Robert E. Weber, and Harold E. Weissler, II, both of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,921

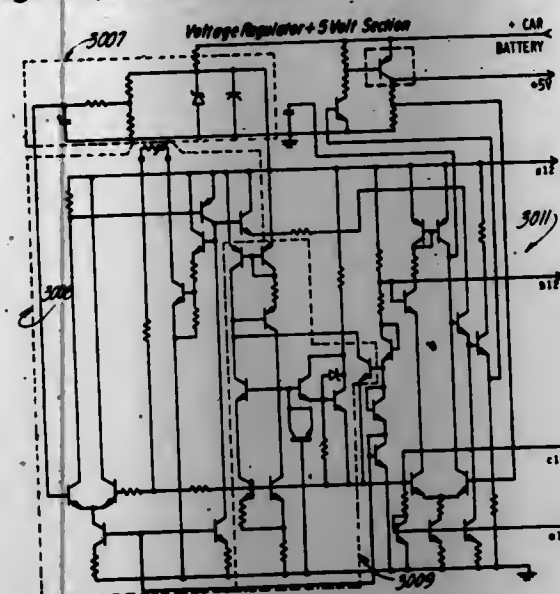
Int. Cl. G05F 1/38; G01R 19/165

U.S. Cl. 371-66

2 Claims

1. A voltage regulator for use in controlling the supply voltage to a microprocessor-based electronic engine control system responsive to one or more sensed engine-operating parameters for generating engine control commands, said voltage regulator comprising series pass transistor means for achieving a low input to output offset, adjustable input means for establishing a predetermined threshold level of supply line voltage below which said regulator shuts down, and means for

automatically shutting down said regulator when said supply line voltage drops below said predetermined threshold level



for preventing the erroneous operation of said electronic engine control system at low supply voltages.

4,244,051

DATA COMMUNICATION METHOD AND APPARATUS THEREFOR

Nobuyuki Fujikura; Makoto Noomi, both of Kawasaki, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Japan

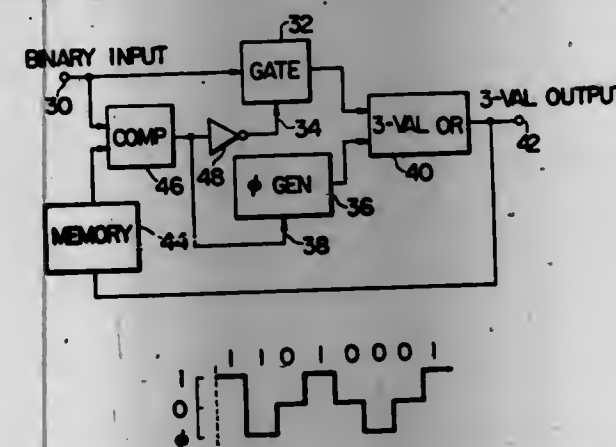
Filed Jan. 22, 1979, Ser. No. 5,470

Claims priority, application Japan, Jan. 20, 1978, 53-4357

Int. Cl. H04L 25/49, 25/34

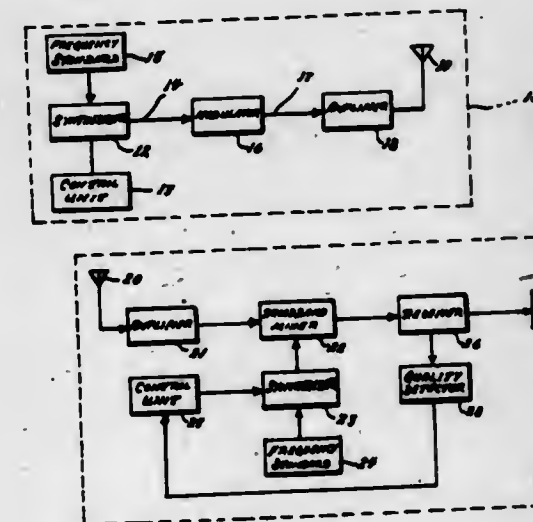
U.S. Cl. 375-17

12 Claims



1. A data communication method comprising the steps of:
generating one of first, second and third signals selectively and at a predetermined time interval in accordance with each bit of binary coded data to be transmitted; and
transmitting said generated signals; and
wherein said generating step includes the steps of:
detecting first and second occurrences of coincidence, said first occurrence of coincidence corresponding to coincidence between said first signal and a signal generated in response to a bit preceding a present bit to be transmitted by one bit, and said second occurrence of coincidence being coincidence between said second signal and said signal generated in response to said preceding bit,
generating said first and second signals in response to said present bit being a logical "1" and a logical "0," respectively, under the condition that said first and second occurrence of coincidence are not detected, respectively, and
generating said third signal in response to said present bit, under the condition that said first occurrence of coincidence is detected when said present bit is a logical "1" and under the condition that said second occurrence of coincidence is detected when said present bit is a logical "0."

U.S. Cl. 455-29



1. A privacy communication system comprising means of generating a signal continuously changing frequency with time in accordance with a preset relationship, said generating means

4,244,052 RECEIVER WORD ALIGNMENT FOR DIGITAL TRANSMISSION SYSTEMS USING A REDUNDANT TERNARY LINE CODE

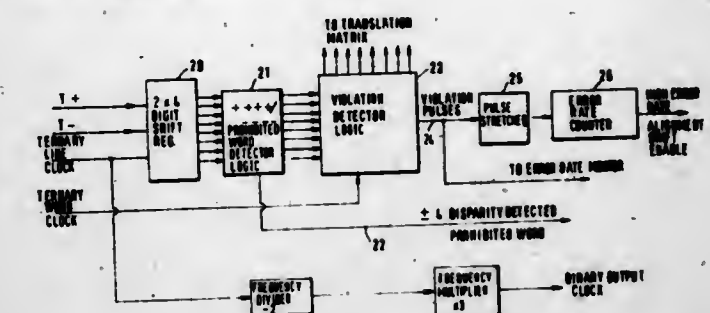
Alan D. Hemsworth, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,660

Int. Cl. H04L 7/06, 25/34

U.S. Cl. 375-19

5 Claims



1. A method of aligning a digital transmission system receiver to incoming redundant ternary line code signals comprising the steps of:
determining whether ternary code words of said line code signals, as identified by timing control signals of said receiver, exceed a predetermined rate of ternary code translating rule violations;
determining the rates at which, if said predetermined rate is exceeded, the different ternary code phases include prohibited ternary code words, where the term "phases" is defined as the plurality of possible first digits in a ternary code word and a prohibited ternary code word is a redundant ternary code word not allocated to a binary equivalent; and
shifting time control signals of said receiver to align said receiver with that ternary code phase having the lowest rate of said prohibited ternary code words if that phase is different from the phase to which said receiver is already aligned.

4,244,053

PRIVACY COMMUNICATION METHOD AND SYSTEM

Marvin R. Clinch, Onondaga, N.Y.; Calvin R. Graf, Paul E. Martin, both of San Antonio, Tex., and Robert B. Fenwick, Palo Alto, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 10, 1970, Ser. No. 73,812

Int. Cl. H04K 1/00

6 Claims

being composed of a first frequency synthesizing means, a first digital computer connected to said frequency synthesizing means, said digital computer having the ability to very rapidly read memory storage to determine the increment of frequency change at any instant of time and also being preprogrammed in accordance with the preset relationship in frequency and in time, a first frequency standard serving as a frequency base for said frequency synthesizer means, said frequency standard maintaining frequency stability over an extended period of time, means to selectively impress intelligence upon said generated signal, means to transmit said signal impressed with said intelligence, means to receive the transmitted signal, said receiving means being physically displaced from said transmitting means, a mixer being fed the received signal as a first input signal, a second frequency synthesizing means identical to said first frequency synthesizing means, a second digital computer connected to said second frequency synthesizing means and identical in capability and preprogramming to said first digital computer, a second frequency standard also connected to said second frequency synthesizer means and identical to said first frequency standard, said first and second frequency standard initially being synchronized, said second frequency synthesizer providing a second input signal for said mixer, a receiver being fed the output signal from said mixer, said receiver being utilized as an intermediate frequency amplifier and detector, a post detection device receiving the output signal from said receiver for conversion to the initially impressed intelligence, and a threshold detector also receiving the output signal of said receiver and providing a control signal to said second digital computer.

4,244,054

METHOD AND APPARATUS FOR MEASURING THE AMPLITUDE AND THE GROUP DELAY FOR EACH SIDE-BAND OF AN AMPLITUDE MODULATED TRANSMITTER

Gianfranco Lorea, Corso Giambone 7, Turin, Italy

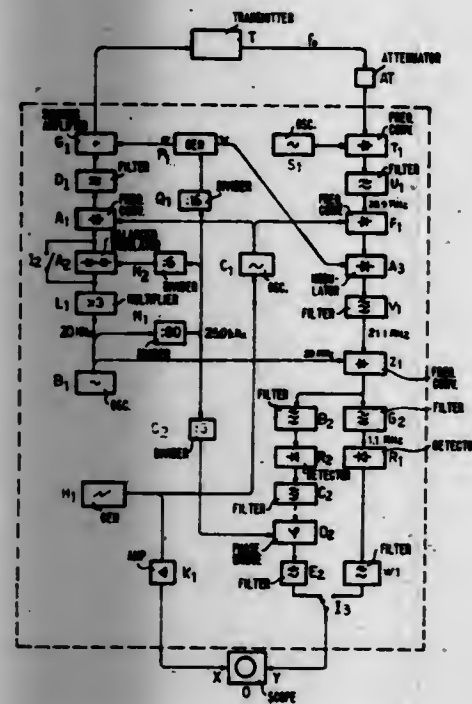
Filed Apr. 3, 1978, Ser. No. 893,189

Claims priority, application Italy, Aug. 31, 1976, 69118 A/76

Int. Cl.³ H04B 1/02

U.S. Cl. 455-115

5 Claims



1. A method of measuring the group delay in each sideband, from the input terminals to the output terminals of an amplitude modulated transmitter, characterized in that it comprises the steps of: generating two input waves having frequencies respectively equalling the sum and the difference of a variable frequency f_v and a fixed frequency f_f , which are sent to the input of the transmitter under test; selecting at the transmitter output the two output waves corresponding to the input wave of the same side-band; frequency shifting, filtering and detecting said output waves so as to extract therefrom a beat signal at frequency $2f_v$; comparing said beat frequency signal in a phase bridge comparator with another signal also at a frequency of $2f_v$

f_f but which is coherent with the signal at said frequency f_f ; obtaining a signal at the output of said phase bridge whose voltage is a linear function of the group delay.

4,244,055

TUNER WITH PHASE LOCKED LOOP SYNTHESIZER

Akira Misawa, and Tatsuo Numata, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

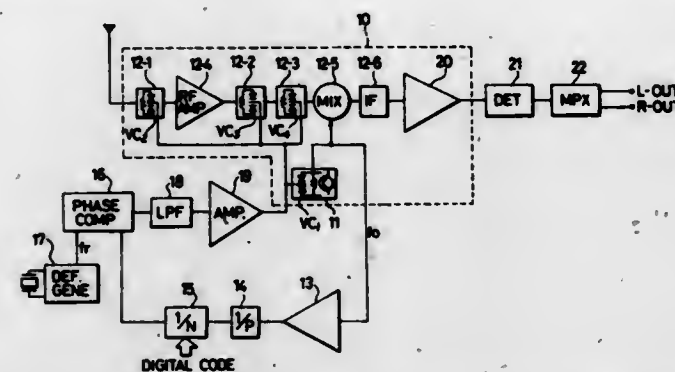
Filed Oct. 16, 1978, Ser. No. 951,819

Claims priority, application Japan, Oct. 17, 1977, 52-123443; Oct. 31, 1977, 52-129632

Int. Cl.³ H04B 1/10, 1/26

U.S. Cl. 455-174

5 Claims



1. A tuner of the phase-locked loop type and comprising: a digital memory board with station data stored thereon at discrete data positions; means for scanning said board and delivering a digital output indicative of said station data; a voltage-controlled variable frequency oscillator for generating a local frequency corresponding to the local frequency signal of a selected station; a programmable frequency divider for dividing the local frequency by a variable dividing ratio determined by said digital output; and means responsive to the divided frequency and to a reference frequency for producing a corresponding control voltage which is applied to said voltage controlled oscillator for determining said local frequency in dependence on said dividing ratio of said frequency divider; and muting control circuit means responsive to said digital output for muting said tuner when said scanning means is between said discrete data positions on said memory board, said muting means comprising an OR circuit responsive to said digital output to mute said tuner when said digital output does not contain said station data.

4,244,056

NOISE REDUCTION CIRCUIT

Masanori Hamada, and Saeji Kawaguchi, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

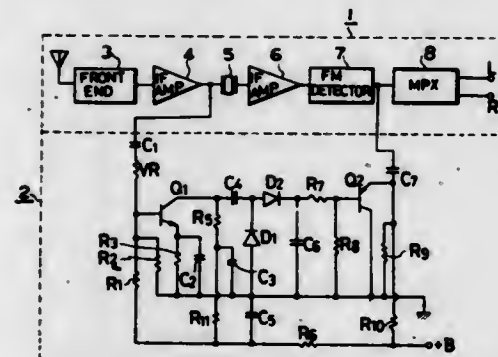
Filed Mar. 12, 1979, Ser. No. 19,840

Claims priority, application Japan, Mar. 16, 1978, 53/29256

Int. Cl.³ H04B 1/10, 15/00

U.S. Cl. 455-213

7 Claims



1. A noise reduction circuit for an FM radio receiver, wherein said receiver includes at least IF signal generating means for producing an IF signal from a received incoming

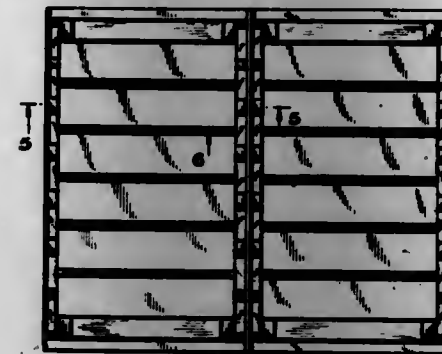
signal and FM detector means coupled to receive said IF signal, comprising a capacitor and a variable resistor means, said capacitor and said variable resistor means being connected in series between an output of said FM detector means and an earth potential point, and control means for continuously controlling the resistance of said variable resistor means in accordance with the level of said IF signal and thereby for continuously varying attenuation of a high frequency component of the incoming signal in response to the strength of the incoming signal to reduce noise contained therein.

DESIGNS

JANUARY 6, 1981

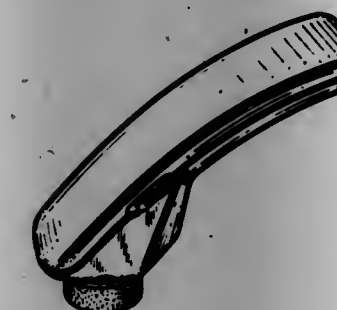
257,746
TRAY INSERT FOR TAPE CARTRIDGES AND TAPE CASSETTES
 Vaughn Aprahamian, Rego Park, N.Y., assignor to Le-Bo Products Company, Inc., Masspeth, N.Y.
 Filed Jul. 31, 1978, Ser. No. 929,419
 Term of patent 14 years
 Int. Cl. D3-02; D6-04

U.S. Cl. D3-35



257,747
SKIN TREATMENT TOOL
 Fran MacGregor, New Britain, Conn., assignor to Clairol Incorporated
 Division of Ser. No. 852,388, Nov. 17, 1977, Pat. No. D. 254,222.
 This application May 29, 1979, Ser. No. 43,062
 Term of patent 14 years
 Int. Cl. D4-02

U.S. Cl. D4-14



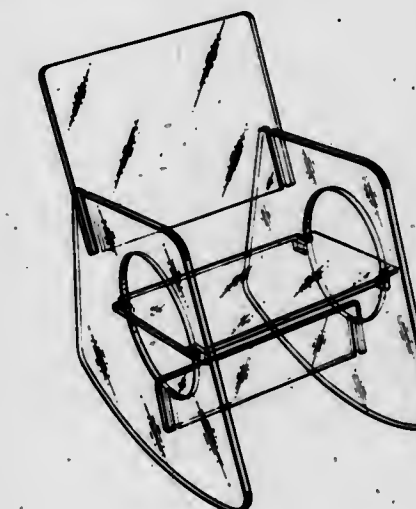
257,748
TRACTOR SEAT
 Edgar J. Smith, R.R. 1, Mitchell, S. Dak. 57301
 Filed May 8, 1978, Ser. No. 903,993
 Term of patent 14 years
 Int. Cl. D6-01

U.S. Cl. D6-48



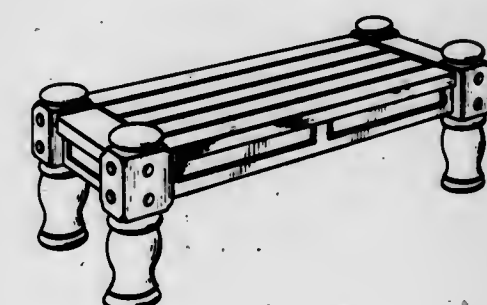
257,749
ROCKING CHAIR
 Peter Davis, 14 Whale Sq., Brooklyn, N.Y. 11232
 Filed Jun. 19, 1978, Ser. No. 916,573
 Term of patent 14 years
 Int. Cl. D6-01

U.S. Cl. D6-49



257,750
COFFEE TABLE
 Lester Beall, Jr., High Point, N.C., assignor to Crestline Furniture Co., Inc., New York, N.Y.
 Filed Oct. 25, 1977, Ser. No. 845,247
 Term of patent 14 years
 Int. Cl. D6-03

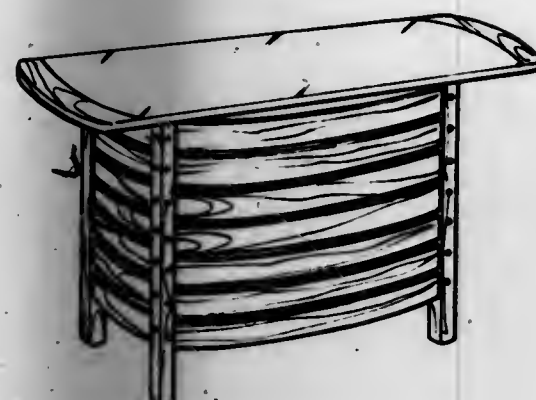
U.S. Cl. D6-177



257,751
TABLE

Jobie G. Redmond, P.O. Box 1133, High Point, N.C. 27260
Filed Nov. 8, 1978, Ser. No. 958,842
Term of patent 14 years
Int. Cl. D6-03

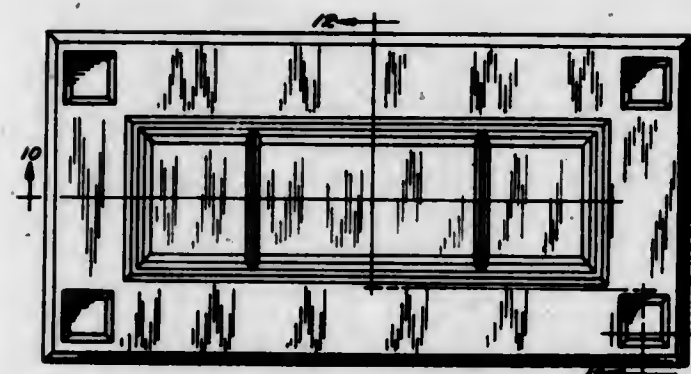
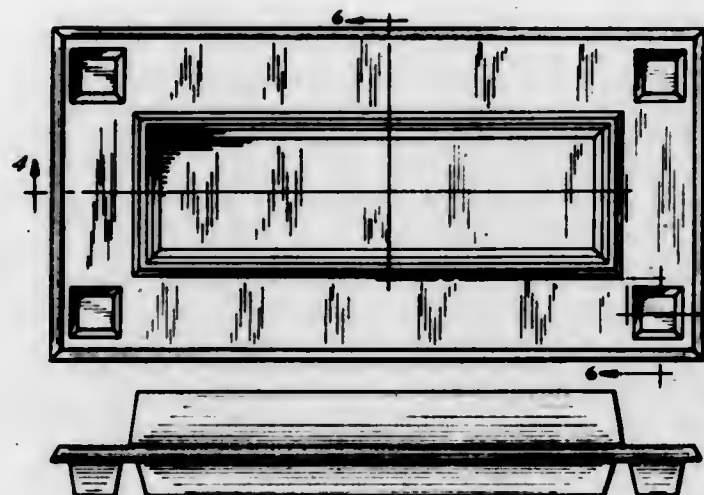
U.S. Cl. D6-179



257,753
SERVING TRAY

Alvin J. Stahel, II, New Brighton, Minn., assignor to Princeton Industries Corporation, Princeton, Ind.
Filed Aug. 2, 1978, Ser. No. 930,543
Term of patent 14 years
Int. Cl. D07-99

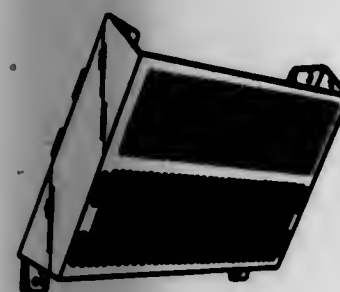
U.S. Cl. D7-37



257,752
ATTACHMENT FOR VERTICALLY MOUNTED FILE
HOLDER

Donald B. Rabig, Elizabeth, N.J., assignor to Borden, Inc., Columbus, Ohio
Filed Jan. 14, 1980, Ser. No. 111,875
Term of patent 14 years
Int. Cl. D6-04

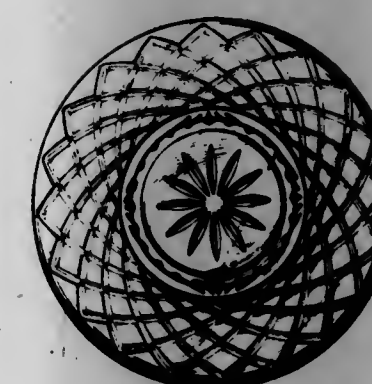
U.S. Cl. D6-191



257,754
COMBINED DECANTER AND STOPPER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Oct. 27, 1978, Ser. No. 985,434
Term of patent 14 years
Int. Cl. D07-01, 06

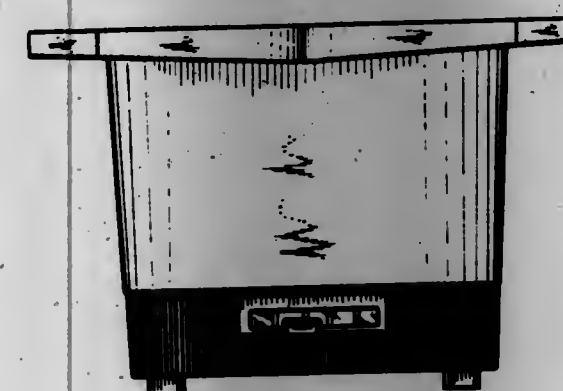
U.S. Cl. D7-52



257,755
DEEP FRYER
William J. Rakocy, Nutley, and Masao Tsuji, North Plainfield, both of N.J., assignors to North American Phillips Corporation, New York, N.Y.

Filed Dec. 7, 1977, Ser. No. 852,365
Term of patent 14 years
Int. Cl. D7-02

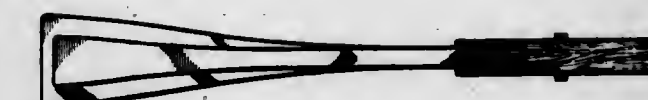
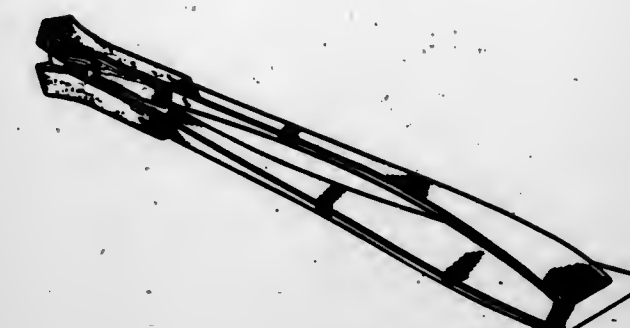
U.S. Cl. D7-94



257,756
BARBECUE TOOL

Logan W. Johnson, 7116 Shannon Dr., Edina, Minn. 55435
Filed Mar. 13, 1979, Ser. No. 20,176
Term of patent 14 years
Int. Cl. D07-06

U.S. Cl. D7-105



257,757
ARTICLE OF FLATWARE
Peter J. Acker, 2418 Foxdale Ave., Oceanside, N.Y. 11572
Filed Jul. 18, 1978, Ser. No. 925,608
Term of patent 14 years
Int. Cl. D07-03

U.S. Cl. D7-143



257,758

COMBINED NAIL-SCREW SHIELD AND MEASURING INSTRUMENT

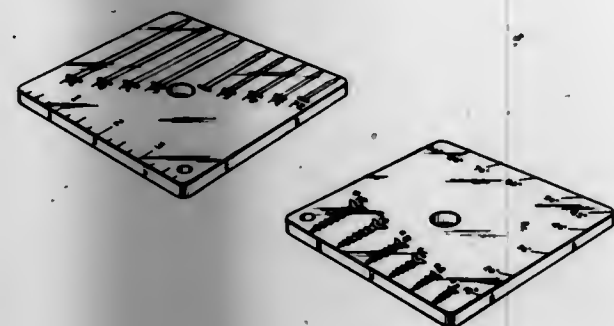
Robert J. Limacher, P.O. Box 2568, Aspen, Colo. 81611

Filed Sep. 1, 1978, Ser. No. 939,135

Term of patent 14 years

Int. Cl. D8-05

U.S. Cl. D8-14



257,759

TORQUE TYPE HAND SCREWDRIVER

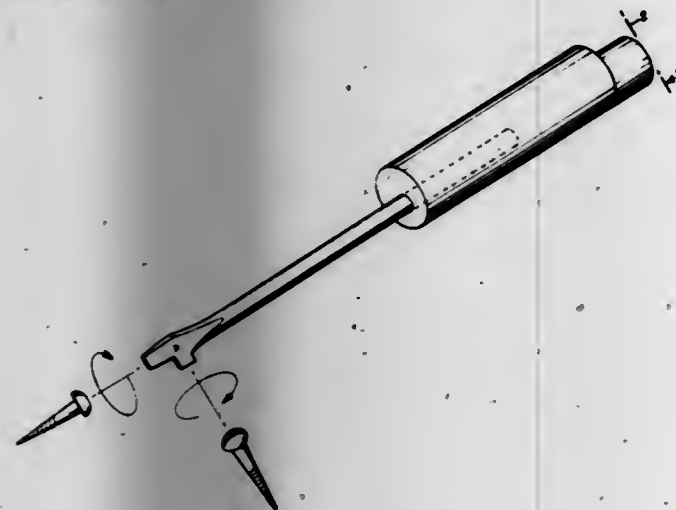
Dana Peterson, 1722-176 Oro Vista Rd., San Diego, Calif. 92154

Filed Feb. 8, 1978, Ser. No. 876,189

Term of patent 14 years

Int. Cl. D08-04

U.S. Cl. D8-85



257,760

COVER FOR FLOOR OUTLET

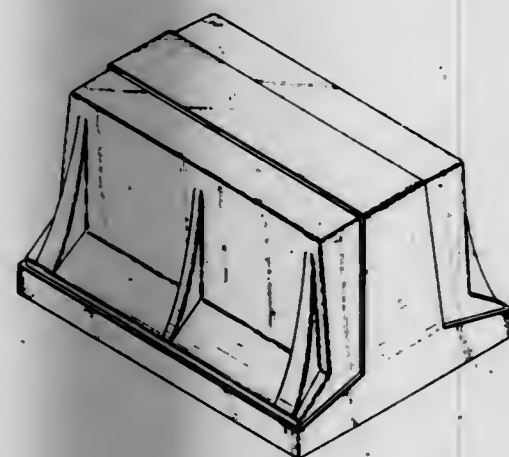
Thomas J. Sotolongo, Clearwater Beach, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 26, 1979, Ser. No. 61,143

Term of patent 14 years

Int. Cl. D8-09; D13-03

U.S. Cl. D8-353



257,761

FURNITURE STOP

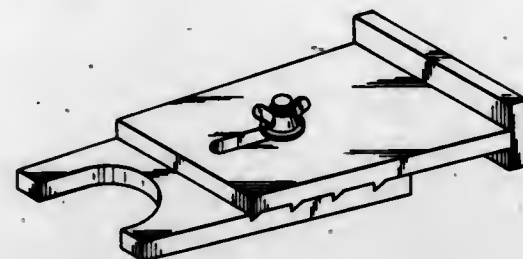
Anna Abel, 4825-200A St., Langley, British Columbia, Canada (V3A 5W8)

Filed Aug. 22, 1978, Ser. No. 936,579

Term of patent 14 years

Int. Cl. D8-09, 99

U.S. Cl. D8-402



257,762

DECANTER

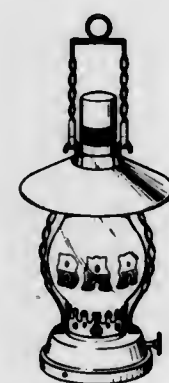
David W. Y. Yeung, Tung Chai Bldg., 7th Fl., 88-90 Wellington St., Hong Kong, Hong Kong

Filed Jan. 30, 1978, Ser. No. 873,110

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-307



257,763

BOTTLE

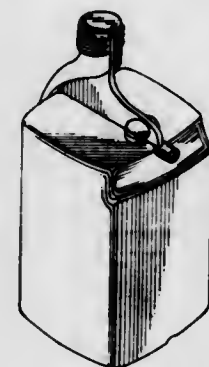
Orlando D. Cambio, Jr., Bristol, Wis., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Jan. 5, 1978, Ser. No. 867,421

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-370



257,764

COMBINED JAR AND CLOSURE

Hajime Tajima, Tokyo, Japan, assignor to Ajinomoto General Foods, Inc., Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 845,086

Claims priority, application Japan, Jul. 12, 1977, 52-27242

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-399



257,765

BILL DETECTOR

Jacob Schachter, 135 New York Ave., Huntington, N.Y. 11743

Filed May 7, 1979, Ser. No. 36,536

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-46



257,766

REFUSE TRUCK BODY

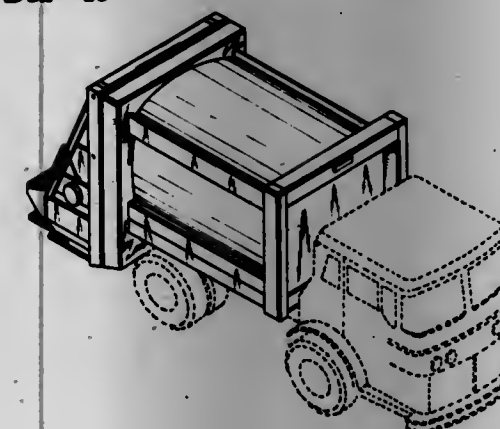
Fred T. Smith, Palos Verdes Peninsula, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed Feb. 8, 1978, Ser. No. 876,190

Term of patent 14 years

Int. Cl. D12-08

U.S. Cl. D12-15



257,767

DOLLY PLATE FOR A REFUSE CONTAINER

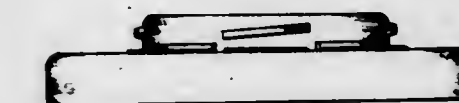
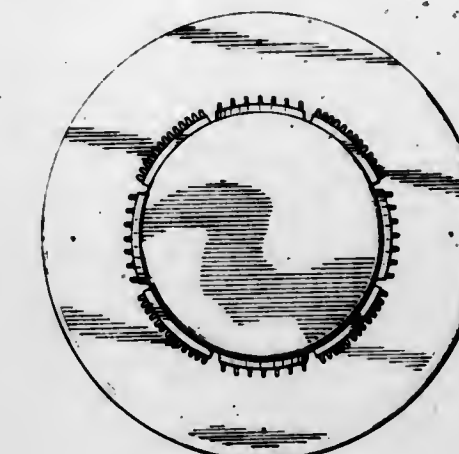
Dale T. Mann, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.

Filed Mar. 8, 1978, Ser. No. 884,714

Term of patent 14 years

Int. Cl. D12-02

U.S. Cl. D12-31



257,768

TRAILER HITCH

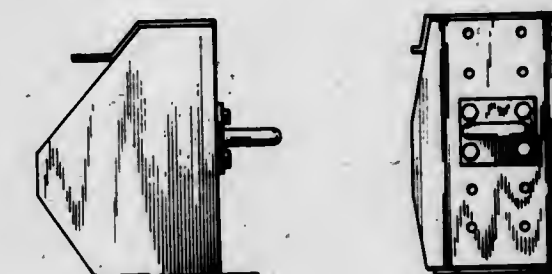
Edward J. Lazzeroni, Racine, Wis., assignor to Miller Tilt-Top Trailer, Company, Milwaukee, Wis.

Filed Sep. 29, 1978, Ser. No. 947,244

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-162



257,769

PIVOTAL SUPPORT FOR A WIND DEFLECTOR BLADE
Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation

Filed Sep. 5, 1978, Ser. No. 939,907

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-181



257,770

DOUBLE VIEWER CARTRIDGE

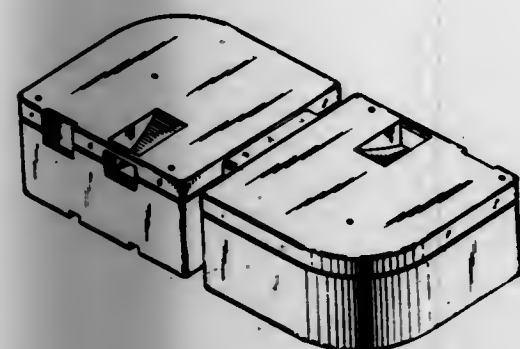
Donald I. Loebsohn, Canby, Oreg., assignor to GAF Corporation, New York, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,908

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D14—11



257,771

SEND/RECEIVE HIGH SPEED IMPACT PRINTER

Dayton O. Dargatz, Anaheim, Calif., assignor to Plessey Peripheral Systems, Irvine, Calif.

Filed Nov. 2, 1978, Ser. No. 957,070

Term of patent 14 years

Int. Cl. D18—01, 02

U.S. Cl. D14—50



257,772

TELEPHONE

Yoshifumi Fukutani, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

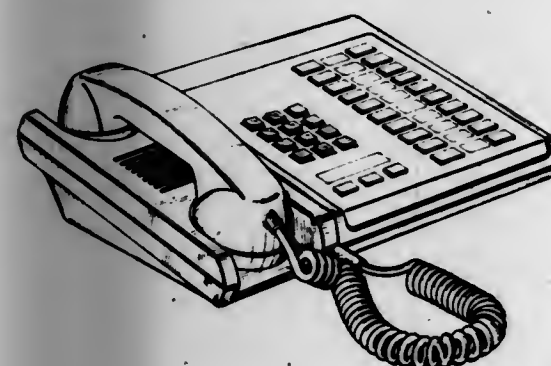
Filed Jun. 12, 1978, Ser. No. 914,579

Claims priority, application Japan, Dec. 12, 1977, 52-48681

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D14—53



257,773

PROJECTION TELEVISION CONSOLE

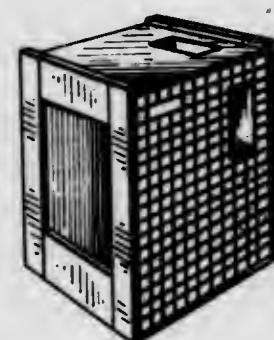
Ronald L. Loper, Manhattan Beach; Robert H. Norwalt, Northridge; Rolf D. Ulrich, Van Nuys, and Theodore A. Flynn, Toluca Lake, all of Calif., assignors to Sega Enterprises, Inc.

Filed Apr. 27, 1978, Ser. No. 900,676

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D14—79



257,774

CARPET AND RUG CLEANER

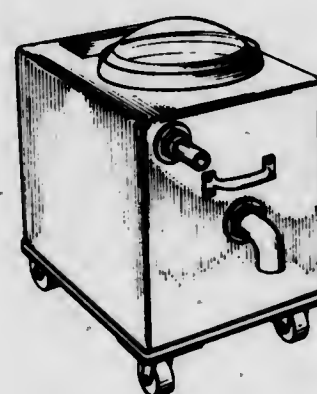
Donald F. Pierson, 813 E. Irvington, South Bend, Ind. 46614

Filed Jun. 7, 1978, Ser. No. 913,452

Term of patent 14 years

Int. Cl. D15—05

U.S. Cl. D15—53



257,775

FLUID DISTRIBUTING MANIFOLD

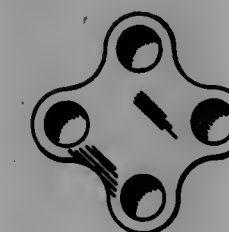
Paul E. Allen, Sandy Hook, Conn., assignor to Logic Devices, Inc.

Filed Nov. 23, 1977, Ser. No. 854,167

Term of patent 14 years

Int. Cl. D15—99

U.S. Cl. D15—199



257,777

LETTER STAMPING MACHINE

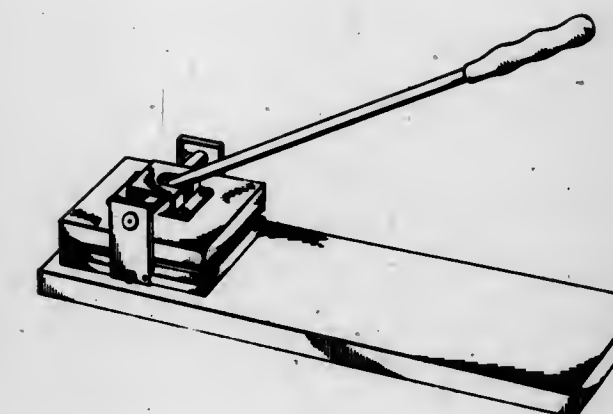
Robert J. Eichenberg, and La Dorna E. Eichenberg, both of 911 Baywood Dr., Newport Beach, Calif. 92660

Filed Jul. 28, 1977, Ser. No. 819,838

Term of patent 14 years

Int. Cl. D18—02

U.S. Cl. D18—15



257,776

PORTABLE MOVIE PROJECTOR

Naokuni Sato; Toru Onishi, and Daisuke Ishiguro, all of Kasai, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

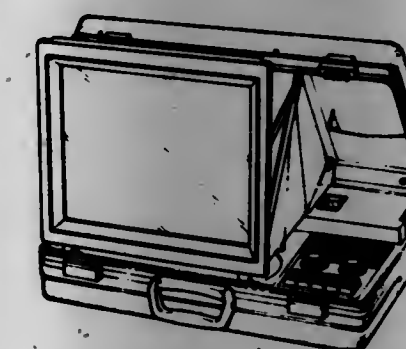
Filed Apr. 19, 1978, Ser. No. 897,815

Claims priority, application Japan, Nov. 30, 1977, 52-47641

Term of patent 14 years

Int. Cl. D16—02

U.S. Cl. D16—18



257,778

BASE FOR A DESK PEN SET AND CALENDAR OR SIMILAR ARTICLES

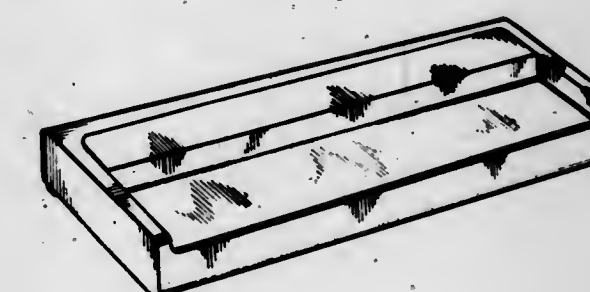
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc.

Filed May 18, 1978, Ser. No. 907,309

Term of patent 14 years

Int. Cl. D19—99

U.S. Cl. D19—99



257,779

DISC TARGET

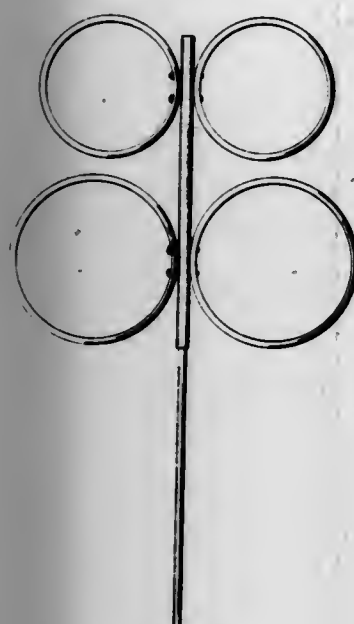
Leo W. Sippola, 10614 W. Villard Ave., Milwaukee, Wis. 53225

Filed Oct. 25, 1978, Ser. No. 954,446

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-5



257,781

STUFFED TOY CLAM OR SIMILAR ARTICLE

Gail G. Inzerillo, 349 O'Connor Rd., North Babylon, N.Y. 11703, and Kathleen A. Williams, 93 E. 13th St., Huntington Station, N.Y. 11746

Filed Feb. 1, 1979, Ser. No. 8,702

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-157



257,782

SLOTTED GOLF PUTTER HEAD

Floyd V. Bernhardt, 5532 N. High School Rd., Indianapolis, Ind. 46254

Filed Mar. 28, 1979, Ser. No. 24,793

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-217



257,780

SIMULATIVE DRIVING TOY

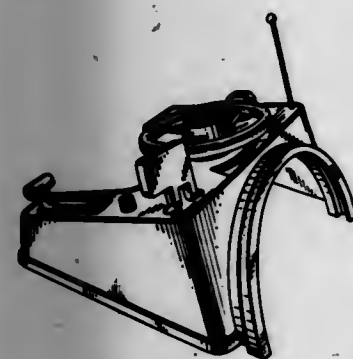
Manfred Strauss, Randolph, N.J., assignor to Shelcore, Inc., New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 950,173

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-142



257,783

GOLF PUTTER HEAD

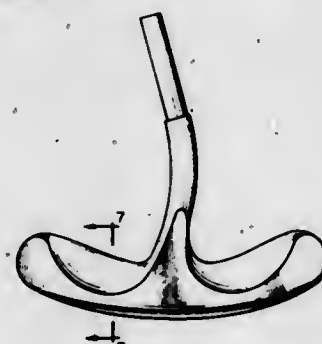
Floyd V. Bernhardt, 5532 N. High School Rd., Indianapolis, Ind. 46254

Filed Mar. 28, 1979, Ser. No. 24,794

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-217



257,784

PUTTER

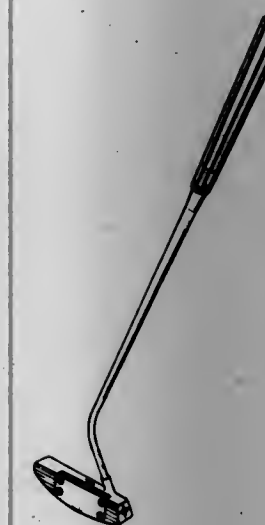
Edward L. Forys, Box 113, Monrovia, Calif. 91016, and Roy K. Fujitaki, Los Angeles County, Calif., assignors to by said Roy K. Fujitaki said Edward L. Forys

Filed Oct. 16, 1978, Ser. No. 951,851

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-219



257,786

DUAL SURFBOARD FIN OR THE LIKE

Charles B. Vann, 531 S. 1st St., Jacksonville Beach, Fla. 32250

Filed Feb. 27, 1978, Ser. No. 881,883

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-237



257,787

VEHICLE ROOF MOUNTED AIR CONDITIONER AIR OUTLET PANEL

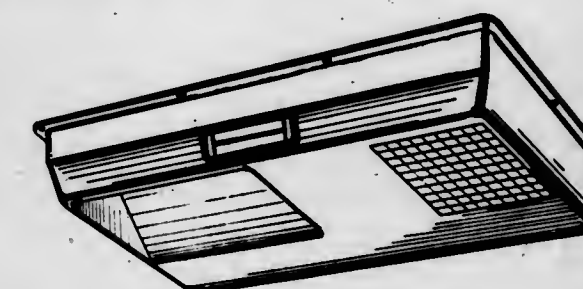
Joseph M. Armbruster, Lighthouse Point, Fla., assignor to Sheller-Globe Corporation, Toledo, Ohio

Filed Aug. 1, 1978, Ser. No. 929,992

Term of patent 14 years

Int. Cl. D23-04

U.S. Cl. D23-142



257,785

RECEIVER FOR A GOLF BALL CHIPPING GAME

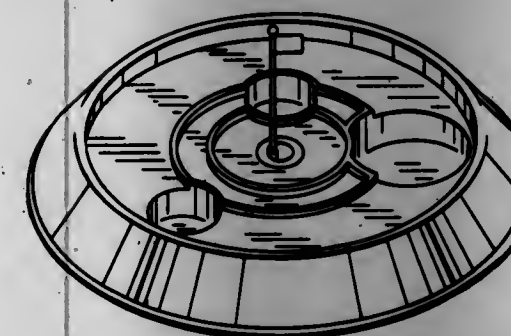
Otto G. Arndt, and James J. Arndt, both of 1708 S. Dahlia St., Denver, Colo. 80222

Filed Sep. 18, 1978, Ser. No. 944,609

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-234



257,788

DISPENSER FOR VAPORIZABLE SUBSTANCE

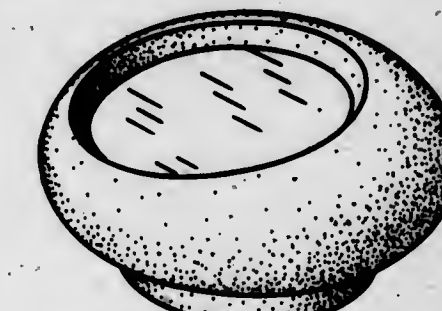
John I. Suhajda, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Mar. 3, 1978, Ser. No. 883,120

Term of patent 14 years

Int. Cl. D23-04

U.S. Cl. D23-150



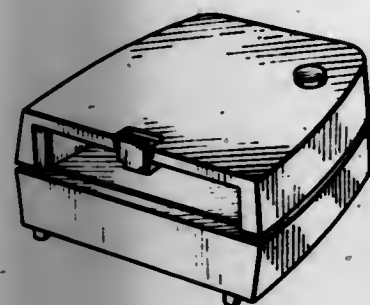
257,789

CONTACT LENS STERILIZER UNIT

Michael D. Thomas, Arab, Ala., and Francis E. Ryder, Barrington, Ill., assignors to Ryder International Corporation, Arab, Ala.

Filed Mar. 24, 1978, Ser. No. 889,826
Term of patent 14 years
Int. Cl. D24—02

U.S. Cl. D24—9



257,792

HAIR CONTROL CLIP

Chen K. Chao, 206-S Tsat-Tse Mui Rd., North Point, Hong Kong BCC, Hong Kong

Filed Mar. 1, 1979, Ser. No. 9,550
Term of patent 14 years
Int. Cl. D28—03

U.S. Cl. D28—40



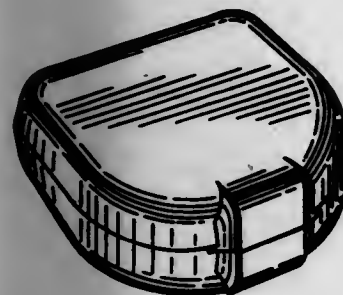
257,790

DENTAL APPLIANCE CARRYING CASE

Peter C. Keeling, Green Acres, LaPorte, Ind. 46350

Filed Jan. 2, 1978, Ser. No. 912,063
Term of patent 14 years
Int. Cl. D24—99

U.S. Cl. D24—10



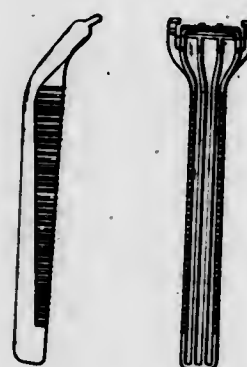
257,793

RAZOR

Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Mar. 9, 1979, Ser. No. 19,133
Term of patent 14 years
Int. Cl. D28—03

U.S. Cl. D28—48



257,791

PIPETTE

James E. Parker, Long Beach, Calif., assignor to ICL/Scientific, Fountain Valley, Calif.

Filed Oct. 20, 1978, Ser. No. 953,837
Term of patent 14 years
Int. Cl. D24—02

U.S. Cl. D24—55



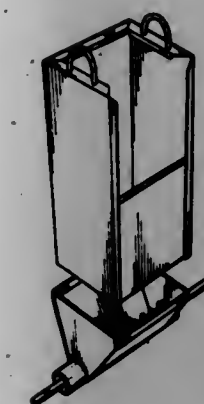
257,794

AUTOMATIC FEEDER FOR LIVESTOCK

Ernst G. Gunnarsson, Severin Cavallingsgatan 7, S-235 00 Vellinge, Sweden

Filed Nov. 13, 1978, Ser. No. 960,268
Claims priority, application Sweden, May 12, 1978, 78-1271
Term of patent 14 years
Int. Cl. D30—03

U.S. Cl. D30—13



257,795

TEXTILE FABRIC

David Doig, Silk Willoughby, England, assignor to The Scotch House Limited, London, England

Filed Dec. 19, 1978, Ser. No. 971,102
Claims priority, application United Kingdom, Jul. 13, 1978, 513520/78

Term of patent 14 years
Int. Cl. D5—05

U.S. Cl. D92—1 AA



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JANUARY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. B. Chance Company: See—
Myers, Franklin D.; and McKelvy, Marvin D., 4,242,930, Cl. 81-474.000.
- A. L. Lee Corporation: See—
Lee, Arthur L.; and Coval, Arthur B., 4,243,126, Cl. 192-2.000.
Lee, Arthur L.; and Coval, Arthur B., 4,243,127, Cl. 192-4.00A.
- A. Raymond: See—
Kuttler, Otto; and Muller, Klaus, 4,243,086, Cl. 411-174.000.
- Abbott Laboratories: See—
Genese, Joseph N., 4,243,031, Cl. 128-214.00E.
- Abele, Werner; and Grossa, Mario, to Du Pont de Nemours, E. I., and Company. Negative tonable systems containing dihydropyridines and photooxidants, 4,243,741, Cl. 430-270.000.
- Aberle, Lothar: See—
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Niet-sche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.
- Abolins, Visvaldis; and Lee, Gim F., Jr., to General Electric Company. Thermoplastic molding compositions of vinyl aromatic compound α,β -unsaturated cyclic anhydride copolymers, 4,243,766, Cl. 525-92.000.
- Abraham, Fayez F., to Tyler Refrigeration Corporation. Glass door merchandiser, 4,242,882, Cl. 62-256.000.
- ACF Industries, Incorporated: See—
Holt, Jan D.; and Neff, Robert K., 4,242,966, Cl. 105-182.00R.
Williamson, Raymond E., 4,242,866, Cl. 60-290.000.
- Ackeret, Peter, to Licinvest AG. Container for photographic prints, 4,242,820, Cl. 40-513.000.
- Ackeret, Peter, to IDN Inventions and Development of Novelities AG. Stacking device, 4,243,279, Cl. 312-107.000.
- Ackley, David A.; Rogers, Gerald D.; Macourek, Peter H.; Gutttag, Karl M.; and Chang, Ki Suk, to Texas Instruments Incorporated. Video display processor, 4,243,984, Cl. 340-703.000.
- Actus, Inc.: See—
Avera, C. Bert, Jr., 4,243,884, Cl. 250-361.00R.
- Adachi, Keiichi: See—
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- Adsara, Jorge D.; Casadio, Silvano; Ribalta, Jose M. B.; and Bruseghini, Leonida. S-(3-Methyl-2-butenyl)cysteine, 4,243,679, Cl. 424-319.000.
- Aeberli, Hans, to Von Roll AG. Waste incinerator exhaust gas treat-ment and apparatus, 4,243,635, Cl. 422-176.000.
- Aerodyne Development Corporation: See—
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- Aerovironment Inc.: See—
Tombach, Ivar, 4,242,908, Cl. 73-421.50R.
- Agence Nationale de Valorisation de la Recherche (ANVAR): See—
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- AGFA-Gevaert, A.G.: See—
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- Aginsky, Yacov. Emergency tourniquet, 4,243,039, Cl. 128-327.000.
- Agouridis, Dimitrios C.; and Fox, Richard J., to United States of Amer-ica, Energy. Cadmium telluride photovoltaic radiation detector, 4,243,885, Cl. 250-370.000.
- Agricultural Research and Development Inc.: See—
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- Ahmed, Myrna M.: See—
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- Ahmed, Nazeer; and Ahmed, Myrna M. Extrusion machine and method of continuous tubular extrusion, 4,242,897, Cl. 72-262.000.
- Ahn, Kie Y.; and Cox, Daniel E., to International Business Machines Corporation. Modification of etch rates by solid masking materials, 4,243,476, Cl. 156-643.000.
- Aikoh Co. Ltd.: See—
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- Ajinomoto Company Incorporated: See—
Yoshida, Zen-ichi; Yoneda, Shigeo; Murata, Hideki; Yasuda, Yutaka; and Nagakura, Saburo, 4,243,601, Cl. 260-396.00N.
- Akasaki, Katsuyuki: See—
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- Akashi, Goro: See—
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- Akima, Tosio; Kudou, Etsuzaburo; Kaneyasu, Tetsuo; and Kochi, Hiromi, to Hitachi Chemical Company, Ltd. Process for producing powdered copolymers of ethylenically unsaturated compound and maleic anhydride or an ester thereof, 4,243,784, Cl. 526-88.000.
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- Aktiebolaget Bofors: See—
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- Aktiebolaget Electrolux: See—
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- Aktiebolaget Multilab: See—
Lenart, Tibor, 4,243,929, Cl. 320-23.000.
- Aktiebolaget SKF: See—
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- Akutsu, Mitsuo: See—
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- Albarelo, Alain, to Thomson-CSF. Multiplexed filtering device, 4,244,030, Cl. 364-825.000.
- Alberto-Culver Company: See—
Balingit, Angelina T.; and Scafdi, Anthony A., 4,243,659, Cl. 424-70.000.
- Albright & Wilson Ltd.: See—
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- Alden Research Foundation: See—
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- Aldridge, Frederick A.: See—
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- Alexandrov, Boris I.: See—
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- Alexeev, Albert V.: See—
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- Alferness, Rodney C., to Bell Telephone Laboratories, Incorporated. Polarization-independent optical directional coupler switch/modula-tor, 4,243,295, Cl. 350-96.140.
- Ali, Wahid R., to Texaco Trinidad, Inc. Process for preparing over-based naphthenic micronutrient compositions, 4,243,676, Cl. 424-294.000.
- Allegro, Joseph. Heat transfer bed assemblies, 4,242,766, Cl. 5-422.000.
- Allemann, Werner: See—
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- Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., to United States of America, Army. Ballistic modifiers, synthesis . . . propel-lants, 4,243,444, Cl. 149-98.000.
- Allibert Exploitation, Societe Anonyme: See—
Deconinck, Didier, 4,243,280, Cl. 312-140.000.
- Mathey, Jean M., 4,243,446, Cl. 156-62.400.
- Allied Water Corporation: See—
Pelmulder, John P., 4,243,523, Cl. 210-652.000.
- Allred, Victor D., to Marathon Oil Company. Process for suppressing carbonate decomposition in vapor phase water retorting, 4,243,511, Cl. 208-11.00R.
- Almgren, Bertil: See—
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- Alshuk, Thomas J. Rolling mill gauge control system, 4,244,025, Cl. 364-472.000.
- Altex Scientific, Inc.: See—
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- Aluminum Company of America: See—
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- AM International, Inc.: See—
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- Amana Refrigeration, Inc.: See—
Hays, Herbert G., 4,243,176, Cl. 237-7.000.
- Amax Inc.: See—
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, 4,243,498, Cl. 204-112.000.
- Amchem Products, Inc.: See—
Hall, Wilbur S.; and Leister, Harry M., 4,243,704, Cl. 427-327.000.
- Amdahl Corporation: See—
Anderson, David L.; and Bishop, Richard L., 4,244,019, Cl. 364-200.000.
- Amemori, Hiroyuki; and Nishiyama, Shigeru, to Tokico Ltd. Turbine meter, 4,242,916, Cl. 73-861.830.
- American Cyanamid Company: See—
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- Shepherd, Robert G., 4,243,609, Cl. 564-91.000.
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American Optical Corporation: See—
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American Screen Printing Equipment Company: See—
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American Standard Inc.: See—
Parkison, Richard G., 4,243,063, Cl. 137-100.000.
Wright, Raymond C., deceased, 4,243,273, Cl. 303-22.00A.
American Thread Company: The: See—
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AMF Incorporated: See—
Chiles, Robert E., III, 4,244,021, Cl. 364-413.000.
Amis, Andrew A.; and Miller, James H., to University of Leeds Industrial Service Ltd. Elbow prosthesis, 4,242,758, Cl. 3-1.910.
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Reynolds, Jack B.; and Amos, Charles R., 4,243,424, Cl. 106-58.000.
AMP Incorporated: See—
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Rollman, Charles D., 4,243,933, Cl. 324-60.00D.
Anchor Products Company: See—
Thrun, Robert H., 4,243,140, Cl. 206-380.000.
Anderson, Alexander B., to Kangol Magnet Limited. Seat belt system and connector therefor, 4,243,266, Cl. 297-483.000.
Anderson, Arthur W.: See—
Israelides, Cleanthes; Han, Youn W.; and Anderson, Arthur W., 4,243,686, Cl. 426-53.000.
Anderson, David L.; and Bishop, Richard L., to Amdahl Corporation. Data processing system including a program-executing secondary system controlling a program-executing primary system, 4,244,019, Cl. 364-200.000.
Anderson, Harold E. Energy conserving security shutters, 4,242,836, Cl. 49-63.000.
Anderson, J. Edward C., to Marquette Metal Products Company. Bi-directional rotary impact tool for applying a torque force, 4,243,109, Cl. 173-93.500.
Anderson, Robert N., to Parlee-Anderson Corporation. Reduction of metal sulfides, 4,243,411, Cl. 75-69.000.
Anderson, Nils-Eric; and Sinner, Bengt, to ASEA Aktiebolag. Energy-efficient fluid medium pumping system, 4,243,892, Cl. 290-1.00R.
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Antipov, Georgy A.: See—
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Anton, Nicholas T., to Wen Products, Inc. Device for sharpening saw chains, 4,242,926, Cl. 76-25.00A.
Antos, George J., to UOP Inc. Nonacidic multimetallic catalytic composite, 4,243,558, Cl. 252-466.00B.
Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with a nonacidic multimetallic catalytic composite, 4,243,826, Cl. 585-434.000.
Apple, Wayne R. Apparatus for automatic ventilation of the lungs using dual potentiometers to vary the power to an electric motor to control the inhalation/exhalation ratio, 4,243,029, Cl. 128-204.210.
Arai, Toshio, to Kabushiki-Kaisha Dentrionics. Dental hand engine, 4,243,388, Cl. 433-27.000.
Arai, Yoshio. Seal ring having a tapered surface, and a sealing device, 4,243,233, Cl. 277-81.00P.
Arbib, Gordon F.; and Baranick, Mervin, to Multicore Solders Limited. Coated soft solder bar or ingot, 4,243,440, Cl. 148-23.000.
Ares, Inc.: See—
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Argenter, Harold, to American Dental Association Health Foundation. Tertiary aromatic amine accelerators in acrylic resin, 4,243,763, Cl. 525-27.000.
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Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,243,308, Cl. 354-60.00E.
Armantrout, Robert J., to United States of America, Navy. Pre-solution preparation of double base propellant binder, 4,243,442, Cl. 149-19.920.
Armbruster, Gerhard; Kleider, Albert; and Vogel, Eberhard, to Robert Bosch GmbH. High-speed power tool, 4,242,839, Cl. 51-170.00MT.
Arnau, Claude J.; Quemner, Jean M.; and Roche, Gaston P., to Societe Anonyme de Telecommunications. Volatile liquid supply equipment and processes and apparatus for introducing volatile cross-linking agents into polyolefin compounds and for the extrusion of cross-linking polyolefin compounds, 4,243,773, Cl. 525-387.000.

Arndt, Friedrich: See—
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhart, 4,243,404, Cl. 71-73.000.
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Olsen, C. Eric, 4,243,047, Cl. 128-751.000.
Auckenthaler, Robert, to SIG - Schweizerische Industrie-Gesellschaft. Apparatus for making packaging sleeves, 4,242,949, Cl. 493-295.000.
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Balasubramanyam, Sugavanam; and Shephard, Margaret C., to Imperial Chemical Industries Limited. Fungicidal compounds, 4,243,405, Cl. 71-76.000.
Balestrini, Augusto, to Centro Ricerche Fiat S.p.A. Method of recovering polyols from scrap polyurethane foam, 4,243,560, Cl. 260-2.300.
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Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefkó, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.
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Beckerman, Howard L.; Pepe, Russell J.; and Dob, Allan M., to Singer Company, The. Precise positioner of buttonhole presser foot, 4,242,976, Cl. 112-264.100.
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Beecher, William H. Extracting device for removing objects from human body passages, 4,243,040, Cl. 128-328.000.
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 Bliven, Andrew W., II; and Kindlmann, Peter J., to Echlin Manufacturing Company, The. Digital bar graph tachometer. 4,243,938, Cl. 324-169.000.
 Blomberg, Peter E., to Aktiebolaget Electrolux. Control system for a refrigerating apparatus operable electrically or by gas. 4,242,879, Cl. 62-148.000.
 Blount, David H. Process for the production of alkali metal-cellulose-silicates and their reaction products. 4,243,757, Cl. 521-154.000.
 Bo, Ermanno, to B.B.M. S.A. Independent cryogenic fluid vaporization installation. 4,242,986, Cl. 122-33.000.
 Bobby, Fults J. Wire stripping device. 4,242,929, Cl. 81-9.50R.
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 Bogner, Karl-Heinz; and Sprenger, Martin, to Robert Bosch GmbH. Electromagnetically operated switch, particularly starter switch for automotive starter motors. 4,243,964, Cl. 335-156.000.
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 Boileau, Sylvie L.; Caubere, Paul J.; Ndebeka, Gilberte; Lecolier, Serge L.; and Raynal, Serge F., to Societe Nationale des Poudres et Explosifs. Bulk anionic polymerization process using an alkali metal amide and the salt of the same alkali metal with a hydroxylic compound. 4,243,787, Cl. 526-180.000.
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 Brasfield, Robert G., to Boeing Company, The. Composite signal generator. 4,243,934, Cl. 324-72.000.
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Brudi, Ronald A.; and Chase, Daniel F., to Brudi Equipment Co., Inc. Lift truck rotator with pressure-relieved valving. 4,243,355, Cl. 414-620.000.
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 Burge, Russell W., to Mobay Chemical Corporation. Flexible foam rebonding process and apparatus. 4,243,617, Cl. 264-39.000.
 Burge, Russell W., to Mobay Chemical Corporation. Flexible foam bonding process. 4,243,625, Cl. 264-120.000.
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Campbell, Thomas C.; Hertzberg, Elliot P.; and Sherry, Howard S., to PQ Corporation. Detergent compositions with silane-zeolite siliate builder, 4,243,545, Cl. 252-140.000.

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Kitahara, Sigeyoshi; Okada, Isamu; Jumoni, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.

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Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,243,308, Cl. 354-60.00E.

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Capetola, Robert J.; and McGuire, John L., to Ortho Pharmaceutical Corporation. Analgesic compositions and methods of use, 4,243,673, Cl. 424-275.000.

Caprari, Fausto, to RCA Corporation. Flash lamp drive circuit, 4,243,917, Cl. 315-241.00R.

Caraher, James R., to Machlett Laboratories, Inc., The. Image intensifier tube with insulator shield, 4,243,904, Cl. 313-99.000.

Cardot, Claude: See—
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Sprengling, Gerhard R.; and Cargnel, Louis A., 4,243,623, Cl. 264-69.000.

Carley, Emilie L.: See—
Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., 4,243,708, Cl. 428-141.000.

Carlock, Gaylord W.; McKeown, William L.; Goodman, James R.; and Skrodzki, Chester, to Textron. Control system for redundant swash-plate drive, 4,243,358, Cl. 416-114.000.

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Czuszak, Charles C., 4,243,275, Cl. 308-128.000.

Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., to Carroll Manufacturing Corporation. Touch panel with ambient light sampling, 4,243,879, Cl. 250-221.000.

Carroll Manufacturing Corporation: See—
Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., 4,243,879, Cl. 250-221.000.

Carson, Don B., to UOP Inc. Alkylation process, 4,243,830, Cl. 585-717.000.

Cartwright, William F.; Cornell, Alan; Higgins, D. Bernard; and Mikkelsen, Robert P., to Gulf & Western Company. Filter cigar, 4,243,053, Cl. 131-4.00A.

Carver, Robert G., to Creative Cartons of Ashland, Inc. Collapsible photographic slide viewer, 4,242,818, Cl. 40-364.000.

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Adara, Jorge D.; Casadio, Silvano; Ribalta, Jose M. B.; and Bruseghini, Leonida, 4,243,679, Cl. 424-319.000.

Casey, T. Eisirt: See—
O'Sullivan, Denis J.; Bolger, Bernard J.; and Casey, T. Eisirt, 4,243,578, Cl. 260-42.520.

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Cassidy, Harold M.: See—
Larkin, Joseph F.; Cassidy, Harold M.; Woodcock, John V.; and Dunn, William M., 4,243,962, Cl. 334-7.000.

Castor, James J.: See—
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Takojima, Hyoichi, 4,243,356, Cl. 414-723.000.

Caterpillar Tractor Co.: See—
Bailey, John M., 4,242,863, Cl. 60-39.060.

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Dauwalder, Fred R., 4,243,258, Cl. 294-88.000.

Earle, Michael; and Lenzen, Glenn H., 4,243,867, Cl. 219-121.0LC.

Nieman, John R., 4,243,093, Cl. 164-96.000.

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Celette S.A.: See—
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Cenker, Moses; and Narayan, Thirumurti, to BASF Wyandotte Corporation. Stable-liquid isocyanurate-modified polyisocyanate compositions, 4,243,756, Cl. 521-125.000.

Centro Ricerche Fiat S.p.A.: See—
Balestrini, Augusto, 4,243,560, Cl. 260-2.300.

Cesano, Franco, to G.O.R. Applicazioni Speciali S.p.A. Laminating method and apparatus, 4,243,456, Cl. 156-214.000.

Cha, Chang Y., to Occidental Oil Shale, Inc. Operation of in situ oil shale retort with void at the top, 4,243,100, Cl. 166-259.000.

Cha, John H.; Brown, Wesley A.; Weldon, Harry P.; and Whyte, Daniel G., to Santa Fe International Corporation. Pipe handling apparatus for reel pipe laying system, 4,243,345, Cl. 405-168.000.

Chabin, Michel, to Societe Franco-Americaine de Constructions Atomiques-Framatome. Recirculating drainage channel for the safety circuits of a nuclear reactor, 4,243,485, Cl. 176-37.000.

Chabries, Douglas M.: See—
McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., 4,243,935, Cl. 324-77.00R.

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Chalabian, Jack S., to K-Jack Engineering Company, Inc. Coin operated vending apparatus with multiple coin chutes, 4,243,134, Cl. 194-59.000.

Challenge-Cook Bros. Incorporated: See—
Prichard, Evan S., 4,243,328, Cl. 366-62.000.

Challis, Lawrence J., to National Research Development Corporation. Phonon spectroscopy, 4,242,905, Cl. 73-15.00R.

Chamberlain, Harvey H., to General Electric Company. Boiler level control system, 4,242,989, Cl. 122-451.00R.

Champion International Corporation: See—
Hartman, Seymour, 4,243,419, Cl. 106-18.230.

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Champion Spark Plug Company: See—
Grime, Thomas E.; and Robinson, Frank A., Jr., 4,243,870, Cl. 219-295.000.

Chan, David C. K., to Chevron Research Company. Herbicidal N-triazolylmethyl-substituted alpha-haloacetanilide, 4,243,408, Cl. 71-092.000.

Chang, Daniel C. Temperature control for resistance heating element, 4,243,875, Cl. 219-497.000.

Chang, Ki Suk: See—
Ackley, David A.; Rogers, Gerald D.; Macourek, Peter H.; Guttig, Karl M.; and Chang, Ki Suk, 4,243,984, Cl. 340-703.000.

Chang, Robert W. H., to Minnesota Mining and Manufacturing Company. Compositions and methods for reducing elution of therapeutic agents from teeth, 4,243,658, Cl. 424-52.000.

Chang, Shung-Ho: See—
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Chao, Sam T.; and Varma, Ravi K., to E. R. Squibb & Sons, Inc. Steroidal-17-spiro-dihydrofuranones, 4,243,586, Cl. 260-239.55R.

Chapron, Claude, to U.S. Philips Corporation. I²L Circuit with auxiliary transistor, 4,243,896, Cl. 307-213.000.

Chase, Charles P.; and MacAnally, Richard B., to Heyer-Schulte Corporation. Intraocular lens with threadably locked retention loops, 4,242,761, Cl. 3-13.000.

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Checkwood, Andrew M.: See—
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Cherry, Edward M., to Monash University. Feedback systems, 4,243,943, Cl. 330-100.000.

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Chan, David C. K., 4,243,408, Cl. 71-092.000.

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Chiao, Cherry C., to Dow Chemical Company, The. Modified thermoplastic resins, 4,243,577, Cl. 260-42.470.

Chiles, Robert E., III, to AMF Incorporated. Ergometric exerciser, 4,244,021, Cl. 364-413.000.

Chill, James L.; Taylor, Harry H.; and Granger, Evertt H., to Marion Bronze Company. Process for forming articles from leaded bronzes, 4,243,437, Cl. 148-11.50C.

Chincin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: See—
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Christian, Miles W., to Banner Energy Corporation. Coal article, 4,243,393, Cl. 44-14.000.

Chromalloy American Corporation: See—
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Chronberg, Sten, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process and device for displacing firing plates through a tunnel kiln, 4,243,378, Cl. 432-11.000.

Chronolog Systems Limited: See—
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Peter, Jack; Offerman, Karl B.; Brown, Larry D.; and Stone, Derek J., 4,243,186, Cl. 242-195.000.

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Clemenson, James T.; and Vincent, Robert R., to Cooper Industries, Inc. Pneumatic percussion drill with exhaust cooling and lubrication of chuck end, 4,243,110, Cl. 173-104.000.

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- Crockett, Thomas W.; Huehls, Patrick N.; and Slotnick, Barry G., to Baxter Travenol Laboratories, Inc. Cardiotomy reservoir. 4,243,531, Cl. 210-188.000.
- Cronenberg, Richard A., to Becton, Dickinson and Company. Humidifier separator. 4,243,396, Cl. 55-238.000.
- Crosbie, Richard J.; and Edwards, Paul R., to United States of America, Navy. G-Protection system sensing a change in acceleration and tilt angle. 4,243,024, Cl. 128-1.00A.
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- Cummins Engine Company, Inc.: See—
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- Stang, John H.; and Johnson, Kenneth A., 4,242,948, Cl. 92-212.000.
- Curetti, Emilio G.; and Collombin, Andre M., to Motosacoche S.A. Method of manufacturing an object in plastics material and object obtained thereby. 4,243,620, Cl. 264-45.100.
- Curinier, Jean; and Vandermarliere, Charles, to Les Fils d'Auguste Chomarat & Cie. Apparatus for the manufacture of non-woven textile fabrics. 4,242,779, Cl. 28-101.000.
- Curiss-Wright Corporation: See—
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- Cuscurida, Michael: See—
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- Czusak, Charles C., to Carrier Corporation. Bearing and lubrication system. 4,243,275, Cl. 308-128.000.
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- Dahlgren, Britt I.: See—
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- Dahlgren, Lennart K.: See—
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- Dai Nippon Toray Co., Ltd.: See—
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- Daniels, Nicholas R., to Emerson Electric Co. Apparatus for and method of in situ application of lubricant to a wick. 4,243,079, Cl. 141-1.000.
- Danilewicz, John C.: See—
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- Dankese, Joseph P. Electrochemical apparatus. 4,243,508, Cl. 204-301.000.
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- D'Atre, John D., to General Electric Company. Gain normalization technique for controlled current induction motor system. 4,243,927, Cl. 318-803.000.
- Dauwalder, Fred R., to Caterpillar Tractor Co. Tree harvester. 4,243,258, Cl. 294-88.000.
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- Richmond, Kenneth D.; Miranti, Joseph P., Jr.; and Henderson, Dewey D., 4,243,452, Cl. 156-138.000.
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- de la Burde, Roger Z.; and Aument, Patrick E., to Philip Morris Incorporated. Method for uniform incorporation of additives into tobacco. 4,243,056, Cl. 131-140.00B.
- de Angelis, Henri, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Method and apparatus for drying a thick wet layer coated on one face of a cardboard sheet. 4,242,805, Cl. 34-1.000.
- DeBlois, Raymond L., to United Technologies Corporation. Precompression fin for axisymmetric inlet on winged high speed vehicles. 4,243,188, Cl. 244-53.00B.
- deBoer, Fred L., to deBoer, Sherry Miles. Firearm mechanism. 4,242,825, Cl. 42-1.00R.
- deBoer, Sherry Miles: See—
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- DeCaprio, Vincent; and Sanderson, George, to Becton, Dickinson and Company. Catheter delivery system. 4,243,033, Cl. 128-214.400.
- Deconinck, Didier, to Allibert Exploitation, Societe Anonyme. Furniture assembly with synthetic resin members. 4,243,280, Cl. 312-140.000.
- DeCoursey, Calvin H., to Lynch Communication Systems, Inc. Method and means for transmitting low speed signals over a PCM framing code. 4,243,930, Cl. 370-110.000.
- DeFilippis, John: See—
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- Degenoff, Robert C.; and Crouse, John C., to General Electric Company. Electrostatic shielding of nonsequential disc windings in transformers. 4,243,966, Cl. 336-70.000.
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- Delbag-Luftfilter GmbH: See—
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- Delfino, Michaelangelo; Gentile, Philip S.; Loiacono, Gabriel M.; and Smith, Wallace A., to North American Philips Corporation. Method for the synthesis of boracites. 4,243,642, Cl. 423-277.000.
- Delory, Bernard; Fleury, Georges; and Kuntzmann, Jean-Claude, to Thomson-CSF. Circulating fluid cooled delay line for high frequency tubes, and high frequency tubes having such a delay line. 4,243,914, Cl. 315-3.500.
- Demi, Roy C., to Robertshaw Controls Company. Fluid flow sensing switch device and method of making the same. 4,243,374, Cl. 431-89.000.
- Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., to Buffalo Color Corporation. Process for the manufacture of 4,4'-dihydroxydiphenyl. 4,243,822, Cl. 568-769.000.
- Deneau, Myron E.: See—
Moore, Henry J., Jr.; and Deneau, Myron E., 4,243,194, Cl. 248-188.100.
- Denev, Stoyan I.; and Davcheva, Nadejda G., to Knippi "Niproruda". Method for separation of large sized salt containing minerals. 4,243,520, Cl. 209-10.000.
- Denki Onkyo Co., Ltd.: See—
Yoshikawa, Norio, 4,243,965, Cl. 335-213.000.
- Densen, Mark S., to Eastern Packaging and Display Co. Knock down cabinet. 4,243,282, Cl. 312-259.000.
- DePenti, Kenneth L., to Midland-Ross Corporation. Railroad car draft gear and coupler arrangement. 4,243,149, Cl. 213-62.00A.
- DeRegnaucourt, Robert A.: See—
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- Deribas, Andrei A.; Limasov, Alexei I.; Matytsin, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Yuri N. Method for joining fiberglass plastic rod to metal fitting of electrical device. 4,242,787, Cl. 29-421.00E.
- DeSousa, Egas J. Hopping vehicle. 4,243,218, Cl. 272-114.000.
- De Stefani, Giuseppe: See—
Genevois, Jean L.; Paolo, Presti; and De Stefani, Giuseppe, 4,243,381, Cl. 432-75.000.
- Deutsch, Dennis A.: See—
Bradshaw, Franklin C.; Connoy, Thomas P.; and Deutsch, Dennis A., 4,243,333, Cl. 400-158.000.
- Deutsches Krebsforschungszentrum: See—
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- Developak Corporation: See—
Evers, Jack R.; and Bauerkemper, Michael I., 4,243,469, Cl. 156-583.100.
- DeVore, Wilfred H. Door opening apparatus for large overhead doors. 4,243,091, Cl. 160-189.000.
- DG Shelter Products Company: See—
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- Dholakia, Anil R., to RCA Corporation. Method for precision grinding of hard, pointed materials. 4,243,395, Cl. 51-293.000.
- Dhondt, Roland O., to Union Oil Company of California. Shale retorting process and apparatus. 4,243,510, Cl. 208-11.00R.
- Diamond Shamrock Corporation: See—
Lieb, Donald F.; and Suchanski, Mary R., 4,243,503, Cl. 204-290.00F.
- DiBugnara, Raymond, to TRW Inc. High concentration phosphor-silica spin-on dopant. 4,243,427, Cl. 106-287.160.
- Dickerson, Carroll D., to Ford Motor Company. Adjustable kingpin assembly. 4,243,339, Cl. 403-4.000.
- Dickey, Frank R., Jr., to General Electric Company. Velocity measuring correlation sonar. 4,244,026, Cl. 364-565.000.
- Dickinson, Roger P.: See—
Barnish, Ian T.; Cross, Peter E.; and Dickinson, Roger P., 4,243,672, Cl. 424-274.000.

- Diebel, David A.: See—
Behrends, Bertwin E.; and Diebel, David A., 4,243,535, Cl. 210-315.000.
- Diederich, Walter J., to Gillette Company, The. Catalytically heated curling device with improved ignition system. 4,243,017, Cl. 126-409.000.
- Dietrich, Guenther: See—
Kukulies, Erwin; and Dietrich, Guenther, 4,242,896, Cl. 72-345.000.
- Dietz, Richard E.: See—
Welch, Melvin B.; and Dietz, Richard E., 4,243,552, Cl. 252-429.00B.
- Diller, Charles E., to Dresser Industries, Inc. Stop collar for tube expander. 4,242,893, Cl. 72-122.000.
- Dillon, George A. Micro-dot identification. 4,243,734, Cl. 430-8.000.
- DiMatteo, Albert: See—
Spaargaren, Robert; and DiMatteo, Albert, 4,243,125, Cl. 188-79.50P.
- Dines, Martin B.: See—
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- Dixon Automatic Tool, Inc.: See—
Dixon, Paul H., 4,242,900, Cl. 72-345.000.
- Dixon, Paul H., to Dixon Automatic Tool, Inc. Parts unloading mechanism. 4,242,900, Cl. 72-345.000.
- Dixon, Rita M.: See—
Wright, Ralph J., 4,243,259, Cl. 294-1.00B.
- Diabac, Antonin: See—
Protiva, Miroslav; Rajnsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Diabac, Antonin; Langsadt, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.
- Dob, Allan M.: See—
Beckerman, Howard L.; Pepe, Russell J.; and Dob, Allan M., 4,242,976, Cl. 112-264.100.
- Dobler, Rudolf; and Weber, Klaus, to AGFA-Gevaert, A.G. Apparatus for detecting holes in webs of photographic paper or the like. 4,243,891, Cl. 250-571.000.
- Dobler, Steve: See—
Fondiller, Robert; Grund, Christian; Dobler, Steve; and Braun, Michael, 4,244,040, Cl. 368-69.000.
- Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatbau KG: See—
Lehnhoff, Kurt; and Schael, Wilfried, 4,243,530, Cl. 210-137.000.
- Dr. Ing. h.c.F. Porsche Aktiengesellschaft: See—
Trenkler, Werner, 4,243,261, Cl. 296-213.000.
- Dr. Ing. Manfred Dreher GmbH & Co. K.G.: See—
Dreher, Manfred, 4,242,838, Cl. 51-164.200.
- Dr.-Ing. Rudolf Hell GmbH: See—
Jurgensen, Heinrich, 4,244,005, Cl. 358-201.000.
- Dr. Johannes Heidenhain GmbH: See—
Ernst, Alfons, 4,243,325, Cl. 356-372.000.
- Dodge, Colmant Cuvelier: See—
Bonnel, Michel G., 4,243,180, Cl. 241-79.200.
- Dollard, Richard M.: See—
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- Donahue, Donald T.: See—
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,243,822, Cl. 568-769.000.
- Donaldson Company, Inc.: See—
Tokar, Joseph C.; and Janecz, Frank A., 4,243,397, Cl. 55-487.000.
- Donnet, Jean-Baptiste; Baudru, Bernard; Coudurier, Maurice; and Vrisakis, Georges. Processes for the manufacturing of precipitated silica. 4,243,428, Cl. 106-288.00B.
- Donofrio, Frank C.: See—
Miller, Bruce J.; Gadonas, Gus C.; and Donofrio, Frank C., 4,243,890, Cl. 250-551.000.
- Dorman, Brian R.: See—
Wolkstein, Herbert J.; Dorman, Brian R.; and Goel, Jitendra, 4,243,951, Cl. 331-94.50H.
- Dorst-Keramikmaschinen-Bau Otto Dorst und Dipl.-Ing. Walter Schlegel: See—
Schaidl, Hubert; and Leingartner, Josef, 4,242,968, Cl. 108-20.000.
- Dory, Alain, to Celeste S.A. Equipment unit for checking deformations of a vehicle body. 4,242,803, Cl. 33-288.000.
- Douren, Lars: See—
Broberg, Hans; and Douren, Lars, 4,243,477, Cl. 159-13.00A.
- Dow Chemical Company, The: See—
Birkelbach, Donald F.; and Knight, George W., 4,243,785, Cl. 526-115.000.
- Chiao, Cherry C., 4,243,577, Cl. 260-42.470.
- Kent, Raymond W., Jr., 4,243,781, Cl. 526-68.000.
- Keskula, Heeno; and Miller, Frederick A., 4,243,765, Cl. 525-86.000.
- Lee, John M.; and Bauman, William C., 4,243,555, Cl. 252-441.000.
- Lefevre, Lloyd E.; and Wegenka, Mark A., 4,243,366, Cl. 425-303.000.
- Martin, Charles W.; and Ward, Eldon L., 4,243,675, Cl. 424-286.000.
- Moore, Eugene R.; and Kowalczyk, John S., 4,243,491, Cl. 203-2.000.
- Reynolds, Jack B.; and Amos, Charles R., 4,243,424, Cl. 106-58.000.
- Rudd, John F., 4,243,764, Cl. 525-67.000.
- Dow Corning Corporation: See—
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- Halaska, Loren A., 4,243,722, Cl. 428-450.000.
- Draber, Wilfried: See—
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; and Plempel, Manfred, 4,243,670, Cl. 424-269.000.
- Drackett Company, The: See—
Shaer, Elias H., 4,243,546, Cl. 252-174.120.
- Drake, Charles A.; and Murtha, Timothy P., to Phillips Petroleum Company. Cobalt-gold promoter for ruthenium hydrogenation catalyst as in hydrogenation of unsaturated dinitriles. 4,243,610, Cl. 564-491.000.
- Drake, Miles P.; and Hughes, Sarah Y., to International Standard Electric Corporation. Apparatus for metal coating of powders. 4,242,982, Cl. 118-716.000.
- Dreher, Manfred, to Dr. Ing. Manfred Dreher GmbH & Co. K.G. Centrifugal drum apparatus. 4,242,838, Cl. 51-164.200.
- Dressel, Thomas D.: See—
Goodale, Robert L.; Dressel, Thomas D.; and Borner, John W., 4,243,049, Cl. 128-757.000.
- Dresser Europe S.A.: See—
Wall, Christopher; and Scaife, Ronald, 4,243,115, Cl. 180-165.000.
- Dresser Industries, Inc.: See—
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- Dschen, Yuan-Heng, to BBC Brown, Boveri & Company, Limited. Open-end spinning device. 4,242,858, Cl. 57-58.890.
- Dudley, Phillip J.: See—
Lenaerts, George V.; Perks, Roger; and Dudley, Phillip J., 4,243,846, Cl. 179-90.00K.
- Dugger, Charles B., Jr., to Minneapolis Electric Steel Castings Company. Liner assembly for ball mills. 4,243,182, Cl. 241-153.000.
- Dumas, David H., to Hercules Incorporated. Sizing compositions. 4,243,481, Cl. 162-158.000.
- Dunham-Bush, Inc.: See—
Shaw, David N., 4,242,872, Cl. 62-2.000.
- Dunlop Limited: See—
Kenney, Michael J., 4,243,089, Cl. 152-370.000.
- Dunn, William M.: See—
Larkin, Joseph F.; Cassidy, Harold M.; Woodcock, John W.; and Dunn, William M., 4,243,962, Cl. 334-7.000.
- Du Pont de Nemours, E. I., and Company: See—
Abele, Werner; and Grossa, Mario, 4,243,741, Cl. 430-270.000.
- Ciganek, Engelbert, 4,243,668, Cl. 424-258.000.
- Elsner, Gotz; Legler, Rudolf F.; and Popovici, Margarete, 4,243,748, Cl. 430-600.000.
- Fang, James C.; and Krespan, Carl G., 4,243,504, Cl. 204-296.000.
- Fremont, Joseph M.; and Garnett, Donald I., 4,243,593, Cl. 260-346.110.
- Gale, David M., 4,243,580, Cl. 260-45.8NT.
- Mack, Rodney L., 4,243,974, Cl. 340-347.0NT.
- Manwiller, Carl H., 4,243,574, Cl. 260-37.00N.
- Simms, John A., 4,243,573, Cl. 260-33.6UA.
- Durastone Co.: See—
Beretta, Angelo V., 4,243,198, Cl. 249-66.00R.
- Dushku, Victor A. Log breaking device. 4,243,205, Cl. 254-113.000.
- Duttweiler, Donald L., to Bell Telephone Laboratories, Incorporated. Adaptive filter with tap coefficient leakage. 4,243,959, Cl. 333-166.000.
- Dwyer, Robert M., to Massey-Ferguson Inc. Hydraulic braking system. 4,243,271, Cl. 303-7.000.
- Dykes, Hiram W. H.: See—
Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., 4,243,444, Cl. 149-98.000.
- Dynamit Nobel Aktiengesellschaft: See—
Lenz, Arnold; Kreuzburg, Gerhard; and Haase, Rainer, 4,243,422, Cl. 106-52.000.
- E. R. Squibb & Sons, Inc.: See—
Chao, Sam T.; and Varma, Ravi K., 4,243,586, Cl. 260-239.55R.
- Harris, Don N.; Phillips, Marie B.; and Greenberg, Roland, 4,243,671, Cl. 424-273.00R.
- Krapcho, John, 4,243,804, Cl. 544-162.000.
- Varma, Ravi K.; and Vogt, B. Richard, 4,243,608, Cl. 260-501.110.
- Earle, Michael; and Lenzen, Glenn H., to Caterpillar Tractor Co. Apparatus for fusibly bonding a coating material to a metal article. 4,243,867, Cl. 219-121.0LC.
- Eastern Packaging and Display Co.: See—
Densen, Mark S., 4,243,282, Cl. 312-259.000.
- Eastman Kodak Company: See—
DoMinH, Thap, 4,243,737, Cl. 430-170.000.
- Edwards, Evan A., 4,243,850, Cl. 369-46.000.
- Garbe, William F.; and Wrobel, Joseph J., 4,243,317, Cl. 355-91.000.
- Gilman, Paul B., Jr.; and Haase, Jan R., 4,243,738, Cl. 430-202.000.
- Gustafson, Gary B., 4,243,316, Cl. 355-75.000.
- Eaton Corporation: See—
Kuntner, Richard J.; and Van der Meer, James C., 4,243,894, Cl. 307-147.000.

Ebauches Electroniques SA: See—
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Ebauches S.A.: See—
Lasser, Claude, 4,244,039, Cl. 368-66.000.

Eberhard, Wolfgang: See—
Bartholomaeus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolfgang; Kokus, Hans-Dieter; Lembke, Herbert; and Schulte, Heinz, 4,242,942, Cl. 91-358.00R.

Ebiha, Heihachiro: See—
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Echlin Manufacturing Company, The: See—
Bliven, Andrew W., II; and Kindlmann, Peter J., 4,243,938, Cl. 324-169.000.

Eckert, Kim, to Motorola, Inc. Differential amplifier, 4,243,945, Cl. 330-253.000.

Economics Laboratory, Inc.: See—
Guilbert, C. Carol; and Soepanski, William H., 4,243,543, Cl. 252-105.000.

Edington, Edwin T.; and White, Alan C., to John Wyeth & Brother Limited. 4-Pyridinamine derivatives, 4,243,808, Cl. 546-285.000.

Edmisten, John H. Stabilizing hitch, 4,243,243, Cl. 280-446.00B.

Edwards, Evan A., to Eastman Kodak Company. Apparatus for tracking a record track on a video disc, 4,243,850, Cl. 369-46.000.

Edwards, Paul R.: See—
Crosbie, Richard J.; and Edwards, Paul R., 4,243,024, Cl. 128-1.00A.

Egami, Kazuhito: See—
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,243,902, Cl. 310-154.000.

Eger, Gerlind; and Leal Lara, Hermilo. Process for preparing monokaryons by dedikaryotizing dikaryotic strains of Basidiomycetes, 4,242,832, Cl. 47-1.100.

Egger, Paul R. Typewriter cabinet, 4,243,281, Cl. 312-208.000.

Ecuchi, Masuichi: See—
Hiramoto, Hiro; and Ecuchi, Masuichi, 4,243,743, Cl. 430-281.000.

Egyt Gyogyszervegyezeti Gyar: See—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Artila, 4,243,660, Cl. 424-84.000.

Ehrenfels, Alfred L., to Harvey Hubbell, Incorporated. Non-rigid mechanical coupling for a fire-rated feed-through fitting and method of making, 4,243,835, Cl. 174-48.000.

Ehrhardt, William M.; and Haury, Earl J., to Shell Oil Company. Selective ignition timing, 4,243,007, Cl. 123-419.000.

Eickmann, Karl. Snapping, 4,242,775, Cl. 24-16.00R.

Eirich, Gustav: See—
Eirich, Wilhelm; and Eirich, Gustav, 4,243,183, Cl. 241-186.200.

Eirich, Wilhelm; and Eirich, Gustav, to Eirich, Wilhelm; and Eirich, Gustav. Preparation and crushing tool, 4,243,183, Cl. 241-186.200.

Eisenhardt, William A., Jr.; Hedaya, Eddie; and Theodoropoulos, Spyros, to Union Carbide Corporation. Novel isocyanates, 4,243,605, Cl. 556-414.000.

Eisner, Jeffrey W. Dental dowel pin placement apparatus, 4,243,389, Cl. 433-74.000.

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Elder, Eugene E. Bow and hinge mounting assembly for eyeglasses frames, 4,243,305, Cl. 351-121.000.

Elder, Joseph T. Method and apparatus for preserving protein in animal droppings, 4,242,809, Cl. 34-33.000.

Electronics Corporation of America: See—
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Electronique Marcel Dassault: See—
Bertholon, Philippe P., 4,243,837, Cl. 179-1.0VC.

Elfarr, Johnnie A. Method and apparatus for flowing fluid from a plurality of interconnected wells, 4,243,102, Cl. 166-314.000.

Eli Lilly and Company: See—
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,243,587, Cl. 260-245.400.

Paget, Charles J.; and Wikel, James H., 4,243,813, Cl. 548-306.000.

Spitzer, Wayne A.; and Goodson, Theodore, Jr., 4,243,588, Cl. 260-245.400.

Elion, Glenn R., to International Communications and Energy, Inc. Optical wavelength division multiplexer mixer-splitter, 4,243,297, Cl. 350-96.150.

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Elliott, Lloyd E., Jr.; and Hudson, John L., to Texaco Inc. Fail-safe mechanism for generating a pulse indicating the precise moment of firing of an air gun, 4,243,116, Cl. 181-118.000.

Ellison, John D. Bowling ball gauge, 4,242,801, Cl. 33-174.00F.

Elsner, Gotz; Legler, Rudolf F.; and Popovici, Margarete, to Du Pont de Nemours, E. I., and Company. Light-sensitive silver halide reproduction material, 4,243,748, Cl. 430-600.000.

Emerson Electric Co.: See—
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Fernstrom, Carl F.; and Visos, Charles D., 4,243,373, Cl. 431-66.000.

Endo, Masaki: See—
Lim, Gary M. F.; and Endo, Masaki, 4,243,803, Cl. 544-26.000.

Energy for Independence, Inc.: See—
Ryerson, John D., 4,243,631, Cl. 422-90.000.

Engdahl, Holger: See—
Savolainen, Jaakko; Engdahl, Holger; Luukkainen, Yrjo; Tolvanen, Martti; and Surakka, Jorma, 4,243,533, Cl. 210-247.000.

Engel, John F., to FMC Corporation. Insecticidal perhaloalkylvinylcyclopropanecarboxylates, 4,243,677, Cl. 424-305.000.

Engel, Joseph C.; Vercellotti, Leonard C.; and Schroeder, Dale W., to Westinghouse Electric Corp. Background light intensity compensation circuit for a line scan camera system, 4,243,876, Cl. 235-455.000.

Engel, Stephen A., to Union Carbide Corporation. Instantaneous scarfing by means of a pilot puddle, 4,243,436, Cl. 148-9.500.

Engelhard Minerals & Chemicals Corporation: See—
Bartholic, David B., 4,243,514, Cl. 208-91.000.

Engineered Yarns, Inc.: See—
Worrall, James D.; and Auger, Suzanne M., 4,243,713, Cl. 428-245.000.

English Electric Valve Company Limited: See—
Nixon, Ralph D., 4,243,986, Cl. 340-756.000.

Enomoto, Tadao; and Ito, Nobuo, to Citizen Watch Co., Ltd. Display device for electronic timepieces, 4,243,303, Cl. 350-345.000.

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Environmental Research Institute of Michigan: See—
Maes, Reed E., Jr., 4,242,833, Cl. 47-17.000.

EPP Corp.: See—
Lennon, Donald J. J.; and Clapp, Roger E., 4,243,726, Cl. 428-545.000.

Equipment Company of America: See—
Garcia, Jose M., 4,243,354, Cl. 414-607.000.

Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Optical distance measuring instrument, 4,243,325, Cl. 356-372.000.

Eshelman, Robert W.; and Benjey, Robert P., to Chrysler Corporation. Pressure transducer, 4,242,914, Cl. 73-711.000.

Esler, Andrew T., to McDonnell Douglas Corporation. Missile director with beam axis shift capability, 4,243,187, Cl. 244-3.130.

Esmark, Incorporated: See—
Toussaint, Stephen M., 4,243,972, Cl. 340-146.35Y.

Ethyl Corporation: See—
Shubkin, Ronald L., 4,243,538, Cl. 252-51.50A.

Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., to General Electric Company. Metallized textured surface polypropylene film, 4,243,708, Cl. 428-141.000.

Everard, John D., to Post Office, The. Delta sigma to PCM converter, 4,243,977, Cl. 340-347.0DD.

Evers, Jack R.; and Bauerkemper, Michael I., to Developak Corporation. Heat sealer mechanism, 4,243,469, Cl. 156-583.100.

Ewald, Ronald F., to Seagist Valve Co., Div. of Pittway Corp. Continuous spray button, 4,243,161, Cl. 222-402.140.

Exxon Research and Engineering Company: See—
Burke, Oliver W., Jr., deceased, 4,243,566, Cl. 260-29.60R.

Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,243,557, Cl. 252-455.00Z.

Hall, Richard B.; Kaldor, Andrew; Kramer, George M.; and Dines, Martin B., 4,243,597, Cl. 260-347.800.

Jacobson, Allan J.; Chianelli, Russell R.; and Whittingham, M. Stanley, 4,243,624, Cl. 264-82.000.

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Luckenbach, Edward C., 4,243,517, Cl. 208-164.000.

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F. L. Smith & Company: See—
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Fafco, Inc.: See—
Rhodes, Richard O., 4,243,454, Cl. 156-162.000.

Fagniat, Gaston; and Lemaire, Jean-Pierre, to Societe Anonyme dite: Vacuum Capatiner International. Method and apparatus for sealing a tube of thermoplastics material by welding, 4,243,448, Cl. 156-73.500.

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Fenwick, Robert B.: See—
Clinch, Marvin R.; Graf, Calvin R.; Martin, Paul E.; and Fenwick, Robert B., 4,244,053, Cl. 455-29.000.

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Fernstrom, Carl F.; and Visos, Charles D., to Emerson Electric Co. Direct ignition gas burner control system, 4,243,373, Cl. 431-66.000.

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Winrow, Donald, 4,243,978, Cl. 340-373.000.

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Ferreira-Godinho, Manuel. Training device for practicing the service in tennis, 4,243,221, Cl. 273-29.00A.

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Magrini, Kenneth H.; and Jones, Raymond B., 4,243,710, Cl. 428-208.000.

Finch, Robert A.: See—
Peterson, Richard H.; and Finch, Robert A., 4,242,935, Cl. 84-1.010.

Finkel, Henry: See—
Beer, Issie M.; Zielinski, Zenon A.; and Finkel, Henry, 4,243,200, Cl. 249-187.00R.

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Hergenrother, William L.; and Halasa, Adel F., 4,243,795, Cl. 528-168.000.

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Fischbeck, Kenneth H.: See—
Wright, Allen T.; and Fischbeck, Kenneth H., 4,243,995, Cl. 346-140.00R.

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Pfalter, Lothar; and Fischer, Siegfert, 4,243,478, Cl. 162-4.000.

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Delory, Bernard; Fleury, Georges; and Kuntzmann, Jean-Claude, 4,243,914, Cl. 315-3.500.

Fluks, Marten, to Conrad-Stork B.V. Cutter wheel for a dredging apparatus, 4,242,814, Cl. 37-66.000.

Flynn, Patrick F.; Weber, Harold G.; and Mulloy, John M., to Cummins Engine Company, Inc. Turbomachine, 4,243,357, Cl. 415-215.000.

Flynn, Roy W.: See—
Grouke, Martin J.; and Flynn, Roy W., 4,243,416, Cl. 106-14.130.

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Engel, John F., 4,243,677, Cl. 424-305.000.

Greenberg, Edward S., 4,243,525, Cl. 210-754.000.

Foley, William M., Jr. Styrene/hydroxy alkyl acrylic acid ester copolymer for contact lenses, 4,243,790, Cl. 526-320.000.

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Brown, Patrick M.; and Boryta, Daniel A., 4,243,392, Cl. 23-295.00S.

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Dickerson, Carroll D., 4,243,339, Cl. 403-4.000.

Foreman, Dave O. Tape storage and display apparatus, 4,243,142, Cl. 206-387.000.

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Forman, Donald B., to United States of America, Navy. Method and apparatus for fabricating a wideband whip antenna, 4,243,992, Cl. 343-873.000.

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Jaisle, Richard F.; and Bunkowski, Kenneth D., 4,243,461, Cl. 156-288.000.

Forney, Robert B. Ear cushioning device for headphones, 4,243,851, Cl. 179-156.00R.

Fortuna, John E., to Knappe & Vogt Manufacturing Co. Ball bearing, 4,243,277, Cl. 308-195.000.

Forval S.A.: See—
Siepmann, Walter, 4,243,204, Cl. 251-366.000.

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Brannigan, Lawrence H.; Franz, John E.; and Schafer, David E., 4,243,406, Cl. 71-88.000.

Fraser, William A.; and Cieloszyk, Gary S., to Union Carbide Corporation. Process for making film from low density ethylene hydrocarbon copolymer, 4,243,619, Cl. 264-40.600.

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Scholze, Horst; and Schmidt, Helmut, 4,243,692, Cl. 427-2.000.

Freeborn, William D., to Osborne Industries, Inc. Animal actuated feeder, 4,242,985, Cl. 119-54.000.

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Mavis, Robert C., 4,243,564, Cl. 260-17.45T.

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Heeb, Dieter; Bergemann, Uwe; and Frenzel, Claus-Dieter, 4,243,548, Cl. 252-305.000.

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Fry, Michael W., to Ciba-Geigy AG. Electrolytic production of active diazine species, 4,243,745, Cl. 430-433.000.

Frydrych, Robert R. Narrow style surface mounted reversible latch, 4,243,256, Cl. 292-245.000.

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Fuji Photo Film Co., Ltd.: See—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Hirano, Shigeo, 4,243,739, Cl. 430-266.000.

Nakamura, Kotaro; Adachi, Keiichi; and Ogawa, Akira, 4,243,747, Cl. 430-551.000.

Noguchi, Masaru, 4,243,294, Cl. 350-6.800.

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- Fujita, Hiro; Tsuzuki, Akira; Ebiha, Heihachiro; and Sekiya, Fukuo, to Citizen Watch Co., Ltd. Frequency division system. 4,244,043, Cl. 368-85.000.
- Fujita, Masanori: See—
Samejima, Toshiohide; Moritani, Nakanobu; Oda, Hajime; and Fujita, Masanori, 4,244,042, Cl. 368-73.000.
- Fujitsu Limited: See—
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- Fujiwara, Hiroshi: See—
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- Fujiwara, Sigeharu: See—
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- Fukuda, Mamoru. Hygienic cleaning apparatus. 4,242,764, Cl. 4-420.400.
- Fukuhara, Tetsukazu, to Neteuren Company Ltd. Method for continuously forming a coating layer on unbonded PC steel bars. 4,243,447, Cl. 156-64.000.
- Fukui, Yoshiharu: See—
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- Fukushima, Hiroshi: See—
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- Fukuyama, Tatsuo: See—
Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, 4,243,839, Cl. 179-1.00F.
- Fuller, Orville A. Hook assembly for retrieving marine vessel towing lines. 4,242,978, Cl. 114-253.000.
- Funke, Siegfried: See—
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- Furukawa, Yasuyoshi: See—
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- Futamura, Shoji: See—
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- Futamura, Yoshisumi: See—
Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Oka-yama, Morio; and Iwasaki, Isao, 4,242,888, Cl. 64-21.000.
- Futurecraft Corporation: See—
Piet, Meyer; and Castor, James J., 4,243,069, Cl. 137-484.600.
- G. L. Resoroth GmbH: See—
Bartholomaeus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolf-gang; Kokus, Hans-Dieter; Lembke, Herbert; and Schulte, Heinz, 4,242,942, Cl. 91-358.00R.
- G.O.R. Applicazioni Speciali S.p.A.: See—
Cesano, Franco, 4,243,456, Cl. 156-214.000.
- Gabbard, James D., to Monsanto Company. Stain-resistant vinyl chlo-ride polymer compositions plasticized with alkylbenzyl succinates, glutarates or mixtures thereof. 4,243,571, Cl. 260-31.80H.
- GAC International, Inc.: See—
Kawaguchi, Kozo, 4,243,386, Cl. 433-9.000.
- Gadonas, Gus C.: See—
Miller, Bruce J.; Gadonas, Gus C.; and Donofrio, Frank C., 4,243,890, Cl. 250-551.000.
- Gahmig, Herbert M., to BASF Wyandotte Corporation. Expandable polystyrene with stabilized cell structure. 4,243,717, Cl. 428-402.000.
- Gala, Babulal V., to GTE Automatic Electric Laboratories Incorporated. Automatic restoral mechanism for a pushbutton key telephone instrument. 4,243,847, Cl. 179-99.00R.
- Gale, David M., to Du Pont de Nemours, E. I., and Company. Elastom-eric copolyether-ester/polyoxymethylene. 4,243,580, Cl. 260-45.8NT.
- Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A. Pneumatic impact wrench having rotat-able and axially translatable components. 4,243,108, Cl. 173-93.000.
- Galtier, Daniel J. M.: See—
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel J. M., 4,243,665, Cl. 424-246.000.
- Galuskin, Vadim B.: See—
Lipets, Adolf U.; Krasnov, Boleslav M.; Sotnikov, Ivan A.; Fedo-sov, Alexei Z.; Galuskin, Vadim B.; Lafa, Jury I.; Alexandrov, Boris I.; and Gromov, Gennady V., 4,243,096, Cl. 165-134.0DP.
- Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, to Gebruder Junghans GmbH. Watch having adjustable date and day indicators. 4,244,038, Cl. 368-35.000.
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- Garbe, William F.; and Wrobel, Joseph J., to Eastman Kodak Com-pany. Contact printing apparatus. 4,243,317, Cl. 355-91.000.
- Garcia, Barbara A.: See—
Henrick, Clive A.; and Garcia, Barbara A., 4,243,819, Cl. 562-433.000.
- Garcia, Jose M., to Equipment Company of America. Drum lifter for fork lift truck. 4,243,354, Cl. 414-607.000.
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- Gardner, Mark R.: See—
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- Gardon, Maurice, to Delattre-Levivier. Installation for conveyance of a boat. 4,243,344, Cl. 405-2.000.
- Garlock Inc.: See—
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- Gash, Duggan J., to Koninklijke Emballage Industrie Van Leer B.V. Method of producing cross laminates. 4,243,463, Cl. 156-324.000.
- Gaster, Laramie M.: See—
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- Gates Rubber Company, The: See—
Hammel, Ronald O.; Barcus, William J.; and Cone, Irwin C., 4,244,011, Cl. 362-183.000.
- Gebruder Heller Verwaltungsgesellschaft mit beschränkter Haftung: See—
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- Gebruder Junghans GmbH: See—
Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, 4,244,038, Cl. 368-35.000.
- Geerkens, Friedhelm. Heat-exchanger element for a freeze drier. 4,242,877, Cl. 62-93.000.
- Gelfand, Mikhail L.: See—
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- Gemmani, Giuseppe. Planer with noise-reducing means. 4,243,085, Cl. 144-230.000.
- General Atomic Company: See—
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- General Binding Corporation: See—
Giulie, Joe D., 4,243,458, Cl. 156-247.000.
- General Electric Company: See—
Abolins, Visvaldis; and Lee, Gim F., Jr., 4,243,766, Cl. 525-92.000.
- Chamberlain, Harvey H., 4,242,989, Cl. 122-451.00R.
- Clapp, Keith A.; and Stewart, Donald A., 4,243,347, Cl. 407-15.000.
- D'Atre, John D., 4,243,927, Cl. 318-803.000.
- Degenoff, Robert C.; and Crouse, John C., 4,243,966, Cl. 336-70.000.
- Dickey, Frank R., Jr., 4,244,026, Cl. 364-565.000.
- Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., 4,243,708, Cl. 428-141.000.
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- Kresge, James S., 4,243,622, Cl. 264-66.000.
- Mark, Victor; and Wilson, Phillip S., 4,243,570, Cl. 260-30.200.
- Myers, Donald C.; and Wilson, Phillip S., 4,243,575, Cl. 260-37.0PC.
- Schroeter, Siegfried H.; and Olson, Daniel R., 4,243,720, Cl. 428-412.000.
- Smith, Donald F.; and Ostrellich, Michael J., 4,243,287, Cl. 339-99.00R.
- Steigerwald, Robert L., 4,244,017, Cl. 363-138.000.
- Wotowiec, Joseph P., 4,244,013, Cl. 362-216.000.
- Ziemba, Richard T., 4,242,963, Cl. 102-236.000.
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Multani, Jagir S.; and Sandhu, Jagtar S., 4,243,937, Cl. 324-158.00T.
- General Motors Corporation: See—
Glennon, Timothy P., 4,243,947, Cl. 330-284.000.
- Kabay, Steve; and Nemecek, Ralph E., 4,243,341, Cl. 403-16.000.
- Schertz, Burton D.; and Aldridge, Frederick A., 4,243,954, Cl. 331-117.00R.
- Short, William T., 4,243,792, Cl. 528-73.000.
- General Tire & Rubber Company, The: See—
Kirksey, J. Frank, 4,242,861, Cl. 57-120.000.
- Genese, Joseph N., to Abbott Laboratories. Intravenous pump filter protector. 4,243,031, Cl. 128-214.00E.
- Genevois, Jean L.; Paolo, Presti; and De Stefani, Giuseppe. Continuous ring furnaces. 4,243,381, Cl. 432-75.000.
- Gentile, Philip S.: See—
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- Georgian, Michael T. Adjustable precision grinding and machinist vise. 4,243,213, Cl. 269-137.000.
- Gericke, Rolf; Rogalski, Werner; Bergmann, Rolf; Hameister, Walter; and Wahlig, Helmut, to Merck Patent Gesellschaft mit beschränkter Haftung. Pyridone-acetic acid derivative. 4,243,810, Cl. 546-295.000.
- Gerrard Industries Limited: See—
Sansum, Robert D., 4,243,077, Cl. 140-93.400.
- Gerry, Frank S.: See—
Wiggins, Wayne T.; and Gerry, Frank S., 4,243,725, Cl. 428-517.000.
- Gershbein, George. Jewelry smoking device. 4,243,058, Cl. 131-171.00R.
- Gewerkschaft Eisenhütte Westfalen: See—
Lobbe, Armin; and Grisebach, Hans-Th., 4,243,268, Cl. 299-32.000.

- Giaccio, Christopher: See—
Vock, Manfred H.; Giaccio, Christopher; Hruza, Anne; Wi-thycombe, Donald A.; Mookherjee, Braja D.; and Mussinan, Cynthia J., 4,243,688, Cl. 426-535.000.
- Giani, Adolfo: See—
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- Gibb, William D., to Northern Telecom Limited. Telephone line cir-cuit. 4,243,842, Cl. 179-18.0FA.
- Gibbons, James F. Forming controlled inset regions by ion implantation and laser bombardment. 4,243,433, Cl. 148-1.500.
- Gibbs, David J. Exercising apparatus. 4,243,217, Cl. 272-73.000.
- Gibson, Jack E. Method of powder coating the inside of pipes with a continuous film of plastic material. 4,243,699, Cl. 427-183.000.
- Gieseking, Darrell. Convertible bed for pick-up truck camper or the like. 4,243,260, Cl. 296-24.00R.
- Gilbert, Everett E., to United States of America, Army. Process for producing hexanitrostilbene. 4,243,614, Cl. 568-931.000.
- Gilles, Jack C., to B. F. Goodrich Company, The. Hydroxyl-containing liquid polymers and pressure-sensitive adhesives prepared therefrom. 4,243,789, Cl. 526-263.000.
- Gillette Company, The: See—
Diederich, Walter J., 4,243,017, Cl. 126-409.000.
- Gilman, Paul B., Jr.; and Haase, Jan R., to Eastman Kodak Company. Amplification process. 4,243,738, Cl. 430-202.000.
- Ginter, Albert: See—
Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, 4,244,038, Cl. 368-35.000.
- Giulie, Joe D., to General Binding Corporation. Method of making prefabricated laminating packet with tab. 4,243,458, Cl. 156-247.000.
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- Gloucester Engineering Co., Inc.: See—
Mulcahy, John J., 4,243,363, Cl. 425-140.000.
- Gnuechtel, Herman C., to Web Printing Controls Co., Inc. Register control system for web operating apparatus. 4,243,925, Cl. 318-603.000.
- Go, Thiam L., to Zube, Friedrich Wilhelm. Displaying measuring instrument. 4,242,980, Cl. 116-202.000.
- Godet, Jean: See—
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- Goel, Jitendra: See—
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- Gogele, Peter W.: See—
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- Goldberg, Ernest: See—
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- Goldshtein, Boris G.: See—
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- Goodman, James R.: See—
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- Goodsmith, Dale H.: See—
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- Goodson, Theodore, Jr.: See—
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- Goodyear Aerospace Corporation: See—
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- Ruof, Edgar J., 4,243,940, Cl. 328-140.000.
- Goodyear Tire & Rubber Company, The: See—
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- Lal, Joginder; and Walters, Sandra J., 4,243,561, Cl. 260-4.00R.
- Goon, Harry; and Spector, George. Food warmer. 4,243,013, Cl. 126-43.000.
- Gordon, Kevin S., to Northern Telecom Limited. Methods for testing optical fibres. 4,243,320, Cl. 356-73.100.
- Gordon, Mack, to Aerodyne Development Corporation. Metallized amorphous silica fabric for high temperature use. 4,243,715, Cl. 428-263.000.
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- Goshima, Takeshi; Sato, Hideaki; and Tsuji, Takao, to Canon Kabushiki Kaisha. Signal recording device. 4,243,849, Cl. 369-62.000.
- Goss, H. Calvin. Document holder assembly. 4,243,249, Cl. 281-1.000.
- Gossink, Robert G.: See—
Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., 4,243,399, Cl. 65-4.00B.
- Goth, George R.: See—
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- Goudsche Machinefabriek B.V.: See—
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- Gould, Steven J.: See—
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- Gozzi, Ilija. Apparatus for joining pieces of laminar material and in particular plywood core strips. 4,243,465, Cl. 156-362.000.
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- Grabel, Irwin J.; and Hanchar, Peter J., to Bally Manufacturing Corpora-tion. Seesaw targets apparatus for pinball game. 4,243,222, Cl. 273-127.00R.
- Grabowsky, Richard L.: See—
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- Graf, Calvin R.: See—
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- Graham Magnetics Incorporated: See—
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- Graham, Weldon C., to General Atomic Company. Orbital arc-welding apparatus of split construction. 4,243,868, Cl. 219-125.110.
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- Granet, Alfred. Carrier conveyor. 4,242,965, Cl. 104-96.000.
- Granger, Evert H.: See—
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- Gratzmuller, Claude A. Hydraulic system for simultaneous control, especially for the control of electric circuit breakers. 4,243,855, Cl. 200-81.400.
- Gratzmuller, Jean L. Piston-type hydropneumatic accumulator equipped with a gas shortage detection device. 4,243,856, Cl. 200-81.500.
- Gray, Douglas W., to Saltney Engineering Company Limited. Linen towel cabinets. 4,243,278, Cl. 312-38.000.
- Green, David T., to United States Surgical Corporation. Surgical clip applicator. 4,242,902, Cl. 72-410.000.
- Green, Melvin E.: See—
Bubley, Henry J.; Green, Melvin E.; and Iaccino, Alex, 4,242,956, Cl. 101-123.000.
- Green, Norman W., to Occidental Petroleum Corp. Pyrolysis reactor and fluidized bed combustion chamber. 4,243,489, Cl. 201-12.000.
- Greenberg, Edward S., to FMC Corporation. Method for reducing the formation of trihalomethanes in drinking water. 4,243,525, Cl. 210-754.000.
- Greenberg, Roland: See—
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- Greene, Jerome. Hydrodynamic bearing with radial, thrust and moment load capacity. 4,243,274, Cl. 308-9.000.
- Greengrass, Colin W.: See—
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- Greenstate, Inc.: See—
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- Greif, Donald S.: See—
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- Griffin, Lawrence C., to Zegeer, Jim, a part interest. Biopsy device. 4,243,048, Cl. 128-751.000.
- Grime, Thomas E.; and Robinson, Frank A., Jr., to Champion Spark Plug Company. Vaporizer with electrode housing interlock. 4,243,870, Cl. 219-295.000.
- Grimm, Robert A.: See—
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- Grisebach, Hans-Th.: See—
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- Groff, Henry C., to Oil Extractors, Inc. Standing valve assembly for an oil well pump. 4,243,361, Cl. 417-554.000.
- Gromov, Gennady V.: See—
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- Grossa, Mario: See—
Abele, Werner; and Grossa, Mario, 4,243,741, Cl. 430-270.000.
- Grossman, Leonard N.; Portis, Alan M.; Bernatowicz, Henry; and Schoenig, Frederick C., Jr., to General Electric Company. Determin-

ing paramagnetic additive content of a base paramagnetic material containing ferromagnetic impurity. 4,243,939, Cl. 324-201.000.

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GTE Automatic Electric Laboratories Incorporated: See—

Gala, Babulal V., 4,243,847, Cl. 179-99.00R.

Jameel, Khaja M.; and Koppensteiner, James V., 4,243,963, Cl. 335-151.000.

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GTE Laboratories Incorporated: See—

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Proud, Joseph M., Jr., 4,243,950, Cl. 331-78.000.

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Kohl, Clyde B.; Kendrick, George B.; and Fleming, Raymond T., 4,243,907, Cl. 313-318.000.

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Guilbert, C. Carol; and Scepanski, William H., to Economics Laboratory, Inc. Stabilized liquid enzyme-containing detergent compositions. 4,243,543, Cl. 252-105.000.

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Bossuet, Jean; Godet, Jean; Guiton, Jean-Francois; Sizarol, Rene; and Waegert, Pierre, 4,243,055, Cl. 131-76.000.

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Gunne, Ingemar; and Almgren, Bertil, to Siemens Aktiengesellschaft. Bottle seal. 4,243,150, Cl. 215-247.000.

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Haas, James L., to Mobay Chemical Corporation. Toluene diamine initiated polyether polyols. 4,243,759, Cl. 521-167.000.

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Haase, Jaroslav: See—

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Hall, Robert E. Winch load fastening apparatus. 4,243,350, Cl. 410-100.000.

Hall, Wilbur S.; and Leister, Harry M., to Amchem Products, Inc. Autodeposition coating process. 4,243,704, Cl. 427-327.000.

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Lind, David J.; Coffey, Valerie J.; and Hallam, Joyce, 4,243,646, Cl. 423-447.100.

Haluska, Loren A., to Dow Corning Corporation. Non-coloring, abrasion resistant, adherent coating for gold and silver surfaces. 4,243,722, Cl. 428-450.000.

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Hays, Herbert G., to Amana Refrigeration, Inc. Sealing and air/fuel mixture flow metering plate for gas furnaces. 4,243,176, Cl. 237-7.000.

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Heitmann, Bob, to Hauni-Werke Korber & Co. KG. Apparatus for inserting packs into the gaps of a moving file of cigarette packs or the like. 4,243,135, Cl. 198-370.000.

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Hertzberg, Elliot P.: See—

Campbell, Thomas C.; Hertzberg, Elliot P.; and Sherry, Howard S., 4,243,545, Cl. 252-140.000.

Hess, Hans-Jürgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., to Pfizer Inc. 15-Substituted-omega-pentanor-prostaglandins. 4,243,595, Cl. 260-345.70P.

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Haas, Frank C.; and Hesse, William K., 4,243,639, Cl. 423-63.000.

Hewlett-Packard Company: See—

Blancke, Timothy B., 4,243,044, Cl. 128-696.000.

Marzalek, Michael S.; and Wheelwright, Lynn M., 4,244,024, Cl. 364-485.000.

Hexter, Charles S.: See—

Sadeh, Dora; and Hexter, Charles S., 4,243,749, Cl. 435-7.000.

Heyer-Schulte Corporation: See—

Chase, Charles P.; and MacAnally, Richard B., 4,242,761, Cl. 3-13.000.

Heykants, Lambertus. Free standing portable stairway railing device. 4,243,207, Cl. 256-64.000.

Hickey, Christopher D. D.; and Clements, Harold J. Containers for goods. 4,243,349, Cl. 410-77.000.

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Merenyi, Miklos; Huszar, Laszlo; and Hidvegi, Janos, 4,242,850, Cl. 52-745.000.

Hiestand, Armin: See—

Nachbur, Hermann; Hiestand, Armin; and Rohringer, Peter, 4,243,418, Cl. 106-18.220.

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Higgins, D. Bernard: See—

Cartwright, William F.; Cornell, Alan; Higgins, D. Bernard; and Mikkelsen, Robert P., 4,243,053, Cl. 131-4.00A.

Higuchi, Noboru; and Futamura, Shoji, to NGK Insulators, Ltd.; and Institute of Technology Precision Electrical Discharge Works. Die for extruding a honeycomb structural body. 4,243,370, Cl. 425-462.000.

Hiler, George D.: See—

Mohlenkamp, Marvin J., Jr.; and Hiler, George D., 4,243,691, Cl. 426-649.000.

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Hill, Robert O.; and Raistrick, Bernard. Process of extraction of aluminum values from coal ash. 4,243,640, Cl. 423-132.000.

Hill, Rodman K. Mold for molding propellers having tapered hubs. 4,243,199, Cl. 249-142.000.

Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, to Leybold-Heraeus GmbH. Process and apparatus for analyzing a sample with the aid of pulsed laser irradiation. 4,243,887, Cl. 250-423.00P.

Hino, Toshiyuki, to Kajima Kensetsu Kabushiki Kaisha. Heat pump type heating and cooling source system. 4,242,873, Cl. 62-2.000.

Hiraide, Takashi: See—
Imamura, Tetsuya; and Hiraide, Takashi, 4,243,559, Cl. 252-548.000.

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Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Hirano, Shigeo, 4,243,739, Cl. 430-266.000.

Hisatomi, Takashi, to Nissan Motor Company, Limited. Ignition system in dual spark plug ignition engine with EGR system. 4,243,005, Cl. 123-638.000.

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Akima, Tosiyo; Kudou, Eisuzaburo; Kaneyasu, Tetsuo; and Kochi, Hiromi, 4,243,784, Cl. 526-88.000.

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Fujikura, Nobuyuki; Noomi, Makoto; and Ihara, Hirokazu, 4,244,051, Cl. 375-17.000.

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Sakai, Junji; Morimoto, Syogo; and Shimaguchi, Takashi, 4,243,420, Cl. 106-38.300.

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Hobbs, Stanley Y.: See—
Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., 4,243,708, Cl. 428-141.000.

Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen: See—
Schweiger, Fritz, 4,243,487, Cl. 176-38.000.

Hockham, George A.: See—
Nemil, Jeffrey T.; Hockham, George A.; and Wolfson, Ronald I., 4,243,990, Cl. 343-771.000.

Hocq, Robert, to Societe Anonyme dite: INTERLIGHT. Fountain pen with ink refill carrier. 4,243,337, Cl. 401-132.000.

Hodges, Donald R.: See—
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Hoechst Aktiengesellschaft: See—
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Hoheisel, Klaus; and Janocha, Siegfried, 4,243,712, Cl. 428-35.000.

Strutzel, Hans; Hoheisel, Klaus; and Janocha, Siegfried, 4,243,074, Cl. 138-118.100.

Strutzel, Hans; Hoheisel, Klaus; and Janocha, Siegfried, 4,243,724, Cl. 428-474.700.

Hoffman, Robert K.; and Kavanaugh, Mark A., to Parker-Hannifin Corporation. Three position selector valve. 4,243,072, Cl. 137-637.100.

Hoffmann, Heinz: See—
Burckhardt, Christoph B.; Grandchamp, Pierre-Andre; Hoffmann, Heinz; and Fehr, Rainer, 4,242,912, Cl. 73-626.000.

Hoffmann, Herwig: See—
Mueller, Herbert; Huchler, Otto H.; and Hoffmann, Herwig, 4,243,799, Cl. 528-409.000.

Hoffmann-La Roche Inc.: See—
Burckhardt, Christoph B.; Grandchamp, Pierre-Andre; Hoffmann, Heinz; and Fehr, Rainer, 4,242,912, Cl. 73-626.000.

Fryer, Rodney I.; Trybalski, Eugene J.; and Walser, Armin, 4,243,589, Cl. 260-245.500.

Olson, Gary L.; and Saucy, Gabriel, 4,243,598, Cl. 260-348.110.

Hofmeister, Helmut: See—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Wendt, Hans; and Kapp, Joachim F., 4,243,664, Cl. 424-243.000.

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Hohman, Charles M., to Owens-Corning Fiberglass Corporation. Glass manufacturing. 4,243,423, Cl. 106-54.000.

Holmes, Alan, to Romag Holdings Ltd. Laminates. 4,243,719, Cl. 428-411.000.

Holt, Dewilton R., to Siemens Corporation. Read back compensation circuit for a magnetic recording device. 4,244,008, Cl. 360-45.000.

Holt, Jan D.; and Neff, Robert K., to ACF Industries, Incorporated. Railway car truck transom including a tubular bearing assembly. 4,242,966, Cl. 105-182.00R.

Holz, John F.: See—
Pratt, Dexter, Jr.; and Holz, John F., 4,243,120, Cl. 182-98.000.

Homsy, Charles A.; and Homsy, Paul T., to Vitex, Inc. Solar heat conversion panel and method of assembly. 4,243,021, Cl. 126-449.000.

Homsy, Paul T.: See—
Homsy, Charles A.; and Homsy, Paul T., 4,243,021, Cl. 126-449.000.

Honda Giken Kogyo Kabushiki Kaisha: See—
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Honeywell Inc.: See—
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Hong, Su-don: See—
Frosch, Robert A. Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Moacanin, Jovan; Gupta, Amitava; and Hong, Su-don, 4,243,327, Cl. 356-432.000.

Honmo, Hiroshi: See—
Nomura, Hidenori; Honmo, Hiroshi; and Matsushita, Shigeo, 4,243,398, Cl. 65-2.000.

Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, to Taiho Pharmaceutical Company. Processes for the preparation of glyoxal-2-oximes. 4,243,812, Cl. 548-248.000.

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Wallace, Harry L.; Horak, Anthony; Krebs, Fred G.; and Brown, Louis R., 4,243,330, Cl. 400-194.000.

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Horn, Hannes S.; and Buchner, Heinrich, to Klockner-Humboldt-Deutz AG. Shaft preheater. 4,243,379, Cl. 432-14.000.

Hornak, Alexander, to Rexnord Inc. Low silhouette adjustable latch with secondary lock. 4,243,255, Cl. 292-113.000.

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Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstenson, Gustav Y.; and Karlstedt, Gustav S. E., 4,242,945, Cl. 92-26.000.

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Hoser, Alfred. Self-regulating heater. 4,242,999, Cl. 123-548.000.

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van Geest, Lambertus K.; and Houtkamp, Johannes J., 4,243,905, Cl. 313-102.000.

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Hoyt, John M.: See—
Fischer, Joseph; and Hoyt, John M., 4,243,576, Cl. 260-42.150.

Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Chiyoo Chemical Engineering and Construction Co., Ltd. Reactor for the thermal cracking of heavy oil. 4,243,633, Cl. 422-129.000.

Hruza, Anne: See—
Vock, Manfred H.; Giacino, Christopher; Hruza, Anne; Witherby, Donald A.; Mookherjee, Braja D.; and Mussinan, Cynthia J., 4,243,688, Cl. 426-535.000.

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Hudson, John L.: See—
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Huehls, Patrick N.: See—
Crockett, Thomas W.; Huehls, Patrick N.; and Slotnick, Barry G., 4,243,531, Cl. 210-188.000.

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Wisler, Allen E.; and Lane, Leo D., 4,243,727, Cl. 428-558.000.

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Toliusis, Vytautas J., 4,242,946, Cl. 92-59.000.

Humphreys, Michael. Electrical distribution system. 4,243,284, Cl. 339-21.00R.

Hung, William M.: See—
Schmidt, Paul J.; and Hung, William M., 4,243,250, Cl. 282-27.500.

Hunsucker, Jerry H., to International Minerals & Chemical Corp. Strippable coating resin from nitroalkanol and polyamine. 4,243,800, Cl. 528-422.000.

Hunt, Harold R., to Phillips Petroleum Company. Carbon black pellet and method and apparatus for producing same. 4,243,365, Cl. 425-222.000.

Hunt, Lloyd P., to Johnson Heater Corp. Combustion chamber construction. 4,243,014, Cl. 126-119.000.

Hunt, Robert E.: See—
White, David J.; Helmick, Carl N., Jr.; and Hunt, Robert E., 4,243,960, Cl. 333-196.000.

Hunter Engineering Co., Inc.: See—
Braun, Curt, 4,242,807, Cl. 34-23.000.

Hurd, Roger B.; and Barbosa, Roosevelt N. Motorcycle garage. 4,242,846, Cl. 52-71.000.

Huschens, Rolf: See—
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Hushens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,243,585, Cl. 260-239.0BD.

Huser, Melvin; and Harper, Clete. Game apparatus. 4,243,229, Cl. 273-402.000.

Husky Injection Molding Systems Inc.: See—
Rees, Herbert; Brown, Paul; and Grund, Miroslav, 4,243,364, Cl. 425-153.000.

Huszar, Laszlo: See—
Merényi, Miklos; Huszar, Laszlo; and Hidvegi, Janos, 4,242,850, Cl. 52-745.000.

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Hyndman, Bruce H.: See—
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I. Kruger A/S: See—
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Ibuki, Seiro: See—
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ICI Americas Inc.: See—
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IDN Inventions and Development of Novelities AG: See—
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Ignell, Rolf L., to Tetra Pak Development SA. Tear-up closing device for containers. 4,243,152, Cl. 220-270.000.

Ihara, Hirokazu: See—
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Ikeda, Susumu: See—
Amano, Kiro; Saito, Tsuyoshi; Hatanaka, Masayoshi; and Ikeda, Susumu, 4,243,662, Cl. 424-180.000.

ILC Dover, a division of ILC Industries, Inc.: See—
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Illinois Tool Works Inc.: See—
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Toda, Tadayoshi; Omote, Kazuaki; and Imai, Mamoru, 4,243,196, Cl. 248-475.00R.

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Imamura, Tetsuya; and Hiraide, Takashi, to Kao Soap Co., Ltd. Liquid detergent compositions containing alkanolamines and polyoxyalkylene alkyl ethers. 4,243,559, Cl. 252-548.000.

Imparato, Luigi: See—
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Beale, Michael H.; and MacMillan, Jake, 4,243,594, Cl. 260-343.30G.

Bye, Ashley D.; and Newton, Alan B., 4,243,782, Cl. 526-140.000.

Inagaki, Kenji: See—
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Inamura, Toshio. Water induction system for internal combustion engines. 4,243,202, Cl. 251-61.400.

Infurnco (Proprietary) Limited: See—
Parsons, Charles H.; and Casper, Badenhorst H., 4,243,832, Cl. 13-16.000.

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Pfeiffer, Hans C.; Ryan, Philip M.; and Weber, Edward V., 4,243,866, Cl. 219-121.0EK.

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International Communications and Energy, Inc.: See—
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International Diagnostic Technology: See—
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International Flavors & Fragrances Inc.: See—
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International Safety Industries Ltd.: See—
Shepherd, William W., Sr., 4,243,240, Cl. 280-94.000.

International Standard Electric Corporation: See—
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Kao, Charles K.; and Maklad, Mokhtar S., 4,243,298, Cl. 350-96.330.

Nemil, Jeffrey T.; Hockham, George A.; and Wolfson, Ronald I., 4,243,990, Cl. 343-771.000.

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Ishii, Mitsuru: See—
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Ishikawa, Shingo: See—
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Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, to Mitsubishi Gas Chemical Company, Inc. Process for simultaneously producing p-toluic acid and alkylene oxide. 4,243,599, Cl. 260-348.250.

Israelides, Cleanthes; Han, Youn W.; and Anderson, Arthur W., to United States of America, Agriculture. Process for improving the palatability of straw for animal feed. 4,243,686, Cl. 426-53.000.

- Itkis, Zolya Y.: See—
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- Ito, Kenji: See—
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- Ito, Mikio: See—
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- Ito, Nobuo: See—
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- Ito, Tadashi: See—
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,243,308, Cl. 354-60.00E.
- Ito, Yukio: See—
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- ITT Industries, Inc.: See—
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- Iwasaki, Isao: See—
Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Okayama, Morio; and Iwasaki, Isao, 4,242,888, Cl. 64-21.000.
- Izushima, Masaaki; Shintaro, Abe; and Haganuma, Tomoyuki, to Ricoh Company, Ltd. Word processor, 4,244,031, Cl. 364-900.000.
- J. I. Case Company: See—
Marto, John H., 4,243,342, Cl. 403-324.000.
- J. M. Voith GmbH: See—
Pfalzer, Lothar; and Fischer, Siegfried, 4,243,478, Cl. 162-4.000.
- Schiel, Christian; and Schmalstieg, Heinrich, 4,243,483, Cl. 162-343.000.
- Jackovitz, John F.; Panson, Armand J.; and Pantier, Earl A., to Westinghouse Electric Corp. Iron EDTA chelate catalyzed oxidation of uranium, 4,243,638, Cl. 423-17.000.
- Jackson, Samuel G. Variable back pressure valve, 4,243,070, Cl. 137-510.000.
- Jackson, William E.: See—
Hubbard, Martin G.; and Jackson, William E., 4,243,528, Cl. 210-104.000.
- Jacobs, Malin L.: See—
Hardee, Patrick C.; and Jacobs, Malin L., 4,243,970, Cl. 340-52.00D.
- Jacobson, Allan J.; Chianelli, Russell R.; and Whittingham, M. Stanley, to Exxon Research & Engineering Co. Method of making cathodes derived from ammonium-metal-chalcogen compounds, 4,243,624, Cl. 264-82.000.
- Jaeneke, Christian: See—
Boeder, Dieter; Jaeneke, Christian; Romer, Rudolf; and Sikorski, Guenter, 4,242,960, Cl. 102-92.700.
- Jaffe, Wolfgang, to Singer Company, The. Linear motor with ring magnet and non-magnetizable end caps, 4,243,899, Cl. 310-14.000.
- Jagenberg Werke Aktiengesellschaft: See—
Zodrow, Rudolf, 4,243,467, Cl. 156-568.000.
- Jagger, Brian E.: See—
Savage, James G.; and Jagger, Brian E., 4,243,331, Cl. 400-59.000.
- Jaisle, Richard F.; and Bunkowski, Kenneth D., to Formica Corporation. Process for releasing laminates, 4,243,461, Cl. 156-288.000.
- Jameel, Khaja M.; and Koppensteiner, James V., to GTE Automatic Electric Laboratories Incorporated. Construction of a printed wiring card mountable reed relay, 4,243,963, Cl. 335-151.000.
- James, Michael J., to Micro & Precision Mouldings (Cheltenham Limited). Mould closing, clamping and opening means, 4,243,369, Cl. 425-451.200.
- Janezich, Frank A.: See—
Tokar, Joseph C.; and Janezich, Frank A., 4,243,397, Cl. 55-487.000.
- Janocha, Siegfried: See—
Hoheisel, Klaus; and Janocha, Siegfried, 4,243,712, Cl. 428-35.000.
- Janocha, Siegfried: See—
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- Strutzel, Hans; Hoheisel, Klaus; and Janocha, Siegfried, 4,243,724, Cl. 428-474.700.
- Janome Sewing Machine Co. Ltd.: See—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,242,973, Cl. 112-158.00E.
- Janssen Pharmaceutica N.V.: See—
Raeymaekers, Alfons H. M.; Van Gelder, Josephus L. H.; Boeckx, Gustaaf M.; and Van Hemeldonck, Lodewijk L., 4,243,806, Cl. 544-396.000.
- Japan Atomic Energy Research Institute: See—
Ishimori, Tomitaro; and Ueno, Kaoru, 4,243,641, Cl. 423-179.500.
- Jardy, Alain P.: See—
Rosset, Robert H.; and Jardy, Alain P., 4,243,496, Cl. 204-56.00R.
- Jarre, Wolfgang: See—
Marx, Matthias; Nissen, Dietmar; and Jarre, Wolfgang, 4,243,755, Cl. 521-99.000.
- Jastrzebski, J. T. B. H.: See—
Noltes, Jan G.; Jastrzebski, J. T. B. H.; and van Koten, Gerard, 4,243,604, Cl. 260-430.000.
- Jeanson, Rene H., to Societe Anonyme Francaise du Ferodo. Dredger having a two-part boom, 4,242,816, Cl. 37-67.000.
- Jeffers, Richard D.: See—
Cooper, Edward G.; Jeffers, Richard D.; and New, David M., 4,242,876, Cl. 62-89.000.
- Jeffries, Ernest H., Jr., to Resco Products, Inc. End block, 4,243,385, Cl. 432-241.000.
- Jelks, Edward C., to United States of America, Navy. Two dimensional imaging using surface wave acoustic devices, 4,244,037, Cl. 367-121.000.
- Jenaer Glaswerk Schott & Gen.: See—
Gliemeroth, Georg; Meckel, Lothar; and Heinemann, Peter, 4,243,299, Cl. 350-96.340.
- Guenther, Franz, 4,243,401, Cl. 65-153.000.
- Kristen, Klaus; and Scheidler, Herwig, 4,243,016, Cl. 126-211.000.
- Jenner, Rolf-Dieter; Schafer, Dieter; and Bauer, Wolfgang O., to Robert Bosch GmbH. Drawing pattern for the human form, 4,242,802, Cl. 33-174.00B.
- Jennings, Richard E.: See—
Parrish, Charles A.; and Jennings, Richard E., 4,242,857, Cl. 56-341.000.
- Jeschke, Willi, to Heidelberger Druckmaschinen AG. Ink duct for offset or relief printing machines, 4,242,958, Cl. 101-365.000.
- Jeschke, Willi; and Gogele, Peter W., to Heidelberger Druckmaschinen AG. Sheet carrier, 4,242,959, Cl. 101-420.000.
- Jilek, Jiri: See—
Protiva, Miroslav; Rajsnar, Miroslav; Sindelar, Karel; Jilek, Jiri; Baril, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadt, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.
- Jochem, Cornelis M. G.: See—
Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., 4,243,399, Cl. 65-4.00B.
- Johann Wolf Gesellschaft m.b.H. KG: See—
Wolf, Johann, 4,243,346, Cl. 406-57.000.
- John Wyeth & Brother Limited: See—
Edington, Edwin T.; and White, Alan C., 4,243,808, Cl. 546-285.000.
- John Zink Company: See—
Reed, Robert D., 4,243,375, Cl. 431-174.000.
- Johns-Manville Corporation: See—
Bodycomb, Frederick M., Jr.; and Bauman, Glenn R., 4,243,011, Cl. 125-13.00R.
- Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Walking beam latch and lens disc actuator arrangement, 4,243,309, Cl. 354-197.000.
- Johnson, Edwin A., to Bendix Corporation. The. Microprocessor-based engine control system with acceleration enrichment control, 4,244,023, Cl. 364-431.000.
- Johnson, Gary R., to Tri-State Oil Tool Industries, Inc. Dual concentric pipe joint, 4,243,252, Cl. 285-39.000.
- Johnson Heater Corp.: See—
Hunt, Lloyd P., 4,243,014, Cl. 126-119.000.
- Johnson & Johnson: See—
Wittebmann, Robert F., 4,243,051, Cl. 128-798.000.
- Johnson, Kenneth A.: See—
Stang, John H.; and Johnson, Kenneth A., 4,242,948, Cl. 92-212.000.
- Johnson, Marvin L. Sled, 4,243,238, Cl. 280-20.000.
- Johnson, Michael R.: See—
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,243,595, Cl. 260-345.70P.
- Johnson, Philip P.: See—
Dingler, Geoffrey L.; and Johnson, Philip P., 4,243,431, Cl. 134-104.000.
- Johnson, Robert E., to McDonnell Douglas Corporation. Ball pivot thrust bearing flex joint, 4,243,192, Cl. 244-215.000.
- Johnson, William G.: See—
Knepp, James E.; Johnston, William G.; and Jursich, Myron J., 4,243,537, Cl. 252-49.300.
- Jones, Donald E., to Life Chiropractic College, Inc. Cervical adjusting unit, 4,243,025, Cl. 128-70.000.
- Jones, Michael D., to Champion International Corporation. Food container and process for manufacturing the same, 4,243,170, Cl. 229-2.54R.
- Jones, Raymond B.: See—
Magrini, Kenneth H.; and Jones, Raymond B., 4,243,710, Cl. 428-208.000.
- Jones, Robert D., to Intraco, Inc. Clamp, 4,243,193, Cl. 248-62.000.
- Jordan, John F.; and Lampkin, Curtis M., to Photon Power, Inc. Solar cell array, 4,243,432, Cl. 136-244.000.
- Jordan, Thomas C., III: See—
Suttles, James M.; Norton, Terry L.; Hart, Joseph P.; and Jordan, Thomas C., III, 4,242,970, Cl. 108-159.000.
- Jorgensen, Ernst K.: See—
Ter-Borch, Poul E.; Baumgarten, Per; and Jorgensen, Ernst K., 4,243,522, Cl. 210-774.000.
- Jumonji, Shigeru: See—
Kitahara, Sigeyoshi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
- Jurgensen, Heinrich, to Dr.-Ing. Rudolf Hell GmbH. Method and apparatus for avoiding or minimizing unwanted line-structures in the electronic reproduction of images, 4,244,005, Cl. 358-201.000.
- Jursich, Myron J.: See—
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- Jyomura, Shigeru: See—
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- K-Jack Engineering Company, Inc.: See—
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- Kabay, Steve; and Nemecek, Ralph E., to General Motors Corporation. Pivot construction, 4,243,341, Cl. 403-16.000.
- Kabushiki-Kaisha Dentronics: See—
Arai, Toshio, 4,243,388, Cl. 433-27.000.
- Kabushiki Kaisha Seikosha: See—
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- Kabushiki Kaisha Tokai-Rika-Denki Seisakusho: See—
Motonomi, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, 4,243,185, Cl. 242-107.200.
- Kajima Kensetsu Kabushiki Kaisha: See—
Hino, Toshiyuki, 4,242,873, Cl. 62-2.000.
- Kakinuma, Toshihide: See—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,242,973, Cl. 112-158.00E.
- Kakizoe, Yutaka: See—
Onoda, Fumio; and Kakizoe, Yutaka, 4,243,924, Cl. 318-573.000.
- Kakumoto, Michio; Oe, Eizi; and Nakagawa, Hiroshi, to Otsuka Pharmaceutical Factory Inc. Method and system for checking sealed containers for pinholes by comparing two discharge currents, 4,243,932, Cl. 324-54.000.
- Kaldor, Andrew: See—
Hall, Richard B.; Kaldor, Andrew; Kramer, George M.; and Dines, Martin B., 4,243,597, Cl. 260-347.800.
- Kali-Chemie Aktiengesellschaft: See—
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Huscens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,243,585, Cl. 260-239.00D.
- Kalibjian, Ralph. Ultra-fast framing camera tube, 4,243,878, Cl. 250-213.00V.
- Kamei, Kiyohiro: See—
Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, 4,243,462, Cl. 156-310.000.
- Kameyama, Atsumi, to Sharp Kabushiki Kaisha. Car shaver and holder therefor, 4,242,799, Cl. 30-43.100.
- Kanebo Foods Ltd.: See—
Kokeguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, 4,243,689, Cl. 426-557.000.
- Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,243,690, Cl. 426-557.000.
- Kaneyasu, Tetsuo: See—
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- Kang, Euyng W.; Brandao, Ruy L.; Bares, Jaromir R.; and Payne, Delmar V., to Bendix Corporation. The. Means for improving angular resolution of incoherent pulse radar systems, 4,243,988, Cl. 343-5.00V.
- Kangol Magnet Limited: See—
Anderson, Alexander B., 4,243,266, Cl. 297-483.000.
- Kao, Charles K.; and Maklad, Mokhtar S., to International Telephone and Telegraph Corporation. High-strength optical preforms and fibers with thin, high-compression outer layers, 4,243,298, Cl. 350-96.330.
- Kao Soap Co., Ltd.: See—
Imamura, Tetsuya; and Hiraike, Takashi, 4,243,559, Cl. 252-548.000.
- Okumura, Takeo; Ishida, Atsuo; and Hayashi, Shizuo, 4,243,657, Cl. 424-47.000.
- Kaposvari Mezogazdasagi Gepgyarto es Szolgaltato Vallalat in Kaposvar: See—
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- Kapp, Joachim F.: See—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Wendt, Hans; and Kapp, Joachim F., 4,243,664, Cl. 424-243.000.
- Karch, John A.: See—
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- Karelin, Jochen: See—
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- Karlstedt, Gustav S. E.: See—
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- Karmazin Products Corporation: See—
Woodhull, Ivan D., Jr.; and Liedel, Thomas H., 4,243,094, Cl. 165-114.000.
- Kashiki, Masayuki: See—
Minagawa, Motonobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, 4,243,581, Cl. 260-45.85S.
- Kataoka, Shunpei, to Nissan Motor Company, Limited. Suspension height adjusting mechanism in torsion-bar suspension system, 4,243,247, Cl. 280-700.000.
- Kates, James M., to Teledyne Industries, Inc. Loudspeaker system, 4,243,840, Cl. 179-1.00D.
- Kato, Kotaro: See—
Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, 4,244,000, Cl. 357-39.000.
- Kaufman, Lawrence G.; and Merriam, Charles N., to Union Carbide Corporation. Ambient temperature curable hydroxyl containing polymer/silicon compositions, 4,243,767, Cl. 525-102.000.
- Kaufman, Martin H., to United States of America, Navy. Nitrile rubber adhesion, 4,243,771, Cl. 525-340.000.
- Kaufman, Michael J. Icing prevention system for a conveyor belt, 4,243,136, Cl. 198-493.000.
- Kaufmann, Raimund: See—
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietzsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.
- Kavanaugh, Mark A.: See—
Hoffman, Robert K.; and Kavanaugh, Mark A., 4,243,072, Cl. 137-637.100.
- Kawaguchi, Kozo, to GAC International, Inc. Orthodontic appliance, 4,243,386, Cl. 433-9.000.
- Kawaguchi, Sueji: See—
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- Kawai, Hisasi: See—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.
- Kawamura, Yoshihisa; and Saito, Masaaki, to Nissan Motor Company, Limited. Internal combustion engine with fuel injectors, 4,242,992, Cl. 123-491.000.
- Kawasaki Jukogyo Kabushiki Kaisha: See—
Suzuki, Takeshi; Murao, Mikio; Uchida, Masahiro; and Nezuka, Minoru, 4,243,382, Cl. 432-78.000.
- Kawashima, Yutaka: See—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.
- Kawasumi, Yoshio: See—
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- Kawneer Company, Inc.: See—
Hubbard, S. Eugene, 4,243,018, Cl. 126-425.000.
- Kay, Alan F. Press fit intelligent fasteners for random or lightly constrained assembly, 4,242,778, Cl. 24-230.00R.
- Kazanji, Robert P.: See—
Warren, John B.; Robinson, Ernest Y.; and Kazanji, Robert P., 4,242,964, Cl. 102-275.000.
- Kazimirov, Eduard K.: See—
Sevastianov, Viktor V.; and Kazimirov, Eduard K., 4,243,043, Cl. 128-422.000.
- Kazmierczak, Robert T.: See—
MacLeay, Ronald E.; and Kazmierczak, Robert T., 4,243,821, Cl. 568-561.000.
- Kazmierowicz, Casimir W. Apparatus for monitoring and controlling a flat zone in a furnace, 4,242,907, Cl. 73-341.000.
- Keck, Dieter, to C. Keller GmbH u. Co. KG. Apparatus for separating joined-bricks, 4,243,012, Cl. 125-23.00R.
- Keeler, Lawrence M.: See—
Lundgren, William E., 4,242,859, Cl. 57-58.890.
- Keely, William A., to Bendix Corporation. The. Idle speed control system for vehicle engines, 4,242,994, Cl. 123-339.000.
- Keim, Willi: See—
Gruber, Kurt; Keim, Willi; and Hentschel, Klaus, 4,243,493, Cl. 203-66.000.
- Kemp, Alonzo. Burglar proof fire safe window covering, 4,243,090, Cl. 160-145.000.
- Kendall, Roy E. Card game, 4,243,226, Cl. 273-292.000.
- Kendall, Thomas L., to Toro Company, The. Irrigation control system, 4,244,022, Cl. 364-420.000.
- Kendrick, George B.: See—
Kohl, Clyde B.; Kendrick, George B.; and Fleming, Raymond T., 4,243,907, Cl. 313-318.000.
- Kenney, Michael J., to Dunlop Limited. Plugs composed of two rubbers having different moduli of extension used for repairing pneumatic tires, 4,243,089, Cl. 152-370.000.
- Kent, Francis J.: See—
Boshold, Raymond F.; and Kent, Francis J., 4,242,895, Cl. 72-257.000.
- Kent, Raymond W., Jr., to Dow Chemical Company, The. Process for the preparation of styrene and acrylonitrile containing polymers, 4,243,781, Cl. 526-68.000.
- Keogh, Michael J., to Union Carbide Corporation. Flame retardant alkylene-alkyl acrylate copolymer composition, 4,243,579, Cl. 260-45.70R.
- Kerr, George T.; Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Alkylation of aromatics using a high silica zeolite, 4,243,828, Cl. 585-467.000.
- Kerr-McGee Corporation: See—
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- Kerstan, Walter, to Wessel-Werk Gesellschaft mit beschränkter Haftung. Method of refining the silicatic slag phase obtained in the thermal recovery of phosphorus from phosphates, 4,243,425, Cl. 106-117.000.
- Keskkula, Henno; and Miller, Frederick A., to Dow Chemical Company, The. Impact-resistant polymers and rubber concentrates therefor, 4,243,765, Cl. 525-86.000.

Kewley, Norman E.; and Smetana, Andrew, to General Electric Company. Flash lamp array construction. 4,243,371, Cl. 431-13.000.

Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., to U.S. Philips Corporation. Method of producing a coupling element for an optical transmission fiber. 4,243,399, Cl. 65-4.00B.

Kida, Junichi: See—
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Kida, Kunio: See—
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Kii, Masami, to Mitsubishi Denki Kabushiki Kaisha. Circuit interrupter with pressure limiting. 4,243,860, Cl. 200-148.00R.

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Kilcher-Chemie AG: See—
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Kimberly-Clark Corporation: See—
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Kimura, Yoshimasa: See—
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Kincaid, Thomas R., to DG Shelter Products Company. Pie segment shaped flammable artificial firelog. 4,243,394, Cl. 44-14.000.

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King, Josef: See—
Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, 4,244,038, Cl. 368-35.000.

Kingsley, G. Howard: See—
Mavis, Robert C., 4,243,564, Cl. 260-17.4ST.

Kinnear, Joseph D., to Brad Harrison Company. Low profile battery connector. 4,243,292, Cl. 339-224.000.

Kinoshita, Shozo: See—
Ueda, Takeshi; Kinoshita, Shozo; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,243,746, Cl. 430-346.000.

Kirksey, J. Frank, to General Tire & Rubber Company. The Yarn twister ring lubricant. 4,242,861, Cl. 57-120.000.

Kirinas, Peter, Jr., to Panduit Corp. Portable tool for mass termination connector. 4,242,792, Cl. 29-857.000.

Kis-Tamas, Attila: See—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.

Kiss, Alexander S.; and Leslie, Frank B. Web ladder release mechanism. 4,243,121, Cl. 182-196.000.

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Kitahara, Sigeyoshi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, to Nippon Hoso Kyokai; and Canon Kabushiki Kaisha. Control device for television camera. 4,244,006, Cl. 358-210.000.

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Klein, Jean M.; and Lacombe, Albert, to Lesieur-Cotelle & Associates S.A. Process for the production of a liquid edible oil from fatty materials having a high content of saturated fatty acids and the oil produced by the process. 4,243,603, Cl. 260-410.700.

Kleine, Werner, to Gebrüder Heller Verwaltungsgesellschaft mit beschränkter Haftung. Drilling head of a rotary impact drill. 4,243,113, Cl. 175-410.000.

Kleinman, Edward B. Display table. 4,242,971, Cl. 108-26.000.

Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Burglar alarm security circuit arrangement. 4,243,979, Cl. 340-554.000.

Kliesch, Howard C.; McWilliams, Daniel N.; Pratt, Roy E.; and Schmude, Donald H., to Texaco Inc. Fluid catalytic cracking unit yield monitor. 4,243,630, Cl. 422-62.000.

Kline, Leo. Freeze-dried natural sour dough starter. 4,243,687, Cl. 426-62.000.

Klockner-Humboldt-Deutz AG: See—
Horn, Hannes S.; and Buchner, Heinrich, 4,243,379, Cl. 432-14.000.

Klug, Hans: See—
Petersen, Harro; Fischer, Kurt; Klug, Hans; Trimborn, Werner; and Schmidt, Horst, 4,243,797, Cl. 528-239.000.

Kluger, Michael A., to Bendix Corporation. The Automatic non-servo brake adjuster. 4,243,124, Cl. 188-79.50P.

Klygis, Mindaugas J., to Illinois Tool Works Inc. Vessel structure. 4,243,162, Cl. 222-530.000.

Knape & Vogt Manufacturing Co.: See—
Fortuna, John E., 4,243,277, Cl. 308-195.000.

Knapp, Heinrich, to Robert Bosch GmbH. Fuel injection system. 4,243,003, Cl. 123-442.000.

Knapp, Kenneth M. Pipeline pig. 4,242,771, Cl. 15-104.06R.

Knauer, Karl, to Siemens Aktiengesellschaft. Highly integrated dynamic memory element. 4,244,035, Cl. 365-149.000.

Knepp, James E.; Johnston, William G.; and Jursich, Myron J., to Aluminum Company of America. Synthetic metal working lubricant. 4,243,537, Cl. 252-49.300.

Knight, George W.: See—
Birkelbach, Donald F.; and Knight, George W., 4,243,785, Cl. 526-115.000.

Knippi "Niproruda": See—
Denev, Stoyan I.; and Davcheva, Nadejda G., 4,243,520, Cl. 209-10.000.

Knopf, Robert J.: See—
Koleske, Joseph V.; Knopf, Robert J.; and Smith, Oliver W., 4,243,569, Cl. 260-29.6TA.

Knowles, Warren D.; and Coulombe, Lionel J., to Singer Company. The Needle support means. 4,242,975, Cl. 112-226.000.

Koba, Keichiro: See—
Sugimura, Hidehiko; and Koba, Keichiro, 4,243,488, Cl. 201-6.000.

Kobale, Manfred; Lorenz, Hans-Peter; and Wengert, Rolf, to Siemens Aktiengesellschaft. Method of producing light-absorbing edging about phosphor dots on color image screens. 4,243,735, Cl. 430-25.000.

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Kobayashi, Hajime; Koumura, Noboru; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Liquid recording medium. 4,243,994, Cl. 346-140.00R.

Kobayashi, Hidehiko: See—
Ueda, Takeshi; Kinoshita, Shozo; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,243,746, Cl. 430-346.000.

Kobayashi, Katsumi: See—
Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, 4,243,661, Cl. 424-117.000.

Kobayashi, Tsutomo: See—
Glass, Howard L.; Liaw, Jiin-Herny W.; and Kobayashi, Tsutomo, 4,243,697, Cl. 427-47.000.

Kobe, Inc.: See—
Hubbard, Martin G.; and Jackson, William E., 4,243,528, Cl. 210-104.000.

Kochi, Hiromi: See—
Akima, Tosio; Kudou, Etsuzaburo; Kaneyasu, Tetsuo; and Kochi, Hiromi, 4,243,784, Cl. 526-88.000.

Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engines. 4,242,997, Cl. 123-568.000.

Kohl, Clyde B.; Kendrick, George B.; and Fleming, Raymond T., to GTE Products Corporation. Lamp having reduced width press-seal. 4,243,907, Cl. 313-318.000.

Kokeguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, to Kanebo Foods Ltd. Non-fried instant cooking dry noodles and a method for producing such noodles. 4,243,689, Cl. 426-557.000.

Kokeguchi, Sadao: See—
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,243,690, Cl. 426-557.000.

Kokin, Vilyam N.: See—
Nazarian, Artashes R.; Kremlev, Vyacheslav Y.; Kokin, Vilyam N.; Sladkov, Viktor I.; Venkov, Boris V.; and Lavrov, Vadim V., 4,243,895, Cl. 307-205.000.

Kokus, Hans-Dieter: See—
Bartholomäus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolfgang; Kokus, Hans-Dieter; Lembke, Herbert; and Schulte, Heinz, 4,242,942, Cl. 91-358.00R.

Koleske, Joseph V.; Knopf, Robert J.; and Smith, Oliver W., to Union Carbide Corporation. High solids compositions containing ester diol alkoxylate and aqueous acrylic latex. 4,243,569, Cl. 260-29.6TA.

Kolling, Georg: See—
Handrick, Kurt; and Kolling, Georg, 4,243,590, Cl. 260-319.100.

Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Okayama, Morio; and Iwasaki, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. External member for a tripod joint and method for manufacturing same. 4,242,888, Cl. 64-21.000.

Kominami, Naoya: See—
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,243,532, Cl. 210-196.000.

Konigsberg, Moses: See—
Mavis, Robert C., 4,243,564, Cl. 260-17.4ST.

Koninklijke Bos Kalis Westminster Group N.V.: See—
Vermeulen, Teunis, 4,242,815, Cl. 37-58.000.

Koninklijke Emballage Industrie Van Leer B.V.: See—
Gash, Duggan J., 4,243,463, Cl. 156-324.000.

Kooya, Kazuo: See—
Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, 4,243,607, Cl. 570-257.000.

Koposov, Valery V.: See—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.

Koppel, Gary A.: See—
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,243,587, Cl. 260-245.400.

Koppensteiner, James V.: See—
Jameel, Khaja M.; and Koppensteiner, James V., 4,243,963, Cl. 335-151.000.

Koritsu Kikai Kogyo Company Limited: See—
Tsuzuki, Akira; and Miura, Atsushi, 4,243,490, Cl. 202-241.000.

Kornbaum, Simon, to Ato Chimie. Process for manufacturing thermoplastic compositions and containers made of such compositions. 4,243,627, Cl. 264-171.000.

Kortman, Jan C., to Goodyear Tire & Rubber Company. The Building and shaping a tire. 4,243,451, Cl. 156-630.000.

Kosaka, Takao; and Tahara, Yukio, to Mitsubishi Paper Mills, Ltd. Thermal sensitive paper minimized in residue deposition on thermal head. 4,243,716, Cl. 428-327.000.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Fluoroaliphatic sulfonyl substituted ethylenes catalysts in polymerization processes. 4,243,783, Cl. 526-225.000.

Kosten, Gerard J., to Lummus Company. The Cooling tower. 4,243,095, Cl. 165-125.000.

Kosuga, Zinzo: See—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.

Kotschwar, Rex R. Beverage cooler. 4,242,884, Cl. 62-371.000.

Koumura, Noboru: See—
Kobayashi, Hajime; Koumura, Noboru; and Ohno, Shigeru, 4,243,994, Cl. 346-140.00R.

Kovac, Jaroslav: See—
Vegh, Daniel; and Kovac, Jaroslav, 4,243,596, Cl. 260-347.700.

Kowalczyk, John S.: See—
Moore, Eugene R.; and Kowalczyk, John S., 4,243,491, Cl. 203-2.000.

Kozel, Charles A., to Methode Electronics, Inc. Electrical male connector assembly. 4,243,289, Cl. 339-126.0RS.

Kozel, Charles A.: See—
Brown, Vincent B.; Kozel, Charles A.; and Scheitz, John T., 4,243,286, Cl. 339-97.00R.

Kraftwerk Union AG: See—
Weber, Robert, 4,243,889, Cl. 250-507.000.

Kramer, Charles J., to Xerox Corporation. Holographic scanner insensitive to mechanical wobble. 4,243,293, Cl. 350-3.710.

Kramer, George M.: See—
Hall, Richard B.; Kaldor, Andrew; Kramer, George M.; and Dines, Martin B., 4,243,597, Cl. 260-347.800.

Krapcho, John, to E. R. Squibb & Sons, Inc. Heterocyclic containing amines. 4,243,804, Cl. 544-162.000.

Krasnov, Boleslav M.: See—
Lipets, Adolf U.; Krasnov, Boleslav M.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; Galuskin, Vadim B.; Lafa, Jury I.; Alexandrov, Boris I.; and Gromov, Gennady V., 4,243,096, Cl. 165-134.0DP.

Krastinat, Walter, to Byk Gulden Lomberg Chemische Fabrik GmbH. Acylhydrocarbylaminoalkanoic acids, compositions and uses. 4,243,678, Cl. 424-319.000.

Krebs, Fred G.: See—
Wallace, Harry L.; Horak, Anthony; Krebs, Fred G.; and Brown, Louis R., 4,243,330, Cl. 400-194.000.

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Kreage, James S., to General Electric Company. Method for manufacturing zinc oxide varistors having reduced voltage drift. 4,243,622, Cl. 264-66.000.

Krespan, Carl G.: See—
Fang, James C.; and Krespan, Carl G., 4,243,504, Cl. 204-296.000.

Kreuzburg, Gerhard: See—
Lenz, Arnold; Kreuzburg, Gerhard; and Haase, Rainer, 4,243,422, Cl. 106-52.000.

Kristen, Klaus; and Scheidler, Herwig, to JENAer Glaswerk Schott & Gen. Vitreous ceramic cooker hob plate with permanently elastically adhesively attached circumferentially surrounding frame. 4,243,016, Cl. 126-211.000.

Krob, Erwin, to TMC Corporation. Safety ski binding. 4,243,245, Cl. 280-626.000.

Kroy Industries, Inc.: See—
Bradshaw, Franklin C.; Conroy, Thomas P.; and Deutsch, Dennis A., 4,243,333, Cl. 400-158.000.

Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhart, to Schering Aktiengesellschaft. 1,2,3-Thiadiazole-3-in-5-ylidene-urea derivatives, process for making the same and compositions containing the same having growth regulating activity for plants. 4,243,404, Cl. 71-73.000.

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Krulikowski, Alex: See—
Melhorn, Barry J.; and Krulikowski, Alex, 4,242,924, Cl. 74-759.000.

Kubelka, Axel, to Polyair Produkt Design GmbH. Device for drawing a boot off the foot. 4,243,163, Cl. 223-115.000.

Kubota Ltd.: See—
Tamura, Hideo; and Ibuki, Seiro, 4,243,429, Cl. 106-306.000.

Kudou, Etsuzaburo: See—
Akima, Tosio; Kudou, Etsuzaburo; Kaneyasu, Tetsuo; and Kochi, Hiromi, 4,243,784, Cl. 526-88.000.

Kuehn, Erich, to ICI Americas Inc. Isocyanurate solutions. 4,243,788, Cl. 526-261.000.

Kugler, Tibor, to Swiss Aluminium Ltd. Cathode for a reduction pot for the electrolysis of a molten charge. 4,243,502, Cl. 204-243.00R.

Kukules, Erwin; and Dietrich, Guenther, to Malmédie & Co. Maschinenfabrik GmbH. Apparatus for forming long workpieces in presses. 4,242,896, Cl. 72-345.000.

Kume, Makoto, to Nippon Sheet Glass Co., Ltd. Alkali-resistant glass composition. 4,243,421, Cl. 106-50.000.

Kume, Toshiaki: See—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,242,973, Cl. 112-158.00E.

Kumiai Chemical Industry Co., Ltd.: See—
Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, 4,243,661, Cl. 424-117.000.

Kuntner, Richard J.; and Van der Meer, James C., to Eaton Corporation. Solid state motor control universal assembly means and method. 4,243,894, Cl. 307-147.000.

Kuntzmann, Jean-Claude: See—
Delory, Bernard; Fleury, Georges; and Kuntzmann, Jean-Claude, 4,243,914, Cl. 315-3.500.

Kurashima, Hideo. Cufflink. 4,242,776, Cl. 24-41.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: See—
Asano, Kiro; Saito, Tsuyoshi; Hatanaka, Masayoshi; and Ikeda, Susumu, 4,243,662, Cl. 424-180.000.

Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,243,633, Cl. 422-129.000.

Seo, Ikuo, 4,243,512, Cl. 208-39.000.

Kuroyanagi, Itsuo: See—
Yamaguchi, Hisayoshi; and Kuroyanagi, Itsuo, 4,243,473, Cl. 156-626.000.

Kurth, Donald D.: See—
Ver Hoef, Niel; and Kurth, Donald D., 4,243,223, Cl. 273-141.00R.

Kuttler, Otto; and Muller, Klaus, to A. Raymond. Clamp-like, sheet-metal, slip-on nut. 4,243,086, Cl. 411-174.000.

La Pierre Synthetique Baikowski, S.A.: See—
Yancey, Paul J., 4,242,842, Cl. 51-298.000.

Labonville, Emilien. Skidder ring and chain connecting means. 4,243,088, Cl. 152-223.000.

Lacome, Albert: See—
Klein, Jean M.; and Lacome, Albert, 4,243,603, Cl. 260-410.700.

LaCourse, Y. Ronald. Hip stabilizer. 4,243,027, Cl. 128-80.00F.

Ladder of Life, Inc.: See—
Rossey, Eugene, Sr., 4,243,119, Cl. 182-96.000.

Ladney, Michael, Jr.: See—
Wright, Leslie S., Jr., 4,243,501, Cl. 204-180.00P.

Laesser, Claude, to Ebauches S.A. Electro-mechanical watch. 4,244,039, Cl. 368-66.000.

Lafa, Jury I.: See—
Lipets, Adolf U.; Krasnov, Boleslav M.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; Galuskin, Vadim B.; Lafa, Jury I.; Alexandrov, Boris I.; and Gromov, Gennady V., 4,243,096, Cl. 165-134.0DP.

Lahoda, Edward J., to Westinghouse Electric Corp. All dry solid potassium seed regeneration system for magnetohydrodynamic power generation plant. 4,243,645, Cl. 423-428.000.

Laimer, Friedrich, to Voest-Alpine Aktiengesellschaft. Converter plant. 4,243,208, Cl. 266-158.000.

Lal, Joginder; and Walters, Sandra J., to Goodyear Tire & Rubber Company. The Composition and method of improving the green strength of unvulcanized [elastomer] reclaimed rubber elastomer blends. 4,243,561, Cl. 260-4.00R.

Lambert, Charles O.: See—
Hogan, James J.; Lambert, Charles O.; and Wallace, Gene A., 4,244,029, Cl. 364-728.000.

Lamberti, Vincent, to Lever Brothers Company. Method for the preparation of carboxymethyloxysuccinic acid. 4,243,820, Cl. 562-583.000.

Lamberton & Company Limited: See—
Young, Andrew, 4,243,131, Cl. 193-35.0MD.

Lamberty, Bernard J.; and Andrews, George S., to Boeing Company. The Broadband center-fed spiral antenna. 4,243,993, Cl. 343-895.000.

Lambie, John W., to Neptune Glenfield Limited. Fluid flow control valves. 4,243,066, Cl. 137-202.000.

Lampkin, Curtis M.: See—
Jordan, John F.; and Lampkin, Curtis M., 4,243,432, Cl. 136-244.000.

Lampson, Neil F., to Riggers Manufacturing Company. Counterbalanced tower crane. 4,243,148, Cl. 212-196.000.

Landoll, Leo M., to Hercules Incorporated. Surfactant-soluble cellulose derivatives. 4,243,802, Cl. 536-91.000.

Landry, Milton E. Non-conductive safety line and method. 4,243,118, Cl. 182-3.000.

Lane, Leo D.: See—
Wisler, Allen E.; and Lane, Leo D., 4,243,727, Cl. 428-558.000.

Langaadl, Leon: See—
Protiva, Miroslav; Rajaner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Václav; Metysova, Jirina; Diabac, Antonin; Langaadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.

Lankard, John R.: See—
Bethune, Donald S.; Lankard, John R.; Loy, Michael M.; and Sorokin, Peter P., 4,243,881, Cl. 250-338.000.

Lansing Bagnall Limited: See—
Shackelford, Geoffrey G., 4,243,257, Cl. 294-88.000.

Larkin, Joseph F.; Cassidy, Harold M.; Woodcock, John W.; and Dunn, William M., to TRW Inc. Digital tuning element and method of making same. 4,243,962, Cl. 334-7.000.

- LaRooka, Mary A. Irrigation-debridement-repair caddy. 4,243,214, Cl. 269-327.000.
- Larson, Willis A., to Oak Industries Inc. Membrane switch with means for impeding silver migration. 4,243,852, Cl. 200-5.00A.
- Lasperas nee Marnier, Monique: See—
Pascal, Robert; Lasperas nee Marnier, Monique; Rousset, Alain; Commeyras, Auguste; Taillades, Jacques; and Mion, Louis, 4,243,814, Cl. 548-344.000.
- Laurent, Henry: See—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Wendt, Hans; and Kapp, Joachim F., 4,243,664, Cl. 424-243.000.
- Laurenz, Frank R., to Agricultural Research and Development Inc. Barn or pit floor scraper assembly and drive means therefor. 4,243,137, Cl. 198-748.000.
- Lavrov, Vadim V.: See—
Nazarian, Artashes R.; Kremlev, Vyacheslav Y.; Kokin, Vilyam N.; Sladkov, Viktor I.; Venkov, Boris V.; and Lavrov, Vadim V., 4,243,895, Cl. 307-205.000.
- Law, Andrew B.: See—
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,243,403, Cl. 71-67.000.
- Lawes, Michael J. A. Loose leaf binders. 4,243,459, Cl. 156-272.000.
- Lawrence, James E., Jr.: See—
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,243,075, Cl. 138-174.000.
- Lazarevich, Vladeta D.: See—
Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., 4,243,879, Cl. 250-221.000.
- Leal Lara, Hermilo: See—
Eger, Gerlind; and Leal Lara, Hermilo, 4,242,832, Cl. 47-1.100.
- Lebailly, Jacques; and Varon, Jacques, to U.S. Philips Corporation. Electroluminescent semiconductor device. 4,243,996, Cl. 357-17.000.
- Leboute, Hubert; and Tronc, Dominique, to C.G.R.MeV. Magnetic mirror for beams of charged particles accelerated in an accelerator. 4,243,916, Cl. 315-111.800.
- Lecolier, Serge L.: See—
Boileau, Sylvie L.; Caubere, Paul J.; Ndebeka, Gilbert; Lecolier, Serge L.; and Raynal, Serge F., 4,243,787, Cl. 526-180.000.
- Ledford, James B.; and Niederer, Edward, Jr. Manually operated pincer mechanism for pipelines. 4,242,903, Cl. 72-413.000.
- Lee, Arthur L.; and Coval, Arthur B., to A. L. Lee Corporation. Brake system for a vehicle and method of operation thereof. 4,243,126, Cl. 192-2.000.
- Lee, Arthur L.; and Coval, Arthur B., to A. L. Lee Corporation. Control system for automatically actuating vehicle brakes. 4,243,127, Cl. 192-4.00A.
- Lee, Gim F., Jr.: See—
Abolins, Visvaldis; and Lee, Gim F., Jr., 4,243,766, Cl. 525-92.000.
- Lee, John M.; and Bauman, William C., to Dow Chemical Company. The Composition for recovery of Mg^{+2} from brines. 4,243,555, Cl. 252-441.000.
- LeFevre, Clyde E.: See—
Swift, William R.; and LeFevre, Clyde E., 4,242,819, Cl. 40-513.000.
- Lefevre, Lloyd E.; and Wegenka, Mark A., to Dow Chemical Company. The Apparatus for forming starting tail for film rolls. 4,243,366, Cl. 425-303.000.
- Legille, Edouard; Mahr, Rene; and Mailliet, Pierre, to Paul Wurth S.A. Method of and apparatus for charging a furnace. 4,243,351, Cl. 414-206.000.
- Legler, Rudolf F.: See—
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- Legory, John E.: See—
York, Kenneth L.; Annal, Peter R.; and Legory, John E., 4,244,049, Cl. 371-38.000.
- Lehnhoff, Kurt; and Schael, Wilfried, to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG. Apparatebau KG. Haemofiltration with filtrate flow control by adjustable venting. 4,243,530, Cl. 210-137.000.
- Leighton, Robert D., to Alden Research Foundation. Polarized electrical outlet. 4,243,291, Cl. 339-184.00M.
- Leingartner, Josef: See—
Schaidl, Hubert; and Leingartner, Josef, 4,242,968, Cl. 108-20.000.
- Leister, Harry M.: See—
Hall, Wilbur S.; and Leister, Harry M., 4,243,704, Cl. 427-327.000.
- Lemaire, Jean-Pierre: See—
Fagnart, Gaston; and Lemaire, Jean-Pierre, 4,243,448, Cl. 156-73.500.
- Lembke, Herbert: See—
Bartholomaeus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolfgang; Korus, Hans-Dieter; Lembke, Herbert; and Schulte, Heinz, 4,242,942, Cl. 91-358.00R.
- Lemoussu, Michel; and Cardot, Claude, to Compagnie Industrielle des Telecommunications cit Alcatel. Automatic equalizer for a synchronous digital transmission signal. 4,243,956, Cl. 333-18.000.
- Lenaerts, George V.; Perks, Roger; and Dudley, Phillip J., to Northern Telecom Limited. Pushbutton switch assembly for telecommunications and other input apparatus. 4,243,846, Cl. 179-90.00K.
- Lenart, Tibor, to Aktiebolaget Multilab. Recharging accumulator batteries. 4,243,929, Cl. 320-23.000.
- Lengyel, Zoltan: See—
Simon, Agoston; and Lengyel, Zoltan, 4,243,685, Cl. 426-53.000.
- Lennon, Donald J. J.; and Clapp, Roger E., to EPP Corp. Structured donor sheet for high-resolution non-impact printer. 4,243,726, Cl. 428-545.000.
- Lenz, Arnold; Kreuzburg, Gerhard; and Haase, Rainer, to Dynamit Nobel Aktiengesellschaft. Granular quartz glass product. 4,243,422, Cl. 106-52.000.
- Lenzen, Glenn H.: See—
Earle, Michael; and Lenzen, Glenn H., 4,243,867, Cl. 219-121.0LC.
- Leonard, Martin. Particulate material separator and method. 4,243,527, Cl. 210-785.000.
- Leonhart, Xavier F. Separately useable pull-out table leaf. 4,242,967, Cl. 108-11.000.
- Leroy, Pierre J.; Bastien, Jean P.; and Sprunck, Emile J., to Creusot-Loire. Tuyere for use in refining liquid metals. 4,243,211, Cl. 266-268.000.
- Les Entreprises Rotot Ltee: See—
Thiboutot, Robert, 4,243,263, Cl. 297-42.000.
- Les Fils d'Auguste Chomarat & Cie: See—
Curinier, Jean; and Vandermarliere, Charles, 4,242,779, Cl. 28-101.000.
- Lesieur-Cotelle & Associes S.A.: See—
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- Leslie, Frank B.: See—
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- Lester, George W.: See—
Malloy, Thomas P.; and Lester, George W., 4,243,831, Cl. 585-824.000.
- Leto, Anthony: See—
Harrison, Emmett S.; and Leto, Anthony, 4,242,865, Cl. 60-242.000.
- Lever Brothers Company: See—
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- Pruss, Hans-Dieter; and Bahrs, Lutje-Wilhelm, 4,243,684, Cl. 426-40.000.
- Taylor, Thomas, 4,243,544, Cl. 252-135.000.
- Levinrad, Maxim D. Board games. 4,243,225, Cl. 273-272.000.
- Lewis, Robert A.: See—
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- Marcella, Joseph. Remotely-perceptible impact-indicating projectile target. 4,243,228, Cl. 273-378.000.
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Meckel, Lothar, See—
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Ware, Lyle A., 4,243,042, Cl. 128-419.00P.

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Brown, Vincent B.; Kozel, Charles A.; and Scheitz, John T., 4,243,286, Cl. 339-97.00R.

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James, Michael J., 4,243,369, Cl. 425-451.200.

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Swartz, Jeffrey L., 4,243,449, Cl. 156-82.000.

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DePenti, Kenneth L., 4,243,149, Cl. 213-62.00A.

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Schwarzmann, Frank, 4,243,883, Cl. 250-343.000.

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Sadch, Dora; and Hexter, Charles S., 4,243,749, Cl. 435-7.000.

Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Huschens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, to Kali-Chemie Aktiengesellschaft. Bendodiazocine derivatives and process of making the same. 4,243,585, Cl. 260-239.00B.

Miller, Bruce J.; Gadonas, Gus C.; and Donofrio, Frank C. Isolator/switching assembly for data processing terminal. 4,243,890, Cl. 250-551.000.

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Muller, Werner C.; and Miller, Franklyn D., 4,243,750, Cl. 435-162.000.

Miller, Frederick A., See—
Keskula, Henno; and Miller, Frederick A., 4,243,765, Cl. 525-86.000.

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Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,243,403, Cl. 71-67.000.

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Amis, Andrew A.; and Miller, James H., 4,242,758, Cl. 3-1.910.

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Van den Bergh, Marc F. S. M., 4,243,215, Cl. 493-422.000.

Mills, Harold E., to Occidental Chemical Company. Metallic ion removal from phosphoric acid. 4,243,643, Cl. 423-319.000.

Minagawa, Motonobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, to Maruzen Oil Co., Ltd. Stabilized polypropylene composition. 4,243,581, Cl. 260-45.85S.

Mine, Katsutoshi, to Toray Silicone Company, Ltd. Electrical insulating compositions containing zinc oxide and an organosilicon compound containing at least one silicon-hydrogen bond. 4,243,542, Cl. 260-375.00B.

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Dugger, Charles B., Jr., 4,243,182, Cl. 241-153.000.

Minnesota Mining and Manufacturing Company, See—
Chang, Robert W. H., 4,243,658, Cl. 424-52.000.

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Simpson, Jon H., 4,243,768, Cl. 525-127.000.

White, James L.; and Berg, James G., 4,243,794, Cl. 528-112.000.

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Ogawa, Masaya, 4,243,312, Cl. 355-8.000.

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Pascal, Robert; Lasperas nee Marnier, Monique; Rousset, Alain; Commyras, Auguste; Taillades, Jacques; and Mion, Louis, 4,243,814, Cl. 548-344.000.

Miquel, Jean, See—
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Miranti, Joseph P., Jr., See—
Richmond, Kenneth D.; Miranti, Joseph P., Jr.; and Henderson, Dewey D., 4,243,452, Cl. 156-138.000.

Misawa, Akira; and Numata, Tatsuo, to Pioneer Electronic Corporation. Tuner with phase locked loop synthesizer. 4,244,055, Cl. 455-174.000.

Mishima, Matsuo, to Micro Technology Laboratory Co., Ltd. Permanent magnet stator for a DC dynamo electric machine using blocking magnets. 4,243,903, Cl. 310-154.000.

Mitchell, Daniel M., to Rockwell International Corporation. Sine-wave static converter. 4,244,016, Cl. 363-98.000.

Mitchell, Phillip E. Bowl and lid dispenser. 4,243,153, Cl. 221-34.000.

Mitooka, Kenji, See—
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,243,457, Cl. 156-245.000.

Mitsche, Roy T.; and Pope, George N., to UOP Inc. Reforming process. 4,243,515, Cl. 208-138.000.

Mitsubishi Denki Kabushiki Kaisha, See—
Fujishima, Kazuyasu; Yamada, Michihiro; and Nagasawa, Kouichi, 4,243,897, Cl. 307-221.00D.

Kii, Masami, 4,243,860, Cl. 200-148.00R.

Mitsubishi Gas Chemical Company, Inc., See—
Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, 4,243,599, Cl. 260-348.250.

Mitsubishi Paper Mills, Ltd., See—
Kosaka, Takao; and Tahara, Yukio, 4,243,716, Cl. 428-327.000.

Mitsui Coke Co., Ltd., See—
Sugimura, Hidehiko; and Koba, Keichiro, 4,243,488, Cl. 201-6.000.

Mitsui Petrochemical Industries Ltd., See—
Shiraki, Shigemitsu; and Yamamoto, Ryoichi, 4,243,636, Cl. 422-225.000.

Miura, Atsushi, See—
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Miyake, Hidekazu, See—
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Miyakoshi, Isamu; Ito, Kenji; Azuma, Hideo; Kitakaze, Fukuzo; Tomotaki, Takamichi; and Takehara, Yasuo, to Hankyu Zouki Kogyo Kabushiki Kaisha. Speed controller for the rolling cylindrical articles. 4,243,132, Cl. 193-40.000.

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Mobay Chemical Corporation: See—
Burge, Russell W., 4,243,617, Cl. 264-39.000.
Burge, Russell W., 4,243,625, Cl. 264-120.000.
Haas, James L., 4,243,759, Cl. 521-167.000.

Mobil Oil Corporation: See—
Farcasiu, Malvina; and Brandes, Susan D., 4,243,539, Cl. 252-52.00R.
Kerr, George T.; Plank, Charles J.; and Rosinski, Edward J., 4,243,828, Cl. 585-467.000.

Moeller, Chris R.; and Slanina, George L. Method and apparatus for control of air flow to a plurality of rooms, 4,243,174, Cl. 236-46.00R.

Moerel, Claude L. E.: See—
Bourdaucau, Paul M. C.; Brouard, Claude M. H. E.; Moerel, Claude L. E.; and Stiot, Jean-Pierre H., 4,243,606, Cl. 260-465.00D.

Mohlenkamp, Marvin J., Jr.; and Hiler, George D., to Procter & Gamble Company, The. Sodium-free salt substitute, 4,243,691, Cl. 426-649.000.

Mohring, Edgar P.; and Muller, Hanns P., to Bayer Aktiengesellschaft. Process for the production of reaction products using aqueous formose which has been prepared with the use of a lead catalyst which lead catalyst has been removed from the formose product by cathodic electrochemical deposition, 4,243,758, Cl. 521-158.000.

Molina, Orlando G., to Rockwell International Corporation. Composition and method for removing water and aqueous leak tracer solutions from fuel tanks, 4,243,547, Cl. 252-194.000.

Molins Machine Company, Inc.: See—
Coburn, Robert E., 4,242,934, Cl. 83-100.000.

Molleron, Claude A.: See—
Brouard, Germain G.; and Molleron, Claude A., 4,244,046, Cl. 370-62.000.

Mona Industries: See—
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., 4,243,602, Cl. 260-403.000.

Monash University: See—
Cherry, Edward M., 4,243,943, Cl. 330-100.000.

Mondragon Sorribes, Ramon. Container for the individual transportation of plants, 4,242,835, Cl. 47-84.000.

Mono Pumps (Africa) (Proprietary) Limited: See—
Payne, Stanley A. E., 4,242,887, Cl. 64-4.000.

Monsanto Company: See—
Brannigan, Lawrence H.; Franz, John E.; and Schafer, David E., 4,243,406, Cl. 71-88.000.
Gabbard, James D., 4,243,571, Cl. 260-31.80H.
Magin, Ralph W., 4,243,591, Cl. 260-326.220.
Spilburg, Curtis A.; and Schuck, James M., 4,243,582, Cl. 260-112.00R.
Williamson, Alex N.; and Tremont, Samuel J., 4,243,825, Cl. 585-428.000.

Montedison S.p.A.: See—
Palvarini, Attilio; Lorusso, Simone; and Longoni, Angelo, 4,243,703, Cl. 427-276.000.

Moody, Jack M., to Cranston Machinery Co., Inc. Door sizing machine, 4,243,084, Cl. 144-39.000.

Moog Recreational Products, Inc.: See—
Replogle, Douglas L., 4,243,244, Cl. 280-605.000.

Mookherjee, Braja D.: See—
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Moore, Eugene R.; and Kowalczyk, John S., to Dow Chemical Company. The Continuous method for determining residual vinyl chloride content in a boiling aqueous polymer dispersion, 4,243,491, Cl. 203-2.000.

Moore, Henry J., Jr.; and Deneau, Myron E., to Mor-Flo Industries, Inc. Hot water tank supporting legs, 4,243,194, Cl. 248-188.100.

Moore, Michael R. P. Bird nesting box formed of a disposable storage container, 4,242,983, Cl. 119-23.000.

Moore, Randall H.: See—
McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., 4,243,935, Cl. 324-77.00R.

Mor-Flo Industries, Inc.: See—
Moore, Henry J., Jr.; and Deneau, Myron E., 4,243,194, Cl. 248-188.100.

Moredock, Jerry L.; Wagner, James E.; and Hyder, Jonnie O., to Martin Marietta Corporation. Chevron grooved decoupling obturator, 4,242,961, Cl. 102-93.000.

Morgan Adhesives Company: See—
McClintock, Jack M., 4,243,453, Cl. 156-152.000.

Morgan Construction Company: See—
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Mori, Haruo: See—
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Mori, Masaaki; Ogawa, Tamotou; and Takai, Norihira, to Toshiba Ceramics Co., Ltd. β -Sialon sintered body and a method for manufacturing the same, 4,243,621, Cl. 264-65.000.

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Morisi, Franco: See—
Marconi, Walter; Pittalis, Francesco; Bartoli, Francesco; and Morisi, Franco, 4,243,776, Cl. 525-420.000.

Moritani, Nakanobu: See—
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Moriyama, Aritsune; and Kida, Kunio, to Sanko Air Plant, Ltd. Thermo-pneumatic unit and apparatus for thermal treatment of travelling flat materials, 4,242,811, Cl. 34-150.000.

Morris, Kenneth J., to Smiths Industries. Workpiece drive wheel for a grinding machine, 4,242,840, Cl. 51-236.000.

Morrow, Duane F.; and Matier, William L., to Mead Johnson & Company. Alkylthiophenoxypropanolamines and pharmaceutical compositions and uses thereof, 4,243,681, Cl. 424-330.000.

Morton, Douglas R., Jr., to Upjohn Company, The. 9,11-Dideoxy-10-oxa-TXB compounds, 4,243,592, Cl. 260-340.700.

Morton, Kenneth I., to Brunswick Corporation. Camouflage, 4,243,709, Cl. 428-195.000.

Mosley, Darrell T.: See—
Winsett, Walter P., 4,242,768, Cl. 9-1.200.

Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Rika-Denki Seisakusho. Locking device for seatbelt systems, 4,243,185, Cl. 242-107.200.

Motorola, Inc.: See—
Daniel, Sam M.; and Peterson, Kenneth M., 4,243,955, Cl. 332-37.00D.
Eckert, Kim, 4,243,945, Cl. 330-253.000.
Seelbach, Walter C., 4,243,898, Cl. 307-310.000.
Zdunek, Kenneth J., 4,243,941, Cl. 329-50.000.

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Mueller, Herbert; Huchler, Otto H.; and Hoffmann, Herwig, to BASF Aktiengesellschaft. Polymerization of tetrahydrofuran, 4,243,799, Cl. 528-409.000.

Mui, Wing F., to GTE Automatic Electric Laboratories Incorporated. Interlock control of asynchronous data transmission between a host processor and a plurality of microprocessors through a common buffer, 4,244,018, Cl. 364-200.000.

Mulcahy, John J., to Gloucester Engineering Co., Inc. Control of tubular film size, 4,243,363, Cl. 425-140.000.

Muller, Hanns P.: See—
Mohring, Edgar P.; and Muller, Hanns P., 4,243,758, Cl. 521-158.000.

Muller, Helmut; and Schweizer, Heinz, to Voith Transmitten GmbH. Coupling for torque transmission, 4,242,889, Cl. 64-30.00R.

Muller, Klaus: See—
Kuttler, Otto; and Muller, Klaus, 4,243,086, Cl. 411-174.000.

Muller, Rolf; to Mead Corporation, The. Wrapper for a plurality of articles arranged in rows, 4,243,143, Cl. 206-429.000.

Muller, Werner C.; and Miller, Franklin D., to National Distillers and Chemical Corp. Process for the hydrolysis of starch and the continuous fermentation of the sugars obtained therefrom to provide ethanol, 4,243,750, Cl. 435-162.000.

Mulloy, John M.: See—
Flynn, Patrick F.; Weber, Harold G.; and Mulloy, John M., 4,243,357, Cl. 415-215.000.

Multani, Jagir S.; and Sandhu, Jagtar S., to General Instrument Corporation. Microelectronic device and method for testing same, 4,243,937, Cl. 324-158.00T.

Multicore Solders Limited: See—
Arbib, Gordon F.; and Baranick, Mervin, 4,243,440, Cl. 148-23.000.

Multifastener Corporation: See—
Matthews, Horton; York, Kenneth V.; and Goodsmith, Dale H., 4,242,793, Cl. 29-798.000.

Murai, Bunjiro; and Matsumoto, Yasuji, to Toshiba Silicone Co. Ltd. Primer compositions for Si-H-olefin platinum catalyzed silicone compositions, 4,243,718, Cl. 428-411.000.

Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, to Kanebo Foods Ltd. Instant-cooking dry macaroni and like dry foods and a method of their manufacture, 4,243,690, Cl. 426-557.000.

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Murao, Mikio: See—
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Murata, Katsuhiro: See—
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Murtha, Timothy P.: See—
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Muscannell, Douglas W.: See—
Paris, Alfonso A., Jr.; Muscannell, Douglas W.; and Grutter, James H., 4,243,082, Cl. 144-133.00R.

Mussinan, Cynthia J.: See—
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Myers, Donald C.; and Wilson, Phillip S., to General Electric Company. Filled thermoplastic resin compositions, 4,243,575, Cl. 260-37.00C.

Myers, Franklin D.; and McKelvy, Marvin D., to A. B. Chance Company. Torque controlled clamp stick adapter, 4,242,930, Cl. 81-474.000.

Nachbur, Hermann; Hiestand, Armin; and Rohringer, Peter, to Ciba-Geigy Corporation. Compositions for fireproofing polyester fiber materials with substituted sulphurilamides, 4,243,418, Cl. 106-18.220.

Nagai, Kiyoshi, to Wakoh Corporation. Filament support assembly for display device, 4,243,910, Cl. 313-522.000.

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Nagasawa, Kouichi: See—
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Nagata, Hideo: See—
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Nagler, Robert T., to Lundy Electronics & Systems, Inc. Conductive laminate and method of producing the same, 4,243,460, Cl. 156-275.000.

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Nakagawa, Hiroshi: See—
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Nakamoto, Soichi: See—
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Nakamura, Akira; and Oguri, Masato, to Toyota Jidosha Kogyo Kabushiki Kaisha. Booster utilizing fluid pressure, 4,242,943, Cl. 91-369.00A.

Nakamura, Kotaro; Adachi, Keiichi; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material, 4,243,747, Cl. 430-551.000.

Nakamura, Yoichi: See—
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Nakamura, Yoshikatsu: See—
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Nakayama, Motohiro; and Nakajima, Kazutsugu, to Nippon Steel Corporation. Steel sheet having a zinc coating on one side, 4,243,730, Cl. 428-659.000.

Nakayama, Yasuaki, to Citizen Watch Co., Ltd. Watch movement construction, 4,243,329, Cl. 368-76.000.

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National Element, Inc.: See—
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National Nuclear Corp.: See—
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National Research Development Corporation: See—
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Martin, Archer J. P.; and Hampson, Frank, 4,243,507, Cl. 204-301.000.

National Semiconductor Corporation: See—
Haines, Ralph W., 4,244,028, Cl. 364-712.000.

National Starch and Chemical Corporation: See—
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,243,480, Cl. 162-141.000.
Tessler, Martin M., 4,243,479, Cl. 162-175.000.

National Steel Corporation: See—
Wilson, Walter A., 4,243,441, Cl. 148-128.000.

Natori, Kenji; and Masuoka, Fujio, to Tokyo Shibaura Electric Co., Ltd. Semiconductor device, 4,243,997, Cl. 357-23.000.

Naumann, Alfred W.; and Behan, Albert S., to Union Carbide Corporation. Production of improved molybdenum disulfide catalysts, 4,243,553, Cl. 252-439.000.

Naumann, Alfred W.; and Behan, Albert S., to Union Carbide Corporation. Molybdenum disulfide catalyst and the preparation thereof, 4,243,554, Cl. 252-439.000.

Nava, Pierluigi. Helmet with tiltable visor, 4,242,757, Cl. 2-10.000.

Nazarian, Artashes R.; Kremliv, Vyacheslav Y.; Kokin, Vilyam N.; Sladkov, Viktor I.; Venkov, Boris V.; and Lavrov, Vadim V. Integrated injection circuit, 4,243,895, Cl. 307-205.000.

Nazimek, Kenneth, to Exxon Research & Engineering Co. Voltage regulator for variant light intensity photovoltaic recharging of secondary batteries, 4,243,928, Cl. 320-2.000.

NCR Canada Ltd. - NCR Canada Ltee: See—
Mazumder, Ali T., 4,243,216, Cl. 271-263.000.
Vyas, Arvind C., 4,243,983, Cl. 340-674.000.

Ndebeka, Gilbert: See—
Boileau, Sylvie L.; Caubere, Paul J.; Ndebeka, Gilbert; Lecolier, Serge L.; and Raynal, Serge F., 4,243,787, Cl. 526-180.000.

Ned Strongin Associates, Inc.: See—
O'Shaughnessy, John F., 4,242,831, Cl. 46-251.000.

Neff, Robert K.: See—
Holt, Jan D.; and Neff, Robert K., 4,242,966, Cl. 105-182.00R.

Negishi, Takao; and Tomita, Kazuo, to Toray Industries, Inc. Multifilament yarn having novel configuration and a method for producing the same, 4,242,862, Cl. 57-287.000.

Negosta, Edward W. Granular product dispenser, 4,243,158, Cl. 222-184.000.

Nekoosa Papers, Inc.: See—
Lodzinaki, Fred P., 4,243,319, Cl. 356-73.000.

Nemecek, Ralph E.: See—
Kabay, Steve; and Nemecek, Ralph E., 4,243,341, Cl. 403-16.000.

Nemit, Jeffrey T.; Hockham, George A.; and Wolfson, Ronald I., to International Telephone and Telegraph Corporation. Integrated multiband array antenna, 4,243,990, Cl. 343-771.000.

Nemoto, Takayuki: See—
Kitahara, Sigeyosi; Okada, Isamu; Jumoni, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.

Neptune Glenfield Limited: See—
Lambie, John W., 4,243,066, Cl. 137-202.000.

Nero, Leroy W., to RCA Corporation. Color picture tube magnetic shielding and degaussing structure, 4,243,913, Cl. 315-8.000.

Nestler, Gerhard: See—
Merger, Franz; and Nestler, Gerhard, 4,243,815, Cl. 560-25.000.

Neturen Company Ltd.: See—
Fukuhara, Tetsuzaku, 4,243,447, Cl. 156-64.000.

Neumann, Gerhard M.; and Karel, Jochen, to Delbag-Luftfilter GmbH. Method of mounting filter elements and mounting therefor, 4,243,486, Cl. 176-37.000.

Nevins, James L., Jr.: See—
Whitney, Daniel E.; and Nevins, James L., Jr., 4,243,923, Cl. 318-561.000.

Nevrela, James D.: See—
Rees, Herbert; and Nevrela, James D., 4,243,362, Cl. 425-130.000.

New, David M.: See—
Cooper, Edward G.; Jeffers, Richard D.; and New, David M., 4,242,876, Cl. 62-89.000.

New England Log Homes, Inc.: See—
Paris, Alfonso A., Jr.; Muscannell, Douglas W.; and Grutter, James H., 4,243,082, Cl. 144-133.00R.

Newton, Alan B.: See—
Bye, Ashley D.; and Newton, Alan B., 4,243,782, Cl. 526-140.000.

Nezuka, Minoru: See—
Suzuki, Takeshi; Murao, Mikio; Uchida, Masahiro; and Nezuka, Minoru, 4,243,382, Cl. 432-78.000.

NGK Insulators, Ltd.: See—
Higuchi, Noboru; and Futamura, Shoji, 4,243,370, Cl. 425-462.000.

Niagara Cutter Inc.: See—
Oaks, Ronald R., 4,242,927, Cl. 76-101.00A.

Nicolas, Edgar; and Bourgeois, Louis, to Solvay & Cie. Process for the electrolytic production of hydrogen in an alkaline, 4,243,497, Cl. 204-98.000.

Nicolaus, Frank G., to Bally Manufacturing Corporation. Anti-stringing device for a coin detecting device, 4,243,133, Cl. 194-9.00R.

Niederer, Edward, Jr.: See—
Ledford, James B.; and Niederer, Edward, Jr., 4,242,903, Cl. 72-413.000.

Nieman, John R., to Caterpillar Tractor Co. Method of making an insulated manifold with double cast walls, 4,243,093, Cl. 164-96.000.

Nietzsche, Rainer: See—
Hillenkamp, Franz; Kaufmann, Raimund; Unold, Eberhard; Nietzsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.

Nihon Atsuden Kogyo K.K.: See—
Yanagida, Kiyomi; Magusa, Harumi; and Takahashi, Akihiko, 4,243,438, Cl. 148-11.50A.

Nihon Kogyo Kabushiki Kaisha: See—
Sato, Haruki; and Kawasumi, Yoshio, 4,243,728, Cl. 428-570.000.

Niida, Hideo, to Tokyo Shibaura Electric Co., Ltd. Refrigerating apparatus, 4,242,880, Cl. 62-200.000.

Nikolaeva, Militsina A.: See—
Kruglikov, Anatoly A.; Nikolaeva, Militsina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.

Nikolic, Cvetko: See—
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, 4,243,498, Cl. 204-112.000.

Niles, Paul D.: See—
Ellingson, Dennis L.; Niles, Paul D.; Normann, Richard W.; and Wilklow, Theodore L., 4,242,790, Cl. 29-879.000.

Ninomiya, Masakazu: See—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.

Nippon Electric Co., Ltd.: See—
Nomura, Hidenori; Honno, Hiroshi; and Matsushita, Shigeo, 4,243,398, Cl. 65-2.000.

Sato, Susumu; and Tsunemitsu, Hideo, 4,244,002, Cl. 357-68.000.

Nippon Graphite Industries, Ltd.: See—
Shiba, Hiroshi; and Murata, Katsuhiro, 4,243,455, Cl. 156-187.000.

Nippon Hoso Kyokai: See—
Kitahara, Sigeyoshi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.

Nippon Kogaku K.K.: See—
Okuda, Minoru; and Ito, Mikio, 4,243,321, Cl. 356-135.000.

Nippon Piston Ring Co., Ltd.: See—
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,243,414, Cl. 75-244.000.

Nippon Sheet Glass Co., Ltd.: See—
Kume, Makoto, 4,243,421, Cl. 106-50.000.

Ohsato, Nobuyoshi; Tanaka, Keihachiro; and Mizushima, Eiji, 4,243,400, Cl. 65-16.000.

Nippon Soken, Inc.: See—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.

Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.

Nippon Steel Corporation: See—
Nakayama, Motohiro; and Nakajima, Kazutsugu, 4,243,730, Cl. 428-659.000.

Nippon Telegraph and Telephone Public Corporation: See—
Nosu, Kiyoshi; Ishio, Hideki; and Miki, Tetsuya, 4,244,045, Cl. 370-3.000.

Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, 4,244,000, Cl. 357-39.000.

Nippon Zeon Co. Ltd.: See—
Inagami, Masaki; and Fukushima, Hiroshi, 4,243,774, Cl. 525-405.000.

Nippondenso Co., Ltd.: See—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.

Nishikawa, Kazuyoshi; and Uno, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Lubrication in power transmission unit, 4,242,923, Cl. 74-700.000.

Nishimatsu, Akira: See—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.

Nishimura, Hiroyuki: See—
Shioya, Toshio; Nishimura, Hiroyuki; and Umemoto, Takashi, 4,242,998, Cl. 123-568.000.

Nishino, Sakae; Sakakibara, Takao; and Okazaki, Haruhiko, to Dai Nippon Toray Co., Ltd. Aqueous dispersion type coating composition, 4,243,565, Cl. 260-22.00CQ.

Nishiyama, Shigeru: See—
Amemori, Hiroyuki; and Nishiyama, Shigeru, 4,242,916, Cl. 73-861.830.

Nishiyama, Yukio: See—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.

Nissan Motor Company, Limited: See—
Hisatomi, Takashi, 4,243,005, Cl. 123-638.000.

Kataoka, Shunpei, 4,243,247, Cl. 280-700.000.

Kawamura, Yoshihisa; and Saito, Masaaki, 4,242,992, Cl. 123-491.000.

Toda, Tadayoshi; Omote, Kazuaki; and Imai, Mamoru, 4,243,196, Cl. 248-475.00R.

Nissen, Dietmar: See—
Marx, Matthias; Nissen, Dietmar; and Jarre, Wolfgang, 4,243,755, Cl. 521-99.000.

Nissen, Walter D., to Kimberly-Clark Corporation. Automatic bag loader, 4,242,854, Cl. 53-529.000.

Nitto Electric Industrial Co., Ltd.: See—
Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, 4,243,462, Cl. 156-310.000.

Niven, William A.; Shikany, S. David; and Shira, Michael L., to United States of America. Energy. Multiple stage miniature stepping motor, 4,243,900, Cl. 310-49.00R.

Nixon, Ralph D., to English Electric Valve Company Limited. Display arrangements, 4,243,986, Cl. 340-756.000.

Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Method and apparatus for generating synchronizing signal for a beam scanner, 4,243,294, Cl. 350-6.800.

Nolte, Ewald, to Tuxhorn KG. Bypass valve for pumps, heating systems and the like, 4,243,064, Cl. 137-117.000.

Noltes, Jan G.; Jastrzebski, J. T. B. H.; and van Koten, Gerard, to Borg-Warner Corporation. Aliphatic metal cluster compounds, 4,243,604, Cl. 260-430.000.

Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., to Borg-Warner Corporation. Zero-valent rhodium catalyst hydrogenation, 4,243,824, Cl. 585-259.000.

Nomura, Hidenori; Honno, Hiroshi; and Matsushita, Shigeo, to Nippon Electric Co., Ltd. Method of producing dielectric diffraction gratings or dielectric multilayer interference filters, 4,243,398, Cl. 65-2.000.

Noomi, Makoto: See—
Fujikura, Nobuyuki; Noomi, Makoto; and Ihara, Hirokazu, 4,244,051, Cl. 375-17.000.

Nordh, Sven B. L. Method and composition for the preservation of plants, 4,243,693, Cl. 427-4.000.

Norlin Industries, Inc.: See—
Swain, Richard S., 4,242,936, Cl. 84-1.030.

Normann, Richard W.: See—
Ellingson, Dennis L.; Niles, Paul D.; Normann, Richard W.; and Wilklow, Theodore L., 4,242,790, Cl. 29-879.000.

North American Philips Corporation: See—
Delfino, Michaelangelo; Gentile, Philip S.; Loiacono, Gabriel M.; and Smith, Wallace A., 4,243,642, Cl. 423-277.000.

North Atlantic Industries, Inc.: See—
Wassermann, Carl I., 4,242,955, Cl. 101-93.290.

Northampton Sheet Metal Fabrications Ltd.: See—
Scarrott, Brian D., 4,242,904, Cl. 72-461.000.

Northern Telecom Limited: See—
Gibb, William D., 4,243,842, Cl. 179-18.0FA.

Gordon, Kevin S., 4,243,320, Cl. 356-73.100.

Lenaerts, George V.; Perks, Roger; and Dudley, Phillip J., 4,243,846, Cl. 179-90.00K.

Norton, Terry L.: See—
Suttles, James M.; Norton, Terry L.; Hart, Joseph P.; and Jordan, Thomas C., III, 4,242,970, Cl. 108-159.000.

Nosu, Kiyoshi; Ishio, Hideki; and Miki, Tetsuya, to Nippon Telegraph and Telephone Public Corporation. Optical multiplexer and demultiplexer, 4,244,045, Cl. 370-3.000.

Novak, Lajos: See—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.

Novak, Walter T.: See—
Hansen, Magnus B.; and Novak, Walter T., 4,244,012, Cl. 362-216.000.

Numata, Tatsuo: See—
Misawa, Akira; and Numata, Tatsuo, 4,244,055, Cl. 455-174.000.

N.V. Bekeert S.A.: See—
Vanassche, Roger; and Verbauwhede, Germain, 4,243,714, Cl. 428-258.000.

N.V. Optische Industrie "De Oude Delft": See—
van Geest, Lambertus K.; and Houtkamp, Johannes J., 4,243,905, Cl. 313-102.000.

Oak Industries Inc.: See—
Larson, Willis A., 4,243,852, Cl. 200-5.00A.

Oaks, Ronald R., to Niagara Cutter Inc. Method of making a cutting tool, 4,242,927, Cl. 76-101.00A.

Oblas, Daniel W.: See—
Brecher, Charles; and Oblas, Daniel W., 4,243,909, Cl. 313-487.000.

Occidental Chemical Company: See—
Mills, Harold E., 4,243,643, Cl. 423-319.000.

Occidental Oil Shale, Inc.: See—
Cha, Chang Y., 4,243,100, Cl. 166-259.000.

Occidental Petroleum Company: See—
Bradford, James L.; and Ore, Fernando, 4,243,637, Cl. 423-10.000.

Occidental Petroleum Corp.: See—
Green, Norman W., 4,243,489, Cl. 201-12.000.

Oda, Hajime: See—
Samejima, Toshihide; Moritani, Nakanobu; Oda, Hajime; and Fujita, Masanori, 4,244,042, Cl. 368-73.000.

Oda, Nobuteru: See—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.

Odin, Eugene: See—
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,243,822, Cl. 568-769.000.

Oe, Eizi: See—
Kakumoto, Michio; Oe, Eizi; and Nakagawa, Hiroshi, 4,243,932, Cl. 324-54.000.

Offerman, Karl B.: See—
Peter, Jack; Offerman, Karl B.; Brown, Larry D.; and Stone, Derek J., 4,243,186, Cl. 242-195.000.

Officine Meccaniche Danieli & C. SpA: See—
Famos, Steno; Fasano, Fulvio; and Bassarutti, Alfredo, 4,242,933, Cl. 83-37.000.

Ogawa, Akira: See—
Nakamura, Kotaro; Adachi, Keiichi; and Ogawa, Akira, 4,243,747, Cl. 430-551.000.

Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus, 4,243,312, Cl. 355-8.000.

Ogawa, Tamotzu: See—
Mori, Masaki; Ogawa, Tamotzu; and Takai, Norihira, 4,243,621, Cl. 264-65.000.

Oguri, Masato: See—
Nakamura, Akira; and Oguri, Masato, 4,242,943, Cl. 91-369.00A.

Ohgi, George Y., to Boeing Company. The. Temperature stabilized linkage, 4,243,189, Cl. 244-75.00R.

Ohlinger, Manfred: See—
Hammon, Fritz; Ohlinger, Manfred; and Hartmann, Job-Werner, 4,243,059, Cl. 137-2.000.

Ohno, Shigeru: See—
Kobayashi, Hajime; Koumura, Noboru; and Ohno, Shigeru, 4,243,994, Cl. 346-140.00R.

Ohsato, Nobuyoshi; Tanaka, Keihachiro; and Mizushima, Eiji, to Nippon Sheet Glass Co., Ltd. Apparatus for producing fibers from heat-softening materials, 4,243,400, Cl. 65-16.000.

Ohwada, Hisatoshi: See—
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,243,633, Cl. 422-129.000.

Oil Extractors, Inc.: See—
Groff, Henry C., 4,243,361, Cl. 417-554.000.

Oil Recovery Systems, Inc.: See—
Strauss, William A., 4,243,529, Cl. 210-109.000.

Oishi, Kiyohiko: See—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.

Okada, Isamu: See—
Kitahara, Sigeyoshi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.

Okada, Ken: See—
Kokeguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, 4,243,689, Cl. 426-557.000.

Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,243,690, Cl. 426-557.000.

Okamoto, Haruo: See—
Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, 4,243,607, Cl. 570-257.000.

Okawa, Masahisa: See—
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,243,786, Cl. 526-137.000.

Okawa, Takashi: See—
Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, 4,243,599, Cl. 260-348.250.

Okayama, Morio: See—
Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Okayama, Morio; and Iwasaki, Isao, 4,242,888, Cl. 64-21.000.

Okazaki, Haruhiko: See—
Nishino, Sakae; Sakakibara, Takao; and Okazaki, Haruhiko, 4,243,565, Cl. 260-22.00CQ.

Oki Electric Industry Co., Ltd.: See—
Onoda, Fumio; and Kakizoe, Yutaka, 4,243,924, Cl. 318-573.000.

Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, 4,244,000, Cl. 357-39.000.

Okuda, Minoru; and Ito, Mikio, to Nippon Kogaku K.K. Handy refractometer, 4,243,321, Cl. 356-135.000.

Okumura, Takeo; Ishida, Atsuo; and Hayashi, Shizuo, to Kao Soap Co., Ltd. Hair cosmetic, 4,243,657, Cl. 424-47.000.

O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., to Mona Industries. Novel quaternary compounds, 4,243,602, Cl. 260-403.000.

Olinkraft, Inc.: See—
Wilson, Jerry F., 4,243,138, Cl. 206-188.000.

Oliver, Douglas E. Apparatus for programming a PROM by propagating data words from an address bus to the PROM data terminals, 4,244,032, Cl. 364-900.000.

Olsen, C. Eric, to Auburn Enterprises, Inc. Instrument for taking tissue specimens, 4,243,047, Cl. 128-751.000.

Olsen, Robert C., to Illinois Tool Works Inc. Nestable and stackable transplanting system, 4,242,834, Cl. 47-73.000.

Olson, Daniel R.: See—
Schroeter, Siegfried H.; and Olson, Daniel R., 4,243,720, Cl. 428-412.000.

Olson, Gary L.; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Synthesis of vitamin E, 4,243,598, Cl. 260-348.110.

Olsson, Mark S. Waterproof sport watch, 4,244,044, Cl. 368-291.000.

Olympus Optical Co., Ltd.: See—
Satoh, Ken, 4,244,009, Cl. 360-71.000.

Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Method for controlling ignition timing of internal combustion engine, 4,243,008, Cl. 123-425.000.

Omote, Kazuaki: See—
Toda, Tadayoshi; Omote, Kazuaki; and Imai, Mamoru, 4,243,196, Cl. 248-475.00R.

O'Neill, Charles F., to Burroughs Corporation. Method for liquid phase epitaxy multiple dipping of wafers for bubble film growth, 4,243,472, Cl. 156-624.000.

Onishi, Sigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. 2-Cycle engine of an active thermosphere combustion, 4,242,993, Cl. 123-59.00B.

Onoda, Fumio; and Kakizoe, Yutaka, to Oki Electric Industry Co., Ltd. System for interpolating an arc for a numerical control system, 4,243,924, Cl. 318-573.000.

Ontario Research Foundation: See—
White, Robert C., 4,242,759, Cl. 3-1.910.

Ore, Fernando: See—
Bradford, James L.; and Ore, Fernando, 4,243,637, Cl. 423-10.000.

Orion Industries, Inc.: See—
Tucker, James I., 4,242,844, Cl. 51-412.000.

Orliaguet, Maurice; and Colas, Christian F., to M A J, Societe a Responsabilite Limitee. Device for conditioning and preserving in vacuo plastic-wrapped sterilized products, notably linen, in an autoclave, 4,242,852, Cl. 53-89.000.

Ortho Pharmaceutical Corporation: See—
Capetola, Robert J.; and McGuire, John L., 4,243,673, Cl. 424-275.000.

Osaka, Kiyoshi: See—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.

Osawa, Yoshiro: See—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.

Osborne, George R., Sr. Connecting hinge system for prefabricated building foldable panel structures, 4,242,845, Cl. 52-69.000.

Osborne Industries, Inc.: See—
Freeborn, William D., 4,242,985, Cl. 119-54.000.

Osborne, Michael L.; and Hadley, Michael J., to USM Corporation. Blind fastener, 4,242,939, Cl. 411-41.000.

O'Shaughnessy, John F., to Ned Strongin Associates, Inc. Toy apparatus with photoemissive motor control system, 4,242,831, Cl. 46-251.000.

Ostling, Sture: See—
Persson, Stig; and Ostling, Sture, 4,243,276, Cl. 308-187.000.

Ostrelch, Michael J.: See—
Smith, Donald F.; and Ostrelch, Michael J., 4,243,287, Cl. 339-99.00R.

O'Sullivan, Denis J.; Bolger, Bernard J.; and Casey, T. Eisirt, to Loctite Corporation. Dental filling composition, 4,243,578, Cl. 260-42.520.

Otsuka Pharmaceutical Factory Inc.: See—
Kakumoto, Michio; Oe, Eizi; and Nakagawa, Hiroshi, 4,243,932, Cl. 324-54.000.

Ott, Peter. Automatic injecting projectile, 4,243,036, Cl. 128-215.000.

Ouchi, Isao: See—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.

Outokumpu Oy: See—
Heimala, Seppo O., 4,243,499, Cl. 204-119.000.

Owens-Corning Fiberglass Corporation: See—
Hohman, Charles M., 4,243,423, Cl. 106-54.000.

Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,243,426, Cl. 106-273.00R.

Oxygen Therapy Institute, Inc.: See—
Stewart, Maurice M., 4,243,155, Cl. 222-3.000.

P.W.T. Plastic World Technology Limited: See—
Tramezzani, Gicancarlo, 4,243,629, Cl. 264-563.000.

Pachmayr, Frank A.; and Farrar, Jack R., to Pachmayr Gun Works, Inc. Pistol grips having cushioning recesses, 4,242,824, Cl. 47-71.00P.

Pachmayr Gun Works, Inc.: See—
Pachmayr, Frank A.; and Farrar, Jack R., 4,242,824, Cl. 47-71.00P.

Pagani, Mario: See—
Bocca, Alberto; and Pagani, Mario, 4,242,770, Cl. 12-24.500.

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- Papp, Alfred; and Harms, Hauke, to Siemens Aktiengesellschaft. Method for magneto-optical current measurements. 4,243,936, Cl. 324-96.000.
- Pappalardo, P. Paul, to Greenstate, Inc. Method of forming an assembled article. 4,242,786, Cl. 29-416.000.
- Pariani, Ronald L.; and Arp, David F., to Southwire Company. Multiple level refractory hearth for vertical shaft metal melting furnaces. 4,243,209, Cl. 266-219.000.
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- Parker-Hannifin Corporation: See—
Hoffman, Robert K.; and Kavanaugh, Mark A., 4,243,072, Cl. 137-637.100.
- Parkison, Richard G., to American Standard Inc. Mixing valve. 4,243,063, Cl. 137-100.000.
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- Parsons, Charles H.; and Casper, Badenhorst H., to Infurnco (Proprietary) Limited. Electric arc furnaces. 4,243,832, Cl. 13-16.000.
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- Patton, Franklin C. Fruit harvesting assembly. 4,242,856, Cl. 56-339.000.
- Paul, Malcolm D. Cold-pack goggles. 4,243,041, Cl. 128-402.000.
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- Penfold, Alan S., to Telic Corporation. Magnetic field generator for use in sputtering apparatus. 4,243,505, Cl. 204-298.000.
- Pennwalt Corporation: See—
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- Pepe, Russell J.: See—
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- Pergunov, Alexandr I.: See—
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- Perkert, Rudolf: See—
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- Perkins, William C., to Rockwell International Corporation. Multiplexed carrier transmission through harmonic polluted medium. 4,244,047, Cl. 370-69.000.
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- Persson, Stig; and Ostling, Sture, to Aktiebolaget SKF. Rolling body retainer. 4,243,276, Cl. 308-187.000.
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- Peterson, Kenneth M.: See—
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- Peterson, Richard H.; and Finch, Robert A. Musical tone generator system using multiple frequency synthesizers. 4,242,935, Cl. 84-1.010.
- Petit, Andre, to Solvay & Cie. Process for the polymerization of vinyl chloride in aqueous suspension utilizing an oil-soluble initiator and subsequently a water-soluble initiator and use of the powders obtained thereby. 4,243,562, Cl. 260-17.00A.
- Pfalzer, Lothar; and Fischer, Siegfried, to J. M. Voith GmbH. Process for treating waste paper with hardened water. 4,243,478, Cl. 162-4.000.
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- Bindra, Jasjit S., 4,243,674, Cl. 424-283.000.
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- Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,243,595, Cl. 260-345.70P.
- Philip Morris Incorporated: See—
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- Phillips, Brinley M.: See—
Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., 4,243,549, Cl. 252-355.000.
- Phillips, Charles A. Load responsive voltage controlled motor. 4,243,926, Cl. 318-798.000.
- Phillips, Jerry L. Expandable sanding block for endless wrap around abrasive belts. 4,242,843, Cl. 51-380.000.
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- Phillips Petroleum Company: See—
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- Hunt, Harold R., 4,243,365, Cl. 425-222.000.
- Smith, Ernest L., 4,242,984, Cl. 119-52.00R.
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- Williams, Ralph P., 4,243,793, Cl. 528-75.000.
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- Piazza, John R., to Western Electric Company, Inc. Method of rendering an ink strippable. 4,243,700, Cl. 427-195.000.
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- Piper, Bert W., to Piper, Bert William. Vehicle antenna. 4,243,989, Cl. 343-715.000.
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- Pitney Bowes, Inc.: See—
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- Pittalis, Francesco: See—
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- Pittman, Charles U., Jr.; and Hanes, Ronald, to Pittman, Charles U., Jr. Production of 1,7-octadiene from butadiene. 4,243,829, Cl. 585-511.000.
- Place, Donald E., to Therm-O-Disc Incorporated. Snap disc operated pressure switch. 4,243,858, Cl. 200-83.00P.
- Plank, Charles J.: See—
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- Plattner, Werner, administrator: See—
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- Plempel, Manfred: See—
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- Pohlman, Joe C.; and Romualdi, James P. Pole construction. 4,242,851, Cl. 52-743.000.
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- Polyair Produkt Design GmbH: See—
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- Polymer Investments N.V.: See—
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- Pope, George N.: See—
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- Portis, Alan M.: See—
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- Portmann, Robert, to Ciba-Geigy Corporation. Process for the preparation of azo dyes. 4,243,583, Cl. 260-156.000.
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- Potchen, Jessie M.: See—
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- Potter, William D., to Smith & Nephew Research Limited. Medical compositions. 4,243,567, Cl. 260-29.6MM.
- Powell, Roger A. Elastically deformed reflectors. 4,243,301, Cl. 350-296.000.
- Powers, Edgar W. Chimney heat capturing system. 4,243,177, Cl. 237-51.000.
- Powers, Robert A.; and Louzos, Demetrios V., to Union Carbide Corporation. Charge transfer complex cathodes for solid electrolyte cells. 4,243,732, Cl. 429-105.000.
- Pozar, Cleve F. Pickup assembly for percussion instrument. 4,242,937, Cl. 84-1.150.
- PPG Industries, Inc.: See—
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- Sensi, John E., 4,243,402, Cl. 65-29.000.
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- Pratt, Albert R.: See—
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- Pratt, Dexter, Jr.; and Holz, John F., to Harnischfeger Corporation. Retractable boarding ladder. 4,243,120, Cl. 182-98.000.
- Pratt, Roy E.: See—
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- PREH, Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co.: See—
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- Price, Paul J. Portable lean-to exercising device. 4,243,219, Cl. 272-117.000.
- Prichard, Evan S., to Challenge-Cook Bros. Incorporated. Trailer transit mixer. 4,243,328, Cl. 366-62.000.
- Prin, Jean-Claude. Carrier for packing and carrying articles. 4,243,171, Cl. 229-52.00B.
- Prins, Steven P. Adjustable orthodontic bracket. 4,243,387, Cl. 433-16.000.
- Pritchett, Ervin G., to National Distillers and Chemical Corp. Compositization of blends and composites. 4,243,769, Cl. 525-222.000.
- Pritelli, Giuseppe, to Pritelli, S.p.A. Automatic apparatus for machining panels, planks and similar articles made of wood, wooden derivatives and the like. 4,243,081, Cl. 144-3.00A.
- Pritelli, S.p.A.: See—
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- Procter & Gamble Company, The: See—
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- Mohlenkamp, Marvin J., Jr.; and Hiler, George D., 4,243,691, Cl. 426-649.000.
- Production Plus Corporation: See—
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- Probas, Ludwig, to Kilcher-Chemie AG. Cross-flow filtration apparatus. 4,243,536, Cl. 210-321.100.
- Protective Treatments, Inc.: See—
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- Protiva, Miroslav; Rajnsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadi, Leon; Pomykacek, Josef; and Miksik, Frantisek, to SPOFA, spolene podniky pro zdravotnickou výrobu. 3 Fluoro-10-piperazino-8-substituted 10,11-dihydrodibenzo-(b) thiophenes and method for the preparation thereof. 4,243,805, Cl. 544-375.000.
- Proud, Joseph M., Jr., to GTE Laboratories Incorporated. Random noise generators. 4,243,950, Cl. 331-78.000.
- Prusa, Hans-Dieter; and Bahrs, Lutje-Wilhelm, to Lever Brothers Company. Preparation of cheese with ropy lactic acid bacteria. 4,243,684, Cl. 426-40.000.
- Puchta, Rolf; Schwadke, Karl; Harder, Hans; and Weber, Rudolf, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process for bleaching textiles in the mechanical laundry drier. 4,243,391, Cl. 8-111.000.
- Purcell, Thomas A.; Shroot, Brahm; and Galtier, Daniel J. M., to Synthelabo. 2-Heterocyclylalkyl-6-methoxy-naphthalenes. 4,243,665, Cl. 424-246.000.
- Purdue Research Foundation: See—
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- Puyana, Alfonso. Therapeutic pressure strap. 4,243,028, Cl. 128-165.000.
- Quack, Hans; and Senn, Armin E., to Sulzer Brothers Limited. Apparatus for a refrigeration circuit. 4,242,885, Cl. 62-500.000.
- Quance, Raymond P. Ski equipment transport and security method and apparatus. 4,242,813, Cl. 36-132.000.
- Quantor Corporation: See—
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- Quayle, Ian H., to Chronolog Systems Limited. Analogue voltage indicator with sequence of light emitting diodes. 4,243,985, Cl. 340-753.000.
- Quemner, Jean M.: See—
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- Querton, Jean-Pierre: See—
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- Quiroga, Pascual A. Rotary engine with lateral pistons. 4,243,006, Cl. 123-247.000.
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- Raeymaekers, Alfons H. M.; Van Gelder, Josephus L. H.; Boeckx, Gustaaf M.; and Van Hemeldonck, Lodewijk L., to Janssen Pharmaceutica N.V. 5-[4-(Diarylmethyl)-1-piperazinylalkyl]benzimidazole derivatives. 4,243,806, Cl. 544-396.000.
- Rahal, Marcel T. Traverse rod drapery hook. 4,242,772, Cl. 16-93.00D.
- Raheja, Raj K.: See—
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- Raistrick, Bernard: See—
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- Ransmark, Sven-Erik L. Process for purifying liquids and a device for carrying out the process. 4,243,526, Cl. 203-10.000.
- Rasmussen, Chris R., to McNeil Laboratories, Incorporated. 2-Benzhydrylimino-1,3-diazacarbocyclic compounds as inhibitors of gastric secretion. 4,243,667, Cl. 424-251.000.
- Ratcliff, Lloyd P. Caloric and/or carbohydrate calculator. 4,244,020, Cl. 364-413.000.
- Rauch, Joseph, to Societe de Vente de l'Aluminium Pechiney. Process of quenching metal pieces and product produced. 4,243,439, Cl. 148-20.600.
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- Rayfield, John F.; and Schieble, John D., to ILC Dover, a division of ILC Industries, Inc. Anti-exposure inflatable structure. 4,242,769, Cl. 9-330.000.
- Raymond, Roger S., to United States of America, Air Force. Thermo-clamps. 4,242,899, Cl. 72-342.000.
- Raynal, Serge F.: See—
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- Raytheon Company: See—
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- RCA Corporation: See—
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- Bortfeld, David P.; and Vieland, Leon J., 4,243,912, Cl. 315-3.000.
- Caprari, Fausto, 4,243,917, Cl. 315-241.00R.
- Dholakia, Anil R., 4,243,395, Cl. 51-293.000.
- Ipri, Alfred C., 4,244,001, Cl. 357-44.000.
- McSparran, Joseph F., 4,243,283, Cl. 339-14.00R.
- Meise, William H., 4,243,918, Cl. 315-389.000.
- Mezrich, Reuben S.; and Stewart, Wilber C., 4,242,913, Cl. 73-626.000.
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- Patterson, David R., 4,243,952, Cl. 331-94.50S.
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- Winarsky, Norman D.; Cohen, Roger W.; Bortfeld, David P.; and Vieland, Leon J., 4,243,911, Cl. 315-3.000.

- Wolkstein, Herbert J.; Dornan, Brian R.; and Goel, Jitendra, 4,243,951, Cl. 331-94.50H.
- Redding, Doyle A.: See—
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- Reed, Floyd W. Cotton module transport apparatus, 4,243,353, Cl. 414-439.000.
- Reed, Robert D., to John Zink Company. Gas or liquid fuel burner with air register control of tangential/axial combustion air movement, 4,243,375, Cl. 431-174.000.
- Rees, Herbert; and Nevrela, James D., to Globe-Union Inc. Composite molding apparatus for articles from two materials having a rotary mold block which includes pins for providing core areas, 4,243,362, Cl. 425-130.000.
- Rees, Herbert; Brown, Paul; and Grund, Miroslav, to Husky Injection Molding Systems Inc. Safety mechanism for injection-molding machine provided with take-off member, 4,243,364, Cl. 425-153.000.
- Regamey, Pierre E. Method and device for transferring condensates from a low pressure network into a high pressure network in a system of generation, distribution and utilization of condensable vapor, 4,242,988, Cl. 122-458.000.
- Regel, Erik; Draber, Wilfried; Buchel, Karl H.; and Plempel, Manfred, to Bayer Aktiengesellschaft. α -(4-Biphenyl)-benzyl-azolium salts and their use for combating micro-organisms, 4,243,670, Cl. 424-269.000.
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- Reid, Terry A.: See—
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- Reil, Wilhelm, to Tetra Pak Developpement SA. Device for filling a measured quantity of a flowing medium into a package, 4,243,160, Cl. 222-373.000.
- Reinhardt, Erik, to F. L. Smith & Company. Rotary kiln, 4,243,384, Cl. 432-80.000.
- Reis, Robert D., to United Electric Controls Company. Control device, 4,243,857, Cl. 200-83.00C.
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- Sankyo Electronic Company Limited: See—
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- Schade, Otto H., Jr., to RCA Corporation. Substantially temperature-independent trimming of current flows, 4,243,948, Cl. 330-289.000.
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Engel, Joseph C.; Vercellotti, Leonard C.; and Schroeder, Dale W., 4,243,876, Cl. 235-455.000.
Schroeter, Siegfried H.; and Olson, Daniel R., to General Electric Company. Silicone coated abrasion resistant polycarbonate article. 4,243,720, Cl. 428-412.000.
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Spilburg, Curtis A.; and Schuck, James M., 4,243,582, Cl. 260-112.00R.
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Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,243,557, Cl. 252-455.00Z.
Schuler, Larry. Shotgun butt cup. 4,243,165, Cl. 224-149.000.
Schulte, Heinz: See—
Bartholomaeus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolfgang; Kokus, Hans-Dieter; Lemke, Herbert; and Schulte, Heinz, 4,242,942, Cl. 91-358.00R.
Schumag GmbH: See—
Wetzels, Walter, 4,243,862, Cl. 219-68.000.
Schumann, Fritz: See—
Wehde, Heinz; Wulffhorst, Burkhard; and Schumann, Fritz, 4,242,860, Cl. 57-81.000.
Schurger, Judith: See—
Schurger, Severin G.; and Schurger, Judith, 4,242,828, Cl. 43-137.000.
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Schwarz, Alois; Mautz, Karlheinz; and Stephan, Michael, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung. Rotor structure, especially for hingeless rotary wing aircraft. 4,243,359, Cl. 416-138.000.
Schwarzmann, Frank, to Midwest Cardiovascular Institute Foundation. Blood hematocrit monitoring system. 4,243,883, Cl. 250-343.000.
Schwedes, Wilhelm: See—
Marzel, Otto; Schwedes, Wilhelm; and Wilhelm, Alfred, 4,243,698, Cl. 427-157.000.
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Cizek, Theodore F.; and Schwuttko, Guenter H., 4,243,471, Cl. 156-616.00R.
SCM (Canada) Limited: See—
McMullan, Robert G., 4,243,336, Cl. 401-6.000.
Scott, Douglas R., to Robertshaw Controls Company. Temperature sensing unit, parts therefor and methods of making the same. 4,243,968, Cl. 338-28.000.
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Fenton, Aaron J.; and Scott-Ellis, E. J. O., 4,243,270, Cl. 301-37.00S.
Scribner, Albert W., to Pitney Bowes, Inc. Fusing device for electrostatic copier. 4,243,869, Cl. 219-216.000.
Sequist Valve Co., Div. of Pittway Corp.: See—
Ewald, Ronald F., 4,243,161, Cl. 222-402.140.
Searingen, Judson S.; and Sunder, Sham. Power systems using heat from hot liquid. 4,242,870, Cl. 60-651.000.
Sedy, Josef: See—
Baker, Dorsey L.; and Sedy, Josef, 4,243,230, Cl. 277-3.000.
Seelbach, Walter C., to Motorola, Inc. Semiconductor temperature sensor. 4,243,898, Cl. 307-310.000.
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Suchowskyj, Wadym; Seibel, Berthold; and Werner, Peter, 4,243,971, Cl. 340-52.00H.
Seitz, Karl, to Ciba-Geigy Corporation. Process for the production of pyridone compounds. 4,243,809, Cl. 546-291.000.
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Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,243,457, Cl. 156-245.000.
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Fujita, Hiro; Tsuzuki, Akira; Ebiha, Heihachiro; and Sekiya, Fukuo, 4,244,043, Cl. 368-85.000.
Self, Cecil H., to Schenck, John F., III. Air gun with safety nozzle. 4,243,178, Cl. 239-436.000.
Seligson, Charles. Stripping box with more than one yarn finger activated at a time. 4,242,890, Cl. 66-133.000.
Seljutin, Vladimir I.: See—
Ushakov, Vladimir F.; Pergunov, Alexandr I.; Alexeev, Albert V.; Maslennikov, Pavel N.; and Seljutin, Vladimir I., 4,242,841, Cl. 51-263.000.

Semi-Alloys, Inc.: See—
Hascoc, Norman, 4,243,729, Cl. 428-577.000.
Senn, Armin E.: See—
Quack, Hans; and Senn, Armin E., 4,242,885, Cl. 62-500.000.
Sensi, John E., to PPG Industries, Inc. Apparatus for measuring temperatures in molten metal. 4,243,402, Cl. 65-29.000.
Seo, Ikuro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for preparation of pitch for producing carbon fiber. 4,243,512, Cl. 208-39.000.
Seppanen, Erkki O. Forming paper using a curved fin to facilitate web transfer. 4,243,482, Cl. 162-202.000.
Serrano, Anthony B. Boring attachment for radial arm saws. 4,243,083, Cl. 144-35.00A.
Service d'Exploitation Industrielle des Tabacs et des Allumettes: See—
Bossuet, Jean; Godet, Jean; Guiton, Jean-Francois; Sizarol, Rene; and Waegert, Pierre, 4,243,055, Cl. 131-76.000.
de Angelis, Henri, 4,242,805, Cl. 34-1.000.
Peschel born Chaudron, Huguette; and Caffoz, Robert, 4,243,057, Cl. 131-147.000.
Serville, Claude: See—
Vinel, Rene; Querton, Jean-Pierre; and Serville, Claude, 4,243,130, Cl. 192-98.000.
Seto, David K.: See—
Hornig, Cheng T.; Lillja, Harold V.; and Seto, David K., 4,242,791, Cl. 29-578.000.
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Severson, Asbjorn M., to Honeywell Inc. Light-weight-tough type solar concentrator shell. 4,243,019, Cl. 126-438.000.
Shackelford, Carl L., to Altea Scientific, Inc. Sample injection valve. 4,243,071, Cl. 137-625.460.
Shackelford, Geoffrey G., to Lansing Bagnall Limited. Gripper mechanism. 4,243,257, Cl. 294-88.000.
Shaer, Elias H., to Dracett Company. The Stable aqueous compositions containing enzymes. 4,243,546, Cl. 252-174.120.
Shai, Sol, to RCA Corporation. Digital open loop programmable frequency multiplier. 4,244,027, Cl. 364-703.000.
Sharp Kabushiki Kaisha: See—
Kameyama, Atsumi, 4,242,799, Cl. 30-43.100.
Shaw, David N., to Dunham-Bush, Inc. Attic mounted solar assist multi-source/sink residential heat pump system. 4,242,872, Cl. 62-2.000.
Shebalin, Rudolf I.: See—
Deribas, Andrei A.; Limasov, Alexei I.; Matysyn, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Jury N., 4,242,787, Cl. 29-421.00E.
Shell Oil Company: See—
Ehrhardt, William M.; and Haury, Earl J., 4,243,007, Cl. 123-419.000.
Vogel, Jacobus E., 4,243,097, Cl. 165-163.000.
Shelley, Carlton E. Water balloon game. 4,243,220, Cl. 273-1.00R.
Sheltech, Inc.: See—
Shelton, Russell S., 4,243,062, Cl. 137-62.000.
Shelton, Russell S., to Sheltech, Inc. Thermostatic self-powered drain valve. 4,243,062, Cl. 137-62.000.
Shepherd, Margaret C.: See—
Balasubramanyam, Sugavanam; and Shepherd, Margaret C., 4,243,405, Cl. 71-76.000.
Shepherd, Robert G., to American Cyanamid Company. Ring-fluorinated 4-(hexadecyl-amino) N-substituted benzamide compounds. 4,243,609, Cl. 564-91.000.
Shepherd, William W., Sr., to International Safety Industries Ltd. Steering stabilizer for motor vehicles. 4,243,240, Cl. 280-94.000.
Sherry, Howard S.: See—
Campbell, Thomas C.; Hertenberg, Elliot P.; and Sherry, Howard S., 4,243,545, Cl. 252-140.000.
Sherwin-Williams Company, The: See—
Yapp, William J.; and McDonald, Robert E., 4,243,705, Cl. 427-386.000.
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, to Amax Inc. Nickel electroplating using reduced nickel oxide as a fluidized cathode. 4,243,498, Cl. 204-112.000.
Shiba, Hiroshi; and Murata, Katsuhiro, to Nippon Graphite Industries, Ltd. Method of forming electrode connector for liquid crystal display device. 4,243,455, Cl. 156-187.000.
Shibata, Akira, to Chugai Denki Kogyo Kabushiki-Kaisha. Integrated Ag-SnO alloy electrical contact materials. 4,243,413, Cl. 75-234.000.
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, to Sumitomo Chemical Co., Ltd. Catalysts for the polymerization of olefins. 4,243,786, Cl. 526-137.000.
Shigemori, Youjiro, to Star Seimitsu Kabushiki Kaisha. Ribbon cartridge. 4,243,334, Cl. 400-247.000.
Shikany, S. David: See—
Niven, William A.; Shikany, S. David; and Shira, Michael L., 4,243,900, Cl. 310-49.00R.
Shima, Kiyoshi. Screw propeller with no shaft boss and ship thruster using such screw propeller. 4,242,979, Cl. 440-38.000.
Shimada, Yasuomi: See—
Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, 4,243,839, Cl. 179-1.00F.
Shimaguchi, Takashi: See—
Sakai, Junji; Morimoto, Syogo; and Shimaguchi, Takashi, 4,243,420, Cl. 106-38.300.
Shimai, Hideo, to Yoshida Kogyo K.K. Method for gapping a slide fastener chain. 4,242,785, Cl. 29-408.000.

Shimizu, Katsuchi: See—
Masuda, Shunichi; and Shimizu, Katsuchi, 4,243,313, Cl. 355-14.00R.
Shin-Etsu Chemical Co. Ltd.: See—
Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, 4,243,607, Cl. 570-257.000.
Shin-Etsu Handatai Co. Ltd.: See—
Yamaguchi, Hisayoshi; and Kuroyanagi, Itsuo, 4,243,473, Cl. 156-626.000.
Shin-Kobe, Electric Machinery Co., Ltd.: See—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.
Shinoda, Nobuhiko: See—
Kitahara, Sigeyoshi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
Shintaro, Abe: See—
Izushima, Masaaki; Shintaro, Abe; and Haganuma, Tomoyuki, 4,244,031, Cl. 364-900.000.
Shioya, Toshio; Nishimura, Hiroyuki; and Umemoto, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Engine exhaust gas recirculation system. 4,242,998, Cl. 123-568.000.
Shira, Michael L.: See—
Niven, William A.; Shikany, S. David; and Shira, Michael L., 4,243,900, Cl. 310-49.00R.
Shirai Denshi Kogyo Co., Ltd.: See—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, to Shin-Kobe, Electric Machinery Co., Ltd.; and Shirai Denshi Kogyo Co., Ltd. Process of producing a printed wiring board. 4,243,474, Cl. 156-630.000.
Shirai, Isamu, to Sankyo Electronic Company Limited. Electromagnetic clutches. 4,243,128, Cl. 192-35.000.
Shiraki, Manabu: See—
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,243,902, Cl. 310-154.000.
Shiraki, Shigemi; and Yamamoto, Ryoichi, to Mitsui Petrochemical Industries Ltd. Apparatus for the continuous liquid-phase catalytic oxidation of alkyl-substituted aromatic compounds. 4,243,636, Cl. 422-225.000.
Shiratori, Naoyuki: See—
Yasujima, Akitaka; Shiratori, Naoyuki; and Ishikawa, Shingo, 4,243,882, Cl. 250-339.000.
Shirinkin, Vladimir A.: See—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Kaposov, Valery V., 4,243,780, Cl. 525-518.000.
Shook, William M., to Warner & Swasey Company. The Hydraulic hammer mounted on a movable boom. 4,243,107, Cl. 173-43.000.
Short, Wilbur G.: See—
Pearson, Eugene W.; and Short, Wilbur G., 4,242,901, Cl. 72-345.000.
Short, William T., to General Motors Corporation. Moisture curing polyurethane topcoat paint with improved gloss stability. 4,243,792, Cl. 528-73.000.
Showa Denko K.K.: See—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.
Shroott, Braham: See—
Purcell, Thomas A.; Shroott, Braham; and Galtier, Daniel J. M., 4,243,665, Cl. 424-346.000.
Shubkin, Ronald L., to Ethyl Corporation. Fuel and lubricating compositions containing N-hydroxymethyl aliphatic hydrocarbylamide friction reducers. 4,243,538, Cl. 252-51.50A.
Sicard, Guy. Combustion system with partial recirculation of exhaust gases and feed mechanism therefor. 4,242,972, Cl. 110-234.000.
Siebert, Heinz: See—
Graalman, Gerhard; and Siebert, Heinz, 4,243,054, Cl. 131-22.00R.
Siede, Heinz-Jurgen: See—
Steigerwald, Wolf-Erhard; Siede, Heinz-Jurgen; Roemer, Bela; and Zimmermann, Jurgen, 4,243,969, Cl. 338-309.000.
Siemens Aktiengesellschaft: See—
Aulich, Hubert; Auracher, Franz; and Witte, Hans H., 4,243,296, Cl. 350-96.150.
Gunne, Ingemar; and Almgren, Bertil, 4,243,150, Cl. 215-247.000.
Hacker, Heinz; and Helwig, Ernst, 4,243,723, Cl. 428-474.400.
Hanner, Otto, 4,243,302, Cl. 350-345.000.
Herold, Georg, 4,243,628, Cl. 264-275.000.
Kleinschmidt, Peter, 4,243,979, Cl. 340-554.000.
Knauer, Karl, 4,244,035, Cl. 365-149.000.
Kobale, Manfred; Lorenz, Hans-Peter; and Wengert, Rolf, 4,243,735, Cl. 430-25.000.
Maas, Michael, 4,243,045, Cl. 128-696.000.
Papp, Alfred; and Harms, Hauke, 4,243,936, Cl. 324-96.000.
Pecher, Gerhard, 4,243,859, Cl. 200-144.00B.
Wengert, Rolf; and Huber, Wilhelm, 4,243,695, Cl. 427-14.100.
Siemens Corporation: See—
Holt, Dewilton R., 4,244,008, Cl. 360-45.000.
Siepmann, Walter, to Forval S.A. Valve housings made from steel, especially for gate valves. 4,243,204, Cl. 251-366.000.
SIG - Schweizerische Industrie-Gesellschaft: See—
Auckenthaler, Robert, 4,242,949, Cl. 493-295.000.

Sigg, Hans, to Maag Zahnrad- & Maschinen AG. Marine reversing gearing. 4,242,920, Cl. 74-361.000.

Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-19,20-didehydro PG₂ compounds. 4,243,611, Cl. 568-379.000.

Sikorski, Guenter: See—
Boeder, Dieter; Jaenke, Christian; Romer, Rudolf; and Sikorski, Guenter, 4,242,960, Cl. 102-92.700.

Simms, John A., to Du Pont de Nemours, E. I., and Company. Acrylic graft copolymers and coating compositions thereof. 4,243,573, Cl. 260-33.60A.

Simms, Larry L. Icebox conversion unit. 4,242,874, Cl. 62-3.000.

Simon, Agoston; and Lengyel, Zoltan, to Chincin Gyogyszer es Vegyeszeti Termek Gyara Rt. Process for the preparation of fermentation media suitable for culturing yeast for animal consumption and microspores and/or for the production of protein from vegetable waste matter. 4,243,685, Cl. 426-53.000.

Simpson, Jon H., to Minnesota Mining and Manufacturing Company. Sag-resistant compositions. 4,243,768, Cl. 525-127.000.

Sindelar, Karel: See—
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadi, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.

Singer Company, The: See—
Beckerman, Howard L., 4,242,974, Cl. 112-158.00E.

Beckerman, Howard L.; Pepe, Russell J.; and Dob, Allan M., 4,242,976, Cl. 112-264.100.

Brown, Jack, 4,243,919, Cl. 318-269.000.

Friedland, Bernard, 4,243,324, Cl. 356-350.000.

Jaffe, Wolfgang, 4,243,899, Cl. 310-14.000.

Knowles, Warren D.; and Coulombe, Lionel J., 4,242,975, Cl. 112-226.000.

Warner, Richard C.; and Weber, Donald J., 4,243,976, Cl. 340-347.00D.

Singley, Ariel J. Typewriter copy holder. 4,243,335, Cl. 400-718.000.

Sinner, Bengt: See—
Andersson, Nils-Eric; and Sinner, Bengt, 4,243,892, Cl. 290-1.00R.

Sinor, Jerry E., to Rockwell International Corporation. Coal hydrogenation. 4,243,509, Cl. 208-8.00R.

Sipos, Sandor; Varga, Sandor; and Hali, Imre, to Kaposvari Mezogazdasagi Gepgyarto es Szolgalato Vallalat in Kaposvar. Soil working machine. 4,243,104, Cl. 172-148.000.

Sitz, Gary E.: See—
Throckmorton, Peter E.; Sitz, Gary E.; and Grimm, Robert A., 4,243,612, Cl. 568-431.000.

Sizarol, Rene: See—
Bossuet, Jean; Godet, Jean; Guillon, Jean-Francois; Sizarol, Rene; and Waegert, Pierre, 4,243,055, Cl. 131-76.000.

Sizelove, Cary L.; and Wells, Donald G., to Chromalloy American Corporation. Suspension for silo unloaders. 4,243,352, Cl. 414-313.000.

SKF Compagnie d'Applications Mecaniques: See—
Vinell, Rene; Querton, Jean-Pierre; and Serville, Claude, 4,243,130, Cl. 192-98.000.

Skinner, Wilfred A.; and Takenishi, Shigeyuki, to SRI International. Production of increased yields of cellulolytic enzymes from *Thielavia terrestris* and separating methods therefor. 4,243,752, Cl. 435-209.000.

Skrodzki, Chester: See—
Carlock, Gaylord W.; McKeown, William L.; Goodman, James R.; and Skrodzki, Chester, 4,243,358, Cl. 416-114.000.

Skubich, Otto; Perker, Rudolf; and Fischer, Karl Heinz, to Massey-Ferguson Services N.V. Device for setting blade of earthmover. 4,243,106, Cl. 172-804.000.

Sladkov, Viktor I.: See—
Nazarian, Artashes R.; Kremlev, Vyacheslav Y.; Kokin, Vilyam N.; Sladkov, Viktor I.; Venkov, Boris V.; and Lavrov, Vadim V., 4,243,895, Cl. 307-205.000.

Slanina, George L.: See—
Moeller, Chris R.; and Slanina, George L., 4,243,174, Cl. 236-46.00R.

Slotnick, Barry G.: See—
Crockett, Thomas W.; Huehls, Patrick N.; and Slotnick, Barry G., 4,243,531, Cl. 210-188.000.

Smetana, Andrew: See—
Kewley, Norman E.; and Smetana, Andrew, 4,243,371, Cl. 431-13.000.

Smith, Charles E. Hydro-power generation systems. 4,242,868, Cl. 60-496.000.

Smith, Donald F.; and Ostrelch, Michael J., to General Electric Company. Dead front plug with insulation penetrating contacts. 4,243,287, Cl. 339-99.00R.

Smith, Ernest L., to Phillips Petroleum Company. Combination container and feeder. 4,242,984, Cl. 119-52.00R.

Smith & Nephew Research Limited: See—
Potter, William D., 4,243,567, Cl. 260-29.6MM.

Smith, Norma J. Fecal impaction remover. 4,243,037, Cl. 128-303.00R.

Smith, Oliver W.: See—
Koleske, Joseph V.; Knopf, Robert J.; and Smith, Oliver W., 4,243,569, Cl. 260-29.6TA.

Smith, Wallace A.: See—
Delfino, Michaelangelo; Gentile, Philip S.; Loiacono, Gabriel M.; and Smith, Wallace A., 4,243,642, Cl. 423-277.000.

Smith, Wyatt B., to Reddig, Doyle A., a part interest. Fishing lure. 4,242,827, Cl. 43-42.100.

Smiths Industries: See—
Morris, Kenneth J., 4,242,840, Cl. 51-236.000.

Snamprogetti S.p.A.: See—
Mancini, Giuseppe; and Imparato, Luigi, 4,243,540, Cl. 252-56.00S.

Marconi, Walter; Pittalis, Francesco; Bartoli, Francesco; and Morisi, Franco, 4,243,776, Cl. 525-420.000.

Snowden, Donald P.: See—
Lukens, Herbert R., Jr.; Snowden, Donald P.; and Voigt, Richard L., 4,243,644, Cl. 423-352.000.

Sobotta, Werner, to Vereinigte Flugtechnische Werke-Fokker GmbH. Aircraft control system. 4,243,922, Cl. 318-561.000.

Societe Anonyme de Techniques Audio-Visuelles S.A.T.A.V.: See—
Renoux, Robert A., 4,243,367, Cl. 425-385.000.

Societe Anonyme de Telecommunications: See—
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., 4,243,773, Cl. 525-387.000.

Brouard, Germain G.; and Mollerion, Claude A., 4,244,046, Cl. 370-62.000.

Societe Anonyme dite: INTERLIGHT: See—
Hocq, Robert, 4,243,337, Cl. 401-132.000.

Societe Anonyme dite: Vacuum Capatiner International: See—
Fagniat, Gaston; and Lemaire, Jean-Pierre, 4,243,448, Cl. 156-73.500.

Societe Anonyme Francaise du Ferodo: See—
Jeanson, Rene H., 4,242,816, Cl. 37-67.000.

Societe de Vente de l'Aluminium Pechiney: See—
Rauch, Joseph, 4,243,439, Cl. 148-20.600.

Societe Francaise des Produits pour Catalyse: See—
Martino, Germain; and Miquel, Jean, 4,243,516, Cl. 208-139.000.

Societe Franco-Americaine de Constructions Atomiques-Framatome: See—
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Societe Nationale des Poudres et Explosifs: See—
Boileau, Sylvie L.; Caudere, Paul J.; Ndebeka, Gilberte; Lecolier, Serge L.; and Raynal, Serge F., 4,243,787, Cl. 526-180.000.

Soini, Erkki: See—
Ekins, Roger P.; and Soini, Erkki, 4,243,880, Cl. 250-252.000.

Solheim, Odd E.: See—
Vareide, Dag; and Solheim, Odd E., 4,243,380, Cl. 432-15.000.

Solvay & Cie.: See—
Nicolas, Edgard; and Bourgeois, Louis, 4,243,497, Cl. 204-98.000.

Petit, Andre, 4,243,562, Cl. 260-17.00A.

Soma, Tsunenori: See—
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Sommer, Richard; Wolfrum, Gerhard; and Buttner, Gerhard, to Bayer Aktiengesellschaft. Monoazo dyestuffs containing diazo component substituted by disulfimide and trifluoromethyl groups. 4,243,584, Cl. 260-165.000.

Sorokin, Peter P.: See—
Bethune, Donald S.; Lankard, John R.; Loy, Michael M.; and Sorokin, Peter P., 4,243,881, Cl. 250-338.000.

Sotnikov, Ivan A.: See—
Lipets, Adolf U.; Krasnov, Boleslav M.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; Galuskin, Vadim B.; Lafa, Jury I.; Alexandrov, Boris I.; and Gromov, Gennady V., 4,243,096, Cl. 165-134.0DP.

Southwire Company: See—
Pariani, Ronald L.; and Arp, David F., 4,243,209, Cl. 266-219.000.

Sovak, Milos; and Ranganathan, Ramachandra, to University of California, The Regents of the. Non-ionic polyiodo sugar substituted anilines. 4,243,653, Cl. 424-5.000.

Spaargaren, Robert; and DiMatteo, Albert, to Chrysler Corporation. Self-adjusting drum brake. 4,243,125, Cl. 188-79.50P.

Spatz Corporation: See—
Spatz, Walter B., 4,243,159, Cl. 222-188.000.

Spatz, Walter B., to Spatz Corporation. Pump devices for dispensing fluids. 4,243,159, Cl. 222-188.000.

Spector, Donald. Scratch and smell puzzle. 4,243,224, Cl. 273-157.00R.

Spector, George: See—
Goon, Harry; and Spector, George, 4,243,013, Cl. 126-43.000.

Speidel, Blasius. Deflation valve for blood pressure measuring device. 4,243,201, Cl. 251-297.000.

Sperry Corporation: See—
Bennett, Virgil O.; and Wilson, George W., 4,242,917, Cl. 74-5.500.

Parrish, Charles A.; and Jennings, Richard E., 4,242,857, Cl. 56-341.000.

Sperry, Peter R.; and Wiersema, Richard J., to Rohm and Haas Company. Pigment dispersant for aqueous paints. 4,243,430, Cl. 106-308.00M.

Spilburg, Curtis A.; and Schuck, James M., to Monsanto Company. Novel glycoproteins from bovine cartilage. 4,243,582, Cl. 260-112.00R.

Spitzer, Wayne A.; and Goodson, Theodore, Jr., to Eli Lilly and Company. Process for novel oxazolinazetidinones. 4,243,588, Cl. 260-245.400.

Split Cycle Energy Systems, Inc.: See—
Brinkerhoff, VerDon C., 4,242,878, Cl. 62-119.000.

SPOFA, spolene podniky pro zdravotnickou výrobu: See—
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadi, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.

Sprague Electric Company: See—
Lintott, David A., 4,244,010, Cl. 361-433.000.

Sprenger, Martin: See—
Bogner, Karl-Heinz; and Sprenger, Martin, 4,243,964, Cl. 335-156.000.

Sprengling, Gerhard R.; and Cargnel, Louis A., to Westinghouse Electric Corp. Method of encapsulating electrical apparatus. 4,243,623, Cl. 264-69.000.

Sprunck, Emile J.: See—
Leroy, Pierre J.; Bastien, Jean P.; and Sprunck, Emile J., 4,243,211, Cl. 266-268.000.

SRI International: See—
Skinner, Wilfred A.; and Takenishi, Shigeyuki, 4,243,752, Cl. 435-209.000.

Srogi, Ladislav G. Mechanical propulsion system. 4,242,918, Cl. 74-84.00S.

Stach, Kurt, deceased: See—
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; and Plattner, Werner, administrator, 4,243,807, Cl. 546-232.000.

Staerzl, Richard E., to Brunswick Corporation. Detonation control apparatus for outboard motor. 4,243,009, Cl. 123-435.000.

Standard Oil Company: See—
Wiggins, Wayne T., 4,243,707, Cl. 427-388.400.

Wiggins, Wayne T.; and Gerry, Frank S., 4,243,725, Cl. 435-517.000.

Stang, John H.; and Johnson, Kenneth A., to Cummins Engine Company, Inc. Insulated composite piston. 4,242,948, Cl. 92-212.000.

Stanley Works, The: See—
Rollband, Ernest J.; and West, Robert F., 4,242,795, Cl. 30-162.000.

Star Seimitsu Kabushiki Kaisha: See—
Shigemori, Youjiro, 4,243,334, Cl. 400-247.000.

Stauffer Chemical Company: See—
Teach, Eugene G., 4,243,811, Cl. 548-215.000.

Staver, Anatoly M.: See—
Deribas, Andrei A.; Limasov, Alexei I.; Matysain, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Jury N., 4,242,787, Cl. 29-421.00E.

Steckler, Steven A.: See—
Balaban, Alvin R.; and Steckler, Steven A., 4,243,953, Cl. 331-117.00R.

Steffl, Robert J.: See—
Vogel, Lambert P.; and Steffl, Robert J., 4,243,105, Cl. 172-311.000.

Stefko, Bela: See—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.

Steigerwald, Robert L., to General Electric Company. Third harmonic auxiliary commutated inverter having selectable commutation capacitance as a function of load current. 4,244,017, Cl. 363-138.000.

Steigerwald, Wolf-Erhard; Siede, Heinz-Jurgen; Rosner, Bela; and Zimmermann, Jurgen, to PREH, Elektrotechnische Werke Jakob Preh Nachf. GmbH & Co. Layer resistor element. 4,243,969, Cl. 338-309.000.

Steinbrecher, Heinrich: See—
von Dorp, Walter; and Steinbrecher, Heinrich, 4,242,894, Cl. 72-96.000.

Steinwart, Johannes: See—
Freyer, Erwin; Steinwart, Johannes; and Will, Peter, 4,243,002, Cl. 123-325.000.

Sten, Nathan, to Aktiebolaget Electrolux. Supplemental cooling system for portable electric power plants. 4,243,893, Cl. 290-1.00B.

Stephan, Michael: See—
Schwarz, Alois; Mautz, Karlheinz; and Stephan, Michael, 4,243,359, Cl. 416-138.000.

Sterling Drug Inc.: See—
Margulies, Herman, 4,243,144, Cl. 206-532.000.

Rubey, Robert J., 4,243,067, Cl. 137-329.030.

Schmidt, Paul J.; and Hung, William M., 4,243,250, Cl. 282-27.500.

Sterling Manufacturing, Inc.: See—
Lindee, Scott A., 4,243,466, Cl. 156-363.000.

Stewart, Donald A.: See—
Clapp, Keith A.; and Stewart, Donald A., 4,243,347, Cl. 407-15.000.

Stewart, James F.: See—
Bowe, Gerald R.; and Stewart, James F., 4,243,314, Cl. 355-29.000.

Stewart, Maurice M., to Oxygen Therapy Institute, Inc. Valving and automatic pressure regulator for inhalation apparatus. 4,243,155, Cl. 222-3.000.

Stewart, Wilber C.: See—
Mezrich, Reuben S.; and Stewart, Wilber C., 4,242,913, Cl. 73-626.000.

Stimtech, Inc.: See—
Bailey, William D., 4,243,052, Cl. 128-798.000.

Stiot, Jean-Pierre H.: See—
Bourdauque, Paul M. C.; Brouard, Claude M. H. E.; Moerel, Claude L. E.; and Stiot, Jean-Pierre H., 4,243,606, Cl. 260-465.00D.

Stohr, Michael, to Deutsches Krebsforschungszentrum. Fluorescence analysis of stained particles. 4,243,318, Cl. 356-39.000.

Stoltz, Andries J., to C.W.M. Du Toit Beleggings (Eiendoms) Beperk. Acceleration monitoring system. 4,242,910, Cl. 73-516.0LM.

Stone, Derek J.: See—
Peter, Jack; Offerman, Karl B.; Brown, Larry D.; and Stone, Derek J., 4,243,186, Cl. 242-195.000.

Stork, Gilbert: See—
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,243,823, Cl. 568-824.000.

Strandwitz, Peter, to Cornelius Company, The. Touch switch and contactor therefor. 4,243,861, Cl. 200-159.00B.

Strauss, William A., to Oil Recovery Systems, Inc. Oil collecting apparatus. 4,243,529, Cl. 210-109.000.

Strongin, Ned. Disc projecting game. 4,243,227, Cl. 273-357.000.

Strupinsky, Vladimir A.: See—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.

Strutzel, Hans; Hoheisel, Klaus; and Janocha, Siegfried, to Hoechst Aktiengesellschaft. Tubular packaging material, preferably for use as a sausage casing. 4,243,074, Cl. 138-118.100.

Strutzel, Hans; Hoheisel, Klaus; and Janocha, Siegfried, to Hoechst Aktiengesellschaft. Thermoplastic multi-layer film. 4,243,724, Cl. 428-474.700.

Stuhmer, Werner: See—
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Husehens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,243,585, Cl. 260-239.0BD.

Su, Jui-Lieh. Plastics moulding machine. 4,242,944, Cl. 92-2.000.

Suchanski, Mary R.: See—
Lieb, Donald F.; and Suchanski, Mary R., 4,243,503, Cl. 204-290.00F.

Suchowerskyj, Wadym; Seibel, Berthold; and Werner, Peter, to Robert Bosch GmbH. Test circuit for automotive passenger restraint systems. 4,243,971, Cl. 340-52.00H.

Suga, Nagaichi. Carbon electrode for arc lamp. 4,243,833, Cl. 13-18.00C.

Sugawara, Minoru, to Ishino Gasket Mfg. Co., Ltd. Gasket reinforced by grommet in combination with graphite sheet. 4,243,231, Cl. 277-22.000.

Sugda, Peter J.; and Thompson, Thomas G. Sewer chimney. 4,243,068, Cl. 137-363.000.

Sugimura, Hidehiko; and Koba, Keichiro, to Mitsui Coke Co., Ltd. Coke compositions and process for manufacturing same. 4,243,488, Cl. 201-6.000.

Sulzer Brothers Limited: See—
Quack, Hans; and Senn, Armin E., 4,242,885, Cl. 62-500.000.

Sumitomo Aluminium Smelting Co., Ltd.: See—
Yanagida, Kiyomi; Magasa, Harumi; and Takahashi, Akihiko, 4,243,438, Cl. 148-11.50A.

Sumitomo Chemical Co., Ltd.: See—
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,243,786, Cl. 526-137.000.

Sumitomo Metal Industries, Ltd.: See—
Takigawa, Toshiji; and Kida, Junichi, 4,242,781, Cl. 29-113.0AD.

Summagraphics Corporation: See—
Rocheleau, Richard T., 4,243,843, Cl. 178-19.000.

Sun, Jui-Yuan: See—
Burk, Emmett H.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,243,550, Cl. 252-412.000.

Sunakawa, Makoto: See—
Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, 4,243,462, Cl. 156-310.000.

Sunder, Sham: See—
Searingen, Judson S.; and Sunder, Sham, 4,242,870, Cl. 60-651.000.

Surakka, Jorma: See—
Savolainen, Jaakko; Engdahl, Holger; Luukkainen, Yrjo; Tolvanen, Martti; and Surakka, Jorma, 4,243,533, Cl. 210-247.000.

Susquehanna Broadcasting Co.: See—
Helgesen, Paul E., 4,243,873, Cl. 219-386.000.

Suttles, James M.; Norton, Terry L.; Hart, Joseph P.; and Jordan, Thomas C., III, to Royston Manufacturing Corporation. Free-standing article support unit. 4,242,970, Cl. 108-159.000.

Sutyagin, Oleg Y.: See—
Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A., 4,243,108, Cl. 173-93.000.

Suzuki, Takeshi; Muro, Mikio; Uchida, Masahiro; and Nezuka, Minoru, to Kawasaki Jukogyo Kabushiki Kaisha. Material distributing means for rotary drum type heat treatment apparatus. 4,243,382, Cl. 432-78.000.

Suzuki, Takeshi: See—
Tatemoto, Masayoshi; Suzuki, Takeshi; Tomoda, Masayasu; Furukawa, Yasuyoshi; and Ueta, Yutaka, 4,243,770, Cl. 525-331.000.

Suzuki, Yasoji: See—
Masuda, Eiji; and Suzuki, Yasoji, 4,243,975, Cl. 340-347.0NT.

Swain, Richard S., to Norlin Industries, Inc. Automatic rhythm generator. 4,242,936, Cl. 84-1.030.

Swan, Jack C., Jr., to Hanson Industries Incorporated. Viscous, flowable, pressure-compensating fitting compositions. 4,243,754, Cl. 521-55.000.

Swartz, Jeffrey L., to Microseal Plastics Corporation. Process for sealing a plurality of polybutylene sheets. 4,243,449, Cl. 156-82.000.

Swartz, Mitchell R., to Massachusetts Institute of Technology. Electrochemical process and apparatus to control the chemical state of a material. 4,243,751, Cl. 435-168.000.

Sweeney, W. Alan, to Chevron Research Company. Polypyrrolidone alloys. 4,243,777, Cl. 525-425.000.

Swift, William R.; and LeFevre, Clyde E., to AM International, Inc. Microfiche carrier assembly. 4,242,819, Cl. 40-513.000.

Swiss Aluminium Ltd.: See—
Kugler, Tibor, 4,243,502, Cl. 204-243.00R.

Sybron Corporation: See—
Tandon, Dinesh C., 4,243,412, Cl. 75-171.000.

Synthelabo: See—
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel J. M., 4,243,665, Cl. 424-246.000.

- Syva Company: See—
Schneider, Richard S.; and Gould, Steven J., 4,243,654, Cl. 424-12.000.
- Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, to Egyi Gyogyszervegyezeti Gyar. Composite insect attractant for male cabbage moths and a process for preparing its active agents. 4,243,660, Cl. 424-84.000.
- Tahara, Yukio: See—
Kosaka, Takao; and Tahara, Yukio, 4,243,716, Cl. 428-327.000.
- Taiho Pharmaceutical Company: See—
Honma, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,243,812, Cl. 548-248.000.
- Taillades, Jacques: See—
Pascal, Robert; Lasperas nee Marnier, Monique; Rousset, Alain; Commeyras, Auguste; Taillades, Jacques; and Mion, Louis, 4,243,814, Cl. 548-344.000.
- Takada, Shunji: See—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Hirano, Shigeo, 4,243,739, Cl. 430-266.000.
- Takahashi, Akihiko: See—
Yanagida, Kiyomi; Magusa, Harumi; and Takahashi, Akihiko, 4,243,438, Cl. 148-11.50A.
- Takahashi, Hidekazu: See—
Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, 4,243,462, Cl. 156-310.000.
- Takahashi, Hiroshi: See—
Kokoguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, 4,243,689, Cl. 426-557.000.
- Murakami, Sanpei; Kokoguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,243,690, Cl. 426-557.000.
- Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, to Matsushita Electric Industrial Co., Ltd. Transducer with flux sensing coils. 4,243,839, Cl. 179-1.00F.
- Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, to Nippon Piston Ring Co., Ltd. Slidable members for prime movers. 4,243,414, Cl. 75-244.000.
- Takahashi, Masamitsu, to Bankoku Needle Manufacturing Company Ltd. Needle pack. 4,243,141, Cl. 206-380.000.
- Takai, Norihira: See—
Mori, Masaaki; Ogawa, Tamotu; and Takai, Norihira, 4,243,621, Cl. 264-65.000.
- Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, to Shin-Etsu Chemical Co. Ltd. Process for the preparation of tetrachloroalkanes. 4,243,607, Cl. 570-257.000.
- Takashima, Masaru, to Aikoh Co. Ltd. Tundish for the continuous casting of steel. 4,243,210, Cl. 266-220.000.
- Takeda, Takako: See—
Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, 4,243,599, Cl. 260-348.250.
- Takehara, Yasuo: See—
Miyakoshi, Isamu; Ito, Kenji; Azuma, Hideo; Kitakaze, Fukuzo; Tomotaki, Takamichi; and Takehara, Yasuo, 4,243,132, Cl. 193-40.000.
- Takenishi, Shigeyuki: See—
Skinner, Wilfred A.; and Takenishi, Shigeyuki, 4,243,752, Cl. 435-209.000.
- Takenoya, Hideaki: See—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,242,973, Cl. 112-158.00E.
- Takeshita, Masajiro: See—
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,243,414, Cl. 75-244.000.
- Takeuchi, Hiroshi; Ito, Yukio; Jyomura, Shigeru; Yamashita, Kunio; Nagatsuma, Kazuyuki; Ashida, Sakichi; and Ishii, Mitsuru, to Hitachi, Ltd. Piezoelectric ceramics. 4,243,541, Cl. 252-62.900.
- Takigawa, Toshiiji; and Kida, Junichi, to Sumitomo Metal Industries, Ltd. Variable crown sleeve roll. 4,242,781, Cl. 29-113.0AD.
- Takojima, Hyoichi, to Caterpillar Mitsubishi Ltd. Quick coupler. 4,243,356, Cl. 414-723.000.
- Tamura, Hideo; and Ibuti, Seiro, to Kubota Ltd. Process for producing tobermorite and ettringite. 4,243,429, Cl. 106-306.000.
- Tamura, Masaaki; and Tanaka, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital servo system for rotating member. 4,243,921, Cl. 318-314.000.
- Tanaka, Keihachiro: See—
Ohsato, Nobuyoshi; Tanaka, Keihachiro; and Mizushima, Eiji, 4,243,400, Cl. 65-16.000.
- Tanaka, Motoaki: See—
Honma, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,243,812, Cl. 548-248.000.
- Tanaka, Shigeo: See—
Tamura, Masaaki; and Tanaka, Shigeo, 4,243,921, Cl. 318-314.000.
- Tanaka, Yoshikatsu: See—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.
- Tandon, Dinesh C., to Sybron Corporation. Dental alloy. 4,243,412, Cl. 75-171.000.
- Tatemoto, Masayoshi; Suzuki, Takeshi; Tomoda, Masayasu; Furukawa, Yasuyoshi; and Ueta, Yutaka, to Daikin Kogyo Co., Ltd. Cross linkable fluorine-containing polymer and its production. 4,243,770, Cl. 525-331.000.
- Taylor, Harry H.: See—
Chill, James L.; Taylor, Harry H.; and Granger, Evert H., 4,243,437, Cl. 148-11.50C.
- Taylor, Henry F.: See—
Richards, William E.; and Taylor, Henry F., 4,243,300, Cl. 350-150.000.
- Taylor, James L., to Thompson-Hayward Chemical Company. Method of reducing infestation of citrus rust mites on citrus trees. 4,243,680, Cl. 424-322.000.
- Taylor, Thomas, to Lever Brothers Company. Production of aluminosilicate-containing detergent composition. 4,243,544, Cl. 252-135.000.
- Te ka De Felten & Guillaume Fernmeldeanlagen GmbH: See—
Schmidt, Hans-Joachim, 4,243,957, Cl. 333-28.00R.
- TEAC Corporation: See—
Utsumi, Yoshihiro, 4,243,848, Cl. 369-45.000.
- Teach, Eugene G., to Stauffer Chemical Company. 2,2,4-Trimethyl-4-hydroxymethyl-3-dichloroacetyl oxazolidine. 4,243,811, Cl. 548-215.000.
- Tektronix, Inc.: See—
Wilde, Doran K., 4,243,958, Cl. 333-165.000.
- Teldix GmbH: See—
Wehde, Heinz; Wulffhorst, Burkhard; and Schumann, Fritz, 4,242,860, Cl. 57-81.000.
- Teledyne Industries, Inc.: See—
Kates, James M., 4,243,840, Cl. 179-1.00D.
- Telic Corporation: See—
Penfold, Alan S., 4,243,505, Cl. 204-298.000.
- Tennant, Jerald L. Posterior encapsulated implant lens. 4,242,762, Cl. 3-13.000.
- Ter-Borch, Poul E.; Baumgarten, Per; and Jorgensen, Ernst K., to I. Kruger A/S. Method and apparatus for utilizing heat content in waste water. 4,243,522, Cl. 210-774.000.
- Tessler, Martin M., to National Starch and Chemical Corporation. Novel starch ether derivatives, a method for the preparation thereof and their use in paper. 4,243,479, Cl. 162-175.000.
- Tetra Pak Development SA: See—
Ignell, Rolf L., 4,243,152, Cl. 220-270.000.
- Reil, Wilhelm, 4,243,160, Cl. 222-373.000.
- Texaco Development Corporation: See—
McDaniel, Kenneth G.; Rice, Doris M.; and Cuscurida, Michael, 4,243,760, Cl. 521-176.000.
- Texaco Inc.: See—
Elliott, Lloyd E., Jr.; and Hudson, John L., 4,243,116, Cl. 181-118.000.
- Kliesch, Howard C.; McWilliams, Daniel N.; Pratt, Roy E.; and Schmude, Donald H., 4,243,630, Cl. 422-62.000.
- Texaco Trinidad, Inc.: See—
Ali, Wahid-R., 4,243,676, Cl. 424-294.000.
- Texas Instruments Incorporated: See—
Ackley, David A.; Rogers, Gerald D.; Macourek, Peter H.; Guttig, Karl M.; and Chang, Ki Suk, 4,243,984, Cl. 340-703.000.
- Textron: See—
Carlock, Gaylord W.; McKeown, William L.; Goodman, James R.; and Skrodzki, Chester, 4,243,358, Cl. 416-114.000.
- Th. Goldschmidt AG: See—
Brugger, Wilhelm, 4,243,649, Cl. 423-608.000.
- Tharp, Charles E.; and Campbell, Clark M., to Environmental Dynamics, Inc. Method and apparatus for aerobically treating wastewater. 4,243,521, Cl. 210-626.000.
- Theodoropoulos, Spyros: See—
Eisenhardt, William A., Jr.; Hedaya, Eddie; and Theodoropoulos, Spyros, 4,243,605, Cl. 556-414.000.
- Therm-O-Disc Incorporated: See—
Place, Donald E., 4,243,858, Cl. 200-83.00P.
- Thiboutot, Robert, to Les Entreprises Rotot Ltee. Collapsible support structure and devices formed therefrom. 4,243,263; Cl. 297-42.000.
- Thiel, Max: See—
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; and Plattner, Werner, administrator, 4,243,807, Cl. 546-232.000.
- Thompson-Hayward Chemical Company: See—
Taylor, James L., 4,243,680, Cl. 424-322.000.
- Thompson, Thomas G.: See—
Sugda, Peter J.; and Thompson, Thomas G., 4,243,068, Cl. 137-363.000.
- Thomson-CSF: See—
Albarelo, Alain, 4,244,030, Cl. 364-825.000.
- Delory, Bernard; Fleury, Georges; and Kuntzmann, Jean-Claude, 4,243,914, Cl. 315-3.500.
- Faillon, Georges; and Carreyve, Claude, 4,243,961, Cl. 333-233.000.
- Fleury, Georges, 4,243,915, Cl. 315-3.500.
- Thornton, Douglas S.: See—
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,243,480, Cl. 162-141.000.
- Thorstenon, Gustav Y.: See—
Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstenon, Gustav Y.; and Karlstedt, Gustav S. E., 4,242,945, Cl. 92-26.000.
- Throckmorton, Peter E.; Sitz, Gary E.; and Grimm, Robert A., to Ashland Oil, Inc. Benzyl oxidation process. 4,243,612, Cl. 568-431.000.
- Thrun, Robert H., to Anchor Products Company. Surgical needle and sharps holding container. 4,243,140, Cl. 206-380.000.
- Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstenon, Gustav Y.; and Karlstedt, Gustav S. E., to Forenade Fabriksverken. Assembly with relatively displaceable members. 4,242,945, Cl. 92-26.000.
- TMC Corporation: See—
Krob, Erwin, 4,243,245, Cl. 280-626.000.

- Toda, Tadayoshi; Omote, Kazuaki; and Imai, Mamoru, to Nissan Motor Company, Limited. Construction for mounting inside rear view mirror in motor vehicle. 4,243,196, Cl. 248-475.00R.
- Tohyama, Yoshikuni; Kimura, Yoshimasa; Ishida, Masato; and Miyamoto, Koichi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,243,311, Cl. 355-8.000.
- Tokar, Joseph C.; and Janeczki, Frank A., to Donaldson Company, Inc. Air cleaner with replaceable filter element. 4,243,397, Cl. 55-487.000.
- Tokico Ltd.: See—
Amemori, Hiroyuki; and Nishiyama, Shigeru, 4,242,916, Cl. 73-861.830.
- Sakazume, Takeshi, 4,242,869, Cl. 60-594.000.
- Tokunaga, Yasuo; and Yamada, Kiyoshige, to Toyo Kogyo Co., Ltd. Rear window structure for automobile. 4,243,262, Cl. 296-146.000.
- Tokyo Denki Kagaku Kogyo Kabushiki Kaisha: See—
Masujima, Sho; and Yoshihito, Yamamoto, 4,243,139, Cl. 206-330.000.
- Tokyo Ohka Kogyo Kabushiki Kaisha: See—
Tsuda, Minoru; Nakamura, Yoichi; Nagata, Hideo; and Nakane, Hisashi, 4,243,740, Cl. 430-270.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Masuda, Eiji; and Suzuki, Yasoji, 4,243,975, Cl. 340-347.0NT.
- Tamura, Masaaki; and Tanaka, Shigen, 4,243,921, Cl. 318-314.000.
- Tsuji, Teruaki; and Watanabe, Shigeru, 4,243,484, Cl. 176-30.000.
- Tokyo Shibaura Electric Co., Ltd.: See—
Azuma, Makoto; and Nakagawa, Akio, 4,243,999, Cl. 357-38.000.
- Natori, Kenji; and Masuoka, Fujio, 4,243,997, Cl. 357-23.000.
- Niida, Hideo, 4,242,880, Cl. 62-200.000.
- Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,243,308, Cl. 354-60.00E.
- Toledo-Pereyra, Luis H., to Henry Ford Hospital. Liver preservation. 4,242,883, Cl. 62-306.000.
- Toliusis, Vytautas J., to Humphrey Products Company. Fluid pressure cylinder convertible for use with or without internal bumpers. 4,242,946, Cl. 92-59.000.
- Tolvanen, Martti: See—
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- Tombach, Ivar, to Aerovironment Inc. Particulate sampler shield. 4,242,908, Cl. 73-421.50R.
- Tomita, Kazuo: See—
Negishi, Takao; and Tomita, Kazuo, 4,242,862, Cl. 57-287.000.
- Tomizawa, Masaharu: See—
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,243,633, Cl. 422-129.000.
- Tomoda, Masayasu: See—
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- Tomotaki, Takamichi: See—
Miyakoshi, Isamu; Ito, Kenji; Azuma, Hideo; Kitakaze, Fukuzo; Tomotaki, Takamichi; and Takehara, Yasuo, 4,243,132, Cl. 193-40.000.
- Toray Industries, Inc.: See—
Hiramoto, Hiroo; and Eguchi, Masuichi, 4,243,743, Cl. 430-281.000.
- Negishi, Takao; and Tomita, Kazuo, 4,242,862, Cl. 57-287.000.
- Toray Silicone Company, Ltd.: See—
Mine, Katsutoshi, 4,243,542, Cl. 260-375.00B.
- Toro Company, The: See—
Kendall, Thomas L., 4,244,022, Cl. 364-420.000.
- Tosco Corporation: See—
Haas, Frank C.; and Hesse, William K., 4,243,639, Cl. 423-63.000.
- Toshiba Ceramics Co., Ltd.: See—
Mori, Masaaki; Ogawa, Tamotu; and Takai, Norihira, 4,243,621, Cl. 264-65.000.
- Toshiba Silicone Co. Ltd.: See—
Murai, Bunjiro; and Matsumoto, Yasuji, 4,243,718, Cl. 428-411.000.
- Toth, Miklos: See—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.
- Toth, William L., to W. S. Rockwell Company. Method of making a particle-containing plastic coating. 4,243,696, Cl. 427-27.000.
- Toussaint, Stephen M., to Eamark, Incorporated. Method of and apparatus for signature coded target recognition. 4,243,972, Cl. 340-146.35Y.
- Towmotor Corporation: See—
Blaha, James G., 4,243,234, Cl. 277-84.000.
- Toyo Kogyo Co., Ltd.: See—
Tokunaga, Yasuo; and Yamada, Kiyoshige, 4,243,262, Cl. 296-146.000.
- Toyota Jidosha Kogyo Kabushiki Kaisha: See—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.
- Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Okayama, Morio; and Iwasaki, Isao, 4,242,888, Cl. 64-21.000.
- Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, 4,243,185, Cl. 242-107.200.
- Nakamura, Akira; and Oguri, Masato, 4,242,943, Cl. 91-369.00A.
- Nishikawa, Kazuyoshi; and Uno, Makoto, 4,242,923, Cl. 74-700.000.
- Onishi, Sigeru, 4,242,993, Cl. 123-59.00B.
- Tramezzani, Giancarlo, to P.W.T. Plastic World Technology Limited. Method and apparatus for the continuous extrusion and blowing of thin films of plastic material in particular rigid PVC. 4,243,629, Cl. 264-563.000.
- Tremont, Samuel J.: See—
Williamson, Alex N.; and Tremont, Samuel J., 4,243,825, Cl. 585-428.000.
- Trenkler, Werner, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Body for motor vehicles, especially automobiles, with a sliding roof having a frame bottom. 4,243,261, Cl. 296-213.000.
- Tri-State Oil Tool Industries, Inc.: See—
Johnson, Gary R., 4,243,252, Cl. 285-39.000.
- Triestram, Douglas E.: See—
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,243,075, Cl. 138-174.000.
- Trimborn, Werner: See—
Petersen, Harro; Fischer, Kurt; Klug, Hans; Trimborn, Werner; and Schmidt, Horst, 4,243,797, Cl. 528-239.000.
- Tronc, Dominique: See—
Leboutet, Hubert; and Tronc, Dominique, 4,243,916, Cl. 315-111.800.
- Trott, William A. Continuous electroforming of metal sheets with lines of weakness for bending and/or break out portions. 4,243,495, Cl. 204-11.000.
- TRW Inc.: See—
DiBugnara, Raymond, 4,243,427, Cl. 106-287.160.
- Larkin, Joseph F.; Cassidy, Harold M.; Woodcock, John W.; and Dunn, William M., 4,243,962, Cl. 334-7.000.
- Trybulski, Eugene J.: See—
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,243,589, Cl. 260-245.500.
- Trytten, Glaydon C. Ash-free fireplace ventilating apparatus. 4,243,015, Cl. 126-120.000.
- Tsao, Utah, to Lummus Company, The. Heat and volatized salt recovery from reaction effluent. 4,243,650, Cl. 423-659.000.
- Tsaijenjuk, Yakov I.: See—
Galimov, Anas G.; Gelfand, Mikhail L.; Goldstein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsaijenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A., 4,243,108, Cl. 173-93.000.
- Tsuda, Minoru; Nakamura, Yoichi; Nagata, Hideo; and Nakane, Hisashi, to Tokyo Ohka Kogyo Kabushiki Kaisha. Light sensitive compositions of polymethyl isopropenyl ketone. 4,243,740, Cl. 430-270.000.
- Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, to Asahi Kasei Kogyo Kabushiki Kaisha. Blood treating system. 4,243,532, Cl. 210-196.000.
- Tsui, Frank F., to International Business Machines Corporation. Chip and wafer configuration and testing method for large-scale-integrated circuits. 4,244,048, Cl. 371-15.000.
- Tsuji, Takao: See—
Ooshima, Takeshi; Sato, Hideaki; and Tsuji, Takao, 4,243,849, Cl. 369-62.000.
- Tsuji, Teruaki; and Watanabe, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for use to exchange O-ring interposed between in-core housing and in-core flange in nuclear reactor. 4,243,484, Cl. 176-30.000.
- Tsujiuchi, Yoshio: See—
Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, 4,243,185, Cl. 242-107.200.
- Tsunemitsu, Hideo: See—
Sato, Susumu; and Tsunemitsu, Hideo, 4,244,002, Cl. 357-68.000.
- Tsuzuki, Akira; and Miura, Atsushi, to Koritsu Kikai Kogyo Company Limited. Radial cutter type cleaning apparatus for coke oven door bottom surface. 4,243,490, Cl. 202-241.000.
- Tsuzuki, Akira: See—
Fujita, Hiro; Tsuzuki, Akira; Ebiha, Heihachiro; and Sekiya, Fukuo, 4,244,043, Cl. 368-85.000.
- Tuck, Alan D., Jr.: See—
Wilden, James K.; and Tuck, Alan D., Jr., 4,242,941, Cl. 91-319.000.
- Tucker, James I., to Orion Industries, Inc. Spark plug cleaner with improved grit recycling. 4,242,844, Cl. 51-412.000.
- Tucker, Mary Y. Earring stay. 4,242,886, Cl. 63-14.00B.
- Turner, W. Bard, to C & K Components, Inc. Rotary coded switch. 4,243,853, Cl. 200-8.00R.
- Tuxhorn KG: See—
Nolte, Ewald, 4,243,064, Cl. 137-117.000.
- Twitchell, Brent L.; and Twitchell, Kendel S. Three-dimensional lift. 4,243,147, Cl. 212-159.000.
- Twitchell, Kendel S.: See—
Twitchell, Brent L.; and Twitchell, Kendel S., 4,243,147, Cl. 212-159.000.
- Tyler Refrigeration Corporation: See—
Abraham, Faye F., 4,242,882, Cl. 62-256.000.
- Tzikas, Athanasios, to Ciba-Geigy AG. Process for the manufacture of 1,4-diaminoanthraquinone-2-carboxylic acid. 4,243,600, Cl. 260-377.000.
- Uchida, Masahiro: See—
Suzuki, Takeshi; Murao, Mikio; Uchida, Masahiro; and Nezuka, Minoru, 4,243,382, Cl. 432-78.000.
- Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, to Nippon Telegraph and Telephone Public Corporation; and Oki Electric Industry Company, Ltd. PNP Semiconductor switches. 4,244,000, Cl. 357-39.000.
- Ueda, Takeshi; Kinoshita, Shozo; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Dispersion imaging material and method of producing image thereon. 4,243,746, Cl. 430-346.000.
- Ueno, Kaoru: See—
Ishimori, Tomitaro; and Ueno, Kaoru, 4,243,641, Cl. 423-179.500.

- Ueno, Takafumi: See—
Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, 4,243,839, Cl. 179-1.00F.
- Ueta, Yutaka: See—
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- Umemoto, Takashi: See—
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- Umemura, Mitsuo: See—
Takamizawa, Minoru; Okamoto, Hafuo; Umemura, Mitsuo; and Kooya, Kazuo, 4,243,607, Cl. 570-257.000.
- Union Carbide Corporation: See—
Eisenhardt, William A., Jr.; Hedaya, Eddie; and Theodoropoulos, Spyros, 4,243,605, Cl. 556-414.000.
Engel, Stephen A., 4,243,436, Cl. 148-9.500.
Fraser, William A.; and Cieloszyk, Gary S., 4,243,619, Cl. 264-40.600.
Kaufman, Lawrence G.; and Merriam, Charles N., 4,243,767, Cl. 525-102.000.
Keogh, Michael J., 4,243,579, Cl. 260-45.70R.
Koleske, Joseph V.; Knopf, Robert J.; and Smith, Oliver W., 4,243,569, Cl. 260-29.6TA.
Naumann, Alfred W.; and Behan, Albert S., 4,243,553, Cl. 252-439.000.
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Powers, Robert A.; and Louzos, Demetrios V., 4,243,732, Cl. 429-105.000.
Sara, Raymond V., 4,243,169, Cl. 228-175.000.
- Union Oil Company of California: See—
Dhondt, Roland O., 4,243,510, Cl. 208-11.00R.
Fenton, Donald M., 4,243,648, Cl. 423-573.00R.
Hass, Robert H.; and Hansford, Rowland C., 4,243,647, Cl. 423-573.00G.
- United Electric Controls Company: See—
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- United States of America
Agriculture: See—
Israelides, Cleanthes; Han, Youn W.; and Anderson, Arthur W., 4,243,686, Cl. 426-53.000.
- Air Force: See—
Cinch, Marvin R.; Graf, Calvin R.; Martin, Paul E.; and Fenwick, Robert B., 4,244,053, Cl. 455-29.000.
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- Army: See—
Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., 4,243,444, Cl. 149-98.000.
Gilbert, Everett E., 4,243,614, Cl. 568-931.000.
Yee, Tin B., 4,243,326, Cl. 356-414.000.
- Energy: See—
Agouridis, Dimitrios C.; and Fox, Richard J., 4,243,885, Cl. 250-370.000.
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Niven, William A.; Shikany, S. David; and Shira, Michael L., 4,243,900, Cl. 310-49.00R.
- Interior: See—
Herman, Charles, III, 4,242,915, Cl. 73-784.000.
- National Aeronautics and Space Administration; administrator; with respect to an invention of:
Breckinridge, James B. Interferometer, 4,243,323, Cl. 356-345.000.
- National Aeronautics and Space Administration: See—
Cornett, Jack E.; Saunders, Andrew A., Jr.; Marvin, Ira E.; and Beittler, Richard S., 4,242,864, Cl. 60-226.00R.
- Navy: See—
Armantrout, Robert J., 4,243,442, Cl. 149-19.920.
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McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., 4,243,935, Cl. 324-77.00R.
Richards, William E.; and Taylor, Henry F., 4,243,300, Cl. 350-150.000.
Saul, David L.; and Rubin, David, 4,243,949, Cl. 331-9.000.
White, David J.; Helmick, Carl N., Jr.; and Hunt, Robert E., 4,243,960, Cl. 333-196.000.
Woodward, Elmer D., 4,243,991, Cl. 343-777.000.
- U.S. Philips Corporation: See—
Chapron, Claude, 4,243,896, Cl. 307-213.000.
Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., 4,243,399, Cl. 65-4.00B.
Lebailly, Jacques; and Varon, Jacques, 4,243,996, Cl. 357-17.000.
Wilson, Ian L., 4,243,906, Cl. 313-229.000.
- United States Surgical Corporation: See—
Green, David T., 4,242,902, Cl. 72-410.000.
- United Technologies Corporation: See—
Breton, Robert A., 4,242,871, Cl. 60-757.000.
DeBlois, Raymond L., 4,243,188, Cl. 244-53.00B.
- Universal Sanitary Equipment Manufacturing Co., Inc.: See—
Rezin, Robert G., 4,242,847, Cl. 52-169.600.
- University of California, The Regents of the: See—
Sovak, Milos; and Ranganathan, Ramachandra, 4,243,653, Cl. 424-5.000.
- University of Leeds Industrial Service Ltd.: See—
Amis, Andrew A.; and Miller, James H., 4,242,758, Cl. 3-1.910.
- Uno, Makoto: See—
Nishikawa, Kazuyoshi; and Uno, Makoto, 4,242,923, Cl. 74-700.000.
- Unsold, Eberhard: See—
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- Untermyer, Samuel, II, to National Nuclear Corp. Apparatus and method for the measurement of neutron moderating or absorbing properties of objects, 4,243,886, Cl. 250-390.000.
- UOP Inc.: See—
Antos, George J., 4,243,558, Cl. 252-466.00B.
Antos, George J., 4,243,826, Cl. 585-434.000.
Carson, Don B., 4,243,830, Cl. 585-717.000.
Malloy, Thomas P.; and Lester, George W., 4,243,831, Cl. 585-824.000.
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Ryu, Ji-Yong, 4,243,827, Cl. 585-463.000.
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- Upjohn Company, The: See—
Morton, Douglas R., Jr., 4,243,592, Cl. 260-340.700.
Sih, John C., 4,243,611, Cl. 568-379.000.
- Urbansky, Rolf, to Volkswagenwerk Aktiengesellschaft. Ignition timing control device for a turbo-charged internal combustion engine, 4,242,996, Cl. 123-407.000.
- Ushakov, Vladimir F.; Pergunov, Alexandr I.; Alexeev, Albert V.; Maslennikov, Pavel N.; and Seljutin, Vladimir I. Apparatus for preparing and feeding an abrasive-containing suspension into the zone of action of work tools of polishing and finishing lathes, 4,242,841, Cl. 51-263.000.
- USM Corporation: See—
Osborne, Michael L.; and Hadley, Michael J., 4,242,939, Cl. 411-41.000.
- Utracki, Lechoslaw A. M., to C-I-L Inc. Azide and doped iron oxide gas generating composition, 4,243,443, Cl. 149-35.000.
- Utsumi, Yoshihiro, to TEAC Corporation. Focus control system for optical read-out apparatus, 4,243,848, Cl. 369-45.000.
- Van Arnem, Donald E., to Avery International Corporation. Method for forming retroreflective sheeting, 4,243,618, Cl. 264-1.000.
- Vanassche, Roger; and Verbauwheide, Germain, to N.V. Bekaert S.A. Steel cord reinforcement for elastomers as well as thus reinforced elastomers, 4,243,714, Cl. 428-258.000.
- Van den Bergh, Marc F. S. M., to Miller-Johannisberg Druckmaschinen GmbH. Paper folding and conveying apparatus and method, 4,243,215, Cl. 493-422.000.
- van der Lely, Cornelis. Rotary harrows, 4,243,103, Cl. 172-59.000.
- Vandermarliere, Charles: See—
Curinier, Jean; and Vandermarliere, Charles, 4,242,779, Cl. 28-101.000.
- Van der Meer, James C.: See—
Kuntner, Richard J.; and Van der Meer, James C., 4,243,894, Cl. 307-147.000.
- van der Schoot, Peter W. C., to Goudsche Machinefabriek B.V. Peeling apparatus, 4,242,952, Cl. 99-625.000.
- Vandling, John M., to Exxon Research & Engineering Co. Facsimile receiver signalling, 4,244,007, Cl. 358-257.000.
- Van Ess, John C., to Ross, Walter A. Light mounting tapes, 4,244,014, Cl. 362-249.000.
- van Geest, Lambertus K.; and Houtkamp, Johannes J., to N.V. Optische Industrie "De Oude Delft". Method of making the cathode of a diode image intensifier tube, and image intensifier tube having a cathode made by this method, 4,243,905, Cl. 313-102.000.
- Van Gelder, Josephus L. H.: See—
Raeymaekers, Alfons H. M.; Van Gelder, Josephus L. H.; Boeckx, Gustaaf M.; and Van Hemeldonck, Lodewijk L., 4,243,806, Cl. 544-396.000.
- Van Hemeldonck, Lodewijk L.: See—
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- van Koten, Gerard: See—
Noltes, Jan G.; Jastrzebski, J. T. B. H.; and van Koten, Gerard, 4,243,604, Cl. 260-430.000.
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., 4,243,824, Cl. 585-259.000.
- van Zalinge, Henk. Stringed musical instrument, 4,242,938, Cl. 84-1.160.
- Vapor Corporation: See—
McKenney, James L., 4,243,871, Cl. 219-326.000.
- Vareide, Dag; and Solheim, Odd E. Method and device for distributing liquid fuel to a fluidized bed, 4,243,380, Cl. 432-15.000.
- Varga, Sandor: See—
Sipos, Sandor; Varga, Sandor; and Hali, Imre, 4,243,104, Cl. 172-148.000.

- Varma, Ravi K.; and Vogt, B. Richard, to E. R. Squibb & Sons, Inc. 3-(4-Hydroxyphenyl)pentanedioic acid, monohydrate, derivatives and analogs, 4,243,608, Cl. 260-501.110.
- Varma, Ravi K.: See—
Chao, Sam T.; and Varma, Ravi K., 4,243,586, Cl. 260-239.55R.
- Varon, Jacques: See—
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- Vasin, Jury P.: See—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Kopusov, Valery V., 4,243,780, Cl. 525-518.000.
- Vegh, Daniel; and Kovac, Jaroslav, to Rektorat Slovenskej vysokej skoly technickej. (5-Nitro-2-furyl)vinylene-2-trimethylammonium bromide and method of preparing same, 4,243,596, Cl. 260-347.700.
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- Verbauwheide, Germain: See—
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- Vercellotti, Leonard C.: See—
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- Yereinigte Flugtechnische Werke-Fokker GmbH: See—
Sobotta, Werner, 4,243,922, Cl. 318-561.000.
- Ver Hoef, Niel; and Kurth, Donald D. Spinner apparatus, 4,243,223, Cl. 273-141.00R.
- Vermeulen, Teunis, to Koninklijke Bos Kalis Westminster Group N.V. Suction pipe position control, 4,242,815, Cl. 37-58.000.
- Vermot, Michel, to Ebauches Electroniques S.A. Electronic timepiece with an alarm device, 4,244,041, Cl. 368-73.000.
- Vickers, Anthony G., to UOP Inc. Fluid catalyst regeneration apparatus, 4,243,634, Cl. 422-144.000.
- Vieau, Richard R.; and Vieau, Robert A. Multiple wire electrode feed mechanism for electroerosion machine, 4,243,864, Cl. 219-69.00W.
- Vieau, Robert A.: See—
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- Vieland, Leon J.: See—
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Winarsky, Norman D.; Cohen, Roger W.; Bortfeld, David P.; and Vieland, Leon J., 4,243,911, Cl. 315-3.000.
- Viessmann, Haas. Connecting arrangement for a heating boiler, 4,242,987, Cl. 122-44.00A.
- Viggo AB: See—
Brandt, Werner J., 4,243,034, Cl. 128-214.400.
- Vinals, Joaquin F.: See—
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,243,823, Cl. 568-824.000.
- Vincent, Robert R.: See—
Clemenson, James T.; and Vincent, Robert R., 4,243,110, Cl. 173-104.000.
- Vinel, Rene; Querton, Jean-Pierre; and Serville, Claude, to SKF Compagnie d'Applications Mecaniques. Self-centering clutch release bearing comprising guide means, 4,243,130, Cl. 192-98.000.
- Visos, Charles D.: See—
Ferstrom, Carl F.; and Visos, Charles D., 4,243,373, Cl. 431-66.000.
- Vitek, Inc.: See—
Homsy, Charles A.; and Homsy, Paul T., 4,243,021, Cl. 126-449.000.
- Vizugyi Tervezo Vallalat: See—
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- Vock, Manfred H.; Giacino, Christopher; Hruza, Anne; Withycombe, Donald A.; Mookherjee, Braja D.; and Mussinan, Cynthia J., to International Flavors & Fragrances Inc. Flavoring with 2-substituted-4,5-dimethyl-Δ³-thiazolines, 4,243,688, Cl. 426-535.000.
- Vock, Manfred H.: See—
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- Voest-Alpine Aktiengesellschaft: See—
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- Vogel, Eberhard: See—
Armbruster, Gerhard; Kleider, Albert; and Vogel, Eberhard, 4,242,839, Cl. 51-170.0MT.
- Vogel, Jacobus E., to Shell Oil Company. Waste heat boiler, 4,243,097, Cl. 165-163.000.
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Yamaguchi, Hisayoshi; and Kuroyanagi, Itsuo, to Shin-Etsu Handatai Co. Ltd. Method for detecting crystal defects in semiconductor silicon and detecting solution therefor. 4,243,473, Cl. 156-626.000.

Yamaha Hatsukoki Kabushiki Kaisha: See—

Yamada, Minoru, 4,243,000, Cl. 123-442.000.

Yamada, Minoru, 4,243,001, Cl. 123-583.000.

Yamamoto, Ryoichi: See—

Shiraki, Shigemichi; and Yamamoto, Ryoichi, 4,243,636, Cl. 422-225.000.

Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, to Showa Denko K.K. Process for purifying crude olefin oxides. 4,243,492, Cl. 203-8.000.

Yamamura, Yuichi: See—

Azuma, Ichiro; and Yamamura, Yuichi, 4,243,663, Cl. 424-181.000.

Yamashita, Kunio: See—

Takeuchi, Hiroshi; Ito, Yukio; Joyima, Shigeru; Yamashita, Kunio; Nagatsuma, Kazuyuki; Asuda, Sakichi; and Ishii, Mitsuru, 4,243,541, Cl. 252-62.900.

Yamazaki, Mitsuyoshi: See—

Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.

Yanagida, Kiyomi; Magusa, Harumi; and Takahashi, Akihiko, to Sumitomo Aluminium Smelting Co., Ltd.; and Nihon Atsuen Kogyo K.K. Production of aluminum impact extrusions. 4,243,438, Cl. 148-11.50A.

Yancey, Paul J., to La Pierre Synthetique Baikowski, S.A. Precision polishing suspension and method for making same. 4,242,842, Cl. 51-298.000.

Yankovsky, Oleg A.: See—

Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutuyang, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A., 4,243,108, Cl. 173-93.000.

- Yapp, William J.; and McDonald, Robert E., to Sherwin-Williams Company, The. Process for coating high solids coating compositions. 4,243,705, Cl. 427-386.000.
- Yarborough, John K. Current monitor. 4,243,982, Cl. 340-664.000.
- Yashin, Jury N.: See—
Deribas, Andrei A.; Limasov, Alexei I.; Matysyn, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Jury N., 4,242,787, Cl. 29-421.00E.
- Yasuda, Yutaka: See—
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- Yasujima, Akitaka; Shiratori, Naoyuki; and Ishikawa, Shingo, to Asahi-Dow Limited. Infrared multilayer film thickness measuring method and apparatus. 4,243,882, Cl. 250-339.000.
- Yasumatsu, Jun: See—
Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, 4,243,185, Cl. 242-107.200.
- Yee, Tin B., to United States of America, Army. Nickel analysis device. 4,243,326, Cl. 356-414.000.
- Yoneda, Shigeo: See—
Yoshida, Zen-ichi; Yoneda, Shigeo; Murata, Hideki; Yasuda, Yutaka; and Nagakura, Saburo, 4,243,601, Cl. 260-396.00N.
- Yonehara, Hiroshi: See—
Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, 4,243,661, Cl. 424-117.000.
- Yoo, Jin S.: See—
Burk, Emmett H.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,243,550, Cl. 252-412.000.
- York, Kenneth L.; Annal, Peter R.; and Legory, John E., to Burroughs Corporation. Method and apparatus for enhancing I/O transfers in a named data processing system. 4,244,049, Cl. 371-38.000.
- York, Kenneth V.: See—
Matthews, Horton; York, Kenneth V.; and Goodsmith, Dale H., 4,242,793, Cl. 29-798.000.
- Yoshida Kogyo KK: See—
Shimai, Hideo, 4,242,785, Cl. 29-408.000.
- Yoshida, Zen-ichi; Yoneda, Shigeo; Murata, Hideki; Yasuda, Yutaka; and Nagakura, Saburo, to Ajinomoto Company Incorporated; and Zen-ichi Yoshida. Cyano substituted diphenylquinones and a process for preparing them. 4,243,601, Cl. 260-396.00N.
- Yoshihito, Yamamoto: See—
Masujima, Sho; and Yoshihito, Yamamoto, 4,243,139, Cl. 206-330.000.
- Yoshikawa, Norio, to Denki Onkyo Co., Ltd. Deflection coil. 4,243,965, Cl. 335-213.000.
- Yoshimura, Shigeru: See—
Kitahara, Sigeyoshi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
- Young, Alastair J., to Automotive Products Limited. Resilient linkage means for use in vehicle fluid pressure braking systems. 4,243,272, Cl. 303-22.00R.
- Young, Andrew, to Lamberton & Company Limited. Conveying apparatus. 4,243,131, Cl. 193-35.0MD.
- Young, John S., to GTE Automatic Electric Laboratories Incorporated. Digitally activated coin control circuit. 4,243,841, Cl. 179-630R.
- Zdunek, Kenneth J., to Motorola, Inc. Digital signal receiver having a dual bandwidth tracking loop. 4,243,941, Cl. 329-50.000.
- Zegeer, Jim: See—
Griffin, Lawrence C., 4,243,048, Cl. 128-751.000.
- Zeidler, James R.: See—
McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., 4,243,935, Cl. 324-77.00R.
- Zen-ichi Yoshida: See—
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- Zeugner, Horst: See—
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Husc-hens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,243,585, Cl. 260-239.0BD.
- Zielinski, Zenon A.: See—
Beer, Issie M.; Zielinski, Zenon A.; and Finkel, Henry, 4,243,200, Cl. 249-187.00R.
- Ziemba, Richard T., to General Electric Company. Delayed arming fuze for a spinning projectile. 4,242,963, Cl. 102-236.000.
- Zimina, Ida A.: See—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.
- Zimmermann, Jurgen: See—
Steigerwald, Wolf-Erhard; Siede, Heinz-Jurgen; Rosner, Bela; and Zimmermann, Jurgen, 4,243,969, Cl. 338-309.000.
- Zodrow, Rudolf, to Jagenberg Werke Aktiengesellschaft. Labeling machine, especially for bottles. 4,243,467, Cl. 156-568.000.
- Zoecon Corporation: See—
Henrick, Clive A.; and Garcia, Barbara A., 4,243,819, Cl. 562-433.000.
- Zopf, Robert A. Supercharger apparatus with fixed baffle air-fuel mixture routing box. 4,243,010, Cl. 123-559.000.
- Zube, Friedrich Wilhelm: See—
Go, Thiam L., 4,242,980, Cl. 116-202.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JANUARY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- AM International, Inc.: See—
Johnson, Dean W., Re. 30,470, Cl. 101-269.000.
- Brunswick Corporation: See—
Reynolds, Eugene E., Re. 30,471, Cl. 273-54.00C.
- Burlington Industries, Inc.: See—
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., Re. 30,474, Cl. 428-253.000.
- Conklin, Delano M.: See—
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., Re. 30,474, Cl. 428-253.000.
- Detroit Lime Company: See—
Parsons, Marshall F., Re. 30,469, Cl. 34-168.000.
- Dow Chemical Company, The: See—
Teot, Arthur S.; Hamlin, Percy J.; and Savage, Albert B., Re. 30,472, Cl. 252-135.000.
- Hamlin, Percy J.: See—
Teot, Arthur S.; Hamlin, Percy J.; and Savage, Albert B., Re. 30,472, Cl. 252-135.000.
- Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., to Hoffmann-La Roche Inc. Benzophenone glycinamide derivatives. Re. 30,473, Cl. 260-112.50R.
- Hoffmann-La Roche Inc.: See—
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.
- Illman, Walter F.: See—
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., Re. 30,474, Cl. 428-253.000.
- Johnson, Dean W., to AM International, Inc. Address printing machine with roller platens and method. Re. 30,470, Cl. 101-269.000.
- Johnson, William H.: See—
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.
- Krohn, Antonin: See—
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.
- Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., to Burlington Industries, Inc. Hot melt size and yarn sized therewith and packages and fabrics of sized yarn. Re. 30,474, Cl. 428-253.000.
- Parsons, Marshall F., to Detroit Lime Company. Preheater for lime kiln. Re. 30,469, Cl. 34-168.000.
- Reynolds, Eugene E., to Brunswick Corporation. Automatic bowling score computing and display device. Re. 30,471, Cl. 273-54.00C.
- Savage, Albert B.: See—
Teot, Arthur S.; Hamlin, Percy J.; and Savage, Albert B., Re. 30,472, Cl. 252-135.000.
- Smithen, Carey E.: See—
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.
- Teot, Arthur S.; Hamlin, Percy J.; and Savage, Albert B., to Dow Chemical Company, The. Detergent composition with antisoil and antiredeposition properties. Re. 30,472, Cl. 252-135.000.
- Thomas, William A.: See—
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.

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- Abel, Anna. Furniture stop. 257,761, 1-6-81, Cl. D8-402.000.
- Acker, Peter J. Article of flatware. 257,757, 1-6-81, Cl. D7-143.000.
- Ajinomoto General Foods, Inc.: See—
Tajima, Hajime, 257,764, Cl. D9-399.000.
- Allen, Paul E., to Logic Devices, Inc. Fluid distributing manifold. 257,775, 1-6-81, Cl. D15-199.000.
- AMP Incorporated: See—
Sotolongo, Thomas J., 257,760, Cl. D8-353.000.
- Aprahamian, Vaughn, to Le-Bo Products Company, Inc. Tray insert for tape cartridges and tape cassettes. 257,746, 1-6-81, Cl. D3-35.000.
- Armbruster, Joseph M., to Sheller-Globe Corporation. Vehicle roof mounted air conditioner air outlet panel. 257,787, 1-6-81, Cl. D23-142.000.
- Arndt, James J.: See—
Arndt, Otto G.; and Arndt, James J., 257,785, Cl. D21-234.000.
- Arndt, Otto G.; and Arndt, James J. Receiver for a golf ball chipping game. 257,785, 1-6-81, Cl. D21-234.000.
- Beall, Lester, Jr., to Crestline Furniture Co., Inc. Coffee table. 257,750, 1-6-81, Cl. D6-177.000.
- Bernhardt, Floyd V. Slotted golf putter head. 257,782, 1-6-81, Cl. D21-217.000.
- Bernhardt, Floyd V. Golf putter head. 257,783, 1-6-81, Cl. D21-217.000.
- Borden, Inc.: See—
Rabig, Donald B., 257,752, Cl. D6-191.000.
- Cambio, Orlando D., Jr., to Respiratory Care, Inc. Bottle. 257,763, 1-6-81, Cl. D9-370.000.
- Chao, Chen K. Hair control clip. 257,792, 1-6-81, Cl. D28-40.000.
- Clairel Incorporated: See—
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- Crestline Furniture Co., Inc.: See—
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- Dargatz, Dayton O., to Plessey Peripheral Systems. Send/receive high speed impact printer. 257,771, 1-6-81, Cl. D14-30.000.
- Davis, Peter. Rocking chair. 257,749, 1-6-81, Cl. D6-49.000.
- Doig, David, to Scotch House Limited, The. Textile fabric. 257,795, 1-6-81, Cl. D92-1.0AA.
- Eichenberg, La Dorna E.: See—
Eichenberg, Robert J.; and Eichenberg, La Dorna E., 257,777, Cl. D18-15.000.
- Eichenberg, Robert J.; and Eichenberg, La Dorna E. Letter stamping machine. 257,777, 1-6-81, Cl. D18-15.000.
- Maza, Dale T.; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Dolly plate for a refuse container. 257,767, 1-6-81, Cl. D12-31.000.
- Miller Tilt-Top Trailer, Company: See—
Lazzeroni, Edward J., 257,768, Cl. D12-162.000.
- North American Philips Corporation: See—
Rakocy, William J.; and Tsuji, Masao, 257,755, Cl. D7-94.000.
- Norwalt, Robert H.: See—
Loper, Ronald L.; Norwalt, Robert H.; Ulrich, Rolf D.; and Flynn, Theodore A., 257,773, Cl. D14-79.000.
- Onishi, Toru: See—
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- Owens-Illinois, Inc.: See—
Plummer, James E., 257,754, Cl. D7-52.000.
- Parker, James E., to ICL/Scientific. Pipette. 257,791, 1-6-81, Cl. D24-55.000.
- Peterson, Dana. Torque type hand screwdriver. 257,759, 1-6-81, Cl. D8-85.000.
- Pierson, Donald F. Carpet and rug cleaner. 257,774, 1-6-81, Cl. D15-53.000.
- Plessey Peripheral Systems: See—
Dargatz, Dayton O., 257,771, Cl. D14-30.000.
- Plummer, James E., to Owens-Illinois, Inc. Combined decanter and stopper. 257,754, 1-6-81, Cl. D7-52.000.
- Princeton Industries Corporation: See—
Stahel, Alwin J., II, 257,753, Cl. D7-37.000.
- Rabig, Donald B., to Borden, Inc. Attachment for vertically mounted file holder. 257,752, 1-6-81, Cl. D6-191.000.
- Rakocy, William J.; and Tsuji, Masao, to North American Philips Corporation. Deep fryer. 257,755, 1-6-81, Cl. D7-94.000.
- Redmond, Jobie G. Table. 257,751, 1-6-81, Cl. D6-179.000.
- Respiratory Care, Inc.: See—
Cambio, Orlando D., Jr., 257,763, Cl. D9-370.000.
- Rubbermaid Commercial Products Inc.: See—
Maza, Dale T.; and Tomblin, Glen E., 257,767, Cl. D12-31.000.
- Ryder, Francis E.: See—
Thomas, Michael D.; and Ryder, Francis E., 257,789, Cl. D24-9.000.
- Ryder International Corporation: See—
Thomas, Michael D.; and Ryder, Francis E., 257,789, Cl. D24-9.000.

Flynn, Theodore A.: See—
Loper, Ronald L.; Norwalt, Robert H.; Ulrich, Rolf D.; and Flynn, Theodore A., 257,773, Cl. D14-79.000.
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Ingram, Charles E., 257,769, Cl. D12-181.000.
Fujitaki, Roy K.: See—
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Fukutani, Yoshifumi, to Tokyo Shibaura Electric Co., Ltd. Telephone. 257,772, 1-6-81, Cl. D14-53.000.
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Gillette Company, The: See—
Gray, Michael J., 257,793, Cl. D28-48.000.
Gray, Michael J., to Gillette Company, The. Razor. 257,793, 1-6-81, Cl. D28-48.000.
Gunnarsson, Ernst G. Automatic feeder for livestock. 257,794, 1-6-81, Cl. D30-13.000.
ICL/Scientific: See—
Parker, James E., 257,791, Cl. D24-55.000.
Ingram, Charles E., to Four Star Corporation. Pivotal support for a wind deflector blade. 257,769, 1-6-81, Cl. D12-181.000.
Inzerillo, Gail G.; and Williams, Kathleen A. Stuffed toy clam or similar article. 257,781, 1-6-81, Cl. D21-157.000.
Ishiguro, Daisuke: See—
Sato, Naokuni; Onishi, Toru; and Ishiguro, Daisuke, 257,776, Cl. D16-18.000.
Johnson, Logan W. Barbecue tool. 257,756, 1-6-81, Cl. D7-105.000.
Kestling, Peter C. Dental appliance carrying case. 257,790, 1-6-81, Cl. D24-10.000.
Ketcham & McDougall, Inc.: See—
Macowski, William, 257,778, Cl. D19-99.000.
Lazzaroni, Edward J., to Miller Tilt-Top Trailer, Company. Trailer hitch. 257,768, 1-6-81, Cl. D12-162.000.
Le-Bo Products Company, Inc.: See—
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Limacher, Robert J. Combined nail-screw shield and measuring instrument. 257,758, 1-6-81, Cl. D8-14.000.
Logic Devices, Inc.: See—
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Loofbourou, Donald I., to GAF Corporation. Double viewer cartridge. 257,770, 1-6-81, Cl. D14-11.000.
Loper, Ronald L.; Norwalt, Robert H.; Ulrich, Rolf D.; and Flynn, Theodore A., to Sega Enterprises, Inc. Projection television console. 257,773, 1-6-81, Cl. D14-79.000.
MacGregor, Fran, to Clairol Incorporated. Skin treatment tool. 257,747, 1-6-81, Cl. D4-14.000.
Macowski, William, to Ketcham & McDougall, Inc. Base for a desk pen set and calendar or similar articles. 257,778, 1-6-81, Cl. D19-99.000.

S. C. Johnson & Son, Inc.: See—
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Sanyo Electric Co., Ltd.: See—
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Sargent Industries, Inc.: See—
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Schachter, Jacob. Bill detector. 257,765, 1-6-81, Cl. D10-46.000.
Scotch House Limited, The: See—
Doig, David, 257,795, Cl. D92-1.0AA.
Sega Enterprises, Inc.: See—
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Shelcore, Inc.: See—
Strauss, Manfred, 257,780, Cl. D21-142.000.
Sheller-Globe Corporation: See—
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Sippola, Leo W. Disc target. 257,779, 1-6-81, Cl. D21-5.000.
Smith, Edgar J. Tractor seat. 257,748, 1-6-81, Cl. D6-48.000.
Smith, Fred T., to Sargent Industries, Inc. Refuse truck body. 257,766, 1-6-81, Cl. D12-15.000.
Sotolongo, Thomas J., to AMP Incorporated. Cover for floor outlet. 257,760, 1-6-81, Cl. D8-353.000.
Stahel, Alwin J., II, to Princeton Industries Corporation. Serving tray. 257,753, 1-6-81, Cl. D7-37.000.
Strauss, Manfred, to Shelcore, Inc. Simulative driving toy. 257,780, 1-6-81, Cl. D21-142.000.
Suhajda, John I., to S. C. Johnson & Son, Inc. Dispenser for vaporizable substance. 257,788, 1-6-81, Cl. D23-150.000.
Tajima, Hajime, to Ajinomoto General Foods, Inc. Combined jar and closure. 257,764, 1-6-81, Cl. D9-399.000.
Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Contact lens sterilizer unit. 257,789, 1-6-81, Cl. D24-9.000.
Tokyo Shibaura Electric Co., Ltd.: See—
Fukutani, Yoshifumi, 257,772, Cl. D14-53.000.
Tomblin, Glen E.: See—
Maza, Dale T.; and Tomblin, Glen E., 257,767, Cl. D12-31.000.
Tsuji, Masao: See—
Rakocy, William J.; and Tsuji, Masao, 257,755, Cl. D7-94.000.
Ulrich, Rolf D.: See—
Loper, Ronald L.; Norwalt, Robert H.; Ulrich, Rolf D.; and Flynn, Theodore A., 257,773, Cl. D14-79.000.
Vann, Charles B. Dual surfboard fin or the like. 257,786, 1-6-81, Cl. D21-237.000.
Williams, Kathleen A.: See—
Inzerillo, Gail G.; and Williams, Kathleen A., 257,781, Cl. D21-157.000.
Yeung, David W. Y. Decanter. 257,762, 1-6-81, Cl. D9-307.000.

LIST OF PLANT PATENTEES

Beineke, Walter F., to Purdue Research Foundation. Distinct variety of black walnut tree. 4,614, 1-6-81, Cl. 32.000.
DeVor Nurseries, Inc.: See—
DeVor, Paul F., 4,613, Cl. 18.000.
DeVor, Paul F., to DeVor Nurseries, Inc. Rose plant named Paul's Pink. 4,613, 1-6-81, Cl. 18.000.
Henry Field Seed and Nursery Company: See—
Turnbull, Kenneth L.; and Hybskman, Daniel K., 4,616, Cl. 36.000.

Hybskman, Daniel K.: See—
Turnbull, Kenneth L.; and Hybskman, Daniel K., 4,616, Cl. 36.000.
Kevorkian, Aram. Peach tree. 4,617, 1-6-81, Cl. 43.000.
McGredy, Samuel D. Rose plant. 4,612, 1-6-81, Cl. 3.000.
Purdue Research Foundation: See—
Beineke, Walter F., 4,614, Cl. 32.000.
Turnbull, Kenneth L.; and Hybskman, Daniel K., to Henry Field Seed and Nursery Company. Pear tree. 4,616, 1-6-81, Cl. 36.000.
Wrigley, Irving H. Apple tree. 4,615, 1-6-81, Cl. 34.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 6TH DAY OF JANUARY, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Du Pont de Nemours, E. I., and Company: See—
Logullo, Francis M., T100,201, Cl. 8-495.000.
Holfeld, Winfried T. Process for calendaring knit fabrics. T100,202, 1-6-81, Cl. 38-144.000.
Lauck, John E., to Shell Oil Company. Label adhesive. T100,203, 1-6-81, Cl. 428-40.000.
Logullo, Francis M., to Du Pont de Nemours, E. I., and Company. Indigo dyeing of polyester fibers. T100,201, 1-6-81, Cl. 8-495.000.

O'Neill, George J.: See—
Weemes, Doyle A.; Seymour, Robert W.; and O'Neill, George J., T100,204, Cl. 264-177.00R.
Seymour, Robert W.: See—
Weemes, Doyle A.; Seymour, Robert W.; and O'Neill, George J., T100,204, Cl. 264-177.00R.
Shell Oil Company: See—
Lauck, John E., T100,203, Cl. 428-40.000.
Weemes, Doyle A.; Seymour, Robert W.; and O'Neill, George J., Coating composition. T100,204, 1-6-81, Cl. 264-177.00R.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 6, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	168	Re.30,469	651	4,242,870	CLASS 76	757	4,243,048		
10	4,242,757	CLASS 36	757	4,242,871	25 A	4,242,926	4,243,049		
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	4,242,761	67	4,242,816	93	4,242,876	CLASS 112	4,243,052		
	4,242,762	CLASS 40	119	4,242,877	57.29	4,242,931			
CLASS 4	152.1	4,242,817	148	4,242,878	437	4,242,932			
321	4,242,765	312	4,243,340	200	4,242,930	474			
420.4	4,242,764	364	4,242,818	225	4,242,933	CLASS 83			
		513	4,242,819	256	4,242,934	37			
CLASS 5	571	4,242,820	306	4,242,883	100	4,242,934			
422	4,242,766	607	4,242,822	371	4,242,884	CLASS 84			
465	4,242,767	621	4,242,823	500	4,242,885	1.01	4,242,935		
CLASS 8		CLASS 42	14 B	4,242,886	1.03	4,242,936			
111	4,243,391	73	4,242,825	4	4,242,887	1.15	4,242,937		
553	4,243,390	73	4,242,826	21	4,242,888	1.16	4,242,938		
CLASS 9		CLASS 43	4	4,242,887	277	4,242,940			
1.2	4,242,768	42.1	4,242,827	319	4,242,941	CLASS 91			
330	4,242,769	137	4,242,828	358 R	4,242,942	2	4,242,944		
CLASS 12	24.5	4,242,770	30 R	4,242,889	369 A	4,242,943	2	4,242,945	
CLASS 13	16	4,243,832	CLASS 65			CLASS 92			
18 C	18	4,243,833	2	4,243,398	2	4,242,944	2	4,242,946	
CLASS 15	91	4,242,829	4 B	4,243,399	26	4,242,945	29	4,242,946	
104.06 R	161	4,242,830	16	4,243,400	59	4,242,946	363	4,242,990	
	251	4,242,831	29	4,243,402	108	4,242,947	263	4,242,998	
CLASS 16		CLASS 47	133	4,242,890	212	4,242,948	325	4,243,002	
93 D	1.1	4,242,832	149 S	4,242,891	CLASS 98		326	4,242,991	
164	17 P	4,242,833	67	4,243,403	2	4,242,950	339	4,242,994	
CLASS 17	71	4,242,834	73	4,243,404	2.11	4,242,951	367	4,243,004	
	84	4,242,835	76	4,243,405	CLASS 99		407	4,242,996	
28	84	4,242,835	88	4,243,406	625	4,242,952	419	4,243,007	
CLASS 23	63	4,242,836	90	4,243,407	CLASS 100		425	4,242,995	
295 S	63	4,242,837	92	4,243,408	100	4,242,953	435	4,243,008	
CLASS 24	59 R	4,242,838	99	4,243,409	176	4,242,954	442	4,243,009	
16 R	164.2	4,242,839	118	4,243,410	CLASS 101		491	4,243,010	
41	170 MT	4,242,840	66	4,242,892	93.29	4,242,955	548	4,242,999	
115 A	236	4,242,841	96	4,242,894	123	4,242,956	559	4,243,000	
230 R	263	4,242,842	122	4,242,895	269	4,242,957	568	4,242,997	
CLASS 28	293	4,242,843	257	4,242,896	Re-30.470	4,242,957	583	4,242,998	
	298	4,242,844	262	4,242,897	365	4,242,958	638	4,243,001	
101	380	4,242,844	307	4,242,898	420	4,242,959	CLASS 102		
CLASS 29	412	4,242,845	342	4,242,899	92.7	4,242,960	13 R	4,243,011	
81 D	342	4,242,846	345	4,242,899	93	4,242,961	23 R	4,243,012	
113 AD	69	4,242,847	410	4,242,900	213	4,242,962	CLASS 126		
129	71	4,242,848	413	4,242,901	236	4,242,963	43	4,243,013	
132	169.6	4,242,849	461	4,242,902	275	4,242,964	119	4,243,014	
149.5 B	716	4,242,850	15 R	4,242,903	CLASS 104		120	4,243,015	
408	741	4,242,851	73	4,242,904	96	4,242,965	211	4,243,016	
416	743	4,242,852	341	4,242,905	CLASS 105		409	4,243,017	
421 E	745	4,242,853	421.5 R	4,242,906	182 R	4,242,966	425	4,243,018	
426.6	89	4,242,854	422 GC	4,242,907	CLASS 106		438	4,243,019	
446	398	4,242,855	516 LM	4,242,908	13	4,243,415	444	4,243,020	
578	529	4,242,856	620	4,242,909	14.13	4,243,416	449	4,243,021	
798	13.7	4,242,857	626	4,242,910	18.22	4,243,417	CLASS 108		
798	339	4,242,858	711	4,242,911	18.23	4,243,418	CLASS 109		
857	341	4,242,859	784	4,242,912	36.3	4,243,419	43	4,243,013	
879		CLASS 30	861.83	4,242,916	50	4,243,420	119	4,243,014	
CLASS 30	238	4,243,396	CLASS 74	5.5	4,242,917	52	4,243,421	120	4,243,015
43.1	487	4,243,397	CLASS 75	84 S	4,242,918	52	4,243,422	211	4,243,016
122	58.89	4,242,858	CLASS 76	198	4,242,919	54	4,243,423	409	4,243,017
162	81	4,242,859	CLASS 77	361	4,242,920	58	4,243,424	425	4,243,018
166 R	120	4,242,860	CLASS 78	574	4,242,921	117	4,243,425	438	4,243,019
276	287	4,242,861	CLASS 79	687	4,242,922	273 R	4,243,426	444	4,243,020
380	700	4,242,923	CLASS 80	759	4,242,923	287.16	4,243,427	449	4,243,021
CLASS 33	1	4,242,805	CLASS 81	792	4,242,924	306	4,243,428	CLASS 108	
14	13	4,242,806	CLASS 82	69	4,243,411	308 M	4,243,429	CLASS 109	
174 B	23	4,242,807	CLASS 83	171	4,243,412	CLASS 108		CLASS 110	
174 F	33	4,242,808	CLASS 84	234	4,243,413	11	4,242,967	20	4,242,968
288	98	4,242,809	CLASS 85	244	4,243,414	26	4,242,971	26	4,242,972
438	150	4,242,810	CLASS 86	39.06	4,242,863	153	4,242,969	159	4,242,970
		4,242,811	226 R	242	4,242,864	234	4,242,972	CLASS 110	
CLASS 34			242	4,242,865				20	4,242,968
1			242	4,242,866				26	4,242,971
13			242	4,242,867				153	4,242,969
23			242	4,242,868				159	4,242,970
33			242	4,242,869				234	4,242,972
98			242	4,242,870				11	4,242,967
150			242	4,242,871				20	4,242,968
			242	4,242,872				26	4,242,971
			242	4,242,873				153	4,242,969
			242	4,242,874				159	4,242,970
			242	4,242,875				234	4,242,972
			242	4,242,876				11	4,242,967
			242	4,242,877				20	4,242,968
			242	4,242,878				26	4,242,971
			242	4,242,879				153	4,242,969
			242	4,242,880				159	4,242,970
			242	4,242,881				234	4,242,972
			242	4,242,882				11	4,242,967
			242	4,242,883				20	4,242,968
			242	4,242,884				26	4,242,971
			242	4,242,885				153	4,242,969
			242	4,242,886				159	4,242,970
			242	4,242,887				234	4,242,972
			242	4,242,888				11	4,242,967
			242	4,242,889				20	4,242,968
			242	4,242,890				26	4,242,971
			242	4,242,891				153	4,242,969
			242	4,242,892				159	4,242,970
			242	4,242,893				234	4,242,972
			242	4,242,894				11	4,242,967
			242	4,242,895				20	4,242,968
			242	4,242,896				26	4,242,971
			242	4,242,897				153	4,242,969
			242	4,242,898				159	4,242,970
			242	4,242,899				234	4,242,972
			242	4,242,900				11	4,242,967
			242	4,242,901				20	4,242,968
			242	4,242,902				26	4,242,971
			242	4,242,903				153	4,242,969
			242	4,242,904				159	4,242,970
			242	4,242,905				234	4,242,972
			242	4,242,906				11	4,242,967
			242	4,242,907				20	4,242,968
			242	4,242,908				26	4,242,971
			242	4,242,909				153	4,242,969
			242	4,242,910				159	4,242,970
			242	4,242,911				234	4,242,972
			242	4,242,912				11	4,242,967
			242	4,242,913				20	4,242,968
			242	4,242,914				26	4,242,971
			242	4,242,915				153	4,242,969
			242	4,242,916				159	4,242,970
			242	4,242,917				234	4,242,972
			242	4,242,918				11	4,242,967
			242	4,242,919				20	4,242,968
			242	4,242,920				26	4,242,971
			242	4,242,921				153	4,242,969
			242	4,242,922				159	4,242,970
			242	4,242,923				234	4,242,972
			242	4,242,924				11	4,242,967
			242	4,242,925				20	4,242,968
			242	4,242,926				26	4,242,971
			242	4,242,927				153	4,242,969
			242	4,242,928				159	4,242,970
			242	4,242,929				234	4,242,972
			242	4,242,930				11	4,242,967
			242	4,242,931				20	4,242,968
			242	4,242,932				26	4,242,971
			242	4,242,933				153	4,242,969
			242	4,242,934				159	4,242,970
			242	4,242,935				234	4,242,972
			242	4,242,936				11	4,242,967
			242	4,242,937				20	4,242,968
			242	4,242,938				26	4,242,971
			242	4,242,939				153	4,242,969
			242	4,242,940				159	4,242,970

	CLASS 328	96.33	4,243,297		CLASS 367		CLASS 423		263	4,243,715	86	4,243,765
140		96.34	4,243,298	88	4,244,036	10	4,243,637	327	4,243,716	92	4,243,766	
	CLASS 329	150	4,243,299	121	4,244,037	17	4,243,638	402	4,243,717	102	4,243,767	
50		296	4,243,301			63	4,243,639	411	4,243,718	122	4,243,768	
	CLASS 330	345	4,243,302	35	4,244,038	132	4,243,640	412	4,243,719	227	4,243,769	
4.3			4,243,303	66	4,244,039	179.5	4,243,641		4,243,720	331	4,243,770	
100		27	4,243,304	67	4,244,040	277	4,243,642	450	4,243,721	340	4,243,771	
135		121	4,243,305	73	4,244,041	319	4,243,643	474.4	4,243,722	344	4,243,772	
253		136	4,243,306	76	4,244,042	352	4,243,644	474.7	4,243,723	347	4,243,773	
265				85	4,243,329	428	4,243,645	517	4,243,724	405	4,243,774	
284				291	4,244,043	447.1	4,243,646	545	4,243,725	415	4,243,775	
289					4,244,044	573 G	4,243,647	558	4,243,726	420	4,243,776	
	CLASS 331	57	4,243,307		4,244,044	573 R	4,243,648	570	4,243,727	425	4,243,777	
						608	4,243,649	577	4,243,728	454	4,243,778	
						659	4,243,650	579	4,243,729	462	4,243,779	
								582	4,243,730	518	4,243,780	
9	CLASS 332	60 E	4,243,308	45	4,243,848		CLASS 424		CLASS 429		CLASS 526	
78		197	4,243,309	46	4,243,850	1	4,243,651	13	4,243,731	68	4,243,781	
94.5 H		299	4,243,310	62	4,243,849		4,243,652	94	4,243,732	88	4,243,782	
94.5 S							4,243,653	105	4,243,733	115	4,243,783	
117 R							4,243,654			137	4,243,786	
	CLASS 333	8	4,243,311	3	4,244,045	5	4,243,655		CLASS 430			
			4,243,312	62	4,244,046	12	4,243,656			140	4,243,787	
37 D		14 R	4,243,313	69	4,244,047	19	4,243,657	8	4,243,734	180	4,243,792	
				110	4,243,930	28	4,243,658	25	4,243,735	225	4,243,793	
	CLASS 334	29	4,243,314			47	4,243,659	115	4,243,736	261	4,243,794	
18		52	4,243,315	15	4,244,048	50	4,243,660	170	4,243,737	263	4,243,795	
28 R		75	4,243,316	38	4,244,049	72	4,243,661	202	4,243,738	320	4,243,796	
165				66	4,244,050	84	4,243,662	266	4,243,739		4,243,797	
166						180	4,243,663	270	4,243,740			
196						181	4,243,664		4,243,741			
233						243	4,243,665		4,243,742	73	4,243,792	
	CLASS 335	39	4,243,318	17	4,244,051	246	4,243,666	281	4,243,743	75	4,243,793	
		73	4,243,319	19	4,244,052	246.34	4,243,667	325	4,243,744	112	4,243,794	
		73.1	4,243,320				4,243,668	346	4,243,745	168	4,243,795	
	CLASS 336	135	4,243,321				4,243,669	351	4,243,746	224	4,243,796	
7		244	4,243,322	39	4,243,331	258	4,243,670	600	4,243,747	239	4,243,797	
	CLASS 337	345	4,243,323	119	4,243,332	263	4,243,671		4,243,748	371	4,243,798	
		350	4,243,324	158	4,243,333	269	4,243,672		4,243,749	409	4,243,800	
151		372	4,243,325	194	4,243,330	273 R	4,243,673					
156		414	4,243,326	247	4,243,334	274	4,243,674		CLASS 431		CLASS 536	
213		432	4,243,327	718	4,243,335	275	4,243,675	13	4,243,371	17 R	4,243,801	
	CLASS 338					283	4,243,676	31	4,243,372	91	4,243,802	
						286	4,243,677	66	4,243,373			
70		17	4,243,996	6	4,243,336	294	4,243,678	89	4,243,374		CLASS 544	
	CLASS 339	23	4,243,997	132	4,243,337	305	4,243,679	174	4,243,375			
		28	4,243,998	195	4,243,338	319	4,243,680	202	4,243,376	26	4,243,803	
340		38	4,243,999				4,243,681	344	4,243,377	162	4,243,804	
	CLASS 340	39	4,244,000			322	4,243,682		4,243,378	375	4,243,805	
		38	4,244,001	4	4,243,339	330	4,243,683		4,243,379	396	4,243,806	
28		44	4,244,002	16	4,243,341	331		11	4,243,380		CLASS 546	
309		68		324	4,243,342			14	4,243,381			
	CLASS 341			397	4,243,343			15	4,243,382	232	4,243,807	
								75	4,243,383	285	4,243,808	
14 R		50	4,244,003		CLASS 405	130	4,243,362	78	4,243,384	295	4,243,810	
21 R		138	4,244,004	2	4,243,344	140	4,243,363	80	4,243,385		CLASS 548	
32 R		201	4,244,005	168	4,243,345	153	4,243,364	241			4,243,811	
97 R		210	4,244,006			222	4,243,365		CLASS 433		4,243,812	
99 R		257	4,244,007		CLASS 406	303	4,243,366			215	4,243,813	
						385	4,243,367	9	4,243,386	248	4,243,814	
126 RS					CLASS 407	405 R	4,243,368	16	4,243,387	306	4,243,815	
143 R		45	4,244,008			451.2	4,243,369	27	4,243,388	344	4,243,816	
184 M		71	4,244,009	15	4,243,347	462	4,243,370	74	4,243,389		CLASS 556	
224											4,243,819	
	CLASS 342	433	4,244,010		CLASS 408		CLASS 426		CLASS 434	414	4,243,820	
							4,243,684	263	4,242,812		CLASS 560	
52 D							4,243,685				4,243,815	
52 H							4,243,686		CLASS 435	25	4,243,816	
146.3 SY		183	4,244,011	77	4,243,349	53	4,243,687	7	4,243,749	60	4,243,817	
148		216	4,244,012	100	4,243,350	635	4,243,688	162	4,243,750	224	4,243,818	
347 DD		249	4,244,013			557	4,243,689	168	4,243,751		CLASS 562	
			4,244,014		CLASS 411	41	4,243,690	209	4,243,752		4,243,819	
347 NT						174	4,243,691	288	4,243,753	433	4,243,820	
373		8	4,244,015		CLASS 414				CLASS 440		CLASS 564	
534		98	4,244,016								4,243,821	
529		138	4,244,017	206	4,243,351	2	4,243,692	38	4,242,979	91	4,243,822	
664				313	4,243,352	4	4,243,693		CLASS 485	491	4,243,823	
674		200	4,244,018	439	4,243,353	14.1	4,243,694	29	4,244,053		CLASS 568	
703			4,244,019	607	4,243,354		4,243,695	29	4,244,054		4,243,824	
753		413	4,244,020	620	4,243,355	27	4,243,696	115	4,244,055	379	4,243,825	
756			4,244,021	723	4,243,356	47	4,243,697	174	4,244,056	431	4,243,826	
799		420	4,244,022		CLASS 415	183	4,243,698	213			4,243,827	
	CLASS 343	431	4,244,023	215		195	4,243,699		CLASS 493	482	4,243,828	
		472	4,244,024		CLASS 416	244	4,243,700	295	4,242,949	769	4,243,829	
5 VQ		485	4,244,025			256	4,243,701	422	4,243,215	824	4,243,830	
715		565	4,244,026	114	4,243,358	276	4,243,702		CLASS 521	931	4,243,831	
771		703	4,244,027	138	4,243,359	327	4,243,703				CLASS 570	
777			4,244,028	191	4,243,360	386	4,243,704				4,243,832	
873			4,244,029		CLASS 417	388.4	4,243,705	55	4,243,744	150	4,243,833	
895		825	4,244,030	554	4,243,361		4,243,706	99	4,243,755	257	4,243,834	
	CLASS 346		4,244,031				4,243,707	125	4,243,756		CLASS 585	
			4,244,032		CLASS 422	31		154	4,243,757		4,243,835	
140 R			4,244,033	62		35	4,243,711	158	4,243,758	259	4,243,836	
	CLASS 350		4,244,034	90	4,243,630	31	4,243,712	176	4,243,759	428	4,243,837	
				119	4,243,631	141	4,243,708	181	4,243,760	434	4,243,838	
3.71		149	4,244,035	129	4,243,632	195	4,243,709			463	4,243,839	
6.8				144	4,243,633	208	4,243,710		CLASS 525	567	4,243,840	
96.14		62	4,243,329	176	4,243,634	245	4,243,713	6	4,243,762	611	4,243,841	
96.15				225	4,243,635	253	4,243,714	27	4,243,763	717	4,243,842	
					4,243,636	258	Re.30.474	67	4,243,764	824	4,243,843	

CLASSIFICATION OF DESIGNS

D3— 35 257,746	94 257,755	399 257,764	53 257,772	142 257,780	150 257,788
D4— 14 257,747	105 257,756	46 257,765	79 257,773	157 257,781	9 257,789
D6— 48 257,748	143 257,757	15 257,766	53 257,774	217 257,782	10 257,790
49 257,749	14 257,758	31 257,767	199 257,775	257,783	55 257,791
177 257,750	85 257,759	162 257,768	18 257,776	219 257,784	40 257,792
179 257,751	353 257,760	181 257,769	15 257,777	234 257,785	48 257,793
191 257,752	402 257,761	11 257,770	99 257,778	237 257,786	13 257,794
37 257,753	307 257,762	50 257,771	5 257,779	257,787	1 AA 257,795
52 257,754	370 257,763				

CLASSIFICATION OF PLANTS

P— 3 4,612	18 4,613	32 4,614	34 4,615	36 4,616	43 4,617
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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

8— 495 T100,201	38— 144 T100,202	264— 177 R T100,204	428— 40 T100,203		
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4,243,779	4,243,046	4,243,644	4,242,871	4,242,792	4,242,813
4,242,760	4,243,047	4,243,647	4,242,872	4,242,834	4,242,855
4,242,901	4,243,069	4,243,648	4,242,911	4,242,863	4,242,921
4,243,026	4,243,071	4,243,653	4,243,053	4,242,866	4,242,948
4,243,159	4,243,080	4,243,654	4,243,188	4,242,881	4,243,124
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4,243,868	4,243,184	4,243,771	4,243,843	4,242,956	4,243,587
4,243,974	4,243,186	4,243,777	4,243,866	4,243,031	4,243,588
4,244,015	4,243,192	4,243,790	4,243,869	4,243,040	4,243,681
4,244,044	4,243,194	4,243,798	4,243,904	4,243,075	4,243,753
4,242,788	4,243,199	4,243,811	4,243,938	4,243,093	4,243,800
4,242,795	4,243,202	4,243,819	4,243,980	4,243,114	4,243,813
4,242,902	4,243,203	4,243,836	4,244,025	4,243,133	4,243,877
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4,243,632	4,243,259	4,243,878	4,243,574	4,243,162	4,243,972
4,243,829	4,243,270	4,243,886	4,243,580	4,243,167	4,243,015
4,243,847	4,243,310	4,243,888	4,243,702	4,243,214	4,243,176
4,242,917	4,243,323	4,243,893	4,243,788	4,243,222	4,243,193
4,243,028	4,243,327	4,243,900	4,243,802	4,243,230	4,243,207
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4,243,841	4,243,331	4,243,942	4,243,032	4,243,286	4,244,016
4,243,898	4,243,335	4,243,949	4,242,766	4,243,289	4,242,985
4,243,955	4,243,345	4,243,960	4,242,788	4,243,292	4,243,407
Re. 30,471	4,243,361	4,243,990	4,242,828	4,243,352	4,243,063
4,242,794	4,243,394	4,243,992	4,242,856	4,243,466	4,243,153
4,242,761	4,243,408	4,244,008	4,242,915	4,243,515	4,243,238
4,242,797	4,243,427	4,244,012	4,242,961	4,243,535	4,243,551
4,242,801	4,243,433	4,244,019	4,242,962	4,243,550	4,243,507
4,242,804	4,243,454	4,244,022	4,243,035	4,243,558	4,242,981
4,242,807	4,243,458	4,244,024	4,243,050	4,243,634	4,243,037
4,242,812	4,243,468	4,244,028	4,243,209	4,243,659	4,243,118
4,242,819	4,243,469	4,244,032	4,243,239	4,243,705	4,243,519
4,242,824	4,243,472	4,244,037	4,243,348	4,243,826	4,243,527
4,242,844	4,243,489	4,244,038	4,243,354	4,243,827	4,243,557
4,242,870	4,243,500	4,244,041	4,243,464	4,243,830	4,244,020
4,242,874	4,243,505	4,244,029	4,243,566	4,243,831	4,242,983
4,242,875	4,243,510	4,244,091	4,243,643	4,243,852	4,243,158
4,242,899	4,243,523	4,244,098	4,243,680	4,243,709	4,243,212
4,242,907	4,243,528	4,244,498	4,243,988	4,243,879	4,243,265
4,242,908	4,243,547	4,244,509	4,243,989	4,243,925	4,243,274
4,242,925	4,243,563	4,244,511	4,242,861	4,243,941	4,243,300
4,242,941	4,243,577	4,244,639	4,242,970	4,243,963	4,243,763
4,242,964	4,243,617	4,244,946	4,243,240	4,243,967	4,244,036
4,242,969	4,243,625	4,243,970	4,243,387	4,244,014	4,242,778

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4,242,892	4,244,034	4,243,598	4,243,766	4,243,796	4,243,926
4,242,937	4,242,806	4,243,602	4,243,775	4,243,858	4,243,968
4,242,989	4,242,947	4,243,608	4,243,817	4,243,884	4,244,010
4,243,017	4,243,019	4,243,614	4,243,821	4,243,940	4,242,762
4,243,030	4,243,042	4,243,619	4,243,822	4,244,013	4,242,764
4,243,044	4,243,049	4,243,624	4,243,844	4,244,029	4,242,765
4,243,076	4,243,052	4,243,650	4,243,850	4,243,191	4,242,768
4,243,285	4,243,170	4,243,651	4,243,875	4,243,365	4,242,771
4,243,291	4,243,182	4,243,671	4,243,881	4,243,375	4,242,796
4,243,297	4,243,314	4,243,688	4,243,908	4,243,494	4,242,827
4,243,304	4,243,333	4,243,700	4,243,927	4,243,552	4,242,954
4,243,309	4,243,397	4,243,767	4,243,937	4,243,610	4,243,007
4,243,363	4,243,543	4,243,801	4,244,007	4,243,793	4,243,021
4,243,372	4,243,658	4,243,804	4,244,017	4,242,978	4,243,070
4,243,449	4,243,768	4,243,820	4,244,026	4,243,010	4,243,073
4,243,508	4,243,783	4,243,823	4,244,040	4,243,084	4,243,099
4,243,622	4,243,794	4,243,828	4,244,048	4,243,164	4,243,102
4,243,726	4,243,818	4,243,834	4,244,053	4,243,389	4,243,116
4,243,751	4,243,931	4,243,845	Re. 30,474	4,243,686	4,243,142
4,243,840	4,243,353	4,243,899	4,242,817	4,243,958	4,243,174
4,243,853	4,243,982	4,243,911	4,242,842	4,242,782	4,243,206
4,243,857	4,242,930	4,243,912	4,243,175	4,242,851	4,243,290
4,243,871	4,242,966	4,243,917	4,243,178	4,242,857	4,243,358
4,243,909	4,242,984	4,243,928	4,243,232	4,242,895	4,243,432
4,243,923	4,243,014	4,243,928	4,243,243	4,242,934	4,243,555
4,243,933	4,243,079	4,243,948	4,243,385	4,243,024	4,243,675
4,243,950	4,243,187	4,243,951	4,243,825	4,243,111	4,243,699
4,243,966	4,243,260	4,243,952	4,243,838	4,243,117	4,243,727
Re. 30,472	4,243,373	4,243,953	4,243,939	4,243,105	4,243,760
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4,242,793	4,243,452	4,243,976	Re. 30,470	4,243,157	4,243,785
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4,242,883	4,243,591	4,242,767	4,242,864	4,243,275	4,243,987
4,242,914	4,242,810	4,242,774	4,242,886	4,243,288	4,243,995
4,242,924	4,242,884	4,242,790	4,242,893	4,243,301	4,244,047
4,242,946	4,242,911	4,242,791	4,243,023	4,243,374	4,242,878
4,242,951	4,243,267	4,242,831	4,243,048	4,243,392	4,242,906
4,242,994	4,243,305	4,242,836	4,243,061	4,243,402	4,243,147
4,243,018	4,243,930	4,242,865	4,243,087	4,243,403	4,243,173
4,243,060	4,242,808	4,242,868	4,243,107	4,243,416	4,243,442
4,243,072	4,243,088	4,242,876	4,243,109	4,243,417	4,242,963
4,243,090	4,243,529	4,242,890	4,243,126	4,243,430	4,243,056
4,243,094	4,242,823	4,242,918	4,243,127	4,243,441	4,243,082
4,243,125	4,242,846	4,242,927	4,243,146	4,243,504	4,243,177
4,243,155	4,242,897	4,242,955	4,243,149	4,243,534	4,243,298
4,243,156	4,242,913	4,243,013	4,243,165	4,243,537	4,243,991
4,243,195	4,242,974	4,243,027	4,243,169	4,243,545	4,244,021
4,243,213	4,242,975	4,243,038	4,243,234	4,243,593	4,244,050
4,243,218	4,242,976	4,243,058	4,243,250	4,243,623	4,242,773
4,243,235	4,243,020	4,243,227	4,243,251	4,243,638	4,242,843
4,243,264	4,243,033	4,243,244	4,243,269	4,243,645	4,242,845
4,243,271	4,243,051	4,243,256	4,243,338	4,243,667	4,242,903
4,243,277	4,243,062	4,243,293	4,243,341	4,243,668	4,243,148
4,243,330	4,243,144	4,243,307	4,243,350	4,243,673	4,243,189
4,243,339	4,243,145	4,243,316	4,243,371	4,243,704	4,243,355
4,243,340	4,243,224	4,243,317	4,243,393	4,243,710	4,243,482
4,243,347	4,243,255	4,243,368	4,243,423	4,243,759	4,243,934
4,243,366	4,243,282	4,243,419	4,243,426	4,243,873	4,243,993
4,243,412	4,243,283	4,243,435	4,243,437	4,243,876	4,243,553
4,243,415	4,243,295	4,243,436	4,243,453	4,243,890	4,243,554
4,243,424	4,243,315	4,243,471	4,243,503	4,243,918	4,243,569
4,243,431	4,243,324	4,243,475	4,243,546	4,243,962	4,242,847
4,243,491	4,243,395	4,243,476	4,243,561	4,244,049	4,242,854
4,243,538	4,243,396	4,243,575	4,243,576	4,243,198	4,243,009
4,243,592	4,243,479	4,243,605	4,243,612	4,243,287	4,243,067
4,243,611	4,243,480	4,243,609	4,243,616	4,243,626	4,243,119
4,243,706	4,243,513	4,243,631	4,243,652	4,243,713	4,243,120
4,243,721	4,243,514	4,243,642	4,243,691	4,243,025	4,243,319
4,243,722	4,243,517	4,243,655	4,243,707	4,243,137	4,243,342
4,243,756	4,243,518	4,243,677	4,243,711	4,242,789	4,243,460
4,243,764	4,243,525	4,243,708	4,243,715	4,242,929	4,243,531
4,243,765	4,243,539	4,243,720	4,243,725	4,242,931	4,243,694
4,243,781	4,243,564	4,243,729	4,243,732	4,242,971	4,243,861
4,243,792	4,243,579	4,243,737	4,243,762	4,243,197	4,243,883
4,243,870	4,243,586	4,243,738	4,243,769	4,243,253	4,243,894
4,243,872	4,243,589	4,243,744	4,243,789	4,243,524	4,242,822

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1 : 257,789	08 : 257,784	18 : 257,787	27 : 257,753	37 : 257,749	41 : 257,770
6 : 257,791	09 : 257,758	25 : 257,774	38 : 257,756	45 : 257,757	46 : 257,748
06 : 257,759	12 : 257,785	26 : 257,782	39 : 257,752	46 : 257,765	51 : 257,767
257,766	257,747	257,783	257,755	257,781	55 : 257,763
257,771	257,775	257,790	257,778	257,750	257,768
257,773	257,760	257,793	257,780	257,751	257,779
257,777	257,786	257,769	257,746	257,754	257,788

PLANT PATENTS

06 : 4,613	4,615	4,617	18 : 4,614	40 : 4,616
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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

10 : T100,201	T100,202	47 : T100,204	48 : T100,203
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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

January 13, 1981

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Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	\$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

June 17, 1980.

National Inventor's Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 7, 1981, from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 8, 1981 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend the ceremony at 2:00 p.m. on Sunday, Feb. 8, 1981 during which time a number of inventors will be inducted into the National Inventors Hall of Fame.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 6, 1981 at 5:00 p.m. We would appreciate the cooperation of all users of the Search facilities by removing all personal property for the early closing.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Oct. 29, 1980.

Survey Results of Reissue Applications Screened During FY 1980

During fiscal year 1980, 655 reissue applications were screened by Licensing and Review before being forwarded to the appropriate patent examining group for examination. Approximately 8% of the applications involved patents sought to be reissued which were at the time of filing or had been previously involved in litigation. About 23% of the applications were filed under 37 CFR 1.175(a)(4) with no substantive changes to the specification, claims, or drawings. Informal data from the Examining Groups showed that of 119 protests reported as being filed during fiscal year 1980, 102 or 86% of the protests were filed in reissue applications.

Beginning January 1, 1980, the Office implemented a screening program by which all reissue applications disposed of by the Office are screened for compliance with PTO rules, and procedures. The results of the survey ending September 30, 1980, showed that of the 290 reissues screened, 211 or 75% of the applications were allowed while 26 or 9% of the applications had been protested. The survey further showed that approximately 8% of the applications screened revealed that the patent sought to be reissued was or had been involved in litigation. The table which follows summarizes the survey data in greater detail. The data is di-

vided into two categories, namely, applications indicating past or present litigation and applications revealing no litigation.

Reissue Applications Screened After Examination

Item	Litiga- tion	No Litigation
Total Reissues Screened	21	259
Total Allowed Reissues	12	199
Total Abandoned Reissues	9	60
Rejected Under 35 U.S.C. 251 Only (no error in original patent)	3	24
Rejected on Other Grounds (claims unpatentable)	3	28
Abandoned with No Rejection	3	8
Total Protested Reissues	12	14
Total Allowed Protested Reissues	4	7
Total Abandoned Protested Reissues	8	7
Rejected Under 35 U.S.C. 251 Only (no error in original patent)	3	2
Rejected on Other Grounds (claims unpatentable)	2	5
Abandoned with No Rejection	3	0

RENE D. TEGTMAYER,
Assistant Commissioner
for Patents.

Date: Dec. 5, 1980.

DEPARTMENT OF COMMERCE Patent and Trademark Office

United States Adherence to the International Union for the Protection of New Varieties of Plants (UPOV)

On November 12, 1980, the United States deposited its instrument of acceptance of the 1978 text of the UPOV Convention. The United States was the second State to adhere to this text, New Zealand having earlier done so.

The UPOV Convention will take effect with respect to the United States and the other adherents to the 1978 text upon a total of five adherences, three of which must be by present member States (States adhering to the 1961 text of the Convention). We expect at least three present member States to adhere shortly and the 1978 text to take effect, therefore, during 1981.

The United States deposited its instrument of acceptance on the basis of the legal protection offered for asexually reproduced plants under the plant patent law (35 U.S.C. 161-164). Accordingly, the Convention will apply only to asexually reproduced plants protected under this law. Steps are now being taken, however, by the Plant Variety Protection Office of the Department of Agriculture to conform the implementation of the Plant Variety Protection Act (7 U.S.C. 2321 et seq.) to the Convention's requirements. When this is done, the United States will notify the UPOV Secretariat that the Convention is also applicable in the United States to sexually reproduced plants protected under that Act.

Questions concerning the UPOV Convention may be directed to the Office of Legislation and International Affairs of the Patent and Trademark Office. This Office may be addressed as follows: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The Office's telephone number is (703) 557-3065.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dec. 16, 1980

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,291,466, Re. S.N. 165,829, Filed Jul. 2, 1980, Cl. 432/60, XEROGRAPHIC FIXING DEVICE, Gilbert A. Aser, et al., Owner of Record: Xerox Corporation, Rochester, N.Y., Attorney or Agent: Harvey M. Brownrout, et al., Ex. Gp.: 344

4,091,129, Re. S.N. 170,544, Filed Jul. 21, 1980, Cl. 427/345, METHOD AND APPARATUS FOR COATING USING AN OPEN-ENDED INK CHAMBER HAVING RESTRICTIONS FOR PARTIALLY LIMIT INK FLOW, Edwin K. Schaeuble, Owner of Record: Paper Converting Machine Company, Green Bay, Wis., Attorney or Agent: Timothy L. Lieton, et al., Ex. Gp.: 162

4,177,968, Re. S.N. 189,378, Filed Sep. 22, 1980, Cl. 242/71.9, REEL ADAPTER FOR TIE MATERIAL AND METHOD OF USING THE SAME, Doyle A. Moore, Owner of Record: Bedford Industries, Inc., Worthington, Minn., Attorney or Agent: Robert C. Baker, Ex. Gp.: 242

4,118,533, Re. S.N. 194,184, Filed Oct. 2, 1980, Cl. 428/297, STRUCTURAL LAMINATE AND METHOD FOR MAKING SAME, Donald E. Hipchen, et al., Owner of Record: The Cleotex Corporation, Tampa, Fla., Attorney or Agent: James W. Grace, Ex. Gp.: 164

4,144,079, Re. S.N. 189,870, Filed Sep. 23, 1980, Cl. 106/164, RAYON FIBERS CONTAINING STARCH, Frederick R. Smith, Owner of Record: Avtex Fibers Inc., Valley Forge, Pa., Attorney or Agent: Arthur R. Eglington, Ex. Gp.: 142

4,158,390, Re. S.N. 161,402, Filed Jun. 20, 1980, Cl. 175/5, FARMING IMPLEMENT PARTICULARLY FOR ROW CULTIVATION, Antonio Maschio, Owner of Record: F. Ill Maschio S.n.c., Campodarsedg Padoca, Italy, Attorney or Agent: Martin Fleit, Ex. Gp.: 334

4,160,026, Re. S.N. 126,900, Filed Mar. 17, 1980, Cl. 424/116, ANTIBIOTICS SF-1130-X₁ AND X₂ SUBSTANCES AND PRODUCTION AND USE THEREOF, Katsuyoshi Iwamatsu, et al., Owner of Record: Meishi Seika Kaisha, Ltd., Tokyo, Japan, Attorney or Agent: None, Ex. Gp.: 125

4,178,663, Re. S.N. 193,731, Filed Oct. 10, 1980, Cl. 29/78, HAND SCRAPER, Robert R. Hayes, Owner of Record: Oatey Company, Cleveland, Ohio, Attorney or Agent: Donald L. Otto, et al., Ex. Gp.: 324

4,195,196, Re. S.N. 164,402, Filed Jun. 30, 1980, Cl. 178/22, VARIANT KEY MATRIX CIPHER SYSTEM, Horst Feistel, Owner of Record: International Business Machines Corporation, Armonk, N.Y., Attorney or Agent: Roy R. Schlemmer, Jr., et al., Ex. Gp.: 222

PATENT NOTICES

Certificates of Correction for the Week of January 13, 1981

Re. 29,998	4,154,181	4,214,926	4,224,729
Re. 30,248	4,155,008	4,214,961	4,224,889
D. 227,100	4,155,080	4,215,878	4,225,886
D. 250,863	4,155,334	4,216,828	4,225,515
3,776,137	4,155,788	4,217,859	4,225,917
3,974,073	4,156,024	4,217,473	4,225,939
4,016,511	4,157,085	4,217,543	4,226,152
4,079,740	4,157,369	4,217,660	4,226,343
4,101,796	4,157,537	4,217,695	4,226,610
4,107,517	4,157,951	4,217,788	4,226,840
4,108,897	4,158,141	4,218,021	4,227,000
4,110,327	4,163,802	4,218,507	4,227,126
4,110,682	4,164,962	4,218,534	4,227,129
4,111,637	4,170,017	4,218,783	4,227,198
4,123,161	4,174,390	4,218,798	4,227,484
4,126,287	4,182,035	4,219,167	4,227,802
4,126,464	4,185,719	4,219,419	4,227,807
4,127,722	4,186,649	4,219,431	4,227,875
4,128,459	4,188,022	4,219,564	4,227,996
4,128,724	4,195,253	4,220,728	4,228,001
4,129,090	4,197,357	4,220,938	4,228,535
4,130,543	4,198,587	4,221,499	4,228,936
4,133,973	4,200,623	4,221,725	4,229,086
4,136,057	4,202,194	4,222,122	4,229,335
4,141,513	4,203,570	4,222,260	4,229,646
4,142,458	4,206,912	4,222,355	4,229,748
4,144,351	4,207,506	4,222,887	4,230,065
4,144,521	4,207,799	4,223,104	4,230,924
4,145,517	4,207,822	4,223,138	4,230,934
4,146,611	4,208,229	4,223,283	4,231,076
4,147,407	4,208,304	4,223,309	4,231,261
4,148,353	4,209,122	4,223,432	4,231,489
4,148,449	4,211,650	4,223,665	4,231,503
4,149,732	4,212,269	4,223,703	4,231,623
4,149,828	4,212,864	4,223,753	4,231,797
4,150,031	4,212,894	4,223,798	4,232,186
4,150,689	4,213,867	4,224,022	4,232,849
4,151,462	4,214,124	4,224,032	4,232,875
4,152,470	4,214,860	4,224,451	4,233,299

U.S. DEPARTMENT OF ENERGY Assistant General Counsel for Patents Washington, D.C. 20545

Patent application 6-003,559. Apparatus for Checking the Direction of Polarization of Shear-Wave Ultrasonic Transducers. Filed Jan. 15, 1979.

Patent application 6-003,840. Material for Radioactive Protection. Filed Jan. 16, 1979.

Patent application 6-009,623. Perfluorocarbon Vapor Tagging of Blasting Cap Detonators. Filed Feb. 6, 1979.

Patent application 6-019,808. Ductile Alloy and Process for Preparing Composite Superconducting Wire. Filed Mar. 12, 1979.

Patent application 6-022,898. Apparatus for Correcting Precision Errors in Slide Straightness in Machine Tools. Filed Mar. 22, 1979.

Patent application 6-024,339. Salt-Soda Sinter Process for Recovering Aluminum From Fly Ash. Filed Mar. 27, 1979.

Patent application 6-026,508. Terpolymerization of Ethylene, Sulfur Dioxide and Carbon Monoxide. Filed Apr. 3, 1979.

Patent application 6-031,810. Miniature Quartz Resonator Force Transducer. Filed Apr. 20, 1979.

Patent application 6-036,257. Glove Box Shield. Filed May 4, 1979.

Patent application 6-043,855. Method of Handling Radioactive Alkali Metal Waste. Filed May 30, 1980.

Patent application 6-050,860. Isotropically Sensitive Optical Filter Employing Atomic Resonance Transitions. Filed June 21, 1979.

Patent application 6-058,420. Electric Controlled Air Incinerator for Radioactive Wastes. Filed July 18, 1979.

Patent application 6-062,373. Hydrogen Production by the Decomposition of Water. Filed July 31, 1979.

Patent application 6-078,759. Cadmium Telluride Photo-voltaic Radiation Detector. Filed Sept. 25, 1979.

Patent 4,168,191. Thermally Stable, Plastic-Bonded Explosives. Filed June 29, 1978. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,172,391. Drill Drive Mechanism. Filed Sept. 9, 1977. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,183,055. Beam/Seam Alignment Control for Electron Beam Welding. Filed Aug. 24, 1978. Patented Jan. 8, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR Branch of Patents, 18th and C Sts. NW., Washington, D.C. 20240

Patent application 6-114,522. Metal Hydride Actuation Device. Filed Jan. 23, 1980.

U.S. DEPARTMENT OF THE NAVY Assistant Chief for Patents, Office of Naval Research Code 302, Arlington, Va. 22217

Patent 4,124,976. Method for Reducing the Critical Injection Parametric in a Solid Fuel Ramjet. Filed July 5, 1977. Patented Nov. 14, 1978. Not available NTIS.

Patent 4,125,728. Method for Preparing 2,3,7,8-Tetraazaspiro(4,4)Nona-2,7-Diene. Filed Sept. 1, 1977. Patented Nov. 14, 1978. Not available NTIS.

Patent 4,131,793. Lateral Photodetectors. Filed Aug. 10, 1976. Patented Dec. 26, 1978. Not available NTIS.

Patent 4,179,219. Revolving Mirror Scanning Interferometer. Filed Apr. 10, 1978. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,184,767. Frequency Agile Optical Radar. Filed July 31, 1975. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,187,556. Electro-Acoustic Transducer With Line Focus. Filed Apr. 5, 1980. Patented Feb. 5, 1980. Not available NTIS.

Patent 4,188,886. Pressure Probe for Safety-Arming Device. Filed May 26, 1978. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,189,026. Underwater Generation of Low Frequency Sound. Filed June 13, 1954. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,189,122. Wide Angle Gimbal System. Filed July 21, 1978. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,190,704. Protected Calcium Anode. Filed Feb. 5, 1979. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,191,461. Camera Jig for Underwater Stereoscopic Photography. Filed May 16, 1979. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,198,634. Optical Autocorrelator Signal Processor. Filed Sept. 30, 1971. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,200,859. Device for Simulating Marine Craft Noises. Filed Apr. 21, 1946. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,200,920. Artificial Underwater Target. Filed Feb. 29, 1956. Patented Apr. 29, 1980. Not available NTIS.

National Technical Information Service

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DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

Patent 4,201,988. Wideband VHF Antenna. Filed Mar. 5, 1979. Patented May 6, 1980. Not available NTIS.

Patent 4,203,108. Underwater Detection System. Filed Aug. 18, 1961. Patented May 13, 1980. Not available NTIS.

Patent 4,203,164. Secure Sonar Communication System. Filed Mar. 6, 1961. Patented May 13, 1980. Not available NTIS.

Patent 4,204,280. Underwater Signal Discrimination System. Filed Nov. 21, 1962. Patented May 20, 1980. Not available NTIS.

Patent 4,205,235. Automatic Electrical Load Matching De-

vice for Wind Generators. Filed Mar. 6, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,205,394. Sealed Cavity Hydrophone Array Calibration. Filed Nov. 3, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,206,746. Spiral-Passage Heat Exchange. Filed Mar. 10, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,207,625. Doppler Compensator for Heterodyne Correlation Devices. Filed Mar. 6, 1961. Patented June 10, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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ing, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
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	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5:00 p.m.

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PATENT EXAMINING CORPS

RENE D. TEGMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 29, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director.....	11-23-79
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director.....	10-10-79
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director.....	9-11-79
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director.....	12-12-79
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director.....	12-6-79
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant.....	1-8-79
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant.....	7-2-79
Ordinance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics; Communications; Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant.....	10-9-79
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing; Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director.....	1-22-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluid Material Handling.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director.....	12-21-78
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 260—Vacant.....	1-8-79
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director.....	8-18-79
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director.....	7-20-79
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director.....	8-1-79
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Tolley; Printing; Typewriters; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director.....	6-1-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director.....	8-19-79
Building Structures; Reels; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 70th Congress, approved August 2, 1946 (60 Stat. 940) and Public Law 610, 83rd Congress, approved August 23, 1954 (64 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,109,176 to 3,112,496, inclusive
Plant Patents..... Numbers 2,286 to 2,323, inclusive

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REISSUES

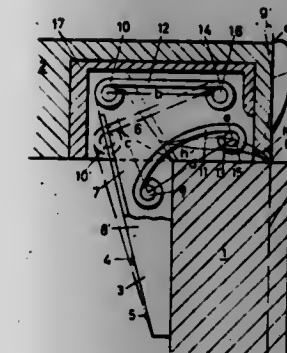
JANUARY 13, 1981

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,475 HINGES

Richard Heinze, Sr., deceased, late of Herford, Fed. Rep. of Germany, and by Richard Heinze, Jr., heir, Lderitzstr. 13, 4900 Herford, Fed. Rep. of Germany
Original No. 3,224,035, dated Dec. 21, 1965, Ser. No. 252,220, Jan. 17, 1963. Application for reissue Mar. 8, 1978, Ser. No. 884,667
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1962, 44646; May 14, 1962, 45773; Aug. 23, 1962, 46724; Sep. 26, 1962, 47008; Oct. 11, 1962, 47119
Int. Cl.³ E05D 3/06
U.S. Cl. 16—163

20 Claims



18. A hinge for door having a recess on the inside thereof, said door swingably arranged on an article of furniture or the like having a side wall defining a side plan and a bracket on the inside of said side wall, said bracket having a free end; said hinge comprising:

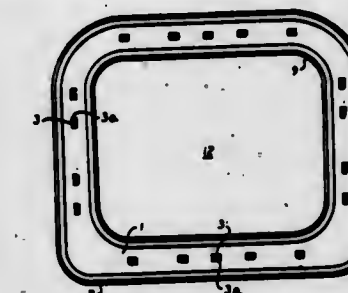
- (a) two links connecting said door and said bracket, said links consisting of an outer link and an inner link, said links having ends arranged in pairs adjacent to one another,
- (b) first means embedded in said recess of said door, said first means having first pivot means therein, one pair of said adjustment link ends being pivotally arranged on said first pivot means,
- (c) said bracket consisting of a shoe-like channel structure, said channel structure having flanges, said flanges extending to said free end of said bracket,
- (d) second pivot means on said flanges, the other pair of said adjacent link ends being pivotally arranged on said second pivot means, and the dimensions of said article of furniture and the associated door thereof being such that
- (e) the distance between the corresponding pairs of said adjacent link ends, the length of said corresponding links and the location of said first and said second pivot means is such that no part of said door projects during a full swinging movement beyond said side wall of said article of furniture,
- (f) an adjustment plate fixedly attached to said article of furniture and extending within said shoe-like channel of said bracket,
- (g) screw means fixedly attaching said bracket to said adjustment plate for aligning said door relative to said article of furniture.

Re. 30,476

DEVICES FOR THE FOLD-FREE STRETCHING AND HOLDING OF LIQUID CRYSTAL FILMS

Friedrich Jensen, Bergisch-Gladbach, and Hermann Linden, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Original No. 4,079,529, dated Mar. 21, 1978, Ser. No. 703,152, Jul. 7, 1976. Continuation of Ser. No. 581,323, May 27, 1975, abandoned. Application for reissue Oct. 20, 1978, Ser. No. 953,283
Int. Cl.² D05C 1/04; G09F 1/12; A47G 5/00
U.S. Cl. 38—102.2

16 Claims



1. A device for the fold-free stretching and holding of liquid crystal films, comprising a substantially rectangular outer frame having an [external] inner centering edge and an insertable inner frame comprising an [inner] external centering edge, wherein the inner boundary of the [inner] outer frame is in the form of a stretching collar, the surface of the collar facing the inner [frame] centering edge being bevelled, the lower edge of the stretching collar being rounded off and its surfaces being smooth, the surface of the stretching collar facing away from the inner [frame] centering edge being bevelled at a steeper angle than that surface facing the inner [frame] centering edge, and wherein the [outer] inner frame comprises a stretching groove which cooperates with the stretching collar and the surface of the [outer] inner frame directed towards the [inner edge] stretching collar of the [inner] outer frame is bevelled parallel to the bevel of the stretching collar, the corners of the inner [boundary] boundary of the outer and inner [frame] frames being rounded off, the outer frame being insertable in the [inner] outer frame by cooperation of the inner and external centering edges and cooperation of stretching collar and stretching groove.

Re. 30,477

ELECTROPHOTOGRAPHIC LIQUID DEVELOPING SYSTEM

Kenneth W. Gardiner, Menlo Park, and Louis F. Schaefer, Palo Alto, both of Calif., assignors to Savin Corporation, Vallhalla, N.Y.
Original No. 3,981,267, dated Sep. 21, 1976, Ser. No. 579,330, May 20, 1975. Application for reissue May 10, 1979, Ser. No. 37,491

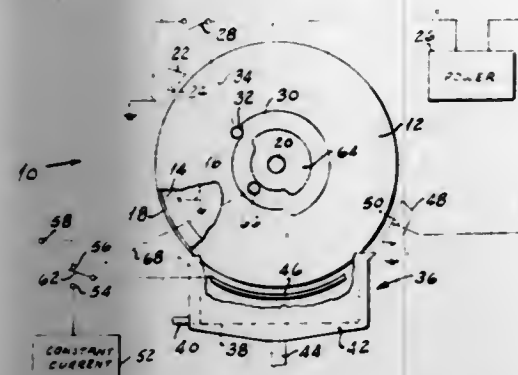
Int. Cl.³ G03G 15/10

U.S. Cl. 118—689

23 Claims

1. Apparatus for developing a latent electrostatic image carried by the surface of a photoconductor having a residual potential in background areas of said image including in combination, means for applying developer to said surface at a developing station, a development electrode at said station, and means for applying a constant biasing current to the development electrode, said biasing means including a constant current source providing a relatively small current, and means for connecting

said constant current source to said electrode to overcome the effect of said residual potential, the biasing means being so



constructed that the resistive impedance thereof seen by the electrode is extremely high.

Re. 30,478

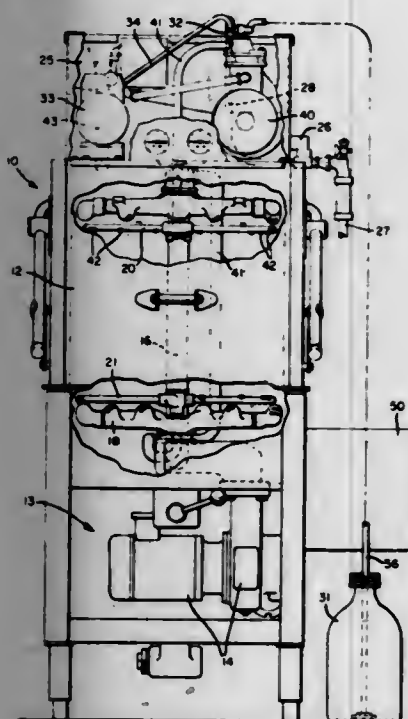
APPARATUS FOR RINSING AND CHEMICALLY SANITIZING FOOD WARE ITEMS

Louis F. Fraula, and Stuart E. Athey, both of Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio
Original No. 4,147,559, dated Apr. 3, 1979, Ser. No. 875,868, Feb. 7, 1978. Division of Ser. No. 835,197, Sep. 21, 1977. Application for reissue Aug. 20, 1979, Ser. No. 67,866

Int. Cl.³ B08B 3/02

U.S. Cl. 134—57 D

13 Claims



13. In a sanitizing rinse system for a warewasher which includes a spray-type washing system for recirculating wash liquid over articles to be washed at a temperature below effective bacteria killing temperatures during each wash cycle of the washing system, a chamber in which articles are supported for washing and rinsing, a rinsing spraying system separate from said washing system and having rinse spray nozzles within said chamber dedicated to spraying only fresh rinse solution, a source of fresh water under facility line pressure associated with a main water supply and at a temperature below effective bacteria killing temperature, a holding tank for receiving water from said source, valve means for connecting and disconnecting said source with said tank for filling said tank, a sanitizing material supply, means for dispensing a predetermined quantity of sanitizing material from said supply into said tank for dispersion with

water to produce a batch for sanitizing solution capable of destroying bacteria when sprayed onto said articles, pump means interconnecting said tank and said rinse spray nozzles to pump said batch of solution under a predetermined pressure onto said articles to rinse said articles; the improvement comprising a cycle controller including: timed means for opening said valve means to commence introduction of fresh water into said tank during each wash cycle, timed means for operating said dispensing means to introduce a predetermined quantity of sanitizing material into said tank with each operation thereof for mixing with the fresh water, means independent of said timed valve opening means and responsive to filling said tank with a predetermined fresh batch of solution for closing said valve means to discontinue water introduction into said tank, and timed means for operating said pump means to discharge the fresh batch of sanitizing solution from said tank through said rinse spray nozzles after the completion of each wash cycle.

Re. 30,479

METHOD OF REMOVING PARTICLES AND FLUIDS FROM A GAS STREAM BY CHARGED DROPLETS

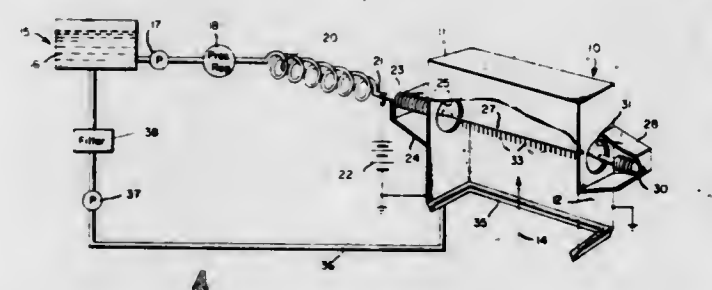
Ernest Cohen, Palos Verdes Estates; Marshall N. Huberman, Los Angeles, both of Calif.; Walter Krieve, deceased, late of Rancho Palos Verdes, Calif.; by Bernice C. Krieve, heir; by Christine A. Krieve, heir, both of Los Angeles, Calif., and Charles W. Lear, Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Original No. 3,958,959, dated May 25, 1976, Ser. No. 495,013, Aug. 5, 1974. Continuation-in-part of Ser. No. 303,017, Nov. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 61,224, Aug. 5, 1970, abandoned. Application for reissue May 17, 1978, Ser. No. 906,727

Int. Cl.³ B03C 3/16

U.S. Cl. 55—10

13 Claims



1. The method of removing from a gas stream undesirable fluid components and particulate matter entrained thereby, by utilizing spaced, conducting elements and a spray tube disposed between the elements, the method comprising the steps of:

- causing the gas stream to flow between the elements and past the spray tube;
- forcing a liquid through the spray tube into the gas stream at substantially atmospheric pressure to generate a liquid jet;
- applying a steady electric potential [of substantially 50 kilovolts to 60 kilovolts] between the liquid jet and the spaced elements [the potential being sufficiently large] to establish an electrostatic field at the spray tube which will verge upon the corona breakdown voltage of the gas stream in the absence of a space charge to break up the liquid jet by the resultant electrostatic field into individual droplets having a diameter between approximately 60 microns and approximately 250 microns, each droplet having a high surface charge density that approaches the Rayleigh limit;
- causing the charged droplets to flow toward the elements at an angle with respect to the direction of flow of the gas stream to provide a relative velocity between the gas stream and the droplets, whereby the droplets will collide with individual particles or undesirable fluids to remove them; and
- eventually causing the droplets to move toward the ele-

ments due to the electrostatic field where they collide and collect.

Re. 30,480

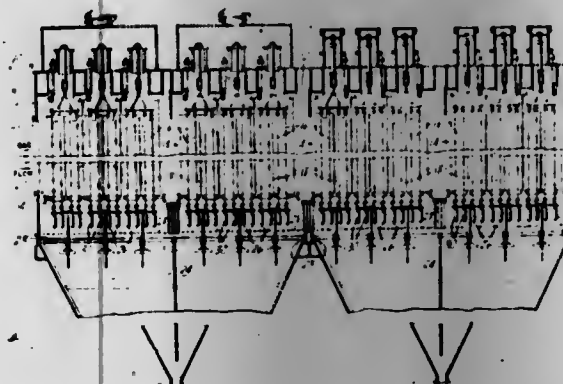
ELECTRIC FIELD DIRECTED CONTROL OF DUST IN ELECTROSTATIC PRECIPITATORS

Peter C. Gelfand, Lebanon, Pa., assignor to Envirotech Corporation, Menlo Park, Calif.
Original No. 3,719,031, dated Mar. 6, 1973, Ser. No. 151,005, Jun. 8, 1971. Application for reissue Mar. 28, 1977, Ser. No. 781,897

Int. Cl.² B03C 3/00

U.S. Cl. 55—136

3 Claims



[1. In an electrostatic precipitator having a housing that defines a flow chamber therein, an inlet opening for conveying a flowing stream of gas carrying dust particles into the chamber, an outlet opening located adjacent a bottom portion of the flow chamber, a dust collector hopper for receiving through a bottom opening in a chamber dust particles removed from the gas, and a plurality of emitting and collecting electrodes extending substantially vertically through the chamber across the path of gas flow, the improvement comprising means for generating a corona discharge disposed below the emitting and collecting electrodes and above the hopper, and a grounded electrode configuration disposed below the corona discharge means, the corona discharge means and electrode configuration providing a corona emission and an electric wind from said means toward the electrode configuration when said means is energized.]

Re. 30,481

PROCESS FOR REDUCING THE PROCESSING TIME IN THE PRODUCTION OF POLYESTERS

Joseph Lacona, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Original No. 4,046,739, dated Sep. 6, 1977, Ser. No. 616,770, Sep. 25, 1975. Application for reissue Sep. 10, 1979, Ser. No. 73,628

Int. Cl.³ C08G 63/16

U.S. Cl. 528—302

9 Claims

1. In a two-stage process for the production of polyesters wherein an aromatic polycarboxylic acid selected from the group consisting of isophthalic acid and terephthalic acid is reacted in the first stage with a polyol to produce half-ester mixture which is reacted with a saturated or unsaturated aliphatic polycarboxylic in the second stage to produce the polyester, to reduce the processing time in the first stage; thereby reducing the processing time for the production of the polyester, comprising:

- contacting first portion of the polyol with the aromatic polycarboxylic acid in the first stage in an amount at least

sufficient to form an agitable mixture with the aromatic polycarboxylic acid but in an amount slightly less than the theoretical amount of polyol needed to react with the isophthalic acid or terephthalic acid and saturated or unsaturated aliphatic polycarboxylic acid,
b. heating the agitable mixture with agitation to a temperature of at least 190° C. to 230° C., and
c. adding the remaining portion of the polyol to the heated agitable mixture with agitation in the first stage in such a manner that the temperature of the heated agitable mixture is maintained at a temperature of at least 190° C. in order to produce a half-ester mixture.

Re. 30,482

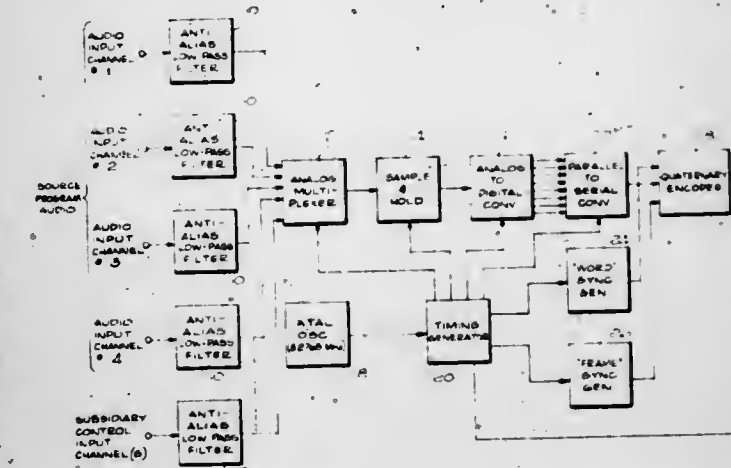
PULSE CODE MODULATED DIGITAL AUDIO SYSTEM

William E. Whitlock, Sherman Oaks, Calif., assignor to Lase Industries, Inc., Van Nuys, Calif.
Original No. 4,030,129, dated Jun. 14, 1977, Ser. No. 696,156, Jun. 14, 1976. Application for reissue Aug. 28, 1978, Ser. No. 937,678

Int. Cl.² G11B 5/00, 5/62

U.S. Cl. 360—32

34 Claims



27. A system for digitally recording and reproducing audio signals comprising:
means for sequentially sampling the instantaneous amplitude of the audio signals periodically at fixed intervals at a rate in excess of twice the maximum desired high frequency response;
analog-to-digital converter means for generating a series of multibit digital words indicative of corresponding sampled amplitude values;
coding means for generating recording signals indicative of the multibit digital words generated by said converter means together with periodic synchronizing signals to identify successive multibit digital words;
video recorder means for recording and reproducing said recording signals indicative of said multibit digital words and said synchronizing pulses for use in generating a substantial duplication of the original audio signal;
memory means for storing a selected plurality of the multibit digital words being reproduced in a predetermined order;
dropout detector means responsive to the recording signal being reproduced for generating a signal indicative of possible data errors in the digital words being reproduced; and,
compensation means responsive to each indication of possible error by said dropout detector means for generating a substitute digital word sequence in accordance with the multibit digital words previously stored in said memory means to be supplied in place of the digital words being reproduced with possible errors in generating said duplication of the original audio signal.

PLANT PATENTS

GRANTED JANUARY 13, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,618

ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277
Filed Sep. 4, 1979, Ser. No. 72,558
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—8

1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by (A) buds and flowers of exhibition form, essentially white in color, the petals being lightly tinted with yellow in the opening stages (buds and flowers resembling White Angel — miniature — U.S. Plant Pat. No. 3,538 — in size, form and color) and (B) as grown outdoors — essentially same as above but petal tips being tinted with pink in a pattern resembling Garden Party (H. T., U.S. Plant Pat. No. 1,814, expired); and further characterized by a plant of compact well rounded shape, vigorous, with the main stems and shoots being nearly thornless, the said plant being easy to propagate from cuttings or by budding, with an abundance of small semi-glossy to matt foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

4,619

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277
Filed Sep. 4, 1979, Ser. No. 72,207
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—9

1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are coral to rose pink in varying shades and/or blended with yellow, the color resembling Mary Marshall (miniature — U.S. Plant Pat. No. 3,346) with general form and size also resembling Mary Marshall, and further characterized by a plant which is vigorous and compact with abundant medium to small size, semi-glossy, disease resistant foliage, easy to propagate from cuttings and by budding, with an abundance of flowers borne singly or several to the stem in loose clusters.

4,620

ROSE PLANT

Joseph F. Winchel, Harbor City, Calif., assignor to John C. Walter, Grand Saline, Tex.
Filed Apr. 23, 1979, Ser. No. 32,365
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—11

1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized by the combination of a plant with many basal canes, matte foliage, many thorns, usually one bloom per stem, large, high-centered blooms of striking yellow color, with sun exposure producing an attractive red coloration at petal edges, and of good keeping qualities both on the bush and as a cut flower.

4,621

PLUM TREE

Lawrence K. Kitahara, and Kei Kitahara, both of 242 W. Palm, Reedley, Calif. 93654
Filed Jul. 9, 1979, Ser. No. 55,647
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—38

1 Claim

1. A new and distinct variety of plum tree, substantially as illustrated and described, characterized by its regular and productive bearing of clingstone fruit of medium size having a reddish skin and flesh which is yellow when the fruit is picking ripe and by its resemblance to the Red Beaut Plum Tree (U.S. Plant Pat. No. 2,539) but from which it is distinguished by bearing fruit ripening from five to seven days earlier, having flesh of a more tender and less fibrous texture and a more delicate vinuous flavor, and having a more globose shape and a more highly colored skin.

4,622

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed May 9, 1979, Ser. No. 37,571
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—74

1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name Futura as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spooned daisy capitulum type; dark yellow ray floret color; yellow-green disc floret color; diameter across face of capitulum ranging from 95 to 110 mm. at maturity; uniform nine week photoperiodic flowering response to short days; medium plant height when grown as a single stem cut spray; and semi-upright branching pattern.

4,623

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed May 9, 1979, Ser. No. 37,573
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—74

1 Claim

1. A new and distinct cultivar *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name Citation, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; medium lavender pink ray floret color with minimum color oxidation; yellow green (immature) to yellow (mature) disc floret color; diameter across face of capitulum ranging from 90 to 105 mm. at maturity; uniform nine week photoperiodic flowering response to short days; tall plant height when grown as a single stem cut spray; and semi-upright branching pattern.

PATENTS

GRANTED JAN. 13, 1981

ERRATA

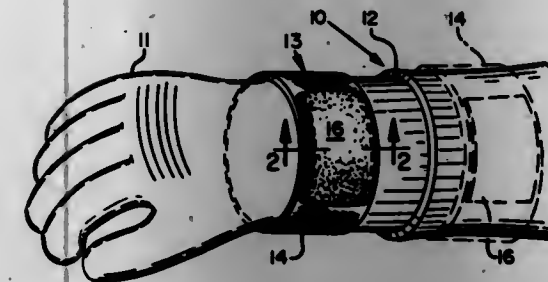
For CLASS	See PATENT NO.
434-059	4,244,120
062-211	4,244,182
474-263	4,244,234
411-477	4,244,269
493-123	4,244,281
493-023	4,244,282
126-438	4,244,374
126-430	4,244,519
269-254 R	4,244,558
015-104.8	4,244,587
312-350	4,244,637
339-103 M	4,244,638
106-039.5	4,244,830
564-099	4,244,887
564-257	4,244,888
564-132	4,244,889
564-455	4,244,890
570-140	4,244,891
570-223	4,244,892
562-412	4,245,078
307-311	4,245,233
367-140	4,245,329

PATENTS

GRANTED JANUARY 13, 1981

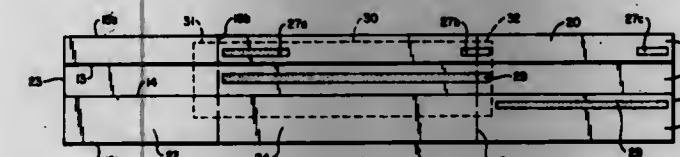
GENERAL AND MECHANICAL

4,244,057
NASAL DRIP ABSORBING DEVICE
 Louise S. Burnham, 11 Blithedale Ter., Mill Valley, Calif. 94941
 Filed Jul. 16, 1979, Ser. No. 57,756
 Int. Cl.³ A41D 27/12
 U.S. Cl. 2—160 7 Claims



1. In combination with an article of outer clothing, a nasal drip absorbing device for use in cold weather when the user's nose tends to drip, comprising:
 fixed securing means connected to the article of clothing, such article adapted to be worn on one of the upper appendages of the user; and
 a disposable absorbent pad formed of multiple layers of absorbent tissue and a backing sheet secured to the layers at their underside, said backing sheet having permanently secured to its underside removable attachment means removably attached to the fixed securing means to permit easy detachment of the pad from the article of clothing and re-attachment of a new disposable absorbent pad; whereby the user can absorb nasal drip in the pad conveniently without reaching into a pocket for other absorbent material, and may replace the disposable absorbent pad whenever necessary.

4,244,058
DISPOSABLE CAP CONSTRUCTION
 James E. Randall, Worthington, Ohio, assignor to Lin-N-Look Company, Inc., Columbus, Ohio
 Filed Aug. 27, 1979, Ser. No. 69,876
 Int. Cl.³ A42B 1/22
 U.S. Cl. 2—197 3 Claims



1. A cap comprising relatively connected headband and crown sections, said headband section consisting of a single, elongated, rectangular piece of flexible sheet material folded longitudinally upon itself to define relatively spaced apart longitudinally coextensive, double thickness upper and lower hem portions separated by a single thickness intermediate portion, said headband being folded transversely upon itself to define front and rear end folds, a continuous side panel along one side of the headband and relatively telescoping male and female end flaps along the opposite side of the headband, said male end flap being slidable within said female end flap to adjust the head size of said headband; said crown section consisting of a single, rectangular blank of flexible material folded longitudinally upon itself to form a pair of outer side panels joined by a plurality of relatively expansible, intermediate pleats; and adhesive means securing one of the outer side panels of said crown section to both the upper and lower hem portions of the female end flap of said headband and the other

outer side panel of said crown section to the continuous side panel of said headband, the male end flap of said headband being adhesively free from said crown section, said one of the outer side panels of said crown section defining with said female end flap an open-ended envelope slidably encasing said male end flap.

4,244,059
NETHER GARMENT FOR AND METHOD OF CONTROLLING CROTCH ODORS
 Phillip F. Pflaumer, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
 Continuation of Ser. No. 582,531, May 30, 1975, abandoned.
 This application Apr. 23, 1979, Ser. No. 32,618
 Int. Cl.³ A41B 9/04 9 Claims

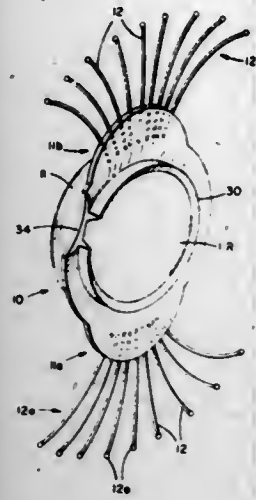


1. Panty type garment comprising a crotch panel consisting of a soft fabric having relatively uniform small passages providing an air permeability of at least about 100 cubic feet per square foot per minute at $\frac{1}{4}$ inch H₂O pressure drop and having an odor absorbent compound applied thereto together with hip encircling garment support structure for suspending said crotch panel across a woman's crotch region to permit ventilation thereof while absorbing odors from the ventilating air, wherein said compound is selected from the group consisting of alkali metal bicarbonates, alkali metal carbonates, water soluble polyamines derived from ethylenimine, and mixtures thereof.

4,244,060
INTRAOCULAR LENS
 Kenneth J. Hoffer, 2001 Santa Monica Blvd., Santa Monica, Calif. 90404
 Filed Dec. 1, 1978, Ser. No. 965,324
 Int. Cl.³ A61F 1/16, 1/24 12 Claims

U.S. Cl. 3—13
 12. A posterior chamber intraocular lens intended for implantation in the capsule of an eye after extracapsular cataract extraction, comprising:
 a lens body,
 centering means attached to said lens body for situating said lens in a central position within said capsule, and
 a generally annular lip projecting rearwardly from the rear face of said lens body, said lip being adapted to contact the

posterior capsule and to space said rear face away therefrom, there being an opening in said lip through which a



discission instrument may be inserted without dislodging said lens.

4,244,061 URINALS

Cyril J. D. Webster, and John C. Griggs, both of St. Albans, England, assignors to National Research Development Corporation, London, England

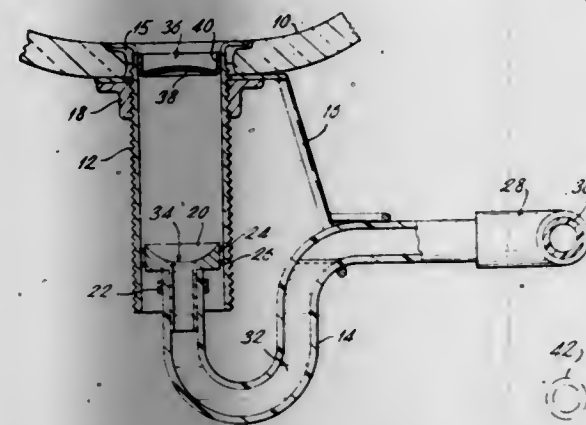
Filed Sep. 14, 1978, Ser. No. 942,196

Claims priority, application United Kingdom, May 12, 1978, 19224/78

Int. Cl.³ A47K 11/00

U.S. Cl. 4-144.1

21 Claims



19. An improved trap for use with flowing liquids comprised of inlet means for establishing flow into said trap, downstream pipe means having an inlet end connected to said inlet means and an exit end, said pipe means creating together with said inlet means a plug type flow of liquid therethrough, said pipe means having an internal diameter ranging from about 8 mm to about 25 mm so that liquid entering said trap will displace liquid retained therein without any substantial mixing occurring between the new and retained liquids, wherein said inlet means includes a restricted portion having a reduced cross-sectional area smaller than the cross-sectional area of said pipe means, said restricted portion retaining a predetermined volume of liquid held by the trap so that the surface area of liquid exposed at the inlet side of said trap is reduced with respect to said pipe means.

4,244,062 LIQUID DISPENSER

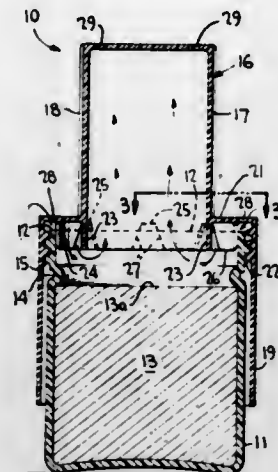
Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Oct. 26, 1978, Ser. No. 954,851

Int. Cl.³ E03D 9/02

U.S. Cl. 4-228

5 Claims



1. A liquid dispenser for a flush tank, comprising, a container having a quantity of concentrated soluble material therein capable of being dispensed as a liquid concentrate, said container having a top opening, a dispensing closure in engagement with said container for axial movement relative thereto, said closure including a hollow cap in communication with the interior of said container, said cap having air vents therein, said closure having at least one discharge port therein defining a flow passage between the interior and exterior of said container, said closure having a sleeve extending inwardly of the container in contact therewith for adjusting the amount of discharge through the flow passage upon axial movement of said closure relative to said container, said sleeve having at least one opening therein extending upwardly and downwardly of an edge at said top opening, said opening in said sleeve further defining the flow passage, the size of said sleeve opening being adjustable in relation to said edge upon the axial movement of said closure relative to the container, means on said closure extending from said cap into said container, and said discharge port being in open communication with the interior of said cap via said extending means and with the interior of said container, whereby liquid mixes below said extending means with the soluble material as it flows into the container through the flow passage from the tank during a tank refill operation, the mixed liquid also flowing into the cap thereby displacing air within said cap and forcing it through said air vents, and whereby the mixed liquid, during a tank flushing operation, is dispensed through the flow passage after it again mixes with the soluble material below said extending means, the mixed liquid in the cap being replaced by air through the vents.

4,244,063 THERAPEUTIC TOILET SEAT

Thomas Bayard, 1105 Seward St., Evanston, Ill. 60202

Filed Sep. 17, 1979, Ser. No. 76,488

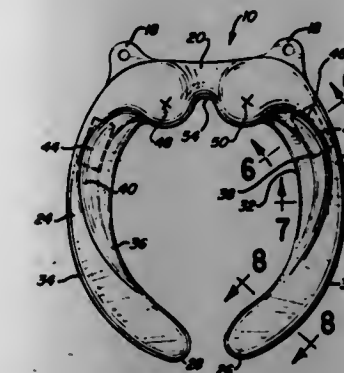
Int. Cl.³ A47K 13/00

U.S. Cl. 4-237

10 Claims

1. A toilet seat for inducing bowel movements including two elongated buttock supporting members having a general curvature to overlie a portion of a toilet bowl upper surface, each of said buttock supporting members having a buttock contacting upper surface including an inner portion of said upper surface and an outer portion of said upper surface, said inner portion contoured concavely over a portion of said buttock contacting upper surface, and said outer portion contoured convexly over a portion of said buttock contacting upper surface, said concave contoured portion defining a concave

curvature defined by the outermost concave points of said buttock contacting surface, said concave curvature having a greater degree of curvature than the general curvature of said buttock supporting member, said toilet seat including a base portion disposed between and interconnecting said buttock supporting members, said base portion having two generally



rounded protruding buttock contacting ridges extending inwardly and downwardly from said toilet seat base portion for applying pressure to muscles used in a bowel movement, said concave curvature of said buttock supporting members being shaped to flow gently into the generally rounded curvature of said buttock contacting ridges.

4,244,064 STEP STOOL CONSTRUCTION

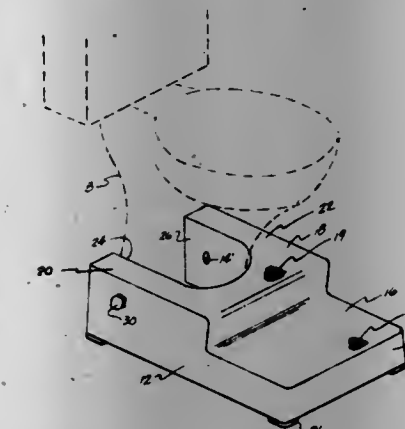
Linda C. Parr, Rte. 1, Box 562, Spartanburg, S.C. 29302

Filed Oct. 29, 1979, Ser. No. 89,607

Int. Cl.³ E03D 11/00

U.S. Cl. 4-254

11 Claims



1. A step stool adapted to be removably receivable about the base of the toilet bowl to facilitate toilet training of small children comprising:

- a horizontal wall means defining at least one step surface, said wall means including a pair of relatively narrow, elongate horizontal wall portions secured thereto and extending rearwardly therefrom whereby said horizontal wall means defines a generally U-shaped opening thereat for receiving the base of a toilet bowl therein;
- generally vertical wall portions secured to said horizontal wall means and extending downwardly therefrom to space and support said horizontal wall means above a stool support surface; and
- adjustable holding means associated with legs of said U-shaped opening to engage the base of said toilet bowl on opposite sides of same for removably securing said stool thereto.

4,244,065 WATER BED CONSTRUCTION

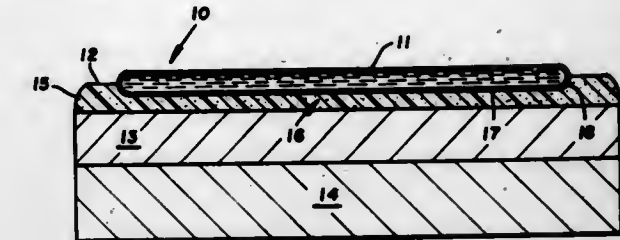
David Hartwell, 3830 Blaisdell Ave., Minneapolis, Minn. 55409

Filed May 21, 1979, Ser. No. 40,674

Int. Cl.³ A47B 27/08

U.S. Cl. 5-400

2 Claims



- A water bed structure including:
 - a fluid retaining bladder of a generally rectangular shape and of a first predetermined thickness;
 - a retaining frame formed of a resilient material and being of a generally rectangular shape and of a second predetermined thickness and providing an upper and a lower surface;
 - a recess formed in said retaining frame in said upper surface thereof; and,
 - said bladder receiving recess being of a depth less than said first predetermined thickness of said bladder.

4,244,066 MATTRESS ASSEMBLY

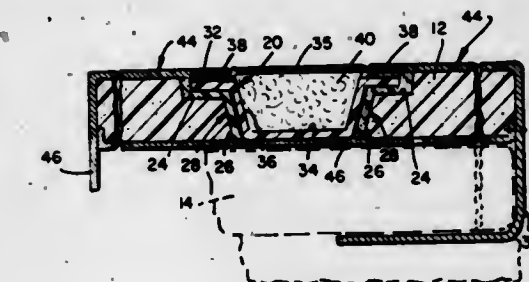
Emma Rakawina, 161 E. 89th St., New York, N.Y. 10028

Filed Jan. 25, 1979, Ser. No. 51,946

Int. Cl.³ A61G 7/02; A47G 9/02

U.S. Cl. 5-463

7 Claims



1. A mattress assembly for use in connection with a bed provided with a preexisting mattress, comprising: a receptacle having a top opening for receiving fluids from the body of a bed occupant and screen means fixedly secured to said receptacle over the top opening thereof, a mattress having a recess for receiving said receptacle therein, sheet means for wrapping said mattress having an opening therein for registry with said receptacle top opening to permit the flow of fluids through said sheet opening into said receptacle, and a pair of tuck flaps at opposite ends of said sheet means adapted to be tucked under said preexisting mattress, said mattress including a lateral access slot extending from said recess to one side of said mattress to permit slideable withdrawal and insertion of said receptacle from and into said recess without removing said sheet means from said mattress, and an insert removably receivable in said access slot whereby insertion of said insert in said access slot fills the latter and provides a substantially continuous flat upper surface thereover, the opposite sidewalls of said insert being substantially coextensive with the sidewalls of said access slot when said insert is inserted in said access slot, and means for releasably securing the periphery of said sheet opening to the rim of said receptacle defining said receptacle top opening comprising fibrous gripping material and means for releasably securing each of said insert sidewalls to the adjacent access slot sidewalls respectively comprising fibrous gripping material.

4,244,067

HAND TOOL FOR WORKING WITH WIRE AND CABLE

Richard D. Rowe, 501 N. Virginia, Fort Lavaca, Tex. 77979

Filed Nov. 16, 1978, Ser. No. 961,332

Int. Cl.³ B25B 7/22; H02G 1/12

U.S. Cl. 7-107

2 Claims



1. A hand tool for working with a coaxial cable and a connector for the cable, said cable having a center conductor, an inner jacketing covering the center conductor, and an outer cover over the inner jacket, the tool comprising:

a first member and a second member, said first member being pivotally connected to said second member by a pivot means,

said first member having formed integrally thereof

a first jaw having formed integrally thereof

a recess for receiving the wire or cable to be worked with,

a cutting edge, and

a plurality of indented cutting elements,

a first mid-portion having

a crimping element formed integrally thereof,

a decrimping element formed integrally thereof, and

a hole for receiving the pivot means,

a first handle having formed integrally thereof a connector element for facilitating the loosening connecting and handling of connectors, said connector element having threads formed integrally exteriorly thereof and

a recess therein for receiving, holding, and centering a wire, conductor, or dielectric, of the coaxial cable,

said second member having formed integrally thereof

a second jaw, having formed integrally thereof

a recess for receiving the wire or cable to be worked with, said recess being substantially similar to and

substantially aligned with the recess of the first jaw,

a cutting edge substantially similar to and substantially aligned with the cutting edge of the first jaw, said

cutting edges aligned so that they coact when the first handle and a second handle formed integrally of the

second member are pressed together to cut an object placed between them,

a plurality of cutting elements, each substantially similar to and substantially aligned with one of the plurality

of indented cutting elements of the first jaw, said

indented cutting elements aligned so that they coact when the first handle and the second handle are

pressed together to cut an object placed between them, a second mid-portion having

a crimping element formed integrally thereof, said

crimping element being substantially similar to and

substantially aligned with the crimping element of the

first mid-portion, said crimping elements coacting

when the first and second handles are pressed together to form a first recess for receiving the coaxial

cable and the connector which is to be connected to

the cable and said crimping elements coacting to form a second and third recess each communicating with the first recess so that material crimped between the crimping elements is pushed outwardly into the second and third recesses,

a decrimping element formed integrally thereof, said decrimping element being substantially similar to and substantially aligned with the decrimping element of the first mid-portion, so that said decrimping elements coact when the first and second handles are pressed together to decrimp an object placed between them,

a hole for receiving the pivot means, said hole substantially similar to and substantially aligned with the hole of the first mid-portion,

the second handle having formed integrally thereof an open-end wrench apparatus for releasably tightening and loosening nuts and connectors and

the jaws of the tool having a first width substantially equal to the length of center conductor to be inserted into the connector and having a second width substantially equal to the length of outer cover to be removed from the cable to permit insertion of the cable into the connector.

4,244,068

METHOD AND APPARATUS FOR MACHINING PIPE COLLARS

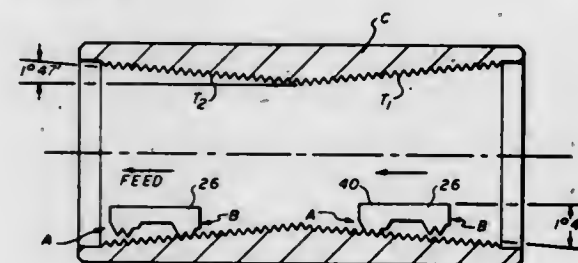
Dieter H. Hellnick, Houston, Tex., assignor to Jo-Way Tool Company, Inc., Houston, Tex.

Filed Mar. 12, 1979, Ser. No. 19,515

Int. Cl.³ B23G 1/04, 1/22

U.S. Cl. 10-101 R

7 Claims



1. A method of producing internally threaded pipe couplings having coaxial, oppositely tapered first and second threaded surfaces, said method comprising:

providing first and second spaced sets of thread forming teeth facing in the same direction;

supporting said first and second sets of thread forming teeth in fixed relation to each other by a threading tool support bar;

moving said support bar to bring one of said sets of thread forming teeth into engagement with a first one of the tapered internal surfaces of said coupling while rotating said coupling;

moving said one set of thread forming teeth along said first tapered surface, said second set of thread forming teeth tracing the thread formed by said first set of thread forming teeth and maintaining a clearance therewith;

upon completion of a linear pass of said first set of thread forming teeth along said first tapered surface of said coupling, bringing said second set of thread forming teeth with said second tapered surface at the central portion of said coupling;

moving said second set of thread forming teeth in thread cutting relation along said second tapered surface, said first set of thread forming teeth tracing and maintaining a clearance with the threads formed by said second set of thread forming teeth;

said sets of thread forming teeth being fixed to said support bar so that an imaginary line touching the crests of at least

one of said teeth of each of said first and second sets of thread forming teeth is maintained in a fixed position, substantially parallel relation with the longitudinal axis of the rotating collar being threaded during machining of threads on both of said first and second tapered surface; and maintaining the depth of cut of the second set of thread forming teeth along said second tapered surface to be less than the clearance of the first set of thread forming teeth with said second tapered surface.

4,244,069

METHOD AND APPARATUS FOR BINDING SHEETS

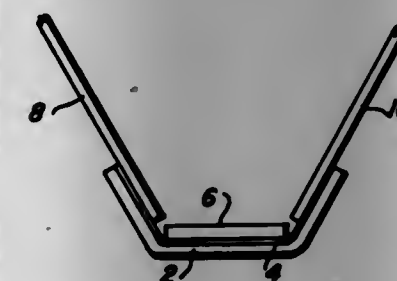
James M. Hale, Chicago, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed May 29, 1979, Ser. No. 42,738

Int. Cl.³ B42C 9/00

U.S. Cl. 11-1 AD

3 Claims



1. A sheet binding material for forming a book cover including a cover backbone formed of a heat shrinkable material, the center portion of the material being prestretched,

a strip of hot melt adhesive on said center portion of the cover backbone for contact with sheets to be bound; and, pressure sensitive adhesive strips on said cover backbone parallel to and on both sides of said hot melt adhesive strip to enable a top and a bottom cover leaf to be attached to said cover backbone by pressing said leaves against said pressure sensitive adhesive strips to form a book cover for insertion of sheets to be bound therein, heating of said cover backbone causing said adhesive to melt into the edges of inserted sheets to glue the sheets into the cover, the heat also causing said prestretched center portion to shrink against the inserted sheets to form a tightly bound booklet.

4,244,070

SOLE WITH HEEL FOR WOMEN FOOTWEARS OR SHOES, AND METHOD FOR QUICKLY AND ECONOMICALLY MAKING SAID SOLES WITH CORRESPONDING HEELS

Edoardo Ughi, via Plinio, 4-Lecco (Como), Italy

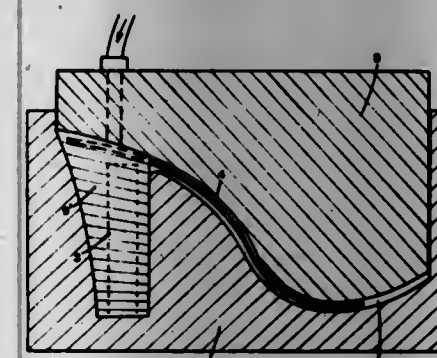
Filed Nov. 2, 1978, Ser. No. 957,418

Claims priority, application Italy, Nov. 29, 1977, 30159 A/77

Int. Cl.³ A43D 9/00; A43B 13/28

U.S. Cl. 12-142 J

1 Claim



1. A method of preparing a one-piece sole-heel assembly of the high heel type which consists of the steps of (1) placing a thin sheet material in a mold formed by opposite complemen-

tary portions defining therebetween a cavity of the proper shape of the heel and sole, for laterally, rearwardly and frontwardly covering the heel, (2) introducing into the mold a reinforcing core into the heel portion (3) introducing a stiffening element into the sole portion projecting from the top of the heel up to the overall front part of the sole (4) injecting a thermoplastic material into said mold through an opening above the heel portion, pressing said sheet against the mold inner face, whereby said reinforcing core and said stiffening element remain embedded in the heel and sole respectively.

4,244,071

COMPACT ROLLOVER VEHICLE WASH APPARATUS

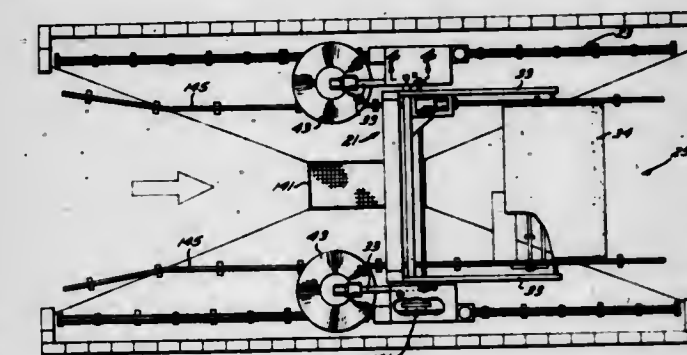
Ivan J. Barber, Ontario, Canada, assignor to The Allen Group, Inc., Melville, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,159

Int. Cl.³ B60S 3/06

U.S. Cl. 15-53 A

6 Claims



1. A compact rollover vehicle wash apparatus for washing a vehicle having front, back, top and opposite side surfaces, parked in a wash stall and facing forwardly in one direction and comprising:

track means extending longitudinally of said stall;

an arch frame over said stall;

trucks mounting said frame rollably on said track means;

top brush arms pivotally carried on their respective one extremities from the top of said arch for rotation about a horizontal axis and normally projecting forwardly therefrom and pivotable from a horizontal retracted position to a lowered operative position;

a horizontal top brush mounted from the free ends of said arms for being carried to a lowered position level with the bottom of the front of said vehicle;

side arms pivotally mounted on their respective one ends from the opposite sides of said frame at points in a vertical plane spaced forwardly of said horizontal axis and projecting in the direction opposite said one direction past said

pivot points and pivotable about said axes from a retracted position projecting coextensive with said track to extended positions angling inwardly along said track;

a pair of vertical side brushes mounted on the free extremities of said side brushes;

a top brush fluid cylinder connected between said frame and said top brush arms;

a pair of side brush fluid cylinders connected between said frame and said side brush arm;

spray means mounted on said frame for spraying washing fluid on said vehicle;

reversible drive motor means for driving said truck; and

control means including a fluid circuit connected with said cylinders for selectively retracting said arms and alternatively urging said arms to their extended positions to engage said top brush with the top surface of said vehicle

and said side brushes on the sides of said vehicle, so said drive motor can drive said trucks along said track while

said top brush washes the front and top surfaces thereof and said side brushes wash the sides thereof, said side arms

being operative as said arch carries them rearwardly to

clear the back corners of said vehicle to swing further inwardly to wash the back of said vehicle.

4,244,072

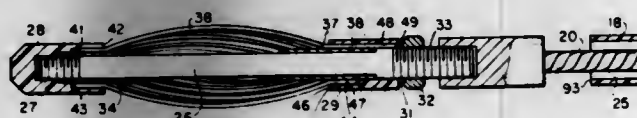
METAL TUBE CLEANING APPARATUS

Heyward O. Dunham, 12 Eastview Dr., Mooresville, Ind. 46158, and Harry K. Dunham, 11241 Keith Dr., Whittier, Calif. 90606

Filed Jul. 30, 1979, Ser. No. 61,608
Int. Cl.³ B08B 9/02

U.S. Cl. 15—104.1 R

13 Claims



1. In apparatus for cleaning heat exchanger tubes or the like wherein said apparatus includes a rotary cutting tool and motor drive means for the tool, the improvement comprising: first circuit means for applying an electrical voltage between a portion of said tool and said tube; and current measuring means responsive to current flow in a path of said first circuit means between said tool portion and said tube.

4,244,073

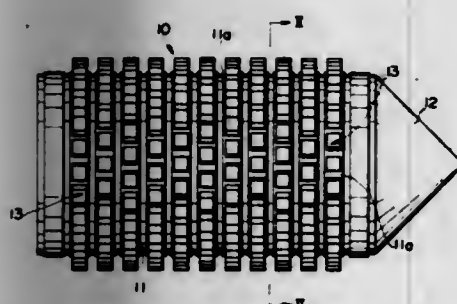
PIPELINE PIG

Sizuo Sagawa, 12-8, 1-chome, Minami-Kugahara, Ohta-ku, Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,907
Int. Cl.³ B08B 9/04

U.S. Cl. 15—104.06 A

6 Claims



1. A pipeline pig including a generally cylindrically shaped body formed of an elastic material, said body having a diameter larger than the internal diameter of a pipeline into which said pig is to be thrust, and a conical portion provided at the forward end of said body, said pig comprising a plurality of spaced pin-like members provided on the peripheral surface of said body, each of said pins including a head portion provided outwardly from said body, a shaft portion radially embedded in said body and an anchoring portion provided at an inner end of said pin, and said pins being made of a material not as hard as that of said pipeline and somewhat harder than that of the substance to be removed or scraped by said pig from said pipeline, said pins being disposed in a plurality of axially spaced, zigzag, circumferential rows such that said head portions of said pins are axially overlapped in part with those of said pins of adjacent rows, the areas of said head portion of each of said pins axially overlapped with the head portions of the adjacent pins being approximately $\frac{1}{2}$ to $\frac{3}{4}$ of the whole area of said head portion.

4,244,074

PAD APPLICATOR

Donna M. Barcikowski, Natrona Heights; Rodger G. Temple, Gibsonia; James E. Jones, Lower Burrell, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 17, 1978, Ser. No. 952,168
Int. Cl.³ A46B 15/00

U.S. Cl. 15—114

49 Claims



1. An applicator cover comprising an exterior applying layer wherein:
a. said exterior applying layer comprises
(1) a first working zone having a pile comprising a first set of generally erect bristle-like fibers, and
(2) a second working zone having a pile of soft, fleecy fibers;
b. the exterior surface of said first working zone constitutes from about 30 to about 95 percent of the total exterior surface area of said exterior applying layer;
c. the exterior surface of said second working zone constitutes from about 5 to about 70 percent of the total exterior surface of said exterior applying layer; and
d. the rear one-third of said exterior applying layer contains at least half of said second working zone.

4,244,075

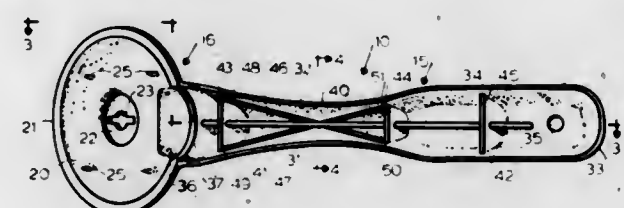
PAD HOLDER FOR A SCOURING DEVICE

Louis J. Silver, 3434 Baker St., San Francisco, Calif. 94123
Filed Aug. 30, 1979, Ser. No. 70,977

Int. Cl.³ A47L 17/08; A46B 17/02, 5/02

U.S. Cl. 15—145

3 Claims



1. A pad holder for a scouring device, comprising a unitary molded plastic member having a handle portion and a cupped bell portion to which a pad is to be attached, said bell portion comprising a spherical shell segment with a lower edge lying along a plane and a central flat portion parallel to said plane and having an opening for receiving a pad-securing device, said handle portion being generally channel shaped and having an upper wall with depending side walls along its length defining a channel between them with a depending end wall at its outer end, joining the depending side walls together and closing said channel there, said handle joining said bell at one side thereof and at about 45° to said plane in a channel portion extending into said spherical segment and crossed by a reinforcing depending arcuate wall perpendicular to said plane, joining said side walls together and closing the channel there, said upper wall being joined to the flat portion of said bell portion by a pair of reinforcing diverging ribs generally perpendicular to said upper wall, said handle being reinforced in said channel by integrally molded portions comprising:
a depending lengthwise rib midway between said side walls, depending from said upper wall and extending from said arcuate wall to a point near and short of said end wall, a series of three transverse ribs joined to said upper wall and

said side walls and inclined at about 45° to said upper wall in a direction toward said bell portion, and
a pair of diagonally extending crossing ribs extending from the juncture of said transverse rib nearest said bell portion with said side walls to the juncture of the next said transverse rib with said side walls, whereby said handle portion is protected from breaking due to exertion of scouring pressures thereon while scouring.

4,244,076

METHOD AND FORMING TOOL FOR THE FABRICATION OF A BRISTLE SUPPORT FOR A BRUSH, ESPECIALLY A HAIR BRUSH

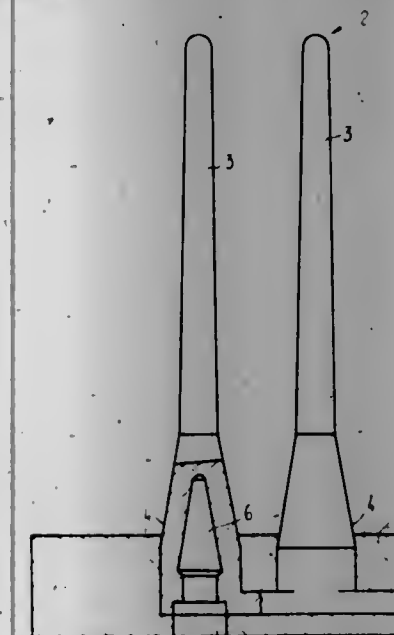
Walter Meyer, Triengen, Switzerland, assignor to Trias Bürstenfabrik AG, Triengen, Switzerland

Filed May 23, 1979, Ser. No. 41,813

Claims priority, application Austria, Jun. 16, 1978, 4419/78
Int. Cl.³ A46B 1/00

U.S. Cl. 15—188

28 Claims



21. A bristle support for bristles of a brush, comprising: essentially mutually parallel rows of bristles formed of plastic; each of said bristles having a rear end; each row of bristles being mutually interconnected at their rear ends by means of a related web; and a bristle support in which there are embedded the rows of bristles together with their webs at the rear ends of said bristles.

4,244,077

CONNECTION FOR WINDSHIELD WIPER

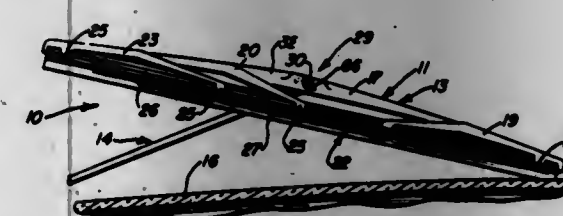
William H. Harbison, Valparaiso; John J. Plisky, Munster, and Michael G. Mohnach, Valparaiso, all of Ind., assignors to The Anderson Company of Indiana, Gary, Ind.

Filed May 17, 1979, Ser. No. 39,871

Int. Cl.³ A47L 1/00

U.S. Cl. 15—250.32

10 Claims



1. In a windshield wiper (10) including a wiper arm (14) and a wiper blade assembly (11) releasably mountable on the side of the wiper arm (14), the wiper arm (14) having a side pin (30) with a reduced diameter portion (69) between an enlarged

outer end segment (71) and an enlarged inner end segment (72) and the wiper blade assembly (11) having a pressure-distributing yoke (17) with an aperture (42) therethrough for receiving the side pin (30), a means for securing the side pin (30) within the aperture (42) comprising a key (66) carried by the yoke (17) having a portion (67) projecting into the aperture (42) with a transverse length less than the axial length of the reduced diameter portion (69) of the side pin (30), a keyway (75) on the enlarged outer end segment (71) of the side pin (30) adapted to receive said key portion (67) therethrough, said key portion (67) passing through said keyway (75) when the side pin (30) is inserted into the aperture (42) to a fully connected position with the reduced diameter portion (69) of the side pin (30) adjacent the key portion (67), a U-shaped spring (50) having spaced legs (52,53) with the free ends of said legs (52,53) secured in the yoke (17), intermediate portions (57,58) of said legs (52,53) extending in chordal fashion across the aperture (42) of the yoke (17) and seated in the reduced diameter portion (69) of the side pin (30) when the side pin (30) is in connected position, and said spring (50) having at the opposite end of said legs (52,53) a connecting crosspiece (55) adapted to be raised for moving said intermediate portions (57,58) of said spring (50) out of alignment with the aperture (42) to release the side pin (30) for removal from the yoke (17).

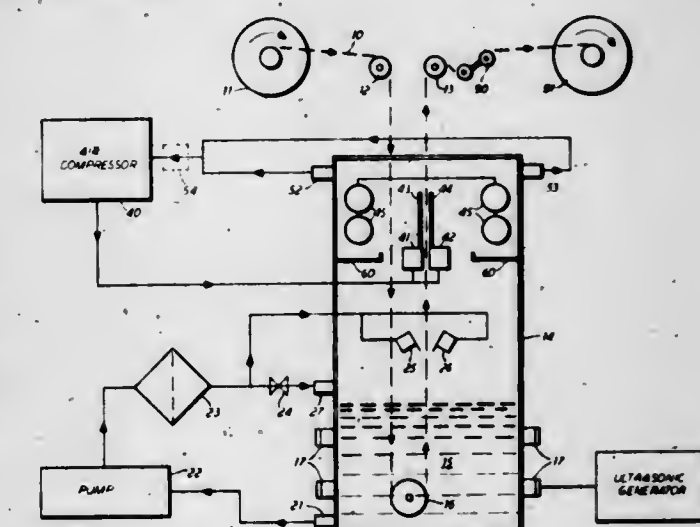
4,244,078

METHOD AND APPARATUS FOR CLEANING FILM
Richard J. Hughes, Mt. Prospect, and Howard Bowen, Wilmette, both of Ill., assignors to Research Technology, Inc., Lincolnwood, Ill.

Filed Apr. 26, 1979, Ser. No. 33,729
Int. Cl.³ A47L 5/38

U.S. Cl. 15—302

17 Claims



10. A film cleaning apparatus comprised of:
an air compressor;
a film cleaning tank containing film cleaning solvent;
a plurality of ultra-sonic transducers coupled to said film cleaning tank;
a means for moving a strip of film having a surface into said film cleaning means and contacting said film cleaning solvent therein;
a pair of solvent spray nozzles disposed above said film cleaning solvent in said film cleaning tank such that said film passes between said spray nozzles and is subjected to a spray of cleaning solvent to rinse said film;
a pair of air directing means connected to said air compressor in close proximity to a film path following said cleaning means such that said film passes between said air directing means and is subjected to high pressure air from said air directing means which strips solvent from the surface of said film;
a plurality of condensing coils connected to a refrigeration system, said coils disposed in a path following said air

nozzles and said coils condensing solvent vapor produced as an incidental result of said stripping of said solvent;
 a collector disposed beneath said condensing coils, said collector accumulating said condensed solvent as said condensed solvent drips off said condensing coils;
 a means on said tank for substantially minimizing escape of solvent mist into the surrounding atmosphere from said tank;
 a means for returning air ejected from said air nozzles to said compressor such that a closed loop air transfer path is formed; and
 a means for removing said solvent from said collector and said bath directing said solvent to a means including said condensing coils subsequently operable for purifying said solvent and for returning said solvent to said tank.

4,244,079

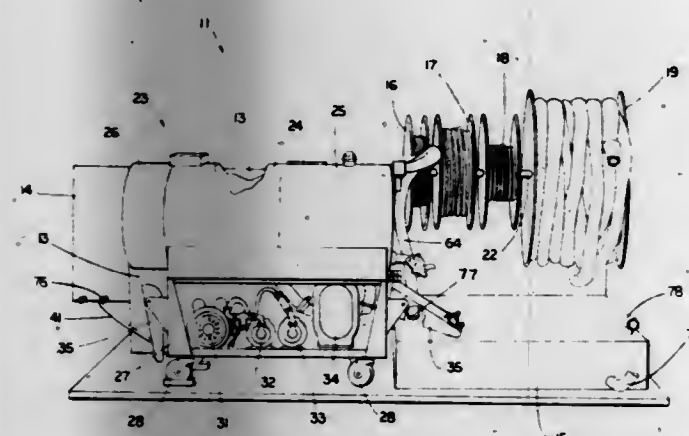
APPARATUS FOR CLEANING A CARPET ON LOCATION

William F. Bane, 4533 Millersville Rd., Indianapolis, Ind. 46205
 Division of Ser. No. 820,554, Aug. 1, 1977, Pat. No. 4,154,578.
 This application Feb. 9, 1979, Ser. No. 10,526

Int. Cl.³ A47L 7/00

U.S. Cl. 15—321

9 Claims



3. A portable apparatus for cleaning a carpet on location without removing the carpet to a cleaning plant comprising:

- a frame;
- means including wheels mounted to said frame for transporting said frame to a carpet location;
- a first supply of alkaline solution on said frame;
- a second supply of acid solution on said frame;
- means connected to said first supply for blowing a heated spray of the alkaline solution under pressure into a carpet on location;
- means connected to said second supply for blowing a spray of the acid solution under pressure into a carpet on location;
- and means including a vacuum pump, a vacuum return line and a vacuum tank on said frame for removing and storing the blown alkaline and acid solutions and the loosened dirt, said means for blowing both the alkaline and acid solutions into the carpet comprising:
 - a head having a plurality of spray jets connected thereto;
 - a two-way valve having two inlet lines and one outlet line, the outlet line being connected to the spray jets, said valve being operable to separately connect the inlet lines with the outlet line;
 - means including a first solution pump for connecting said first supply to one of the two inlet lines on said valve;
 - means including a second solution pump for connecting said second supply to the other of the two inlet lines on said valve;
 - and a motor operable to run said first and said second solution pumps and the vacuum pump.

4,244,080

SUCTION NOZZLES FOR VACUUM CLEANERS

Hans Wessel, Wildbergerhütte, D-5226 Reichshof 31, Fed. Rep. of Germany

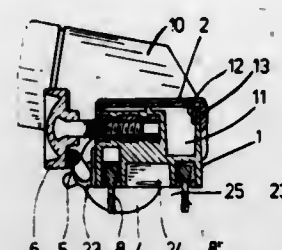
Filed Aug. 17, 1979, Ser. No. 67,519

Claims priority, application Fed. Rep. of Germany, May 3, 1979, 7912825[U]

Int. Cl.³ A47L 9/00, 9/04

U.S. Cl. 15—325

7 Claims



1. A suction nozzle for a vacuum cleaner comprising a nozzle body adapted on its underside to receive interchangeable strips which define the front and rear margins of a suction passage, rollers at each end of said passage cooperating with a front said strip to form lateral suction gaps communicating with said passage, and with a rear said strip to laterally confine the latter, a cranked axle bar for said rollers carried in open bushings of different orientations, said bushings being integrally formed with said body, means for acting on said axle bar to adjust the height of the rollers, and a swivel socket communicating with said passage for connection to suction apparatus, the socket having two mutually rotatable parts, one said part being fixed with the nozzle body, a first one of said socket parts carrying a bearing ring which receives a spring washer which engages a second one of said socket parts to locate the latter axially with respect to said first socket part.

4,244,081

HINGE FOR SPECTACLES

Karl Beyer, Meyrin-Geneva, and Conrad Zellweger, Chene-Bougeries-Geneva, both of Switzerland, assignors to La National S.A., Geneva, Switzerland

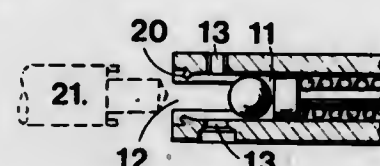
Filed May 30, 1979, Ser. No. 43,888

Claims priority, application Switzerland, May 30, 1978, 5872/78

Int. Cl.³ G02C 5/16

U.S. Cl. 16—128 A

3 Claims



1. A hinge for spectacles comprising two parts connected to each other, one of said parts being in the shape of a cam, the other of said parts comprising a blind cylindrical housing having an open end, at least one spring and one pressure member in said housing, said pressure member comprising a ball bearing, said spring pushing said ball bearing against said cam shape, an intermediate part mounted within the housing between said ball bearing and said spring, said intermediate part providing less friction with the ball bearing than the friction of said ball bearing on the cam shape, said intermediate part comprising a cylindrically-shaped member sliding within the housing, a rod mounted axially inside said spring, said rod providing a stop which limits the opening of said hinge, said rod and said intermediate part being integral, said cylindrical housing including means for retaining its contents, said retaining means reducing the open cross section of said housing near its opening.

4,244,082

ARRANGEMENT FOR MIXING TEXTILE FIBER FLAKES

Ferdinand Leifeld, Kempen; Walter M. Oellers, and Johannes W. Reiche, both of Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Trutzschler GmbH & Co. KG, Munchen-Gladbach, Fed. Rep. of Germany

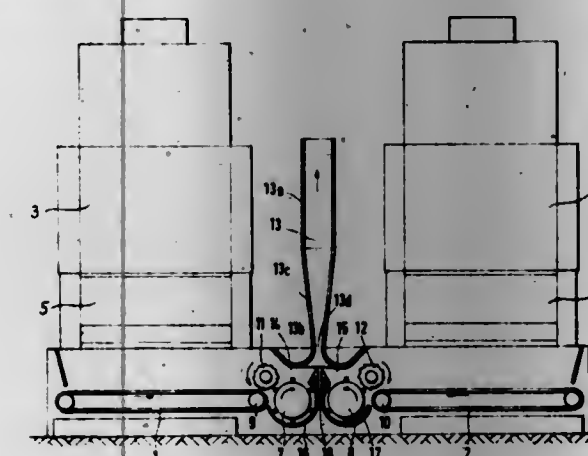
Filed Mar. 20, 1979, Ser. No. 22,271

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815420

Int. Cl.³ D01G 7/04

U.S. Cl. 19—81

12 Claims



1. An arrangement for mixing textile fiber flakes in predetermined quantity ratios, comprising: at least two conveyers; at least two weighing feeders with associated scale tanks, each of said conveyers having one weighing feeder with one of said scale tanks for delivering fiber flakes; conveyer rollers and breakup rollers; each conveyer having one conveyer roller and one breakup roller cooperating jointly for receiving said textile fiber flakes; flake suction means; all of said conveyer rollers and said breakup rollers being connected to said flake suction means.

4,244,083

CABLE CLAMP

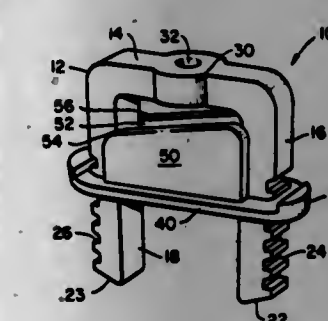
Leonard R. Aremka, Chicago, and Harold D. Cook, Wheaton, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed May 3, 1979, Ser. No. 35,658

Int. Cl.³ B65D 63/00; A44B 21/00

U.S. Cl. 24—16 R

4 Claims



1. A clamp 10 for securely retaining a cable 60 including a "U" shaped body member 12 having a base portion 14 and two parallel legs 16, 18 extending from the base portion, each of said legs defining a retaining surface 24, 26 on their outwardly disposed surfaces and a keeper 20 having a relatively flat plate 40 defining at least two spaced openings 42, 44 for receiving the legs 16, 18 of the body member 12, the edges of the opening 42, 44 are in engagement with the retaining surfaces 24, 26 of the legs 16, 18 when the keeper 20 is engaged with the body member 12 characterized in that:

said keeper 20 includes means 50, 52 for positioning a cable placed between the legs 16, 18 of said body member 12 against a selected portion of the body member 12 said positioning means defining a continuous straight camming

edge 54, 56, a straight line along said edge intersects the axes of said legs 16, 18 at an acute angle, said camming edge 54, 56 of said positioning means 50, 52 being defined by a first planar wall 50, 52 extending from said keeper plate 40, the end of said wall 50 defining said camming edge 54 and serving to urge a cable placed between said legs 16, 18 against said base 12 and against one of said legs 18 of said body member 12 and away from the opposite leg of said body member 12.

4,244,084

JOINTING OF FABRIC ENDS

Bryan J. Gisbourne, Blackburn, England, assignor to Scape-Porritt Limited, England

Filed Jul. 24, 1978, Ser. No. 927,412

Claims priority, application United Kingdom, Aug. 31, 1977, 36421/77

Int. Cl.³ F16G 3/02; D21F 7/10

U.S. Cl. 24—33 C

8 Claims



1. A papermaker's fabric comprising a multi-layer fabric of which, in the end regions thereof, the individual ones of a plurality of plies are folded back towards the body of the fabric, and are secured together in overlying disposition, and a respective helical coil secured to at least one of the plies at each end of the fabric by the warp yarns of such ply by the engagement of the successive turns of the coil in attaching relationship with the warp yarns of a web-free zone of the said ply and about the axis of which web-free zone the end region of the ply is folded.

4,244,085

PIN FOR DOCUMENTS

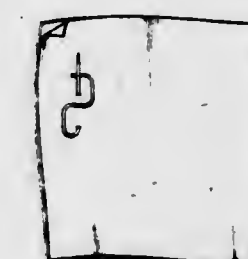
Wei Tsao-Tsung, No. 12, Alley 63, Lane 149, Hua-Hsin Street, Chung-Ho Town, Taipei Hsien, Taiwan

Filed Dec. 18, 1978, Ser. No. 970,577

Int. Cl.³ A44B 9/00

U.S. Cl. 24—85 C

1 Claim



1. A pin device capable of performing both clipping and pinning functions, said device comprising a single piece of wire having one sharpened end and one blunt end and being bent into two segments; the first said segment being substantially straight and having the said sharpened end, the second said segment being bent through a first loop such that the wire in the second segment crosses said straight segment, said second segment being bent into a second loop in reverse direction to said first loop, so as to provide a second crossing of said straight segment near said sharpened end of the first segment, said second segment being generally S-shaped, with the said blunt end being substantially contained within the profile of the S and being positioned adjacent said sharpened end, said two loops of said second segment being substantially in the same

plane and on the same side of said straight segment but being formed with curvature from the plane so as to provide a resiliently biased contact between said first and second segments at the point of said second crossing when in a first position, said bias contact providing retaining force for objects inserted between said segments whereby said device may be employed as a spring clip, said first and second loops being large enough to permit the said second segment to be elastically deformed in its plane until said blunt end of said second segment is removed from contact with said straight segment, permitting said blunt end to be elastically deformed out of the plane of the first loop, said blunt end subsequently being engaged on the side of said straight segment which is opposite to that of the said first position, the said blunt end being elastically moved to a second position wherein said second segment is parallel to its location in said first position, whereby said blunt end provides a retention clip for material which has been pierced by said straight segment functioning as a pin.

4,244,086

ZIPPER CLOSURE LOCK

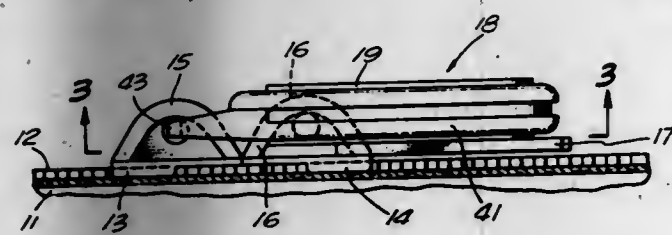
James S. Gregg, Aurora, Colo., assignor to Samsonite Corporation, Denver, Colo.

Filed Sep. 20, 1979, Ser. No. 76,961

Int. Cl.³ A44B 19/26

U.S. Cl. 24—205.11 L

5 Claims



1. A device for selectively securing first and second zipper operators together, each operator having an upstanding loop, comprising:

- a hollow housing swivelly connected to one loop, and having an opening for receipt onto the other loop at one position;
- a rotor located within said housing and having peripheral parts extending through a further opening in said housing;
- a detent on said rotor which extends through said other loop at one position of said rotor and is free of said loop for other rotor positions; and
- means selectively adjustable to obstruct rotation of said rotor from the position at which the detent is within the loop to a position free of said loop.

4,244,087

SEPARABLE SLIDE FASTENER

Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 9, 1979, Ser. No. 28,068

Claims priority, application Japan, Apr. 19, 1978, 53-52232[U]

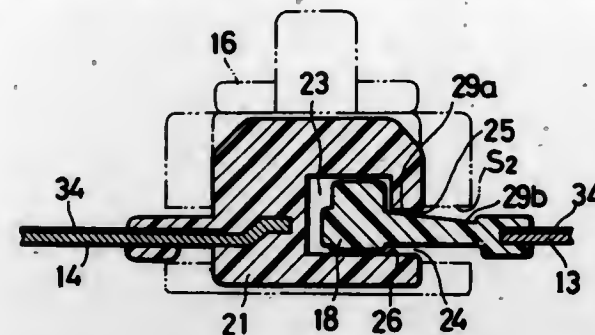
Int. Cl.³ A44B 19/38

U.S. Cl. 24—205.11 R

6 Claims

1. A slide fastener comprising: a pair of companion stringers each having a fabric tape and a row of interlocking fastener elements mounted on a longitudinal edge of said tape; a slider having a flanged opening for taking said companion stringers into and out of engagement; and a separable end stop assembly including a pin member on one of said companion stringers and a socket member on the other stringer, said socket member having an opening for collaterally receiving said pin member, and a longitudinal slit communicating with said opening and defined by a flanged portion and a bottom wall of said socket member, said pin member including a pin retainer land integrally formed therewith, said land having an inclined surface sloping downward from said pin member toward an outer

longitudinal edge of said one of the companion stringers so that said land has a thick region adjacent said pin member and a thin region remote from said pin member, said thick region of said land having such thickness that said land is engageable with either of said flanged portion and said bottom wall of said



socket member when said pin member is inserted into said opening of said socket member to thereby secure said pin and socket members together in a predetermined relation, and said thin region of said land having such thickness that said flanged opening of said slider can pass thereover without being obstructed by said land.

4,244,088

HOSE CLIP

Heinz Sauer, Ronneburg, Fed. Rep. of Germany, assignor to Rasmussen GmbH, Maintal, Fed. Rep. of Germany

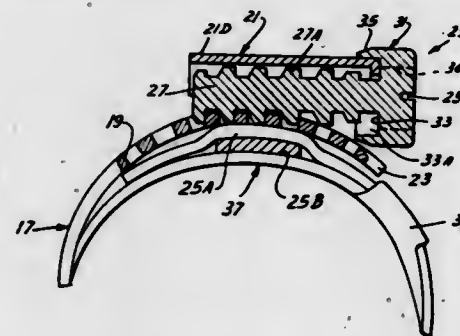
Filed Dec. 13, 1979, Ser. No. 103,289

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1978, 2854676

Int. Cl.³ B65D 63/00

U.S. Cl. 24—274 R

43 Claims



1. A hose clip, comprising an elongated band having a threaded end portion and a second portion; a housing connected with said second portion and including a tubular section; and a tensioning element having an externally threaded shank rotatably mounted in said tubular section and meshing with the thread of said end portion and a larger-diameter head, said head having a tubular portion and said tubular section of said housing having an end portion which is surrounded by said tubular portion.

4,244,089

METHOD OF CONSTRUCTING BOX SPRINGS OR THE LIKE

Paul Cavalier, 22696 Essex Way, Southfield, Mich. 48075

Continuation-in-part of Ser. No. 922,991, Jul. 10, 1978, abandoned, which is a division of Ser. No. 790,286, Apr. 25, 1977, Pat. No. 4,120,059. This application Jan. 14, 1979, Ser. No. 48,641

Int. Cl.³ B68G 7/00

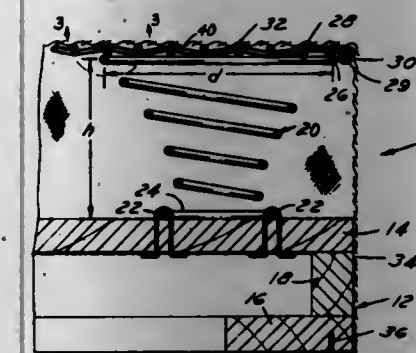
U.S. Cl. 29—91.1

10 Claims

1. A method for constructing box springs or the like comprising the steps of attaching one end of a plurality of coil springs to a frame such that the other end of each said spring lies in a substantially common plane, locating a mesh having a border wire around the periphery thereof over said springs in

said substantially common plane such that said other ends of said springs are free-floating with respect to said mesh and with respect to each other, locating a cover over said mesh such that a periphery of said cover encompasses said border wire, and attaching said cover periphery to said frame.

3. A method of constructing box springs or the like comprising the steps of attaching one end of a plurality of coil springs



to a frame such that the other end of each said spring lies in a substantially common plane, placing a cover over a work surface, placing a mesh having border means around the periphery thereof over said cover, placing said attached frame and springs over said mesh such that said springs lie on said mesh and are unattached thereto and said border means is aligned with a periphery of said frame, and attaching a periphery of said cover to said frame.

4,244,090

DEVICE FOR ATTACHING AND REMOVING RUBBER BEARING ABOUT PIPE STEMS

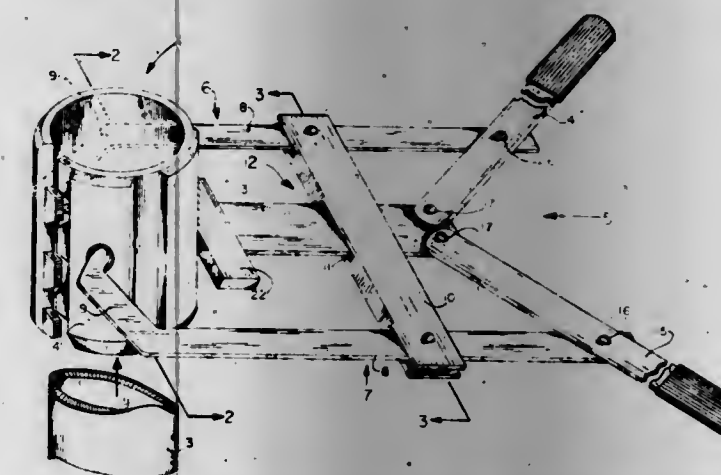
Albert A. Foret, Sr., Rte. One, Box 393, Pierre Part, La. 70339

Filed Sep. 17, 1979, Ser. No. 76,075

Int. Cl.³ B23P 19/02

U.S. Cl. 29—235

3 Claims



1. A device to attach or remove rubber bearings having a slit down one side about pipe stems which comprises:

- (a) bearing grasping assemblies positioned with said rubber bearing between them, said bearing grasping assemblies each having a support arm with a grasping finger means attached at one end and said grasping finger means attachable to said rubber bearing on opposite sides of said slit;
- (b) a cross plate brace pivotally attached to the middle section of each support arm, said cross plate brace having an opening through which a rear grip assembly can slide back and forth, said rear grip assembly comprising:
 - (i) a shaft slideable back and forth through said opening,
 - (ii) a gripping pad attached to one end of said shaft facing said grasping finger means; and
- (c) lever arms each pivotally attached at one end to said shaft and each pivotally attached at its middle section to one of said support arms at an end opposite said grasping finger means.

4,244,091

HOSE CRIMPING APPARATUS

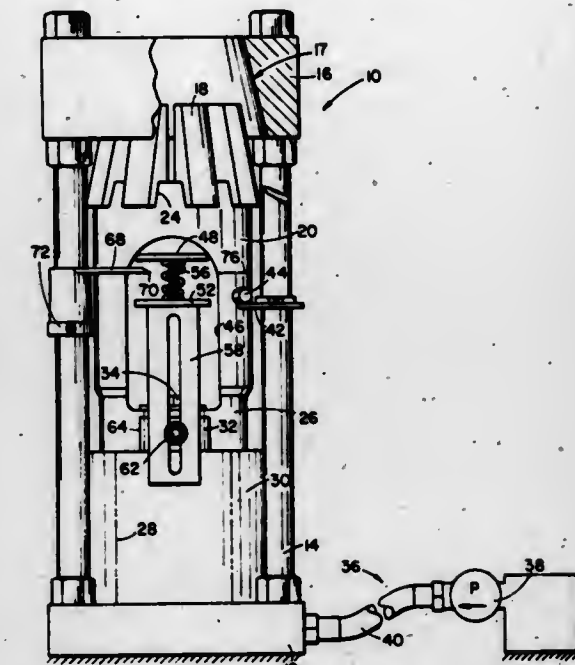
Jack Kimble, Westminster, and Walter W. Paine, Aurora, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Sep. 21, 1979, Ser. No. 77,526

Int. Cl.³ B23P 19/04

U.S. Cl. 29—237

10 Claims



1. In an apparatus for crimping a fitting onto a hose comprising a plurality of circumferentially spaced crimping dies, a camming surface against which the dies impinge, an axially disposed inner platform means adjustably mounted adjacent the crimping dies for receiving the fitting and positioning a crimpable portion thereof between the dies, and means for moving the dies relative to the camming surface to cause the dies to be displaced radially inwardly against the fitting and crimp the same, the improvement comprising:

axially adjustable outer platform means coupled to and co-movable with the inner platform means, for disposing thereon a gauge element having an indicating portion bearing a relationship to the fitting to be crimped; and locator means disposed adjacent the outer platform means establishing a locating position preselected relative to the crimping dies, adapted and arranged so that upon axial adjustment of the outer platform means the indicating portion of the gauge element may be moved into alignment with the locator means thereby properly positioning the inner platform means relative to the crimping dies for crimping said fitting.

4,244,092

HYDRAULIC APPARATUS

Andrew M. Riddles, 5 Circle Rd., Scarsdale, N.Y. 10583

Filed Jan. 11, 1979, Ser. No. 2,538

Int. Cl.³ B23P 19/04

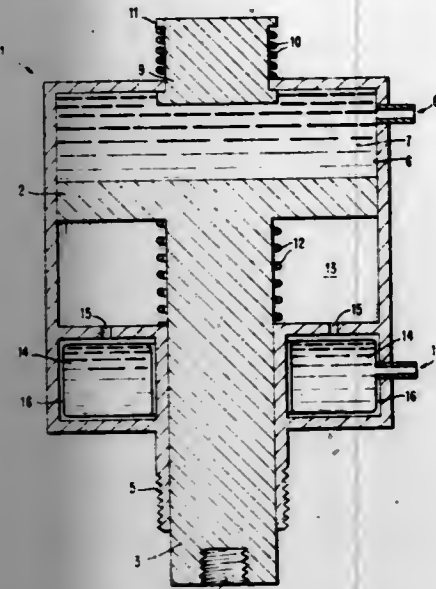
U.S. Cl. 29—252

3 Claims

1. Hydraulic apparatus for providing additive shock stress to steady hydraulic stress in producing relative work motion between two objects comprising in combination:

- a fluid chamber containing a hydraulic fluid and having engaging means integral with the housing of said chamber to direct motion of a first of said two objects in a first direction;
- piston means in contact with said fluid in said chamber and having a work transmitting member thereof including engaging means to direct motion of the second of said two objects in a direction opposite to said first direction;
- pressure application means operable to introduce steady stress in said fluid against said piston means in excess of

that produced by the force of gravity on the parts of the apparatus, and
a reciprocating member having a striking force receiving



portion at one end external to said fluid chamber and having the other end in contact with said fluid and operable to apply accelerated pressure to said fluid in response to striking force applied to said receiving portion.

4,244,093

TUBING SLIP PULLING TOOL

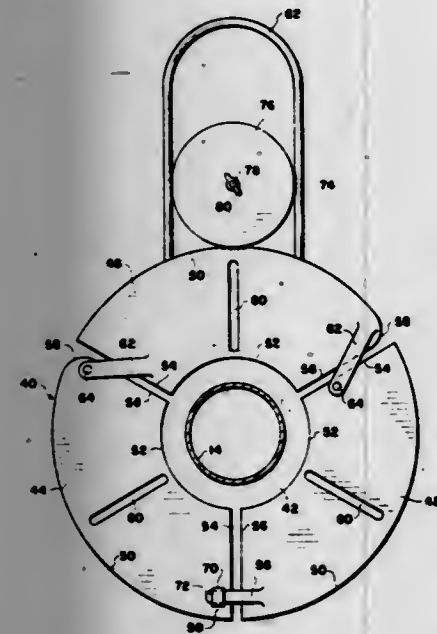
Fred Klingensmith, 107 E. Hobson, Sapulpa, Okla. 74066

Filed Mar. 19, 1979, Ser. No. 21,438

Int. Cl.³ B23P 19/04

U.S. Cl. 29—256

7 Claims



1. A tubing slip pulling tool comprising a substantially disc-like member; said tool having a centrally spaced circular opening therein to receive a tubing therethrough, said tubing having a plurality of slips engagingly surrounding the same below said tool; and said tool also having a plurality of radial slots circumferentially spaced around the disc-like member, said slots being adapted to receive bolts therethrough for attaching said tool to the tubing slips; said disc-like member being divided into a plurality of equal sized accurate sections, said sections being provided with hinge means to permit the opening of the tool.

4,244,094
INSTRUMENT FOR REMOVING EXCHANGEABLE
BLADES FROM SURGICAL SCALPES

Marek Racinski, Nowy Tomysl, Poland, assignor to Fabryka Narzedzi Chirurgicznych, Nowy Tomysl, Poland

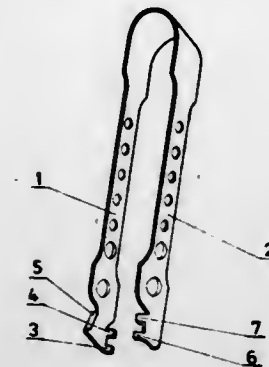
Filed Oct. 25, 1979, Ser. No. 88,277

Claims priority, application Poland, Nov. 28, 1978, 211289

Int. Cl.³ B25B 27/14

U.S. Cl. 29—270

1 Claim



1. Instrument for removing exchangeable blades from surgical scalpels, characterized by that it consists of two arms connected with each other and forming approximately the shape of the letter "U" or "V", whereby the end of one arm is from the inner side provided with two protrusions having the height larger than that of the upper part of the lock of the scalpel, and the spacing larger than the width of the lock, and with a catch disposed at a distance from the protrusions, having the height equal to or larger than the thickness of the blade, inclined to the longitudinal axis of the arms under an acute angle approximately equal to the inclination angle of the bevel of the lock of the scalpel, and the end of the other arm is from the inner side provided with two similar protrusions having the height larger than the whole height of the lock of the scalpel and the spacing larger than the width of the lock of the scalpel, and moreover the protrusions of the arms are displaced against each other by such a distance that under the influence of pressure of the arms onto the blade mounted on the scalpel it follows a bending of the dull-edged end of the blade above the upper plane of the lock of the scalpel and catching on the catch.

4,244,095

TENSION CONTROL OF FASTENERS

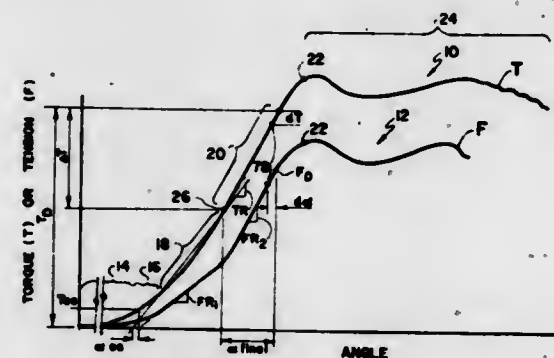
Stavash Eahghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jan. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Jan. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,355

Int. Cl.³ B23P 19/06

U.S. Cl. 29—407

14 Claims



1. Apparatus for sequentially tightening a multiplicity of threaded fasteners through a region of relatively free rotation and no fastener stress at least partially into a region of increas-

ing fastener stress to a termination point exhibiting an average final applied torque value, comprising
means for applying torque to the fastener;
means for sensing torque applied to the fastener in the region of relatively free rotation; and
means creating a signal when the sensed torque in the region of relatively free rotation exceeds a predetermined value comprising a minor fraction of the average final torque value.

4,244,096

SPEAKER BOX MANUFACTURING METHOD

Hirota Kashiichi, Hachiohji, Japan, assignor to Kyowa Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

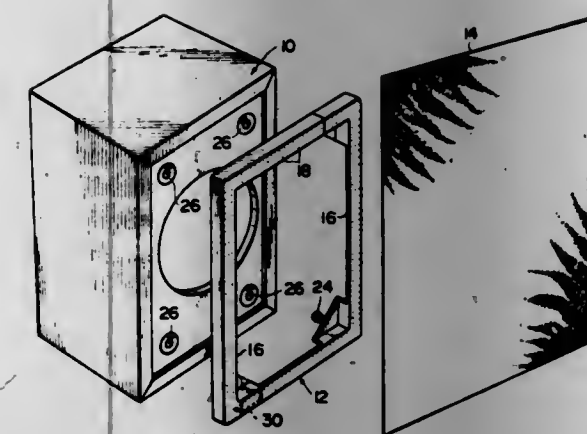
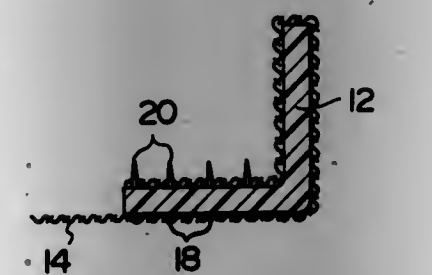
Filed May 30, 1979, Ser. No. 43,890

Claims priority, application Japan, May 31, 1978, 53-66237

Int. Cl.³ B23P 11/00

U.S. Cl. 29—432

4 Claims



1. A method of manufacturing a speaker box comprising the steps of preparing thermoplastic front frame having many protrusions formed on a substantially whole front face thereof and many thorn-like projections formed on a substantially whole rear face thereof; forcing said front frame onto a cloth with the front face of said front frame being directed to said cloth, so that said front protrusions cut into said cloth so as to temporarily secure said cloth to said front frame; rearwardly folding a peripheral portion of said cloth extending outside said front frame and further inwardly folding said peripheral portion to make said cloth pierced by said thorn-like projections on said rear face of said front frame; softening and depressing the head portions of said thorn-like projections piercing said cloth to cause each of the said projections on said rear face of said front frame to have a head larger than the mesh of said cloth so that said cloth is permanently secured to said front frame; and integrally engaging the cloth covered front frame so formed with the front face of a speaker box.

4. A cloth covered front panel for use in a speaker box comprising a front frame having many protrusions formed on a substantially whole front face thereof and a cloth covering said front face of said front frame and secured to said front frame by forcing said front frame onto said cloth with said front face of said front frame being directed to said cloth so that said front protrusions cut into said cloth so as to temporarily secure said cloth to the front frame; rearwardly folding a peripheral portion of said cloth extending outside said front frame and further inwardly folding said peripheral portion to

cause said peripheral portion to be pierced by thorn-like projections formed on a substantially whole rear face of said front frame; and softening and depressing the head portions of said thorn-like projections to cause the projections on said rear face of said front frame to have a head larger than the mesh of said cloth so as to permanently secure said cloth to said front frame.

4,244,097

SCHOTTKY-GATE FIELD-EFFECT TRANSISTOR AND FABRICATION PROCESS THEREFOR

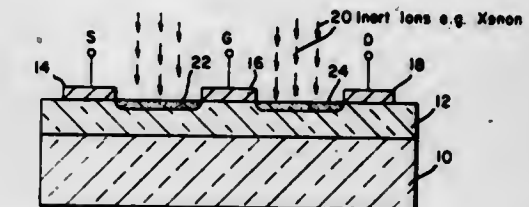
Frederick W. Cleary, Westlake Village, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 851,224, Nov. 14, 1977, Pat. No. 4,160,984. This application Mar. 15, 1979, Ser. No. 21,049

Int. Cl.³ B01J 17/00

U.S. Cl. 29—571

4 Claims



1. A process for fabricating a surface stabilized Schottky-gate field-effect transistor which comprises depositing source, gate and drain electrodes on the surface of a III-V compound semiconductor crystal to expose certain surface areas thereof, and then implanting chosen inert ions into said exposed surface areas using each of the electrodes as a mask to form lattice damaged and electrically compensated thin regions of controlled depth beneath the surface of said crystal, whereby the effects of carrier traps and defects in the semiconductor crystal surface are minimized, thereby reducing device drift, time constants and noise.

4,244,098

METHOD OF ASSEMBLING A DYNAMOELECTRIC MACHINE AND AN AUXILIARY COOLING DEVICE

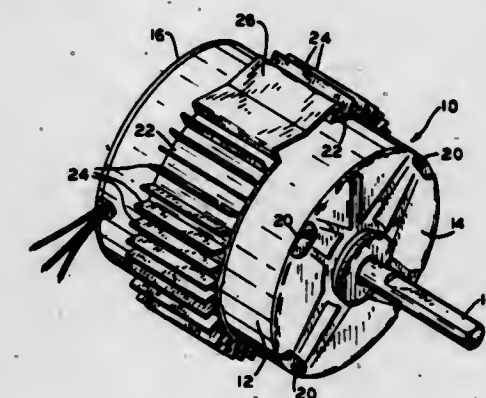
Victor D. Barcus, Churubusco, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 539,583, Jan. 8, 1975, Pat. No. 4,105,905. This application May 26, 1978, Ser. No. 909,635

Int. Cl.³ H02K 15/14

U.S. Cl. 29—596

1 Claim



1. A method of assembling a cooling shell arrangement in heat transferring relationship with an outer peripheral surface of a housing of a previously fully manufactured and finished dynamoelectric machine without press fitting, preheating, or defacing the finish on such housing, said cooling shell arrangement including two extruded, arcuate shaped cooling fin sections each providing an arcuate shaped inner peripheral surface substantially conforming to the curvature of said outer peripheral housing surface, the method comprising: moving said two arcuate shaped cooling fin sections radially against

said housing to make substantially simultaneous contact between all portions of each conforming inner peripheral surface and the previously finished outer peripheral surface of said housing of the dynamoelectric machine; positioning said cooling fin sections with first ends thereof sufficiently close to one another to permit clamping thereof; engaging the first ends of the cooling fin sections with a locking and tensioning member and locking such first ends together; holding the cooling fin sections in tension around the outer peripheral surface of the housing with second ends thereof sufficiently close to permit clamping thereof; and engaging the second ends of the two cooling fin sections with another locking and tensioning member so that said cooling fin sections are locked together and held in tension about the housing and thereby maintained under tension in a fixed position on the finished housing.

4,244,099

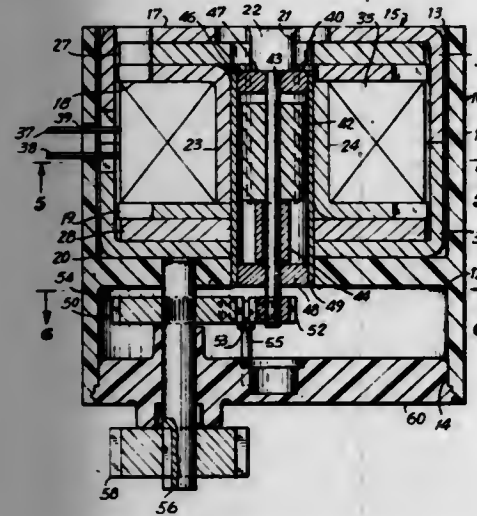
METHOD OF MAKING AN ELECTRIC ROTATING MACHINE

Arthur W. Haydon, Middlebury, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.

Filed Jan. 11, 1979, Ser. No. 2,807
Int. Cl.³ H02K 15/14

U.S. Cl. 29-396

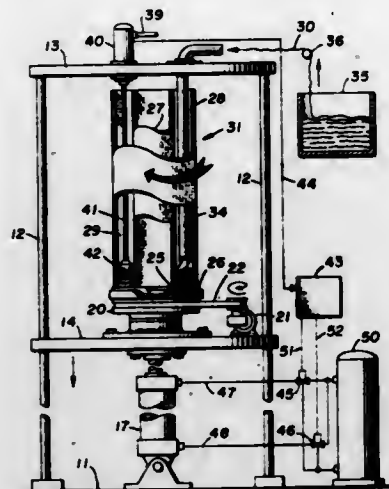
11 Claims



1. A method of making an electrical rotating machine, comprising the steps of: positioning a unitary one-piece housing having recesses in opposite ends thereof with the recess in one of its ends opening in an upward direction; assembling a multipart stator by stacking a plurality of pole pieces in oppositely disposed relationship with each other, two of the pole pieces being provided with peripheral flanges to form a cylindrical enclosure; inserting a winding within the cylindrical enclosure; thereafter depositing the stator assembly in the recess in said upwardly opening end of the housing; inserting a rotor assembly in the recess in said upwardly opening end of said housing, the rotor assembly including a rotor shaft extending into the recess in the other end of said housing; inverting said housing such that the recess in its other end extends in an upward direction; and positioning a gear train in the recess in said other end of said housing, the gear train including a pinion mounted on the rotor shaft and at least one reduction gear in meshing engagement with said pinion.

4,244,100
APPARATUS FOR MAKING A FIBER BED ELEMENT
Alvah B. Terry, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 25, 1979, Ser. No. 33,367
Int. Cl.³ B23P 21/00; B28B 1/04; B65H 54/84
U.S. Cl. 29-714 5 Claims



1. Apparatus for making a fiber bed element made up of a roving of fibers packed in the annulus formed by a pair of concentric screens, comprising:
 - a. upper and lower platforms positioned in vertical alignment, the lower platform being movable vertically relative to the upper platform.
 - b. rotatable means on the lower platform for supporting the screens in a concentric positioning,
 - c. means connected to the rotatable supporting means for rotating said screens,
 - d. means positioned above the screens and extending into the annulus for feeding a roving of fibers into said annulus,
 - e. means mounted above the screens and extending into said annulus for packing said roving in said annulus,
 - f. fluid-actuated means connected to the packing means for sensing the packing force applied to the fibers by the packing means.
 - g. means connected to the lower platform for moving said platform vertically away from the upper platform as said roving is fed into said annulus, and
 - h. means connected to the control means and the moving means for controlling said moving means to maintain a uniform packing force as said annulus is filled with fiber.

APPARATUS FOR ATTACHING TERMINALS TO ELECTRIC CONDUCTORS

Lloyd A. Talley, Valinda, Calif., assignor to Eubanks Engineering Co., Moorpark, Calif.

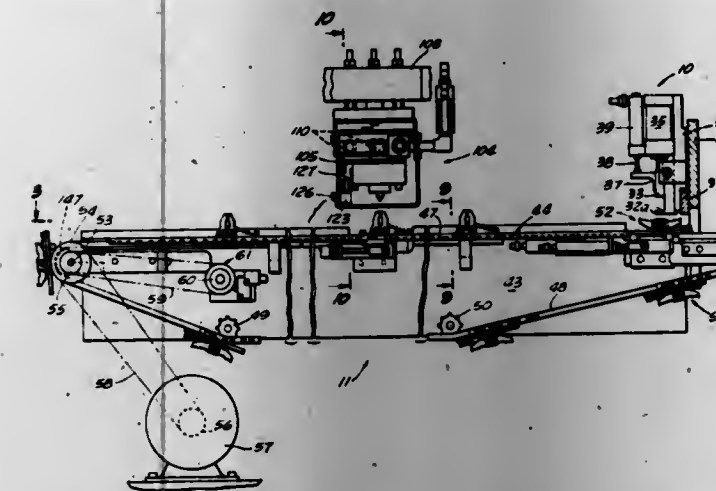
Filed Feb. 26, 1979, Ser. No. 14,934
Int. Cl.³ H01R 43/04

U.S. Cl. 29-753

17 Claims

1. Apparatus for attaching terminals to the ends of electric conductors, comprising:
 - a. means for axially delivering predetermined lengths of electric conductors endwise into a conductor supply zone;
 - b. a terminal attaching zone spaced from said conductor supply zone, including cooperable terminal attaching die means for receiving a terminal therebetween, said terminal having an end portion for reception of an end of said conductor;
 - c. means for successively picking up and transporting the conductor lengths laterally from the conductor supply zone to a position in said terminal attaching zone, in which said end of the conductor is disposed in endwise spaced relation to said terminal end portion, comprising: a movable conveyor having spaced finger assemblies for successively picking up the conductors delivered to the

supply zone, each of said finger assemblies including a pair of pivotally mounted finger members interconnected for concerted movement to opened and closed relation, said finger members having cooperating jaw portions moved to gripping relation in the closed position of said finger members and non-gripping relation in the opened position of said finger members; means for moving said finger members to place the jaw



- portions in non-gripping relation to admit a conductor length in the supply zone therebetween, and thereafter move said finger members to place the jaw portions in gripping relation with said conductor length;
- d. means in the terminal attaching zone for moving said conductor in a path to position said end in said terminal end portion; and
- e. means including said die means for crimping said terminal end portion on the received conductor end.

4,244,102

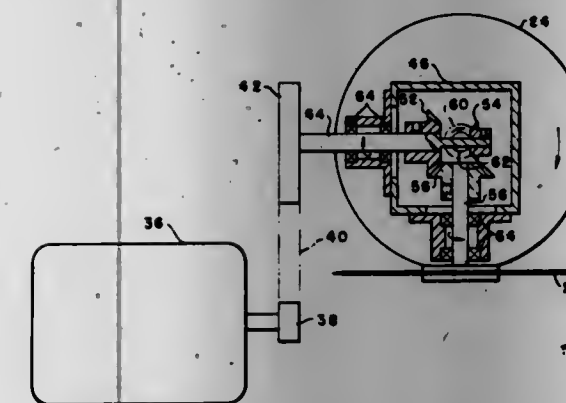
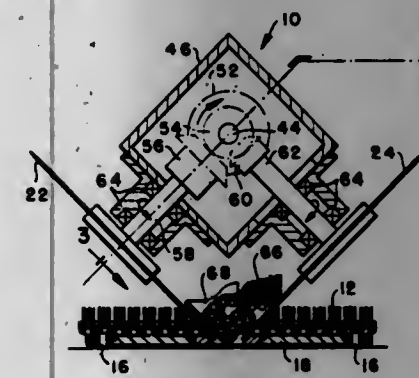
CARPET CUTTING MACHINE

Milton M. Bolles, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 11, 1978, Ser. No. 932,949
Int. Cl.³ B26B 7/00

U.S. Cl. 30-27 B

1 Claim



1. Apparatus to cut a wide width of carpet into at least two

smaller widths comprising: a base plate adapted to support a carpet thereon, a pair of cutting blades mounted on and at an acute angle to said base plate with one of said blades being substantially perpendicular to the other of said cutting blades and means operably associated with said base plate to drive said cutting blades in the same direction, said means to rotate including a gear box, a drive shaft projecting into said gear box, a first bevel gear connected to said drive shaft, a first gear means operably associated with said first bevel gear and one of said cutting blades to rotate said one cutting blade, a second bevel gear connected to said drive shaft, a second gear means operable with said other cutting blade to rotate said other cutting blade, the axis of said first and said second gears being substantially perpendicular to the axis of the gear operably associated therewith, said first gear being larger in diameter than said second gear.

4,244,103

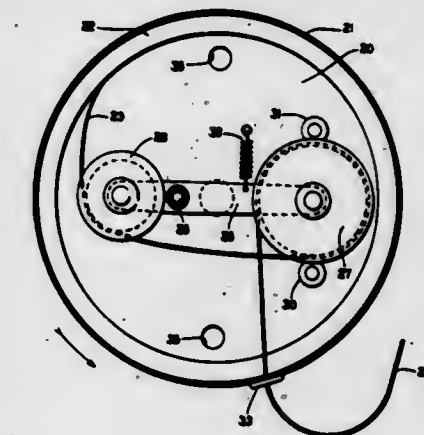
MOWER OF THE CENTRIFUGAL CORD TYPE WITH AUTOMATIC PAYOUT OF CUTTING CORD

James L. Snarr, 1747 SE. 44th Ter., Cape Coral, Fla. 33904

Filed Feb. 3, 1978, Ser. No. 875,122
Int. Cl.³ A01D 50/00

U.S. Cl. 30-276

10 Claims



1. A whirling cord type mower in which a long length of cord is stored in the rotating head of the mower and the free end of the cord passes from the head through an eye, characterized by presence of a snubbing device for the cord, the snubbing device having a fixed part on the rotating head and a moving part constrained to move toward and away from the fixed part, a guide way for training the cord between the fixed part and the moving part and in a loop around a portion of the moving part and thence essentially radially outward through the eye, with the loop so directed that tension of centrifugal force on the cord end presses the moving part toward the fixed part.

4,244,104

MULTIPLE USE CHAIN SAW MILL

George Grube, 14135 Olde Highway 80, El Cajon, Calif. 92021

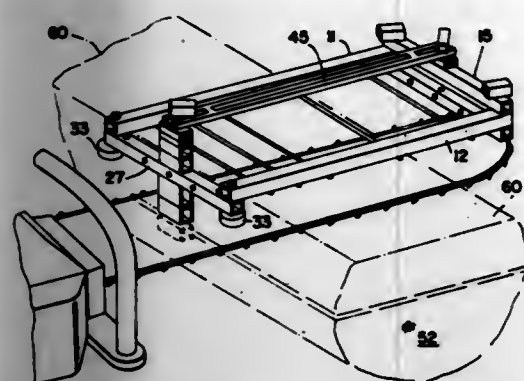
Continuation of Ser. No. 854,270, Nov. 23, 1977, Pat. No. 4,134,203. This application Sep. 18, 1978, Ser. No. 943,282
The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.
Int. Cl.³ B27B 17/02

U.S. Cl. 30-371

7 Claims

1. A device for guiding the cutting action of a chain saw which includes a chain saw bar, comprising: a mill frame, said mill frame including a pair of spaced apart, parallel, longitudinally extending members, at least one runner member extending transversely between said longitudinally extending members in the same plane thereof, a pair of end members each secured between like ends of said longitudinally extending members, at least one of said end members being slidably

positionable along said longitudinally extending members; and means for securing the chain saw bar to said end members,



including means for maintaining a selected spacing interval between said end members and said chain saw bar.

4,244,105

POLYTRACK DIGITAL SCALE

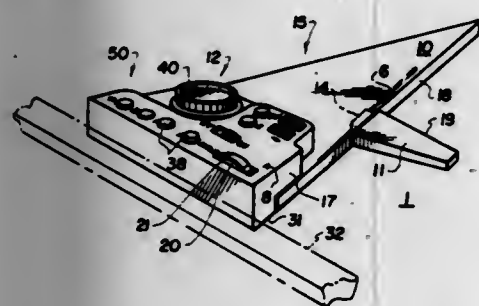
Constantine C. Goussios, 37 Chaffee Ave., Albertson, N.Y. 11507

Filed Mar. 6, 1978, Ser. No. 883,631

Int. Cl.² B43L 7/00

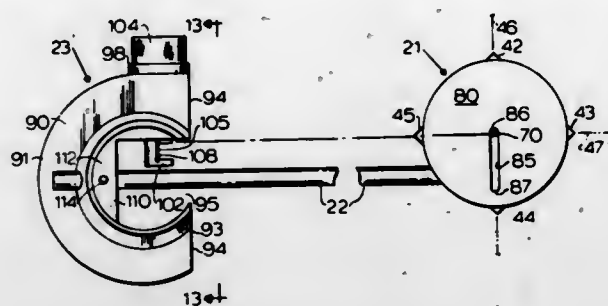
U.S. Cl. 33—1 M

7 Claims



1. A polytrack digital scale for measuring and displaying a distance on a drawing surface comprising, a first right triangle having a vertical straight edge, a second triangle having a horizontal straight edge connected to said first right triangle and slidably engaged with said vertical straight edge, drive means in said first right triangle connected to said second triangle for driving said second triangle with said horizontal straight edge along said vertical straight edge of said first triangle for vertically displacing said horizontal straight edge, a first precision potentiometer with a roller having a horizontal axis of rotation connected to said first potentiometer in said first triangle, said roller having a periphery engageable with the drawing surface for measuring a horizontal displacement of said first triangle on said drawing surface, a second precision potentiometer rotatable by said drive means and connected thereto for measuring a vertical displacement of said horizontal straight edge on said second triangle when said drive means drives said horizontal straight edge along said vertical straight edge, a first digital-volt meter connected to said first potentiometer, a second digital volt meter connected to said second potentiometer and a digital display connected to each of said digital volt meters for displaying a digital representation of said vertical and horizontal displacement, said drive means comprising a drive roller rotatably mounted in said first triangle about an axis substantially perpendicular to the drawing surface with a belt movable adjacent said vertical straight edge engaged around said drive roller, said drive roller connected to said second potentiometer, and said second triangle being connected to said belt, said drive roller rotatably mounted in said first triangle adjacent an angle thereof which is opposite said vertical straight edge.

4,244,106
DEVICE FOR DESCRIBING AN ELLIPSE
Donald C. Pierce, 1253 C. Redwood Blvd., Novato, Calif. 94947
Filed May 29, 1979, Ser. No. 43,331
Int. Cl.³ B43L 11/04; B26B 3/00
U.S. Cl. 33—31 20 Claims



20. A device for describing an ellipse, including in combination:
a cylindrical shell having an enclosed first slot extending through about 90° thereof,
a path-generating disc fitting snugly but rotatably inside said shell having a bottom surface at the bottom of the shell and an upper surface, a diametrically-extending enclosed second slot therethrough, and, perpendicular to said second slot, a diametrically-extending recess in said upper surface,
a square bottom plate secured to the bottom surface of said disc and having a lower face from which project a plurality of sharp points for determining the position of said disc relative to a base surface on which the ellipse quadrant is to be described,
a cylindrical cam with an upper face, a lower face having a path-defining circular projection that rotates in and rides snugly back and forth in said disc's recess, an enclosed third slot extending diametrically across said cam and across half of said projection, and a cylindrical face having a radial opening therethrough aligned with and leading into said third slot and a tangential opening parallel to said third slot,
an eccentricity-determining rod fitting slidably in said third slot and having an inner end extending vertically out from said third slot into said second slot, for movement back and forth therein,
a radius rod having one end secured in said tangential opening of said cam and extending out through said first slot to a distal end,
securing means for adjustably securing said eccentricity-determining rod in a desired position relative to said third slot and thereby determining the eccentricity of the ellipse to be described, said securing means having a control portion on the upper face of said cam,
a circular top closure member having an annular shelf making a snug closure against the top rim of said shell and an opening affording access to said control portion, and
scribing means for cutting or marking said base surface, adjustably secured to the distal portion of said radius rod, the radius rod being moved from a first end of said first slot to the other to describe a quadrant of an ellipse, the shell then being rotated while the bottom plate and radius rod remain stationary until the first end of the first slot again engages the radius rod, describing another quadrant of the ellipse, and so on until the complete ellipse is described.

4,244,107

INDIRECT READING INSIDE CALIPER

Andrew Rea, 10271 Nottingham, Detroit, Mich. 48224

Filed May 21, 1979, Ser. No. 40,513

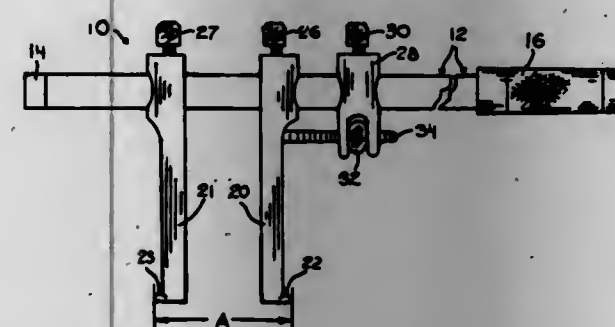
Int. Cl.³ G01B 3/20, 5/12

U.S. Cl. 33—143 J

1 Claim

1. An improved indirect reading inside caliper which eliminates the need for a plurality of telescoping inside gauges, said

inside caliper comprising an elongated hollow tubular body, a pair of measuring fingers and a bracket slidable on said hollow tubular body, respective manually operated fasteners for said fingers and bracket for holding the same in selected positions on said hollow tubular body, means fastening one of said fingers and said bracket together so that they slide in unison on said hollow body, a compression spring in the interior of said hollow body operative upon said bracket so as to yieldably urge it toward one end of said hollow body, and manual adjustment means associated with said bracket for imparting incremental movement to said one fingers relative to the other finger, whereby a range of inside diameters of apertures having size ratios of the order of 1 to 10 may be precisely measured,



said hollow tubular body having an axially extending slot therein extending substantially end to end thereof to maximize the maximum distance of travel between said fingers, said slot being V-shaped, each of said fasteners having V-shaped shoulders thereon which engage said slot, whereby to circumferentially align said fingers and bracket on said hollow tubular body, the fastener for said bracket having an inner end which extends into the interior of said tubular body for engaging an end of said compression spring, and said fingers having respective protuberances on corresponding outside faces thereof, and said fingers having opposing inside faces thereon ground flat so as to minimize the minimum distance between said protuberances.

4,244,108

EXCITATION CIRCUITRY FOR VARIABLE RELUCTANCE TRANSDUCER

Kurt W. Bailey, Royal Oak, and Richard O. Juengel, Romeo, both of Mich., assignors to The Valeron Corporation, Troy, Mich.

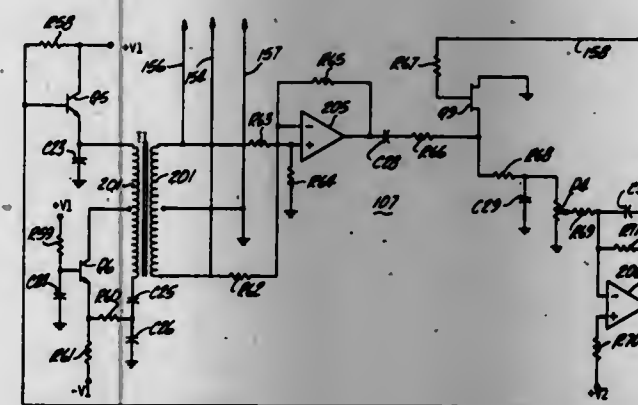
Division of Ser. No. 936,575, Aug. 22, 1978, Pat. No. 4,197,650.

This application Nov. 19, 1979, Ser. No. 95,816

Int. Cl.³ G01B 7/02

U.S. Cl. 33—143 L

4 Claims



1. In a part sizing system utilizing at least one variable reluctance transducer, apparatus for supplying a constant excitation signal to the transducer, said apparatus comprising:
a transformer having a primary winding and a secondary winding;
power means coupled to the primary winding for inducing an AC excitation signal in said secondary winding;

means for coupling said secondary winding to the transducer;
means for supplying a constant reference signal;
error detection means for comparing said reference signal with said excitation signal, said error detection means providing an error signal proportional to the difference between said reference and excitation signals; and
feedback means for feeding said error signal back to said power means to compensate for said difference thereby maintaining a constant transducer excitation signal.

4,244,109

APPARATUS FOR MOUNTING AND ALIGNING PRINTED CIRCUIT BOARD

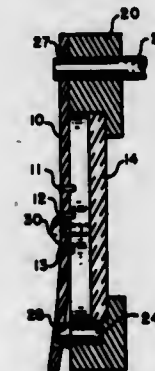
Ira Silverman, Winnipeg, Canada, assignor to Pertec Computer Corporation, El Segundo, Calif.

Filed Oct. 19, 1976, Ser. No. 733,868

Int. Cl.³ G01B 3/00

U.S. Cl. 33—180 R

5 Claims



1. Apparatus for mounting and aligning a removable member on a supporting surface comprising
a first substantially cylindrical pin extending from said supporting surface,
a second pin spaced from said first pin extending from said supporting surface, said second pin having a fixed cam surface inclined relative to the axis of said first pin, said removable member having first and second aligning holes formed therein each defined by a surrounding edge, said holes being spaced by a distance approximately equal to the spacing between said pins whereby said first hole can receive said first pin therethrough and the edge of said second hole can simultaneously engage said second pin cam surface, and
means for pressing said removable member against said supporting surface between said pins to force said second hole edge along said cam surface and to thus engage said first hole edge against said first pin.

4,244,110

WORKPIECE END LOCATOR

Roger H. Fournier, Millbury, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Jul. 20, 1978, Ser. No. 926,503

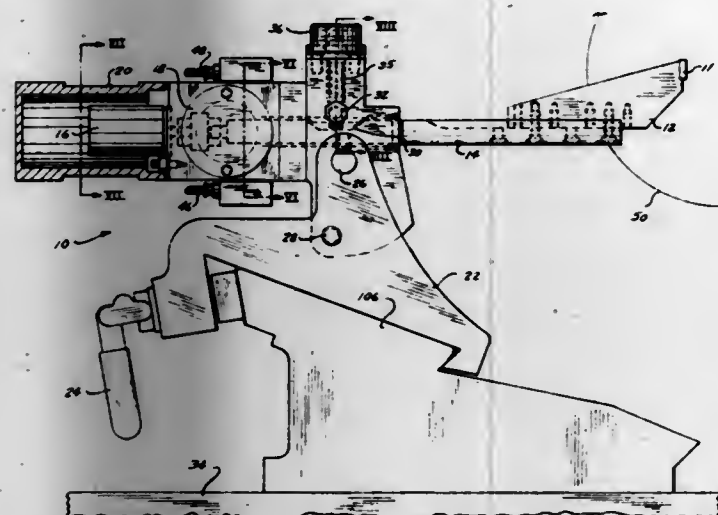
Int. Cl.³ B24B 49/00

U.S. Cl. 33—180 R

12 Claims

1. An end locator for locating a workpiece in a machine comprising:
a probe arm rotatable about an axis through a selected angular range;
a first stop;
a second stop displaced from said first stop with said probe arm disposed angularly therebetween to define the selected angular range;
a shaft securely connected to said probe arm and extending along the axis around which said probe arm rotates;
a rotary transducer connected to said shaft to provide an analog signal representative of the position of said shaft;
first biasing means, positioned to one side of said shaft and

comprising said second stop, for biasing said probe arm toward said first stop when activated into contact with either the workpiece or said first stop;
second biasing means, positioned to the other side of said shaft and comprising said second stop, for biasing said probe arm toward said first stop when activated into contact with either the workpiece or said first stop;



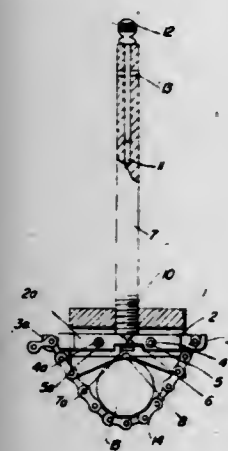
second biasing means, positioned to the other side of said shaft and comprising said first stop, for biasing said probe arm toward said second stop when activated into contact with either the workpiece or said second stop; and,
a spring loaded latch movable to a latched position engaging and latching said shaft to hold said probe arm at a zero reference position, intermediate said first stop and said second stop, and an unlatched position out of engagement with said shaft, permitting free rotation of said probe arm.

4,244,111

DIAL INDICATOR HOLDERS

James E. Heard, Sr., 7450 Oak Grove Ave., Justice, Ill. 60458
Filed Apr. 24, 1979, Ser. No. 32,860
Int. Cl.³ G01B 3/22

U.S. Cl. 33—180 R



1. A dial indicator holder for aligning shafts comprising a metal base capable of making spaced line contact with the surfaces of cylindrical or hexagonal shaft members; said base having a threaded opening therein receiving a support post threaded at one end and having a transverse bore at its other end for receiving a pin to facilitate rotation of said support post; said base pivotally supporting a pair of opposed levers for movement in a plane orthogonal to the shaft member axis, inner ends of said levers engaging the threaded end of said support post and being pivotally moved in response to turning of said threaded support post, the outer ends of said levers having hooked portions to receive a chain for clamping said base to said shaft member.

4,244,112
APPARATUS TO AID ALIGNMENT OF MOTOR VEHICLE WHEELS

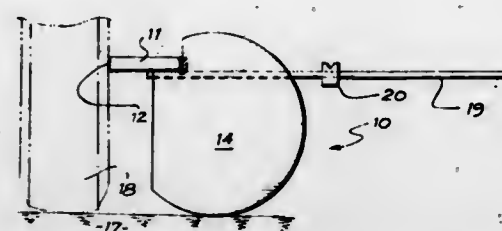
Frederick C. Pavitt, 2-54 Avoca St., Randwick, New South Wales 2031, Australia

Filed Jun. 6, 1979, Ser. No. 46,398

Claims priority, application Australia, Jun. 14, 1978, PD4721
Int. Cl.³ G01B 5/255

U.S. Cl. 33—203.15

2 Claims



1. An apparatus to aid on the aligning of motor vehicle wheels, said apparatus comprising:

- a bar having a longitudinal straight edge to engage a wheel at two angularly spaced locations which are horizontally aligned;
- two disc members attached to said bar and extending therefrom so as to be generally normal to said edge, each said member having an arcuate edge adapted to engage a surface upon which said wheel is resting so that said bar in use is biased under the influence of gravity to engage said wheel; and
- a rod attached to said bar and extending generally normal to the bar edge so that in use said rod is generally horizontal.

4,244,113

MEASURING ARRANGEMENT

Georg Hirrmann, Zürich, Switzerland, assignor to Polyprodukte AG, Switzerland

Continuation of Ser. No. 627,022, Oct. 29, 1975, abandoned.

This application Jul. 9, 1976, Ser. No. 704,082

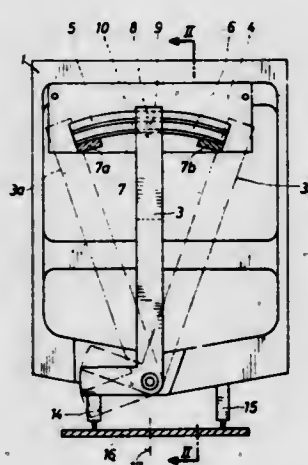
Claims priority, application Switzerland, Oct. 29, 1974,

14508/74

Int. Cl.² G01B 9/00, 11/275

U.S. Cl. 33—203.18

23 Claims



1. An apparatus for measuring the angle of wheel inclination of vehicle wheels, the apparatus comprising: measuring means for obtaining a measurement of the angle of wheel inclination at each vehicle wheel, converting means connected with said measuring means for converting the measured angle of wheel inclination into a pulse proportional to the measured angle, and limit switch means for switching the measuring apparatus on and off in a predetermined measuring range whereby the wheel inclination angle at limit positions of the predetermined measuring range is automatically determined.

4,244,114

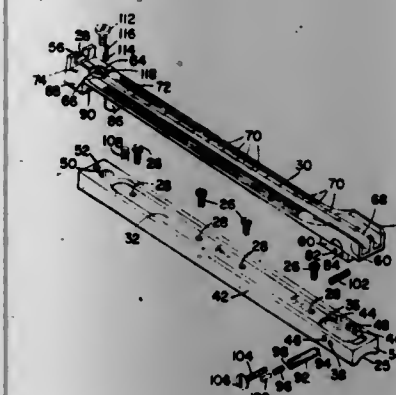
STEPPED PLATFORM RAMP SIGHT FOR FIREARMS

Travis R. Strahan, Rte. 7, Townsend Cir., Ringgold, Ga. 30736
Continuation-in-part of Ser. No. 974,053, Dec. 28, 1978, Pat. No. 4,192,075. This application Oct. 17, 1979, Ser. No. 85,778

Int. Cl.³ F41G 1/02

U.S. Cl. 33—257

10 Claims



1. A target sight for hand-held firearms having a gun barrel and a frame to which the barrel is secured, said target sight comprising a rear sight upstanding rib member having a notch formed therein positioned above the frame of the gun rearwardly of the barrel, and a front sight member, said front sight member comprising an elongated ramp laterally aligned with said notch positioned above the barrel at the front thereof and extending rearwardly toward said rear sight, said ramp comprising a series of discrete steps descending from a maximum elevation at the front to a minimum elevation at the rear, each step comprising a substantially flat rearwardly extending rest surface, and a riser connecting adjacent steps, said rest surfaces being dimensionally elongated relatively to said risers.

4,244,115

BOW SIGHT

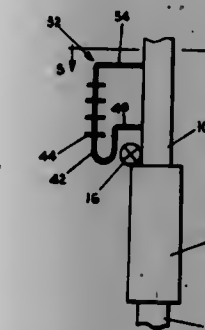
Alvin Waldorf, 8899 Amsden, Fenwick, Mich. 48834

Filed Jun. 4, 1979, Ser. No. 45,254

Int. Cl.³ F41G 1/46

U.S. Cl. 33—265

10 Claims



1. A sighting mechanism for a bow comprising:
an elongated rod having a series of transverse grooves spaced at predetermined distances along the rod;
flat, resilient vertical position markers having openings therein that fit snugly over the rod, the openings being of a size such that the vertical position markers clip securely into place in the grooves along the rod, the position markers being movable to other grooves to adjust the height setting of the bow sight, the opening in each position marker being formed such that at least a portion of the position marker surrounding the opening is resiliently deflected outwardly by the rod when the position marker is positioned on a non-grooved portion of the rod, said portion of the position marker resiliently deflecting inwardly so as to fit into any desired groove in the rod when the position marker is positioned on the groove, the inter-fitting of said portion of the position marker in the groove

holding the position marker resiliently in its desired vertical position on the rod; and
mounting means for mounting the elongated rod to the bow such that the elongated rod provides a generally vertical reference line and the position markers provide generally horizontal reference lines for sighting the bow.

4,244,116

DEVICES FOR MEASURING THE AZIMUTH AND THE SLOPE OF A DRILLING LINE

Jacques Barriac, Plaisir, France, assignor to Societe d'Applications Generales d'Electricite et de Mecanique (SAGEM), Paris, France

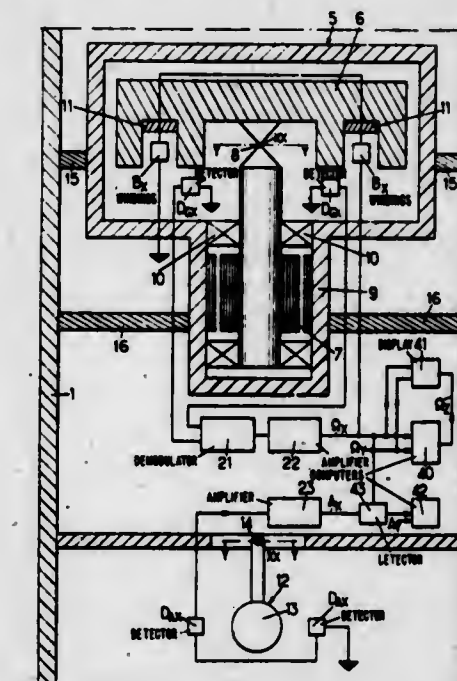
Filed Nov. 21, 1978, Ser. No. 962,712

Claims priority, application France, Dec. 2, 1977, 77 36335

Int. Cl.³ G01C 19/38; E21B 47/024

U.S. Cl. 33—304

6 Claims



1. A device for measuring the azimuth and the slope of a drilling line, comprising gyroscope means and accelerometer means disposed in a container equipped with retractable centering means so that it may be lowered into the drilling line at the end of a cable and interlocked with the section of the drilling line in which the measurement is to be effected, the gyroscope means being comprised by a gyroscope with two principal axes of sensitivity disposed in the container so that its two principal axes of sensitivity are perpendicular to the axis of the drilling line, the gyroscope including an inertia flywheel having an axis of rotation parallel to the axis of the drilling line, and the accelerometer means being comprised by an accelerometer with two principal axes of sensitivity disposed in the container so that its two principal axes of sensitivity are perpendicular to the axis of the drilling line and parallel to those of the gyroscope.

4,244,117

ELECTRONIC INCLINATION GAUGE

Robert Cantarella, 8 Green Dolphin Dr., South Burlington, Vt. 05404; Paul Tasetano, Box 41, North Ferrisburgh, Vt. 05473, and George E. Strickholm, South Lincoln, Vt., assignors to Robert Cantarella, South Burlington and Paul Tasetano, North Ferrisburgh, both of Vt.

Continuation-in-part of Ser. No. 875,094, Feb. 3, 1978, Pat. No. 4,167,818. This application Jun. 27, 1979, Ser. No. 52,480

The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.

Int. Cl.³ G01C 9/06

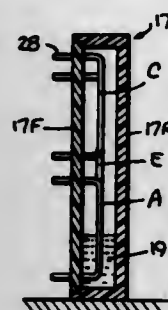
U.S. Cl. 33—366

4 Claims

1. An inclination gauge comprising:

A a bar placeable against a surface inclined from a reference axis;

B circuit means including a gravity-sensing potentiometer mounted on said bar and a balancing circuit associated with said potentiometer and having an excitation voltage applied thereto to produce an analog voltage whose magnitude and sense depends on the inclination of the surface from the reference axis, said analog voltage having a null value when said surface is aligned with the reference axis; said potentiometer being formed by a cell having front and rear walls and partially filled with a pool of semi-conductive liquid, and an electrode assembly disposed within said cell intermediate said walls and constituted by an



annular central electrode and at least two electrode segments on either side of said central electrode, said pool partially immersing the central electrode and said electrode segments when the bar is placed against a surface to be gauged, the distribution of liquid between the immersed electrode segments depending on inclination, the electrodes of said assembly being formed of shaped wires of good conductivity which all lie in a common plane spaced from said walls to reduce surface tension and tilting effects;

C means to convert said analog voltage to a corresponding digital value; and

D means on said bar to display said value to provide a read-out of said inclination.

4,244,118

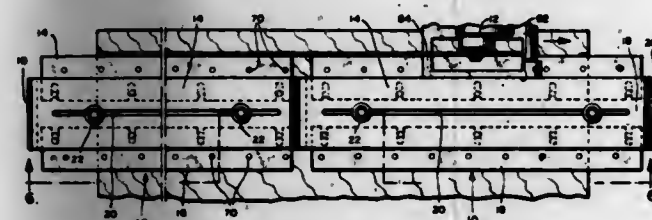
ALIGNMENT DEVICE FOR HAND HELD CUTTING TOOLS

Chester Matuzak, 6569 Ebinger Dr., Niles, Ill. 60648
Filed Jan. 27, 1979, Ser. No. 52,569

Int. Cl.³ B27B 9/04; B43L 7/00

U.S. Cl. 33—430

10 Claims



1. An alignment device for guiding a hand manipulated power tool on a surface of a planar workpiece, said device comprising: a flat, planar, elongate gauge member adapted to be placed on a workpiece and having a gauge defining alignment edge which is adapted to be aligned on and with a desired line of cut on the surface of the workpiece, an elongate guide member adjustably fixable to and relative to said gauge member, having an elongate side guide surface and being positioned on said elongate gauge member with said guide surface spaced parallel to said alignment edge a predetermined distance equal to the distance from a shoe of a selected hand held power tool to the path of travel of a cutting member of the power tool, releasable attaching means for attaching said guide member on said gauge member and for permitting adjustment of the position of said gauge member relative to said guide surface, and holding means for holding said device to the

workpiece, said holding means for holding said device on a workpiece comprising clamping means for clamping said device to a workpiece, said guide member having an elongate channel therein, and said clamping means including at least one clamp member received in said channel and extending through said guide member.

4,244,119

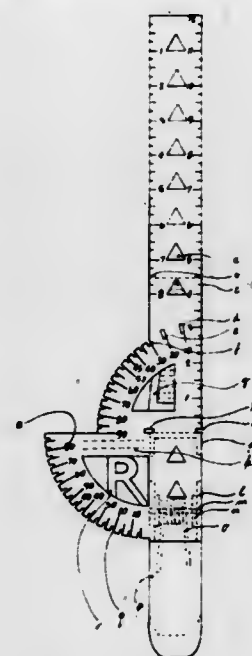
PROTRACTABLE STRAIGHT-EDGE WITH VISE

Henri Klok, P.O. Box 13714, Houston, Tex. 77019
Filed Mar. 27, 1979, Ser. No. 24,382

Int. Cl.³ B43L 7/02

U.S. Cl. 33—437

1 Claim



1. A measuring and angle marking device comprising an elongated flat member having spaced parallel straight edges; a spacing and pivot flange mounted to the underside face of said flat member intermediate the elongated length thereof for dividing said member into a handle portion and a relatively longer major guiding and marking portion, said guiding and marking portion having a calibrated scale along one of said straight edges with its zero index at said flange and progressing out therefrom; said flange extending transversely between and terminating at said straight edges, with the ends of said flange providing a first pivot point aligned with the calibrated straight edge and at the zero index of said scale and a second pivot point aligned with the other second straight edge; first and second apertures in said flat member at said first and second pivot points; first and second ninety degree protractor segments integrally formed and coplanar with said flat member; said first protractor segment positioned on said guiding and marking portion having its center at said first pivot point and its zero line coinciding with said scaled edge and its ninety degree line aligned with the transverse line defined by said flange; said second ninety degree protractor segment positioned on said handle portion with its center on said second pivot point and its zero degree line aligned with said second straight edge and the ninety degree line coinciding with said ninety degree line of said first segment; said first protractor segment is graduated from 0 to 90 degrees in a counterclockwise direction from the zero degree line and said second segment is graduated from 0 to 90 degrees in a clockwise direction from the zero degree line so that said segments are positioned on the flat member wholly to the side opposite said calibrated straightedge; and spring biased clamping rise means on the underface of said handle portion for securely clamping the device on work material to be marked or cut, with said marking and guiding portion adapted to overlie the material and said flange abutting an edge of said work material.

4,244,120

ACCELERATION CUEING SIMULATION DEVICE

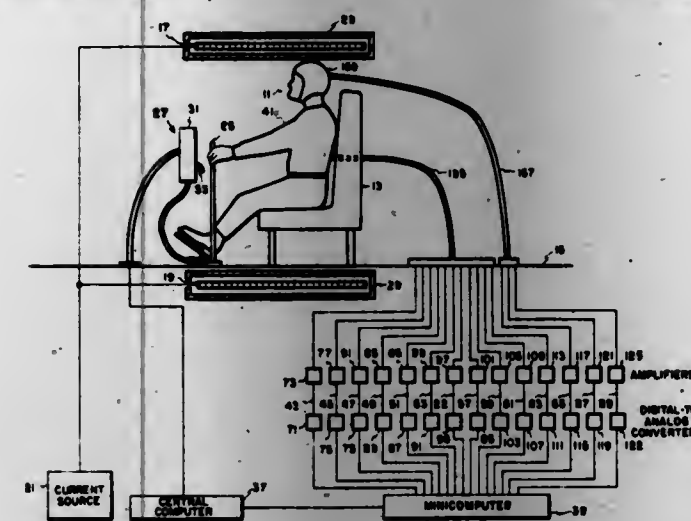
William T. Harris, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1979, Ser. No. 47,459

Int. Cl.³ G09B 9/08

U.S. Cl. 434—59

21 Claims



1. A device for applying simulated acceleration forces to a trainee pilot, comprising in combination:

current source means having an output for generating a direct current voltage;

Helmholtz coil means, having an input effectively connected to the output of said current source means for producing a uniform magnetic field over a predetermined region;

control means, positioned within the uniform magnetic field produced by said Helmholtz coil means, for generating a control data signal which is responsive to a series of simulated flight maneuvers performed by a trainee pilot, said trainee pilot being positioned within the uniform magnetic field produced by said Helmholtz coil means adjacent to said control means;

a suit adapted to be worn upon the body of said trainee pilot; a helmet adapted to be worn upon the head of said trainee pilot;

first computer means having an input effectively connected to the output of said control means, and an output for processing the control data signal generated by said control means according to a flight simulation program, and for producing a logic signal which is in response to the processing of said control data signal by said flight simulation program;

second computer means having an input effectively connected to the output of said first computer means, and a plurality of outputs for processing the logic signal produced by said first computer means according to an acceleration cueing program, and for producing a plurality of digital logic signals which are in response to the processing of said logic signal by said acceleration cueing program;

a plurality of converter means effectively and respectively connected to the plurality of outputs of said second computer means for changing the plurality of digital logic signals provided by said second computer means to a plurality of analog control signals, and for amplifying said plurality of analog control signals; and

a plurality of coil means effectively and respectively connected to the outputs of said plurality of converter means, with three thereof embedded within said helmet, and the remainder thereof embedded within said suit for applying a plurality of simulated acceleration forces to said trainee pilot with each of said simulated acceleration forces being in response to the product of said uniform magnetic field and one of said plurality of analog control signals.

4,244,121

WATERPROOF BOOT WITH KNEE PROTECTION

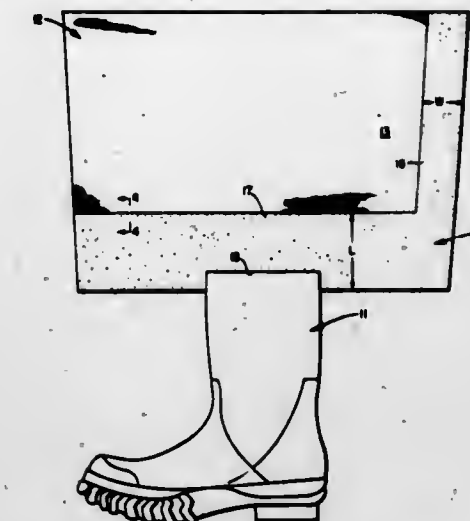
Richard R. Adams, Rock Island, Ill., assignor to Chromalloy American Corporation, St. Louis, Mo.

Filed Apr. 21, 1978, Ser. No. 898,700

Int. Cl.³ A43B 1/10

U.S. Cl. 36—2 R

7 Claims



1. In a boot of the type wherein a relatively flexible upper leg portion is secured upon a foot and lower leg portion around a circumferential seam, the improvement wherein said portions are adhesively secured at said seam by an adhesive layer that extends integrally upwardly from said seam at least within the forward part of said upper leg portion to provide when dry a flexible smooth tough internal reduced abrasion area directly opposite the wearer's knee.

4,244,122

MODIFIED POWER UNIT FOR SNOW PLOWS

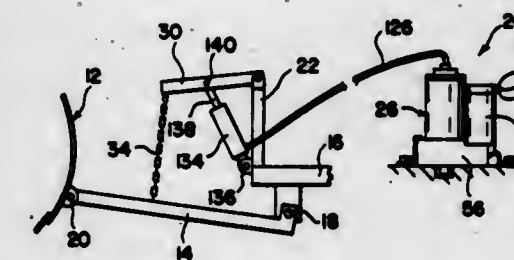
Vernon L. Hetrick, North Olmsted, Ohio, assignor to Meyer Products, Inc., Cleveland, Ohio

Filed Jan. 4, 1979, Ser. No. 44,938

Int. Cl.³ E01H 5/06; F01B 29/04

U.S. Cl. 37—41

8 Claims



1. In a plow blade power unit including a piston sleeve defining a hydraulic cylinder within a surrounding hydraulic fluid reservoir, piston means in said piston sleeve and including a piston rod connectable to said plow blade for raising and lowering thereof, said piston sleeve being releasably engaged between base and cover means at its opposite ends, said base and cover means also engaging an outer member defining a hydraulic fluid reservoir with said piston sleeve and said base and cover means, pump means for delivering hydraulic fluid under pressure to said piston sleeve for controlling displacement of said piston means, the improvement comprising: a replacement sleeve assembly for said piston means and piston sleeve and including a replacement sleeve having a length generally corresponding to that of said piston sleeve and adapted to be releasably engaged between said base and cover means, and a fixed end wall in said replacement sleeve including flow passageway means therethrough, for fluid flow from said pump means to enter said replacement sleeve and flow

therefrom through said flow passageway means in said end wall.

4,244,123

GUIDANCE DEVICE FOR DRAIN TILE LAYING MACHINE

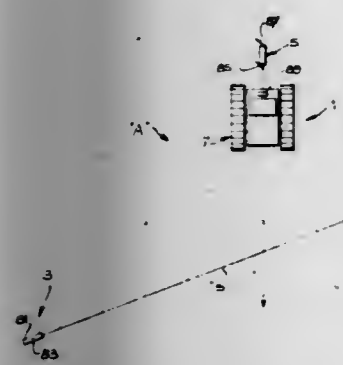
Germain Lazare, 105 Beauregard Ave., Iberville (St-Jean), Quebec, Canada (J2X 2L9), and Robert Gelesko, 1060, 38th Ave., Fabreville (Laval), Quebec, Canada (H7R 4W5)

Filed Mar. 26, 1979, Ser. No. 24,020

Int. Cl.³ E02F 5/10; F16L 1/00

U.S. Cl. 37—193

8 Claims



1. An improved guidance device for use with an earthworking machine with an earthworking element mounted on the machine about a pivot connection, comprising:
a signal emitter to be located at a given reference point;
two signal receivers mounted on the earthworking element, said two signal receivers being mounted on the element in a longitudinally spaced-apart relation for distinguishing between a depth change or an attitude change in the element; and
operating means for adjusting the attitude or depth of the earthworking element depending on the indication given by the signal receiver.

4,244,124

STEAM IRON AND BAFFLING

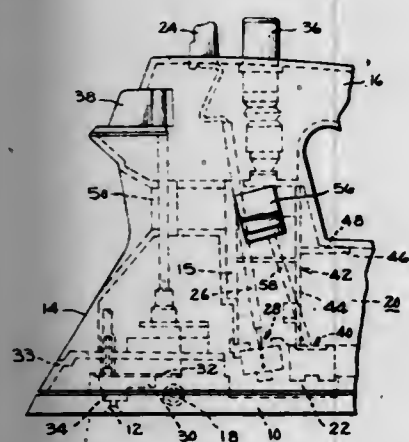
Wendell C. Walker, Alta Loma, and Arthur C. Downing, Ontario, both of Calif., assignors to General Electric Company, New York, N.Y.

Filed Nov. 16, 1979, Ser. No. 94,978

Int. Cl.³ D06F 75/06

U.S. Cl. 38—77.82

5 Claims



1. In a plastic steam iron having a controlled water valve and fill opening to an interior water tank molded in a plastic shell to have a riser portion extending into a connected handle, a ported soleplate with a steam generator and cover thereover forming steam distribution passages, and iron purging means

including a substantially large valved opening in the tank bottom with handle means controlling a slanted rod actuating the opening valve to dump the tank water onto the soleplate, the improvement comprising,

- a separate molded baffle for bottom tank insertion into the riser portion, and having a transverse vertical wall extending across the tank,
- a horizontal wall cantilevered on one side of said vertical wall between its ends at the tank top forming an upward limit stop on the tank,
- a pair of vertical channels offset from said vertical wall on the other side thereof, said channels extending into said riser portion adjacent the fill opening directing water to the tank, and
- aperture means in said vertical wall forming a supported guide for the lower end of said rod, whereby a single molded plastic baffle is easily assembled from below, directs water into and prevents water splashing from the fill opening and provides a support guide for the rod adjacent the dump valve.

4,244,125

LABEL SYSTEM FOR MAKING INTEGRATED CIRCUIT DIAGRAMS AND PRINTED CIRCUIT BOARDS

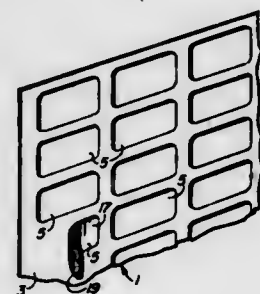
Jan J. Corey, 39 W. 6th Ave., Mesa, Ariz. 85202

Filed Mar. 7, 1979, Ser. No. 18,148

Int. Cl.³ G09F 3/10

U.S. Cl. 40—2 R

5 Claims



- 1. A label assembly comprising in combination:
 - a. a backing sheet;
 - b. a label including a sheet of flexible material, said label including:
 - i. an upper surface, said upper surface having thereon an outline of an integrated circuit package;
 - ii. a plurality of spaced lead tabs on said upper surface, each of said lead tabs having printed thereon a lead number corresponding to a lead number of a commercially available integrated circuit, said lead numbers being respectively arranged on consecutively positioned ones of said lead tabs in the same sequence in which the correspondingly numbered leads are arranged on the commercially available integrated circuit when it is viewed from a first major surface thereof; and
 - iii. a gummed lower surface, said label thereby being removably attached to said backing sheet and securely attachable to a sheet of paper on which a diagram of an electronic system is to be drawn utilizing a plurality of said labels having lead tabs numbered in accordance with a plurality of commercially available integrated circuits, utilized in the electronic system.

4,244,126

LAMP SHADE REMINDER CLOCK

Don S. James, 1020 Bradbourne, Space 77, Duarte, Calif. 91110

Filed Sep. 29, 1978, Ser. No. 947,083

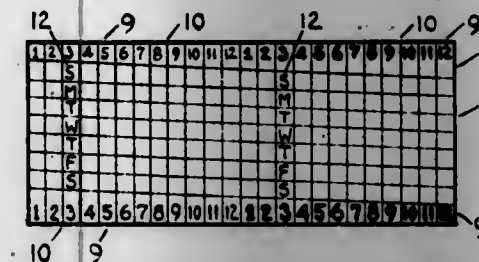
Int. Cl.³ G09F 3/06

U.S. Cl. 40—112

10 Claims

- 1. A constant speed electric motor driven cylindrical or conical translucent lamp shade comprising an erasable surface with permanent markings of the time of the day and day of the

week, revolving once every twenty four hour day around a second translucent cylindrical or conical lamp shade with a diagonal or inclined transparent aperture indicating day of the week, revolving once every seven day week around a third



stationary cylindrical or conical translucent lamp shade comprising a vertical fixed transparent aperture placed upon a common standard lamp harp and light source thereby emitting a constantly changing lighted window effect on said erasable surface on which notations were previously programmed.

4,244,127

INTERCONNECTABLE PICTURE FRAMES

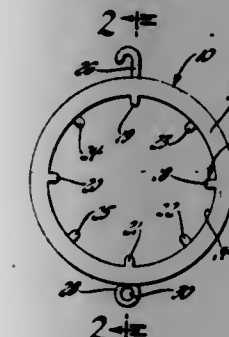
George Buzzard, Rte. No. 1, Box 474, Houghton Lake, Mich. 48629

Filed Aug. 14, 1978, Ser. No. 928,054

Int. Cl.³ G09F 1/12

U.S. Cl. 40—152.1

4 Claims



1. A picture frame for simultaneous display of front and rear sides of a picture comprising, in combination, a ring for substantially encircling the edge of said picture between said front and rear sides, said ring being defined by a plane; a loop radially positioned on and secured to said ring so as to extend radially outward from said ring and said picture edge in a first direction; a hook positioned on and secured to said ring so as to extend radially outward from said ring and picture edge in a second direction opposite said first direction, said hook being of a size that may be inserted in said loop, said hook and said loop being angularly disposed so that when said hook of said picture frame is inserted into said loop of an identical picture frame the planes which define said picture frames are at a predetermined angle to each other and are not parallel; and a set of picture retaining tabs inside said ring approximate said pictures so as to retain said picture in said ring.

4,244,128

PAPERBOARD PICTURE DISPLAY

Dennis E. Russell, Craighead City, Ark., assignor to Alton Box Board Company, Alton, Ill.

Filed Feb. 12, 1979, Ser. No. 11,131

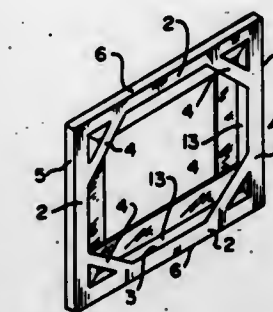
Int. Cl.³ G09F 1/12

U.S. Cl. 40—154

5 Claims

1. A paperboard picture display for use in protecting a framed picture in addition to affording a near complete viewing of any picture held therein, comprising, a front perimeter frame for the display, said frame having an opening therein and of dimensions slightly greater than the exterior dimensions of any picture being displayed, integral straps spanning the corner

of the frame opening between segments of the perimeter frame and for holding any displayed picture therein, spacer means foldably connecting with the inner edges of the front perimeter frame and capable of bending inwardly of the display for contacting against the sides of any picture held therein and being useful for positioning any said displayed picture substantially centrally of the view opening, side and end walls foldably connecting with the outer edges of the perimeter frame, and a



back perimeter frame foldably connecting with the said walls for securing a picture within the formed display, and including a pair of corner flanges foldably connecting with the adjacent segments of the perimeter frame at each corner thereof, said corner flanges being arranged within the confines of the spanning corner strap and extending toward the back perimeter frame to therein aid in the positioning of the held picture within the display.

4,244,129

ADJUSTABLE CARD RACK

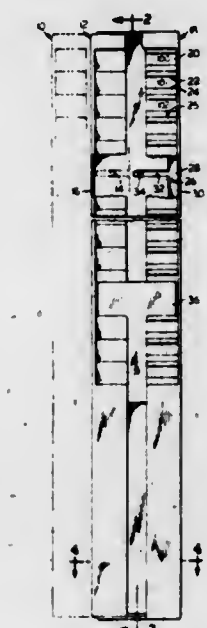
Gerhard A. Foerster, Woodbridge, and Thaddeus J. Soboleski, North Haven, both of Conn., assignors to Pyramid Plastics, Inc., Meriden, Conn.

Filed Jun. 18, 1979, Ser. No. 49,472

Int. Cl.³ G09F 1/10; B42F 17/00

U.S. Cl. 40—373.2

8 Claims



1. In a card-rack assembly including a pair of elongated spaced-apart sidewalls, each of which provides first and second longitudinally extending edges, said first edges and second edges lying generally in first and second substantially parallel common planes, respectively, said card-rack assembly further including means supporting said sidewalls in opposed, spaced relationship and a multiplicity of divider substantially parallel to each other and portions supported between said sidewalls at an acute angle to said common planes to form card compartments between adjacent divider portions, said compartments being open toward said first common plane, said card-rack assembly thereby being permitted to be mounted with said

common planes extending vertically and said divider portions inclined downwardly from said first common plane toward said second common plane to permit cards to be received in said card compartments at said first common plane, the improvement wherein each of a plurality of adjacent ones of said divider portions has at least one aperture therethrough aligned with said apertures in the other divider portions of said plurality of adjacent divider portions to provide elongated passage therethrough and through said compartments formed thereby, and wherein there is included a stop member removably supported in said assembly and extending through said aligned apertures to limit the depth of said compartments to which cards can be inserted.

4,244,130

ANIMATED DISPLAY SIGN

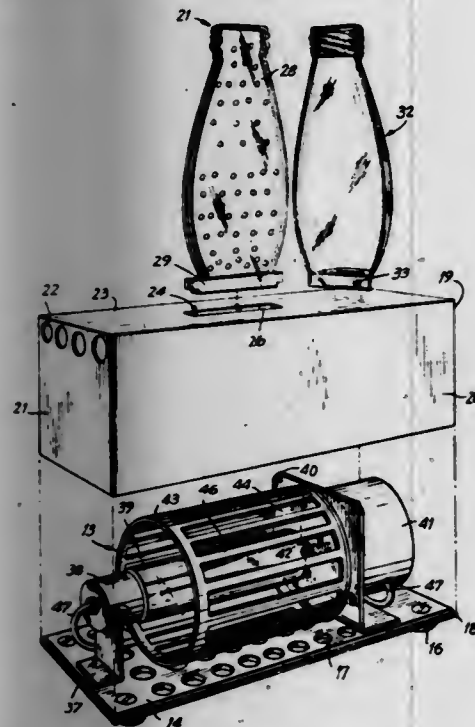
Mauricio Frois, New York, N.Y., assignor to Thomson-Leeds Company, Inc., New York, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,458

Int. Cl.³ G09F 13/18

U.S. Cl. 40—442

8 Claims



1. A display device comprising a plurality of superimposed transparent sheets each having formed in the rear face thereof a plurality of vertically and transversely spaced individual concave dimples which are vertically staggered relative to corresponding dimples in the other sheets, a three-dimensional contoured transparent body member simulating a liquid receptacle disposed forwardly of and adjacent to said sheets and including a hollow shell having a convex front face and a concave rear face, the border of the forwardmost sheet overlying the perimeter of said shell and illuminating means for cyclically sequentially illuminating corresponding adjacent edges of said sheets whereby to cyclically sequentially illuminate the dimples in successive sheets and provide an illusion of rising bubbles in said liquid receptacle simulating body member.

4,244,131

AIMING DEVICE FOR A FIREARM

Joseph R. Kaelin, Baschi, Switzerland, assignor to Escape Trading Company Aktiengesellschaft, Zug, Switzerland

Filed Jan. 25, 1979, Ser. No. 6,964

Claims priority, application Switzerland, Feb. 1, 1978, 1122781/78

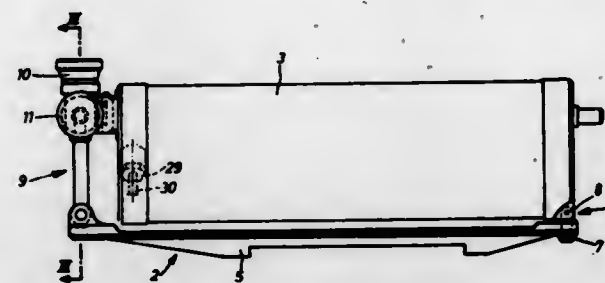
Int. Cl.³ F41F 3/00

U.S. Cl. 42—1 A

5 Claims

1. An aiming device for a firearm comprising: a laying device adapted to be fitted on the firearm parallel thereto and comprising a bottom part and an adjusting

facility for adjusting the laying device to compensate for vertical and lateral drift of a projectile; a laser device which is disposed on the laying device and is arranged to emit beams in the direction of the firearm muzzle, the laser device being pivotally mounted at its front end on the bottom part of the laying device and being retained at its rear end on the adjusting facility for movement in two directions, said adjusting facility com-



prising a first adjusting mechanism which is pivotally mounted on the bottom part and a second adjusting mechanism which is retained on the laser device and on the first adjusting mechanism, the laser device being adjustable for height by the first adjusting mechanism and laterally by the second adjusting mechanism, in both cases in relation to the bottom part; and means for supplying power for energizing the laser device.

4,244,132

FISHING POLE HOLDER

Richard C. Hoffman, 235 Steel St., Unit #4, and Reginald W. Holt, 13 Baker Crescent, both of Barrie, Ontario, Canada

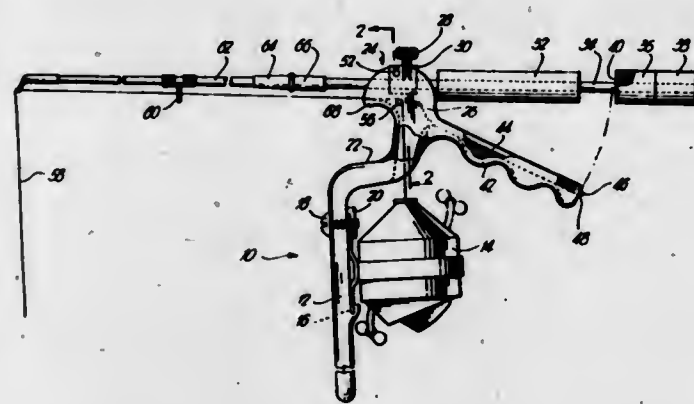
Filed May 2, 1979, Ser. No. 35,350

Claims priority, application Canada, Jan. 22, 1979, 320015; Apr. 9, 1979, 320015

Int. Cl.³ A01K 97/10

U.S. Cl. 43—21.2

4 Claims



1. A fishing pole holder comprising a mounting base shaft, a handle grip and a fulcrum for the balanced mounting therein of a pole handle; said pole handle having means at one end for detachably receiving a fishing rod; a first balance means for positioning in said fulcrum and for receiving the pole handle therein and a second balance means at the end of the handle remote from said fishing rod and including means for detent engagement with the handle grip of the holder, said mounting base shaft being adapted to receive a reel thereon and means in the fulcrum for guiding fishing line from the reel through said fulcrum and along a rod mounted in said holder.

4,244,133

BARBED FISHING LURE WITH PIVOTED SPRING MEANS FOR ATTACHING A PLASTIC WORM THERETO

Michael A. Martinek, 1002 SW. 5th Ct., Boynton Beach, Fla., assignor to Rockwell International Corporation, Segundo, Calif.

Filed Apr. 18, 1979, Ser. No. 31,183

Int. Cl.³ A01K 85/00, 83/06

U.S. Cl. 43—42.25

7 Claims



1. An artificial fishing lure attachable to a line for bass fishing and the like comprising an elongated metal shank having a curved barbed hook at the trailing end thereof, spiraled mounting means arranged on and extending around and affixed to the opposing and leading end of said shank for mounting hula skirt means thereon with a plurality of depending strands, flexible coiled metal spring means swivelly connected to the leading end of said shank adjacent said hula skirt wire mounting means, said spring means being threadedly screwed into and embedded in the leading end of an elongated flexible plastic worm, and said barbed hook extending into the body of said worm whereby said worm extends between and is supported by and between said spring means and said hook, and said worm will be uppermost and said shank and hook lowermost when said lure is trailed through the water.

4,244,135

FLY AND INSECT TRAP

Harry A. Harwoods, 16654 Blumfield, Roseville, Mich. 48066

Continuation-in-part of Ser. No. 677,982, Apr. 19, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,779

Int. Cl.³ A01M 1/02

U.S. Cl. 43—122

9 Claims



1. An insect trap comprising an outer housing, a base portion and a tubular frusto conical member open at its apex and at its base secured to said base portion and contained within said housing thereby defining a capture chamber between said housing and said frusto conical member wherein the axis of said frusto conical member is generally in a vertical direction with the apex of the frusto conical member above the base, means for positioning insect bait beneath the base of said frusto conical member and a tubular U-shaped member having two legs and open at the free end of each leg, the open end of one leg being positioned over and in registry with the apex of the frusto conical member so that the other leg extends downwardly towards the base portion and is open at its free end to the capture chamber.

4,244,136

SUSPENDING AND PROPELLING MEANS FOR TOY FIGURES

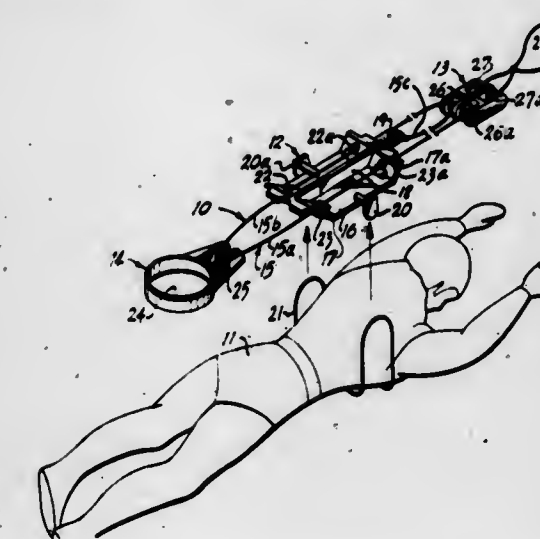
Neal Kublan, Brookville, N.Y., assignor to Mego Corp., New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,581

Int. Cl.³ A63H 3/50

U.S. Cl. 46—32

11 Claims



1. A suspending and propelling means for imparting a "flying" action to toy figures and objects comprising a support clip disposed between fixed and movable pulley members, said support clip being a generally rectangular member with upstanding ends having aligned apertures adjacent the side extremities thereof, one of said upstanding ends having a central strand coupling means, and said support clip and pulley mem-

4,244,134

DISPOSABLE PEST TRAP

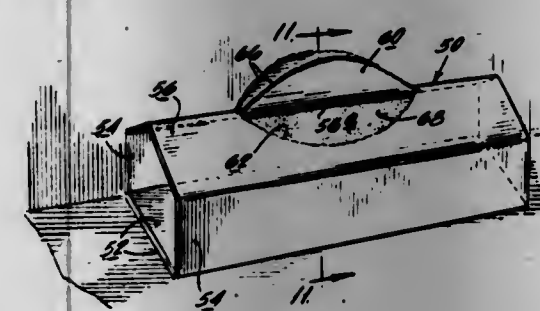
Harry J. Otterson, 218 Ewell Ave., Gettysburg, Pa. 17325

Continuation-in-part of Ser. No. 908,099, May 22, 1978, abandoned. This application Apr. 9, 1979, Ser. No. 28,254

Int. Cl.³ A01M 23/00, 1/14

U.S. Cl. 43—58

8 Claims



1. A rodent trap comprising an elongated base, spaced upstanding sidewalls projecting from the outer side edges of said base, a top spaced from and overlying the base to define an elongated enclosure open at opposite ends, adhesive means on the interior surface of said base and sidewalls only, said adhesive means on the base spaced inwardly from the outer edges at opposite ends of the base to define non-adhesive ramp areas, said interior surface of the top being non-adhesive.

bers being united by an elongated flexible strand, said flexible strand having one end secured to said clip at said central strand coupling means, and passing through said fixed pulley member, then through the aligned apertures at one side of said clip and through the movable pulley member, then back through the aligned apertures at the other side of said clip and to the fixed pulley member to which the other end of said strand is secured, and the length of said strand being such that when the support clip is adjacent the movable pulley members, and under slight tension, the distance between the support clip and fixed pulley member will be in excess of about three feet, whereby grasping and pulling on said movable pulley member causes a toy figure or object secured to said support clip to be suspended, and moved toward said fixed pulley member.

4,244,137

TOY CAMERA HAVING PICTURE EJECTION MECHANISM

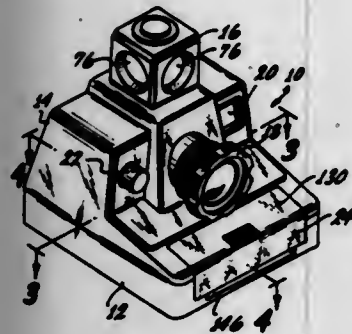
Takeo Iseki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,212

Claims priority, application Japan, Aug. 11, 1978, 53-110676
Int. Cl.³ A63H 33/30

U.S. Cl. 46—39

10 Claims



1. A toy which comprises:

- a housing;
- said housing including an opening allowing ingress and egress to the interior of said housing through said opening;
- a plate member having a flat surface, at least a portion of said plate member capable of fitting into said opening in said housing and being retained in said housing;
- an ejection means located in said housing and positioned within said housing to operatively interact with said plate when said plate is inserted through said opening into said housing and to be capable of ejecting said plate from said housing through said opening;
- a braking means positioned in said housing to bear upon the surface of said plate member as said plate member is ejected from said housing by said ejection means, said braking means including a fluid reservoir means capable of retaining a quantity of fluid and a braking surface means operatively connected to said fluid reservoir means, said braking surface means capable of retarding the ejection of said plate through said opening and depositing a thin film of said fluid on the surface of said plate.

4,244,138

ANIMATED ACTION TOY BIRD

Edward T. Holahan, Chicago; Burton C. Meyer, Downers Grove, and Terry E. Webb, West Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 4, 1980, Ser. No. 118,185

Int. Cl.³ A63H 11/00

U.S. Cl. 46—124

16 Claims

1. An animated action toy in the form of a flying bird, comprising:

- a hollow body having a head at one end and a tail at the opposite end adapted for use in holding the toy in the hand for manipulation thereof;
- a pair of wings mounted on said body;
- a beak on said head including a beak member mounted for

movement to open and close with respect to another beak member, a pair of talons extended from an under side of said body, each talon including a plurality of claws for gripping and releasing external objects, first operator means on said body manually activated to move said claws of said talons between open and closed positions for gripping an external object, and



means for biasing said claws of said talons to pivot when said first operator means is released, said claws of each talon being pivotally interconnected and mounted for movement past an over center toggle locking relation when pivoted between said open and said closed positions whereby said biasing means is effective to retain said claws in either said closed or said open position.

4,244,139

EATING DOLL

Erick E. Erickson, Chicago, and Wayne A. Kuna, Oak Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 1, 1980, Ser. No. 117,437

Int. Cl.³ A63H 13/02

U.S. Cl. 46—141

15 Claims



1. An animated doll including a hollow head and body formed with a wall of thin plastic material; said head having a face on a forward side with a mouth defined therein including movable upper and lower lips for opening and closing said mouth, said mouth including a cavity adapted for holding food formed to normally extend inwardly of said lips and including a flexible inside wall portion movable outwardly and inwardly between said lips;
- first mechanical operator means for moving at least one of said lips toward open and closed positions, and
- second mechanical operator means for moving said inside wall portion of said mouth inwardly and outwardly between said lips for receiving and ejecting food placed in said cavity,
- said second operator means including an elongated element

having a rigid free end portion engaging said flexible inside wall portion of said mouth to form a tongue-like projection movable outwardly between said lips.

4,244,140

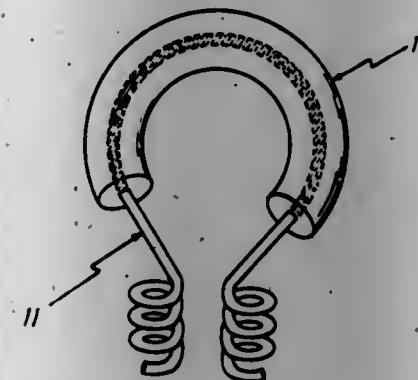
TOYS WITH SHAPE MEMORY ALLOYS

Kibong Kim, 8415 Buckhannon Dr., Potomac, Md. 20854

Filed Nov. 14, 1977, Ser. No. 851,494

Int. Cl.³ A63H 33/26, 13/16; C22C 19/00; H01H 37/46
U.S. Cl. 46—145

3 Claims



1. toy having a form which may be repeatedly changed, comprising:
 - a shape memory alloy element, for example, Nitinol, comprising nickel and titanium, having a transition temperature at which metallic phases of the alloy change and above which the said shape memory alloy element is mechanically stronger than the said shape memory alloy element of temperature below the said transition temperature;
 - a pliable plastic element wrapped around the said memory element;
 - said shape memory element having a fixed shape, any shape, obtained through cold or hot shaping, for example, annealing;
 - said shape memory alloy being easily deformable at a temperature which is lower than the said transition temperature, and after a deformation, regaining its said fixed shape by obtaining an external source of heat so as to raise its temperature beyond the said transition temperature.

4,244,141

WALKING TURNING DOLL MECHANISM

Raymond J. Douglas, Carson, and Norman E. Stadlinger, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 18, 1977, Ser. No. 770,089

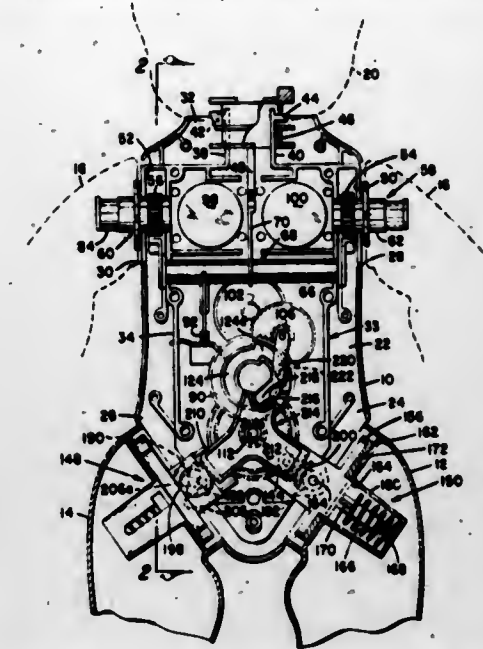
Int. Cl.³ A63H 11/14

U.S. Cl. 46—150

10 Claims

1. In a doll, the combination comprising:
 - a generally hollow torso;
 - a pair of depending substantially rigid legs, each of said legs being coupled to said torso for pivotal movement about shafts, each of said shafts being on a generally fore-to-aft axis;
 - drive means within said torso;
 - means within said torso coupling said drive means to both said legs to pivot both of said legs simultaneously side-to-side in the same direction relative to said torso about said shafts;
 - slotted bearing members operatively connecting the rear of each shaft to said torso, the slots of both said bearing members being arranged in parallel relation with each other in a normally vertical direction to enable each of said legs to have forward impetus to enable the doll to walk in a straight line forward direction; and
 - means coupled to said drive means and to at least one of said

slotted bearing members to rotate said bearing member through an angle to redirect the impetus of such leg at an



angle to the forward direction to enable the doll to walk along a curved line.

4,244,142

PUPPET RUG FOR THERAPEUTIC PURPOSES

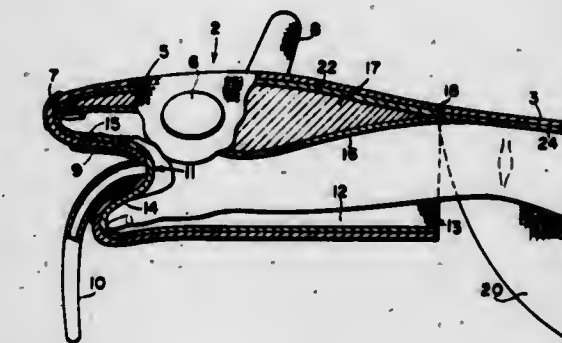
Robert L. Crawford, 1323 Heula St., Apt. 402, Honolulu, HI. 96822

Filed Sep. 6, 1978, Ser. No. 939,965

Int. Cl.³ A63H 3/14, 3/36, 7/00; G01S 17/00

U.S. Cl. 46—154

1 Claim



1. A puppet rug for therapeutic purposes comprising a head portion connected to one end of a body portion; said head portion includes a head, eyes, an upper jaw, a lower jaw, a nose, ears, a mouth, and a tongue; said head portion having an arm cavity which communicates with a thumb cavity located in the area of said lower jaw and a finger cavity located in the area of said upper jaw; the arm cavity is initially sewed shut near the junction of said head portion and said body portion and is adapted to be opened by a therapist; said tongue is hollow and is adapted to be manipulated by the finger or fingers of a person; a covering over the opening of said tongue; said body portion including a body and limbs and is adapted for use as a rug, said body having a surface area large enough so that it may be used as a rug.

4,244,143

HIGHWAY GAME

Terrence A. Scully, 65 E. 39th Ave., Vancouver, British Columbia, Canada V5W 1J6

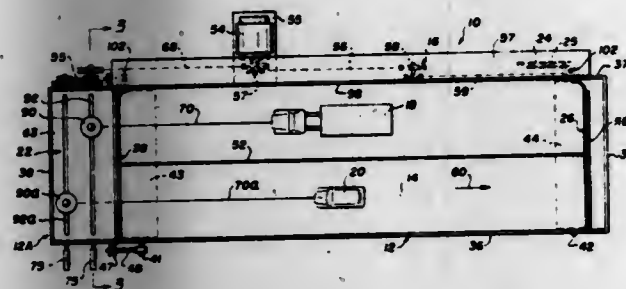
Filed Oct. 10, 1978, Ser. No. 949,628

Int. Cl.³ A63H 17/00; A63B 67/00; G09B 9/02; G09F 19/00
U.S. Cl. 46—202

7 Claims

1. A highway game comprising a base, a roadway belt rotatably mounted on the base, a toy vehicle having wheels engag-

ing the roadway belt, a control mechanism for the toy vehicle mounted at one end of the base, said control mechanism including a winding device wound with a tether secured to the vehicle, drive means for rotating the roadway belt in one direction to turn the wheels of the toy vehicle and simulate movement of said vehicle in the opposite direction, turning means for rotating the winding device for shifting the toy vehicle longitudinally on the rotating roadway belt, said turning means including a manually operable transverse shaft rotatably supported by the base, said winding device being slidably and non-rotatably mounted on the transverse shaft, a manually operable slide mounted on the base in operative engagement with the wind-



ing device whereby the toy vehicle can be shifted laterally on the rotating roadway belt, first and second endless scenery panels rotatably mounted on the base alongside the roadway belt, said drive means including a drive connection for rotating the endless scenery panels in the same direction as the roadway belt, said first endless scenery panel depicting scenes normally found adjacent a highway and said second endless scenery panel depicting scenes normally found relatively far from the highway, said first and second endless scenery panels being separately mounted on rollers, the rollers supporting the first endless scenery panel being of greater diameter than the rollers supporting the second endless scenery panel whereby the former panel moves faster than the latter panel.

4,244,144

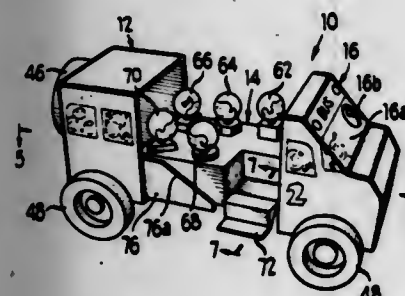
TOY MOTOR VEHICLE

Benjamin L. Goldberg, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,822
Int. Cl.³ A63H 11/10

U.S. Cl. 46—202

18 Claims



1. A toy vehicle, comprising:

a body having a front end section, rear end section and an intermediate section for slidably interconnecting said front and rear end sections for movement between a retracted adjacent position and an expanded spaced apart position;
wheel means for supporting said end sections for rolling movement over a playing surface during play; and
manually controllable drive means on said vehicle interconnecting said end sections for selectively moving said end sections toward and away from each other to adjust the length of said vehicle to vary on a continuous basis between a minimum length in said retracted position and a maximum length in said expanded position.

4,244,145

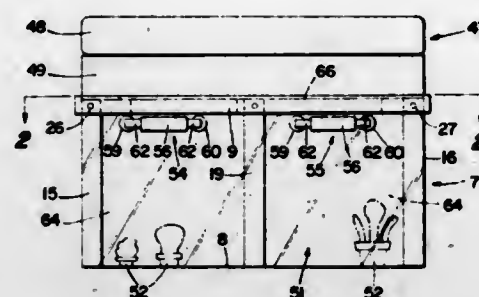
INDOOR PLANT GROWING APPARATUS

David D. Polacek, 780 Oberlin Rd., Apt. #17, Elyria, Ohio 44035

Filed May 17, 1979, Ser. No. 39,826
Int. Cl.³ A01G 9/14

U.S. Cl. 47—17

11 Claims



1. An indoor plant growing apparatus to be located on a floor, which comprises:
a frame adapted to support a bed, a plant growing chamber being formed within said frame;
a bed unit mounted on said frame; and
a light fixture unit mounted on said frame, said light fixture unit including means for providing light downwardly onto plants in said plant growing chamber.

4,244,146

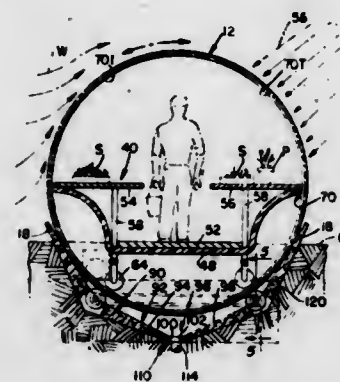
REVOLVING GREENHOUSE

Dale P. Kranz, 633 E. 73rd St., Kansas City, Mo. 64131
Filed Jul. 23, 1979, Ser. No. 59,956

Int. Cl.³ A01G 9/14; G02F 1/30

U.S. Cl. 47—17

16 Claims



1. A revolving greenhouse comprising:

a hollow outer cylinder revolvably mounted on a support means to have the longitudinal axis thereof horizontally oriented, said cylinder having a lateral surface;
translucent means forming a first portion of said cylinder lateral surface and opaque means forming the remainder of said cylinder lateral surface;
bench means in said cylinder extending longitudinally thereof, for supporting plants or the like in said cylinder;
roller means supporting said bench means on said cylinder;
a walkway extending longitudinally of said cylinder near said bench means;
cylinder revolving means for revolving said cylinder about said longitudinal axis for exposing said translucent and said opaque means to sunlight, said revolving means including idler rollers contacting said cylinder lateral surface, drive rollers contacting said cylinder lateral surface and drive means connected to said drive rollers for driving same to revolve said cylinder.

4,244,147

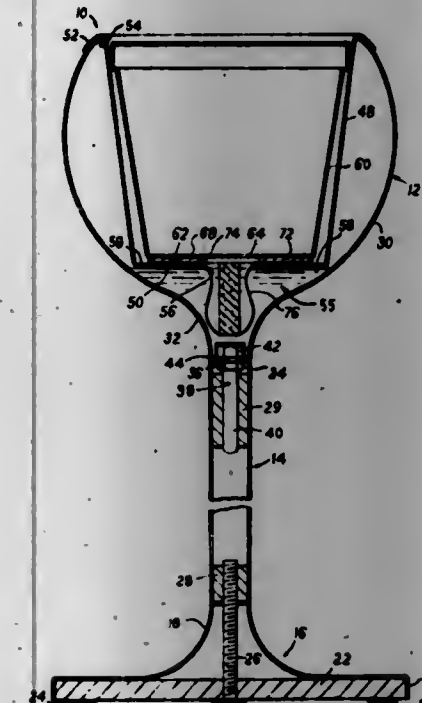
FLOWER POT HOLDERS

Nicholas J. Geddes, 63 Scott St., Berarior, Johannesburg, South Africa

Filed Oct. 10, 1978, Ser. No. 949,725
Int. Cl.³ A47G 7/00; A01G 25/00

U.S. Cl. 47—39

3 Claims



1. A flower pot holder comprising:

- (a) a flower pot,
- (b) a hollow body surrounding the flower pot and formed as a surface of revolution having an open mouth at its upper end and a water-impervious lower part, the said water impervious lower part defining a water space within which an amount of water is contained,
- (c) an inner member having a frusto-conical main portion and a flat base at its smaller end, the main portion projecting through the mouth and being supported by the body and the base being located within the lower part of the body in such a way that the said water space is located below the said base, there being an enlarged opening in the base and in addition permanently open ventilating openings in the inner member ventilating the water space,
- (d) wick means comprising a pad of capillary matting resting on the base and a ribbon attached to the pad and passing through the said enlarged opening, the said flower pot standing on the pad,
- (e) a weighted stand, and
- (f) an elongated upright support having upper and lower ends the lower end being connected to the stand and the upper end being connected to the body and carrying the body through a bolt passing through the lowermost part of the body and further comprising sealing means wherein the said bolt is in sealed water-tight relationship with the body, and wherein the projecting part of the bolt is received in the upper end of the said upright support.

4,244,148

PROCESS AND DEVICE FOR AIR-CONDITIONING GREENHOUSES

Francoise M. Chabanon, Roquefort-les-Pins, and Henri J. Royer, Nice, both of France, assignors to Association pour la Recherche et le Développement des Méthodes et Processus Industriels (A.R.M.I.N.E.S.), Paris, France

Filed Mar. 30, 1979, Ser. No. 25,400

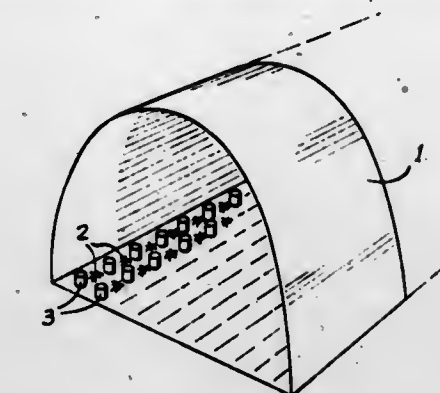
Claims priority, application France, Apr. 5, 1978, 78 10703
Int. Cl.³ A01G 9/00; C09K 3/18

U.S. Cl. 47—58

4 Claims

1. A process for air-conditioning a greenhouse or the like for the cultivation of plants by means of heat from the sun which consists of placing within the greenhouse a plurality of porta-

ble isothermic closed containers, each container having a unit volume of 1-10 liters, each container containing a body of a material having latent heat of fusion, the melting temperature of said body of material being between 10° and 20° C., uniformly distributing said containers in the interior of the greenhouse at a rate of 5-10 containers per m² of ground surface,



whereby during the day when the temperature inside the greenhouse due to the heat from the sun exceeds said melting temperature, said body of material melts, absorbing calories and cooling the interior of said greenhouse and during the night when the temperature in the greenhouse becomes lower than said melting temperature, said body of material solidifies and releases by solidification the latent heat of fusion.

4,244,149

WATER DISTRIBUTING SOIL SUPPORT FOR PLANT CONTAINERS

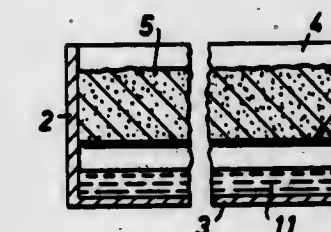
Bernard Zeltner, Aix en Provence, and Gaston Marmonnier, Marseille, both of France, assignors to Manufacture Provencale de Matieres Plastiques SA, Marseille, France

Filed Jan. 25, 1979, Ser. No. 51,726

Int. Cl.³ A01G 27/00

U.S. Cl. 47—81

12 Claims



1. A water distributing soil support for a plant container comprising a layer of water-absorbent fabric and a fabric support structure carrying the fabric, the fabric having regions including means which renders the fabric non-absorbent, the regions being relatively disposed to flank and, between them, define pathways of water-absorbent fabric, said pathways being defined as a main pathway in the fabric and at least one branch pathway extending from the main pathway in a position at least partly along the main pathway to control distribution of water throughout water-absorbent areas of the fabric.

4,244,150

ONE-PIECE ABRASIVE BLASTING WHEEL

James R. Goff, 6601 Shawnee Dr., Oklahoma City, Okla. 73116

Filed Jan. 8, 1979, Ser. No. 46,740

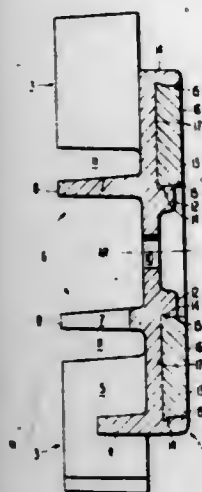
Int. Cl.³ B24C 5/06

U.S. Cl. 51—434

8 Claims

1. A blast wheel for rotatable, centrifugal abrasive blasting device comprising
a wheel having a front surface and a rear surface;
a plurality of radially extending abrasive throwing blades on the front surface of said wheel, wherein said blades are

substantially equally spaced around the circumference of said wheel;
a vaned impeller on the front surface of said wheel; and
a ring rigidly secured to the rear surface of said wheel;



wherein said device is a one-piece casting formed of dissimilar materials, such that said wheel, said blades and said impeller are formed of an abrasion-resistant material having relatively poor machinability, and said ring is formed of a material having good machinability.

4,244,151

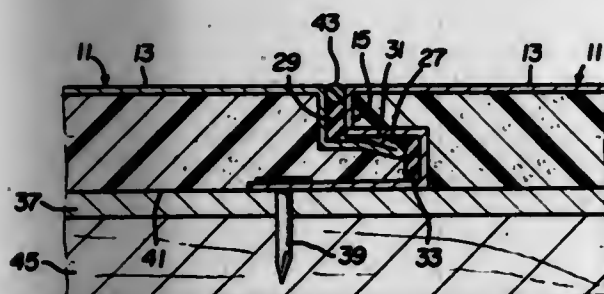
ROOF CONSTRUCTION

Charles T. Seem, Allentown, Pa., assignor to S.M.N. Corporation, Allentown, Pa.

Filed Apr. 18, 1979, Ser. No. 31,228
Int. Cl.³ E04D 1/28, 3/35

U.S. Cl. 52-60

15 Claims



1. In a roof construction for use upon a deck or pre-existing roof, a series of elongated coplanar roof panels assembled edge-to-edge at their ends in a line, and top-to-bottom in a line at right angles thereto, juxtaposed over said deck or roof; each roof panel comprising a thin metallic skin having a rectangular top plate;
a downturned front edge along its length;
said front edge terminating in a return plate, which terminates in a downturned upright wall, in turn, terminating in an outturned anchor plate spaced from and projecting forwardly of said top plate; and defining with said return plate an assembly slot;
a series of aligned struckout snap lock stops formed in said return plate and extending into said assembly slot;
a downturned rear edge along the opposite edge of said top plate;
said rear edge terminating in a flexible outturned assembly plate spaced from and projecting rearwardly of said top plate;
a reverse-turned snap lock angle flange at the edge of and extending above said assembly plate;
an elongated body of foam plastic material underlying said top plate, said assembly plate and projected into portions of said panel between said top plate and return plate and anchored therein; its bottom surface extending to said

anchor plate and coplanar therewith and adapted to cooperatively engage said deck or roof;
and a series of fasteners securing said anchor plate to said deck or roof;
the assembly plate and underlying portion of said foam plastic body along one edge of a panel defining a tongue snugly nested within the corresponding assembly slot along the opposite edge of an adjacent panel with said lock flange of one panel snapping into interlocked retaining engagement with snap lock stops of said adjacent panel.

4,244,152

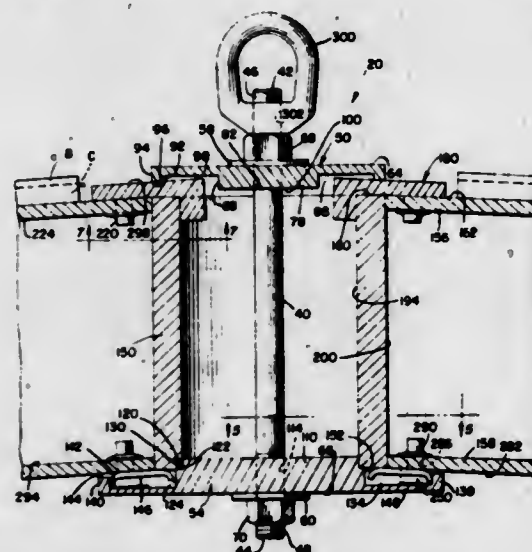
JOINT FOR GEODESIC DOME

George C. Harper, Jr., Cornsopola, Pa., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Dec. 19, 1978, Ser. No. 971,033
Int. Cl.² E04B 1/32

U.S. Cl. 52-81

6 Claims



1. A joint connector for use in space frames to connect a plurality of struts together, comprising:
a central bolt;
top and bottom plates slidably mounted on said central bolt;
an integral cylindrical, tubular hub surrounding said central bolt and located between said plates;
means on said central bolt for forcing said plates together to secure said hub between said plates;
fastening means for connecting struts to said hub so that shear forces and radial forces from such struts are transmitted to said hub, said fastening means including a gusset plate attached to a pair of struts which are oriented at an angle with respect to each other;
arcuate spacer plates; and
a tension ring, said tension ring including a plurality of chain-like elements each pivotally connected to a hub, said chain-like elements being connected to hubs in pairs with each pair having one chain-like element disposed above the other chain-like element.

4,244,153

EARTH COVERED IN-THE-GROUND NUCLEAR REACTOR FACILITY

Klemens Schwarzer, Jülich; Wolfgang Krüger, Alsdorf; Karl-Heinz Escherich, Eschweiler; Klaus Kasper, Alsdorf; and Jürgen Altes, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,261
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713824

Int. Cl.³ E02D 27/00

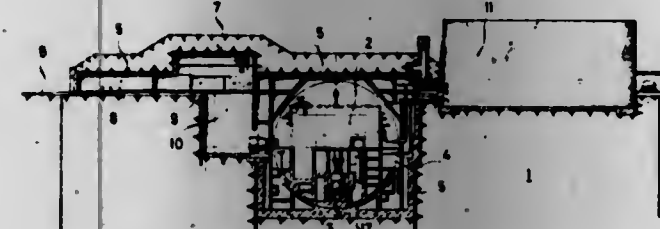
U.S. Cl. 52-169.5

3 Claims

1. An in-the-ground nuclear reactor facility having a part of

the nuclear reactor facility building which includes the building portion containing the nuclear reactor embedded below the natural ground topography of the site, at least said part of said building having an external concrete wall and roof structure projecting above the top edge of the natural landscape surface and covered with fill extending down to the land surface, which facility comprises the improvement which consists in that:

said external concrete wall and roof structure (5) above the natural landscape surface top edge (6) is surrounded and covered by a first layer (12) adjacent to said wall and roof structure and composed of a material selected from the group consisting of clay, loam and mixtures of clay and loam having a permeability in the range from 0.001 to 0.1 darcy, said first layer extending at least down to a ground-



water diverting ground layer and having a thickness in the range from 1.5 to 3 meters;
of the building portion embedded below the natural ground contour, at least the part which is below the top of said ground water diversion ground layer (13) is embedded substantially entirely in undisturbed ground except for the presence of any portion of said first layer extending downward from above;
above said first layer (12) is overlaid a second layer (14) of a permeability in the range from 1 to 100 darcy, of a material selected from the group consisting of gravel, sand, porous stones and the like and of a depth in the range between 0.5 3 meters, and
above said second layer (14) is spread a top layer (15) of earth fill that is at least 3 meters thick and has a permeability less than that of said second layer (14).

4,244,154

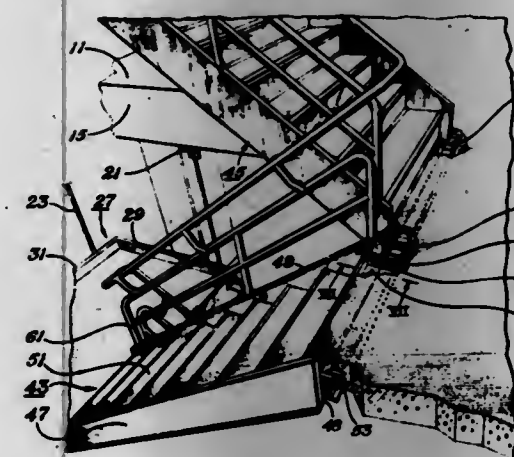
STAIRCASE AND METHOD OF CONSTRUCTION

Richard H. Weaver, 520 Ave. H, East, #100, Arlington, Tex. 76011

Filed Mar. 19, 1979, Ser. No. 21,549
Int. Cl.³ E04F 11/12

U.S. Cl. 52-185

13 Claims



1. A method of constructing a metal frame staircase between floors and in a building, the floors above the base of the staircase having openings for the staircase with a base on one edge of each of the openings, the method comprising in combination:
suspending a rectangular landing frame from the building

structure between two of the floors and openings, the landing frame having a straight frame member on one side; constructing for each part of the staircase between floors, an upper and a lower flight assembly, each flight assembly being substantially identical to each other, and comprising a plurality of steps secured between two stringers;
welding an upper bar to the inside of each stringer at the top, and a lower bar to the inside of each stringer at the bottom, and positioning the two upper bars and two lower bars such that they protrude horizontally outward past the stringers;
positioning the lower flight assembly between the base on the lower floor and the landing frame, with the lower bars resting on the lower floor base and the upper bars resting on the straight member of the landing frame, then welding the upper and lower bars to the straight member and the lower floor base, respectively; and
positioning the upper flight assembly between the landing frame and the upper floor, with the lower bars resting on the straight member of the landing frame and the upper bars resting on the upper floor base, then welding the upper and lower bars to the upper floor base and the straight member respectively.

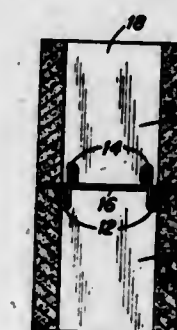
4,244,155

BLOCK INTERLOCKING INSERT

Arthur R. Swiger, 137 E. Front St., Adrian, Mich. 49221
Continuation of Ser. No. 774,503, Mar. 4, 1977, abandoned. This application May 8, 1978, Ser. No. 904,012
Int. Cl.³ E04B 2/16

U.S. Cl. 52-442

7 Claims



1. In a block wall having upper and lower tiers of building block of the type having top and bottom surfaces with walls forming an internal core cavity of generally predetermined width extending therebetween, and with the cavities of the upper and lower tiers being aligned: a long, narrow strip of relatively stiff material having upper and lower surfaces, a width considerably less than that of said predetermined cavity width, and a length greater than said predetermined cavity width positioned between said tiers; said strip having a first upwardly extending U-shaped configuration followed by a first downwardly extending U-shaped configuration positioned longitudinally of each other and lengthwise of said strip, and a second downwardly extending U-shaped configuration and a second upwardly extending U-shaped configuration positioned longitudinally of each other and lengthwise of said strip; said first and second upwardly extending U-shaped configurations being positioned against the respective opposing vertical core cavity wall surfaces of the upper tier and the first and second downwardly extending U-shaped configurations being positioned against the respective opposing vertical core cavity wall surfaces of the lower tier to key the two tiers together; said strip having end portions positioned between blocks of the upper and lower tiers to hold the blocks of the two tiers apart and provide a space therebetween; and a mortar joint material in said space between said keyed tiers.

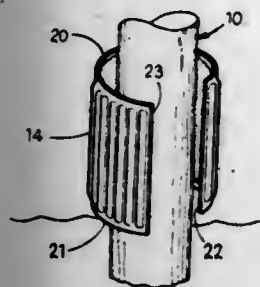
4,244,156

POLE AND PILING PROTECTOR

Ridley Watts, Jr., 34000 Cedar Rd., Gates Mills, Ohio 44040
Continuation-in-part of Ser. No. 874,875, Feb. 3, 1978, Pat. No. 4,161,090. This application Dec. 4, 1978, Ser. No. 966,089
Int. Cl.³ E04G 21/00

U.S. Cl. 52-746

2 Claims



1. A method of protecting a portion of a pole or piling intermediate its ends, comprising the steps of providing a still but not rigid protective shell capable of being formed into a tubular configuration and having pockets in one surface of the shell and corresponding extending projections in the opposite surface, establishing a length of the shell greater by at least the width of one of said pockets than the perimeter of the pole or piling at the location to be protected, coating said one surface with a foamable adherent material in sufficient quantity to fill the pockets and cover said surface when the foamable material expands, applying the shell about the pole or piling before the foamable material has substantially expanded and overlapping the ends so that at least one projection is nested within a pocket at the overlapped ends, and maintaining the shell about the pole or piling while the material expands, hardens, and adheres to the pole or piling.

4,244,157

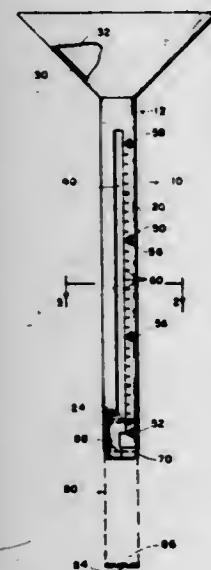
COIN COUNTER AND WRAPPER FILLER

Robert A. Vondra, 5638 Spring St., Omaha, Nebr. 68106, and
Richard E. McGuire, 1013 N. 90th St. - Apt. 1, Omaha, Nebr. 68114

Filed Jan. 29, 1979, Ser. No. 7,343
Int. Cl.³ B65B 39/00, 39/06

U.S. Cl. 53-254

1 Claim



1. A coin counter and wrapper filler comprising a body having a hollow upstanding shank for receiving coins, said body having a funnel attached to its upper end and emptying into said shank, indicia on said shank for indicating the number of coins therein, said shank having visibility means so that the quantity of coins inside said shank can be read against indicia printed on said shank, and a plug having a portion extending across and engaging the lower end of said shank so as to prevent said plug from entering said shank beyond a desired point, said plug having an upper end portion of resilient nature which

resiliently and removably grips the lower end of said shank whereby said plug can be removed after coin counting for permitting coins to fall into the open top of a closed coin wrapper, the lower end of said shank being tapered inwardly on its outer side for reception in the upper end of a paper coin wrapper, said wrapper being of a type which is cylindrical when fully expanded.

4,244,158

PACKAGE FORMING METHOD AND APPARATUS

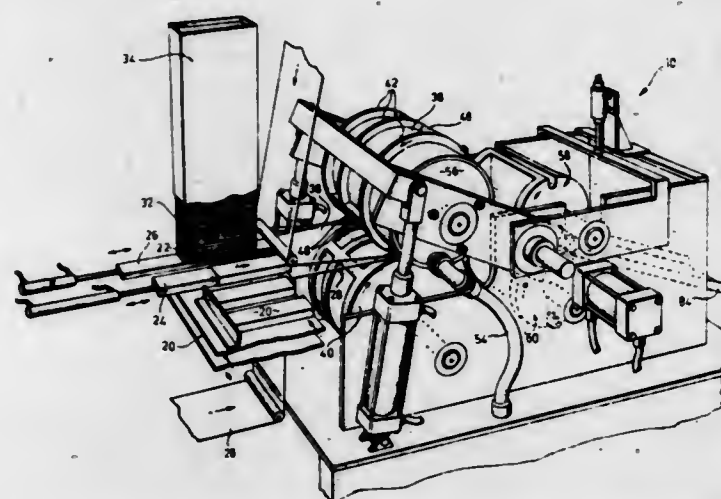
Roy W. Nelham, Cheltenham, Canada, assignor to R. Nelham & Associates Incorporated, Mississauga, Canada

Filed Mar. 13, 1979, Ser. No. 20,078

Int. Cl.³ B65B 9/02, 61/18

U.S. Cl. 53-412

7 Claims



1. A method of forming a packaging structure, which comprises: feeding items to be packaged in pairs serially onto a substantially horizontally-moving band of heat sealable flexible polymeric material in accordance with the desired horizontal spacing on said band, and engaging said items with a parallelly-moving upper band of heat sealable flexible polymeric material, continuously heat sealing said upper band to said horizontally-moving band at the marginal edges thereof to provide permanent longitudinal seals thereat and between said marginal edges to provide a longitudinal peelable seal thereat to separate said pair of items, intermittently heat sealing said upper band to said horizontally-moving band at longitudinally-spaced locations thereof to provide closely-spaced transverse pairs of peelable seals extending between said marginal edges, transversely severing the heat sealed layers between said closely spaced transverse pair of peelable seals to successively form individual heat sealed packages containing said pair of items, each said individual heat sealed packages thereby having permanent heat seals at each side edge thereof, peelable seals at each end thereof and an additional peelable seal extending continuously from the one end edge to the other to separate the interior of the package into separate compartments each containing one of said items, whereby, upon separation of the overlying layers along the peelable seal at one of said end edges, the overlying layers also separate along said additional peelable seal to permit simultaneous access to the items in the package and to form a single interior compartment without otherwise damaging the integrity of the remainder of the package.

4,244,159

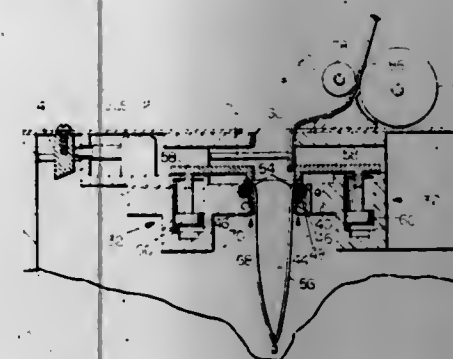
MACHINE FOR PRODUCING PACKAGES SEQUENTIALLY FROM CONTINUOUS FLEXIBLE TUBING

Larry C. Goss, 9270 Secor Rd., Temperance, Mich. 48182
Filed Mar. 29, 1979, Ser. No. 24,965

Int. Cl.³ B65B 9/00, 5/02, 9/12

U.S. Cl. 53-567

5 Claims



1. A machine for making packages sequentially from a length of plain flexible tubing, said machine comprising means for advancing the tubing lengthwise along a path and for stopping the advance, first sealing means along the path for forming a transverse sealed strip across the tubing, means along the path beyond said sealing means for severing the tubing near the sealed strip and forming a severed section, means along the path beyond said sealing means and beyond said severing means for holding the severed edges of the severed section to open and close the severed section, second sealing means along said path beyond said holding means for forming a second transverse sealed strip near the severed edges, and means for retracting the tubing slightly before advancing it.

4,244,160

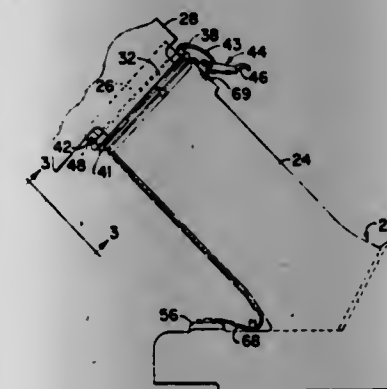
IGNITION INTERLOCK SYSTEM FOR SELF-PROPELLED WALK-BEHIND LAWN MOWER

Donald L. Carolan, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Dec. 21, 1978, Ser. No. 972,143
Int. Cl.³ A01D 35/26

U.S. Cl. 56-10.5

6 Claims



1. A walk-behind mower and engine ignition safety interlock system, comprising: a blade housing provided with a discharge opening and an upwardly projecting boss adjacent to the opening; a cutting confining means disposed in covering relationship to the discharge opening for at least intercepting cuttings following an upward trajectory toward the opening; said cutting confining means including a receptacle shaped complementary to and receiving said boss; releasable fastener means extending centrally through the boss and receptacle and releasably securing the cutting confining means to the housing; an internal combustion engine mounted on the housing and including an engine ignition means; an ignition circuit connected to the ignition means and including a current source and a

normally closed switch means connected in series with and between the current source and the ignition means; said switch means including a first pair of separate contacts mounted in the boss; and conductor means mounted at least partly in said receptacle for interconnecting the first pair of contacts for effecting the normally closed condition of the switch means only when the cutting confining means is secured to the housing.

4,244,161

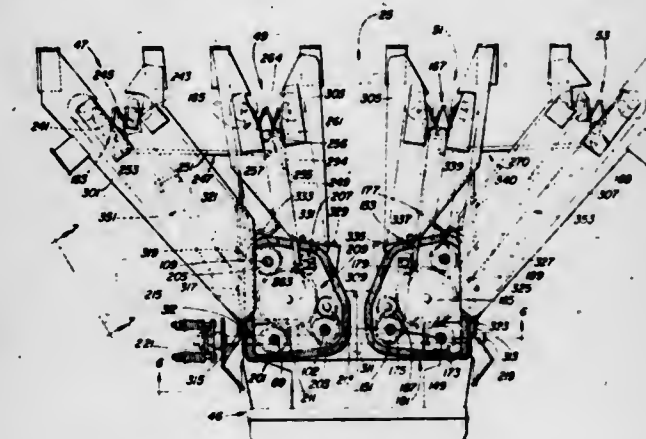
HARVESTER HEADER WITH DRIVE MECHANISM FOR OSCILLATING KNIFE CUTTERS

Jack L. Gutter, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 11, 1979, Ser. No. 74,563
Int. Cl.³ A01D 55/02, 55/262

U.S. Cl. 56-13.6

4 Claims



1. In a header for a harvester with a crop receiving throat, said header comprising:
a plurality of generally downwardly and forwardly inclined crop dividers;
a plurality of crop receiving passageways defined between adjacent ones of said dividers, each passageway having a crop entry and crop exit at the forward and rearward end thereof, respectively, said crop exits disposed adjacent said throat;
a pair of conveyors disposed on opposite sides of each passageway for conveying severed crop along said passageways and into said throat;
first and second oscillating knife cutters disposed adjacent to the crop entries of a first and second of said passageways, respectively,
cutter drive means for actuating said cutters for severing crop engaging said cutters wherein the improvement comprises:
said drive means comprising:
a first reciprocable rod connected to said second cutter;
input drive means for reciprocating said first rod, said second cutter oscillatable responsive to reciprocation of said first rod;
a second reciprocable rod connected between said first and second cutters for oscillating said first cutter responsive to the oscillation of said second cutter.

4,244,162

ROW UNIT FRAME

Richard A. Pucher, Leola, Pa., assignor to Sperry Corporation, New Holland, Pa.

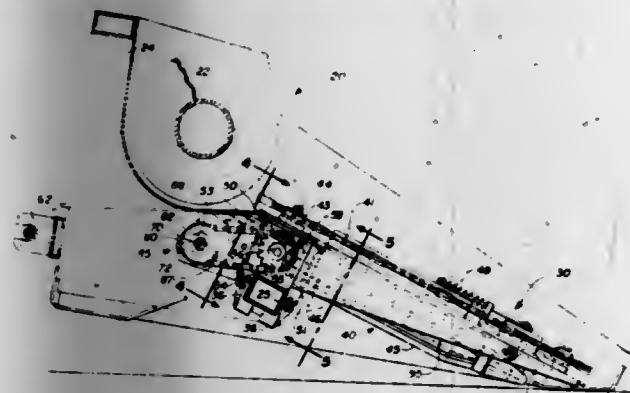
Filed Aug. 6, 1979, Ser. No. 64,269
Int. Cl.³ A01D 45/02

U.S. Cl. 56-14.2

14 Claims

1. A corn harvesting header attachable to a mobile crop treating unit comprising:
a main frame having a transverse substantially horizontal beam;

a plurality of forwardly extending spaced apart row units supported by said transverse beam, each respective said row unit having gathering means for harvesting the crop material and delivering the harvested crop material rearwardly, each said respective row unit being operable to harvest a row of corn, each respective said row unit further having a single unitary subframe structure including an elongated box beam portion positioned generally parallel to said transverse beam of said main frame and two spaced apart nondetachable L-shaped leg members extending forwardly from said box beam portion, each said respective row unit being selectively adjustable along said horizontal beam, whereby the relative spacing between adjacent row units may be selectively varied;



a transverse power input shaft rotatably supported by said main frame for delivering rotational power to said gathering means from a prime mover;
a clutch means corresponding to each respective said row unit for terminating the transmission of power from said power input shaft to the respective said gathering means upon an overload therein, each respective said clutch means being operable to terminate power to only the corresponding gathering means without effecting the transmission of power to other row units; and
a power transfer means for transferring power between said power input shaft and each respective said gathering means.

4,244,163

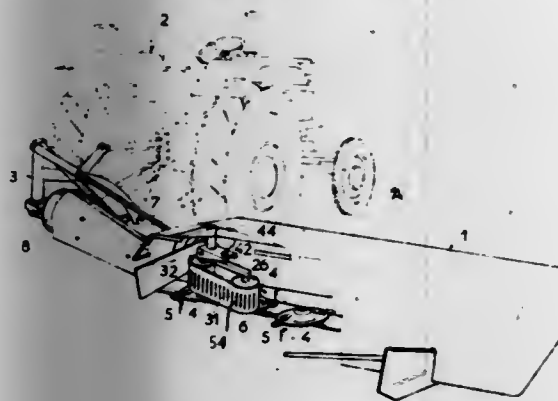
DEVICE FOR REDUCING THE WIDTH OF WINDROWS FORMED BY A MOWER

Jean-Paul Gantzer, Dannelbourg, and Anton Werner, Saverne, both of France, assignors to Kuhn, S.A., Saverne, France
Filed Feb. 27, 1979, Ser. No. 15,738

Claims priority, application France, Mar. 10, 1978, 78 07925
Int. Cl.³ A01D 57/30, 69/00

U.S. Cl. 56—192

8 Claims



1. A device for reducing the width of the windrow formed by a mower comprising at least one rotating element having thereon cutting elements, the said device being located at least at one of the extremities of the mower and comprising: two drums over which pass windrowing means

the first drum being situated approximately above one of the rotating elements
the second drum extending, seen in the direction of travel of the mower, behind the first drum
said second drum driving the windrowing means
the lines joining respectively the axes of the two drums and the axes of the rotating elements forming an acute angle
and transmission means disposed at least partially within said second drum to drive the windrowing means at a speed different from the speed at which the rotating elements rotate.

4,244,164

SAFETY LAWN MOWER AND GRASS COLLECTOR

Edward Szymanis, Midhurst, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

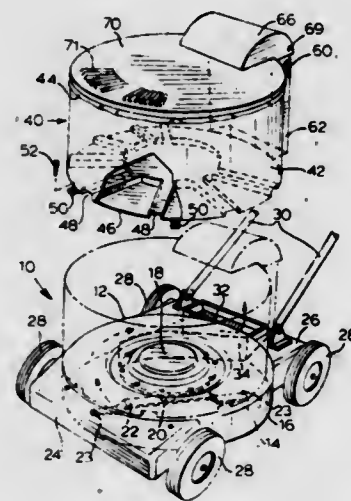
Filed May 21, 1979, Ser. No. 40,697

Claims priority, application Canada, Jul. 7, 1978, 306982

Int. Cl.³ A01D 35/22

U.S. Cl. 56—202

10 Claims



1. A lawn mower comprising a deck having a downwardly opening cutting chamber and an apron portion rearwardly extending from said deck, a cutting blade mounted from an electrical prime mover mounted on said deck for rotary movement in a generally horizontal plane, a discharge chute opening provided in the rearwardly extending apron portion of said deck to permit the discharge of grass cuttings therethrough, an upwardly opening bin means mounted upon said deck above said cutting chamber for collecting said cuttings, duct means connecting between said discharge chute opening and said bin means, said duct means comprising a first generally vertical portion connected at the lower end to said discharge chute opening, an elbow portion hingedly connected to the upper end of said vertical portion and moveable between a first position overhanging said bin means and a second position generally clear thereof, vane means associated with said elbow portion and moveable therewith to a position obstructing access to said discharge opening as said elbow portion is moved to said second position and to a non-obstructing position as said elbow portion is moved to said first position, and chute means extending within said cutting chamber and below the apron portion of said deck to connect said discharge chute opening to said cutting chamber.

4,244,165

HARVESTER APPARATUS

Kenneth L. McElwain, Ruskin, Fla., assignor to Keneco Manufacturing, Inc., Ruskin, Fla.

Filed May 31, 1979, Ser. No. 44,007

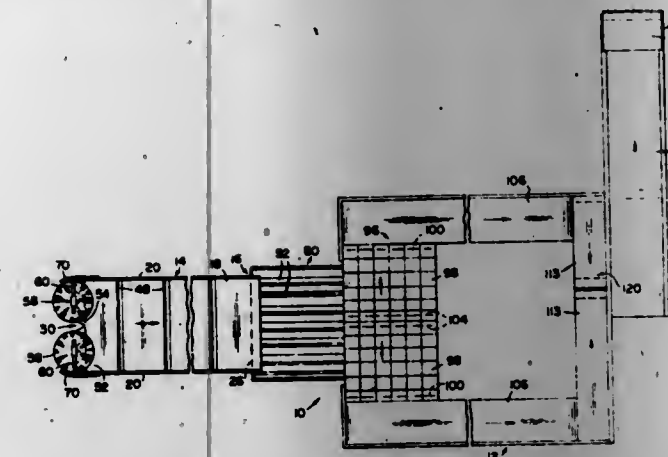
Int. Cl.³ A01D 45/00

U.S. Cl. 56—327 R

20 Claims

1. A harvester apparatus comprising a plurality of discrete stations disposed in operative communication relative to each other on a self-propelled mobile chassis to remove plants from

the earth and separate the fruit or vegetable from the stem or vine including a cutting station comprising a cutter having a positioner station disposed adjacent thereto to engage the plants and orient the plants for cutting by said cutter, a first transport station comprising a diagonally disposed first conveyor disposed to receive plants from said cutter station and a stripper station adjacent said first transport station to receive



the plants to separate the fruit or vegetables from the vine or stem, said positioner station being adjustable laterally relative to said cutter station, said positioner station comprising a pair of brushes disposed on opposite sides of said cutter in operative communication therewith and said positioner station further includes a pair of comb elements extending in operative relationship to said brushes to continuously clean said rotating brushes of debris.

4,244,166

BALE ROLLING MACHINE

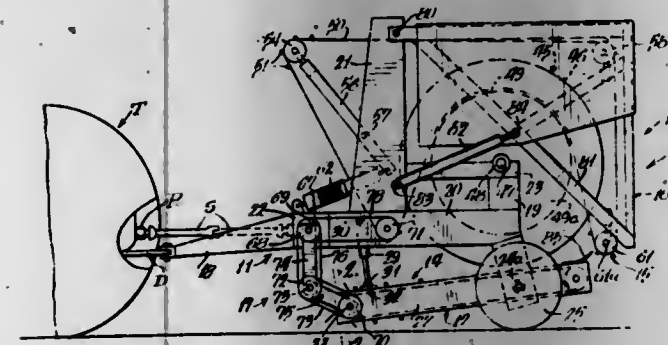
Frank E. Hayward, Vinton, Iowa, assignor to Chromalloy American Corporation, Vinton, Iowa

Filed Apr. 19, 1979, Ser. No. 31,323

Int. Cl.³ A01D 43/02; A01F 15/00

U.S. Cl. 56—341

21 Claims



1. Apparatus for rolling large bales of fodder comprising, in combination:

a frame which has side frame members and supporting wheels;

a floor supported in said side frame members;

a plurality of parallel, longitudinal, upwardly open chain guiding channels recessed in said floor;

endless chain fodder conveyor means having front and rear sprockets and chains with a rearwardly moving working run, said working run of each of said chains being completely recessed in one of said channels, and said chains having only fodder engaging lugs projecting above the floor;

rotary fodder pickup means at the front of the frame, said pickup means having tines to feed fodder from the ground onto the fodder conveyor means;

a rear discharge gate pivoted on the side frame members;

a plurality of parallel endless baling riddle chains connected by raddles extending transversely above the floor, said baling riddle chains being trained over upper and lower

forward sprockets journaled on the frame and over upper and lower rearward sprockets journaled on the gate, said chains and raddles having a lower working run from the lower rearward sprockets to the lower forward sprockets, above the floor, so as to define the rear, top and front of the baling chamber;

chain take-up means including movably mounted take-up sprockets engaging the baling chains and spring means biasing said movably mounted sprockets to minimize the length of the working run of said baling chains;

means for driving the fodder conveyor means and the fodder pickup means;

means for driving a forward sprocket to move the working run of the baling riddle chains forwardly above the floor;

and means for swinging the rear discharge gate between a generally upright baling position and a generally horizontal elevated discharge position.

4,244,167

ROTARY BALER FOR FORMING CYLINDRICAL HAY BALES

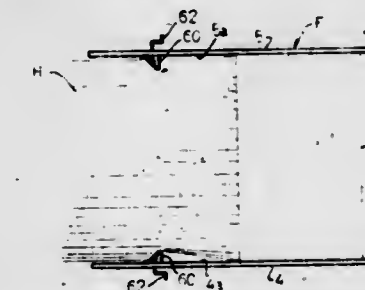
Dean E. Seefeld, and Hallis D. Campbell, both of West Bend, Wis., assignors to Gehl Company, West Bend, Wis.

Filed Aug. 27, 1979, Ser. No. 69,987

Int. Cl.³ A01D 39/00

U.S. Cl. 56—341

3 Claims



1. A rotary baler for forming cylindrical bales of crop material comprising, means for transporting said baler over the crop material to be baled, a pick-up mechanism for feeding the crop material to the baler, cooperative means carried by the baler defining a bale-forming zone for receiving crop material and in which zone a bale can grow in diameter, a pair of vertically extending side walls, one wall at each side of said cooperative means, said cooperative means including a tensioned compacting endless means which is continuously wrapped around the growing bale to provide bale density, a support pressure roller arranged transversely in said baler and over which said compacting means is trained and located in the lower portion of said zone to thereby penetrate the periphery of the bale being formed to increase the density of said bale, and crop material guiding means at the interior surface of each side wall and converging rearwardly toward one another to deflect the crop material which is delivered by said pick-up mechanism inwardly away from said side walls as it enters said zone to thereby reduce side sheet friction between said crop material and said side walls to avoid excessive compacting means tension and permit bale density to be governed by said support pressure roller.

4,244,168

BROOM RAKE

John R. Howard, West Chicago, Ill., assignor to The Drackett Company, Cincinnati, Ohio

Continuation of Ser. No. 888,590, Mar. 20, 1978, abandoned.

This application Jan. 7, 1980, Ser. No. 110,167

Int. Cl.³ A01D 7/06, 7/00

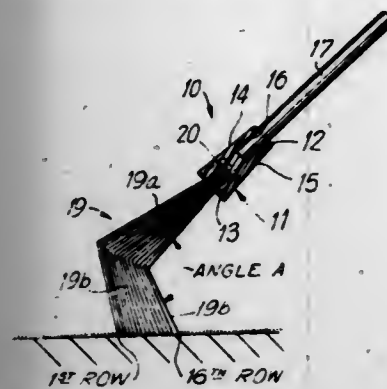
U.S. Cl. 56—400.17

7 Claims

1. A broom rake comprising:

(a) a base having a top, a bottom opposed to the top, a first side, and a second side opposed to the first side;

- (b) a handle attached to and extending outwardly from the first side of the base;
- (c) a plurality of bristles anchored in and extending outwardly of the second side of the base, wherein said bristles are tightly disposed with respect to each other within the base and the bristles extend longitudinally along the second side thereof in layers from the top to the bottom of the



base; each bristle having a first portion and a second portion, said first portion being anchored in the base and extending outwardly thereof to a substantial extent of the full length of the bristle, said second portion being disposed at an obtuse angle to the first portion and also having a substantial length relative to the full length of the bristle, wherein the obtuse angle varies from one layer to the next so that the bristles flare outwardly from the base.

4,244,169

DEVICE FOR JOINING TEXTILE YARNS BY AXIAL TWISTING

Hubert Ligones, Pont-St-Espirit, France; Laurent Kropf, Lausanne, and Erwin Zürcher, Le Lignon, both of Switzerland, assignors to Fomento de Inversiones Industriales S.A., Barcelona, Spain

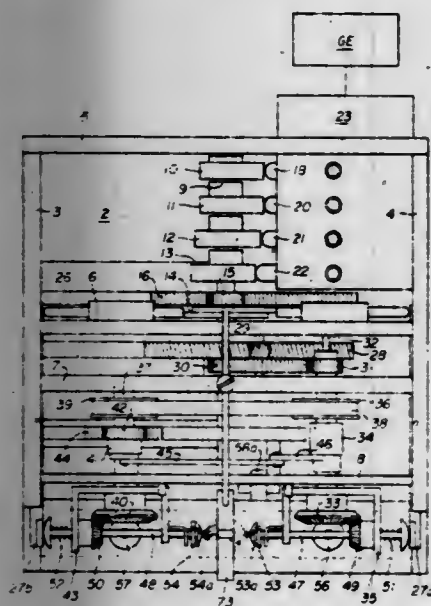
Filed Jun. 11, 1979, Ser. No. 47,649

Claims priority, application Switzerland, Jun. 12, 1978, 6379/78

Int. Cl.³ B65H 69/06

U.S. Cl. 57—22

5 Claims



1. A device for joining textile yarns by twisting the respective yarn ends about their axes, comprising means for untwisting the end portions of the yarns and for imposing an excess twist on the yarn portions adjacent to said end portions, and for then transferring this excess twist to the end portions in order to cause them to join together, which means comprise two substantially coaxial spindles rotatably mounted in respective supports and kinematically linked one to the other so that they rotate in reverse directions to each other, each of which spindles comprises a rod of which that end facing the other spindle has a hooking element extending radially to the rod axis, drive

means for rotating said spindles alternately in two respective directions of rotation, and means for stretching a respective yarn in the path of each said hooking element such that its rotation in one of said directions of rotation of the spindle winds a portion of said yarn as a helix onto said rod while the yarn end portion is being untwisted, and such that its rotation in the other direction of rotation of the spindle unwinds the wound portion of yarn and twists its end portion together with the end portion of the yarn wound on the other spindle, these joined yarns being released simultaneously from said spindles as said helix-wound portions become unwound.

4,244,170

SPINNING DEVICE COMPRISING A RING ROTATABLY SUPPORTED ON A FLUID BEARING

Olivier Traynard, Mulhouse, and Jean-Pierre Bruggeman, Villeneuve d'Ascq, both of France, assignors to Societe Alsacienne de Constructions Mecaniques de Mulhouse; Institut Textile de France and Agence Nationale de Valorisation de la Recherche (ANVAR), all of France

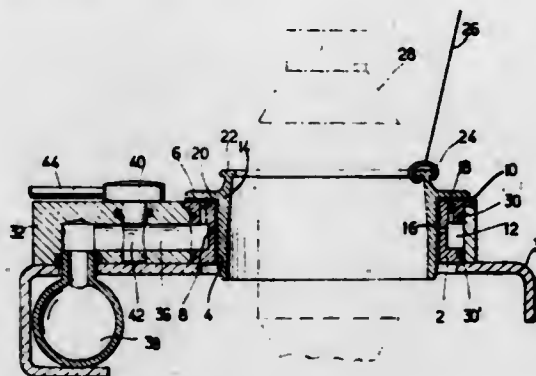
Filed Mar. 20, 1979, Ser. No. 22,185

Claims priority, application France, Mar. 24, 1978, 78 08635

Int. Cl.³ D01H 7/56

U.S. Cl. 57—124

1 Claim



1. In a ring-frame spinning device in which each ring is rotatably supported on a fluid bearing and which comprises, a ring carrier or stator having an internal surface of revolution comprising a first axial surface and a second radial surface, a first set and a second set of compressed-air discharge ducts having their openings respectively in said first and second surfaces, means to supply a flow of compressed air to said first and second set of ducts, a ring freely mounted within said stator and having external axial and radial surfaces of revolution adapted to cooperate with said internal surfaces in order to form with said surfaces a compressed-air leakage gap for centering, by means of the first set of ducts, and for lifting, by means of the second set of ducts, the ring, and a yarn-guide ring traveller which is capable of sliding freely on the ring, the improvement comprising means for controlling the flow of compressed air admitted only to said second set of discharge ducts, which serves to lift the ring, said control means being adapted to reduce the lifting of the ring when it is desired to stop the ring in order to produce a braking effect on said ring by bringing its said radial surface into frictional contact with said cooperating second radial surface of the stator, while the flow of compressed air to said first set of discharge ducts is maintained in order to keep the ring centered during braking.

4,244,171

BULKABLE FILAMENTARY YARN

Yoshiyuki Sasaki, Takatsuki; Shiro Kumakawa, and Katsuyuki Kasaoka, both of Ibaraki; all of Japan, assignors to Teijin Limited, Osaka, Japan

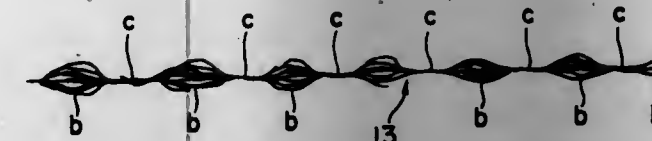
Filed May 16, 1979, Ser. No. 39,476

Claims priority, application Japan, May 17, 1978, 53-58658; May 24, 1978, 53-60901; May 24, 1978, 53-60902

Int. Cl.³ D02G 3/44, 3/04

U.S. Cl. 57—208

6 Claims



1. A bulkable filamentary yarn in which constituent filaments of substantially straight form are assembled with each other, said yarn having interlaced portions of at least 20 per meter along the yarn length wherein a filamentary group between each adjacent pair of interlaced portions exhibits mixed, differential boil-off shrinkage characteristics both among the filaments and within each of the filaments, and K value, as defined by the following formula, of the yarn being no more than 1.0

$$K = l_1/l_2$$

wherein l_1 is the length of an interlaced portion and l_2 is the length of a non-interlace portion hereinbefore defined.

4,244,172

FLATTENED STRAND ROPE

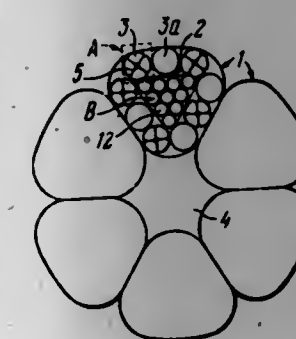
Mikhail F. Glushko, prospekt Shevchenko, 15/5, kv. 17; Viktor K. Skalatsky, ulitsa Zhukovskogo, 5, kv. 25; Anatoly I. Zakrzhevsky, prospekt Shevchenko, 8a, kv. 28, and Anatoly D. Zakhraymin, ulitsa Yaroslavskogo, 45, kv. 14, all of Odessa, U.S.S.R.

Filed Feb. 2, 1979, Ser. No. 9,268

Int. Cl.³ D07B 1/22, 5/10

U.S. Cl. 57—215

15 Claims



1. A rope comprising:
at least one wedge-shaped strand;
a core of said strands;
wires wound on said core to form said strand;
at least a portion of said strand wires fashioned as twisted wire groups;
the wires in each one of said twisted wire groups being made sector-shaped and in contact with each other over helical surfaces; and,
an intermediate layer of wires provided between said twisted wire groups of a strand and said core, the cross-sectional area of each one of said wires in said intermediate layer being close in value to the cross-sectional area of wires making up said twisted wire groups.

4,244,173

BOUCLE YARN AND PROCESS FOR ITS PREPARATION

Arthur Lulay, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1978, Ser. No. 951,395

Int. Cl.³ D02G 1/18, 3/24, 3/42

U.S. Cl. 57—227

22 Claims

1. An improved precursor yarn having a twist multiplier of 1.5 to 4.0 suitable for the preparation of a boucle yarn comprising a core spun yarn of partially intermingled high shrinkage fibers and low shrinkage fibers twisted together, the high shrinkage fibers being predominately on the surface of the yarn, the difference in shrinkage of the high shrinkage and low shrinkage fibers being at least 20% in boiling water.

17. Process for preparing the precursor yarn of claim 1 wherein a component consisting of a staple fiber roving of high shrinkage fibers is fed into a spinning frame and drafted in the usual manner, a component consisting of a low shrinkage spun or filament yarn or monofilament is fed into the back of the front roller of the spinning frame and combined with the drafted roving and the two components are twisted together to provide a twist multiplier of 1.5 to 4.0, the shrinkage differential of the two components in boiling water being at least 20%.

4,244,174

POY YARN COMPOSITIONS

Andrew J. Bobkiewicz, Montreal, Canada, assignor to The Bobtex Corporation, Ltd., Montreal, Canada

Filed Oct. 23, 1978, Ser. No. 953,967

Claims priority, application United Kingdom, Nov. 3, 1977, 45677/77

Int. Cl.³ D02G 3/36, 3/40

U.S. Cl. 57—232

17 Claims

10. The method of manufacturing a composite yarn product having a carrier which is subsequently coated with a binding material and an outer yarn component, said method comprising the steps of supplying a partially oriented carrier of partially oriented or undrawn material, subjecting said carrier to an in situ axial deformation including drawing the carrier and twisting the carrier, coating said carrier with a molten polymeric material while said carrier is subjected to said deformation or immediately just after said carrier has been subjected to said deformation, and applying an outer layer of yarn-forming material on said coated carrier while said polymeric material is tacky.

4,244,175

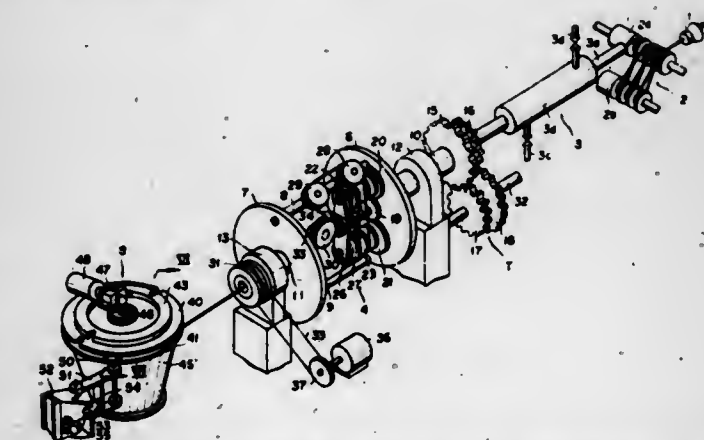
METHOD AND APPARATUS FOR MANUFACTURING A THREE-DIMENSIONED CRIMP FILAMENT

Sadaaki Takagi, 39, Mikage-cho, Okazaki-shi, Aichi-ken, Japan
Continuation-in-part of Ser. No. 799,180, May 23, 1977, Pat. No. 4,154,051. This application Nov. 22, 1978, Ser. No. 963,039

Int. Cl.³ D02G 1/02, 1/04

U.S. Cl. 57—282

12 Claims



1. A method for manufacturing a three-dimensional crimp filament comprising:
twisting a bundle of large denier filaments into a single twist

while said filaments are stretched between a freely-rotatable first roller with a peripheral groove having 10-500 mm of diameter at a grooved portion and at least one other freely-rotatable second roller in a total denier of 50,000-3,000,000 denier by means of twisting action in a subsequent double twist step;
 double twisting said single-twisted filaments into a double twist up to said first roller and heating the filaments thus twisted into a double twist while passing them through a tubular guide means;
 cooling said double-twisted filaments to effect a heat-set while maintaining the twisting action;
 untwisting said double-twisted filaments thus heat-set to form three-dimensioned crimp filaments; and
 cutting said untwisted three-dimensioned crimp filaments into staple lengths, the diameter of said first roller at the grooved portion being correlated with the diameter of the double-twisted filaments formed from the 30,000-3,000,000 denier bundle to prevent the spread of the double twist back beyond said first roller under the tension necessary to form and maintain said double twist, and the width of said peripheral groove and the diameter of said tubular guide means being sufficient to freely receive the double-twisted filament, but insufficient to allow it to curl into a greater multiple twist.

4,244,176

DEVICE FOR WAXING A YARN

Takeshi Shimizu, Kariya, and Kinpei Mitsuya, Aichi, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

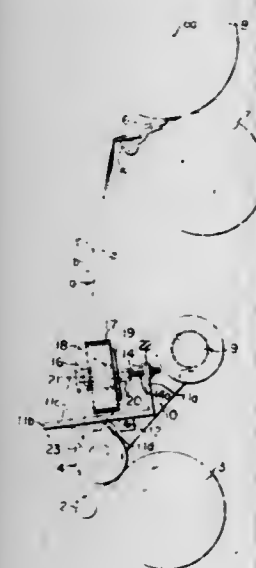
Filed Mar. 27, 1979, Ser. No. 25,442

Claims priority, application Japan, Apr. 5, 1978, 53/39946; Apr. 11, 1978, 53/47335[U]; Apr. 13, 1978, 53/48608[U]; Apr. 17, 1978, 53/50641[U]

Int. Cl.³ D01H 13/30; D02J 3/18; B65H 71/00

U.S. Cl. 57-295

20 Claims



1. A device for waxing a yarn which is fed from a supply of yarn through a waxing position to a yarn winding-up mechanism in a spinning machine, said waxing device comprising:
 a wax body having opposite end faces and an opening extending axially therethrough between said end faces;
 support means for rotatably supporting said wax body, said support means including, a sleeve member having a cylindrical portion and a stop adjacent said cylindrical portion, said hollow sleeve member inserted into said opening of said wax body for having a part of said cylindrical portion project from one end of said opposite end faces of said wax body remote from said stop, said hollow sleeve member having a stationary spindle member extending there-

into for supporting said hollow sleeve member for rotation about said spindle member, and said stop positioned adjacent the other of said opposite end faces of said wax body for maintaining said wax body at a defined axial position relative to said sleeve member;
 connecting means for fixedly and integrally connecting said wax body and said hollow sleeve member; and
 whereby said waxing device is positioned between the yarn supply and the yarn winding-up mechanism for having said yarn contact a surface of said cylindrical portion of said hollow sleeve member and said one end of said opposite end faces of said wax body as said yarn is fed from the yarn supply.

4,244,177

THREAD GUIDE FOR RING SPINNING AND RING TWISTING MACHINES

Arthur Würmli, Winterthur, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

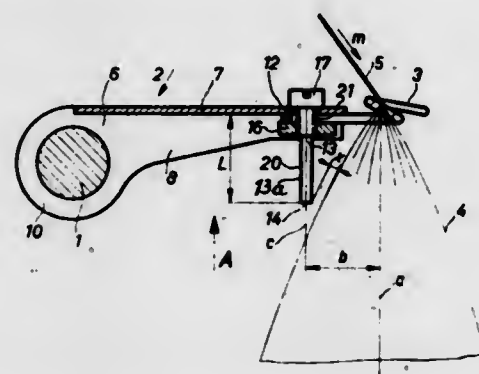
Filed Feb. 4, 1980, Ser. No. 118,086

Claims priority, application Switzerland, Feb. 23, 1979, 1797/79

Int. Cl.³ D01H 1/42; B65H 59/00

U.S. Cl. 57-353

9 Claims



1. Thread guide for ring spinning and ring twisting machines, with a thread guide lappet, with a thread guide eyelet formed by a wire wound in approximately helical form, which is mounted onto the thread guide lappet using a screw, and which defines the point of the thread balloon, and with a thread catching device, characterized in that the thread catching device arranged below the thread guide eyelet (3,18) consists of an extension (13a) of the mounting screw (13) extending downward in operating position.

4,244,178

POROUS LAMINATED COMBUSTOR STRUCTURE

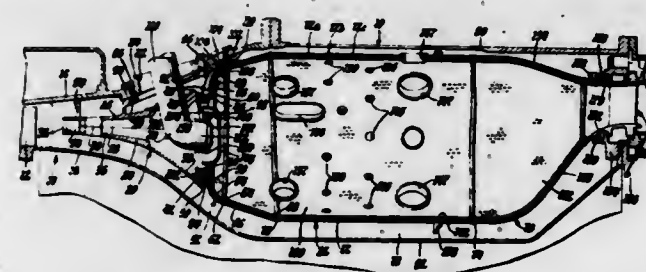
Avrum S. Herman, and Samuel B. Reider, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1978, Ser. No. 887,879

Int. Cl.² F02C 3/00

U.S. Cl. 60-754

3 Claims



1. A canister type combustor assembly for supplying combustion products to the turbine nozzle of a gas turbine engine including a combustor support wall internally thereof comprising in combination: a tubular, multi-layered porous metal wall

with pores and cavities therethrough and having an inlet end and an outlet end and an internal combustion chamber, a rigid outlet collar for connection to the turbine nozzle, said collar having side walls and curved inner and outer lips forming an arcuate passage located at a point offset to the longitudinal axis of said tubular porous metal wall, and a porous metal transition for joining said tubular porous metal wall to said outlet collar, said transition including side walls and top and bottom walls without substantial reduction in permeability due to forming, each of said transition walls including a sharp radius bend at the side edge thereof defining a metal section having pores and cavities therein compressed to increase the density of the transition walls at the sharp radius bends therein, and a seam weld joining adjacent ones of said sharp radius bends to seal the transition between the tubular porous metal wall and said outlet collar with minimal loss of permeability through the wall segments of said porous metal transition thereby to maximize flow of coolant flow through the transition for discharge through said outlet collar.

4,244,179

ANNULAR COMBUSTION CHAMBER FOR GAS TURBINE ENGINES

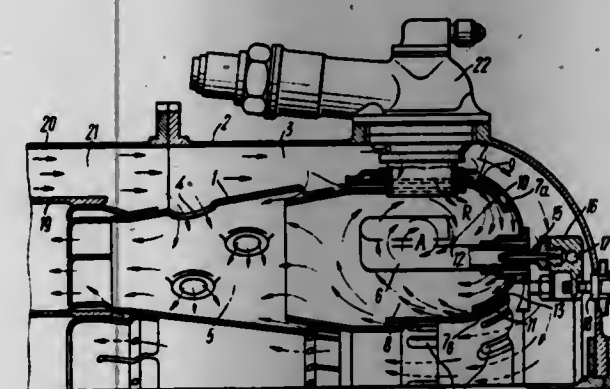
Gennady P. Kalinov, ulitsa Pervomaiskaya, 35, kv. 52; Vladimir G. Kuznetsov, ulitsa Timiryazeva, 33, kv. 4; Anatoly M. Polyakov, ulitsa Gorkogo, 35, kv. 6, and Igor A. Shleenskoy, ulitsa Timiryazeva, 32, kv. 70, all of Stupino Moskovskoi oblasti, U.S.S.R.

Continuation of Ser. No. 764,732, Feb. 1, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,180

Int. Cl.² F02C 7/22

U.S. Cl. 60-39.36

1 Claim



1. An improved annular combustion chamber for a gas turbine engine, employing a combustion zone; a dilution zone; fuel means; delivery means for delivery of fuel and primary air to a combustion zone; passage means for supplying a part of primary air to stabilize and intensify burning; passage means for the delivery of secondary air into a dilution zone for reducing the temperature of combustion products, wherein: said means for supplying primary air to stabilize and intensify burning are in the form of at least two slotted passages formed by opposite surfaces of concentric toroidal sections originating at a single center in the combustion zone whereby the end of a preceding section overlaps the beginning of a following section, and said center is determined by the center of the radius of a circle forming the toroidal section being greater by the total value of the thickness of the wall of the preceding toroidal section and height of the passage between them, and each following passage being displaced downstream relative to the preceding channel to ensure an air stream flow in the combustion zone along a helical line having center different to the axis of symmetry of the annual combustion chamber.

4,244,180

PROCESS FOR PRODUCING FUEL GASES FROM CARBONACEOUS MATERIAL

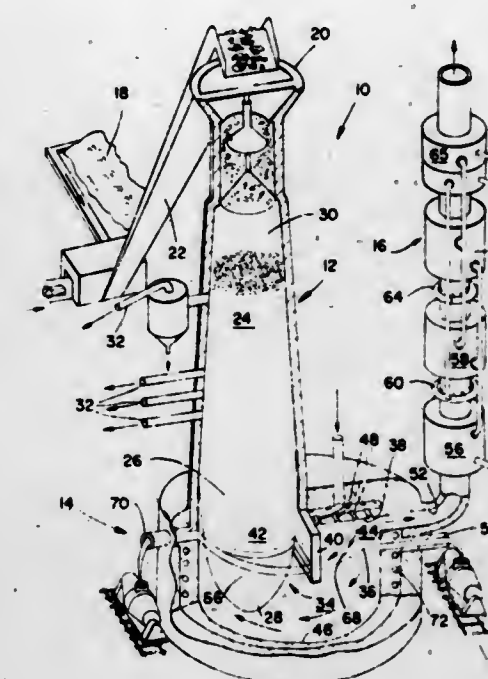
Ned S. Rasor, Sunnyvale, Calif., assignor to Rasor Associates, Inc., Sunnyvale, Calif.

Division of Ser. No. 852,525, Nov. 17, 1977, Pat. No. 4,187,672. This application Mar. 16, 1979, Ser. No. 21,267

Int. Cl.³ F02C 3/28

U.S. Cl. 60-39.04

33 Claims



1. A process for converting a carbon containing feed which is solid at ambient temperature into a hot gas, comprising:
 introducing a feed which yields carbon on being heated above a carbonization temperature thereof and which is solid at ambient temperature into a carbonization chamber of a reactor in such a manner that a contiguous mass of said feed is contacted, at a temperature above said carbonization temperature, with a liquid which is a solvent for carbon and which fills said reactor up to a liquid level therein, said introducing comprising arranging said mass of said feed to extend into said carbonization chamber with a first portion of said mass in contact with said liquid and progressively adding said feed to a second portion of said mass spaced from said first portion to maintain the extension thereof into said carbonization chamber substantially constant and to create a temperature gradient therealong;
 introducing into oxidation chamber means in said reactor, said oxidation chamber means being separated from said carbonization chamber above said liquid level and flow of said liquid being allowed between said oxidation chamber means and said carbonization chamber, oxidizing means having an oxygen content and exothermically reactive overall with said liquid to elevate the temperature of said liquid towards said temperature above said carbonization temperature and to oxidize carbon contained in said liquid, while maintaining said carbonization chamber substantially oxidizing means free;
 motivating said liquid to flow between said oxidation chamber means, where carbon contained in said liquid is oxidized by said oxidizing means, and said carbonization chamber, and into flowing contact with said mass within said carbonization chamber to force pyrolysis of said mass and dissolution of said carbon in said liquid; and
 conducting away from said oxidation chamber means a hot gas formed therein by reaction of said oxygen content of said oxidizing means with said carbon.

4,244,181

VARIABLE GEOMETRY GAS TURBINE ENGINE FUEL AND GUIDE VANE CONTROL

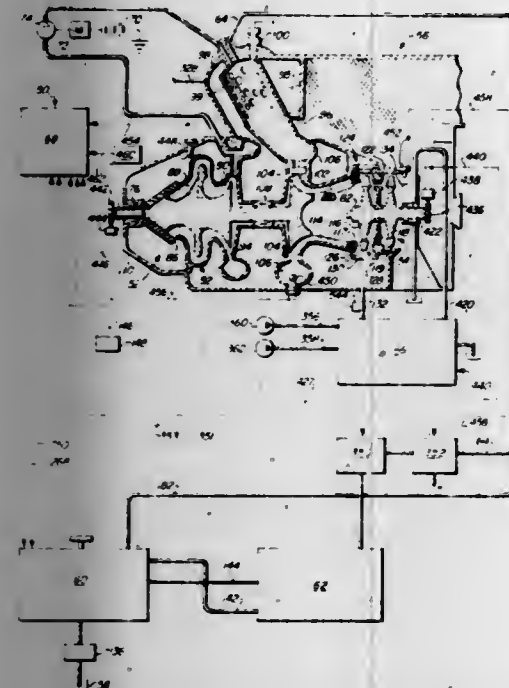
Wilfried Wiher, Redondo Beach, Calif.; Geoffrey D. Woodhouse, Phoenix, Ariz.; George B. Mattson, Scottsdale, Ariz.; Harvey B. Jansen, Tempe, Ariz.; Robert A. Hatch, Boca Raton, Fla., and Leon D. Lewis, Rancho Palos Verdes, Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1977, Ser. No. 863,198

Int. Cl.³ F02C 9/04, 9/14

U.S. Cl. 60—39.16 R

2 Claims



1. In a gas turbine engine having a gas generator section including a combustor for generating a gas flow, a power turbine section rotatably driven by said gas flow:

means for generating a first signal requesting substantial increase in output power of said engine, said first signal means including a throttle for selecting a desired gas generator speed;

first means for selectively maintaining the speed of said engine at a first preselected minimum idle speed, said first means comprising a fuel governor control for controlling fuel flow to said combustor, said fuel governor including a fuel metering element and means for sensing actual gas generator speed and adjusting said fuel metering element to minimize the difference between said desired and actual speeds;

second means selectively energizable for maintaining said engine speed at a second preselected idle speed substantially higher than said first idle speed, said second means comprising a solenoid having a plunger engageable with said fuel metering element upon energization of said solenoid;

means for generating a second signal anticipatory of said first signal, said second means automatically energized by said second signal;

means for adjusting the incidence of gas flow on the power turbine section between first and second dispositions respectively developing minimum and maximum pressure ratios across said power turbine section, said adjusting means responsive to said first signal and said means for sensing actual gas generator speed to adjust said incidence of gas flow to said first disposition during at least a portion of acceleration of said engine;

means for sensing temperature of inlet air flow to said gas generator and for sensing pressure in said combustor; and a scheduling valve operably associated with said temperature and pressure sensing means for metering fuel flow to said combustor as a preselected empirical function of said sensed pressure and sensed temperature during engine acceleration, said scheduling valve and said fuel metering element disposed in series relative to said fuel flow.

4,244,182

APPARATUS FOR CONTROLLING REFRIGERANT FEED RATE IN A REFRIGERATION SYSTEM

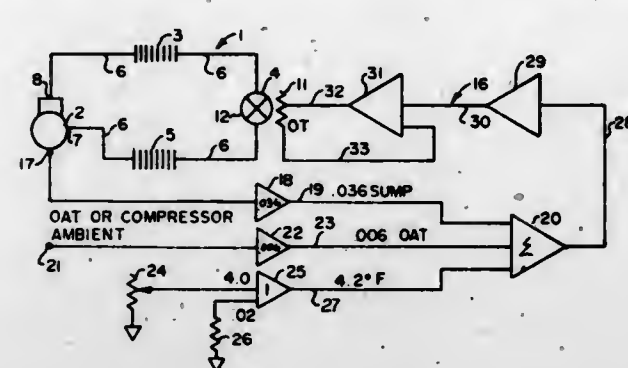
Joseph L. Behr, Des Peres, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 20, 1977, Ser. No. 862,445

Int. Cl.³ F25B 41/00, 41/04

U.S. Cl. 62—211

10 Claims



7. A system and control means therefor, comprising:

a compressor including a sump;
a first coil operatively connected to said compressor;
a second coil operatively connected to said compressor;
an electrically operable expansion valve connected between said first and said second coils, said expansion valve including electrically energizable means for controlling position of said valve; and

control means for controlling the electrical input to the electrically energizable means of said expansion valve, said control means including summing means having at least two inputs and one output, first temperature sensor means connected between the sump of said compressor and said first input, second temperature sensor means connected between the ambient surroundings of said compressor and said second input, and amplifier means electrically connected between the output of said summing means and the electrically energizable means of said expansion valve.

4,244,183

CONTROL MEANS FOR AN AUGMENTOR FOR A GAS TURBINE ENGINE

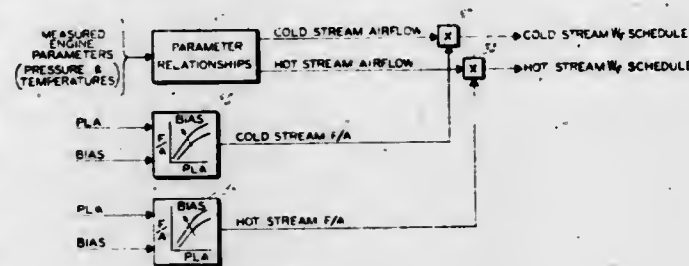
Edmond Preti, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 27, 1978, Ser. No. 900,679

Int. Cl.² F02K 3/08

U.S. Cl. 60—224

9 Claims



1. For a turbofan engine having an augmentor receiving both cooler fan air and hotter core air and fuel nozzles in the augmentor disposed in both the hot air and cooler airstreams, means for producing independent schedules for the fuel in said nozzles disposed in the hot airstream and cooler airstream, said scheduling means including first function generating means responsive to engine operating parameters for producing first and second signals indicative of hot stream airflow and cooler stream airflow, second function generating means responsive to means indicating power generated by said engine for producing third and fourth signals simulating fuel/air ratio in both the hot and cooler airstreams and means responsive to said first

signal and third signal and to said second and fourth signals for producing an output signal indicative of the scheduled fuel flow to the fuel nozzles disposed in said hot airstream and said cooler airstream.

4,244,184

AUXILIARY HYDROSTATIC DRIVE SYSTEM

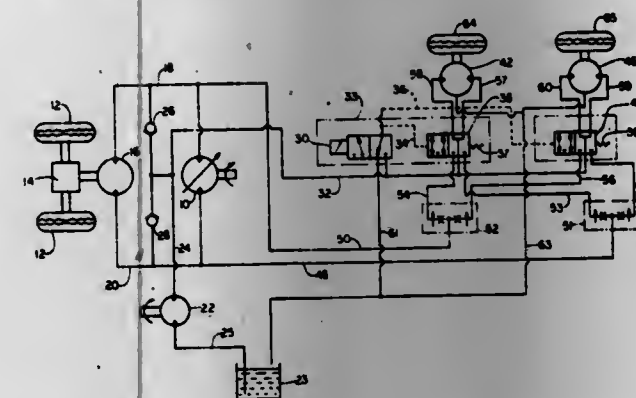
Dale Baldauf, Coldwater, and Larry J. Pingry, Celina, both of Ohio, assignors to Paul Revere Corporation, Greenwich, Conn.

Filed Aug. 23, 1979, Ser. No. 68,757

Int. Cl.³ B60K 17/34; F15B 11/06, 13/06

U.S. Cl. 60—420

7 Claims



1. A drive system for a vehicle propulsion unit having a pair of traction wheels comprising:

a variable displacement pump for supplying driving fluid to hydraulic motors;

a pair of hydraulic auxiliary motors, each of said motors having its output shaft operably connected to a wheel, each of said auxiliary motors having first and second fluid line connection means;

selector valve means having alternate on and off positions, said selector valve means including first and second fluid control spools;

first and second pairs of fluid lines connecting in parallel relation the two sides of each auxiliary motor to one side of said selector valve means, the first pair of fluid lines being connected to one side of said first spool, the second pair of fluid lines being connected to one side of said second spool;

a first flow divider supplied with forward pressure fluid from said variable displacement pump;

a second flow divider supplied with reverse pressure fluid from said variable displacement pump; and

a pair of fluid lines connecting in parallel relation the two outputs of each flow divider with the second side of said selector valve means, whereby, (1) with the selector valve means in its "on" position, the spools in said valve means allow hydraulic fluid to be communicated between said auxiliary motors and said flow dividers, and (2) with the selector valve means in its "off" position, the spools in said selector valve means offer a short circuit at the selector valve of said first and second pairs of fluid lines while at the same time preventing flow of hydraulic fluid between said first and second flow dividers and said auxiliary motors.

4,244,185

MASTER CYLINDER FOR HYDRAULIC BRAKE SYSTEM

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to IIT Industries, Inc., New York, N.Y.

Filed Jan. 29, 1978, Ser. No. 920,747

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734551

Int. Cl.³ B60T 13/20

U.S. Cl. 60—550

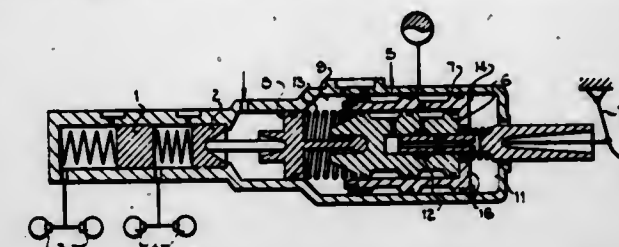
6 Claims

1. An improvement in a master cylinder for hydraulic brake systems, said master cylinder being actuatable both by the

force applied to a brake pedal exclusively and by an auxiliary force, said master cylinder including a master cylinder piston slidable by a booster with a hydraulic transmission interposed between said booster and said master cylinder piston, said improvement comprising:

a master cylinder actuating piston directly bearing mechanically on said master cylinder piston; and

said booster includes two booster pistons, a first of said two booster pistons having the same effective area as said master cylinder actuating piston and disposed coaxially of said master



cylinder between said master cylinder actuating piston and said brake pedal, and a second of said two booster pistons having a means connected to an end thereof adjacent said brake pedal abutting against an end of said first booster piston adjacent said brake pedal, said first and second booster pistons being hydraulically coupled to said master cylinder actuating piston for hydraulic operation thereof when said auxiliary force is present and only said first booster piston directly bearing mechanically on said master cylinder actuating piston for mechanical operation thereof when said auxiliary force fails.

4,244,186

BRAKE INSTALLATION

Herbert Mehren, Ludwigsburg, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

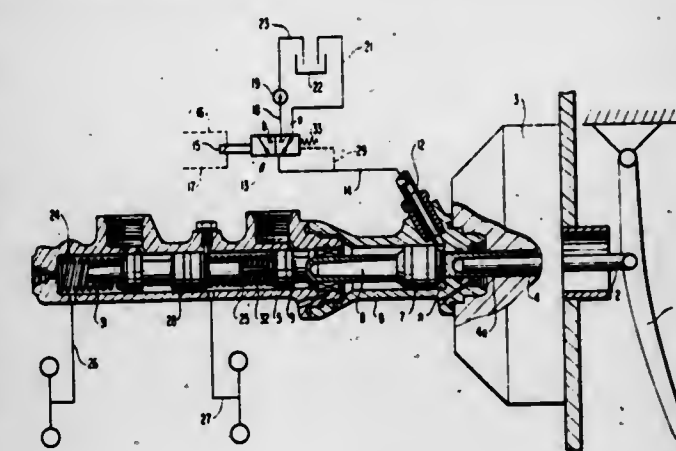
Filed Jan. 6, 1978, Ser. No. 913,062

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1977, 2725941

Int. Cl.³ F15B 7/00

U.S. Cl. 60—560

12 Claims



1. A hydraulic brake pressure control installation, comprising master brake cylinder means, a brake force booster means interposed between the master brake cylinder means and a brake pedal means, characterized in that an adjusting cylinder means is arranged between the brake force booster means and the master brake cylinder means for adjusting the hydraulic pressure used for actuation of brakes, the adjusting cylinder means includes an adjusting cylinder piston means and a piston rod means adapted to be supported by a piston means of the master brake cylinder means, the adjusting cylinder means further includes a working chamber means on a side of the adjusting cylinder piston means facing the brake force booster

means, a control valve means is provided for controlling a supply of a hydraulic medium to the working chamber means of the adjusting cylinder piston means, a connecting nipple is provided on the adjusting cylinder means and leads to the working chamber means, a feed line leads to the control valve means and is operatively connected with said connecting nipple, means are provided for producing a control signal to enable an electro-hydraulic actuation of the brakes, said control valve means is operable to connect the feed line either with a supply pressure line or with a substantially pressureless return line, and in that means are provided for causing an interruption in a supply of hydraulic medium to the working chamber means upon a pressure of the hydraulic medium in the working chamber means reaching a pressure proportional to the control signal.

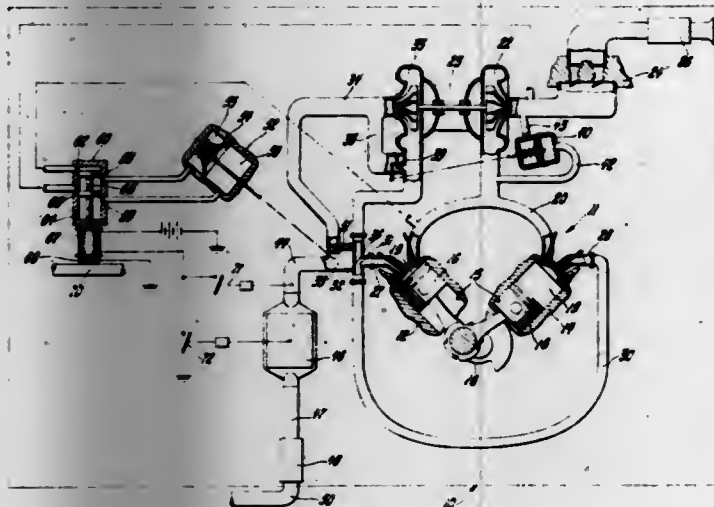
4,244,187

VEHICLE ENGINE WITH TURBINE BYPASS FOR EXHAUST TREATMENT DEVICE WARM-UP
Jeff K. Lane, 11313 Main Rd.; Joseph M. Negri, 10435 Rustic Ridge, both of Fenton, Mich. 48430, and Donald J. Harrod, 821 Milford Rd., Holly, Mich. 48442

Filed Mar. 30, 1979, Ser. No. 25,337
Int. Cl.³ F01N 5/04; F02B 37/00

U.S. Cl. 60—602

12 Claims



1. The combination in an automotive vehicle of an internal combustion engine with at least one variable volume working and combustion chamber, intake and exhaust systems each connected with said combustion chamber for respectively conducting intake gases to and exhaust gases from the combustion chamber, said exhaust system including a power turbine for receiving power from the engine exhaust gases and an exhaust treatment device that utilizes waste heat to encourage reaction of undesirable products in the exhaust gases, said treatment device being downstream of the turbine, and the improvement comprising

a bypass passage around the turbine and connecting the combustion chamber directly to the exhaust treatment device,

a valve operable to open and close the bypass passage, and actuating and control means operative to operate said valve to open said bypass passage during warm-up to quickly heat the exhaust treatment device by the direct passage of exhaust gases thereto around the turbine and further operative to close said bypass upon warm-up of the treatment device to direct exhaust gases through the turbine for normal power recovery before being directed to the treatment device.

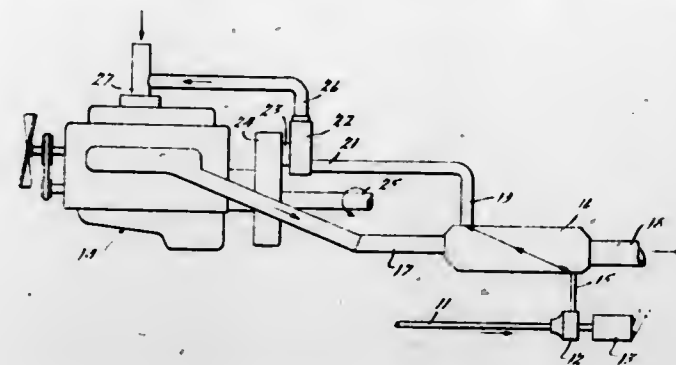
4,244,188
METHANOL FUELED SPARK IGNITION ENGINE
John R. Joy, Brighton, Mich., assignor to Williams Research Corporation, Walled Lake, Mich.

Filed Aug. 14, 1979, Ser. No. 66,458

Int. Cl.³ F02G 3/00; F02B 43/08

U.S. Cl. 60—624

2 Claims



1. In combination, a methanol supply line, a fuel pump in said line, a catalyst bed reformer connected to the outlet from said pump, the pump being capable of delivering said fuel at a relatively high pressure to the reformer, a spark ignition engine having an output shaft, an exhaust conduit leading from said spark ignition engine to said reformer whereby the pumped fuel will be heated and decomposed on the catalyst to form hydrogen and carbon dioxide, an auxiliary turbine having an output shaft coupled to the output shaft of said spark ignition engine, a conduit leading from the outlet of said reformer to the inlet of said auxiliary turbine whereby said carbon dioxide and hydrogen will be led to the turbine at an elevated temperature and pressure, an air inlet for said spark ignition engine, and means leading from the outlet of said auxiliary turbine to said air inlet whereby air will be mixed with said carbon dioxide and hydrogen and led to said spark ignition engine for combustion.

4,244,189
SYSTEM FOR THE MULTIPURPOSE UTILIZATION OF SOLAR ENERGY

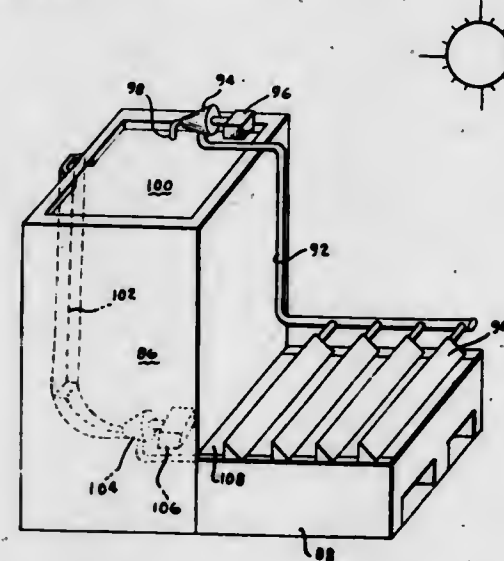
Emmanuel Bliamptis, 20 Phinney Rd., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 738,976, Nov. 4, 1976, abandoned. This application Oct. 10, 1978, Ser. No. 950,117

Int. Cl.³ F03G 7/02

U.S. Cl. 60—641

1 Claim



1. A system for the multipurpose utilization of solar energy, adapted for use in combination with multi-storied buildings, comprising: a building roof area at a first elevation, adapted for storing and exposing water to incident solar radiation; a building roof area at a second elevation, greater than said first elevation, adapted for storing water; a solar collector mounted over the building's roof at said first elevation and including

airtight means for collecting vapors of the water generated by incident solar radiation; a first electromagnetic generator means mounted on the building roof at the second elevation; a first turbine means operatively connected to the first generator means; duct means, including an elliptically shaped tubular member formed of two half members, where one half member is constructed of a material that will selectively pass solar radiation, and the other half member is constructed of a material that will absorb radiation passing through the first half member and heat the contents of the tubular member, connecting the vapor collection means at the first elevation and the first turbine means, whereby vapors collected and passing through the said tubular member cause said first turbine to operate; means connected to the first turbine for depositing water condensed in the first turbine on the building roof area at the second elevation; a second electromagnetic generating means; a second turbine means operatively connected to the second electromagnetic generating means; duct means connecting the second building roof storage area to the second turbine, whereby water from the roof storage area will descend and cause the second turbine to operate, and means connected to the second turbine for directing water output from the second turbine to the first building roof storage area.

4,244,190

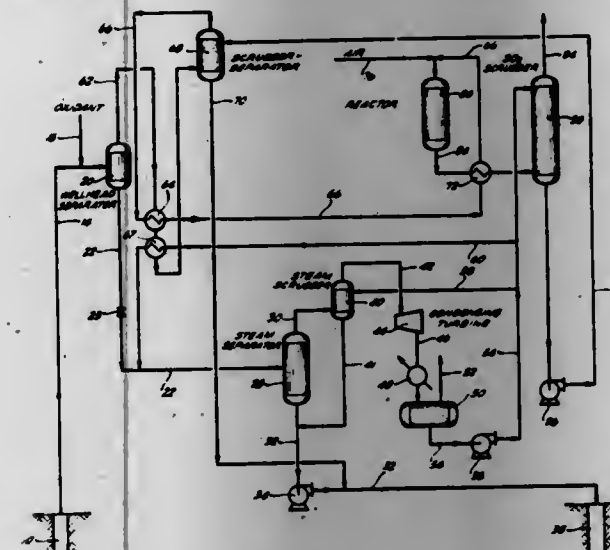
PROCESS FOR INTEGRATING TREATMENT OF AND ENERGY DERIVATION FROM GEOTHERMAL BRINE
William C. Lieffers, Fullerton, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Oct. 23, 1978, Ser. No. 953,644

Int. Cl.³ F03G 7/00

U.S. Cl. 60—641

27 Claims



1. A process for treating and deriving useful energy from a two-phase geothermal brine produced from a subterranean geothermal reservoir, said two-phase geothermal brine containing non-condensable gases, including hydrogen sulfide, and also containing heavy and/or transition metals in solution, the process comprising:

- separating said non-condensable gases from said produced geothermal brine, thereby separating a substantial majority of said hydrogen sulfide from said geothermal brine;
- flashing a portion of said separated geothermal brine to a high quality steam;
- deriving useful energy from said high quality steam;
- converting substantially all of said hydrogen sulfide separated from said geothermal brine with said non-condensable gases to sulfur and/or other sulfur compounds of a higher oxidized state;
- removing a portion of said sulfur and/or other sulfur compounds of a higher oxidized state from said non-condensable gases to form an environmentally acceptable vent gas;

- discharging at least a portion of said environmentally acceptable vent gas to the atmosphere;
- mixing said portion of said sulfur and/or sulfur compounds of a higher oxidized state with the geothermal brine remaining after step (b); and
- injecting the mixture formed in step (g) into said subterranean geothermal reservoir.

4,244,191

GAS TURBINE PLANT

Rudolf Hendriks, Velp, Netherlands, assignor to Thomassen Holland B.V., De Steeg, Netherlands

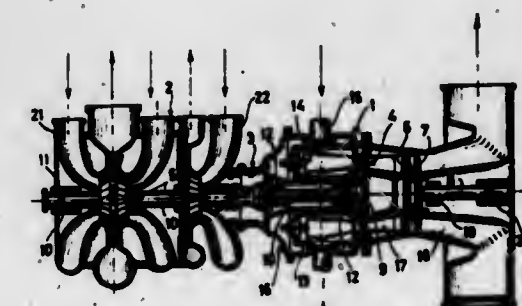
Filed Dec. 20, 1978, Ser. No. 971,535

Claims priority, application Netherlands, Jan. 3, 1978, 7800077

Int. Cl.³ F02C 3/08

U.S. Cl. 60—728

8 Claims



1. A gas turbine plant comprising:
a multipart casing within which are mounted a turbine section including turbines and a radial compressor section including compressors;
the turbine section including an outlet, an axial single stage turbine in driving connection with the compressors and at least one axial turbine stage mounted on an output shaft, the driving connection and output shaft being separate from one another;
the compressor section including a double-stage radial compressor having a high and a low pressure stage, the low pressure stage being double sided;
a compressor inter-cooler arranged between the low pressure stage and the high pressure stage; and
a heat exchanger disposed in the outlet of the turbine section.

4,244,192

REFRIGERATION SYSTEM AND RECIPROCATING COMPRESSOR THEREFOR WITH PRESSURE STABILIZING SEAL

Fred F. Chellis, Concord, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Dec. 11, 1978, Ser. No. 968,325

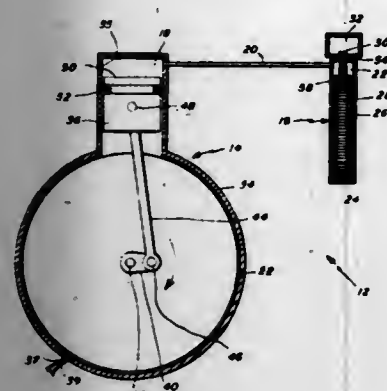
Int. Cl.³ F25B 9/00; F16J 9/08, 15/32, 15/48

U.S. Cl. 62—6

5 Claims

1. A seal arrangement for the compressor of a refrigerator of the type comprising a reciprocating displacer within a cold finger, the displacer being driven in a reciprocating motion by the pressure differential between a gas in the cold finger and gas in a gas spring volume, the cold finger being in fluid communication with a space in a compressor cylinder, the compressor space and the cold finger defining a closed working volume of gas which is compressed and expanded by a piston in the compressor cylinder, said seal arrangement including an annular-lip seal of generally U-shaped cross section within a circumferential groove at the interface of the piston and cylinder and characterized in that said seal arrangement includes means for restricting axial movement of the seal to retain the

annular lip of the seal spaced from the opposing faces of the groove, thereby maintaining a single direction of greater gas



leakage past the seal and attaining a substantially constant mean pressure in the working volume.

4,244,193

AMBIENT AIR COOLING SYSTEM

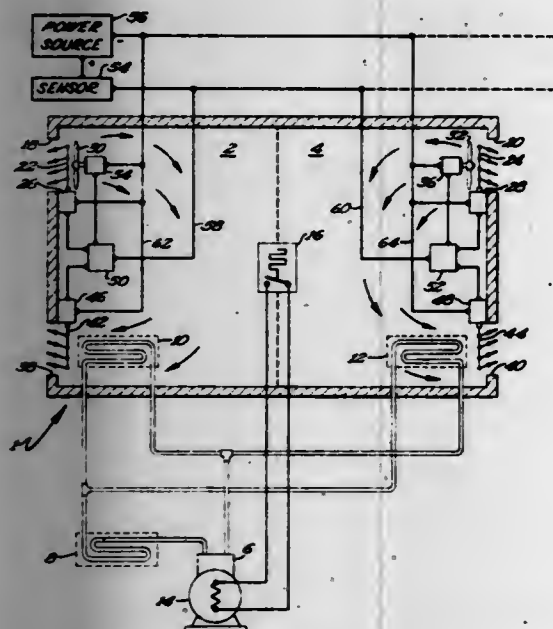
Marian H. Haakenson, 566 Sunset Pl., Bismarck, N. Dak. 58501

Filed Aug. 24, 1979, Ser. No. 69,343

Int. Cl.³ F25D 17/00

U.S. Cl. 62—180

6 Claims



1. Cooling apparatus for an enclosure comprising:
 - a refrigeration system comprising a compressor, condenser and evaporator interconnected in refrigerant flow relationship, said evaporator being located within the area of said enclosure to be cooled;
 - a first thermostat responsive to the temperature within said area to be cooled and operative to actuate said refrigeration system at a predetermined, upper temperature level and to deactivate said refrigeration system at a predetermined, intermediate temperature level below said upper temperature level;
 - air flow passage means connecting the interior of said enclosure with the outdoors;
 - fan means positioned to draw ambient air into said enclosure and said area to be cooled from the outdoors through said air flow passage means;
 - a second thermostat responsive to the temperature within said area to be cooled and operative to actuate said fan means at said intermediate temperature level and to de-energize said fan means at a predetermined, low temperature level below said intermediate temperature level; and
 - an outdoor temperature sensor responsive to ambient air temperature and operative to energize said second thermostat and render it operative to actuate said fan means at a predetermined ambient temperature less than said intermediate temperature level.

4,244,194

EVAPORATOR, PARTICULARLY FOR AIR CONDITIONING DEVICES

Hermann Haesters, Pulheim; Erich Altdorf, Cologne; Siegfried Lorenz, Frechen-Hulchen, and Bernd Forsting, Rheydt, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

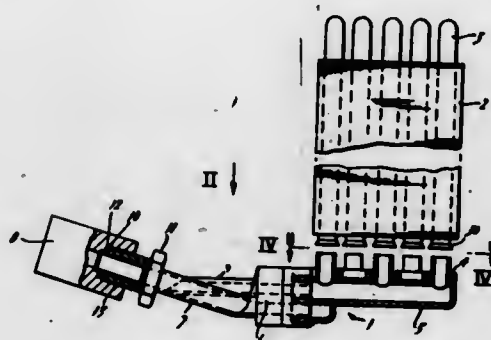
Filed Aug. 27, 1979, Ser. No. 70,089

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2847525

Int. Cl.³ F25B 39/02

U.S. Cl. 62—515

2 Claims



1. An evaporator, for air conditioning installations comprising:
 - a plastic connecting box divided into a forward flow chamber and a return flow chamber;
 - a pipe bundle of U-shaped metal pipes held together by cooling fins sealed and firmly bonded to the connecting box; the seal and bond being effected by a curable plastic in which the pipe ends are embedded;
 - said connecting box includes:
 - a distributor part which possesses several tubular injection chambers and return flow chambers located parallel to one another, each of which groups together a plurality of injection orifices or a plurality of return flow orifices respectively and also includes an injection collecting chamber and a return flow collecting chamber which correspondingly merge the respective injecting chambers and return flow chambers together, and a connecting part which is secured to the distributor part and forms connecting pipes connectable to an injection valve and compressor intake line respectively, the respective connecting pipes also being in fluid communication with the injection collecting chamber and return flow collecting chamber respectively, said connecting part being firmly bonded to the distributor part via a tongue and groove bond by means of a curable plastic.

4,244,195

CONNECTION MEANS

Harold T. Rutter, and Doyle W. Jaycox, both of St. Louis County, Mo., assignors to Sunnen Products Company, St. Louis, Mo.

Filed Jan. 15, 1979, Ser. No. 3,388

Int. Cl.³ F16D 3/18, 3/54

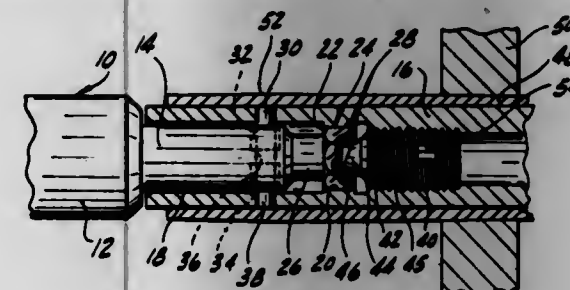
U.S. Cl. 64—9 R

25 Claims

1. Means for coupling substantially aligned members comprising a first elongated member adapted to be rotated, a second elongated member and means for coupling the members, said first member having a bore formed extending into said member from one end thereof, a projection formed on one end of the second member extending into said bore, said bore having a polygonal shaped bore portion spaced from the end of said first member, said projection having a polygonal shaped head portion for cooperation with the polygonal shaped bore portion, said head portion having a free end surface formed thereon, means in said bore in position to abut the free end

surface of said polygonal shaped head portion to limit penetration of the projecting portion into said bore and to provide force transmitting contact therebetween in the axial direction, and other means to hold said projection in said bore including registered cross-bore through said first and second members at a location intermediate the ends of said bore, the cross-bore through said first member being smaller in diameter than the cross-bore through the projection, and a pin extending through the registered cross-bore to prevent the members from coming apart.

14. Means to couple aligned rotatable driving and driven members comprising an elongated driving member having an axis and a free end with an axial bore extending thereinto, a driven member having an axis and a free end with an axial bore extending thereinto, each of said axial bores having a polygonal shaped bore portion spaced from the free end of the respective member and means forming a fixed stop therein, a cross-



bore through each of said driving and driven members intersecting the axial bore therein, an elongated coupling member having a similar polygonal shaped portion adjacent each opposite end thereof, each of said polygonal shaped portions having a surface forming a free end of said elongated coupling member, a pair of axial spaced cross-bore through said elongated coupling member in position to register respectively with the cross-bore through the driving and driven members when the coupling member is positioned extending into the axial bores in said driving and driven members in positions therein with the polygonal shaped head portions engaging the respective polygonal shaped bore portions and with the respective free end surfaces on said coupling member engaging the respective fixed bore stops, and a pin extending respectively through each set of registered cross-bore to hold the members together, the respective cross-bore through the elongated coupling member being larger in cross-section than the cross-section of the pin.

4,244,196

HOMOKINETIC JOINT

Nicolas Staeheli, Francesco Malocchi, and Walter Würth, all of Milan, Italy, assignors to Oerlikon Italiana SpA, Milan, Italy

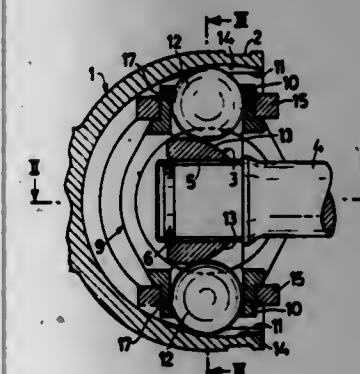
Filed Feb. 17, 1978, Ser. No. 878,876

Claims priority, application Italy, Mar. 2, 1977, 20837 A/77

Int. Cl.³ F16D 3/30

U.S. Cl. 64—21

1 Claim



1. A homokinetic joint, comprising an external cup-shaped linking element, an internal linking element inserted into said cup and an intermediate cage-like body adapted to afford a homokinetic bond between said linking elements, said interme-

diate body being equipped with laterally and outwardly projecting annular extensions, within which respective guiding elements are housed which have a spherical shape and cooperate with respective arcuate paths of the outer surface of the inner linking element and of the inner surface of the outer linking element for guiding said linking elements in their movements relative to one another on planes which are mutually perpendicular and about which annular extensions are arranged for rotation respective rings cooperating with shoulders of the inner surface of the outer linking element for transferring the torque from either linking element to the other, said joint being characterized in that said annular extensions of the intermediate body are spaced apart from the inner surface of the outer linking element and the centering of the inner linking element relative to the outer linking element is ensured by a coupled of spherically convex projections which protrude laterally of said inner linking elements in direction perpendicular to that of said annular extensions and cooperate with corresponding spherically concave portions of the internal surface of the outer linking element, the portions of the inner surface of the outer linking element which confront said annular extensions of the intermediate body having a substantially cylindrical trend.

4,244,197

METHOD AND APPARATUS FOR PRODUCING KNIT FABRIC

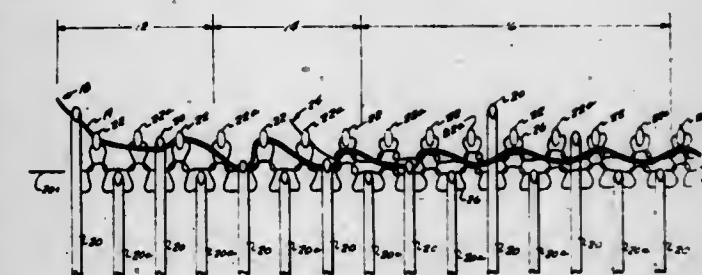
Klaus P. Althammer, Spartanburg, S.C., assignor to Sulzer Brothers Limited, Spartanburg, S.C.

Filed Sep. 10, 1979, Ser. No. 73,893

Int. Cl.³ D04B 9/06

U.S. Cl. 66—19

15 Claims



1. A knitting machine for producing a fleece fabric having a relatively light single knit ground construction and unknitted relatively heavy yarns inlaid and tucked in selected courses thereof to extend alternately over and under spaced groups of one or more consecutive wales of the ground construction, said machine including two sets of hook needles positioned for extended and retracted movement in planes disposed at angles to each other to form a fabric construction,
 - a first yarn feed position along the sets of needles of the machine; needle control means for extending selected groups of one or more consecutive needles of one of said sets which are spaced by at least one intervening of said set to a tuck position at said first yarn feed position while maintaining said intervening needles in welt position; needle control means for selectively extending at least one needle of the other set of needles which is located between each of said groups of tuck positioned needles to a yarn receiving position at said first yarn feed position; means for introducing a relatively heavy inlay yarn into the hooks of said extended needles of both sets at said first yarn feed position; needle control means for thereafter retracting the extended needles of both sets to dispose the inlay yarn in a sinuous path extending alternately on opposite sides of said plane of movement of said one set of needles;
 - a second yarn feed position along the sets of needles, needle control means for extending the previous tuck positioned needles and at least one of said intervening needles between each of said groups of tuck positioned needles of said one set to a knit position at said second yarn feed

position while maintaining said other set of needles in a retracted yarn miss position with said selected needles thereof holding said heavy inlay yarn out of the plane of movement of said intervening needles of said one set, means for feeding a relatively lightweight ground yarn to the hooks of each of said knit positioned needles in said one set at said second yarn feed position, needle control means for moving said knit positioned needles to a welt position to form corresponding stitches in said ground yarn while simultaneously releasing said inlay yarn from said previously tuck positioned needles to tuck the same into said ground yarn stitches without forming a stitch therein; and needle control means for thereafter moving said selected of said other set of needles to a knit position and then to a welt position to clear and release the inlay yarn from said needles into the knitted ground construction without forming a stitch therein.

4,244,198

SLIVER LOOP KNIT FABRIC

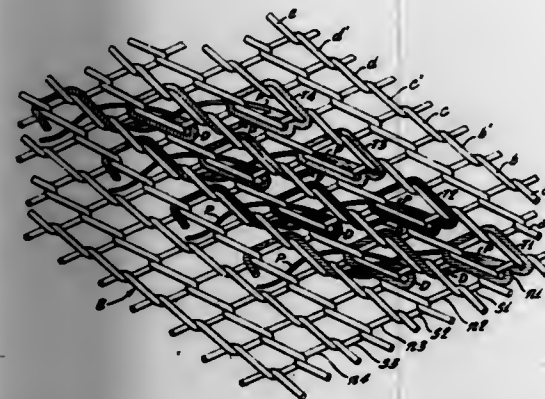
Rudolph S. Schaub, Rte. 2, Lakeview Rd., Caryville, Tenn. 37714, and John C. Harralson, 7501 S. Whispering Oak, Powell, Tenn. 37849

Continuation-in-part of Ser. No. 788,733, Apr. 19, 1977, abandoned. This application May 22, 1978, Ser. No. 908,162

Int. Cl.³ D04B 9/14, 9/16

U.S. Cl. 66—191

3 Claims



1. A sliver loop knit fabric comprising a base fabric formed of knitted courses and knitted wales and a plurality of tufts of sliver fibers incorporated into the base fabric, wherein:

- each of the tufts of sliver fibers is incorporated into plural courses and plural wales of the base fabric to provide a loop pile texture on one side of the loop knit fabric and the appearance of a jersey knitted web on the opposite side thereof and
- portions of each of the tufts are incorporated into the base fabric in the form of plural knitted stitches and other portions of the tufts are interlaced into the base fabric in the form of floats,
- the plural knitted stitches formed from each of the tufts of sliver fibers being connected course-wise and wale-wise by diagonal segments of fibers, at least some of said floats being trapped between the base fabric and said diagonal segments of fibers,
- said loop pile texture being constituted by said floats and by said diagonal segments of fibers.

4,244,199

WARP KNIT ELASTIC TAPE CONSTRUCTION FOR USE AS WAISTBAND REINFORCEMENT

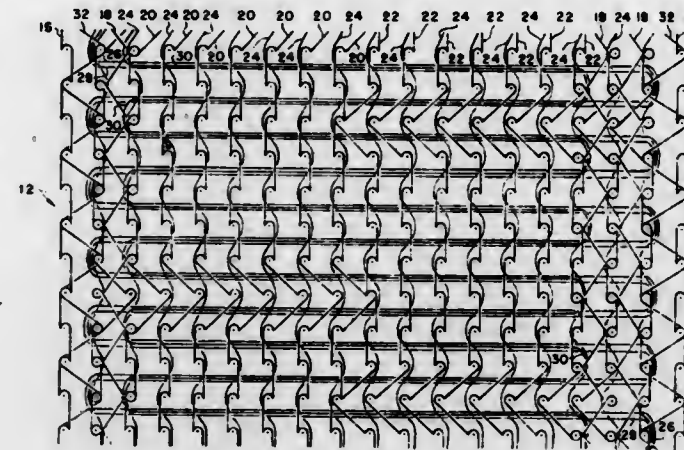
Werner Rhode, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 875,476, Feb. 6, 1978, abandoned, which is a continuation of Ser. No. 759,819, Jan. 17, 1977, abandoned. This application Jul. 5, 1979, Ser. No. 54,722

Int. Cl.³ D04B 23/10

U.S. Cl. 66—193

4 Claims



1. A warp knit elastic tape suitable for use as a waistband support in garments having a relatively high degree of stretch in the longitudinal direction and dimensional stability in the transverse direction comprising: a plurality of pairs of relatively inelastic yarns with each inelastic yarn forming single stitches in every course of the tape, a plurality of relatively elastic yarns inlaid in said stitches and extending across at least one wale of the tape from course to course, a relatively stiff and heavy continuous monofilament yarn inlaid between adjacent stitches in each wale and extending across the tape between every course, said monofilament yarn at the end of each course reverses direction at each side of the tape to pass through the next adjacent course with the reversal points of said monofilament yarn at one side of said tape being closer to the centerline of said tape than the reversal points on the other side of said tape and a skirt knit into each tape outside the reversal points on said monofilament yarn which is closer to the centerline of said tape.

4,244,200

APPARATUS FOR SUPPLYING A DEFINITE AMOUNT OF A TREATING LIQUID TO A TEXTILE PRODUCT CONTINUOUSLY

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

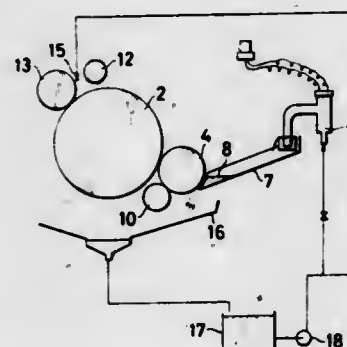
Filed Jun. 26, 1979, Ser. No. 52,307

Claims priority, application Japan, Jul. 5, 1978, 53-81664

Int. Cl.³ D06B 1/14

U.S. Cl. 68—202

5 Claims



1. An apparatus for continuously applying a definite amount

of a treating liquid to a textile product comprising a liquid retaining roll having a surface for retaining a treating liquid thereon, a rubber roll disposed in pressure contact with said liquid retaining roll for forming a bite therebetween and said rubber roll arranged to guide the textile product to the bite so that the textile product is pressed against said liquid retaining roll for transferring a definite amount of the treating liquid to the textile product, said liquid retaining roll being rotatable about an axis, said rubber roll being rotatable about an axis in generally parallel relation with the axis of said liquid retaining roll with said rubber roll and liquid retaining roll rotating in opposite directions, a vessel located on the opposite side of said liquid retaining roll from the bite between said rubber roll and liquid retaining roll and being angularly spaced from said rubber roll, said vessel having a bottom surface sloping downwardly toward the surface of said liquid retaining roll, said vessel being arranged to contain a body of the treating liquid so that a treating liquid level is located within said vessel above the bottom thereof with the body of treating liquid contacting the surface of said liquid retaining roll, said vessel being open along the side thereof extending in the axial direction of said liquid retaining roll and adjacent said liquid retaining roll, said vessel having a length of said side so that the treating liquid therein flows out of said vessel at the opposite ends of said retaining roll for eliminating flock, hards and dust adhering to said liquid retaining roll, a doctor roll disposed in pressing contact with said liquid retaining roll and being angularly spaced from said rubber roll and said vessel so that said liquid retaining roll rotates through said vessel and contacts said doctor roll before contacting said rubber roll, and means for cleaning the surface of said rubber roll, said means including means for directing a part of the treating liquid against the surface of said rubber roll at a position angularly spaced from the bite between said rubber roll and said liquid retaining roll.

4,244,201

FLUID PRESSURE ACTUATED DEVICE

Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & C., Modena, Italy

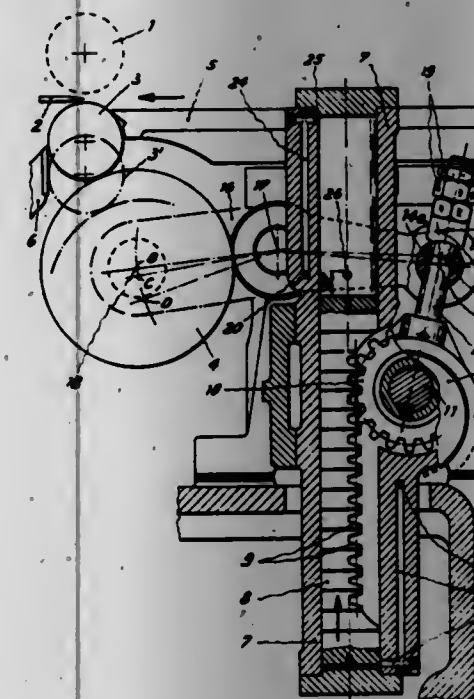
Filed Sep. 5, 1978, Ser. No. 939,850

Claims priority, application Italy, Sep. 15, 1977, 27586 A/77

Int. Cl.³ F01B 9/00; B21B 13/02; C14B 1/14; F15B 15/22

U.S. Cl. 69—9

4 Claims



1. A material splitting machine which includes a cutting region for a material to be split, a ring roller in said cutting region for applying pressure to the material, scrapers associated with, and arranged to guide the ring roller, a pressure roller acting on the ring roller, and a fluid pressure actuated device comprising a cylinder, a double acting piston movable in the cylinder by pressurized fluid, a rack movable with the

piston, a pinion gear co-operating with the rack, a cam connected to the pinion gear for angular movement therewith, a lever system connected to the pressure roller and a connecting rod connecting the cam to the lever system for effecting displacement of the pressure roller from the cutting region in response to movement of the piston from a first position adjacent to a first end of the cylinder towards a second position adjacent to a second, opposite end of the cylinder, said cylinder having first and second ports communicating with the first and second ends of the cylinder and a third port between the first and second ports, conduit means for respectively connecting the ports to a source of fluid pressure and to exhaust, the arrangement being such that connection of the first port to the fluid pressure source while the second port is connected to exhaust will cause the piston to move from said first position to said second position so as to effect maximum displacement of the pressure roller, whereas connection of the fluid pressure source to the first port when the piston is in said first position and while the third port only is connected to exhaust will cause the piston to move from said first position to a position in which it closes the third port and between said first and second positions so as to effect limited displacement of the pressure roller.

4,244,202

APPARATUS FOR MAKING CORRUGATED FLEXIBLE METAL TUBING

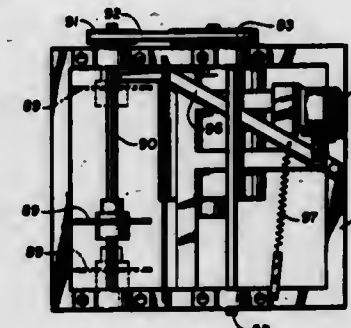
Leroy E. Anderson; Michael P. Schmidt, and William W. Weaver, all of Detroit Lakes, Minn., assignors to Manufacture Systems, Inc., Detroit Lakes, Minn.

Continuation of Ser. No. 813,894, Jul. 8, 1977, abandoned. This application Oct. 20, 1978, Ser. No. 953,098

Int. Cl.³ B21C 37/12; B23D 45/12

U.S. Cl. 72—49

9 Claims



1. A flying cut-off device for cutting off sections from an elongated member as it is being moved longitudinally, comprised of:

- a frame;
- a saw support pivotally mounted on said frame for tilting movement thereof about an axis and between a retracted position and a cutting position;
- a power-driven shaft rotatably mounted upon said support for rotation thereof about its longitudinal axis and extending parallel to and laterally of the axis of tilting movement of said support;
- a circular saw slidably and drivably mounted on said shaft for rotating therewith in driven relation and being freely slidable in non-biased relation longitudinally thereof during rotation between an initial position and a cut-completed position and
- means mounted on said frame in cooperation with said saw being shiftably mounted relative to said shaft for movement along its length for returning the saw to its said initial position subsequent to completion of each cut.

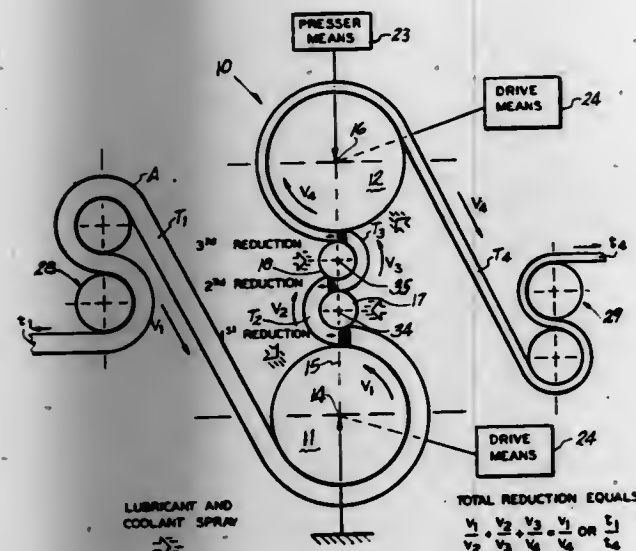
4,244,203

COOPERATIVE ROLLING PROCESS AND APPARATUS
Michael J. Pryor, Woodbridge, and Joseph Winter, New Haven, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 29, 1979, Ser. No. 25,232
Int. Cl.³ B21B 1/22, 39/08

U.S. Cl. 72-205

31 Claims



1. A rolling mill apparatus adapted to provide increased percentage reductions in the thickness of metal strip per pass and increased total reductions between anneals, said apparatus comprising:

at least first and second driven back-up rolls having respective first and second roll axes defining a first plane, said back-up rolls being arranged for relative movement along said first plane toward and away from each other;

at least first and second idling work rolls having respective third and fourth roll axes, said work rolls having substantially smaller diameters than said back-up rolls, said third and fourth roll axes being arranged generally in said first plane, said work rolls being arranged between said first and second back-up rolls and said work rolls being arranged for relative movement generally in said first plane toward and away from said backup rolls and from each other;

means for driving said back-up rolls so that the peripheral speed of said first back-up roll is less than the peripheral speed of said second back-up roll;

said rolls being arranged to take three thickness reductions in said strip in a single pass through said mill, a first of said reductions being taken in a first roll bite between said first back-up roll and said first work roll, a second of said reductions being taken in a second roll bite between said first work roll and said second work roll and a third of said reductions being taken in a third roll bite between said second work roll and said second back-up roll;

said rolls being arranged so that said strip travels through said mill in a serpentine fashion wherein said strip first encompasses said first back-up roll and then forms an S-shaped braid about said work rolls and then encompasses said second back-up roll;

means for applying forward and back tension to said strip as it passes through said mill; and

presser means for applying a desired pressure between said rolls.

4,244,204

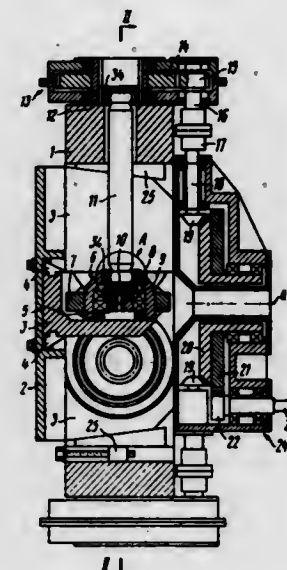
MILL STAND

Vladimir N. Vydrin, ulitsa Timiryazeva, 28, kv. 27; Valery V. Pastukhov, ulitsa Stalevarov, 28-a, kv. 79; Leonid A. Barkov, ulitsa Klary Tsetkin, 30-a, kv. 13; Pavel M. Sychev, ulitsa Timiryazeva, 36, kv. 3; Sergei I. Dolgov, prospekt Lesina, 68, kv. 20, all of Chelyabinsk; Dmitry S. Novikov, Leninsky prospekt, 49, kv. 20, Moscow; Sergei A. Mymrin, ulitsa Shirshova, 7, kv. 55, Chelyabinsk; Palat S. Maxudov, ulitsa Metallurgov, 9, kv. 4, Chirchik; Nikolai N. Sergeev, ulitsa Metallurgov, 5, kv. 4, Chirchik, and Anatoly A. Shegal, ulitsa Sportivnaya, 46, kv. 44, Chirchik, all of U.S.S.R.

Filed Nov. 7, 1978, Ser. No. 958,334
Int. Cl.³ B21B 13/10, 31/02

U.S. Cl. 72-224

4 Claims



1. A mill stand comprising: a roll housing; chocks mounted on said roll housing; axles having first ends non-rotatably fixed to said chocks; workrolls of toroidal shape rotatably mounted on said axles and forming a pass, with at least one of said workrolls being power driven; a drive for rotating said at least one of said workrolls; a spindle driven from and geared to said drive; connecting means for connecting said spindle and said at least one of said workrolls; said connecting means comprising a generally annular member, interconnecting said spindle and said at least one of said workrolls; said spindle being positioned in direct proximity with and on the side of the free end of one of said axles carrying said at least one of said workrolls to thereby permit the application of great force and hence permit rolling of difficult-to-form metals and alloys.

4,244,205

APPARATUS FOR ALIGNING EXTRUSION PRODUCING MEMBERS OF A PRESS

Raymond F. Boshold, Springfield, Pa., assignor to Wean United Inc., Pittsburgh, Pa.

Filed Apr. 25, 1978, Ser. No. 899,953
Int. Cl.³ B21C 27/00, 23/00

U.S. Cl. 72-263

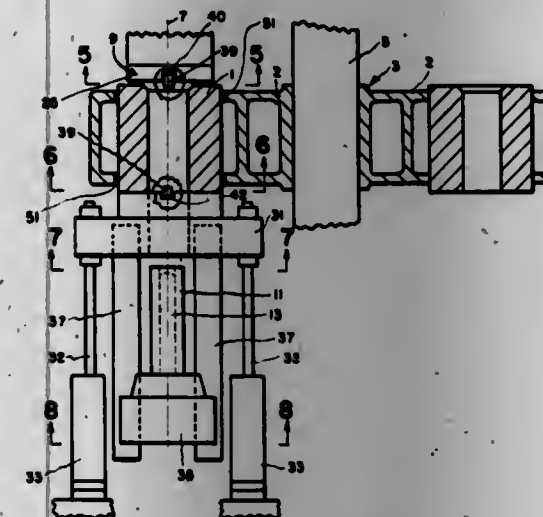
10 Claims

1. In an extrusion press including a container-container holder assembly having a container holder with an opening for supporting a container into which a heated billet is placed, a die slide for supporting a die assembly on the working centerline of the press, and a sealing member and an extrusion stem arranged to move coincident to the working centerline of the press, said extrusion stem positionable on an opposite side of the sealing member relative to the container when positioned in said working position, and said sealing member having an opening through which said extrusion stem extends during an extrusion stroke of the press, said container-container holder assembly being positionable into and out of a working position relative to said working centerline of the press and when in said working position adapted to be positioned between and adjacent to said die slide and said sealing member so that an

axis of said container is coaxial with the die assembly, said sealing member, and said extrusion stem during the sealing stroke of the press,

said container and said die assembly having cooperating surfaces which contact each other during said sealing stroke of the press,

said container-container holder assembly, said die slide, and said sealing member including mutual cooperating means for allowing movement of said container relative to said holder in a direction toward said working centerline to obtain a predetermined registration of said container with said die assembly and said sealing member and for maintaining said container in said predetermined registration,



said mutual cooperating means including:

a first means for allowing said movement of said container relative to said container holder, and

a second means formed as a part of said container, said die slide and said sealing member for registering and maintaining said container with said die slide and said sealing member in said predetermined registration,

said second means constructed and arranged in a manner to be operatively effective during said sealing stroke of said press prior to said contacting of said surfaces of said container and said die assembly.

4,244,206

TOOTHED BELT PULLEY

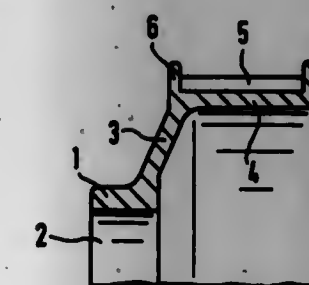
Lore Krull, Glittersloher Strasse 40, 4803 Steinhagen, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,309
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809872

Int. Cl.³ B21K 1/30, 1/42

U.S. Cl. 72-377

1 Claim



1. A method for the production of a toothed belt pulley made of metal without machining which is provided at lateral sides with annular flanges which protrude above the height of the teeth comprising initially shaping one of the two flanges as an axially extending collar with an outside diameter equal to or less than the diameter of the pitch circle of the teeth and then

4,244,207

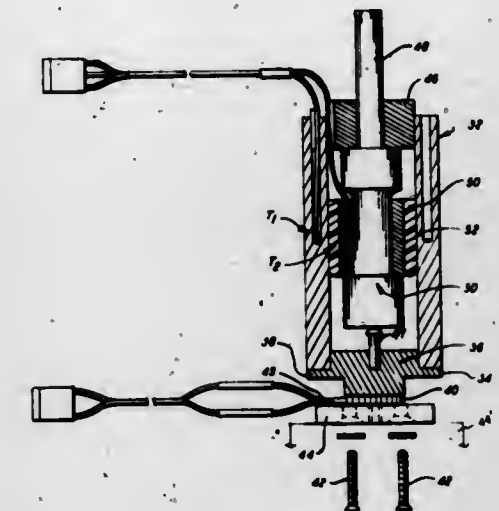
TEMPERATURE STANDARD

John J. J. Staunton, Oak Park, Ill., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 9, 1979, Ser. No. 18,969
Int. Cl.³ G01K 15/00

U.S. Cl. 73-1 F

25 Claims



1. A melting point cell for calibrating a temperature measuring device comprising:

a body for containing a crystalline material which melts at a known temperature, said body including a passage for receiving the temperature measuring device and disposing it, during calibration, closely adjacent said crystalline substance;

a first thermally conductive member in thermal contact with at least a portion of the exterior of said body;

a second thermally conductive member surrounding said body and said first thermally conductive member;

a thermally resistive material disposed between and in thermal contact with said first and said second thermally conductive member; and

means to control the temperature of said second thermally conductive member so that the rate of heat flow into said body is at a desired rate.

4,244,208

HIGH-PRESSURE LEAK TESTING APPARATUS AND PACKER

Ernest D. Hauk, Yucca Valley, and Jesse C. Kirkpatrick, Mission Viejo, both of Calif., assignors to Service Equipment Design Co., Inc., Signal Hill, Calif.

Filed May 23, 1979, Ser. No. 41,611
Int. Cl.³ G01M 3/28

U.S. Cl. 73-46

13 Claims

10. A high-pressure leak-testing apparatus for pipe joints, which comprises:

(a) first and second means to define first and second casing sections,

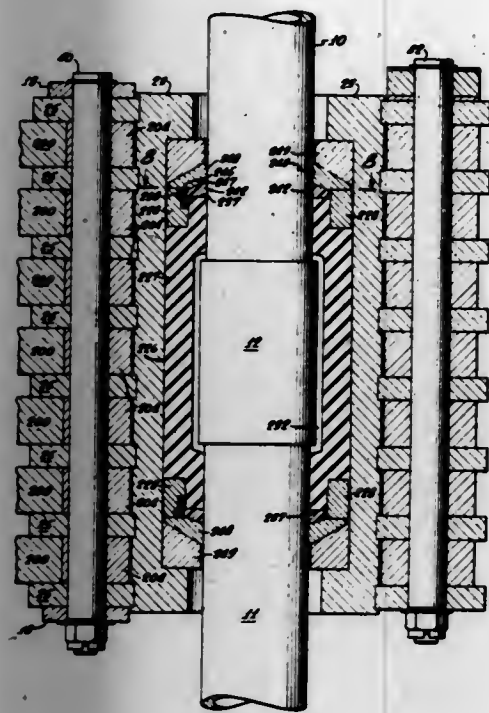
said first and second means each having several external ribs mounted therein to strengthen the same against bending, said ribs being provided in spaced parallel relationship in planes generally transverse to the axis of said casing,

(b) link means connected pivotally to said first casing section,

(c) several hooks connected to said link means and adapted to hook onto said second casing section to maintain said casing sections in closed condition, the number of said hooks being substantially equal to the

number of spaces between the ribs of said casing sections,

(d) a hollow cylindrical mass of rubber which is split at at least one point about the circumference thereof, said mass of rubber having insert elements molded therein, and



(e) extrusion-prevention means at each end of said mass of rubber and adapted to seat closely adjacent the pipe to be tested, said extrusion-prevention means being synthetic resin adapted to flex and having a resistance to extrusion much greater than that of said rubber forming said cylinder.

4,244,209

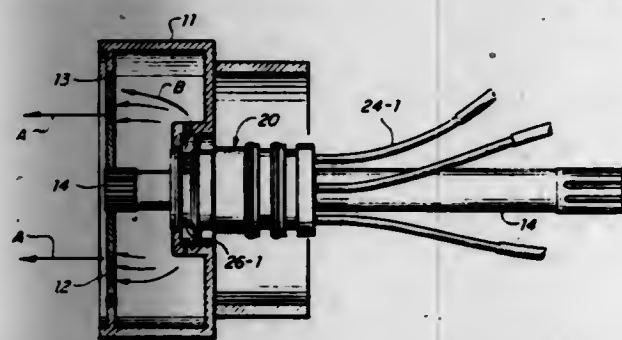
TESTING OF FLUIDIC DEVICES

John Ceramicoli, 211 Beaver St., Framingham, Mass. 01701
Continuation of Ser. No. 836,540, Sep. 26, 1977, Pat. No. 4,158,304. This application Feb. 12, 1979, Ser. No. 11,406
The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.

Int. Cl.³ G01M 19/00

U.S. Cl. 73-49.8

10 Claims



1. Apparatus for testing of fluidic devices which comprises interface adapter for application to the device, said adapter including an internal channel that extends to a port which is able to communicate with a corresponding part of the device and is located in a groove bounded by snap rings; and means for directing a gaseous medium into said device through said internal channel.

4,244,210
COMBINED FUEL LEVEL AND FUEL CONSUMPTION INDICATOR

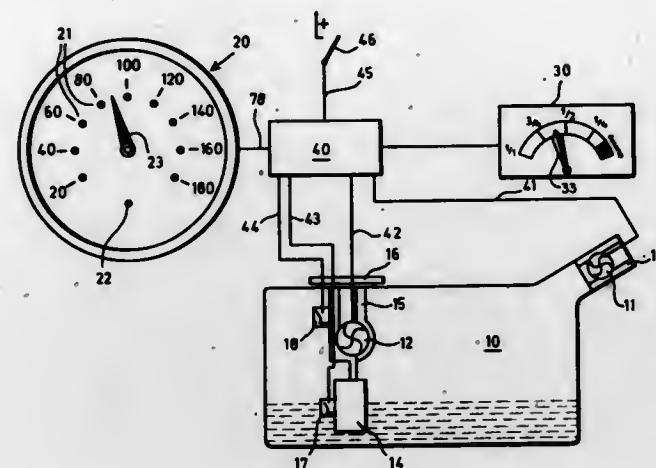
Hans Prohaska, Bietigheim-Bissingen, and Eckhardt Schmid, Güglingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,129

Int. Cl.³ G01F 9/00

U.S. Cl. 73-113

3 Claims



1. Apparatus for measuring and indicating the quantity of fuel in a tank of an automotive vehicle said tank having a fuel inlet and a fuel output, said apparatus comprising:

first means coupled to said inlet of said tank for providing a first signal proportional to the quantity of fuel delivered into said tank;

second means coupled to said output of said tank for providing a second signal proportional to the quantity of fuel delivered from said tank;

means coupled to said first and second means and responsive to said first and second signals for providing an output signal indicative of the difference between said first and second signals;

means responsive to said output signal for indicating the quantity of fuel in said tank;

means for generating periodic signals;

means coupled to said means for generating signals and to said second means and responsive to said second signal and to said periodic signals for providing a fuel consumption signal proportional to the quantity of fuel delivered from said tank between successive ones of said periodic signals; and,

means responsive to said fuel consumption signal for indicating the rate of fuel delivery from said tank.

4,244,211

APPARATUS FOR MEASURING SMALL WEIGHT CAPACITIES OF LIQUIDS

Ugo Carpino, Milan, Italy, assignor to T.E.A. Tecniche Elettrotecniche Applicate S.r.l., Milan, Italy

Filed Jan. 11, 1979, Ser. No. 3,768

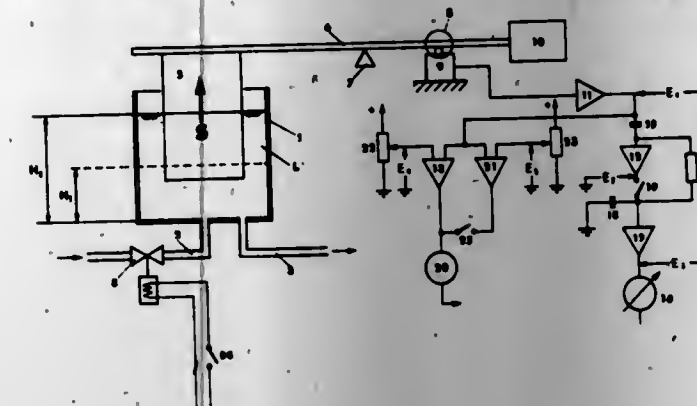
Claims priority, application Italy, Jan. 12, 1978, 19216 A/78
Int. Cl.³ G01M 15/00; G01F 9/00, 23/20

U.S. Cl. 73-113

7 Claims

1. Apparatus for measuring small weight capacities of liquids, characterized in that it comprises: a vessel to be filled with the liquid the weight capacity of which is to be measured; a pipe for the delivery of said liquid from said vessel; a body immersed in said liquid and supported in a substantially fixed position, within the vessel, by a lever adapted to transmit the buoyancy acting on said body to an electric transducer; an electronic shunt circuit fed by the output of said transducer; and a measuring instrument fed by the output of said electronic

shunt circuit through an amplifier, the body immersed in the liquid being connected to one end of a lever, fulcrumed at an



intermediate point and balanced at the opposite end, close to which end said lever bears on said transducer.

4,244,212

FLUIDIC PRESSURE RATIO SENSOR

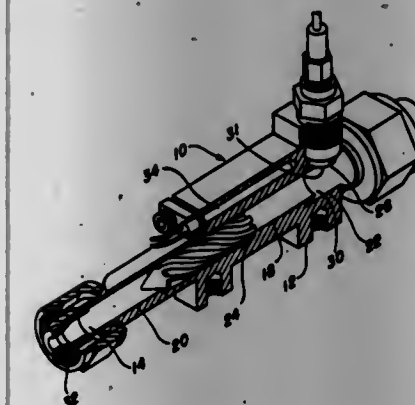
David A. Stignani, Shafer, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 25, 1979, Ser. No. 42,470

Int. Cl.³ G01F 7/00

U.S. Cl. 73-115

2 Claims



1. A pressure ratio detector connected between the compressor and the engine inlet of a turbojet engine, comprising: a housing with a fluid flow channel passing through the housing; said housing having an inlet at one end of the flow channel adapted to be connected to a compressor stage of a turbojet engine and an outlet at the other end of the flow channel adapted to be connected to inlet of said turbojet engine; an insert having an orifice for producing a pressure drop in the inlet of said flow channel; a plug in said flow channel; said plug having a flow spreader at the inlet end and a plurality of helical flow paths in said flow channel; means, between said plug and said outlet, for subjecting the flow to a sudden expansion and inducing a nutation in the flow; means, responsive to the acoustic nutational frequency in the region of said expansion, for converting the acoustic nutational frequency to an electrical output signal; and means, for measuring the temperature of flow at the inlet end of the flow channel.

4,244,213

RETORQUE MEASURING APPARATUS

Engene J. Marcinkiewicz, Plymouth, Mich., assignor to GSE, Inc., Farmington Hills, Mich.

Filed Mar. 15, 1979, Ser. No. 20,610

Int. Cl.³ B25B 23/142

U.S. Cl. 73-139

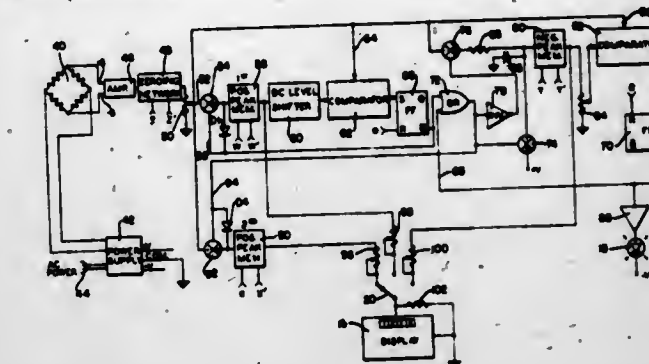
15 Claims

1. Apparatus for measuring the amount of previously applied torque to a fastener comprising: a transducer means for providing an output signal representa-

tive of the amount of subsequently applied torque to the fastener, such torque being applied until motion of the fastener is obtained;

first positive peak detector means for sensing the maximum positive output of said transducer before said signal decreases;

negative peak detector means for sensing the minimum negative output signal of the transducer before said signal again increases;



switching network means coupled to the output of said first positive peak detector for energizing said negative peak detector upon detection of a negatively sloped signal from the transducer; and

display means for displaying the output of said negative peak detector, said output being closely associated with the amount of torque originally applied to the fastener.

4,244,214

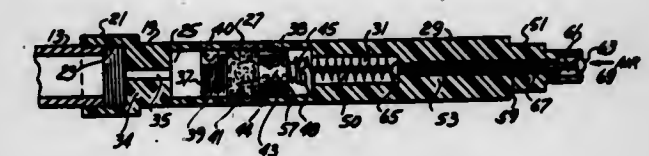
VISUAL TIRE VALVE

William F. Curran, 6561 Balfour, Allen Park, Mich. 48101
Continuation-in-part of Ser. No. 2,915, Jan. 12, 1979, Pat. No. 4,193,295. This application Sep. 24, 1979, Ser. No. 78,668
The portion of the term of this patent subsequent to Mar. 18, 1997, has been disclaimed.

Int. Cl.³ B60C 23/02

U.S. Cl. 73-146.8

12 Claims



1. A visual tire valve adapted for mounting over a tire stem comprising a stem housing at one end mounted upon said stem, said housing having an elongated bore intermediate its ends and a barrel at its other end having a counterbore communicating with said bore;

a bolt slidably mounted within said bore having a longitudinal aperture therethrough;

a one-way valve normally seated in said aperture having a stem projected loosely through said bolt aperture and outwardly thereof;

there being three annular bands of different colors end-to-end over the exterior of said bolt, for indicating over-inflation, proper inflation, and under-inflation, respectively;

a transparent window in said stem housing of the same width as one color band, for viewing one band and alternately, parts of a pair of adjacent bands;

said barrel including an axial stem portion having a normally closed longitudinal bore, the inner end of the stem portion being in registry with said counterbore and its outer end extending from said barrel;

a spring calibrated for a predetermined tire pressure, within said barrel interposed in compression between said bolt and stem portion;

and a normally seated spring-biased air flow control rod within said stem portion closing off air communication therethrough, and upon application thereto of air under

pressure adapted to unseat for transmitting compressed air through said stem portion and housing, unseating said valve, and through said tire valve stem, said bolt reacting to the tire pressure until an intermediate color band registers with said window.

4,244,215

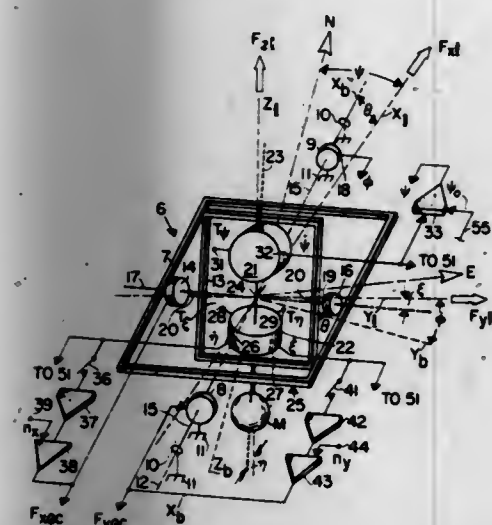
AUTONOMOUS NAVIGATION SYSTEM

Robert A. Froesch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Shmuel J. Merhav, Haifa, Israel

Filed Sep. 24, 1979, Ser. No. 78,611
Int. Cl.³ G01C 22/02; G01P 9/02

U.S. Cl. 73-178 R

11 Claims



2. Apparatus for measuring local level specific force components on a vehicle comprising:

a gyro-stabilized two-degree of freedom pendulum including an inner gimbal rotatably supported by an outer gimbal adapted to be strapped to the longitudinal axis of said vehicle, said pendulum having an axis normal to the axis of rotation of said inner gimbal;

means for generating signals proportional to the angular velocities with which said pendulum axis deviates from the local vertical about x and y orthogonal axes in the local level plane;

means for torquing each gimbal;

means coupled between said generating means and said torquing means for integrating and amplifying said angular velocity signals and producing torque command signals for energizing said torquing means, said torque command signals being proportional to the specific force components on said vehicle along said x and y axes.

4,244,216

HEAT FLOW METER

Samuel G. Dukelow, Mayfield Village, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

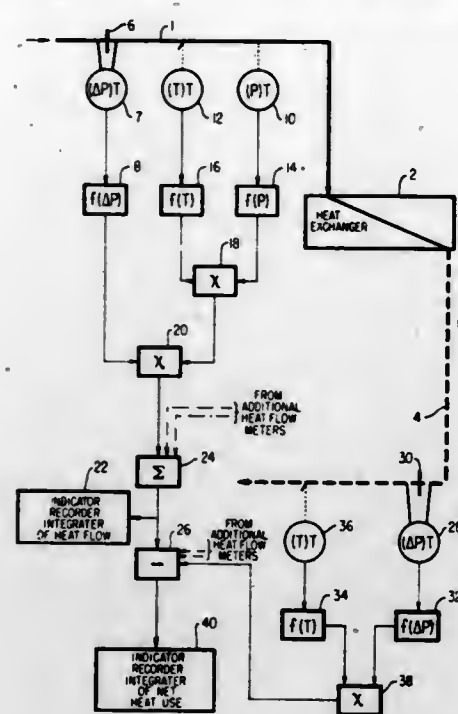
Filed Jan. 8, 1979, Ser. No. 1,557
Int. Cl.³ G01K 17/06, 17/10

U.S. Cl. 73-190 H

7 Claims

1. A meter of the heat transported through a conduit by a vapor carrier having a specific volume and enthalpy each of which varies in known discrete functional relationship with the carrier conditions of pressure and temperature, comprising, means generating a first signal proportional to the heat transported by the carrier at the specific volume and enthalpy as determined from predetermined values of said conditions of the carrier; and means correcting first said signal for the change in specific volume and enthalpy of the carrier produced by a change in value of one of said conditions from the predetermined value comprising, means generating a signal proportional to the value of said one condition, a first function generator responsive to said last named signal generating a first composite signal proportional to the total correction required

to said first signal for the change in specific volume and enthalpy of the carrier produced by the change in value of said one condition from the predetermined value and means modi-



ifying said first signal by said first composite signal correcting said first signal for the error produced by the change in said one condition from said predetermined value.

4,244,217

GAS FLOW MONITOR

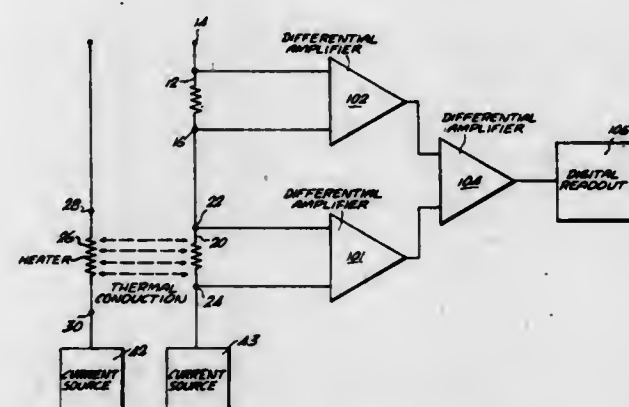
R. K. Ledbetter, 6435 SW. 85 St., Miami, Fla. 33143

Filed Dec. 18, 1978, Ser. No. 970,562

Int. Cl.³ G01F 1/68

U.S. Cl. 73-204

6 Claims



1. An air flow monitoring device comprising, a sensor for use in measuring gas flow velocity, the sensor comprising:

a first metal electrically conductive wire having a first and a second end of a predetermined length;

a second metal electrically conductive heated wire identical to said first wire and parallel to and closely adjacent said first wire;

means to heat the second wire substantially uniformly along the length thereof; and means to hold said first and second wire in closely adjacent parallel relation; and

a heater means for heating the second wire substantially uniformly along the length of the second wire comprising a third wire coiled about the length of the second wire including a heater circuit having a power source; the first and second wires in series having a means to measure the resistance of each wire and the resultant difference therebetween and

means to hold said first and second wire in closely adjacent parallel relation.

4,244,218

FLUID MEASURING DEVICE

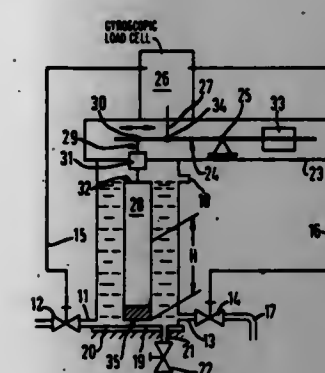
Josef Wohrl, Pfedelbach, Fed. Rep. of Germany, assignor to Eric Thomas Scriven, England, a part interest

Filed Oct. 20, 1978, Ser. No. 953,268

Int. Cl.³ G01F 23/10

U.S. Cl. 73-309

14 Claims



1. A fluid measuring device comprising: a container for receiving the fluid to be measured; a body positioned within said container; a force transmission means retaining said body in a predetermined vertical position within said container irrespective of the fluid level in said container, whereby said body is progressively immersed in the fluid when fluid is added to said container and said body progressively emerges from the fluid when fluid is withdrawn from said container, the cross-sectional area of said body at any fluid level within the operational range of the fluid measuring device having a known relationship with the cross-sectional area of said container at the same fluid level, and a gyroscopic load cell capable of measuring an applied force without movement of said force relative to said load cell, said force transmission means being connected to said load cell whereby the resultant vertical force on said body at any fluid level is transmitted to said load cell which is calibrated to take account of said known relationship and to express said resultant vertical force as a quantity of the fluid.

4,244,219

LIQUID-LEVEL METER

Isao Takahashi, Fujimi, Japan, assignor to Sakura Instrument Co. Ltd., Tokyo, Japan

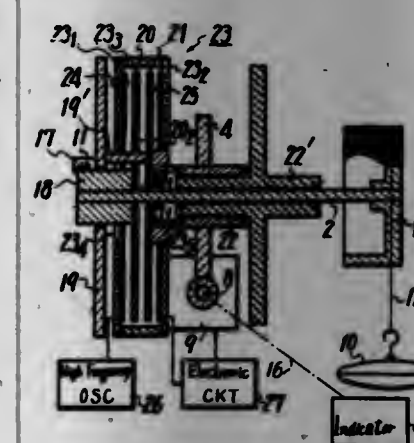
Filed Nov. 28, 1978, Ser. No. 964,298

Claims priority, application Japan, Dec. 21, 1977, 52/154064

Int. Cl.³ G01F 23/10

U.S. Cl. 73-309

10 Claims



1. A liquid level meter comprising a housing, a first and second rotatable shaft mounted within said housing coaxially

one within the other, means for resiliently coupling said shafts for rotation, a drum fixedly mounted on said first shaft for conjoint rotation therewith and having a float suspended from said drum by an elongated wire, the change in buoyancy of said float exerting a torque on said drum to cause said drum to rotate, capacitor means for detecting variations in the torque exerted on said drum, said capacitor means comprising a pair of ring shaped electrodes fixedly mounted on said housing spaced from each other and charge varying means located between said electrodes, said charge varying means comprising a pair of insulating shield plates spaced from each other and from said electrodes, one of said shields being conjointly rotatable with the first shaft, the other of said shields being conjointly rotatable with the second shaft to permit selective transfer of charge between said electrodes, means for providing an electric signal in response to the transfer of charge between said electrodes, a motor coupled to said second shaft to drive the same, said motor being responsive to said electric signal to rotate said second shaft in the direction of the torque exerted on said drum to cause said resilient coupling to rotate said first shaft accordingly and means for indicating the level of liquid in response to the degree of movement of said motor.

4,244,220

SKI-POLE SUPPORT STRUCTURE FOR A STEM AND DIAL-TYPE THERMOMETER

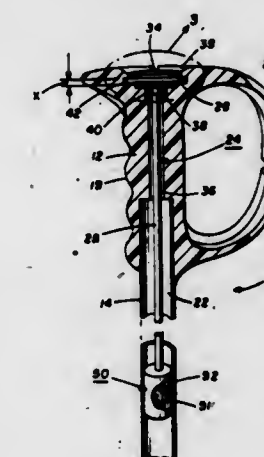
John W. Henson, Orange, Conn., and Robert J. Prove, Claymont, Del., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 11, 1979, Ser. No. 47,653

Int. Cl.³ G01K 1/14; A63C 11/12

U.S. Cl. 73-343 R

7 Claims



1. In a ski pole for skiing service including a grip handle and an elongated shank secured to the underside of the grip handle and extending away therefrom, thermometer support means defined as a passage extending internally of at least said grip handle, said support means being of size adapted to receive a stem and dial thermometer with the stem extending from the dial portion to its distal end being in thermal communication with ambient weather temperature thereabout and with indicia of the received thermometer exposed to view at a surface of said grip handle.

4,244,221

REMOVABLE INSTRUMENTATION PROBE

John C. Scott, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 1, 1979, Ser. No. 8,359

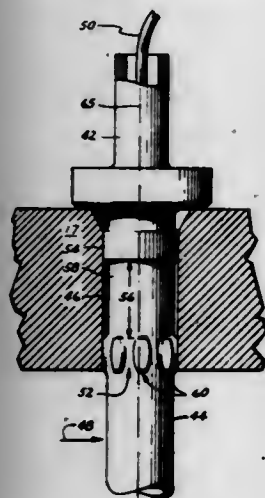
Int. Cl.³ G01K 1/08

U.S. Cl. 73-349

7 Claims

1. A removable instrumentation probe comprising a hollow member having a longitudinal axis and extending through an opening in a wall for measuring properties within an inner side of the opening in the wall, wherein the improvement comprises:

first and second bands projecting outwardly from and disposed peripherally around the member, said bands being longitudinally spaced apart and engaging the interior of said wall opening with a close mechanical fit to minimize gas leakage between the member and the interior of said wall opening, said second band being sealingly located between said first band and an outer side of said wall, the first band being farthest from the outer side of the wall and being comprised of a plurality of circumferentially spaced apart individual segments, each of said band segments being reduced in width on both longitudinal ends for sweeping away contamination on said interior of said wall opening wherein insertion and removal of the member through the wall opening can be accomplished without seizure caused by said contamination.



7. A removable instrumentation probe comprising a hollow member having a longitudinal axis for extending through an opening in a wall for measuring properties on the inner side of the wall, wherein the improvement comprises:

first and second bands projecting outwardly from and disposed peripherally around the member, said bands being longitudinally spaced apart and engaging the interior of said wall opening with a close mechanical fit to minimize gas leakage between the member and the interior of said wall opening, said second band being sealingly located between said first band and an outer side of said wall, the first band being farthest from the outer side of the wall and being comprised of a plurality of circumferentially spaced apart individual segments, each of said band segments being reduced in width on both longitudinal ends and being generally elliptically shaped.

4,244,222

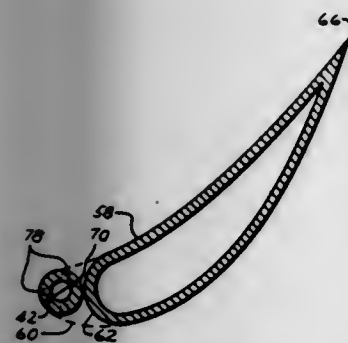
INSTRUMENTATION PROBE

John Z. Hoyer, and John C. Scott, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Feb. 1, 1979, Ser. No. 8,361

Int. Cl.³ G01K 1/08, 13/02

U.S. Cl. 73—349

4 Claims



1. In a turbomachine of the type having a compressor, a high pressure turbine and a low pressure turbine and including an

airfoil of the type having a leading edge, a trailing edge, an outer band platform, an inner band platform, and having a portion of the leading edge removed, wherein the improvement comprises:

an instrumentation probe for measuring properties of the turbomachine gas flow, said probe extending through an aperture in the outer band platform wherein the probe is supported by the outer band platform in cantilevered fashion, said probe being disposed adjacent to the remaining leading edge of the airfoil and in spaced relation therewith to substantially replace at least a portion of the removed leading edge portion and to aerodynamically form at least a portion of the leading edge of the airfoil wherein the instrumentation probe is aerodynamically positioned and sized with a circular cross-sectional shape having a diameter substantially the same as the width of the removed leading edge portion to reduce gas flow losses associated with aerodynamic separation of the probe and the airfoil and wherein the remaining leading edge comprises an indented leading edge in the form of a shortened axial chord.

4,244,223

SYSTEM AND METHOD FOR GEOPHYSICAL PROSPECTING BY MEASUREMENT OF EARTH TIDES

Allen R. Gelger, 2600 E. Idaho #227, Las Cruces, N. Mex. 88001

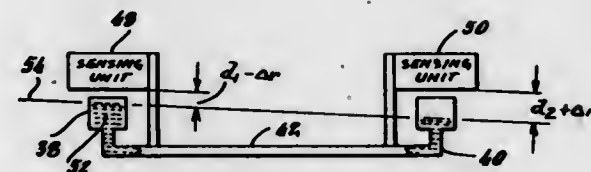
Continuation-in-part of Ser. No. 843,500, Oct. 19, 1977, Pat. No. 4,121,464. This application Jul. 10, 1979, Ser. No. 56,242

The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.

Int. Cl.³ G01V 9/00

U.S. Cl. 73—382 G

15 Claims



1. A method of locating potentially hydrocarbon-bearing subsurface formations using tiltmeters to measure the rise and fall of the earth's surface due to the gravitational pull of extraterrestrial masses, said method comprising the steps of:

detecting the rise and fall of the earth's surface at each of a plurality of points by means of the tiltmeters to establish the time arrival and apparent direction of a geoid tidal wave at each of the points;

combining the time and direction measurements to establish the tidal wave shape in a region of interest, said wave shape being indicative of the viscosity in the region.

4,244,224

AUTOMATIC SAMPLER FOR GAS AND LIQUID

Alvie P. Conn, 7926 Ridgeview, Houston, Tex. 77055

Filed Apr. 18, 1979, Ser. No. 31,067

Int. Cl.³ G01N 1/14

U.S. Cl. 73—422 TC

7 Claims

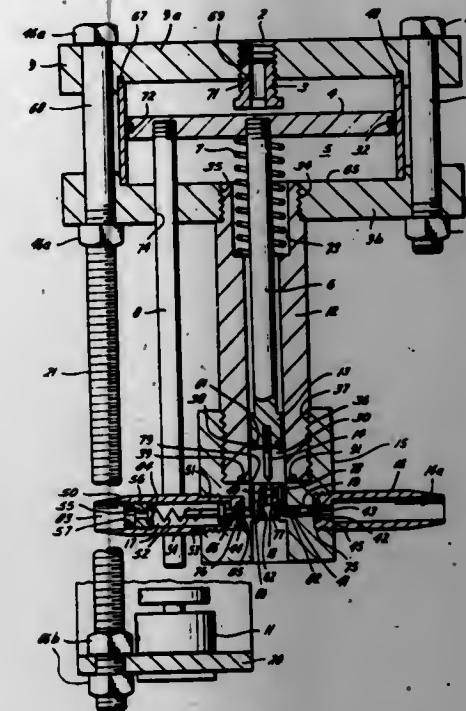
1. A sampler for sampling gas from a gas source and introducing the sample into a sample container, the sampler powered by the gas being sampled and comprising

a pump means for pumping a sample of the gas from the source to the sample container,

a timer connected to the pump for intervally activating the pump,

a pressure regulator connected between the pump and the

timer for regulating the pressure of the gas from the pump to the timer,



with each of said first coupling means whereby each transducer head may be interconnected with the scan arm assembly;

- (d) determination means operatively connected with said second coupling means for determining the characteristic of the identification means of a transducer head interconnected with the scan arm assembly; and
- (e) generating means operatively connected with said determination means for generation a representation from the determined characteristic whereby the generating means identifies the transducer head interconnected with said scan arm assembly.

4,244,228

PRESSURE TRANSDUCER

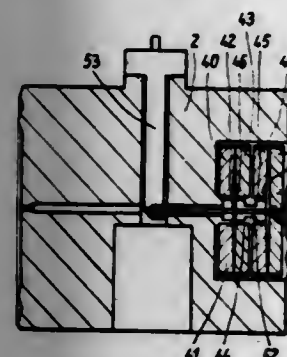
Lutz Lehnardt, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed May 29, 1979, Ser. No. 43,216

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2825222

Int. Cl.³ G01L 13/02, 13/06

U.S. Cl. 73-716

4 Claims



1. In a pressure transducer having a measuring element mounted in a housing and responsive to a pressure to be measured, the measuring element comprising two elastic, disk-shaped parts mounted side-by-side and connected together tightly at their peripheries to form an inside cavity, one of the disk-shaped parts having a central opening by which it is connected to the housing, there being an opening in the housing leading into the inside of the cavity, and the other disk-shaped part being connected to a transmission element, the transmission element being centrally attached thereto, the improvement comprising:

a ring mounted on the peripheries of the two disk-shaped parts and firmly joined thereto along the outer edges of the disks which are furthest removed from each other, whereby the disks are tightly and indirectly connected to each other.

4,244,229

DIFFERENTIAL PRESSURE TRANSDUCER

Roger J. Pullen, Bognor Regis, England, assignor to Sangamo Weston Controls, Limited, North Bersted, England
Filed May 24, 1979, Ser. No. 42,270

Claims priority, application United Kingdom, May 30, 1978, 24481/78

Int. Cl.³ G01L 9/10

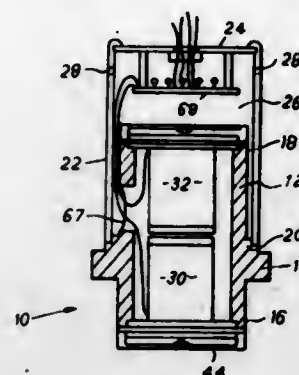
U.S. Cl. 73-722

16 Claims

1. A differential pressure transducer comprising:

a housing member;
first and second substantially identical, generally cylindrical, evacuated and sealed capsules, which are mounted in the housing member such that their respective temperatures tend to track each other, each capsule being closed at one axial end by a respective flexible diaphragm having a first side which is disposed inside the capsule, and a second side which is disposed outside the capsule and is arranged to be subjected, in use, to a respective one of first and second fluid pressures, whereby each diaphragm is displaced, in

use, by an amount dependent upon the respective one of the first and second pressures to which it is subjected; and first and second displacement responsive means for producing first and second electrical signals respectively, each



signal being representative of the displacement of a respective one of said diaphragms;
whereby the first and second signals are together representative of the difference between the first and second pressures.

4,244,230

FLUIDIC OSCILLATOR FLOWMETER

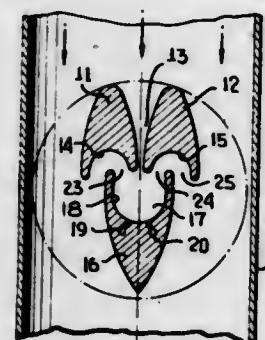
Peter Bauer, 13921 Esaworthy Rd., Germantown, Md. 20767
Continuation-in-part of Ser. No. 859,145, Dec. 9, 1977, Pat. No. 4,184,636. This application Oct. 12, 1978, Ser. No. 950,929

The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.

Int. Cl.³ G01F 1/00

U.S. Cl. 73-861.19

12 Claims



1. A flow sensor for measuring fluid flow comprising:
means for issuing a defined stream made up of at least part of said fluid flow;
an oscillation chamber having a common inlet and outlet opening, said oscillation chamber being positioned to receive said defined stream through said common opening, said oscillation chamber including:
oscillation means for cyclically oscillating said stream back and forth across said chamber in a direction substantially transverse to the direction of flow in said jet;
flow directing means for directing fluid from the cyclically oscillated stream out of said chamber through said common inlet and outlet opening; and
sensing means for sensing the cyclic variation of the oscillating stream.

4,244,231

METHOD FOR MEASURING MASS FLOW OF A SUBSTANCE

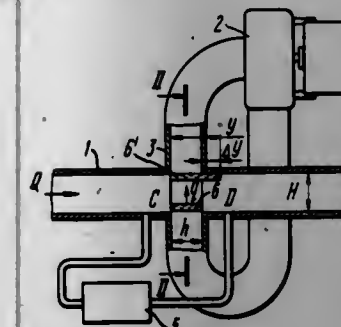
Lev N. Teterevskiy, ulitsa Musorgskogo, 1, kv. 216, Moscow, U.S.S.R.

Filed Mar. 5, 1979, Ser. No. 17,105

Int. Cl.³ G01F 1/34

U.S. Cl. 73-861.42

1 Claim



1. A method for measuring mass flow of a substance based on the differential pressure between two points of the flow of a substance being measured, comprising the steps of:
providing an auxiliary flow of the same substance, intersecting said measured substance;
channelling said auxiliary flow out from an intersection zone;
measuring said differential pressure between two points of said measured flow;
said measurement points being located upstream and downstream the intersection of said measured flow and said auxiliary flow;
the parameters of said auxiliary flow being selected based on the following conditions: $v > H/h$, $b > B$, wherein H and h are the cross-sectional dimensions of said measured and auxiliary flow, respectively, as measured in the zone of their intersection in the plane of intersection of the flow directions;
 B and b are the cross-sectional dimensions of said measured and auxiliary flows in said intersection zone as measured in the direction at right angle to said plane;
 v is the average velocity of said auxiliary flow in the zone of intersection of flows in the plane of intersection of the flow directions;
 V is the average velocity of said measured flow in the same said zone of intersection of the flows at maximum measured flow rate of a substance.

4,244,232

TRACTOR TRANSMISSION MECHANISM

Yoshinobu Murayama, Sakai, Japan, assignor to Kubota Ltd., Osaka, Japan

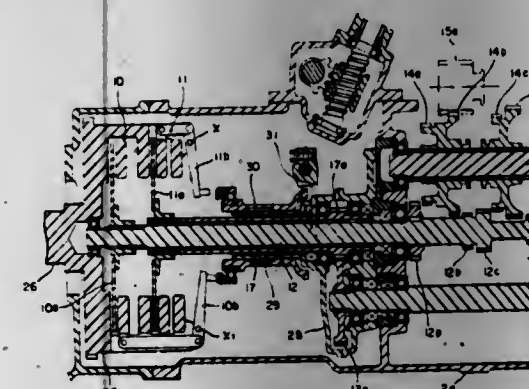
Filed Apr. 24, 1978, Ser. No. 899,069

Claims priority, application Japan, Sep. 20, 1977, 52-113998

Int. Cl.² F16H 37/00, 57/02

U.S. Cl. 74-15.66

2 Claims



1. A tractor transmission mechanism having a transmission case, an engine output shaft connected to an engine, double

action clutch means connected to the engine output shaft and including a travelling system clutch and a power take-off system clutch, a travelling system input rotary shaft projecting through a wall of the transmission case and connected to the travelling system clutch, a rotary cylindrical shaft co-axially fitted on a part of the travelling system input shaft projecting through the wall of the transmission case, said transmission mechanism comprising:

an auxiliary gear case fitted on the external periphery of the rotary cylindrical shaft and on the external surface of the wall of the transmission case,
a power take-off system input rotary shaft disposed beneath the travelling system input rotary shaft, one end of said input rotary shaft being extended through the wall of the transmission case into the auxiliary gear case,
a toothed wheel mounted on the rotary cylindrical shaft and disposed in the auxiliary gear case, and
a further toothed wheel mounted on the extended end of the power take-off system input rotary shaft in the auxiliary gear case, said wheels being engaged with each other.

4,244,233

RECIPROCATING INDEXING MECHANISM

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

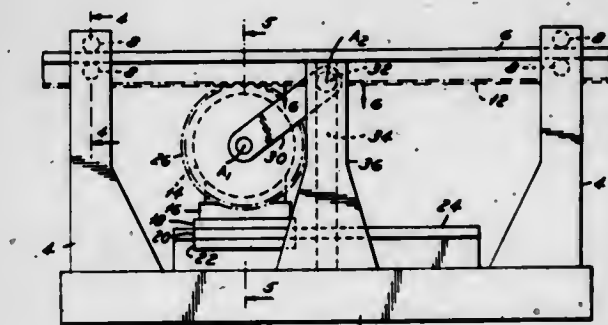
Continuation of Ser. No. 621,960, Oct. 14, 1975, abandoned.

This application Jan. 6, 1978, Ser. No. 867,333

Int. Cl.³ F16H 27/02, 21/16, 21/18

U.S. Cl. 74-89

21 Claims



1. A reversible indexing system having a rotary angular input movement of greater than 180° and less than 360° and an output movement reaching zero velocity at each end of its stroke independent of input velocity comprising:

- a frame,
- an output member mounted in said frame for movement in a predetermined path,
- a first rotating drive member having a driving relationship with said output member and rotating about a first axis,
- first means positioning said output member and said first rotating drive member for a driving relationship and guiding said first rotating member along a path equidistant from said output member,
- a second drive member eccentrically and rigidly mounted to said first rotating drive member and moving in a path substantially transverse to the path of said first axis,
- second means connecting said second drive member and said frame and guiding said second drive member along a path substantially relatively transverse to the drive surface of said output member, and
- a reversible rotary prime mover having an output shaft with an angular output movement greater than 180° and less than 360°, said shaft being connected to and driving one of said drive members.

4,244,234

POWER TRANSMISSION BELT STRUCTURE AND METHOD OF MAKING SAME

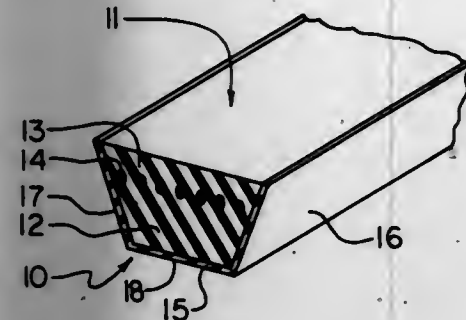
Paul M. Standley, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Oct. 10, 1978, Ser. No. 949,610

Int. Cl.³ F16G 5/16

U.S. Cl. 474-263

13 Claims



1. An endless, substantially trapezoidal, power transmission belt having reduced coefficient of friction non-parallel sides comprising a belt body having a friction-reducing layer of an elastomeric composition bonded in association with said non-parallel sides, said composition comprising an elastomer, activated carbon and at least one friction-reducing material.

4,244,235

APPARATUS FOR ATTACHING A BRAKE LEVER STAY TO A HANDLE BAR OF A BICYCLE

Kunihiko Yoshikawa, Soka, Japan, assignor to Kabushiki Kaisha Yoshikawa Seisakusho, Yashio, Japan

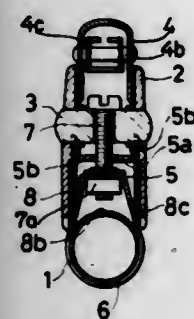
Filed Oct. 25, 1978, Ser. No. 955,023

Claims priority, application Japan, Apr. 18, 1978, 53/50269[U]

Int. Cl.³ B62K 23/06; B62L 3/02; F24H 9/06

U.S. Cl. 74-499

10 Claims



1. In apparatus for attaching a stay for a brake lever to a tubular handle bar in which said stay is constructed of a non-ferrous metal or synthetic resin, said stay supporting a pivot shaft on which the brake lever is pivotally mounted, said stay having a cavity portion in which projects a fastening band engaging the handle bar, the fastening band being secured to the pivot shaft by an adjustable tightening fastener, the improvement comprising a spacer element engaged in said cavity and including first means for engaging the handle bar and second means for engaging the pivot shaft, said spacer element being constituted of a material which develops friction with said handle bar such that when the adjustable fastener is tightened frictional engagement is developed between the spacer element and said handle bar to hold the stay on the handle bar in secured position.

4,244,236

TILT STEERING COLUMN MECHANISM

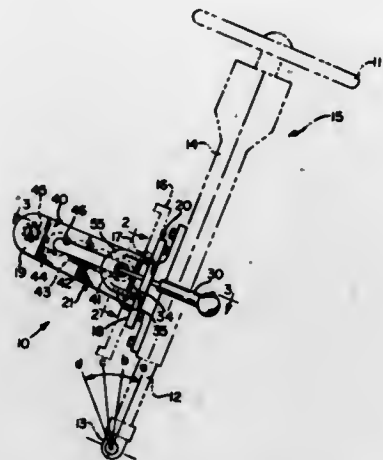
Raymond L. Sylvester, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed May 29, 1979, Ser. No. 42,745

Int. Cl.³ B62D 1/18; G05G 5/06

U.S. Cl. 74-493

7 Claims



1. An improved tilt steering column mechanism for a steering column tiltable about a universal joint at the base thereof, comprising:

a support bracket means connected to a vehicle cab frame for supporting the steering column above the universal joint connection;

a slider bracket means connected to the steering column and having arm means passing forwardly through guide openings provided in the support bracket means for limiting tilting of the steering column to the fore-and-aft direction;

frusto-conical detent means slideably mounted to the support bracket means and movable transversely with respect to the steering column for locking the arm means of the slider bracket means to the support bracket means at selected frusto-conical detent receiving means provided on one lateral side of the arm means corresponding to one of several selectable fore-and-aft tilt positions of the steering column;

spring means carried on the support bracket means and engaging the frusto-conical detent means for moving and pressing the frusto-conical detent means into the selected frusto-conical detent receiving means;

lever means extending rearwardly from an opening provided in the support bracket means and pivotally connected thereto and pivotally linked to the frusto-conical detent means out from the selected frusto-conical detent receiving means against the force of the spring means upon swinging of the lever means about the axis of the pivotal connection;

the support bracket means comprising a base plate fixed to the vehicle cab frame and having three spaced-apart flange members projecting forwardly therefrom and passing through an opening provided in the vehicle cab frame, the flange members each having at least one flat lateral side positioned at the guide openings provided in the base plate for the arm means of the slider bracket means;

the slider bracket means comprising two identical spaced-apart arm means each having a pedestal fixed to a base on the steering column and each having two parallel lateral flat sides projecting forwardly from the pedestal and passing through a respective guide opening in the base plate and guiding along side of the flat lateral side of each of the flange members, the arm means each having an elongated slot on the identical lateral flat side and a plurality of uniformly spaced-apart frusto-conical holes on the identical opposite lateral flat sides tapering downwardly into the slot and comprising the frusto-conical detent receiving means; and

the frusto-conical detent means comprising an elongated

locking bar having two axially spaced-apart frusto-conical detent portions thereon slideably carried in matching transverse bores provided in each of the flat lateral sides of the flange members, the frusto-conical detent portions each tapering downwardly in the same axial direction into an elongated anchor portion of a size passing through the slot in each arm means anchoring the respective arm means to the flange members of the support bracket means.

4,244,237

TILT STEERING COLUMN MECHANISM

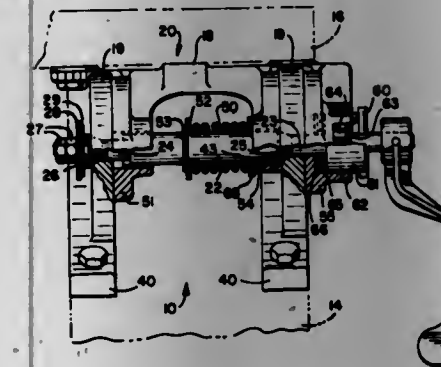
Loren G. Sprunger, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed May 29, 1979, Ser. No. 42,746

Int. Cl.³ B62D 1/18; G05G 5/06

U.S. Cl. 74-493

7 Claims



1. An improved tilt steering column mechanism for a steering column tiltable about a universal joint at the base thereof, comprising:

a support bracket means connected to a vehicle cab frame for supporting the steering column above the universal joint connection;

a slider bracket means connected to the steering column and having arm means passing forwardly into the support bracket means for limiting tilting of the steering column to the fore-and-aft direction;

frusto-conical detent means slideably mounted to the support bracket means and movable transversely with respect to the steering column for locking the arm means of the slider bracket means to the support bracket means at selected frusto-conical detent receiving means provided on one lateral side of the arm means corresponding to one of several selectable fore-and-aft tilt positions of the steering column;

first spring means carried on the support bracket means and engaging the frusto-conical detent means for moving the frusto-conical detent means out of engagement with the frusto-conical detent receiving means; and

a rotary cam means slideably mounted to the support bracket means, a cam follower pin means fixed to the frusto-conical detent means, and a second spring means of lesser magnitude than and opposing the first spring means urging the rotary cam means into engagement with the cam follower pin means and the frusto-conical detent means into engagement with the frusto-conical detent receiving means;

lever means fixed to the frusto-conical detent means for moving the frusto-conical detent means into engagement with the frusto-conical detent receiving means by rotating the cam follower pin means along a rising cam land surface of the rotary cam means and loading the opposing spring means and for moving the frusto-conical detent means out from engagement with the frusto-conical detent receiving means by rotating the cam follower pin means in a reverse direction along a now falling cam land surface of the rotary cam means and releasing the loading on the opposing spring means whereby the first spring means moves the frusto-conical detent means out from the frusto-

conical detent receiving means against the lesser force of the second spring means.

4,244,238

REMOTE CONTROL WIRE APPARATUS

Masato Suzuki, Okazaki; Yasushi Mima, and Kentaro Okamoto, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

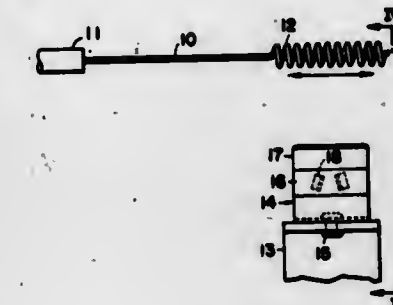
Continuation of Ser. No. 777,951, Mar. 16, 1977, abandoned.

This application Jan. 15, 1979, Ser. No. 3,470

Claims priority, application Japan, Dec. 17, 1976, 51-169891

Int. Cl.³ F16C 1/10

7 Claims



1. A remote control wire apparatus comprising:

a guide;

a control wire projecting from said guide;

an expandable coil formed at at least one end portion of said control wire projecting through said guide;

an open socket substantially U-shaped in cross-section maintained in locking engagement with an exterior of said coil,

said socket being made from resilient material, said socket also having at least one clamping projection which engages with the winding of said coil thereinbetween, said socket further rotatably supported by a pivot pin extending through a base of said U-shaped socket perpendicular to an axis of said control wire, said socket further being shorter than said coil in length; whereby a simple adjustable connection is made between said control and wire and said socket.

4,244,239

PEDAL FOR BICYCLES

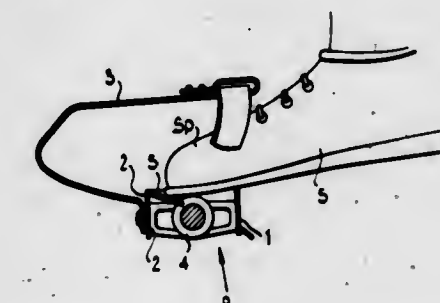
Tullio Campagnolo, Corso Padova, 168, 36100 Vicenza, Italy

Filed Feb. 22, 1979, Ser. No. 14,030

Int. Cl.³ G05G 1/14, 1/18

U.S. Cl. 74-560

4 Claims



1. In a pedal for bicycles, comprising a central pivot pin, a peripheral band that pivots on the pin, the band having front and rear portions disposed forwardly and rearwardly of the pin, a toe clip that extends forwardly of said front portion and then upwardly and then rearwardly, and means mounting the toe clip to the front portion of the pedal; the improvement comprising a guide for the toe of a shoe of a bicyclist, the guide being carried by the pedal and extending from said front portion in a smooth and continuous incline downwardly rearwardly toward said pin, the guide having an upper surface in the vicinity of said front portion that is at least as high as the top of said front portion, thereby to prevent the top of said

front portion from interfering with the toe of the shoe of bicyclist when the toe is inserted in said toe clip, said guide being formed in a one-piece unitary manner with said front portion of the pedal band.

4,244,240

ELASTIC INTERNAL FLYWHEEL GIMBAL

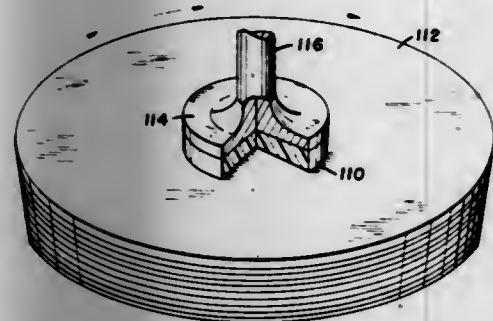
David W. Rabenhorst, Clarksville, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Dec. 17, 1976, Ser. No. 751,371

Int. Cl.³ G05G 1/00; F16F 15/10

U.S. Cl. 74—572

13 Claims



1. An inertial energy storage system wherein energy is put into the system and taken out of the system comprising in combination:

- an inertial energy storage flywheel rotor;
- a rotary shaft; and
- elastic joint means for mounting said flywheel rotor to said rotor shaft substantially central to said flywheel rotor, said elastic joint means permitting precessional movement of said flywheel rotor relative to said shaft, said precessional movement being relative angular displacement between the longitudinal axis of said shaft and the plane occupied by said flywheel rotor.

4,244,241

FINAL DRIVE UNITS FOR MOTOR VEHICLES

Alan F. Treadwell, Coventry, England, assignor to Chrysler United Kingdom Limited, London, England

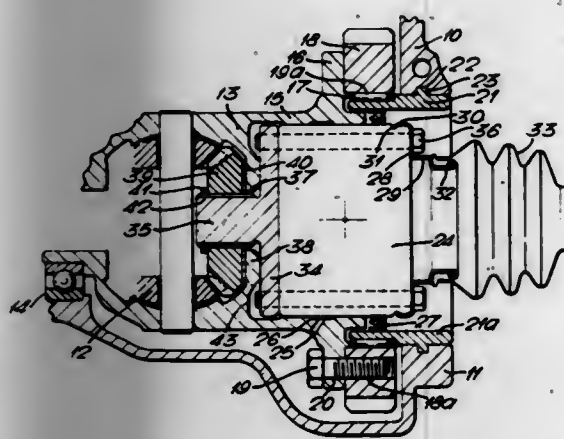
Continuation of Ser. No. 726048, Sep. 23, 1976. This application Oct. 5, 1978, Ser. No. 948,746

Claims priority, application United Kingdom, Oct. 7, 1975, 41060/75

Int. Cl.³ F16H 37/08, 1/38

U.S. Cl. 74—695

5 Claims



1. A final drive unit for a motor vehicle comprising a differential having a rotatable planet wheel carrier formed with a hollow extension on each side thereof through which output drives may extend, a first bearing supporting one of said extensions for rotation, an input ring gear having an inner face which abuts and is secured to the other extension, the input ring gear having an inner surface which forms one surface of a bearing race, a fixed hollow bearing carrier coaxial with the first bearing

and extending concentrically within the ring gear, that part of the bearing carrier located within the ring gear having an outer surface forming a second bearing race and roller bearing elements disposed between the outer bearing race of the ring gear and the inner bearing race of the bearing carrier providing a second bearing which supports the ring gear concentrically with the bearing carrier for rotation.

4,244,242

LUBRICATION SYSTEM FOR DIFFERENTIAL GEAR UNIT

Makoto Uno, Toyota; Yoshio Sanui, Okazaki, and Yasuyoshi Yasui, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

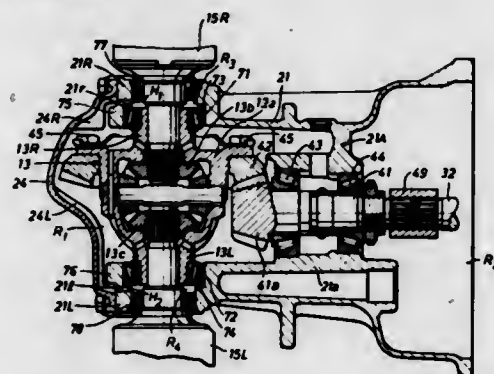
Filed Sep. 26, 1978, Ser. No. 945,794

Claims priority, application Japan, Dec. 3, 1977, 52-162305[U]

Int. Cl.³ F16H 1/38, 1/40, 57/04; F01M 1/00

U.S. Cl. 74—710

3 Claims



1. In a power transmission unit for a motor vehicle, the transmission unit comprising a trans-axle casing having an upright seating face for rigidly securing said casing to a cylinder block of an engine and having an upright partition wall for subdividing the interior of said casing into front and rear chambers, said trans-axle casing being provided with a cover plate which sealingly closes the open end of the front chamber, a drive pinion shaft rotatably journaled along the fore-and-aft axis of the vehicle on said partition wall and including a drive pinion integral with said drive pinion shaft and located in the front chamber, a differential gear unit arranged within the front chamber of said casing and having a pair of side-journals rotatably supported by a pair of spaced side-bearings carried on a pair of carrier portions of said trans-axle casing, a crown wheel integral with said differential gear unit and in mesh with said drive pinion to drive said differential gear unit, and a pair of wheel axles extending oppositely outwardly from the differential gear unit through the respective side-journals and surrounded by a pair of annular seal members carried on the respective carrier portions,

the improvement wherein said cover plate includes a pair of lateral protrusion means integrally formed on the inner wall of said cover plate with said pair of lateral protrusion means forming a reinforcement rib means for strengthening said cover plate, said lateral protrusion means extending downwardly at both sides of said crown wheel from the upper portion of said cover plate with the lower ends thereof extending into a pair of side-spaces formed around each of said wheel axles between the respective side-bearings and the respective seal members, wherein said lateral protrusion means receive lubricating oil flowing around said crown wheel and carry the lubricating oil into each of said side-spaces.

4,244,243

VARIABLE LEVERAGE GEARING

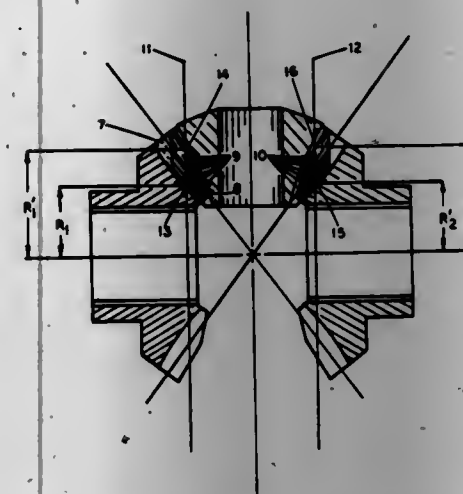
Thomas M. McCaw, 512 Lingle, Lafayette, Ind. 47901

Filed Dec. 15, 1978, Ser. No. 969,832

Int. Cl.³ F16H 1/40, 55/17, 1/14

U.S. Cl. 74—713

6 Claims



1. A variable leverage torque proportioning differential including in combination a housing, first and second side gears each having bevel teeth and each being rotatively mounted in said housing, at least one pinion having bevel teeth and being rotatively mounted in said housing, said pinion bevel teeth being in meshing engagement with said bevel teeth of said first and second side gears, said side gear bevel teeth and said pinion bevel teeth having lines of contact, said lines of contact having midpoints which coincide with a given plane of rotation of each of said side gears.

4,244,244

METHOD AND APPARATUS FOR ELIMINATING GEAR SHIFTING JOLT IN MOTOR VEHICLES

Helmut Rembold, Möglingen, and Ernst Linder, Mühlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

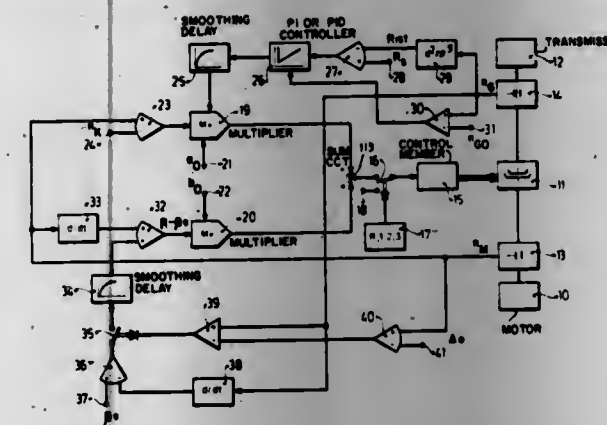
Filed Jan. 6, 1978, Ser. No. 867,307

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1977, 2700821

Int. Cl.³ B60K 41/22

U.S. Cl. 74—866

16 Claims



1. A method of eliminating gear shifting jolt in motor vehicles equipped with automatic or semiautomatic stepwise-variable transmissions and having a friction clutch controlled by a control member for coupling power between driving and driven portions of the propulsion machinery, which method comprises the steps of:

- setting a maximum permissible value of gear shifting jolt (R_S) and producing a first electrical signal corresponding to said maximum permissible jolt value;
- generating second (n_M) and third (n_G) electrical signals

respectively corresponding in magnitude to motor speed and transmission input speed;

- generating a fourth electrical signal corresponding to the value of detected actual jolt (R_{act}), in response to at least said third signal;
- generating a fifth electrical signal corresponding to the difference between detected actual jolt and maximum permissible jolt by subtracting said fourth signal from said first signal;
- generating in response to said fifth signal and to a sixth electrical signal by means of a controller stage 26 having a transfer function $F(s)$ composed of at least a proportional and a differential term to which controller said fifth electrical signal is supplied as an input;
- modulating the amplitude of said sixth signal by a seventh electrical signal corresponding to the difference between motor speed (n_M) and a predetermined speed (n_K) in a multiplier stage to produce an eighth electrical signal;
- generating a ninth electrical signal in response to at least the time rate of change of said second electrical signal;
- generating a tenth electrical signal by summing said eighth and ninth electricals, and
- applying said tenth electrical signal to said control member of said friction clutch.

4,244,245

FASTENER TENSION CONTROL SYSTEM

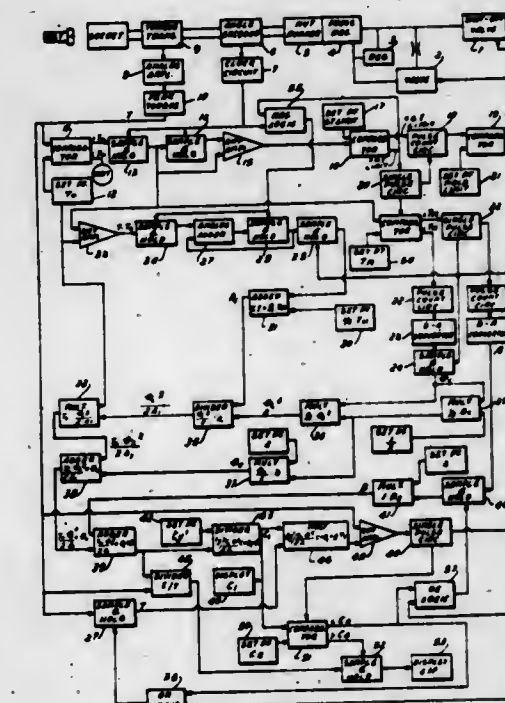
William K. Wallace, Barnet, and David L. Rosbrook, Whiteboro, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed May 16, 1979, Ser. No. 39,328

Int. Cl.³ B23Q 19/06; G06F 15/20

U.S. Cl. 81—469

7 Claims



1. A tension control tightening method wherein a motor is powered to run down and set a fastener and means are provided to regulate power to the motor to obtain a predetermined tension set on the fastener, said method comprising the steps of:

- initiating operation of the motor for turning the fastener;
- generating a signal indicative of fastener rotations;
- generating a signal proportional to the torque being exerted upon the fastener by the rotation means;
- utilizing both of said signals to determine the work being expended on the fastener;
- comparing said work to equivalent work on a theoretical fastener having no friction load;
- establishing an efficiency factor based on said comparisons;
- utilizing said efficiency factor to determine actual torque

required to obtain predetermined tension on the fastener; and cutting off power to the motor when said predetermined tension is obtained on the fastener.

4,244,246

WRENCH WITH AUTOMATIC FEED MECHANISM

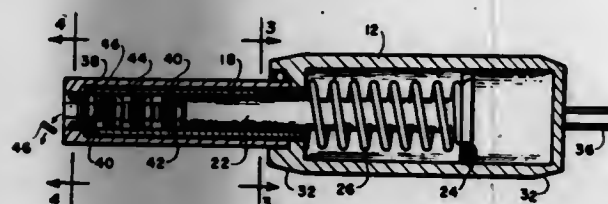
Dennis L. Gillett, 21440 Shady Ln., Los Gatos, Calif. 95030

Filed Jan. 29, 1979, Ser. No. 7,568

Int. Cl.³ B25B 13/02

U.S. Cl. 81-125

5 Claims



1. A wrench having means for dispensing fasteners from a storage magazine removably contained within the wrench into the driving tip of said wrench, said wrench comprising:

a hollow tubular handle having an axial opening in the first end thereof;

a driver portion having a first end removably coupled to the first end of said handle, said driver portion having an axial bore throughout the length thereof and in open communication with said axial opening in the first end of said handle, said axial bore having a cross-section corresponding to the external cross-section of a desired storage magazine of fasteners;

a driving tip formed at the second end of said driver portion, said driving tip having a driving bore coaxial with the bore of said driver portion and in open communication therewith, said driving bore having a cross-section corresponding to the cross-section of fasteners within said desired storage magazine, the interface between the bore of said driver portion and said driving bore being a step for preventing the removal of said desired storage magazine through said driving bore; and

feeding means within said hollow handle and extending into said axial bore of said driver portion for urging the contents of said bore of said driver portion toward said driving tip.

4,244,247

TURRET WITH ELASTIC-ACTION DEVICE FOR THE POSITIONING OF THE TOOL-CARRYING BODY

Ettore Zaninelli, Milan, Italy, assignor to Baruffaldi Frizioni S.p.A., Milan, Italy

Filed Jan. 19, 1979, Ser. No. 4,986

Claims priority, application Italy, Jan. 23, 1978, 19521 A/78

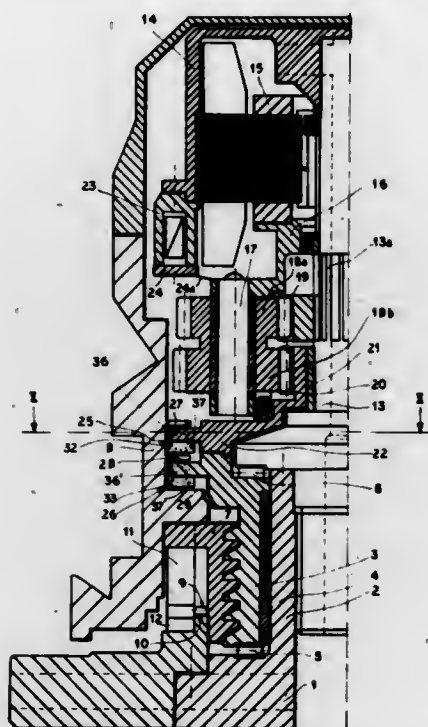
Int. Cl.³ B23B 29/00, 29/24

U.S. Cl. 82-36 A

8 Claims

1. An automatic turret for a lathe and the like, comprising a fixed base, a control screw mounted to be rotatable and axially non-displaceable, a nut connected to a tool-carrying body, two basic toothed crowns and at least one latch for arresting the tool-carrying body, a central column supporting a hollow-rotor motor at its upper end and said control screw at the lower end thereof, an epicyclic reduction gear associated with said motor and having an initial end toothed wheel fixed to said column and a second end wheel rotatable on said column and connected to said control screw, a positioning device of the tool-carrying body comprising at least one annular guide recess provided on the inner cylindrical surface of the body, co-axial with the axis of the turret and interrupted on its circumference at at least one point by at least one radial element, the said annular recess also being provided with at least one tooth projecting radially from the control screw, and at least one pre-loaded spring interposed so as to penetrate within said annular recess between said tooth projecting from the screw

and one flank of said element present in the recess; said tooth of the screw being capable of traveling an angular path within said recess of the tool carrying body corresponding to the axial movement for the disengagement of the body from the base in which path the said spring is partially unloaded, the said tool-carrying body being, after disengagement, rotated directly by said tooth until reaching the new working position, and being provided with at least one latch which slides on guides and is



adapted to penetrate into the base so as to arrest the tool-carrying body when it has reached the new position, this arrest remaining stable during the reversal of the rotation of the screw adapted to lower the tool-carrying body until locking the basic toothed crowns and reloading said spring interposed in said recess, the stability of locking of the screw being ensured by an electro-magnetic brake acting directly on the motor.

4,244,248

METHOD AND APPARATUS FOR SETTING UP TOOLS, WORK PIECES AND SIMILAR ON A ROTATABLE SPINDLE

Lars Adell, Mjölby, and Kent Mattsson, Linköping, both of Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

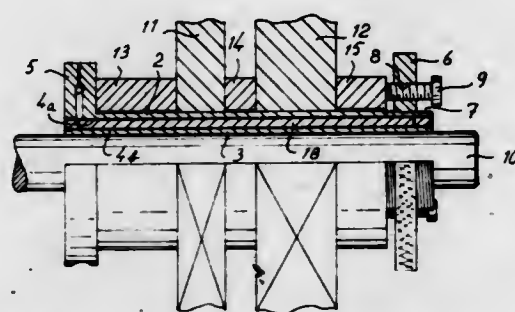
Filed Dec. 20, 1978, Ser. No. 971,448

Claims priority, application Sweden, Feb. 24, 1978, 7802166

Int. Cl.³ B23B 31/40

U.S. Cl. 82-44

10 Claims



1. Apparatus for setting up tools, workpieces or similar mountable members on a rotatable spindle, comprising a double walled sleeve, said double walled sleeve having at one end a fixed collar, said sleeve having at the opposite end means for axially clamping and securing a tool or similar member on the sleeve in engagement with the fixed collar, said double walled sleeve enclosing a solid sleeve defining on each side thereof a recess with a relatively thin outer wall and a relatively thin

inner wall, respectively, the two recesses being interconnected so as to permit common pressurization and release of pressure.

2. A method of setting up tools, workpieces or similar mountable members on a rotatable spindle by means of a clamp bushing, the bushing comprising a double walled sleeve which is closed at both ends and which has at one end a fixed radially outwardly directed collar and at the opposite end means for axially securing the mountable member or members on the clamp bushing, the bushing being formed with means for permitting pressurization of a recess formed between the outer wall and the inner wall of the sleeve and for releasing pressure from said recess, comprising slipping onto the sleeve at least one tool or similar mountable member formed with a suitable fit in relation to the outer dimension of the sleeve, applying a first axial locking means mounted at the outer end of the sleeve to thereby slightly clamp the mountable member between the collar of the bushing and the first locking means, turning a second axial locking means comprising at least one axial screw means threadedly engaging said first locking means so as to strongly clamp said mountable member against the fixed collar on said double walled sleeve, mounting the sleeve together with the clamped mountable member onto a rotatable spindle, pressurizing the interior of the recess of the sleeve whereby the two walls of the sleeve are subjected to radially inwardly and outwardly directed pressure so as to provide outward and inward expansion of the said walls, whereby the sleeve, the rotatable spindle and the tool, workpiece or similar mountable member are interconnected as a coherent rotatable unit.

4. Apparatus for setting up tools, workpieces or similar mountable members on a rotatable spindle, comprising a sleeve having an outer wall and an inner wall and being closed at both ends to thereby define a recess between said walls which can be pressurized so as to expand at least one of said walls, said sleeve having at one end a fixed collar and at the opposite end a first locking means for slight axial clamping and securing of a mountable member or members on the sleeve in engagement with the fixed collar, and a second locking means carried by the first locking means for axially strong clamping of the mountable member or members to the said fixed collar.

4,244,249

APPARATUS FOR CONSTRUCTING BREAST CUPS

Flavia DiTullio, New York, N.Y., assignor to Hanes Corporation, Winston-Salem, N.C.

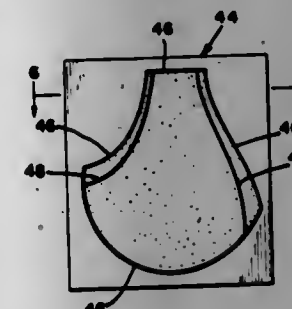
Division of Ser. No. 830,398, Sep. 6, 1977, Pat. No. 4,202,853.

This application Nov. 9, 1979, Ser. No. 92,682

Int. Cl.³ B29C 17/08, 17/03; B29D 31/00

U.S. Cl. 83-139

9 Claims



1. An apparatus for shaping a molded breast cup having a smooth, seamless interior and exterior from a unitary fabric sheet having unmolded portions and a molded section, said molded section defining a three-dimensional peripheral contour of a prescribed configuration provided with a marginal edge contiguous with the unmolded portions, the improvement comprising a first means for severing the unmolded fabric portions from the molded section along the marginal edge, and a second means for removing selected portions of the molded section inwardly of said marginal edge to alter the size and configuration of the three-dimensional, peripherally contoured molded section, said first and second means being mounted upon a common support.

**4,244,250
APPARATUS FOR TRANSPORTING TOOLS IN MACHINES FOR THE PROCESSING OF ROD-SHAPED ARTICLES**

Willy Rudzinski, Düsseldorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

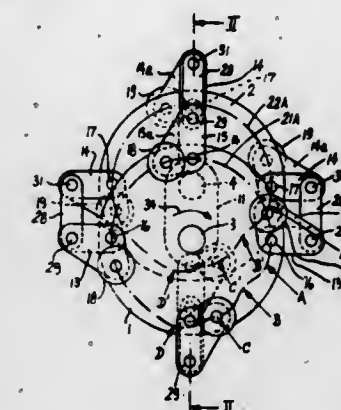
Filed Oct. 13, 1978, Ser. No. 951,187

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746915

Int. Cl.² A24C 5/31

U.S. Cl. 83-310

14 Claims



1. Apparatus for transporting and guiding tools in tobacco processing machines or the like, comprising first and second carriers which are respectively rotatable about parallel first and second axes; means for rotating at least one of said carriers; at least one first and at least one second lever; pivot means respectively connecting said first and second levers to said first and second carriers for angular movement about third and fourth axes which are parallel to said first and second axes; means for coupling said levers to each other so that rotation of one of said carriers entails rotation of the other of said carriers by way of said coupling means and orbital movement of said first and second levers about said first and second axes, respectively, said coupling means constituting a crank unit connected with said levers and having a tool supporting portion whose orientation remains unchanged during rotation of said carriers; and means for simultaneously pivoting said first and second levers about the respective axes during predetermined stages of said orbital movement of said levers.

4,244,251

FULL ROTATION-TYPE PAPER WEB CUTTING DEVICE

Souchi Iwano, Norihiko Suzuki, Yasuhiko Doi, Shigenitsu Shimizu, and Takeshi Morikawa, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

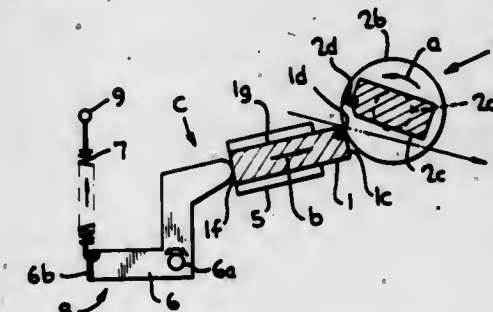
Filed Apr. 24, 1979, Ser. No. 33,019

Claims priority, application Japan, Apr. 28, 1978, 53-54930[U]

Int. Cl.³ B23D 25/02

U.S. Cl. 83-349

8 Claims



1. A device for cutting a paper web comprising: a rotary blade assembly comprising a frame; a non-rotatable blade in cutting engagement with said rotary

blade assembly and being retractable from said rotary blade assembly during the cutting engagement therewith; guide members supporting said non-rotatable blade for sliding movement in the direction of the retraction; and means for elastically biasing said non-rotatable blade into cutting engagement with said rotary blade assembly, said biasing means including a lever pivotally mounted on the frame, and a spring having one end connected to one end of the lever with the other end of the spring being mounted on the frame to bias the lever for urging the non-rotatable blade toward the rotary blade assembly.

4,244,252

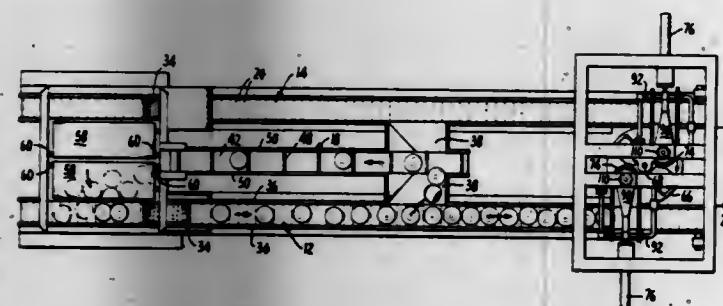
ONION CONVEYOR AND SLICER

Roy C. Pellaton, Stockton, Calif., assignor to Guntert & Pellaton, Inc., Stockton, Calif.

Filed Apr. 9, 1979, Ser. No. 28,105
Int. Cl.³ B26D 4/46, 4/50

U.S. Cl. 83—356.3

8 Claims



1. An onion slicer comprising a rotary plate, slicing knife means carried by said plate, an onion feed conveyor positioned to deliver onions tangentially to said plate, transfer means movable transversely of said conveyor operable to move onions from said conveyor onto said plate, means to position an onion on said plate for slicing by said knife means, means to continuously press said onion against said plate as it is sliced by said knife means, and means to convey onion slices away from said plate comprising an aperture in said plate to pass said slices as they are formed by said knife means.

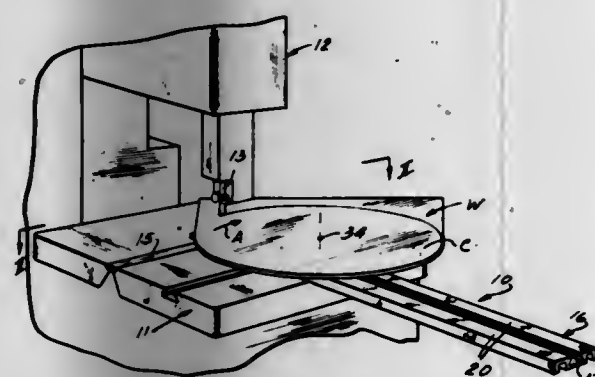
4,244,253

CUTTING GUIDE ATTACHMENT FOR POWER TOOLS

Richard J. Flanagan, McMinnville, Tenn., assignor to Houdaille Industries, Inc., Ft. Lauderdale, Fla.

Filed Jun. 19, 1978, Ser. No. 916,949
Int. Cl.³ B27B 13/04; B23Q 27/00; B23D 53/06
U.S. Cl. 83—411 R

8 Claims



1. A cutting guide attachment for work table equipped cutting machine tools controlling the feed path of the workpiece to the cutting tool to form desired workpiece contours which comprises, an elongated track bar, bolts for demountably securing one end of the track bar on top of the machine tool work table positioning the bar adjacent one side of the cutting tool to extend laterally from the cutting edge of the tool, a slide carried by said track bar, a workpiece centering means on said slide adapted to guide the workpiece against the cutting tool

along an arcuate path with a radius controlled by the distance of said centering means from the cutting tool, means controlling the position of said slide in said track bar to maintain the desired feed path, and a workpiece supporting block mounted on top of said work table adjacent the opposite side of the cutting tool presenting a work support surface at the same level as the workpiece centered on the centering means.

4,244,254

CARTON FOR CUTTING AND DISPENSING SHEET MATERIAL

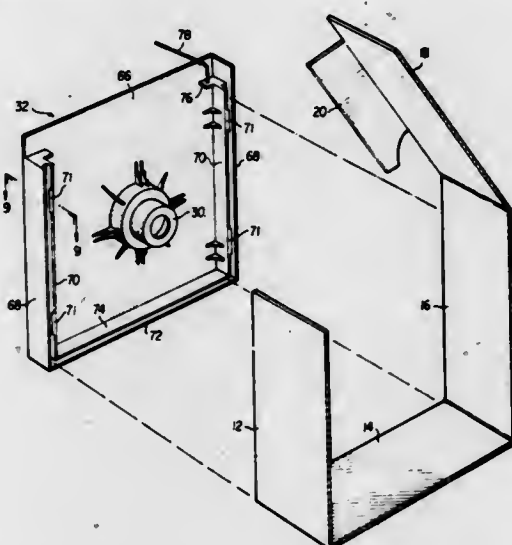
Darrell D. Fish, Timonium, Md., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 933,855, Aug. 15, 1978, Pat. No. 4,196,647.
This application Aug. 17, 1979, Ser. No. 67,563

Int. Cl.³ B26D 1/34

U.S. Cl. 83—589

3 Claims



1. A carton construction for dispensing sheet material which comprises

- (a) front, bottom, rear and top wall members cut from a strip of paperboard and serially connected along laterally spaced fold lines,
- (b) a pair of opposed side wall members made from a plastic material;
- (1) each of said side wall members having a U-shaped channelled groove to receive the front, bottom, and rear wall members,
- (2) each of said side wall members further having roll receiving means,
- (c) and said front and top wall members having cooperating cutter means to sever and dispense sheet material supported on said roll receiving means.

4,244,255

ARTICLE SLOTTING APPARATUS

Peter Dykstra, North Haledon, N.J., assignor to Park Metal, Prospect, N.J.

Filed Jul. 10, 1979, Ser. No. 56,153

Int. Cl.³ B26D 5/10

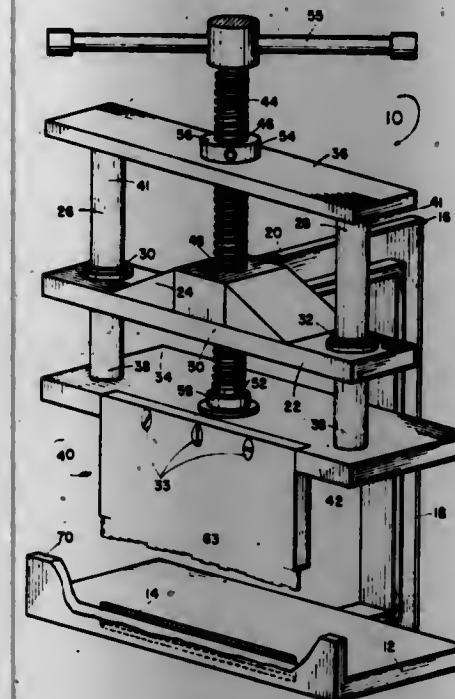
U.S. Cl. 83—631

9 Claims

1. An article slotting apparatus, comprising:

- (a) a support member,
- (b) an upright support member comprising a generally horizontally disposed arm member and a generally vertically disposed post member attached to said support member,
- (c) a fixed platen member that is mounted on said upright support member so that said post member is located at the rear area of said fixed platen member, said fixed platen member comprising spaced apart bores therein,
- (d) a movable lower platen member,
- (e) an upper platen member,
- (f) post members that are spaced apart and generally vertically disposed, said lower platen member being connected

to said post members at first ends of said post members and said upper platen member being connected to said post members at opposite second ends of said post members, said post members being disposed at said bores of said fixed platen member so that said fixed platen member is slidably movable with respect to said post members, said upper platen member movable lower platen member, and post members being connected together and movable in unison,



body in order to produce said profiles, said apparatus comprising:

- a plurality of thin supporting members, each of which has a free end;
 - at least one comparatively fine wire which extends between and is retained by said free ends of said supporting members in a predetermined orientation based on the desired profile shape, and such that said wire is zigzaggedly arranged obliquely to said direction of relative movement in such a way that an individual wire portion extending between two adjacent supporting members is oblique with respect to the direction of said relative movement between the body and said profile shaping apparatus.
9. A method for shaping profiles using the apparatus as claimed in claim 1 comprising moving the body relative to said apparatus such that said wire engages and moves relatively along the surface of the body, and with the wire portions between adjacent supporting members being oblique to the direction of relative movement.

4,244,257

WAVE-SHAPE GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENTS

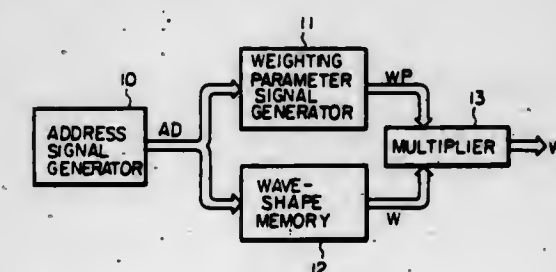
Koji Nishi, Takayasu Kondo, both of Hamamatsu, and Shigeo Ando, Iwate, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Mar. 26, 1979, Ser. No. 24,025

Claims priority, application Japan, Mar. 28, 1978, 53-36474
Int. Cl.³ G10H 1/06, 7/00

U.S. Cl. 84—1.01

9 Claims



- (g) a slotting tool element attached to the front edge of said movable lower platen member, said tool element extending downward from said lower platen member into the space between said support member and said lower platen member, said space being free of obstruction, and
- (h) a threaded drive shaft engaging at least one of said upper and lower platen member 2 and to be movable therewith with respect to said horizontally disposed arm member.

4,244,256

PROFILE SHAPING APPARATUS AND METHOD

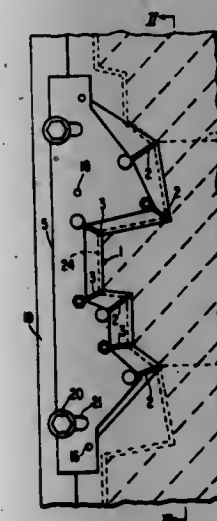
Per Jakobsson, and Holger Alexandersson, both of Orebro, Sweden, assignors to Intong Aktiebolag, Kumla, Sweden

Filed May 29, 1979, Ser. No. 43,265

Claims priority, application Sweden, May 30, 1978, 7806191
Int. Cl.³ B26D 1/547, 3/00

U.S. Cl. 83—862

9 Claims



1. An apparatus for use in shaping profiles in the surface of a body of a semiplastic material, said apparatus being adapted in use for operating with a relative movement between the body and said apparatus in a direction along the surface of the

1. A wave-shape generator for electronic musical instruments having a plurality of keys, comprising:

- address signal generator means for generating an address signal having a value which progresses at a rate corresponding to a depressed one of said keys, the rate of progression of the value of said address signal being different for each said key;
- wave-shape memory means storing a wave-shape in the form of a plurality of sample values, said wave-shape means being coupled to the output of said address signal generator and receiving said address signal, said wave-shape memory means generating, upon receipt of said address signal, a wave-shape signal whose shape is determined by said stored wave-shape and whose period is determined by said rate;
- weighting parameter signal generator means coupled to the output of said address signal generator and receiving said address signal, said weighting parameter signal generator means generating, upon receipt of said address signal, a weighting parameter signal whose magnitude changes during said period of said wave-shape signal as a function of said address signal, the period of said weighting parameter signal being determined by said rate of progression of said value of said address signal; and
- a multiplier coupled to the output coupled to the output of said weighting parameter signal generator and said wave-shape memory for multiplying said weighting parameter signal with said wave-shape signal and generating a corresponding modulated wave-shape signal representing a new wave-shape different in shape from said wave-shape

represented by said wave-shape sample values stored in said wave-shape memory.

4,244,258

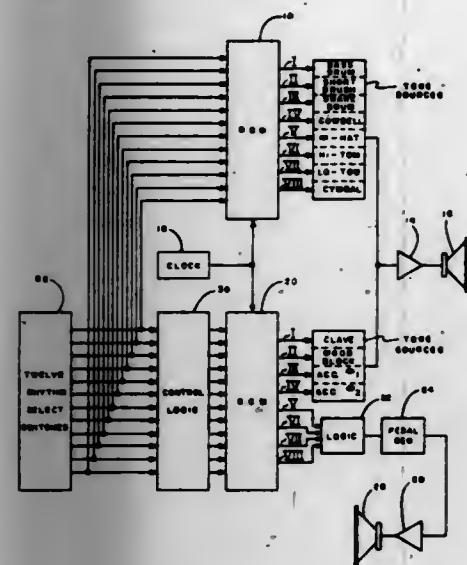
RHYTHM SYSTEM FOR ELECTRONIC ORGAN

Robert A. Finch, Mundelein, Ill., assignor to CBS Inc., New York, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,479
Int. Cl.³ G10F 1/00

U.S. Cl. 84-1.03

9 Claims



1. An automatic pulse pattern generating unit for an electronic organ having percussive and accompaniment voices, comprising:

- a set of switches each for selecting when actuated one of a multiplicity of different pulse patterns;
- first means including first memory means storing a first set of two or more pulse patterns and responsive to actuation of two or more of said switches for producing a pulse pattern of percussive voices consisting of an "OR'd" combination of two or more pulse patterns of said first set corresponding to the actuated switches; and
- second means including second memory means storing a second set of two or more pulse patterns different from the pulse patterns of said first set for producing in response to actuation of said two or more switches a singular pulse pattern of said second set of an accompaniment voice corresponding to the first actuated of said two or more switches.

4,244,259

ELECTRONIC MUSICAL INSTRUMENT WITH MEMORY TO STORE TONE CONTROL INFORMATION

Masahiko Koike, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 3, 1979, Ser. No. 54,428

Claims priority, application Japan, Jul. 10, 1978, 53-94858; Jul. 25, 1978, 53-102021

Int. Cl.³ G10H 3/00

U.S. Cl. 84-1.19

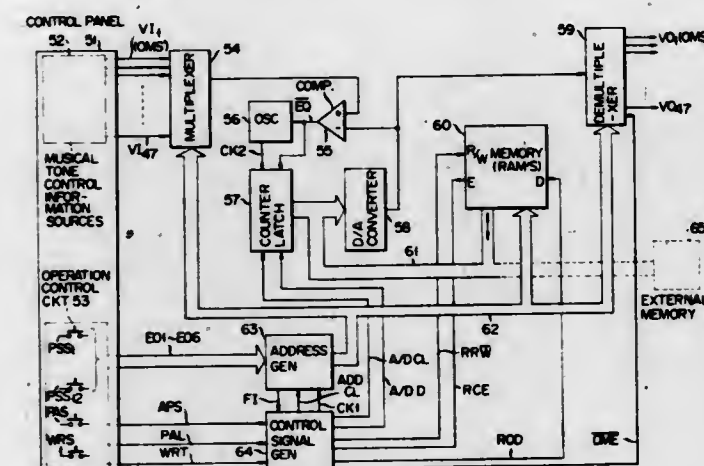
10 Claims

1. An electronic musical instrument, comprising: keyboard circuit means for producing, in response to a key depression, a key identifying signal corresponding to the note of a depressed key and a trigger signal representing said key depression;
- musical tone signal synthesizing circuit means coupled to said keyboard circuit means for producing a musical tone signal in response to said key identifying signal, said musical tone signal being modulated by control waveforms;
- at least one source of parameter control analog signals whose magnitudes are changeable;
- control waveform generator means for producing and supplying said control waveforms to said musical tone signal synthesizing circuit means to modulate the musical tone

signal, said control waveforms having controllable parameters to define the shapes thereof and said control waveform generator means being arranged to produce the control waveforms that are determined by said parameter control analog signals in response to said trigger signal and said parameter control analog signals;

at least one source of analog select signals, the level of each of said analog select signals being selectively set to one of a plurality of levels;

mode changeover means coupled to said musical tone signal synthesizing circuit means for changing the generation mode of the musical tone signal in response to said select signals each of which is an analog signal having a level, said mode changeover means including level detecting means for detecting the levels of said analog select signals to produce digital outputs respectively corresponding to said levels for changing said generation mode of the musical tone signal;



a multiplexer circuit connected to receive said parameter control analog signals and said analog select signals for multiplexing said parameter control analog signals and said analog select signals in a time sharing manner; conversion means coupled to an output of said multiplexer circuit for effecting conversion between digital and analog signals;

read and write memory coupled to said conversion means through a data bus, said memory means storing, in a write mode, output signals of said multiplexer circuit which have been converted into digital signals by said conversion means and reading out, in a read mode, the stored digital signals to supply them to said conversion means which converts the digital signals into analog signals; and a demultiplexer circuit connected to receive analog signals from said conversion means for demultiplexing and selectively coupling said converted analog signals to said control waveform generator means and to said mode changeover means.

4,244,260

FOOTAGE VOLUME CONTROL CIRCUIT

Alberto Kniepkamp, Arlington Heights, and Douglas R. Moore, Vernon Hills, both of Ill., assignors to Norlin Industries, Inc., Deerfield, Ill.

Filed Dec. 28, 1978, Ser. No. 974,052

Int. Cl.³ G10H 1/06, 5/10

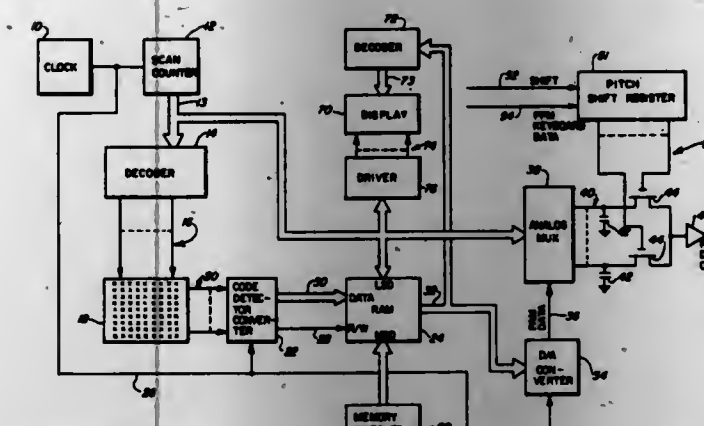
U.S. Cl. 84-1.21

15 Claims

1. A programmable source of analog information comprising: a matrix having a plurality of switches distributed along a first axis and along a second axis;
- the switches distributed along said second matrix axis corresponding to respective different pulse amplitudes;
- scanning means for interrogating successive groups of said matrix switches, the switches of any one group all having the same position along said first matrix axis;

a read/write digital memory having a plurality of addresses; switch means for selecting among different groups of said memory addresses;

means responsive to said scanning means to write data into and read data out of successive memory addresses in the currently selected group of memory addresses during write cycles and read-out cycles of said memory respectively;



means responsive to said scanning means for entering the successive pulse amplitude values obtained from said matrix into successive ones of the currently selected group of memory addresses in digital form during write cycles of said memory;

and digital-to-analog converter means responsive to read-out cycles of said memory to translate each of the pulse amplitudes specified in said successive memory addresses from digital to voltage analog form.

4,244,261

ELECTRONIC KEYBOARD MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

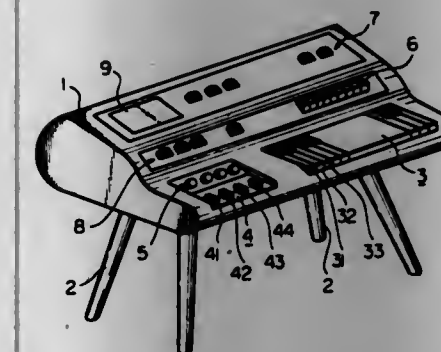
Filed Dec. 15, 1977, Ser. No. 860,879

Claims priority, application Japan, Dec. 17, 1976, 51-170193[U]

Int. Cl.³ G10H 1/02

U.S. Cl. 84-1.24

9 Claims



1. An improved electronic keyboard instrument comprising: a musical keyboard having a plurality of individually actuable keys, each of said keys being movable between an on and an off position;
- a main processing system for generating a different musical tone in response to the actuation of each respective one of said keys, said main processing system including n musical tone elements, n being an integer greater than 1, each of said musical tone elements controlling a different tonal quality of said musical tones;
- a pressure-sensitive member assembly including n manually operable deflectable pressure-sensitive members which are independently operable from each other and independently operable of said keys of said keyboard, each of said pressure-sensitive members sensing the instantaneous pressure applied thereto and controlling the operation of a respective one of said musical tone elements as a direct

function of said instantaneous pressure applied thereto independently of the relative pressure applied to those said keys in the on position, independently of the operation of the remaining said pressure-sensitive members and as a function of the pressure applied thereto.

4,244,262

ECHO-MACHINE EMPLOYING LOW PASS FILTERS WITH A VARIABLE CUT-OFF FREQUENCY

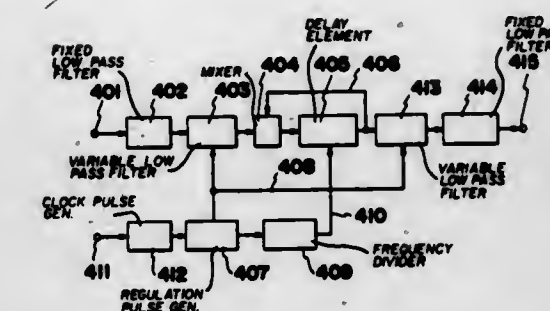
Atsushi Imai, Osaka, Japan, assignor to Roland Corporation, Osaka, Japan

Filed Sep. 7, 1978, Ser. No. 940,507

Claims priority, application Japan, Nov. 15, 1977, 52-136188 Int. Cl.³ G10H 1/043, 1/10

U.S. Cl. 84-1.24

9 Claims



1. A variable delay echo machine comprising: a clock pulse generator for generating a clock pulse signal having a controllable frequency;
- a cut-off frequency regulation pulse generator connected to said clock pulse generator for generating a rectangular wave signal having the same frequency as said clock pulse signal and having a duty ratio directly proportional to the frequency of said clock pulse signal;
- a frequency dividing signal converter connected to said cut-off frequency regulation pulse generator for generating a shift pulse signal having a frequency a predetermined integral fraction of the frequency of said rectangular wave signal;
- a first variable cut-off frequency low pass filter having an input terminal, an output terminal and a cut-off frequency control terminal receiving said rectangular wave signal from said cut-off frequency regulation pulse generator for passing signals applied to said input terminal having frequencies less than a cut-off frequency proportional to the duty ratio of said rectangular pulse signal to said output terminal;
- a variable time delay element having an input terminal connected to said output terminal of said first variable cut-off frequency low pass filter, an output terminal and a delay time control terminal receiving said shift pulse signal of said frequency dividing signal converter, for the coupling the signal applied to said input terminal of said variable time delay element to said output terminal of said variable time delay element after a time delay inversely proportional to the frequency of said shift pulse signal from said frequency dividing signal converter; and
- a second variable cut-off frequency low pass filter having an input terminal connected to said output terminal of said variable time delay element, an output terminal and a cut-off frequency control terminal receiving said rectangular wave signal from said cut-off frequency regulation pulse generator for passing signals applied to said input terminal of said second variable cut-off frequency low pass filter and having frequencies less than a cut-off frequency proportional to the duty ratio of said rectangular pulse signal to said output terminal of said second variable cut-off frequency low pass filter.

4,244,263

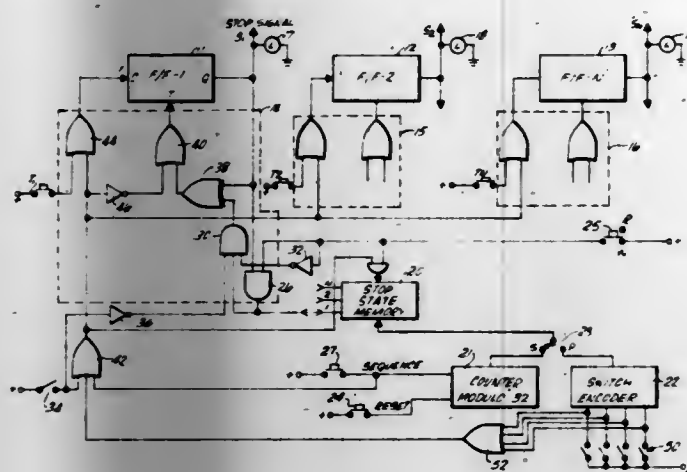
TONE SELECTION CONTROL FOR AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutch, and Leslie J. Deutch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Dec. 18, 1978, Ser. No. 970,749
Int. Cl.³ G10B 3/10

U.S. Cl. 84—345

1 Claim



1. A capture combination tone setting system for an organ or the like having a plurality of tone control stops which can be individually turned on or off, comprising:

a bistable device associated with each stop for controlling the state of the stop, a control circuit associated with each device including a tone control push-button switch for changing the state of the associated bistable device each time the switch is activated, indicator means for indicating the state of each bistable device, an addressable read/write memory for storing a plurality of tone setting control words in separately addressable locations, means including a counter for addressing the memory at a location corresponding to the setting of the counter, means responsive to the states of the bistable devices for generating a word coded to identify the states of the devices, means including a write control switch for writing said word in memory at the address fixed by the counter when the switch is actuated, means including a sequence control switch for advancing the counter by one and resetting the bistable devices to an initial state when the sequence control switch is activated, means responsive to said sequence control switch when the write control switch is off for reading out a word from the address in memory fixed by the counter, changing the states of selected devices in response to said word and incrementing the counter, a plurality of tone combination setting switches, means for presetting a unique address in the counter in response to operation of any of said tone combination setting switches, whereby each tone combination switch selects a predetermined starting word location in memory for subsequent sequencing by the counter.

4,244,264

SYSTEM FOR REGISTERING AND SELECTING STOPS IN A MUSICAL INSTRUMENT

Dominique Fellet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 17, 1978, Ser. No. 878,869

Claims priority, application France, Feb. 23, 1977, 77 05253
Int. Cl.³ G10B 3/10

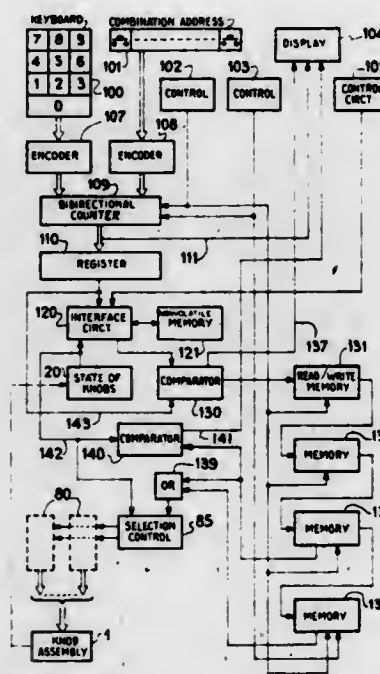
U.S. Cl. 84—345

12 Claims

1. In a musical instrument having a multiplicity of independently movable stops provided with respective actuators electrically operable to displace said stops between selected and unselected positions, the combination therewith of:

nonvolatile memory means with a multiplicity of sequen-

tially accessible storage areas each having recorded therein a combination of binary signals identifying the selected and unselected positions of respective stops; a cascade of ancillary read/write memories connected to said nonvolatile memory means for consecutive loading with respective signal combinations from as many adjacent storage areas thereof; a multiplicity of register stages with output connections respectively extending to said actuators; player-operated selector means for identifying a storage area of said nonvolatile memory means containing a chosen signal combination and feeding the latter via a first memory of said cascade into a second memory of said cascade while loading said first memory with an adjacent signal combination;



control means connected to said second memory for reading out said chosen signal combination and converting same into positioning commands entered into said register stages and for immediately advancing said adjacent signal combination from said first memory to said second memory as a replacement of the chosen signal combination read out therefrom while immediately replacing said adjacent signal combination in said first memory with a further signal combination read out from the next-following storage area of said nonvolatile memory means whereby said cascade always contains a plurality of signal combinations substantially less than the number of said storage areas; and

interface means inserted in said output connections for simultaneously transmitting said positioning commands to the respective actuators in response to a transfer instruction.

4,244,265

DRUM APPARATUS

Gene J. Tuttrup, 516 C Olive Pl., Honolulu, HI. 96818

Filed Sep. 22, 1978, Ser. No. 945,032

Int. Cl.³ G10D 13/02

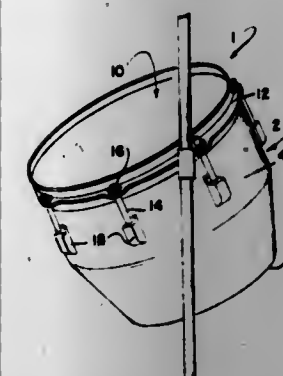
U.S. Cl. 84—411 R

11 Claims

1. A percussion instrument apparatus comprising:

a drum body having a relatively large first open end, means for stretching a drum skin across the first open end, the body having first and second inward sloping sidewall sections, said first sidewall section sloping slightly inward from said first open end and said second sidewall section sloping inward from said first sidewall section at a sub-

stantially greater angle than said first sidewall section, each sidewall section being about one half the length of



the drum body, and said drum body having a second smaller open end opposite the first open end.

4,244,266

DRUMHEAD DEADENING DEVICE

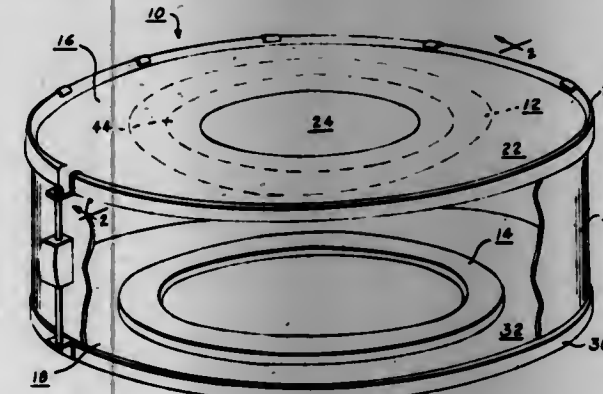
Bruce N. Hardy, Elkhart, Ind., assignor to Silver Street, Incorporated, Elkhart, Ind.

Filed Jul. 9, 1979, Ser. No. 56,021

Int. Cl.³ G10D 13/02

U.S. Cl. 84—411 M

8 Claims



1. A drumhead structure comprising a drumhead membrane, an outer rim disposed on the periphery of said membrane, a device of porous, pliable material for absorbing some of the vibrations of said membrane, an opening therein to correspond in position to the preferred attack area of said membrane, and an adhesive attaching said device to said membrane.

4,244,267

PERCUSSION INSTRUMENT

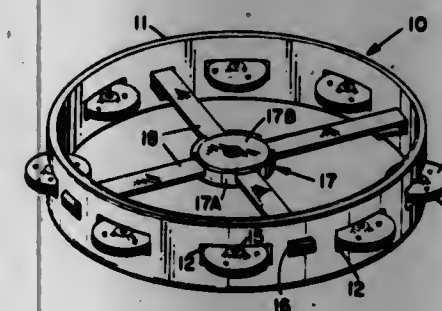
James J. Nemeth, 995 Summit Dr., Laguna Beach, Calif. 92651

Filed Apr. 3, 1979, Ser. No. 26,579

Int. Cl.³ G10D 13/02

U.S. Cl. 84—418

12 Claims



1. A percussion instrument comprising, an outer ring member,

a plurality of sound producing elements attached to said ring member, at least one resilient means engaged with and spanning the interior of said ring member, and hub means connected to said resilient means within said ring member and adapted to coact with a separate mounting means to provide a mounting arrangement for said percussion instrument.

4,244,268

STRIKE LINE ADJUSTER

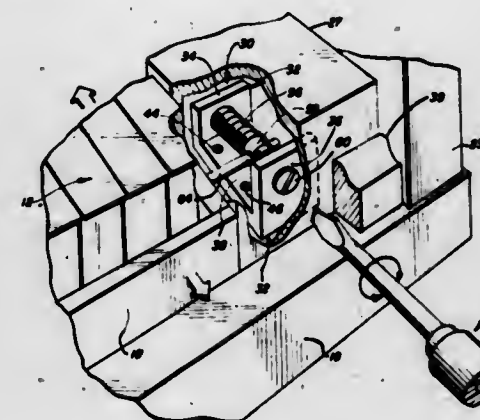
Jairus P. Barham, Spring Lake, and Norman L. Meyer, Grand Haven, both of Mich., assignors to Norlin Industries, Inc., Deerfield, Ill.

Filed May 14, 1979, Ser. No. 38,791

Int. Cl.³ G10C 3/00

U.S. Cl. 84—432

3 Claims



1. In a piano of the type having a keyframe assembly overlying a keybed, an improved hammer strike line adjustment apparatus comprising:

a generally U-shaped bracket having a base and a pair of opposed side walls extending upwardly from the distal ends of said base, said side walls including a pair of axially aligned internally threaded apertures and said base being fastened to the piano keybed intermediate the keyframe assembly and treble arm so that the axis of said apertures extends longitudinally alongside the keyframe assembly; an externally threaded worm gear cooperatively received by said apertures for movement longitudinally of the keyframe assembly in response to rotation thereof, said worm gear including an annular recessed portion; a shift pin having a first end secured to the keyframe assembly and a second end received by the annular recessed portion of said worm gear, whereby rotation of said worm gear is effective for longitudinally displacing said shift pin for adjusting the hammer strike line characterizing said piano; and a piano keyblock securable between the keyframe assembly and treble arm for normally covering said bracket, worm gear and shift pin and being removable for effecting rotation of said worm gear.

4,244,269

PRONG-TYPE FASTENER

Frederick R. Gorell, Streator, Ill., assignor to Transco, Inc., Chicago, Ill.

Filed Oct. 30, 1978, Ser. No. 955,583

Int. Cl.³ F16B 17/00; E04B 1/40; A44B 21/00

U.S. Cl. 411—477

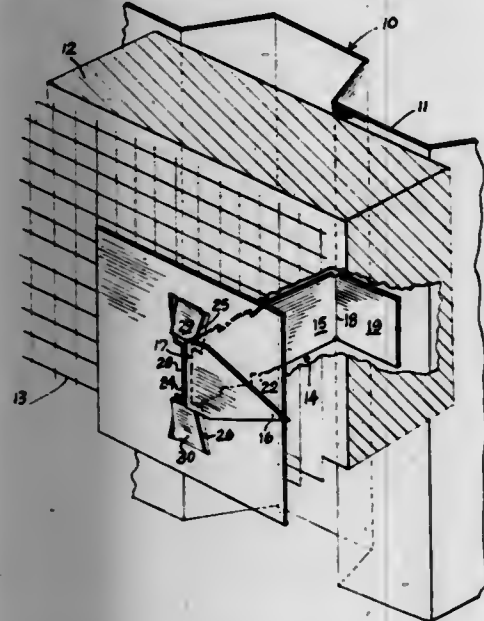
1 Claim

1. A prong-type fastener for assembling an insulated wall panel including an outer metallic wall structure and a batt of insulating material comprising

(a) an elongated substantially rectangularly-shaped body of metallic material,

(b) a base member formed at one end of said body and extending transversely with respect to the longitudinal

- length thereof and adapted to be fixedly connected to the inner wall surface of the outer metallic wall structure,
- (c) a penetrating point formed on the opposite end of said body and adapted to have a batt of insulating material impinged thereon between said base and said point,
- (d) a locking member comprising a substantially flat square plate of a size greater than said base adapted for cooperating with said body member for maintaining the batt of insulating material upon said body between said locking member and said base and to surround the area of penetration of said penetrating point through the batt of insulating material,
- (e) a slot formed in said locking member through which said elongated body projects as said locking member is positioned on said body in facial abutment with said batt of insulating material surrounding the area of penetration of said point therethrough,



- (f) said slot terminating at opposite ends into U-shaped slots which define latching fingers extending in opposite directions toward said slot formed in said locking member with said latching fingers adapted to have contact with opposite longitudinal edges of said body as said body is projected through said slot
- (g) said slot and said U-shaped slots defining guide members to either side of said slot for guiding said locking member on said body with said latching fingers in contact with opposite longitudinal edges of said body, and
- (h) a series of step notches formed on said opposite longitudinal edges of said body between said penetrating point and said base and adapted to contact said latching fingers as said body is guided through said slot for latching said locking member on said body inwardly of said penetrating point.

4,244,270 FEEDER FOR A GUN

Douglas P. Tancie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

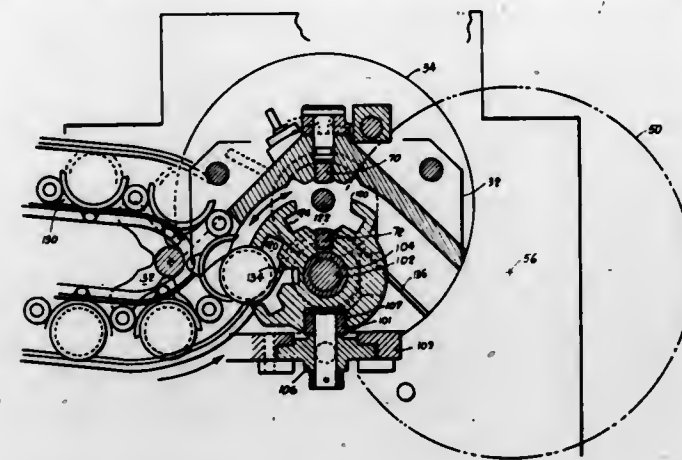
Filed Jul. 3, 1978, Ser. No. 921,657
Int. Cl.³ F41D 10/02

U.S. Cl. 89—33 C

9 Claims

1. An ammunition feeder for a gun having a longitudinally reciprocating gun bolt, including:
- first means driven at a substantially uniform angular velocity, for advancing a train of rounds of ammunition at a substantially uniform linear velocity;
- second means driven at a non-uniform angular velocity, for receiving a round of ammunition from said first means and for transversely translating such round directly onto the face of the gun bolt of the gun, and for transversely translating such round from the face of the gun bolt of the gun; driving means for said second means including

a first cylindrical cam having a first peripheral cam track; a second cylindrical cam, coupled to and driving said second means, having a second peripheral cam track; a first cam follower disposed in said first cam track; a second cam follower disposed in said second cam track; and link means intercoupling said first and second cam follow-



ers, whereby rotation of said first cam causes rotation of said second means; said gun bolt being journaled for reciprocation along a first longitudinal axis; said second means being journaled for movement about a second longitudinal axis; and said driving means serves to oscillate said second means about said second longitudinal axis.

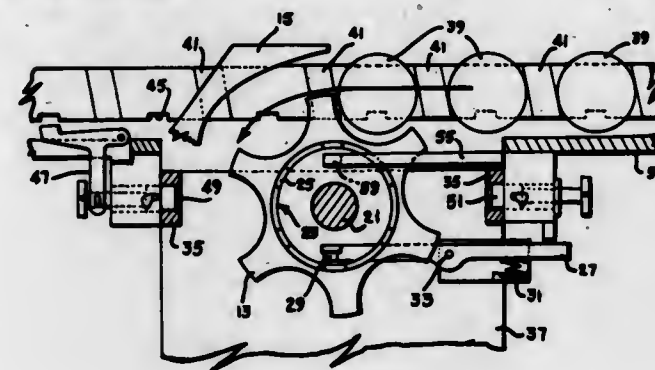
4,244,271 AMMUNITION FEED TIMING MECHANISM

Roger E. Gaboriault, Williston, Vt., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 10, 1979, Ser. No. 2,280
Int. Cl.³ F41D 10/22

U.S. Cl. 89—33 BB

2 Claims



1. A positive timing mechanism for mounting exit and entrance units to a linkless feed ammunition rounds storage drum comprising a scoop for transferring the rounds to and from the drum to the exit and entrance units, a rotatable scoop sprocket for scooping the rounds during the transfer operation, means for synchronously timing the rotation of said scoop sprocket with the movement of the drum, means for maintaining the exit and entrance units in synchronous timing with the drum including a raised ring extending axially outward from the surface of said scoop sprocket, a series of timing slots equally spaced in the wall of said raised ring, a spring loaded timing lever pivotally mounted for radial movement relative to said raised ring, and a protrusion on the inner end of said spring loaded timing lever for engagement with one of said series of timing slots when said protrusion and slot are in alignment to prevent rotation of said scoop sprocket when dismounted from the drum, means for preventing the mounting and dismounting of the exit and entrance units on the drum unless and until the

units are synchronously timed therewith including a timing arm extending inwardly to the center of an opening in which the units are positioned and a protrusion on the inner end of said timing arm in alignment with one of said series of timing slots in said raised ring such that the raised ring on said scoop sprocket will allow the protrusion on said timing arm to pass therethrough only in the properly timed position, thereby providing foolproof timing of the exit and entrance units with the drum and maintaining the timed positions after detachment therefrom.

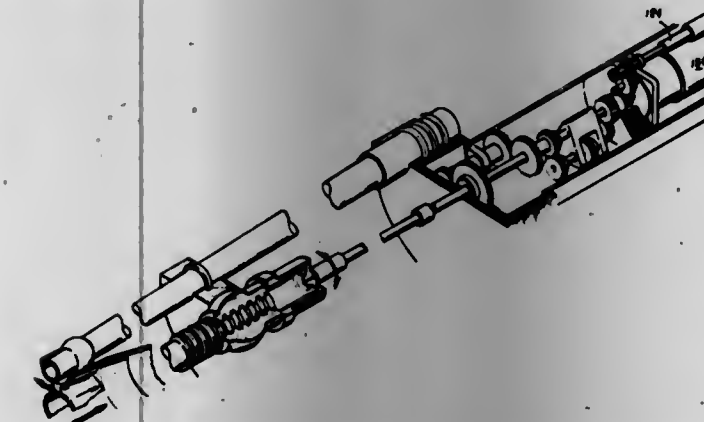
4,244,272 DISPERSION-CONTROLLED MULTIBARREL GUN SYSTEM

Edgar R. Terry, Richmond, and Joseph A. Hudock, Shelburne, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Oct. 10, 1978, Ser. No. 949,607
Int. Cl.³ F41D 7/04

U.S. Cl. 89—41 A

5 Claims



1. In a weapon system for aiming and for firing a plurality of projectiles at a target by means of a fixed forward-firing Gatling type gun with a barrel cluster having a mean boresight and wherein said weapon system at any given time has an aiming error and a bias which is either constant or range dependent or both, and wherein each projectile as fired has a ballistic dispersion:

first means coupled to said barrel cluster for concurrently adjusting the alignment, or boresight, of one or more of the barrels of said barrel cluster with respect to said mean boresight of said barrel cluster before or during the firing interval whereby to vary the dispersion of said plurality of projectiles fired by said gun;

the improvement of:

second means coupled to said first means for causing said first means to continually adjust said alignment of said barrels of said barrel cluster with respect to said mean boresight to provide a predetermined and constant dispersion pattern of projectiles at the target as the error between the point of aim and the target and the range between the gun and the target continually vary.

4,244,273 RIFLE MODIFICATION

Walter J. Langendorfer, Jr., Lansdowne, and David W. Coffin, Sr., Prospect Park, both of Pa., assignors to Langendorfer Plastics Corporation, Lansdowne, Pa.

Filed Dec. 4, 1978, Ser. No. 965,963
Int. Cl.³ F41D 5/10

U.S. Cl. 89—193

1 Claim

1. A modification for a M-16 type standard U.S. Army rifle having among its elements a barrel and a bolt with a bolt key secured thereto, comprising:

(a) a forward cylinder connected to the front portion of the bore of the barrel wherein gas pressure from burning propellant powder is introduced, said cylinder having

(1) adjustment means for varying the size of the bore of

- the cylinder whereby the force exerted by the propellant gases on the piston rod can be controlled, and
- (2) gas exhaust means;
- (b) a piston within the cylinder;
- (c) a rod connected to the piston extending rearwardly of the cylinder for transmitting force rearwardly to the bolt key; and



- (d) a buffer arrangement at the rearward portion of the piston rod and within the bolt key for absorbing the initial high impact force created by the gases in the forward cylinder which is transmitted rearwardly by the piston rod, said buffer system having a floating piston and a plurality of shock absorbing pads that are alternately different.

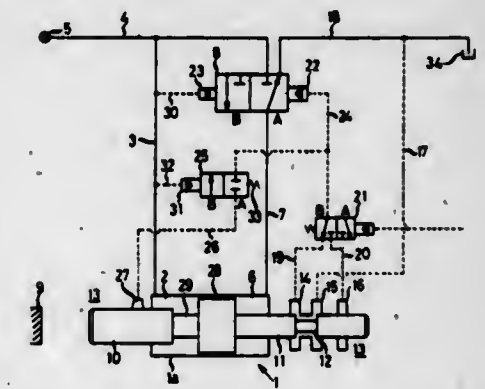
4,244,274 CYLINDER CONTROL DEVICE OF HYDRAULIC CYLINDER APPARATUS

Hiroshi Oguni, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 3, 1979, Ser. No. 63,658
Claims priority, application Japan, Aug. 14, 1978, 53-99189
Int. Cl.³ F01L 25/06; F01B 7/18

U.S. Cl. 91—308

7 Claims



1. A cylinder control device of a hydraulic cylinder apparatus comprising a cylinder body, a piston arranged in said cylinder body for reciprocatory movement, a plurality of working fluid chambers defined by the cylinder body and the piston, a working fluid source, and a plurality of conduits for supplying working fluid from the working fluid source to the working fluid chambers and discharging working fluid therefrom to a fluid discharging place of a working fluid circuit, the cylinder control device comprising:

a main directional control valve operative to control the supply of working fluid to the working fluid chambers and the discharge of working fluid therefrom to thereby switch the movement of the piston from one direction to the other direction, the main directional control valve having a pilot chamber containing working fluid therein for moving the main directional control valve between two positions when a change occurs in the pressure of working fluid in the pilot chamber which is connected to the fluid discharging place of the working fluid circuit;

a control valve connected to the pilot chamber of said main directional control valve and movable between two positions or open and closed positions for causing the pressure in the pilot chamber to vary, the control valve being moved between the closed position and the open position by a change in the pressure in the conduit in communica-

tion with the working fluid source, and the pressure in the conduit in communication with the working fluid source being able to be raised to move the control valve from one position to the other position, thereby causing the pressure in the pilot chamber to vary and moving the main directional control valve from one position to the other position; and

a first valve means interposed between the pilot chamber of the main directional control valve and the fluid discharging place of the working fluid circuit, said first valve means being operative to open when the piston reaches a predetermined position in its rearward stroke;

wherein the improvement resides in that said first valve means comprises a plurality of valve members arranged axially of the piston, and wherein an auxiliary directional control valve is located in a passage connecting the first valve means to the pilot chamber of the main directional control valve for selectively actuating the valve members of the first valve means, the pressure in the pilot chamber being reduced when the selected valve members are opened and the pilot chamber communicates with the fluid discharging place, thereby moving the main directional control valve from one position to the other position.

4,244,275

COUNTERBALANCE VALVE

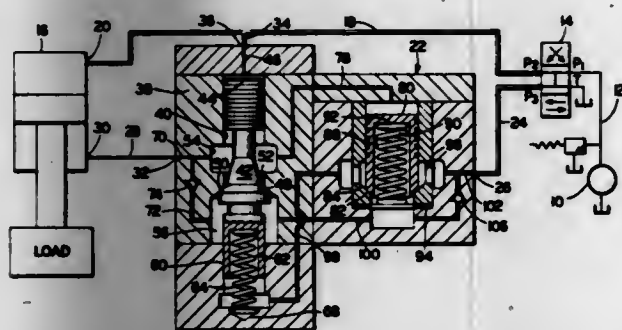
Robert Smilges, Paris, France, assignor to Abex Corporation, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,165

Int. Cl.³ F15B 13/042

U.S. Cl. 91—420

1 Claim



1. A hydraulic system for raising and lowering a load including a hydraulic motor operable in one direction to raise the load and operable in the opposite direction to lower the load, a pump which supplies pressure fluid to operate the motor, a four-way valve alternatively movable between a first position which connects the pump output to one side of the motor to raise the load, a second position which connects the pump output to the other side of the motor to lower the load and a neutral position in which the pump output is routed to tank and the hydraulic motor is stationary, characterized by a remote, pilot-operated counterbalance valve connected between the four-way valve and the hydraulic motor, which valve comprises a metering spool, a variable metering orifice which passes fluid from the motor when the load is lowered, means biasing the metering spool to close the metering orifice, a pilot fluid conduit connected between one end of the metering spool and the unloaded side of the motor, wherein pressure fluid in said pilot fluid conduit moves the metering spool to open the metering orifice when the load is lowered, a pressure compensator valve which comprises a pressure compensator spool, means for connecting the pressure compensator spool to the upstream and downstream sides of the metering orifice, a compensator spool seat and the compensator spool cooperates with the compensator spool seat to form a compensator orifice which receives fluid from the metering orifice and the pressure compensator valve maintains a fixed pressure differential across the metering orifice to thereby maintain a fixed fluid flow through the metering orifice when the load is lowered,

including means for hydraulically closing the compensator orifice when the hydraulic motor is stationary.

4,244,276

HYDRAULIC CIRCUIT

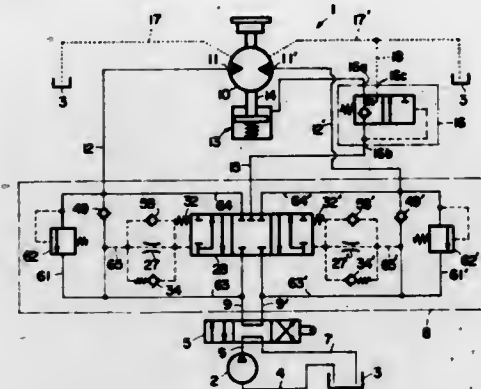
Michiyooshi Iwata, Gifu, Japan, assignor to Teijin Seiki Company Limited, Osaka, Japan

Filed Jul. 16, 1979, Ser. No. 58,109

Int. Cl.³ F15B 13/04

U.S. Cl. 91—447

3 Claims



1. A hydraulic circuit, comprising in combination: a hydraulic source; a reservoir tank connected with said hydraulic source through a first hydraulic passage; a change-over valve connected with said hydraulic source and said reservoir tank through second and third hydraulic passages, respectively; a spool valve connected with said change-over valve through a pair of hydraulic pipes; a hydraulic actuator having a pair of inlet-outlet ports; and a pair of inlet-outlet passages each having one end connected with said spool valve and the other end connected with said inlet-outlet port of said hydraulic actuator; said spool valve including a pair of connecting passages each connecting said hydraulic pipe and said inlet-outlet passage and having a main check valve to allow a hydraulic fluid to flow from said hydraulic pipe to said inlet-outlet passage; a pair of spool passages each having one end connected with said connecting passage between said main check valve and said hydraulic pipe and the other end connected with said connecting passage between said main check valve and said inlet-outlet passage; a valve spool axially movable to open and close said spool passages; a pair of compression coil springs urging said valve spool to be brought into a null position; a pair of pilot passages each having one end connected with said connecting passage between said main check valve and said hydraulic pipe to bring said connecting passage into communication with said valve spool so as to axially move said valve spool against said compression coil spring; a pair of throttles each provided on each of said pilot passages; two pairs of additional pilot passages each having one end connected with said pilot passage between said throttle and said connecting passage between said main check valve and said hydraulic pipe and the other end connected with said pilot passage between said throttle and said valve spool; and two pairs of auxiliary check valves each provided on each of said pilot passages, said pair of adjacent auxiliary valves being adapted to allow said hydraulic fluid to pass through said pair of said adjacent pilot passages in opposite directions.

4,244,277

REDUNDANT SERVO WITH FAIL-SAFE ELECTRIC SYSTEM

William D. Avis, Costa Mesa, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Mar. 2, 1979, Ser. No. 16,993

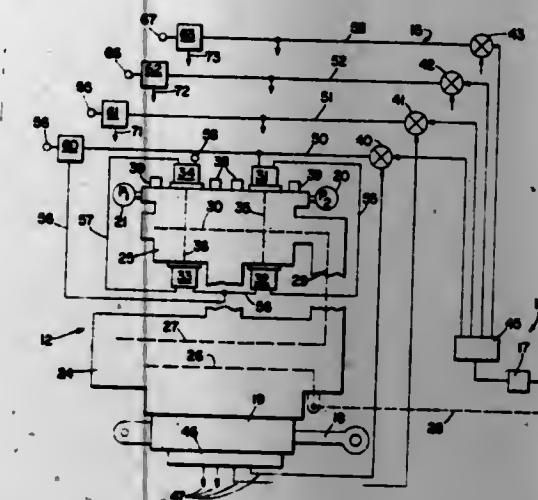
Int. Cl.³ F15B 13/04

U.S. Cl. 91—459

18 Claims

1. In an electrical circuit having plural components in series connection therein for energization from a single power

source, means for establishing an electrical path about failures in the circuit to maintain energization of the remaining components, comprising a triac in shunt connection with a portion of said series circuit, and



means for gating said triac into conduction upon open-circuit failure of said portion of said series circuit, thereby to establish an electrical path to said remaining components.

4,244,278

ARRANGEMENT FOR A HYDRAULIC BRAKE BOOSTER

Juan Belart, Walldorf, and Jochen Burgdorf, Offenbach, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

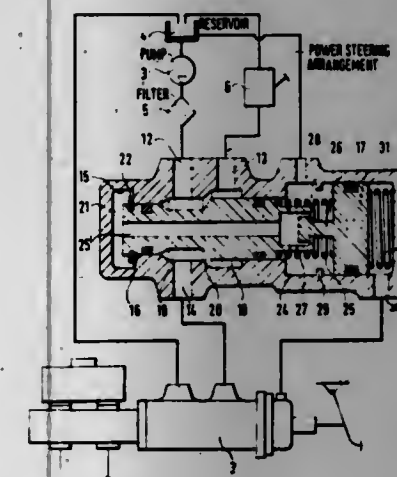
Filed Apr. 9, 1979, Ser. No. 28,471

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820342

Int. Cl.³ F15B 11/10

U.S. Cl. 91—468

37 Claims



1. An arrangement for a hydraulic brake booster including a booster chamber, said arrangement permitting a controlled delivery of a pump-circulated pressure-transmitting fluid to said booster chamber, said arrangement comprising:

- a housing having a stepped bore;
- a throttle element slidably sealed in said bore;
- a piston slidably sealed in said bore adjacent one end of said throttle element and acted upon by pressure in said booster chamber in an actuating direction toward said throttle element, said piston being displaceable within limits relative to said throttle element; and
- a control spring disposed in said bore between said one end of said throttle element and an adjacent end of said piston to determine the maximum force transmitted from said piston to said throttle element.

4,244,279

HYDROSTATIC TRANSMISSION LUBRICATION

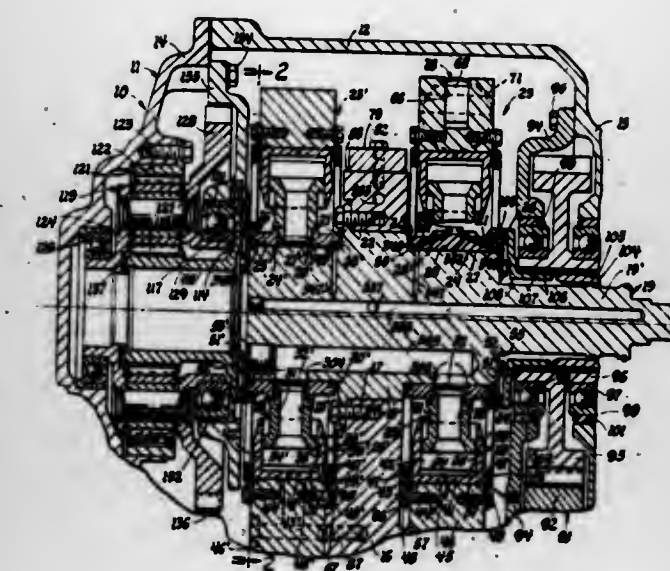
Max E. Stewart, Indianapolis, and James R. Lucas, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 22, 1979, Ser. No. 51,110

Int. Cl.³ F01B 1/06, 13/06

U.S. Cl. 91—488

12 Claims



1. In a radial hydrostatic machine having a housing; a rotor rotatably mounted in said housing; a bearing ring mounted on said housing and having an internal bearing positionable eccentric to said rotor; a plurality of pairs of piston members and cylinder members with each pair providing a hydrostatic chamber; each of said pairs having one member mounted on said rotor and the other member having a slipper bearing supported on said internal bearing; hydrostatic fluid transfer means having an inlet and an outlet alternately connected to and providing hydrostatic pressure in said hydrostatic chambers during rotation of said rotor for hydromechanical torque transfer and providing on said slipper bearings a hydrostatic load proportional to hydrostatic pressure and a hydrodynamic load proportional to the speed of said rotor; the improvement comprising hybrid bearing means for each slipper bearing having an internal bearing surface on said internal bearing and a slipper bearing surface on said slipper bearing with a clearance therebetween for running bearing oil film support on said internal bearing surface; a hydrostatic component having a recess centrally in said slipper bearing surface with said clearance on both sides of said recess, a restricted port connecting said hydrostatic chamber to said recess and laterally to said slipper bearing surface and balancing pressure increasing with hydrostatic pressure; and a hydrodynamic component having low pressure fluid supply means for maintaining a body of fluid on said internal bearing surface between said slipper bearings with a height larger than the free film thickness of the fluid, and a taper at the leading edge of said slipper bearings providing an injection wedge space with an entrance having a height larger than said free film thickness and gradually diminishing to said clearance for injecting hydrodynamic fluid into said clearance with a hydrodynamic fluid flow and balancing pressure increasing with speed and coacting with hydrostatic flow and balancing pressure to decrease hydrostatic fluid flow and providing increased total flow and balancing pressure balancing hydrodynamic load and hydrostatic load to meet total fluid flow and balancing pressure requirements of said hybrid bearing at all speeds.

4,244,280

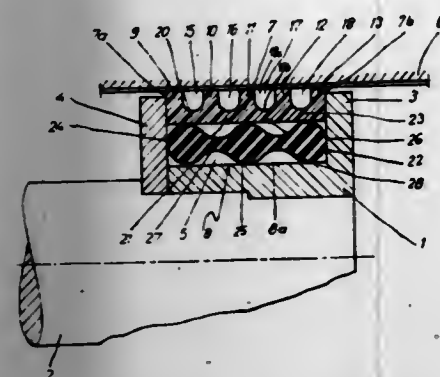
PISTON FOR A PNEUMATIC CYLINDER

Kurt Stoll, Lenzhalde 72, 7300 Esslingen/N., Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,603
Int. Cl.³ F01B 31/10; F16J 1/06, 9/00

U.S. Cl. 92-159

7 Claims



1. In a piston for a pneumatic working cylinder having an annular radially outwardly opening groove on the piston circumference, in which are arranged an outer guide and seal ring and a support ring made of an elastic material, said support ring engaging and urging radially outwardly the said guide and seal ring, wherein said guide and seal ring slidingly engages the inside circumference of a cylinder, the improvement comprising wherein said guide and seal ring is of said one-piece construction, wherein said guide and seal ring has plural guide portions arranged axially spaced from one another, said one-piece guide and seal ring having plural, axially spaced, outwardly opening, annular grooves in the radially outer surface thereof between said guide portions, wherein the material of said guide and seal ring adjacent the bottoms of said annular grooves each form a flexible connection between each pair of adjoining guide portions, and wherein said elastic support ring is of a unitary construction and consists of plural axially spaced support portions which are each connected through thinner web segments, said support portions engaging on the one side thereof the bottom of said annular groove and on the other side thereof the radially inner surface of said guide and seal ring.

4,244,281

CARTON, FEEDER APPARATUS FOR PACKAGING MACHINES

Ivan L. Kauffman, Commerce Township, Oakland County; Robert J. Allen, Farmington, and Gregory J. Dwyer, Livonia, all of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Jan. 19, 1979, Ser. No. 4,931
Int. Cl.³ B31B 1/80

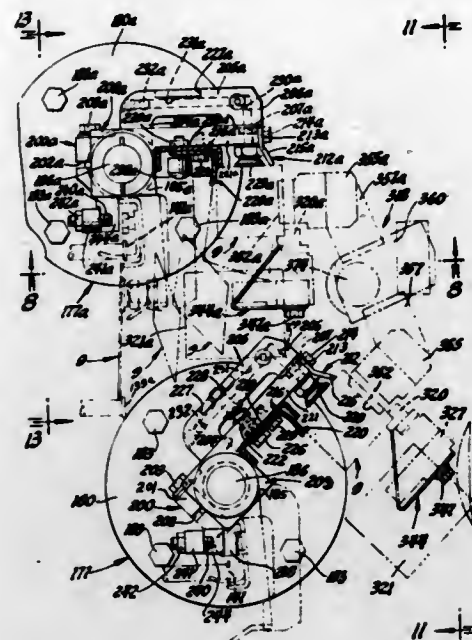
U.S. Cl. 493-123

9 Claims

1. A carton feeder apparatus for use in a packaging machine for forming, filling and closing cartons, characterized in that the carton feeder apparatus includes:

- (a) a pivot shaft rotatably mounted on the support structure of the packaging machine;
- (b) a carrier member fixedly secured to the pivot shaft;
- (c) vacuum cup means operatively mounted on said carrier member and adapted to engage one outer panel of each frontmost carton withdrawn from a carton magazine when brought into contact therewith;
- (e) means connected to said gear drive means for operating the gear drive means so as to rotate said pivot shaft;
- (f) a pair of vertically spaced apart arm members having one end freely rotatable on the carton feeder arm pivot shaft; and

(g) means attached to the feeder arm members and adapted to engage said one outer panel during the rotation of said



pivot shaft to assist in the expansion and erection of the carton into an erected tubular carton;

4,244,282

BOX ERECTING APPARATUS

Andre E. Ruzand, Voiron, and Francois L. Ernst, La Murette, both of France, assignors to Etablissements Ruby, Voiron, France

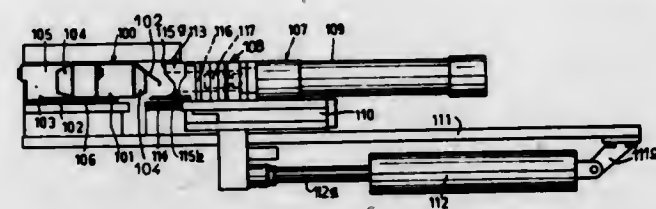
Filed Jul. 23, 1979, Ser. No. 59,521

Claims priority, application France, Jul. 25, 1978, 78 21971; Jul. 16, 1979, 79 18391

Int. Cl.³ B31B 1/76

U.S. Cl. 493-23

24 Claims



1. A device for forming folding boxes from flat box blanks made of cardboard or of a similar semi-rigid material and then to close one of their ends, said formed boxes defining a case having four folding edges which run parallel to the axis of the case and which define four panels, namely a first pair consisting of a lower panel and an opposite upper panel and a second pair consisting of two lateral panels, at least that end of the case which it is desired to close having on the one hand an end panel connected by a folding line to one of said upper and lower panels of the case, and on the other hand two transverse flaps which are each connected by a folding line to a respective said lateral panel of the case, the said end panel being extended by a tab intended to be introduced into the case of the formed box, said device comprising:

- (a) feed means adapted to receive the flat box blanks stacked on top of one another with the ends of the boxes which it is desired to close all being arranged on the same side of said feed means;
- (b) means defining a forming slot of U-shaped cross-section having a top and a bottom and an axis extending between first and second open ends, said first end being designed to pass a completed box after the forming and closing cycle;
- (c) means effective to fold over said two end flaps of the formed box towards one another inside the forming slot, and to arrange them substantially in one and the same plane;

- (d) closing means to pivot the end panel and engage its associated tab with the interior of the case of the box; and
- (e) means operable to move said closing means translationally parallel to the axis of said forming slot, said closing means being arranged opposite said second opening.

4,244,283

FRUIT AND LIKE TRANSPORTATION BINS

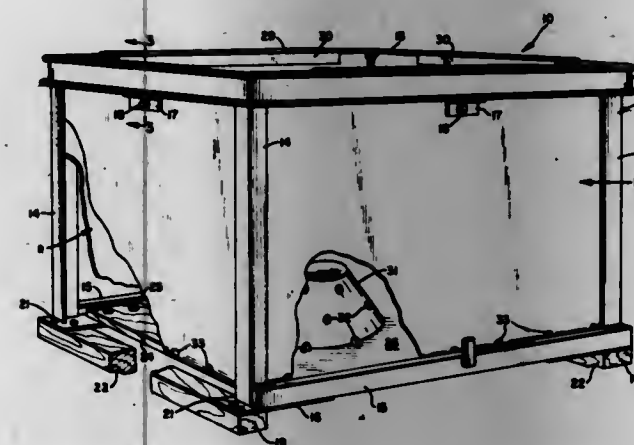
Richard P. Georges, Winter Haven, Fla., assignor to Georges Enterprises, Inc., Winter Haven, Fla.

Filed Apr. 30, 1979, Ser. No. 34,661

Int. Cl.³ A01F 25/00

U.S. Cl. 98-56

10 Claims



9. In a bin for the transportation of citrus fruit, means defining a rigid frame having a substantially continuous top rim and an integral tub-like container of molded synthetic plastic mounted within said frame with the upper edges of said container extending around substantially coextensively within the rim, and means for attaching the upper portions of the container side walls to said rim whereby the container is effectively suspended within the frame substantially free of attachment to the frame below said rim, said container being internally smooth surfaced and capable of substantially retaining its shape even with a full load of fruit and having a bottom wall formed with an intermediate upstanding portion that is provided with open perforations for promoting aeration of the fruit in the bin.

4,244,284

MEAT COOKING APPARATUS

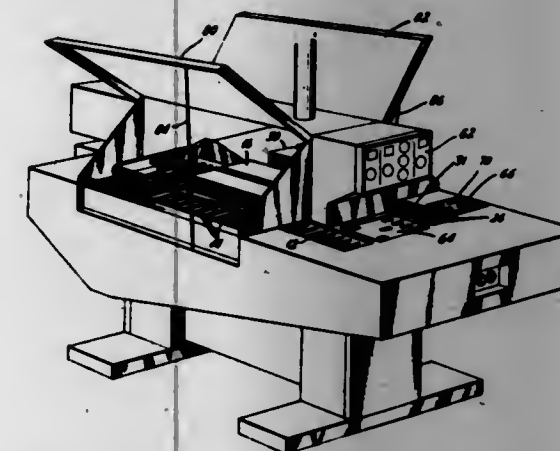
David B. Flavan, Jr.; Merrill M. E. Jenkins, Sr., both of St. Louis; James S. White, Webster Groves, and James E. Pate, Fenton, all of Mo., assignors to Three Rivers Development Corporation, St. Charles, Mo.

Filed May 29, 1979, Ser. No. 42,747

Int. Cl.³ A47J 27/62

U.S. Cl. 99-327

33 Claims



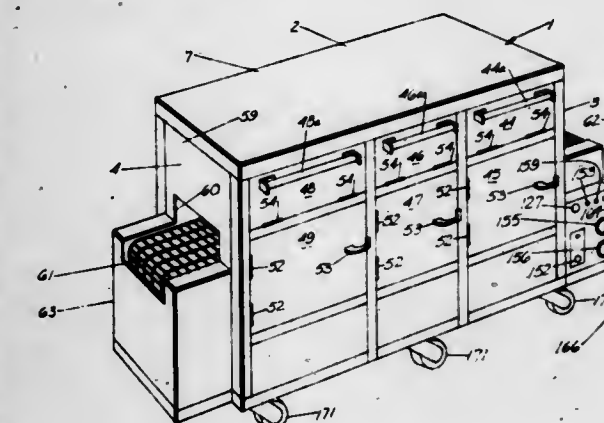
1. Meat cooking apparatus comprising:

electrical heating means for passing electric current through a piece of meat to cook said piece of meat;
radiant broiling means for radiating at least one of two opposite surfaces of said piece of meat to char said radiated surface;
conveying means for moving said piece of meat through said electrical heating means and said radiant broiling means;
sensing means for sensing the interior temperature of said piece of meat as it is being cooked;
input means for presetting a temperature corresponding to the degree to which said piece of meat is to be cooked; and control means responsive to said sensing means and said input means for controlling said electrical heating means and the degree of cooking of said piece of meat.

4,244,285
OVENJames F. Baker, 1727 John Gray Rd., Cincinnati, Ohio 45220
Filed Aug. 17, 1979, Ser. No. 67,271Int. Cl.³ A47J 37/04

U.S. Cl. 99-339

11 Claims



1. An oven for cooking and heating foodstuffs comprising an elongated, substantially rectangular, heat insulated housing having an entrance end and an exit end, first and second longitudinal sides, a top and a bottom, the interior of said housing defines a chamber having a first section adjacent said housing entrance end, a second intermediate section and a third section adjacent said housing exit end, a continuous conveyor having an upper horizontal cooking surface flight and a lower horizontal return flight extends longitudinally through all of said chamber sections and through openings in said housing entrance and exit ends, said conveyor being supported on sprockets located beyond said housing entrance and exit ends, said upper cooking flight comprising a continuously moving cooking surface intermediate the height of said chamber, means to drive said conveyor, an upper and a lower radiant heating element assembly located respectively above and below said upper cooking flight of said conveyor in each of said chamber first and third sections, a stationary cooking and heating surface in each of said chamber sections located at a level above said conveyor upper cooking flight and above said upper radiant heating element assemblies in said first and third chamber sections, said first housing side having an upper door for each chamber section for access to said stationary cooking surface therein and a lower door for each chamber section for access to said conveyor upper cooking flight passing there-through.

4,244,286

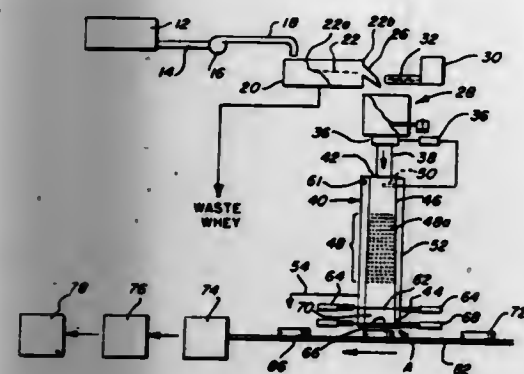
APPARATUS AND METHOD FOR MAKING CHEESE
Robert R. Rust, Cumberland, Wis., assignor to Universal Foods Corporation, Milwaukee, Wis.

Filed Feb. 21, 1978, Ser. No. 879,965

Int. Cl.³ A01J 25/00

U.S. Cl. 99—459

13 Claims



1. An apparatus for preparing a cheese curd loaf, comprising:

- a first dewatering means for dewatering a mixture of cheese curd solids and whey;
- container means for receiving the dewatered mixture of cheese curd and residual whey and including a valved outlet discharge means;
- a curd accumulation and draining column having an upper and lower end and formed in the shape of a generally open cylinder having a circumferentially extending perforated downwardly and outwardly tapered sidewall sector formed intermediate the upper and lower ends thereof and tapered at a radial rate of at least 1.3%, said draining column being open at the upper end and positioned to receive a cheese curd and residual whey mixture from the container means, the perforations formed in said perforated sector of the draining column being of such dimensions to permit whey to pass therethrough and retain cheese curd solids in the draining column, the length of said column being sufficient to provide a sufficient head of curd therein to compact and concomitantly disperse residual whey from curd held therein to thereby thicken the cheese curd as it moves downward in said draining column;
- curd level sensor means positioned at the upper end of the draining column and cooperatively coordinated with the valved outlet discharge of the container means to maintain a predetermined level of curd solids in said column;
- loaf severing and discharge means for severing a uniform series of cheese curd loafs from the bottom of a column of curd formed in the draining column and discharging the same whereby the curd column is intermittently impacted by downward motion for each cycle of the loaf severing and discharging means, said means comprising:
 - first guillotine valve means positioned at the bottom of said draining column operable between a cheese curd column supporting closed position and an open position adapted in closing to sever a uniform series of cheese curd loafs from the bottom of a column of curd formed in the draining column;
 - a cheese curd loaf sizing sleeve positioned below said first guillotine valve means and extending a pre-defined distance therebeyond; and
 - a second guillotine valve means positioned at the bottom of said sizing sleeve operable between a cheese curd column supporting closed position and a cheese curd loaf discharging open position;
- first conveyor means for sequentially introducing cheese curd loaf receiving cheese forms in a loading position adjacent said second guillotine means; and
- second conveyor means for removing a curd loaf contained in a cheese form from the loading position.

4,244,287

TWO-STAGE MECHANICAL DEWATERING OF SEWAGE SLUDGE

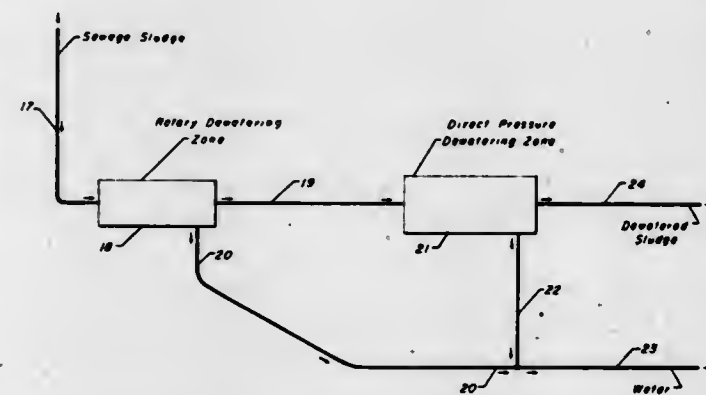
Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 22,910, Mar. 22, 1979, and a continuation-in-part of Ser. No. 22,914, Mar. 22, 1979, said Ser. No. 22,910, and Ser. No. 22,914, is a continuation-in-part of Ser. No. 891,437, Mar. 29, 1978, Pat. No. 4,160,732, and a continuation-in-part of Ser. No. 909,587, May 25, 1978, Pat. No. 4,193,206, which is a continuation-in-part of Ser. No. 775,673, Mar. 8, 1977, Pat. No. 4,128,946, Ser. No. 813,577, Jul. 7, 1977, Pat. No. 4,098,006, Ser. No. 813,578, Jul. 7, 1977, Pat. No. 4,099,336, Ser. No. 844,097, Oct. 20, 1977, Pat. No. 4,121,349, Ser. No. 858,879, Dec. 8, 1977, and Ser. No. 891,437, which is a continuation-in-part of Ser. No. 813,577, Pat. No. 4,098,006, said Ser. No. 858,879, is a continuation-in-part of Ser. No. 813,577, and Ser. No. 813,578, said Ser. No. 844,097, is a continuation-in-part of Ser. No. 813,578, said Ser. No. 813,578, and Ser. No. 813,577, is a continuation-in-part of Ser. No. 775,673. This application Jul. 9, 1979, Ser. No. 55,569. The portion of the term of this patent subsequent to Jul. 10, 1996, has been disclaimed.

Int. Cl.³ A47J 19/02; B30B 9/02

U.S. Cl. 100—37

11 Claims



1. A process for mechanically dewatering sewage sludge which comprises the steps of:

- passing a feed stream comprising sewage sludge which comprises at least 65 wt.% water into a first end of a first mechanical dewatering zone comprising a cylindrical chamber having a cylindrical porous wall formed by parallel windings which are spaced apart by a distance of about 0.0075 to about 0.013 cm., pressurizing the feed stream within the first dewatering zone to a superatmospheric pressure by rotating a screw conveyor having a helical blade which is centrally mounted within the porous wall, the blade of the screw conveyor having a helical outer edge which is separated from the inner surface of the porous wall by a distance of from about 0.08 to about 5.0 cm.;
- maintaining a substantially continuous and unagitated layer of filter media comprising fibers derived from the feed stream in an annular space located between the inner surface of the porous wall and the helical outer edge of the screw conveyor, and simultaneously transporting the sewage sludge located between the grooves of the helical blade of the screw conveyor along the length of the porous wall to a second end of the first dewatering zone;
- withdrawing water radially from the first dewatering zone through the porous wall and through said layer of filter media;
- withdrawing a first dewatering zone solids stream comprising at least 35 wt.% solids from the second end of the first dewatering zone;
- passing the first dewatering zone solids stream into a second mechanical dewatering zone and compressing the first dewatering zone solids stream by applying a pressure in excess of 500 psi., said pressure being applied while the

first dewatering zone solids stream is in contact with a porous surface and while the first de-watering zone solids stream is substantially immobile relative to said porous surface, and thereby removing water from the first dewatering zone solids stream; and,
(f) withdrawing a second dewatering zone solids stream comprising at least 45 wt.% solids from the second mechanical dewatering zone.

4,244,288

FLYING PRINTER

Yasuhito Harasina, Tokyo, Japan, assignor to Kyodo Insatsu Kabushiki Kaisha, Tokyo, Japan

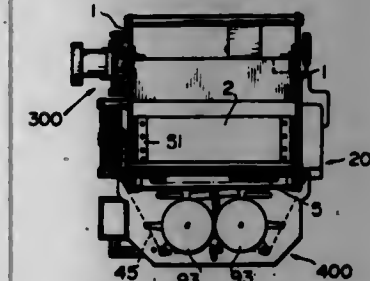
Filed Mar. 27, 1978, Ser. No. 890,152

Claims priority, application Japan, Mar. 26, 1977, 52-33884

Int. Cl.³ B41J 29/08, 9/10, 9/38

U.S. Cl. 101—93.02

18 Claims



1. In a flying printer, the improvement comprising a printing mechanism including a ratchet wheel continuously rotatable at a first speed and having at least one tooth, a print drum continuously rotatable at a second speed having a specific ratio to that of said ratchet wheel and having typeface characters arranged on the curved periphery thereof, at least one hammer means rotatable between a first position in which said characters on said print drum are imprinted and a second stand-by position, a trigger lever including an arm rotatably supported at a support point on each hammer means for driving the corresponding hammer means towards said print drum, each trigger lever being independently rotatable into and out of the path of said tooth of said ratchet wheel, means for selectively rotating each trigger lever into the path of said tooth of said ratchet wheel, said ratchet wheel tooth having a planar striking face for striking against said trigger lever and having an outermost point, designated by A, on a transverse section taken through the axis of said ratchet wheel, said trigger lever having a planar stroke-receiving face for receiving a stroke from said planar striking face of said tooth and for making contact where-with when said trigger lever is rotated into said path of said tooth, said planar striking face of said ratchet wheel tooth and said planar stroke-receiving face of said trigger lever lying in a common contact plane at the moment of impact between said faces, said common contact plane passing through the center of rotation of said hammer means and the center of rotation of said ratchet wheel, said point A tracing a circle when rotated, a normal line being defined as the tangent to said circle at the point on said circle where said striking face makes contact with said stroke-receiving face, said support point being located on the side opposite to the axis of said ratchet wheel with respect to said normal line and an angle θ formed by said normal line and a line connecting said point A at contact with said stroke-receiving face and said support point lying in the range between 0° and 2.7° and buffer means including an elastic member having upper and lower two-stage members having shallow V-shaped grooves and deep V-shaped grooves formed alternately for receiving said arm of said hammer, said members being arranged so that one shallow V-shaped groove and one deep V-shaped groove are combined with each other in a vertical direction as a pair for receiving said hammer means at the stand-by position to absorb the force of the reaction of striking when said hammer means is returned to the stand-by position from the striking position.

4,244,289

APPARATUS FOR MARKING STRIP MATERIAL

Stephen Collins, London, England, assignor to Onkside Industrial, #19167, Holdings, Ltd., Middlesex, England

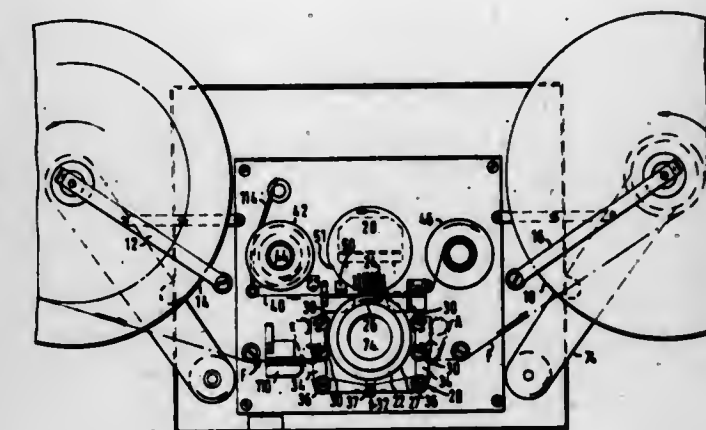
Filed Apr. 11, 1979, Ser. No. 29,033

Claims priority, application United Kingdom, Apr. 25, 1978, 16240/78

Int. Cl.³ B41J 1/22; G03B 19/18

U.S. Cl. 101—93.18

6 Claims



1. Apparatus for marking strip material such as cinematographic film, the apparatus comprising means for feeding the film from a film supply station to a film take-up station via a printing station, means for feeding a tape carrying transferable marking material from a tape supply station to a tape take-up station via the printing station, said printing station including two movable members, one carrying a printing block and the other carrying a back-up platen, the apparatus being arranged such that at said printing station the film and tape move between said two members in a superimposed relationship, and such that when the printing block and platen are moved into co-operating, adjacent relationship, selected print elements on the printing block cause marking material to be transferred from the tape to the film, thereby to mark or print the film with data indicated by the selected print elements, wherein the tape is pulled through the printing station by a contra-rotating action of the members during the printing operation, the apparatus further including a tape brake mechanism for preventing tape feed except during each printing operation, transmission gearing for coupling together said two members for simultaneous contra-rotation, and manually actuated means operable, when said one member is positioned with the printing block located diametrically opposite said printing station, to temporarily lock said one member in that position and to temporarily disengage said gearing so that said other member may be angularly rotated relative to said one member.

4,244,290

MINIATURE PRINTER

Kazuto Tamai, Shigeru Sawada, Osamu Nakamura, and Norio Nakagaki, all of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 29, 1978, Ser. No. 891,416

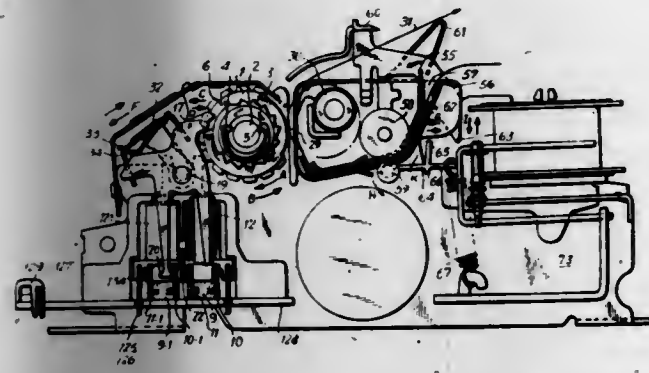
Int. Cl.³ B41J 1/48, 7/34; H01F 7/14

U.S. Cl. 101—99

16 Claims

1. A miniature printer, wherein character rings having characters on the outer peripheries thereof are rotatable from a standby position to bring a selected character to a printing position for printing said selected character in cooperation with a platen, and can be returned to said standby position, comprising for each character ring:
a pawl member for selectively bringing said character ring to rest at a printing position;
magnetic means including permanent magnet means and electromagnetic coil means for cooperatively establishing standby and selection positions in which said pawl member may be held in the absence of a current pulse through said coil means, and for transferring said pawl member

from said standby to said selection position by passage of current through said coil means;
 character signal means for providing a character signal for indicating the position of said character ring during rotation and during rest and when in a standby position;
 detection means for receiving said character signal and for determining when said pawl member is to be activated and when printing is to be effected;
 pawl shaft means on which said pawl member is mounted for rotation therearound; and
 wherein said pawl member includes a core member and a reset arm, said core member including first and second core arms;



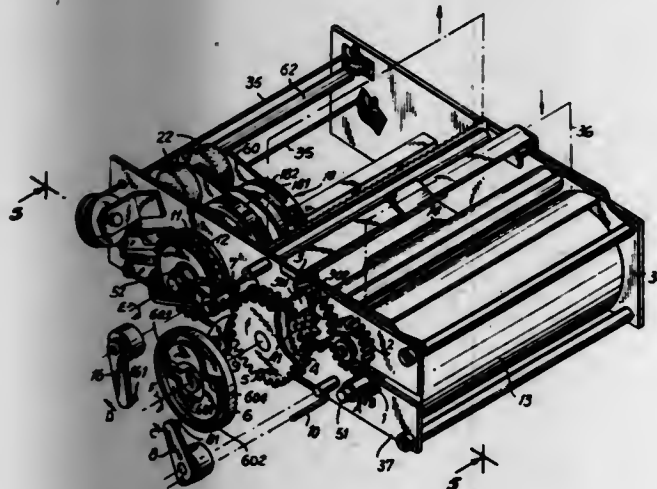
said first core arm in part lying within said electromagnetic coil means and protruding therethrough into the magnetic field of said permanent magnet means, said permanent magnet means being disposed relative to said first shaft means and said coil means so that said first core member is positioned proximate one or the other of the poles of said permanent magnet means when said pawl member is disposed in standby or said selection position, said second core arm lying outside said electromagnetic coil means; said reset arm being arranged and disposed for mechanical reset of said pawl member from said selection to said standby position.

4,244,291
PRINTER WITH A FIXED AND AN AXIALLY MOVABLE CHARACTER RING

Kozo Kodaira, and Noboru Ito, both of Shiojiri, Japan, assignors to Kabushiki Kaisha Sawa Seikosha, Tokyo, Japan
 Filed Nov. 8, 1978, Ser. No. 958,869
 Int. Cl.³ B41J 1/24

U.S. Cl. 101—99

24 Claims



1. A serial printer for printing characters serially in a laterally spaced pattern forming a line of characters on paper, comprising:
 a single reversible motor;
 a first character print ring having print characters peripherally disposed therearound;

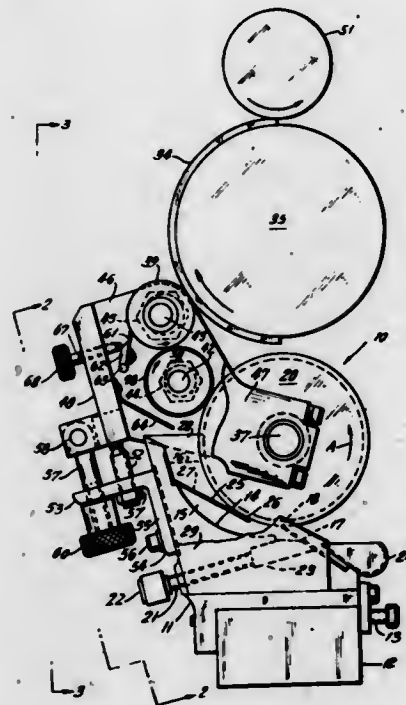
a second character print ring having print characters peripherally disposed therearound;
 means for rotating said first and second character print rings driven in unison by said single motor when said motor rotates in a first direction;
 means for selecting and positioning a character on each of said character print rings for printing;
 hammer means for pressing said paper between said character print rings and said hammer, whereby said selected character on each of said character print rings is simultaneously printed;
 means for driving said hammer means, said means for driving including said single motor;
 means including said single motor for laterally translating at least one of said character print rings from a standby condition, whereby said laterally spaced pattern of characters can be serially printed; and
 means including said single motor for returning said at least one translated character print ring to said standby condition when said motor rotates reversely to said first direction.

4,244,292
INKER APPARATUS

Robert Williams, Randolph, and Albin Rohr, Rockaway, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.
 Filed Oct. 17, 1979, Ser. No. 85,480

Int. Cl.³ B41F 31/06, 31/04, 31/34; B41H 27/06
 U.S. Cl. 101—350

8 Claims



1. Inker apparatus constructed primarily for the application of paste-type ink; said inker apparatus including first means defining an ink containing trough partially bounded by a rotationally mounted fountain roll and a scraper blade; said scraper blade including a metering edge adjacent the outer cylindrical surface of said fountain roll and extending parallel to the rotational axis of the latter; said outer cylindrical surface having a cellular pattern formed therein; a wiper blade for forcing ink into the cells of said outer cylindrical surface; said wiper blade including a forward working edge inside said trough extending parallel to said rotational axis and disposed adjacent said outer cylindrical surface; said working edge being above said metering edge and below the ink level in said trough; and ink passage means behind said working edge disposed to permit ink removed from said fountain roll to circulate in said trough and be reapplied to said fountain roll at a position above said working edge.

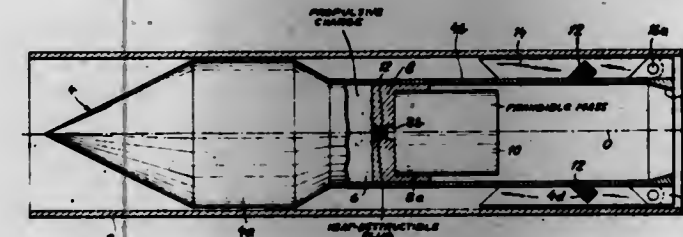
4,244,293
PROJECTILE DESIGNED FOR RECOILLESS AND VIRTUALLY NOISELESS FIRING

Werner Grossewandt, Ratingen; Manfred Moll, and Wilfried Becker, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany
 Continuation-in-part of Ser. No. 746,702, Nov. 26, 1976, abandoned. This application Jun. 9, 1977, Ser. No. 807,315
 Claims priority, application Fed. Rep. of Germany, Nov. 25, 1975, 2553201

Int. Cl.³ F41F 3/02

U.S. Cl. 102—38 RL

7 Claims



1. A projectile comprising:
 a head provided with a tubular tail;
 a sabot slidably received in said tail;
 an inertial body engaged by said sabot with clearance from the inner wall surface of said tail; and
 a propulsive charge in said tail inserted between said head and said sabot for driving said head and tail forwardly and said sabot and body rearwardly upon being detonated, said tail having a rear end provided with a constricted opening bounded by an inwardly tapering peripheral surface for retaining said sabot permanently in said tail while giving passage to said body, said sabot having a transverse wall interposed between said charge and said body, said transverse wall defining with the peripheral wall of said tail a substantially closed chamber for retention of combustion gases from said charge upon engagement of said sabot with said constricted opening, at least one of said walls being provided with an aperture which is occupied by a heat-destructible plug and forms a path for a delayed escape of said combustion gases from said chamber, said path being initially obstructed by said body.

4,244,294
STOWABLE NOZZLE PLUG AND METHOD FOR AIR BREATHING MISSILE

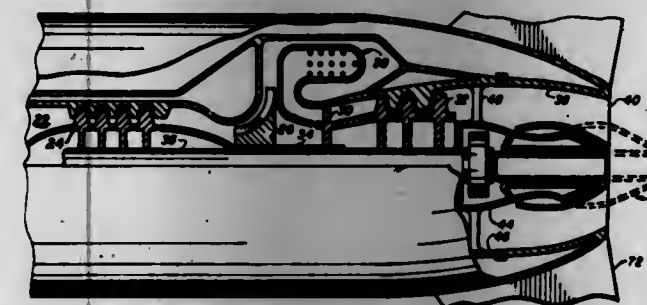
Jean-Paul Frignac, Scottsdale; Dennis W. Swain, Phoenix, both of Ariz., and Arthur J. Kavie, Goddard, Kans., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 23, 1978, Ser. No. 954,004

Int. Cl.³ F42B 15/10

U.S. Cl. 102—49.3

19 Claims



1. An air breathing missile configured for storage in an environment dimensionally limited in a longitudinal direction, comprising:
 a longitudinal housing having a forward fuel/payload compartment, a rear engine compartment, and a rear exhaust end;
 an air breathing gas turbine engine arranged in said engine

compartment to define a thrust exhaust nozzle having an exhaust plane at said exhaust end;
 a power launch booster releasably secured to said housing at said exhaust end when said engine is non-operable; and
 a longitudinally translatable exhaust plug on said engine disposed in a stowed position within said housing without protruding beyond said exhaust plane when said booster is secured to said housing, said plug being operable after release of said booster to translate longitudinally to an operating position protruding beyond said exhaust plane and presenting an optimal fixed nozzle exhaust area at said exhaust plane for design condition engine operation.

5. An air breathing gas turbine engine adapted for use in a missile or like environment dimensionally limited in a longitudinal direction of exhaust gas flow from the engine, comprising:

an engine housing having an open rear exhaust end;
 compressor, combustor, turbine and exhaust sections serially arranged in said longitudinal direction in said housing;
 a core member disposed generally centrally within said exhaust section and rigidly secured to said housing, said core member being of generally circular cross-section and having an enlarged diameter at a location adjacent the outer end thereof to define a circular shoulder; and
 an exhaust plug translatable in said longitudinal direction and having a closed outer end, an open inner end, and having a generally circular cross-section of varying diameter, the diameter of said inner open end being less than the diameter of said shoulder, said plug disposed in a stowed position prior to engine operation in generally nested, concentric, surrounding relationship to said core member lying totally within said housing without said closed end extending beyond said exhaust end of the housing, said plug translatable in said longitudinal direction from said stowed position to an operating position with said inner open end of the plug in engagement with said circular shoulder of the core member, said plug and core member cooperable with said housing to define an annular exhaust thrust nozzle having an optimal nozzle exhaust area at said exhaust end for design condition engine operation, said plug extending outwardly of said exhaust end in said operating position.

4,244,295
RADIANT ENERGY ACTIVATED PYROTECHNIC CAP HAVING DESICCANT THEREIN

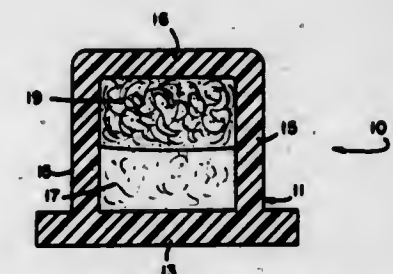
John W. Shaffer, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 10, 1979, Ser. No. 2,265

Int. Cl.³ F92C 19/08

U.S. Cl. 102—205

8 Claims



1. In a pyrotechnic cap for providing an audible signal of high intensity upon receipt of energy in the form of light and/or heat from a flashlamp wherein said cap includes a plastic container having a pyrotechnic composition hermetically sealed therein separately from said flashlamp, the improvement wherein said container further includes a quantity of a non-deliquescent desiccating material therein, said material located adjacent said pyrotechnic composition.

4,244,296

SELF-PROPELLED VEHICLE

Jean Vertut, Issy-Les-Moulineaux, France, assignor to Commissariat à l'Energie Atomique, France

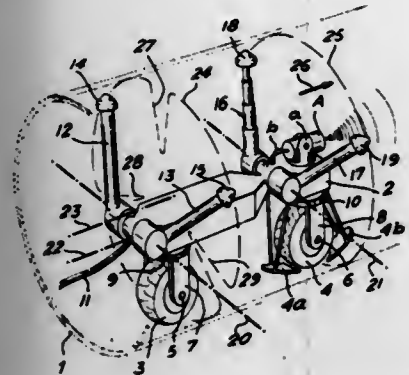
Filed Feb. 15, 1978, Ser. No. 877,885

Claims priority, application France, Feb. 24, 1977, 77 05410

Int. Cl.³ B61B 13/10

U.S. Cl. 104—138 G

15 Claims



1. A self-propelled vehicle with articulated arms comprising:
 - (a) a vehicle body having a longitudinal plane of symmetry,
 - (b) at least one wheel which drives and steers the vehicle, the wheel being mounted on said body and having an individual pivoting axis and an individual steering axis, said steering axis being located in the vicinity of said longitudinal plane, the at least one wheel being adapted to roll on a first surface, the distance between said body and said at least one pivoting axis being fixed,
 - (c) at least one pair of pivoting arms carried by said body, each arm of said pair being located on one side of said longitudinal plane, each arm of said pair terminating in a supporting member, which supporting member is adapted to slide or roll on a second surface, the second surface being opposite to said first surface,
 - (d) means carried by said vehicle for transmitting individually a pivoting torque to each of said arms, such pivoting torque resulting in an arm rotating and contacting, at the terminating support member of the arm, the second surface, whereby the reaction between the second surface and the support member results in a contact force between the wheel associated with said pair of arms and the first surface to thereby assist the self-propelled vehicle in traversing a bend in the first and second surfaces, and to compensate for variations in shape of the first and second surfaces.

4,244,297

ARTICULATED RAILWAY CAR TRUCKS

Dale E. Monelle, 116 S. 44th St., Omaha, Nebr. 68131

Continuation-in-part of Ser. No. 408,469, Oct. 23, 1973, Pat. No. 4,003,316. This application Jan. 6, 1977, Ser. No. 757,146

Int. Cl.³ B61F 3/08, 5/12, 5/38, 5/52

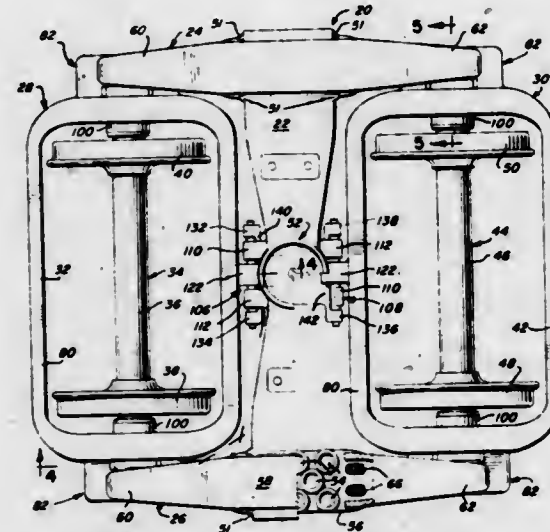
U.S. Cl. 105—168

51 Claims

1. A railway truck comprising a pair of longitudinally extending side frames, a transverse center support extending between and supported by said side frames, and a pair of wheelset swiveling assemblies disposed one on each side of said center support and supporting said side frames, means connecting each of said wheelset swiveling assemblies to said side frames at points spaced outward longitudinally of said truck from said center support and permitting relative horizontal movement between said side frames and said swiveling assemblies, means normally supporting an inward portion of each of said wheelset swiveling assemblies on said center support for both substantially universal pivotal movement of the respective wheelset swiveling assembly and lateral movement of the respective inward portion thereof relative to said center support, and means interconnecting said inward portions of said wheelset swiveling assemblies for both conjoint lateral motion of said inward portions of said wheelset swiveling assemblies relative to said center support and permitting limited relative

swiveling rotation between said wheelset swiveling assemblies upon such conjoint lateral motion for transmitting steering movement between said supported wheelset swiveling assemblies independently of said center support.

35. A railway truck comprising a pair of longitudinally extending side frames, a transverse center support structure extending between and supported by said side frames, said structure including a transverse member connected to and supported on said side frames and a center load support member disposed in overlying relation to said transverse member, and a pair of wheelset swiveling assemblies disposed one on each side of said center support structure and supporting said side frames, means connecting each of said wheelset swiveling assemblies to said side frames at points spaced outwardly longitudinally of said truck from said center support structure and permitting relative horizontal movement between said side frames and said swiveling assemblies, means supporting an inward portion of each of said wheelset swiveling assemblies on said center support structure for both substantially universal pivotal movement of the respective wheelset swiveling assembly and lateral movement of the respective inward portion thereof relative to said center support structure, and means interconnecting said inward portions of said wheelset swiveling assemblies for both conjoint lateral motion of said inward portions of said wheelset swiveling assemblies relative to said



center support structure and permitting limited relative swiveling rotation between said wheelset swiveling assemblies upon such conjoint lateral motion, said interconnecting means comprising a flexible "U"-shaped connecting member spanning the underside of said center load support member and engaging said inward portions of said wheelset swiveling assemblies for transmitting steering movements therebetween.

46. A railway truck assembly for supportably engaging a railway vehicle comprising a pair of longitudinally extending side frames, a transverse center support extending between and supported by said side frames, a pair of wheelset swiveling assemblies disposed one on each side of said center support and extending in underlying relation to said side frames at points spaced outward longitudinally of said truck from said center support for supporting said truck assembly, means supporting each of said side frames on the respective underlying wheelset swiveling assemblies at such points spaced outward longitudinally of said truck assembly from said center support and permitting relative horizontal movement therebetween, means supporting said wheelset swiveling assemblies against movement resultant from application thereto of longitudinal forces such as those resulting from car coupling impact and braking, and means including a flexible "U"-shaped element extending beneath said center support and connected to said wheelset swiveling assemblies for transmitting steering movements therebetween.

4,244,298

FREIGHT CAR TRUCK ASSEMBLY

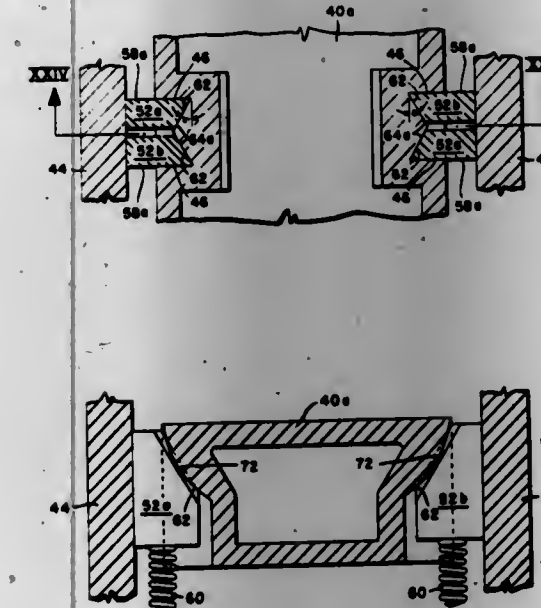
V. Terrey Hawthorne, Radnor, and Stuart A. Schwam, Narberth, both of Pa., assignors to Railroad Dynamics, Inc., Ardmore, Pa.

Filed Apr. 11, 1979, Ser. No. 29,260

Int. Cl.³ B61F 5/12, 5/50

U.S. Cl. 105—197 D

21 Claims



1. In a freight car truck assembly,
 - A. a pair of laterally spaced wheeled side frame members each having a bolster opening defined by means including a pair of laterally spaced column members with opposed friction surfaces defining the width of said opening,
 - B. a bolster member spanning said side frame members and having opposite end portions respectively projecting into said bolster openings, the opposite side surface areas of each bolster end portion respectively opposed to said friction surfaces being disposed respectively in close spaced relation thereto,
 - C. means mounting said bolster member upon said side frame members comprising
 1. means interposed between said bolster and said frame members and operative for yieldably supporting said bolster member on said side frame members,
 2. a system of wedge members interposed between said bolster and column members, each of said wedges being disposed in a pocket formed in one of said bolster and column members with oppositely facing sides thereof respectively in close, sliding engagement with opposed sides of the pocket, and
 3. yieldable means urging each of said wedge members into an effective working position wherein the sloping and friction surfaces of the wedge member are in sliding engagement respectively with the sloping surface of the pocket formed in one of said bolster and column members and with the other of said members.

4,244,299

RAILWAY SIDE DOOR HOPPER CAR LOCKING MECHANISM

William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed May 11, 1978, Ser. No. 905,067

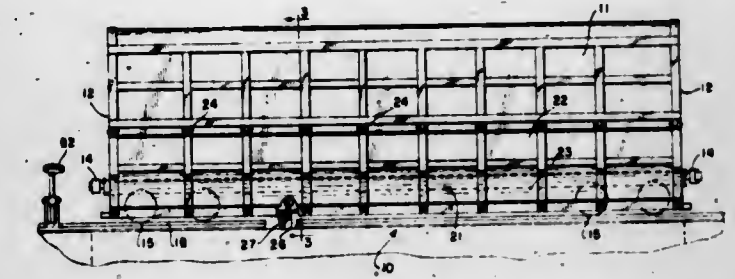
Int. Cl.³ B61D 7/08, 7/18, 7/30; B65G 67/24

U.S. Cl. 105—251

43 Claims

1. For a railway hopper car having a hopper including a downwardly and outwardly extending slope sheet structure terminating adjacent to a side discharge opening, and, a door hingedly connected to said car for swinging movement between open and closed positions relative to said opening, the improvement of a locking arrangement comprising,

a latch member hingedly connected to said door including a hook shaped locking element adjacent one end thereof, a keeper arrangement supported on said hopper, said keeper arrangement including a reciprocating keeper element adapted to be selectively moved between lock and unlock positions relative to said hook shaped locking element, said hook shaped locking element being adapted for relative movement transversely of said keeper element, locking means movably supported on said hopper engaging



said hook shaped locking element in the closed door position to lock the hook shaped element in the lock position of said keeper element, said hook shaped element engaging said locking means during closing movement of said door to move the locking means to an out-of-the-way position whereupon said hook shaped element assumes its locked position relative to said keeper element and said locking means assumes its engaged position relative to said hook shaped element, and means for moving said keeper element for unlocking said hook shaped element from said locking element.

4,244,300

SHELVING SYSTEM OF VARIABLE SHELVES

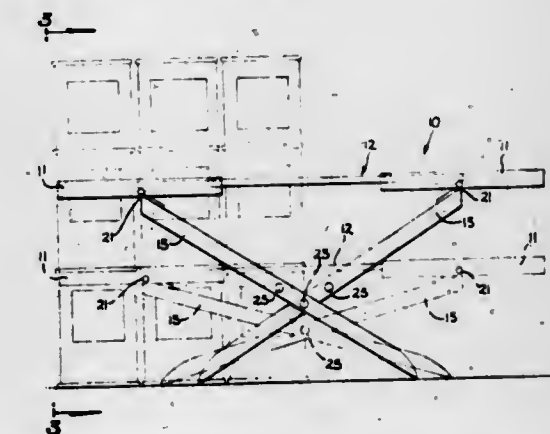
I. Elton Leach, 1711 Stoner Ave., Los Angeles, Calif. 90025

Filed Aug. 20, 1979, Ser. No. 68,095

Int. Cl.³ A47B 45/00

U.S. Cl. 108—116

1 Claim



1. A shelving system for storing cans in a pantry so that the labels on the cans are visible, said shelving system comprising a plurality of identical variable shelves, each of said variable shelves comprising:
 - a. a platform on which the cans are placed and which has a slot at each end;
 - b. a pair of rectangular members, each of which has a bore at one end and is mechanically coupled to said platform at one of its ends with said bore being aligned with a corresponding slot of said platform whereby an adjustable platform is formed; and
 - c. variable supporting means for supporting said adjustable platform at an adjustable height, said supporting means comprising:
 - a pair of supports;
 - a pair of hinges, each of said hinges pivotally coupling an

end of one of said pair of supports to one of said rectangular members; and maintaining means for maintaining the point of intersection of said pair of supports, said maintaining means comprising a pin; and a plurality of holes which are drilled in each of said pair of supports and which are mechanically coupled together by said pin.

4,244,301

CORNER SHELF ARRAY

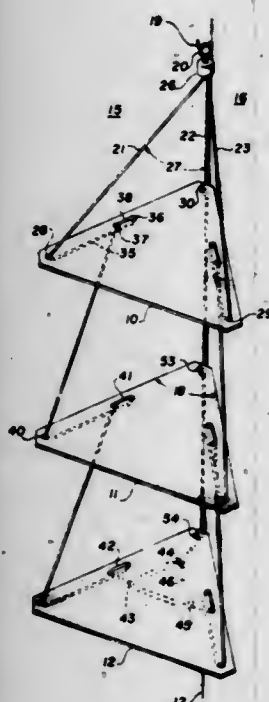
Daniel T. Nakatsu, 117 Westwood Dr., San Francisco, Calif. 94112

Continuation-in-part of Ser. No. 917,107, Jun. 19, 1978, Pat. No. 4,187,787. This application May 7, 1979, Ser. No. 36,649

Int. Cl.³ A47B 5/00

U.S. Cl. 108—149

4 Claims



1. A shelf array suspendable from a single hook for disposal in a corner location adjacent two intersecting walls, comprising in combination,

at least one shelf generally triangular in shape having defined therein near an edge along two sides and in triangular corner therebetween a series of apertures,

a flexible line array comprising three flexible lines arrayed in three parts respectively through the apertures in the corner and the apertures along the two adjacent edges respectively with loops through the shelf in all three lines to thereby support it in a changeable position that is movable to level the shelf or to adjust spacing of the shelf against the wall,

holding means comprising a ring member surrounding all three lines adjacent the corner location and a securing member adjacent thereto securing an uppermost one end of one of the three lines to retain the line through the corner aperture substantially parallel to the intersection of the walls when hanging and to dispose the other two lines toward an uppermost shelf at an acute angle away from the corner respectively to the foremost aperture along the two edges thereby to cause the weight of the shelf and any contents thereon to be urged toward the corner for contact with the walls adjacent thereto for support and stability.

4,244,302 DOOR MOUNTING AND OPERATING APPARATUS FOR SECURITY TRANSACTION ENCLOSURES AND THE LIKE

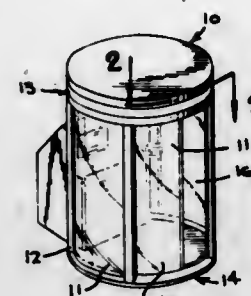
James G. Stine, Allentown, Pa., assignor to Automatic Devices Company, Allentown, Pa.

Filed Sep. 18, 1979, Ser. No. 76,731

Int. Cl.³ E05G 5/02

U.S. Cl. 109—2

14 Claims



1. A closure mounting and operating assembly for a movable closure for the entrance passage of a security transaction booth or the like in the form of an upright cylindrical enclosure having a cylindrical top wall structure, the assembly comprising an angle-iron shaped main mounting ring having an inwardly projecting circular mounting flange to be fastened to said top wall structure adjacent the outer perimeter thereof concentric with the vertical center axis of the cylindrical enclosure, a circular track fixed in depending relation to said mounting ring concentrically below the same by fastening bolts extending from an upper portion of the track through said mounting flange, the track having an I-beam shaped cross-section portion having a vertical center web and a bottom track flange, supported from the flange by a plurality of circumferentially spaced bolts through the top of the track and said flange, a plurality of door carrier devices to be secured to the top portion of and dependently carry the movable closure each having two pairs of roller wheels flanking the web of the track at opposite sides thereof and riding on said bottom track flange at circumferentially spaced locations, a drive motor and worm gear box mounted on the mounting ring having a main drive wheel driven thereby rotatable about a horizontal axis, a pair of cable idler wheels rotatable about spaced parallel horizontal axes below said drive wheel and immediately below said mounting flange, a cable system trained about the drive wheel and cable idler wheels and extending outwardly around the track to substantially encircle the enclosure having attachment to at least one of said carrier devices to move the carrier devices and closure supported thereby in entrance opening and closing directions under control of the drive motor and worm gear box, and cable guide means assembled on said bolts between said bottom flange and the top of the track for guiding and locating the cable system.

4,244,303

COMBINATION PICTURE FRAME AND REPOSITORY

Cheryl A. Kurausk, 19015 Snow, Dearborn, Mich. 48124

Filed Jul. 18, 1979, Ser. No. 58,533

Int. Cl.³ A47G 1/06

U.S. Cl. 109—23

1 Claim

1. A repository comprising a frame having a plurality of members one of which is movable, such movable frame member having both an open and a closed position, a back panel on the frame, hinge means pivotally connecting the movable frame member to the back panel, an opaque front panel on the frame laterally spaced from the back panel providing therebetween a storage compartment, a magnetic component on each end of the movable frame member, and magnetic components on the ends of the frame members immediately adjacent the

movable frame member for cooperation with the first mentioned magnetic components so as yieldably to hold the mov-



able frame member in its closed position thereby concealing the storage compartment.

4,244,304

SECURITY BOX AND MOUNTING PLATE

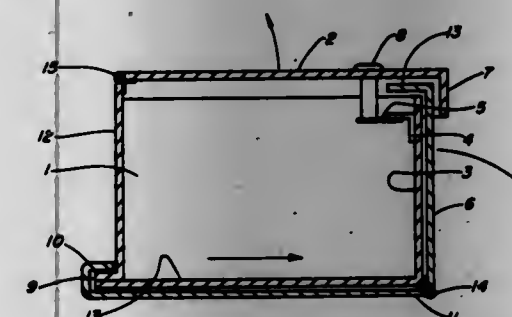
Ronald H. Read, 666 Tower Mews, Oakdale, N.Y. 11769

Filed Nov. 6, 1979, Ser. No. 91,696

Int. Cl.³ E05G 1/04; A45C 1/12

U.S. Cl. 109—52

2 Claims



1. In combination, a security box and mounting plate, comprising:

- a box having four sides positioned in a general rectangular configuration, a bottom and a rotatable top cover, said box being held with the bottom forming the lower surface for reference purposes,
- a first hinge connecting the cover to a first side of the box to permit rotating the cover about the hinge to expose the contents of the box,
- a first lip connected to the cover along the edge opposite the hinge, said lip extending downward with respect to the cover and said lip extending outside and parallel to a portion of a second side of the box, said second side being located opposite said first side,
- a locking means of the type designed to accept a key, said locking means being mounted to the cover adjacent the lip and extending through the cover with the portion having the key receptacle facing outward of the cover,
- a locking arm means connected to the lower portion of the lock and extending generally orthogonal to the lock and parallel with the cover, said locking arm means being connected to the locking means to rotate when a key which has been inserted in the lock is rotated,
- a latching means attached to and extending orthogonally with respect to inside of the second side of the box at a height above that which the locking arm takes when the cover is closed, said latching means holding the cover closed when the locking arm is rotated to a position directly beneath the latching means,
- a projection located generally in the plane of the bottom of the box, said projection extending beyond the first side of the box,
- a mounting plate comprising:
 - a first section approximately the size of and positioned adjacent the bottom of the box, said first section having

two sides which extend upwards adjacent the sides of the box,

- a detent to accept the projection, said detent being attached to the first section of the mounting plate and positioned at the end adjacent to and positioned to accept the projection,
- a second section located adjacent to and having generally the same size as the second side of the box,
- a second hinge connecting the first and second sections of the mounting plate at their edges and located adjacent the junction of the second side of the box and the bottom of the box,
- a second lip attached to the second portion of the mounting plate on the edge opposite the second hinge said second lip extending orthogonally with respect to the second portion of the mounting plate and beneath the box cover to hold the box to the mounting plate when the locking arm is placed beneath the latching means.

4,244,305

FLUIDIZED BED INCINERATOR

Akio Kawano, and Isao Tanaka, both of Kumagaya, Japan, assignors to Riken Piston Ring Kogyo Kabushiki Kaisha, Tokyo, Japan

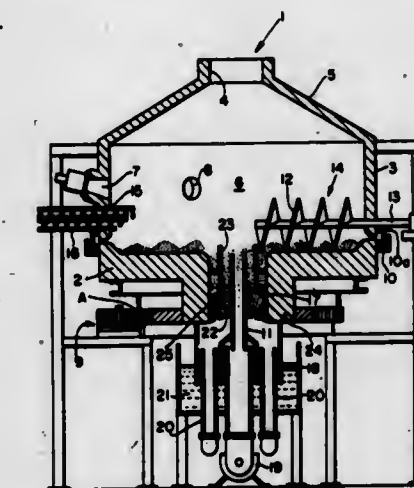
Filed May 14, 1979, Ser. No. 38,695

Claims priority, application Japan, May 12, 1978, 53/63430[U]

Int. Cl.³ F23G 5/00, 7/00; F23C 11/02

U.S. Cl. 110—245

7 Claims



1. A fluidized bed incinerator for waste material comprising shield wall means defining therein a first cylindrical combustion chamber, means for drying and burning waste materials in the chamber under forced air and at high temperatures, an annular rotatable hearth rotatable about a vertical axis in the combustion chamber and defining the bottom thereof, means for rotating the hearth, an opening in said wall means and conveyor means for charging waste materials through said opening onto the periphery of said hearth, said hearth having a downwardly extending outlet in the center thereof, means disposed above the hearth for moving the waste materials from the periphery to the center of the hearth and for breaking up and agitating the material to ensure contact with the hot air and high temperatures in the first combustion chamber and effect a drying and partial burning thereof, a second combustion chamber for completing the burning thereof comprising a fluidized bed furnace connected to the outlet in the hearth for receiving the dried and partially burnt material as it falls through the outlet, said furnace having a perforated plate located in the lower portion of the second combustion chamber, means for forcing air upwardly through the plate into said second combustion chamber to maintain the materials in a fluidized and burning state, and an ash outlet extending upwardly through the plate and the center of the second combustion chamber and having an upper inlet end in the chamber for

receiving ash from the second combustion chamber and a lower outlet end for discharging the ash from the incinerator.

4,244,306

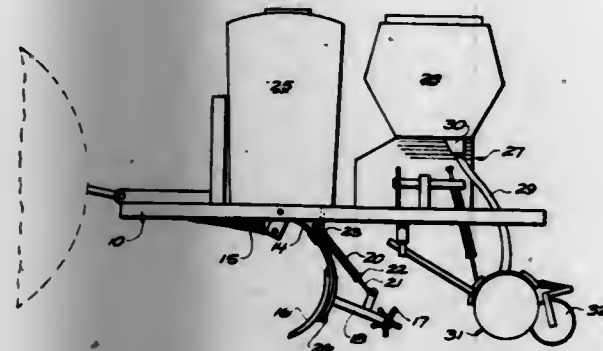
MINIMUM TILLAGE PLANTER

Charles L. Peterson, and Edwin A. Dowding, both of Moscow, Id., assignors to Idaho Research Foundation, Inc., Moscow, Id.

Continuation of Ser. No. 924,934, Jul. 17, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 67,871

Int. Cl.³ A01C 23/02

U.S. Cl. 111—7



1. A minimum tillage planter for use in unplowed fields, comprising:

- a wheeled supporting framework adapted for movement about a field;
 - a plurality of transversely spaced spring tooth chisel plows each including a yieldable support having a forward arcuate surface depending downward from the framework, whereby movement imparted to the chisel plows by the framework results in the digging of furrows as loosened soil is lifted along the forward arcuate surfaces of the chisel plows as they move through the soil along transversely spaced areas separated by strips of untilled soil;
 - a liquid fertilizer tank mounted on said framework;
 - fertilizer conduit means having an inlet operatively connected to said liquid fertilizer tank and having a plurality of outlets located respectively adjacent the lower end of each chisel plow for selectively directing liquid fertilizer to the furrow dug thereby as the chisel plows move through the soil;
 - a plurality of narrow fluted rollers;
 - a pivoted frame mounted individually to each spring tooth chisel plow and extending rearwardly therefrom, each frame being individually mounted to a yieldable support for a chisel plow for free pivotal movement about a horizontal transverse axis;
 - bearing means on each frame rotatably mounting one narrow fluted roller at an elevation above the lower end of the chisel plow to which the frame is mounted, said bearing means rotatably supporting each roller about a horizontal transverse axis on said frame;
 - individual means operatively connected between the supporting framework and each frame for yieldably urging the frame downwardly relative to the chisel plow to which the frame is mounted for maintaining each roller in yieldable engagement with the soil through which the chisel plows have just passed, to thereby break up resulting clods of soil immediately behind each chisel plow and to cause some of the loosened soil along each furrow to fall back into the furrow and provide a compacted soil cover above the fertilizer therein;
 - an individual drill means mounted to the framework at a location rearward of each chisel plow and roller, each drill means being in longitudinal alignment with an individual chisel plow and roller for planting of seed along each furrow at an elevation above that of the outlets of said fertilizer conduit means;
- whereby fertilizer and seed is placed along each furrow at

differing elevations without disturbing the strips of untilled soil to each side of the furrows.

4,244,307

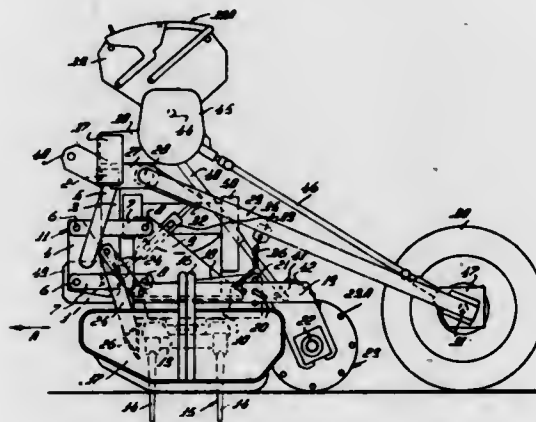
BROADCAST SEEDER INCLUDING DRIVEN TOOLS AND ROLLER

Cornelis van der Lely, 7, Bruchrain, Zug, Switzerland
Continuation of Ser. No. 800,428, May 25, 1977, abandoned, which is a division of Ser. No. 540,444, Jan. 13, 1975, Pat. No. 4,036,154. This application Sep. 15, 1978, Ser. No. 942,885
Claims priority, application Netherlands, Jan. 18, 1974, 7400690

The portion of the term of this patent subsequent to Jul. 19, 1994, has been disclaimed.
Int. Cl.³ A01C 19/00, 7/16

U.S. Cl. 111—11

7 Claims



1. A soil working machine having a front coupling frame connectable to a prime mover and an elongated frame portion that is pivotably linked to said coupling frame, said frame portion extending transverse to the direction of travel and a row of soil working members having downwardly extending tools being rotatably mounted on said frame portion, drive means connected to rotate said soil working members about upwardly extending axes, at least one ground engaging supporting wheel positioned to the rear of said row of said soil working members and arm means interconnecting said wheel to said coupling frame, said arm means being inclined from an upper part of the coupling frame, downwardly and rearwardly to said wheel, with respect to the normal direction of machine travel, said wheel being journaled adjacent the rear of said arm means, a delivery device including a hopper and tubes for delivering material to the ground being supported on said coupling frame and said hopper being mounted substantially directly above said frame portion, an elongated roller positioned in front of said wheel and to the rear of said frame portion, said roller being pivoted to said frame portion with arm elements and means fixing said elements together with roller in any one of a plurality of supporting positions with respect to said soil working members, to regulate the working depths thereof, said roller being open with a periphery of circumferentially positioned elongate elements that engage the soil worked by said tools, bracket means interconnected to said frame portion, said tubes extending downwardly and rearwardly to said bracket means and lower open ends of said tubes being loosely retained by said bracket means, said open ends being positioned directly above said roller, adjacent the front of the path of said elongate elements, whereby material is delivered through said ends to soil being worked and subsequently the soil and material are lightly compressed by the roller.

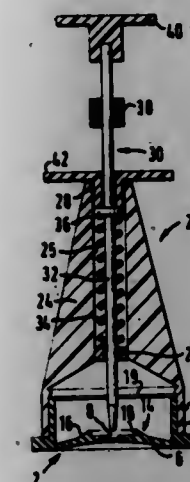
4,244,308

SEED DRILLS

Albert E. Vince, 25 Station Rd., Wokingham, England
Filed Sep. 18, 1978, Ser. No. 942,964
Int. Cl.³ A01C 5/00, 5/02

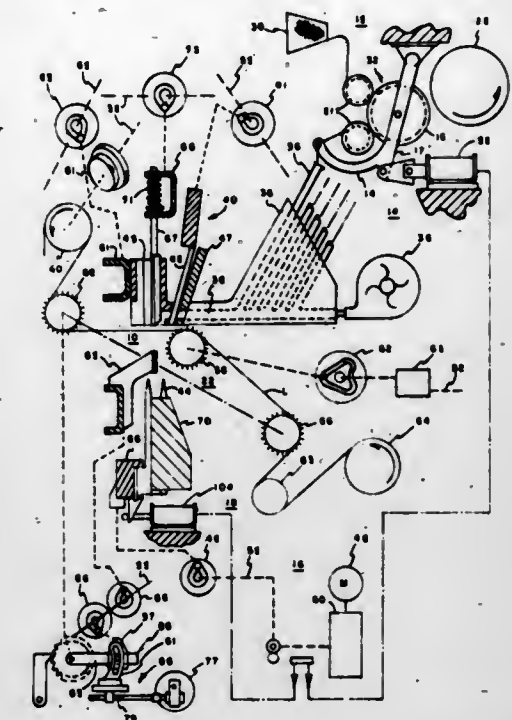
U.S. Cl. 111—89

14 Claims



1. A seed drill comprising a seed container including a base portion of a resilient material, the surface of the base portion within the container having formed thereon an annular ridge dividing the base portion into an outer section and an inner section, said inner section including a seed-retaining bore extending part way through the base portion, one end of the bore communicating with the interior of the container, and the base portion having at least one slit formed therein to permit the other end of the bore to communicate with the exterior of the container, the seed drill further comprising a dibble movable from an inoperative position, remote from the base portion, to an operative position, in which the dibble extends through the recess and the slit to the exterior of the container, thereby ejecting any seed located in said bore, the base portion being in its unstressed condition of a shape convex inwardly of the container, with ridge forming the peak of the base portion, the ridge being so shaped as to permit, on sideways shaking of the drill, ready movement of seeds resting on the outer section of the base portion, from the outer section to the inner section, while substantially preventing movement in the opposite direction, from the inner section to the outer section.

backing layer movement means including means of adjusting said movement; and



control means to simultaneously control the selectability of said tuft applying elements, the selection and feeding of yarn and the movement of the backing layer.

4,244,310

ZIGZAG SEWING MACHINE WITH A TRIMMING DEVICE

Toshio Sasaki, Inazawa, and Osamu Kamiya, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 1, 1979, Ser. No. 80,806

Claims priority, application Japan, Oct. 14, 1978, 53-126359
Int. Cl.³ D05B 37/00, 3/02

U.S. Cl. 112—126

10 Claims

1. A zigzag sewing machine with a trimming device for trimming the marginal edge of a work fabric, comprising: a machine frame including a bed portion on which said trimming device is removably disposed to be actuated in relation to the operation of said sewing machine, a needle carried by said frame for endwise reciprocation and lateral oscillation, oscillating means operatively connected with said needle to laterally oscillate the latter for forming zigzag stitches of variable stitch width, switching means co-operating with said oscillating means for changing the field position of the needle oscillation, and operated means for actuating said switching means in relation to the disposition of said trimming device in a prede-

4,244,309

METHOD, MEANS, AND TUFTED PRODUCT

Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540, and David R. Jacobs, New Canaan, Conn., assignors to Abram N. Spanel, Princeton, N.J.

Filed Aug. 30, 1979, Ser. No. 71,164

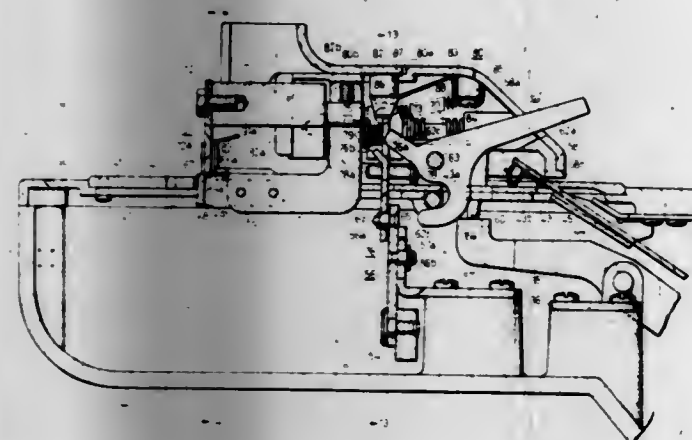
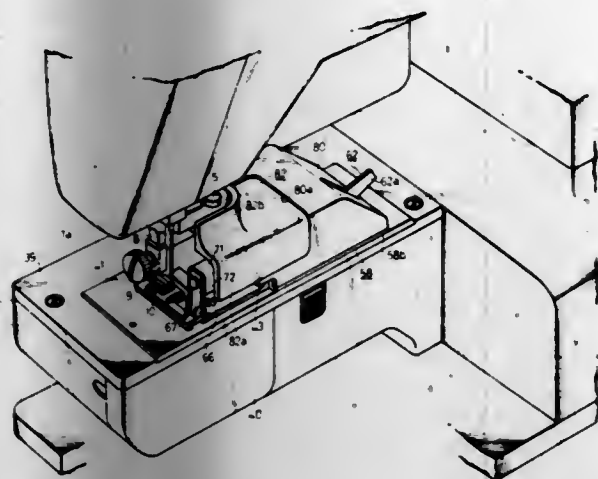
Int. Cl.³ D05C 15/00

U.S. Cl. 112—79 A

41 Claims

1. Tufting apparatus or the like comprising:
selectable tuft applying elements;
yarn feeding means including means to select yarn from a plurality of yarn types;

terminated position on said bed portion, whereby the field position of the needle oscillation is set to place zigzag stitches along



and over the trimmed edge of the work fabric on performing overedge stitching by using said trimming device.

4,244,311

ZIGZAG SEWING MACHINE WITH A PATTERN SELECTING DEVICE

Yasuro Sano, Hachioji, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

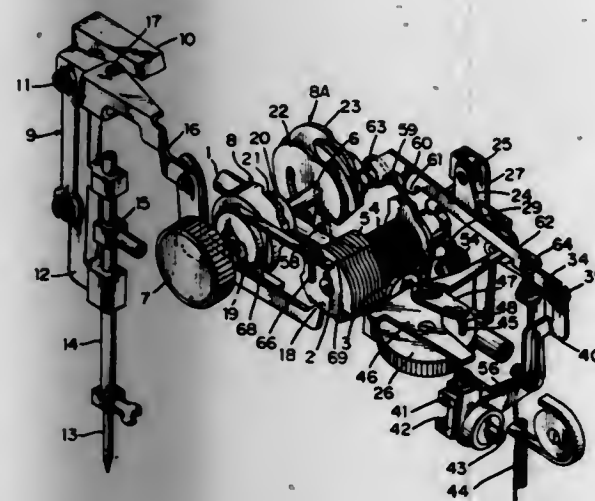
Filed May 18, 1979, Ser. No. 40,274

Claims priority, application Japan, Feb. 16, 1979, 54-17067

Int. Cl.³ D05B 3/02

U.S. Cl. 112-158 A

6 Claims



1. A sewing machine comprising a machine housing; a drive shaft rotatably mounted on the machine housing for vertically reciprocating a needle bar with a needle; a swingable support supporting the needle bar and swingable mounted on the machine housing; a group of cams rotated by the drive shaft at a reduced speed and including a plurality of pattern cams for controlling the lateral swinging movement of the needle bar and a single feed control cam for controlling a feed adjusting

device; cam follower means operatively connected to the needle bar and operated to selectively engage the pattern cams for transmitting the movement in accordance to the pattern cams; means manually operated in a first operation range to selectively engage the cam follower means to the pattern cams and to select the feeding amounts individually in accordance to the selected pattern cams, said manually operated means being operated in a second operation range to select the single feed control cam in relation to the same pattern cams to be selected.

4,244,312

TAILOR TACKING ATTACHMENT

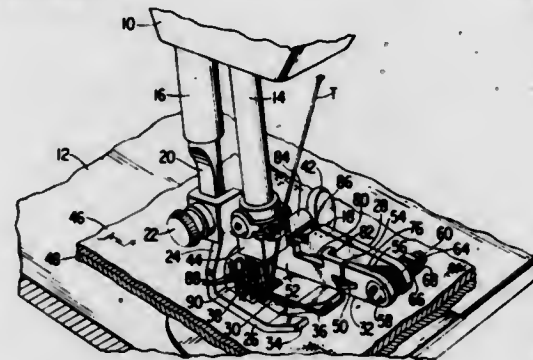
Edward Bialy, Hillside, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 21, 1980, Ser. No. 132,711

Int. Cl.³ D05B 29/12, 3/02

U.S. Cl. 112-235

10 Claims



1. A tailor tacking device for use on a sewing machine including a presser bar, a reciprocable needle bar having a sewing needle secured thereto by a needle clamp, and means for feeding work under the needle, said tailor tacking attachment comprising a shank for attachment to the pressure bar, a sole plate with a needle accommodating opening permitting the formation by the sewing needle of the machine of zig-zag stitches in fabric under the sole plate, an elongated member which extends over said opening in the work feeding direction to provide a support for the loops of zig-zag stitches and which is operably associated with the needle bar for movement therefrom an elevated position into a depressed position during downward movement of the needle bar to avoid having the loop supporting member interfere, at such time, with the needle of the machine, and means for causing the elongated member to return to its elevated position during upward movement of the needle bar.

4,244,313

AUTOMATIC, IN SITU BOBBIN SPOOL LOADING

Herman Rovin, Norwalk, Conn.; Lawrence J. Levine, Valley Stream, N.Y.; Theodore Opuzanski, Darien, Conn.; Joseph Pellicano, Greenwich, Conn., and Alan F. Swenson, Norwalk, Conn., assignors to Automatech Industries Inc., Piedmont, S.C.

Continuation-in-part of Ser. No. 833,178, Sep. 14, 1977, Pat. No. 4,117,789. This application Apr. 17, 1978, Ser. No. 896,884

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

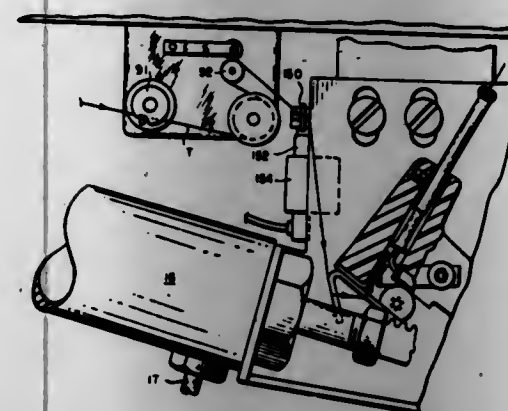
Int. Cl.³ D05B 57/26, 37/04, 45/00; H03K 17/00

U.S. Cl. 112-279

36 Claims

1. Apparatus for withdrawing thread from a package of thread and presenting a predetermined length thereof to the bobbin of a sewing machine for winding thereon comprising a mounting bracket for securing the apparatus to the frame of the sewing machine, a feed tube for transporting the thread from the package to the bobbin, means mounting the feed tube on the mounting bracket for reciprocal movement into an out of loading position adjacent the bobbin, comprising a supporting sleeve mounted on said bracket, a loading arm mounted on said

sleeve for pivoting movement, a drive gear mounted on said sleeve having a lost motion driving engagement with said loading arm, an actuator mounted on said mounting bracket and operably associated with said drive gear for rotating the



4,244,314

AUXILIARY FEED STITCH REGULATOR MECHANISM

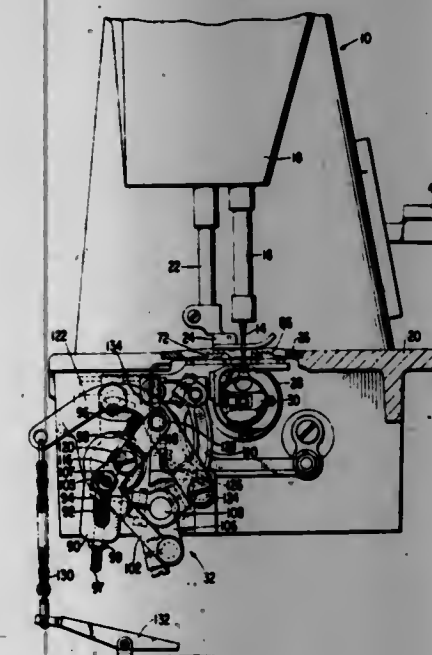
Eli N. Onembo, Clark, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 26, 1979, Ser. No. 97,600

Int. Cl.³ D05B 27/08

U.S. Cl. 112-313

3 Claims



1. In an industrial sewing machine with a differential feeding mechanism having an auxiliary feeding mechanism including means for generating variable oscillatory motion, an auxiliary feed dog, means for connecting said variable generating means to said feed dog for feed and return motion thereof, and means for selectively varying said variable generating means comprising: a connecting link having a first end and a second end, with said first end operatively connected to said variable generating means; a feed actuating lever pivotably connected to said sewing machine, said feed actuating lever being formed with a slot; and stud means extending through said second end of said connecting link and said slot of said feed actuating lever, said slot extending in a direction to give the greatest distance from the pivotal connection of said feed actuating lever and from said slider at the extreme thereof effective during feed motion, to the least distance therefrom at the extreme thereof effective for return motion.

4,244,315

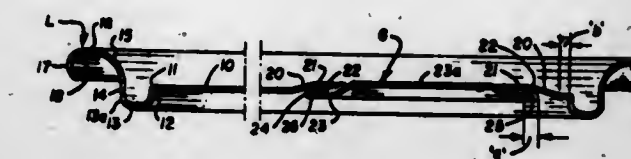
METHOD FOR THE MANUFACTURE OF A CAN LID HAVING A TRIPLE-FOLD PUSHDOWN GATE

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020
Continuation of Ser. No. 758,128, Jan. 10, 1977, Pat. No. 4,119,050. This application Jul. 24, 1978, Ser. No. 927,519
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

Int. Cl.³ B21D 51/00

U.S. Cl. 113-121 C

7 Claims



1. A method for the manufacture of a gated can lid preparatory to attaching the lid to the body of a can, said method comprising the steps of:

forming a triple-fold gate in a blank of metal which will constitute the can lid by drawing a cup to provide an aperture, folding the wall of the cup to form an interconnecting spacer strip underneath the aperture and a gate panel beneath the spacer strip, and at least partially outlining the gate with a cut in the panel underneath the spacer strip, the gate being disposed at a location offset from the center of the can lid and the drawing of the cup being such as to effect an area of disturbed metal about the gate aperture extending into the periphery of the can lid; and thereafter

blanking the can lid and forming at the periphery of the can lid a circumferential chuck panel, a seaming panel, and a curl to complete the lid.

4,244,316

MARINE VESSEL SAFEGUARD STEERING MECHANISM

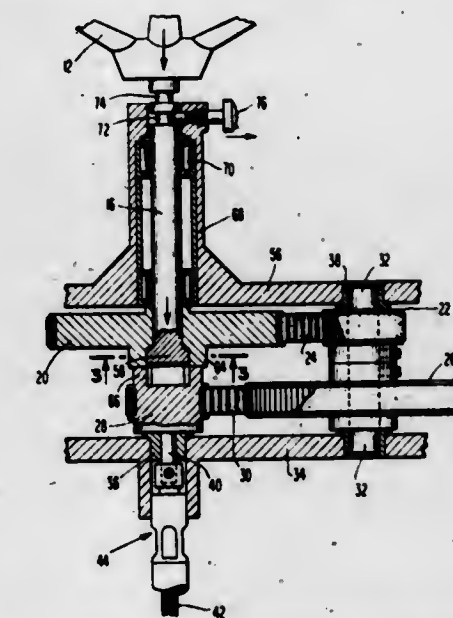
Walter Kulischenko, East Brunswick, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 28, 1979, Ser. No. 15,830

Int. Cl.³ B63H 25/00

U.S. Cl. 114-144 R

5 Claims



1. In a marine vessel steering system wherein manually-operable steering control means effects rotation of rotatable flexible means for controlling movement of a steering member through screw means which converts rotary motion from said rotatable flexible means to linear motion, said linear motion effecting movement of said steering member which controls direction of travel of said marine vessel, said steering control means having

a steering shaft affixed thereto for rotation therewith, the combination of a safeguard improvement thereto comprising a first pair and a second pair of serially connected driver pulley-driven pulley-belt systems, interengaging means provided on said steering shaft and driver pulley of said first pair of systems for releasable disengagement therebetween, a pulley shaft aligned with said steering shaft, said pulley shaft fixedly secured to a driven pulley of said second pair of systems, said pairs of systems being so arranged that a single revolution of said steering shaft causes a plurality of revolutions of said driven pulley of said second pair of systems, said rotatable flexible means communicating with an output end of said pulley shaft, means for interlocking said steering and pulley shafts while simultaneously disengaging said steering shaft from said interengaging means upon fracture of any of said belts of said driver pulley-driven pulley-belt systems or high speed travel of said marine vessel whereby rotation of said steering means rotates said driven pulley of said second pair of systems in accordance therewith.

4,244,317

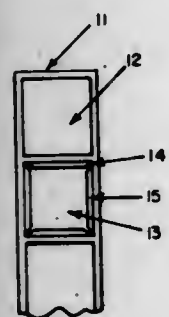
BARGRAPH LIGHT GUIDE

Sol Rauch, Ottawa, Canada, assignor to Canadian Marconi Company, Montreal, Canada

Filed Mar. 15, 1979, Ser. No. 20,861
Int. Cl.³ G01D 11/28; G09F 09/00

U.S. Cl. 116—202

3 Claims



1. A bargraph light guide comprising: an elongated plastic member having a front face and a back side opposite said side face; a plurality of equal sized cavities extending into said plastic member from said back side to form at least one column of cavities along the length of said plastic member, each said cavity being defined by a cavity wall; a like plurality of pellet inserts, each pellet having an outer wall, each pellet being inserted into a respective cavity; and means spacing said outer wall of each pellet from the respective cavity wall of its respective cavity; each said pellet comprising a light transmitting material; said cavity wall comprising four wall members extending transversely into said plastic member; whereby the cross-section of said cavity is a four-sided figure; the cross-section of each pellet being generally of the same shape as the cross-section of said cavity; said means for spacing being mounted between respective walls of said pellets and said cavities; each of said cavity wall members being disposed at right angles to adjacent ones of said cavity wall members; each of said cavity wall members being of the same length as every other cavity wall member, whereby the cross-section of said cavity is square in shape; the cross-section of each pellet being similarly square in shape; said means for separating comprising protrusions extending from each corner of each pellet.

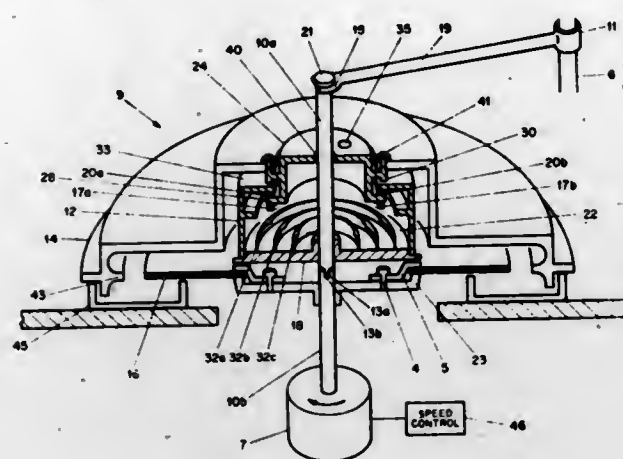
4,244,318
THIN PARTICULATE FILM SPIN COATER

T. F. Chen, Dresher, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,427
Int. Cl.³ B05C 5/02, 11/08

U.S. Cl. 118—52

10 Claims



1. A thin film particulate spin coater apparatus comprising: (a) a metallic disk means having a hole located at its center; (b) a mixing chamber which is adapted to be positioned over said disk hole; (c) means for introducing a thixotropic composition into said chamber, said composition comprising iron powder, a resin and solvent; (d) means for rotating said disk and said mixing chamber at a first speed until said composition is in a Newtonian state; (e) means for releasing said Newtonian composition onto said rotating disk so that its surface is flooded therewith; and (f) means for decoupling the rotation of said mixing chamber and the rotation of said disk and thereafter rotating said disk at a second higher speed; and (g) means for controlling the evaporation of said solvent while said disk is spinning at said first and second higher speeds whereby an ultra-thin surface is formed upon said disk surface.

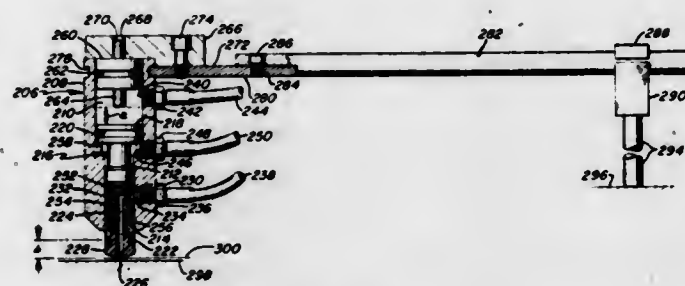
4,244,319

FLUID DISPENSING APPARATUS

Howard B. Carstedt, Rte. 1, Box 208, Loretto, Minn. 55357
Continuation-in-part of Ser. No. 715,443, Aug. 18, 1976, Pat. No. 4,104,983. This application Aug. 7, 1978, Ser. No. 931,369
Int. Cl.³ B05C 5/02, 17/00

U.S. Cl. 118—411

15 Claims



1. A fluid applicator comprising: an elongated, hollow body having an opening at one dispensing end thereof and closure means sealingly covering its opposite end; an input port in said body for receiving fluid to be dispensed from a pressurized supply; an inlet opening in said body, adjacent said opposite end thereof for connection to a source of pressurized actuating fluid;

an elongated piston reciprocally movable within said body longitudinally thereof between a rest position and a fluid dispensing position in response to actuating fluid introduced through said inlet opening, said piston comprising: an elongated, tubular shank portion having a groove around its periphery adapted to be interiorly positioned adjacent to said input port when said piston is disposed in said fluid dispensing position; a flow passage extending longitudinally within said tubular shank portion and defining a fluid output orifice at the outer extremity thereof in fluid flow communication with said groove, said fluid output orifice being the outermost end element on said elongated piston, and said tubular shank portion being moved through said opening at said one dispensing end of said body to a position where said output orifice is freely disposed outside of said body for direct contact with an article to which fluid is to be applied when said piston is moved under the pressure of actuating fluid to said fluid dispensing position; gasket means for preventing the passage of fluid between said groove and said input port when said piston is in said rest position; means for returning said piston to said rest position after fluid is dispensed; and said closure means comprises a cap extending transversely across said opposite end of said body in sealing engagement therewith, and means secured to said opposite end of said body and affixed to said cap, whereby said cap is positively restrained against displacement.

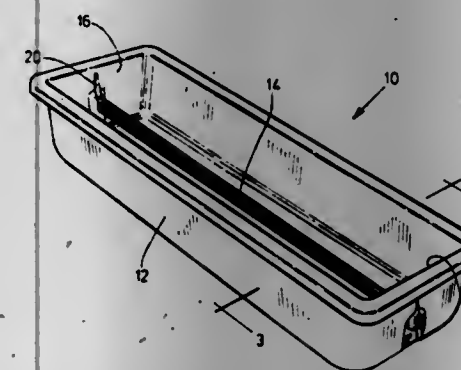
4,244,320

WALLPAPER TROUGH ASSEMBLY

William McCurdy, R.R. 1, Palgrave, Ontario, Canada
Continuation of Ser. No. 760,276, Jan. 18, 1977, abandoned. This application May 8, 1978, Ser. No. 903,526
Claims priority, application Canada, Jan. 20, 1976, 243863
Int. Cl.³ B05C 3/12

U.S. Cl. 118—419

3 Claims



1. A wallpaper trough assembly consisting essentially of: (a) an upwardly open rectangular vacuum molded plastic tray, said tray having a bottom, side walls, and first and second opposed ends, (b) an elongated bar having a uniform longitudinal cross-section extending horizontally in said tray between the first and second ends of said tray, and (c) an inwardly upwardly open channel integrally molded in each end of said tray near the bottom thereof to receive a respective end of said bar, the width of the channel being sufficiently smaller than the width of the bar and said channel being sufficiently flexible, so that the channel expands to accommodate the bar, whereby the said end of said bar is resiliently engaged in said channel when the said end is forced down into said channel and the bar is removably held near the bottom of the tray, and wherein the walls and sides of the trays are so configured that the trays are nestable and the rods are assemblable therein for use of the assembly.

4,244,321

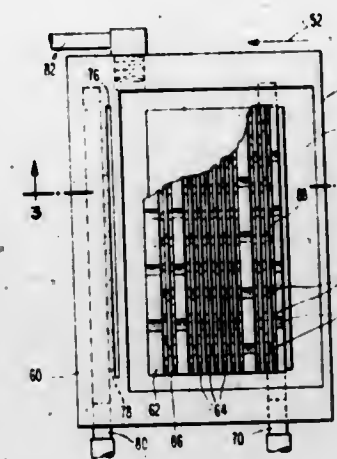
ELECTROGRAPHIC DEVELOPMENT ELECTRODE

John D. Plumadore, Westfield, Mass., assignor to James River Graphics, Inc., South Hadley, Mass.

Filed Feb. 14, 1978, Ser. No. 877,772
Int. Cl.³ G03G 13/10, 15/10

U.S. Cl. 118—648

5 Claims



1. A development electrode assembly adapted to be located close to a charge retaining surface of a moving electrographic recording medium, said development electrode assembly assisting the deposition of electrostatically charged liquid toner particles onto the charge retaining surface from the space between the development electrode assembly and the recording medium, said electrode assembly comprising an array of a plurality of rows of development electrode segments each having a width less than the full width of the charged portion of the charge retaining surface, each segment located in closely spaced parallel relation to the charge retaining surface, each segment being electrically floating and isolated from all other segments, said rows extending in a direction transverse to the direction of movement of said recording medium and at least some of said rows containing a plurality of electrode segments, said electrode segments being staggered in different rows such that every element of the recording medium across the full width of the portion of the recording medium being toned passes directly over at least one segment.

4,244,322

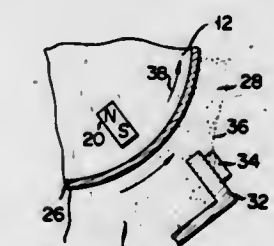
MAGNETIC BRUSH TYPE DEVELOPING APPARATUS

Yutaka Nomura, Yokohama; Mitsuaki Koyama, Higashikurume, and Masahiro Katou, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 6, 1978, Ser. No. 884,622
Claims priority, application Japan, Mar. 11, 1977, 52-26708
Int. Cl.³ G03G 15/09

U.S. Cl. 118—658

5 Claims



1. A developing apparatus utilizing a magnetic brush, comprising a cylindrical drum having a photosensitive layer provided on the outer peripheral surface thereof and on which an electrostatic latent charge image is formed; a magnetic roller disposed opposite to the photosensitive layer of the cylindrical drum with a gap left therebetween and having permanent

magnets arranged in a predetermined array in a roller body thereof with their polarity oriented and a rotating cylindrical sleeve provided around the outer surface thereof and on which a magnetic brush is formed; a receptacle made of non-magnetic material and within which said magnetic roller is mounted and in which a developed mixture comprising iron powder and toner powder is held, said receptacle having a magnetic brush exposure window opened to permit said magnetic roller and said cylindrical drum to face each other; a doctor blade made of non-magnetic materials having a first end and a second end attached at said first end to that edge of said magnetic brush exposure window from which the magnetic brush emerges, said doctor blade being located near to a closest gap between said magnetic roller and said cylindrical drum to restrict the thickness of the magnetic brush; and a magnetic piece attached to said doctor blade to attract the iron powder in the magnetic brush thereto by a magnetic force between said permanent magnets in said body of said magnetic roller and said magnetic piece to form a magnetic powder curtain between the magnetic brush and said magnetic piece so as to inhibit toner powder from depositing on said doctor blade second end and blocking said toner powder from flying off of said doctor blade onto said photosensitive layer.

4,244,323

APPARATUS FOR FLOATING AND SINKING FISH BREEDING NETTED TANKS

Shinji Morimura, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

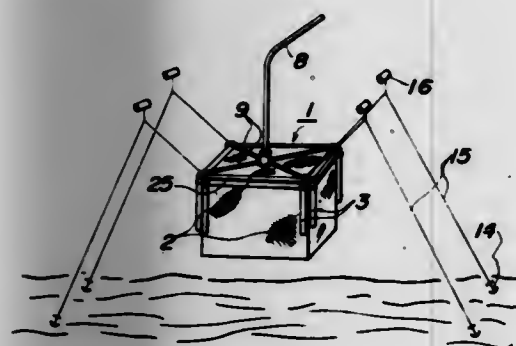
Filed Apr. 24, 1979, Ser. No. 32,846

Claims priority, application Japan, May 11, 1978, 53-54948; Jun. 10, 1978, 53-69388; Sep. 19, 1978, 53-128413[U]; Sep. 29, 1978, 53-120975; Oct. 24, 1978, 53-145224[U]

Int. Cl.³ A01K 61/00

U.S. Cl. 119-3

5 Claims



1. An apparatus for floating and sinking fish breeding netted tanks comprising a fish breeding netted tank body totally covered with a netted body; anchors disposed on the sea-bottom; mooring cables connecting said anchors to said fish breeding netted tank; buoyancy bodies each connected to an intermediate portion of said mooring cable and always holding said intermediate portion of said mooring cable under the sea surface; said anchors being disposed outwardly of said netted tank body and said buoyancy bodies such that the portion of each mooring cable between each anchor and each buoyancy body is disposed at an acute angle to a vertical line extending downwardly from each buoyancy body during raising and lowering of said netted tank body; a floating and sinking mechanism secured to said fish breeding netted tank body and adapted to supply fluid into said fish breeding netted tank body and removing said fluid therefrom, said floating and sinking mechanism controlling the depth and raising and lowering speeds of said fish breeding netted tank with the buoyancy of said buoyancy bodies kept in balance with the weight under water of said fish breeding netted tanks.

4,244,324

LIVESTOCK CONTAINMENT DEVICE

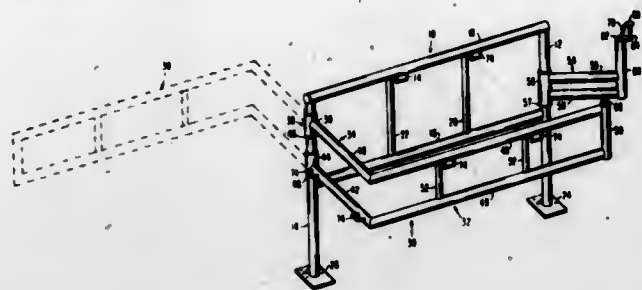
Frank Kratky, Bellvue, Colo., assignor to Westguard Products, Inc., Cheyenne, Wyo.

Filed Aug. 14, 1979, Ser. No. 66,372

Int. Cl.³ A61D 3/00

U.S. Cl. 119-27

4 Claims



1. A livestock containment device mountable on a surface and comprising:
a free-standing rigid panel firmly secured in an upright position and of a length and height to span an animal disposed alongside;
a generally L-shaped vertically-oriented rigid framework having one leg of a length similar to that of said panel; means for hingedly coupling the free end portion of one leg portion of said framework to only one end portion of said panel, with the bottom of said framework being spaced above said surface, said framework being free to horizontally swing substantially around said one end portion of said panel and said framework being entirely supported in position by said coupling means;
a gate of a length to span the distance between the free end portion of the other leg portion of said framework and the other end portion of said panel;
means for hingedly coupling one end portion of said gate to one of said free end portion of said other leg portion and said other end portion of said panel;
and means for securing the other end portion of said gate to the other of said free end portion of said other leg portion and said other end portion of said panel.

4,244,325

DISPOSAL OF OXIDES OF NITROGEN AND HEAT RECOVERY IN A SINGLE SELF-CONTAINED STRUCTURE

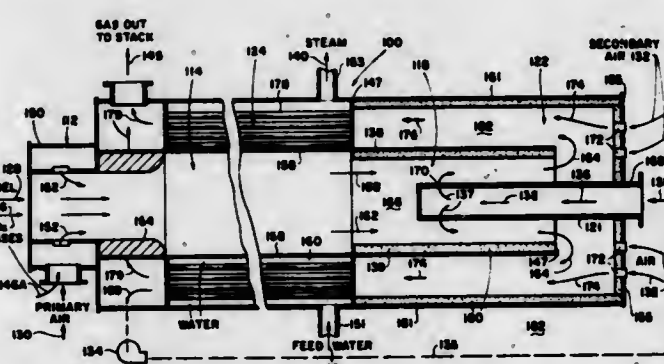
Wallace F. Hart; David O. Watts, and Robert D. Reed, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Mar. 1, 1979, Ser. No. 16,294

Int. Cl.³ C01B 21/20

U.S. Cl. 122-4 R

12 Claims



1. A self-contained combination NOX disposal and heat recovery system characterized by:
(a) a burner means and means to supply to said burner means NOX gases to be reduced, gaseous fuel at selected flow rate sufficient to maintain combustion, and primary air in less-than-stoichiometric flow rate;
(b) a reducing section in which said NOX gases, primary air

and fuel are burned after flowing through said burner means in a first direction;
(c) water/steam tubes positioned in said reducing section to receive heat from the flame therein;
(d) means to inject cooled stack gases into the hot products of combustion as they leave said reducing section into a furnace section downstream of said reducing section;
(e) outlet means from said furnace section positioned such that the gases flowing out of said furnace section flow in a second direction opposite to said first direction;
(f) means to inject secondary air into said gases flowing out of said furnace section; whereby the total of primary plus secondary air is greater-than-stoichiometric value;
(g) a reoxidation section positioned to receive the flame and products of combustion flowing out of said furnace section in said second direction, and to output its products of reoxidation in said second direction to a heat recovery section; and
(h) means to output cooled, NOX-reduced products of combustion from said heat recovery section to a stack means.

4,244,326

STEAM GENERATING SYSTEM

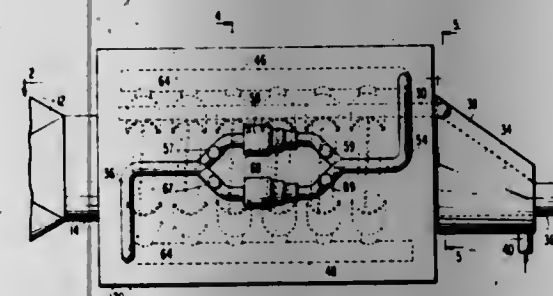
Dennis H. Jackson, 850 W. Osborn Rd., Phoenix, Ariz. 85013

Filed Apr. 12, 1979, Ser. No. 29,402

Int. Cl.³ F22B 33/00

U.S. Cl. 122-20 B

10 Claims



1. A steam generating system comprising a heat chamber, at least one conduit extending completely through said heat chamber, collecting means for collecting flue gases from at least one furnace and directing said flue gases through said conduit, a plurality of separate steam coils wrapped about said conduit in spaced relation to each other along the length of said conduit within said heat chamber, first pipe means for supplying water to one end of each steam coil and second pipe means for removing steam from the other end of each steam coil and air circulating means for circulating the hot air within said heat chamber in a circumferential direction about the circumference of each steam coil.

4,244,327

STEAM GENERATOR ARRANGEMENT

Eugen Seinegaraki, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 11, 1979, Ser. No. 47,419

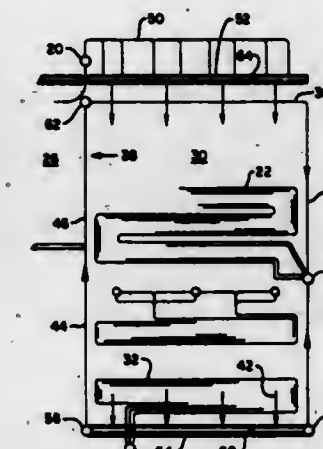
Int. Cl.³ F22B 37/10

U.S. Cl. 122-235 A

7 Claims

1. A steam flow path arrangement for a vertical gas flow pass of a steam generator; said vertical gas flow pass having a rectangular cross section and an opening in a front wall at an upper elevation for the ingress of flue gas, an opening at the bottom for egress of flue gas, and a tubular superheater located within said gas pass, comprising: a first plurality of parallel tubes lining the rear wall of said gas pass from the roof elevation to an intermediate elevation; a third plurality of parallel tubes lining the side walls of said gas pass from the roof elevation to a lower elevation; a fourth plurality of parallel tubes lining the front wall of said gas pass from the top of said front wall to said lower elevation, said tubes also passing

through the front wall opening; a fifth plurality of parallel tubes lining the rear wall of said gas pass from said intermediate elevation to said lower elevation; first header means attached to the upper end of said third plurality of tubes for conveying substantially all of the steam flow therethrough; a second header means connected to the bottom end of said third plurality of parallel tubes for receiving substantially all the steam flow; a third header means connected to the bottom of said fifth plurality of tubes; a first conveying means for conveying a minor portion of the steam flow from said second header



means to said third header means; fourth header means connected to the bottom of said fourth plurality of parallel tubes; a second conveying means for conveying a major portion of the steam flow from said second header means to said fourth header means; a fifth header means connected to the bottom of said second plurality of parallel tubes and to the top of said fifth plurality of parallel tubes connected for serial flow therethrough; and supply tubes connecting said fifth header to said tubular superheater.

4,244,328

PROCEDURE FOR THE OPERATION OF COMBUSTION ENGINE

Olle B. Lindstrom, Lorensvik 14, S-18363 Tilly, Sweden

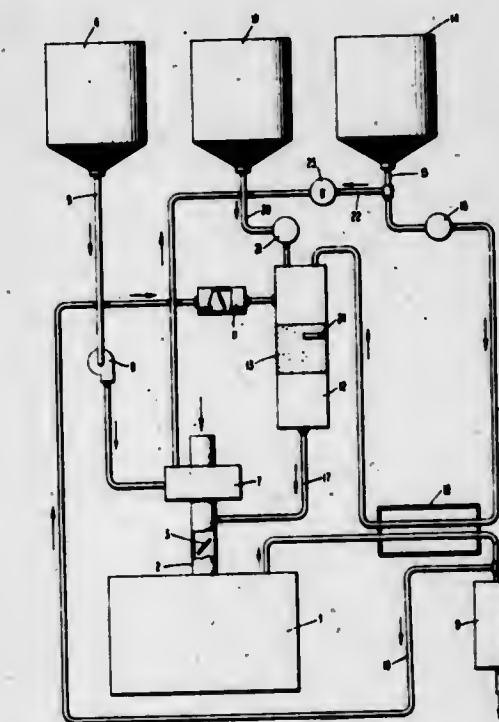
Filed Mar. 10, 1978, Ser. No. 885,324

Claims priority, application Sweden, Mar. 17, 1977, 7703011

Int. Cl.³ F02B 43/08, 19/00, 47/00

U.S. Cl. 123-3

10 Claims



1. A process for reducing the amount of noxious components and aldehydes in the exhaust gas of an operating combustion

engine which employs a fuel comprising gasoline and methanol comprising the steps of:

- (a) recycling a water vapor-containing exhaust gas stream from the combustion engine to a first zone wherein the exhaust gas stream is mixed with a separate feed stream comprising methanol in a fixed amount selected from within the range of about 5 to 35 percent by volume based on the amount of gasoline supplied to the combustion engine which is fed from a storage zone through a vaporization zone;
- (b) catalytically steam reforming said vaporous methanol-containing feed stream in a steam reforming zone in the presence of said exhaust gas stream to form a gaseous mixture comprising hydrogen and carbon monoxide, whereby at least a portion of the water vapor and energy required for said steam reforming is provided by said exhaust gas stream;
- (c) combining said gaseous mixture of hydrogen and carbon monoxide with a mixture of air and gasoline;
- (d) supplying the hydrogen/carbon monoxide/air/gasoline mixture to a combustion zone within said combustion engine;
- (e) combusting said mixture in said combustion zone to produce an exhaust gas comprising a reduced amount of noxious components and aldehydes.

4,244,329

CLEAN SPARK IGNITION INTERNAL COMBUSTION ENGINE

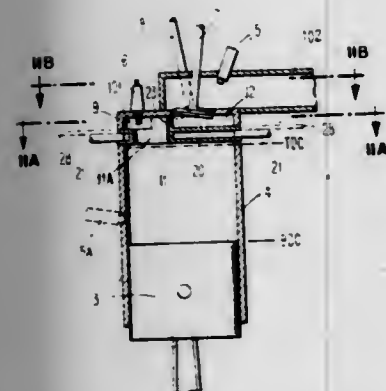
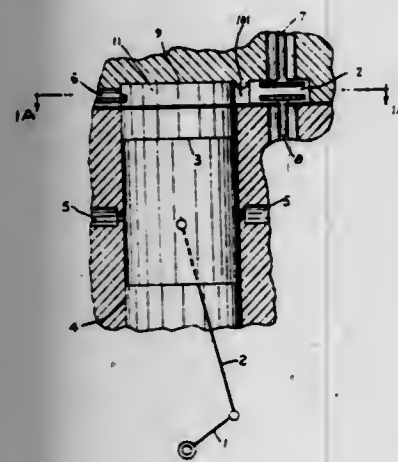
Hui-Tzeng Ting, Apt. 2M 245 E. 149th St., New York, N.Y. 10451

Continuation-in-part of Ser. No. 667,409, Mar. 16, 1976, Pat. No. 4,036,187, Ser. No. 376,304, Jul. 6, 1973, abandoned, Ser. No. 772,811, Feb. 28, 1977, abandoned, and Ser. No. 808,636, Jun. 21, 1977, abandoned. This application Jan. 6, 1978, Ser. No. 867,480

Int. Cl.² F02B 19/10, 19/16

U.S. Cl. 123—261

39 Claims



1. In a spark ignition engine having means for fuel injection,

a piston, a cylinder including a cylinder head, means for obtaining stratification of the air-fuel mixture comprising:

- (a) a combustion zone having main and auxiliary combustion chambers;
 - (i) the main combustion chamber being bounded by the piston top at or near top dead center, a part of the cylinder head and a throat leading to the auxiliary combustion chamber;
 - (ii) an auxiliary combustion chamber affixed to the engine and located adjacent the side of said main chamber and communicating by said throat therewith, said auxiliary chamber being a nonmoving part of the engine;
 - (b) inlet means for introducing air into the combustion zone and exhaust means for evacuating the gases from the cylinder after combustion;
 - (c) fuel injector means for injecting fuel into a layer at or near the piston top when the piston is at or near bottom dead center to create a fuel-rich layer at the vicinity of the piston top at the end of intake stroke so as to provide a fuel-rich parcel in said main chamber later at the end of compression stroke;
 - (d) spark means for igniting the said fuel-rich parcel created in the said main combustion chamber when the piston is at or near the top dead center,
- whereby combustion begins in said main combustion chamber and receives a secondary air supply from said auxiliary combustion chamber.

4,244,330

ENGINE CYLINDER LINER HAVING A MID STOP

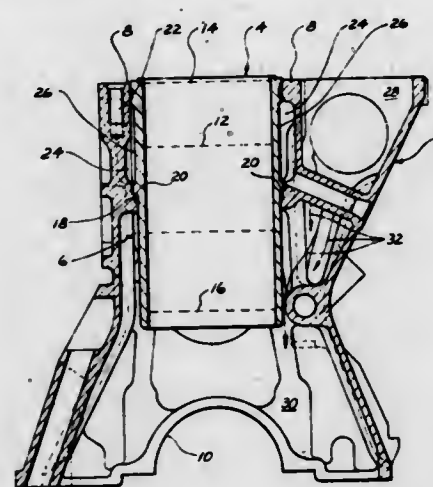
James D. Baugh, Greensburgh; Terrence M. Shaw, Columbus; Roy J. Primus, Columbus, and Richard E. Glasson, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Nov. 13, 1978, Ser. No. 959,702

Int. Cl.³ F02F 1/16

U.S. Cl. 123—41.84

10 Claims



1. A liner for a cylinder cavity within the block of an internal combustion engine having a liner stop positioned within the cylinder cavity at a point intermediate the extremes of travel of a piston disposed for reciprocating travel within the cylinder cavity, and having an annular sealing wall extending interiorly of the engine block starting at the liner stop, comprising

- (a) a hollow cylindrical body having an inner end portion and an outer end portion;
- (b) reinforcing and securing means for resisting the deforming forces resulting from fuel combustion within said outer end portion and for compressively and frictionally engaging the inside surface of the cylinder cavity when pressed thereinto, said reinforcing and securing means including
 - (1) an end boss adjacent the outer end of said outer end portion,
 - (2) a pair of annular, axially spaced cylindrical surfaces formed on the outside of said end boss having outside

diameters greater than any other portion of said hollow cylindrical body and slightly greater than the inside diameter of corresponding portions of the cylinder cavity into which said hollow cylindrical body is designed to be press fitted, and

- (3) settable plastic material retaining means separating said annular axially spaced cylindrical surfaces for receiving material which remains plastic during a press fitting of said hollow cylindrical body into the cylinder cavity and which is subsequently, settable to provide radial support to said hollow cylindrical body over the axial distance between said cylindrical surfaces, said settable material retaining means including circular recess contained within said end boss located between said cylindrical surfaces; and
- (c) a stop means for positioning said hollow cylindrical body within the cylinder cavity, said stop means including a stop boss formed on the outer surface of said hollow cylindrical body within the cylinder cavity, said stop means including a stop boss formed on the outer surface of said hollow cylindrical body intermediate its ends, said stop boss including a stop engaging surface for engaging the engine block liner stop, said stop engaging surface being positioned to cause said outer end portion of said hollow cylindrical body to extend a predetermined distance beyond the outer extreme of the cylinder cavity when said stop engaging surface is placed in contact with the engine block liner stop, said stop boss has an outside diameter which is less than the inside diameter of that portion of the cylinder cavity with which said annular axially spaced cylindrical surfaces are designed to be frictionally engaged, whereby said stop boss is able to clear that portion of the cylinder cavity which is frictionally engaged by said annular, axially spaced cylindrical surfaces when said hollow cylindrical body is assembled in the engine block,

wherein said hollow cylindrical body includes an annular recess formed in the outside surface of said hollow cylindrical body between said end boss and said stop boss to form one wall of a coolant passage for removing heat from the liner, said inner end portion of said hollow cylindrical body includes a skirt portion integrally joined to said outer end portion at one end, said skirt portion being designed for use while being free of any direct contact with the engine block when inserted therein, said hollow cylindrical body includes an annular sealing means for retaining a settable plastic material between the liner and the annular sealing wall of the engine block to form a secondary coolant seal inwardly of said stop boss and to provide radial support to said hollow cylindrical body without interfering with the press fitting of said end boss, said annular sealing means including an annular seal surface arranged to be positioned adjacent to but a predetermined distance from the annular sealing wall of the engine block to form a clearance space, and wherein said annular sealing means includes a cylindrical recess between said stop engaging surface and said annular seal surface for retaining settable plastic material and a second deeper annular seal recess between said stop engaging surface and said cylindrical recess for receiving a compliant annular seal and for receiving excess settable plastic sealant pressed out of the clearance space between said annular seal surface and the annular sealing wall when the liner is press fitted into an engine block.

4,244,331

FREE PISTON GAS GENERATOR ASSEMBLIES

Robert N. Mettler, 8951 Farrallone Ave., Canoga Park, Calif. 91304

Filed Oct. 6, 1978, Ser. No. 940,887

Int. Cl.³ F02B 71/02; F02D 39/10

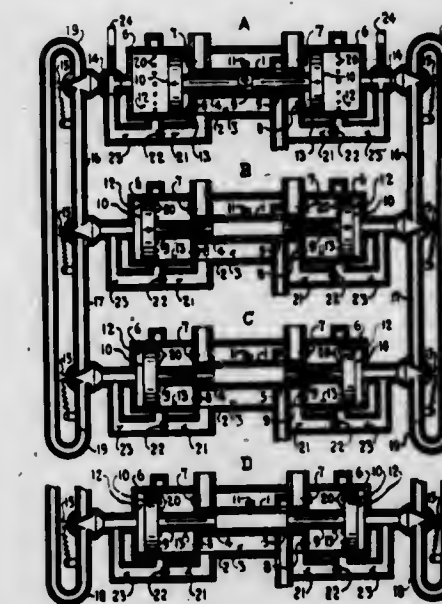
U.S. Cl. 123—46 A

9 Claims

1. In a free piston gas generator assembly having a plurality of separate free piston gas generators, each free piston gas

generator having a motor cylinder and at least one pair of bounce energy cylinders, and having a pair of free pistons, with each of the pair of free pistons comprising a motor piston contained within the motor cylinder and at least one bounce energy piston contained within the at least one bounce energy cylinder, the motor piston and the at least one bounce energy piston on each of the pair of free pistons being connected together for simultaneous movement, the improvement comprising:

- the plurality consisting of at least three free piston gas generators;
- a pair of transfer loops each having a closed loop pipe interconnecting the at least one bounce energy cylinder of one of the pair of free pistons in each of the plurality of free gas generators;
- a plurality of transfer valves, each in fluid communication with one of the pair of at least one bounce energy cylinders of a respective free piston gas generator and the respective closed loop pipe;
- each transfer valve being a two-way valve having an always open port in fluid communication with the respective bounce energy cylinder, an upstream port and a downstream port, each in fluid communication with the respective closed loop pipe, and the transfer valve being normally biased to shut the upstream port and moveable to overcome the bias to thereby shut the downstream port;



whereby movement of the bounce energy piston in the respective bounce energy cylinder in fluid communication with a respective one of the transfer valves transfers a fluid pressure increase through the normally open downstream port and the closed loop pipe to overcome the bias of a next successive transfer valve downstream in the closed loop pipe and shut the downstream port of that next successive downstream transfer valve to thereby increase the fluid pressure in the respective at least one bounce energy cylinder in fluid communication with that next successive downstream transfer valve, thereby driving the bounce energy piston in the bounce energy cylinder, in fluid communication with that next successive downstream transfer valve, and the interconnected motor cylinder, towards a firing position for that next successive downstream free piston gas generator;

the interconnection of the plurality of free piston gas generators through the closed loop transfer pipe thereby effecting a continuous sequential operation of each of the plurality of free piston gas generators; and

a pair of starting valves each positioned between the transfer valve and bounce energy cylinder of each of the free pistons on at least one of the free piston gas generators in the gas generator assembly;

the starting valve having two positions, a starting position directing fluid pressure from a source of pressurized fluid into the respective bounce energy cylinder and blocking

fluid communication between the bounce energy cylinder and the respective transfer valve, and a running position opening the fluid communication between the bounce energy cylinder and the respective transfer valve and shutting the fluid communication between the source of pressurized fluid and the bounce energy cylinder; wherein the starting valves of each pair of starting valves on a respective one of gas generators being connected to operate in unison to change from the starting position to the running position and from the running position to the starting position and having a linkage means operatively connected to the bounce energy pistons for preventing the placing of the starting valves in the starting position when the free pistons are in generally an inward dead point at the opposite end of travel of the free pistons from a scavenging position.

4,244,332

INDUCTION SYSTEM FOR A V-TYPE TWO-CYCLE ENGINE

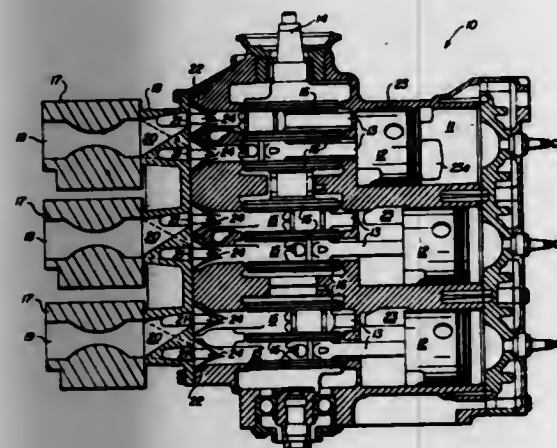
David W. Kneche, 1521 W. 5th Ave., Oshkosh, Wis. 54901, and Keith M. Gagner, 5379 Highway G, Winneconne, Wis. 54986

Filed Aug. 6, 1979, Ser. No. 64,151

Int. Cl.³ F02B 75/18

U.S. Cl. 123—59 B

9 Claims



1. An induction system for a multi-cylinder two-cycle crankcase compression engine (10) having an even number of cylinders (11) and a generally vertical crankshaft (14), comprising: (A) a separate crankcase compartment (15) encircling said crankshaft (14) for each cylinder, said compartments (15) arranged in a vertical row; (B) one inlet opening (22) in each of said crankcase compartments (15), said openings (22) being arranged in a vertical row and each having a rectangular cross section; (C) one carburetor (17) for each pair of vertically adjacent crankcase inlet openings (22), said carburetors each having a pair of horizontally adjacent barrels (19); and (D) a carburetor adapter means (18) for connecting each barrel (19) of each of said carburetors (17) to one of said crankcase inlet openings (22).

4,244,333

INDUCTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hiromitsu Matsumoto, Hamamatsu, Japan, assignor to Yamaha Hatsukoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 29, 1978, Ser. No. 937,712

Claims priority, application Japan, Mar. 9, 1977, 52/106028

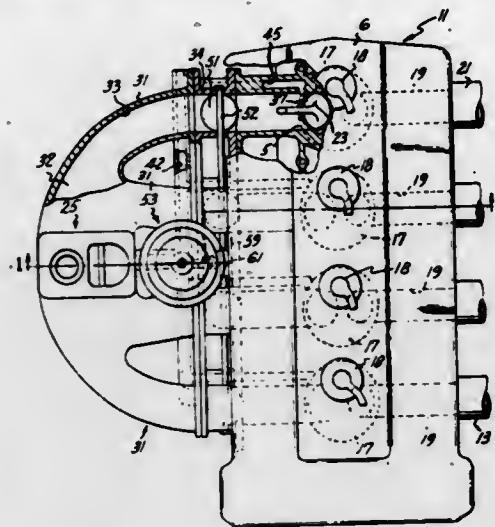
Int. Cl.³ F02B 17/00, 3/00

U.S. Cl. 123—432

9 Claims

1. In an induction system for a multiple cylinder engine having a plurality of variable volume chambers in which combustion occurs, a plurality of main induction passages, each communicating with a respective variable volume chamber, a plurality of auxiliary induction passages, each communicating with a respective of said variable volume chambers, said auxiliary induction passages having a substantially lesser effective

cross-sectional area than said main induction passages so that a given mass flow through said auxiliary induction passages enters the respective chambers at a substantially greater velocity than the same mass flow through said main induction passages, primary throttle valve means for controlling the flow through said main induction passages to the respective chambers, and auxiliary throttle valve means controlling the flow



through said auxiliary induction passages to the respective chambers, the improvement comprising said auxiliary induction passages each communicating with said primary induction passages downstream from said main throttle valve means and balance passage means communicating said auxiliary induction passages with each other for maintaining the pressure in said main induction passage downstream of said main throttle valve means at a pressure less than atmospheric.

4,244,334

VALVE ACTUATING AND CONTROL CIRCUIT

Wolfgang Maisch, Frankreich, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

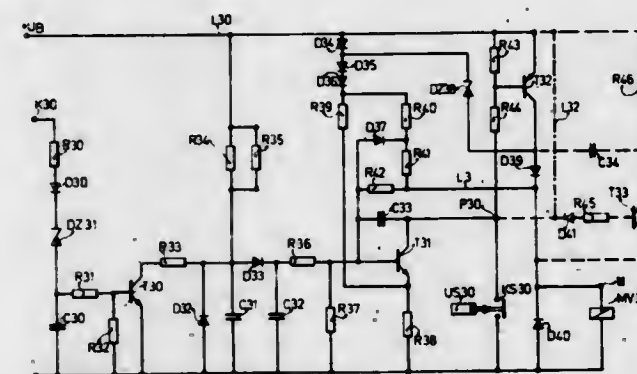
Filed Mar. 13, 1978, Ser. No. 886,321

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1977, 2710989

Int. Cl.² F02M 7/12

U.S. Cl. 123—325

10 Claims



1. An apparatus for actuating control elements, especially for actuating a fuel shutoff mechanism in the fuel supply system of an internal combustion engine with spark ignition provided by a spark coil, said fuel shutoff mechanism including a solenoid valve having actuating windings connected in series with a power transistor, said power transistor being controlled by a driver transistor in a primary circuit which also includes switch means responsive to engine speed and switch means responsive to intake manifold pressure and wherein the improvement comprises that said primary circuit further includes:

an input transistor whose base electrode is connected to a first capacitor which is also connected to said spark coil to be charged thereby;

a second capacitor connected to a power electrode of said input transistor to be discharged therethrough; and a third capacitor, connected in parallel with said second capacitor via a diode and also connected to the base of said driver transistor.

4,244,335

CONTROL OF VEHICLE ENGINE FUEL FEED BY ELECTRO-STRESS MEANS

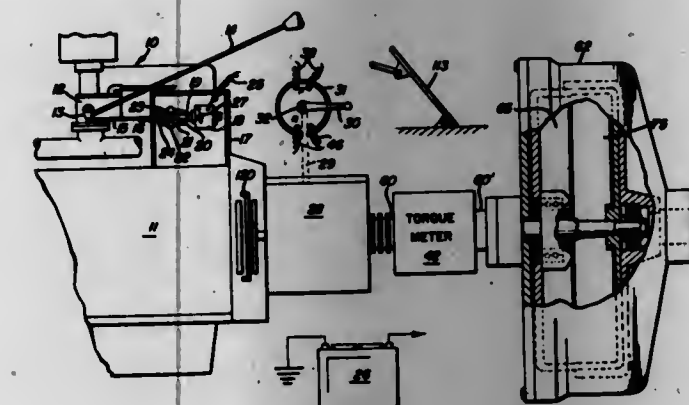
John H. deRussy, 529 Andros La., Indian Harbour Beach, Fla. 32937

Continuation of Ser. No. 761,276, Jan. 21, 1977, abandoned. This application Nov. 17, 1978, Ser. No. 961,772

Int. Cl.² F02M 7/00

U.S. Cl. 123—350

8 Claims



1. In combination with an internal combustion engine having a variable fuel supply means and connected to a load through a power drive train, a load responsive control comprising:

a power supply;
a variable speed electric motor means electrically connected in circuit with said power supply for rotation at an angular velocity dependant upon the level of the electrical input applied thereto;

mechanical linkage means connected between said electric motor and said variable fuel supply means for adjusting the amount of fuel supply to said internal combustion engine dependent upon the speed of rotation of said electric motor;

primary adjustment means connected in series circuit with said electric motor for controlling the level of electrical input supplied to said electric motor, said primary adjustment means being attached to an accelerator pedal for varying said electrical input in response to the position of said accelerator pedal;

secondary adjustment means connected in electrical circuit with said electric motor and said primary adjustment means and mechanically connected to said drive train for adjusting the input to said electric motor in response to the torque transmitted to said load through the drive train.

4,244,336

LOW SPEED LIMITER UNIT FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEMS

Arthur O. Fitzer, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jun. 5, 1978, Ser. No. 912,348

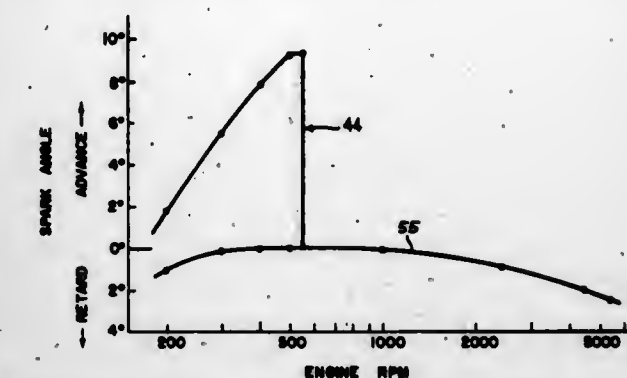
Int. Cl.³ F02P 5/04

U.S. Cl. 123—418

19 Claims

1. In a solid state ignition system for a two-cycle engine, a low speed limit control means capable of producing an essentially concentrated, steep, step-like substantial advance of the ignition angle or timing with reducing engine speed, comprised of a rapidly responding electronic spark advance means and a speed sensing means connected to sense the engine speed and responsive below a preselected minimum engine speed to actuate said electronic spark advance means, and wherein said

advance means and speed sensing means are constructed and arranged to change the ignition angle by approximately 9



degrees in a narrow speed range of less than plus and minus five percent of said preselected minimum engine speed.

4,244,337

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Masahiro Asai, Hekinan, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

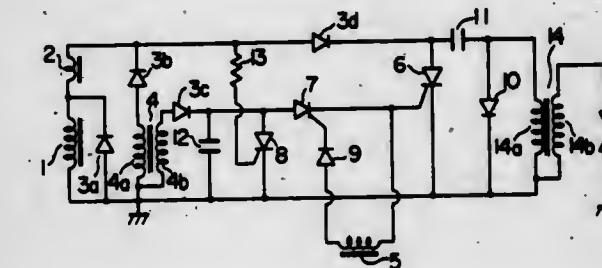
Filed May 24, 1979, Ser. No. 42,223

Claims priority, application Japan, May 30, 1978, 53-64703

Int. Cl.³ F02P 3/08, 11/00

U.S. Cl. 123—603

3 Claims



1. An ignition system for internal combustion engines comprising:

a magneto generator coupled with a crankshaft of an internal combustion engine to generate an AC output, a capacitor connected to said magneto generator and being charged through a diode by each half-cycle of one polarity of the AC output of said magneto generator, an ignition coil having a primary coil connected to said capacitor and having a secondary coil connected to an ignition plug,

a thyristor connected in series with said capacitor and said primary coil of said ignition coil to form a discharging path of said capacitor,

an auxiliary capacitor, a transformer for charging said auxiliary capacitor by each half-cycle of the other polarity of the AC output of said magneto generator,

a first semiconductor switching element connected across said auxiliary capacitor for short circuiting said auxiliary capacitor,

a first switching element control circuit for turning on said first semiconductor switching element by each half-cycle of said one polarity of the AC output of said magneto generator,

a second semiconductor switching element connected between said auxiliary capacitor and a gate of said thyristor and upon being turned on for discharging the electric charge of said auxiliary capacitor through a gate-cathode path of said thyristor, and

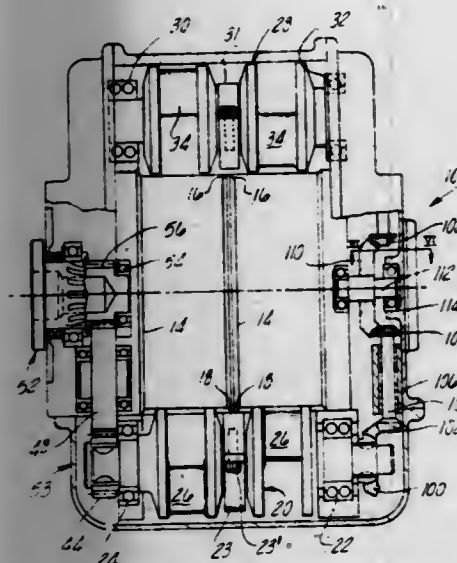
a timing generator connected to apply an output to a gate of said second semiconductor switching element to turn on the same and to render said thyristor conductive, said timing generator generating the output at a predetermined

ignition time and within a half-cycle of said other polarity of the AC output of said magneto generator when said internal combustion engine is rotating in a normal direction.

4,244,338

INTERNAL COMBUSTION ENGINE

Louis J. Rassey, 15711 12 Mi Rd., Roseville, Mich. 48066.
Continuation-in-part of Ser. No. 803,051, Jun. 3, 1977, Pat. No. 4,198,946. This application Aug. 16, 1978, Ser. No. 934,207
Int. Cl.³ F01L 7/00
U.S. Cl. 123—190 A 6 Claims



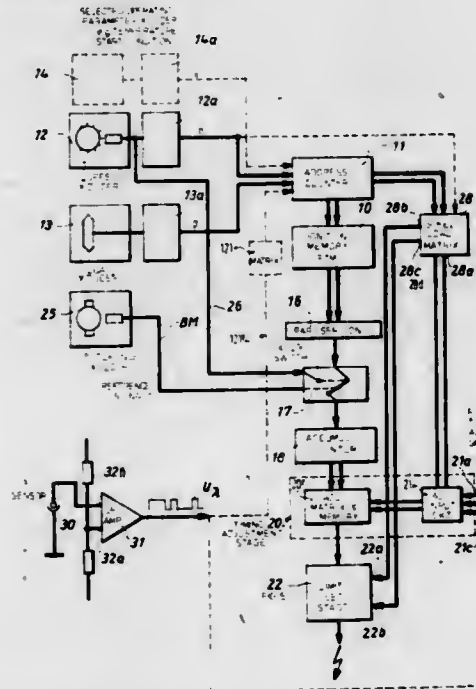
1. An internal combustion engine comprising:
 - a housing, said housing having a cylindrical bore formed therethrough;
 - a pair of piston members, each piston member having a head at one end and connecting means secured to the other end, said piston members being slidably disposed in said housing throughbore so that said piston heads are in a facing relationship;
 - fuel inlet passage means in said housing for communicating a combustible fuel to said throughbore and between said piston heads and exhaust passage means in said housing for exhausting fumes from said throughbore;
 - crankshaft means rotatably mounted in said housing, said connecting means being attached to said crankshaft means to rotatably drive said crankshaft means upon reciprocation of said piston members in said throughbore;
 - a cylindrical inlet valve member rotatably mounted in said housing adjacent said throughbore and in said fuel inlet passage means, said inlet valve member having a diametric throughbore which selectively opens and closes said inlet passage means in dependence upon the rotational position of said inlet valve member;
 - a cylindrical outlet valve member rotatably mounted in said housing adjacent said throughbore and in said exhaust passageway, said outlet valve having a diametric throughbore which selectively opens and closes said exhaust passageway in dependence upon the rotational position of said outlet valve member; and
 - means for rotatably driving said valve members in synchronism with the reciprocation of the piston members in the housing throughbore, wherein said crankshaft means further comprises a pair of crankshafts rotatably mounted in said housing in a spaced and parallel relationship, one crankshaft being positioned adjacent each axial end of the housing throughbore, and means for drivingly connecting said crankshaft in synchronism to an output shaft, wherein said rotatably driving means is operatively connected between one end of at least one crankshaft and one end of said valve members, and wherein said rotatable driving means further comprises a valve drive shaft rotatably mounted in said housing, first bevel gear means for rotatably driving one end of the valve drive shaft from one end

of one crankshaft and second bevel gear means for rotatably driving said valve members from the other end of said valve drive shaft.

4,244,339

METHOD AND SYSTEM TO CONTROL IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE IN DEPENDENCE ON AN EXHAUST GAS COMPOSITION SIGNAL

Ingo Gorille, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 6, 1978, Ser. No. 940,159
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 2740044
Int. Cl.³ F02P 5/04
U.S. Cl. 123—416 16 Claims

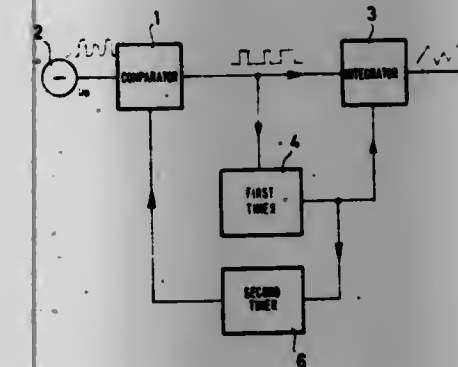


1. In an internal combustion engine system a method to control the composition of the exhaust gases therefrom comprising:
 - generating an exhaust gas signal (U_λ);
 - generating crankshaft position signals representative of the instantaneous position of the crankshaft with respect to a reference position (top dead center—TDC);
 - generating an ignition event control signal at a predetermined angular crankshaft position with respect to said reference position (TDC);
 - and superimposing an ignition angle adjustment signal under control of said exhaust gas signal (U_λ) on the generated ignition event control signal as a function of said exhaust gas signal
- which includes the method steps of:
 - changing the angular relation of successive ignition event signals with respect to the reference position in an angular incremental step ($\Delta\alpha$) of a predetermined angular value, which angular step is independent of the magnitude of the exhaust gas signal and small with respect to a maximum adjustment angle (αE);
 - repeating the foregoing method step, and algebraically adding the subsequent angular increment to the prior angular crankshaft position at which the ignition event control signal is then generated;
 - and continuing to repeat the two preceding method steps.

4,244,340

METHOD AND APPARATUS FOR CONTROLLING FUEL MANAGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Harro Herth, Schwieberdingen; Hans Schanrle, Walheim; Ulrich Drews, Vaihingen-Pulverdingen; Erich Singer, Besigheim; Bernd Kraus, and Peter Werner, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Continuation of Ser. No. 676,997, Apr. 14, 1976, abandoned.
This application Apr. 12, 1978, Ser. No. 895,683
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1975, 2517269; Dec. 30, 1975, 2559046
Int. Cl.³ F02D 5/00; F02M 7/00
U.S. Cl. 123—440 42 Claims



1. A method of controlling the operation of a fuel management system of an internal combustion engine, said system including fuel allocation means, control means for generating fuel control signals related to engine rpm and air flow rate, and also including an oxygen sensor for generating a sensor signal related to a fuel-air ratio of a fuel-air mixture supplied to the engine which is fed back in a closed loop to said control means, comprising the steps of:

generating a single variable reference signal;
comparing said reference signal with said sensor signal;
continuously detecting the occurrence of sensor signal changes in a time interval;
automatically disabling the closed-loop control of said system based on feedback of said sensor signal when no sensor signal changes are detected in said time interval indicating a malfunction of said oxygen sensor and substituting therefor an open-loop control based on engine rpm and air flow rate;
automatically altering the magnitude of said reference signal by a predetermined value;
re-engaging the closed-loop control of said system based on feedback of said sensor signal when sensor signal changes are again detected indicating an operative state of said oxygen sensor; and
thereafter returning the magnitude of said reference signal gradually to a normal level appropriate for an operative oxygen sensor whereby said reference signal is maintained at a value which is bracketed by said sensor signal, to effect said closed-loop control based on feedback of said sensor signals.

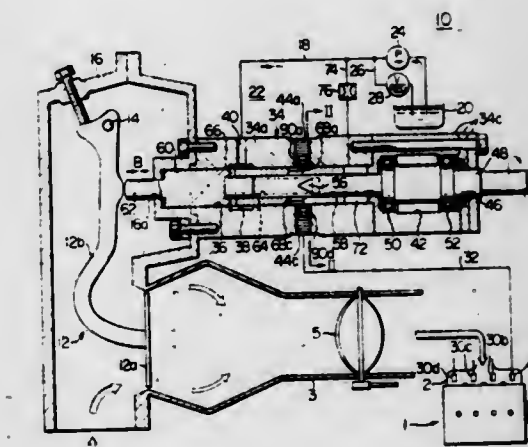
4,244,341

FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, Okazaki, and Taro Tanaka, Chiryu, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan
Filed Apr. 4, 1978, Ser. No. 893,533
Claims priority, application Japan, Apr. 7, 1977, 52-40126
Int. Cl.³ F02M 41/06 5 Claims

1. A fuel injection system for an internal combustion engine having at least one cylinder, said system comprising:
 - a sensor for detecting the rate of engine intake air flow;

a fuel source operative to supply a fuel under a predetermined pressure;
a fuel metering device including a housing provided with a fuel inlet port connected to said fuel source and at least one fuel outlet port; and
at least one fuel injector adapted to be mounted on the engine;
said fuel metering device further including a rotor mounted in said housing for rotation in timed relationship with the engine rotation and a control member mounted in said housing in telescopic relationship to said rotor and operatively associated with said intake air flow sensor so that said control member is axially moved relative to said rotor when the rate of engine intake air flow is varied;
one of said rotor and control member which is disposed inside the other defining a fuel passage always in communication with said fuel inlet port in said housing;
said rotor being provided with at least one orifice;
said control member being provided with at least one orifice;
the rotation of said rotor relative to said control member moving the orifice in said rotor into overlapping and communicating relationship to the orifice in said control member;
the arrangement being such that the angle of rotation of said rotor over which the communication between said ori-



fices lasts is varied in accordance with the variation in the rate of engine intake air flow to thereby meter a fuel charge to be fed into the engine;
said fuel outlet port in said housing being communicated with said fuel passage when said orifices are overlapped and communicated with each other to allow the fuel to flow from said fuel passage through said orifices and said fuel outlet port;
a fuel delivery circuit means for delivering the thus metered fuel charge to said fuel injector;
said fuel delivery circuit means including said fuel outlet port in said fuel metering device housing; and
an orifice member disposed in said fuel delivery circuit means to provide therein a fixed restriction orifice having a fuel flow cross-sectional area smaller than the area over which said orifices are overlapped and communicated with each other, whereby the amount of each fuel charge to the engine is solely dependent upon the duration of the communication between said orifices in said rotor and said control member, wherein the orifice in said rotor and the orifices in said control member are all triangular and arranged such that an apex of the orifice in said rotor and an apex of each of the orifices in said control member are overlapped with each other when the orifice in said rotor is moved by the rotation of said rotor relative to said control member.

4,244,342

FUEL INJECTION SYSTEM

Ivor Fenne, Greenford, England, assignor to Lucas Industries Limited, Birmingham, England

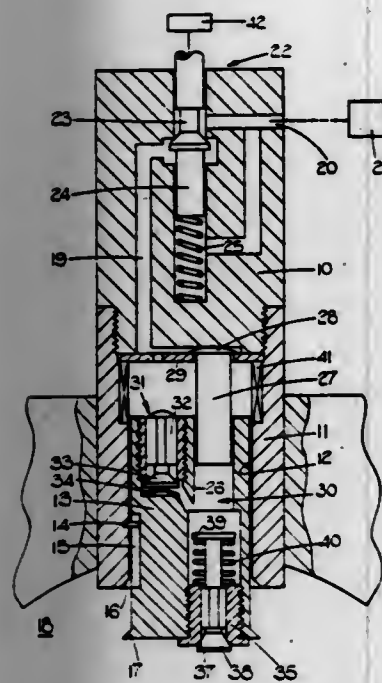
Filed Nov. 8, 1978, Ser. No. 958,542

Claims priority, application United Kingdom, Dec. 9, 1977, 51266/77

Int. Cl.³ F02M 49/02, 51/00

U.S. Cl. 123—501

15 Claims



1. A fuel injection system for supplying fuel to a combustion space of an internal combustion engine and including a piston slidable within a cylinder, the piston in use being subjected to the pressure of air within the engine cylinder during the compression stroke to effect movement of the piston for the purpose of generating a fuel pressure which is sufficiently high to open the valve member of a fuel injection nozzle and through which fuel is supplied to the combustion space, a further cylinder, a plunger slidable within said further cylinder, said further cylinder and said plunger defining a pumping chamber communicating with said nozzle and from which fuel flows when the piston is moved by the air pressure within the combustion space, valve means operable to admit fuel under pressure to the closed end of said first mentioned cylinder from a source of fuel under pressure, and a non-return valve through which the closed end of the first mentioned cylinder is in communication with said pumping chamber, said non-return valve being carried by said piston and includes a valve member which is biased into contact with a seating by resilient means and during delivery of fuel to the associated engine by the predominant fuel pressure in said further cylinder, said valve member towards the end of the inward stroke of said piston being lifted from said seating to cause a reduction in the pressure in said further cylinder thereby to allow rapid closure of the fuel injection nozzle, the arrangement being such that during movement of the piston to effect a reduction in the volume of the pumping chamber, said non-return valve is closed so that the fuel displaced from the pumping chamber flows to said nozzle, and when fuel is supplied to said cylinder to effect displacement of the piston to increase the size of the pumping chamber, fuel can flow to the pumping chamber by way of said non-return valve.

4,244,343

THERMOSTATIC VALVE FOR COMPENSATING AIR FUEL MIXTURE FOR AIR TEMPERATURE CHANGE

Akihide Yamaguchi, Kariya; Hajime Akado, Anjo, and Mitsuyoshi Teramura, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

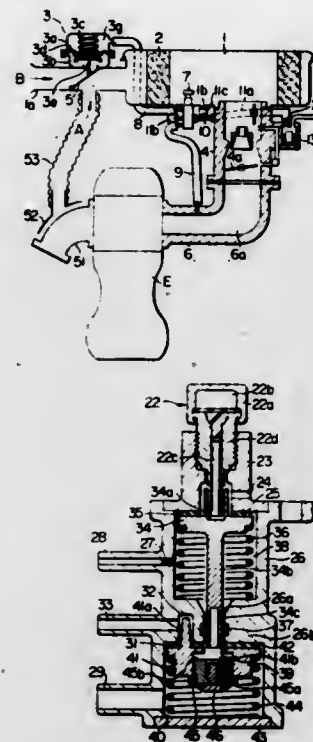
Filed Feb. 16, 1979, Ser. No. 12,702

Claims priority, application Japan, Feb. 20, 1978, 53/20471

Int. Cl.³ F02M 3 1/00

U.S. Cl. 123—556

6 Claims



1. In an internal combustion engine having: a carburetor supplying an air fuel mixture to said engine through an intake pipe, said carburetor having a float chamber for storing fuel and a throttle valve for adjusting amount of air flow, and an air cleaner connected at the upstream side of said carburetor and supplying the air to said carburetor through a filter element, said air cleaner having an intake air passage to introduce the air from atmosphere, and a temperature responsive system comprising:

a change-over valve pivotally mounted in said intake air passage adjacent to an aperture formed in said intake air passage for closing and opening the same, a vacuum motor mounted on said intake air passage and having a vacuum chamber and a movable diaphragm responding the vacuum applied to said chamber, said diaphragm being connected to said change-over valve so that said change-over valve is actuated to close and open said aperture in response to the movement of said diaphragm, a conduit connected to said aperture at one end and opening to a portion of an exhaust pipe so as to introduce warmed air around said exhaust pipe into said air cleaner when said aperture is opened, and a thermostatic valve mounted in said air cleaner for changing over a plurality of passages in response to temperature of intake air;

said thermostatic valve comprising:

a temperature detector having a thermally expandable member adapted to expand and shrink in response to the temperature of said intake air and an operation shaft adapted to be actuated by said thermally expandable member;

a housing to which said temperature detector is attached, said housing having a first port communicating with the atmosphere, a second port communicating with said vacuum motor, a third port communicating with the float chamber of said carburetor and a fourth port communicating with said intake passage, and having a first passage intercommunicating said first and second ports, a second passage intercommunicating said second and

fourth ports, and a third passage intercommunicating with third and fourth ports;

a first valve element disposed in said housing and adapted to be operated by said operation shaft of said temperature detector, said first valve element being movably disposed to be opened and closed said first passage;

a first spring means disposed in said housing and urging said first valve element in a closing direction;

a second valve element disposed in said housing and adapted to be operated by said first valve element, said second valve element being movably disposed to be opened and closed said third passage;

a second spring means disposed in said housing and urging said second valve element in a closing direction;

a check valve disposed in said second passage, said check valve opening said second passage when a vacuum introduced from said fourth port is higher than the vacuum introduced from said second port and permitting transmission of the vacuum from said fourth port to said second port,

whereby, when the temperature of said intake air is low, said first and second valve elements are moved to the closing positions so as to close said first and third passages, while, when the temperature of said intake air is raised, said first valve element is moved to the opening position to open said first passage so that air from atmosphere or other air source is supplied to said fourth port through said first port, whereas, when the temperature of said intake air is further increased, said second valve element is moved by said first valve element to the opening position to open said third passage and to allow the air from the atmosphere or other air source to flow said fourth port via said first port.

terminal of said ignition control means for furnishing a limit signal when the current through said primary winding exceeds a predetermined current, and auxiliary control means (28) having a control electrode connected to said limit signal furnishing means and an output circuit connected to said control electrode of said ignition control means for decreasing current flowing through said primary winding in response to said limit signal, a protective circuit for said ignition and auxiliary control means, said protective circuit comprising

clamping circuit means (16-26) connected between said output circuit and said control electrode of said ignition control means and having at least one threshold element (22-24) adapted to switch from a blocked to a conductive state when the voltage across said primary winding exceeds a predetermined voltage for furnishing a control signal allowing a selected current flow through said primary winding in response to a voltage across said primary winding exceeding said predetermined voltage, said clamping circuit means further comprising voltage divider means (16 18) having a first and second end terminal respectively connected to said first and second output terminal of said ignition control means and a voltage divider tap (20) connected to said at least one threshold element; and

means (50, 52) for blocking current flowing through said threshold element when said threshold element is in said conductive state from said output circuit of said auxiliary control means.

4,244,344

ARCHERY BOW WITH FORCE BALANCING TORSION ELEMENT

Miroslav A. Simo, Riverside, and Josef Tosovsky, Berwyn, both of Ill., assignors to New Archery Products Corp., Riverside, Ill.

Filed Sep. 22, 1978, Ser. No. 944,744

Int. Cl.³ F41B 5/00

U.S. Cl. 124—24 R

24 Claims



1. In an archery bow of the type comprising a rigid central handle portion with a first outwardly extending resilient opposing limb at one end and a second outwardly extending resilient opposing limb at the opposite end and having a bowstring attached to the outboard region of each limb, the improvement comprising: an elongated torsion means extending between said limbs; a first cam following means at one end of said torsion means and a second cam following means at a second opposite end of said torsion means, said first cam following means in force transmitting contact against a first cam surface in fixed and force transmitting relation to said first outwardly extending limb and said second cam following

IGNITION SYSTEM WITH OVERVOLTAGE AND EXCESS CURRENT PROTECTION

Peter Werner, Wernsheim/Iptingen; Werner Jundt, Ludwigsburg; Herman Roozenbeek, Schwieberdingen, and Bernd Bodig, Leinfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

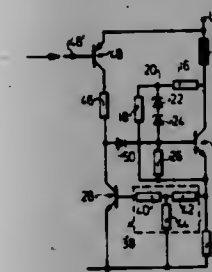
Filed May 17, 1979, Ser. No. 40,070

Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823788

Int. Cl.³ F02P 1/00; H05B 41/36

U.S. Cl. 123—650

8 Claims



1. In an ignition system having a source of DC voltage (U_B), an ignition coil having a primary winding (10) connected to said source of DC voltage, ignition control means (12) having an output circuit having a first output terminal connected to said primary winding, a second output terminal, and a control electrode for controlling current flow through said primary winding in accordance with a control signal applied to said control electrode, means (14) connected to said second output

means in force transmitting contact against a second cam surface in fixed and force transmitting relation to said second limb, whereby a force applied by said first cam surface is transmitted through said first cam following means in contact therewith to said torsion means and through said torsion means to said second cam following means at the opposite end thereof to said second cam surface thereby synchronizing force and movement of said first and second opposing limbs.

4,244,346

STRESS RELIEVING BRACKET FOR MOUNTING A PULLEY ON THE END OF A COMPOUND BOW

Alex J. Barna, 1216 Crawford St., Duquesne, Pa. 15110

Filed Feb. 23, 1979, Ser. No. 14,533

Int. Cl.³ F41B 5/00

U.S. Cl. 124—24 R

7 Claims



1. A compound bow comprising, a pair of limbs, each of said limbs having a first end portion and a second end portion, handle means connecting said first end portions of said pair of limbs, bracket means connected to said second end portion of at least one of said pair of limbs for rotatably supporting a rotatable member on said second end portion, said bracket means having a limb engaging portion and a rotatable member supporting portion extending outwardly from said limb engaging portion, said limb engaging portion forming a removable pocket, said pocket including a pair of oppositely positioned plates arranged to receive only said limb second end portion in surrounding relation, said pair of plates engaging the back and belly of said limb second end portion to thereby securely mount said bracket means on said limb second end portion, said rotatable member supporting portion being adapted to rotatably support a rotatable member in spaced relation from said limb second end portion, said limb second end portion and said pair of plates of said limb engaging portion having aligned bores, said fastening means extending through said aligned bores, said fastening means including elongated members, each said elongated member having opposite end portions engaging only said pair of plates respectively to securely connect said pair of plates to said limb second end portion, and said fastening means being removed from engagement with said limb second end portion so that the stresses generated by said fastening means are not transmitted directly to said limb second end portion but are transmitted to said pair of plates.

4,244,347

PORTABLE DEVICE FOR SHAPING THE PERIPHERY OF SANDING WHEELS

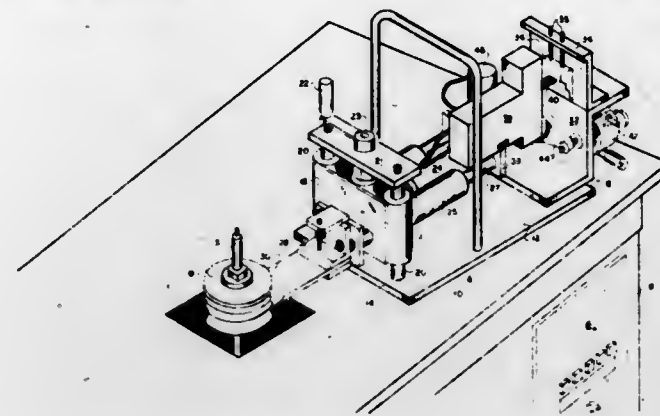
Alphonso K. Welch, High Point, N.C., assignor to Abrasives & Air Equipment Co., High Point, N.C.

Filed Jan. 29, 1979, Ser. No. 7,333

Int. Cl.³ B24B 53/08

U.S. Cl. 125—11 PH

1 Claim



1. A portable shaping device for forming the periphery of a sanding wheel into a shape corresponding to the profile of a piece of wooden molding while mounted on the spindle of a motor in its sanding position, said shaping device comprising:

- a platform of such size and shape that it is selectively and manually moved from one conventional spindle sander to the table of another spindle and situated in an operative position thereon;
- a housing means mounted on said platform and means for manual movement thereof in a path parallel to the axis of rotation of said sanding wheel;
- a hydraulic cylinder attached to and carried by said housing means for axially reciprocal movement therewith, the piston of said hydraulic cylinder attached to and carried by said housing means for axial reciprocal movement therewith, the piston of said hydraulic cylinder positioned for movement in a radial direction with respect to said sanding wheel when said platform is in an operative position;
- a shaping tool attached to the free end of the piston of said hydraulic cylinder for radial movement therewith;
- holding means fixed with respect to said platform for securing said piece of wooden molding;
- a follower arm carried by said housing means and spring biased into engagement with the contoured surface of said piece of wooden molding, said follower arm being axially movable with said housing means, said follower arm being slidably movable against the spring bias in a radial direction responsive to pressure against said follower arm during axial movement of said housing means, whereby said radial sliding movement follows the shape of said molding;
- a source of hydraulic fluid and pump means for providing a flow thereof from said source to said hydraulic cylinder, a valve means positioned exteriorly of said hydraulic cylinder and in the path of fluid flow to said hydraulic cylinder, said valve means including a rotatable housing with a plurality of valved ports and said valve means transforming the linear movement of said follower arm to a fluctuation in fluid flow to said hydraulic cylinder;
- said rotatable housing being mounted for rotation within said control housing with the axis of rotation extending perpendicularly to the linear horizontal path of movement of said follower arm, a yoke attached to said follower arm for horizontal reciprocal movement therewith, said yoke including a triangular frame with two adjacent sides pivotally attached to the third side and to each other at an apex, said third side forming the portion of said yoke which is attached to said follower arm, and said apex

being attached to said rotary valve at a point on the face thereof which is removed from the axis of rotation, whereby the flow of fluid to opposite ends of the hydraulic cylinder may be modulated and movement of said follower arm translated into rotary motion of said valve, and whereby said shaping member is caused to move radially of said sanding wheel responsive to axial movement of said housing means.

4,244,348

PROCESS FOR CLEAVING CRYSTALLINE MATERIALS

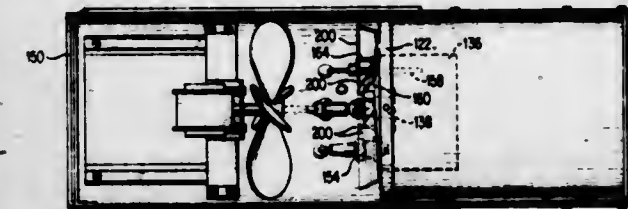
Donald F. Wilkes, Albuquerque, N. Mex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 10, 1979, Ser. No. 74,360

Int. Cl.³ B28D 1/32

U.S. Cl. 125—23 R

7 Claims



1. A process for cleaving a thin wafer from a boule of single crystal material comprising the steps of
a. creating an inward directed radial stress concentration 360° around said boule, which intersects its crystallographic plane of minimum bond strength, and
b. triggering said cleavage of said boule via a shock wave applied normal to said plane whereby said thin wafer is cleaved from said boule.

4,244,349

PORTABLE FORCED AIR HEATER

Wallace W. Velle, and Hector Macias, both of Upland, Calif., assignors to Schen Manufacturing Company, Upland, Calif.

Filed Dec. 22, 1978, Ser. No. 972,359

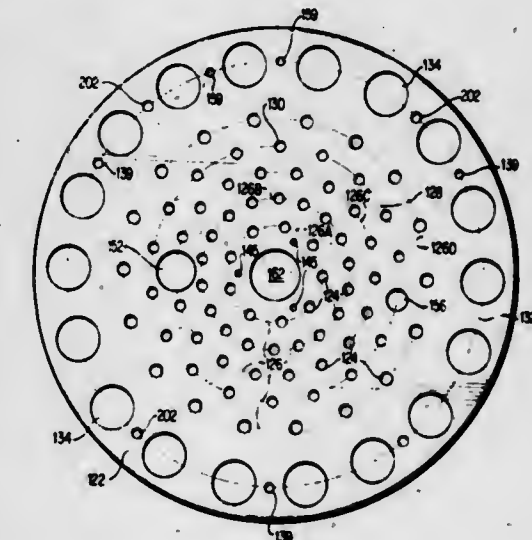
Int. Cl.³ F24H 3/02

U.S. Cl. 126—110 C

9 Claims

1. In a forced air heater having means for defining a shell, means positioned within the shell for defining a combustion chamber, means positioned upstream of the combustion chamber for blowing air through the combustion chamber, nozzle means for injecting a fuel to be burned into the combustion chamber, and means for igniting the injected fuel, the improvement comprising means positioned between the combustion chamber and the means for blowing air for defining a flame holder, said means for defining a flame holder forming an upstream end wall of the combustion chamber and comprising a plate member having a plurality of openings defined therein, a first group of said openings providing communication between the means for blowing and the combustion chamber and being arranged to stabilize and control combustion within the combustion chamber, the first group of said openings including a first plurality of openings having a relatively small size and positioned close to the center of said plate member and a second plurality of openings spaced at a greater distance from the center of said plate member, said first and said second plurality of openings being positioned in such manner that the percentage of total plate member area devoted to openings increases at a generally uniform rate as the distance from the

center of the plate member increases, said means for defining a flame holder including a side wall having openings formed therein for attaching said means for defining a flame holder to the means for defining a shell, and the means for defining a combustion chamber including first means connected to said shell for defining a first combustion chamber and second means connected to a portion of said plate member spaced from the outer periphery thereof for defining a second combustion



4,244,350

SOLAR ENERGY HEAT-STORAGE TANK

Talbot A. Chubb, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 26, 1979, Ser. No. 24,136

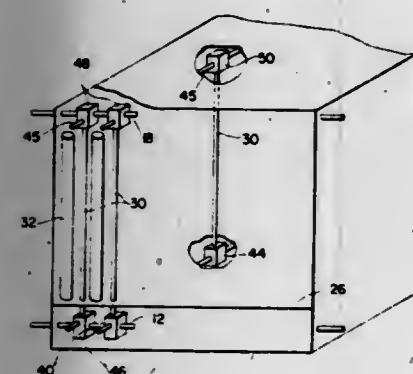
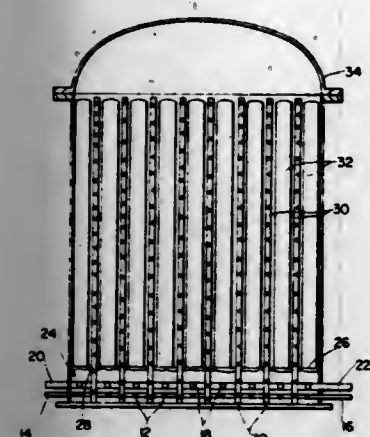
Int. Cl.³ F24H 7/00; F28D 13/00

U.S. Cl. 126—400

31 Claims

1. An energy storage assembly which comprises:
an enclosed housing means;
heat transfer means in the bottom of said housing means;
heat release means for heating said heat transfer means;
a plurality of vertically extending heat conductive means within said housing means with one end of said heat conductive means in heat transfer relationship with the heat transfer means, said heat conductive means extending along the height of said housing means;
heat storage means, positioned in spaced relation with said heat conductive means for radiative and convective heating by said heat conductive means, each said heat conductive means being surrounded by a plurality of heat storage means and even the closest of the latter being fairly closely spaced from their associated heat conductive means so

that the radiative heating from the heat transfer means is made more effective; and



steam pipe means in heat transfer relationship with said heat transfer means whereby heat from said heat transfer means is transferred to said steam pipe means.

4,244,351

SOLAR COLLECTION SYSTEM

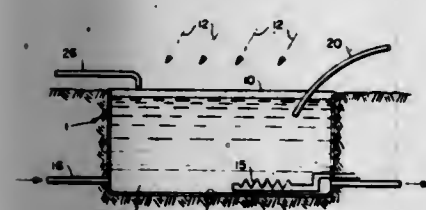
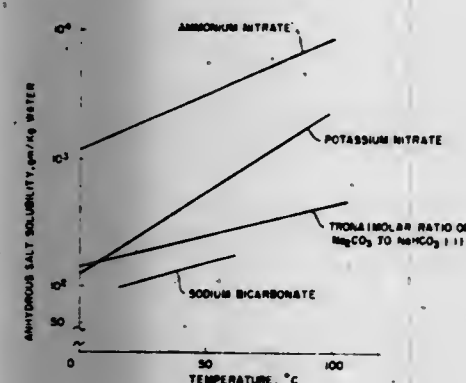
Sidney Loeb, Omer, Israel, and Gurmukh D. Mehta, Warrenton, Va., assignors to InterTechnology/Solar Corporation, Warrenton, Va.

Filed Nov. 6, 1978, Ser. No. 958,037

Int. Cl.³ F24J 3/02; C22B 26/10

U.S. Cl. 126-415

6 Claims



1. A solar energy collection solution comprising a vertically varying concentration of a solute in a liquid column of a brine solution, said solute consisting essentially of a mixture of sodium carbonate and sodium bicarbonate dissolved in water as solvent; in operation, said solution being substantially a saturated solution, the solute concentration and density of said

solution being greatest at a lower, hotter level of the solution and decreasing continuously toward an upper, cooler level the said molar ratio of sodium carbonate to sodium bicarbonate being in the order of three to two, in which a transparent cover material means is used as a barrier material over the solution for the purpose of impeding carbon dioxide transfer across the solution surface.

4,244,352

CONTROL SYSTEM FOR SOLAR HEATER

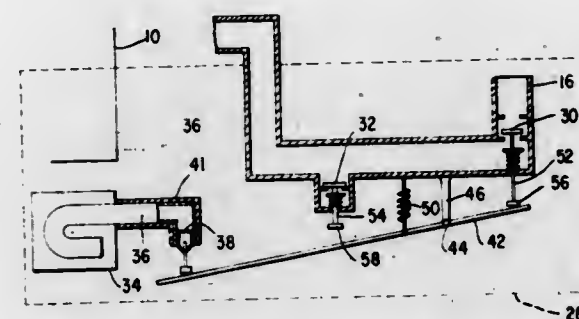
Howard L. Foster, 6908 Park Dr., Chattanooga, Tenn. 37421

Filed May 11, 1979, Ser. No. 38,302

Int. Cl.³ F24J 3/02

U.S. Cl. 126-422

9 Claims



1. A solar energy activated mechanical control system for a solar water heater comprising, first solar collector means for holding water to be heated, a water storage tank, input means including a conduit communicating said storage tank and collector means for supplying water at a first temperature level to said collector means, inlet valve means between said input means and said collector means, output means communicating water at a second and higher temperature level from said collector means to said storage tank, drain valve means communicating with the water in said collector means for draining said collector means when open, second solar collector means, a thermostat including a temperature responsive thermostatic element movable between a first position when at a first temperature level and a second position when at a second temperature level, a thermal heat conducting conduit fastened to said second solar collecting means and to said thermostat for transferring heat therebetween, pivotably mounted lever means forcibly acted upon by said thermostatic element for pivoting in a first direction when said element moves from said first position to said second position and for pivoting in a second direction when said element moves from said second position to said first position, and operator means movable by said lever means for acting on said inlet valve means and said drain valve means for closing said drain valve means and opening said inlet valve means when said lever means pivots in said first direction and for closing said inlet valve means and opening said drain valve means when said lever means pivots in said second direction.

4,244,353

SOLAR HEATING SHINGLE ROOF STRUCTURE

George T. Straza, 1071 Industrial Pl., El Cajon, Calif. 92020

Continuation-in-part of Ser. No. 694,959, Jun. 11, 1976. This

application Apr. 7, 1977, Ser. No. 785,337

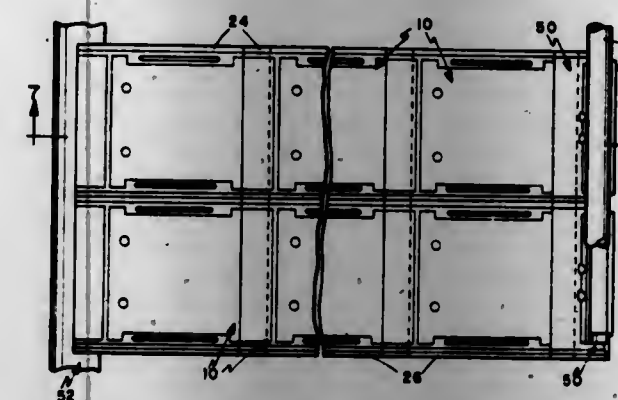
Int. Cl.³ F24J 3/02

U.S. Cl. 126-432

24 Claims

1. A solar heating shingle roof structure, comprising: a plurality of parallel rows of longitudinally interconnected and laterally overlapping fluid conducting shingles having means for attachment to a roof structure, each shingle comprising a hollow body of substantially rectangular, thin, flat configuration, having an upper sheet defining an upper surface, a lower sheet defining a lower surface, laterally spaced side walls defining side surfaces, an upper transverse edge and a lower transverse edge, said

upper and lower sheets and said side walls being spaced apart and defining a fluid flow passage therebetween, each shingle having at least one fluid inlet defined by socket means adjacent the upper edge having substantially the same width as said fluid flow passage and at least one fluid



outlet defined by plug means adjacent the lower edge thereof communicating with said flow passage, and said plug and socket means interconnecting the inlets and outlets of longitudinally adjacent overlapping shingles.

4,244,354

SOLAR PANEL

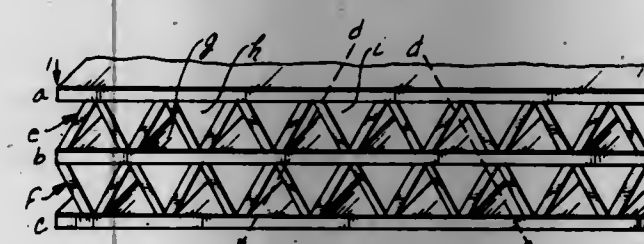
Douglas J. Williams, P.O. Box 55083, Valencia, Calif. 91355

Filed Jan. 10, 1979, Ser. No. 2,256

Int. Cl.³ F24J 3/02

U.S. Cl. 126-448

26 Claims



1. A solar heating and cooling apparatus comprising three essentially planar structures and two convoluted structures, each of said convoluted structures located between and in direct contact with a pair of planar structures in an alternating sequence forming thereby a plurality of fluid passageways and alternating insulation channels therebetween, each convoluted structure being continuous between a respective pair of planar structures, and a fluid flow control apparatus for controlling flow of fluid through the fluid passageways.

4,244,355

MODULAR STRUCTURALLY INTEGRATED SOLAR PANEL

Jack Stout, 1209 Kouba Dr., Yukon, Okla. 73099

Filed Jun. 5, 1978, Ser. No. 912,413

Int. Cl.³ F24J 3/02

U.S. Cl. 126-450

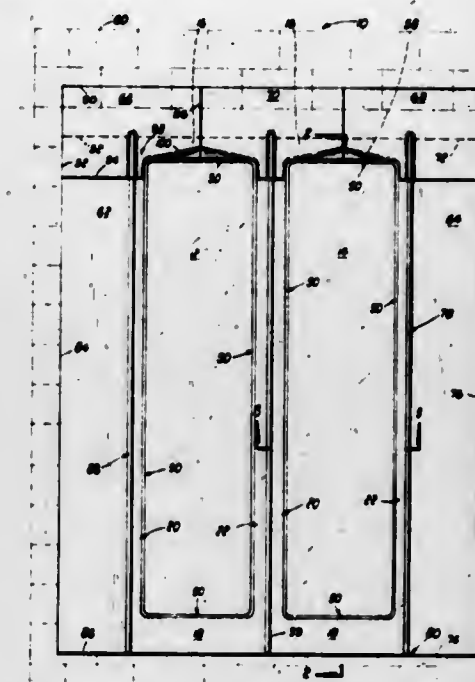
2 Claims

1. A solar panel system for the mounting of solar panel modules between conventionally spaced and sloped roof rafters, and for integration of said modules with a conventional roof shingle system for leakproof mounting of said modules, comprising:

first and second solar panel modules, each of said modules having a collector housing with a substantially vertical ridge extending around the periphery thereof, and each module having integral side gutter portions and integral upper and lower flashing portions;

a first complementary side flashing having an inverted seal-

ing channel for engagement with an outer wall of one of said side gutters of said first solar panel module; a second complementary side flashing having an inverted sealing channel for engagement with an outer wall of one of said side gutters of said second solar panel module; a separate inverted sealing channel for engagement with an outer side wall of adjacent gutter portions of each of said solar panel modules;



a first upper outer complementary flashing, for sealing engagement with said first complementary side flashing and said integral upper flashing of said first module; a second upper outer complementary flashing, for sealing engagement with said second complementary side flashing and said integral upper flashing of said second module; and a central upper complementary flashing for sealing engagement with said integral upper flashings of said first and second modules.

4,244,356

SOLAR COLLECTOR

Walter H. Barrett, Woonsocket, R.I., assignor to Columbia Chase Corporation, Braintree, Mass.

Continuation of Ser. No. 761,450, Jan. 21, 1977, Pat. No.

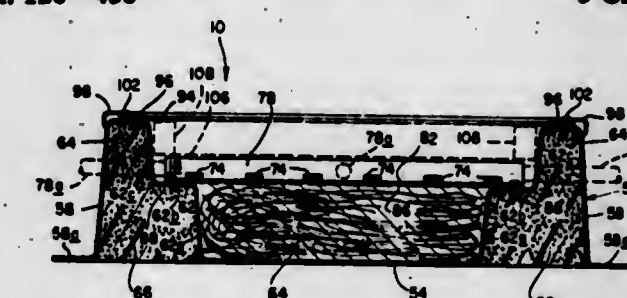
4,120,288. This application Jun. 16, 1978, Ser. No. 916,130

The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.

Int. Cl.³ F24J 3/02

U.S. Cl. 126-450

5 Claims



1. A solar collector comprising A. a monolithic frame formed of a resin material and back assembly, said assembly having (1) a back wall; (2) an upstanding side wall extending around the periphery of the back wall, said side wall being composed of a pair of spaced-apart inner and outer wall sections, said inner wall section contiguous with said backwall and a

- bridging web connecting the inner and outer section so as to form a channel all around the collector;
- B. an absorber plate;
- C. means for positioning the absorber plate in the assembly so that the absorber plate is spaced from, and substantially parallel to, the assembly back wall;
- D. a light transmitting outer anti-convection cover substantially coextensive with the frame assembly having a coefficient of expansion about that of said resin material;
- E. means for securing the anti-convection cover to said bridging web, said panel further including a mass of insulation material filling the channel between the side wall sections;
- F. a mass of insulating material occupying the space between the absorber plate and the assembly back wall

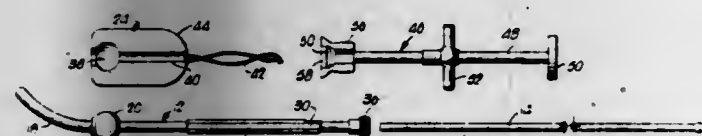
4,244,357

METHOD AND APPARATUS FOR HOMOGENEOUSLY IRRADIATING THE VAGINAL MUCOSA WITH A LINEAR SOURCE UTEROVAGINAL APPLICATOR
Richard A. Morrison, 9021 Delmar, Shawnee Mission, Kans. 66207

Filed Jan. 5, 1979, Ser. No. 1,160
Int. Cl.³ A61N 5/10

U.S. Cl. 128—1.2

14 Claims



1. A therapeutic instrument for irradiative treatment of the genital tract by subjecting the same to radiant energy, said instrument comprising:
- an elongated, tubular, uterovaginal tandem terminating at the normally innermost end thereof in a tubular, intrauterine applicator,
- said tandem having an inlet at its normally outermost end adapting the tandem and its intrauterine applicator for afterloading with a linear source of radioactive energy having isodose curves in the form of concentric circles surrounding the same; and
- an enlarged, cylindrical, intravaginal applicator having an axial, tandem-receiving bore therethrough
- said intravaginal applicator completely surrounding and being coaxial with the tandem adjacent its intrauterine applicator,
- said intravaginal applicator having a pair of opposed, mating, initially separate, half-cylinder bivalves in abutting relationship along and longitudinally of the tandem, rendering said bivalves separately insertable into said vagina vault through said vaginal introitus and into place on the tandem after insertion of the tandem into said tract until its intrauterine applicator is disposed within the uterine cavity.

4,244,358

ROLLOVER BED HAVING PALLET WITH FLEX POINTS AND CONSTANT TRACTION MAINTAINING APPARATUS

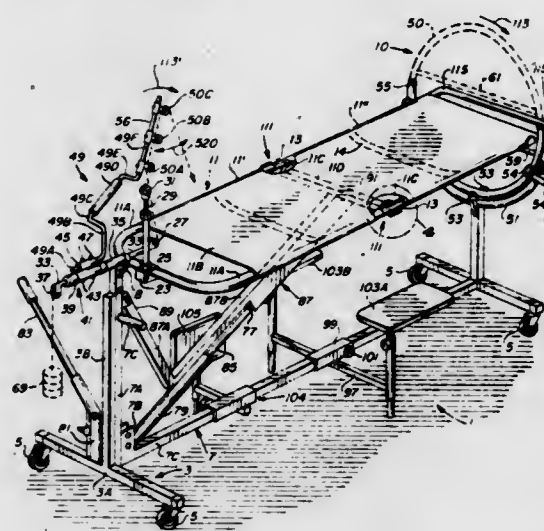
Noel Pyers, 4242 E. Ware Rd., Tucson, Ariz. 85711
Filed Sep. 10, 1979, Ser. No. 74,131
Int. Cl.³ A61F 5/00

U.S. Cl. 128—74

14 Claims

1. An apparatus for supporting a patient and maintaining constant traction on the patient, said apparatus comprising in combination:
- (a) an undercarriage having first and second ends;
- (b) first and second end members attached to the first and second ends of said undercarriage;
- (c) first pallet means for supporting a patient; said first pallet

- means having first and second ends thereof and also including first and second sections, said first and second sections being hingeably connected;
- (d) first hinge means for hingeably connecting said first and second sections;
- (e) first pallet support means connected to said first end member for supporting the first end of said first pallet means;
- (f) second pallet support means connected to said second end member for supporting the second end of said first pallet means;
- (g) first adjustable support means for adjustably supporting and controlling the height of the hinged portions of said first pallet means;
- (h) traction means for maintaining constant tension at a constant angle on a portion of the patient's body, said traction means including



- i. a traction cord being first end and also having a second end for connection to a part of the patient's body,
- ii. means connected to the second end of said traction cord for maintaining a constant tension in said traction cord,
- iii. cord support means rigidly connected to said first end support means, said cord support means maintaining a portion of said traction cord in fixed relationship to said second section of said first pallet means during pivoting of said first and second sections of said first pallet means about said first hinged means,
- whereby the body of the patient can be flexed by raising and lowering the hinged portion of said flexed first patient support means by means of said first adjustable support means without significantly altering either the traction tension or angle of application thereof to the patient.

4,244,359

ORTHOPEDIC SANDAL

Alfred Dieterich, Westtorgraben 3, 8500 Nurnberg, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,715

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842815

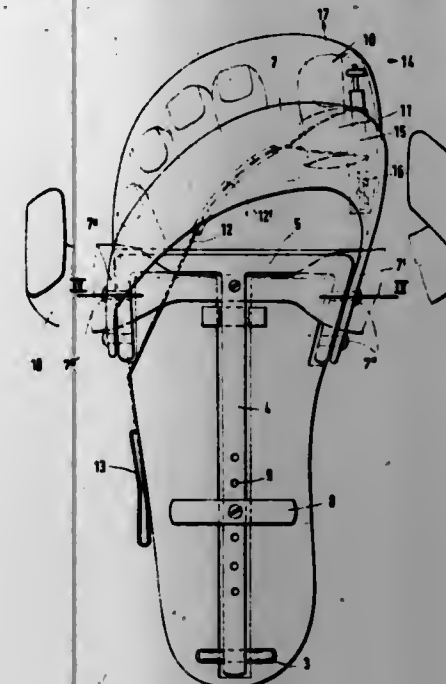
Int. Cl.³ A61F 5/00

U.S. Cl. 128—81 R

22 Claims

1. An orthopedic sandal for a foot comprising a sole having a rearward portion and a frontal portion, a lever arrangement

connected to said sole for correcting the toes, the lever arrangement being located at least in the rearward portion of the



sole and activated by means of a pressure on of the rearward portion of the sole.

4,244,360

ORTHOPEDIC FIXATION PIN HOLDER

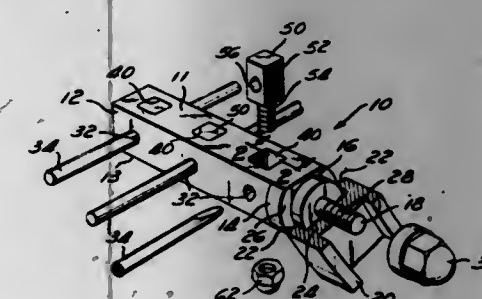
Charles L. Dohogoe, San Pedro, Calif., assignor to Ace Orthopedic Manufacturing, Inc., Hawthorne, Calif.

Filed Oct. 22, 1979, Ser. No. 87,218

Int. Cl.³ A61F 5/04

U.S. Cl. 128—92 A

1 Claim



1. In a pin holder for use on an orthopedic external fixation device comprising a body member adapted to be mounted to said external fixation device, a first aperture extending through said body member sized to receive a pin therein, a second aperture extending through said body member aligned with and oriented perpendicular to said first aperture, including an enlarged aperture portion initiating at one end of said second aperture and terminating at a distance spaced from the opposite end of said second aperture, and a locking member slidably positioned within said enlarged aperture portion including a pin receiving aperture oriented parallel to said first aperture, said locking member including means for reciprocating said locking member within said enlarged aperture portion to cause said pin receiving aperture and said first aperture to tightly contact opposite sides of a pin inserted through said apertures, said improvement comprising:

a V-shaped recess formed on opposing wall portions of said pin receiving aperture and said first aperture, said recesses tangentially contacting said pin at discrete locations along the diameter of said pin to apply a shear force to said pin to positively clamp said pin in said pin holder.

4,244,361

PORTABLE ELECTRICAL INHALATOR

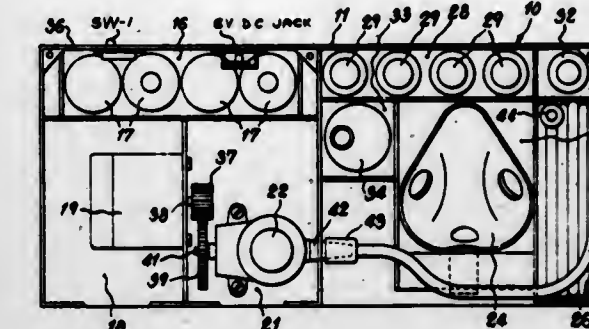
Herbert O. Neubert, 231 Mabel Pl., Franklin Lakes, N.J. 07417

Filed Apr. 13, 1979, Ser. No. 29,803

Int. Cl.³ A61M 16/00

U.S. Cl. 128—200.14

6 Claims



1. A portable oral inhalator for supplying medicament to the respiratory system of a human body comprising, in combination, a carrying case, a plurality of compartments in said carrying case for segregated component parts in individual compartments thereof including a motor, a compressor, means interconnecting said motor and said compressor, a nebulizer, plastic tubing for interconnecting said compressor and one side of said nebulizer, a face mask connectable to the other side of said nebulizer, and medicine for placement in said nebulizer, whereby air produced by said compressor and fed into said medically treated nebulizer supplies medicated air through said face mask and upon a patient's face, means including a plurality of electrical power sources, electrical control means connectable to said power sources for supplying energy to said motor said plurality of electric power sources include dry cell batteries having a voltage of 6 volts disposed in a first one of said compartments, a first cord having an input plug at one end, an output plug at the other end thereof and an A.C. adapter charger intermediate the plugs in which the input plug is adaptable for insertion into a 110 volt A.C. socket and the output plug is adaptable for insertion into a 6 volt D.C. jack; and a second cord having an input plug at one end, an output plug at the other end thereof, and a 12 volt D.C.-6 volt D.C. converter intermediate the plugs in which the input plug is adaptable for insertion into a 12 volt D.C. socket and the output plug is adaptable for insertion into a 6 volt D.C. jack, and wherein said motor is disposed in a second one of said compartments, said compressor is in a third compartment, gear means in said third compartment for interconnecting said compressor and motor, said nebulizer is in a fourth compartment, plastic tubing is in a fifth compartment having one end connectable to said compressor and its other end connectable to said nebulizer, and said face mask is in a sixth compartment being connectable to said nebulizer.

4,244,362

ENDOTRACHEAL TUBE CONTROL DEVICE

Charles C. Anderson, 2827 W. Meadowwood Dr., Chesapeake, Va. 23321

Filed Nov. 29, 1978, Ser. No. 964,503

Int. Cl.³ A61M 25/00, 16/00

U.S. Cl. 128—200.26

7 Claims

1. An endotracheal intubation assembly comprising a flexible intubating guide stylet;
- first magnetic means attached to one end of said stylet and movable therewith;
- an open ended flexible endotracheal tube having a lumen of a dimension substantially greater than the cross-sectional dimension of said stylet and said first magnetic means whereby said tube is freely movable over said stylet and said magnetic means, thereby permitting free flow of breathable gas along said lumen; and
- second magnetic means externally placeable over the tracheal orifice of a patient;
- whereby said one end of said stylet is inserted into the throat

of said patient, with said first magnetic means being directed onto the trachea by said second magnetic means



which is placed adjacent the external surface of said tracheal orifice area, and said endotracheal tube is threaded over said stylet and guided into the trachea by said stylet.

4,244,363

DISPOSABLE ANESTHESIA CIRCUIT

Robert W. Moore, Jr., Houston, Tex., and Stanley C. Weirich, 618 Diamondhead Blvd., Houston, Tex. 77532, assignors to Stanley C. Weirich, Crosby, Tex.

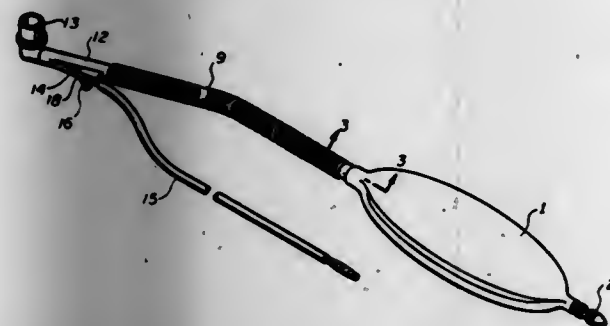
Continuation of Ser. No. 965,081, Nov. 30, 1978, abandoned, and a continuation of Ser. No. 949,767, Oct. 10, 1978, abandoned.

This application May 14, 1979, Ser. No. 38,441

Int. Cl.³ A61M 16/00

U.S. Cl. 128—205.17

1 Claim



1. In a disposable anesthesia circuit, a flexible breathing bag, a rigid tube having one end connected to said bag in flow relation therewith and a gas-air mixture inlet housing having a passageway extending into said tube, a hose mounted on said inlet housing communicating with said passageway and adapted to be connected to a source of supply of gas-air mixture and adapter means connected to the other end of said tube for connection to a patient an adjustable exhaust valve mounted in said bag, said valve having a male and a female component, each component having an enlarged knurled portion for rotation of said components relative to each other, said male component having a longitudinal slot, and said female portion having a transverse elongated slot, the exposed slot area of the male member increasing as the female member is rotated in one direction on said male member and decreased when said female member is rotated in the other direction and said female component having an escape passageway in the extended end thereof.

4,244,364

COMBINATION INTRA-VEINOUS FLOW-METER AND LOW LEVEL FLUID MECHANISM

Harold Grushkin, 25 Atlantic Ave., Nantux, N.Y. 10954

Filed Feb. 23, 1979, Ser. No. 14,639

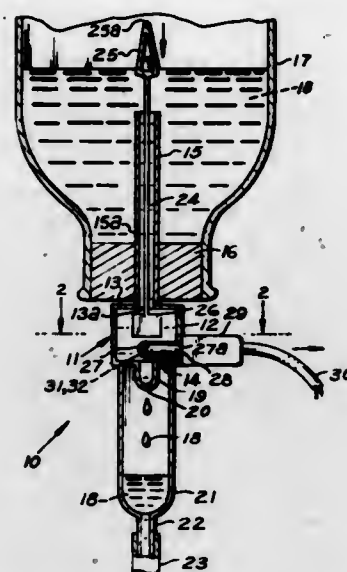
Int. Cl.³ A61M 5/14

U.S. Cl. 128—214 E

4 Claims

1. A combination intra-venous flow-meter and low level fluid mechanism, comprising, a hollow square housing of suit-

able material, a stylus tube fixedly secured at one end, over a central opening included in the top wall of said hollow square housing, and the opposite end of said stylus tube is removably received in the stopper of a bottle of intra-venous fluid, a stem freely and elevatably received in said stylus tube, a float fixedly secured at one end, to one end of said stem, for floatation on



the intra-venous fluid level in its bottle, and a plate integral with the opposite end of said stem within said hollow square housing, in which the fluid travels, the bore of the stylus tube being the passageway means for fluid travel into said hollow square housing, and the end of said float is pointed, for easy insertion into the stopper of the bottle of intra-venous fluid.

4,244,365

DEVICE FOR USE IN DETECTING OCCLUSION IN AN INFUSION SYSTEM

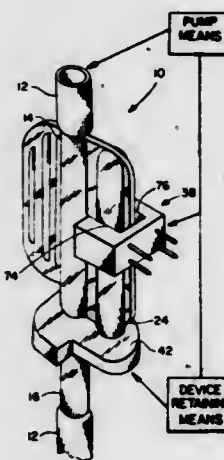
Lee E. McGill, Orinda, and Susan J. Watkins, Berkeley, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Mar. 26, 1979, Ser. No. 23,927

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214 E

5 Claims



1. In an infusion set for administering parenteral solutions, the set having flexible tubing with means for connecting to a supply of parenteral solution at one end and to an infusion needle at the other end, an intermediate portion of the tubing to which pumping means can be associated for driving the solution through the set, the set having an overpressure device connected to the tubing at a point between the pumping means and the infusion needle, the improvement in the overpressure device which comprises a tubular member with an upper portion and a lower portion having an inlet at its upper portion and an outlet at its lower portion with the inlet and the outlet being connected with the tubing at the point between the pumping means and the infusion needle, the over-pressure device including a pressure chamber generally vertically in-

clined, closed at its upper end and joined at its lower end to an intermediate position on the tubular member by a transverse bridging portion which contains an interconnecting passage whose bore is substantially smaller than bores of either the pressure chamber or the tubular member, whereby in an overpressure condition a portion of the solution will be forced through the interconnecting passage and rise into the pressure chamber to a point where transmitted light from an optical sensor positioned at the pressure chamber is deflected by the meniscus of the solution, interrupting the light being sensed by a receiver of the optical sensor and communicating the interruption to the pumping means to cause inactivation of the pumping means.

4,244,366

SYRINGE STROKE CONTROLLING MECHANISM

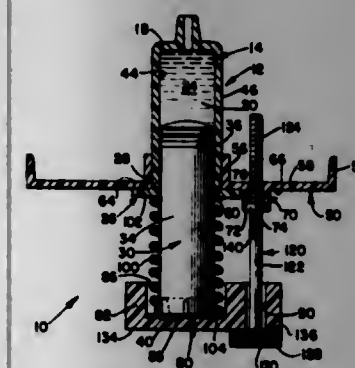
Kenneth Raines, Bethlehem, Pa., assignor to Barron Medical, Inc., Bethlehem, Pa.

Filed Oct. 30, 1979, Ser. No. 89,365

Int. Cl.³ A61M 5/00

U.S. Cl. 128—218 PA

12 Claims



1. A stroke controlling mechanism for use on a reusable syringe having a forward end and a rearward end, said stroke controlling mechanism comprising:

- a molded gripping member having a syringe barrel bore defined therein for snugly receiving a syringe barrel portion, said gripping member having a flange surrounding said bore for contacting the syringe barrel to hold such syringe securely in position with respect to said gripping member, said gripping member being in abutting contact with finger grip means of a syringe so that said syringe finger grip means prevents said gripping means from moving rearwardly off the syringe barrel;
- a molded cap member having a plunger head bore defined therein for receiving a syringe plunger head;
- a compression spring surrounding a syringe plunger and located between said cap member and said gripping member, said compression spring being positioned and sized to urge the syringe plunger outwardly of a syringe barrel;
- a gripping member metering rod bore defined in said gripping member adjacent said syringe barrel bore;
- a cap member metering rod bore defined in said cap member adjacent said plunger head bore to be in axial alignment with said gripping member metering rod bore;
- threaded means on said gripping member metering rod bore;
- a metering rod received in said axially aligned metering rod bores, said metering rod having an adjusting knob on one end thereof and threads on the other end thereof, said metering rod threads cooperating with said threaded means and said adjusting knob abutting said cap member to couple said cap member to said gripping member in a manner which resists the urging of said spring against the plunger, said metering rod being threadably received in said threaded means and freely slidably received in said cap member metering rod bore for adjusting the maximum distance permitted between said plunger head and said barrel for adjusting dosage size associated with a syringe.

4,244,367

PROTECTIVE PANTY BRIEF

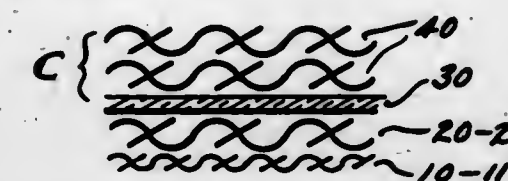
Janet T. Rollenhagen, 3878 Galois Ct., Simi Valley, Calif. 93063

Filed Feb. 2, 1979, Ser. No. 9,283

Int. Cl.³ A61F 13/16

U.S. Cl. 128—288

4 Claims



1. A protective undergarment in the form of a panty to be worn by those persons who suffer from incontinence and do not have complete bladder control and the like, and comprised of coextensively stretchable body panels of single knit material to prevent clinging with outer garments and with a crotch area covering the urinary canal and attendant genitals, a full lining of stretchable liquid absorbent double knit material over the stretchable body panels, and a protective shield including an impermeate membrane impervious to said liquid urine and made of stretch resistant material coextensive of said crotch area over which an absorbent pad is removably lodged with its extremities extended contiguously between the stretchable lining over the body panels and wearers body, whereby said absorbent pad is positioned by the crotch area and held secure by constriction of the stretchable lining and body panels frictionally engaged therewith.

4,244,368

INCONTINENT GARMENT

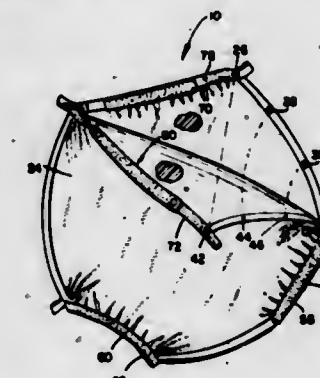
Peter W. Caradonna, Holliston, Mass., assignor to Gilman Brothers Inc., Boston, Mass.

Filed Mar. 5, 1979, Ser. No. 17,840

Int. Cl.³ A41B 13/02

U.S. Cl. 128—287

3 Claims



1. An incontinent garment for removably mounting disposable liners and alternately and selectively mounting reusable liners by means of female snap fasteners secured to said reusable liners, said garment comprising a panty body having a waist portion, a first pair of spaced male snap fasteners mounted at the front of said waist portion and a second pair of spaced male snap fasteners mounted at the rear of said waist portion, said snap fasteners being positioned to receive the female snap fasteners of said reusable liners for removably mounting the latter within the body, said male snap fasteners having protrusions facing inwardly of said panty body, and neutralizing means removably attached to said male snap fasteners to cover over the protrusions thereof when a disposable liner is mounted in said garment in the absence of a reusable liner therein, said neutralizing means comprising a pair of flexible straps each having a pair of spaced female snap fasteners mounted thereon and positioned to attach to and cover over the respective first and second pairs of male snap

fasteners on said waist portion, and having a smooth outer surface facing the interior of said garment, said disposable liners including adhesive means for attachment thereof to said garment, said disposable liners in attached position leaving said male snap fasteners exposed with their protrusions facing the body of the wearer, said flexible straps being attachable to said exposed male snap fasteners to cover over the latter when a disposable liner is attached to said garment.

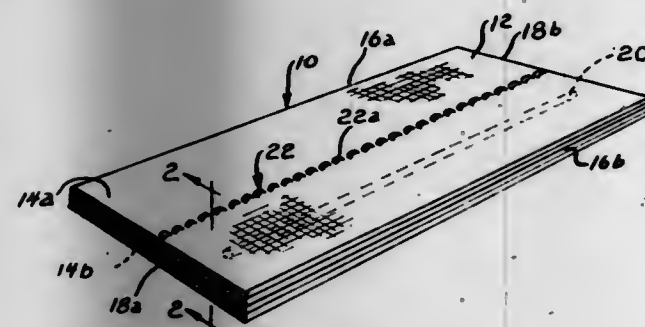
4,244,369

SURGICAL SPONGE WITH VISUALLY DETECTABLE ELEMENT

James D. McAvinn, Chicago, and Herbert G. Canty, Ingleside, both of Ill., assignors to The Kendall Company, Boston, Mass. Continuation-in-part of Ser. No. 760,056, Jan. 17, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,074 Int. Cl.³ A61F 13/00

U.S. Cl. 128—296

22 Claims



1. A surgical sponge, comprising:
a sheet of an absorbent material comprising a multiple ply absorbent gauze; and
an elongated visually detectable element having a portion at least partially located on an outer surface of said sheet, said element being substantially non-radiopaque to X-rays and comprising an inner layer of a highly reflective material, and an outer layer at least substantially covering the inner layer, said outer layer comprising (a) transparent material means for defining a nonwetttable outer surface of the element, said outer surface having a contact angle greater than 90 degrees in the presence of blood whereby in the presence of blood, at least portions of said element are not occluded by blood and thus remain highly visible, said non-wetttable element having a color which contrasts with the color of blood to further significantly increase the visibility of the sponge in a patient's body when said sponge is saturated by body fluids, said outer portion extending a substantial distance along the outer surface of the sheet and being permanently affixed to the sheet throughout its length.

4,244,370

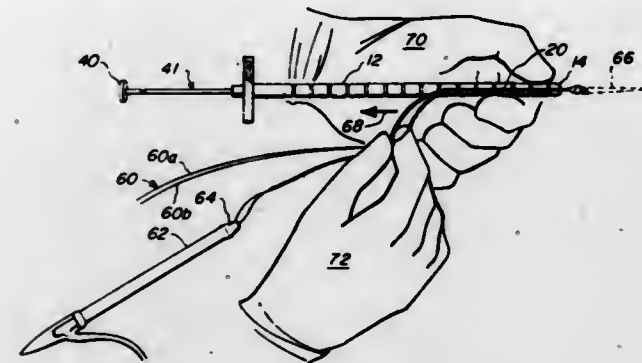
TOOL FOR POSITIONING IMPLANTABLE MEDICAL PROSTHETIC DEVICE AND METHOD OF USING SAME

William L. Furlow, Rochester, and Michael A. Mikulich, St. Paul, both of Minn., assignors to American Medical Systems, Inc., Minneapolis, Minn. Filed Nov. 20, 1978, Ser. No. 962,319 Int. Cl.³ A61B 17/00; A61F 5/00; A61B 17/34 U.S. Cl. 128—303 R

5 Claims

1. A tool for the body implantation of medical prosthetic devices comprising:
an elongated barrel capable of being inserted into an elongated bodily cavity and having a handle end and an opposite, forward end rounded for inserting into a bodily cavity;
a central bore extending over the entire length of said barrel along the longitudinal axis thereof, said bore being of a diameter slightly greater than the maximum outer dimension

sion of a suturing needle to be slidably inserted within said bore from said forward end of said barrel;
an obturator slidably mounted inside of said bore in a close fit therewith for smooth back and forth sliding movement longitudinally of said bore between a retracted position wherein said obturator is moved towards said handle end of said barrel to permit a suturing needle to be inserted within said bore from said forward end of said barrel and an extended position wherein said obturator is moved towards said forward, rounded end of said barrel to



project the needle with suture attached out of said bore from said forward end of said barrel; and
an elongated slot extending along said barrel generally parallel to the longitudinal axis thereof from said forward end rearwardly towards said handle end, said slot further extending transversely through said barrel and communicating with said bore, whereby suture materials attached to a needle may be placed in said slot and passed into said bore and thence pulled towards said handle end of said barrel to draw the needle into said bore from said forward end of said barrel.

4,244,371

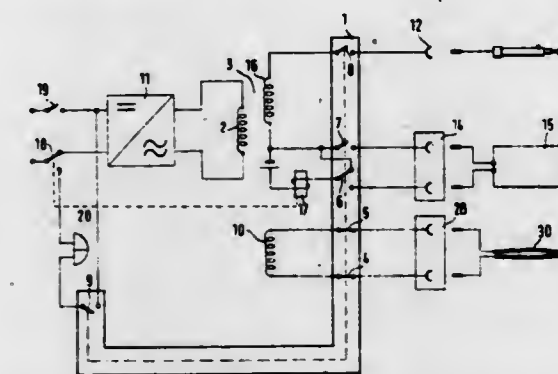
HIGH-FREQUENCY SURGICAL APPARATUS

Günter Farin, Tübingen-Hirshau, Fed. Rep. of Germany, assignor to Erbe Elektromedizin GmbH & Co. KG, Tübingen, Fed. Rep. of Germany Continuation-in-part of Ser. No. 841,983, Oct. 13, 1977, Pat. No. 4,171,700. This application Mar. 20, 1979, Ser. No. 22,376 Claims priority, application Fed. Rep. of Germany, Oct. 13, 1976, 2646229

Int. Cl.³ A61B 17/39

U.S. Cl. 128—303.14

4 Claims



1. High-frequency electrical surgical apparatus for use with manipulable electrodes through electrode-connections, respectively, for a neutral electrode, at least one electrode for monopolar operation, and at least two electrodes for bipolar operation, the apparatus having a high-frequency generator, an electric power source connected to the input circuit of said high-frequency generator for powering the same, and protective circuit means responsive to interruption of the electrically conducting connection between the neutral electrode and said electrode-connection at the apparatus provided for said neutral electrode, for interrupting the energy supply provided by said

high-frequency generator to said at least one monopolar operation electrode and for producing an alarm signal indicative of said first-mentioned interruption, having the improvement which consists in that:

the output of said high-frequency generator is connected to the primary winding of a transformer having first and second secondary windings which are electrically isolated from each other and are of different turns ratios with respect to said primary winding, said first secondary winding having the turns ratio for coupling said high-frequency generator to the higher load impedance;
multipole switch-over means are provided having a first position in which said first secondary winding is connected to said electrode-connection for said at least one electrode for monopolar operation and to said electrode-connection for said neutral electrode while said electrode-connections for said electrodes for bipolar operation are disconnected from said transformer, and a second position in which said second secondary winding is connected to said electrode-connections for said electrodes for bipolar operation, while said electrode-connections for said electrode for monopolar operation and for said neutral electrode are disconnected from said transformer, said electrode connections for said electrodes for bipolar operation being electrically isolated from any conductor connectable by said switch-over means to said first secondary winding; and
said multipole switch-over means includes means for disabling said protective circuit means when said multipole switch-over means is in its said second position.

4,244,372

SURGICAL INSTRUMENT FOR SUTURING ORGANS

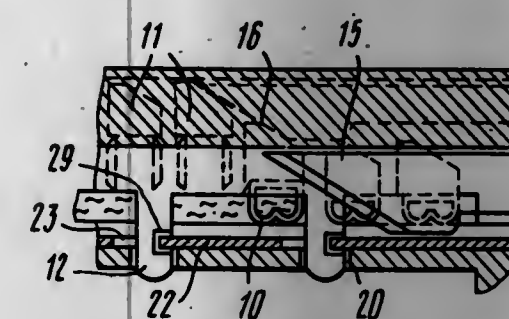
Nikolai N. Kapitlanov, ulitsa Levchenko, 3, kv. 9; Vladimir M. Fedotov, ulitsa Startovaya, 21, kv. 42; Natalya P. Petrova, 1 Novokuzninskaya ulitsa, 4, kv. 40; Marya D. Patsiora, ulitsa Sokolnichesky val, 40, kv. 106; Kim N. Tantsanidi, ulitsa Sokolnichesky val, 40, kv. 77, and Oleg B. Milonov, Leninsky prospekt, 93, korpus 4, kv. 4, all of Moscow, U.S.S.R. Filed Feb. 27, 1979, Ser. No. 15,654

Claims priority, application U.S.S.R., Mar. 31, 1978, 2595728

Int. Cl.³ A61B 17/04

U.S. Cl. 128—334 R

1 Claim



1. A surgical instrument for suturing organs, such as parenchymal organs, comprising:
a supporting part having a working end;
a staple-receiving part having a working end, said staple-receiving part being pivotally connected with said supporting part;
a first longitudinal jaw of generally rectangular cross-section carried by the working end of said supporting part;
a second longitudinal jaw carried by the working end of said staple-receiving part in opposition to said first longitudinal jaw;
staples having two legs, the whole being generally "U" shaped;
indentations in said first longitudinal jaw for bending over the legs of staples;
longitudinal staple magazines accommodated in said second longitudinal jaw, each of said magazines confining and

spacing a plurality of single staples along said second longitudinal jaw;
sliding members for driving said staples, transverse guide slots formed in said staple magazines in opposition to said indentations, to accommodate therein staples and said sliding members for driving said staples;
longitudinal slots in said staple magazines;
bars with wedge-shaped ends facing said members for driving said staples, and accommodated in said longitudinal slots for direct communication and cooperation with said staple-driving members, for driving out and bending over the legs of said staples;
a separate longitudinal slot located between said longitudinal slots in said staple-receiving part;
a knife blade movably accommodated in said longitudinal slot in said staple-receiving part for motion jointly with said bars;
a latch-type locking means for preventing substantial traumatism of layer-by-layer sutured organs and for ensuring rigid alignment of said jaws of the instrument in the course of a suturing operation; said means comprising:
rods attached to said second longitudinal jaw in two parallel longitudinal rows and projecting from the medial surface thereof;
transverse grooves in said rods near their medial ends;
a longitudinal guide slot in said first longitudinal jaw;
jaw openings spaced in said first longitudinal jaw for receiving a portion of said rods;
a locking strip slidably engaged in said longitudinal guide slot, said strip having apertures therein which are alignable with said jaw openings;
manual means for sliding said locking strip within said longitudinal guide slot so that when said rods have been received in said openings the rim of said apertures is slidably engagable in said transverse grooves, thus locking the jaws together.

4,244,373

ELECTRICAL STIMULATION DENTAL DEVICE

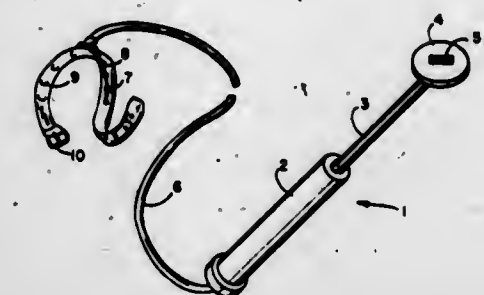
Marvin J. Nachman, 315 Saybrook Rd., Villanova, Pa. 19085

Filed May 17, 1978, Ser. No. 906,446

Int. Cl.³ A61N 1/04

U.S. Cl. 128—419 F

9 Claims

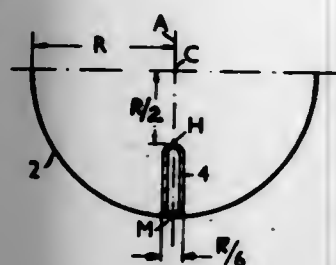


1. A dental device for electrically stimulating a periodontium region within the mouth of a patient comprising:
(a) power supply means for producing a direct electrical current in the approximate range of 6–20 microamperes;
(b) an electrode housing releasably securable to opposing transverse sides of an external surface of the gingivae lining within the mouth of said patient,
(c) first cathodic electrode means being electrically coupled to said power supply means and adapted to directly contact the gingivae lining within said mouth of said patient; and,
(d) second anodic electrode means being mounted on said electrode housing and electrically coupled to said power supply means, said second electrode means adapted to directly contact the inner wall of said mouth of said patient.

4,244,374

FOCUSSED SOLAR COLLECTOR
Daniel Man-El, 90 Frishman St., Tel Aviv, Israel
Filed May 22, 1978, Ser. No. 908,282
Int. Cl.³ F24J 3/02

U.S. Cl. 125-438



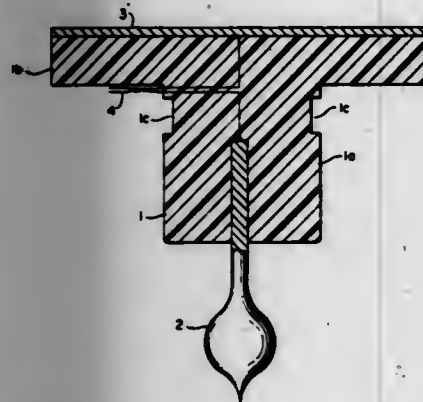
1. A focussed solar collector including a solar-radiation reflector and a solar-radiation absorber disposed to receive the solar-radiations directly and those reflected from the reflector, characterized in that said reflector is of a cylindrical configuration having a semi-circular cross-section and a constant radius of curvature, and that said absorber is of flattened cross-section having a height of no less than 0.1, but no more than 0.5 times the radius of curvature of the reflector and a width substantially less than its height, said absorber being disposed within the reflector with one end of the absorber at the mid-point of the reflector inner surface and with the height axis of the absorber aligned with the reflector radius from said mid-point.

4,244,375

TRANSCUTANEOUS ELECTRODE WITH FINGER OPERATIVE ATTACHMENT ASSEMBLY
Alfred O. Farrar, Cranbury; Howard M. Hochberg, East Windsor, and Flavie L. Jones, Lincroft, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 801,691, May 31, 1977, abandoned.
This application Feb. 7, 1979, Ser. No. 9,902
Int. Cl.³ A61B 5/04

U.S. Cl. 128-642

27 Claims



1. Self-holding electrode arrangement for direct transcutaneous derivation of biopotentials, such as the ECG of a fetus in fetal monitoring, comprising:

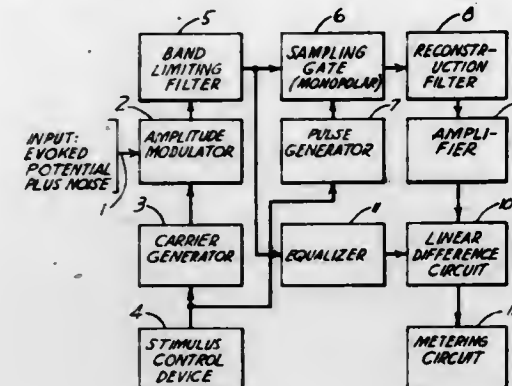
- a base of electrically insulating material;
- an active electrode element extending from said base, the extending portion thereof having along its length at least one tuberosity means for securely holding the electrode to the patient upon non-rotary insertion thereof;
- a reference electrode element mounted to said base and spaced from said active electrode element; and
- means for electrically connecting said active and reference electrode elements to a biopotential monitor.

4,244,376

MEASUREMENT OF EVOKED NERVOUS SYSTEM POTENTIALS
Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, Canada, and Sidney T. Fisher, 53 Morrison Ave., Mt. Royal, Montreal, Quebec H3R 1K3, Canada
Filed Feb. 8, 1980, Ser. No. 119,769
Int. Cl.³ A61B 5/04

U.S. Cl. 128-731

3 Claims



1. Measuring apparatus for an evoked nervous system potential, due to a periodic sensory stimulus, which delivers each component of said potential substantially unaltered in relative amplitude and timing, and substantially free from back-ground noise due to the general electrical activity of the nervous system, which comprises:

- pick-up electrodes or equal means for obtaining said evoked nervous system potential from the surface of the body containing said nervous system, and
- frequency shifting means which receives and is set to shift said evoked potential by an approximate frequency which is precisely controlled by the frequency and phase of a harmonic of said periodic sensory stimulus, which shifts said evoked potential to a selected frequency band which has a bandwidth less than the frequency of said periodic sensory stimulus, the lowest frequency in said selected frequency band having a frequency of zero-crossings greater than the minimum shaping or Nyquist frequency for said selected frequency band, and
- band-limiting filter means which receives the output of said frequency shifting means and has a pass-band approximately the same as said selected frequency band, and pulse generating means producing a first regularly-occurring sequence of pulses of the same polarity, controlled in frequency and timing by the frequency of said periodic sensory stimulus, which occur at instants of zero-crossings of said evoked potential at the input to said sampling means, at a frequency greater than the minimum sampling or Nyquist frequency of said selected frequency band, and

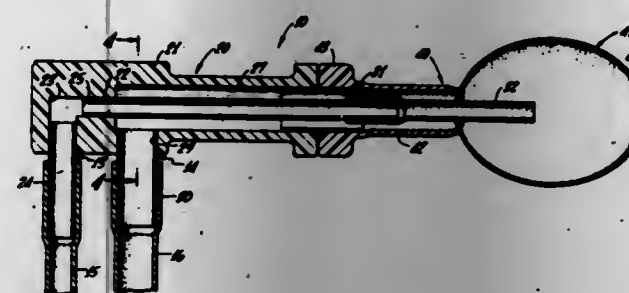
said sampling means which receives as input the output of said band-limiting filter means, and the output of said pulse generating means as gating pulses, and which produces samples with unchanged polarity for the first sequence of gating pulses, and filter reconstruction means with a pass-band substantially the same as said selected frequency band, which reconstructs the output of said sampling means in analog form as a replica of said background noise, and subtraction means which subtracts said replica of background noise at the output of said filter reconstruction means from the wave at the output of said band-limiting filter means so that the output from said subtraction means is said evoked potential substantially unaltered in relative phase and amplitude and substantially free from said background noise, and metering circuit means which receives the output of said subtraction means.

4,244,377

EAR PROBE FOR USE IN CLOSED-LOOP CALORIC IRRIGATION
Guenter A. Grams, 2443 Norse Ave., Costa Mesa, Calif. 92627
Continuation-in-part of Ser. No. 760,178, Jan. 17, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 952,690
Int. Cl.³ A61B 5/00, 10/00

U.S. Cl. 128-742

11 Claims



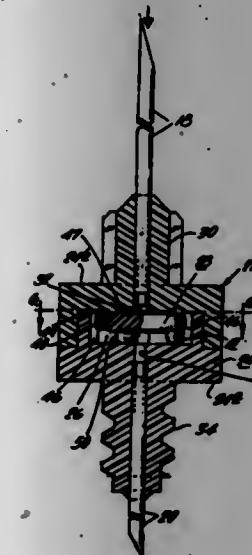
1. An ear canal balloon comprising:
a one-piece, elongate, cylindrical member formed from an elastic material and having open and closed ends and sections of different diameters and thicknesses, said member including:
a first section defining the closed end thereof, said first section having a relatively small diameter to permit insertion into an ear canal and a minimum thickness to permit inflation thereof into contact with the inner ear;
a second section intermediate the open and closed ends thereof, said second section having a relatively small diameter to permit insertion into said ear canal and a thickness which is greater than the thickness of said first section by an amount sufficient to prevent inflation thereof in use, said first and second sections being approximately equal in length; and
a third section defining the open end thereof, said third section having a relatively large outside diameter and a substantial thickness so as to contact the exterior ear and limit movement of said first and second sections of said balloon into said ear canal.

4,244,378

PRESSURE RESPONSIVE ONE-WAY VALVE FOR MEDICAL SYSTEMS
Dominic J. Brignola, Phoenixville, Pa., assignor to The West Company, Phoenixville, Pa.
Filed May 30, 1978, Ser. No. 910,760
Int. Cl.³ A61B 5/14

U.S. Cl. 128-766

3 Claims



1. A valve assembly comprising a housing having a valve chamber, an inlet at one axial end of said valve chamber, a rib depending from said one axial end face circumscribing said inlet and spaced radially outwardly therefrom, an outlet at the

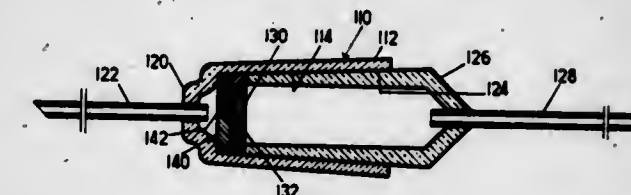
opposite axial end of said valve chamber, a disc-like valve element mounted in said chamber comprising a generally disc-like body portion having a top face and a bottom face, and a plurality of pedestals depending from the bottom face, the top face confronting said rib and the terminal ends of said legs abutting said opposite axial end wall of said valve chamber, said annular rib engaging the top face of said body portion in a circular plane extending through the center of said pedestals, the axial height of said valve element being slightly greater than the axial depth of said valve chamber between said rib and said opposite axial end wall and means defining a least one flow passage adjacent the periphery of said valve element, permitting flow from between said inlet and outlet at a predetermined pressure differential to displace said top face of the valve element away from said rib.

4,244,379

CHECK VALVE FOR BLOOD DRAWING APPARATUS
Gordon E. Smith, Sun Prairie, Wis., assignor to Quest Medical, Inc., Carrollton, Tex.
Filed Aug. 2, 1979, Ser. No. 63,033
Int. Cl.³ A61B 5/14

U.S. Cl. 128-766

5 Claims



1. A check valve for blood drawing apparatus comprising:
a body member having a cavity formed therein opening to the exterior of the body member at one end thereof;
a proximal needle extending into the cavity in the body member;
a plug received, in the opening of the cavity in the body member to close the cavity;
a distal needle also extending through the plug into the cavity in the body member;
a flexible valve member in the shape of a flat circular disk positioned in the cavity in the body member to the distal needle, the valve member having a slit formed therein so that the slit will be caused to open to allow fluid flow therethrough when the fluid pressure in the proximal needle is greater than the fluid pressure in the distal needle, the valve member being held in place by the plug; and
a backing disk formed of rigid material and having a hole formed therein, the backing disk being positioned against and behind the valve member.

4,244,380

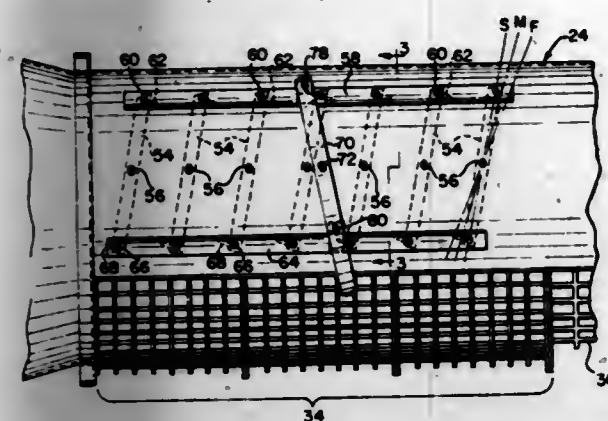
ADJUSTABLE TRANSPORT VANES FOR AXIAL FLOW COMBINE
Richard A. DePauw, East Moline; Neil C. Dunn, and James R. Lucas, both of Moline, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Mar. 20, 1979, Ser. No. 22,238
Int. Cl.³ A01F 7/06

U.S. Cl. 130-27 T

7 Claims

1. In an axial flow combine, the combination comprising:
a generally cylindrical rotor casing having an open end for reception of crop material to be threshed and separated;
a generally cylindrical rotor journaled for rotation within said casing and having a plurality of rasp bars secured thereon for threshing crop material;
a plurality of crop transport vanes disposed within said casing in radially spaced relation to the rasp bars on said rotor for coaxing with said bars upon rotation of said

rotor to direct the crop material generally helically along said casing;



and means for simultaneously adjusting the positions of said vanes relative to the casing to selectively vary the rate of movement of the crop material through said casing.

4,244,381

UPGRADED TOBACCO STEM MATERIAL AND ITS METHOD OF PREPARATION

Andrew T. Lendvay, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,333

Int. Cl.³ A24B 3/14

U.S. Cl. 131—17 A

23 Claims

1. A method of upgrading tobacco by-product material which comprises subjecting the by-product material to an uncatalyzed heat treatment step such that it experiences a weight loss of at least 10% but no more than 35% and a water extraction step such that water soluble constituents contained within the by-product material are removed therefrom wherein either of the said steps may be carried out prior to the other.

4,244,382

METHOD AND APPARATUS FOR DELIVERING PARTICLES OF TOBACCO TO SHREDDING MACHINES

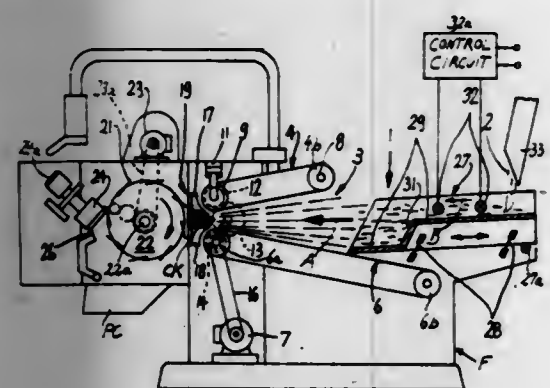
Willi Thiele, Geesthacht; Klaus-Georg Hackmack, Hamburg, and Reinhard Hohm, Pinneberg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 20,520, Mar. 14, 1979. This application Jul. 23, 1979, Ser. No. 60,239

Int. Cl.³ A24B 7/14; B65G 37/00; B65C 27/08

U.S. Cl. 131—21 B

21 Claims



6. In a machine for comminuting particles of tobacco, such as ribs of tobacco leaves, wherein a transporting unit advances a stream of tobacco particles lengthwise from a location which is remote from a cutting station to said cutting station, wherein said unit condenses the stream between said location and said station, and wherein successive increments of the condensed stream are shredded by at least one moving tool at said station, the improvement which comprises conveyor means defining at

least one elongated path which is at least substantially in line with said stream, said conveyor means having outlet means at said location and including a first portion which defines a first portion of said path and is nearer to said location and a second portion which defines a second portion of said path and is more distant from said location; means for feeding particles of tobacco to said conveyor means whereby such particles advance toward and enter said location to form said stream; and means for agitating the particles in said path, including means for imparting to the particles of tobacco in said first portion of said path a first recurrent movement having a predominantly vertical component and means for imparting to the particles of tobacco in said second portion of said path a second recurrent movement having a substantially horizontal component.

4,244,383

SMOKING DEVICE

Richard W. Kahler, Box 61, Rte. #1, Rock Cave, W. Va. 26234

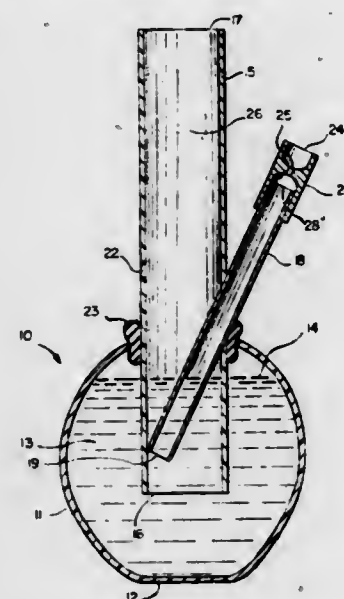
Continuation of Ser. No. 798,490, May 19, 1977, which is a continuation-in-part of Ser. No. 527,074, Nov. 25, 1974,

abandoned, which is a continuation of Ser. No. 357,186, May 4, 1973, Pat. No. 3,863,646. This application Jun. 22, 1979, Ser. No. 51,167

Int. Cl.³ A24F 1/02; 5/00

U.S. Cl. 131—180

3 Claims



1. In a smoking device comprising a reversible smoking bowl in combination with a stem, said reversible bowl comprising:

- first smoking compartment means, having a predetermined diameter and length, and defined within one end of said bowl, for receiving either a hollow stem of a smoking device in a co-axial manner with respect to a first rectilinear axis passing longitudinally through said stem and said first compartment, or a first charge of tobacco;
- second smoking compartment means being larger than said first smoking compartment means, and having a diameter equal to said predetermined diameter and defined within another end of said bowl, for also receiving either a hollow stem of a smoking device in a co-axial manner with respect to a second rectilinear axis passing longitudinally through said stem and said second compartment, or a second charge of tobacco which is larger than said first charge of tobacco, and being co-axial with said first smoking compartment means as a result of said first and second axes being coincident;
- means defining an orifice with said bowl for connecting said first and second smoking compartment means, said orifice means being unrestricted by the stem of said smoking device so as to thereby permit smoke and ash to freely pass from one of said compartment means having tobacco disposed therein to the other one of said compartment

means having a stem or a smoking device disposed therein, said bowl thereby being reversible as said first compartment means alternatively accommodates either said stem or the first charge of tobacco, while the second compartment means simultaneously alternatively accommodates the second charge of tobacco or said stem, each of said compartments being in co-axial alignment with each other through means of the coincidence of said first and second axes; and in co-axial alignment with that portion of the stem immediately adjacent to said reversible bowl through means of either said first or second axis.

4,244,384

MODULAR SHELTER SYSTEM

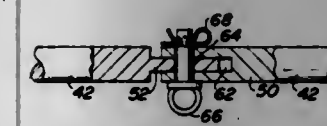
Garnet S. Bean, 12655 Limekiln Rd., Fulton, Md. 20759

Filed Mar. 7, 1979, Ser. No. 18,104

Int. Cl.³ A45F 1/16; E04B 1/12

U.S. Cl. 135—4 R

18 Claims



1. A modular shelter system comprising:

- at least a pair of base members adapted to be locationally mounted on a base surface, said base members being located on opposing sides of said shelter system;
- support means being releasably coupled to each of said base members for providing a substantially hemispherical support contour envelope, said support means being foldable;
- a covering member adapted to be mounted on said support means, said covering member being securable to said support means; and,
- base rod support means secured to said support means and extending laterally through a pair of aligned openings formed through a pair of opposing and laterally displaced base member sidewalls, said base rod support means including (1) at least a first rod support member extending in said lateral direction between an inner surface of each of said base member sidewalls, each of said first rod support members having a lateral through opening and a first rod support member external diameter, and (2) at least a second rod support member having an extended length greater than a lateral displacement of said base member sidewalls, each of said second rod support members being insertable through said sidewall aligned openings and each of said first rod support member through openings, each of said second rod support members having a second rod support member diameter.

4,244,385

FLUENT MATERIAL LEVEL CONTROL SYSTEM

William Hotine, P.O. Box 216, Albion, Calif. 95410

Filed Dec. 12, 1979, Ser. No. 102,736

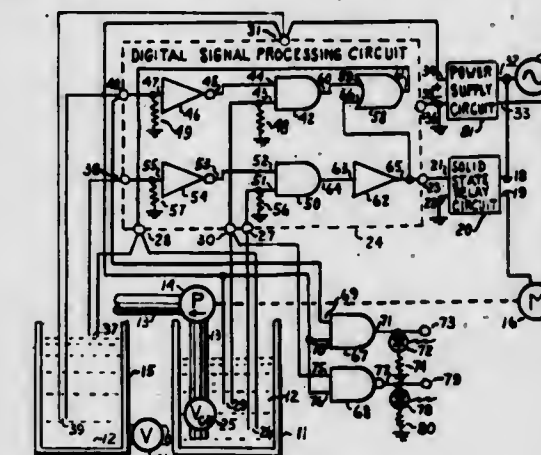
Int. Cl.³ F17D 3/00; F04B 49/06; G01F 23/00

U.S. Cl. 137—1

13 Claims

13. The method of controlling the level of fluent material during transfer of said material between two reservoirs and maintaining said level between desired high and low levels in each of said reservoirs, said method comprising: detecting increasing or decreasing levels of said material by

using upper and lower level sensors placed at said desired levels in each of said reservoirs, said sensors individually transmitting a digital voltage output signal upon immersion in said material and terminating said digital output signal upon emergence from said material; transmitting said digital voltage signals from said sensors to input circuits of a digital signal processing circuit being supplied with operational power from a connected power supply and having an output circuit; processing said digital signals in said processing circuit in a manner producing a digital output signal from said processing circuit when the increasing level of said material in said first reservoir immerses said upper sensor and when the decreasing level of said material in said second reservoir falls below said lower sensor, and terminating said digital output signal from said processing circuit when the increasing level of said material in said second reservoir



immerses said upper sensor and when the decreasing level of said material in said first reservoir falls below said lower sensor; transmitting said digital output signal from said processing circuit to the input circuit of a solid state relay having an input circuit and an output circuit, said relay output circuit being serially connected between a source of electrical power and power driven flow control means for regulating flow of said material being transferred between said reservoirs, said relay input circuit responding to said output signal from said digital processing unit and changing the normal operating state of said relay output circuit; operating said flow control means by said change of state of said relay output circuit; and controlling flow of said material in a manner to maintain level of said material within said desired levels in each of said reservoirs.

4,244,386

VALVE HAVING PYROTECHNIC SEPARATION DEVICE

Thomas K. C. Hardesty, Ednor, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

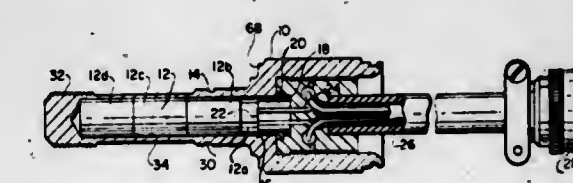
Division of Ser. No. 826,509, Aug. 22, 1977, Pat. No. 4,158,322.

This application Jan. 30, 1979, Ser. No. 7,852

Int. Cl.³ F16K 17/40

U.S. Cl. 137—68 A

13 Claims



1. A pyrotechnically actuated valve adapted to be fitted

within an enclosed wall means disposed in a fluid, said enclosed wall means having an opening therethrough, comprising:

- a valve housing sealingly disposed in said opening, said housing having a plurality of intake ports and means for discharge in communication therewith;
- a translatable closure member slidably disposed within said housing and normally arranged to close said intake ports; means defining a pressure cavity between said housing and said closure member;
- a combination gas generator and separation device disposed within said cavity, said device being fixed at one end to said housing and at its other end to said closure member thereby retaining said translatable closure member in a position closing said intake ports;
- a chamber defined within a fusible tubular portion of said separation device;
- a pyrotechnic mixture confined within said chamber capable of fusing said tubular portion and creating a high pressure motive fluid;
- means for initiating combustion of said mixture;
- whereupon valve actuation said mixture burns through said tubular portion allowing a rapid pressure increase to be experienced within said cavity thereby forcing said closure member to translate away from said housing thereby opening said intake ports.

4,244,387

ROTARY VALVE WITH TEMPERATURE RESPONSIVE SEAL MEANS

Christopher J. Snape, Halesowen, England, assignor to Charles Wain (Valves) Limited, London, England

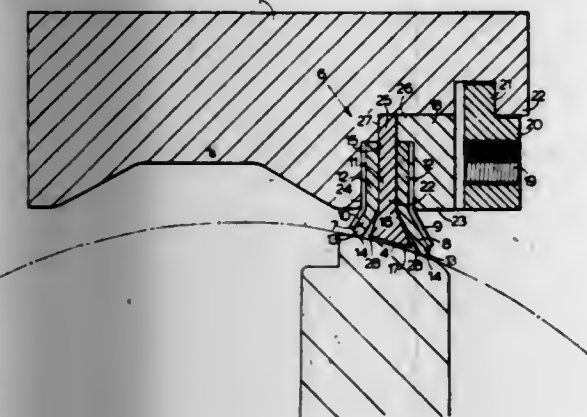
Filed Nov. 8, 1978, Ser. No. 958,660

Claims priority, application United Kingdom, Nov. 8, 1977, 46358/77

Int. Cl.³ F16K 1/226

U.S. Cl. 137-72

3 Claims



1. A rotary valve comprising a valve housing defining a passageway through which fluid is passed, a valve member pivotally mounted within the housing for movement between a closed position, in which it prevents the flow of fluid along the passageway, and an open position in which the flow of fluid is allowed, and an annular seal mounted on the valve housing to seal between a peripheral surface of the valve member and the wall of the passageway when the valve member is in its closed position, the seal comprising first and second annular sealing elements, arranged to seal against flow along the passageway in either direction, and a rigid support ring mounted between the two sealing elements, the support ring being clamped to the valve housing independently of the two sealing elements, so that in the event of loss of the sealing elements the support ring would remain clamped in position, and the valve member being movable, in the event of a fire which destroys the sealing elements, along the passageway in its closed position until its peripheral surface engages the support ring so that a seal is again formed to prevent the flow of fluid along the passageway.

4,244,388 COMBINATION VALVE

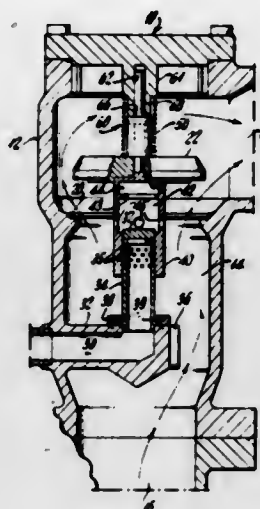
Roy L. Feiss, Southampton, Pa., assignor to Crane Co., New York, N.Y.

Continuation of Ser. No. 849,833, Nov. 9, 1977, abandoned. This application Jul. 9, 1979, Ser. No. 55,860

Int. Cl.³ G05D 11/03

U.S. Cl. 137-116

8 Claims



- A. a combination fluid by-pass and check valve comprising:
 - A. a valve body having an inlet, an outlet, and a passage therebetween;
 - B. a seat in said body circumferentially surrounding the passage, said seat adapted to receive a check disc;
 - C. a check disc positioned in the passage and cooperating with said seat, said disc having a first position displaced from said seat by fluid flowing from the inlet to the outlet, and a second position forming a closure means when fluid flows from the outlet to the inlet;
 - D. by-pass means extending into said body and passage, said by-pass means having a number of rows of circumferential perforations of a relatively small diameter disposed to permit fluid flowing through one perforation to impinge upon fluid flowing through another perforation to thereby reduce fluid noise and cavitation; and,
 - E. a sleeve extending from said check disc for movement therewith telescopically cooperating with said by-pass means, said sleeve having a single row of orifices having a diameter larger than the diameter of the perforations, and, a recess in the inner periphery of said sleeve aligned with the single row of orifices, said recess communicating with the number of rows of circumferential perforations in said by-pass means when said check disc is in said second position whereby fluid passes from the orifice through the recess and the number of rows of circumferential perforations into said by-pass means when said check disc is in said first position preventing flow through said by-pass means and allowing flow through said passage from the inlet to outlet.

4,244,389 FLOW CONTROL VALVE

Yoshiyuki Shimoura, Higashimatsuyama, and Asaji Kuroda, Kawagoe, both of Japan, assignors to Jidoshakiki Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,240

Claims priority, application Japan, Sep. 8, 1978, 53-110457; Jan. 22, 1979, 54-6385

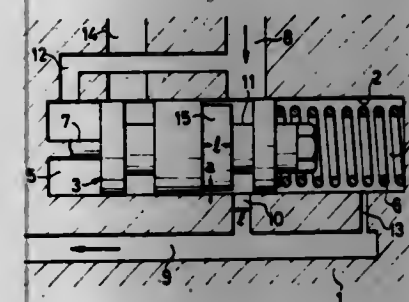
Int. Cl.³ G05D 11/03

U.S. Cl. 137-117

7 Claims

1. A flow control valve, comprising: a housing having an elongated hole therein, an inlet port extending laterally from said hole between the longitudinal ends thereof and adapted to be connected to a supply of pressure fluid, an outlet port ex-

tending laterally from said hole and adapted to be connected to a load device, said outlet port being located relative to said inlet port so that the pressure fluid can flow from said inlet port through said hole to said outlet port, said housing having a bypass port extending laterally from said hole and adapted to be connected to return pressure fluid to said supply, said bypass port being longitudinally offset from said inlet port and said outlet port, said housing having a first passage extending from said inlet port to one longitudinal end of said hole adjacent said bypass port and a second passage extending from said outlet port to the opposite longitudinal end of said hole; a spool valve slidably disposed in said hole for longitudinal movement therein, said spool valve having first, second and third valve



lands slidably and sealingly engaging the wall of said hole, said first valve land being disposed between said first passage and said bypass port and being movable across said bypass port to open or close same, said third valve land being disposed between said inlet and outlet ports and said opposite longitudinal end of said hole, said second valve land being disposed between said bypass port and said inlet and outlet ports, said second valve land including a portion of reduced diameter spaced from the wall of said hole and adapted to be moved in said hole between said inlet and outlet ports to form a predetermined clearance defining a variable flow passage in said hole and extending between said inlet port and said outlet port when said valve spool is moved toward said opposite longitudinal end of said hole.

4,244,390 HYDRAULIC CIRCUIT BREAKER

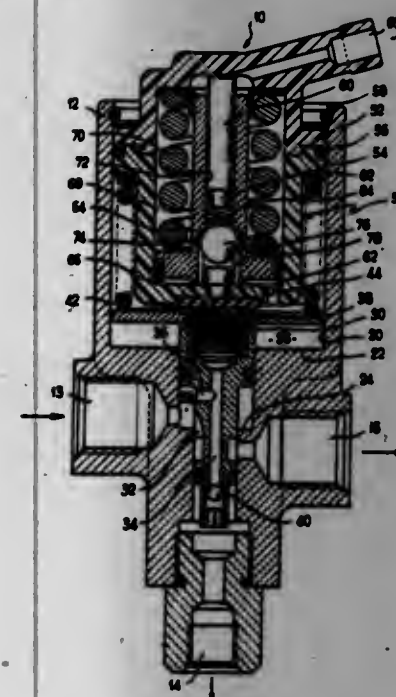
Gilbert Kervagoret, Arbentuil, France, assignor to Societe Anonyme DBA, Paris, France

Filed Jul. 11, 1979, Ser. No. 56,484

Int. Cl.³ G05D 11/03, 16/10

U.S. Cl. 137-118

5 Claims



1. A hydraulic circuit breaker comprising a housing having an inlet orifice for connecting to the outlet of a hydraulic

pump, a first outlet orifice for connecting to the pressure chamber of a hydraulic accumulator, and a second outlet orifice for connecting to an open-centre hydraulic circuit, a stepped bore formed in the housing receiving a differential piston which defines an inlet chamber therein in communication with the inlet orifice and a control chamber, a constriction orifice having a cross-section which varies in dependence on the position of the differential piston being disposed between the inlet chamber and the second outlet orifice, the inlet chamber communicating with the control chamber via a first passage comprising a first constriction and also communicating with the second outlet orifice via a connection comprising a check valve, the circuit breaker also comprising a resilient vessel having a variable-volume compartment connected to the control chamber, said vessel being adapted to connect the compartment with a second or leak passage forming a constriction when the pressure in the compartment reaches a first predetermined value, and the communication with the leak passage being interrupted when the pressure in the compartment falls below a second predetermined value, said resilient vessel comprising an interchangeable capsule placed coaxially in the large-diameter or control-chamber portion of the stepped bore, said capsule containing a second piston slidably mounted therein in sealing-tight manner and dividing its interior into a first or variable-volume compartment and a second compartment, said second piston being urged towards the end of said first compartment by resilient means disposed in said second compartment, an axial passage for connecting the two compartments being provided in said piston and opening into the first compartment to define a valve seat which co-operates with a valve element resiliently urged thereagainst, a push rod element stationary relative to the capsule being disposed in said axial passage of the second piston and adapted to raise said valve element from its seat so that fluid can flow in the leak passage when the second piston has moved a given distance corresponding to said first predetermined pressure in said first compartment, the leak passage then comprising the space defined between said push-rod element and said axial passage, and said second compartment being connected by a leak orifice to a low-pressure fluid tank.

4,244,391

PNEUMATIC PROGRAM REGISTER AND CORRESPONDING MODULE

Jacques Coudeyre, Tournon, and Claude Guidot, Saint-Perry, both of France, assignors to Crouzet, Paris, France

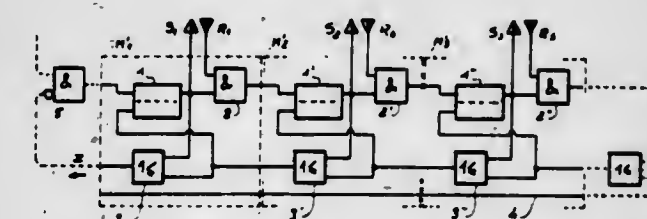
Filed Oct. 14, 1977, Ser. No. 842,098

Claims priority, application France, Oct. 20, 1976, 76 31684

Int. Cl.³ G05D 16/04

U.S. Cl. 137-119

4 Claims



1. A pneumatic program register comprising a plurality of sequential modules, each module comprising a pneumatic flip-flop having a trigger input, a reset part and an output, an AND cell with two inputs and an output and an OR cell with two inputs and an output, one input of said OR cell being connected with the output of said flip-flop of the same module, said output of said flip-flop being also connected with one of the inputs of said AND cell of the same module, the other input of said OR cell being connected, on the one hand, with the output of the OR cell of the following sequential module, so that the OR cells of all sequential modules are connected in series, and, on the other hand, with the reset port of said flip-flop of the same module, the trigger input of said flip-flop being

connected with the output of the AND cell of the preceding sequential module.

4,244,392

BACKFLOW PREVENTION APPARATUS

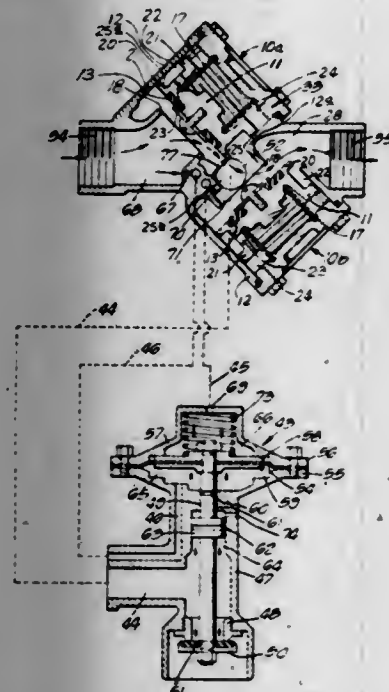
David E. Griswold, Corona Del Mar, and Richard E. Velt, Arcadia, both of Calif., assignors to Griswold Controls, Irvine, Calif.

Division of Ser. No. 410,173, Oct. 26, 1973, abandoned. This application Feb. 9, 1979, Ser. No. 10,934

Int. Cl.³ F16K 24/00, 15/02

U.S. Cl. 137-218

4 Claims



1. In combination, two duplicate check valve assemblies connected in series and defining a zone between them, an intake passage to the first check valve assembly, a discharge passage from the second check valve assembly, said passages having a common axis, each check valve assembly having a stationary barrel inclined to said axis, each check valve assembly having a stationary seat and a valve poppet movable along the barrel to close against the seat, each valve poppet moving a right angles with respect to the movement of the other valve poppet, means for discharging flow from the first check valve assembly directly against the valve poppet in the second check valve assembly, means cooperating with each barrel and valve poppet to define a chamber remote from its valve seat, a spring in each chamber acting to close its respective valve poppet against its seat, and cooperating means on each valve poppet and barrel to increase the flow rate downstream of each check valve assembly and thereby reduce the pressure in the zone and in the discharge passage, whereby forward flow through each check valve assembly causes a reduction in pressure in its spring chamber.

4,244,393

SHUT-OFF VALVE

Kari Lehtinen, Pikikatu 6, 04400 Järvenpää, Finland

Filed Jul. 31, 1978, Ser. No. 929,492

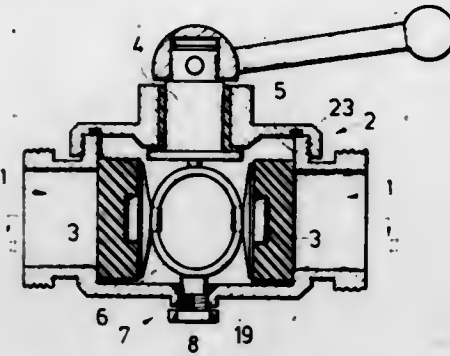
Int. Cl.³ F16K 13/02, 25/00

U.S. Cl. 137-240

6 Claims

1. A shut-off valve, comprising a valve body provided with at least two flow ports, two shutters and an operating shaft part of which employs a closed annulus, on the periphery of which said shutters are attached opposite each other for closing and opening said two flow ports simultaneously, the first flow port by means of the first shutter and similarly the second flow port by means of the other shutter, by turning the operating shaft; said ring member specifically being a spring which has been arranged to urge said shutters against the inner surface of said

valve body and which rests against the bottom of said valve body primarily in the axial direction of said operating shaft; said annulus being braced against said bottom of said valve body in axial direction only so that the part of said annulus resting against said bottom of said valve body is free to move with reference to said bottom in radial directions relative to said shaft, thus balancing the shutter pressures, and said bottom being substantially level, said spring and



said shutters being automatically balanced and being free of support from said bottom of said valve body in the direction of the normal of said operating shaft and in the radial direction of said operating shaft so that said annulus is free to move in all radial directions normal to said operating shaft; and said valve also being provided with an adjustable tensioning device for regulating the tension of said shutters against the inner surface of said valve body.

4,244,394

COLD WEATHER FAUCET INSULATION APPARATUS AND FASTENING MEANS THEREFOR

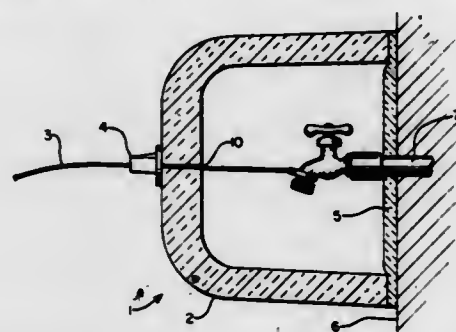
William Hartselle, III, 12269 Sherbrook Dr., Baton Rouge, La. 70815

Filed May 21, 1979, Ser. No. 40,962

Int. Cl.³ F16K 51/00

U.S. Cl. 137-375

10 Claims



6. In an apparatus for insulating outside faucets, said apparatus including an elliptically shaped insulating shell of rigid foamed plastic, open at one end and having a small slot in the wall opposite said open end, and a fastening means for attaching to said faucet, passing through said hole and releasably holding said shell in place, the improvement comprising said apparatus additionally including a flat, elliptically shaped flexible foamed plastic end seal having a central hole and a slit from said central hole to the outside edge of said seal so that said seal surrounds the pipe attached to said faucet, lies adjacent to the structure through which said pipe protrudes and covers the open end of said shell and a fastening means of the pawl and ratchet type having a two-piece construction comprising:

- (a) A retainer having
 - (i) an upper body of generally rectangular cross-section open on one long side and having the two short sides as side walls, the remaining long side being a back wall such that the walls define a channel,
 - (ii) a pawl located in the open side of said upper body having a tip at one end for engagement with a ratchet and a base portion at its other end, said pawl being flexibly attached

- to said side walls at a point spaced apart from its ends and at such an angle that depression of the base of said pawl allows clearance of said tip from said channel, and
- (iii) a flat base attached to said upper body and having a passage conforming to the shape of said channel; and
- (b) a relatively flat, thin strap of a rectangular cross-section separate from said retainer having
 - (iv) a loop at one end of said strap and a tip at the other end of said strap, and
 - (v) said ratchet formed by a series of transversely disposed, angular teeth along a portion of the length of said strap, whereby introduction of said strap into said channel displaces the tip of said pawl which allows passage of said strap, in one direction only and retains said strap until the base portion of said pawl is depressed toward said strap, releasing engagement of the tip of said pawl with said ratchet and allowing removal of said strap from said retainer, whereby in operative connection said seal is placed over the pipe extending from a structure, said strap is placed through the hole in said shell with sufficient remaining length that said loop can be conveniently placed over any protrusion of said faucet, said shell is fitted over said faucet in register with said end seal, said strap is passed through the retainer and tightened until the retainer is fitted against the shell, holding the shell in place by tension maintained with the pawl until subsequently released.

4,244,395

CHECK VALVE ASSEMBLY

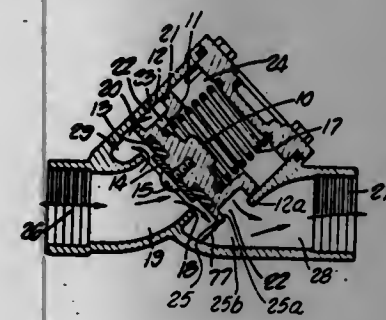
David E. Griswold, Corona Del Mar, and Richard E. Velt, Morro Bay, both of Calif., assignors to Griswold Controls, Irvine, Calif.

Continuation-in-part of Ser. No. 410,173, Oct. 26, 1973, abandoned. This application Feb. 9, 1979, Ser. No. 10,987

Int. Cl.³ F16K 15/02

U.S. Cl. 137-484.2

1 Claim



1. In a check valve, the combination of: a stationary body having an inlet passage and a coaxial discharge passage, said inlet passage terminating in a stationary inclined annular valve seat, said body having a stationary inclined barrel positioned coaxially of said valve seat and having an inclined wall provided with an internal cylindrical surface, a valve poppet having a seal element for sealing contact with said valve seat, a spring acting to move said valve poppet into sealing contact with said valve seat, said spring acting to create a pressure drop when said valve poppet is initially moved away from said seat by fluid pressure in the inlet passage, means including a pair of parallel flanges on the valve poppet cooperating with said cylindrical surface to define a spring chamber remote from said valve seat, a first of said flanges cooperating with a portion of said body to form a first restriction establishing a localized zone of relatively rapid flow and consequent reduced pressure, a portion of said wall projecting into the discharge passage to form a second restriction, a second flange cooperating with said cylindrical surface and inclined wall to isolate the spring chamber from said discharge passage, said valve poppet having a peripheral groove between said flanges communicating with said spring chamber and with said localized zone.

4,244,396

DIGITAL FLUID FLOW CONTROL SYSTEM

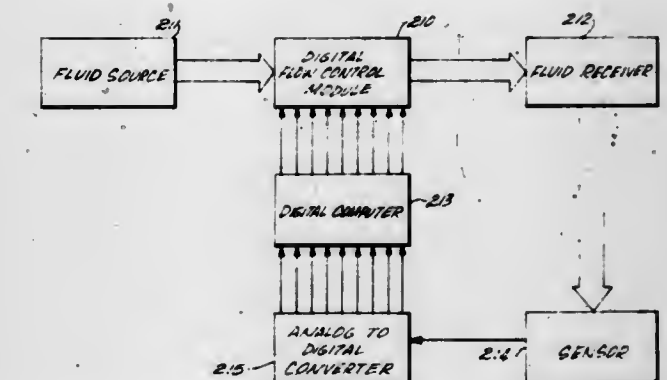
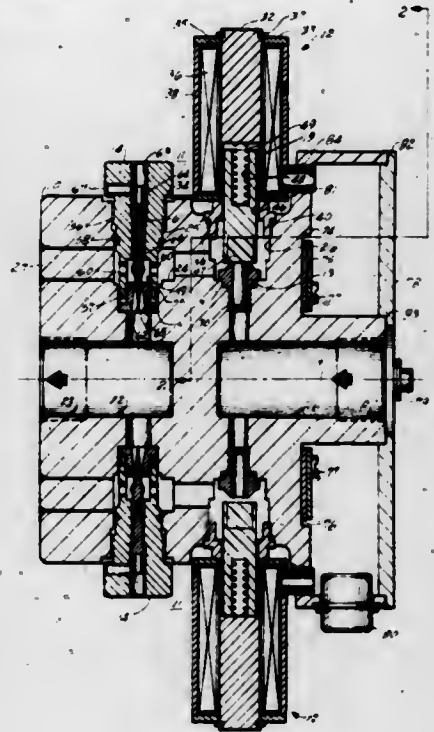
Harry Friedland, Salt Lake City, Utah, and Addison W. Langill, Jr., Balboa, Calif., assignors to Powell Industries, Inc., Houston, Tex.

Continuation of Ser. No. 432,153, Jan. 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 169,930, Aug. 9, 1971, Pat. No. 3,785,389, which is a continuation-in-part of Ser. No. 142,681, May 12, 1971, abandoned. This application May 24, 1976, Ser. No. 689,071

Int. Cl.³ G05D 7/03

U.S. Cl. 137-599

6 Claims



1. A digital fluid flow control system comprising:

- a valve body;
- an upstream conduit formed in the valve body to terminate at a closed end;
- a downstream conduit formed in the valve body in axial alignment with the upstream conduit to terminate at a closed end spaced from the closed end of the upstream conduit;
- a plurality of radial flow passages disposed around the conduits, each radial flow passage comprising a first bore in the valve body parallel to the conduits, spaced laterally therefrom, and extending between their closed ends, a second bore in the valve body perpendicular to the conduits and interconnecting the upstream conduit to the first bore near its one end, and a third bore in the valve body perpendicular to the conduits and interconnecting the downstream conduit to the first bore near its other end; and means responsive to a plurality of binary signals equal in number to the passages for individually opening and closing the respective passages.

4,244,397

SHUT-OFF DAMPER

Robert J. Magill, Whitstable, and Sydney J. Field, Ashford, both of England, assignors to Actionair Equipment Limited, Whitstable, England

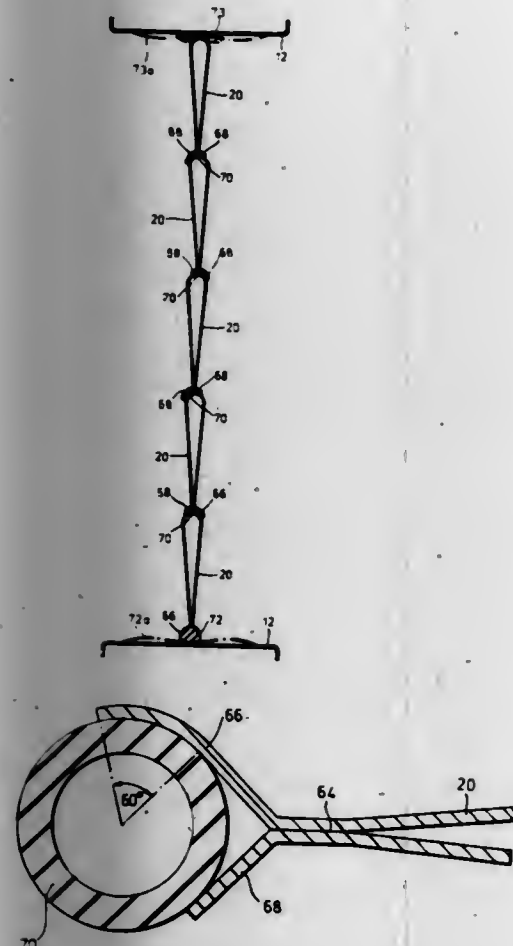
Continuation of Ser. No. 877,185, Feb. 13, 1978, abandoned.

This application Aug. 20, 1979, Ser. No. 67,819

Claims priority, application United Kingdom, Apr. 29, 1977, 18095/77

Int. Cl.³ F24F 13/14

U.S. Cl. 137—401



1. A shut-off damper for shutting-off the flow of gaseous fluid through a duct, said damper comprising: a hollow metal frame defining an opening for the passage of fluid therethrough, a line of hollow, sheet-steel, aerofoil-section, open-ended blades arranged in said opening of said frame with each blade having a leading edge and a trailing edge, a plurality of blade bearing components, one at each end of each blade, to support the blades on said frame for rotation about parallel axes extending longitudinally of the blades, said blades being swingable about said axes to open and close the said opening in the frame, a shaft on each blade bearing component and a respective aperture in said frame to rotatably receive said shaft, an intermediate flange on each blade bearing component, a surface on said flange opposing the adjacent open-end of the respective blade, a spigot projecting from said flange surface and shaped in cross-section to enter the said adjacent open end of the blade and to support that end of the blade for rotation about the longitudinal axis of the blade, a pair of spaced-apart flange-like ridges projecting from said flange surface of said blade bearing component to snugly receive the extreme end-portion of the blade between them, the ridges being in sealing contact with said extreme end portion to give additional support to the blade end and to provide a seal at the blade end, a plurality of rotary elements, one for each blade, keyed onto the blade bearing components at one side of said frame for the purpose of effecting swinging movement of the blades about their parallel axes, the said rotary elements being rotatable in unison to cause corresponding swinging movement of the blades between their fully-open and fully-closed positions, and

fluid sealing means extending along the trailing edge of each blade whereby a seal is formed between adjacent blades when the blades are in their closed positions, said trailing edge sealing means comprising a compressible sealing member fastened to the trailing edge of the respective blade; there also being additional fluid sealing means interposed between the flange on each blade bearing component and the said frame.

4,244,398

CHECK VALVE ASSEMBLY HAVING VALVE OPENING PRIOR TO PASSING FLOW AND FLOW SHUT OFF PRIOR TO VALVE CLOSING

Alfred K. Tengan, Huntington Beach, Calif., assignor to Moog Inc., East Aurora, N.Y.

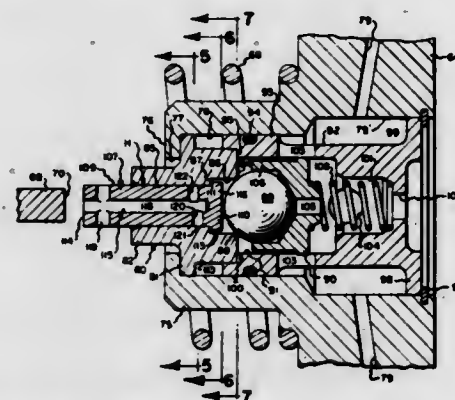
Continuation of Ser. No. 876,737, Feb. 10, 1978, abandoned.

This application Aug. 20, 1979, Ser. No. 67,438

Int. Cl.³ F16K 31/12

U.S. Cl. 137—630.19

10 Claims

**1. A two-stage valve assembly, comprising:**

- a body member separating a pressurized chamber on one side thereof from a relatively unpressurized space on the other side thereof, said body member having an opening therethrough communicating said chamber and space and having a seat surrounding
- a valve element arranged in said chamber and biased to move toward said seat;
- a slide sealingly mounted in said opening for sliding movement relative to said body member, said slide having one surface arranged in said space and having another surface arranged to face said valve element;
- one of said slide and body member having a passageway therethrough, said passageway having one end communicating with one of said space and chamber and having its other end terminating in a port arranged to be selectively covered by the other of said slide and body member, said slide being movable toward said chamber to displace said element from said seat prior to said port being uncovered and to further displace said element from said seat when said port is uncovered; and
- an abutment member arranged in said space and adapted to selectively engage said slide one surface, one of said members being mounted for movement toward and away from the other.

4,244,399

SHED LOCATING DEVICE FOR DOBBIES

Joseph Palan, Duingt, and Pierre Bourgeois, Paisy, both of France, assignors to Societe Anonyme des Etablissements Staubli, Faverges, France

Filed Feb. 23, 1979, Ser. No. 14,530

Claims priority, application France, May 31, 1978, 78 16964

Int. Cl.³ D03D 51/00

U.S. Cl. 139—1 E

4 Claims

1. A shed locating device to be interposed between the shaft of a dobby and the shaft of the shed-forming mechanism of a loom, the device comprising:

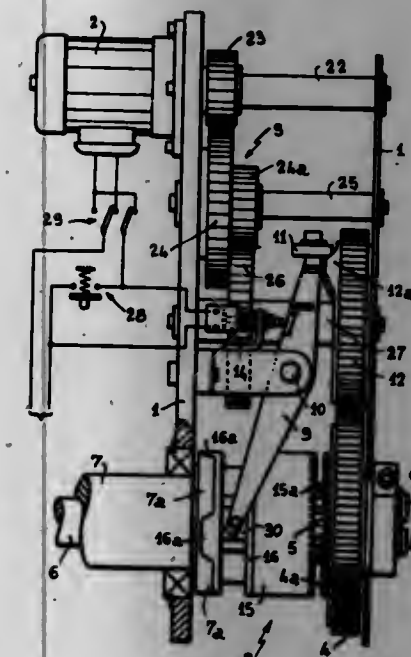
- a frame supporting the dobby shaft in alignment with the shaft of the loom;

collar means axially slidable with respect to the dobby shaft and fixed for rotation therewith, and the collar means being rotatable about the loom shaft;

auxiliary motor means coupled to drive a ring gear rotatably supported on the dobby shaft, the auxiliary motor means being supported by the frame and being manually actuatable to commence driving the ring gear;

a clutch plate carried by the loom shaft adjacent to one side of the collar means, and the clutch plate and the adjacent side of the collar means having teeth which interengage when the collar means is moved axially toward the plate, thereby coupling the dobby shaft to be driven by the loom shaft;

the ring gear being located adjacent the other side of the collar means, and the ring gear and the other side of the



collar means having teeth which interengage when the collar means is moved axially toward the ring gear, thereby coupling the dobby shaft to be driven by the loom shaft;

the ring gear being located adjacent the other side of the collar means, and the ring gear and the other side of the collar means having teeth which interengage when the collar means is moved axially toward the ring gear, thereby coupling the dobby shaft to be driven by the ring gear;

the collar means comprising two separate rings located adjacent to each other; and

means for selectively actuating the ring nearest the clutch plate to move both rings away therefrom in the direction of the ring gear.

4,244,400

HAND WEAVING LOOMS

Jack N. Edwards, Box 777, El Rito, N. Mex. 87530

Filed May 11, 1979, Ser. No. 38,198

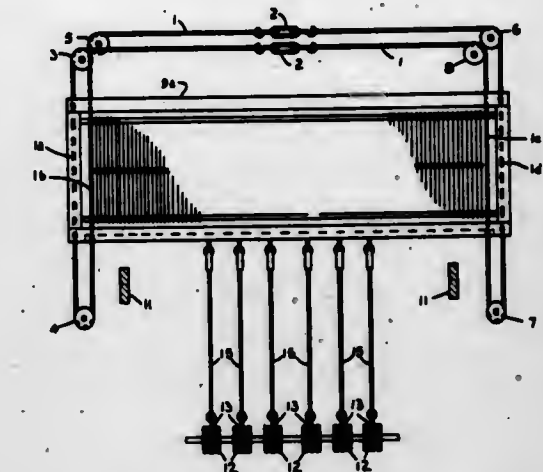
Int. Cl.³ D03D 29/00

U.S. Cl. 139—33

3 Claims

1. A shedding mechanism in a foot treadled, hand weaving loom, comprised of: a plurality of continuous or essentially continuous cables, moveably supported on fixed pulleys; the pulleys arranged so that two runs of the cable are aligned vertically on each side of the loom, and said vertical runs move in opposite directions on each side of the loom when the cable is moved; a plurality of harness frames, each fixedly attached to a vertical run of each cable on each side of the loom, such that each harness will move freely up or down and remain parallel to its original horizontal position; a plurality of idler bars, each located beside a harness frame, and each fixedly attached to a vertical run of each cable on each side of the loom, such that each idler bar moves up or down in the opposite direction to the harness which is attached to the same cable; a pair of

harness-and-idler-bar stops, located an appropriate distance below the harnesses and with the top surface of the stops angled, so that when the harnesses or idler bars come to rest against the stops, the harnesses are in the full open position, with the rear harnesses open further than the front harnesses, an amount determined by the angle on the stops; a plurality of treadles pivotally mounted at the rear of the loom and located



beneath the harnesses; a treadle compensator, pivotally mounted on each treadle directly beneath the harnesses and idler bars; connecting cords, selectively connecting each treadle compensator to each harness or its idler bar, such that when a selected treadle is depressed, the harnesses will rise or fall, as determined by the tie-up, and come to the full open position.

4,244,401

HYDRAULIC DRIVER FOR A SHUTTLE

Olle Gustafsson, Karlakoga, Sweden, assignor to Almhults Bruk Aktiebolag, Almhult, Sweden

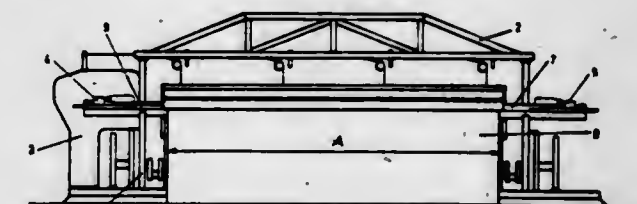
Filed May 7, 1979, Ser. No. 36,903

Claims priority, application Sweden, Nov. 14, 1977, 7712816

Int. Cl.³ D03D 49/34

U.S. Cl. 139—142

10 Claims



1. A hydraulic driver for a shuttle in a power loom, characterized by a single action type hydraulic cylinder (12) with a working piston (59) shiftable therein for emitting throwing energy direct to the shuttle (6), and a supply valve (11) connected to the hydraulic cylinder (12) and distributing hydraulic fluid from a pressure means source to the hydraulic cylinder (12) via a pressure accumulator (9) mounted on the hydraulic cylinder, said supply valve being controlled by a magnet valve (10) directly connected to one end of the supply valve, substantially all of the hydraulic fluid amount used for one stroke of the working piston being supplied by the pressure accumulator (9) which is then refilled from the pressure means source and the return stroke of the working piston (59) being produced by an exterior compressed air cylinder, the entire apparatus being produced as a compact unit mounted on the lathe (7) of the loom.

4,244,402

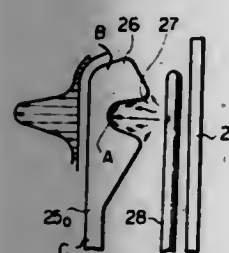
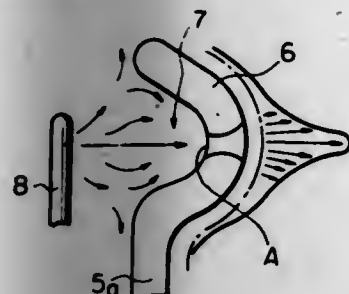
DEVICE FOR INSERTING A WEFT YARN IN JET OPERATED WEAVING MACHINES

Junzo Hasegawa, Obu; Kazunori Yoshida, Nagoya; Fuzio Suzuki, Toyoda; Hajime Suzuki, Anjo; Hiroshi Arakawa, Kariya; Akira Kobayashi, Obu; Akio Arakawa, Kariya, and Munetaka Yamazato, Toyota, all of Japan, assignors to Kabushiki Kaisha Toyota Jidoshokki Seisakusho and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi, Japan
Filed Feb. 26, 1979, Ser. No. 15,486

Claims priority, application Japan, Feb. 27, 1978, 53/022445
Int. Cl.³ D03D 47/28

U.S. Cl. 139—435

20 Claims



1. In a jet operated weaving machine provided with a mechanism for forming a shed of warp yarns, a reed for beating up a weft yarn inserted into said shed periodically, a slay for supporting said reed, a device for inserting a weft yarn through said shed comprising a main nozzle for picking up and carrying said weft yarn through at least part of the length of said shed and a comb forming a guiding channel for said weft yarn upon being periodically inserted in said shed, said comb comprising a plurality of guide plates arranged in an aligned condition parallel to the longitudinal direction of said reed, each of said guide plates having an opening portion, said guiding channel being formed by said opening portions of said guide plates, a plurality of auxiliary nozzles arranged in an aligned condition parallel to said comb for directing a plurality of individual pressure fluid flows into said guiding channel, means for controlling the carrying action of said weft yarn by said individual pressure fluid flows started from each of said auxiliary nozzles comprising in combination a plurality of said guide plates and a corresponding one of said auxiliary nozzles, and an air escaping passage formed between every two adjacent guide plates and defined by the shape of the region therebetween, each said region having an enlarged portion for reducing the flow resistance of the air escaping from the corresponding nozzle in the direction of said warp yarns, so that the quantity of the escaping air flow through each escaping passage is maximum at a predetermined portion of said escaping passage.

4,244,403

APPARATUS FOR TRANSFERRING LIQUID BETWEEN A RESERVOIR AND A MOBILE TANK TRUCK

Paul P. Legleiter, P.O. Box 920, Gaylord, Mich. 49735

Filed Apr. 17, 1979, Ser. No. 30,728

Int. Cl.³ B65B 3/04

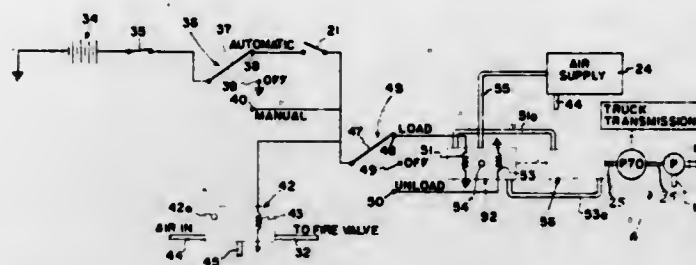
U.S. Cl. 141—94

12 Claims

1. In a liquid transfer system for transferring liquid from a storage reservoir to a mobile truck-mounted transport tank via

a conduit leading from the reservoir to the tank and a flow control valve operable to shut off or permit flow through the conduit from the reservoir including:

- a mobile truck with a transport tank,
- a pump in communication with the conduit,
- an energy source,
- drive means for driving said pump,
- adjustable switching circuitry connected with said energy source for controlling the drive means and pump,
- a sensor, for determining when the liquid level in said tank is at a predetermined level, connected with said circuitry,
- switching means, connected in said circuitry, in one position causing the drive means and pump to operate



only so long as the sensor indicates the level in the tank is below said predetermined level and then disabling the drive means and pump, and in a second position selectively permitting the drive means and pump to operate even when the level in the transport tank is at or above said predetermined level;

the improvement wherein:

normally closed valve means at the transport tank is provided for communicating the pump and conduit with the transport tank when the valve means is opened; and means is provided for automatically opening said normally closed valve means when said float is at said level below said predetermined higher level which also automatically opens said normally closed valve means when said switching means is in said second position.

4,244,404

ROTARY PISTON FILLER

Bruce A. Brockner, and Rand R. Caspersen, both of New Richmond, Wis., assignors to Domain Industries, Inc., New Richmond, Wis.

Filed Feb. 12, 1979, Ser. No. 11,179

Int. Cl.³ B67C 3/28; B65B 3/12

U.S. Cl. 141—146

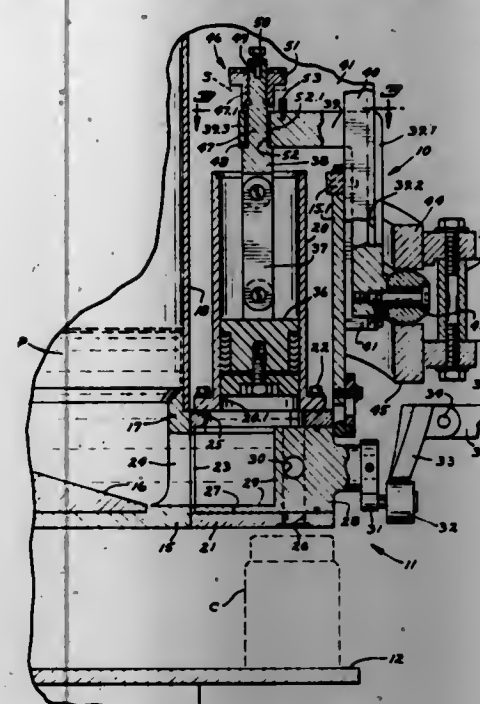
9 Claims

1. A rotary piston filler for dispensing measured liquid product into containers, comprising

a container-carrying turret rotatable about an upright axis and having a source of such liquid product, the turret also having a plurality of upright pumping cylinders with pistons therein and arranged about the periphery of the turret, and the turret also having valve means at each cylinder alternately connecting the cylinder to the liquid product source and discharging liquid from the cylinder to an adjacent container, the piston of each cylinder having substantially vertical reciprocation,

driving means producing vertical reciprocation of the pistons of the cylinders and including elongate stationary circumferential cam means embracing the rotary turret and undulating axially thereof, vertically movable drive arms and stationary vertical guide means on the turret for the arms and adjacent each of the cylinders, the drive arms having follower means engaging the cam means to be vertically reciprocated thereby as the turret revolves, the drive means also including drive rods connected to the pistons to produce vertical reciprocation thereof, and each of the drive arms and the adjacent drive rod having adjustable lost motion connecting means producing vari-

able vertical reciprocation of the rod in response to the vertical reciprocation of the drive arm, the rod having a



reduced magnitude of vertical movement as compared to the vertical movement of the arm.

4,244,405

TREE SHEAR HEAD AND CONTROLS THEREFOR

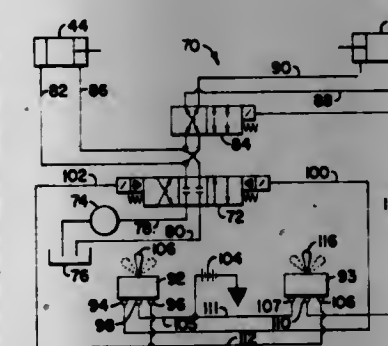
Eugene S. Zirker; Andrew P. Redman; Victor C. Pierrot; Alvin L. Menzel, and Lynn E. Kurt, all of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Feb. 5, 1979, Ser. No. 9,755

Int. Cl.³ A01G 23/08

U.S. Cl. 144—34 E

4 Claims



4. A tree shear head comprising: an upright frame; a shear mounted on a lower portion of the frame for movement between stem-receiving and stem-shearing positions; a grapple tong and an accumulator tong pivotally mounted on the frame one above the other at a location above the shear for movement between respective open and closed positions; the accumulator tong having a yieldably pivoted outer end portion adapted for yielding upon encountering a standing tree stem when the accumulator tong is moving to its open position; first and second double-acting hydraulic actuators respectively coupled between the frame and the grapple tong and the accumulator tong for respectively moving grapple and accumulator tongs between their respective open and closed positions; a control system for the actuators including: a pump; a reservoir; solenoid-operated grapple tong and accumulator tong control valves; supply and return lines respectively connecting the pump and reservoir to the grapple tong control valve; a first pair of pressure-exhaust lines connecting the grapple tong control valve to each of the first actuator and the accumulator tong control valve; a third pair of pressure-exhaust lines connecting the last-named valve to the second actuator; said grapple tong control valve being shiftable from a central position, wherein it blocks fluid in the first and second actuators, to a

4,244,406

SAFETY SWITCH FOR PORTABLE POWER-OPERATED DEVICE

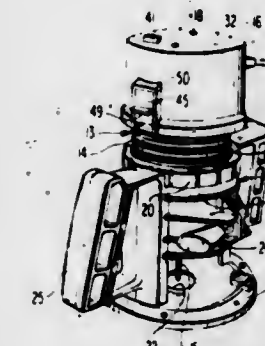
Henry J. Stielper, White Hall, Md., assignor to The Black & Decker Manufacturing Co., Towson, Md.

Filed Nov. 7, 1978, Ser. No. 958,370

Int. Cl.³ B27C 5/10

U.S. Cl. 144—136 C

11 Claims



1. In a portable electric router of the type having housing means enclosing an electric motor, electric switch means operable to turn said motor "on" and "off", a rotatable tool bit extending from said housing means and driven by said motor, a base assembly attached to said housing means and including means adjacent said tool bit for supporting and guiding said router with said tool bit engaging a work surface, said housing means having support means to support said router on a generally horizontal surface with said tool bit out of engagement with said horizontal surface; the improvement which comprises switch operator means accessible from outside said housing means for operating said switch means and for turning said motor "off" and for preventing said motor from being turned "on" when said router is positioned with said support means engaging a horizontal surface, said switch operator means being movable from a first position where said motor is "on", to a second position where said motor is "off", at least a portion of said switch operator means extending outwardly of said support means when in said first position, said switch operator means portion when in said second position being located toward said support means from its location when in said first position.

4,244,407

MECHANICAL LOG SPLITTER

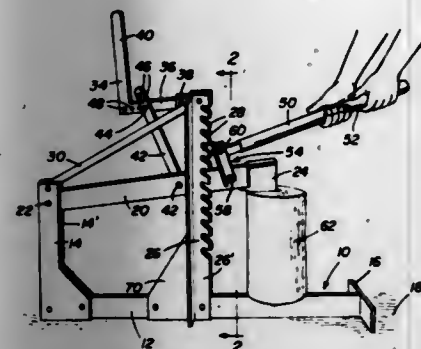
Jerry L. McMullin, 705 Jensen, Idaho Falls, Id. 83401

Filed Jan. 13, 1979, Ser. No. 48,542

Int. Cl.³ B27L 7/00

U.S. Cl. 144—193 H

9 Claims



1. A log splitter including a base, an elongated support lever, means pivotally supporting one end of said lever relative to said base for swinging of the support lever is an upstanding plane about a first axis elevated relative to said base and for movement of the other end of said support lever toward and away from a predetermined location on said base while the other end of said lever is elevated above said base, an upright carried by said base and defining a series of vertically spaced notches thereon, a downwardly facing wedge structure carried by said other end of said support lever opposing said predetermined location, said base defining support means for supporting an upstanding log section therefrom with the lower end of said log section disposed in said predetermined location, an elongated actuating lever having anchor structure on one end thereof selectively releasably pivotally receivable in said notches and defining a handle on its other end, and upstanding connecting link structure pivotally connected at one end to said other end of said support lever and at the other end to said one end of said actuating lever at a point thereon spaced from said anchor structure.

4,244,408

UTILITY BAG

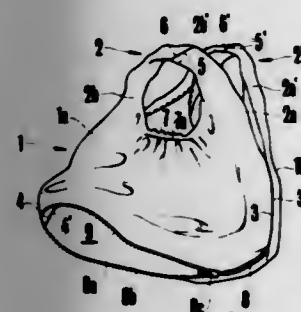
Otsome Shoda, Funabashi, Japan, assignor to Yamatoya Company Limited, Japan

Filed Dec. 28, 1978, Ser. No. 973,803

Int. Cl.³ A45C 7/00

U.S. Cl. 150—1.7

6 Claims



1. A utility bag for holding articles comprising a sheet of material including a first side wall and a second side wall, each side wall having two side edges, said first and second side wall being in juxtaposition, a lower part of each side edge of said first side wall and a substantially equal length of a juxtaposed lower part of each side edge of said second side wall being sewably connected, a remaining upper part of each side edge of said first and second side walls being disposed adjacent to a portion of said material, said material having a cutout centrally disposed between said material portions, at least two of said material portions being connected to each other forming loops defining hand grip areas, a plurality of tapes, each of said tapes having an interlockable member sewn to a respective one of

said side walls, means connected to at least one of said members for interlocking both members, and an integral part of said material disposed between said tapes providing means for adjusting the capacity of said bag.

4,244,409

COLLAPSIBLE SOLUTION CONTAINER

Thomas D. Wilson, Wyoming, Minn., and William G. Scott, Carpentersville, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 9, 1979, Ser. No. 83,003

Int. Cl.³ B65D 1/02

U.S. Cl. 150—0.5

12 Claims



1. A flexible, collapsible container for medical fluids composed of a flexible, inert, plastic material, said container comprising:

a body section of generally flat tubular configuration when empty having a longitudinal axis and a transverse axis shorter than said longitudinal axis, said body section when filled with said medical fluid having a generally transverse oval configuration, said body section further defining front, back, side and opposing side wall portions which are substantially smooth and unencumbered within the confines of said body section, said end wall portions defining a hanger section at one end and a tubular passageway extending from the opposing end, the side wall portions at said one end of said body section tapering in a uniform manner from the outermost dimension of the body section to said hanger section to define shoulder portions with weakened corners between said outermost dimensions at said hanger section,

said body section being blow molded from a plastic resinous material with the thickness of the shoulder portions and the side wall portions throughout the longitudinal axis being of a smaller dimension than the front and back wall portions,

so that when said container is filled with said medical fluid and supported by said hanger section and the medical fluid is allowed to flow from the opposing tubular passageway, at least one of the side wall portions in the body section adjacent the corners of said hanger section end will assume an opposing inwardly extending pleated configuration which pleated configuration will continue to be formed longitudinally along the body section in the direction of the tubular passageway as the medical fluid is continued to be drained from said container.

4,244,410

HAMPER WITH IMPROVED LIFTING APPARATUS

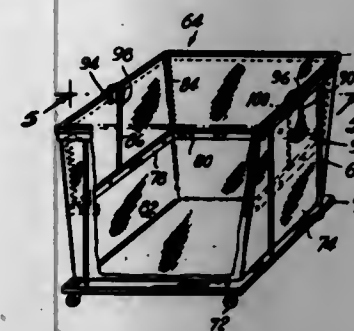
Max Silverman, 3850 Sedgwick Ave., New York, N.Y. 10463

Filed Jul. 13, 1979, Ser. No. 57,454

Int. Cl.³ B65D 90/20

U.S. Cl. 150—51

8 Claims



1. A hamper for accommodating both heavy and light loads comprising:

a base;
an upper perimetric frame supported on said base;
a sack having a mouth, said mouth of said sack being mounted on said upper frame with said sack depending therefrom in an extended condition;
a rigid member secured to a lower portion of said sack and extending transversely across said sack;
spring means for supporting and maintaining said lower portion of said sack in a raised position when said sack is void of any load therein, said spring means allowing a sufficient light load in said sack to lower said lower portion of said sack to an intermediate position away from said raised position, and said spring means raising said lower portion of said sack from said intermediate position towards said raised position when a portion of said sufficient light load is removed from said sack;
said spring means including tension springs coupled between said rigid member and said upper frame for upwardly biasing said rigid member from said intermediate position towards said mouth to said raised position; and
rope means coacting with said tension springs for raising said lower portion of said sack from a distended position towards said raised position when said sack contains a heavy load which said tension springs alone are unable to raise, said distended position being below said intermediate position;
said rope means being coupled to said rigid member and extending upwardly and over an edge of said upper frame for raising said rigid member from the distended position towards said mouth to said raised position as said rope means is pulled over said frame edge.

4,244,411

INSULATING COVER

Anders Karlström, Stockholm, and Anders Eriksson, Saltjö-Boo, both of Sweden, assignors to AB Smulan, Nacka, Sweden

Filed Sep. 12, 1979, Ser. No. 74,639

Claims priority, application Sweden, Sep. 13, 1978, 7809644

Int. Cl.³ B65D 65/26

U.S. Cl. 150—52 F

5 Claims

1. An insulating cover (3) comprising four side-walls (4,5,6,7) and a roof-structure (8), said side-walls and said roof-structure comprising an outer and an inner layer (9,11) of a flexible material and an intermediate insulating layer (10) of an elastic foamed plastics material, at least one of the side-walls being openable by means of slide chain fastener means, and said cover being intended to be placed over and around goods carried by a substantially rectangular load-carrying device, such as a pallet, having arranged on at least two mutually opposite side-edges a substantially planar frame-structure (2), which projects upwardly from the load-carrying surface of said load-carrying device, wherein two mutually opposite

side-walls (5,7) and the roof-structure (8) extending therebetween form a coherent unit which is detachably connected to



the other two side-walls (4,6) by means of said slide chain fastener means (12,13).

4,244,412

ANTI-SKID DEVICE FOR VEHICLE WHEELS

Gianfranco Seggio, 7, Via Tracola, Milan, Italy

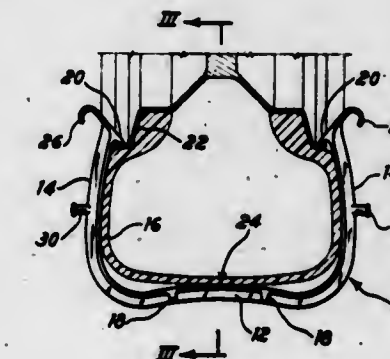
Filed Apr. 2, 1979, Ser. No. 26,408

Claims priority, application Italy, Apr. 7, 1978, 21416/78[U]

Int. Cl.³ B60C 27/00

U.S. Cl. 152—218

10 Claims



1. An anti-skid device comprising a plurality of U-shaped elements including a pair of resilient spreadable arms for engagement with a wheel of a vehicle to provide anti-skid characteristics, and

rigid spacer means pivotally connecting pairs of said U-shaped elements at predetermined and fixed intervals such that said elements can rotate from a first position where said arms are substantially parallel to said spacer means to a second position where said arms are substantially perpendicular to said first position and such that said elements define a pre-set pitch when the device is mounted on said wheel,

said arms having a shape and size and said elements being connected to said spacer means so as to allow said device to be mounted on said wheel of said vehicle by moving said tire such that the wheel passes between said arms of said U-shaped elements.

4,244,413

SOLID TIRE AND WHEEL ASSEMBLY FOR VEHICLE MOVING THROUGH A TUBULAR CONDUIT

Takuya Takahashi, Odawara; Masayoshi Iijima, Yokohama, and Norio Ishikawa, Yokosuka, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Jun. 7, 1978, Ser. No. 913,273

Claims priority, application Japan, Jun. 10, 1977, 52-68511

Int. Cl.³ C08F 8/42; B60C 7/00

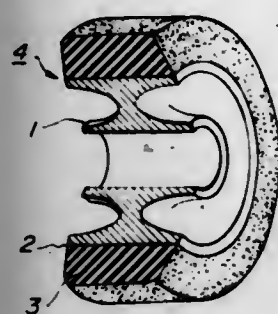
U.S. Cl. 152—323

9 Claims

1. A solid tire and wheel assembly for vehicle moving

through a tubular conduit obtained by forming a composition layer composed of

- (A) a diene elastomer consisting mainly of cis-1,4-polybutadien
(B) an α,β -ethylenically unsaturated carboxylic acid, wherein the ratio by weight of component (A) to component (B) is 87/13 to 55/45,
(C) a divalent metal compound selected from the group consisting of one or more of zinc oxide, zinc hydroxide



and zinc carbonate present in quantities of 50 to 150 parts by weight per 100 parts by weight of the component (B); which quantity is sufficient to neutralize all carboxyl groups present in component (B), and
(D) a dialkyl peroxide present in quantities of 0.3 to 5.0 parts by weight per 100 parts by weight of the combined weight of components (A) and (B) on the outer circumferential surface of a metal rim of the wheel and adhering and curing said layer on said metal rim by heating at 100° to 180° C.

4,244,414

RADIAL TIRES FOR HEAVY DUTY VEHICLES

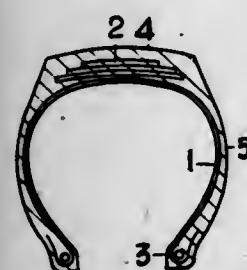
Yukihisa Uemura, Oji, and Shoji Miyoshi, Nakamiya, both of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Dec. 19, 1978, Ser. No. 971,832

Claims priority, application Japan, Dec. 19, 1977, 52-153341
Int. Cl.³ B60C 9/08

U.S. Cl. 152—354 R

2 Claims



1. A heavy duty radial tire for use on large equipment such as trucks and buses, said radial tire comprising:

- a carcass structure having two plies which are made of polyester cords having a fineness of no less than 4500 deniers, and a ply-to-ply cord spacing from the first ply to the second ply of between 1.2 to 1.7 times the cord diameter at the maximum tire width, said carcass ply cords being coated with rubber and said tire having bead cores with the end portions of said carcass ply cords being turned up around said bead cords and being covered with said rubber coating of said carcass ply cords, said rubber coating on said carcass ply cords extending beyond the ends of said cords at least three times the diameter of said carcass ply cords.

4,244,415 PNEUMATIC VEHICLE TIRE WITH AT LEAST TWO TREAD STRIPS ARRANGED IN SPACED RELATIONSHIP TO EACH OTHER

Julius Peter, Hanover; Peter Johannsen, Hanover-Herrenhausen, and Gerhard Mauk, Wunstorf, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

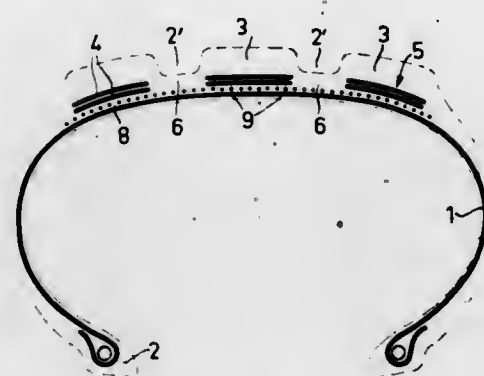
Filed Oct. 4, 1978, Ser. No. 948,437

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744997

Int. Cl.³ B60C 9/20, 11/06

U.S. Cl. 152—361 R

4 Claims



1. A pneumatic vehicle tire having a radial carcass and provided with at least two tread strips separated from each other by circumferential grooves having a width amounting to 20–50% of the width of the tread strips, which includes in combination: each tread strip having a belt-like reinforcement each including two fabric layers arranged radially inwardly of said tread strip symmetrically between the tread strips and said radial carcass so that each of said at least two tread strips has securely connected therewith a separate belt-like reinforcement each including the two fabric layers of which the width substantially corresponds to the width of each one of said tread strips, and thread-shaped strength carriers in a layer arranged within the region between said belt-like reinforcements and said radial carcass at least between said belt-like reinforcements radially inwardly of said grooves, said strength carriers together with the circumferential direction of said tire defining an angle within the range of 0° to 10° for strengthening area between said belt-like reinforcements stabilized against outward bulging due to internal tire pressure.

4,244,416

TIRE BUFFING MACHINE SYSTEM

Robert P. Newton, Tampa, Fla., assignor to Autodynamics, Inc., Tampa, Fla.

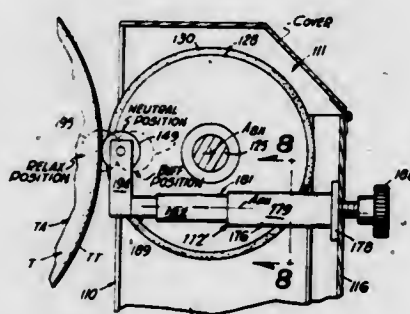
Continuation of Ser. No. 709,544, Jul. 28, 1976, Pat. No. 4,139,041. This application Jan. 11, 1979, Ser. No. 2,785

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.³ B29H 21/08

U.S. Cl. 157—13

13 Claims



1. A tire buffing machine for reducing the loaded radial runout of an inflated pneumatic tire comprising:
a support frame;

tire mounting means on said support frame for mounting and rotating the tire about an effective tire rotational axis; tread removal means on said support frame movable to and from engagement with the tire tread, said tread removal means capable of removing a portion of the tire tread when in engagement with the tire tread; spacing means operatively associated with said tread removal means, said spacing means including a tire tread engaging portion; spacer support means carried by said tread removal means; and spacer spring means, said spacer support means movable with said tread removal means and movably mounting said tire tread engaging portion for movement toward and away from said tread removal means so that the tire tread engages and moves said tire tread engaging portion toward said tread removal means as said tread removal means moves toward said tire tread; and said spacer spring means operatively connected to said movable tread engaging portion for selectively urging said tread removal means away from the tire tread over a first prescribed force range while said tread engaging portion is engaging the tire tread where the spring urging force increases in said first prescribed force range as said tread removal means moves toward the tire tread; and, positioning means for selectively urging said tread removal means toward the tire tread with a second prescribed force within said first prescribed force range so that said tread removal means is urged toward the tire tread until said tread engaging portion of said spacing means engages the tire tread and said tread engaging portion is moved toward said tread removal means sufficiently to cause said spacer spring means to urge said tread removal means away from said tire tread with a force substantially equal to said second prescribed force so that said tread removal means is held in the vicinity of the tire tread but out of engagement therewith.

4,244,417

FLEXIBLE DOOR WIPER SEAL

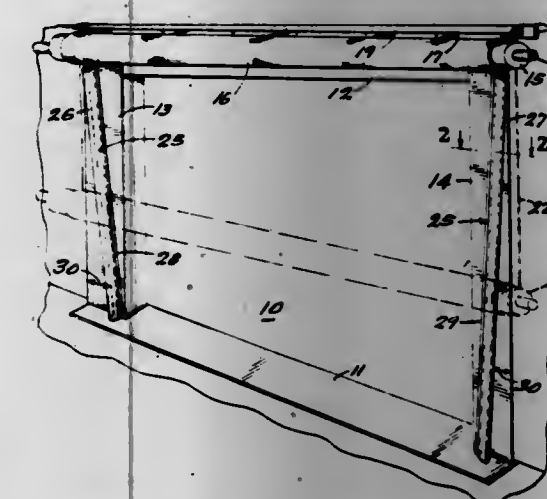
Robert B. Taylor, Findlay, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio

Filed May 2, 1977, Ser. No. 792,587

Int. Cl.³ A47G 5/02

U.S. Cl. 160—243

8 Claims



1. A sealing device for a flexible closure for building openings including a flexible membrane secured at its upper edge to a substantially horizontal building member above such opening and having a substantially horizontal roller extending across said opening between spaced apart vertical building members and secured to said membrane whereby rotation of said roller in one direction will raise said roller as it winds said membrane thereupon and rotation of said roller in the opposite direction will lower said roller as it unwinds said membrane therefrom, said sealing device, comprising:
elongate flexible sealing gaskets extending alongside and

substantially coextensive with each of said spaced apart vertical building members, said sealing gaskets having a convex outer surface facing and flexible membrane, with said gaskets each declining inwardly toward one another and said outer surface being skewed outwardly from said opening, whereby when said roller is in its lower position, said membrane contacts said gaskets along the vertical height thereof along upwardly diverging lines of contact.

4,244,418

APPARATUS FOR FORMING VACUUM-SEALED MOULD

Hidetoshi Terada, and Masanori Yosikawa, both of, Toyokawa, Japan, assignors to Sintokogio Ltd., Nagoya, Japan

Division of Ser. No. 906,878, May 17, 1978, Pat. No. 4,167,206.

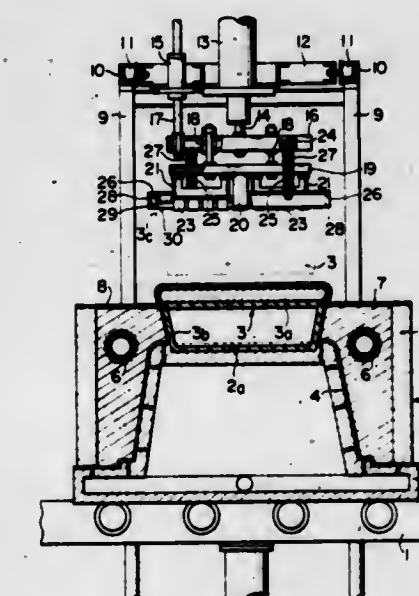
This application Feb. 2, 1979, Ser. No. 8,832

Claims priority, application Japan, May 20, 1977, 52/59110

Int. Cl.³ B22C 9/02

U.S. Cl. 164—147

16 Claims



1. An apparatus for forming a mould cavity having a communication hole comprising a charged moulding flask containing a mould cavity forming pattern and a lower portion of a communication hole forming pattern disposed thereon, a first shield member overlaying said mould cavity forming pattern and said communication hole forming pattern, a second shield member overlaying said charged moulding flask and that part of said first shield member overlaying the top portion of said communication hole forming pattern, means adapted for welding and cutting said first and said second shield members along a coincident periphery, said periphery surrounding the top surface of said top portion.

4,244,419

ELECTROMAGNETIC STIRRING APPARATUS

Axel von Starck, Remscheid; Hans-Erwin Gerbig, Hückeswagen-Wiehlagen; Hans Schrewe, Duisburg, and Jürgen Sarmann, Essen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,428

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818183

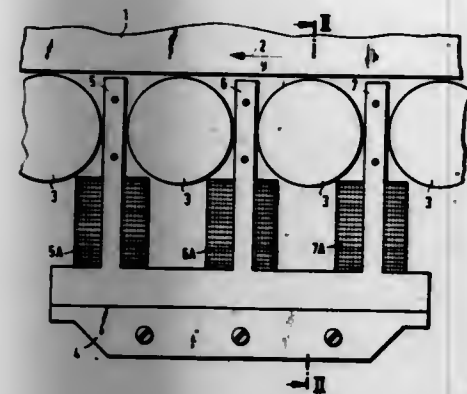
Int. Cl.³ B22D 27/02

U.S. Cl. 164—147

5 Claims

1. Electromagnetic stirring apparatus for stirring the solidifying core of a continuous casting comprising:
a roller frame;
at least one pair of guide rolls mounted on said roller frame for transporting said continuous casting, said guide rolls being electrically insulated from said roller frame;
ferromagnetic sheets having at least two teeth positioned in

alternating arrangement among said guide rolls each tooth having a longitudinal extension running in the direction of the rotational axis of said guide rolls, wherein adjacent teeth are disposed such that they enclose a guide roll of said continuous casting;



an induction coil surrounding each of said teeth, said teeth and said coils positioned such that passes through said continuous casting to stir the solidifying core of said casting; the path of said flux encircling at least one tooth and closing over a guide roll, current induction in said guide roll being prevented by the electrical insulation of said guide rolls.

4,244,420

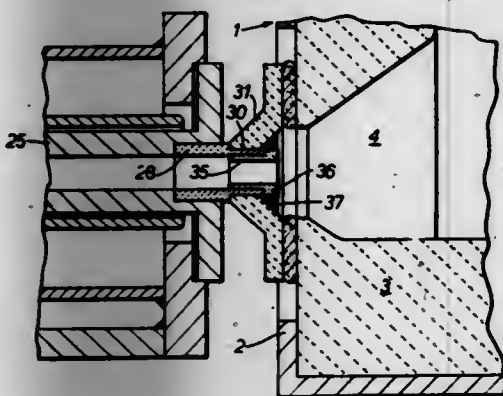
APPARATUS FOR FEEDING A HORIZONTAL CONTINUOUS CASTING MOLD

Richard J. Dain, Crouch, Near Borough Green, England, assignor to Davy-Loewy Limited, Sheffield, England
Continuation of Ser. No. 741,453, Nov. 12, 1976, abandoned, which is a continuation of Ser. No. 578,917, May 19, 1975, abandoned. This application May 17, 1978, Ser. No. 907,016

Int. Cl.³ B22D 11/10

U.S. Cl. 164—440

6 Claims



1. In combination, a continuous casting mould including a copper body defining an open ended mould cavity extending through the copper body between inlet and outlet ends thereof, the cross-sectional dimensions of the cavity being uniform along its length apart from a portion at the inlet end thereof which has enlarged cross-sectional dimensions as compared with the remainder of the cavity, means for cooling said mould adjacent said inlet, a one piece graphite feed tube defining a bore which has the same cross-sectional dimensions as said remainder of the cavity, a first end portion of the tube having external cross-sectional dimensions which are the same as those of the enlarged portion at the inlet end of the cavity, said first end portion of the tube projecting into said enlarged portion of the cavity with the outer surface of said first end portion abutting against surfaces of the body defining the enlarged portion in good heat transfer relationship therewith, and means for supplying molten metal to said feed tube and comprising a tundish including a side wall having an

outlet opening therein, said tube having a second end portion, including an end wall projecting into said outlet opening and having a surface sealed to the wall of the tundish defining said outlet opening, and wherein the end wall of said second end portion and a portion of the tube defining the bore of said second end portion, and extending from the end wall of said second end portion of the tube a distance less than the entire length of the bore of the feed tube, are covered by a body of refractory material other than graphite.

4,244,421

PROCESS AND AN APPARATUS FOR COOLING OF WASTE GAS BENDS

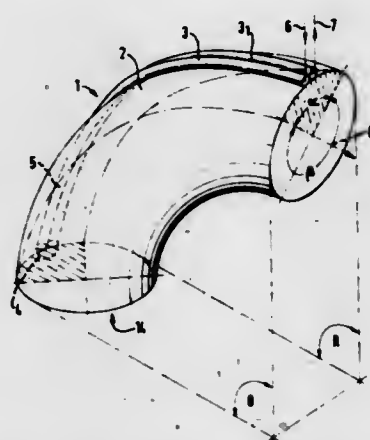
Herbert Kuhlmann, Bochum, Fed. Rep. of Germany, assignor to Sidelal S.A. Societe Industrielle de Participations Luxembourgeoise, Luxembourg, Luxembourg
Filed Jul. 20, 1978, Ser. No. 926,378

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734922

Int. Cl.³ F28D 7/00; F28F 3/12

U.S. Cl. 165—1

5 Claims



1. A process for the cooling of waste gas bends with the use of cooling walls and having cooling channels taking the same direction as the flow of waste gases; removing the concentrated heat occurring in the direction of waste gas flow in the casing of a waste gas bend, in the zone of a certain selected sector of the cross section within the actual zone in which it occurs, said removal being effected by flowing coolant under adjustable coolant pressure and coolant throughput through cooling channels disposed along the longitudinal direction in the casing of a certain selected sector of the cross section, said cooling channels being of equal flow cross section within an entire cooling circuit and the temperature being reduced to the level prevailing in the other remaining cooler sectors of the said cross section of the bend portion of the casing.

4,244,422

METHOD AND DEVICE FOR DEFROSTING HEAT EXCHANGER WITHOUT IMPAIRMENT OF ITS HEAT EXCHANGE EFFICIENCY

Karl Hällgren, Huddinge, Sweden, assignor to Aktiebolaget Carl Munters, Sollentuna, Sweden

Continuation of Ser. No. 741,462, Nov. 12, 1976, abandoned.

This application Oct. 2, 1978, Ser. No. 947,856

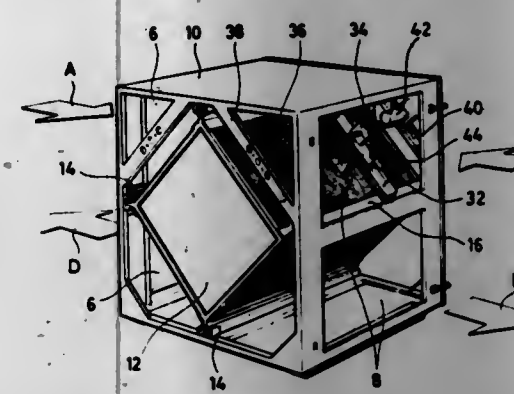
Int. Cl.³ F28F 17/00

U.S. Cl. 165—1

7 Claims

1. In the method of defrosting a heat exchanger without substantial impairment of the thermodynamic exchange efficiency of the exchanger, which comprises a pack of facially opposed heat exchange surfaces defining therebetween a plurality of open-ended channels in which a stream of relatively cold medium is passed through one set of channels in heat exchange relationship with a stream of relatively warm medium passed through another set of channels, which channels

terminate in an inlet surface area and an outlet surface area for the respective sets of channels which surface areas extend across said pack, the improvement comprising: continuously controlling the proportions of the two streams by blocking off a portion of the surface area for the cold medium to periodically interrupt the flow of cold medium through at least one cold medium channels at a time along



the surface area of said blocked off portion in response to environmental thermodynamic conditions while maintaining the flow of warm medium through the set of warm medium channels uninterrupted to heat the exchange surfaces of the frosted channels so as to maintain the channels free of ice without substantially impairing the thermodynamic exchange efficiency thereof.

4,244,423

HEAT EXCHANGER

Bruno H. Thut, 9580 Stafford Rd., Bainbridge, Ohio 44022, and Dale T. Lehman, 5577 Valley Ln., Solon, Ohio 44139

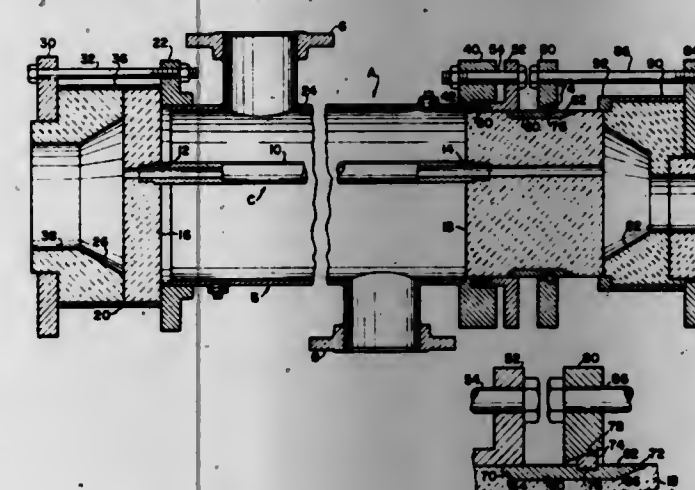
Continuation-in-part of Ser. No. 796,175, May 12, 1977, Pat. No. 4,119,141. This application Jul. 17, 1978, Ser. No. 924,912

The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

Int. Cl.³ F28F 9/12

U.S. Cl. 165—62

3 Claims



1. A heat exchanger of the character described comprising an elongated shell having a tubular cylindrical member having flange members adjacent to its opposite ends, one of said flange members having a counterbore facing in the direction away from said cylindrical member, a plurality of tubes having their opposite ends connected to header members, means including an end member connecting one of said header members to the other of said flange members, the other of said header members having an outside diameter slightly less than the inside diameter of said end of said cylindrical member at which said one of said flange members is located and being slidable therein, said other of said header members having an external circumferential groove therein with at least the end thereof farthest from said one of said flange members being outwardly inclined, another end member adjacent to the end of said other of said header members facing in the direction away from said cylindrical member, means for clamping said another end member

to said other of said header members comprising a sleeve member formed of a plurality of arcuately shaped parts located in said circumferential groove in said other of said header members and having at least the end thereof furthest from said one of said flange members beveled complementary to the taper of the adjoining end of said groove in said other of said header members, a split ring member surrounding said sleeve member and having its radial outer or circumferential surface inclined radially outwardly in the direction away from said end of said cylindrical member at which said one of said flange members is located, a retainer ring member surrounding said split ring member, a clamp plate at the end of said another of said end members at the end thereof facing in the direction away from the end of said cylindrical member at which said one of said flange members is located, and means for adjustably connecting said retainer ring member to said clamp plate.

4,244,424

MAGNETIC CASING DEPTH MARKER

Kenneth J. Talbot, Thibodeaux, La., assignor to Chromalloy American Corporation, St. Louis, Mo.

Filed Mar. 28, 1979, Ser. No. 24,523

Int. Cl.³ E21B 17/00

U.S. Cl. 166—66

13 Claims



1. Apparatus for marking a location on a well casing, which comprises:

an axially upper magnet in contact with the exterior of said casing, said axially upper magnet having radially inner and outer faces, said inner face being of one pole and said outer face being of the other pole; and an axially lower magnet substantially axially aligned with said upper magnet in contact with said exterior of said casing, said axially lower magnet having radially inner and outer faces, said inner face being of one pole and said outer face being of the other pole, wherein the poles of said upper and lower magnet are opposite.

4,244,425

LOW DENSITY BALL SEALERS FOR USE IN WELL TREATMENT FLUID DIVERSIONS

Steven R. Erbsteiner, Missouri City, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed May 3, 1979, Ser. No. 35,564

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

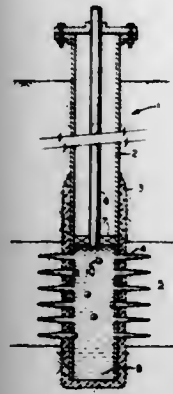
Int. Cl.³ E21B 33/13, 43/26, 43/27

U.S. Cl. 166—284

21 Claims

6. A method of plugging the perforations in a casing which has been set in a wellbore comprising: downwardly flowing into said casing a carrier liquid having ball sealers suspended therein, said ball sealers comprising syntactic foam and having a density less than the density

of the carrier liquid, said ball sealers being of sufficient size to plug the casing perforations; and maintaining the flow velocity of said carrier fluid at a rate sufficient to overcome the buoyancy of said ball sealers and sufficient to transport said ball sealers to the perforations.



9. A ball sealer for plugging perforations in a casing which has been set in a wellbore comprising syntactic foam, said syntactic foam being a material system comprised of hollow spherical particles dispersed in a binder.

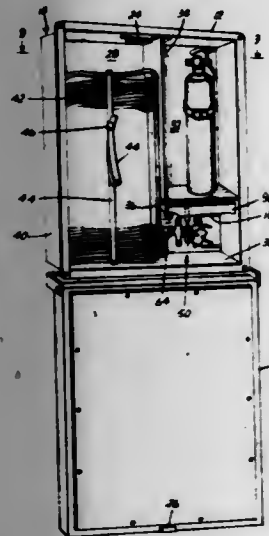
4,244,426

FIRE-FIGHTING APPARATUS

George E. Kerr, 2611 Mary Sue St., Largo, Fla. 33540
Filed Apr. 12, 1979, Ser. No. 29,300
Int. Cl.³ A62C 25/00

U.S. Cl. 169-51

13 Claims



1. Fire-fighting apparatus comprising a cabinet unit provided with a bottom and sides, the front of said unit being open, said unit being adapted to be positioned with said bottom and open front arranged vertically, an access door hingedly mounted on one side and swingable to open and close said open front, said unit having therein at least two laterally adjacent compartments with a feed-through opening therebetween, a side of each compartment being a cabinet unit side, a water hose contained within one compartment and a manually operable water valve assembly disposed in the other, means for securing said valve assembly to said cabinet unit, said valve assembly having inlet and outlet sides, the outlet side being disposed adjacent said feed-through opening with one end of said hose being connected thereto, said valve assembly including an operating handle, a cover plate hingedly mounted on said cabinet unit to overlie said handle, spring means urging said cover plate in a direction to uncover said handle, and said cover plate having a portion within said feed-through opening which is engageable by said water hose when the latter is stored within said one compartment to hold said cover plate in position to overlie said handle, said securing means including a mounting bracket which partially surrounds said valve assembly and is secured to said bottom by means of threaded fasten-

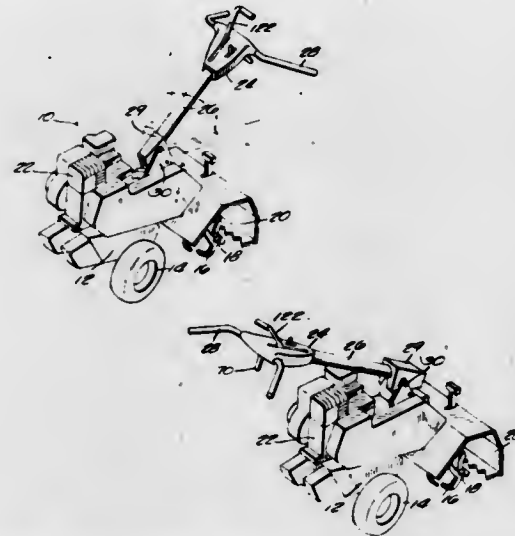
ers, said valve assembly including a valve body and having two arm portions which are secured to said bottom by means of said threaded fasteners.

4,244,427

TILLER WITH ROTATABLE TINES AND GUIDING HANDLE

Edward W. Enters, Fredonia, and Roger J. Bacon, Plymouth, both of Wis., assignors to Gilson Brothers Company, Plymouth, Wis.

Filed Aug. 19, 1978, Ser. No. 916,483
Int. Cl.² A01B 33/02; B62D 51/06
U.S. Cl. 172-42 31 Claims



1. A rear tined tiller comprising:
a rigid frame,
a wheel supporting the frame for movement on the ground,
a prime mover supported by the frame and fixed to said frame,
a plurality of tilling tines rotatably supported by said frame and driven by said prime mover, said tines engaging the ground for tilling,
a guiding handle,
means for connecting said guiding handle to said frame and for supporting said guiding handle for pivotal movement with respect to said frame and with respect to a generally vertical axis in an arc of more than 90° and for pivotal movement about a horizontal axis, and
latch means for releasably restraining said guiding handle against pivotal movement, said latch means including a movable member supported by one of said frame and said handle, said movable member being movable from a first position wherein said guiding handle is restrained against pivotal movement to a second position wherein said guiding handle is pivotable with respect to one of said axes, and a third position wherein said guiding handle is pivotable around both said generally vertical axis and said generally horizontal axis, and wherein said movable member includes a first lever arm selectively engageable with said frame and a second lever arm selectively engageable with said guiding handle for releasably restraining said guiding handle against pivotal movement when said movable member is in said first position.

4,244,428

TOOL BAR WING FOLD RESTRAINING MECHANISM

Tom J. Sloan, La Porte, Ind., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 7, 1979, Ser. No. 46,307
Int. Cl.³ A01B 73/00

U.S. Cl. 172-126

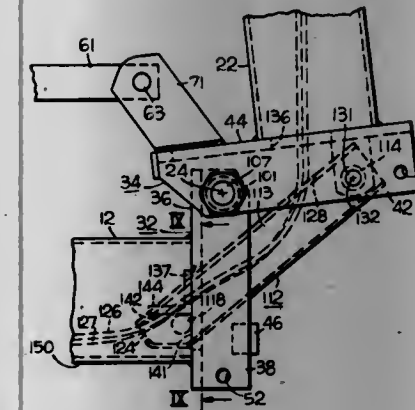
16 Claims

1. In a tool bar having a main section adapted for connection in draft relation to a tractor and a wing section pivoted to the main section for vertical swinging movement about a horizon-

tal folding axis between a horizontal working position in which the sections are in alignment and an upright transport position, a restrain mechanism for limiting the vertical swinging movement of the wing section relative to the main section characterized by

said horizontal axis being disposed above said sections when said wing section is in its working position,
one of said sections being hollow,
a link disposed within said one section having one of its opposite ends extending therefrom and pivotally connected to the adjacent end of the other of said sections on an axis parallel to and spaced from said folding axis, and

of each link on said vehicle frame and a universal connection for an opposite end of each link on said dozer frame, a third link extending generally parallel and spaced from said first and second links, said third link having one end pivoted on said vehicle frame and an opposite end supported by a universal connection on said dozer frame, first and second independently actuated fluid rams interposed between said vehicle frame and said dozer frame for raising and lowering said dozer frame and for tilting said dozer frame on said vehicle frame, motion limiting means pivoted on said vehicle frame and interposed between said rigid links for limiting transverse shifting of said dozer frame with respect to a longitudinal vehicle axis and cooperating with said rigid links for limiting the tilt of said dozer frame with respect to a horizontal reference plane.



a lost motion connection between the other end of said link and said one section including
abutment surfaces on said link and said one section limiting withdrawal of said link from said one section when said wing section is swung to its upright transport position and guide means within the hollow interior of and carried by said one section operatively associated with said other end of said link so as to maintain the latter at the bottom portion of said hollow interior of said one section when said wing section is in its transport position.

4,244,429

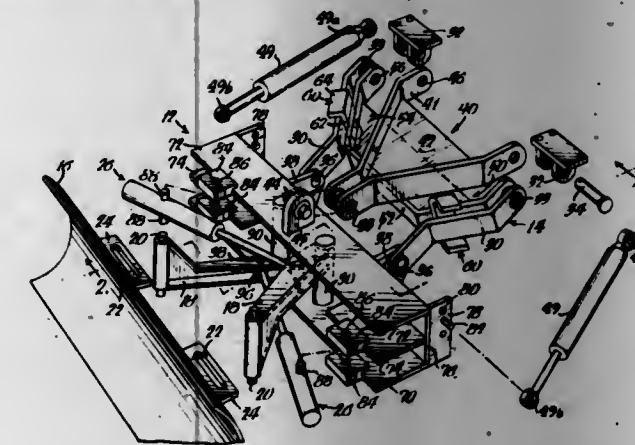
MOUNTING MECHANISM FOR ANGLE DOZER BLADE

Roland N. Nissen, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 12, 1978, Ser. No. 950,593
Int. Cl.³ E02F 3/76

U.S. Cl. 172-804

6 Claims



1. In a vehicle having an elongated vehicle frame with a dozer frame supported thereon and a dozer blade supported on said dozer frame, first and second transversely spaced rigid links, pivot means defining a universal connection for one end

2. A rolling cutter earth boring bit, comprising:
a bit body, said bit body having at least one downwardly extending arm with a projecting bearing pin, said bearing pin having a central axis, a top and a bottom;
a rolling cone cutter adapted to be rotatably mounted on said bearing pin;
bearing and cutter retaining means between said bearing pin and said rolling cone cutter;
a seal positioned around said bearing pin between said bearing pin and said rolling cone cutter;
an eccentric unloaded surface on the top of said bearing pin that extends radially about a location offset from said central axis of said bearing pin with a space existing between said rolling cone cutter and said unloaded surface;
at least one groove in said eccentric unloaded surface;
a concentric load surface on the bottom of said bearing pin that extends radially about a location concentric with said central axis of said bearing pin with reduced clearance between said rolling cone cutter and said load surface; and
a lubricant located between said rolling cone cutter and said bearing pin, said lubricant filling said space and said at least one groove.

4,244,430

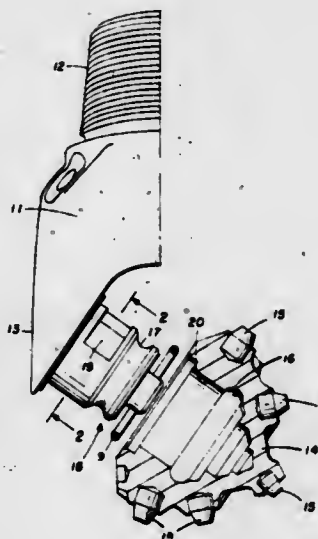
EARTH BORING BIT PACKED LUBRICATION SYSTEM

Glen D. Raiburn, Plano, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 939,527, Sep. 5, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,350
Int. Cl.³ E21B 10/22; B21K 5/04

U.S. Cl. 175-227

2 Claims



4,244,431

DRILLING APPARATUS WITH DUAL DRILL PIPE AND CROSS-OVER

Gary R. Johnson, Yorba Linda, Calif., assignor to Tri-State Oil Tool Industries, Inc., Boonville, La.
Division of Ser. No. 854,132, Nov. 23, 1977. This application
Jan. 18, 1979, Ser. No. 4,454
Int. Cl.³ E21B 17/00

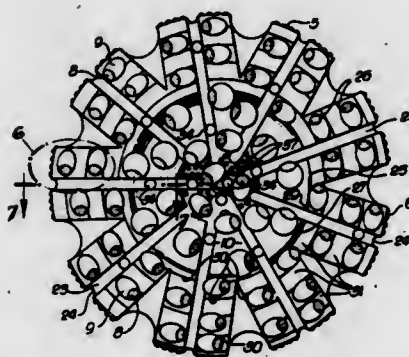
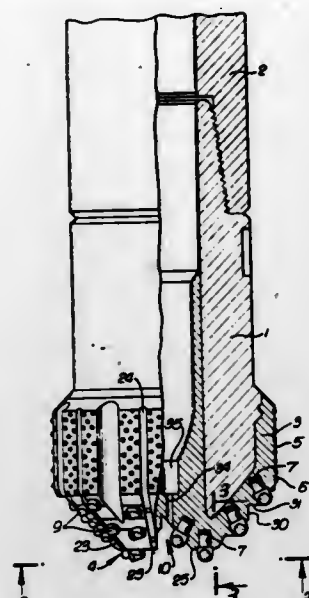
U.S. Cl. 175—320

4 Claims



1. Apparatus for drilling a bore hole into an earth formation comprising: a rotatable dual drill pipe string having an inner pipe and an outer pipe defining an inner bore in said inner pipe and an outer fluid path between the pipes; a drill bit having central drilling fluid passage means for the flow of drilling fluid through the bit into the bore hole; means for connecting said outer fluid path to a source of drilling fluid while permitting rotation of said drill pipe string; crossover means incorporated in said drill pipe string for directing drilling fluid from said outer fluid path to said drill bit passage means; said crossover means including means for blanking off said inner bore to prevent upward and downward fluid flow between said central fluid passage means and said inner bore.

and back, said hard material at said sockets overlying and being contiguous said backs and extending rearwardly therefrom,



whereby said material adjacent said sockets transmits thrusts through said backs to said cutters during rotation of the bit.

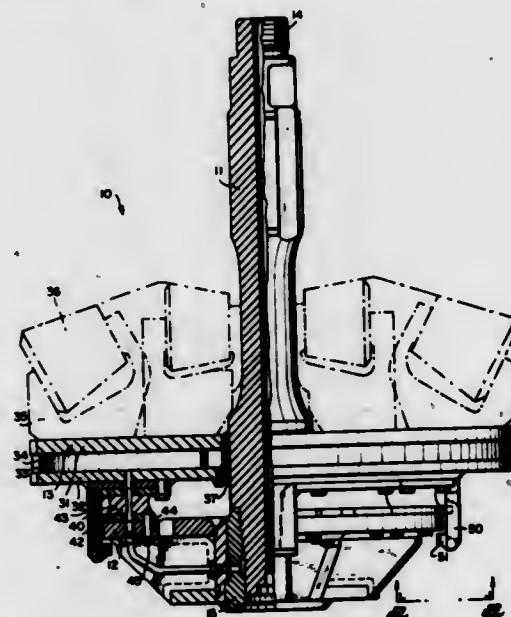
4,244,433

SAFETY MECHANISM FOR A RAISE DRILL

Jackson M. Kellner, Midland, Tex., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Dec. 26, 1978, Ser. No. 973,007
Int. Cl.³ E21B 9/24

U.S. Cl. 175—344

1 Claim



1. A raise drill for enlarging the diameter of a pilot hole comprising:
a drive stem having an upper end adapted to be connected to a drill column;

4,244,432

EARTH-BORING DRILL BITS

David S. Rowley; Bruce H. Walker, both of Salt Lake City, and
Coy M. Fielder, Granger, all of Utah, assignors to Christensen, Inc., Salt Lake City, Utah
Continuation of Ser. No. 704,424, Jul. 12, 1976, abandoned. This
application Jun. 8, 1978, Ser. No. 913,571
Int. Cl.³ E21B 9/36; E21C 13/01

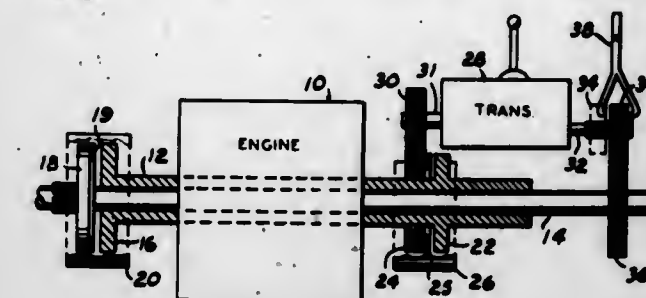
U.S. Cl. 175—329

15 Claims

1. An earth-boring bit comprising a metallic shank having a fluid passage, one end of said shank being coated with a hard material bonded to said end and forming a face of said bit, said hard material having a wear resistance substantially greater than that of said metallic shank, preformed sockets in said hard material of said face, preform cutters mounted in said sockets, each of said cutters including a plurality of abrasive particles bonded into a preform, said preform cutters each being formed with a cutting face and a back, each of said sockets embracing sides of said cutter mounted therein between said cutting face

a thrust plate integrally secured to the lower end of said drive stem;
a bit body having a plurality of rolling cutters mounted thereon, said bit body further having a base plate contiguous to and above said thrust plate;
a flexible coupling interconnecting the thrust plate to the base plate; and
safety means for drivingly securing the thrust plate to the base plate upon the severance of the flexible coupling, said safety means including retaining means for preventing relative axial movement between the thrust plate and the base plate upon severance of the flexible coupling, said retaining means including at least one lug having a flange secured to one of said plates for extending over and around the other of said plates with a small clearance therebetween, said retaining means further including auxiliary drive means for drivingly interconnecting the thrust plate to the base plate upon severance of the flexible coupling.

shaft including a pinion slip-spline mounted thereon, the improvement comprising:
first and second annular outstanding flanges secured to the respective end portions of said drive shaft;
a one piece wheel supported axle coaxially surrounded intermediate its ends by said drive shaft;
a disk coaxially slip-spline mounted on said axle adjacent said first flange,
said flange having a friction clutch surface facing said first flange;



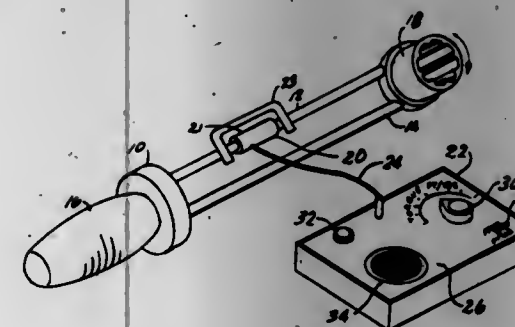
4,244,434

ELECTRONICALLY INDICATING TORQUE WRENCH

John T. R. Wilson, 736 Lynnhaven La., La Canada, Calif. 91011
Continuation-in-part of Ser. No. 892,303, Mar. 31, 1978. This
application Dec. 4, 1978, Ser. No. 966,395
Int. Cl.² G01G 19/00; G01L 5/24; B25D 23/142

U.S. Cl. 177—245

14 Claims



1. An electronically indicating torque wrench comprising:
handle means for applying torquing force to the wrench;
arm means structurally connected at one end to the handle means, said arm means having a mechanical stress that is a function of the torquing force applied to the wrench the arm means having magnetic characteristics that vary as a function of the mechanical stress in said arm means;
means connected to the other end of the arm means for engaging bolt heads and nuts, said means imparting torque, caused by the torquing force, to said bolt heads and nuts;
transducer means operatively coupled to the arm means and responsive to the stress therein such that a transducer means output signal is a function of the stress in the arm means; and
indicator means responsive to the transducer means for indicating when the transducer means output signal is at a predetermined value.

primary clutch means for moving said disk toward and away from said first flange;
a drive gear in mesh with said transmission spur gear and coaxially journaled by said drive shaft adjacent said second flange, said drive gear having a friction clutch surface facing said second flange;
an axle gear mounted on said axle for meshing with said pinion and,
secondary clutch means for moving said drive gear toward and away from said second flange.

4,244,435

VEHICLE WITH POWER DRIVEN SKI

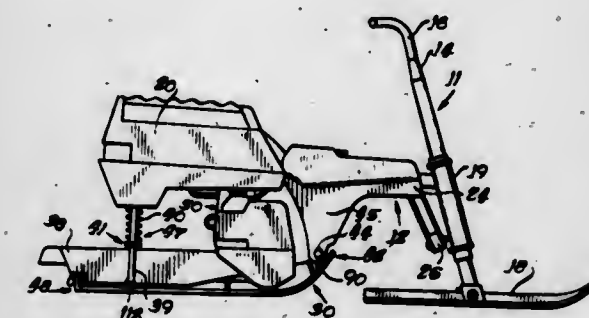
Richard W. Condon, Frankfurt, and Charles Stewart, Boardman, both of Ill., assignors to Roper Corporation, Kankakee, Ill.

Filed Jan. 19, 1979, Ser. No. 4,905

Int. Cl.³ B62M 27/02

U.S. Cl. 180—191

18 Claims



8. In a power driven ski vehicle having an upstanding frame with a front ski steerable by a handlebar and with a rear seat beneath which is a power driven ski driven by a motor with an endless propulsion track mounted on said power ski for movement along the underside of the ski to engage the snow and to propel the vehicle forward, the improvement comprising:
means on the underside of said power ski defining a longitudinally extending tunnel opening towards the snow for receiving and guiding the propulsion track traveling longitudinally within said tunnel, outer depending flanges at the longitudinally outer sides of the power ski providing turning edges therefor, and a longitudinally extending running surface located on each side of the tunnel and located inwardly with respect to said turning edges for supporting and sliding engagement with the snow, said track comprising an endless chain and transversely extending cleats fixed to said chain at spaced locations on said chain, said tunnel means having a roof engageable by said cleats and having chain guide means at the entrance to said tunnel to space said cleats from said tunnel

4,244,435

DIRECT DRIVE FOR A MOTOR VEHICLE

Hawkins Hom, 818 Morningside Dr., Millbrae, Calif. 94030

Filed Apr. 13, 1979, Ser. No. 29,795

Int. Cl.³ B60K 17/00, 7/00

U.S. Cl. 180—70 R

2 Claims

1. A direct drive for a wheel supported vehicle having a straight drive shaft type engine with its longitudinal axis disposed transversely of the vehicle adjacent one of the vehicle wheel supporting axle positions, said engine having a hollow drive shaft, said vehicle having a gear shift transmission mounted adjacent one end of said drive shaft, said transmission having a spur gear equipped input shaft and having an output

roof thereof, thereby preventing undue slapping and wearing of the cleats at the entrance to said tunnel.

4,244,437

APPARATUS FOR GENERATING WAVES IN THE GROUND

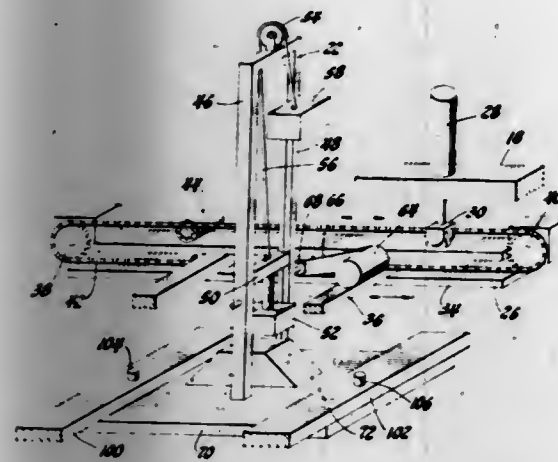
Earl Fulkerson, 4917 3A Street E, Gulf Lake Estates, Bradenton, Fla. 33507

Filed Feb. 13, 1979, Ser. No. 11,875

Int. Cl.³ G01V 1/14

U.S. Cl. 181-114

7 Claims



1. Apparatus for generating waves in the ground, comprising:
a frame;
an elongated, linear, rigid boom movably mounted on the frame;
a hammer mounted on the boom for movement therealong;
an anvil mounted on the ground beneath the frame in a first position thereto to be struck by the hammer;
cable means mounted on the boom and connected to the hammer for dropping it from an elevated position to strike the anvil; and
positioning means mounted on said frame and connected to the boom for positioning it in a first position with respect to the frame to guide the hammer for a downward motion in a first direction toward the anvil, said positioning means being operative to move the boom with respect to the frame to a second position thereto to guide the hammer for a downward motion in a second direction toward the anvil whereby the hammer is operative to generate a wave in the ground by a downward motion in either said first direction on said second direction without repositioning either the frame or the anvil with respect to the ground.

4,244,438

ENCASED INTERNAL COMBUSTION ENGINE, IN PARTICULAR FOR AN AUTOMOBILE

Michael Willmann, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 42,791

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826145

Int. Cl.³ G10K 11/16

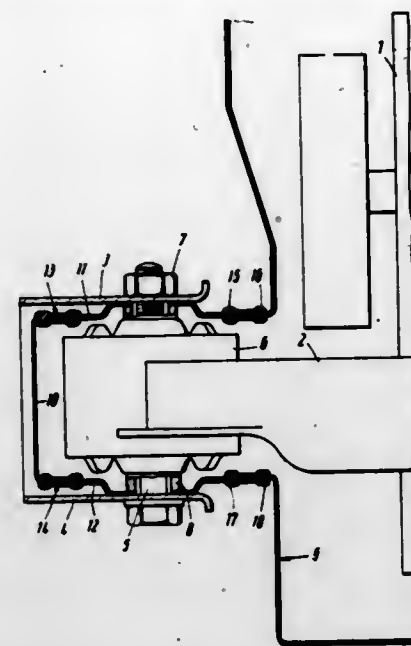
U.S. Cl. 181-204

6 Claims

1. An encased internal combustion engine, for example for an automobile, mounted on a frame via suspensions and enclosed in a sound-insulating casing with walls through which the suspensions pass, sound-insulating elements being interposed between the walls of the casing and the suspension, characterized in that

the suspensions in each case contain an engine-side arm with a sound-insulating element that is passed through by an attachment means for fixing the engine on the frame; and the walls of the casing extend on all sides around the arm as well as the sound-insulating element and are supported on

the frame by means of mounting wall portions of the casing through which the attachment means passes, which mounting wall portions are acoustically insulated relative



to the remainder of the casing by means of sound-insulating intermediate layers inserted into the walls of the remainder of the casing and engaging the mounting wall portions.

4,244,439

SOUND-ABSORBING STRUCTURE

Jens Wested, Herlev, Denmark, assignor to Elektronikcentralen, Hersholt, Denmark

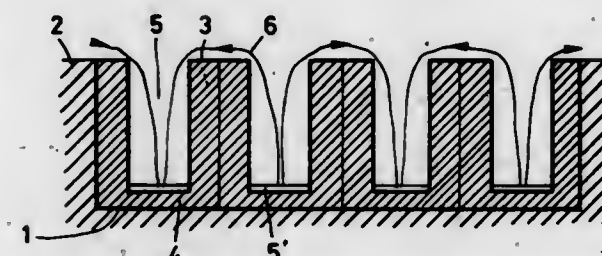
Filed Oct. 31, 1978, Ser. No. 956,274

Claims priority, application Denmark, Nov. 10, 1977, 4984/77; Aug. 4, 1978, 3452/78

Int. Cl.³ B64F 1/26; G10K 11/00

U.S. Cl. 181-210

15 Claims



1. A sound-absorbing structure for use adjacent a surface such as a surface of the soil or ground around roadways and airports comprising: material with a plurality of linear and parallel, spaced apart upstanding ribs with grooves between said ribs for damping a first sound field passing across said surface, characterized by the depth and width of the grooves and the height and thickness of the ribs being so dimensioned, and by the sound-absorbing structure being arranged substantially parallel to and the longitudinal direction of the ribs and grooves substantially orthogonal to the direction in which a sound attenuation is desired, that there is provided an acoustic coupling between adjacent grooves of the structure at the frequencies to be damped causing the generation of a local sound field, which is a system of stationary fluctuations from one groove to another acquiring its energy from said first sound field passing across said structure.

4,244,440

APPARATUS FOR SUPPRESSING INTERNALLY GENERATED GAS TURBINE ENGINE LOW FREQUENCY NOISE

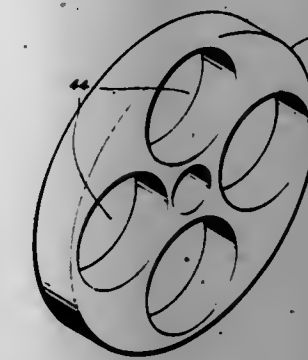
Ram K. Matta, Loveland, and William S. Clapper, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 1, 1978, Ser. No. 965,652

Int. Cl.³ F02K 1/00

U.S. Cl. 181-213

6 Claims



1. In a gas turbine engine including a gas flow path and a core exhaust nozzle, an apparatus for suppressing internally generated low frequency noise comprising:
a one-piece, generally disc-shaped suppressor located within and at the downstream end of the core exhaust nozzle of the engine, said suppressor comprising a plurality of open elements therethrough; a characteristic dimension of each of said open elements being less than or equal to a suppressor constant times the acoustic wavelength of an internally generated noise frequency which is to be suppressed.

4,244,441

BROAD BAND ACOUSTIC ATTENUATOR

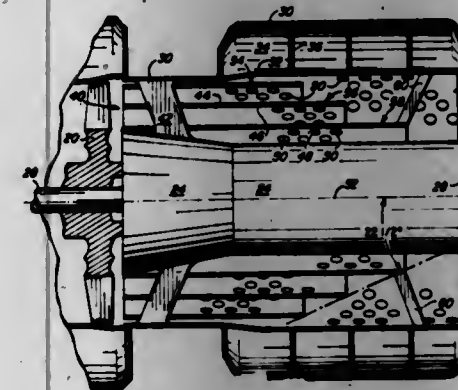
Alan G. Tolman, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 31, 1979, Ser. No. 62,383

Int. Cl.³ F01N 1/00; F02K 1/00

U.S. Cl. 181-213

19 Claims



1. An acoustic attenuator for heated exhaust gas from a gas turbine engine having a compressor, a combustor for heating compressed air from the compressor, turbine means driven by heated gases from the combustor, and a cylindrical exhaust duct for receiving only heated exhaust gases from said turbine means substantially without mixture with cooling fluid flow, said attenuator comprising:
a plurality of open-ended cylinders extending axially within said cylindrical exhaust duct and substantially concentrically arranged within said exhaust duct, each of said cylinders having a regular pattern of equally sized apertures throughout the entire surfaces thereof, the total area of said apertures being no more than approximately one half the full surface area of said cylinders.

4,244,442

METHOD AND APPARATUS FOR TREATING EXHAUST GASES PARTICULARLY FOR AIR-OPERATED TOOLS

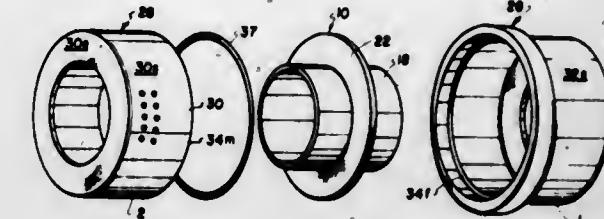
Henry A. Scarton, Troy, N.Y.; Warren C. Kennedy, Pittsburgh, Pa., and Keith R. Gaylo, Syosset, N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,034

Int. Cl.³ F01N 1/08

U.S. Cl. 181-230

22 Claims



1. A muffler construction, particularly for exhaust gases of air-operated tools, comprising, a tubular sleeve having a passage therethrough, exhaust gas pipe means extending into said sleeve and defining a constricted flow passage with said sleeve, a shell having first and second opposed cylindrical coaxial shell sections, each having an end wall at their respective outer ends and facing in opposite directions engaged with said exhaust gas pipe means, and side walls spaced radially outwardly from said sleeve, said exhaust gas pipe means having a gas pipe discharge, partition means in said shell section defining a first expansion chamber and at least one additional expansion chamber, said constricted flow passage extending between said first expansion chamber and said at least one additional expansion chamber, sealing and enclosing means closing said sidewalls of said first and second shell sections so as to define the first expansion chamber and at least one additional expansion chamber within said shell sections, the exhaust gases from said discharge entering into said first expansion chamber and forming a vortex therein with the gases then flowing into said constricted passage into said one additional expansion chamber to form an additional vortex, and a final gas discharge defined in said wall of said second shell section communicating with said additional expansion chamber.

4,244,443

DRAWER TYPE EMERGENCY ESCAPE

Hiromitsu Naka, Yashio, Japan, assignor to Kabushiki Kaisha Naka Gijutsu Kenkyusho, Hokkaido, Japan

Filed Jan. 4, 1979, Ser. No. 896

Claims priority, application Japan, Nov. 2, 1978, 53-135415

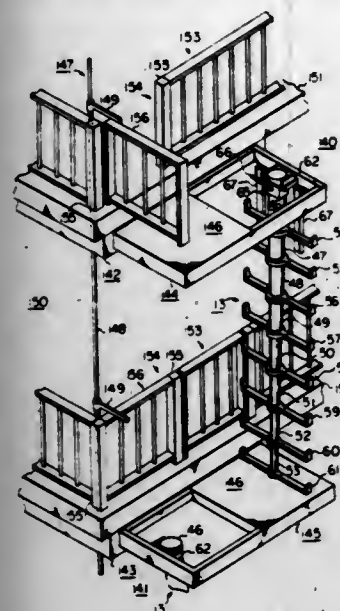
Int. Cl.³ E06C 9/10, 5/24

U.S. Cl. 182-84

17 Claims

1. A drawer type emergency escape comprising:
a stowage box adapted to be attached to a support;
a slidable frame mounted to be slidably extended out of and retracted into said stowage box;
a telescopically extensible escape means attached to said slidable frame to be received into and extended out of the frame; and
a shift mechanism adapted to pull said slidable frame out of said stowage box as said emergency escape is employed and including a support shaft fixed to a side of said stowage box, a rotary plate rotatably mounted on said support shaft and operable from the outside of said stowage box, a pair of connection links connected at first ends thereof to said rotary plate, a pair of operation links connected at first ends thereof to second ends of said connection links, extensible tongs connected at first ends thereof to second ends of said operation links and having second ends

adapted to engage said slidable frame, and a ring guide groove guiding said operation links in a direction extend-



ing at right angles to the direction of extension of said slidable frame.

4,244,444

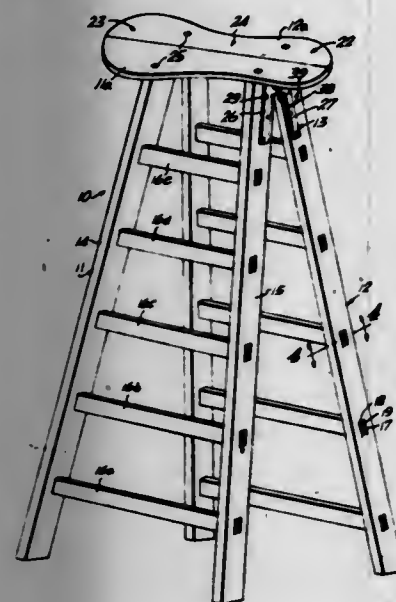
WALKING STEPLADDER

Giovanni N. Quagglotto, 400 NE. 137th St., North Miami, Fla. 33161

Filed Oct. 15, 1979, Ser. No. 84,685
Int. Cl.³ E04G 1/18

U.S. Cl. 182-104

10 Claims



1. A walking stepladder, comprising, in combination, a pair of substantially identical ladder side members, each side member comprising a pair of elongated side rails secured in spaced relation by a plurality of mutually-spaced, transverse step members and a transverse top portion, hinge mechanism joining upper end portions of the side rails of each ladder side member and providing for relative inward and outward pivotal swinging of said ladder side members, said hinge mechanism comprising means limiting relative outward pivotal swinging movement of said ladder side member to a first position of ladder stability, and releaseable means limiting relative inward pivotal movement of said ladder side members with respect to said first limit position, to a second position of ladder stability, thereby providing for safe walking of the ladder by the user when straddling it from above the transverse top portions thereof with the legs supported by opposed step members of said ladder side members.

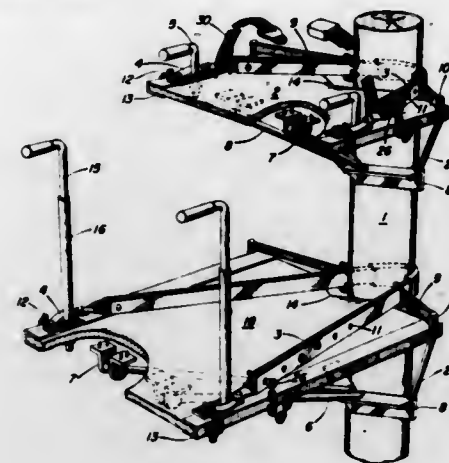
4,244,445
SUPPORT PLATFORM FOR VERTICAL POLES OR TREES

Clarence A. Strode, 214 S. Eleventh St., Ponca City, Okla. 74601

Filed Apr. 18, 1979, Ser. No. 31,001
Int. Cl.³ A45F 3/26; A47C 9/10

U.S. Cl. 182-136

10 Claims



1. An apparatus for use on substantially vertical poles, comprising two sections which cooperate in ascending and descending said vertical poles, comprising:

- (a) an upper section comprising a seat member having handle members attached thereto; said handle members connected to flexible gripping means removably and adjustably secured to said seat member; a brace member supporting said seat member, attached at one end to the underside of the seat member and at the opposite end contacting said pole, whereby application of force to the seat member increases the contact of the brace member with said pole; and
- (b) a lower section comprising a foot platform having handle members attached thereto; said handle members connected to flexible gripping means removably and adjustably secured to said foot platform, and a brace member attached at one end beneath said platform and at the opposite end in contact with the pole, whereby application of force to the foot platform increases the grip of the brace member on said pole; whereby the pole is ascended by drawing the lower section to a convenient height below the seat section, then standing on said lower section and raising said seat section to a convenient height and repeating the process until the desired height is reached.

4,244,446

ADJUSTABLE LADDER SUPPORT

George R. Mair, 7785 Cote de Liesse, St. Laurent, Quebec, Canada (H4T 1G3)

Filed Oct. 15, 1979, Ser. No. 84,853

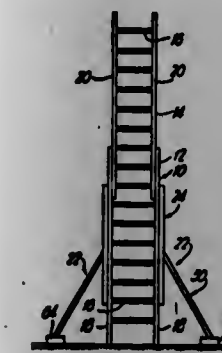
Claims priority, application Canada, Oct. 20, 1978, 313847
Int. Cl.³ E06C 1/16

U.S. Cl. 182-172

15 Claims

1. A safety support for a ladder having a pair of legs spaced apart by a plurality of rungs, comprising, for each leg of the ladder: a channel member for connection to the ladder, said channel member defining a longitudinal slot in one side thereof; a first shoe member slidably receivable within said channel member; means for locking said first shoe member at a desired longitudinal position within said channel member; a

second shoe member slidably receivable within said channel member; and a brace member pivotally connected at one end



to said first shoe member and at the other end to said second shoe member.

4,244,447

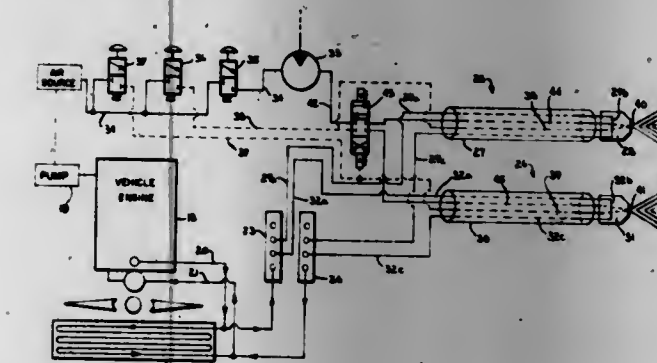
MOBILE POWER CRANE-EXCAVATOR WITH OPEN GEAR GREASING

John R. Hanitz, Green Bay, Wis., assignor to Northwest Engineering Company, Green Bay, Wis.

Filed Jan. 8, 1979, Ser. No. 1,711
Int. Cl.³ F01M 5/00; F16N 17/04

U.S. Cl. 184-6.22

8 Claims



1. In a mobile power crane-excavator having operative mechanism including exposed gears:

- (a) a frame,
- (b) a water cooled internal combustion engine mounted on said frame and with said engine providing a source of heated water,
- (c) means connecting said engine to said operative mechanism for driving the latter,
- (d) a source of grease for application to said gears,
- (e) a gear greasing spray assembly disposed adjacent a said gear,
- (f) and means for transporting both grease from said source and heated water from said engine into closely adjacent heat transferring relationship at said spray assembly so that the traveling grease is lowered in viscosity before being sprayed onto the said gear.

4,244,448

ARTICLE CONSOLIDATION SYSTEM

William F. Matheny, III; Clay Bernard, II, and William M. Angell, all of Tulsa, Okla., assignors to Clay Bernard Systems International Ltd., Tulsa, Okla.

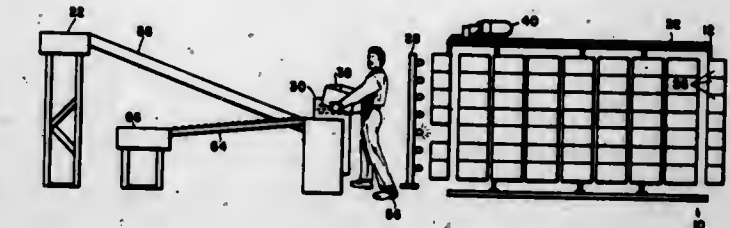
Filed Jul. 11, 1978, Ser. No. 923,653
Int. Cl.³ B65G 15/12

U.S. Cl. 186-35

4 Claims

1. A consolidation system for consolidating preselected articles into predetermined combinations of articles which comprises a continuous track; a continuous chain supported from said track and movable in a horizontal direction around said track; a plurality of horizontally spaced and vertically extending baskets suspended from said chain, each basket

having vertically spaced compartments; drive means for driving said chain around said track, said drive means including a sprocket engagable with said chain and a motor for driving said sprocket; an operator work station located at a fixed position on the outside of said track where an operator can perform predetermined work functions of introducing into said baskets said preselected articles and removing said predetermined combinations of articles from said baskets; alignment means for moving said chain a predetermined degree to align a pre-



lected basket with said operator work station, said alignment means including a pulse generator adapted to emit pulses as said motor drives said chain, a sensor located at a fixed position adjacent said chain, an emitter mounted on said chain and adapted to activate said sensor once during each complete revolution of said chain; and indicating means located at said work station to indicate a predetermined vertical compartment on said preselected basket where a predetermined work function is to be performed.

4,244,449

TENSIONING DEVICE FOR TENSIONING OF HYDRAULIC HOSES ON TELESCOPIC LIFT MAST ASSEMBLIES

Friedrich Renk, and Jürgen Hündel, both of Dortmund, Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

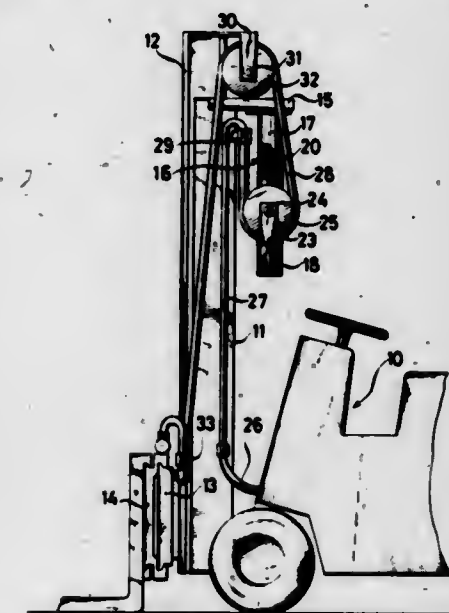
Filed Mar. 21, 1979, Ser. No. 22,546

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815024

Int. Cl.³ B66B 9/20

U.S. Cl. 187-9 E

2 Claims



1. In a tensioning device for tensioning of hydraulic flexible tubes on telescopic lift mast assemblies of fork lift trucks with the flexible tubes being turned-around over a pulley which is rotatably mounted on the stationary outer upright and an additional pulley which is rotatably mounted on the sliding inner upright, the improvement comprising

- a holder,
- means for guiding said holder on the stationary outer upright,
- a spring operatively engaging said holder,
- a rotatable pulley being rotatably mounted on said holder,

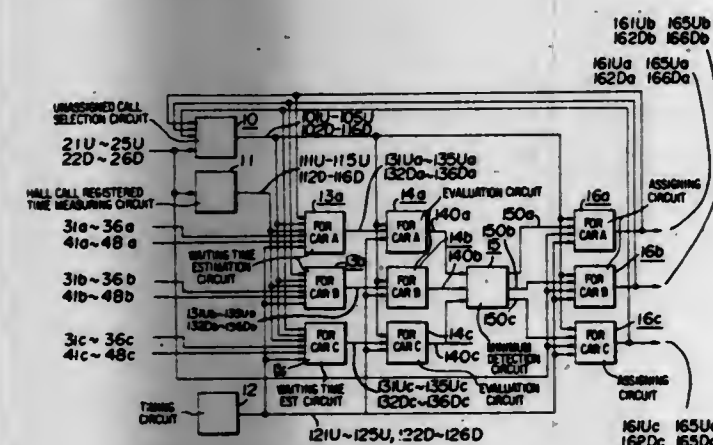
said guiding means comprises, a tube fastened on the upright column, said tube being formed with a slot, a guide rod is arranged in the central axis of said tube, a slide is slidably mounted on said guide rod, said slide is guided in said slot and is connected with said holder for said rotatable pulley, said spring engages said slide.

4,244,450

GROUP SUPERVISORY SYSTEM OF ELEVATOR CARS
Yasukazu Umeda; Toshiyuki Kamohara; Seichi Goto; Shintaro Tsuji, and Yoshio Miyazaki, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 844,919, Oct. 25, 1977, abandoned.
This application Jul. 12, 1979, Ser. No. 57,073
Int. Cl.³ B66B 1/22

U.S. Cl. 187-29 R

2 Claims



1. A group supervisory system of elevator cars which comprises:

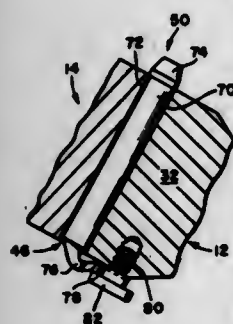
waiting time estimating function means for estimating the waiting time at each floor; and
waiting time evaluation function means for giving a predetermined weight to the estimated waiting time output of said estimating function means, said predetermined weight being a variable computed as a function of the estimated waiting time and utilized by the supervisory system as an additional factor in assigning a car to a call.

4,244,451

DISC BRAKE AND PIN ASSEMBLY THEREFOR
Donald D. Johansson, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Filed Mar. 26, 1979, Ser. No. 23,930
Int. Cl.³ F16D 65/02

U.S. Cl. 188-73.3

5 Claims



1. In a disc brake assembly having a torque member disposed adjacent a rotor, a caliper movable relative to the rotor in order to urge a pair of friction elements into engagement with the rotor, and a pin assembly movably supporting the caliper relative to the torque member, the improvement wherein the pin assembly includes a sleeve engageable with the caliper and the torque member, said sleeve comprising a cylinder with an axially extending split, said cylinder defining a bore for receiving

ing a pin element which forms a clearance with said cylinder bore wall, and said axially extending split permitting said cylinder to contract radially into engagement with said pin during a braking application to transmit torque from the caliper to the torque member via said split cylinder and said pin element.

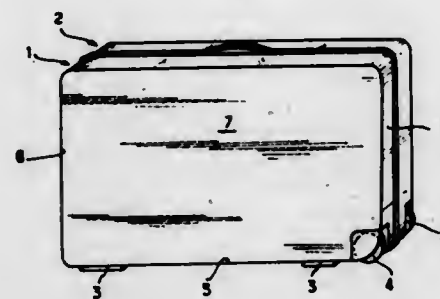
4,244,452

SUITCASE WITH ROLLERS

Andre G. Seynaeve, Senlis, France, assignor to Societe Delsey, Bobigny, France
Filed Aug. 21, 1979, Ser. No. 68,339
Claims priority, application France, Oct. 30, 1978, 78 30729
Int. Cl.³ A45C 5/14

U.S. Cl. 190-18 A

8 Claims



1. A suitcase comprising:

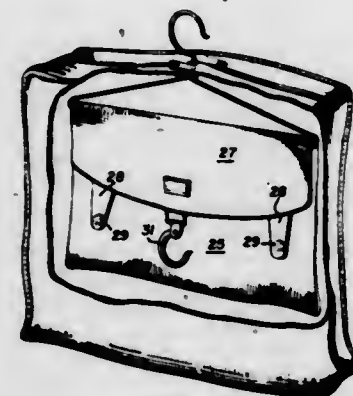
two shells and at least two rollers disposed in housings provided in the outer faces of the shells, so as to project radially outwardly from said housings, first and second added boxes, first and second complementary members forming each added box within which one of said rollers is positioned, one of said first and second members of each box forming the bottom and the sidewall of the box and said one member being shaped so as to contact intimately an outer face portion of one of the housings;
a shaft extending between said first and second members of each box upon which said rollers are mounted; and
means for securing said boxes in the housings so as to be positioned outside the shells and for interlocking said first and second members.

4,244,453

GARMENT COVER, HANGER AND CARRIER WITH REMOVABLE CONTAINER FOR ACCESSORIES, ETC.
Kurt P. Herz, 12-11 43rd Ave., Long Island City, N.Y. 11101
Filed Oct. 22, 1979, Ser. No. 87,690
Int. Cl.³ A45C 5/00

U.S. Cl. 190-43

3 Claims



1. A garment cover, carrier, hanger and accessories container wherein the garment cover comprises a generally rectangular flexible sheet which is transversely foldable to provide a rear section and a front section; means at the adjacent ends of said rear section and said front section when in folded condition for permitting the extension therebetween of the shank and hook members of a coat hanger while the main body portion of said coat hanger is disposed between said front and

rear sections, a zipper fastener for locking together the front and rear sections of said generally rectangular flexible sheet when the same are in transversely folded position; and a pouch-like accessories container including front and rear walls with an extending flap on one of said walls for embracing the horizontal bar of a coat hanger and overlapping the other wall; and means for fastening said flap when in the aforementioned overlapping position.

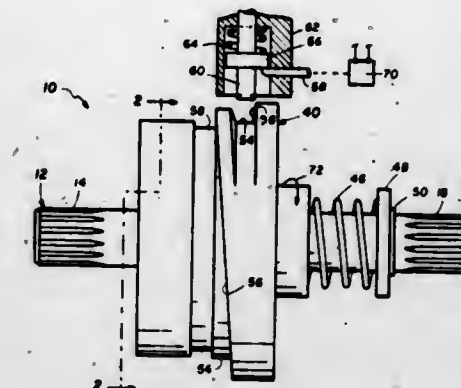
4,244,455

ROTARY SHAFT DECOUPLING MECHANISM

W. Aleck Loker, Leonardtown, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 17, 1978, Ser. No. 952,169
Int. Cl.³ F16D 11/06

U.S. Cl. 192-24

4 Claims



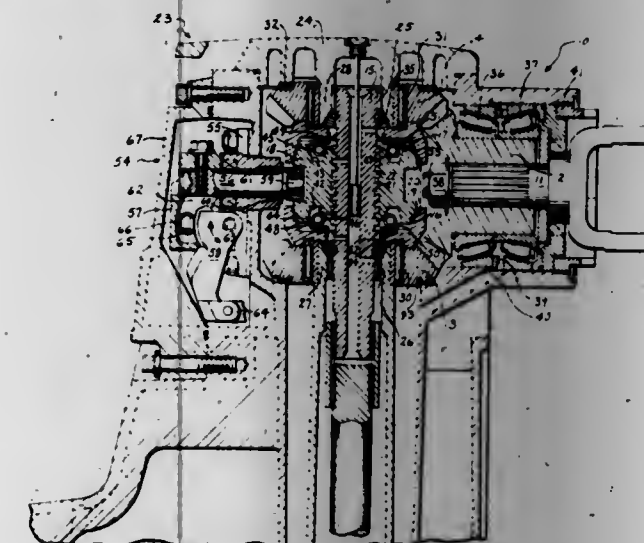
4,244,454

CONE CLUTCH

Herbert A. Bankstahl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Apr. 30, 1979, Ser. No. 34,521
Int. Cl.³ F16D 11/04, 21/00, 21/04

U.S. Cl. 192-21

8 Claims



1. A clutch apparatus comprising:

- (A) a housing;
- (B) a main shaft;
- (C) first and second main bearings supporting said main shaft on said housing;
- (D) a forward gear having a clutch face on one side, said forward gear freely rotatable about said main shaft;
- (E) forward bearings supporting said forward gear on said housing, with said forward bearings in approximately the same plane as the gear teeth of said forward gear;
- (F) a reverse gear having a clutch face on one side facing said clutch face on said forward gear, said reverse gear freely rotatable about said main shaft;
- (G) reverse bearing supporting said reverse gear on said housing, with said reverse bearings in approximately the same plane as the gear teeth of said reverse gear;
- (H) a drive gear means for driving said forward and reverse gears in respectively opposite directions;
- (I) a sleeve member mounted on said main shaft between said forward and reverse gears, said sleeve member having:
 - (a) a clutch face at each end, each selectively engageable with one of said clutch faces of said forward and reverse gears;
- (J) a shift means for selectively moving said sleeve member axially along said shaft to a forward or reverse drive position to engage one of said sleeve clutch faces with one of said forward or reverse gear clutch faces; and
- (K) a spring means for automatically forcing said sleeve member toward whichever of said drive positions said sleeve member is closest to.

1. A rotary shaft decoupling device comprising:
an input shaft rotatable about its longitudinal axis;
a driving component fixed on said input shaft for rotation therewith and fixed against axial movement, said driving component having a first diameter and characterized by a plurality of axially extending first external grooves spaced about the periphery thereof;
an output shaft aligned with said input shaft for rotation about said axis;
a driven component fixed on said output shaft for rotation therewith and fixed against axial movement, said driven component being disposed immediately adjacent said driving component with a discontinuity therebetween and having a like plurality of axially extending, second external grooves spaced about the periphery thereof, said second external grooves being aligned with said first external grooves;

force transmitting means formed of a high impact resistant synthetic plastic material and comprising a plurality of force transmitting elements and having a first position wherein said elements are engaged in said aligned first and second external grooves so as to span said discontinuity and key said driving and driven components together for positive simultaneous rotation;
slide means, coaxially mounted for rotation with one of said components and surrounding said force transmitting means, said slide means being mounted for axial movement relative to said components and operative to shift said force transmitting means from said first position to a second position wherein said elements are entirely to one side of said discontinuity, whereby said driven component is decoupled from positive simultaneous rotation with said driving component;
biasing means yieldably urging said slide means in a direction for holding said force transmitting means in said first position; and
actuator means for effecting said axial movement of said slide means in response to rotation thereof.

4,244,456

EJECTED ROLLER SHAFT DISCONNECT MECHANISM

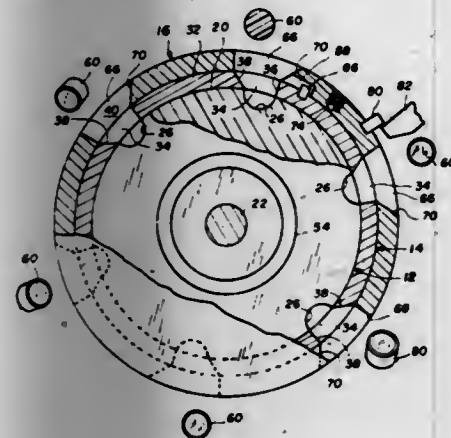
W. Aleck Loker, Leonardtown, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 21, 1978, Ser. No. 944,433
Int. Cl.³ F16D 9/00

U.S. Cl. 192-27

12 Claims

1. A rotary shaft decoupling device comprising:
a rotary driving component comprising a circular flange

portion presenting a substantially cylindrical surface interrupted by a plurality of axially extending grooves;
 a rotary driven component having a cylindrical portion closely encircling and coaxial with said cylindrical surface and characterized by a plurality of slots;
 a plurality of force transmitting elements seated in said grooves and extending into said slots so as to key said driving component to said driven component;
 indexing means, coaxial with and closely encircling said driven component, for holding said force transmitting elements in said slots and grooves, said indexing means being characterized by a plurality of slots;



detent means for releasable holding said indexing means for rotation with said driving and driven components and in a predetermined rotational position relative to said driven component, in which position said slots of said indexing means are displaced from registration with said slots of said driven component; and
 actuating means for arresting rotation of said indexing means until rotation of said driving and driven components brings said grooves and said slots of said driven component into substantial registration with said slots of said indexing means, whereby said force transmitting elements are ejected from said device and said driving and driven components are released for rotation independent of one another.

4,244,457

PLATE CONVEYOR, ESPECIALLY FOR TRANSPORTING INDIVIDUALS

Werner Ernst, Rotkreuz, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

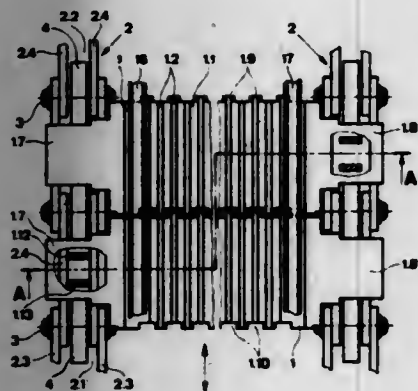
Filed May 10, 1978, Ser. No. 904,495

Claims priority, application Switzerland, May 25, 1977, 6438/77

Int. Cl.³ B65G 15/00, 17/06

U.S. Cl. 198—321

10 Claims



1. A plate conveyor belt, especially for transporting individuals, comprising:
 a plurality of plates arranged in succession in a predetermined direction of travel of the plate conveyor belt;

a pair of endless, substantially mutually parallel drive chains, for driving said plates;
 said plates being arranged between said drive chains;
 each of said drive chains having chain links;
 guide means for guiding said plates;
 travelling rolls for revolvingly guiding said plates at said guide means in at least one or a number of predetermined planes;
 each of said plates having opposed sides extending substantially parallel to the direction of travel of the plate conveyor belt;
 each drive chain being arranged laterally of and along one of the parallel sides of the respective plates;
 at least one attachment element for connecting each chain link with an associated one of the plates;
 each plate having a prolongation at each said side extending essentially parallel to the direction of travel of the plate conveyor belt;
 each said prolongation extending over its related chain link;
 each said prolongation providing a support portion by means of which the related plate bears at said chain link;
 each support portion having a side confronting the related chain link;
 at least one projection provided at an end of said side of each support portion confronting said related chain link;
 said at least one projection together with the side of the plate forming a guide;
 the chain links of each drive chain comprising wider chain links and narrower chain links, each having pairs of brackets;
 said wider chain links being received in said guide;
 each support portion being further provided with at least one further projection approximately at the central region of a further side thereof confronting the chain link and which further projection extends transversely with respect to the direction of travel of the plate conveyor belt; and
 said further projection constituting a guide for an inner surface of the brackets of a narrow chain link.

4,244,458

SAMPLE VIAL GUIDE

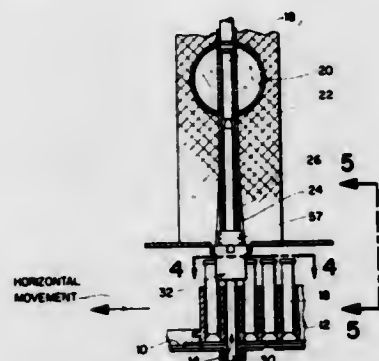
Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 1, 1977, Ser. No. 812,310

Int. Cl.³ B65G 47/00

U.S. Cl. 198—339

7 Claims



1. In apparatus for moving sample vials along a generally horizontal path toward a first operating station and for transferring a vial in an operative position at said first operating station upwardly in a generally vertical path through an access passage toward a second operating station and for subsequently returning the vial along said vertical path to said first operating station for movement along said horizontal path away from said first operating station, the improvement comprising means for guiding each vial into position at said first operating station and constraining the vial thereat which includes:
 first and second jaws disposed in an opposing relationship at

said first operating station and depending generally vertically on opposite sides of said horizontal path and being shaped to accommodate a sample vial therebetween in said operative position; and
 means supporting said first and second jaws for lateral movement relative to each other in a direction transverse to said horizontal path between a closed position for constraining said vial in said operative position and an open position laterally outward thereof for accommodating movement of said vial along said horizontal path.

4,244,459

PARISON UNSCRAMBLER

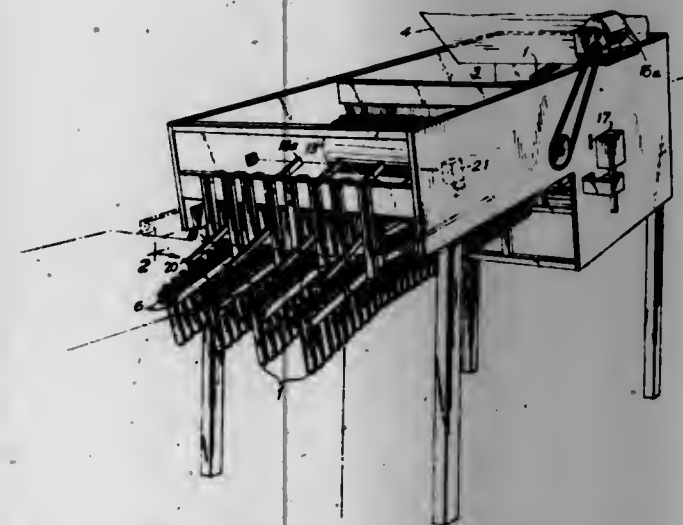
Barton R. Garrett, 131-12 232nd St., Laurelton, N.Y. 11413

Filed Jan. 26, 1978, Ser. No. 872,566

Int. Cl.³ B65G 47/24

U.S. Cl. 198—389

8 Claims



1. In an apparatus for unscrambling, orienting and feeding elongated objects having a radial flange as they move from a feeder to a processing station, the combination of a sorting chamber for receiving said objects at one end thereof, and discharging them from the other end, one or more pairs of smooth feeding rollers mounted longitudinally throughout the length of said sorting chamber, the space between the rollers of each pair being large enough to receive the body of the object and small enough to prevent the passage of the flanged portion therebetween, said feeding rollers being inclined downwardly from the receiving end of said chamber to the discharge end thereof to promote gravity feed of said objects through said sorting chamber, and means for rotating said rollers of each pair at equal speed in an upward direction to aid in feeding said objects along the rollers and through said chamber, in combination with a rotatable clearing wheel in said sorting chamber, means mounting said clearing wheel so that its axis is substantially at right angles to the direction of feed of said feeding rollers and positioning the same above said feeding rollers a distance sufficient to prevent those objects not properly located between said feeding rollers from advancing beyond said clearing wheel, and means driving said clearing wheel in a direction opposite to the normal movement of the objects being oriented and passing through said sorting chamber.

4,244,460

PROCESS AND EQUIPMENT TO FORM MODULES OF BISCUITS OR OTHER LIKE PRODUCTS

Fergus M. Groundwater, 194 Betourney St., St-Lambert, Quebec, Canada

Filed Aug. 31, 1978, Ser. No. 938,536

Int. Cl.³ B65G 47/26

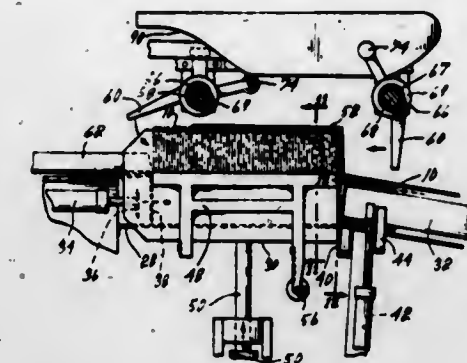
U.S. Cl. 198—429

16 Claims

1. An apparatus for automatically and continuously forming a single row of regularly spaced discrete modules of thin products, stacked face to face such as biscuits, from several uninter-

rupted feeding rows of products, also stacked face to face, comprising:

- (a) a module former for separating a discrete module of products, said module having a predetermined length, from the leading end of each feeding row of products;
- (b) means for transferring said modules into separate carriers which support said modules, said means comprising lift slats built into the sides of the module former and engag-



ing the module of products on each of its lower edges, and a prime mover for lifting the module former above the row of products, each of said carriers comprising a pair of moving carrier blocks including fingers adapted to engage the front and rear ends, respectively, of the modules when the modules are raised by the module former; and
 (c) means for moving said carriers so as to merge the modules into a single row of modules uniformly spaced for delivery to other equipment.

4,244,461

DEFLECTING DEVICE FOR FOLDED SHEET PRODUCTS

Robert Fischer, Heuchelheim, and Rudolf Stüb, Wachenheim, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

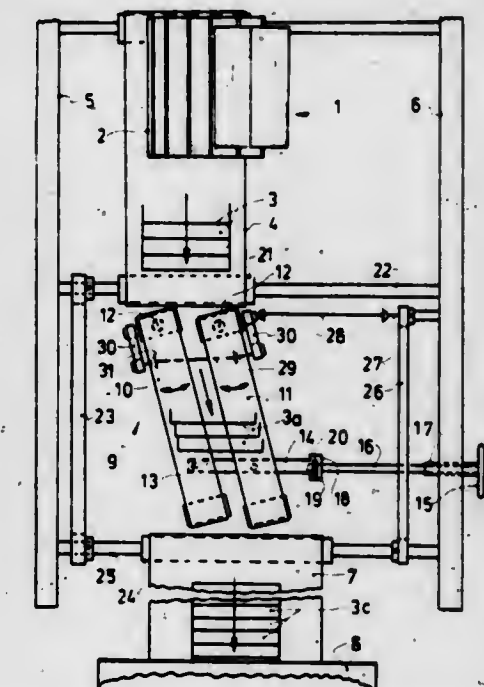
Filed May 17, 1979, Ser. No. 40,006

Claims priority, application Fed. Rep. of Germany, May 27, 1978, 2823247

Int. Cl.³ B65G 47/30

U.S. Cl. 198—456

4 Claims



1. In a device for deflecting a product stream of folded sheet products from a first to at least a second longitudinal conveyor belt, said belts being laterally displaced with respect to one another, the improvement comprising:
 a supplemental longitudinal conveying means which bridges the distance between the first and the second longitudinal

conveyor belts and which is inclined to an extent corresponding to the lateral displacement of said first and second longitudinal conveyor belts, said longitudinal conveying means comprising two parallel, synchronously-driven conveyor belts positioned adjacent to one another which are each pivotably mounted about a pivot axis approximately running normally to the plane of conveyance and which are coupled with an adjusting device for adjusting their pivotable position, said adjusting device having an adjusting arm which is pivotably coupled with each of said parallel, adjacent conveyor belts at respective pivot points so that the distance between said pivot points of said adjusting arm is the same as the distance between the pivot axes, said arm being coupled with an adjusting spindle supported by an outer machine casing by means of a pin-slot connection.

4,244,462

BOTTLE TABLE FOR LABELING MACHINES

Hermann Kronseder, Regensburger Strasse, 8404 Würth, Fed. Rep. of Germany

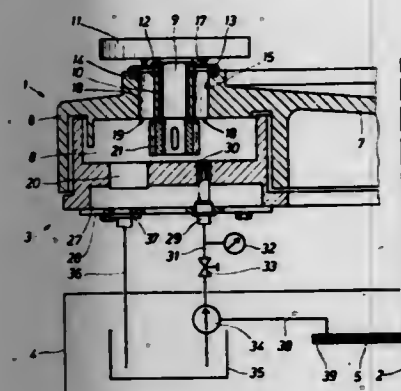
Filed Sep. 27, 1979, Ser. No. 79,608

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842794

Int. Cl.³ B65G 45/02

U.S. Cl. 198—500

10 Claims



1. A revolving table for transporting articles such as bottles, said table including a wheel-like member supported for revolving about a vertical axis, a plurality of bearing means mounted in said member radially spaced from said axis and arranged angularly around said axis, a vertically disposed shaft in the respective bearing means, a bottle-supporting turntable mounted on the upper ends of the respective shafts, a stationary member above which said wheel member revolves and which cooperates with said wheel member to define an annular recess in which a cam is arranged and which has elements controlled by said cam for rotating said turntables, and improved means for lubricating said bearings wherein: said wheel-like member is provided with a first duct adjacent each shaft, said duct having an inlet opening presented toward said recess and an outlet opening in communication with said bearing means, and at least one nozzle mounted in said stationary member for projecting lubricant into said inlet openings of said respective first ducts successively while said wheel-like member revolves.

4,244,463

CONVEYOR APPARATUS

Thomas S. Bartley, Mobile, Ala., assignor to V-V Systems, Inc., Minneapolis, Minn.

Filed Jul. 18, 1979, Ser. No. 58,612

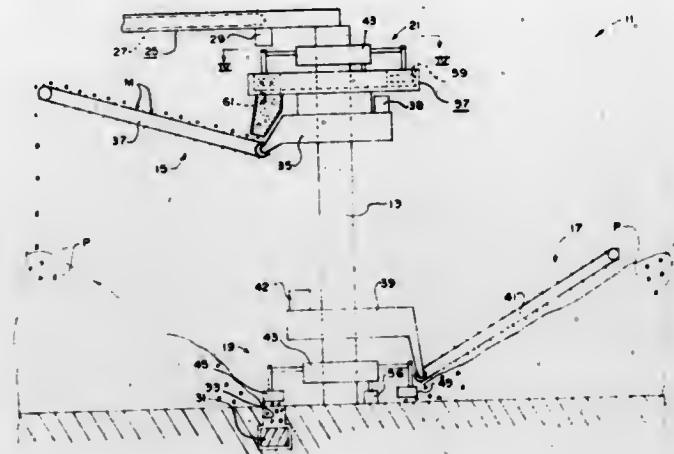
Int. Cl.³ B65G 65/28

U.S. Cl. 198—508

8 Claims

1. A conveyor apparatus for conveying loose bulk material from a first location to a second location, said conveyor apparatus comprising:

- (a) body means for rotating about a vertical axis;
- (b) a plurality of wing means fixedly attached to said body means and extending radially outward from the vertical axis about which said body means rotates, said plurality of wing means having a portion positioned substantially adjacent said first location and having a portion positioned substantially adjacent said second location, rotation of said body means causing said wing means to rotate and to



- convey said loose bulk material from said first location to said second location;
- (c) a vertical column means about which said body means is rotatably attached; and
- (d) a stacker means rotatably attached to said vertical column means for conveying said loose bulk material from said second location to a substantially circular storage pile about said vertical column means.

4,244,464

CONVEYOR, IN PARTICULAR FOR EGGS

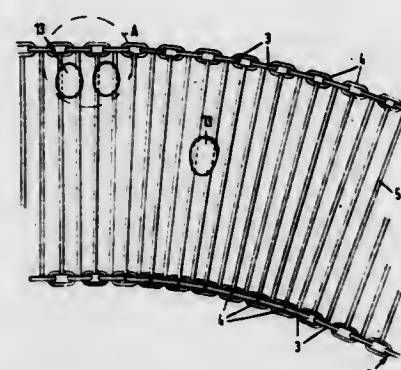
Pieter van Capelleveen, Ziest, Netherlands, assignor to Gebr. van Capelleveen B.V., Utrecht, Netherlands

Filed Dec. 5, 1979, Ser. No. 100,343

Int. Cl.³ B65G 17/06, 13/02

U.S. Cl. 198—688

5 Claims



1. A conveyor, in particular for eggs, comprising a conveyor belt composed of bars of spring steel or like material, which bars extend transversely to the conveyor belt and have their end portions secured to chains of the type having closed annular links extending in perpendicular planes, which links, for traversing bends, permit temporary shortening of the chain by sliding one into the other, characterized in that the successive bars in the belt are disposed at different levels relative to the plane of transportation.

4,244,465

ELECTROSTATIC HOLDING AND CONVEYING APPARATUS

Shintaro Hishikawa, and Hideo Yamada, both of Kawaguchi, Japan, assignors to Taihei Chemicals Limited, Tokyo, Japan

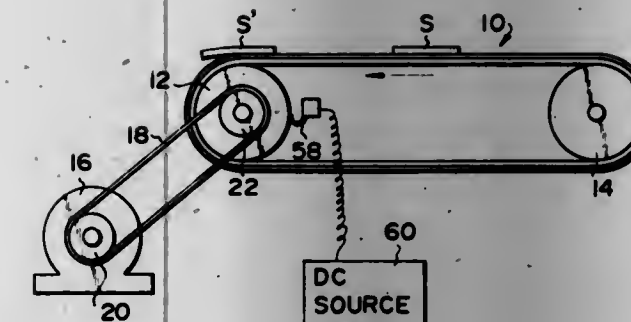
Filed Apr. 17, 1979, Ser. No. 30,859

Claims priority, application Japan, Apr. 21, 1978, 53/47486

Int. Cl.³ B65G 47/92

U.S. Cl. 198—691

9 Claims



1. An electrostatic holding and conveying apparatus comprising a pair of rollers having at least one driving roller; an endless conveyor belt extending between said pair of rollers for conveying a sheet-like material thereon by holding it from one side only of said material in contact with the endless conveyor belt, said endless conveyor belt having a base layer of flexible insulative material, two groups of electrodes spaced and disposed on a first surface of said base layer in such a manner that each two adjacent electrodes are positionally separated and electrically insulated from each other and belong to different groups, respectively, a protective layer of flexible material of poor conductivity disposed on the whole of said first surface of said base layer to cover all of said electrodes, and at least two terminals located on one surface of said conveyor belt and electrically connected to said two groups of electrodes, respectively; and at least one pair of contact members connected across a high voltage DC source and located to continuously contact said terminals of said conveyor belt, respectively, for applying a high voltage between said two groups of electrodes, thereby establishing an electrostatic flux appearing outside said protective layer of said conveyor belt so that the sheet-like material on the surface of said protective layer of said conveyor belt is electrostatically attracted to and held by the conveyor belt by the action of an electrostatic bonding force between an electrical charge in each electrode and an electrical charge of an opposite polarity induced in the sheet-like material, whereby, when said conveyor belt is driven, the sheet-like material is fed together with said conveyor belt.

4,244,466

CONTACT LENS APPLICATOR

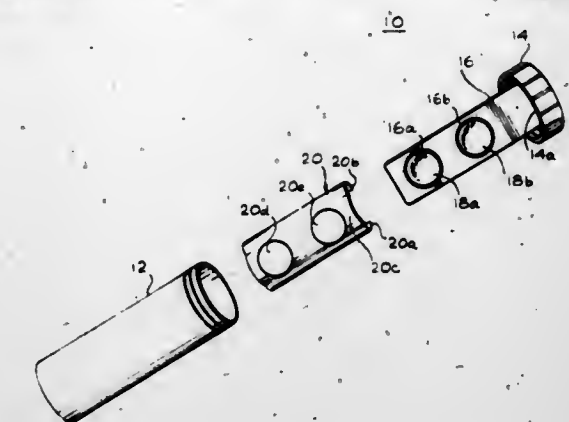
Erik M. Arnheim, P.O. Box 46053, Hollywood, Calif. 90046

Filed Oct. 9, 1979, Ser. No. 82,811

Int. Cl.³ B65D 85/00; B08B 3/10; A61F 9/00; A45C 11/04

U.S. Cl. 206—5.1

10 Claims



- 1. In an applicator for contact lenses, comprising:
 - (a) Means for ocularly applying contact lenses accommodated thereon;
 - (b) Contact lens retaining means mountable on the contact lens applying means.

4,244,467

DEVICE FOR THE EXTEMPORANEOUS PREPARATION OF A SOLUTION UNDER STERILE CONDITIONS

Claudio Cavazza, Rome, Italy, assignor to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

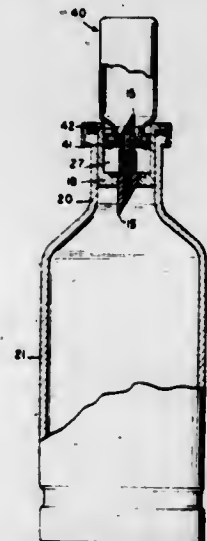
Filed Jun. 4, 1979, Ser. No. 45,165

Claims priority, application Italy, Jun. 5, 1978, 49717 A/78

Int. Cl.³ B65D 81/32; A61J 1/00

U.S. Cl. 206—222

5 Claims



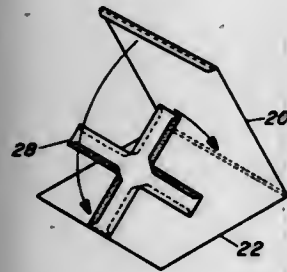
- 1. Apparatus for mixing and dispensing two substances comprising in combination
 - a first container for sealingly containing a first substance, said first container having a neck defining a discharge opening and being sealable by a stopper,
 - a second container for sealingly containing a second substance, said second container having a neck defining a discharge opening,
 - a recessed plug having a base and upstanding side walls seated in said neck of the second container, said plug recess being open outwardly with respect to said second container and dimensioned sealingly to receive the neck of the first container, and
 - an elongated transfer spout having a first end projecting into the second container and a second end extending substantially concentrically through the recess in said plug to enter the first container through said stopper, said transfer spout having a portion intermediate said first and second

ends sealingly retained in said base of the recessed plug and being provided with two substantially parallel passages extending longitudinally therethrough.

4,244,468

PACKAGE FOR PHONOGRAPH RECORDS

Gerard E. Spring, 37 Libby Rd., Milton, Mass. 02186, and Joseph M. Bernardini, 15 Pratt St., Allston, Mass. 01134
Filed Jul. 30, 1979, Ser. No. 61,668
Int. Cl.³ B65D 27/08, 85/02, 85/57
U.S. Cl. 206—312 6 Claims

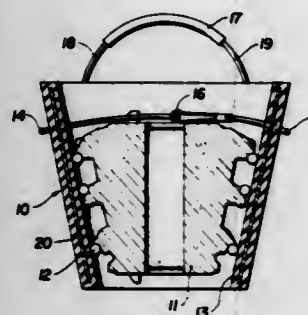


1. A package for phonograph records and the like, comprising
 - (a) generally rectangular and substantially coextensive front and rear panels joined to one another along one pair of opposite edges to form a sleeve open along another pair of opposite edges,
 - (b) divider means mounted between said panels and defining a plurality of offset and partially overlapping pockets some pockets open along one open edge of said sleeve and other pockets open along the other open edge of said sleeve,
 - (c) each of said pocket being substantially smaller than said sleeve and dimensioned to contain one of said records.

4,244,469

PROTECTIVE CARRYING CASE FOR DRILL BITS

Robert M. Miner, P.O. Box 373, Casper, Wyo. 82602
Filed Oct. 9, 1979, Ser. No. 82,488
Int. Cl.³ B65D 8/08, 85/00
U.S. Cl. 206—349 8 Claims

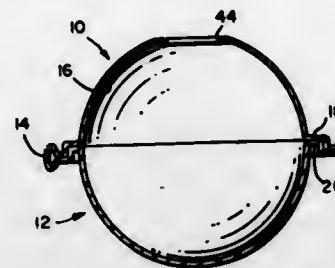


1. A cutting tool protective and carrying case, comprising in combination, a bottomless generally conically shaped body member with walls of a plastic material with a handle array comprising a pair of opposed handles extending from the larger open mouth end of said conically shaped body member with flexible cords extending from opposite sides of the handles into the plastic material of said body member and secured within the plastic material of the body member.

4,244,470

INDIVIDUAL ICE CREAM DISPENSING RECEPTACLE

John M. Burnham, Hingham, Mass., assignor to Howard Johnson Company, Boston, Mass.
Filed Aug. 6, 1979, Ser. No. 64,061
Int. Cl.³ B65D 83/00, 85/78
U.S. Cl. 206—525 3 Claims



1. A receptacle for molding and dispensing ice cream comprising in combination a dished top part of predetermined configuration, a dished bottom part of corresponding configuration, said top and bottom parts having abutting edges and at said edges mutually interengaged structures which hold the top and bottom parts together so as to define a structure containing an interior cavity for receiving ice cream and said top part containing an opening located symmetrically with respect to its axis of symmetry through which the ice cream in fluid form is introduced into the cavity to fill same to therefor form the material to the interior configuration of the cavity, said parts being comprised of thin, flexibly yieldable plastic material such as to be easily displaced inwardly by application of finger pressure to the outside, said mutually-engageable structures comprising at the edge of each part an outwardly-extending flange defining an annular planar surface and a downwardly-extending flange defining a cylindrical surface, said annular flange and circular flange at the edge of the top part defining a downwardly-facing groove, and said annular flange and cylindrical flange at the edge of the bottom part defining an upstanding rib which is frictionally received within the groove, and a support flange extending outwardly from the lower edge of each of the cylindrical flanges, a hinge connecting the support flanges, said hinge comprising a tubular fold embodying oppositely-diverging leaves joined at their distal edges by a flexible arcuate back part which permits the support flanges to meet in a common plane, said support flanges embodying planar portions extending from the ends of the hinge and along the front side thereof, and forming in conjunction a support for supporting the structure in a horizontal plane within a support containing an opening corresponding in configuration to the horizontal section of the parts at their meeting edges, said support flanges at the junction of the side portion with the front portion defining corners and wherein a corner of one flange and the opposite corner of the other flange are cut off at an angle to expose the subjacent and superincumbent corners of the respective flanges.

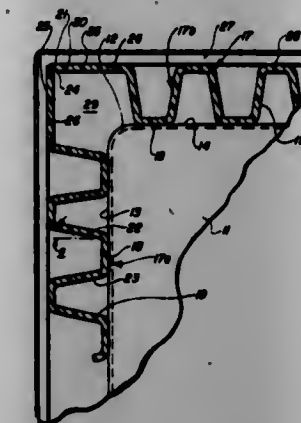
4,244,471

PACKAGING SYSTEM

Robert F. Plante, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Apr. 9, 1979, Ser. No. 28,096
Int. Cl.³ B65D 81/02
U.S. Cl. 206—586 30 Claims

28. A packaging system for packaging an object having a perimetral array of vertical corners defined by planar intersecting outer surfaces, said packaging system comprising:
 - a bottom cap;
 - a top cap;
 - a plurality of corner angles each having bottom ends retained by said bottom cap and top ends retained by said top cap, each of said corner angles defining a pair of flat

portions defining an effectively inextensible corner portion and a pair of thin wall corrugated legs extending extensibly outwardly from the flat corner portions and having free ends, the corrugations of said angle legs defining a plurality of inner surfaces for facially engaging each side of the object corner embraced by the corner angle

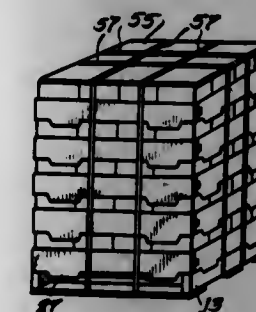


whereby said corrugated legs may expand away from and contract toward said corner portion as a result of inwardly acting shock forces applied to and removed from the legs; and means for maintaining said bottom cap, top cap and corner angles as an assembly for packaging said object fixedly therein.

4,244,472

STACKED SHIPPING UNIT

Philip H. Brown, Zionsville, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.
Filed Jun. 5, 1979, Ser. No. 45,753
Int. Cl.³ B65D 19/00, 21/02, 71/00, 85/62
U.S. Cl. 206—597 5 Claims



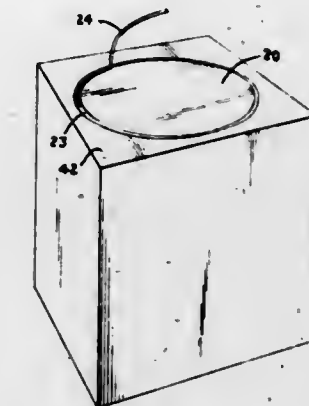
1. A shipping unit which comprises a rigid generally rectangular supporting base, a plurality of open-top free-standing trays formed of fiberboard sheet material, product to be shipped filling each of said trays, and said filled trays being arranged in vertical superimposed relationship, means uniting said filled superimposed trays to said base, and each of said free-standing trays being formed from an integral fiberboard blank and having a flat bottom and four upstanding interconnected vertical walls defining its periphery, means formed in the four corners of said blank which locks adjacent ends of said walls generally perpendicular to one another and upstanding from said flat bottom, said locking means including a locking flap hinged to the end of one of each pair of adjacent walls and interengaging means formed in said locking flap and in the other of said pair of adjacent walls, and said vertical peripheral walls each having depending ears which extend below said bottom and lie outward of and frictionally engage the product filling said next lower tray, the height of said wall plus said depending ear being less than the height of said product, said ears being formed of

fiberboard material from the region of said blank otherwise constituting said flat bottom.

4,244,473

COMPOSITE PACKING

Carl H. Peters, Falsterbo, Sweden, assignor to Platmanufaktur AB, Malmo, Sweden
Continuation of Ser. No. 848,885, Nov. 7, 1977, abandoned. This application Feb. 15, 1979, Ser. No. 12,944
Claims priority, application Sweden, Nov. 17, 1976, 7612865
Int. Cl.³ B65D 65/34, 77/36
U.S. Cl. 206—605 9 Claims



1. A packing comprising an outer cover constituted by a relatively rigid material and a filled inner container of relatively flexible material disposed within the outer cover and conforming in shape thereto, said outer cover having opposite ends and including a perimetral rim portion with a central opening at one of said ends, means connecting the inner container to the outer cover only at said rim portion, a plate disposed within the opening in said rim portion to define a narrow gap therewith extending completely around the periphery of said plate and being continuous, said plate being constituted of the same material as said outer cover, said plate having an inner surface facing the outer surface of the inner container, means securing said inner surface of the plate to the outer surface of the inner container such that said plate is secured in said packing only to said inner container and the connection of the plate to the outer container is effected solely through the intermediary of the connection of the inner container to the outer cover by said connecting means, and severing means affixed to said inner container along the entire length of said gap for severing said inner container only at said gap when said severing means is pulled, whereby upon severance of said inner container at said gap, said plate is freely removable together with the portion of the inner container secured thereto and severed at said gap.

4,244,474

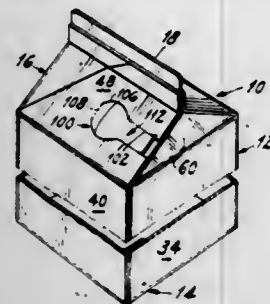
LIQUID CONTAINER WITH STRAW OPENING MEANS

Daniel J. Wise, Farmington, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.
Filed Jun. 11, 1979, Ser. No. 47,658
Int. Cl.³ B65D 5/70 6 Claims

U.S. Cl. 206—612

1. In a liquid proof, paperboard container coated on the outside and inside with a thermoplastic material that serves as a barrier and becomes an adhesive when subjected to heat, and including a tubular body having one side panel thereof overlapping a side seam flap and a bottom closure thereon, a pair of opposed roof panels extended toward each other and overlapping said body such that one end portion of one of said roof panels overlaps and is supported by a panel extension of said side seam flap, a pair of opposed triangular end panels infolded between said roof panels from opposite gable ends, two pairs of triangular fold-back panels, each pair being integral with a respective one of said in-folded triangular end panels along fold lines underlying said roof panels, said fold-back panels

being folded along fold lines formed at the lateral ends of respective roof panels, an outer rib panel surmounting each roof panel, a pair of inner rib panels joined by a fold line and surmounting each pair of triangular fold-back panels and adjoining end panel, and a sealing flap integral with each one of said outer rib panels, each of said sealing flaps having a marginal sealing area defined thereon, said rib panels and said marginal sealing areas being sealed together into a top closure rib, the improvement comprising means for forming a straw opening therein including a tear strip formed by cuts through the outer thermoplastic material and at least half way through one



of said roof panels along a pair of spaced apart lines beginning at the edge thereof adjacent said underlying, said cuts stopp-
 pong short of the inner thermoplastic material supporting panel extension and extending in a predetermined configuration a predetermined distance beyond the free edge of said underlying panel extension, with the inner ends of said pair of spaced apart lines defining a flexible hinge therebetween when said tear strip is peeled from said one of said roof panels, thereby uncovering a clean, weakened area beyond said free edge, said weakened area being adapted to being penetrated by the pressing of a straw thereagainst.

4,244,475 FISH SORTER

John R. Green, West Vancouver, Canada, assignor to Neptune Dynamics Ltd., North Vancouver, Canada

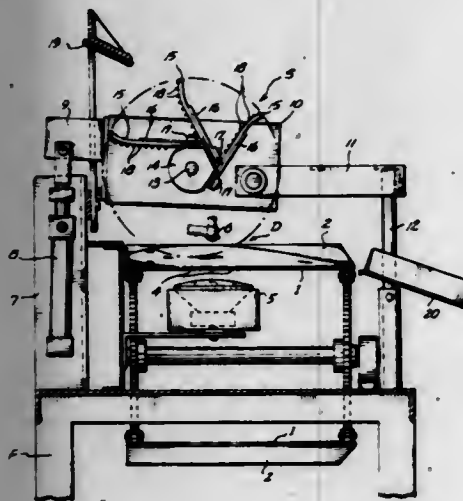
Filed Apr. 27, 1978, Ser. No. 900,745

Claims priority, application Canada, Feb. 22, 1978, 297479

Int. Cl.³ B07C 5/342

U.S. Cl. 209—588

20 Claims



1. In a fish sorter including:
 means for detecting a desired characteristic of fish;
 means for transporting the fish along a path past the detecting means;
 fish-engaging means for moving fish out of the path of fish movement;
 means mounting the fish-engaging means adjacent to the path of fish movement for shifting of the fish-engaging means toward and away from such path; and
 control means selectively operable automatically in response to action of the detecting means for shifting the fish-engaging means toward the path of fish movement to

engage fish having the desired characteristic and move them out of such path, and for normally maintaining the fish-engaging means away from such path so that fish not having the desired characteristic are not diverted from such path;

the improvement comprising:

the fish-engaging means including a central portion and at least one fish-engageable member projecting outward from said central portion, and drive means for moving the fish-engaging means unidirectionally relative to the path of fish movement and including means for synchronizing movement of the fish-engaging means with movement of the transporting means such that a fish-engageable member of the fish-engaging means projects from said fish-engaging means central portion toward the path of fish movement when a fish having the desired characteristic is in registration with the fish-engaging means, said fish-engageable member including a paddle for engaging fish having the desired characteristic.

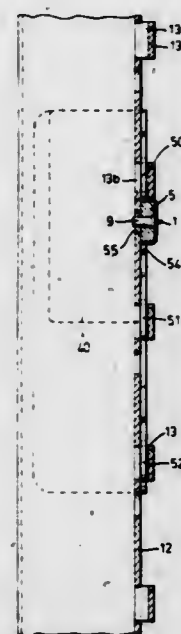
4,244,476 RACKING

Alexander R. Tang, High Wycombe, England, assignor to Acrow (Automation) Limited, Middlesex, England

Filed Jun. 27, 1979, Ser. No. 52,487

Int. Cl.³ A47F 5/00

11 Claims

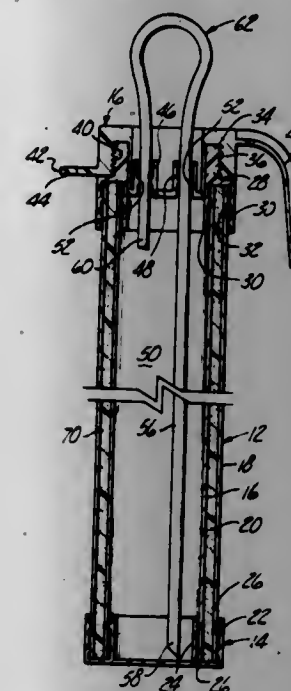


1. Racking of the type comprising metal uprights having sockets and beams having ends provided with hooks which are adapted to engage said sockets on the uprights wherein a stop is provided on said metal uprights and an abutment surface is provided on said beams and a locking member comprising a magnet positioned and magnetically held in place against said metal upright between said stop on a metal support and said abutment surface of a beam when said hooks of said beam are engaged in said sockets on said metal upright, the locking member having abutment surfaces adapted to bear against said stop and said abutment surface on the beam respectively thereby limiting movement of said beam preventing removal of said hooks from said sockets.

4,244,477
CONTAINER FOR POTABLE LIQUID
 Jerry E. Seel, 595 Meadowbrook Dr., Adrian, Mich. 49221
 Continuation-in-part of Ser. No. 597,296, Jul. 18, 1975, Pat. No. 4,165,814. This application Aug. 20, 1979, Ser. No. 67,773
 The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.
 Int. Cl.³ B65D 51/24

U.S. Cl. 215—229

9 Claims



1. In a container for a potable liquid, the improvement comprising:

an elongated and tubular body having a top and a lower end; means for closing the lower end of the body;
 a cap closing the top of said body and said cap being provided with a first hole and a second hole each extending completely through said cap, said cap further including an annular seal ring which protrudes radially inwardly into each of said holes in the cap; and
 a straw extending through said first hole with a first end positioned adjacent the bottom of said container and said straw having a second end detachably received in said second hole, said straw being removable from said holes whereby said second end of said straw can be removed from said second hole to permit a person to drink the liquid contained within the container through said straw but said straw being constructed of a sufficiently strong material and fitting within said holes and engaged by seal rings with sufficient frictional engagement to support a container full of potable liquid when the ends of said straw are positioned in said holes so that said straw can be used as a handle to carry said container.

4,244,478
CLOSURE ASSEMBLY FOR UNIT DOSE VIAL
 Richard Handman, Atlanta, Ga., assignor to MPL, Inc., Chicago, Ill.

Filed Jun. 27, 1979, Ser. No. 52,562

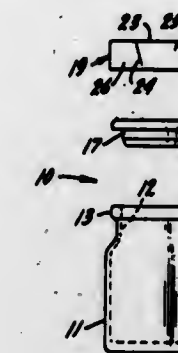
Int. Cl.³ B65D 51/16, 51/18

U.S. Cl. 215—249

2 Claims

1. A unit dose vial closure assembly for oral administration of medication, for use with a vial having an outlet opening and an annular lip around the outlet opening and with a relatively large blunt fill needle, the closure assembly comprising:
 an elastomer stopper fitted into and sealing the outlet opening of the vial, the stopper including an annular rim at least partially covering the lip of the vial and a self-venting, self-sealing linear slit valve permitting the deposit of medication into the vial, by insertion of the fill needle into the slit valve, with the stopper in sealing position in the

outlet opening of the vial and without requiring puncture of the stopper;
 and a metal sealing ring crimped onto the annular lip of the vial, the sealing ring covering the rim of the stopper to preclude contamination from outside sources, the sealing ring having a central opening affording direct access of the fill needle to the slit valve in the stopper without requiring removal or alteration of the sealing ring;
 and the sealing ring including manual release means comprising a release tab formed integrally with the sealing

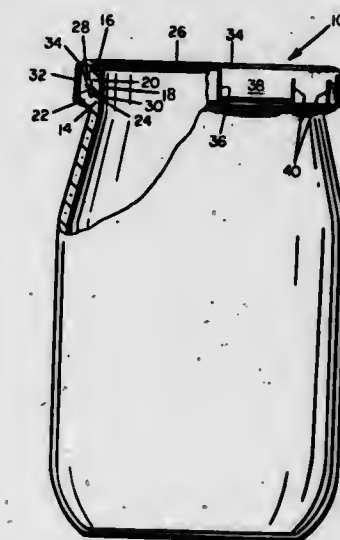


ring and at least one partial slit line formed in the sealing ring immediately adjacent the release tab, so that a manual pull on the release tab breaks the sealing ring along the partial slit line and releases the sealing ring to allow ready removal of both the sealing ring and the stopper for oral administration of the contents of the vial, the release tab being located in the central opening of the metal sealing ring over the slit valve and being of annular configuration, the tab having an opening therethrough affording access to the slit valve through the tab for filling of the vial by the fill needle.

4,244,479
TAMPERPROOF CLOSURE MEMBER
 Ned J. Smalley, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
 Continuation-in-part of Ser. No. 878,138, Feb. 15, 1978, abandoned. This application Dec. 13, 1978, Ser. No. 968,940
 Int. Cl.³ B65D 41/32

U.S. Cl. 215—256

6 Claims



1. A tamperproof closure member for assembly on a container neck having a rim defining an open mouth of the container, said closure member comprising:
 an end wall;
 retaining means carried by said end wall comprising an annular skirt depending downwardly from said end wall and being formed to fit in snap-fit relationship on said container neck to thereby retain said closure member in snug-fitting, removable assembly on said container neck;

an outer marginal portion of said end wall providing an annular overhang arranged to extend laterally outwardly beyond said retaining means, said overhang presenting a bearing surface against which to apply manual force in the axial direction for closure removal from said container neck;

an integral tamper-indicating sleeve depending from the outer peripheral edge of said end wall spaced outwardly from said downwardly depending skirt and enclosing said bearing surface within the interior confines thereof to thereby isolate said bearing surface from accessibility for manual removal of said closure member from said container neck, said sleeve being substantially longer than said skirt and shaped to fit snugly against said container neck below said retaining means;

a selectively weakened section defined along the juncture of said tamper-indicating sleeve with said end wall, said weakened section being adapted to selectively tear in response to a manually applied tearing force and thereby accommodate separation of said tamper-indicating sleeve from said end wall, whereby to permit manual access to said bearing surface for the removal of said closure member from said container neck, and provide a readily ascertainable indication of tampering with the closed container.

4,244,480

CAP FOR SEALING CONTAINERS

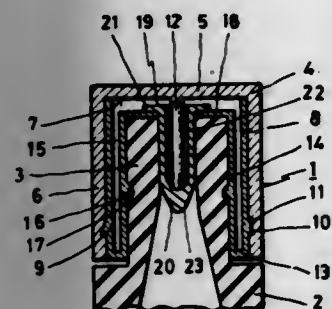
Antonio Puig Planas, Barcelona, Spain, assignor to Teco Iberica, S.A., Barcelona, Spain

Filed Jul. 23, 1979, Ser. No. 59,958

Claims priority, application Spain, Jun. 7, 1979, 243,808

Int. Cl.³ B65D 41/30

U.S. Cl. 215—320



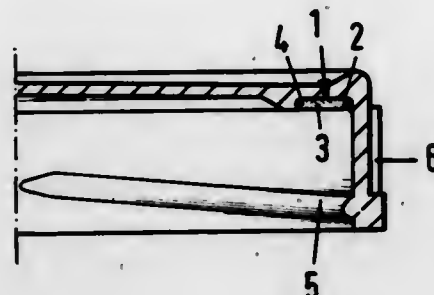
1. A cap for sealing containers, said cap having a hood member adapted for surrounding the side walls and top of the container neck and a resilient material sealing member adapted for press fit insertion in the interior of the neck and having a generally hollow cylindrical shape, closed at one end and having an annular flange at the other end, comprising in combination: an axial rod extending from the interior of the hood member, the free end of which is applied in the interior of the sealing member against the closed end thereof and an annular portion attached to the hood member and adapted for retaining the sealing member by means of the annular flange thereof, and having an inner body member attached to the hood member and formed by a first body portion having its outer lateral configuration of the same dimensions as the inner side wall of the hood member, said first body portion being attached at the lower end thereof by way of a joining portion to a second body portion suitable for adaptation to the outer side wall of the neck, there being defined between said body portions a substantially tubular free space and said second body portion being crowned by said annular portion adapted to cover the edges of the neck orifice, leaving the orifice free, and to retain the sealing member.

4,244,481
CLOSURE CAP WITH SEALING RING
Wiebren D. H. Kornelis, Steenwijkerwold, Netherlands, assignor to Kornelis' Kunstzaken Producten Industrie BV, Steenwijkerwold, Netherlands
Continuation-in-part of Ser. No. 878,338, Feb. 23, 1977, abandoned. This application Jul. 24, 1979, Ser. No. 60,060
Claims priority, application Netherlands, Jul. 25, 1978, 7807901

Int. Cl.³ B65D 53/06

U.S. Cl. 215—348

7 Claims



1. A closure cap at least circularly symmetrical internally, made of a thermoplastic polyolefin material for closing a container containing a circularly symmetrical neck portion, which closure cap comprises a closed end wall and a side wall, the side wall being internally provided with means through which the closure cap can be connected to the neck portion of the container with closure thereof and the end wall is internally provided with a channel-like circular-symmetrical seat portion integral therewith, at least one wall of the channel being formed by a collar projecting from the end wall, and the channel is provided with a sealing ring from a depressable synthetic material for sealing the container in co-operation with the upper rim of the neck portion, characterized in that both walls of the channel have the shape of two facing undercuts and the sealing ring is a ring formed by gelation in situ.

4,244,482

MULTI-LAYER CONTAINER

Frank Baumgart, Ratingen; Joachim Jorde, Essen; Karl Opitz, Essen, and Heinrich Rywalak, Essen, all of Fed. Rep. of Germany, assignors to Fried, Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 782,406, Mar. 29, 1977, abandoned.

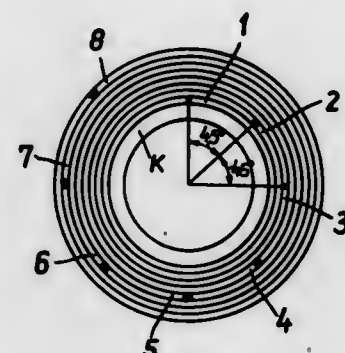
This application May 17, 1978, Ser. No. 906,991

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613441

Int. Cl.³ B65D 90/04; F16L 9/02, 9/14

U.S. Cl. 220—3

3 Claims



1. A multi-layer pressure container comprising in combination:
a core in the form of a body of rotation about a longitudinal axis;
a plurality of sheet metal plates having longitudinal edges, one of which plates is wrapped directly around the core

with the edges of the plate in opposed relation to form a longitudinal seam, which seam is substantially opened by the lack of continuous welding material along the length of the longitudinal seam; the other plates being wrapped about the first plate in superimposed relation with respect to one another with each plate forming a seam between the opposed longitudinal edges thereof; the seams being displaced arcuately with respect to one another whereby the seams are not linearly aligned on the same radius and whereby there is a distribution of seams substantially throughout 360° of rotation; and

welds distributed in the longitudinal seams of a plurality of the other plates with the volume of welded material from one plate of said plurality of said other plates to another plate of said plurality of said other plates increasing in the radially outward direction, with the seam of the outermost plate of said container being completely welded along the length thereof and being completely filled with welded material.

4,244,483

ELECTRICAL WIRING BOX

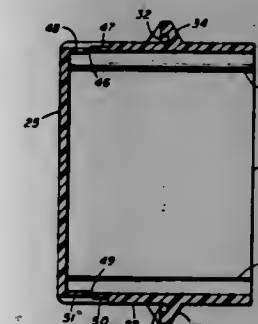
Claude J. Bauer, Parkersburg, W. Va., and Roger D. Johnson, Asheville, N.C., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 15, 1979, Ser. No. 66,754

Int. Cl.³ H02G 3/08, 3/12

U.S. Cl. 220—3.2

7 Claims

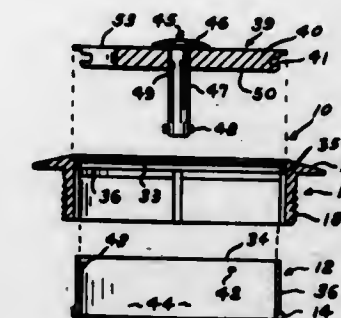


1. A molded plastic electrical wiring box for use with non-metallic sheathed cable comprising:
a wall structure defining front-to-rear walls and a back wall therebetween which in combination define a chamber within the box;
said wall structure having integrally molded therein a generally rectangular knock-out region having two opposite side edges, two opposite ends;
two substantially parallel lines of fracture delineating the opposite side edges of said knock-out region;
a resilient hinging means connecting each of the opposite ends of said knock-out region to said wall structure;
a frangible bridge extending across the knock-out region in a line from one of said lines of fracture to the other, dividing said knock-out region into two flaps, each having an inner and an outer major surface;
the major surfaces of said flaps being substantially planar, the plane of each major surface of one flap being spaced from the plane of the corresponding major surface of the second flap, to provide said frangible bridge; and a resilient hinging means joining the end of each flap opposite said frangible web to the surrounding wall structure;
whereby an aperture for accommodating non-metallic sheathed cable may be formed in said knock-out region by breaking said frangible bridge and separating one or both of said flaps from said knock-out region along the lines of fracture, and by bending one or both flaps about the resilient hinging means.

4,244,484
SERVICE FITTING ASSEMBLY
Kenneth E. Guritz, 570 Emerald Harbor Dr., Longboat Key, Fla. 33548, and Michael L. Guritz, 6904 Manatee Ave. West, Bradenton, Fla. 33508
Filed Sep. 28, 1979, Ser. No. 79,958
Int. Cl.³ H02G 3/08

U.S. Cl. 220—3.7

10 Claims



1. A service fitting assembly of the type designed to provide access for service cable from under-floor race way assembly to and above-floor service area: said service fitting comprising a base element, mounting means movably attached to said base element in substantially supporting relation thereto, said supporting means structured and disposed for interconnection to the under-floor race way to which said service fitting may be attached, access means comprising an aperture disposed in interconnecting relation between the above-floor surface and the under-floor race way assembly housing the service cable, said aperture defined at least partially by the free end peripheral edge of said base element; seal means disposed in liquid sealing engagement between said mounting means and said base element, whereby liquid is prevented from entering said service fitting assembly at the junction of said base element and mounting means contiguous said sealing means.

4,244,485

COLLAPSIBLE BASKET

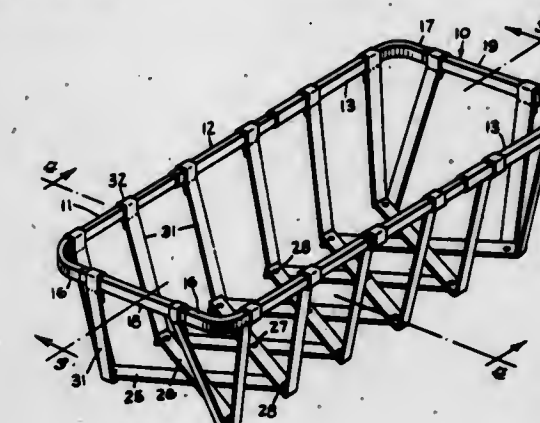
Louis T. Trammell, 202 Butler Ave., Buffalo, N.Y. 14208

Filed Jun. 9, 1977, Ser. No. 804,944

Int. Cl.³ B65D 6/16

U.S. Cl. 220—6

2 Claims

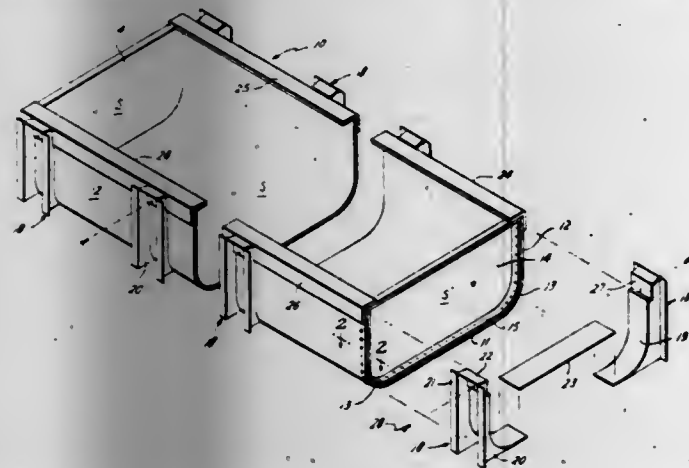


1. In a collapsible basket, an upper generally rectangular frame having side and end rail portions, the side rail portions comprising a plurality of telescoping sections whereby the lengths of the side rail portions may be extended or retracted in a lengthwise direction, a bottom wall comprising a lazy tong linkage lying generally in a plane parallel to the plane of said upper frame and extensible and retractable in a lengthwise direction with said rail portions, and a series of flexible strap members spaced about said upper frame and extending downwardly to and connected with the pivotal connections of the outer ends of the links of the lazy tong linkage of said bottom wall, the upper ends of the strap members at the sides of said

basket having loops extending about said rail portions and slidable therealong, said flexible strap members enabling said upper frame to be moved toward and away from said bottom wall between collapsed and opened positions of said basket, the overall thickness of said basket in a collapsed position being substantially no greater than the thickness of said rectangular frame.

4,244,486 TANK

Herbert J. Ewald, Jr., P.O. Box 519, Karnes City, Tex. 78118
Continuation of Ser. No. 920,694, Jun. 30, 1978, abandoned.
This application May 11, 1979, Ser. No. 38,018
Int. Cl.³ B65D 6/00, 6/34, 8/08
U.S. Cl. 220—71 7 Claims



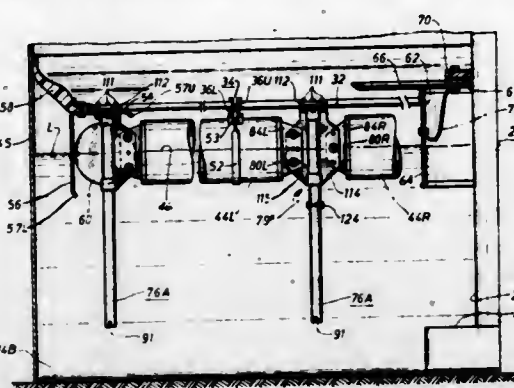
1. A tank, comprising longitudinally extending bottom, side and curved connecting walls formed of a sheet of flexible, plastic material bent into a "U" shape, end walls formed of additional sheets of plastic material having side, bottom and curved edges secured to the ends of the side, bottom and curved walls of the bent sheet, struts having inner walls which conform to the side and curved connecting walls of the bent sheet at longitudinally spaced-apart locations along both sides thereof so as to maintain the shape of the bent sheet when the tank is filled, said struts being free of attachment to the sheet, means for preventing the struts from moving laterally away from the sides of the bent sheet, and a pair of stiffening members each having an upper flange supported on and extending along the upper edge of each side wall and a side flange depending from said edge along and adjacent only the outer side of the side wall, each said stiffening member being free of attachment to the bent sheet.

4,244,487 FLOATING COVER HAVING PIVOTALLY CONNECTED FLOTATION PONTOONS

Ronald C. Kern, Katy, Tex., assignor to Ultraflo Corporation, Houston, Tex.
Filed Apr. 2, 1979, Ser. No. 25,836
Int. Cl.³ B65D 88/34, 88/36, 88/40, 88/42
U.S. Cl. 220—216 6 Claims

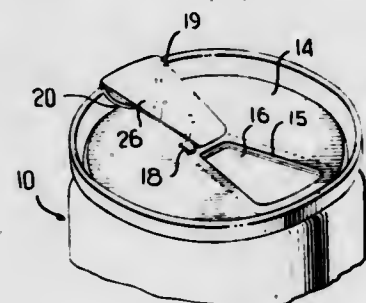
1. A floating cover for a liquid storage tank comprising:
a deck;
a first deck support pontoon adopted to flotationally support the deck on the surface when a liquid is disposed within the tank;
a fixed-length leg mounted rigidly to the first deck support pontoon; and,
a second deck support pontoon adapted to flotationally support the deck on the surface, the second pontoon being pivotally interconnected to the fixed-length leg so that the second pontoon may pivotally rotate with respect to the

longitudinal axis of the first pontoon when the deck flexes in response to turbulence within a liquid disposed within



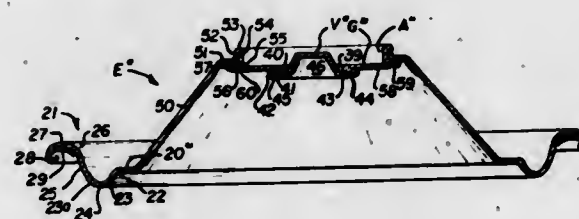
the tank or in response to other non-uniform loading on the deck.

4,244,488
PLASTIC PULL TAB WITH MEMORY
James J. Fridl, Darien; Gary K. Hasegawa, Chicago, and Donald R. Richardson, Orland Park, all of Ill., assignors to The Continental Group, Inc., New York, N.Y.
Filed Sep. 28, 1979, Ser. No. 79,851
Int. Cl.³ B65D 41/02
U.S. Cl. 220—260 10 Claims



1. A pull tab for attachment to an easy opening container; said pull tab being formed of a plastics material having a memory and including an attaching portion, an intermediate securing portion for securement to a removable panel portion and a grip portion; said memory being means for moving said intermediate portion and said grip portion together with an attached removable panel portion to an out-of-the-way position when said pull tab is utilized to remove an attached panel portion, and both said attaching portion and said grip portion overlie said intermediate portion.

4,244,489
PRESSURE RELIEF VENT IN A PUSH-DOWN GATE FOR
A CAN END
Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020
Filed Aug. 6, 1979, Ser. No. 63,792
Int. Cl.³ B65D 41/32
U.S. Cl. 220—268 7 Claims



1. A can end comprising: a flat expansion panel having a primary aperture therein with a gate panel disposed in the primary aperture and hinged to the expansion panel at the primary aperture to form a push-down gate for opening a can to which the end is affixed; said primary aperture including an

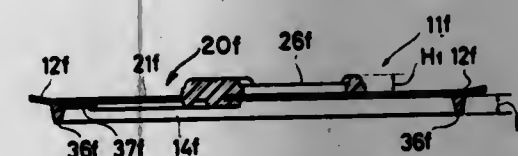
underfolded spacer strip under the panel, a reverse underfold at the outward edge of the spacer strip joining with the gate panel; and a score cut at the periphery of the gate panel to define the gate, the score cut extending about the gate panel from each side of the hinge connecting the gate to the expansion panel; said gate panel having a secondary aperture therein with a vent panel disposed in the secondary aperture and hinged to the gate panel to form a push-down vent gate adapted to be opened before the push-down gate is opened to relieve gas pressure from within the can.

4,244,490
CONICAL CAN END WITH PUSH DOWN GATE
Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020
Filed Aug. 6, 1979, Ser. No. 63,794
Int. Cl.³ B65D 41/32
U.S. Cl. 220—268 7 Claims



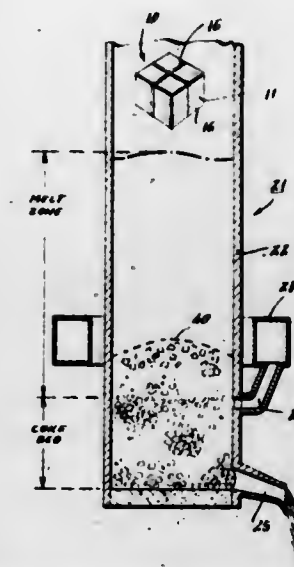
1. A conical can end having a central expansion panel drawn to form a conoid-shaped frustum with a panel at the apex end thereof; an aperture in the apex panel; a push-down gate in the aperture; and a hinge means integrally interconnecting said gate with the apex panel; and wherein said aperture in the apex panel includes an underfolded spacer strip under the apex panel, a reverse underfold at the outward edge of the spacer strip joining with said gate, and a score cut in the gate at the periphery thereof to define the gate, the score cut extending about the gate from each side of the hinge means.

4,244,491
CONTAINER COVER MEMBER HAVING SYNTHETIC
RESIN OPENABLE PORTION
Kielichi Takahashi, Ichikawa; Hiroshi Aoyama, Tokyo; Kikuya Hirakawa, Ebina, and Yukio Sarusawa, Zama, all of Japan, assignors to Tokai Kogyo Co., Ltd., Tokyo, Japan
Filed Dec. 13, 1978, Ser. No. 969,150
Claims priority, application Japan, Dec. 15, 1977, 52-149914; Feb. 27, 1978, 53-20996; Mar. 22, 1978, 53-35572[U]; Mar. 24, 1978, 53-36779[U]; Apr. 12, 1978, 53-42117; Apr. 14, 1978, 53-43321
Int. Cl.³ B65D 41/32
U.S. Cl. 220—270 14 Claims



1. A container cover member comprising a cover sheet for closing on a container open end, said cover sheet having a dispensing opening therethrough, a closure member formed of a synthetic resin closing the dispensing opening, the closure member being generally seated in the dispensing opening and including a handle disposed laterally adjacent the dispensing opening in overlying relation to the cover sheet for displacing the closure member relative to the dispensing opening by an upward force on the handle, and therebeing a synthetic resin rib depending from the underside of the cover sheet, the rib forming means for stacking a plurality of the cover members, and said rib forming means defining a recess for receiving the closure member and handle of an adjacent cover member within said recess when stacked.

4,244,492
PACKAGING FOR RECLAIMING SCRAP METAL
Ronald J. Beyerstedt, Waupaca, Wis.; Ludwig Gutnager, Carversville, Pa., and Michael W. Laszewski, Appleton, Wis., assignors to Champion International Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 731,884, Oct. 13, 1976, abandoned. This application Mar. 9, 1978, Ser. No. 884,750
Int. Cl.³ B65D 5/56; C22B 1/248
U.S. Cl. 220—453 12 Claims

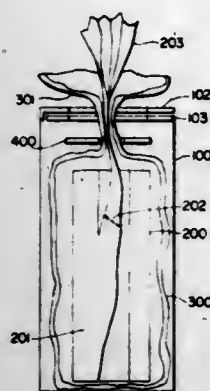


1. A burn-retardant packaging means for introducing metal scrap into a metal-melting furnace while minimizing entrainment of the metal scrap in the furnace gases, said packaging means defining a container for enclosing metal scrap therein and comprising:
a bottom wall;
a plurality of side walls joined to said bottom wall;
a top wall comprising a plurality of closure flaps hingedly joined to said side walls;
said bottom wall, said plurality of side walls, and said top wall defining a complete enclosure and being made from more than two laminae of fiberboard wherein the individual laminae are bonded to each other by substantially uniform and continuous layers of a laminating agent comprising an intumescent adhesive, said layers of laminating agent being substantially coextensive with the bonded surfaces of said laminae;
said intumescent adhesive layers expanding in the presence of heat when said packaging means is placed in said furnace and forming layers of a burn-retarding foam between said individual laminae, thereby insulating the metal scrap in said container to prevent premature exposure of said metal scrap to the heat in said furnace.

4,244,493
ARRANGEMENT FOR SEALING A BAG CONTAINING
PRE-MOISTENED TOWELETTS AND FOR
DISPENSING TOWELETTS THEREFROM
Thomas S. Harrison, Deer Isle, Me., assignor to Sterling Drug Inc., N.Y.
Filed Oct. 12, 1978, Ser. No. 950,617
Int. Cl.³ A47K 10/38
U.S. Cl. 221—46 2 Claims

1. A package for dispensing and separating single sheets from a continuous roll of pre-moistened sheets which are joined at perforations, said package comprising:
a container means for housing therein a continuous roll of pre-moistened sheets;
a bag means positioned within said container means and surrounding said roll, said bag means being open at a top end portion thereof and an end sheet of said roll extending therethrough; and
dispensing plate means, separate from and positioned within

said container means, surrounding said end sheet of said roll and said top end portion of said bag means for gathering and substantially sealing said bag means around said



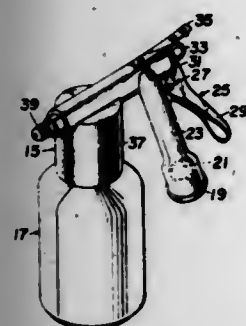
end sheet of said roll and for dispensing said end sheet therethrough and causing said end sheet to tear from the next sheet on said roll at the perforations when said end sheet is drawn therethrough.

4,244,494

METHOD FOR INSERTING AN ADDITIVE LIQUID INTO A FLOWING FLUID AND DISCHARGING THE RESULTANT MIXTURE

Samuel D. Colgate, and Robert A. Ramey, both of Gainesville, Fla., assignors to Samuel Colgate, Robert Ramey and Associates, A Limited Partnership, Gainesville, Fla.
Division of Ser. No. 805,302, Jun. 10, 1977, Pat. No. 4,171,070.
This application May 3, 1979, Ser. No. 35,779
Int. Cl.³ B67D 5/56, 1/08

U.S. Cl. 222—1



1. A method for inserting a desired amount of an additive liquid into flowing water in a dispensing assembly and discharging the resultant mixture comprising the steps of: storing the additive liquid in a separate container; forcibly maintaining a closure member in the container in a normally closed state to prevent escape of the additive liquid from the container; establishing a desired rate of flow of the water into the dispensing assembly; initially passing water without any additive liquid through the dispensing assembly and into the container to pressurize the additive liquid; maintaining the water separate from the additive liquid; directing the water against a plunger disc in the dispensing assembly to directly actuate the closure member in the container to open the container for discharge of the additive liquid; using the water directed into the container to force the additive liquid into the flowing water; closing the container to prevent discharge of the additive liquid into the flowing water; passing the water without any additive liquid through the dispensing assembly after closing of the container; and terminating the flow of the water into the dispensing assembly only after water without any additive liquid has been

passed through the dispensing assembly to thereby rinse the dispensing assembly.

4,244,495

PLASTIC LID SAFETY CLOSURE ASSEMBLY FOR CONTAINERS

Willy Lorscheid, Pulheim, and Ludwig Wingen, Cologne, both of Fed. Rep. of Germany, assignors to Joachim Czech, Regensburg, Fed. Rep. of Germany

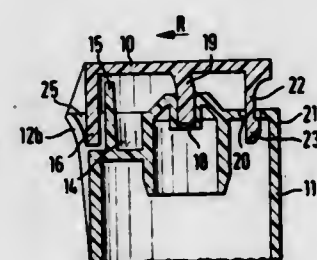
Filed May 21, 1979, Ser. No. 40,497

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828065

Int. Cl.³ B65D 25/42

U.S. Cl. 222—153

9 Claims



1. A closure assembly for a container, of the type comprising a lid carrier which is receivable on the upper portion of the container to be substantially fixed thereon and wherein there is a hole through which contents of the container can be discharged, and a lid having a hinged connection with the lid carrier to be swingable to and from a closed position substantially overlying said lid carrier and blocking said hole, said closure assembly being characterized by:

A. said lid having thereon a substantially hook-shaped locking member, said locking member

(1) projecting downwardly from the lid relative to said closed position thereof,

(2) being near the periphery of the lid at a location substantially opposite said hinge connection, and

(3) having thereon a shoulder which projects away from the hinge connection and defines a surface that is spaced below the lid and faces toward the same;

B. said lid carrier having thereon, at a location which is near its periphery and substantially opposite said hinge connection, a radially inwardly projecting ledge under which said shoulder is releasably engageable to confine the lid in its closed position;

C. cooperating means on said lid and the lid carrier by which said locking member is normally maintained in a position in which said shoulder is engaged under said ledge but providing for resiliently yielding displacement of at least the lower portion of said locking member in the direction towards the hinge connection to enable disengagement of said shoulder from said ledge for opening of the lid; and

D. said lid having a peripheral portion which

(1) is opposite said hinge connection and

(2) overlies the peripheral portion of the lid carrier to be engageable by a thumb for swinging the lid away from its closed position at the same time that said thumb is applying force in a direction towards said hinge connection to effect disengagement of said shoulder from said ledge.

4,244,496

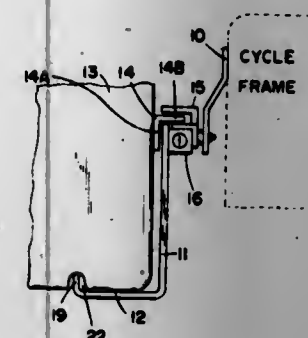
SIDE MOUNT FOR CARRYING A LUGGAGE BOX OR THE LIKE ON A MOTORCYCLE

Reuben Litz, 543-19th Ave. North, South St. Paul, Minn. 55075
Filed Jan. 21, 1980, Ser. No. 114,123

Int. Cl.³ B62J 9/00, 11/00

U.S. Cl. 224—32 R

5 Claims



1. A mount for removably carrying a luggage box or bag by a motorcycle, comprising:

a. an attachment plate (10) adapted to be fixedly attached to the main frame of a motorcycle extending downwardly and outwardly from its attachment;

b. a carrying plate (11) fixedly attached to and spaced outwardly from and extending downwardly from said attachment plate the lower part of said carrying plate bent outwardly to form a ledge (12) for a luggage box (13) to rest on;

c. a right angle bracket member (14) adapted to be fixedly attached along its one side (14A) to a side of a luggage box with the other side of the bracket (14B) extending over the top edge of the carrying plate toward the attachment plate in the space between the carrying plate and the attachment plate;

d. a clamping arm (15) pivotally attached at one end adapted to be swung downward toward the space between the attachment plate and the carrying plate for holding the bracket member in place; and

e. means (16) for releasably locking the clamping arm in the holding position.

4,244,497

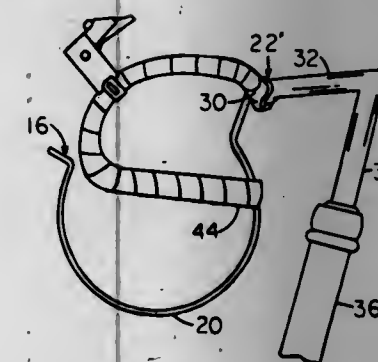
BALL RACK FOR A BICYCLE

Robert E. Lee, 5125 E. Third, Long Beach, Calif. 90814

Filed Mar. 19, 1979, Ser. No. 22,061

Int. Cl.³ B62J 7/06

U.S. Cl. 224—36



1. A carrying rack for removable attachment to a bicycle comprised of a single length of resilient wire bent to form a U-shaped hand grip having a linear central portion with leg portions at both ends thereof disposed substantially perpendicular to said linear central portion, and from said leg portions said wire is bent into mutually congruent, circular, obtuse arcuate bails defining an article receptive area therein, and said hand grip is displaced outwardly from the radius of curvature of said bails and outwardly from said receptive area and said bails are laterally spaced from each other and constructed with

an undeformed diameter large enough to capture a small enough to snugly restrain movement of basketballs, volleyballs and soccer balls therein, and the ends of said arcuate bails remote from said hand grip are turned outwardly away from the radius of curvature of said bails beyond said receptive area to form open sided hooks manipulatable for releasable securement to the framework of a bicycle, and said hand grip allows ready removal and insertion of an article in said receptive area.

4,244,498

SKI BOOT CADDY

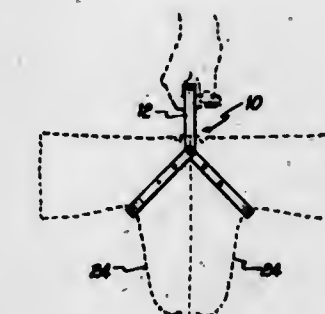
Robert D. Copp, 5068 Glen Verde Dr., Bonita, Calif. 92002

Filed Aug. 27, 1979, Ser. No. 69,808

Int. Cl.³ A47F 7/08; B65D 63/10

U.S. Cl. 224—45 P

2 Claims



1. A ski boot caddy comprising:

(a) an inverted U-shaped handle;

(b) a pair of straps pivoted at the respective ends thereof to the ends of said handle such that said straps can be pivoted outwardly to engage the tops of the arches of a pair of ski boots with the soles pressed together, or alternatively pivoted into a compact form substantially aligned with said handle when said caddy is not in use;

(c) each of said straps comprising a pair of adjustable lapped half straps with means to selectively engage the half straps in each pair together to define any one of several lengths; and,

(d) one of the half straps of each pair being provided with a longitudinal slot and a nipple projection and the other half strap of each pair being provided with a key to engage said slot and a plurality of longitudinally spaced holes to be selectively engaged by said nipple.

4,244,499

FOLDABLE PACK BELT

Brian J. Adams, Bristol, Va., assignor to Evrika Pack Corp., Lexington, Va.

Filed May 14, 1979, Ser. No. 38,945

Int. Cl.³ B65D 30/10, 33/24

U.S. Cl. 224—224

21 Claims



1. A foldable pack belt for carrying at least one article comprising: a substantially planar member having first and second lon-

itudinally-extending edges interconnected by first and second transversely-extending edges;
 first complementary fastening means having a first component associated with said first longitudinally-extending edge and a second component associated with said second longitudinally-extending edge, said first component having a portion thereof selectively releasably engaged by said second component to releasably and adjustably interconnect said first and said second longitudinally-extending edges to each other so that the size of a carrying portion of the pack belt is adjusted whereby a first compressive force is exerted on an article to be carried when longitudinally-extending edges of said planar member are folded about a longitudinally-extending axis and interconnected to each other to encompass the article; and
 second complementary fastening means having a first component associated with said first transversely-extending edge and a second component associated with said second transversely-extending edge, said first component of said second complementary fastening means having a portion thereof selectively releasably engaged by said second component to adjustably releasably interconnect said first and said second transversely-extending edges to each other so that a second compressive force is exerted on a carried article when said planar member is folded about an axis extending generally perpendicular to the longitudinal axis, the axis being inside and spaced from the folded member.

4,244,500

VIEWING SUPPORT

Raymond Fournier, 8609 St-Denis, Montreal, Quebec, Canada H2P 2H4

Filed Jun. 18, 1979, Ser. No. 49,125

Int. Cl.³ G03B 17/00

U.S. Cl. 224—265

3 Claims



1. A viewing support adapted to be mounted on the upper body of an operator to provide a steady platform for a viewing device, said support comprising:

- a first support arm having a rest portion terminating in a rear hooked portion adapted to engage over and rest upon an operator's shoulder, said hooked portion being flat in cross section and curved along its length to define an inner concave bearing surface that fits over said shoulder when the support is in place;
- a second support arm having a downwardly and inwardly curved main body portion terminating at its lower end in a rest portion adapted to rest against a selected place on the front of the operator's torso, said rest portion comprising a short crossbar centrally fastened to the lower end of said main body portion and adapted to bear against said selected place when the support is in place on the operator, and said selected place being spaced downwardly on the torso from the shoulder;
- means for pivotally connecting said first support arm and said second support arm directly to each other so that said support arms can be moved relative to each other to adjust the point where said rest portion engages the operator's torso and the angular relationship between said support arms, said connecting means comprising first pivot means mounted forwardly on the rest portion of said first support

arm and second pivot means mounted on the upper end of said main body portion of said second support arm, one of said pivot means comprising a part-circular wall extending from its associated support arm and having a stub shaft projecting therefrom, and the other of said pivot means comprising a circular mounting plate having a central bore therein for receiving said stub shaft, said circular mounting plate being engageable with said part-circular wall;

means for releasably locking said first and said second support arms in a desired fixed angular relationship to each other, said locking means comprising a part-circular slot in said part-circular wall, said slot being concentric about said stub shaft and said circular mounting plate having a through hole therein aligned with said slot, a locking bolt passing through said aligned hole and slot, and a locking nut screwable onto said bolt for releasably locking said first and said second support arms together; and
 platform means on the front end of said first support arm, for mounting the viewing device.

4,244,501

SLIDABLE BRACKET FOR LUGGAGE RACK

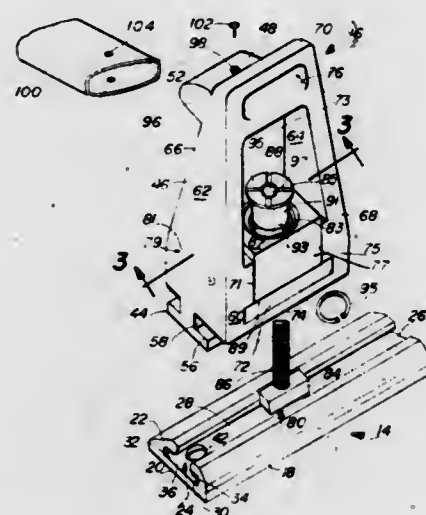
Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 836,966, Sep. 27, 1977, Pat. No. 4,132,335. This application Jan. 18, 1979, Ser. No. 4,317

Int. Cl.³ B61D 47/00

U.S. Cl. 224—324

8 Claims



1. A tie-down bracket for an automotive vehicle mounted article carrier comprising:

- a lower base section engageable with a track formed in the article carrier;
- an upper section interconnected to the base section;
- a bore formed in the upper section to nestingly receive a rotatable collar;
- a rotatable collar nestingly disposed in the base the collar having a coin or screwdriver engaging depression formed therein, a lower end of the collar projecting into an opening formed in the bracket, the lower end having a groove formed therearound proximate the opening formed in the bracket, the collar having an enlarged head to prevent axial downward displacement thereof;
- means for selecting locking the bracket in the track responsive to the rotation of the collar, comprising:
 - a key member releasably engaging the track;
 - a threaded shaft integrally formed with the key member and projecting upward therefrom, the shaft extending through a bore formed in the base section, the bore in registry with the bore of the upper section;
 - a ring disposed in the groove to prevent upward movement of the collar.

4,244,502

DISPENSER FOR ROLL OF FLEXIBLE STRIP

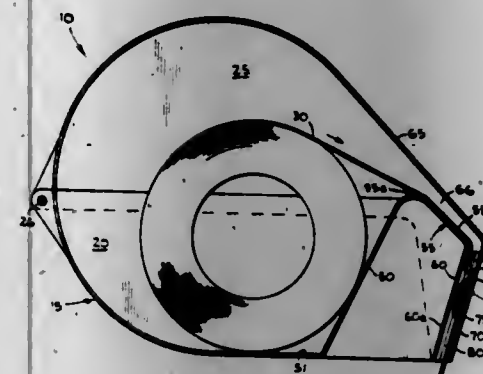
Steven P. Reed, Felton, Calif., assignor to Sven Iveter, San Jose, Calif.

Filed Sep. 15, 1978, Ser. No. 942,696

Int. Cl.³ B65H 35/04; B26F 3/02

U.S. Cl. 225—13

12 Claims



1. A dispenser for removing successively the free end of a roll of strip, said roll of strip being formed with slits at predetermined locations therealong, said dispenser comprising:

- (a) a container in which is disposed the roll of strip, said container being formed with a strip exit location;
- (b) downwardly directed means projecting from said container at said strip exit location for defining a downwardly directed passage through which the free end of the roll of strip advances;
- (c) a track in said container at the entrance of said passage over which the free end of the roll of strip enters said passage, said track and said means being arranged to open a slit in said roll of strip advancing beyond said track into said passage; and
- (d) an elongated upwardly directed indexing member disposed in said passage and formed with a tip for entering an opening slit of the free end of the roll of strip advancing downwardly through said passage, said indexing member being formed to sever the free end of the roll of strip along the slit entered by said indexing member by the application of a force applied by an operator to the free end of the roll of strip, said indexing member being arranged to retard the egress of the strip trailing the free end of said roll of strip from said container during the severing of the free end of the roll of strip from the roll of strip by obstructing the path of travel of the strip of the roll of strip trailing the slit entered by said indexing member.

4,244,503

DISPENSER FOR FLEXIBLE MATERIAL

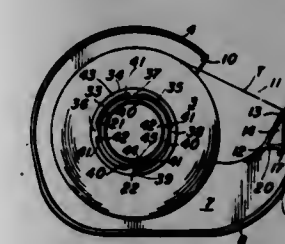
Steven G. Kramer, 60 El Verano Way, San Francisco, Calif. 94127

Filed Jul. 9, 1979, Ser. No. 56,056

Int. Cl.³ B26F 3/02

U.S. Cl. 225—46

12 Claims



5. In a dispenser for pressure sensitive tape embodying a housing for a roll of such tape, and a cutter bar for severing an end portion of such tape from the remainder thereof and adhesively holding the free end portion of said remainder after said end portion has been so severed, the combination of

- a. a hub disposed in said housing,
- b. a spool mounted on said hub for rotation therearound,
- c. a roll of pressure sensitive tape mounted on said spool for rotation therewith,
- d. said tape being disposed in a spiral around said spool in such position that tension applied to the outer free end of said tape toward said cutter bar will cause said roll and spool to rotate around said hub in a direction to unwind said tape from said roll toward said cutter bar,
- e. said hub having a detent on the outer periphery thereof,
- f. said spool having a plurality of detents on the inner periphery thereof,
- g. said detent on said hub being disposed in position to retardingly, but releasably, sequentially engage each detent of said plurality of detents during said tape-unwinding rotation of said roll and spool.

4,244,504

APPARATUS FOR CONTROLLING THE MOVEMENT OF A WEB OF MATERIAL CONTINUOUSLY DELIVERED TO A MACHINE PROCESSING THE WEB

Jean Grob, Lausanne, and Roger Roch, Cossouay, both of Switzerland, assignors to J. Bobet & Fils, S.A., Lausanne, Switzerland

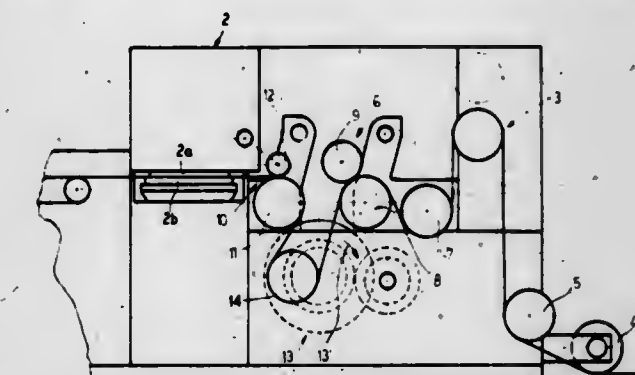
Filed Nov. 9, 1978, Ser. No. 959,378

Claims priority, application Switzerland, Nov. 11, 1977, 013762/77

Int. Cl.³ B65H 17/54, 17/20, 17/42

U.S. Cl. 226—114

3 Claims



1. An apparatus for controlling the movement of a web of material being continuously supplied to a machine which operates sequentially on portions of the web with each portion being at a standstill while being operated on by the machine, said apparatus including a pair of spaced side frame members, means for feeding the web in a direction at a continuous rate of feed being disposed in the side frame members and including means for pulling and introducing the web of material, and a web take-up means for engaging the web of material and accumulating the web as the portion is at a standstill, said web take-up means comprises a pair of first members mounted in said pair of side frame members for rotation on a first axis, a web guide member extending between said pair of first members and having a second axis and a hub member with a sliding shoe disposed at each end thereof, means for mounting the web guide member in said pair of first members with the second axis being offset from the first axis, said means for mounting including means for varying the amount of offset of the second axis from the first axis and means for varying the angular position of the second axis relative to said pair of first members during rotation of said pair of first members on the first axis, and means for compensating for the weight of the web guide member being mounted on each of said first members, said means for mounting including a support member mounted on each of the first members for relative rotation about the first axis, each support member having a first sliding guide for receiving the sliding shoe of the hub and a second sliding guide, said means for adjusting the axial position including a first screw member mounted for rotation in each of said support members with a

an inner reinforcing wall, extending substantially the entire height of the outer wall;
 at least two hinge flaps extending upward from the outer wall, each hinge flap being folded inward to the inner wall;
 a flexible bail attached to each hinge flap;
 a recessed bottom;
 bottom tabs extending downward from the bottom, parallel to and contiguous with the inner wall; and
 at least one lower tab extending from the lower edge of the outer wall, the at least one lower tab being folded inward and in overlapping relationship with the lower end of the inner wall and with the bottom tabs, and the outer wall, inner wall, bottom tabs and lower tabs being fastened together.

4,244,511

SPECIALTY ENVELOPE SERVING AS A PICTURE FRAME

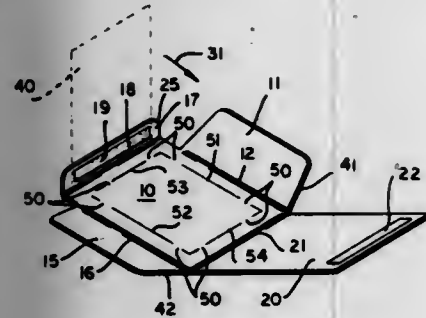
John D. Coleman, Fairport, N.Y., assignor to Photomailer, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 901,502, May 1, 1978, Pat. No. 4,186,868. This application Nov. 20, 1978, Ser. No. 961,935. The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.

Int. Cl.³ B65D 27/14

U.S. Cl. 229—92.1

8 Claims



1. An envelope assembly comprising
 a writing surface;
 said writing surface including a removable section comprising a portion of said writing surface bounded by a plurality of cuts;
 a right side flap disposed so that said right side flap may be folded to cover a portion of said writing surface;
 a left side flap disposed so that said left side flap may be folded to cover a portion of said writing surface;
 a front flap including a lower surface, and including a front flap upper surface with a first adhesive means disposed on said front flap upper surface for fastening a foreign object to said front flap;
 a rear flap having an area substantially equal to the area of said writing surface and including a rear flap upper surface;
 said rear flap being disposed so that it may be folded to cover substantially all of said writing surface;
 second adhesive means disposed on said rear flap upper surface near the distal end of said rear flap for attaching said rear flap upper surface to said lower surface when said rear flap is folded over said writing surface subsequent to said front flap being folded over said writing surface;
 wherein said front flap is jointed to said writing surface along a crease defining a first straight line;
 said left side flap is characterized by a first top edge defining a second straight line;
 said right side flap is characterized by a second top edge defining a third straight line; and
 said second straight and said third straight line each intersect said first straight line to form an acute angle.

4,244,512
MAILBOX

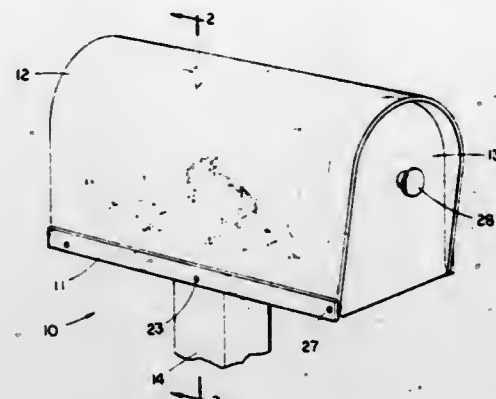
Gerald W. Wise, 210 E. Mill Rd., Evansville, Ind. 47710

Filed Jul. 9, 1979, Ser. No. 55,517

Int. Cl.³ A47G 29/12

U.S. Cl. 232—17

3 Claims



1. A mailbox which comprises:
 a base, said base including an upper face and having two sides and two ends, the upper face defining an inner and outer pair of channels extending along the two sides of said base, respectively;
 a transparent cover having a pair of longitudinal opposed side edges received within the outer channels and mounted to said base;
 means for releasably holding a picture adjacent said cover whereby the picture is viewable from outside the mailbox, said holding means including the inner pair of channels of said base; and
 a picture releasably held adjacent said cover, said picture having a pair of opposed edges received within the inner pair of channels, respectively.

4,244,513

CENTRIFUGE UNIT

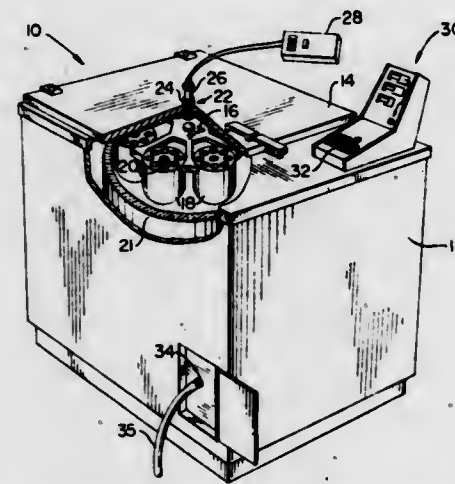
Ervin Fayer, Hollywood; Steven H. Setzer, Miramar, and Donald A. Gillette, Hollywood, all of Fla., assignors to Coulter Corporation, Hialeah, Fla.

Filed Sep. 15, 1978, Ser. No. 942,627

Int. Cl.³ B04B 9/10, 13/00, 15/08, 15/06

U.S. Cl. 233—23 R

24 Claims



1. A vent-view port used in combination with a centrifuge apparatus for separating substances of varying density, said centrifuge apparatus having a housing and a rotor disposed within the housing; the combination comprising:
 the housing defining an access aperture formed there-through;
 said vent-view port being mounted for relative movement in said access aperture and including vent means for providing venting of the apparatus and for input of contaminant eliminating fluids;

said vent-view port including means for effecting relative movement of said vent-view port within said access aperture for selectively opening and closing said vent means.

(m) a display circuit for displaying a distance in accordance with the selection circuit output signal.

4,244,514

ELECTRONIC TRIP METER WITH AN ALARM FOR AN AUTOMOTIVE VEHICLE

Hiroaki Nomura; Takaaki Mogi; Teruo Kawasaki, all of Yokohama; Masanori Mizote, Yokosuka; Kiyoshi Yamaki, Yokohama; Takashi Oka, Tokyo, and Hideoki Matsuo, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

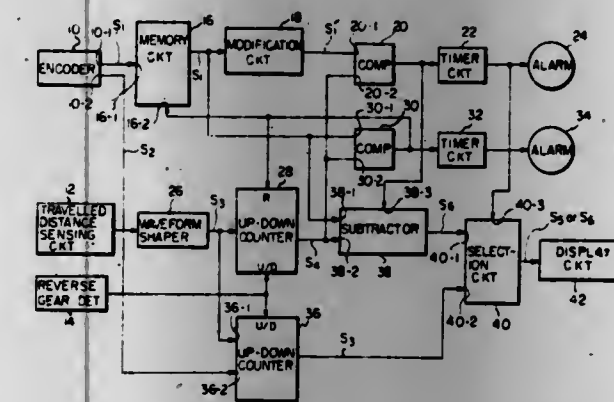
Filed Dec. 13, 1978, Ser. No. 969,310

Claims priority, application Japan, Dec. 21, 1977, 52-154881

Int. Cl.³ G06F 15/20; G06M 3/14

U.S. Cl. 235—92 DN

12 Claims



1. An electronic trip meter with an alarm for an automotive vehicle, comprising:

- encoding means for producing a plurality of first signals which are indicative of sub distances along a course, and a second signal indicative of a total distance between a starting point and an objective point;
- travelled distance sensing means for producing a third signal in the form of a pulse train, the number of pulses of said third signal being indicative of a distance actually travelled by said vehicle;
- memory circuit for storing the sub distances represented by said first signals, each of said first signals being read out in turn in response to a reset signal applied thereto;
- modification circuit for producing an output signal indicative of a distance shorter than that represented by the read out signal derived from said memory circuit;
- first counting means for producing a fourth signal indicative of a distance travelled by said vehicle in accordance with said third signal;
- second counting means for producing a fifth signal indicative of the difference between said total distance and said distance travelled;
- first comparator for producing an output signal when the distance travelled exceeds said distance represented by the modification output signal;
- second comparator for producing an output signal when the distance travelled exceeds said distance represented by the memory circuit output signal, said output signal of said second comparator being utilized as said reset signal;
- a timer circuit responsive to said output signal of said first comparator for producing a signal for a predetermined period of time;
- an alarm responsive to the output signal of timer circuit;
- a subtractor for producing a sixth signal indicative of the difference between the distance represented by said fourth signal and the distance represented by the memory circuit output signal, said subtractor producing said sixth signal only when the first comparator output signal is applied thereto;
- a selection circuit for selectively transferring one of said fifth and sixth signals in response to the timer circuit output signal; and

4,244,515

PRESET COUNTER

Hiroaki Kondo, Osaka, Japan, assignor to Hokuyo Automatic Co., Ltd., Osaka, Japan

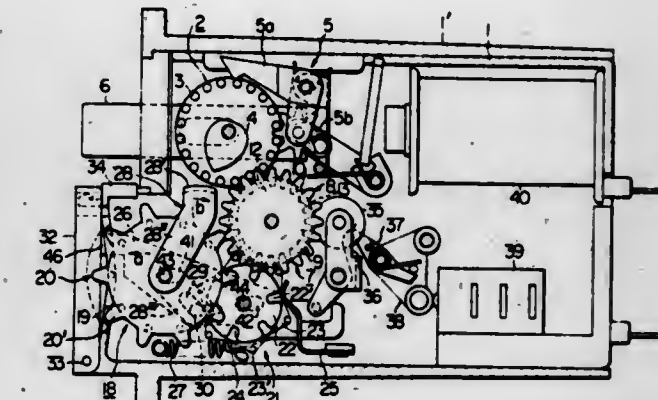
Filed Jun. 14, 1979, Ser. No. 48,378

Claims priority, application Japan, Aug. 2, 1978, 53/106956[U]

Int. Cl.³ G06F 15/18

U.S. Cl. 235—132 R

6 Claims



1. A preset counter comprising
 a casing, and
 one or more counter units,
 each counter unit having
 a number wheel,
 a first intermediate wheel in mesh with said number wheel,
 a preset wheel,
 a second intermediate wheel in mesh with said preset wheel,
 locking means, and
 a contact mechanism having a contact roller or a count-stop means,
 said first intermediate wheel comprising a first wheel which is in engagement with said number wheel and whose rotation may be releasably arrested by said locking means and a second wheel which is disposed in opposed relationship with said second intermediate wheel and is resiliently connected through clutch means to said first wheel and formed with a notch, said second wheel being forcibly rotated when said first wheel is prevented from being rotated, and
 arresting means for arresting said second intermediate wheel at a predetermined angular position and in the braked state when said second intermediate wheel remains stationary, said second wheel being rotated by the rotation of said second intermediate wheel but the rotation of said second wheel causing no rotation of said second intermediate wheel, each of said counter units being so arranged that when said notch and said contact roller are in line with each other, contacts are actuated so as to generate the signal which is transmitted to the exterior.

4,244,516

CONTROL UNIT FOR STARTING A CLIMATIZATION PROCEDURE IN A BUILDING

Jorn U. Christiansen, Hvidovre, Denmark, assignor to Tour & Andersson Aktiebolag, Johannesbo, Sweden

Filed Mar. 28, 1979, Ser. No. 24,534

Claims priority, application Sweden, Mar. 28, 1978, 78034923

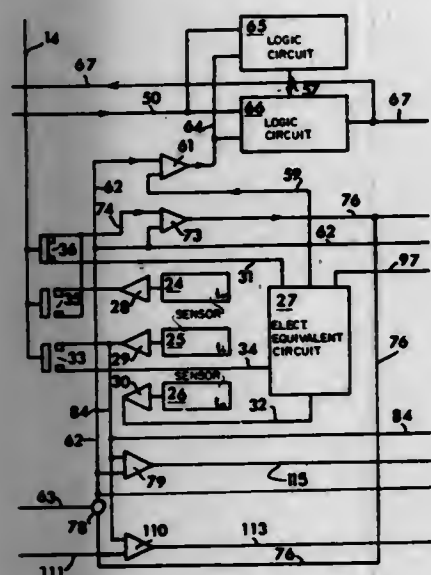
Int. Cl.³ F23N 5/20

U.S. Cl. 236—46 R

5 Claims

1. A control unit for controlling the start of a climatization procedure in a building, wherein a pulse generator is provided for generating pulses used in timing the operations of the control unit, first and second temperature sensor means are provided for sensing the interior air temperature of the building

and the external temperature outside of the building and for respectively producing first and second voltages in accordance therewith, and an equivalent electrical circuit for controlling the operations of the control unit is arranged to simulate the thermal properties of the building during temperature conditioning operations, i.e., heating or cooling, the equivalent electrical circuit being fed with a said first voltage representative of the interior temperature in the building, and a said second voltage representative of the external temperature outside of the building, and the time required for a discharge, a charge or an equalization of one or more voltages on condensers contained in the equivalent electrical circuit being representative of the period of time required for conditioning the temperature of the building, after the conditioning system



has been out of use during a predetermined period of time, the discharge or charge or equalization time being short as compared with the time for conditioning the temperature of the building and being used for calculation of the correct moment for starting the conditioning procedure by the control unit, said unit further comprising a further temperature sensor means for sensing the temperature of the walls within the building and a control circuit, responsive to said further temperature sensor means, for producing an output voltage used in controlling the start of said of the conditioning procedure by the control unit such that normal operation of the conditioning system is delayed until the difference between the temperature of the walls within the building and the air temperature within the building has decreased to predetermined value.

4,244,517

TEMPERATURE CONTROL FOR VARIABLE VOLUME AIR CONDITIONING SYSTEM

Dennis A. Stanke, La Crescent, Minn., and Paul C. Rentmeester, La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Division of Ser. No. 899,627, Apr. 24, 1978, Pat. No. 4,182,484. This application Mar. 22, 1979, Ser. No. 22,675

Int. Cl.³ F16K 31/02; F24F 7/00

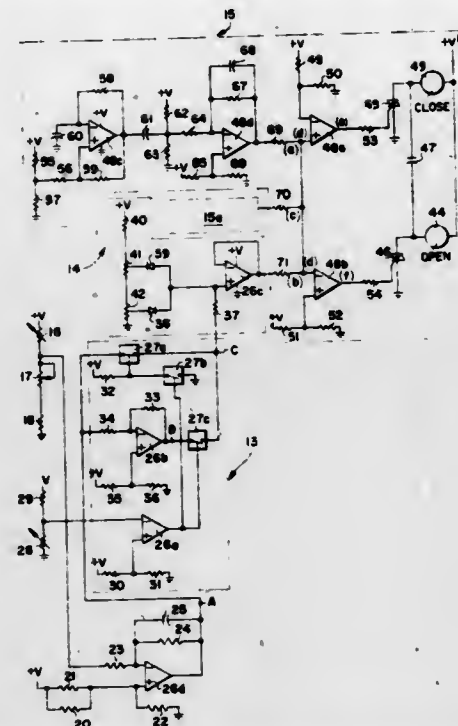
U.S. Cl. 236—49

5 Claims

1. A temperature control for a variable volume air conditioning system wherein electric motor-operated valve means are provided for varying the volume of conditioned air supplied to a conditioned zone, said temperature control comprising
 - a. zone thermostat means for sensing the temperature within a conditioned zone, determining the deviation between a set-point temperature and said zone temperature and for producing an electrical error signal having a magnitude which varies with respect to said deviation in temperature;
 - b. flow limit circuit means for receiving said electrical error signal and responsive to the magnitude thereof to impose thereon at least a first limit beyond which its magnitude cannot vary, said first limit being related to one of the

maximum or minimum desired flow of conditioned flow through said air valve means;

- c. feedback circuit means for producing an electrical feedback signal related to the actual volume of conditioned air flow through said air valve means; and
- d. valve motor control circuit means for receiving said electrical error signal and said electrical feedback signal and for energizing electric motor-operated air valve means in response thereto so as to vary the volume of



conditioned air being supplied to said conditioned zone in a sense to restore the zone temperature to the set-point temperature; said valve motor control circuit means being responsive to said electrical error signal and said electrical feedback signal such that the actual volume of conditioned air flow through said air valve means is related to the magnitude of said electrical error signal, thereby preventing a flow of conditioned air beyond said one of the maximum or minimum desired flow of conditioned air.

4,244,518

THERMALLY-CONTROLLED VALVE

Werner Föller, Stuhl, Fed. Rep. of Germany, assignor to Gestra-KSB Vertriebsgesellschaft mbH & Co. KG, Bremen, Fed. Rep. of Germany

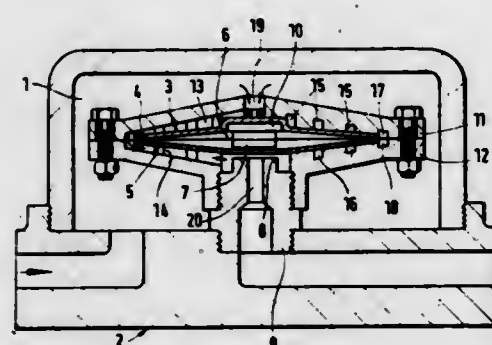
Filed Aug. 16, 1979, Ser. No. 66,895

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837538

Int. Cl.³ F16T 1/10

U.S. Cl. 236—58

13 Claims



2. In a valve of the type which includes a valve housing having a valve seat, a thermal control element mounted in said valve housing having at least one relatively thin rigid wall portion, a flexible membrane coupled to the periphery of the wall portion so as to define therebetween an expansion cham-

ber in which an expansion medium is disposed, and a locking member which is actuated by the membrane for cooperative coaction with the valve seat, the improvement comprising:

- said valve including a relatively thick-walled, jacket-type housing which is mounted in said valve housing and which encompasses said control element in a supporting manner, said jacket-type housing having flow conduits which oppose and run along the surface of said control element, said flow conduits being provided with an input and output opening for the medium to be discharged and said flow conduits comprising grooves which are formed in inner wall faces of said jacket-type housing and which open onto the surface of said control element.

4. In a valve of the type which includes a valve housing having a valve seat, a thermal control element mounted in said valve housing having at least one relatively thin rigid wall portion, a flexible membrane coupled to the periphery of the wall portion so as to define therebetween an expansion chamber in which an expansion medium is disposed, and a locking member which is actuated by the membrane for cooperative coaction with the valve seat, the improvement comprising:

- said valve including a relatively thick-walled, jacket-type housing comprising two generally cup-shaped elements which are coupled with each other at their respective edges, which are mounted in said valve housing and which encompass said control element

said opening so that fuel flows in an axial direction from said fuel space through said fuel filter to said pump suction space.

4,244,521

ARRANGEMENT FOR DISCHARGING LIQUID MEDIUM UNDER HIGH PRESSURE

Kuno Guse, Dortmund, Fed. Rep. of Germany, assignor to Bochumer Eisenhuetten Heintzmann GmbH & Co., Bochum, Fed. Rep. of Germany

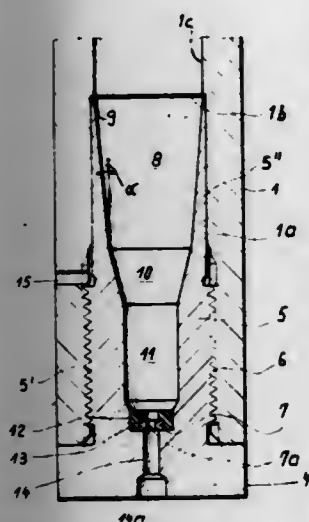
Filed Feb. 14, 1979, Ser. No. 12,110

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814165

Int. Cl.³ B05B 1/00; E21B 7/18

U.S. Cl. 239—110

27 Claims



1. An arrangement for discharging liquid at a predetermined high pressure level from a feed pipe having a tubular end portion, comprising

jet means adapted to be installed in the tubular end portion of the feed pipe and including a jet, a holder for the jet and a support for the holder and having a first portion and an axially spaced second portion adapted to be located inside said tubular end portion and having a smooth outer cylindrical circumference engageable with a corresponding inner circumference of said tubular end portion substantially without any radial clearance therebetween, said jet means further including an inlet, an outlet spaced from said inlet and passage means connecting said inlet with said outlet and including an inner recess provided in said second portion of said holder and having a funnel-shaped cross section converging in direction towards said first portion so as to increase the pressure of incoming liquid up to said predetermined level as the medium issues through said outlet; and connecting means for sealingly and detachably installing said jet means in said tubular end portion, including an outer thread provided in said first portion of said support and engageable with a corresponding inner thread in said tubular end portion of said feed pipe.

4,244,522

LIQUID STORAGE AND DISTRIBUTION APPARATUS FOR AGRICULTURAL IMPLEMENTS

Donald R. Hartwig, Rock Island, Ill., assignor to Deere & Company, Moline, Ill.

Filed Aug. 31, 1979, Ser. No. 71,448

Int. Cl.³ B05B 9/00

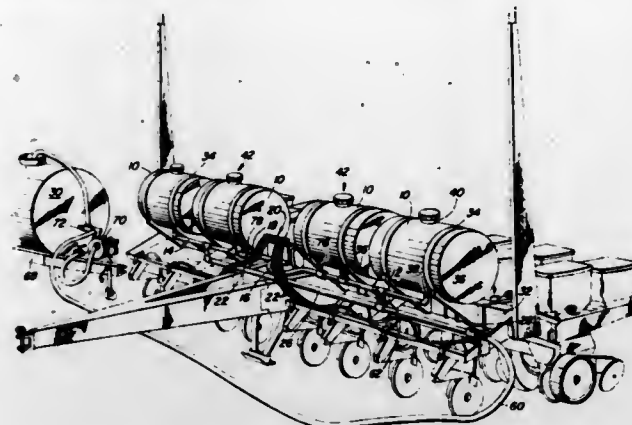
U.S. Cl. 239—148

4 Claims

1. Apparatus for receiving fluid pumped from a separate supply and for carrying and distributing said fluid from a mobile frame comprising:

at least two spaced apart fluid tanks carried on the frame, each tank having first and second openings, one of said openings being in the top portion of said tanks;
a fluid pump carried on the frame;
fluid line means connected to the other of said openings of

said tanks, said line means extending between the tanks and connected with the fluid pump;
valve means in the fluid line means selectively operable to prevent fluid flow between said tanks;
means coupled with the pump for distributing fluid received from said pump to the ground;
second valve means in the fluid line means selectively operable to permit fluid flow from the fluid supply and to said fluid line means; and



tank vent structure carried in the one opening of each tank, each vent structure including an opening therethrough and a member confined below said opening for reciprocal movement into and out of engagement with said opening, said member being boyant and larger than the opening in the vent structure whereby the member will seal the opening in said structure when the fluid level in said tank is such that the member is boyantly raised and forced into engagement with the opening.

4,244,523

APPARATUS FOR CLEANING TANKS OR VESSELS

Bruce T. Looper, 405 48th St., NW., Bradenton, Fla. 33507

Filed Mar. 15, 1979, Ser. No. 20,655

Int. Cl.³ B08B 9/08

U.S. Cl. 239—227

16 Claims



1. An apparatus for cleaning tanks or vessels, comprising:
(a) spray means, pivotedly mounted to a tiltable frame, for forming continuous cleaning liquid spray jets;
(b) mechanical means for continuously moving said spray means back and forth along the longitudinal axis of the tank or vessel to be cleaned;
(c) a gear box, fixedly mounted to said tiltable frame and operatively connected to a fixed support frame by a lever

arm mechanism, for continuously moving said spray means to direct said spray jets in both directions along the latitudinal axis of the tank or vessel to be cleaned simultaneously with the operation of said mechanical means; and
(d) power means for driving said mechanical means and said gear box.

4,244,524

EPICYCLIC NOZZLE DRIVE, AN ORBITAL NOZZLE UNIT AND A HYDRAULIC CLEANING HEAD INCORPORATING THE SAME

Ronald H. Wellings, Flackwell Heath, England, assignor to Purex Engineering Services, Maidenhead, England

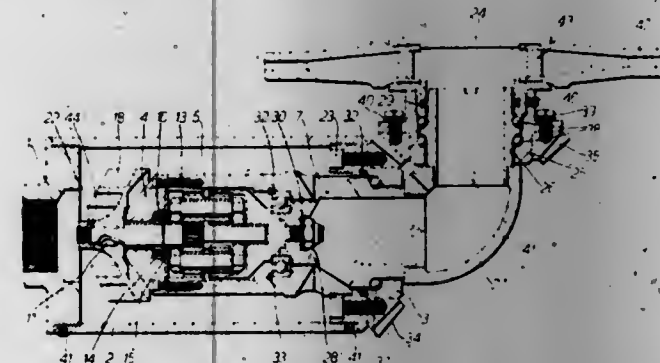
Filed Apr. 16, 1979, Ser. No. 30,572

Claims priority, application United Kingdom, Apr. 18, 1978, 15327/78

Int. Cl.³ B05B 3/04

U.S. Cl. 239—227

2 Claims



1. A drive for an orbital nozzle, comprising a housing having a fluid inlet, a fluid driven impeller disposed proximate to said inlet, a fluid passage within the housing extending from said inlet to an outlet, an epicyclic rotary speed reducing gear unit within said housing, said gear unit having an input formed by said impeller, an output shaft driven by the gear unit at a speed reduced below the speed of said impeller, means driveable by said output shaft and mounting the nozzle for rotation, including means for delivering fluid from said outlet of said passage to said nozzle, and wherein said gear unit is made of stainless steel and is provided with non-corrosive plastic bearing bushes, and wherein said passage surrounds said gear unit such that fluid flowing through said passage acts to dissipate frictional heat generated in the gear unit.

4,244,525

WRITING INSTRUMENT WITH REFILLABLE SCENT DISPENSER

Ronald A. Manna, 18 Island Hill Ave., Ridgefield, Conn. 06877

Filed Nov. 13, 1979, Ser. No. 93,826

Int. Cl.³ B05B 15/00

U.S. Cl. 239—289

12 Claims

1. An instrument for retaining a writing implement and for dispensing a liquid, said instrument comprising:

an elongated housing of a size and shape approximate to that of a pen or pencil, said elongated housing having a closed end and an open end;
said closed end of said elongated housing having an inner recess extending longitudinally into said housing towards said open end, said recess being shaped to removably receive a writing implement therein;
a liquid holding annular chamber defined between said elongated housing and said inner recess, closed at the closed end of said housing and open at the open end of said housing;
a pump mounted in the open end of said elongated housing

and communicating with said annular chamber through said open end; and



means for receiving and spraying liquid pumped by said pump from said annular chamber.

4,244,526

FLOW CONTROLLED SHOWER HEAD

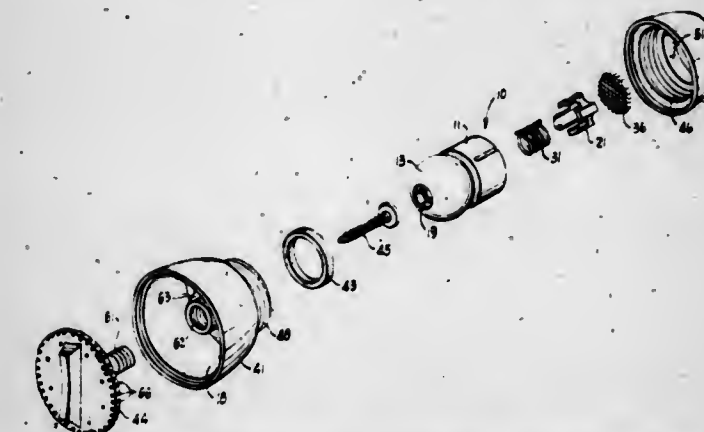
Michael J. Arth, 21040 Detroit Rd., Rocky River, Ohio 44116

Filed Aug. 16, 1978, Ser. No. 934,321

Int. Cl.³ B05B 1/18; E03C 1/08

U.S. Cl. 239—533.1

10 Claims



1. A shower head assembly comprising a coupling adapted to be connected to a supply line, a spray head having an orifice means for producing a spray pattern, the head assembly defining an internal flow path for conducting fluid received in said coupling to said orifice means, a flow regulating means including a chamber in said flow path, defined by an internal surface, and having an inlet and an outlet, a flow controller element disposed within said chamber, said flow controller element including a radial extending web having an effective pressure area exposed to fluid pressure in said supply line, a plurality of support fingers extending axially from peripheral portions of said radial extending web, a restriction member extending axially from a central portion of said radial web, said fingers defining surfaces for coacting with said internal surface of said chamber to support and guide said flow controller element within said chamber for movement towards and away from said outlet of said chamber in response to changes in fluid pressure of said supply line acting on said effective pressure area and, spring means biasing said element away from said outlet.

4,244,527

ELECTROSTATIC SPRAY GUN

Giuseppe De Fusco, St. Gall, Switzerland, assignor to Gema AG Apparatebau, St. Gall, Switzerland

Filed Mar. 15, 1979, Ser. No. 20,827

Claims priority, application Switzerland, Mar. 15, 1978, 2809789/78

Int. Cl.³ B05B 5/02

U.S. Cl. 239—691

6 Claims



1. An electrostatic spray gun comprising: a gun means providing a gun portion and a handle portion; a high-voltage generator having a low-voltage side mounted in said gun means; a switch means mounted in said gun means for turning-on and turning-off said high-voltage generator at its low-voltage side; said gun means including structure defining a flow channel for an atomizing gas; a pressure line for the infeed of the atomizing gas operatively connected with said flow channel; a manually-operated closure valve means arranged in said flow channel; said switch means being arranged in said flow channel and being structured as a flow switch; said flow switch having a movable contact; a differential pressure valve arranged in said flow channel; said differential pressure valve having a closure portion; said movable contact being coupled with said closure portion; said atomizing gas moving in a predetermined direction through said flow channel; and said flow switch being arranged in front of said closure valve means, viewed in the flow direction of said atomizing gas.

4,244,528

PROCESS FOR MICRONIZING OF SOLID CARBONACEOUS MATTER AND PREPARATION OF CARBON-OIL MIXTURES

Joseph Vlaty, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 26, 1979, Ser. No. 61,030

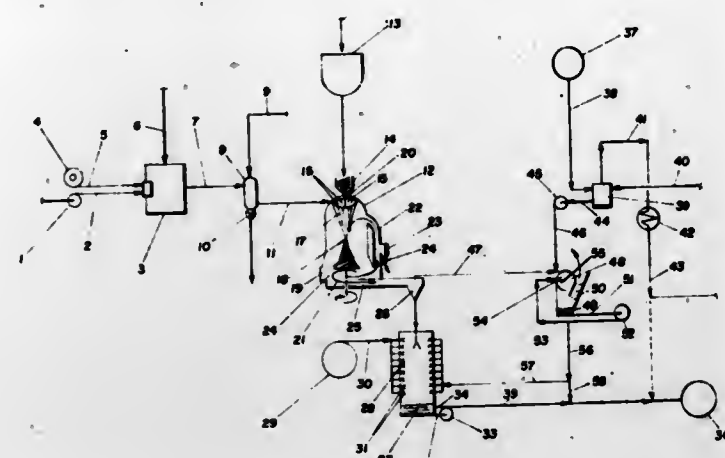
Int. Cl.³ B02C 19/06

U.S. Cl. 241—5

30 Claims

1. In a process for pulverizing particles of a solid material wherein said particles are projected against a concussion plate while said concussion plate rotates about its axis passing through its vertex the improvement comprising the steps of: (a) directing at least two intersecting fluid streams so that said streams first intersect at a common collision point and then diverge until they impinge on the convex grinding

surface of a concussion plate having a centrally disposed vertex; (b) projecting the particles to be pulverized into said collision point whereby reduction is effected and said reduced particles are fluidized in said fluid streams; and



(c) allowing said particles within the fluid stream to impact against the grinding surface of the rotating concussion plate such that they are further reduced and continuously cleared from said grinding surface.

4,244,529

INERTING OF PULVERIZING MILLS FOR COMBUSTIBLE MATERIALS

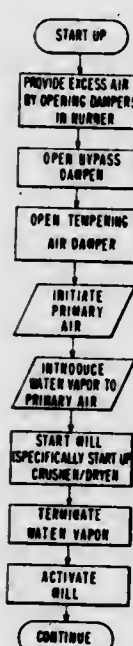
Robert M. DeGabriele, Negaunee, Mich., and Humberto Causilla, Jr., Rockville, Md., assignors to The Cleveland Cliffs Iron Company, Cleveland, Ohio

Filed May 7, 1979, Ser. No. 36,731

Int. Cl.³ B02C 17/00, 23/18, 23/24

U.S. Cl. 241—18

12 Claims



1. In a method for pulverizing a carbonaceous combustible material in a pulverizing mill having a pulverizing zone to produce particles of said combustible material, said method comprising the steps of:

(1) starting up said mill by

(a) directing into said pulverizing zone at an elevated temperature a primary air stream derived from a hot air stream and a tempering air stream, said primary air stream serving to dry and transport said combustible material particles through said mill; and

(b) feeding said combustible material into said pulverizing zone;

(2) pulverizing said combustible material into particles in said pulverizing zone; (3) discharging said combustible material particles from said pulverizing zone and mill by means of said primary air stream; and (4) shutting down said mill by terminating the feeding of said combustible material while continuing said pulverizing and maintaining said primary air stream comprising at least said tempering air stream to discharge substantially all of said combustible material from said mill; wherein during start-up and shutdown, the combustible material-air mixture passes through a composition zone of explosive mixtures; the improvement for preventing explosions in said mill which comprises: introducing at start-up and shutdown into said primary air stream at a site upstream from or at said pulverizing zone sufficient water vapor to reduce the oxygen content of said air stream to an amount in the range of about 8 to 18 volume %, said water vapor being in an amount less than an amount resulting in significant agglomeration and adhesion of said combustible materials to the walls of said mill; said water vapor being introduced during start-up at a time at least immediately prior to introduction of said combustible material into said pulverizing zone and terminating at about the time of addition of said combustible material into said pulverizing zone; and during shutdown, said water vapor being introduced at a time at about said termination of said feeding of said combustible material, and terminating when said primary air stream and said combustible material no longer form an explosive mixture.

4,244,530

INTEGRATED COAL CLEANING AND SLURRY PREPARATION PROCESS

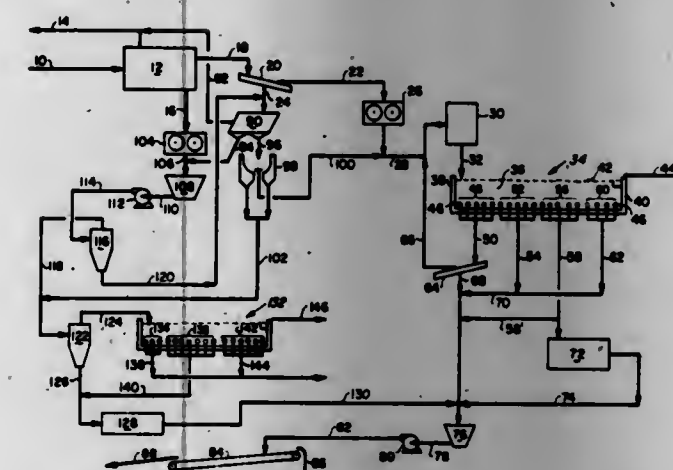
William J. Halvorsen, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed Dec. 17, 1979, Ser. No. 104,322

Int. Cl.³ B02C 23/08

U.S. Cl. 241—24

8 Claims



1. A coal cleaning and slurry preparation process for producing an aqueous coal slurry having a controlled coal particle size distribution and concentration from a coal feedstream which contains coal and gangues, said process consisting essentially of:

(a) separating said coal feedstream into a first coal stream, a first coarse middlings stream and a first waste stream containing a portion of said gangues;

(b) separating said first coal stream into a second coal stream, said second coal stream containing coarse coal having a particle size consist larger than a first selected minimum and a third coal stream, said third coal stream

containing coal having a particle size consist smaller than said first selected minimum;

(c) separating said third coal stream into a fourth coal stream, a second middlings stream and a second waste stream containing a portion of said gangues;

(d) separating said fourth coal stream into a fifth coal stream, said fifth coal stream containing coal having a particle size consist larger than a second selected minimum and a sixth coal stream, said sixth coal stream having a particle size consist smaller than said second minimum;

(e) crushing said coarse coal to produce a seventh coal stream;

(f) combining said seventh coal stream and said fifth coal stream and grinding said coal to produce an eighth coal stream;

(g) separating said eighth coal stream into a ninth coal stream, said ninth coal stream containing coal having a particle size consist smaller than about 325 Tyler mesh, a tenth coal stream, said tenth coal stream containing coal having a particle size consist greater than about 100 Tyler mesh and an eleventh coal stream, said eleventh coal stream containing coal having a particle size consist from about 325 to about 100 Tyler mesh;

(h) separating at least a major portion of any coal particles larger than about 14 Tyler mesh from said tenth coal stream to produce a twelfth coal stream;

(i) recycling said twelfth coal stream to combination with said fifth coal stream and said seventh coal stream;

(j) grinding at least a portion of said eleventh coal stream to produce a thirteenth coal stream;

(k) crushing said coarse middlings;

(l) combining said crushed coarse middlings and said second middlings stream to produce a third middlings stream;

(m) separating said third middlings stream into a third waste stream, said third waste stream containing small amounts of coal and middlings, and a fourth cleaned middlings stream, said fourth cleaned middlings stream containing cleaned coarse middlings and minus 100 mesh gangues and middlings;

(n) recycling said third waste stream to combination with said third coal stream;

(o) combining said fourth cleaned middlings stream and said sixth coal stream to produce a first combined stream;

(p) separating said first combined stream into a second combined stream, said second combined stream containing particles of a size consist larger than a third selected minimum and a third combined stream, said third combined stream containing particles of a size consist smaller than said third selected minimum;

(q) separating said third combined stream into a fourteenth coal stream and a fourth waste stream containing a portion of said gangues;

(r) combining said fourteenth coal stream and said second combined stream and grinding the combined streams to produce a fifteenth coal stream, said fifteenth coal stream containing coal having a particle size consist smaller than about 100 Tyler mesh; and,

(s) combining said ninth coal stream, said tenth coal stream, any portion of said eleventh coal stream not ground to produce said thirteenth coal stream, said thirteenth coal stream and said fifteenth coal stream to produce said aqueous slurry having a controlled coal particle size distribution.

4,244,531

AGITATED-MEDIA MILL WITH A BAFFLED INNER WALL

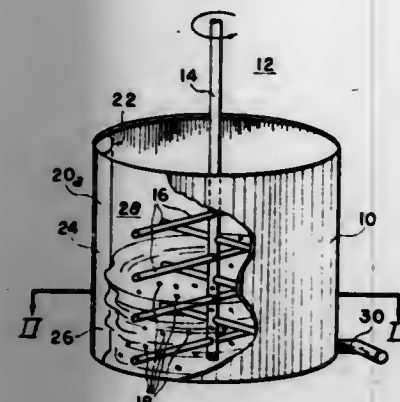
Andrew Szegvari, Akron, Ohio, assignor to Union Process, Inc., Akron, Ohio

Filed Oct. 31, 1978, Ser. No. 956,341

Int. Cl.³ B02C 17/16

U.S. Cl. 241-172

10 Claims



1. Apparatus for comminuting a process mixture, said apparatus comprising:

- a comminuting vessel;
- a comminuting media that is contained by the comminuting vessel; and
- an agitator extending into the comminuting media and being rotatable therein, said agitator having a shaft with radial members extending therefrom with at least some of said radial members having surfaces that are inclined with respect to the plane of rotation of the radial member, said surfaces of radial members at a given angular position on the shaft having a sense of inclination opposite from the surfaces of adjacent radial members having the same angular position such that the rotation of said agitator causes pulsating flow of the mixture during comminution thereof.

4,244,532

CRUSHER SWING JAW

Gerald E. Kroening, Columbia, and Karl B. Werginz, W. Columbia, both of S.C., assignors to Litton Systems, Inc., Columbia, S.C.

Continuation of Ser. No. 819,662, Jul. 28, 1977, abandoned. This application Aug. 11, 1978, Ser. No. 932,866

Int. Cl.³ B02C 1/10; B23K 31/02

U.S. Cl. 241-264

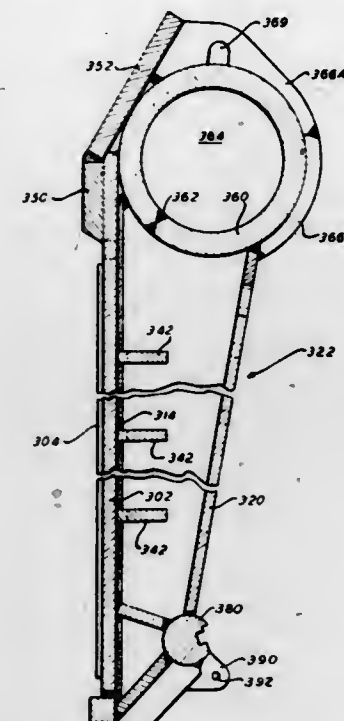
36 Claims

1. A composite swing jaw for a crusher; comprising:
 - (a) a first plate member having an upper area and a lower area with a face surface and a rear surface extending therebetween;
 - (b) a plurality of main rib members positioned and disposed to extend outwardly from said rear surface of said first plate member and sized to extend between an upper location proximate said upper area and a lower location proximate said lower area;
 - (c) barrel means, formed from a plurality of plate members secured together and to said first plate member to form with said first plate member a barrel like enclosure with an opening through which the shaft for operating the swing jaw passes, having an outer peripheral surface disposed in proximity to said first plate member proximate said upper area thereof and to said main rib members proximate said upper location; and
 - (d) securing means rigidly interconnecting said first plate member, said plurality of main rib members, and said barrel means into a composite whole.
3. The method of forming a crusher swing jaw; comprising:
 - (a) forming a first plate member with an upper area and a lower area and with a face surface and a rear surface extending therebetween, and with a pair of side edges;
 - (b) forming a plurality of rib members from plate like mate-

rial and sized to correspond to the distance between said upper and lower areas;

(c) positioning said plurality of rib like members so that each one extends outwardly from said rear surface and between said upper and said lower areas;

(d) forming barrel means from a plurality of plate members welded together into a barrel-like configuration to receive



the shaft for operating the swing jaw, and with an outer peripheral surface disposed proximate said first plate member proximate said upper area thereof and disposed proximate at least some of said rib member proximate an upper location thereof; and

(e) securing said first plate member, said plurality of rib members, and said barrel member together to form the swing jaw.

4,244,533

METHOD OF OPERATING AN AIR SENSOR

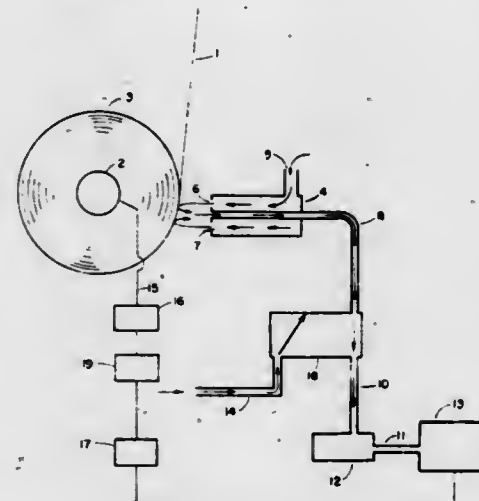
Walter J. Reese, North Huntingdon, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 5, 1979, Ser. No. 72,804

Int. Cl.³ B65H 54/00

U.S. Cl. 242-18 R

3 Claims



1. In an apparatus for sensing the surface of material being collected on a winder by introducing air onto the said surface material thereof and means are provided to sense the back pressure of air reflected from said surface using an amplifier and a pns switch to actuate movement of the winder to maintain a set distance between the winder surface and the air introducing means, the improvement comprising:

valve means in communication with the back pressure sensing means,

push button means associated with the winder to produce a signal when the winder is stopped and the push button is actuated, to thereby move said valve means and provide a connection through said valve means to a secondary air supply to disconnect said back pressure sensing means and means to introduce said secondary air supply in a direction countercurrent to the flow of air utilized to sense said back pressure to thereby purge the air sensing means of any accumulation of contaminants contained therein before starting said winder.

4,244,534

STRIP COILER

Heinrich Reannebaum, Menden, and Benito Kakoschke, Hemer, both of Fed. Rep. of Germany, assignors to Sundwiger Eisenhütte Maschinenfabrik Grah & Co., Hemer-Sundwig, Fed. Rep. of Germany

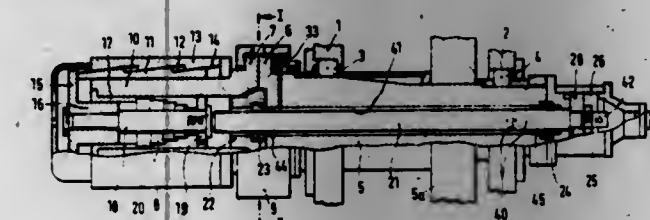
Filed Nov. 19, 1979, Ser. No. 95,334

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850560

Int. Cl.³ B65H 75/28

U.S. Cl. 242-72.1

7 Claims



1. A strip coiler comprising an expandable coiling drum having a mounting outward flange on one end, a rotative shaft having an outward flange on one end, said flanges fitting together, a collar encircling said outward flanges and having first and second inward flanges cooperatively embracing the outward flanges, the first inward flange and the corresponding one of said outward flanges forming a releasable form-locking joint, the second inward flange having fluid pressure means working against the adjacent outward flange.

4,244,535

SEPARABLE FILM SPOOL AND METHOD OF LOADING FILM CASSETTE THEREWITH

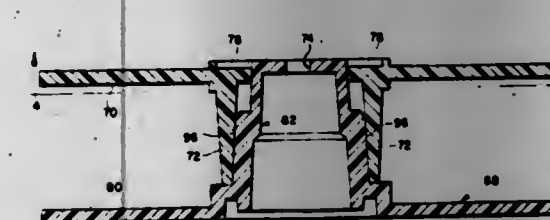
Donald E. Moodie, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 4, 1979, Ser. No. 45,272

Int. Cl.³ B65H 75/18

U.S. Cl. 242-71.8

11 Claims



1. A two-piece spool for winding of a flexible strip, said spool having a pair of interconnected members, each of said members having a flange portion, at least one of said members carrying a hub section defining the rotational axis of the assembled spool and configured for supporting said strip in a convolutely wound condition, a first of said members having at least one deflectable tongue extending from the flange of said first member in a generally parallel relation to said axis and being constructed and dimensioned to be deflected in a direction generally transverse to its longitudinal axis to facilitate releasable frictional engagement thereof, and a second of said members having means for slidably receiving and deflecting said tongue so as to interconnect said members, said receiving means including means responsive to sliding engagement with said tongue for deflecting said tongue along an axis generally transverse to its longitudinal axis into a flexed and deflected condition from an initial undeflected condition to a deformed and deflected condition so that when deflected a tight and releasable frictional engagement results with said receiving means to retain said members in their interconnected arrangement.

4,244,536

EXTENSION CORD REEL

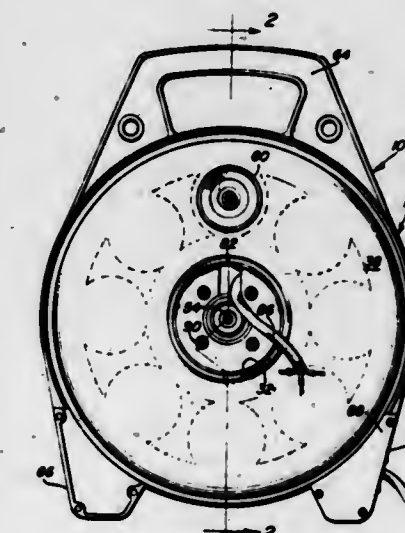
Thomas D. Harrill, Box 330, Mabank, Tex. 75147

Filed Oct. 31, 1979, Ser. No. 89,889

Int. Cl.³ B65H 75/40

U.S. Cl. 242-96

8 Claims



1. An extension cord reel construction including a hollow body having opposite front and rear ends, a rear closure wall closing the rear end of said body and including a central portion projecting forwardly toward the forward end of said body and terminating forwardly generally centrally intermediate the front and rear ends of the body, a pair of front and rear generally cylindrical and front-to-rear aligned spool core sections, said rear spool core section including a rear radially outwardly projecting circumferential flange and a front inwardly projecting annular wall, said front spool section including a front radially outwardly projecting circumferential flange and a rear inwardly projecting annular wall, said spool sections being end abutted and secured together with the front and rear facing surfaces of said front and rear annular walls being disposed in abutting relation, a generally cylindrical front-to-rear extending hub including a generally cylindrical outer rim portion and an annular central hub portion, said outer rim portion including a front radially outwardly projecting flange, said front and rear annular walls being journaled on said outer rim portion rearwardly of said front radially outwardly projecting flange of said hub, said central portion of said rear closure wall having a central bore formed therethrough and defining a forwardly facing annular seat surface concentric with and about said central bore, the rear end of said outer rim being seated against said seat surface, and a fastener secured through said central bore and said annular central hub portion, said front and rear spool sections being at least substantially enclosed within said hollow body with the rear spool core section loosely telescoped over said central portion of said rear wall and said front circumferential flange subsequently completely closing the front end of said body.

4,244,537

ADJUSTABLE SENSOR RESPONSIVE TO VEHICLE ACCELERATION

Lucas Labour, Heverlee, Belgium, assignor to N.V. Klippan S.A., Heverlee-Louvain, Belgium

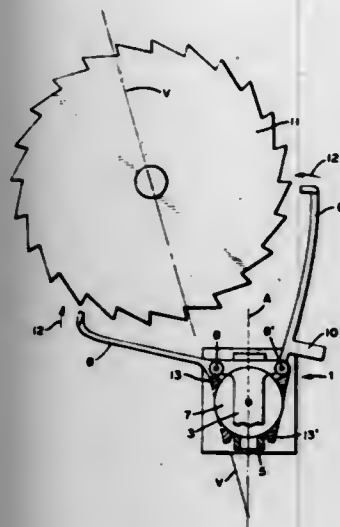
Filed Jan. 19, 1979, Ser. No. 50,049

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827409

Int. Cl.³ A62B 35/02; B65H 75/48

U.S. Cl. 242—107.4 A

10 Claims



1. In a seat belt retractor including a sensor responsive to vehicle acceleration and locking means operable to lock said retractor against movement in the protraction direction at an acceleration above a predetermined acceleration, the improvement comprising:

said locking means comprising two pivotably mounted pawls operable to lock a single ratchet wheel having peripheral ratchet teeth in response to actuation of said sensor, said pawls being positioned on opposite sides of said sensor so that the force required to lock said ratchet wheel upon acceleration above said predetermined acceleration is uniform regardless of the direction of said acceleration.

4,244,538
SPOOL

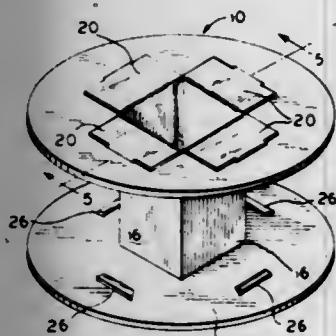
Brian S. Thores, Lyons, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 13, 1979, Ser. No. 57,181

Int. Cl.³ B65H 75/14

U.S. Cl. 242—118.8

1 Claim



1. A spool formed from a plurality of blanks of paperboard or the like, comprising:

- (a) a hollow core of rectangular cross section formed from foldably interconnected walls to define a tube;
- (b) each wall having an end flap at each end thereof foldable with respect to said wall and having locking tabs at the ends thereof;
- (c) a pair of end members adapted to be secured to said

hollow core, each of said end members having a rectangular opening therein closely fitting the walls of said core; (d) each of said end members having slots, each of said slots being spaced from the openings in the end members by a distance equal to the length of said flaps;

(e) said end flaps being foldable against said end walls with the locking tabs inserted into said slots to maintain said core and said end walls in assembled relationship.

4,244,539

PERFECT LAYER COIL WINDING APPARATUS
Yukinori Taneda, Yokohama; Takashi Kobayashi, Fujisawa; Kiyoshi Yano, Yokohama; Mitsunobu Isobe, Machida, and Noboru Sugimoto, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Japan

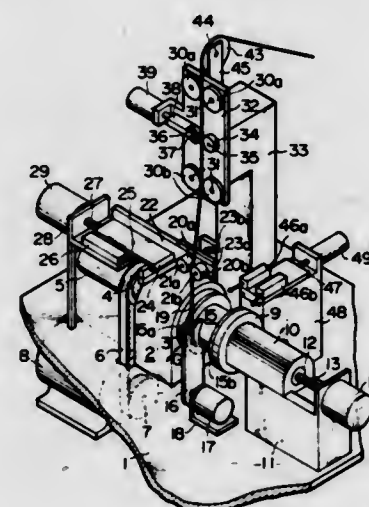
Filed May 31, 1979, Ser. No. 44,338

Claims priority, application Japan, May 31, 1978, 53-64340

Int. Cl.³ B65H 54/28

U.S. Cl. 242—158 R

4 Claims



1. A perfect layer coil winding apparatus for forming a multi-layered perfect layer coil which includes wire winding means for rotating a bobbin having flanges on both ends thereof to perform a winding operation and provided with a detector for detecting a degree of rotation of said bobbin, said feed means provided with a pair of rollers for holding therebetween a wire to supply said wire to said bobbin and define a supply position of said wire, for moving said supply position forward and backward in a direction parallel to the axis of said bobbin in synchronism with the rotation of said bobbin in such a manner that said supply position follows a winding position for winding said wire round said bobbin thereat with the delay of a predetermined amount on the basis of the output of said detector, further comprising:

said wire winding means including a shaft and a tail stock shaft to hold said bobbin therebetween, the width between said flanges of said bobbin being variable, said tail stock shaft being slidable in the axial direction thereof toward said shaft to compress and adjust said width between said flanges of said bobbin;

position detecting means for detecting the position of each of said flanges of said bobbin held by said wire winding means;

diameter measuring means for measuring the diameter of said wire wound round said bobbin; and

control means connected to said position detecting means and said diameter measuring means for calculating the width of said bobbin from the position of each of said flanges detected by said position detecting means and for calculating the number of turns per layer in a perfect layer coil winding and the winding width of said bobbin required to conduct said perfect layer coil winding from said calculated width of said bobbin and the diameter of said wire measured by said diameter measuring means to

slide said tail stock shaft toward said shaft and adjust said width of said bobbin to said winding width.

4,244,540

SPECTRAL DISCRIMINATION SYSTEM FOR AN OPTICAL SEEKER

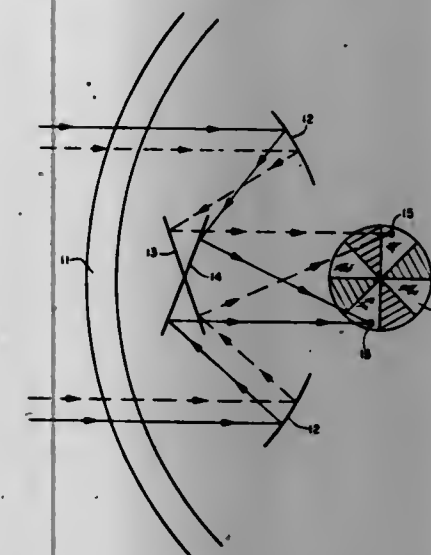
Richard H. Vollmerhausen, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 21, 1978, Ser. No. 948,948

Int. Cl.³ F41G 7/00; F42B 15/02; G06F 15/50

U.S. Cl. 244—3.16

6 Claims



1. A conical scan optical seeker system for spectral discrimination of targets comprising:

- a gyroscopic frame;
- at least one primary mirror serving as an aperture to focus incoming light to said seeker system;
- at least one dichroic mirror placed in the path of said focused light to divide said focused incoming light into at least two blur circles which represent separate locations for focusing light of different preselected wavelengths; and
- detection means for observing the presence of said different preselected wavelengths at each of said blur circles.

4,244,541

DUAL CAM CONTROL MECHANISM FOR COORDINATED DEPLOYMENT AND RETRACTION OF AN AIR-CRAFT'S LEADING AND TRAILING EDGE WING FLAPS

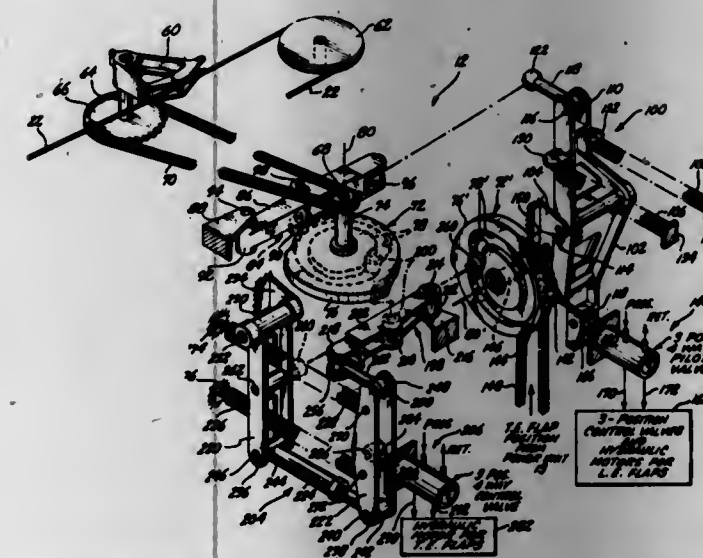
Rupert I. Dorn, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jan. 2, 1979, Ser. No. 64

Int. Cl.³ B64C 13/32

U.S. Cl. 244—221

13 Claims



1. In an apparatus for controlling the leading edge flaps and

trailing edge flaps of an aircraft in response to a single, pilot operated control, that has a primary control cam means which cooperates with leading and trailing edge flap follower means for effecting, in response to selective movement of said primary cam means by said pilot operated control, the extension and retraction of the leading and trailing edge flaps, respectively, through leading and trailing edge actuation means, and that further has a secondary cam means which is slaved to the trailing edge flaps for correlative movement therewith and a feedback follower means cooperating with said secondary cam means for providing a mechanical feedback signal which coacts with said trailing edge flap follower means to cause the trailing edge flap actuation means to effect the movement of said trailing edge flaps to a position selected by said pilot operated control and said primary cam means, wherein the improvement in said apparatus ensures a predetermined retraction sequence of the leading and trailing edge flaps and comprises:

additional camming surface means formed on said secondary cam means; and

override follower means cooperating with said additional camming surface means on said secondary cam means for overriding the reaction of said leading edge actuation means to said leading edge flap follower means and said primary cam means when said leading edge flap follower means attempts to cause the leading edge flaps to retract before the trailing edge flaps have retracted, in response to said trailing edge flap follower means, to at least a predetermined state of retraction.

4,244,542

CONDUIT SPACER SYSTEM

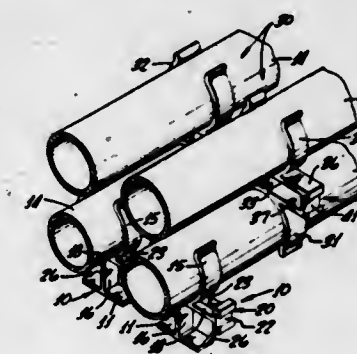
Lyle H. Mathews, 2141 Shannon Way, Mesa, Ariz. 85205

Filed Jun. 4, 1978, Ser. No. 45,303

Int. Cl.³ F16L 3/00

U.S. Cl. 248—49

4 Claims



1. A system for supporting a plurality of conduits above another in parallel, spaced-apart relationship comprising:

a first unit for supporting a first conduit comprising:

- a base;
- a first U-shaped member having an open end and a diameter approximately equal to the outside diameter of a conduit to be supported thereby; and
- first means interconnecting said base and said first member with said open end of said first member extending away from said base; and

a second unit for supporting a second conduit above said first conduit comprising:

- a second U-shaped member having an open end and a diameter approximately equal to the outside diameter of said second conduit;
- a third U-shaped member having an open end and a diameter approximately equal to the outside diameter of said first conduit; and

second means interconnecting said second and third U-shaped members with said open ends thereof extending in opposite directions and the planes of said second and third members coplanar;

the spacing between the open ends of said first, second and

third U-shaped members being less than the outside diameters of the conduits to be supported thereby, the opposed arms of said first, second and third U-shaped members being made from a resilient material to permit spreading thereof for receipt of conduits therebetween whereby said U-shaped members may be snapped onto conduits to be supported thereby.

4,244,543

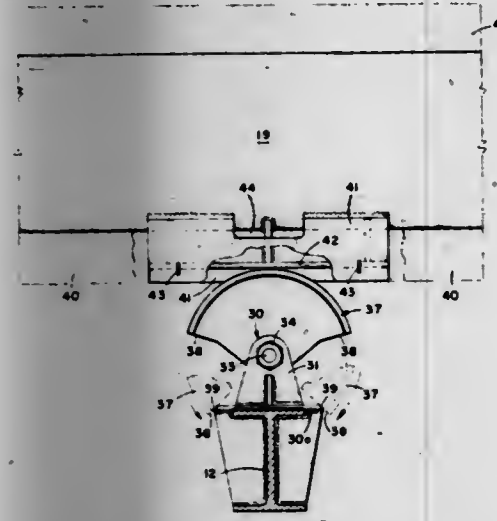
SUPPORT ROLLER OR ROCKER FOR HOT EXPANDING PIPE LINES

Ernest A. Ericson, Channelview, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Jan. 8, 1979, Ser. No. 1,629

Int. Cl.³ F16L 3/18, 3/22

U.S. Cl. 248—55

9 Claims



1. A rotatable support apparatus for supporting a length of expandable pipe upon a raised-above-the-ground, fixed, flat, horizontal surface member in the presence of other pipes supported on said member, which applies a constant load to said member under pipe expansion conditions, comprising in combination:

- (i) rolling and guiding contact means comprising a rotatable member having a uniform annular or arcuate cross-section,
 - (ii) support means for said rotatable member rigidly attached to said fixed flat surface member,
 - (iii) pivot connecting means for said rotatable member which pivotably and rotatably connects said rotatable member to said support member,
- said assembly being so constructed and arranged whereby longitudinal movement of a pipe resting and supported upon said rotatable member causes rotation of said rotatable member upon said pivot connecting means to accommodate said pipe movement without shifting the load movement from said fixed flat surface.

4,244,544

HOLDERS FOR CABLES AND CONDUITS

Kazimierz F. Kornat, Chelmsford, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 19, 1979, Ser. No. 31,567

Claims priority, application United Kingdom, May 30, 1978, 24493/78; Feb. 12, 1979, 04768/79

Int. Cl.³ F16L 3/22

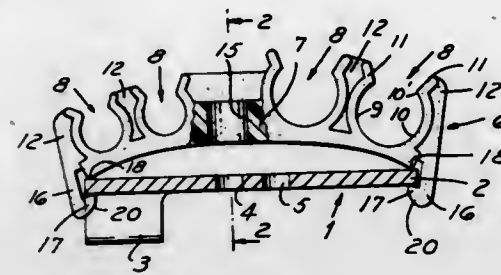
U.S. Cl. 248—68 R

5 Claims

1. A holder for cables or conduits comprising a base or carrier of resilient plastics material having at least one clip formed integrally therewith on one surface thereof, said at least one clip having two jaws for receiving a cable or conduit, and an aperture in the central region of said base for receiving a connector, said carrier being resiliently deformable by movement of said central region relative to the ends to close the jaws of said at least one clip, characterized in that:

said carrier is removably mounted on a supporting bracket

by means of mounting lugs provided towards each end of said base, said mounting lugs engaging the ends of said supporting bracket when said carrier is in an arcuate substantially undeformed position, with the jaws of said at least one clip open thus holding said carrier steady to facilitate insertion of the cable or conduit into said at least one clip, and in that:



said supporting bracket is adapted to be mounted on a supporting wall or panel and to engage with a connector in said aperture in said carrier, whereby the central region of said carrier may be drawn towards said bracket, thereby providing a coupling between said carrier and said supporting bracket when said carrier is in a deformed position with the jaws of said at least one clip closed and securing the cable or conduit in said at least one clip.

4,244,545

CABLE TRAY CONDUIT CLAMP

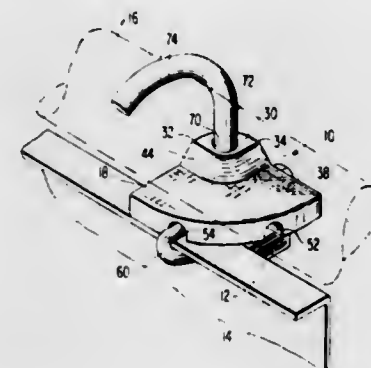
Richard C. Berry, North Camillus, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Mar. 19, 1979, Ser. No. 22,002

Int. Cl.³ F16L 3/24

U.S. Cl. 248—72

6 Claims



1. A conduit clamp for securing a conduit at any desired angle relative to a U-shaped cable tray having a flange on each side thereof comprising a flat plate having an upper surface for supporting a conduit and a lower surface adapted to rest on a flange of said cable tray, a rectilinear block protruding downwardly from said bottom surface adapted to engage a side of said cable tray, two intersecting bores extending through said plate perpendicular to each other and parallel to said surfaces of said plate, a bolt extending through one of said bores having a J-shaped hook portion at one end thereof adapted to engage said flange and a nut threaded on the other end thereof engaging said clamp for securing said clamp to said cable tray, a further bore extending through said plate and block orthogonally relative to said intersecting bores and clamping means adjustably secured in said bore adapted to engage and clamp a conduit onto said upper surface of said plate.

4,244,546

UNIVERSAL DRAWER GUIDE MOUNTING BRACKET

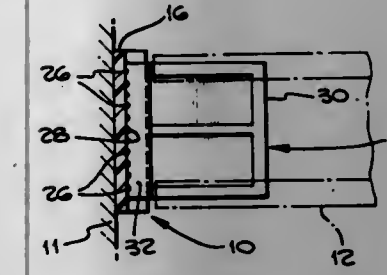
Paul Mertes, 15528 Don Metz St., Mission Hills, Calif. 91345, and Gary W. Nelson, 22933 Hatteras St., Woodland Hills, Calif. 91367

Filed Mar. 19, 1979, Ser. No. 21,970

Int. Cl.³ A47B 88/00

U.S. Cl. 248—258

24 Claims



1. A universal rear drawer guide mounting bracket, for easy use in inaccessible locations, comprising:
base means for attaching one side of said mounting bracket to a mounting surface;
drawer guide attaching means for connecting one end of a furniture-type drawer guide to the other side of said mounting bracket;
adjusting means, forming the interface between said base and said drawer guide attaching means, for allowing displacement of said drawer guide attaching means relative to said base means, thereby providing positional adjustment of a drawer guide mounted to said drawer guide attaching means, said adjusting means including locking means for resisting movement between said drawer guide attaching means and said base means once the proper position for said drawer guide has been established; and
means forming part of said base means and said drawer guide attaching means, for resiliently urging said adjusting means into locking action, independent of any structure to which said base means may be attached;
whereby said mounting bracket may be easily positioned, in inaccessible locations such as inside the rear of a cabinet by centrally locating said attaching means relative to said base means, securing a drawer guide onto said drawer guide attaching means, locating said bracket in position while holding said drawer guide, securing said mounting bracket to a mounting surface, and then aligning said drawer guide by tapping said attaching means with a hammer or the like.

4,244,547

THEODOLITE LEVELING MEANS

J. Peter E. Kool, Succasunna, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Dec. 20, 1978, Ser. No. 971,467

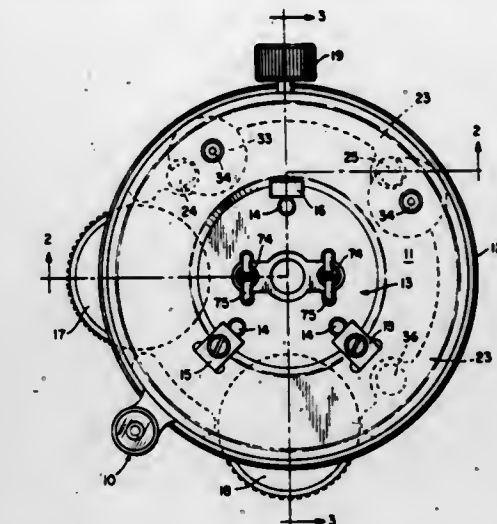
Int. Cl.³ F16M 11/12

U.S. Cl. 248—180

10 Claims

1. Adjustable leveling means comprising:
(a) a base platform establishing a fixed base plane;
(b) an intermediate platform defining a first tilt plane mounted upon said base platform by means comprising a first pair of fixed post members terminating in substantially spherical surfaces and a pair of socket members disposed to respectively receive therein each of said spherical surfaces and form a pivot therewith, the centers of curvature of said spherical surfaces establishing a first fixed tilt axis oriented substantially parallel to said base plane and about which said first tilt plane is tiltable with respect to said base plane;
(c) first adjusting means for imparting increments of tilt to said first tilt plane;
(d) an upper platform defining a second tilt plane mounted upon said intermediate platform by means comprising a second pair of fixed post members terminating in substan-

tially spherical surfaces and a pair of socket members disposed to respectively receive therein each of said spherical surfaces and form a pivot therewith, the centers of curvature of said spherical surfaces establishing a second fixed tilt axis oriented substantially orthogonal to said first tilt axis and about which said second tilt plane is tiltable with respect to said first tilt plane;



(e) second adjusting means for imparting increments of tilt to said second tilt plane; and
(f) means comprising said upper platform establishing a major datum plane; whereby cooperative manipulation of said first and second adjusting means will orient said major datum plane in a desired stable, fixed attitude with respect to said base plane.

4,244,548

MIRROR CLAMPING ASSEMBLY

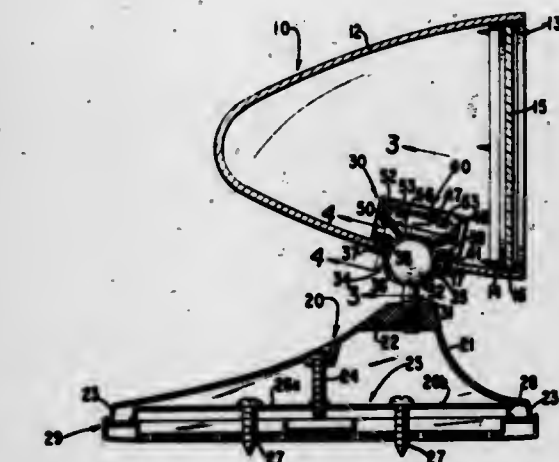
Bernard C. Sharp, White Plains, N.Y., assignor to Parker-Hannifin Corporation, Shelton, Conn.

Filed Jul. 9, 1979, Ser. No. 55,601

Int. Cl.³ A47G 1/24

U.S. Cl. 248—481

8 Claims



1. In a ball joint for holding a body such as a mirror housing positioned tightly yet turnably relative to a supporting member carrying a ball disposed in an opening through a wall of the body, a clamping assembly comprising:
a ball seat member cradling the outer side of said ball and fixed against the outer side of said wall about said opening;
a body clamp fixed against the inner side of said wall about said opening;
a ball clamping member at the inner side of said wall to bear against the inner side of said ball;
means including an element engageable with said clamping member and adjustable from outside said wall for holding said ball clamping member under a desired tension against said ball;

and coating means on said body clamp and said ball clamping member for preventing displacement of the latter away from a position for engagement with said holding element and said ball in the event of disengagement of said element from said clamping member.

4,244,549

SELF STRAIGHTENING PICTURE HANGER

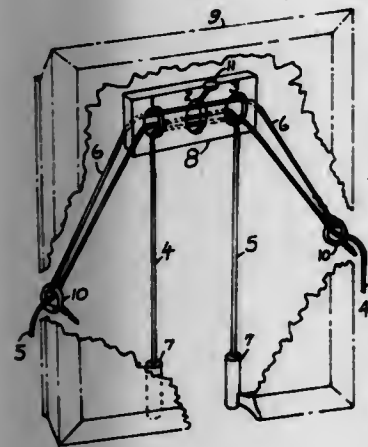
Clifford T. Oldfield, 4119 Vincent St., Pierrefonds, Que., Canada (H9J 1W7)

Filed May 5, 1978, Ser. No. 902,951

Int. Cl.³ A47G 1/16

U.S. Cl. 248—494

1 Claim



1. A self straightening picture hanger for mounting a picture on a wall, said hanger comprising a generally rectangular plate, said plate having three horizontally spaced apertures, the center of said apertures being on the horizontal center line of said plate, a wire secured at opposite ends to a picture frame and threaded through the outboard apertures, said apertures serving to retain said wire in a desired, pre-adjusted position, the center aperture adapted to be placed over the head of a nail and serve as a pivot point, a pair of cords threaded through the outboard apertures, one end of each cord depending from a respective aperture and a roller attached to each depending end, said rollers adapted to be interposed between the picture frame and the wall whereby the frame may roll on the rollers which, in turn, roll on the wall and allow the picture to return to a straight position, if disturbed.

4,244,550

UMBRELLA SUPPORTING DEVICE FOR BICYCLE

Eisuke Yamada, Nagoya, Japan, assignor to Arakawa Industry Company Limited, Aichi, Japan

Filed Nov. 6, 1978, Ser. No. 957,837

Claims priority, application Japan, Nov. 7, 1977, 52-149842

Int. Cl.³ A01K 97/10

U.S. Cl. 248—534

7 Claims



1. An umbrella supporting device for detachably supporting an umbrella in an upright perpendicular or vertically angular position on the handlebar of a bicycle, comprising:

- a supporting post adapted to be removably attached in an upright position to the handlebar stem of the bicycle and including a lower post member of cylindrical shape and an

upper post member telescopically received in the lower post member;
lock means for locking the upper post member in fixed vertical position in the lower post member;
clamping means attached to the upper end of the upper post member of said supporting post for detachably clampingly receiving the handle of the umbrella, said clamping means including a pair of clamping members having their inner sides facing each other for clamping therebetween the handle of the umbrella, said clamping means including manual operating means for moving the clamping members together;

a bracket means fixed to the lower end of the lower post member of said supporting post and formed with a lock hole sized and positioned to admit the head lock nut of the bicycle thereby to lock said umbrella supporting device as a whole at the handlebar stem of the bicycle and tilting means for fixedly locating the bracket means in secured tilted positions angularly relative to the handlebar of the bicycle whereby the umbrella can be fixedly located in selected vertical angular relation to the bicycle.

4,244,551

COMPOSITE SHELL MOLDS FOR THE PRODUCTION OF SUPERALLOY CASTINGS

Bruce E. Terkelsen, Cheshire; Michael Cybulsky, Manchester, both of Conn., and James S. Perron, Hudson, Ohio, assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 751,005, Dec. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 561,711, Mar. 25, 1975, abandoned. This application Jun. 30, 1978, Ser. No. 920,753

Int. Cl.² B28B 7/34

U.S. Cl. 249—134

3 Claims



1. A composite ceramic shell mold having an internal cavity for producing castings of superalloys which are susceptible to chain porosity, said cavity containing a region where the cross-sectional area changes by a factor of at least 1:2 which comprises:

- a. an inner component consisting essentially of alumina and silica, with the alumina composing at least 80% by weight of the component, and the sum of the alumina and silica composing at least 90% by weight of the component, said inner component having an average thickness of about 2 to 20 mils and being wettable by molten superalloys; and
- b. an outer component consisting essentially of zircon and a colloidal silica binder and having a thickness of from 0.1 to 0.4 inch, said outer component being readily removable from the solidified superalloy casting.

4,244,552

CORNER WEDGING CONSUMABLE HOT TOP

Joseph A. Perri, Corapolis, Pa., assignor to Insul Company, Inc., East Palestine, Ohio

Filed Sep. 20, 1979, Ser. No. 77,169

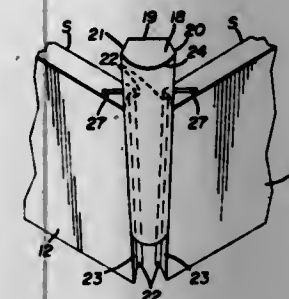
Int. Cl.³ B22D 7/10

U.S. Cl. 249—197

5 Claims

1. A consumable hot top for installation in the upper end of an ingot mold and comprising four solid preshaped sections of

consumable disintegratable material and four corner pieces arranged in a walled structure having open upper and lower ends, each of said preshaped sections having an outer surface and an inner surface, the ends of said preshaped sections each being formed with first end portions extending at right angles from said inner surface and second end portions extending outwardly from said first end portions at 45° angles with said outer surface, so that the second end portions increase the



width of said preshaped sections, said corner pieces each having flat inner surfaces and oppositely disposed sides disposed at about 90° angles thereto, with the outer surfaces of said corner pieces opposite said inner surfaces being outwardly curved, said ends of said preshaped sections being downwardly outwardly tapered and said corner pieces being oppositely tapered so as to engage said preshaped sections in a wedging action expanding the over all size of the wall structure when moved between said preshaped sections.

4,244,553

HYDRAULIC ACTUATION SYSTEM FOR ENGINE VALVES

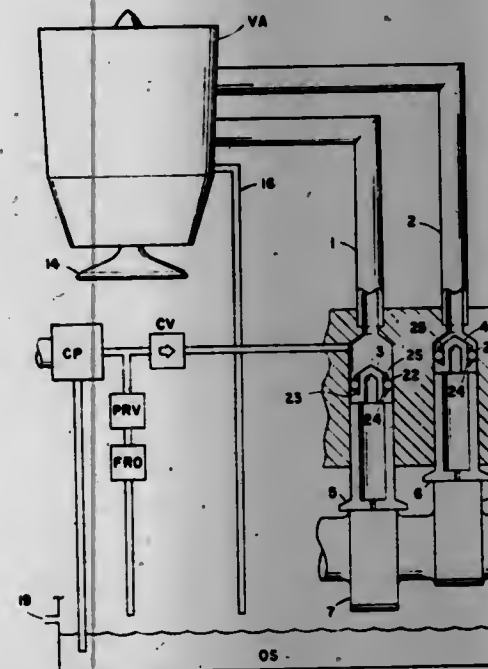
Alfonso S. Escobosa, 2034 Brittany Pl., Placentia, Calif. 92670

Filed May 25, 1978, Ser. No. 909,650

Int. Cl.³ F16K 31/122; F01L 9/02

U.S. Cl. 251—57

6 Claims



1. A system of hydraulically actuated poppet valves wherein fluid supplied by complementary flow sources and replenished by a variable pressure source is conveyed to actuator/port units to effect the opening and closing of engine valves; said flow sources constituting valve-opening and valve-closing circuits incorporating cam driven cam follower units having finite leakage sliding seals; said variable pressure source comprising a pump circuit incorporating a high pressure pump, a shunt connected pressure release valve having a series flow restricting orifice said pressure source applied to the valve-closing circuits through a check valve; said actuator/port units comprising a symmetrically arranged single-ended actuator, a valve member, a valve seat and a valve port with said actuator having a finite leakage piston and shaft sliding seals with the

shaft seals, in turn, comprised of interior and exterior seals with leakage from the interior seals returned to the system oil sump; said system of hydraulically actuated poppet valves each incorporating a first retractable elastomeric seal in series with the actuator interior shaft, said first retractable seal under a non-pressurized condition latches each of the valve members during the engine turn-off period, during normal operation said first retractable seal retracts under a pressurized condition to unlatch each of the valve members, thus defining the leakage determined by the interior seals, regardless of the position of each of the poppet valves during the latching and unlatching positions, synchronization with the corresponding cam follower units is always maintained; the cam follower units include second retractable elastomeric seals for the purpose of positively containing the control fluid in the valve-opening and valve-closing circuits, said second retractable seals performs in the same manner as the first retractable seal during the latching and unlatching of the poppet valves; a variable leakage sliding seal in the valve-opening cam follower units allows a net valve-closing force to develop across the actuator piston during the period the valve members must remain closed.

4,244,554

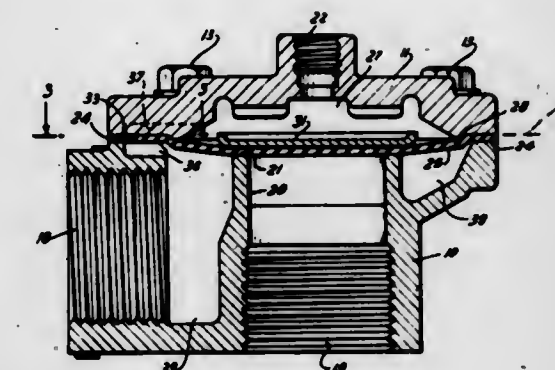
SPRINGLESS DIAPHRAGM VALVE

Joseph DiMauro, Hillside; Herbert H. Kaemmer; Noel A. Otto, both of Whippany, and Roger G. Riefler, Kinnelon, all of N.J., assignors to Automatic Switch Company, Florham Park, N.J., Continuation of Ser. No. 600,541, Jul. 31, 1975, abandoned. This application Apr. 2, 1979, Ser. No. 26,119

Int. Cl.³ F16K 31/126

U.S. Cl. 251—61.1

9 Claims



1. A valve comprising:

- (a) a valve body having an inlet port, an outlet port, and a valve seat between said ports,
- (b) a flexible diaphragm within said valve body and movable into and out of engagement with said valve seat to close and open the valve, respectively, and
- (c) non-resilient, rigid means engaging said diaphragm only in a region radially outwardly of the region of said diaphragm which engages said valve seat for biasing said diaphragm into engagement with said valve seat, said rigid means being capable of fully closing the valve without the aid of any other closing force when the pressure is equal on both sides of said diaphragm.

4,244,555

SELF-CLEANING VALVE FOR REGULATING THE FLOW OF LIQUID IN IRRIGATION SYSTEMS

Virginio Maggioni, Rosta, and Renzo Moretti, Cambiano, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed May 23, 1979, Ser. No. 41,968

Claims priority, application Italy, Jul. 4, 1978, 68563 A/78

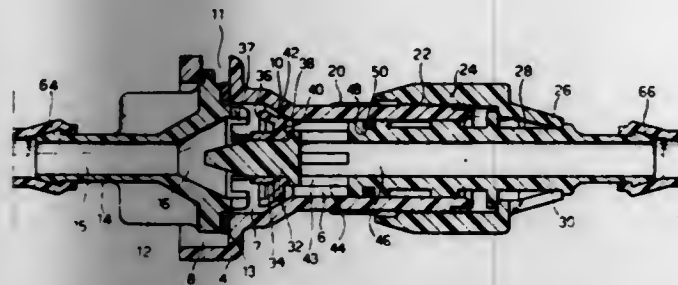
Int. Cl.³ F16K 31/44

U.S. Cl. 251—82

2 Claims

1. A self-cleaning valve for regulating the flow of an irrigating liquid in irrigation systems, said valve comprising a body

having inlet means, a pipe union detachably connected to said body and having a seating extending into said inlet means, a nut threaded onto said body, a tubular element connected to said nut and displaceable axially within said body by rotation of said nut, said element having a central bore and longitudinal radially directed slots through which said central bore communicates with said inlet means, said body having a frusto-conical seat adjacent said inlet means, a floating bush within said body supported on the end of said element adjacent said inlet means, said floating bush defining an adjustable passage between said seat and said bush and shoulder means on said element for moving said bush away from said seat upon axial displacement



of said element toward said inlet means, said bush being movable by liquid flow in a direction from said central bore to said pipe union into engagement with said seating and said bush being movable towards said frusto-conical seat by liquid flow in a direction from said pipe union to said central bore for controlling the flow of irrigating liquid from the inlet means into the tubular element bore to a communicating outlet means as determined by the limiting position of said shoulder means said seating including means permitting flow of liquid from said outlet means between the bush and said seating to said inlet means regardless of the limiting position of the shoulder means.

4,244,556

VALVES OR THE LIKE

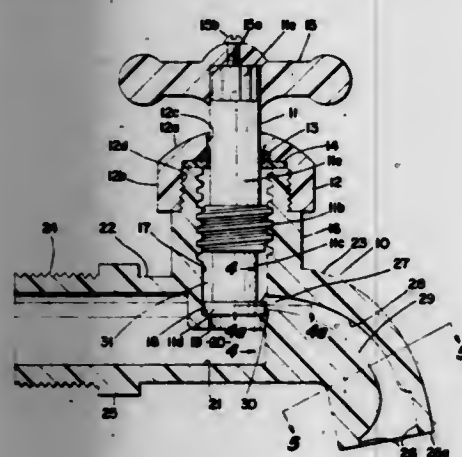
Don R. Miller, Ashland, Ohio, assignor to U-Brand Corporation, Ashland, Ohio

Filed Sep. 18, 1978, Ser. No. 943,004

Int. Cl.³ F16K 27/00

U.S. Cl. 251-118

8 Claims



1. In a valve having a valve seat and an outlet portion having a fluid outlet passageway therein, said fluid outlet passageway comprising a wall having a transverse cross-section in the form of a downwardly facing arc of a circle, and a wall having a transverse cross-section in the form of a chord of that circle interconnecting the ends of said arc, said last-named wall terminating at one end in a dam extending from said last-named wall to said valve seat.

4,244,557

HIGH VACUUM SEAL

Wilhelm Polhede, Bruchköbel, and Reinhard Reiter, Höchst, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Köln-Bayenthal, Fed. Rep. of Germany

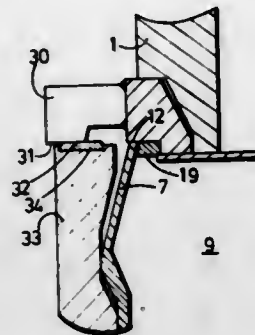
Filed Oct. 3, 1978, Ser. No. 948,308

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1977, 2745139; Sep. 18, 1978, 2840618

Int. Cl.³ F16K 25/00

U.S. Cl. 251-167

17 Claims



1. In a vacuum-tight closure assembly including means defining a valve seat; a spreadable valve plate movable into a closed position for assuming a spreaded state in which it sealingly engages the valve seat; and guide means for a centered guiding of the valve plate during its motion into the closed position; the improvement wherein said guide means comprises

- (a) a plurality of lugs affixed to said means defining said valve seat; each said lug having a guide face being situated in the vicinity of said valve seat; and
- (b) a carrier affixed to and movable with said valve plate and having a periphery comprising counterguide faces; said guide faces of said lugs being oriented towards said counterguide faces of said carrier; said guide face cooperating with said counterguide faces during said motion of said valve plate.

4,244,558

FRAME-POSITIONING DEVICE FOR MOUNTING CANVAS AND LIKE MATERIAL

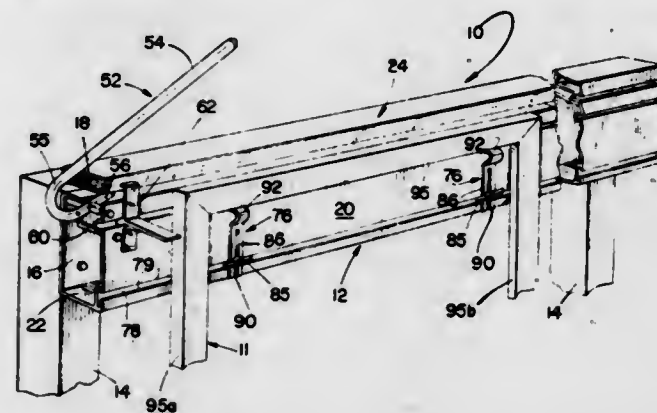
Richard Guy, 27752 Torija, Mission Viejo, Calif. 92691

Filed Apr. 16, 1979, Ser. No. 30,010

Int. Cl.³ B66F 19/00

U.S. Cl. 269-254 R

6 Claims



1. A frame-positioning device for mounting and stretching canvas and like materials that are stretch-mounted to a supporting stretcher frame, in combination with a canvas-stretching-and-mounting apparatus, wherein the frame-positioning device comprises:

- a pair of oppositely disposed stretcher-bar holders slidably mounted to said canvas-stretching-and-mounting apparatus and adjustably spaced apart from each other to support said stretcher frame thereon;
- means for slidably mounting said stretcher-bar holders along

the longitudinal plane of said apparatus to support said frame relative to said apparatus; and means for adjusting said stretcher-bar holders in a vertical plane to position the side frame vertically with respect to said apparatus, whereby the canvas mounted on said frame is stretched tightly across said frame.

4,244,559

BELT TIGHTENING TOOL

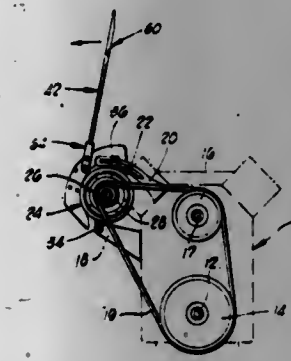
Ray R. Mote, Perkins, Okla., assignor to Jack K. Vassar, Perkins, Okla., a part interest

Filed Aug. 15, 1979, Ser. No. 66,844

Int. Cl.³ B66F 3/00

U.S. Cl. 254-129

5 Claims



1. A belt tightening tool comprising: an elongated arcuate jaw element having a concave inner gripping face, a convex outer face and a pair of opposed, substantially parallel, flat side surfaces extending between said inner and outer faces; a lug-engaging to projecting from said jaw element at one end thereof; and elongated lever arm means having one end detachably and adjustably connected to said jaw element at a location intermediate the ends thereof, said elongated lever arm means comprising: an elongated lever arm; and a bifurcated connecting bracket which includes: a web portion secured to one end of said lever arm; and a pair of legs extending on opposite sides of said jaw element and adjustably connected to said jaw element; and further characterized in that said arcuate jaw element defines a plurality of pairs of spaced apertures extending therethrough from one of said side surfaces to the other; and each leg of said bifurcated connecting bracket defines a pair of spaced apertures, with the pairs of apertures in said legs aligned with each other, and the spacing of said apertures in said legs conforming to the spacing of said pairs of spaced apertures in said arcuate jaw element; and wherein said tightening tool further includes fastening means extending through aligned pairs of apertures in said legs and in said arcuate jaw element to secure said lever arm means to said arcuate jaw element at a selected angular relationship to said jaw element.

4,244,560

TREE PULLER

Wallace H. Hawkins, Rt. 7, Old Buncombe Rd., Greenville, S.C. 29609

Filed Jan. 22, 1979, Ser. No. 5,097

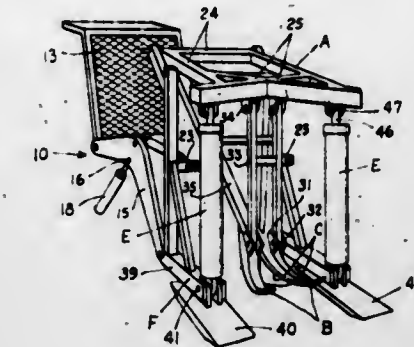
Int. Cl.³ A01G 23/06

U.S. Cl. 254-132

10 Claims

1. A tree pulling apparatus carried by a wheeled vehicle comprising: an elongated arm pivotally carried by the vehicle on one end thereof and extending forwardly and downwardly therefrom; first fluid power operated cylinder means connected to said

elongated arm intermediate the ends thereof for raising and lowering same; a tiltable supporting frame having a lower inner end pivotally carried upon a free end of said elongated arm and a lower forward end supportable upon the ground; second fluid power operated cylinder means pivotally connected to said tiltable frame for imparting tilting movement thereto;



an elevatable frame member having pivotal connection adjacent an upper rearward portion of said tiltable frame; tree gripping means carried by said elevatable frame extending forwardly thereof; and a pair of transversely aligned power operated cylinders, having pivotal mounting between a forward lower end of said tiltable frame and forward portion of said elevatable frame member, and being spaced on each side of said tree gripping means.

4,244,561

AIRBORNE HOIST

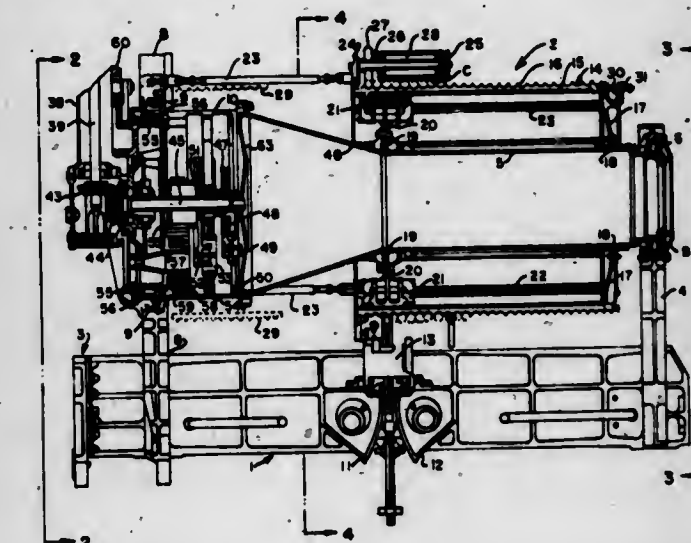
Richard F. Campbell, Broomall, Pa., and Dennis Stein, Columbus, Ohio, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 2, 1979, Ser. No. 54,213

Int. Cl.³ B66D 1/26

U.S. Cl. 254-288

21 Claims



1. An airborne hoist for lifting a load and comprising a pair of rotatable drums for use in providing feed out of a pair of cables for use in the lift procedure, a base structure supporting said drums for rotation in opposite directions, a drive unit, said drive unit when energized providing for rotation of said drums in their opposite directions of rotation, a cable holding means supported by each drum and each capable of both rotating in unison with the rotation of its respective supporting drum and for simultaneously shifting axially a distance along the length of its drum during rotation, one of each cable being wound on each cable holding means and each capable of being simultaneously wound or unwound during a lifting operation.

4,244,562

POWDER INJECTION APPARATUS FOR INJECTION OF POWDER INTO MOLTEN METAL

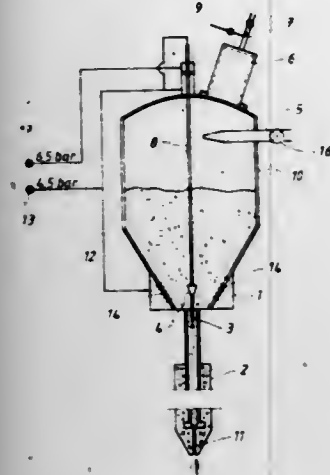
Ake Archenholtz, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Dec. 18, 1978, Ser. No. 970,803

Claims priority, application Sweden, Dec. 23, 1977, 7714717

Int. Cl.³ C21C 7/00

U.S. Cl. 266—216



1. Means for injection of powder into a molten metal, comprising:
 - a container for retaining powder;
 - a lance mounted to said container for injection of powder into the molten metal;
 - powder storage means connected to said container;
 - evacuation means connected to said container for evacuating said container for ejector filling thereof with powder;
 - an ejector tube mounted within said container and movable in said lance in proximity to the opening thereof for ejecting gas therein to maintain the lance opening free of melt with the lance immersed therein; and
 - means for moving said ejector tube in said lance.

4,244,563

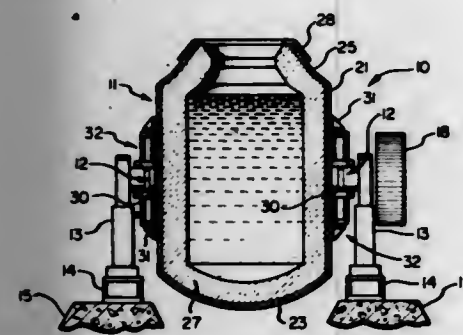
METALLURGICAL VESSEL WITH REMOVABLE TRUNNION PINS

William R. Carr, 1425 Brush Hill Cir., Naperville, Ill. 60540

Filed Dec. 10, 1979, Ser. No. 101,730

Int. Cl.³ C21C 5/50

U.S. Cl. 266—246



1. In a metallurgical vessel comprising a crucible portion having an outer shell, a circumferential trunnion portion attached to the crucible portion, and a pair of coaxially aligned pins each located on an opposite side of the trunnion portion in a pair of coaxially aligned holes with one of each of the holes located on an opposite side of the trunnion portion, with the improvement comprising:

at least one of the holes having a circular cross-sectional configuration and tapering from a larger diameter on the outside of the trunnion portion to a smaller diameter on the inside of the trunnion portion, with said taper being of a self-holding nature; and

a pin having a self-holding tapered portion positioned in said tapered hole.

4,244,564

CONTROL SYSTEM FOR A COLLATOR

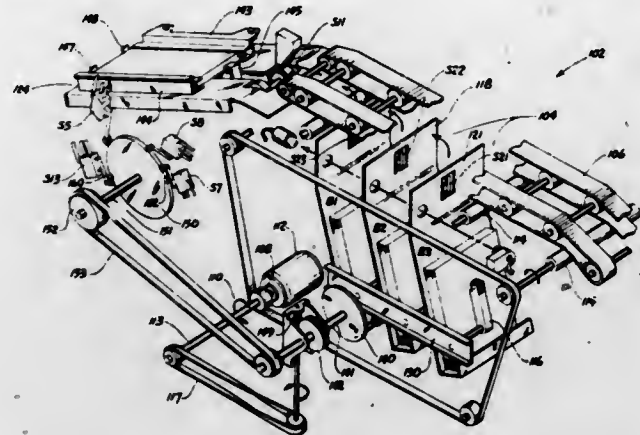
Michael A. Brown, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 868,647, Jan. 11, 1978, abandoned, which is a continuation-in-part of Ser. No. 726,145, Sep. 24, 1976, abandoned. This application May 23, 1979, Ser. No. 41,670

Int. Cl.³ B42B 2/00; B65H 39/055

U.S. Cl. 270—53

18 Claims



1. In a collator having an operative cycle during which a set of sheets is collated and including a plurality of sheet storage bins, each of said bins having an access thereto and comprising a wall having a first and a second portion, the first portion supporting sheets inserted into the bin and said second portion providing a means for guiding said sheets as they are fed out of said bin wherein a sheet being fed from said bin passes only momentarily over said second portion, a corresponding plurality of sheet feeders, each feeder being operatively associated with a corresponding bin, means for cyclically moving said feeders from a home position, in which position each feeder does not obstruct the access to its bin, along a predetermined operative path longitudinally extending adjacent said first and second portions to allow a sheet feeder to engage and carry a sheet from said first portion over and beyond said second portion and returning to said home position preparatory to another cycle of operation and wherein each feeder, if stopped in the course of said operative path, would obstruct the access to its corresponding bin, and wherein the second portion of said wall includes an aperture located in the operative path of its respective feeder, and drive means for moving said sheet feeders along said predetermined path, a control system comprising:

means for sensing a sheet feeding malfunction during a cycle of operation, said sensing means including a plurality of misfeed and nonfeed detectors corresponding to the number of bins, each misfeed and nonfeed detector comprising a switch having an actuator disposed in a respective aperture whereby the aperture is normally bridged by a sheet as the sheet is fed out of the bin by the sheet feeder and the sheet feeder passes through the aperture to activate the switch when the sheet feeder fails to feed a sheet from the bin, means responsive to said sensing means and operatively associated with said drive means for (a) continuing the cyclical operation of said sheet feeders after a sheet feeding malfunction is sensed and (b) stopping said sheet feeders in said home position before another cycle begins whereby the sheet feeding malfunction can be readily corrected through the access provided to each of said bins when said sheet feeders are in their respective home positions.

14. A combined collating, jogging and stapling system having an operative cycle during which a set of sheets is sequentially collated, jogged into alignment, and fastened together, comprising:

A. a stapler for fastening together a set of jogged sheets;

- B. a jogger operatively associated with said stapler and having a pair of side guides cyclically reciprocally movable between an open position for receiving a set of collated sheets and a closed position to align the sides of a set of received sheets;
- C. a plurality of adjacent sheet storage bins each having an access thereto, each bin comprising a wall having a first and a second portion, the first portion supporting sheets inserted into the bin and said second portion providing a means for guiding said sheets as they are fed out of said bin wherein a sheet being fed from said bin passes only momentarily over said second portion;
- D. a corresponding plurality of sheet feeders each operatively associated with a corresponding bin, means for cyclically moving said feeders from a home position, in which each feeder does not obstruct the access to its bin, along an operative path longitudinally extending adjacent said first and second portions to allow a sheet feeder to engage and carry a sheet from said first portion over and beyond said second portion and returning to said home position preparatory to another cycle of operation, wherein each feeder if stopped in the course of said operative path would obstruct the access to its corresponding bin, and wherein the second portion of said wall includes an aperture located in the operative path of its respective feeder;
- E. a conveyor operatively associated with said sheet feeders and said jogger for conveying sheets ejected from said bins to said jogger;
- F. means defining a predetermined path along which said sheets are ejected out of said bins and conveyed by said conveyor to said jogger;
- G. means operatively disposed along said predetermined path for sensing a sheet feeding malfunction, said sensing means including a plurality of misfeed and nonfeed detectors corresponding to the number of bins, said misfeed and nonfeed detectors comprising a plurality of switches, each switch having an actuator arm located in a respective aperture whereby the aperture is normally bridged by a sheet as the sheet is fed out of the bin by the sheet feeder and the sheet feeder passes through the aperture and actuates the corresponding switch when the sheet feeder fails to feed a sheet; and
- H. cycle means operatively connected to said stapler, jogger, conveyor and sheet feeders, and responsive to said sensing means for (a) normally cyclically operating said system, (b) continuing the cyclical operation of said system after a sheet feeding malfunction is sensed and (c) stopping the system before the stapler operates and after the sheet feeders are in their respective home positions.

4,244,565

METHOD OF CONTROLLING THE ENTRY OF MATERIAL INTO A SPIRAL COMPARTMENT STACKER

Josef Geier, Munich, Fed. Rep. of Germany, assignor to Gesellschaft für Automation und Organisation GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,426

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756223

Int. Cl.³ B65H 43/08, 29/40

U.S. Cl. 271—176

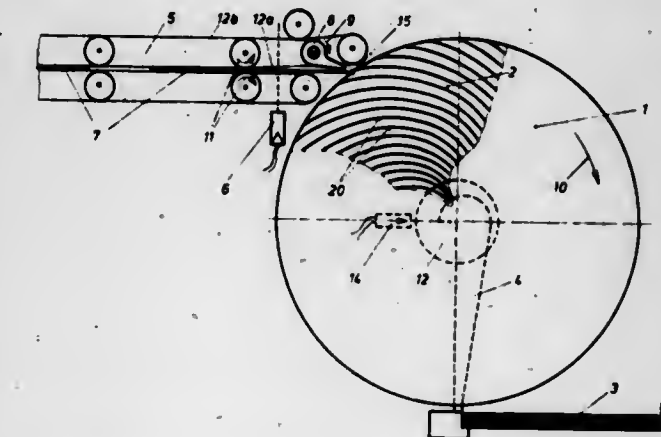
25 Claims

1. A method of controlling the entry of flat, flexible sheet material into compartments of a rapidly rotating spiral compartment stacker, the spiral compartment stacker having a rotating stacker drum with helically curved partitions defining spiral compartments in said drum, each sheet spiral compartments, each compartment having an ideal point of entry for the sheet material, the method comprising the steps of:

conveying the sheet material to the rotating drum; checking the synchronization between the conveyance of the sheet, on the one hand, and the position of the ideal

point of entry of the material into a spiral compartment, on the other hand; deflecting the front edge of the material in proportion to any asynchronization found in said checking step to substantially correct any deviation in the entry of material into a compartment from the ideal point of entry; stripping said sheet material from said stacker drum; and stacking said stripped sheet material in a stack.

23. A spiral compartment stacking apparatus comprising: a stacker drum rotatably mounted on a frame member; a means for rotating said stacker drum; a plurality of helically disposed partitions in said drum, said partitions defining a plurality of compartments in said drum for receiving flat, flexible sheet material therein, each sheet having a front edge for entry into one of the spiral compartments, said compartments having entrance openings at the circumference of the drum, said compartments extending toward the drum axis in a helical arrangement, said partitions being spaced further from each other in the region of the drum circumference than in the region of the drum axis, so that the cross section of each compart-



ment, taken in a direction normal to the drum axis, is larger near the drum circumference than near the drum axis and so that the same cross section has a helically inwardly tapering configuration, each entrance opening of each compartment having an ideal point of entry for the sheet material;

a conveying means for conveying flat, flexible sheet material toward said stacker drum during rotation of said drum; a stripper means for stripping the flat, flexible sheet material from said stacker drum; a stacking area at the exit point of said stacker drum; means for checking to determine whether the conveyance of the sheet material toward the stacker drum is synchronized with the position of the ideal point of entry of the sheet material into a spiral compartment of the rotating drum; and means for deflecting the front edge of the sheet material in proportion to any asynchronization found in said checking step to thus substantially correct any deviation in the entry of material into a compartment from the ideal point of entry.

4,244,566

LEVITATION DEVICE

Gale Molovinsky, 10502 Great Arbor Dr., Potomac, Md. 20854

Filed Jun. 7, 1979, Ser. No. 46,485

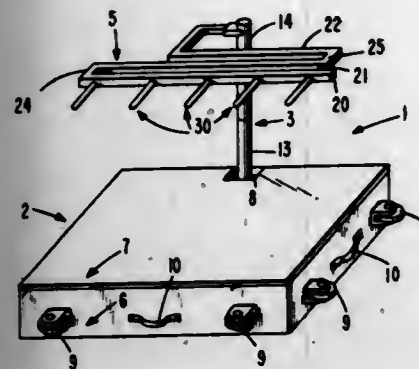
Int. Cl.³ A63J 5/12

U.S. Cl. 272—9

7 Claims

1. An improved levitation illusion apparatus for use in conjunction with a rigid hoop comprising: a rectangular stage having an aperture therein, an upright support member extending through said aperture and operatively connected to said stage, a horizontal support member extending from said upstanding support member at an angle of from 0° to 10° from the horizontal; wherein,

said horizontal support member comprises: four parallel support member sections whose length increases as their horizontal distance from the upright support member increases; three parallel intermediate support member sections which connect the four parallel support member sections together; and the rectangular stage comprises;



a trunk body having a hinged apertured lid, a plurality of rollers mounted on the periphery of the trunk body, a support fixture rigidly attached to a wall of the trunk body, whereby said support fixture removably secures said upright support member in the vertical position through the apertured lid acting as the top surface of the stage.

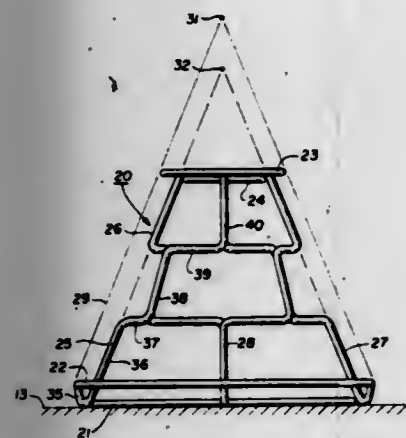
4,244,567 SPACE TUMBLER

George H. Linzee, 25 Bayview Ave., E. Setauket, N.Y. 11733, and Richard Compton, Aspen, Colo., assignors to George H. Linzee, East Setauket, N.Y.

Continuation of Ser. No. 911,806, Jun. 2, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 102,255
Int. Cl.³ A63G 1/12

U.S. Cl. 272—33 R

7 Claims



1. An exercising device for supporting a rider above the ground comprising: structural members defining inner and outer interconnected cones displaced from one another along a common axis; said outer cone being defined by different diameter rings adapted to rest upon the ground and having said axis at their center; and said inner cone being defined by a plurality of struts connected between said rings, each of said struts including substantially straight longitudinal portions extending along lines that converge on said axis and at least two substantially straight transverse portions extending parallel to the plane of said rings, said transverse portions interconnecting said longitudinal portions and lying within the perimeter of said inner cone.

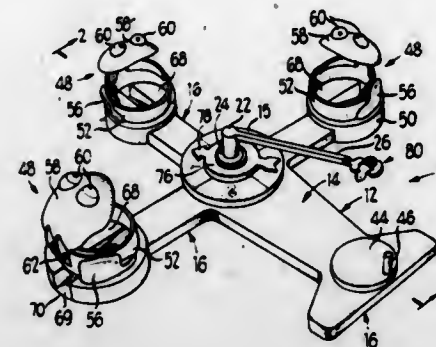
4,244,568 GAME APPARATUS

Michael J. Ferris, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,832
Int. Cl.³ A63F 9/00

U.S. Cl. 273—1 R

10 Claims



7. A game apparatus for two or more players, comprising: a generally cross shaped base having a plurality of generally elongated radially extending portions; a plurality of playing pieces; means for rotating the playing pieces, one at a time, about a generally circular path above the extending portions of said base, said pieces being releasably attached to said moving means; and an operable, player actuated playing piece capturing element mounted on a plurality of base extensions, generally in the path of travel of said playing piece, said playing piece capturing elements including means for capturing one of said playing pieces by removing one of said pieces from said moving means and retaining said playing piece, simulating consumption of a prey by a predator.

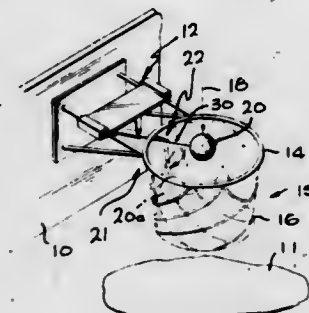
4,244,569 BASKETBALL PRACTICING APPARATUS

James K. Wong, 46-194 Nona Loop, Kaneohe, HI. 96744
Filed Oct. 2, 1975, Ser. No. 618,758

Int. Cl.³ A63B 63/08

U.S. Cl. 273—1.5 A

5 Claims



1. In combination with a basketball hoop installation which includes a hoop, a net depending from the hoop, a backboard, and a hoop-mounting bracket extending from said backboard and supporting said hoop a distance from the backboard, the improvement of a basketball practice aid comprising:

a target;
a rod having an outer end coupled to said target and an inner end;
a mount having an inner portion mounting on the basketball hoop installation, said mount having an outer portion; and
a tightly coiled spring having an inner end mounted on said outer mount portion, an outer end mounted on said rod inner end, and a free middle portion which can bend enough to permit the rod to pivot approximately 90°; said mount outer end lying below the level of said hoop and said rod being held so it extends at an upward incline to hold said target at least at the level of said hoop.

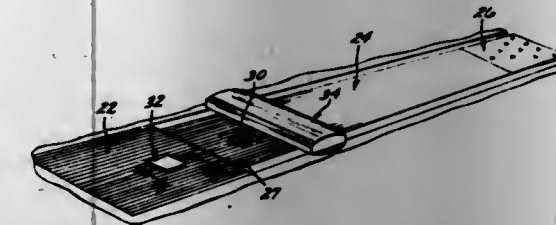
4,244,570 METHOD FOR RESURFACING BOWLING ALLEYS

Gordon W. Murrey, Sr., 14150 S. Figueroa, Los Angeles, Calif. 90061

Filed Jun. 26, 1978, Ser. No. 919,075
Int. Cl.³ A63D 1/04; B32B 35/00

U.S. Cl. 273—51

20 Claims U.S. Cl. 273—93 R



1. A method for resurfacing tongue and groove bowling alleys constructed of side by side slats to form a wooden alley bed defining an approach section leading to a foul line, ball impact section forward of said foul line, an intermediate lane section, and forward pin deck section for supporting bowling pins, said method comprising the steps of:

removing the existing finish and refacing the wooden alley bed to create a substantially even base surface;
overlying at least a portion of said approach section and pin deck section base surface with respective approach and pin deck barrier plates of a uniform thickness and having upwardly facing top surfaces, said barrier plates being characterized in that the said upwardly facing top surfaces are harder than the top surface of said base surface of said bed and said plates are of a sufficient predetermined thickness to be more resistant to deformation by downwardly acting forces applied thereto than said base surface;
affixing said barrier plates to said base surfaces;
overlying the lane section base surface intermediate said approach and pin deck sections with a lane spacer of said uniform predetermined thickness;
affixing said spacer to said base surface;
overlying said barrier plates and lane spacer with a preformed finishing layer having greater flexibility than said barrier plates; and
affixing said finishing layer to said preformed barrier plates and said lane spacer whereby downwardly acting forces applied to said finishing layer against said barrier plates will support said finishing layer over said barrier plates to thus support said finishing layer against local downward flexing which could cause stress build up in the interface between said barrier plate and finishing layer.

13. A resurfaced bowling alley having tongue and groove slats forming an elongated bed, such bed defining an approach section on one extremity thereof leading to a foul line, a pin deck section on the opposite extremity thereof for receiving bowling pins and an intermediate lane area, interposed between such approach and deck sections, said alley comprising: a resurfaced even top surface on said tongue and groove bed; a relatively rigid, pin deck barrier plate of a pre-determined thickness overlying said deck section for distributing downwardly acting forces over adjacent slats; anchoring means anchoring said barrier plate to said bed; a lane spacer of said predetermined thickness overlying said intermediate lane area to have the top surface thereof on the same level as the top surface of said barrier plate; means of said uniform predetermined thickness overlying said approach section; and, a relatively flexible preformed finishing layer overlying said means on said approach area, spacer and barrier plates whereby impact of said rebounded bowling pins on said finishing layer over said pin deck barrier plate will be resisted by said plate and will be distributed over a plurality of underlying and adjacent slats.

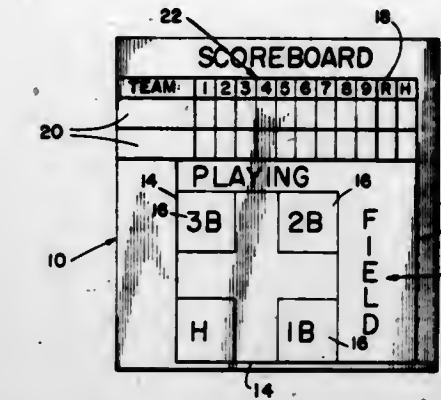
1002 O.G.—26

4,244,571 BASEBALL GAME APPARATUS

Robert W. Haglof, 1433 Superior Ave., No. 277, Newport Beach, Calif. 92660

Filed Apr. 9, 1979, Ser. No. 28,048
Int. Cl.³ A63F 7/06

1 Claim



1. A game apparatus adapted to provide the characteristics of baseball, comprising:

a game board having a playing field and a simulated baseball diamond indicated thereon;
a scoreboard disposed adjacent said playing field to provide a means to keep an inning-to-inning score between two defined teams selected by the players thereof;
a plurality of game pieces defining base runners which are positioned on the baseball diamond during game play;
a pair of dice members specifically marked to provide game plays having outs, singles, doubles, triples and home runs defined by markings O, O, S, S, T and HR on one die, the other die being marked O, O, O, D, S and S, whereby the arrangement of the marked dice to each other establishes the location of the game pieces on the game board and gives realistic batting averages for the indicated team players; and
at least one score sheet arranged to indicate the teams playing, the players of said teams, and game play of each player for each inning thereof.

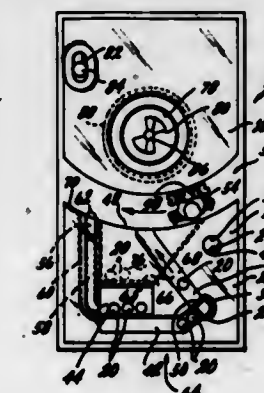
4,244,572 BOARD GAME HAVING MOVABLE TARGET

Korechika Hatakeyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed May 21, 1979, Ser. No. 40,925

Claims priority, application Japan, May 19, 1978, 53-68152[U]
Int. Cl.³ A63B 65/12; A63D 3/02

U.S. Cl. 273—120 R

12 Claims



1. In a board game having a playing surface, an object release means for releasing an object so that said object moves across said playing surface, and a target means for receiving an object released by said object release means, said target means

being located in association with said playing surface, the improvement which comprises:

said target means including a movable target member located so as to move relative to said playing surface during the use of said game, said target member including object holding means for holding an object released by said object release means;

a receptacle means located in association with said playing surface and capable of receiving said object, said object being capable of being released by said object release means as said target member moves in a time sequence and said object being capable of being held by said object holding means if said release of said object from said object release means is coordinated with the movement of said target means and said object being capable of being deposited in said receptacle means if said release of said object from said object release means is not coordinated with the movement of said target means.

4,244,573

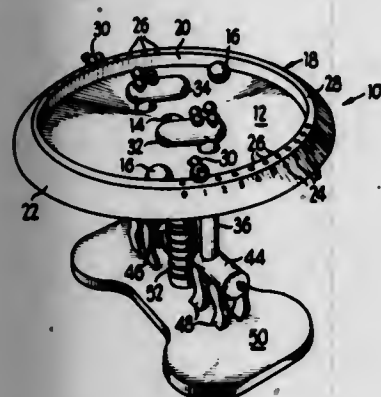
COMPETITIVE GAME APPARATUS

Jeffrey D. Breslow, Highland Park; Michael J. Ferris, and Henry Arina, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 5, 1979, Ser. No. 91,093

Int. Cl.³ A63F 7/24

U.S. Cl. 273-119 R



1. A competitive game apparatus wherein scores are made by moving an object, such as ball or the like, into a goal, comprising:

- a base for supporting the apparatus on a suitable support surface;
- a concave playing surface with said goal located at the approximate center of said field;
- support means on the base for mounting the playing surface at an elevated position;
- a pair of paddles rotatably mounted on the playing surface for striking the object;
- a handle for each of said paddles extending below the surface for manual grasping by the players of the game to effect rotation of the paddles and
- handle support means mounted on the base for rotatably mounting the lowermost end of each of said handles, wherein said handle support means are in the form of an animal torso.

4,244,574

PINBALL MACHINE WITH CONICAL PLAYFIELD

Ronald E. Milner, Grass Valley, and Nolan K. Bushnell, Woodside, both of Calif., assignors to Atari, Inc., Sunnyvale, Calif.

Filed Mar. 29, 1979, Ser. No. 25,123

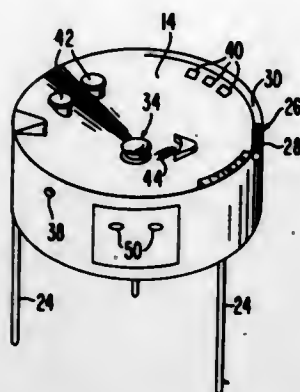
Int. Cl.³ A63F 7/00

U.S. Cl. 273-121 A

6 Claims

4. In a pinball machine: a body having a generally circular upper margin and a conical surface extending downwardly from the upper margin and inwardly toward the central axis of the upper margin, said surface defining a playfield over which a number of balls can move along spiral paths; means near said

lower extremity of the surface for defining an actuatable bumper for applying forces to a ball to force the ball upwardly of said lower most extremity; and a manually actuated push-but-



ton mounted on the body near the upper margin thereof for actuating said bumper defining means, said body having a ball-return passage communicating with the space above said conical surface near the bumper.

4,244,575

PINBALL GAME HAVING ACTIVE TARGETS

Noritoshi Hori, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

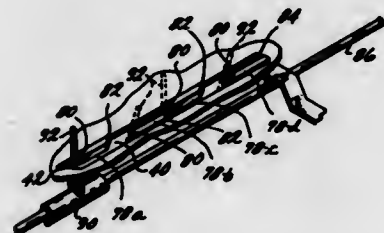
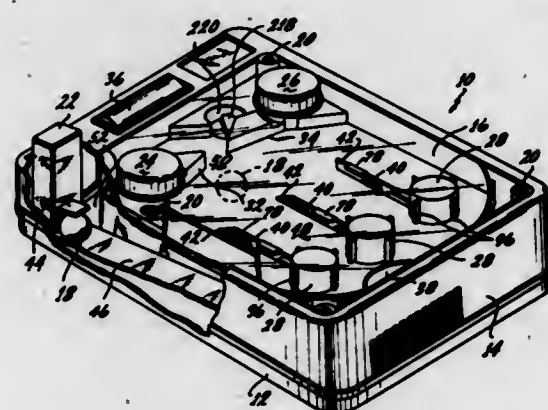
Filed Aug. 9, 1979, Ser. No. 65,217

Claims priority, application Japan, Aug. 11, 1978, 53/110674[U]

Int. Cl.³ A63B 71/00

U.S. Cl. 273-127 D

16 Claims



1. In a game having a playing surface and at least one object movable on the playing surface, and including an object launching means for causing said object to move across the playing surface, the improvement which comprises:

- at least one slidably mounted target means on said playing surface for sliding between an initial position and a final position and including at least one intermediate position located between said initial and final positions, said final position having means to actuate a signal means;
- target retention means operatively connected to said target means and releasably retaining said target means in both said initial position and said intermediate position and releasing said target means step-wise when said target means are contacted by said object to first release said target from said initial position allowing said target means to slide to and be reversibly retained in said intermediate position and subsequently when said target means is again

contacted by said object to release said target means from said intermediate position allowing said target means to slide to said final position; activation means for activating said target means to step-wise move from said initial position to each of said intermediate positions and from the last of said intermediate positions to said final position.

4,244,576

GOLF PRACTICE APPARATUS

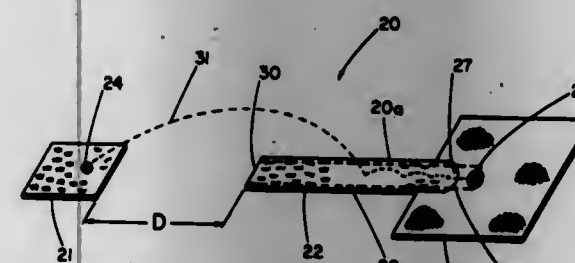
Jack M. Mosler, and Jeanette E. Mosler, both of 606 Ocean Ave., Seal Beach, Calif. 90740

Filed Aug. 10, 1978, Ser. No. 932,556

Int. Cl.³ A63B 69/36

U.S. Cl. 273-176 F

4 Claims



1. A golf practice apparatus for pitching, chipping and putting, for use indoors, said golf practice apparatus comprising: a chipping-putting mat disposed substantially horizontal and having a top surface;
- a putting green mat arranged contiguous with said chipping-putting mat and disposed substantially horizontal, said putting green mat having a top surface of loop-like fibers and a golf-cup-like hole portion disposed in said top surface of said loop-like fibers;
- a lighter-than-regulation-weight golf ball having a plurality of hook-like projections disposed thereon, said hook-like projections being of a design suitable for interlocking engagement with said loop-like fibers;
- a pitching mat spaced apart from said chipping-putting mat; and
- the top surface of said chipping-putting mat having a surface design suitable for allowing rolling freedom thereacross by said lighter-than-regulation-weight golf ball.

4,244,577

DIAGNOSTIC MEMORY SKILL GAME AND METHOD

Mildred S. Poulos, 1834 Taper Dr., Upper St. Clair, Pa. 15241

Filed Feb. 7, 1979, Ser. No. 9,867

Int. Cl.³ A63F 3/00

U.S. Cl. 273-236

10 Claims



1. An educational memory skill board game apparatus for use in developing and improving memory skills comprising: a substantially rectangular game board having a flat top playing surface comprising: a pair of player areas disposed adjacent mutually opposite peripheral edges of said game board; each of said player areas having a first row of rectangular spaces and a second parallel row of rectangular spaces; and,

a common area disposed centrally upon said game board and between said player areas;

- a plurality of informational cards of size and shape corresponding to each of said rectangular spaces with information printed thereon; and,
- a plurality of center cards with supplemental information printed thereon for disposing on said common area of said game board; said supplemental information printed on said center cards correlates with and is complementary to said information printed on said informational cards.

4,244,578

ELECTRONIC BACKGAMMON

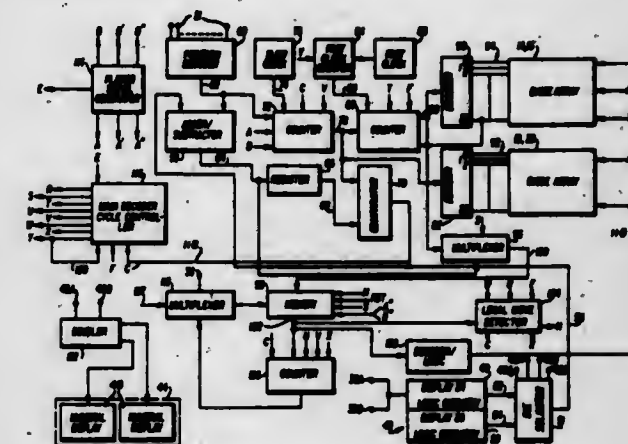
Walter L. Rosenzweig, 23 Willets Ave., Syosset, N.Y. 11791

Filed Jan. 29, 1976, Ser. No. 653,529

Int. Cl.³ A63F 3/02

U.S. Cl. 273-237

3 Claims



1. A game for playing backgammon electronically, comprising:

- (a) a playing board having a plurality of game positions having first light emitting means for representing, when energized, the positions of men for each player;
- (b) memory means for storing signals corresponding to the number of men of each player at each of said positions;
- (c) means, connected to said memory means, for energizing said first light emitting means;
- (d) means, connected to said memory means, for moving a man from an initial position to a final position and for updating said memory means to store new signals as a result of the move;
- (e) means, responsive to said stored signals, for preventing a move from occurring if the final position to which one player wants to move a man has a certain number of men of the other player;
- (f) second light emitting means, at each of said game positions, for displaying, when energized, movement of a man from said initial position to said final position;
- (g) wherein said means for moving and for updating includes:
 - (i) means, operable by a player, for generating a first signal corresponding to the number of positions a man is movable,
 - (ii) position encoder means, operable by the player, for generating a second signal corresponding to the initial position from which the man is movable,
 - (iii) counter means, connected to said encoder means, for generating third signals representing said initial and final positions, and for generating fourth signals representing said initial and final positions to address said memory means,
 - (iv) means, connected to said encoder means and said first signal generating means, for logically adding said first and second signals to produce a fifth signal corresponding to said final position,
 - (v) comparator means for comparing said third signals and said fifth signal and for generating a sixth signal when one of said third signals represents said final position, and
 - (vi) means for subtracting one from the signal representing

the number of men of the player in the initial position when one of said fourth signals representing said initial position addresses said memory means and for adding one to the signal representing the number of men of the player to said final position in response to said sixth signal and when one of said fourth signals representing said final position addresses said memory means; and

(h) wherein said counter means includes

- (i) a slow clock pulse generator means, and said first counter connected to said slow clock generator means, for counting slow clock pulses to generate third signals representing, respectively, said initial through said final positions, said second light emitting means being responsive to said third signals to be energized sequentially from said initial position to said final position, and
- (ii) a fast clock pulse generator means, and a second counter connected to said first counter and said fast clock pulse generator means, for counting fast clock pulses commencing with a count corresponding to said final position to generate said fourth signals representing all of said game positions, said first light emitting means being activated in response to said fourth signals representing all of said game positions.

4,244,579

BOARD GAME

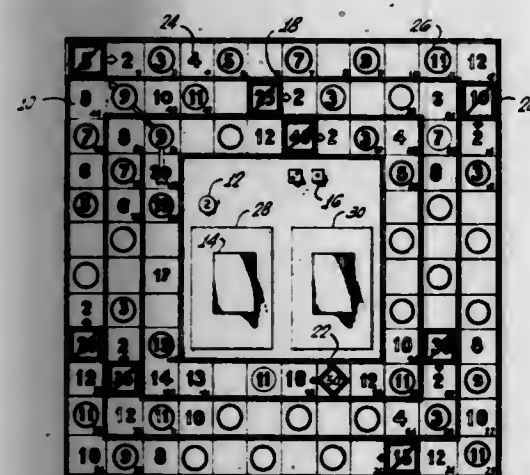
Luis B. Campos, 8454 Sharp Ave., San Valley, Calif. 91352

Filed Oct. 11, 1978, Ser. No. 950,462

Int. Cl.³ A63F 3/00

U.S. Cl. 273-243

8 Claims



1. In a game apparatus, which can be played by at least two players the combination of:

- a game board having a continuous path comprising a continuous circuit having a plurality of playing spaces, said playing spaces being arranged into laps, all of said laps in said circuit having the same number of spaces, and wherein the board is square shaped and has on it an involution circuit rectangularly disposed consisting of nine laps of twelve spaces each, each of said spaces on said board having a space value indicated by a number, said numbers running consecutively through said circuit, a first eight laps each lap beginning with a multicolored square space containing a bonus number, each of said bonus numbers being unique to a given lap and also being the lap value attached each of said spaces in said lap, each of said spaces following said bonus number having in its center an integer, said integers running consecutively in said eleven spaces from two to twelve, integers three, five, seven, nine and eleven being encircled, a last lap having spaces with the integers running consecutively from ten to twenty rather than two to twelve, integers fifteen and nineteen are encircled, said board also having fixed locations for the storage of cards to be drawn and cards drawn;
- a plurality of counters, each counter having an intrinsic value, said counters being grouped into a plurality of sets

of counters, each of said sets being identical in composition to each other set;
means for signalling the direction and number of spaces which a counter may move; and
means for increasing said intrinsic value of each of said counters.

4,244,580

MULTIVARIANT BOARD GAME APPARATUS

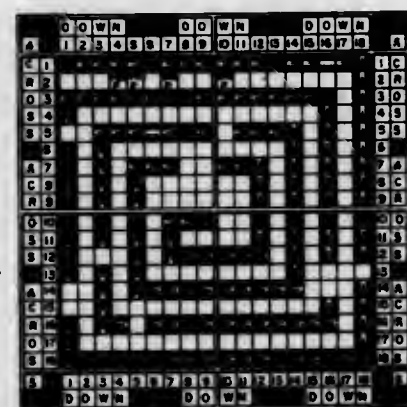
Francis X. Hoyles, 6410 Morris Park Rd., Philadelphia, Pa. 19151

Filed Jun. 4, 1979, Ser. No. 45,417

Int. Cl.³ A63F 3/00

U.S. Cl. 273-272

1 Claim



1. A multivariant game apparatus adapted to be used for the play of different board games by 2 to 4 players comprising:

- a game board having a rectangular coordinate gridded space system having rows and columns imprinted as playing surface adapted to be changed into the different playing patterns on which the various games are played wherein said gridded space system includes a grid type webbing secured above the playing field such that said webbing extends along the side of each grid space and separates the individual imprinted grid spaces from each other, said web acting to form shallow cavities for a tile to be placed on the grid space such that the tile cannot slide or slip out of the position;

- a multiplicity of marked playing pieces adapted to be picked up at random and placed on said board according to the rules of the game being played; wherein said pieces are thin magnetizable tiles having one of a set of markings comprising letters, numbers, and suit markings commonly found on playing cards, said tiles further being made in such a size to fit into said webbing so that it rests in said cavities on said playing surface;

- means to block off and segregate areas within the boundaries of the playing board to vary the board configuration for the particular game being played, said blocking means comprising tiles having indicia thereon denoting playing area boundaries and different from the markings on said playing piece tiles, said blocking tiles further being made in such a size to fit into said webbing so that they rest in said cavities on said playing surface;

- container means for storing said tiles during the playing of the game wherein the container is a tall, can-like structure of such depth that when said playing pieces are placed therein, they cannot be seen by players of the game, and;
- selection means comprising a magnet of such strength and size that it will generally pick up only one of said magnetized tiles, said selection means further being placed on a wand so that it may be inserted into said container means for the purposes of randomly selecting one of the playing pieces for the particular game being played.

4,244,581

GAME WITH PIECES PREVENTING ADJACENT PLACEMENT

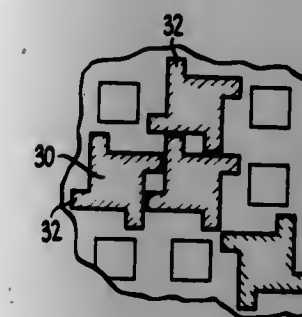
Alex Imatt, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 23, 1978, Ser. No. 953,895

Int. Cl.³ A63F 3/00

U.S. Cl. 273-282

3 Claims



1. A game apparatus, comprising:

- a game board having a field defining an m by n array of playing spaces arranged in rows and columns on the field; two sets of generally pyramid shaped playing pieces, each set of playing pieces having a plurality of playing pieces with distinguishing means thereon identifying all the playing pieces of one set;

- locating means for removably interlocking the playing pieces with the playing spaces, said locating means comprising receiving means on the playing pieces and projection means at each of the playing spaces wherein the receiving means on the playing pieces includes a depending portion adapted to receive the projection means defining said playing spaces; and

- obstructing means provided on the playing pieces, said obstructing means on the playing pieces of opposing sets being arranged so as to prevent the placement of opposing playing pieces in abutting relation in the same row or column of playing spaces.

4,244,582

PERSONALIZED CARD PACK PRODUCING METHOD

Mohammad Raees, No. 1-2, Minami Kata 2-chome, Okayama-shi, Okayama-ken, and Yasushi Hayashibara, No. 372-1, Hama, Okayama-shi, Okayama-ken, both of Japan

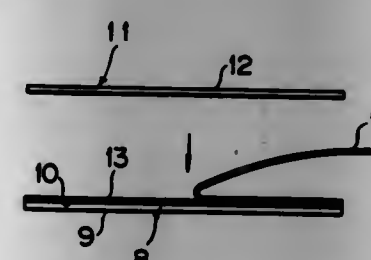
Filed Mar. 6, 1979, Ser. No. 18,021

Claims priority, application Japan, Mar. 13, 1978, 53-31851

Int. Cl.³ A63F 1/02

U.S. Cl. 273-293

4 Claims



1. A method for producing a pack of cards for game or playing purposes, comprising the steps of:

- forming for each card a reverse body by printing on one side thereof a pattern, symbol, character, numeral or the like necessary to the game or play, and by applying to the other side thereof an adhesion surface;
- providing for each card an obverse body separate from said reverse body with said obverse body having one side substantially blank and suitable for subsequent applying of a personalized design by the user and the other side suitable for securement to said adhesive surface;
- when the cards are to be used, printing said one sides of said obverse bodies of said pack of cards with a pattern, sym-

bol, character, numeral or other personalized design which is a favorite of the user, and covering said adhesion surfaces of said reverse bodies with said other sides of said obverse bodies, and therewith producing a pack of laminated cards.

4,244,583

SELF SCORING TARGET FOR DARTS AND SIMILAR PROJECTILES

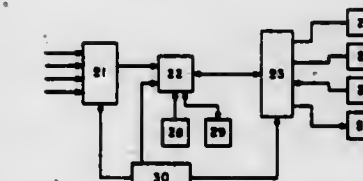
Eugene L. Wood, 265 Bradley Ave., State College, Pa. 16801, and Alfred M. Cooke, Milton Farm, Reay, Calthness, Scotland

Filed Feb. 6, 1978, Ser. No. 875,741

Int. Cl.³ F41J 3/02

U.S. Cl. 273-373

16 Claims



1. A target adapted to provide electrical signals when engaged by an electrically conductive missile, comprising

- (a) first and second adjacent spaced pads each formed of electrically conductive synthetic plastic foam material;
- (b) means for electrically insulating the pads from each other;

- (c) means for establishing a potential difference between said pads, said potential difference establishing means including

- (1) a capacitor having a pair of terminals connected with said pads, respectively; and
- (2) means applying across said capacitor a direct-current potential difference of such magnitude that upon penetration of said insulating means by a first conductive missile to electrically connect said pads, only partial discharge of said capacitor is produced; and
- (d) means including an operational amplifier having a pair of input terminals connected with said capacitor terminals, respectively, for producing a first electrical signal indicative of the resulting partial discharge of said capacitor, whereby subsequent penetrations of the target by a subsequent conductive missile produces further partial discharge of the capacitor, thereby affording the multiple detection of hits in the same scoring area.

4,244,584

FLIPPABLE GAME PIECE TARGET

George Viveiros, P.O. Box 623, 237 North St., Mattapoisett, Mass. 02739

Filed Sep. 4, 1979, Ser. No. 72,167

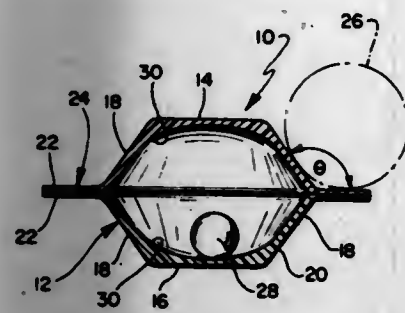
Int. Cl.³ A63B 63/00; F41J 7/00

U.S. Cl. 273-386

6 Claims

- 1. A flippable game piece having a housing defining a generally enclosed interior having a movable weight disposed therein, said housing including opposed parallel, generally planar, top and bottom walls on which said piece may be supported in alternate positions and on which said weight is supported, said housing of a geometrically regular configura-

tion exhibiting a number of radially outwardly extending flange portions disposed parallel to but vertically intermediate said top and bottom walls, said flange portions connected to said top and bottom walls on either side thereof by centrally inwardly extending sloped connecting walls which define an



obtuse angular relation with an adjacent flange portion, said flange portions forming targets whereby a playing element such as a ball may be thrown thereagainst so as to flip said game piece over on to its opposite top or bottom surface, whereby said weight shifts by gravity so as to maintain said alternate position.

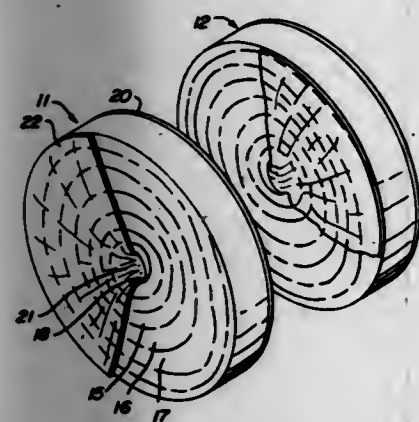
4,244,585

ARCHERY TARGET

Lionel Croll, c/o Lionel Supply & Manufacturing Company, 1325 Walnut St. - Suite 1108, Philadelphia, Pa. 19107
Continuation-in-part of Ser. No. 778,005, Mar. 16, 1977, Pat. No. 4,126,501, and Ser. No. 872,510, Jan. 26, 1978, abandoned.
This application Oct. 5, 1979, Ser. No. 82,012
Int. Cl.³ F41J 3/00

U.S. Cl. 273-408

11 Claims



1. A target construction comprising an elongate single piece of flexible separate plastic film randomly gathered transversely and extending in a planar spiral configuration under longitudinal tension and having convolutions in adjacent engaging relation to define a disc having a random multitude of internal air pockets, and form retaining means associated with said disc to retain the configuration thereof.

10. A target construction comprising a coil of gathered plastic film having convolutions in adjacent engaging relation to define a disc having internal air pockets, and form retaining means associated with said disc to retain the configuration thereof, said form retaining means comprising a flexible sheet extending in gathered relation centrally through said coil and splayed outwardly onto opposite sides of said coil and secured thereto.

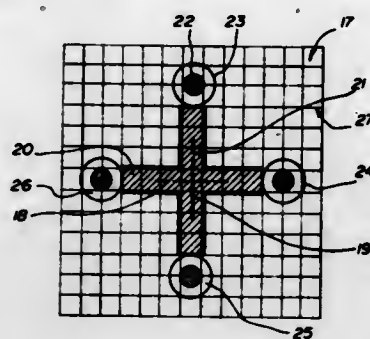
4,244,586

FOUR-IN-ONE SCOPE SIGHTING-IN TARGET

Bernard J. Gorrow, Crawford Bay, Canada, assignor to W. B. Lambert, Lethbridge, Canada
Filed Apr. 12, 1979, Ser. No. 29,487
Claims priority, application Canada, Jun. 14, 1978, 305482
Int. Cl.³ F41J 1/04

U.S. Cl. 273-409

1 Claim



1. A sighting-in target for a distance greater than the available range between the firearm and the target, said target having a cross comprised of a vertical line and a horizontal line intersecting therewith;
said target further comprising four markings in the form of solid-colored circles, each circle being circumscribed by a concentric ring, the vertical and horizontal lines being of equal length, intersecting at their mid-points and said rings and corresponding circles being located one each at the four ends of said lines, wherein at least one of said markings defines an impact point.

4,244,587

APPARATUS FOR CLEANING RECORDS

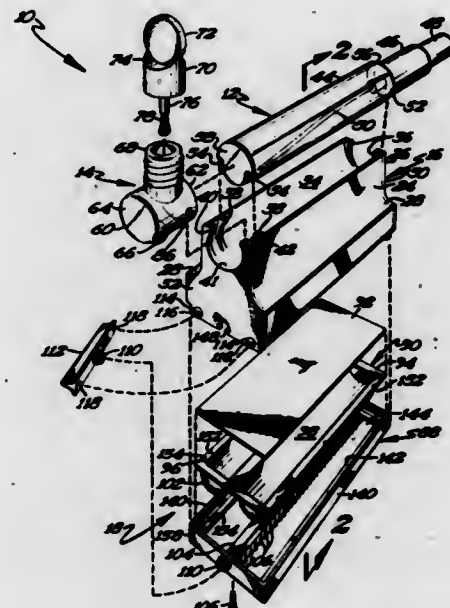
Eduard H. Schweizer, 5101 Boarshead Rd., Minnetonka, Minn. 55343

Filed Oct. 28, 1976, Ser. No. 736,472

Int. Cl.³ G11B 3/58

U.S. Cl. 15-104.8

74 Claims



1. Apparatus for cleaning records comprising, in combination: a body member including a cavernous interior having an open base and including a handle portion for grasping by the fingers of the user; a cleaner element having a cleaning face and a supporting face; means for pivotally mounting the cleaner element to the body member allowing the cleaner element to be positioned in a first, cleaning position where the cleaning face is exteriorly exposed of the body member allowing the cleaning face to be placed in cleaning contact with the records and in a second, storage position where the cleaning face is located within the interior of the body member and not exteriorly exposed of the body member for preserving the cleanliness of the cleaning face and avoiding contact between

the cleaning face and other material thus preventing the material or the contaminants located thereon to be transferred to the cleaning face or the contaminants located on the cleaning face from being transferred to the material and for allowing the supporting face to be exteriorly exposed of the body member for providing a supporting base for the apparatus; a liquid container having a shape; and means for dispensing liquid located in the liquid container onto the record; and wherein the handle portion of the body member includes a supportive, positional recess having a shape complementary to and for receiving the liquid container and wherein the apparatus further comprises means for positioning and maintaining the liquid container within the supportive, positional recess.

4,244,588

SHEAR SEAL ASSEMBLY

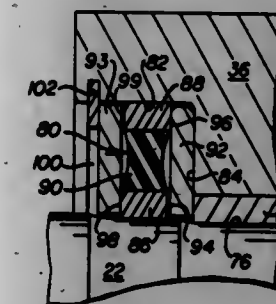
Stewart A. Langewiesch, Blue Grass, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.
PCT No. PCT/US 7900943, 8 371 Date Nov. 5, 1979, 8 102(e)
Date Nov. 5, 1979.

This PCT application filed Nov. 5, 1979, Ser. No. 127,999

Int. Cl.³ F16J 15/50, 15/56

U.S. Cl. 277-5

11 Claims



1. In a seal assembly (80/80') for sealing between first and second members (22/36/22',36') having limited relative motion therebetween, the seal assembly (80/80') including an inner sleeve (86/86'), an outer sleeve (88/88'), and an annular elastomeric member (90/90') connected between the sleeves (86,88/86',88'), the inner and outer sleeves (86,88/86',88') each including first and second side portions (94,98,96,99/94',96',98',99'), the second member (36/36') having first and second bores (76,82/76',82') and a thrust surface (84/84') therebetween, the improvement comprising:
thrust means (92,93,102/92') extending radially from the inner to the outer sleeves (86,88/86',88') and adjacent thereto, the outer sleeve (88/88') being connected to the second bore (82/82') and the inner sleeve (86/86') being connected to the first member (22/22').

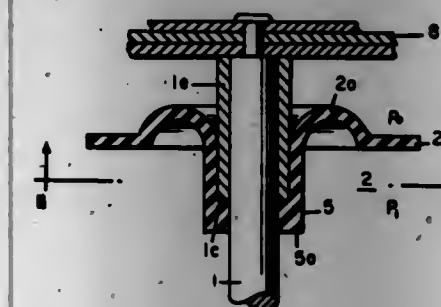
4,244,589

SEALED SHAFT OF REDUCED DIAMETER

Wilfred H. St. Laurent, Jr., Marblehead, Mass., assignor to Bellofram Corporation, Burlington, Mass.
Division of Ser. No. 3,163, Jan. 15, 1979, Pat. No. 4,208,060.
This application Nov. 1, 1979, Ser. No. 90,367
Int. Cl.³ F16J 3/04, 15/56

U.S. Cl. 277-30

4 Claims



1. A sealed shaft for the passage from one space into another

space where a different pressure prevails comprising in combination

- (a) a shaft having a predetermined outer diameter;
- (b) an elastomeric rolling diaphragm having a radially outer clamping flange, an intermediate convoluted rolling wall, and a radially inward directed bottom having a central bore therein equal to said predetermined outer diameter of said shaft; and
- (c) a tubular member having an inner diameter equal to the outer diameter of said shaft mounted on said shaft, said tubular member having a radially outer diameter of such thickness as to engage a length of said rolling wall of said rolling diaphragm; and
- (d) said tubular member having an end surface in permanent engagement with said bottom of said rolling diaphragm.

4,244,590

INFLATABLE PACKER CONSTRUCTION

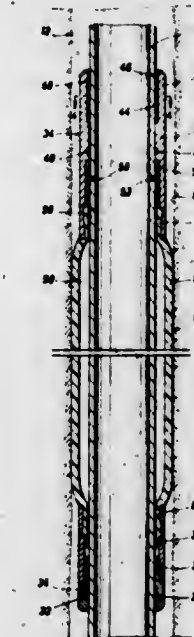
Lawrence Sanford, 4047 Hollister, Houston, Tex. 77055

Filed Apr. 18, 1977, Ser. No. 788,599

Int. Cl.³ F16J 15/46

U.S. Cl. 277-34.3

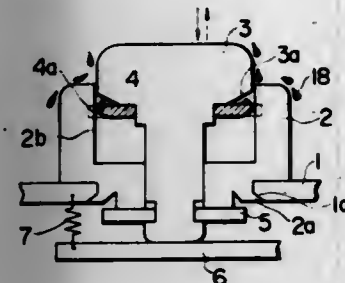
29 Claims



1. An inflatable packer comprising:
a tubular member,
first and second annular heads surrounding said tubular member and longitudinally spaced therealong, said first head being longitudinally slidable on said tubular member, said second head including an attachment portion, a relief being formed between said attachment portion and said tubular member,
securing means disposed in said relief for securing said attachment portion to said tubular member and preventing substantial longitudinal movement between said attachment portion and said tubular member,
centering means disposed between said second head and said tubular member for maintaining said second head and said tubular member in substantially coaxial relation independently of said securing means, and
an expandable, tubular element secured to said first and second heads and extending therebetween.

4,244,591

DEVICE FOR PROTECTING THE OPERATING SECTION OF A CAMERA FROM WATER DROPS AND DUST
 Junji Umetsu, Kita, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
 Continuation of Ser. No. 911,241, May 30, 1978, abandoned.
 This application Sep. 11, 1979, Ser. No. 74,273
 Claims priority, application Japan, May 30, 1977, 52-69537
 Int. Cl.³ F16J 15/10; G03B 17/08, 17/38
 U.S. Cl. 277-212 F 5 Claims



1. A seal for protecting the interior of a camera from water drops and dust, said seal of the type comprising an external casing member of said camera, an operating member outside of said casing member for controlling a camera function, said operating member passing through an opening in said external casing member to form a gap therebetween, and a sealing means for sealing said gap, wherein the improvement comprises:

said sealing means comprising a viscoelastic sheet, having a substantially rectangular cross-section and an axial thickness which is small in relation to its radial thickness, fixedly secured to one of said members and tightly contacting the entire periphery of the other of said members around the entire periphery of said other member within said gap.

4,244,592

CHILD'S RIDE-ON VEHICLE

Raymond J. Lohr, Erie, Pa., assignor to Empire of Carolina, Inc., New York, N.Y.
 Filed Jan. 31, 1979, Ser. No. 8,022
 Int. Cl.³ A63G 19/00; B62M 1/00
 U.S. Cl. 280-1.192 8 Claims

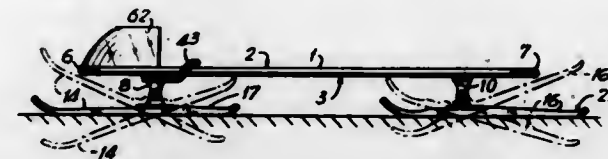


1. In a child's ride-on vehicle having a body and ground engaging wheels, the combination of a first member pivoted to said body, at least one second member movably mounted in said body for movement between a generally retracted position and a generally projecting position, actuating means acting between said first member and said second member for moving said second member in response to pivotal movement of said first member, operating means projecting through said body, and pivot means for pivoting said operating means to said second member.

4,244,593

CONVERTIBLE SLED

Larry J. Malone, 619 W. Market St. Box 65, Baltimore, Ohio 43501
 Filed Nov. 20, 1978, Ser. No. 962,010
 Int. Cl.³ B62B 13/18
 U.S. Cl. 280-8 5 Claims

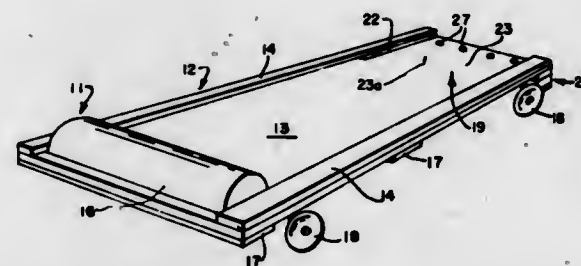


1. A convertible sled for use on surfaces with high coefficients of friction as well as surfaces with low coefficients of friction, said sled comprising
 a body-supporting board having an oversurface for supporting the body of a user and an undersurface, said board having sides, a front, and a spaced opposite rear;
 a plate affixed to the undersurface of the board close to the front and equidistant from the sides thereof;
 a front support member;
 a pivot pin pivotally coupling the front support member to the plate;
 a bearing interposed between the adjacent surfaces of said front support member and said plate to provide smooth rotation of said front support member about the pivot pin;
 a pair of rear support members affixed to the undersurface of the board close to the rear and equidistant from the sides thereof, the rear support members being in spaced parallel relation, each of the front and rear support members comprising a block having a bore formed therethrough spaced from and parallel to the undersurface of the board and extending perpendicularly to the sides of said board in said rear support members;
 a front ski member;
 a pair of rear ski members, each of the ski members having an oversurface and a coupling member extending therefrom with a pair of spaced ears having coaxial bores formed therethrough and spaced a distance from each other sufficient to accommodate the blocks of said support members, therebetween, the bores of the blocks being coaxial with the bores of the ears;
 annular bearing members in the bores of said ears; and
 bolts passing through the bearing members of the ears and the bores of said blocks to removably affix said ski members to said support members in a manner whereby said ski members are rotatable in planes perpendicular to the undersurface of said board.

4,244,594

CREEPER BRAKE DEVICE

Ivan C. Hines, 2706 46th Ave., Rock Island, Ill. 61201
 Filed Aug. 3, 1979, Ser. No. 63,610
 Int. Cl.³ B62B 11/00
 U.S. Cl. 280-32.6 3 Claims



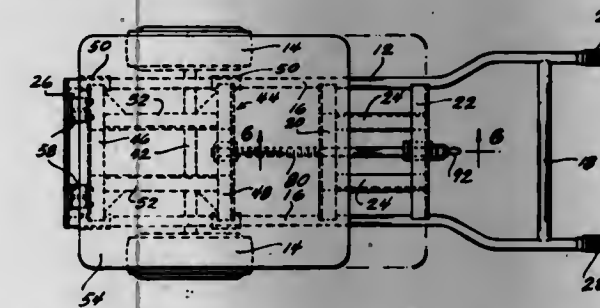
1. A crawler-supported creeper having an elongated rectangular floor including opposite end edges and opposite side edges and attached elongated side strips running lengthwise of the side edges, longitudinally spaced apart transverse supports

attached to the floor, and a headrest carried by the floor at a portion thereof adjacent to one end edge, characterized in that the floor is continuous throughout its length and includes as a major part of its length a relatively rigid body-supporting portion to which the side strips and transverse supports are affixed, the floor further includes as an extension and attached to said body-supporting portion a downwardly deflectable part having a free terminal end at the end edge of the floor opposite to the headrest end edge, and said deflectable part is free from support by the strips and supports so as to be bendable downwardly by the weight of the user, and a ground-engaging brake is secured to said deflectable part.

4,244,595

HAND TRUCK FOR BANDED MASONRY PRODUCTS

Darrell L. Sagert, 1821 Oakdale Dr., Waukesha, Wis. 53186
 Filed Dec. 18, 1978, Ser. No. 970,188
 Int. Cl.³ B62B 1/04, 1/26
 U.S. Cl. 280-47.29 1 Claim



1. A hand truck for use on construction sites for lifting and transporting a banded stack of masonry products, said stack including at least one opening therein, the hand truck including a frame, wheels for supporting the frame for movement over the ground and for supporting the frame for tiltable movement between a vertical position and an inclined position, a plate supported by the frame for generally longitudinal movement with respect to the frame, said plate having a surface for supporting the individual units in the stack of masonry products, a pair of tongs mounted on said plate to project therefrom so that they can be positioned in the opening in said stack for lifting support of said stack, an elongated screw journaled in said frame for rotary movement but fixed against axial movement, a nut fixed to said plate used in threaded engagement with said screw so that rotation of said screw will produce movement of said plate and its associated tongs longitudinally of said frame for positioning said tongs in accordance with the location of the opening in the stack, means for rotating said screw, and means for adjusting said tongs laterally of said frame to adjust their spacing on said plate.

4,244,596

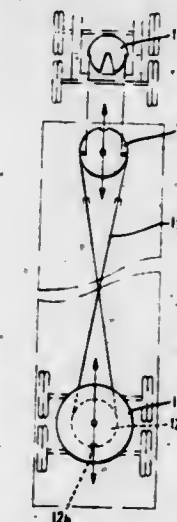
STEERING CONTROLLING APPARATUS FOR TRAILERS

Tae D. Chung, 200, Eabnne-ri, Gwangyang-eub, Gwangyang-gun, Jeonra-namdo, Rep. of Korea
 Filed Jan. 29, 1979, Ser. No. 7,634
 Int. Cl.³ B62D 13/04 5 Claims

1. In an articulated truck-trailer combination having a steering control apparatus connected between the truck and the trailer for causing the trailer to approximately follow the path of the truck during turning, the improvement wherein said steering control apparatus comprises:
 a first coupling device mounted on said truck and having a pair of substantially diametrically opposite projecting parts;
 said first coupling device including an annular coupling plate having front and rear opposed semicircular parts which are of different diameters, the front part being of greater diameter than the rear part so that the intersection of said two parts define a pair of shoulders located on diametri-

cally opposite sides of said coupling plate, said shoulders defining said projecting parts;
 a second coupling device mounted on said trailer adjacent the forward end thereof and being pivotally connectible to said first coupling device for joining said truck and trailer together, said second coupling device including a first steering transmitting plate mounted for horizontal angular displacement relative to the trailer bed;
 said first steering transmitting plate having a pair of diametrically opposite slots formed therein and extending radially thereof, said slots being disposed on a diametrically extending line which extends substantially perpendicular to the longitudinally extending direction of the trailer when the truck-trailer combination is traveling along a straight path;

operator means mounted on said second coupling device and being engageable with said projecting parts for causing horizontal angular displacement of said first steering transmitting plate relative to said trailer bed in response to



rotation of said first coupling device due to turning of said truck relative to said trailer;
 said operator means including slide members slidably disposed within said slots and having projecting portions thereon disposed adjacent the periphery of said coupling plate for engagement with said shoulders;
 a second steering transmitting plate mounted on said trailer adjacent the rear end thereof, said second steering transmitting plate being mounted for horizontal angular displacement relative to said trailer bed, said trailer having a rear axle assembly connected to said second steering plate so as to be horizontally angularly displaceable therewith relative to said trailer bed; and
 cable means connected between said first and second steering transmitting plates for horizontally angularly displacing said second steering transmitting plate and said axle assembly in one direction in response to horizontal angular displacement of said first steering transmitting plate in the opposite direction.

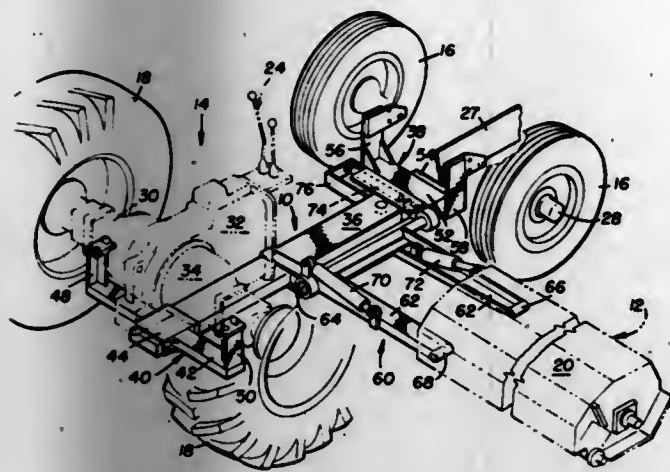
4,244,597

SIDE MOUNTING ASSEMBLY FOR TRACTOR IMPLEMENT

John E. Dandl, P.O. Box 687, Chico, Calif. 95926
 Filed May 29, 1979, Ser. No. 42,872
 Int. Cl.³ B60D 1/14; A01B 51/00; A01D 35/262 8 Claims

1. A mounting assembly for supporting a side mounted mower attachment or the like upon a tractor having front housing and rear axle, comprising
 (a) a central mounting beam extending longitudinally beneath the tractor,
 (b) front and rear saddles interconnected respectively with forward and rearward ends of the beam and each extend-

ing outwardly to form brackets for connection to the front housing and rear axle respectively, and
 (c) a support arm assembly adapted for interconnection with the mower attachment and a central portion of the beam for supporting the mower attachment upon the tractor,



the longitudinal beam and the front and rear saddles being arranged for interaction with each other to transfer torque reaction forces from the support arm assembly and mower attachment directly to the front housing and rear axle of the tractor.

4,244,598

ADJUSTING MECHANISM FOR SKI BINDINGS

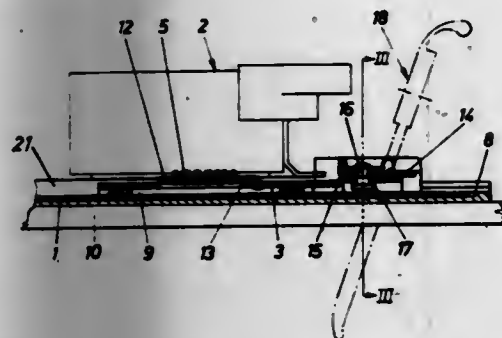
Josef Svoboda, Schwechat, and Erwin Krob, Vienna, both of Austria, assignors to TMC Corporation, Baar, Zug, Switzerland

Filed May 22, 1978, Ser. No. 907,967

Claims priority, application Austria, May 23, 1977, 3681/77
 Int. Cl.³ A63C 9/22

U.S. Cl. 280—633

5 Claims



1. An adjusting mechanism for a ski binding, comprising:
 a base plate secured to a ski and having means thereon defining an elongated guideway;
 a carriage adjustably movably mounted on said guideway;
 a toothed rack secured to and adjustably movable with said carriage, said toothed rack including a portion extending forwardly of said carriage;

sole support means for supporting the sole of a ski boot and connecting means for connecting said sole support means to an upper surface of said forward portion of said toothed rack, said connecting means comprising means defining axially aligned first and second openings in said toothed rack and said sole support means, respectively, and a bolt received in said first and second openings, the axis of said first and second openings and, consequently, said bolt extending in a direction which is perpendicular to the upper surface of said ski, said sole support means being pivotal about said axis of said bolt and relative to said toothed rack and being adjustably movable with said carriage along said guideway, said connecting means further including means for facilitating a free lateral movement of said sole support means relative to said forward portion of said toothed rack; and

stop means for limiting said lateral movement.

4,244,599

MOBILE MACHINE COMPRISING A STABILIZER

Yves M. Gauchet, Duvy, France, assignor to Poclain, Belleville, France

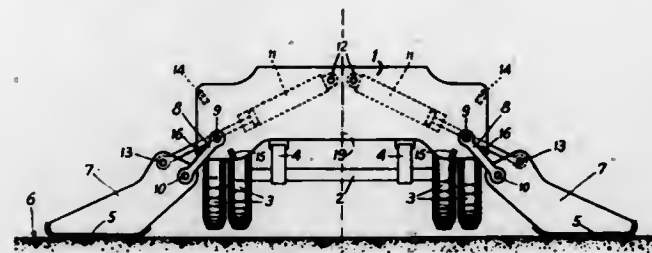
Filed Feb. 26, 1979, Ser. No. 15,243

Claims priority, application France, Feb. 28, 1978, 78 05740

Int. Cl.³ B66C 23/80

U.S. Cl. 280—764

2 Claims



1. A mobile machine comprising a frame provided with a stabilizer operable with respect to the support surface receiving said machine, said stabilizer comprising a connecting rod with opposed first and second ends articulated at a first end on the frame, a shoe assembly for abutment on the support surface, said shoe assembly being articulated on the second end of the connecting rod, a stop on the frame limiting inward rotation of the connecting rod about the first end relative to the frame whereby the second end of the connecting rod on which the shoe assembly is articulated is positioned inwardly toward the median plane of the frame and an adjustable member for adjusting the position of the shoe assembly with respect to the frame coupled between the frame and the shoe assembly, said member being articulated to the frame and shoe assembly at points spaced respectively from the first and second ends of the connecting rod and adapted to place said shoe assembly between an inward retracted position relative to the frame and a position of complete extension outward relative to the frame, said stabilizer further comprising a second stop on the frame limiting outward rotation of the connecting rod with respect to the frame with the end of the connecting rod on which the shoe assembly is articulated being positioned outward relative to the median plane of the frame; whereby the positioning of the shoe assembly from its retracted position to its completely extended position comprises at least the following two phases:
 one phase comprising a rotation of the shoe with respect to the connecting rod with said connecting rod remaining substantially immobile near the first stop, and a partial extension of the shoe to outside the frame being effected, and
 another phase comprising a rotation of the connecting rod with respect to the frame, displacing this connecting rod from near the first stop towards the second stop, during which another partial extension of the shoe to outside the frame is effected.

4,244,600

DEACTIVATABLE LOCKING RETRACTOR FOR VEHICLE SEAT BELT SYSTEMS

Juichiro Takada, 3-12-1, Shinmachi Setagaya-ku, Tokyo, Japan

Filed Mar. 19, 1979, Ser. No. 21,633

Claims priority, application Japan, Apr. 18, 1978, 53/044780

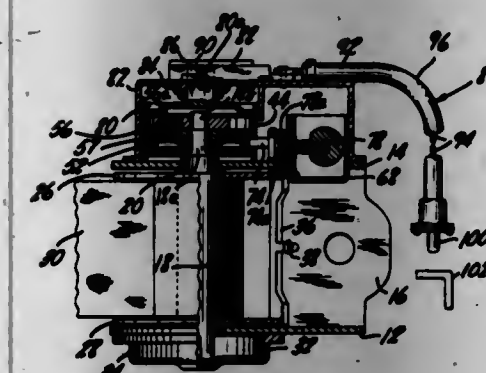
Int. Cl.³ A62B 35/02; B65H 75/48

U.S. Cl. 280—803

1 Claim

1. In a belt retractor for use in a vehicle passenger seat belt restraint system which includes a frame, a shaft journaled on the frame, a belt-retracting reel affixed to the shaft, a spiral leaf spring having one end joined to the frame and the other to the shaft to rotate the reel and shaft in the direction to wind the belt onto the reel, at least one main ratchet wheel rotatable with the reel, and a main locking pawl selectively engageable

with the main ratchet wheel to prevent the reel from rotating in a direction in which the belt is unwound from the reel, the improvement in a lock-actuating mechanism responsive to both acceleration of a sensing pendulum and the inertia of an inertia assembly which detects acceleration of the reel when the belt is pulled out comprising a cup-like second ratchet wheel mounted for rotation on the shaft, having internal ratchet teeth along an outward edge of a peripheral flange thereof spaced outwardly from one side frame portion of the frame and coupled to the main pawl to pivot it into engagement with the main ratchet wheel upon rotation of the second ratchet wheel against the force of a spring which biases the main pawl and second ratchet wheel in a direction maintaining the main pawl out of engagement with the main ratchet wheel; an inertia assembly having a cam member located radially inwardly of the ratchet teeth of the second ratchet wheel and affixed to the shaft for rotation therewith; an inertia disc received on the shaft for rotation relative to the shaft and located axially inwardly toward the reel from the cam member, a second pawl pivoted on a flange portion of the inertia disc and urged by a spring into engagement with a cam surface on the cam member with a force such that the disc and the components associated with it rotate with the cam member and shaft up to a selected acceleration of the reel in a direction in which the belt is withdrawn, the spring yielding and permitting rotation of the cam member relative to the inertia disc and associated components upon acceleration of the reel in said direction in excess of the selected acceleration, whereby the cam member pushes the second pawl out into engagement with the second ratchet wheel to cause rotation of the second ratchet



wheel and engagement of the main pawl with the main ratchet wheel, a third ratchet wheel mounted on a sleeve portion of the inertia disc inwardly of a flange portion thereof for rotation relative thereto, a clutch spring engaged between the third ratchet wheel and the inertia disc to couple the third ratchet wheel and the inertia disc for conjoint rotation but affording forced rotation of the inertia disc relative to the third ratchet wheel; a pendulum mounted to pivot in all directions about a vertical axis upon acceleration thereof; a third pawl associated with the pendulum and actuated by pivoting of the pendulum to engage external ratchet teeth on the third ratchet wheel, thereby to stop rotation of the inertia assembly and produce engagement between the second pawl and the second ratchet wheel, and in turn, the main pawl and the main ratchet wheel to lock the reel; and a disabling mechanism for preventing locking of the reel including a blocking member selectively engageable with the second pawl to prevent it from moving outwardly to engage the second ratchet wheel, the blocking member being mounted on a fixed support member outwardly of the blocking member for sliding movement toward and away from the second pawl axially of the axis of rotation of the inertia disc and including an annular portion engageable with a boss projecting outwardly relative to the frame in all positions of the second pawl, and actuating means coupled to the blocking member for shifting it between a blocking position in engagement with the second pawl and an unblocking position out of engagement with the second pawl including a compression spring engaged between a portion of the blocking member and the support member and urging the blocking member toward the inertia disc for engagement with the second pawl, a cam

follower on the blocking member, a cam member mounted to slide transversely relative to the axis of rotation of the inertia disc and having a cam surface oblique to said axis and engaging the follower to move the blocking member axially outwardly against the spring to the unblocking position, and a linkage coupled to the cam member and engageable by the vehicle door for moving the cam member in response to opening and closing motion of the door.

4,244,601

DEVICE IN CONNECTION WITH SAFETY BELTS FOR VEHICLES

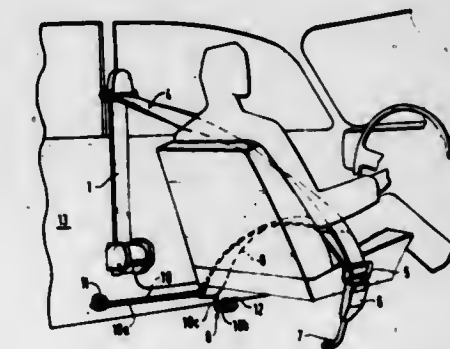
Thomas Nilsson, Gästgärdsgatan 5, 44020 Vargarda, Sweden

Filed Aug. 21, 1978, Ser. No. 935,176

Int. Cl.³ B60R 21/08

U.S. Cl. 280—805

1 Claim



1. In a vehicle: a vehicle body having a floor, a seat and a door post, a safety belt having a retractor device and being looped through connecting means at said door post one end of said belt being connected to said retractor device, and means for attaching said safety belt to said vehicle body, said attaching means including a substantially stiff bar which is deformable when subjected to a high load and extending substantially horizontally near said floor and substantially in driving direction of said vehicle behind said seat and having front and rear ends connected to said vehicle body, the other end said safety belt having a portion forming a loop around said bar, said belt having a width considerably narrower than the length of said bar so that said loop is adapted to move along said bar, said loop having a width transverse to said bar which is large compared to the transverse size of said bar whereby when said safety belt is in use, said loop is drawn to the front end of said bar and when said safety belt is not in use, said loop is drawn towards the rear end of said bar.

4,244,602

SHOCK-ABSORBING SKI POLE GRIP AND METHOD OF ADJUSTING THE SAME

Jon I. Allsop, and Donald J. Stern, both of Bellingham, Wash., assignors to Allsop Automatic, Inc., Bellingham, Wash.

Continuation-in-part of Ser. No. 787,424, Apr. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 691,718, Jun. 1, 1976, Pat. No. 4,061,347. This application Aug. 16, 1977, Ser. No. 825,060

The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.

Int. Cl.³ A63C 11/22

U.S. Cl. 280—821

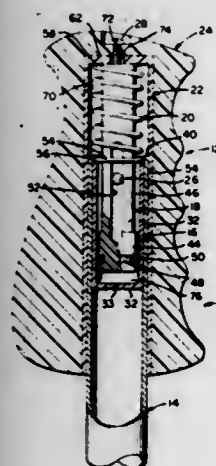
64 Claims

1. A shock absorbing ski pole capable of absorbing impacts caused by being planted into snow during use, said ski pole comprising:

- a hollow shaft having a lower snow engaging end and an upper hand engaging end,
- a hand grip mounted circumjacent to the upper end of said shaft,
- a pneumatic cylinder and piston assembly mounted to the upper end of the shaft, said assembly comprising a first cylinder member fixedly connected to one of said shaft

and said hand grip, and a piston member fixedly connected to the other of said shaft and hand grip and positioned for reciprocating motion in said cylinder, said cylinder and piston defining an air compression chamber to resist relative movement of said hand grip downward relative to the shaft,

- d. spring means mounted in the upper end of said shaft to resist downward movement of the hand grip relative to the shaft and urge the hand grip to an upper position with a first force of a predetermined value,
- e. stop means to limit upward movement of the hand grip relative to the shaft, and
- f. an elongate friction and positioning sleeve positioned securely within said hand grip and frictionally engaging the outer surface of the upper end of the shaft to exert a



frictional force thereagainst less than the first force exerted by said spring means, said sleeve engaging the upper end of the shaft along the length thereof to prevent movement of the hand grip relative to the shaft about an axis perpendicular to a lengthwise axis of the shaft, while permitting relative movement about an axis parallel to the lengthwise axis of the shaft,

whereby when the ski pole is being manipulated with its snow engaging end free of the snow, the friction and positioning sleeve prevents relative movement between the hand grip and shaft in a manner to give a secure feel to the ski pole, and when the ski pole is planted in a snow surface to push the hand grip downwardly so as to compress the spring means and pressurize the compression chamber to absorb the impact, said friction and positioning sleeve resists return movement of the hand grip to absorb resiliency in the return motion.

4,244,603

BOOK, MORE PARTICULARLY POCKET DICTIONARY
Laura De Monti, Lugano, Switzerland, assignor to Prototypen Establishment, Steier, Liechtenstein

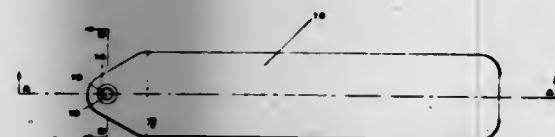
Filed May 9, 1979, Ser. No. 37,394

Claims priority, application Switzerland, May 9, 1978, 5031/78

Int. Cl.³ B42D 1/06, 3/00

U.S. Cl. 281—15 R

6 Claims



1. A printed pocket dictionary constructed of an assembly of superposed elongated cards printed on both sides and two conforming external covers, each card and cover radially

rotating in its respective plane about a pin threaded through a circular cut-out provided at an end of each of the cards and covers on their axial line, and each card and cover remaining partially in contact with adjacent card or cards, characterized in that:

- (a) each card is formed of a slidable synthetic resin of the group comprising polyvinylchloride and polystyrene, has at said end, wherein the circular cut-out is provided for the pin, linear edges converging to form a curved apex, and the circular cut-out for the pin is located entirely in the zone with said converging edges such that the minimum width of the margin around said cut-out is at most equal to three quarters of the diameter of said cut-out; and
- (b) the thickness of each card is at least 0.10 mm.

4,244,604

IMAGE-OFFSETTING

William J. Fraser, Forrest Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 23, 1979, Ser. No. 41,556

Int. Cl.³ B41M 5/16, 5/22; C09D 11/00

U.S. Cl. 282—27.5

16 Claims

1. A color-forming composition comprising a dithiooxamide containing color-forming compound capable of forming colored complexes with transition metal salts and a liquid cosolvent vehicle, wherein the improvement comprises an image-offset control agent in an amount sufficient to reduce image-offsetting, said image-offset control agent being an aliphatic tertiary amine selected from the group consisting of triaurylamine, tributyl amine, and mixtures thereof, which is capable of forming an association with color-forming dithiooxamide compound.

4,244,605

MATERIAL FOR FORMING GRAPHICS

Kenneth S. Deneau, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

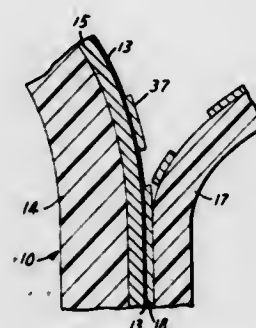
Division of Ser. No. 844,600, Oct. 25, 1977, Pat. No. 4,157,412.

This application May 29, 1979, Ser. No. 43,106

Int. Cl.³ B41L 1/20; B32B 5/16

U.S. Cl. 282—27.5

5 Claims



1. In a composite material for forming graphics such as letters, numbers, symbols or pictures in accordance with patterns of heating, the composite material comprising a donor web, a friable layer of granules releasably adhered to the donor web; and an accepting portion comprising a layer of latent adhesive material facing the layer of granules, which adhesive material is nontacky at normal room temperature, but is selectively softened and activated when heated to a temperature range somewhat above normal room temperature and then adheres to granules so that upon separation of the accepting tape and donor web, the granules are carried to the accepting tape only in heated areas, the improvement wherein said layer of granules is a mono-layer.

4,244,606

APPARATUS FOR REDUCING THERMAL FATIGUE IN A PIPING SUSPENSION SYSTEM FOR A HIGH TEMPERATURE FURNACE

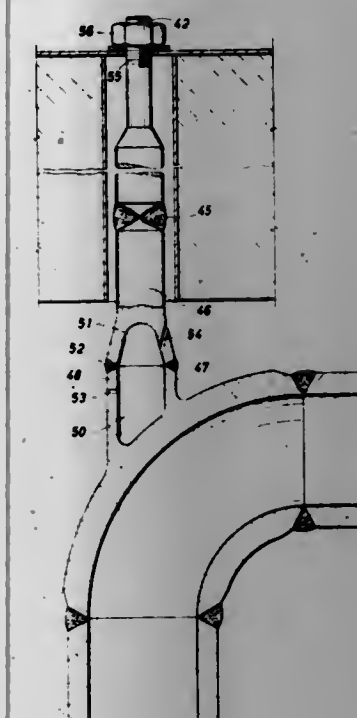
LeRoy E. Abrahamson, Seabrook, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 28, 1978, Ser. No. 946,676

Int. Cl.³ F16L 55/00

U.S. Cl. 285—14

5 Claims



1. Apparatus for use in high-temperature piping arrangements comprising:

- a tubular metal pipe fitting having a wall of selected thickness defining inner and outer surfaces of said fitting, said inner wall surface defining the bore of said tubular fitting, upwardly-directed support base means having wall means formed on the upper outer surface of said fitting and extending outwardly and upwardly therefrom, said wall means forming a chamber in said support base means with the outer wall of said pipe fitting closing the bottom of the chamber and the other end being open, said support base means adapted to be secured to movement-limiting means for said pipe fitting, and
- elongated vertical support rod means fixedly connected to the upper end of the wall means forming the open end of the chamber within said support base means.

4,244,607

CYLINDRICAL THREADED CONNECTION

Thomas L. Blose, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Jan. 2, 1979, Ser. No. 449

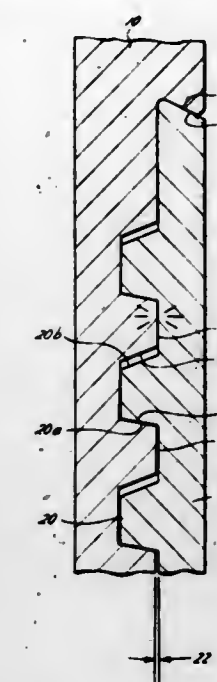
Int. Cl.³ F16L 21/00

U.S. Cl. 285—92

13 Claims

- 1. A thread connector for pin and box members, wherein: interengaged substantially free running radial clearance helical cylindrical threads on said pin member and said box member for rotatable make-up connect said pin member and said box member;
- stop shoulders on each of said pin member and said box member disposed adjacent said interengaged helical cylindrical thread for engagement to limit rotational make-up of said pin member and said box member;
- seal surface on each of said pin member and said box member disposed adjacent said interengaged threads for sealing radial interference engagement to block leakage of fluid between said pin member and said box member when said stop shoulders are engaged; and
- said thread on said pin member having a limited tapered portion relative to the longitudinal axis of the substantially free running radial clearance cylindrical thread to pro-

duce a controlled amount of radial interference engagement in the threads between said pin member and said box



member to prevent inadvertent disengagement of the interengaged helical cylindrical threads.

4,244,608

FEMALE COUPLING WITH STAPLE LOCK

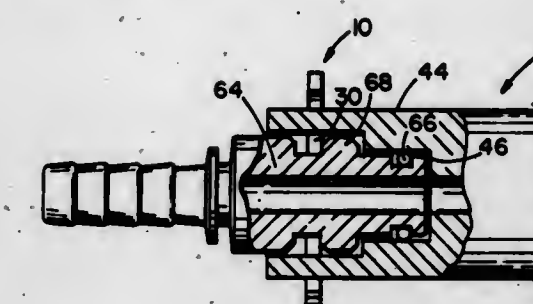
Robert E. Stuenkel, Elizabeth, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Mar. 5, 1979, Ser. No. 17,675

Int. Cl.³ F16L 37/12

U.S. Cl. 285—305

7 Claims



1. A lock staple for use with a female coupling having a bore for receiving a collared male stem, the staple comprising: two generally parallel leg members interconnected to each other at common first ends by a spring means for allowing common free ends of the leg members to spread apart, the leg members having substantially centrosymmetrical slots that face each other, and are dimensioned to provide a free bore in the coupling when aligned therewith, locking tab portions intermediate the first ends and slots which face each other and intersect diametrically unopposed portions of the bore when in a locking position, and coupling engaging surface portions that face each other intermediate the free ends and slots and engage the coupling when the slots are aligned with the bore.

4,244,609

SHEET-METAL CORNER PIECE FOR JOINING PROFILES OF GAS DUCT FLANGE JOINT

Günter Smitha, Am Bülzgraben 33, 5860 Iserlohn-Lethmate, Fed. Rep. of Germany

Filed Jan. 29, 1978, Ser. No. 920,164

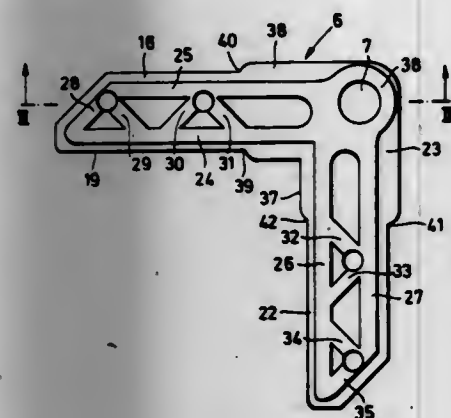
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1977, 2730307

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.² F16L 23/00

U.S. Cl. 285-405

1 Claim



1. A flange joint for the end of a polygonal-section duct having a plurality of straight duct sides meeting at duct corners, said joint comprising:

- a respective elongated L-section profile for each of said sides, each profile having one L-flange fittable over the respective side and another L-flange forming at each end a longitudinally open recess having a predetermined transverse dimension; and
- a respective sheet-metal corner piece for each of said corners and having a pair of legs each formed with at least two parallel and spaced-apart longitudinal corrugations and with at least one transverse corrugation bridging the respective longitudinal corrugations, each piece being of substantially constant thickness at and between the respective corrugations with said thickness being substantially smaller than said transverse dimension, each piece further being formed with a throughgoing screw hole and around said hole with an annular raised region.

4,244,610

SLIDING WINDOW CHANNEL LOCK

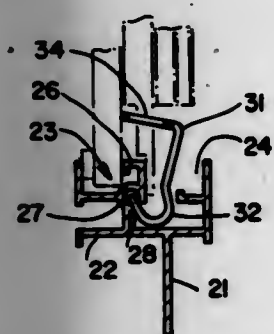
Donald Hawkins, P.O. Box 1203, Tracy, Calif. 95376

Filed Oct. 29, 1979, Ser. No. 89,253

Int. Cl.³ E05C 5/00

U.S. Cl. 292-67

7 Claims



1. In conjunction with a sliding panel assembly comprising a channel member having a recessed track therealong, a hollow tubular longitudinal member, a longitudinally disposed slot extending between said track and said tubular member, and a panel slidably disposed in said track; a lock device for limiting translation of said panel, including a stop member having a lower portion with a distal edge extending into and engaging said slot with minimal clearance, an upwardly extending web

portion joined to the proximal edge of said lower portion, and means on said web portion for rotating said stop member about said engagement with said slot to engage said slot frictionally and immobilize said stop member.

4,244,611

BIAS OVER-CENTER LATCH WITH POSITIVE LOCKING FEATURE

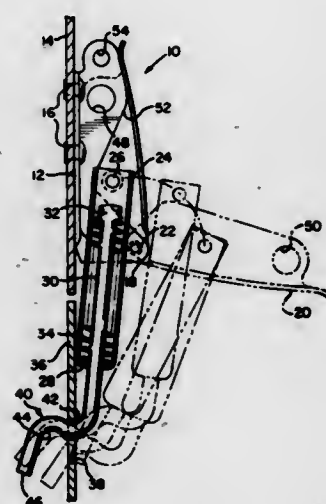
Edward S. Wahoaki, Kenosha, Wis., assignor to International Harvester Company, Chicago, Ill.

Filed Oct. 25, 1979, Ser. No. 88,256

Int. Cl.³ E05C 5/02

U.S. Cl. 292-113

4 Claims



1. In an over-center latch mechanism for latching two relatively immovable panel members, one of said panel members having an elongated slot, said mechanism having a base member including a pair of outward-projecting ears affixed to the other of said panel members, a lever pivotally attached to said ears and including a pair of side flanges and an extension for operator manipulation thereof, a cylindrical tube, a pin extending through said flanges and said tube for pivotal attachment of said tube to said lever, a cylindrical rod having an enlarged head on one end and the other end projecting beyond said tube, a washer on said rod, and a compression spring trapped inside said tube and urging said washer against said enlarged end; the improvement comprising:

- an S-shaped bend formed on said other end of said rod and capable of insertion through said elongated slot, said bend having a shape and length such that removal of said bend from said slot is possible only in conjunction with manipulation of said lever.

4,244,612

MOLDED PLASTIC SNAP-ON LATCH FOR PLASTIC RECEPTACLE

Peter T. Schurman, 21 Cassway Rd., Woodbridge, Conn. 06525

Filed Mar. 1, 1979, Ser. No. 16,122

Int. Cl.² E05C 19/06

U.S. Cl. 292-249

7 Claims

1. A latch structure for plastic receptacles having base and cover closure members separable along a parting line to form confronting edges in the closed condition of said receptacle, said latch structure comprising

- a mounting lug on one of said members adjacent a confronting edge thereof, said mounting lug being formed to provide cooperating recesses on opposite surfaces extending parallel to and closely adjacent said confronting edge, and a forwardly projecting camming surface connecting said recesses and sloping away from said confronting edge;
- a latching post on the other of said base or cover members, adjacent the confronting edge of said other member and complementing said mounting lug, said latching post

having a detent on its face remote from said confronting edge; and

- a plastic buckle adapted to be mounted on said mounting lug for engagable and disengagable cooperation with said latching post when said base and cover members are in confronting relation, said buckle having a mounting lug receiving aperture and a latching post receiving aperture, each defined by a pair of spaced parallel side rails flanking said post and lug, and by bridging bars joining said rails at their opposite ends and intermediate thereof;
- said mounting lug receiving aperture being of relatively narrow, generally rectangular form whose longer sides are formed by said intermediate and one of said end brid-

ers that holds a long fuse barrel having a fuse release ring, comprising:

- a body having a cavity means for surrounding at least a portion of the long fuse barrel for holding the long fuse barrel to raise and lower the long fuse barrel from a utility pole fuse holder in a safe manner,
- said cavity means having an open end and a closed end,
- a guide means for use on the long fuse barrel to guide the tool toward a fuse release ring as the tool is slid along the fuse barrel, said guide means connected to said body adjacent to open end,
- a ring connecting means positioned and connected adjacent said guide means for insertion into the fuse ring by rotation of said body, whereby skill is not required to place the ring connecting means in the fuse ring located on a utility pole at a great distance from the user of the tool.

4,244,614

CLAM GUN WITH VENT MECHANISM FOR EASING WITHDRAWAL FROM THE SAND

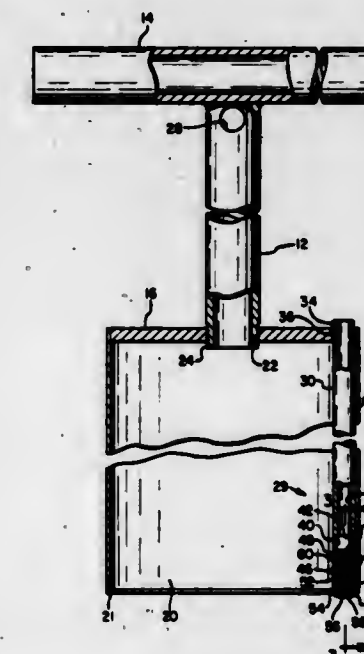
Walter M. Madsen, P.O. Box 495 Jefferson St., Madras, Oreg. 97741

Filed Feb. 1, 1979, Ser. No. 8,245

Int. Cl.³ A01B 1/00

U.S. Cl. 294-50.7

2 Claims



ing bars, said lug receiving aperture being substantially less wide than the projecting camming surface of said lug but substantially equal to the thickness of said lug between said cooperating recesses, at least one of said end and intermediate bars having resilience transversely in the plane of the buckle;

- said latching post receiving aperture being also of generally rectangular form, wherein the portions of said side rails defining the sides of said post aperture provide strap portions flexible transversely of the plane of the buckle, and wherein the bridging bar forming the distal end of said buckle has a resilient catch which releasably engages said latching post detent when said buckle is in latching position.

4,244,613

FUSE HOLDER EXTRACTOR AND REPLACER TOOL

Lattie M. Tillman, 300 Peaceful Ridge Rd., Davie, Fla. 33330

Filed Mar. 6, 1978, Ser. No. 883,524

Int. Cl.² B25B 27/14; B25J 1/00

U.S. Cl. 294-19 R

7 Claims



1. A fuse barrel manipulation tool for utility pole fuse hold-

ers that holds a long fuse barrel having a fuse release ring, comprising:

- a housing having a side wall and an open lower end and adapted to be inserted into the beach sand and thereafter withdrawn to remove a core of sand contained therein from the beach sand; and
- means for venting air to the region beneath the core of sand during withdrawal of the housing from the beach sand, said venting means including,
- a vertically extending pipe mounted adjacent the side wall, the pipe having a bore extending therethrough,
- a valve plug slidably mounted in the pipe bore and extending below the lower end of the pipe,
- the valve plug having a head at its lower end adapted to seat against the lower end of the pipe to seal the pipe bore when the valve plug is moved upwardly upon insertion of the housing into the beach sand,
- the valve plug further having a horizontal bore which extends therethrough and a vertical bore which extends from the upper end of the valve plug to the horizontal bore so that air can flow through the valve plug when the valve plug is moved downwardly during withdrawal of the housing from the beach sand, and
- means for limiting the downward movement of the valve plug.

4,244,615

LIFTING SPREADER ACTUATED CRANK

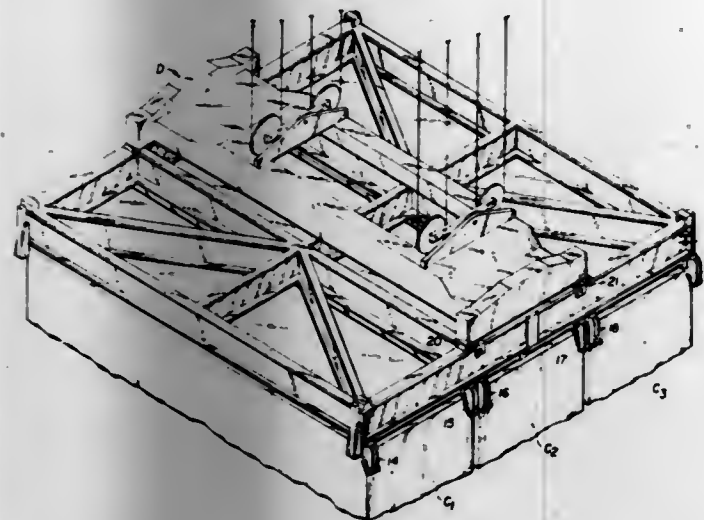
James A. Brown, Moraga, Calif., assignor to Matson Navigation Company, San Francisco, Calif.

Filed May 29, 1979, Ser. No. 43,202

Int. Cl.³ B63B 25/00; B66C 1/66

U.S. Cl. 294—67 DA

8 Claims



1. In combination with a lifting spreader having a penetrating lifting hook and an underlying block having an upwardly exposed cavity for insertion of said lifting hook therein, a mechanism for producing rotary motion to a shaft upon penetration of said lifting hook into said cavity, said mechanism comprising: a lever arm pivoted at one portion and provided with a pedal pad at another portion, said lever arm disposed with said pedal pad immediately below said cavity for downward movement upon penetration of said lifting hook into said cavity and into engagement with said pedal pad; means for pivoting said shaft responsive to movement of said lever arm whereby movement of said lever arm responsive to the insertion of said lifting hook into said cavity causes rotation of said shaft.

4,244,616

TOOL FOR EXCHANGING AND TRANSPORTING IRRADIATION CAPSULES OF A NUCLEAR REACTOR

Christian Buchalet, L'Etang la Ville, France, assignor to Framatome, Courbevoie, France

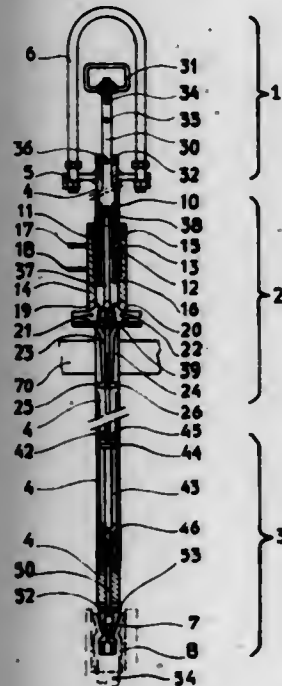
Filed Feb. 7, 1979, Ser. No. 10,159

Claims priority, application France, Feb. 17, 1978, 78 04531

Int. Cl.² B66C 1/54

U.S. Cl. 294—86 A

3 Claims



1. A tool for exchanging and transporting irradiation cap-

sules of a nuclear reactor using water, the capsules containing samples experiencing, during operation of the reactor, comparable irradiation to that experienced by the reactor vessel, between the vessel and the swimming pool and between positions along the heat shield surrounding the core of the reactor, said tool comprising:

- a vertical operating tube;
- a vertical operating rod coaxial with said operating tube and vertically movable relative thereto;
- handle means mounted at the upper part of said operating rod;
- tongs for engaging a capsule and comprising fingers;
- means mounting said fingers on the lower end portion of said operating tube for pivotal movement between an inoperative position and an operative position for engaging a capsule;
- first cam means operable to move said fingers between said operative and inoperative positions thereof;
- means mounting said first cam means on the lower end portion of said operating rod for operation thereof by movement of said rod;
- means for exerting a downward thrust on a capsule by said operating tube comprising a double-acting jack comprising a piston slidable in a cylinder and defining two chambers therewith, a piston rod connected to said piston, said cylinder being coaxial with said operating tube and said operating tube forming said piston rod, and means for supplying fluid under pressure to said chambers of said jack;
- clamp means having bearing faces for co-operation with a fixed part of the reactor;
- means mounting said clamp means on said cylinder of said jack for pivotal movement about horizontal axes between an inoperative position and an operative position for co-operation with the fixed part of the reactor;
- second cam means operable to move said clamp means between said inoperative and operative positions thereof; and
- means mounting said second cam means on said operating rod for operation thereof by movement of said rod.

4,244,617

BOTTLE CARRIER

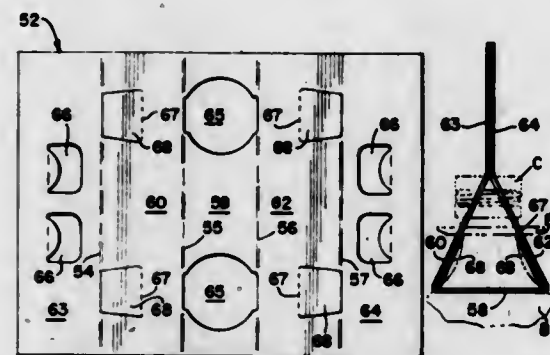
Guelfo A. Manizza, Blauvelt, N.Y., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Jan. 8, 1979, Ser. No. 1,921

Int. Cl.³ B65D 71/00

U.S. Cl. 294—87.2

13 Claims



1. A carrying member for articles in the form of bottles having a substantial neck portion depending from a cap receiving mouth formation, which neck portion has an annular projection which forms a downwardly facing abutment spaced below the bottom edge of the skirt of a closure cap on said mouth formation, said carrying member comprising a plurality of hingedly connected, generally rectangular panels of cut and scored sheet material which has substantial stiffness, said panels being folded and connected so as to form a tube of substantially triangular cross section, one of said panels constituting a

bottom wall and having cut therein an aperture for positioning over the neck of an article and in a plane spaced a substantial distance below said abutment, a pair of said panels being hinged to opposite lateral edges of said bottom wall panel and constituting sidewall panels which extend upwardly from said bottom wall panel in converging relation to a top connecting hinge formation, said sidewall panels having laterally aligned apertures disposed therein with upwardly facing bottom edges positioned for engagement beneath said abutment at opposite sides of an article, said bottom edges of the aligned apertures in said upwardly converging sidewall panels disposed in gripping relation with the neck portion of the article in the area beneath said annular projection so as to support the weight of the article when carried, and said bottom edges of said apertures in said sidewall panels presenting a double thickness of material with at least one of said double thickness edges being formed by the terminal edge of a panel which has a hinged connection with said bottom wall panel and the associated sidewall forming panel and which is secured on the inside face of the bottom margin of said sidewall panel.

4,244,618

PRESSURE FLUID OPERATED GRIPPING APPARATUS

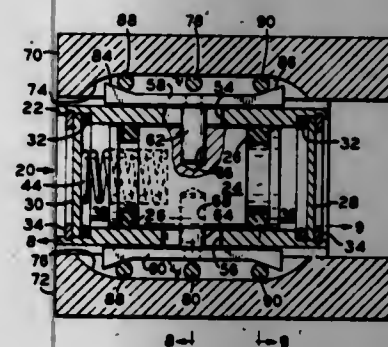
Peter W. Boyer, and Jonathan D. Dent, both of Fort Wayne, Ind., assignors to PHD, Inc., Fort Wayne, Ind.

Filed Aug. 15, 1979, Ser. No. 66,567

Int. Cl.³ B66C 1/44

U.S. Cl. 294—88

14 Claims



1. Gripping apparatus comprising a supporting body, a pair of spaced generally parallel levers independently mounted between the ends thereof on said body for pivotal movement toward and away from each other about spaced parallel axes, two elongated operating bars slidably mounted on said body in parallel juxtaposition with said levers, respectively, said bars being disposed between said pivot axes, respectively, and said body with said axes being opposite the mid portions of said bars, opposed cam means provided between the opposite ends of said bars and the respective levers for pivoting the latter oppositely toward and away from each other in response to reciprocal movement of said bars, and means for reciprocating said bars in unison.

4,244,619

FOLDING CHAIR

Junzo Yoshimura, 8-6 Mezuro 3-Chome, Toshima-Ku, Tokyo, Japan

Filed May 16, 1979, Ser. No. 39,660

Int. Cl.³ A47C 4/08

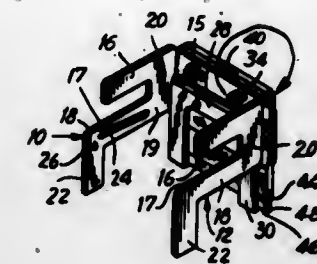
U.S. Cl. 297—34

12 Claims

1. A folding chair comprising:

- a back support;
- two side supports movably mounted on said back support, such that said back support and said side supports lie in substantially parallel planes when said chair is folded, and said side supports extend substantially perpendicularly from said back support when said chair is unfolded;
- a back portion movably mounted on said back support, such that said back portion rests substantially parallel and adjacent a rear portion of said back support when said chair is

folded, and said back portion rests against a front portion of said back support between said side supports when said chair is unfolded; and



a seat movably mounted on said back portion, such that said seat rests substantially parallel to said back portion when said chair is folded, and said seat rests in a substantially horizontal plane between said side supports when said chair is unfolded.

4,244,620

WALL-PROXIMITY RECLINING CHAIR

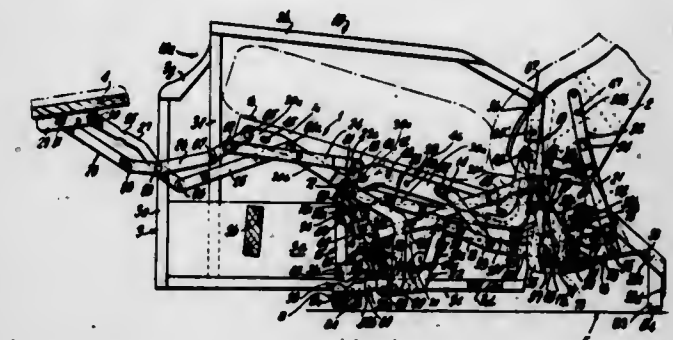
Kenneth S. Harrison, Ridgefield, and Robert J. Caldwell, Bloomfield, both of N.J., assignors to Mohasco Corporation, Amsterdam, N.Y.

Filed Mar. 22, 1978, Ser. No. 888,833

Int. Cl.² A47C 1/035

U.S. Cl. 297—85

24 Claims



1. In a wall-proximity reclining chair of the type having (A) a base for supporting the chair on a floor; (B) body-supporting means including a seat located generally above the base, and a backrest located generally rearwardly of the seat, said body-supporting means having a pair of seat-mounting members each located at an opposite side of the seat, and a pair of backrest-mounting members each located at an opposite side of the backrest; and (C) a movable armrest assembly mounted for longitudinal horizontal reciprocating movement relative to the base, including a pair of armrests, each located at an opposite side of the seat, and a pair of interconnected armrest-mounting members each mounted on a respective armrest for moving the armrest assembly forwardly and rearwardly as a unit relative to the base in response to manual urging on the armrest assembly by a seated user; the improvement comprising:

- (a) body support-to-base linkage means kinematically connecting the seat-mounting members and backrest-mounting members directly to the base along a direct force-transmitting path which bypasses the armrest-mounting members such that any load having a force component which acts generally downwardly on the body-supporting means is directly transmitted along the force-transmitting path only to the base, and not to the armrest-mounting members; and
- (b) drive linkage means for moving the body-supporting means between an end-limiting upright position in which the seat and backrest are spaced a predetermined

distance away from a room wall behind the chair, and an end-limiting fully reclined position in which the seat and backrest are forwardly spaced at a greater distance from the room wall such that physical contact of the body-supporting means with the room wall is avoided in said positions, said drive linkage means operatively connecting each armrest-mounting member to said body-support-to-base linkage means at bypass connection points which transmit no downwardly-acting force component from the seat-mounting members and backrest-mounting members to the armrest-mounting members such that the latter are isolated from any transmission of downwardly-acting forces from the body-supporting means in said positions of the latter, whereby the seat and backrest are moved between said positions without excessive wobble or instability.

4,244,621

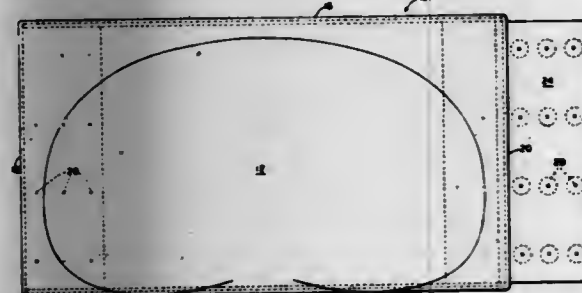
SEATING MODULE AND BASE COMBINATION, AND METHOD OF ASSEMBLING SAME

Charles W. Lazaro, Springfield, N. Berwick, and George E. Libby, N. Waterboro, all of Me., assignors to Hussey Manufacturing Company, Inc., North Berwick, Me.

Filed Apr. 23, 1979, Ser. No. 32,521
Int. Cl.³ A47C 1/12

U.S. Cl. 297-218

12 Claims



1. A multiple seating combination comprising; a base and a multiplicity of seat modules mounted on said base and arranged in a row;
each said module comprising a hollow body member of generally shallow, flat, rectangular shape having an upper surface and an underneath surface, the upper surface contoured to the form of a seat; said body member also having generally vertical front and rear faces, and first and second end portions;
means for securing the first end portion of a first module to said base;
means for securing the second end portion of said first module to said base comprising a fastening component extending laterally from said second end portion integral with said underneath surface and said second end portion a fastener for securing said fastening component to said base, and a fastening head penetrating through said fastener component;
means for securing the first end portion of a second said module to said fastening head in position covering the fastener which secures the fastening component of the first said module to said base;
means for securing the second end portion of the second module to said base in the same way as the second end portion of the first module is secured;
a succession of such modules secured one after the other in substantially the same way as the second module is secured relative to the first;
an end module substantially identical to the modules already defined;
means for securing the first end portion of the end module to a fastening head penetrating the fastening component of

the next to last module in position covering the fastener of that component; and
means on said base and penetrating the underneath surface of the body of said end module for securing the second end portion of said end module to said base;
whereby a complete, substantially tamper-proof row of said modules covers said base.

4,244,622

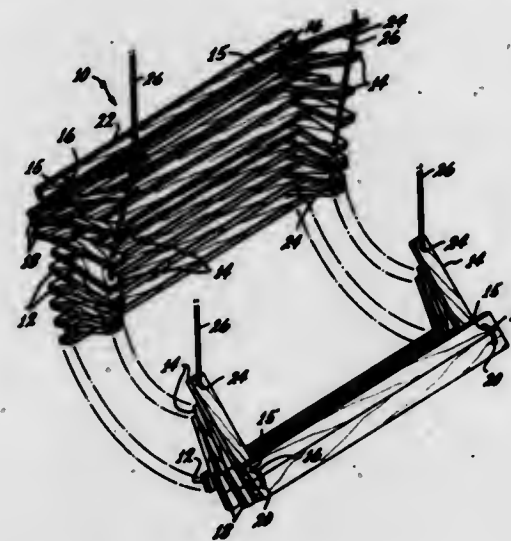
HANGING CHAIR

Clifford G. Simpson, 14714 High Valley Rd., Poway, Calif. 92064

Filed Sep. 20, 1979, Ser. No. 77,309
Int. Cl.³ A47D 13/10

U.S. Cl. 297-273

8 Claims



1. A hanging chair comprising:
a plurality of spaced parallel crosspieces;
a plurality of contour control boards arranged substantially perpendicular to said crosspieces, the first end of each of said contour boards filling the space between two adjacent crosspieces near each of the two ends of said crosspieces; aligned holes through said contour board first ends and said crosspieces;
two body cables extending through said aligned holes at the crosspiece ends and fastened in a secure but flexible manner near the outermost crosspieces;
holes through said contour boards near the second ends thereof; and
two hanging cables extending through the holes in said second ends and extending beyond said contour boards; whereby said hanging cables may be attached to an overhead support to hang said chair in mid air.

4,244,623

MULTI-POSITION ARMREST

Garth O. Hall; Harvey N. Teagler, both of New Berlin, and Neal C. Eriksson, Franklin, all of Wis., assignors to UOP Inc., Des Plaines, Ill.

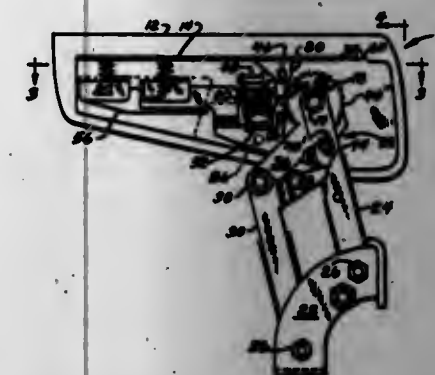
Filed May 8, 1979, Ser. No. 37,209
Int. Cl.³ A47C 7/54

U.S. Cl. 297-417

13 Claims

1. A multi-position armrest assembly for at least one side of a vehicle seat comprising a seat frame, an armrest, and armrest mounting linkage means supported by said seat frame for moving said armrest and locking it against downward movement relative to said seat frame in a plurality of positions including at least: a first seat width extending position where its top surface is coplanar with and immediately adjacent to a seat bottom cushion mounted on said seat frame; a second armrest position where it is positioned above and generally parallel to said first position; a third hip support position where its rear-

ward end is raised above the level of the seat bottom cushion and above its forward end; and a fourth storage position where



it is arranged generally vertically adjacent a seatback cushion mounted on said seat frame.

4,244,624

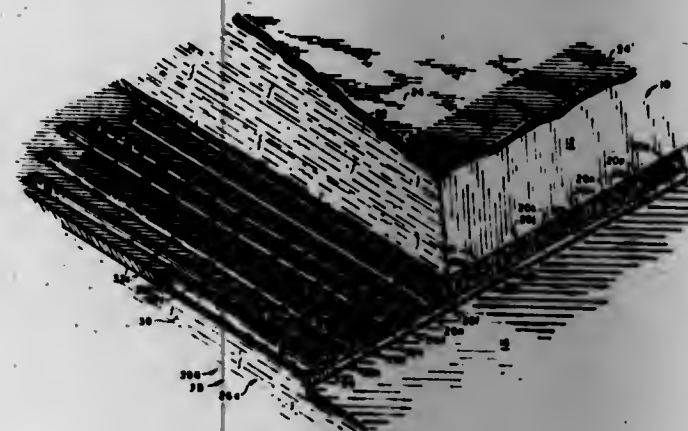
METHOD FOR RECLAIMING HIGHWALLS AT MINING SITES WITH PARTIALLY MINED ORE VEINS

Leonard R. Nitsberg, Knoxville, Tenn., assignor to Reclamite, Ltd., Knoxville, Tenn.

Filed Aug. 8, 1979, Ser. No. 64,558
Int. Cl.³ E21C 41/00

U.S. Cl. 299-13

17 Claims



1. A method for reclaiming a highwall at a surface mining site having a plurality of elongated holes bored into the face of the highwall, said holes being disposed substantially parallel with respect to each other and extending into a preselected mineral deposit or seam and opening on the face of the highwall, each of said holes being disposed below overburden, above underpinning and separated by pillars of hard mineral deposits, said method comprising the steps of:
placing at least one series of directional charges within said holes, each charge being placed at a preselected location within said hole, and
detonating each of said directional charges thereby creating rubble from said highwall, pillars and underpinning.

4,244,625

APPARATUS FOR CUTTING HARD EARTH FORMATIONS

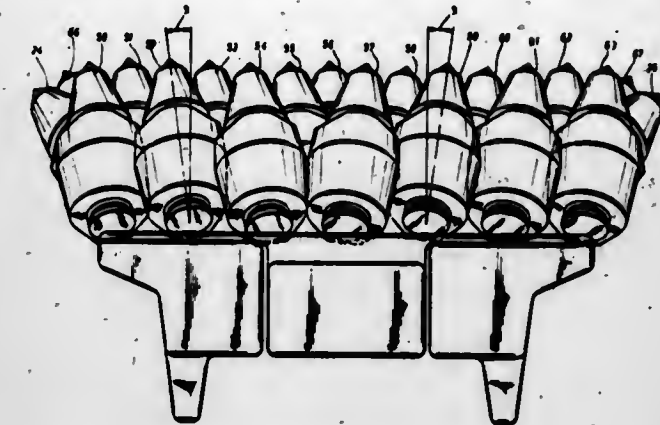
Gilbert M. Turner, and Clarence L. Stepp, both of Houston, Tex., assignors to Boring & Tunneling Company of America, Inc., Houston, Tex.

Filed Jul. 13, 1978, Ser. No. 924,222
Int. Cl.³ E21C 25/38

U.S. Cl. 299-83

9 Claims

1. In an apparatus for cutting hard earth formations of the type having a continuous chain link conveyor assembly comprising a plurality of interconnected links carrying bits for effecting cutting wherein a portion of the bits are inner bits for cutting the central portion of the kerf and the remaining bits



substantially all of the inner bits at a suitable penetration angle and a sideward angle in the range from 3° to 12°.

4,244,626

ROTARY CUTTER FOR GOUGING OUT ORE FROM MINE FACES OR THE LIKE

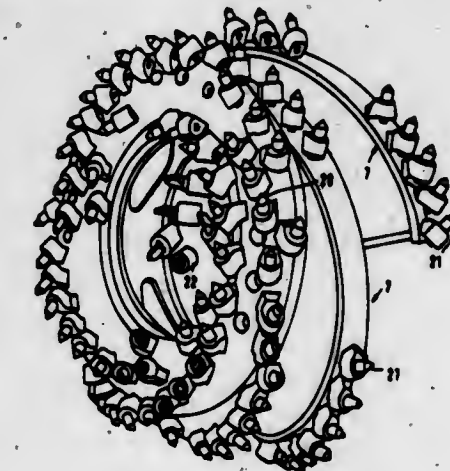
Klaus Konieczny; Erich Schmitt, both of Recklinghausen, and Adolf Buhles, Neunkirchen, all of Fed. Rep. of Germany, assignors to Gestins- und Tiefbau GmbH, Recklinghausen-Hochlarmark and H. Krummenauer KG, Neunkirchen, both of, Fed. Rep. of Germany

Filed Oct. 12, 1978, Ser. No. 950,692
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 2746169

Int. Cl.³ E21B 13/04

U.S. Cl. 299-90

11 Claims



1. A rotary cutter for gouging out ore from seams, particularly in underground excavations, comprising an annular section having an outer periphery; a second section coaxially surrounded by and located rearwardly of said annular section; a first set of material removing bits provided on said annular section and operative for removing material from the seam while the cutter moves forwardly with said annular section located ahead of said second section whereby the non-removed material within said annular section forms a core which extends toward said second section; a second set of bits provided on said second section rearwardly offset from said bits of said first set and operative for comminuting the material of the core during the forward movement of the cutter; and a third set of material removing bits mounted on and extending outwardly of said outer periphery of said annular section and operative for removing additional material from the seam while the cutter moves transversely to its axis along the face of the seam while said bits of said second set are out of contact with the material of the seam.

4,244,627

LIFT CYLINDER ASSEMBLY

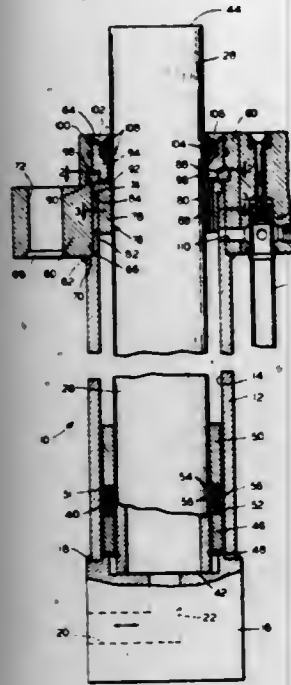
Russell Hastings, Jr., Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 8, 1979, Ser. No. 46,892

Int. Cl.³ F16C 29/02

U.S. Cl. 308—4 R

6 Claims



1. In a lift cylinder assembly, the combination comprising, a tubular elongated cylinder having an open end and first and second generally concentric inner cylindrical surfaces, said first cylindrical surface being disposed adjacent said open end and of a diameter greater than the diameter of said second cylindrical surface so as to define an annular shoulder therebetween, a piston rod supported within said cylinder for longitudinal extension outwardly from said open end, said piston rod having a cylindrical peripheral surface of a diameter less than the diameter of said second inner cylinder surface and defining an annular space therebetween, sole guide bushing means supported within said cylinder adjacent said annular shoulder, said guide bushing means having an annular portion extending within said annular space between said piston rod and said second inner surface of said cylinder and adapted to receive said piston rod therethrough in sliding relation and firmly engage said adjacent second inner surface, and means associated with said cylinder and said guide bushing means to maintain said guide bushing means in fixed longitudinal position within said cylinder.

4,244,628

GUIDE ROLLER ASSEMBLY

Douglas W. J. Naylor, and Michael R. Scalf, Sr., both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 923,321, Jul. 10, 1978,

abandoned. This application Mar. 14, 1980, Ser. No. 130,227

Int. Cl.³ F16C 29/04

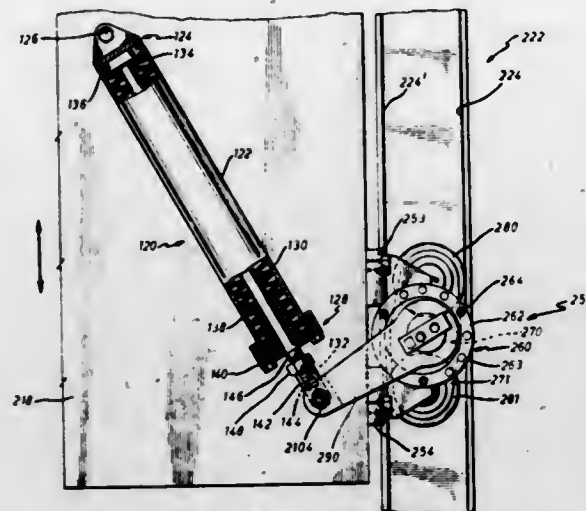
U.S. Cl. 308—6 R

18 Claims

1. A guide roller assembly including a pair of guide rollers carried by a movable member, the guide rollers being suited for placement within an elongated guide track having an axis of displacement and a pair of generally parallel guide track flanges on each side of said displacement axis, and the guide rollers being spaced such that a line interconnecting the roller's respective axes of rotation forms an acute angle with said displacement axis, the improvement of:

a rigid member rotationally supporting said guide rollers, the rigid member being rigidly interconnected with a mounting shaft which is rotationally mounted in a support carried by the movable member, the rigid member supporting said pair of guide rollers for placement within said guide

track such that each of said rollers is positioned against or adjacent a respective guide flange; and biasing means functionally interconnected with said mounting shaft for applying a biasing torque to said mounting shaft and thereby to the rigid member (a) to maintain at least one of said rollers against a respective flange when a misalignment in the guide track is encountered, (b) to permit the rollers to accommodate misalignment in the



guide track by allowing the rigid member to experience biased rotational movement such that the rollers are displaced together along a circumferential path, and (c) to cushion a shock load when the movable member is subjected to a force having a directional component perpendicular to that of the displacement axis by absorbing the shock load with one of said guide rollers and transmitting that load through the rigid member to said biasing means.

4,244,629

DEVICE FOR THE HORIZONTAL STABILIZATION OF A VERTICALLY SUPPORTED MASS

Helmut Habermann, Vernon, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

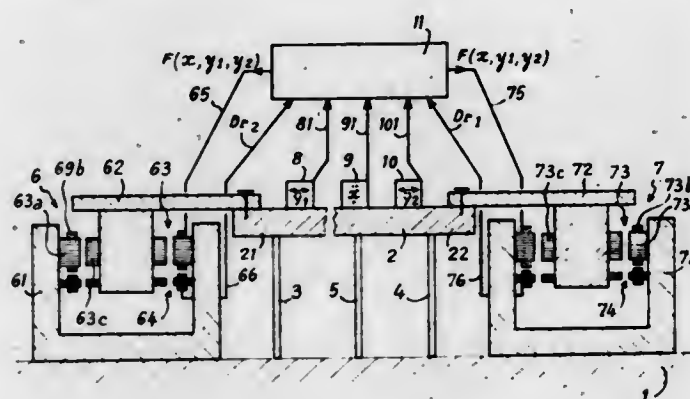
Filed Jan. 30, 1978, Ser. No. 873,169

Claims priority, application France, Feb. 4, 1977, 77 03246

Int. Cl.³ F16C 39/06

U.S. Cl. 308—10

3 Claims



1. In a suspension system for a mass supported vertically with the aid of springs, a horizontal stabilization device intended for damping the oscillations of said mass in a horizontal plane for a given vibration frequency band comprising:

first and second active electromagnetic radial bearings, each comprising armature windings mounted on a stationary armature cooperating with a ring armature disposed opposite said stationary armature, the axis of each of the bearings being vertical, each of the stationary armature assemblies being rigidly affixed to a frame and the ring armature of the first bearing being rigidly affixed to a first end of said mass to be stabilized and the ring armature of the

second bearing being rigidly affixed to a second end of the mass to be stabilized; at least one first accelerometer and at least one second accelerometer, each said accelerometer adapted to function in a band of frequencies including said given vibration frequency band, said at least one first accelerometer and at least one second accelerometer being disposed on said mass to be stabilized to detect oscillations along a first and a second horizontal axis, respectively, of said mass, said accelerometers delivering a first and second signal, respectively, in response to oscillations whose frequencies are included within said given vibration frequency band; and a control circuit to which are applied said first and second signals, and which is connected to the windings of the electromagnetic radial bearings to ensure a stabilization of the movements of said mass to be stabilized.

4,244,630

JOURNAL MOUNTING FOR THE SHAFT OF A WATER PUMP OR THE LIKE

Roland Tischer, Dittelbrunn, Fed. Rep. of Germany, assignor to Fag Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

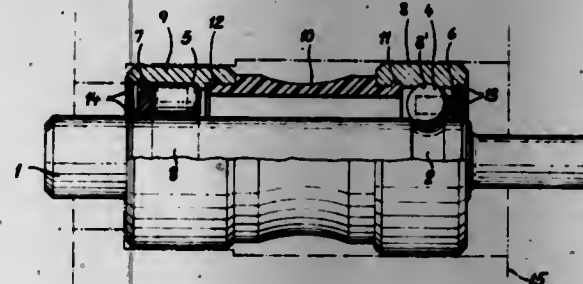
Filed Sep. 17, 1979, Ser. No. 76,360

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978; 2840666

Int. Cl.³ F16C 35/06

U.S. Cl. 308—189 R

6 Claims



1. A journal mounting for a shaft rotatable inside a housing, comprising:

a first and a second bearing ring axially spaced from each other, said bearing rings concentrically surrounding said shaft and being separated by annular clearances from respective peripheral zones thereof; a first set of rotary bodies partly received in an inner annular groove of said first bearing ring in a confronting annular groove of said shaft at one of said peripheral zones; a second set of rotary bodies inserted between said second bearing ring and said shaft in contact with the other of said peripheral zones; and a sleeve between said bearing rings having extremities snap-fitted onto same.

4,244,631

HUB AND BEARING ASSEMBLY

Patrick M. Cadaret, Union Lake, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Oct. 9, 1979, Ser. No. 83,082

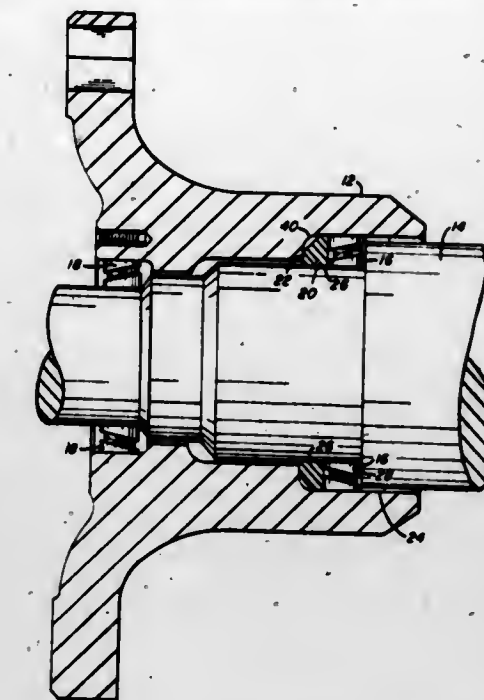
Int. Cl.³ F16C 35/073

U.S. Cl. 308—210

3 Claims

1. In a land vehicle a wheel assembly including an aluminum hub rotatable about a spindle, said hub including a bearing stop shoulder projecting radially inwardly from an inner circumferential surface of said hub, a bearing mounted on an outer circumferential surface of said spindle and a bearing spacer intermediate said stop shoulder and said bearing, said bearing spacer comprising an annular member having axially extending inner and outer cylindrical surfaces and radially extending end surfaces, one of said end surfaces extending radially outward from said inner cylindrical surface a radial distance less than

the radial extent of said stop shoulder and being joined to said outer cylindrical surface by a surface spaced from said stop shoulder and said inner circumferential surface of said hub



whereby said bearing spacer transmits thrust forces on said bearing to said bearing stop shoulder while allowing a large radius on the bearing stop shoulder to reduce undesirable stress concentrations therein.

4,244,632

CALLIGRAPHER'S PORTABLE DESK

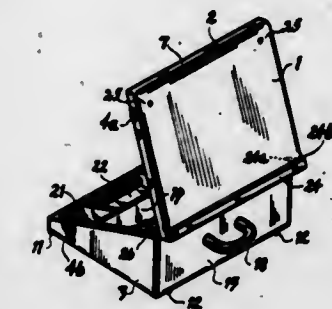
Gloria G. Molinari, 128 Fulton St., Redwood City, Calif. 94061

Filed Sep. 17, 1979, Ser. No. 76,374

Int. Cl.³ A45C 11/36

U.S. Cl. 312—231

2 Claims



1. A calligrapher's portable writing desk, to be used in conjunction with a table, comprised of a rectangular box with the front and rear walls having different heights which are also fitted on each end with tapered side walls slanting downward from rear to front, said side walls support a top lid with the side walls of said top lid and the side walls of the box being joined together with a fastener, said rear wall and a back portion of the top lid being joined together with a hinge which facilitates opening from the front, said rear wall also being affixed with a carrying handle for portability, a top writing surface being rounded on the front edge in addition to being covered with a smooth surface containing four small holes positioned one on each corner, said holes connectable with a narrow easel/podium bracket, said bracket having a peg protruding from each side end, with a lip along the front edge, said bracket being connectable horizontally into said holes in the front of the top surface with the lip side up to hold cards or paper upright against the top surface of the desk, said desk with said bracket attached in conjunction with a table being usable as a podium, said bracket being usable on the two rear holes of the top surface when the lid of the desk is raised and held in a vertical position by an elbow bracket inside the side wall, said

desk turned around with the back of the desk facing forward and the bracket attached to the said rear holes to provide for the desk to be used as an easel for larger lettering or poster-board brush work, a bottom surface having on each corner small rubber feet, the rear feet being attached to a threaded rod which is adjustable, said threaded rod varies the height of said feet by turning it through a metal bracket which is fitted flush with, and secured onto, the bottom of said desk, said rear feet when not in use, have their threaded rods positioned into the back inside corner of the desk.

4,244,633

MULTICOLOR HOLOGRAM AND METHOD FOR FORMING SAME

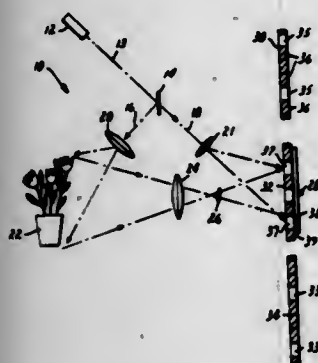
Truman F. Kellie, Lakeland, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 22, 1978, Ser. No. 908,978

Int. Cl.³ G03H 1/02

U.S. Cl. 350—3.78

12 Claims



1. A method for forming a surface relief holographic article suitable for the holographic reconstruction of a three-dimensional multicolor image of an original three-dimensional multicolored object, comprising the steps of

- directing a first pair of beams including a mutually coherent reference beam and object beam having information corresponding to one color component of said multicolored three-dimensional object modulated thereon against a first group of small areas distributed along a surface of a photographic medium to form a latent image of a first standing wave interference fringe pattern corresponding to said one color component;
- directing an additional pair of mutually coherent beams including a reference beam and an object beam having information corresponding to an additional color component of said object modulated thereon against a second group of small areas distributed along said medium, which second group of areas is displaced from and distinct from said first group, to form a latent image of a second standing wave interference fringe pattern corresponding to said additional color component;
- processing said medium to form a holographic article which includes a permanent image of said fringe patterns as regions of varying optical density;
- positioning a positive photoresist layer in intimate optical contact with the processed medium;
- directing light through the processed medium and onto the photoresist layer to provide in said layer a latent image of said permanent image; and
- processing the photoresist layer to provide a said surface relief holographic article which comprises a substantially homogeneous polymeric sheet having formed on a surface thereof an optically detectable relief pattern corresponding to said fringe patterns, whereby a three-dimensional multicolor reconstruction of said object may be obtained by directing white light through a multicolor mask and onto the article, said mask being positioned in registration with the article such that a given color in the mask is adjacent portions of the hologram corresponding to that color.

4,244,634 ATTACHMENT FOR CONNECTING A PLURALITY OF INDEPENDENT MICROSCOPES

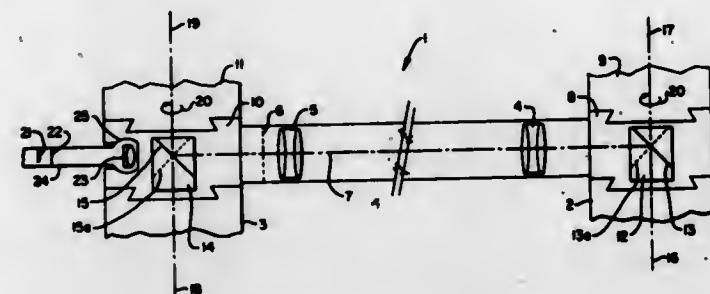
Joseph C. Dianetti, E. Aurora, and Robert W. Leonard, Williamsburg, both of N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Filed Nov. 9, 1979, Ser. No. 94,030

Int. Cl.³ G02B 21/18, 23/04

U.S. Cl. 350—31

8 Claims



1. An attachment for optically coupling two microscopes, each microscope having a stand and a detachable viewing body, which comprises two relay supports, each support being adapted for mounting between a stand and viewing body, an optical relay connecting said supports, beam splitting means mounted in each support for coupling said relay to each microscope, whereby one stand is coupled to two viewing bodies by the relay.

4,244,635

GO BOARD USING LIQUID CRYSTAL DISPLAY OR ELECTROCHROMIC DISPLAY

Takehiko Sasaki, Yamatokoriyama, and Yuji Yashiro, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

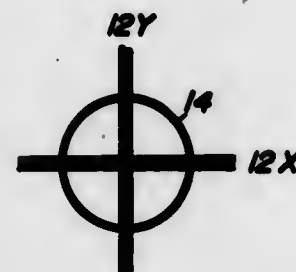
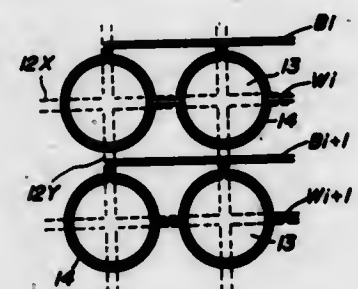
Filed Jun. 2, 1978, Ser. No. 911,905

Claims priority, application Japan, Jun. 6, 1977, 52/74191[u]

Int. Cl.³ G02F 1/133

U.S. Cl. 350—336

5 Claims



- An electro-optical board game display comprising:
 - first and second coplanar opposing substrates;
 - a pattern of game board check lines formed on one of said substrates, said pattern being formed by a plurality of vertical lines and a plurality of horizontal lines;
 - a plurality of disc pattern electrodes formed on said first substrate, each of said disc pattern electrodes being centered on an intersection of one of said horizontal lines and one of said vertical lines;
 - a plurality of ring pattern electrodes formed on said first

substrate, each of said ring pattern electrodes being formed concentric to one of said disc pattern electrodes; a plurality of common electrodes formed on said second substrate, each of said common electrodes being disc-shaped and positioned directly across from one of said disc pattern electrodes and the ring pattern electrode concentric thereto;

first lead electrodes connecting horizontal rows of said ring pattern electrodes together to form ring pattern electrode rows; and
second lead electrodes connecting horizontal rows of said disc pattern electrodes together to form disc pattern electrode rows;
each of said ring pattern electrodes having a discontinuous portion which allows said second lead electrodes to connect to said disc pattern electrodes, said discontinuous portion of each of said ring pattern electrodes being formed in juxtaposition to one of said game board check lines to render the discontinuous portion of each of said ring pattern electrodes hidden from view.

4,244,637 TRACK ASSEMBLY

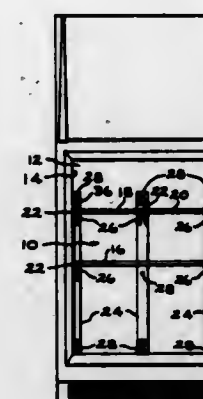
Earl D. Boorman, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 26, 1979, Ser. No. 33,356

Int. Cl.³ A47B 96/12

U.S. Cl. 312—350

14 Claims



1. A track assembly for securing to a wall and receiving shelves:

- an elongated strip, said strip being U-shaped in lateral cross section to provide two-spaced parallel legs and a connecting portion;
- a shim having a base with a top and bottom surface, the bottom surface contacts the wall, and each of two parallel sides of the shim having a step, said steps being spaced apart a distance equal to the distance of the spaced parallel legs of the strip and the other two parallel sides of the shim being unstepped and spaced apart from each other a distance greater than the distance of the spaced parallel legs of the strips; and
- support means attached to the strip for supporting shelves thereon.

4,244,636

DISPLAY DEVICE FOR THE REPRESENTATION OF BRIGHT IMAGES ON A DARK BACKGROUND AND A PROCESS FOR OPERATION OF THE DEVICE

Guenter Baur, Freiburg; Waldemar Griebel; Hans Krueger, both of Munich, and Alois Schaner, Grieswald, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

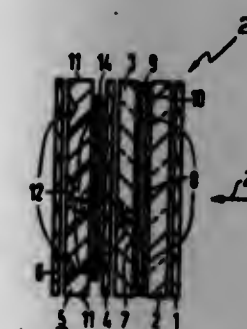
Filed Feb. 13, 1978, Ser. No. 877,486

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706372

Int. Cl.³ G02F 1/133

U.S. Cl. 350—345

1 Claim



1. A device for displaying bright characters against a dark background comprising a twisted nematic liquid crystal cell located between cross polarizers and having character shaped electrode segments for applying a voltage across the liquid crystal material, an illumination plate located behind said liquid crystal cell and being formed of a solid body having fluorescent particles dispersed therethrough, grooves being located in the region directly behind each electrode segment and being formed in the rear surface of said illumination plate for directing fluorescent illumination from said plate through the liquid crystal cell in the region of the character shaped electrode segments, an absorption foil being located behind said illumination plate, a luminous coating being provided on the front surface of said illumination plate and being restricted to the regions of the front surface of the illumination plate directly behind said character shaped segments, a tritium lacquer layer being on the surface on said luminous coating for emitting beta-radiation to excite the luminous coating material.

4,244,638 SNAP-IN STRAIN RELIEF

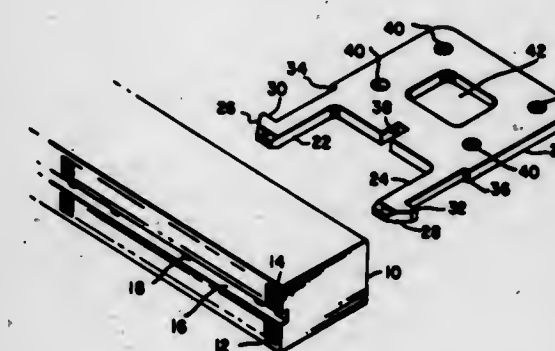
David M. Little, Harrisonburg, Va., and Brian A. Wolfe, Jones-town, Pa., assignors to AMP Incorporated, Harrisonburg, Pa.

Filed May 3, 1979, Ser. No. 35,377

Int. Cl.³ H01R 13/58

U.S. Cl. 339—103 M

6 Claims



1. In combination with an electrical connector housing having at least two parallel spaced terminal carrying portions defining at least one elongated slot between each adjacent pair of rows and a plurality of parallel spaced bars subdividing said slot into a plurality of passages, a strain relief member detachably secured to said connector, said strain relief member comprising:

- a plate of rigid material having an overall rectangular plan profile, with an integral pair of legs extending from one side thereof and set in from corners thereof to form outwardly directed first shoulders adjacent the legs, each leg having a profiled free end including an outwardly and

rearwardly directed slope forming a second outwardly and rearwardly directed shoulder spaced from the first shoulder and adapted to engage opposite ends of a respective bar in said slot; and
a patterned array of apertures in said plate whereby said plate is attached to said connector housing and conductors are secured in said plate by tie down means passing through said apertures and around said conductors.

4,244,639

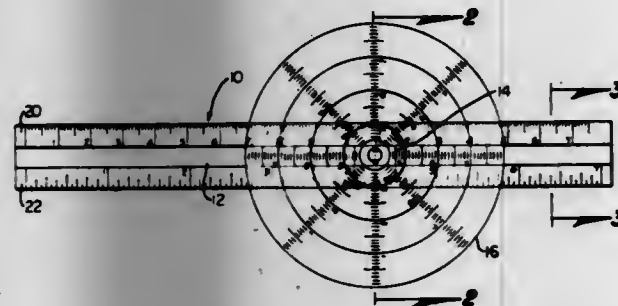
LENS SIZING DEVICE

Masami Kanda, 7475 Dakin St., Denver, Colo. 80221
Filed Dec. 4, 1978, Ser. No. 965,900

Int. Cl.³ A61B 3/10

U.S. Cl. 351—5

18 Claims



1. A device for measuring parameters for corrective lenses for a person's eyes, comprising:
a transparent elongated strip having a first face with first index markings thereon; and
a transparent disc slidably mounted on said strip by a substantially transparent mounting means and rotatable about an axis perpendicular to the plane of said strip, said disc having second index markings thereon, the axis of said disc intersecting said strip and said disc sized to extend laterally on either side of said strip.

4,244,640

FILM CASSETTE HAVING FRICTION PAD PULL STRIP STRESS RELIEVER

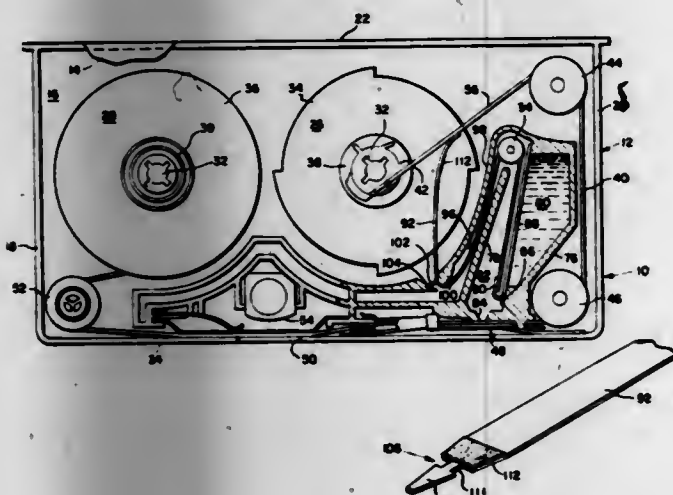
J. Winthrop Aldrich, Scituate, and Joseph A. Stella, Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 10, 1979, Ser. No. 101,426

Int. Cl.³ G03C 11/00

U.S. Cl. 352—130

6 Claims



1. In a film cassette comprising a housing, a rotatably mounted reel within the housing, an elongated strip of photographic film disposed along a predetermined path within said cassette and having one end thereof connected to said reel so that, responsive to the rotation of said reel, said film strip will be progressively coiled around and supported in said reel, said film strip having a tactile discontinuity adjacent its said one

end, a processing station positioned within said housing and containing a quantity of processing fluid sufficient to coat substantially the entire length of said film strip, said processing station being actuatable upon withdrawal therefrom of an elongated pull strip responsive to a force sufficient to overcome a given resisting force, said pull strip having a free end formed and adapted such that, as said reel is rotated to progressively coil said film strip therearound, said pull strip will lockingly engage said tactile discontinuity to thereby draw said pull strip into said coiled film, the improvement comprising:
a strip of material carried upon the surface of said pull strip substantially immediately adjacent said free end thereof, such that said strip of material is brought into engagement with a portion of the outermost convolution of said film strip, following engagement of said pull strip and film strip, as said pull strip is drawn to said reel, said strip of material having a coefficient of friction greater than the coefficient of friction of the material from which said pull strip is fabricated whereby the frictional engagement of said strip of material with said film strip upon passage of said film strip and said pull strip onto said reel will serve to resist at least a portion of said given resisting force transmitted by said pull strip upon withdrawal of said pull strip to actuate said processing station and as a result the full force necessary to actuate said station is not transmitted to said free end of said pull strip which is locked in engagement with said film strip.

4,244,641

MICROFILM READER

Wilfried Hofmann; Guenther Laeder, both of Taufkirchen; Peter Nassal, Gauting; Peter Puechler, Munich; John Krueger, Munich; Walter Rauffer, Munich, and Herbert Lasch, Taufkirchen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

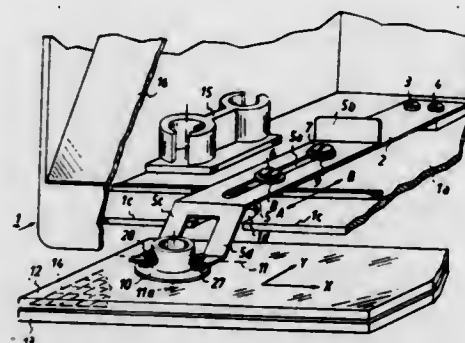
Filed Jul. 21, 1977, Ser. No. 817,730

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1976, 2632934; Nov. 30, 1976, 2654320

Int. Cl.² G03B 23/08, 1/48

U.S. Cl. 353—27 R

2 Claims



1. A microfilm reader for providing enlarged projections via an image forming objective of any desired micropicture selected from a plurality of pictures present on a microfilm comprising in combination,
a frame;
a microfilm support movable in at least two directions having an upper and a lower transparent plate for positioning the microfilm;
a support for the image forming objective slidably mounted in said frame for movement along a direction substantially parallel to said transparent plates and biased against the upper one of the two transparent plates;
an image forming objective operatively mounted on said support;
a mirror mounted on said frame above and proximate the said image forming objective;
a spring slide lever movable relative to the microfilm reader and attached to the slidable support and adapted to be positioned into an operative position wherein the image

forming objective is in a correct position for projecting a preselected micropicture,
said lever has a carrying end and two spring arms arranged in spaced relationship relative to the two plates and extending from the slide lever at its carrying end for mounting the slidable support between said two arms; said two spring arms being biased in a direction normal to said two plates, said image forming objective being tiltable on said two spring arms around an axis essentially parallel to the upper plate.

4,244,642

APERTURE CARD READER WITH AUTOMATIC AND MANUAL CARD FEED

Shiro Toriumi, Zama; Hiroshi Endo, Fuchu; Takao Saijo, Matsudo; Takao Saito, Musashino, and Kuniaki Kamimura, Kawasaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

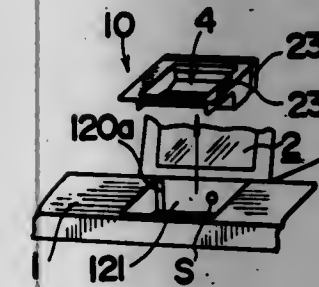
Filed Jun. 19, 1979, Ser. No. 49,967

Claims priority, application Japan, Jun. 26, 1978, 53-88293[U]

Int. Cl.³ G03B 23/14; B65H 5/26

U.S. Cl. 353—27 R

11 Claims



1. An aperture card reader comprising: a pair of aperture card holding presser plates each having a transparent portion through which light can be passed for projecting the image of a microfilm mounted in the apertured portion of an aperture card, said pair of presser plates being mounted for movement toward each other perpendicular to the plane of the opposed faces of said plates for holding an aperture card therebetween and movable away from each other to leave a space for receiving an aperture card; a reader main body housing having a first card feeding opening for permitting an aperture card to be fed into and withdrawn from the space between the presser plates from outside said housing and transversely of the direction in which the plates are movable, with the aperture card in a position in which the major sides of the aperture card are oriented in the direction of feeding or the minor sides of the aperture card are oriented in the direction of feeding; guide plates defining a second opening for feeding an aperture card into the space between the presser plates only in a position in which the minor sides of the aperture card are oriented in the direction of feed, said guide plates being disposed for guiding the aperture card from the second opening to the space between the presser plates through said first opening; a pair of feed rollers for automatically transporting an aperture card from the second opening along the guide plates; a support member on which said guide plates and feed rollers are mounted and which is mounted on said housing for moving the guide plates and the feed rollers away from said first opening of the housing; and a pair of discharge rollers in said housing for engaging the aperture card and discharging it from the housing after the aperture card has been feed between the presser plates from said guide plates and held therebetween for projecting an image of the microfilm which is mounted on the aperture card, and the presser plates have been moved apart.

4,244,643

MANUAL SETTING DEVICE IN DIGITAL TYPE ELECTRICAL CONTROL CAMERA

Saijiro Tokutomi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 839,465, Oct. 4, 1977,

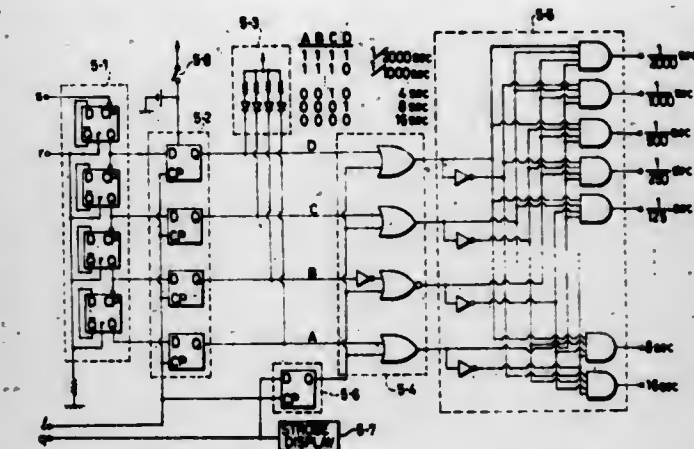
abandoned. This application Jan. 5, 1979, Ser. No. 1,090

Claims priority, application Japan, Oct. 5, 1976, 51/119556

Int. Cl.³ G03B 7/093, 17/20

U.S. Cl. 354—23 D

9 Claims



1. In a digital electrical control camera of the type wherein the shutter speed is electrically controlled by a circuit comprising a first counter preset to a suitable shutter speed, display means viewable through the camera viewfinder for displaying the shutter speed preset in said first counter, an oscillator, a second counter responsive to said oscillator when the shutter is released for counting up to a predetermined number, and gating means connected to the outputs of said first and second counters for generating an output when the count accumulated in said second counter is equal to the count preset in said first counter to stop the shutter timing, the improvement comprising manually operated pulse generating means connected to said first counter for presetting said first counter to said suitable shutter speed, and means for generating a latch signal when said shutter is actuated, said first counter comprising a pulse counting circuit for counting pulses indicative of shutter speed, a latch circuit to latch the contents of said pulse counting circuit in response to said latch signal, a gate circuit and a decoder for providing an output to said gating means.

4,244,644

METHOD AND APPARATUS FOR SERIES PHOTOGRAPHY OF A SUBJECT IN MOTION

Marc Odier, 85, Boulevard Exelmans, 75016 Paris, France

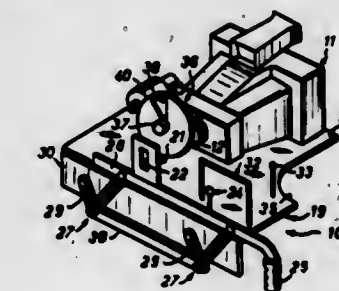
Filed May 1, 1979, Ser. No. 34,981

Claims priority, application France, May 3, 1978, 78 13117

Int. Cl.³ G03B 11/00, 15/16

U.S. Cl. 354—122

21 Claims



1. Apparatus for series photography of a subject in motion, said apparatus being adapted to be associated with a "still" camera, a field stop defining an aperture sized and positioned to effectively reduce the total field of view of the associated camera, means mounting said field stop in front of said associated camera for movements in all directions in the general

plane of said field stop, means for displacing said field stop to follow displacements of the subject in motion, and means for adjusting the shape and/or size of aperture of said field stop.

4,244,645

DAYLIGHT LOADING SYSTEM FOR MICROFICHE CASSETTES

Leo N. Vackier, 'S-Gravenwezel; Lucien P. Van der Vliet, Hoboken, and Roger J. Bals, Schelle, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

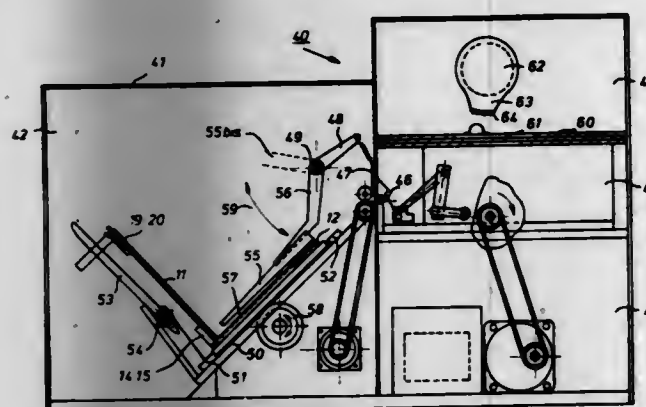
Filed Apr. 16, 1979, Ser. No. 30,564

Claims priority, application United Kingdom, Apr. 18, 1978, 15241/78

Int. Cl.³ G03D 13/06; G03B 17/26

U.S. Cl. 354—310

10 Claims



1. A device for loading in daylight conditions, a microfiche cassette of the type having a bottom, a covered hinged to said bottom and locking means therefor including spring loaded detents snapable into associated recesses, comprising:

- a housing
- a door in said housing capable of being opened and closed and when closed light-tightly shielding light from the interior of said housing
- a space in said housing in which a stack of unexposed microfiches may be housed in darkroom conditions
- a platform in said housing for supporting said microfiche cassette in said housing in unlocked and opened condition for receiving a microfiche on one of said bottom or cover guiding means movable between a withdrawn inoperative position and operative position proximate the part of the cassette receiving the microfiche to form a temporary guide channel for the microfiche being delivered as the latter approaches said platform so that the microfiche assumes a predetermined position on the part receiving it and
- means for the closing and reloading of said microfiche cassette after loading with said microfiche.

4,244,646

DEVICE AND METHOD FOR PRODUCING A NUMBER OF COPIES BY ELECTROPHOTOGRAPHIC TECHNIQUES

Eberhard Bayer, and Karl Kempter, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 821,133, Aug. 2, 1977. This application Feb. 14, 1979, Ser. No. 12,003

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1976, 2635731

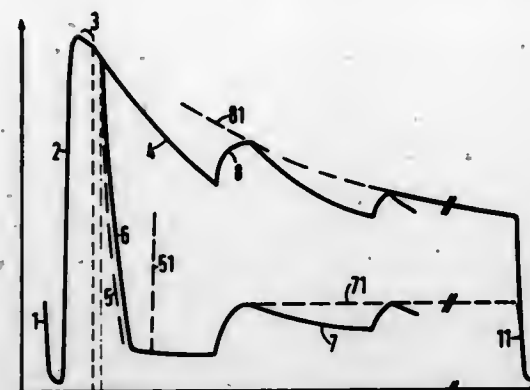
Int. Cl.³ G03G 15/00

U.S. Cl. 355—3 R

9 Claims

7. A method of electrophotographically reproducing copies of a document having a drum with a layer on its surface capable of storing charges and having photo-conductive properties and exhibiting an absorption border, said method comprising spraying Corona charge onto said layer of said drum surface to charge it during each revolution of said drum, exposing a document once during a first revolution of the drum with

energy having a longer wave length than said absorption border to form a latent image on said layer, and printing a plurality



of copies of said document from said latent image with one copy being formed during each succeeding revolution of said drum.

4,244,647

ERASING DEVICE FOR IMAGE TRANSFER TYPE COPYING APPARATUS

Takao Fujiwara, Toyokawa, and Yoshitaro Furukawa, Toyokashi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

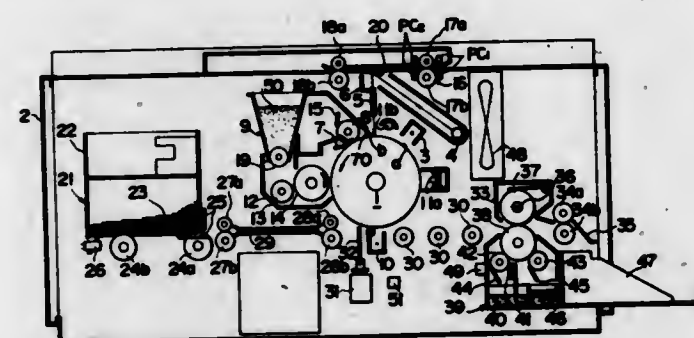
Filed Mar. 23, 1979, Ser. No. 23,249

Claims priority, application Japan, Apr. 7, 1978, 53-46020[U]

Int. Cl.³ G03G 15/00

U.S. Cl. 355—14 R

6 Claims



1. In an image transfer type copying apparatus which includes an image exposure means having an exposure lamp for successively projecting an image of the original onto a photosensitive member and means disposed around said photosensitive member including a charging means for charging the surface of the photosensitive member and remaining operative subsequent to the formation of a latent image thereon, a developing means for developing an electrostatic latent image, an image transfer means for transferring the developed image onto a copying member and cleaning means for cleaning the residual toner, the improvement comprising an erasing means for erasing unnecessary charges formed by said charging means, and a control means therefor wherein said control means energizes said erasing means while said exposure lamp is still lit, said exposure lamp being effective to remain energized even after completion of exposure of the image, and said erasing means is energized when the trailing edge of the latent image reaches a position not influenced by said erasing means.

4,244,648

MISFEED DETECTOR FOR COPY MACHINE

Max Schultze, Old Tappan, N.J., and Dietmar Eberlein, New City, N.Y., assignors to Savin Corporation, Valhalla, N.Y.

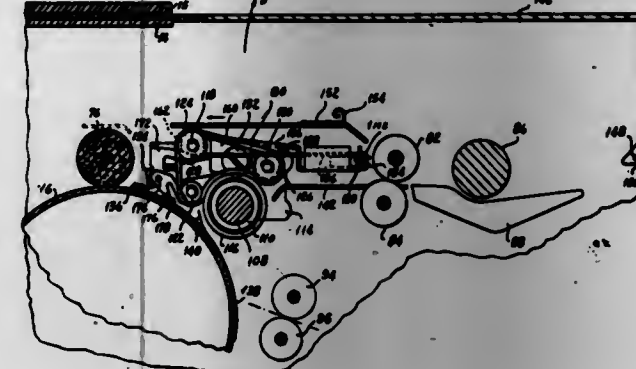
Continuation of Ser. No. 805,836, Jan. 13, 1977, abandoned.

This application May 30, 1979, Ser. No. 43,755

Int. Cl.³ G03G 15/00

U.S. Cl. 355—14 SH

16 Claims



1. In a copying machine of the type in which a surface carrying a developed image is moved successively past a first station at which a length of copy material is fed to said surface for movement therewith and past a second station at which said image is transferred to said copy material and past a third station at which a pick-off means is adapted to lift a leading edge portion of said length off said surface to pick said length off said surface and past a fourth station at which a cleaning element acts on said surface, apparatus including a misfeed detector element formed with a recess opening in a direction opposite to the direction of movement of said surface for receiving the leading edge of a length of copy material and means mounting said misfeed detector element adjacent to said surface at a location between said third and fourth stations with a portion thereof leading into said recess resting on said surface in normal operation of said machine to intercept the leading edge of a length of copy material which has not been picked off by said pick-off means to direct said leading edge into said recess, and to prevent movement of said length of copy material to said cleaning station.

4,244,649

OPTICAL SYSTEM FOR PROVIDING VISUAL AID FOR PROPER MAGNIFICATION SELECTION

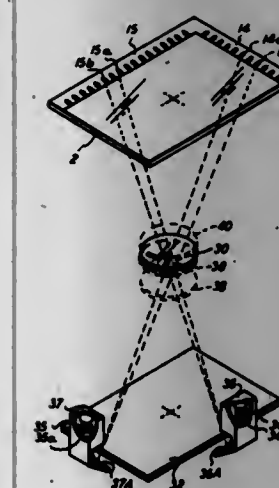
James D. Rees, Pittsford; David N. Redden, Penfield; Craig A. Smith, Pittsford, and Paul H. Stiebitz, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 24, 1979, Ser. No. 41,850

Int. Cl.³ G03B 27/52

U.S. Cl. 355—61

9 Claims



1. In a full-frame copying system having magnification capabilities, an optical system which includes means for selecting

appropriate magnification ratios for projection of a document onto selected size copy sheets comprising:

- a platen for supporting the document to be copied, said platen having a translucent registration guide along two registration edges;
- means for projecting an image of said document onto an image plane;
- means for varying the magnification of said projected image; and
- means on the image side of said projecting means for creating line images at said image plane and transmitting said images through said projection means onto said registration guides, the location of said line images varying in response to said magnification variance whereby the position of said line pairs on said guides provides a visual indication of the dimensions of a document which can be copied onto the copy sheet in use at the instant magnification.

4,244,650

AUTOMATIC OPTICAL INSPECTION AND SORTING

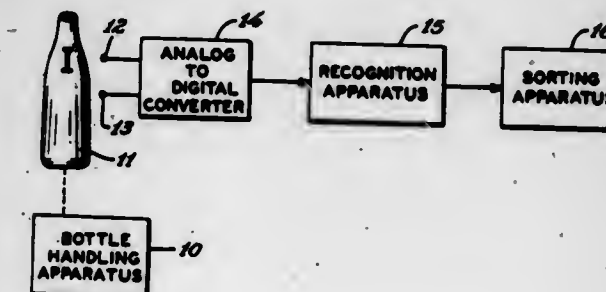
James H. Garfunkel, Mound, and Kenneth P. Koeneman, Lakeville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 20, 1978, Ser. No. 898,221

Int. Cl.³ G06K 9/38, 9/82, 9/46; G01B 11/00

U.S. Cl. 356—71

4 Claims



1. Pattern recognition apparatus comprising:

- optical sensor means detecting reflected light from the surface of goods having a pattern to be identified, the sensor means scanning a line across the goods as the goods pass in front of the sensor means, the light reflected from the pattern of the passing goods providing an analog signal pattern output from said sensing means which analog signal pattern is characteristic of the pattern sensed;
- means for sampling the analog signal pattern at predetermined increments of movement of the goods and means converting each said signal sample to a digital bit;
- means for temporarily storing the digital bits representing the signal pattern from said goods, said temporarily stored digital signal containing information which can be expressed as signal peaks, area under the curve of the digital signal, gap in the signal, and vertical excursions of the digital signal from one bit to the next;
- means for counting the number of peaks of the digital signal;
- means for determining the area under the curve of the digital signal;
- means for determining the largest gap in the digital signal, where gap is defined as the number of consecutive data points at a signal level of less than a predetermined digital number;
- means for summing the total of the positive and negative vertical excursions of the digital signal, the sum being referred to as sigma;
- means for dividing the area value by the sigma value to obtain a value Y; and,
- means for comparing the number of peaks, the area, the largest gap, and the value Y with prestored information characteristic of each pattern type to be recognized.

4,244,651

IMPERSONAL EYEPIECE FOR ASTRONOMIC POSITIONING

Edward F. Roof, 2205 Montgomery Ave., Woodbridge, Va. 22191

Filed Feb. 21, 1979, Ser. No. 13,108

Int. Cl. G01C 1/00

U.S. Cl. 356-142

28 Claims



1. An astronomical positioning apparatus of a type wherein an optical viewing device is used to continuously produce a source image of a celestial object to observe the object and the position of said celestial object is measured periodically once each period T for a time interval t, comprising: projection means for superimposing the image of a spatial reference pattern reticle on said source image during said time intervals to display the position of said celestial object with respect to said reference reticle image during said time intervals.

4,244,652

FERROELECTRIC LENGTH MEASURING AND MOVING TARGET TRANSDUCER WITH MEMORY

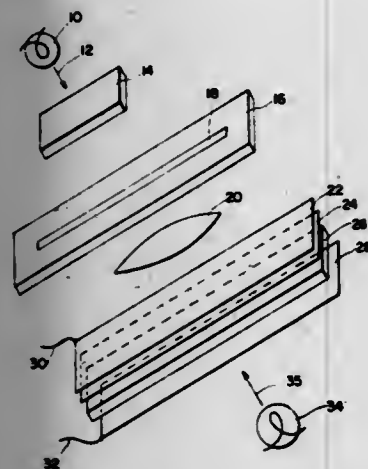
J. Louis Berger, Alexandria, Va., and L. Eric Cross, State College, Pa., assignors to the United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 6, 1978, Ser. No. 958,071

Int. Cl. G01B 11/02, 11/00

U.S. Cl. 356-383

10 Claims



1. Apparatus for measuring the length of an object having finite length and width dimensions, said apparatus comprising in combination:

- (1) a ferroelectric transducer having storage memory characteristics and having a high resistive impedance in the absence of light, which resistive impedance decreases responsive to incident light energy, said transducer including an assembly of
 - (a) an elongated ferroelectric substrate having a longitudinal axis;
 - (b) a photoconductive coating bonded to the upper side of said substrate;
 - (c) first transparent conductive coating means bonded to the upper side of said photoconductive coating; and
 - (d) second transparent conductive coating means bonded to the underside or lowerside of said substrate;
- (2) a d.c. voltage source;
- (3) means for electrically connecting said first and second transparent conductive coating means across said d.c.

voltage source, said means including capacitive output impedance means;

- (4) means for deriving an output signal responsive to image-responsive voltage produced by said ferroelectric substrate across the capacitance impedance;
- (5) said ferroelectric substrate being inherently responsive to light energy from a related selected light source for producing light energy to activate said ferroelectric transducer;
- (6) means for focusing light energy from the selected light source upon a selected one of said transparent coatings;
- (7) a slotted opaque plate disposed between the selected transparent conductive coating means and the selected light source, said plate having at least one elongated narrow slot having a width less than the width of the object being measured and having a length greater than the object being measured;
- (8) said apparatus adapted to introduce a dimensionally defined object to be measured between the selected light source and at least one slot of said slotted opaque plate, and whereby the longitudinal axis of the elongated ferroelectric substrate is generally parallel to and in alignment with a corresponding longitudinal axis of the slot in said opaque plate.

4,244,653

COLOR DETECTING DEVICE FOR COLOR PRINTER

Eiichi Asai; Fumio Matsumoto, and Takaaki Terasita, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

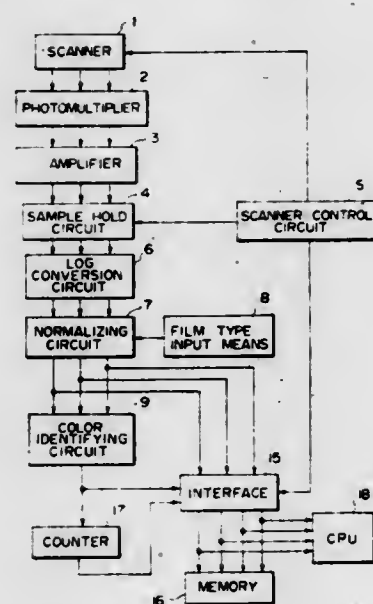
Filed May 22, 1978, Ser. No. 908,450

Claims priority, application Japan, May 25, 1977, 52/60830

Int. Cl. G01J 3/46; G03B 27/78

U.S. Cl. 356-404

5 Claims



1. A color detecting device for determining whether or not a particular color is included in a color negative comprising a color density measuring means which measures the red, green and blue densities of a plurality of points on a color negative, a normalizing means which normalizes the measured densities to correct their values in accordance with the gamma value and sensitivity of the negative, and a color identifying means which determines whether or not the normalized color densities fall within a predetermined range in a chromaticity coordinate system when plotted therein, said particular color being defined by said region and said chromaticity coordinate system being a two or three dimensional coordinate system the axes of which represent the red, green and blue densities or combinations thereof.

4,244,654

COLOR DETECTING DEVICE FOR COLOR PRINTER

Eiichi Asai; Kazuo Shiota, and Taiso Akimoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

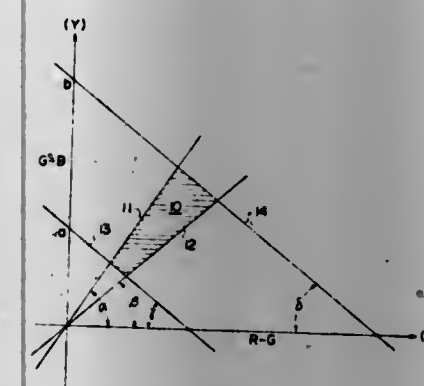
Filed May 22, 1978, Ser. No. 908,451

Claims priority, application Japan, May 25, 1977, 52/60831

Int. Cl. G01J 3/46; G03B 27/78

U.S. Cl. 356-404

9 Claims



1. A color detecting device for determining whether or not a particular color is included in a color negative comprising a color density measuring means which measures the red, green and blue densities of a plurality of points on a color negative, a normalizing means which normalizes the measured densities to correct their values in accordance with the gamma value and sensitivity of the negative, and a color identifying means which determines whether or not the normalized color densities fall within a closed region in a color chromaticity coordinate system of two dimensional type the axes of which represent the combinations of the red, green and blue densities, said closed region defining said particular color.

4,244,655

COLOR DETECTING DEVICE FOR COLOR PRINTER

Eiichi Asai; Kazuo Shiota; Koji Takahashi, and Taiso Akimoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

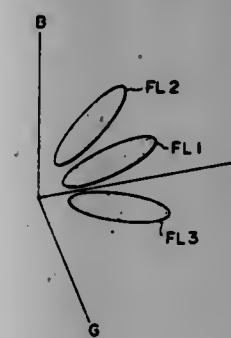
Filed May 22, 1978, Ser. No. 908,452

Claims priority, application Japan, May 25, 1977, 52-60832

Int. Cl. G01J 3/46; G03B 27/78

U.S. Cl. 356-404

12 Claims



1. A color detecting device for determining whether or not a particular color is included in a color negative comprising a color density measuring means which measures the red, green and blue densities of a plurality of points on a color negative, a normalizing means which normalizes the measured densities to correct their values in accordance with the gamma value and sensitivity of the negative, and a color identifying means which determines whether or not the normalized color densities fall within an ellipsoid in a three-dimensional chromaticity coordinate system, the axes of the three-dimensional chromaticity coordinate system representing the red, green and blue densities, said particular color being defined by the ellipsoid which is represented by the following formula

$$dS^2 = C_{11}dB^2 + 2C_{12}dBdG + C_{22}dG^2 + 2C_{23}dGdR + C_{33}dR^2 + 2C_{31}dRdB$$

wherein

$dB = B - B$

$dG = G - G$

$dR = R - R$

B: blue density of measured point

G: green density of measured point

R: red density of measured point

B: average blue density

G: average green density

R: average red density

$C_{11}, C_{12}, C_{22}, C_{23}, C_{33}, C_{31}$: constants

said color identifying means calculating dS^2 for a measured point by putting the normalized red, green and blue densities into the formula, and comparing the calculated dS^2 with a predetermined constant K, whereby the measured point is determined to have the particular color when the calculated dS^2 is not larger than K.

4,244,656

APPARATUS FOR CONTACTING LIQUIDS AND SOLIDS WITH LIQUIDS

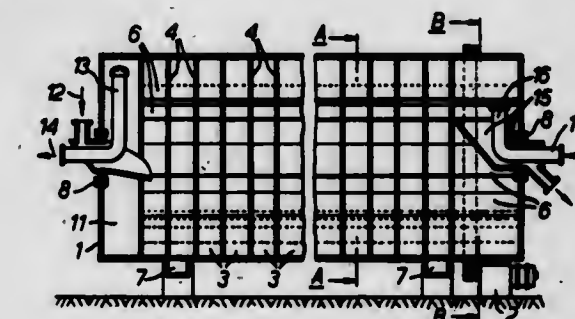
Theodor J. M. Hohlbaum, Ilford, England, assignor to RTL Contactor Holding S.A., Switzerland

Filed Nov. 29, 1978, Ser. No. 964,507

Int. Cl. B01F 9/06

U.S. Cl. 366-180

9 Claims



1. A contactor for continuously contacting at least two streams, passing therethrough in substantially separate phases, said contactor comprising

- (a) a drum mounted for rotation about its axis;
- (b) means for causing rotation of said drum;
- (c) a plurality of axially spaced discs secured within said drum and dividing said drum interior into a series of compartments;
- (d) openings closely adjacent said drum and between the peripheries of said discs and said drum through which said separate phases can pass along said drum from compartment to compartment;
- (e) a plurality of receptacles within each of at least some of said compartments; located adjacent said drum; and arranged to rotate with said drum and to cause intermingling of said phases;
- (f) means for introducing said streams separately into said drum; and
- (g) means for discharging said streams separately from said drum.

4,244,657

FONT AND METHOD FOR PRINTING CURSIVE SCRIPT

Thomas M. Wasyluk, Honesdale, Pa., assignor to Zaner-Bloser, Inc., Columbus, Ohio

Filed Jun. 8, 1978, Ser. No. 913,564

Int. Cl. B41J 3/06

U.S. Cl. 400-109

10 Claims

8. A method of printing educationally correct cursive written material having preceding, succeeding and following characters of the English alphabet which are formed from a plural-

ity of groups, of different letters of the alphabet having the same distinctive beginning strokes, comprising:

- providing a plurality of discrete letter character forms of the same letter of the English alphabet having connector elements which come to indistinguishably meet with the distinctive beginning strokes of adjacent letters in printed words of the cursive written material,
- selecting from the plurality of discrete character forms, on the basis of and with discrimination as to the form of

TYPE	LEADER	CHARACTERS
DOWN CURVE		a d g q
MINIMUM UNDERCURE	-	u f p v r w u
STEEP DOWN CURVE		o c
OVERCURE	-	m n x y z
MAXIMUM UNDERCURE	-	b f h k l
SHORT UNDERCURE	-	ll
CHECK STROKE	-	ll

the beginning strokes, a succeeding character having an extending character element of matching form with the character that will follow the letter being selected.

- positioning said succeeding character form adjacent to said preceding character form with the connector of said preceding character in indistinguishable contacting position on said succeeding character, and
- successively printing said character forms to produce printed cursive writing with indistinguishable connections in ligature.

4,244,658

DOT PRINTER HEAD

Masahiko Mori, Shiojiri, Japan, assignor to Kabushiki Kaisha Sawa Seikosha, Tokyo, Japan

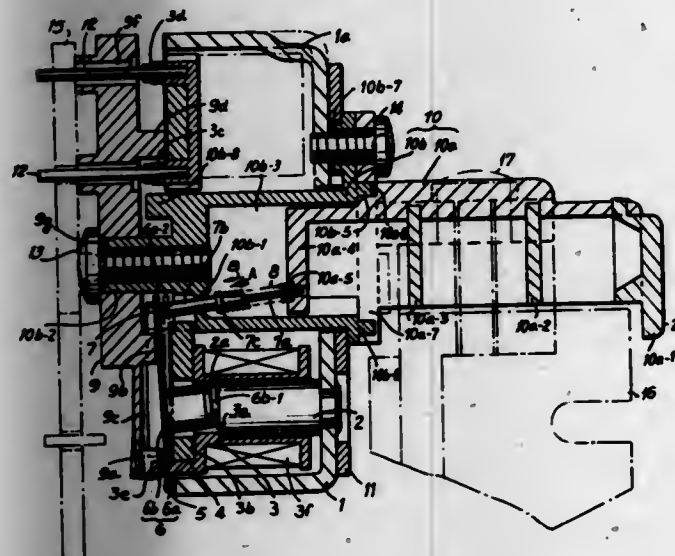
Filed Feb. 1, 1979, Ser. No. 8,637

Claims priority, application Japan, Feb. 1, 1978, 53-10905

Int. Cl.³ B41J 3/12

U.S. Cl. 400-124

10 Claims



1. A dot printer head comprised of:

- a first yoke, having a first magnetically permeable core fixed thereon;
- a coil frame, said coil frame having an opening in one surface and receiving said first core therein, said opening having a stepped portion, one end surface of said magnetic core being in abutment with said stepped portion and said coil frame having a fulcrum projection extended therefrom;
- a coil, said coil being wound on the outer periphery of said coil frame, said coil being proximate said first yoke and first core, electrically energizing said coil inducing a mag-

netic field in said first core, and de-energizing said coil extinguishing said magnetic field;

- a lever, said lever having a curved segment proximate one end, said curved segment having an aperture there-through, said fulcrum projection of said coil frame being inserted through said aperture disposed in said curved segment to form a fulcrum for pivoting said lever;
- a second magnetically permeable core fixedly attached to said lever, said second core being within said magnetic field of said first magnetic core, and being attracted toward said first core when said coil is energized;
- a second yoke, said second yoke abutting on a surface of said coil frame opposite to said surface having said opening in which said first core is inserted;
- a needle, said needle contacting the other end of said lever, said needle being substantially longitudinally driven;
- guide means for directing the longitudinal path of said needle when driven;
- restraining means, said restraining means including a hold portion, stop portion and flexible segment, said hold portion constraining said curved segment, said stop portion limiting the return travel of said lever when said coil has been de-energized after printing;
- return means for moving said lever and for maintaining contact between said needle and said lever when said coil is de-energized;
- whereby said lever pivots and said needle is driven along a guided path for printing when said coil is energized.

4,244,659

KEYBOARD ARRANGEMENT

Lillian G. Malt, Quirral House, Thursley, Surrey, England

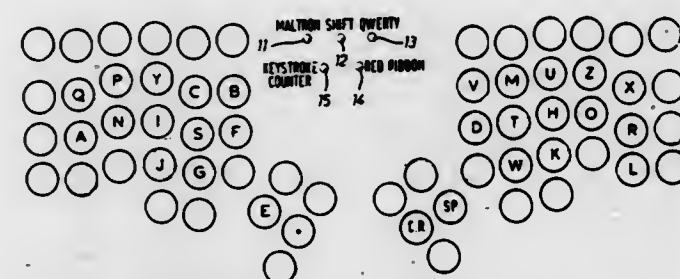
Filed May 31, 1978, Ser. No. 911,251

Claims priority, application United Kingdom, Jun. 1, 1977, 23308/77

Int. Cl.³ B41J 5/10

U.S. Cl. 400-486

14 Claims



1. An input keyboard for the transfer of information to a machine by a human operator comprising:

- a plurality of keys arranged for operation by the operator's fingers on both hands in at least three rows, the center of said three rows containing in order from the left as viewed by the operator keys to operate at least the letters A, N, I, S, F, D, T, H, O and R, the upper row of said three rows containing in order from the left as viewed by the operator keys to operate at least the letters Q, P, Y, C, B, V, M, U, Z and X, the lower of said three rows containing in order from the left as viewed by the operator keys to operate at least the letters J, G, W, K, and L, and a plurality of keys arranged for operation by the operator's thumbs, keys for E and the full stop (period) symbol being arranged for operation by the operator's left thumb and keys for the carriage return and spacing operations being arranged for operation by the operator's right thumb.

4,244,660

CONTAINING MARKERS IN INTERLEAVED RELATIONSHIP

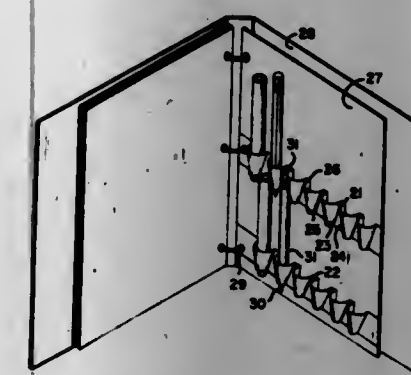
George L. Aronson, 500 Governor's Dr., Winthrop, Mass. 02152

Filed Jun. 27, 1979, Ser. No. 52,542

Int. Cl.³ B42D 3/12; B65D 85/28

U.S. Cl. 402-79

11 Claims



1. A marking instrument container comprising, first and second strips of supporting material each having first and second pockets with sides formed from flexible material and a third pocket provided between said sides, and carrier means comprising opposed first and second sheets affixed so that they may be opened apart and closed together for mounting said strips thereon, said first and second strips being attached to said first and second sheets respectively so that said first pocket on said first strip is received in said third pocket on said second strip when said sheets are closed together.

4,244,661

FASTENER MEANS AND JOINT FOR LAMINATES

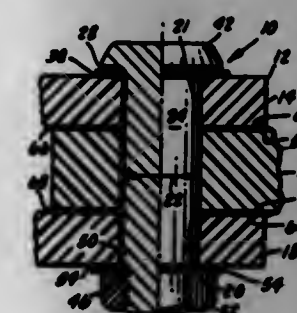
Aram J. Derry, Santa Monica, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 23, 1979, Ser. No. 59,535

Int. Cl.³ F16B 9/00

U.S. Cl. 403-243

8 Claims



1. A structural joint including:

- a first structural member constructed from composite material, said first structural member defining a bore of predetermined inner diameter therethrough;
- a second structural member, said second structural member defining a cylindrical bore therethrough having a predetermined inner diameter, said first and second structural members being positioned so that said bores of said first and second structural members are axially aligned;
- a sleeve having a hollow cylindrical portion with an inner and outer diameter, first and second ends, a flange on said first end thereof and a longitudinal slit through said hollow cylindrical portion and said flange thereof, said sleeve being inserted in said cylindrical bore of at least said first structural member; and
- a fastener having a cylindrical shank of predetermined diameter positioned in said sleeve, said predetermined diameter of said cylindrical shank being sized to expand said sleeve into interference fit with said cylindrical bore of a least said first structural member.

4,244,662

SNOW GROOMER

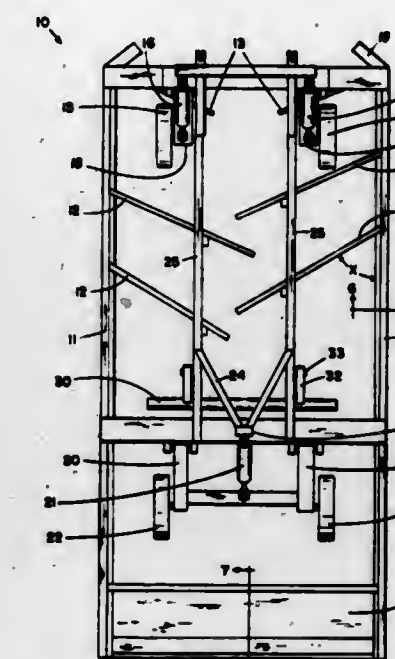
James L. Olson, 16823 Judicial Rd., Lakeville, Minn. 55044

Filed Jun. 7, 1979, Ser. No. 46,423

Int. Cl.³ E01C 19/22

U.S. Cl. 404-118

9 Claims



1. A snow grooming device for leveling a snowmobile trail comprising:

- a frame having a front section and a back section, said frame including a pair of outer sections forming a set of side members operable to function as a runner, said set of side members having sufficient strength to withstand an impact from an obstruction located along the side of a trail as said snow grooming device is pulled along a snowmobile trail with obstructions located therealong;
- a set of retractable wheels connected to said frame; said retractable wheels located inside said set of side members to thereby prevent said set of retracting wheels from engaging an obstruction along the side of the trail, said set of retractable wheels operable to permit raising and lowering of said frame;
- a plurality of cutting and compacting blades, each of said cutting and compacting blades connected to said frame, said plurality of cutting and compacting blades angled toward said back section of said frame so that snow displaced by said plurality of cutting and compacting blades is directed toward the back section of said frame, said cutting and compacting blades having a cutting edge for grooming snow;
- at least one cutting and compacting blade extending inward from opposite sides of said frame, said cutting and compacting blades having sufficient length to direct snow over half way across said frame yet sufficiently short so as not to direct the snow outside of said frame, said plurality of cutting and compacting blades staggered to thereby coact to direct snow from said set of side members to the center of said groomer to thereby permit the snow to fill in holes in the trail with excess snow directed to a leveler in said groomer;
- a leveler connected to said frame, said leveler located rearward of said plurality of cutting and compacting blades, said leveler operable to deflect and divert excess snow from said cutting and compacting blades over an extended area to thereby spread the snow within the confines of said frame to enable compacting of the spread snow; and
- a compactor operatively related to said frame for compacting the snow as it discharges from said leveler.

4,244,663

APPARATUS FOR RESTRICTING PIPE MOTION

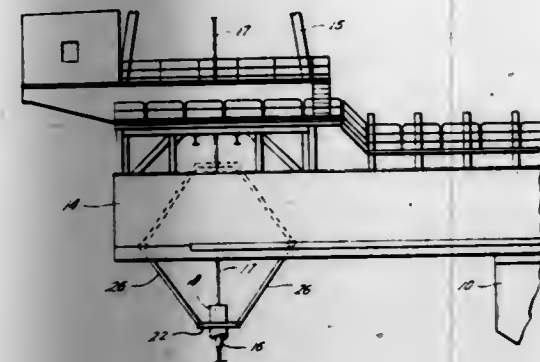
Stephen M. Croghan, Houston, Tex., assignor to Marathon Manufacturing Company, Houston, Tex.

Filed Dec. 26, 1978, Ser. No. 973,155

Int. Cl.³ E02D 21/00

U.S. Cl. 405—195

12 Claims



1. A restricting assembly adaptable to be mounted on a marine vessel for restricting the lateral movement of a pipe column extending upward from the bottom of a body of water to a point above the surface of the water, said restricting assembly comprising:

- a restricting frame;
- rigid suspension means for pivotally suspending said restricting frame from the vessel; and
- bracing means carried by the restricting frame for interconnecting said restricting frame and said rigid suspension means for restricting the lateral movement of the restricting frame;
- said restricting frame and its rigid suspension means being pivotally adjustable to a stowed position on the vessel when the restricting frame is not in use.

4,244,664

METHOD AND APPARATUS FOR ON-SITE TREATMENT OF MUD AND SILT

Jean-Claude Duverne, 18, rue des Processions, Linas, F 91310 Montlhéry, Essonne, France

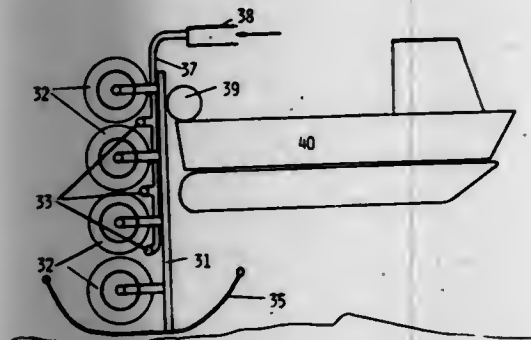
Filed Feb. 22, 1979, Ser. No. 14,134

Claims priority, application France, Feb. 22, 1978, 78 05008; Jan. 5, 1979, 79 00205

Int. Cl.³ E02D 3/12

U.S. Cl. 405—263

12 Claims



1. A method for on-site treatment of mud and silt by a mixing process with simultaneous injection of a reagent for the purposes of stabilization and solidification, the method comprising breaking up of a first vertical section of a given width of the soil by a continuous forward-moving mixing process down to a given depth while simultaneously injecting said reagent forwardly into said soil until said first section is completed, initiating treatment of a second adjacent section in the same manner and disposed adjacent said first section while said first section is in the process of hardening, and completing subse-

quent sections in the same manner until the entire area to be treated is mixed to the desired depth.

3. Apparatus for on-site treatment of mud and silt by mixing them in a continuous feed with a simultaneous injection of a reagent product in order to stabilize and solidify said mud and silt comprising a chassis supporting a row of parallel mixers and a set of injector tubes having several openings, said openings facing forward and disposed along the length of said injector tubes, each injector tube disposed between two mixers and adapted for the discharge of said reagent through said openings, each mixer comprising endless auger type screw which can be rotated in either direction by an independent motor, said endless screw when rotated being longitudinally immobile, said screw designed to create longitudinal movement of the soil to facilitate complete mixture with said reagent, and said apparatus being adapted for vertical or horizontal operation.

4,244,665

STRUCTURAL ELEMENT SYSTEM

Herwig Neumann, Herrenberger Str. 39, 7031 Hildrizhausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 682,014, Apr. 30, 1976,

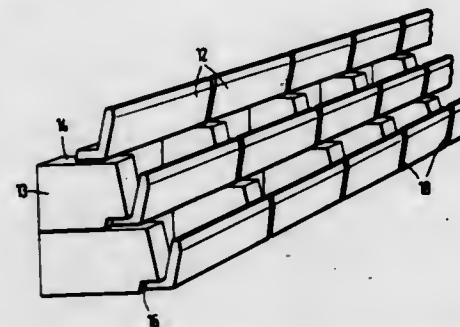
abandoned. This application Apr. 24, 1978, Ser. No. 899,399

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1977, 2718290

Int. Cl.³ E02D 29/02

U.S. Cl. 405—286

15 Claims



1. A structural element system for the erection of plant accommodating, slope retaining walls comprising
 - (a) a plurality of substantially L-shaped longitudinal elements arranged in multi-level relationship having a horizontally extending base plate and an upwardly extending parapet forming the front of the wall and providing plant growth medium support surfaces, and
 - (b) a plurality of section support elements acting as vertical partitions along said longitudinal elements, extending horizontally in a direction perpendicular to the direction of said longitudinal elements and extending into the slope to be retained,
 - (c) said section support elements having upper and lower mounting surfaces adapted to be stacked one upon the other,
 - (d) each of said section support elements being provided with a recess which is open to the front, into which the base plate of the longitudinal elements extends, the longitudinal elements being supported by said support elements, whereby the shearing forces of the earth slope along the wall are sectioned by the vertical partitions and by the base plates of said longitudinal elements,
 - (e) each of said section support elements being further provided with a front flange extending from said section support element forwardly of said parapet and adjacent the recess for transmitting the horizontal slope stresses exerted on said longitudinal elements back to said section support elements.

4,244,666

PIN LOCK TOOL HOLDER

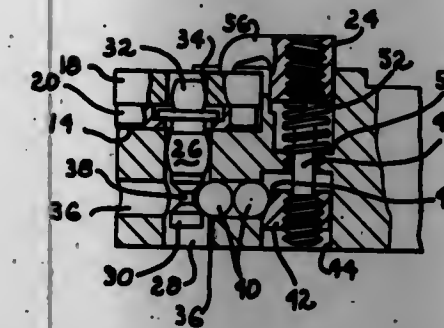
Robert A. Erickson, Ligonier; Ernest J. Friedline, and Donald W. Warren, both of Latrobe, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation-in-part of Ser. No. 894,729, Apr. 10, 1978, abandoned. This application Jun. 11, 1979, Ser. No. 47,648

Int. Cl.³ B26D 1/12

U.S. Cl. 407—105

21 Claims



1. In a tool holder having an insert receiving pocket for supporting an insert, the pocket having at least a side wall and bottom wall, a pin receiving bore extending in the tool holder through the bottom wall of the pocket, a pin having one end portion disposed in the bore and another end portion for engaging a center hole in a cutting insert, the pin having a region between the end portions thereof closely fitting with a side of said bore while the portions of said pin on opposite sides of said region have clearance in the bore so that the pin is tiltable in the bore about said region, a recess communicating with said bore near said one end portion of said pin, spherical elements in said recess contacting said one end of said pin, and means for moving said spherical element so as to tilt said pin in said bore and clamp a cutting insert in said pocket, the improvement which comprises: said pin having a groove cut around said one end portion and positioned on said pin so as to register with said recess when said pin is disposed in said bore, said means for moving said spherical elements comprising linearly slidable cam means located in a hole in said tool holder, said recess and said spherical elements communicating with said hole and a first position of said cam means tilting said pin into clamping position and a second position tilting said pin out of clamping position, and said slidable cam means having means connecting a top clamp such that said top clamp firmly presses down on the top of the insert in the pocket when said pin is tilted into clamping position.

4,244,667

BORING TOOL

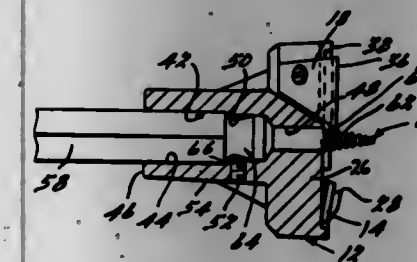
Russell M. Timmons, Latherville, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 28, 1979, Ser. No. 79,857

Int. Cl.³ B23B 51/00

U.S. Cl. 408—201

17 Claims



1. In a boring tool for boring relatively large diameter openings in a workpiece comprising a body, a driving shaft operative to rotationally drive said body, and self-feeding means extending axially outwardly from one side of said body, said self-feeding means being operative to engage said workpiece and to draw said boring tool therethrough a predetermined

distance in response to each revolution of said boring tool, said body further having a cutting edge provided thereon operative to shear material from said workpiece, said cutting edge being axially spaced from said one side of said body a distance substantially equal to said predetermined distance whereby said cutting edge is operative to provide a depth of cut substantially equal to the axial distance said boring tool advances in response to each revolution and said cutting edge and said self-feeding means cooperate to provide a synchronized feed rate.

4,244,668

APPARATUS FOR FORMING INTERNAL TEETH AT LARGE WORKPIECES AT A GEAR SHAPER

Walter Demuth, Wallisellen, Switzerland, assignor to Mang Gear-Wheel & Machine Co., Ltd., Zürich, Switzerland

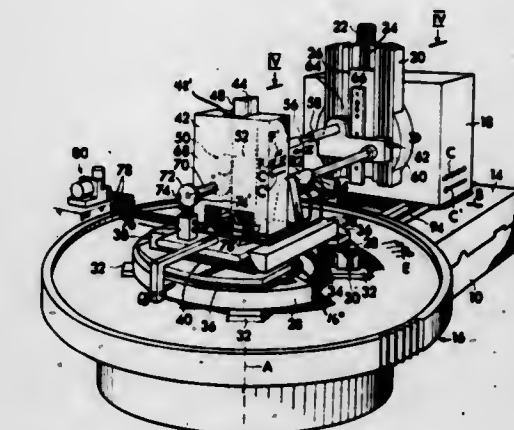
Filed May 14, 1979, Ser. No. 38,624

Claims priority, application Switzerland, Jun. 2, 1978, 6063/78

Int. Cl.³ B23F 1/04, 5/12

U.S. Cl. 409—46

12 Claims



1. An apparatus for forming internal teeth at large workpieces at a gear shaping machine, comprising:
 - a machine bed;
 - a workpiece table for chucking a workpiece having a workpiece axis arranged at said machine bed;
 - stand means arranged at said machine bed;
 - said workpiece table and stand means being relatively rotatable with respect to one another and relatively advanceable with respect to one another;
 - said stand means comprising guide means;
 - a plunger;
 - a plunger drive for moving said plunger to-and-fro along said guide means;
 - an auxiliary stand;
 - bearing means substantially coaxially secured at the workpiece for mounting said auxiliary stand to be rotatable about the workpiece axis and radially shiftable with respect thereto;
 - an auxiliary plunger arranged at said auxiliary stand;
 - auxiliary stand guide means for guiding said auxiliary plunger;
 - bridge means operatively coacting with said plunger and said auxiliary plunger; and
 - said auxiliary plunger being driven by said plunger through the agency of said bridge means such that said auxiliary plunger moves along said guide means of said auxiliary stand back and forth in the tooth lengthwise direction of the internal teeth of the workpiece.

4,244,669

CUTTER HEAD FOR CUTTING TEMPLATES FROM CARDBOARDS, PLASTICS, AND THE LIKE

Wolfgang Puritz, Buxtehude, and Gerhard Voss, Hamburg-Schenefeld, both of Fed. Rep. of Germany, assignors to Aristowerte Dessert & Pape KG (GmbH & Co.), Hamburg, Fed. Rep. of Germany

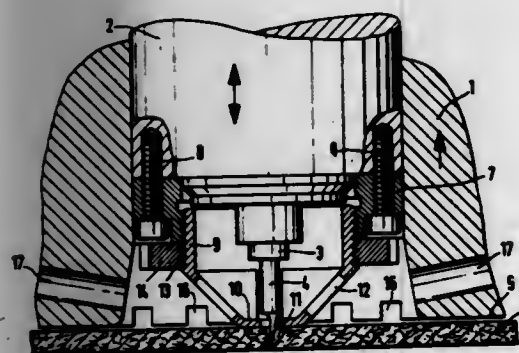
Filed Jan. 15, 1978, Ser. No. 915,620

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728794

Int. Cl.³ B23C 5/02, 5/26

U.S. Cl. 409—137

1 Claim



1. A cutter head for cutting templates from plastic and cardboard material in accordance with electronically controlled programs, the cutter head comprising:
 - support means positioned in spaced relation to the material and having a bore therethrough;
 - spindle means axially moveable in the bore for engaging the cutter head with the material;
 - a cutting stylus mounted at one end of said spindle for rotation with respect thereto, said cutting stylus having a cylindrical shank portion defining an axis of rotation and a cutting blade portion, said cutting blade portion defined over half of its circumference by a conical surface sloped at about thirty degrees with respect to the axis, generated about a base of about three millimeters and intersected by a planar surface extending at an angle of about six degrees with respect to the axis of the cutting stylus to form cutting edges, said planar surface intersecting said conical surface at a point before the geometric apex of the conical surface, and said cutting blade portion having a length of about six millimeters;
 - means for rotatably holding the stylus with respect to the spindle means, said holding means being attached to the cylindrical shank portion;
 - a foot having a cylindrical bore therethrough closely complementing and extending over a length of the cylindrical shank portion of the stylus for stabilizing the stylus as the stylus rotates in the bore; said foot having a bottom surface surrounding and adjacent to the cutting blade portion of the stylus and extending away from the cutting blade over a relatively small area for holding the material as the material is cut inside of the area; said foot further having a portion for connecting the bottom surface to the axially moveable spindle, said connecting means having radial openings through which cutting scraps pass, and
 - means in said support means for carrying away cutting scraps that pass through the radial openings in the connecting means.

4,244,670

CONTAINER TIE DOWN

Frederick Pidcock, Kirkhill, Great Britain, assignor to Whirly Bird Services Limited, Aberdeen, Great Britain

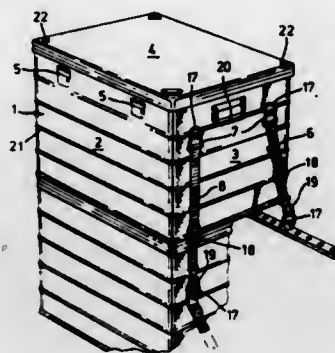
Filed May 29, 1979, Ser. No. 43,499

Claims priority, application United Kingdom, May 31, 1978, 25395/78

Int. Cl.³ B60P 7/08; B61D 45/00; B65D 63/00

U.S. Cl. 410—103

1 Claim



1. A cargo-carrying container of a size to be readily manhandled having two opposite end walls, a cargo tie-down device forming a releasable fastening mounted on the outer side of each end wall, each said tie-down device comprising an eye bolt fastened to the end wall having means for fastening a hook thereto and a flexible strap tension member mounted at one end on each end wall by said eye bolt and extending from such end wall to a free end of the strap tension member, and a releasable fastening hook member on the free end of each strap tension member, the hook member being complementary to the hook fastening means of the eye bolt in forming a releasable fastening with a similar eye bolt of the tie-down devices of a similar container underlying the first-mentioned container, wherein the eye bolt hook fastening means is a rigid ring member supported by the eye bolt, each of said flexible strap tension members is a strap including buckle means for adjustment of the effective length of the strap, and said hook member on the free end of the strap includes a spring-loaded latch for releasably closing the hook when assembled with one of said ring members.

4,244,671

MECHANISM FOR DESTACKING AND DISCHARGING NESTED ARTICLES

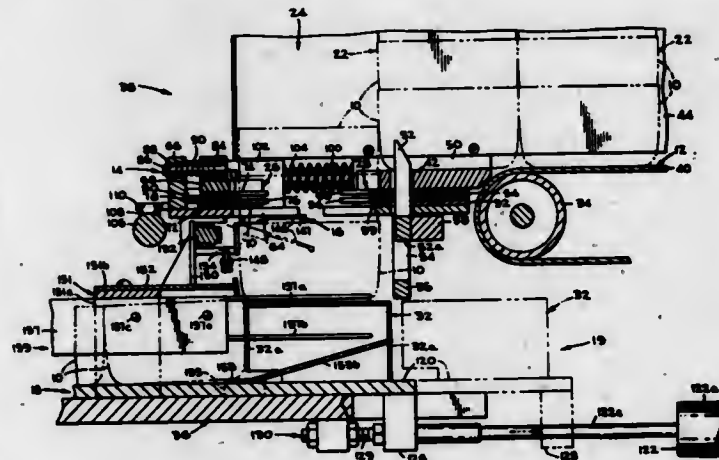
Franklin J. Sera, San Jose, Calif.; William V. Gonda, Homer City, and Robert E. McDowell, Indiana, both of Pa., assignors to FMC Corporation, San Jose, Calif.

Filed Jul. 5, 1978, Ser. No. 922,130

Int. Cl.³ B65G 59/10

U.S. Cl. 414—128

7 Claims



1. Stripper mechanism in a destacking machine having a frame and having a base shiftable with respect to said frame, said stripper mechanism adapted to dislodge the end article in

a nested stack which is held by a clamp mechanism engaging said stack beyond said end article, said stripper mechanism having actuating member and having article-engaging members to engage the end article for dislodgment thereof on operation of said actuating member, the improvement wherein said actuating member is mounted on said base and said base is shiftable toward and away from said stack, said article-engaging members pivotally mounted on said actuating member in spaced apart relation to straddle said stack, means to bias said article-engaging members together to engage the stack when said base is advanced toward the stack, and stop means mounted on the frame to engage said article-engaging members on retraction of said base from the stack to force said article-engaging members apart.

4,244,672

SYSTEM FOR SEQUENCING ARTICLES INCLUDING MAIL

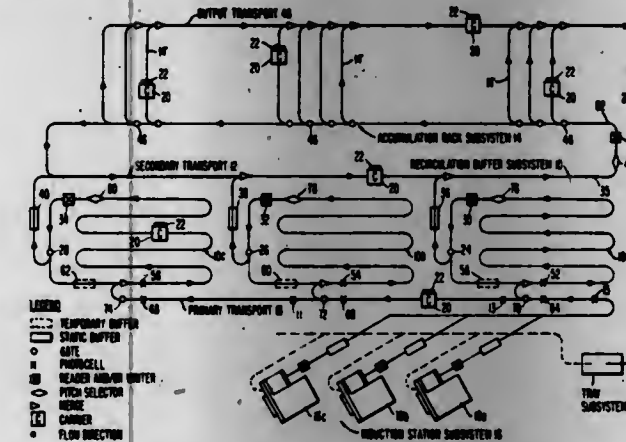
George E. Lund, Berwyn, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 4, 1979, Ser. No. 45,438

Int. Cl.³ B65G 43/00

U.S. Cl. 414—134

10 Claims



1. A system for sequencing articles including mail comprising in combination:
 - carriers coupled to said articles for providing support therefor and remaining therewith throughout the operation, escort memory means attached to each of said carriers and adapted to receive information regarding at least the destination route and stop to which the article is to be delivered;
 - an induction station subsystem including write station means for storing said information in the escort memory means of each of said carriers;
 - a recirculation buffer subsystem comprised of at least one recirculating buffer for circulating carriers bound for random routes and stops, thereby providing temporary storage therefor;
 - primary transport means for transporting said carriers from said induction station subsystem into said recirculating buffer;
 - control system means coupled to said induction station subsystem for establishing a route destination queue encompassing all of the loaded carriers in the system, and in accordance with predetermined criteria, for selecting carriers associated with a particular route to be outputted from the recirculating buffer;
 - read/write means situated within said recirculating buffer and so positioned with respect to the path of travel of said carriers as to read the route and stop of each carrier as contained in its escort memory;
 - an output accumulation rack subsystem having a plurality of individually identifiable output racks;
 - secondary transport means having a reentrant configuration and transporting said carriers from said recirculation buffer subsystem to said output accumulation rack subsystem;
 - said read/write means within said recirculating buffer being coupled to said control system means and being directed

thereby to overwrite the escort memory of the carriers selected to be outputted from the recirculating buffer with information identifying at least one particular output rack and their order within said last-mentioned rack; gate means within said recirculating buffer responsive to the overwrite action of said read/write means for permitting said selected carriers to exit said recirculating buffer and to enter said secondary transport means; read station means situated along said secondary transport means for reading the output rack and order information stored in the escort memory of each carrier, said read station means being operatively coupled to said control system means whereby a determination is made as to whether a given carrier should be directed to said particular output rack in accordance with the sequence being established therein or be permitted to circulate via said secondary transport means for successive readings by said read station means in respective attempts to build upon said last-mentioned sequence, and gating means situated within said accumulation rack subsystem and responsive to said read station means for causing said given carrier to enter and be stored in proper sequential order in said particular output rack.

4,244,673

CONSECUTIVE WAFER TRANSFER APPARATUS AND METHOD

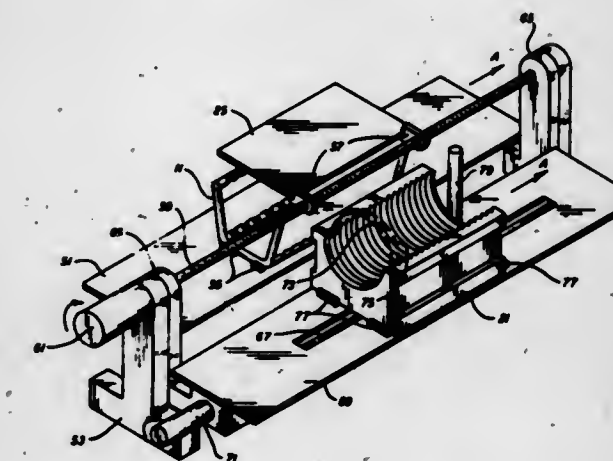
William W. Henderson, Greenwich, Conn., assignor to Emerson Plastronics, Bronx, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,861

Int. Cl.³ B65G 65/04

U.S. Cl. 414—405

14 Claims



1. A wafer transfer apparatus for consecutively transferring wafers used in the fabrication of semiconductor devices from notches in an inverted first carrier to notches in a collector, which comprises:
 - (a) retaining means positioned under the first carrier;
 - (b) means for changing the relative position of the first carrier and retaining means so that successive notches in the first carrier are uncovered; and
 - (c) means for changing the relative position of the retaining means and the collector, so that wafers fall consecutively from notches in the first carrier into every nth notch in the collector, where n is a positive integer.

4,244,674

DRAG FEED DEVICE FOR GRINDER-MIXER MACHINES

Milton Amunson, Soldier, Iowa, assignor to Art's-Way Manufacturing Company, Armstrong, Iowa

Filed Oct. 1, 1979, Ser. No. 80,560

Int. Cl.³ B60P 1/40

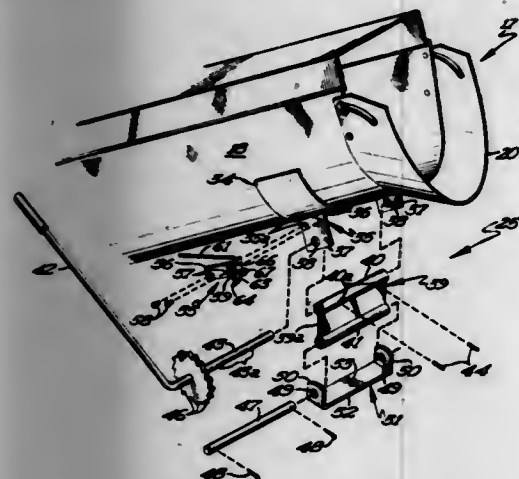
U.S. Cl. 414—523

5 Claims

1. An adjustable drag feed device for mobile grinder-mixer

machines including a chassis having ground engaging wheels, a mixing tank mounted on the chassis, and an inlet hopper on said chassis for receiving materials to be ground and mixed, said adjustable drag feed device comprising:

an elongate, auger housing of generally U-shaped cross-sectional configuration having a discharged end and having an inlet end, an auger in said auger housing for moving material from the inlet end to the discharge end, means mounting said auger housing on said chassis including a support arm pivotally connected with respect to the chassis for swinging movement about a vertical axis to which permits lateral swinging movement of the drag feed device about the vertical axis between a transport position and a selected operative position extending angularly outwardly from the chassis, means interconnecting said



support arm with said auger housing adjacent the discharge end of the latter, said interconnecting means including a pivot arm pivotally connected at one end to said support arm to permit relative pivoting movement therebetween about a horizontal pivoting axis extending transversely of the auger housing, said pivot arm being pivotally connected at its other end with said auger housing, actuating means connected with the other end of said pivot arm causing pivoting movement of the pivot arm about the horizontal pivot axis between the pivot arm and the support arm to shift the drag feed device in a longitudinal direction, and releasable lock means on said auger housing and said actuating means for releasably locking the drag feed device in a selected position when shifted in a longitudinal direction.

4,244,675

MULTI-STAGE BARREL TYPE CENTRIFUGAL PUMP WITH RESILIENT COMPENSATOR MEANS FOR MAINTAINING THE SEALS BETWEEN INTERSTAGE PUMPING ASSEMBLIES

John R. Bower, Newark, England, assignor to Worthington Pump, Inc., Mountainside, N.J.

Filed Apr. 30, 1979, Ser. No. 34,634
Int. Cl.³ F01D 25/24; F04D 1/06

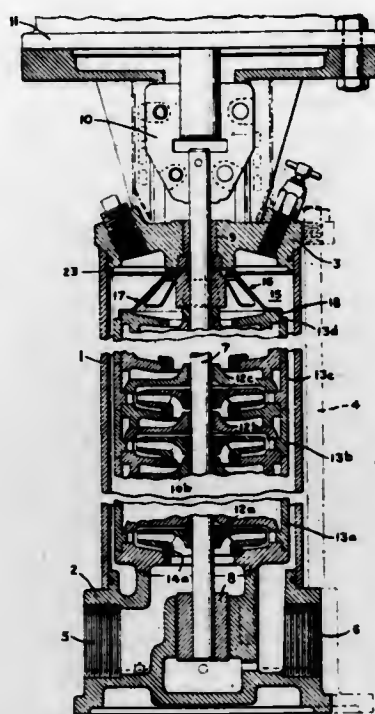
U.S. Cl. 415-135

12 Claims

1. A compensator for maintaining the seals between interstage pumping assemblies of a multi-stage barrel type centrifugal pump comprising,

- a main body element having annular means at one end for engaging the last one of said interstage pumping assemblies radially outward of the centerline thereof to maintain concentricity of the compensator with respect to said interstage pumping assemblies when the compensator is exerting forces thereon,
- resilient means connected at the end of said main body element remote from said annular means, and
- said resilient means biased in assembled position to exert a

controlled force on said annular means to permit differential movement of said interstage pumping assemblies while



maintaining a fluid tight seal between the respective interstage pumping assemblies.

4,244,676

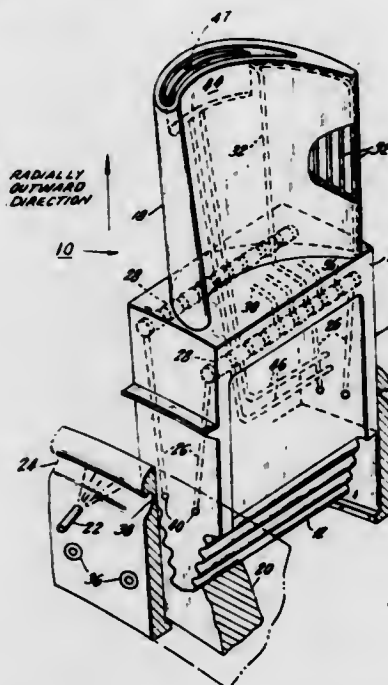
COOLING SYSTEM FOR A GAS TURBINE USING A CYLINDRICAL INSERT HAVING V-SHAPED NOTCH WEIRS

Clayton M. Grondahl, Clifton Park, and Malcolm R. Germain, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,660
Int. Cl.³ F01D 5/18

U.S. Cl. 416-92

14 Claims



1. An improved liquid coolant distribution system for a gas turbine of the type including a turbine disk mounted on a shaft rotatably supported in a casing, at least one turbine bucket extending radially outward from said disk, said bucket including a root portion mounted in said disk, a shank portion extending radially outward from said root portion to a platform portion, and an airfoil extending radially outward from said platform portion, said distribution system comprising:

- a platform coolant channels located in said platform por-

tion and extending into foil coolant channels located in said airfoil portion; and

- (b) metering means for receiving coolant from a source of liquid coolant and for distributing said coolant evenly into each of said platform coolant supply channels, said metering means comprising:

- (1) a hollow cylindrical tube having a plurality of grooves formed at spaced intervals about the outer periphery thereof;
- (2) a V-shaped notch weir formed in each of said grooves, each said V-shaped notch weir extending through the wall of said hollow cylindrical tube so as to permit coolant contained in said tube to flow through said notch weir and into said grooves;
- (3) cylindrical housing means receiving said cylindrical tube, said housing means cooperating with said grooves to form fluid conducting channels for said coolant; and
- (4) a plurality of coolant transporting channels equal in number to the number of said grooves, each of said coolant transporting channels extending from its associated groove to a different one of said platform coolant channels.

4,244,677

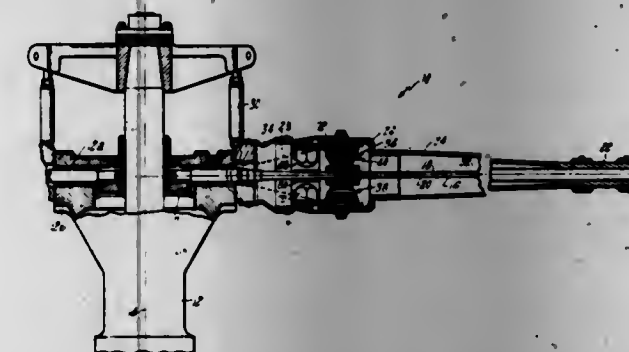
CROSS-BEAM HELICOPTER ROTOR WITH READILY REPLACEABLE SNUBBER

William L. Noehren, Huntington; Donald L. Ferris, Newtown, and Peter C. Ogle, Woodbridge, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 12, 1978, Ser. No. 924,110
Int. Cl.² B64C 27/38, 27/72

U.S. Cl. 416-134 A

9 Claims



1. A helicopter rotor of the cross-beam variety including:

- (1) a hub member adapted to be mounted for rotation about an axis of rotation,
- (2) a flexible, one-piece spar member supported by said hub member and extending radially on opposite sides thereof, and being fabricated of high strength fiber members extending in parallel relationship radially therealong and bonded together so as to form a flexible spar with high tensile strength and shaped to be rectangular in cross section and present flap upper and lower surfaces,
- (3) a blade member connected to the opposite ends of said spar member,
- (4) a torque tube connected at its outboard end to said spar member and extending inwardly in spaced relation to and enveloping said spar member,
- (5) a primary snubber member positioned at the inner end of said torque tube and comprising a top portion extending between said spar upper surface and the inner surface of said torque tube and a lower portion extending between said spar flat lower surface and the inner surface of said torque tube, each of said primary snubber portions comprising:
 - (a) an outer plate member,
 - (b) an inner plate member, and
 - (c) alternate laminates of elastomer and non-extensible material sandwiched therebetween,

(6) quick connect-disconnect means connecting said outer plate member to said torque tube,

(7) retainer means connected to said spar surface and engaging said inner plate member so that said inner plate member is restrained from moving both laterally and radially outwardly with respect to the spar but so that said inner plate member is movable radially inwardly with respect to said spar toward said hub member,

(8) means connecting said retainer means to said spar surface comprising an elastomer layer of selected durometer and thickness and bonded to the retainer means and the spar surface over a selected area so that the elastomer is of specified shape factor.

4,244,678

DISPLACEMENT CONTROL SYSTEM FOR VARIABLE DISPLACEMENT PUMP

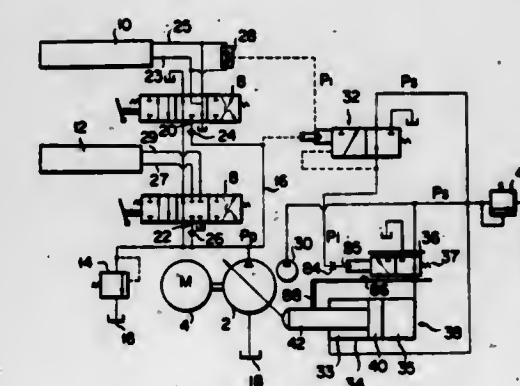
Kazuo Uehara, Tokyo; Hideaki Toma, Yokohama, and Yoshito Sato, Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Selsakusho, Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,098

Claims priority, application Japan, Jun. 26, 1978, 53-86675
Int. Cl.³ F04B 49/00

U.S. Cl. 417-218

4 Claims



1. A displacement control system for a variable displacement pump comprising:

- charge pump means;
- first actuator means connected to said variable displacement pump;
- second actuator means connected to said variable displacement pump, said first and second actuator means being arranged in parallel with respect to said variable displacement pump;
- cut-off control valve means connected to said charge pump means, said cut-off control valve means comprising a valve body having a first and a second pump ports, a pressure port and a first outlet port formed therein, the first pump port being connected to said charge pump means, the second pump port being connected to said variable displacement pump and the pressure port being connected to said first actuator means, sleeve means mounted within said valve body, a first pin slidably mounted within said sleeve means, a second pin slidably mounted within said sleeve means, the cross-sectional area of which is larger than that of said first pin, a spool slidably mounted within said sleeve means, the cross-sectional area of which is larger than that of said second pin, a cylindrical cap member fixedly secured to said valve body defining a spring chamber therein, and spring means disposed within said spring chamber for urging said spool toward connecting said first pump port with said first outlet port; and
- servo booster means connected to said first outlet port for controlling the displacement of said variable displacement pump.

4,244,679

SWASH-PLATE-TYPE COMPRESSOR FOR AIR-CONDITIONING VEHICLES

Shozo Nakayama; Kimio Kato; Takamitsu Mukai; Tomoo Fujii; Hiroya Kono, all of Kariya; Tatsuhiko Fukuoka, Toyota; Eizi Asada, Okazaki, and Kenichiro Futamura, Toyota, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya and Taiho Kogyo Kabushiki Kaisha, Toyota, both of Japan

Filed Nov. 15, 1978, Ser. No. 960,775

Claims priority, application Japan, Jul. 31, 1978, 53-93396

Int. Cl.³ F04B 1/14; C22C 9/00; F01B 3/00

U.S. Cl. 417-269

24 Claims

1. A swash plate type compressor for air-conditioning vehicles, wherein a lubricating oil is supplied in said compressor in the state of a gaseous mixture with a refrigerant gas, said compressor comprising a cylinder block, a swash plate rotatably mounted in said cylinder block and supported by a rotating drive shaft, at least one piston slidably retained within said cylinder block, and shoes mounted on said swash plate and retained by ball bearings, said ball bearings being operatively connected with said piston, wherein said swash plate reciprocates, by its rotation, at least one piston via said shoes and ball bearings, wherein said shoes are made of a copper-based alloy comprising from 0.5 to 8% of manganese, from 0.1 to 4% of silicon, from 0.5 to 15% of lead and from 0.1 to 1.5% of phosphorus, the balance being copper.

5. A swash-plate type compressor, comprising a cylinder block, a swash plate rotatably mounted in said cylinder block and supported by a rotating drive shaft, at least one piston slidably retained within said cylinder block, and shoes mounted on said swash plate and retained by ball bearings, said ball bearings being operatively connected with said piston, wherein said swash plate reciprocates, by its rotation, at least one piston via said shoes and ball bearings, wherein said shoes are made of a copper-based alloy comprising not more than 1% but more than 0% of molybdenum, from 0.5 to 15% of lead, less than 5% but more than 0% of tin, and not more than 1.5% of phosphorus, the balance being copper.

4,244,680

ROTARY VANE COMPRESSOR WITH OIL SEPARATING MEANS

Yutaka Ishizuka, Kusan, and Shinichi Kobayashi, Higashi-Matsuyama, both of Japan, assignors to Diesel Kiki Co., Ltd., Saitama, Japan

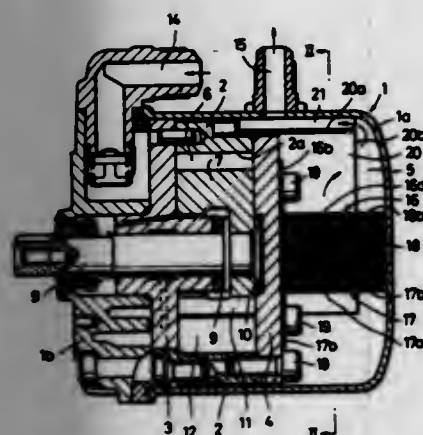
Filed Jul. 20, 1979, Ser. No. 59,165

Claims priority, application Japan, Aug. 19, 1978, 53-114024[U]

Int. Cl.³ F04C 29/02; B01D 50/00

U.S. Cl. 418-97

6 Claims



1. In a compressor for compressing a gaseous medium containing an oil dispersed therein, of the type including: a casing horizontally disposed; a pump housing enclosed in said casing, the pump housing having an interior thereof formed as a peripheral cam surface; a rotor journaled in said pump housing and carrying a plurality of vanes radially movably inserted in

a periphery thereof; drive shaft means secured to one end of said rotor; a discharge pressure chamber defined between the casing and the pump housing; pump outlet means formed in said pump housing in communication with said discharge pressure chamber; compressor outlet means formed in an upper portion of said casing in communication with said discharge pressure chamber; and oil separator means disposed within said discharge pressure chamber for separating oil from pressurized gaseous medium delivered through said pump outlet means, the improvement wherein said oil separator means comprises: a pair of upper and lower plates which can be traversed by fluid and substantially horizontally mounted on a wall of said pump housing facing said discharge pressure chamber, in relation vertically spaced from each other; an oil separating element interposed between the upper and the lower plates; a hollow guide element of a shape generally corresponding to the inner peripheral shape of the casing, fitted in the casing in a fashion covering most of the inner peripheral wall of the discharge pressure chamber but a lower part thereof, said guide element having an outer peripheral surface facing said compressor outlet means formed as a depression extending from an end edge thereof and terminating in said peripheral surface, for defining, in cooperation with an inner peripheral surface of the casing, a passage for guiding gaseous medium fed from the discharge pressure chamber to the compressor outlet means.

4,244,681

MAGNETIC FIBER OPTIC CASTING APPARATUS

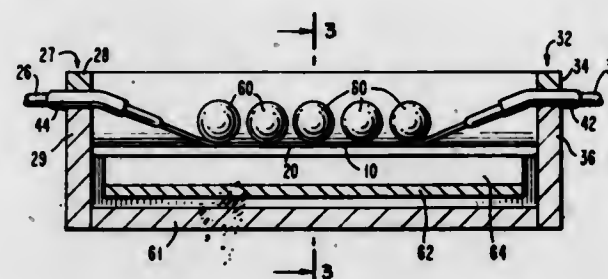
Liam D. Comerford, Croton-on-Hudson; John D. Crow, Mohegan Lake, and John S. Harper, Carmel, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,777

Int. Cl.³ B29C 6/00; B29D 3/02, 11/00

U.S. Cl. 425-3

16 Claims



1. Apparatus for casting plugs into optical fiber ends, comprising:
a mold having two side surfaces defining a vee-shaped groove for receiving at least one fiber end;
at least one unattached fiber seating element, said at least one seating element having a size and shape such that when said at least one seating element is urged into said groove over a fiber end lying within said groove, said at least one seating element forces the side surface of said fiber end into tangential contact with both of said side surfaces of said groove;
means for generating a field which urges said at least one seating element into said groove; and
means for introducing a solidifiable liquid into said groove while at least one fiber end is held in tangential contact with both of said side surfaces of said groove by said at least one seating element, whereby said at least one fiber end and said at least one seating element may be thereby molded together into a plug.

4,244,682

PORTABLE CONCRETE MOLDING APPARATUS

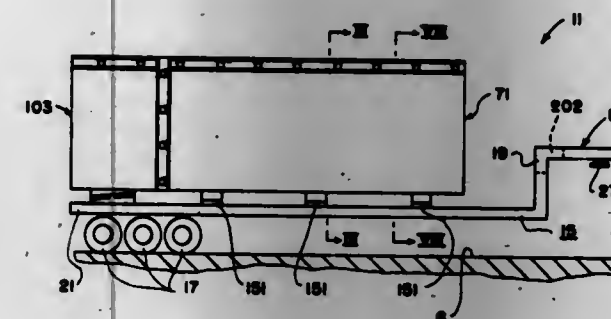
John H. Willingham, 1280 Estate Dr., Memphis, Tenn. 38117

Filed Sep. 20, 1979, Ser. No. 77,408

Int. Cl.³ B28B 15/00

U.S. Cl. 425-62

33 Claims



1. Portable concrete molding apparatus comprising:

- (a) a bed;
- (b) a first mold means for being fixedly attached to said bed; said first mold means including a first mold face having a forward edge, a rearward edge, a top edge and a bottom edge; said first mold means including a second mold face having an outer side edge, an inner side edge, a top edge and a bottom edge; said first and second mold faces being substantially normal to one another with said rearward edge of said first mold face being conterminous with said inner side edge of said second mold face;
- (c) a second mold means for being movably attached to said bed; said second mold means including a first mold face having a forward edge, a rearward edge, a top edge and a bottom edge; said second mold means including a second mold face having an outer side edge, an inner side edge, a top edge and a bottom edge; said first and second mold faces being substantially normal to one another with said rearward edge of said first mold face being conterminous with said inner side edge of said second mold face; said first mold faces of said first and second mold means being substantially the same shape and size and being located substantially directly opposite one another a spaced-apart distance; and
- (d) a third mold means for being movably attached to said bed; said third mold means including a first mold face having a first side edge, a second side edge, a top edge and a bottom edge; said first mold face of said third mold means being substantially the same shape and size as the combined spaced-apart shape and size of said second mold faces of said first and second mold means and being located substantially directly opposite thereof a spaced-apart distance.

4,244,683

APPARATUS FOR COMPRESSION MOLDING OF RETROREFLECTIVE SHEETING

William P. Rowland, Southington, Conn., assignor to Reflexite Corporation, New Britain, Conn.

Filed Sep. 20, 1979, Ser. No. 77,488

Int. Cl.³ B29C 17/00, 3/02; B29D 11/00

U.S. Cl. 425-143

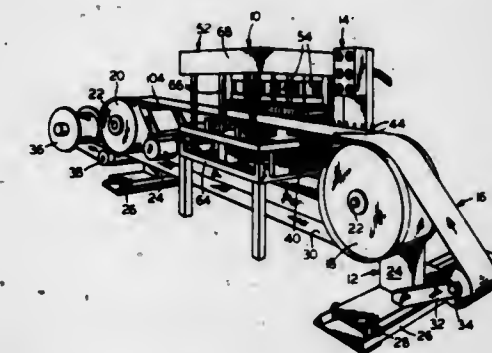
16 Claims

11. In apparatus for continuously embossing synthetic thermoplastic sheeting to generate precisely formed embossments on one surface thereof and a smooth opposite surface, the combination comprising:

- A. a frame;
- B. an elongated polishing member mounted in said frame for movement in a path along said frame and having a highly polished upper surface;
- C. a series of mold members overlying the polished surface of said polishing member and adapted to emboss an associated length of synthetic plastic sheet material disposed between said molds and said polishing member, said molds

being equally spaced, on center, along said path a predetermined distance;

D. a series of at least three presses mounted in said frame along said path, each press having a first platen in spaced relationship to said polished surface of said polishing member and a second platen disposed in spaced relationship to the other surface of said polishing member, said presses being equally spaced, center-to-center, along said path a distance substantially equal to the spacing of said mold members, said presses being operable to move at least one of said platens towards the other to a closed position and away from the other to an open position, said platens in said closed position clamping the polishing



member and molds tightly on opposite surfaces of the associated sheet material to effect embossment thereof; p1 E. means for indexing said polishing member along said path a distance substantially equal to said spacing to advance the associated sheet material and said molds from press to press;

F. means for operating said presses to open said platens to release the clamping force on said polishing member and molds and to close said platens upon completion of the indexing movement to restore said clamping force; and G. means connected to said presses for controlling the temperature of at least one of said platens of at least some of said presses along said path to effect temperature control of said molds as they are indexed from press to press.

4,244,684

METHOD FOR CONTROLLING CORROSION IN THERMAL VAPOR INJECTION GASES

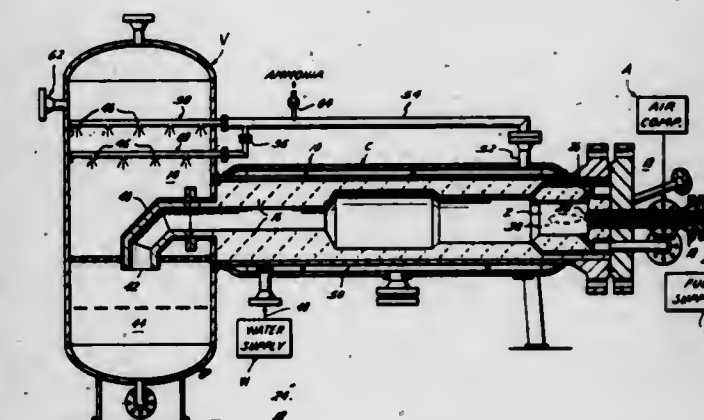
John S. Sperry, and Richard W. Krajciek, both of Houston, Tex., assignors to Carmel Energy, Inc., Houston, Tex.

Filed Jun. 12, 1979, Ser. No. 47,726

Int. Cl.³ F23L 7/00; F23D 11/44

U.S. Cl. 431-4

7 Claims



1. In a method of producing a high pressure thermal vapor stream of water vapor and combustion gases, for injection into a subterranean formation to stimulate the production of viscous minerals, comprising burning a substantially stoichiometric ratio of fuel and air in a combustion zone under pressure to produce combustion gases, and contacting the combustion

gases with water in a vapor producing vessel, to form a thermal vapor stream for injecting into the formation, the improvement for preventing corrosion of equipment which comprises: injecting sufficient water into the combustion zone simultaneously with burning the fuel to maintain a temperature within such combustion chamber within the range of from 1100° C. to 1650° C.; and injecting ammonia into the thermal vapor stream exiting the vapor producing vessel whereby such thermal vapor stream is rendered substantially noncorrosive to ferrous metals.

4,244,685

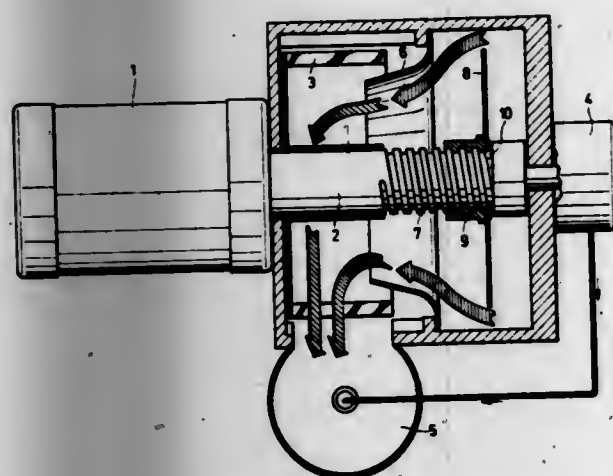
MEANS FOR AUTOMATIC CLOSING AND OPENING OF THE AIR INTAKE DUCT OF AN OIL BURNER

Paavo Lahtinen, Espoo, Finland, assignor to Nortti-Tuote Oy, Helsinki, Finland

Filed Sep. 21, 1978, Ser. No. 944,416
Int. Cl.³ F23N 3/00

U.S. Cl. 431-265

1 Claim



1. Apparatus for opening and closing the air intake duct of an oil burner having a motor provided with a shaft which extends through said air intake duct and which drives a fan and an oil pump which feed air and oil to a mixer, said apparatus comprising a duct section having a wall surrounding said shaft, said duct section being reduced in cross sectional area in one axial direction with reference to said shaft to provide a plurality of section portions of increasingly reduced cross sectional area in said direction, a plate, a hub carried by said plate for movement therewith, interengageable threaded means on said hub and on said shaft for mounting said plate on said shaft for movement in the direction of the axis thereof, the construction and arrangement being such that under the influence of a deceleration of said shaft said plate moves in said one axial direction and to abut said duct section wall to close said duct section upon stopping of said shaft and such that under the influence of an acceleration of said shaft said plate moves in a direction opposite to said one axial direction and to move away from said wall to open said duct section upon start up of said shaft.

4,244,686

ENERGY SAVING FURNACE AND METHOD OF OPERATING SAME

Wilmore S. Scott, Jr., Wilmington, N.C., assignor to General Electric Company, San Jose, Calif.

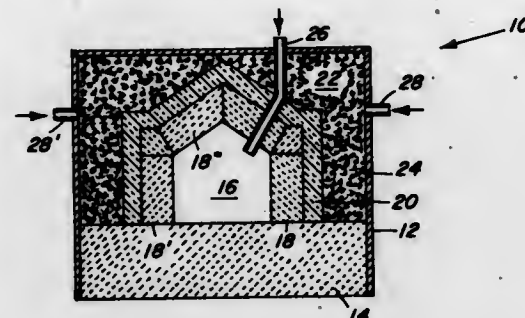
Filed Jul. 18, 1979, Ser. No. 58,480
Int. Cl.³ F27B 5/04

U.S. Cl. 432-26

22 Claims

1. A furnace of improved operating economy for controlled atmosphere service, comprising:
(a) a heating chamber having walls of a gas permeable re-

- fractory material providing at least a portion of the hot face of said chamber;
(b) a substantially gas impervious furnace housing enclosing at least a portion of the heating chamber in a spaced apart relation with the gas permeable walls thereof to thereby provide an intermediate space therebetween;
(c) a highly porous thermal insulating material positioned in the space intermediate said furnace housing and gas permeable walls of the heating chamber;



- (d) means for supplying a relatively light weight gas into the heating chamber; and
(e) means for supplying a relatively heavy weight gas into the space intermediate said furnace housing and gas permeable walls of the heating chamber at a pressure greater than the pressure of the relatively lighter weight gas within the heating chamber.

4,244,687

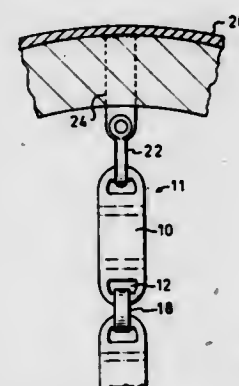
CHAIN CONSTRUCTION AND ARRANGEMENT FOR ROTARY KILN-TYPE DEVICES

Jorgen O. Bernt, Oakville, and Barry C. Forster, Mississauga, both of Canada, assignors to J. O. Bernt & Associates Limited, Oakville, Canada

Filed Apr. 30, 1979, Ser. No. 34,464
Int. Cl.³ F27B 7/14

U.S. Cl. 432-118

5 Claims



1. Chain for use in rotating, walled, passages containing gas-borne particulate material, said chain comprising:
a plurality of flat area links having, in their designed orientation on said chain, a flat material of greater width and depth dimensions than thickness dimension;
a loop at each end of said flat material, defining an aperture between said loop and said flat material, connecting connector links joining a loop of one link to a loop of the next,
whereby said flat area links and said loops define an extended, substantially straight, hanging attitude for said chain when said chain is suspended from one end;
said flat material being arranged so that said width and depth dimensions are located in a substantially vertical plane in the extended, substantially straight, hanging attitude of said chain,
said loops being provided with means defining a shallow slot to, at least partially, receive said link in the extended,

substantially straight hanging attitude of said chain, and to determine, in such attitude, the orientation of a link so received, relative to the loop about the axis of the chain in said attitude,
said loops and the orientation of said shallow slot being arranged so that said flat material in said flat area links is aligned,
said loops being shaped so that said apertures are large enough to allow the removal of said links from said shallow slots during flexure of the chain,
said links and apertures being designed and constructed to allow universal movement of adjacent links relative to one another, during flexure of said chain, about directions perpendicular to the axis of said chain.

4,244,688

PULSATING ORTHODONTIC APPLIANCE

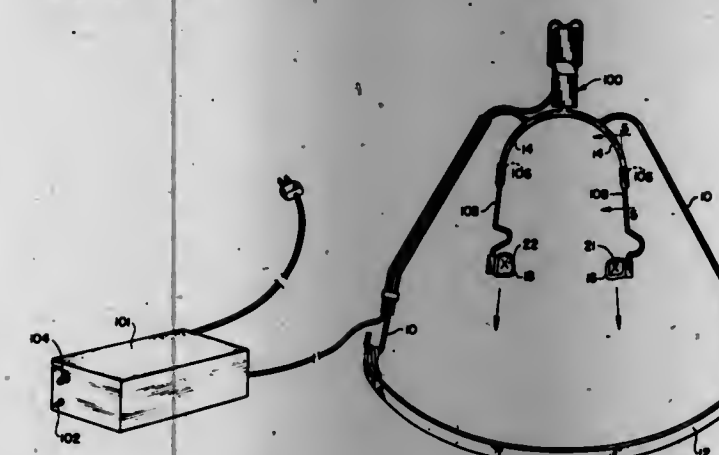
Craven H. Kurz, 10921 Wilshire Blvd. Suite 512, Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 895,438, Apr. 11, 1978, which is a continuation-in-part of Ser. No. 717,090, Aug. 24, 1976, abandoned. This application May 4, 1979, Ser. No. 36,040 The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.³ A61C 7/00; A61H 1/00

U.S. Cl. 433-5

4 Claims



1. An orthodontic appliance comprising: a bow element comprising an external oral arch bow and an internal oral arch bow adapted to be engaged with a band on a tooth to apply a force to the tooth to move the tooth in a predetermined direction in the mouth of a patient; and an electric pulsating motor

coupled to said bow element to exert a reciprocating force on said bow element to cause said bow element to exert a pulsating force on the tooth.

4,244,689

ENDOSSEOUS PLASTIC IMPLANT

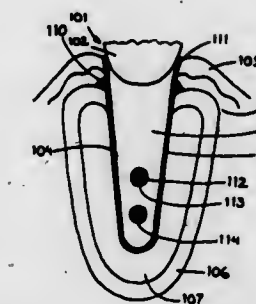
Arthur Ashman, 200 Central Park South, New York, N.Y. 10019
Continuation of Ser. No. 643,405, Dec. 22, 1975, abandoned.

This application Jun. 27, 1978, Ser. No. 919,711

Int. Cl.³ A61C 8/00

U.S. Cl. 433-175

41 Claims



1. A dental implant adapted for tooth replacement in a living being, said implant including at least a support member for a tooth crown, said support member comprising a lower portion adapted to fit into a mating alveolar socket such that the top of the lower portion is substantially at the level of the alveolar ridge and a neck portion having a cross section adapted to match the cross section of a tooth crown contiguous thereto, said neck portion being connected to the top of the lower portion such that the top of the neck portion is substantially at the level of the gingival sulcus, wherein the entire exposed surfaces of said lower portion and said neck portion consist essentially of a porous plastic surface portion said plastic consisting of essentially pure polymethylmethacrylate containing no polymerizing catalyst, said surface portion having exposed interconnected pores adapted to promote only connective tissue ingrowth from surrounding subcutaneous and alveolar environments, said porous surface portion having preselected pore sizes restricted to the range of from about 50 to about 150 microns, and said interconnected pores in said surface portion extending to a depth of at least two millimeters.

CHEMICAL

4,244,690

METHOD OF DYEING FIBROUS PRODUCTS

Kanji Sato; Kazuyoshi Kashiwa; Masaru Nishii; Yasuhiro Kanaya, and Yasumasa Kawabe, all of Fuji, Japan, assignors to Tokai Denka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,343

Claims priority, application Japan, Jan. 30, 1978, 53-78538

Int. Cl.³ D06P 1/22, 1/30; C09K 3/00

U.S. Cl. 8-465

5 Claims

1. An improved method of dyeing fibrous products comprising dyeing a fibrous product using an oxidation-reduction dyeing type dye and an aqueous alkali solution of thiourea dioxide as a reducing solution with the reduction of the dye with said aqueous alkali solution of thiourea dioxide being carried out in the presence of one or more substances selected from the group consisting of saturated aliphatic ketones having 3 to 10 carbon atoms, saturated aliphatic ketocarboxylic acids having 3 to 10 carbon atoms and alicyclic ketones having 3 to 10 carbon atoms.

4,244,691

NOVEL WATER-SOLUBLE ANTHRAQUINONE DYES

Jean-Marie Adam, Saint-Louis, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 16, 1979, Ser. No. 94,852

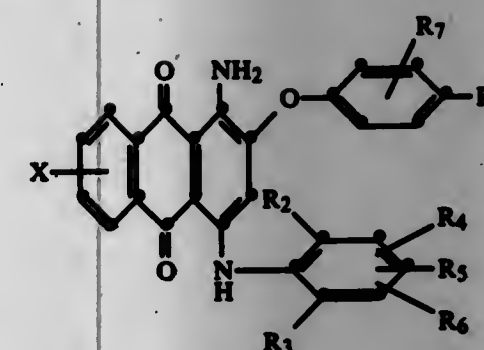
Claims priority, application Switzerland, Nov. 24, 1978, 12068/78

Int. Cl.³ C07C 143/665; C09B 1/52, 5/62

U.S. Cl. 8-676

26 Claims

1. A novel water-soluble anthraquinone dye, or a mixture of such dyes, which, in the form of the free acid, has or have the formula I



in which X is halogen, R₁ is an unbranched or branched alkyl radical having 4 to 8 carbon atoms, R₂ and R₃ independently of one another are an unbranched or branched alkyl radical having 1 to 4 carbon atoms, R₄ is hydrogen, an unbranched or branched alkyl radical having 1 to 4 carbon atoms, a free or acylated amino group or a fibre-reactive radical bonded via an amino group, R₅ is hydrogen or an unbranched or branched alkyl radical having 1 to 4 carbon atoms and R₆ and R₇ independently of one another are hydrogen, an unbranched or branched alkyl radical having 1-4 carbon atoms, a -SO₃H group, halogen or a radical of the formula -CH₂-N-H-CO-Y, in which Y is an alkyl or alkenyl radical having 1 to 4 carbon atoms which is unsubstituted or substituted by one or two halogen atoms, or is a substituted or unsubstituted phenyl radical, with the proviso that at least one of the radicals R₆ or R₇ is a -SO₃H group.

4,244,692

PROCESS FOR MANUFACTURING FLAME-RETARDANT YARN

J. Lyle Claiborne, Hixson, Tenn., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.

Filed Jul. 24, 1978, Ser. No. 927,616

Int. Cl.³ D06M 1/00; B05D 3/04; C09K 3/28

U.S. Cl. 8-116 P

9 Claims

1. The process of flame-retardant treating textile yarn, comprising: impregnating a single end of yarn with an aqueous tetrakis

(hydroxymethyl) phosphonium hydroxide composition derived from tetrakis (hydroxymethyl) phosphonium sulfate,

drying the impregnated yarn to reduce its water content, then ammoniating the dried impregnated yarn by passing a single end of yarn into an inlet tube of an ammoniating



apparatus through said inlet tube into an ammonia filled changer wherein the yarn is substantially evenly wound on a spool while still within said ammoniation chamber, removing the impregnated and ammoniated yarn from said chamber, oxidizing the ammoniated impregnate, and washing the yarn with water, thereby producing a uniformly flame-retardant textile yarn.

4,244,693

METHOD AND COMPOSITION FOR TESTING FOR THE PRESENCE OF AN ALKALI METAL

Jerold Guon, Canoga Park, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 28, 1977, Ser. No. 772,627

Int. Cl.² G01N 31/22, 33/20

U.S. Cl. 23-230 L

9 Claims

5. A method for detecting the presence of an alkali metal on the surface of a body comprising:

applying to said surface a thin film of a liquid composition comprising a light-colored pigment, an acid-base indicator and a nonionic wetting agent dispersed in a liquid carrier which comprises a minor amount of water and a major amount of an organic solvent selected from the group consisting of lower aliphatic alcohols, ketones and ethers, whereby any alkali metal present on the surface will react with the acid-base indicator to produce a contrasting color change in the thin film which is readily discernable.

4,244,694

REACTOR/SEPARATOR DEVICE FOR USE IN AUTOMATED SOLID PHASE IMMUNOASSAY

Peter R. Farina, North Salem; Kathy P. Ordomez, Peekskill, and Iris J. Siewers, White Plains, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,321

Int. Cl.² G01N 33/16, 31/06

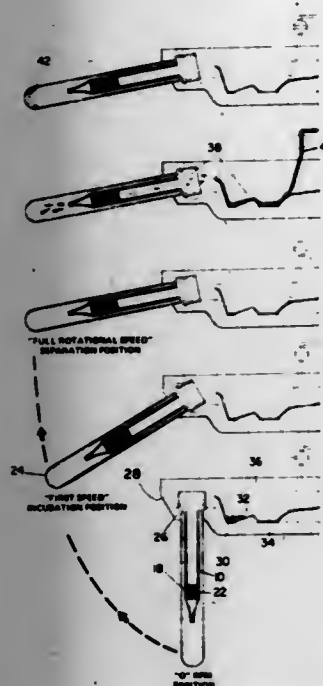
U.S. Cl. 23-230 B

9 Claims

1. A reactor/separators device for use in rapid, automated solid phase immunoassays wherein components are mixed, transferred and separated by means of centrifugal force, said device comprised of, in combination, (a) a column which is open at both ends, (b) a retaining and filtering means disposed in said column and which is impermeable to aqueous solutions at approximately atmospheric pressure, but permeable to aqueous solutions when subjected to a centrifugal force, (c) a reaction and separation chamber disposed in said column above

said filtering means and containing at least one matrix having immobilized therein an antigen or antibody component for the separation of at least one of said components of an antigen-antibody system.

9. In an immunoassay employing an antigen-antibody system



and wherein samples and reagents are mixed and transferred by means of centrifugal force, the improvement which comprises transferring said samples and reagents to the reactor/separators device of claim 1, permitting said samples and reagents to incubate on said matrix, and separating therefrom at least one component of the antigen-antibody system.

4,244,695

PROCESS FOR THE QUANTITATIVE DETERMINATION OF THE OXYGEN DEMAND OF WATER CONTAINING OXIDIZABLE MATTER

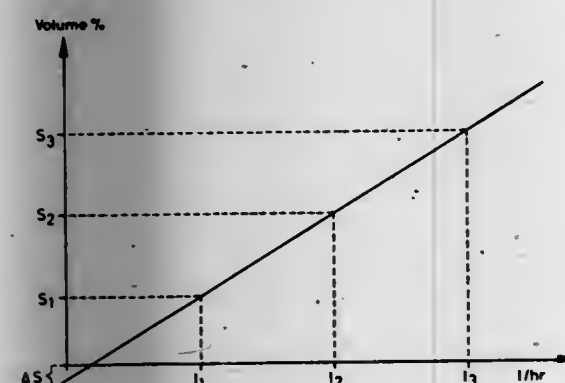
Werner Melzer, Liederbach, and Dieter Jaenicke, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jul. 19, 1979, Ser. No. 58,849

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832043

Int. Cl.³ G01N 31/12, 33/18

U.S. Cl. 23—230 PC

2 Claims



1. Process for the quantitative determination of the oxygen demand (TOD) of water containing oxidizable matter by continuously evaporating the water at about 900° C. in the presence of oxygen, which comprises

(a) adding to the steam at continuously repeated intervals varying amounts l_1, \dots, l_n of oxygen-containing gas per unit of steam, the respective amount of the oxygen-containing gas not exceeding 1 to 5% by volume, calculated on the amount of steam produced during the corresponding interval;

(b) measuring the residual oxygen concentration S_1-S_n for each amount of oxygen-containing gas l_1, \dots, l_n and
(c) calculating the TOD from the residual concentrations S_1, \dots, S_n and the amounts of oxygen-containing gas l_1, \dots, l_n introduced in step (a).

4,244,696

METHOD AND APPARATUS FOR DETERMINING THE CHEMICAL OXYGEN DEMAND OF ORGANIC MATERIALS DISSOLVED IN WATER

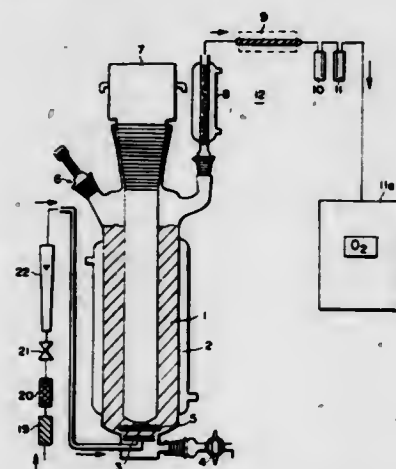
Peter Wölfel, Langenau, Fed. Rep. of Germany, assignor to Deutscher Verein des Gas- und Wasserfachs e.V., "DVGW-Forschungsstelle", Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,673

Int. Cl.³ G01N 33/18

U.S. Cl. 23—230 R

7 Claims



1. A method for determining the chemical oxygen demand of organic materials dissolved in water by oxidation which comprises subjecting a sample of water to a photochemical oxidation under the action of the UV radiation of a mercury vapor lamp, in the presence of an inert carrier gas which contains less than 5 percent by volume of oxygen, and determining the chemical oxygen demand of the organic materials dissolved in the water by measuring the amount of spent oxygen in the carrier gas.

4,244,697

PROCESS FOR EXPELLING URANIUM HEXAFLUORIDE HAVING A HIGH U-235 CONTENT FROM A TRANSPORTATION CYLINDER

Horst Vietzke, Maintal; Paul Börner, Freigericht, and Gerhard Wagner, Rodenbach, all of Fed. Rep. of Germany, assignors to Nukem, GmbH, Hanau, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,969

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1977, 2703277

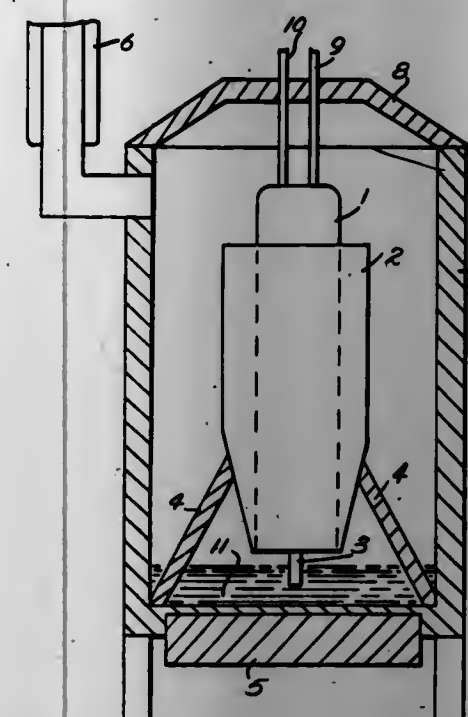
Int. Cl.³ B01D 7/00

U.S. Cl. 23—294 R

11 Claims

1. A process for expelling uranium hexafluoride having a high content of U-235 out of a transportation container comprising externally heating the container containing uranium hexafluoride with a heating medium to sublime and expel the uranium hexafluoride from the container, employing as the heating medium a hydrogen free halogenated organic compound having a boiling point above the sublimation temperature of uranium hexafluoride, said heating medium being normally in the liquid form and being in an outer container, said outer container enclosing the transportation container and the

heating medium, said external heating including the steps of vaporizing the liquid heating medium and applying the heated



vapors from above to the outside of the transportation container.

4,244,698

METHOD FOR DRYING MAGNESIUM SULFATE

Robert J. King, Homewood, Ill., and Herbert A. Johnson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1978, Ser. No. 902,135

Int. Cl.³ B01D 43/00; C22B 1/16; F26B 3/08

U.S. Cl. 23—313 FB

17 Claims

1. A method of drying hydrated crystalline magnesium sulfate to reduce its surface moisture content comprising:

- fluidizing a bed of hydrated crystalline magnesium sulfate particles by continuously passing a heated gaseous medium in a generally upwardly direction through the particles at a superficial velocity at least sufficient to maintain turbulent fluidization and mixing of the particles throughout the bed;
- transferring hydrated crystalline magnesium sulfate to be dried into the bed of particles from a crystal feeding means, said magnesium sulfate to be dried being in a dispersed form;
- controlling the amount of hydrated crystalline magnesium sulfate within the bed to maintain a constant bed depth;
- controlling the temperature and relative humidity of the heated gaseous medium to maintain a bed temperature and humidity sufficient to vaporize at least a portion of the surface moisture from the hydrated crystalline magnesium sulfate without removing waters of hydration; and
- removing dried hydrated crystalline magnesium sulfate from the bed.

4,244,699

TREATING AND CLEANING COAL METHODS

Clay D. Smith, and Douglas V. Keller, Jr., both of Lafayette, N.Y., assignors to Otis Industries, Ltd., Lafayette, N.Y.
Division of Ser. No. 561,168, Mar. 24, 1975, Pat. No. 4,173,530, which is a continuation-in-part of Ser. No. 423,577, Jan. 14, 1974, abandoned. This application Jan. 15, 1979, Ser. No. 3,641

Int. Cl.³ C10L 9/02, 9/10

U.S. Cl. 44—1 SR

8 Claims

7. A method of incorporating additives into particulate solids which comprises the steps of dispersing in a carrier which comprises a liquid selected from the group consisting of 1,2-difluoroethane, 1-chloro-2,2,2-trifluoroethane, 1,1-

dichloro-2,2,2-trifluoroethane, dichlorofluoroethane, 1-chloro-2-fluoroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloro-1,2,2,2-tetrafluoroethane, and trichlorofluoromethane an additive which is soluble or otherwise dispersible in said carrier; contacting the solids with the carrier liquid and additive dispersion; and stripping essentially all of the carrier from the solids to thereby leave only the additive thereon, said solids being coal particles and the additive comprising calcium or magnesium oxide, or both, said additive being added to the coal in an amount effective to reduce the content of sulfur in the gaseous combustion products generated by the subsequent burning of the coal.

4,244,700

METHOD OF AND APPARATUS FOR HEAT PROCESSING OF PULVERIZED SOLID FUEL

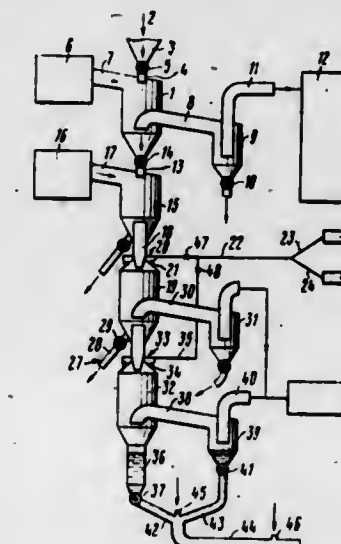
Zinovy F. Chukhanov, ulitsa D. Utyanova, 3, kv. 40; Zinovy Z. Chukhanov, ulitsa Obrucheva, 6, kv. 352; Sergel A. Tsuprov, Bolshoi Vuzovskiy pereulok, 1, kv. 26; Vadim A. Karasev, Leninsky prospekt, 16, kv. 30; Anatoly M. Nikolaev, Scherbakovskaya ulitsa, 5, kv. 76, all of Moscow; Robert M. Shibaev, ulitsa Skildkova, 93, kv. 57, Kalinin; Boris F. Bratchenko, ulitsa Alexeya Tolstogo, 15, kv. 5, and Ivan V. Lyashenko, Lesnaya ulitsa, 45, kv. 89, both of Moscow, all of U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,663

Int. Cl.³ C10L 9/08, 1/32

U.S. Cl. 44—1 R

7 Claims



1. A method of heat processing of pulverized solid fuel, which comprises heating the fuel by a substantially oxygen-free gaseous heat carrier in less than one second to a temperature from 300° to 500° C. at which thermal decomposition of the fuel begins, subsequently heating the fuel by a substantially oxygen-free gaseous heat carrier in less than one second to a temperature from 500° to 800° C. at which an intense thermal decomposition of the fuel takes place to form a vapour-and-gas suspension containing solid particles, gas, tar vapours and water vapours, and cooling the resultant vapour-and-gas suspension by direct contact thereof with a coolant to a temperature of 360°-140° C. at which pulverized solid particles adsorb heavy tar, breaking the resultant vapour-and-gas suspension into solid matter and vapour-and-gas mixture to obtain useful liquid products.

5. An apparatus for heat processing of pulverized solid fuel comprising:

- a first chamber, first feed means for feeding fuel into said first chamber, gas delivery means for delivering a substantially oxygen-free gaseous heat carrier into said first chamber to heat the fuel to a temperature at which thermal decomposition of the fuel begins and first discharge means for discharging the used gaseous heat carrier from said first chamber;
- a second chamber operatively connected to said first chamber, first conduit means for transfer of the fuel from said

first chamber to said second chamber, second gas delivery means for delivering a substantially oxygen-free gaseous heat carrier into said second chamber to heat the fuel to a temperature at which an intensive thermal decomposition of the fuel takes place to form a vapour-and-gas suspension consisting of solid particles, tar vapours, water vapours and gases;

a third chamber operatively connected to said second chamber, second conduit means for transfer of vapour-and-gas suspension from said second chamber to said third chamber, spray means for delivering and spraying a coolant within said third chamber to cool the vapour-and-gas suspension to a temperature at which pulverized solid particles adsorb heavy tar, second discharge means for discharging the vapour-and-gas suspension from said third chamber and third discharge means for discharging the resultant solid matter from said third chamber.

4,244,701

POWDERED FUEL (GASOLINE SUBSTITUTION)

Yasui Yamashita, 631 Park Ave., Hot Springs, Ark. 71901, assignor to Yasui Yamashita, Hot Springs, Ark.

Filed May 23, 1979, Ser. No. 41,759

Int. Cl.³ C10L 5/00

U.S. Cl. 44-1 C

2 Claims

1. A powdered fuel product, which comprises a mixture of 95 percent dry ingredients consisting of 25 percent powdered wood charcoal, 25 percent powdered hard coal, 25 percent powdered grain chaff and 20 percent gun powder, and a mixture of 5 percent of liquid ingredients, consisting of 3 percent alcohol and 2 percent water, said dry and said liquid mixtures being mixed together.

2. A process of making a powdered fuel product, wherein an ingredient of powdered wood charcoal is first heated to six hundred degrees Fahrenheit (three hundred and sixteen degrees Centigrade) and is then thoroughly mixed with other dry ingredients, comprising powdered grain chaff, powdered hard coal and gun powder, so as to form a mixture which subsequently is then mixed with liquid ingredients, comprising alcohol and water, and the last said mixing is done in an enclosed tank, so as to prevent evaporation of said alcohol.

4,244,702

EMULSIFIED FUEL OIL AND METHOD OF PRODUCTION

Howard Alliger, 10 Penderas Dr., Melville, N.Y. 11746

Filed Feb. 26, 1979, Ser. No. 15,442

Int. Cl.³ C10L 1/04

U.S. Cl. 44-51

6 Claims

1. An emulsified fuel oil comprising 100 parts by volume of #2 diesel oil, 1 to 20 parts by volume of water, and 1 to 20 parts by volume of #6 bunker oil.

4,244,703

FUEL ADDITIVES

Alfred F. Kaspaal, Malibu, Calif., assignor to California-Texas Oil Company, Glendale, Calif.

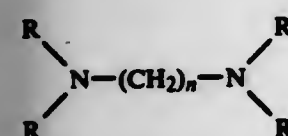
Filed Jan. 29, 1979, Ser. No. 7,305

Int. Cl.³ C10L 1/18, 1/22

U.S. Cl. 44-56

27 Claims

1. A fuel composition having increased combustion efficiency and fuel economy, the composition comprising a mixture of hydrocarbons and containing a tertiary diamine having the formula:



in which R is a methyl group and wherein n is an integer between 1 and 6, the diamine being present in the fuel composition

in an effective amount, the composition further comprising an effective amount of an anhydrous alcohol.

4,244,704

GASOLINE COMPOSITION

William M. Sweeney, and Francis S. Bove, both of Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,703

Int. Cl.³ C10L 1/18

U.S. Cl. 44-78

6 Claims

1. A gasoline composition characterized by improved octane number which comprises a major portion of gasoline and a minor, octane-improving, portion of phenyl t-butyl ether.

4,244,705

TRIPLE ROTARY GAS LOCK SEAL SYSTEM FOR TRANSFERRING COAL CONTINUOUSLY INTO, OR ASH OUT OF, A PRESSURIZED PROCESS VESSEL

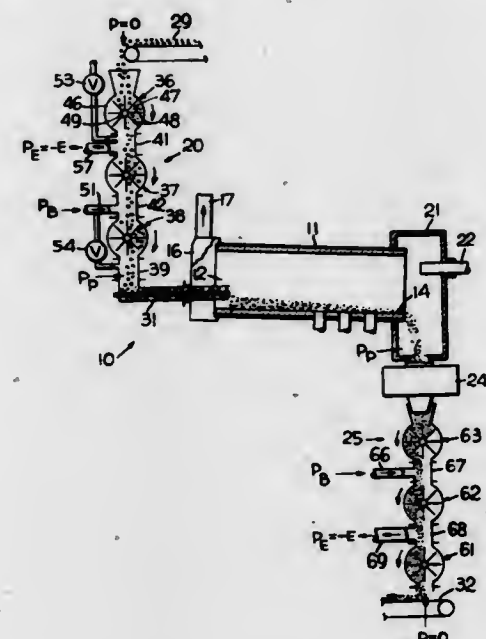
Robert M. Seidl, Greendale, and Francis J. Enright, Milwaukee, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 24, 1979, Ser. No. 42,041

Int. Cl.³ C10J 3/68

U.S. Cl. 48-77

6 Claims



1. An apparatus for providing a continuous feed of coal particles and a seal system for a pressurized process vessel which utilizes heated gas to convert the coal to a process gas; including,

first, second and third rotary gas locks interconnected in series relationship and to the pressurized process vessel in series transfer relationship, said first one of said gas locks being arranged to initially receive the coal and the third one of said gas locks being closest to the pressurized process vessel;

means for supplying a buffer seal gas between adjacent second and third rotary gas locks to prevent leakage of gases from the pressurized process vessel through said gas locks into the ambient atmosphere;

means for supplying air to the material outlet side of said first rotary gas lock to replace the voids left by the dumping of the coal particles from the pockets of the first rotary gas lock to prevent the escape of buffer seal gas from the connection between said first and second rotary gas locks into the ambient atmosphere external to the feed system; and

means to exhaust gas from between said first and said second rotary gas locks;

whereby the buffer seal gas is prevented from being released to the ambient atmosphere external to the feed and seal system.

4,244,706

PROCESS FOR GASIFYING CARBONACEOUS MATERIAL FROM A RECYCLED CONDENSATE SLURRY

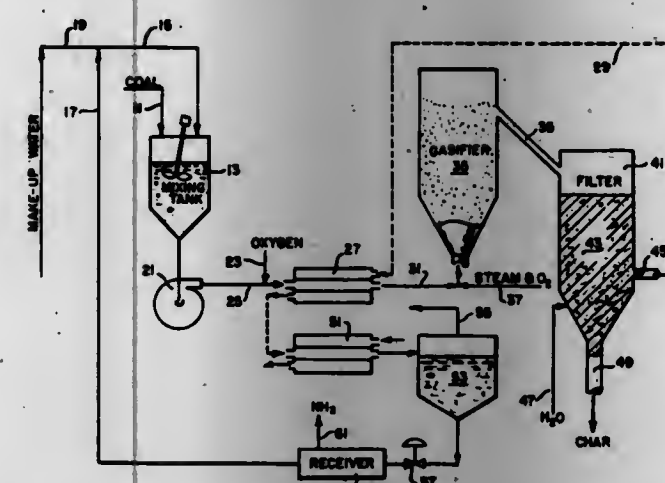
Albert J. Forney, Coraopolis, and William P. Haynes, Pittsburgh, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 10, 1979, Ser. No. 74,352

Int. Cl.³ C10J 3/54

U.S. Cl. 48-202

13 Claims



1. A process for gasifying solid carbonaceous material by reaction with H₂O and O₂ comprising:
forming a water slurry of carbonaceous material at a first pressure and pumping said slurry to a second and higher pressure;
injecting oxygen-containing gas at a temperature above that of said slurry into the slurry at said second pressure;
heating the slurry to a first temperature to combust a portion of said carbonaceous material and vaporize the water of the slurry to form a gas-solid mixture;
passing said gas-solid mixture from bottom to top through a fluidized bed to combust an additional portion of said carbonaceous material and thereby heat to a second temperature at which gasification occurs by pyrolysis and reaction of carbon with steam to form CO and H₂;
withdrawing gas-solid mixture from the top portion of said fluidized bed and allowing the solids to settle to form a downwardly moving bed of supported solids;
filtering the gas from said gas-solids mixture through the upper portion of said downwardly moving bed of supported solids; and
condensing steam from the filtered gas stream and recycling the resulting condensate to form said water slurry with said carbonaceous material.

4,244,707

ABRASIVE COMPOSITION FOR USE IN TOOTHPASTE

Setish K. Wason, Churchville, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 826,901, Aug. 24, 1977, Pat. No. 4,159,280, which is a continuation-in-part of Ser. No. 723,345, Sep. 15, 1976, abandoned. This application Sep. 22, 1978, Ser. No. 946,678

Int. Cl.³ C04B 31/16; C09C 1/68

U.S. Cl. 51-308

7 Claims

1. An abrasive composition useful for incorporation into a therapeutic toothpaste composition and which will provide abrasive characteristics for the toothpaste composition at RDA values of 200-400 and will prevent fluoride-caused corrosion and staining of an unlined aluminum tube containing said toothpaste composition, said abrasive composition consisting essentially of a dentifrice-grade silica polishing agent which has been treated with a sufficient amount of a food grade alkaline earth metal compound selected from the group consisting of the hydroxide, oxide, nitrate, chloride, acetate, or

formate of calcium, magnesium, and strontium, and mixtures thereof, so as to have present therein from about 168-7000 ppm of the alkaline earth metal in said composition, said silica functioning as a carrier for the alkaline earth metal.

4,244,708

METHOD AND APPARATUS FOR SEPARATING COMPONENTS FROM A FLOWING MEDIUM BY MEANS OF CENTRIFUGAL FORCE

Ernst-August Bielefeldt, Hollenstedt, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 772,491, Feb. 28, 1977, abandoned.

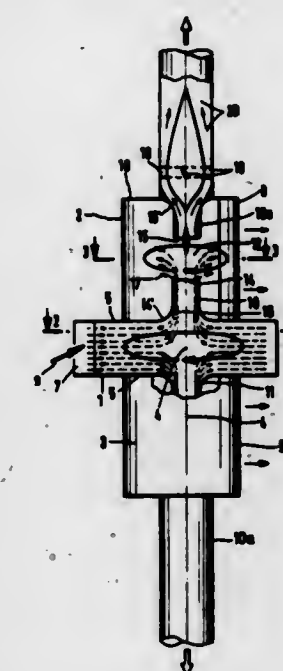
This application Apr. 16, 1979, Ser. No. 30,097

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 2610031

Int. Cl.³ B01D 45/12

U.S. Cl. 55-1

14 Claims



1. A method for separating heavier particles from a flowing lighter medium by subjecting the flowing medium to centrifugal forces, said heavier particles being suspended in said flowing lighter medium, with an apparatus comprising spin generator means including a housing with a given flow diameter and having an axis, exit pipe means including an exit port, said exit pipe means being arranged to extend coaxially with said axis of said spin generator housing, tangential inlet means operatively connected to said spin generator housing for producing a substantially tangential flow in said spin generator housing, said coaxially extending exit pipe means having a diameter smaller than said given diameter of the spin generator housing for converting the substantially tangential flow of the flowing medium with the particles suspended therein into a spinning pipe flow in said exit pipe means, said smaller exit pipe diameter substantially increasing the rotational flow speed in said exit pipe means, separator chamber means having a diameter larger than said exit pipe means, said separator chamber means being arranged for cooperation with said spin generator housing, said exit pipe means being centrally connected to said spin generator housing and extending coaxially into said separator chamber means for imparting an angular momentum, due to said smaller diameter of the exit pipe means, to the flow as it passes from said spin generator housing through said exit pipe means into said separator chamber means, wherein the flow is subjected to a flow diameter expansion, exhaust pipe means also extending coaxially into said separator chamber means coaxially to and opposite said exit pipe means, said exit port being located in the respective separator chamber means, said exhaust pipe means having an entrance port located in the respective separator chamber means at such a position that a predetermined spacing is established between the exit port and the

entrance port which face each other in said separator chamber means, said spacing providing an expansion zone between said ports for said flow diameter expansion, whereby an eddy source flow is generated in said flow expansion zone, said apparatus further comprising tangentially effective active exhaust means extending at least for the axial length of said predetermined spacing and operatively connected to said separator chamber means substantially in parallel to said flow expansion zone, said exhaust means amplifying the expanding eddy source flow by superimposing on said eddy source flow a tangentially effective exhaust suction flow in said flow expansion zone, whereby any particles entrained in an axial or radially inwardly directed path are again shifted radially outwardly by the superposition of the radial component of said flow expansion and the radial component of said tangentially effective exhaust means thereby removing the heavier particles toward said tangentially effective exhaust means, and axially effective exhaust means connected to said exhaust pipe means, whereby the lighter now cleaned medium is axially exhausted through said exhaust pipe means, said method comprising the steps:

- causing a substantially tangential flow of the flowing medium with the particles suspended therein in said spin generator means,
- reducing the flow diameter by passing the flow into said exit pipe means to convert the flow into a spinning pipe flow and to impart angular momentum to the spinning pipe flow and to substantially increase the rotational speed of said flow by said flow diameter reduction whereby said heavier particles are accumulated in a circumferentially outer zone of said spinning pipe flow,
- axially spacing said exit port, from which said spinning pipe flow exits, from said coaxially arranged exhaust port for said clean medium, to provide said flow expansion zone between said exit port and said exhaust port,
- increasing the flow diameter by expanding said spinning pipe flow into said flow expansion zone under its own centrifugal force as the spinning pipe flow exits from said exit port to thereby generate an eddy source flow in said flow expansion zone,
- superimposing by means of said active exhaust means a tangentially effective, active exhaust suction flow on said expanding eddy source flow for amplifying and stabilizing said eddy source flow in said flow expansion zone and for combining the radially effective centrifugal force component with the radially effective component of the tangential exhaust suction flow whereby any particles entrained in an axial or radially inwardly directed flow are again shifted radially outwardly toward tangential exit ports prior to any axial escape of a particle so that said heavier particles are separated from the flowing medium into said tangentially effective exhaust suction flow, and
- axially exhausting said clean, lighter medium through said exhaust port.

4,244,709

HIGH INTENSITY IONIZATION-ELECTROSTATIC PRECIPITATION SYSTEM FOR PARTICLE REMOVAL AND METHOD OF OPERATION

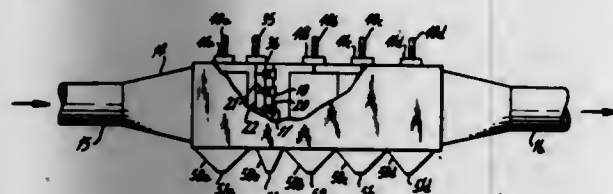
Ching M. Chang, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,498

Int. Cl.³ B03C 3/12

U.S. Cl. 55—2

8 Claims



1. In a method for removing fine particles from a feed stream

in which the particles in the feed gas stream are charged in a single high intensity ionization step and the charged particles are thereafter collected in a downstream plate-wire electrode type electrostatic precipitation step: the improvement comprising first passing the fine particle-containing feed gas stream through an upstream plate-wire electrode type electrostatic precipitation step prior to said charging at the same gas velocity as the downstream electrostatic precipitation step with the upstream particle collection area A_U in said upstream plate-wire electrode type electrostatic precipitation step and the downstream particle collection area A_D in said downstream plate-wire electrode type electrostatic precipitation step and X the fraction of the arithmetic sum A_T of A_U and A_D which is represented by A_U , all in accordance with the following formulas:

$$A_U = A_T \text{ times } X$$

where

A_U = the upstream particle collection area

A_T = the arithmetic sum of upstream plus downstream particle collection areas A_U and A_D

$$X = K(1 - 2/C)^{1.35}$$

$$C = -\ln(1 - \eta_0)$$

η_0 = the nominal operating efficiency of the upstream and downstream plate-wire electrode type electrostatic precipitation absent the high intensity ionization and being between 0.95 and 0.98, and

$$K = \text{between } 0.92\eta_0^{11} \text{ and } (8.21 - 7.34 \eta_0)/\eta_0^{7.5}$$

7. Apparatus for removing fine particles from a gas stream comprising:

- a first upstream electrostatic precipitator of parallel spaced plates having an upstream particle collection area A_U , a multiplicity of wires equally spaced between each pair of adjacent plates and positioned at intervals in the longitudinal flow direction from a gas inlet end to a gas discharge end and oriented with the wire length nominal to the direction of gas flow, and means for establishing an electric field between such first upstream plates and wires;
- a high intensity ionizer in flow communication with the gas discharge end of said first electrostatic precipitator (a) comprising a multiplicity of tubular Venturi means as anodes each aligned with the throat section thereof adjacent the first electrostatic precipitator. A disc-shaped member as a cathode positioned within each tubular Venturi means, and means for establishing a high intensity electric field between each of said tubular Venturi means and said disc-shaped member;
- at least a second downstream electrostatic precipitator in flow communication with the gas discharge end of said high intensity ionizer (b) having substantially the same flow cross-sectional area as said first electrostatic precipitator comprising parallel spaced plates having a downstream particle collection area A_D , a multiplicity of wires equally spaced between each pair of adjacent plates in parallel alignment to each other and positioned at intervals in the longitudinal flow direction from a gas inlet end to a gas discharge end and oriented with the wire length normal to the direction of gas flow, and means for establishing an electric field between such second downstream plates and wires; with
- the upstream particle collector area A_U , the downstream particle collection area A_D being constructed and the high intensity ionizer being positioned with X the fraction of the arithmetic sum A_T of A_U and A_D which is represented by A_U , all in accordance with the following formulas:

$$A_U = A_T \text{ times } X$$

where

A_U = the upstream particle collection area

A_T = the arithmetic sum of upstream plus downstream particle collection areas A_U and A_D

$$X = K(1 - 2/C)^{1.35}$$

$$C = -\ln(1 - \eta_0)$$

η_0 = the nominal operating efficiency of the upstream and downstream type electrostatic precipitators (a) and (c) absent the high intensity ionizer (b) and between 0.95 and 0.98, and

K = between $0.92 \eta_0^{11}$ and $(8.21 - 7.34 \eta_0)/\eta_0^{7.5}$

(e) housing means for enclosing said upstream electrostatic precipitator array (a), said high intensity ionizer (b), and said downstream electrostatic precipitator (c).

4,244,710

AIR PURIFICATION ELECTROSTATIC CHARCOAL FILTER AND METHOD

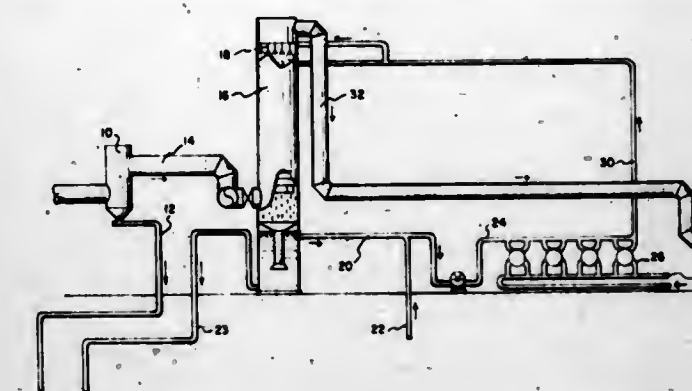
Manfred R. Burger, Wolfratshausen Strasse 45J, 8023 Pullach, Fed. Rep. of Germany

Filed May 9, 1978, Ser. No. 904,305

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721528; Jan. 24, 1978, 2802965

Int. Cl.³ B03C 3/00

U.S. Cl. 55—6



25 Claims
light oil having boiling points from about 40° to 200° C. to the ammonia liquor after it has left the primary cooler but before it enters the indirect ammonia liquor cooler.

4,244,712

CLEANSING SYSTEM USING TREATED RECIRCULATING AIR

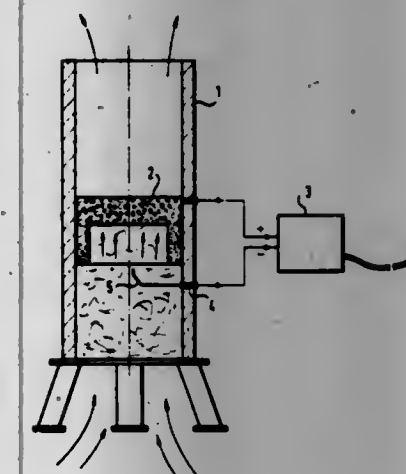
Stewart R. Tongret, 827 17th St., Santa Monica, Calif. 90403

Filed Mar. 5, 1979, Ser. No. 17,451

Int. Cl.³ B01D 35/06; B03C 3/32, 3/04

U.S. Cl. 55—124

1 Claim



- A method for purifying air comprising: passing air containing particles between an inlet and outlet of a housing; filtering said air through a charcoal microporous filter medium placed in the path of particles contained in said air, said charcoal microporous filter medium having a surface communicating with the inlet for receiving air containing particles and a surface communicating with the outlet for delivering air to said outlet; applying an electrical charge of a first polarity by an electrical connection to said surface of the charcoal filter medium communicating with the outlet for delivering air making electrical contact with said charcoal filter medium, whereby an electrostatic pole is primarily contained in the large interior surface of said charcoal filter medium; and charging particles in the air to be purified to a second polarity opposite the first polarity of said charcoal filter medium before the particles reach the surface of said charcoal filter medium communicating with said inlet whereby said charged particles entering said charcoal medium are electrostatically attracted to said charcoal filter medium and held thereby separated from the air.

4,244,711

PROCESS FOR MINIMIZING THE DEPOSITION OF MATERIALS IN THE AMMONIA LIQUOR COOLERS IN THE COKING OF CARBONACEOUS MATERIALS

Elwood V. Schulte, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Mar. 31, 1978, Ser. No. 892,141

Int. Cl.³ B01D 47/00

U.S. Cl. 55—89

6 Claims

- An improved process for cooling coke oven gas in the primary cooler of a coke oven gas by-product recovery process comprising contacting the coke oven gas in the primary cooler with ammonia liquor, passing the ammonia liquor com-

- A cleansing system using treated recirculating air including, in combination:
 - a housing having an air entrance opening and first and second air exit openings on opposite sides of the housing respectively;
 - blower means including a blower motor having a shaft with two centrifugal type blowers mounted on opposite sides of said shaft juxtaposed to said first and second exit openings, respectively, for drawing air into the entrance opening and through the housing out the exit openings;
 - an electrostatic air cleaner supported in said housing through which incoming air passes for filtering out negatively charged impurities in the air;
 - a charcoal filter in said housing following said electrostatic air cleaner for chemically absorbing other impurities in said air;
 - an ozone gas generator following said charcoal filter for adding ozone to air flowing through said housing;
 - first and second negative ion generators associated with said first and second exit openings respectively for charging air particles negatively, said blower means following said ozone gas generator and preceding said negative ion generators so that air flowing out said exit openings contains ozone and is treated with negative ions at the output of said blower means immediately prior to passing through said exit openings;
 - a timer attached to said housing for supplying electrical energy during a set time period to said blower means, electrostatic air cleaner and negative ion generator;

- (h) a high voltage transformer in said housing connected to said timer and including a grounded center tapped secondary coil providing high voltage A.C. on first and second output leads connected to said ozone generator; and,
- (i) first and second rectifiers connected respectively between said output leads and said center tapped ground for providing rectified positive and negative voltages, equal to one half the total output voltage of said high voltage transformer to said electrostatic air cleaner and said negative ion generators respectively, said air circulating around an area in which said housing is positioned and penetrating and permeating fabric, rugs, carpets and the like in said area to kill odor causing bacteria and essentially sanitize material with which the air comes into contact.

4,244,713

APPARATUS FOR ANALYSIS OF ABSORBED GASES
Brian Goodwin, Neston, England, assignor to The Medishield Corporation Limited, London, England

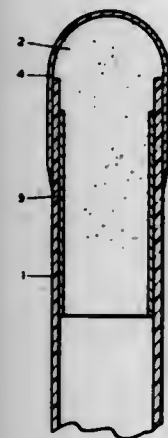
Filed Aug. 18, 1978, Ser. No. 935,064

Claims priority, application United Kingdom, Aug. 25, 1977, 35633/77

Int. Cl.³ B01D 53/22

U.S. Cl. 55—158

6 Claims



1. A device for use in the analysis of absorbed gases in liquids, comprising a flexible plastics material tube, one end of which is fitted with a porous material plug having a permeability which in use defines the passage of gas through said end of the tube, and the end of the tube being covered with a polymeric material layer for protecting said porous plug by constraining the diffusion of liquid as would impair its gas permeability, said polymeric layer also inhibiting the passage of water vapor through said porous plug, the gas permeability of the porous material plug being substantially less than that of the polymeric material layer.

4,244,714

SUMP DIVIDER FOR DEMISTER UNIT
Robert C. McGuire, Dublin, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 10, 1979, Ser. No. 37,963

Int. Cl.³ B01D 47/06

U.S. Cl. 55—238

9 Claims



1. Improved apparatus for cleaning particle-laden gas of the type which includes a duct, means for introducing liquid droplets in the particle-laden gas flowing through the duct, demister means in the duct for removing liquid and particles from

the gas, and moving means for moving gas through the duct, the improvement comprising:

- (a) a flow path means forming at least one curved flow path in the demister means for causing the gas to change direction and effect separation primarily by centrifugal force followed by a straight flow path wherein further separation takes place principally due to gravitational forces,
- (b) a liquid collection surface defining the bottom of the demister means,
- (c) removing means for removing liquid from the liquid collection surface,
- (d) a liquid collection barrier disposed in the straight flow path downstream from the curved flow path and defining the downstream end of the liquid collection surface; the barrier extending the width of the flow path;
- (e) a boundary surface spaced above the collection surface and below the uppermost portion of the barrier and extending across at least a substantial portion of the width of the duct through the curved flow path for forming upper and lower duct portions and separating removed liquid and flowing gas, the boundary surface including a plurality of openings for communicating the upper and lower portions so that liquid can gravitate to the lower portion and gas can flow through the upper portion with minimal re-entrainment of liquid.

4,244,715

DUST REMOVAL APPARATUS
Manfred Eisenbarth, Zweibrücken, Fed. Rep. of Germany, assignor to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany

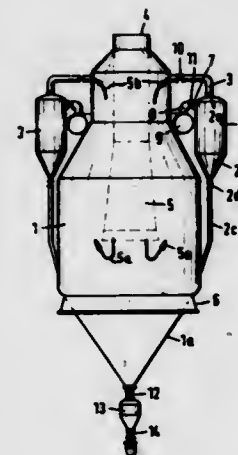
Filed Nov. 5, 1979, Ser. No. 91,507

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927317

Int. Cl.³ B01D 46/02

U.S. Cl. 55—315

5 Claims



1. Apparatus for removing dust and other dry contaminant particles from a contaminated gas flow, comprising

- (a) a dust pre-separator housing;
- (b) an inlet in the top of said pre-separator housing;
- (c) an outlet in the bottom of said pre-separator housing;
- (d) a diverging expansion pipe extending from said inlet to a point spaced from said outlet; the improvement characterized by
- (e) a plurality of secondary filter cases having gas inlets and outlets in the top thereof and positioned adjacent said pre-separator housing;
- (f) a plurality of secondary gas outlets adjacent the top of said pre-separator housing;
- (g) first flow communication means connecting each of said secondary gas outlets to one of said gas inlets of said secondary filter cases;
- (h) a purified gas manifold;
- (i) second flow communication means connecting the outlets of said secondary filter cases to said purified gas manifold;

- (j) valve means in said first and second flow communication means; and
- (k) a dust removal outlet in the bottom of each said secondary filter case;
- (l) each said dust removal outlet connected to the bottom of said dust pre-separator housing adjacent the outlet thereof.

4,244,716

SKIMMER APPARATUS FOR CENTRIFUGAL SEPARATORS

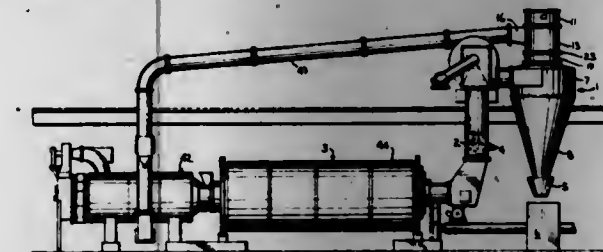
Witfried P. Duske, Milwaukee, Wis., assignor to Progressive Development Inc., Milwaukee, Wis.

Filed Jul. 2, 1979, Ser. No. 53,972

Int. Cl.³ B04C 5/103

U.S. Cl. 55—340

10 Claims



1. A skimmer apparatus for use with a centrifugal flow means in which fluid borne particulate is concentrated in the outer periphery of the fluid, said peripheral air containing particulate, the improvement in said skimmer apparatus for removing said retained particulate from said fluid comprising a means establishing an annular passageway aligned with the periphery of the exiting air and having a peripheral discharge opening, said means comprising an outer cylinder means connected to and spaced from an inner cylinder means, a spiral wall strip having first and second edges located with the annular passageway with one of said strip edges secured to said outer cylinder and the other of said strip edges secured to said inner cylinder means for directing of the outer portion of the air to said peripheral discharge opening and back to the center of the skimmer and means to selectively proportion the air, directly enter the opening and back to the center of the skimmer.

4,244,717

SYSTEM FOR COLLECTING SOLID PARTICLES ENTRAINED IN A GAS STREAM

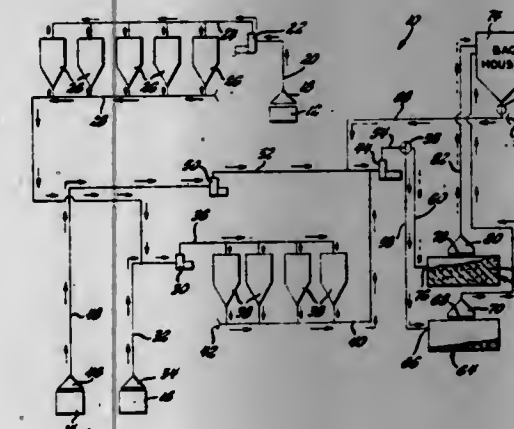
Robert W. Butcher, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1978, Ser. No. 961,042

Int. Cl.³ B01D 46/02

U.S. Cl. 55—364

8 Claims



1. System for collecting solid particles entrained in a gas stream, said system comprising:
a solid particle receptacle made entirely of material impervious to a gas stream and having opposed ends and a top and a bottom and opposed sides joining said ends and top and

bottom to define an envelope impervious to a gas stream, the length of said receptacle between said opposed ends being greater than its width between said sides or its height between said top and bottom, said receptacle having a gas stream entrance opening in the top part of one of said ends and facing toward the other of said ends, and an unrestricted gas stream exit opening in said top generally centrally disposed between and spaced from said ends and sides and having an effective area about ten times as great as the effective area of said entrance opening;

first conduit means for conducting a gas stream with solid particles entrained therein to said entrance opening and into the interior of said receptacle in a direction toward said other of said ends and at a predetermined first volumetric flow rate and a predetermined first velocity sufficient to keep the solid particles entrained in the gas stream until they pass through said entrance opening, the gas stream then slowing in velocity in said receptacle sufficiently to permit substantially all of the solid particles entering said receptacle to fall out of the gas stream and be deposited in said receptacle, said first conduit means extending from said one end and integral with said one end; second conduit means for conducting the gas stream and any solid particles remaining entrained therein from the interior of said receptacle through said exit opening at substantially the same volumetric flow rate as said first volumetric flow rate and at a second upwardly directed velocity which is sufficiently less than said first velocity so that most of the solid particles still entrained in the gas stream in said second conduit means fall back into said receptacle through said exit opening and only a small portion of the solid particles entering said receptacle remain entrained in the gas stream, the values of the volumetric flow rate and the velocities depending at least in great part on the density of the solid particles, said second conduit means extending from the top of said receptacle and integral therewith in the form of an elongate collar.

4,244,718

REVERSE GAS-FLOW BAG FILTER

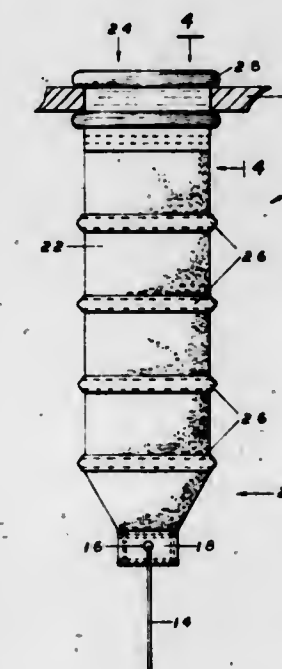
Emerson L. Noddin, Auburn, Me., assignor to Albany International Corp., Albany, N.Y.

Filed Apr. 15, 1976, Ser. No. 677,402

Int. Cl.³ B01D 46/02

U.S. Cl. 55—377

5 Claims



1. In a bag filter to be received in the opening in a dividing plate of a bag filter housing and supported thereby, said bag including a peripheral wall and open and closed upper and lower ends respectively, said wall of said bag folded upon itself

at the open end thereof and fastened thereto to provide a cuff, an elastomeric gasket within said cuff, said gasket including spaced outwardly projecting beads adapted to urge said cuff in sealing engagement with the upper and lower surfaces of said dividing plate, means for connecting said lower end to said bag housing for tensioning said bag along its lengthwise axis, a hard surfaced support structure within said cuff adjacent said gasket, and a plurality of transversely extending wall support members attached to said bag in spaced relationship whereby said wall is prevented from inward or outward collapse.

4,244,719

METHOD AND APPARATUS FOR DISTRIBUTING MINERAL FIBERS

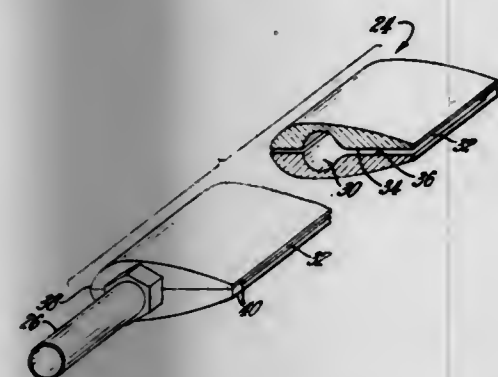
George R. Weiner, San Jose, Calif., assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Dec. 26, 1979, Ser. No. 107,300

Int. Cl.³ C03B 37/04

U.S. Cl. 65-4 R

15 Claims



1. In a system for deflecting a veil (16) of mineral fibers means for forming a mineral fiber veil and, an elongated nozzle (24), the improvement comprising:

- a manifold chamber (30) extending throughout the length of said nozzle (24);
- a discharge conduit (32) leading from said manifold chamber (30) to the downstream side (40) of said nozzle (24), said discharge conduit (32) being adapted to discharge a substantially non-turbulent flow of gases; and
- means (26) for introducing gases into said manifold chamber (30), said means (26) being positioned outside the path of the induced air;
- said nozzle having an airfoil-shaped cross section to enable a substantially non-turbulent flow of induced air past said nozzle (24).

4,244,720

FIBER WASTE AND CULLET COLLECTION PROCESS AND APPARATUS THEREFOR

Howard E. Boen, Waukegan, Ill.; Andre R. de Muinck, Littleton, Colo.; John H. Miller, Littleton, Colo., and Samuel R. Genson, Littleton, Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Nov. 8, 1978, Ser. No. 958,866

Int. Cl.³ C03B 37/04

U.S. Cl. 65-8

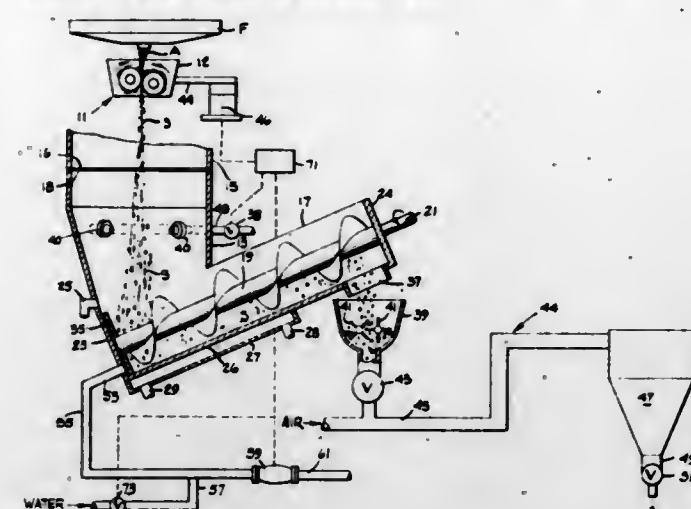
27 Claims

1. A process for the collection of waste or cullet from a fiberizing system in which a melt stream impinges on the outer rim of at least one rapidly spinning rotor, is broken into small drops by such impingement and the drops are attenuated into fibers by being flung from the rim of said at least one rotor, which process comprises:

- (a) positioning a collection hopper below the level of said at least one rotor in said system and disposed to receive waste or cullet from said system;
- (b) providing means to sense whether fiberizing is or is not occurring in said system at a given point in time;
- (c) when fiberizing is occurring, collecting waste from said

fiberizing in said hopper while said hopper is substantially dry;

- (d) when fiberizing is not occurring, collecting cullet from said system in said hopper while there is a significant quantity of liquid in contact with said melt stream whereby said cullet is formed; and



- (e) providing means responsive to said sensing means to cause said quantity of liquid to be introduced into said hopper when the non-occurrence of fiberizing is sensed and to cause said hopper to be substantially drained of liquid when the occurrence of fiberizing is sensed.

4,244,721

METHOD OF MAKING COMPOSITE BOROSILICATE GLASS ARTICLES

Prabhat K. Gupta, Mt. Rainier, Md.; Martin G. Drexhage, Washington, D.C., and Pedro B. de Macedo, 6100 Highboro Dr., Bethesda, Md. 20034, assignors to Pedro Buarque de Macedo, Bethesda and Theodore A. Litovitz, Silver Spring, both of, Md.

Continuation of Ser. No. 827,448, Aug. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 724,852, Sep. 20, 1976, abandoned. This application Jan. 31, 1979, Ser. No. 8,158

Int. Cl.³ C03C 15/00

U.S. Cl. 65-31

13 Claims

1. A method for producing a glass article which comprises melting a composition in the phase separable regions of the alkali-borosilicate or alkali-boro-germania-silicate systems and forming a preshaped glass article, inducing the preshaped article to phase separate into a silica-rich phase and a silica-poor phase by heat-treating it at 480° C. to 550° C. for 0.5 to 200 hours, leaching out the silica-poor phase only from the surface layers of the article so as to form a structure having porous surface layers surrounding an unleached region of substantially the original glass composition, washing this structure with an organic media which contains less than 50% by weight water to dissolve and remove oxides of boron and other leaching reaction products without substantially attacking the silica-poor phase which remains in the structure, said organic media including a member selected from the group consisting of lower aliphatic alcohols containing from one to five carbon atoms, acetone, or mixtures thereof, drying and heating the washed glass article to collapse the outer porous surface layers to form a glass having a silica-rich surface layer surrounding said unleached region of substantially the original glass composition.

4,244,722

METHOD FOR MANUFACTURING THIN AND FLEXIBLE RIBBON OF DIELECTRIC MATERIAL HAVING HIGH DIELECTRIC CONSTANT

Noboru Tsuya, 1-38, Kashiwagi 2-chome, and Kenichi Arai, both of Sendai, Japan, assignors to Noboru Tsuya, Sendai, Japan

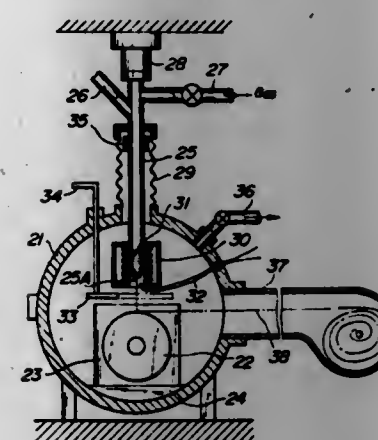
Filed Dec. 7, 1978, Ser. No. 967,434

Claims priority, application Japan, Dec. 9, 1977, 52-148604; Jan. 14, 1978, 53-72657

Int. Cl.³ C03B 19/02, 32/00

U.S. Cl. 65-32

18 Claims



1. A method for manufacturing a thin and flexible ribbon of dielectric material comprising the steps of heating a raw material consisting essentially of a dielectric material which can form a crystalline structure in a solid state and up to 50 atomic percent of a glass former at a temperature from the melting point of the raw material to about 300° C. above the melting point to form a one phase melt of the raw material; ejecting the melt through a nozzle under a pressure in the form of a jet flow against a moving surface of a cooling substrate moving at a speed of more than about 5 m/sec; and cooling the jet flow of the melt on the cooling surface at a cooling rate of about 1,000° to 1,000,000° C./sec so as to form a thin and flexible ribbon of the dielectric material containing an amorphous texture in an amount of more than 50% by area ratio.

4,244,723

SPONTANEOUSLY-FORMED MULLITE GLASS-CERAMICS

David G. Grossman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

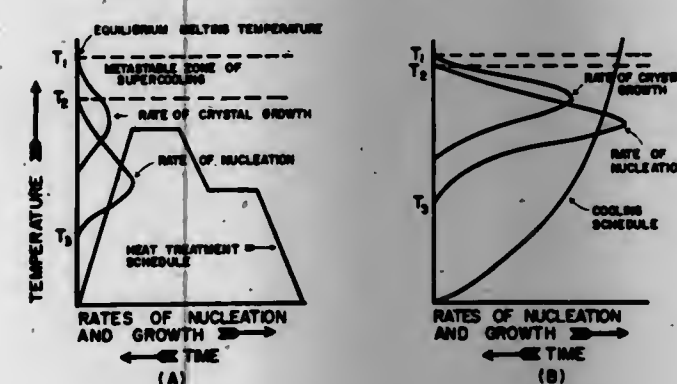
Filed Mar. 19, 1975, Ser. No. 559,789

Int. Cl.³ C03B 27/00, 32/00; C03C 3/22

U.S. Cl. 65-33

6 Claims

RATES OF NUCLEATION AND GROWTH WITHIN (A) CONVENTIONAL AND (B) SPONTANEOUSLY-FORMED GLASS-CERAMIC SYSTEMS



1. A method for making a highly crystalline glass-ceramic article consisting essentially of mullite and rutile crystals homogeneously dispersed within a glassy matrix, said crystals

constituting at least 50% by volume of said article, which comprises the steps of:

- (a) melting a batch for a glass consisting essentially, by weight on the oxide basis as calculated from the batch, of about 5-15% MgO, 15-35% Al₂O₃, 1-5% B₂O₃, 30-55% SiO₂, 8-15% TiO₂, and 5-15% F;
- (b) simultaneously cooling said melt to a temperature about 850°-1000° C. and shaping a glass body therefrom at a rate between about 10°-1000° C./minute to obtain phase separation and nucleation therein;
- (c) further cooling said shaped glass body and exposing said glass body to a temperature between about 650°-850° C. for a sufficient length of time to cause crystallization of the mullite and rutile in said glass body; and then
- (d) cooling the crystallized body to room temperature.

4,244,724

DOUBLE LINK ARRANGEMENT FOR PRESS BENDING MOLDS

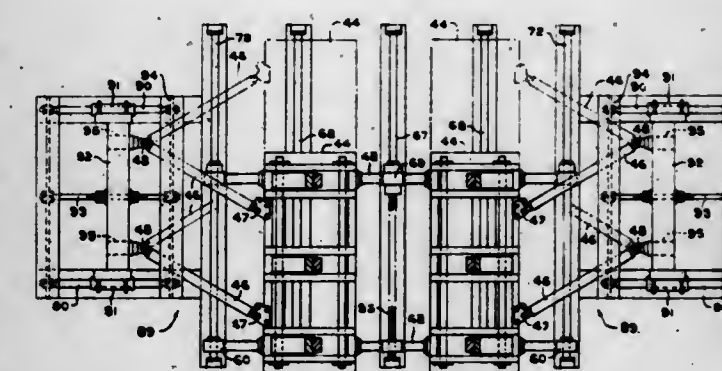
George R. Claassen, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 27, 1979, Ser. No. 70,277

Int. Cl.³ C03B 23/03

U.S. Cl. 65-106

7 Claims



1. A method of press bending a glass sheet supported in an upright orientation comprising combining the steps of moving said glass sheet continuously in a longitudinal direction from a heated atmosphere into a cooling area while supporting a pair of pressing molds of complementary shape on opposite sides of said moving glass sheet with their shaping surfaces aligned with one another and moving said pressing molds in unison from upstream retracted positions adjacent said heating atmosphere in said longitudinal direction toward said cooling area in transverse alignment with said moving glass sheet and simultaneously toward the opposite major surfaces of said upright glass sheet while maintaining said aligned orientation of said pressing molds relative to one another and to the major surfaces of said glass sheet until said pressing molds impart their complementary shapes onto the glass sheet and then retracting said pressing molds from glass sheet engagement without stopping the glass sheet until said glass sheet is exposed to blasts of tempering medium applied against its opposite surfaces.

4. Apparatus for press bending a glass sheet supported vertically by tongs comprising a heated furnace, a shaping station and a cooling area disposed in end to end relation, a conveyor for moving said glass sheet along an essentially horizontal path through said heated furnace, said shaping station and said cooling area, said shaping station comprising a pair of pressing molds having shaping surfaces of complementary configuration, a support structure on each side of said path, each of said support structures having one or the other pressing molds rigidly attached thereto in a predetermined selected position and with the shaping surfaces in aligned orientation with one another, a pair of links each having a front pivotal connection to the rear of one or the other of said support structures, a rear pivotal connection for each of said links connecting each of said links to a fixed structure, said links being of equal length and the distance between said front pivotal connections being

equal to the distances between said rear pivoted connections, transverse shaft means common to said pair of support structures, said pair of support structures being mounted for movement along said transverse shaft means in response to pivoting of said links, longitudinal drive means drivingly connected to said transverse shaft means for moving said support structures in unison in a direction longitudinal of said conveyor, longitudinal shaft means to guide said movement longitudinal of said conveyor, means coordinating the longitudinal movement of said support structures with movement of a glass sheet along said conveyor, and means to maintain said pressing molds in said aligned orientation while moving said support structures in unison with said glass sheet from an upstream retracted position adjacent said heated furnace through a glass engaging position at said shaping station to a downstream retracted position adjacent said cooling area in response to the pivoting of said links in response to movement of said support structures along said longitudinal direction of movement.

4,244,725

GLASSWARE HANDLING SYSTEMS

Frank A. Fenton, Doncaster, England, assignor to Emhart Industries, Inc., Farmington, Conn.

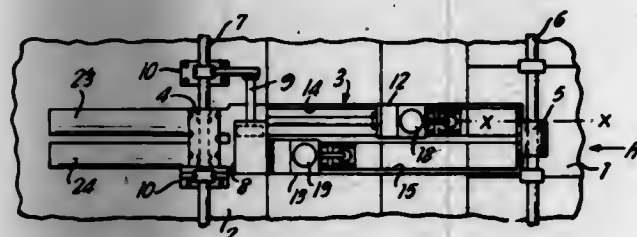
Filed May 11, 1979, Ser. No. 38,368

Claims priority, application United Kingdom, May 31, 1978, 25918/78

Int. Cl.³ C03B 35/12

U.S. Cl. 65—260

10 Claims



1. A glassware forming machine in combination with a glassware handling system for transferring formed articles of glassware from a blow mould of the machine to a spaced Lehr mat, the system comprising a carriage extending between the blow mould and the Lehr mat in the direction of transfer of the articles from the blow mould the Lehr mat, guide means permitting translational movement of the carriage in a substantially horizontal direction which is substantially perpendicular to said direction of transfer, the carriage carrying two heads each of which is capable of releasably holding the glassware and each of which is reciprocable with respect to the carriage between the blow mould and the Lehr mat, and actuating means which are operative to translate the carriage between a first position in which the reciprocatory path of one of the heads is aligned with the blow mould so that said one head is able to take out the glassware from the blow mould, and a second position in which the reciprocatory path of the other of the heads is aligned with the blow mould so that the other head is able to take out the glassware from the blow mould, the actuating means reciprocating the heads in timed relationship with translation of the carriage to enable the two heads to take out the glassware from the blow mould in alternate sequence and to deposit the glassware on the Lehr mat in alternate sequence.

4,244,726

APPARATUS FOR MANUFACTURING GLASS BOTTLES

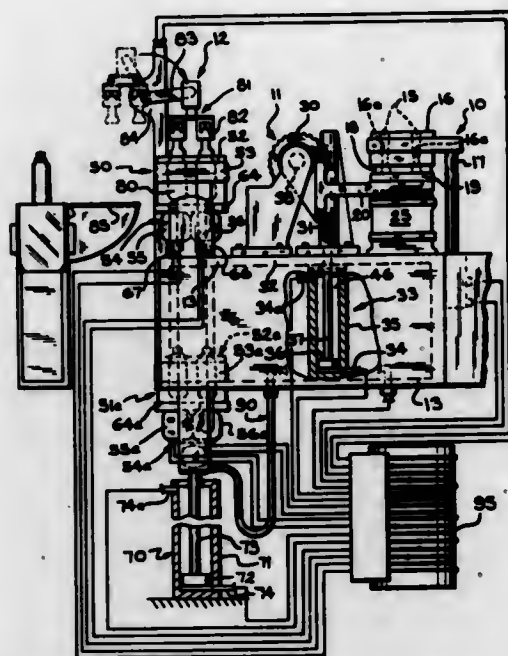
John D. Northup, 2460 Underhill Rd., Toledo, Ohio 43615, assignor to Jr. Northup; Nancy Northup Lehrkind; Mary Northup and Ruth B. Northup, part interest to each

Continuation-in-part of Ser. No. 906,048, May 15, 1978, abandoned. This application Nov. 29, 1978, Ser. No. 964,739

Int. Cl.³ C03B 9/14, 9/20

U.S. Cl. 65—264

4 Claims



1. Apparatus for manufacturing glass containers comprising: first and second blow molds, means for supporting said blow molds and means for reciprocating said supporting means along a substantially vertical path to bring said first and second blow molds into and out of a receiving position; means for delivering parisons to said blow molds when said blow molds are located at said receiving position; means for expanding the parisons in the blow molds into containers when said blow molds are out of said receiving position; and means for removing the expanded containers from the blow molds when the blow molds are located at the receiving position.

4,244,727

UREA-FORMALDEHYDE SOLUTION FOR FOLIAR FERTILIZATION

William P. Moore, Jr., Hopewell, Va., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 7, 1979, Ser. No. 10,115

Int. Cl.³ C05B 15/00

U.S. Cl. 71—29

6 Claims

1. A process for preparing a storage-stable aqueous solution of a urea-formaldehyde partial condensation product adapted for the foliar feeding of plants which consists of: providing an aqueous solution of an alkali metal hydroxide, urea and formaldehyde substantially free of formic acid, said solution having a urea to formaldehyde ratio of from 1.5 to 2.0, a nitrogen content between 10 and 30% and a pH between 8.5 and 9.8; heating said aqueous solution at a temperature of from 75° C. to 90° C. for 20 to 300 minutes while continuously maintaining the pH thereof between 8.5 and 9.8 by the incremental addition of an alkali metal hydroxide until the reaction mixture exhibits a viscosity of from 10 to 60 centipoise at 25° C.; and cooling said reaction mixture to ambient temperature and adjusting the pH to between 7.5 and 9.8 by the addition of a water soluble buffering agent in an amount to provide a buffering capacity requiring between 0.05 and 0.30 millie-

equivalents of phosphoric acid to lower the pH of one gram of the reaction mixture to 7.0.

4,244,728

CROSS-LINKED LIGNIN GELS

Humbert T. Dell'Colli; Peter Dilling, both of Charleston, and Sten I. Falkenag, Mt. Pleasant, all of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Feb. 3, 1976, Ser. No. 654,884

Int. Cl.³ A01N 25/04

U.S. Cl. 71—65

5 Claims

1. A cross-linked lignin gel for use as a controlled release herbicide carrier comprising the reaction product of an aqueous solution of alkali lignin at a concentration of 10% to 40% weight by volume with from 1 to 10 moles of a cross-linking agent selected from the group consisting of formaldehyde, glyoxal, and glutaric dialdehyde reacted at a temperature between about 10° C. and 100° C. until a reversibly swellable gel is formed.

4,244,729

SUSTAINED RELEASE PESTICIDE COMPOSITIONS AND PROCESS FOR MAKING SAME

Humbert T. Dell'Colli, and Peter Dilling, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y. Division of Ser. No. 581,634, May 28, 1975, Pat. No. 4,184,866.

This application Jan. 8, 1976, Ser. No. 693,876

Int. Cl.³ A01N 25/04

U.S. Cl. 71—65

2 Claims

1. In a process for making a controlled release pesticide carrier, the improvement comprising, (a) reacting alkali lignin solution at a concentration of between 10% and 25% by volume with from 1 to 5 moles of epichlorohydrin at a temperature between about 50° C. and 100° C. for from 5 minutes to 2 hours to thereby form a reversibly swellable gel.

4,244,730

HERBICIDAL

N-HALOACETYL-2-ALKYL-6-ACYLANILINES

John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

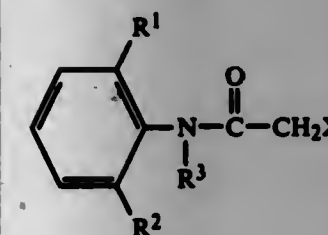
Filed Jul. 2, 1979, Ser. No. 53,877

Int. Cl.³ A01N 43/30, 43/32

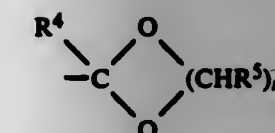
U.S. Cl. 71—88

7 Claims

1. A compound of the formula



wherein R¹ is alkyl of 1 to 4 carbon atoms; or alkoxy of 1 to 4 carbon atoms; R² is a group of the formula



wherein n=2, 3 or 4; R⁴ is alkyl of 1 to 3 carbon atoms and R⁵ is hydrogen or alkyl of 1 to 3 carbon atoms; R³ is hydrogen or alkyl of 1 to 4 carbon atoms; and X is halogen.

4. An herbicidal composition comprising a biologically inert carrier and an herbicidally effective amount of the compound of the formula defined in claim 1.

4,244,731

METHOD FOR CONTROLLING THE GROWTH OF PLANTS

Hiromichi Oshio, Minoo; Hiroyuki Konishi, Ibaraki; Shunji Matsumura, Hirakata; Kikuchi Ishikawa, and Eichi Yoneyama, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

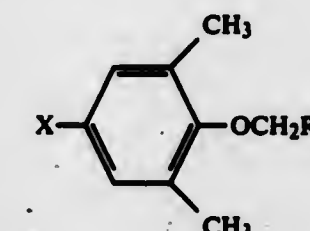
Filed Apr. 14, 1978, Ser. No. 896,487

Claims priority, application Japan, Apr. 18, 1977, 52/44676 Int. Cl.³ A01N 37/34, 37/38

U.S. Cl. 71—105

12 Claims

1. A method for regulating the growth of a plant which comprises applying to the plant a plant growth regulating effective amount of a 2,6-dimethylphenoxy compound of the formula,



wherein R is hydroxycarbonyl, C₁₋₆ alkoxy carbonyl, C₁₋₆ alkylcarboxymethyl, mono-, di- or tri-halo C₁₋₄ alkylcarboxymethyl or nitrile; X is hydrogen or C₁₋₄ alkylcarbonyl, when R is C₁₋₆ alkylcarboxymethyl, mono-, di- or tri-halo C₁₋₄ alkylcarboxymethyl or nitrile; and X is C₁₋₄ alkylcarbonyl or benzoyl, when R is hydroxycarbonyl or C₁₋₄ alkoxy carbonyl.

4,244,732

MANUFACTURE OF STEEL FROM ORES CONTAINING HIGH PHOSPHOROUS AND OTHER UNDESIRABLE CONSTITUENTS

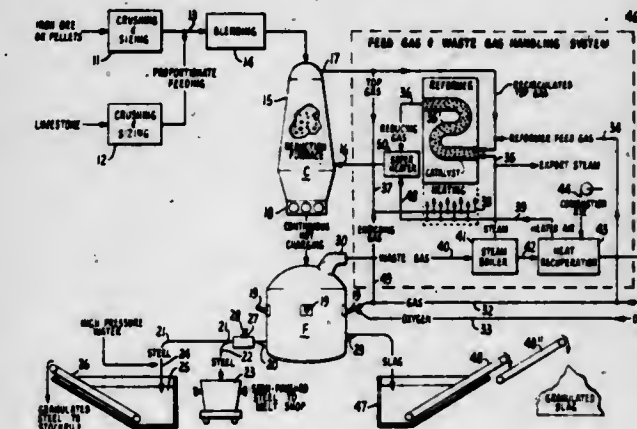
Frank E. Brauns, Alta Loma, Calif., assignor to Kaiser Engineers, Inc., Oakland, Calif. and Societe Nationale de Siderurgie, Algiers, Algeria

Filed Mar. 27, 1979, Ser. No. 24,410

Int. Cl.³ C21B 11/00

U.S. Cl. 75—38

8 Claims



1. A process for producing relatively semifinished steel from iron oxide ores containing relatively high quantities of phosphorous oxides comprising the following steps:

- blending presized granules of said high phosphorous iron ore and limestone;
- feeding said ore and limestone to a reduction furnace to form a permeable bed therein and through which heated reducing gases at a temperature within the range of about 850° C. to 1250° C. are introduced to flow upwardly through said bed to reduce the iron oxides therein without reducing to any great extent the oxides of phosphorous contained in said ore to thereby convert said ore to sponge iron of at least 75 percent metallic iron;
- passing said heated product of step (b) in solid form to a high temperature of at least 1650° C. wherein said metallic iron is melted to a liquid form and the heated partially

calcined limestone forms a molten slag into which the phosphorous oxides are fluxed and stabilized, said melting being conducted in the absence of reducing agent so as not to reduce the phosphorous, thus effecting a separation from the metallic iron in the melt and producing a low phosphorous semifinished steel suitable for refining; and (d) recovering the semifinished steel for conversion into fully refined steel of negligible phosphorous content in conventional furnaces.

4,244,733

METHOD OF PRODUCING BLISTER COPPER FROM COPPER RAW MATERIAL CONTAINING ANTIMONY
Stig A. Petersson, Skelleftehamn; Bengt S. Eriksson, Skelleftea, and Arne C. Fridfeldt, Skelleftehamn, all of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE78/00030, § 371 Date Apr. 19, 1979, § 102(e) Date Apr. 12, 1979, PCT Pub. No. WO79/00104, Pub. Date Mar. 8, 1979.

This PCT application filed Apr. 12, 1979, Ser. No. 47,712

Claims priority, application Sweden, Aug. 19, 1977, 7709355

Int. Cl.³ C22B 15/00

U.S. Cl. 75—72

16 Claims

1. A method of producing blister copper from antimony-containing copper raw material including smelting of the copper raw material during formation of matte and a slag and converting said matte to blister copper, characterized in that the slag is separated from the copper matte, whereupon the copper matte prior to being converted to blister copper, is brought into contact, under violent agitation, with a gas, neutral to the matte in a quantity sufficient to reduce by volatilization the antimony content of the copper matte and also the content of any other impurities selected from the group consisting of bismuth, arsenic and zinc to a level acceptable when performing the subsequent converting process to obtain the desired blister copper product.

4,244,734

PROCESS FOR RECOVERING METAL VALUES FROM MATERIALS CONTAINING ARSENIC

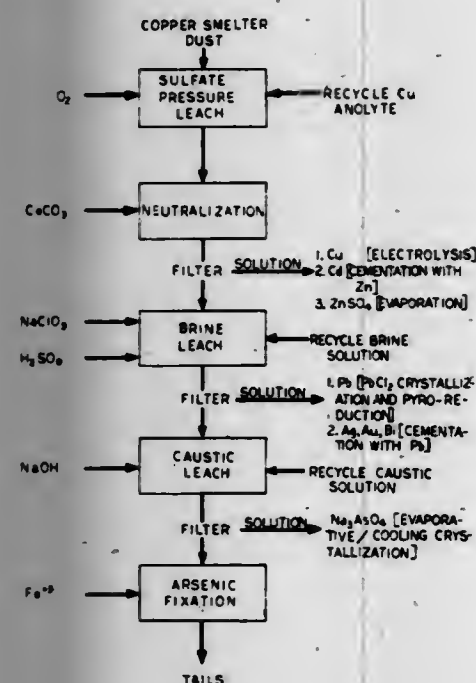
James E. Reynolds, and Enzo L. Coltrinari, both of Golden, Colo., assignors to Hazen Research, Inc., Denver, Colo.

Filed Jul. 19, 1979, Ser. No. 58,868

Int. Cl.³ C22B 13/04, 11/04, 15/08, 19/22

U.S. Cl. 75—101 R

18 Claims



1. A process for separating arsenic from a material containing arsenic and one or more metal values selected from the

group consisting of copper, cadmium, zinc and germanium, comprising:

- leaching the material to solubilize arsenic and the other metal values;
- contacting the leach solution with ferric ions to precipitate arsenic as a ferric-arsenic compound;
- retaining the leach solution in contact with the ferric ions for a sufficient period of time to precipitate substantially all the arsenic present in solution;
- performing a liquid-solid separation; and
- neutralizing the liquid of step (d) to a pH of about 3 to precipitate a substantial portion of the remaining arsenic.

4,244,735

CHLORIDE LEACH PROCESS FOR RECOVERING METAL VALUES IN THE PRESENCE OF ARSENIC
James E. Reynolds, and Enzo L. Coltrinari, both of Golden, Colo., assignors to Hazen Research, Inc., Denver, Colo.

Filed Jul. 27, 1979, Ser. No. 61,411

Int. Cl.³ C22B 13/04, 11/04, 15/08, 19/22

U.S. Cl. 75—101 R

13 Claims

1. In a hydrometallurgical process for recovering metal values selected from the group consisting of lead, silver, gold, antimony and bismuth from a material containing arsenates wherein substantially all of the arsenic is present in its pentavalent state, the improvement comprising leaching said metal values with a solution containing sufficient chloride ion concentration, in an amount of 2-4 gpl ferric ions and an oxidizing agent at a pH of at most about 1.0 in order to solubilize a substantial portion of the desired metal values to the exclusion of the arsenates.

4,244,736

YTTRIUM CONTAINING ALLOYS

Joseph G. Day, Holmer Green, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Jul. 5, 1978, Ser. No. 922,158

Claims priority, application United Kingdom, Jul. 5, 1977, 28073/77

Int. Cl.² C22C 1/00

U.S. Cl. 75—129

16 Claims

1. A process for the production of alloys containing iron, chromium, aluminium and yttrium and/or other rare earth metal or metals in which yttrium and/or other rare earth metal or metals is added to a melt in the form of a master alloy, the master alloy having a melting point of less than 1000° C.

4,244,737

METHOD AND ALLOY FOR INTRODUCING MACHINABILITY INCREASING INGREDIENTS TO STEEL

Michael O. Holowaty, Crown Point, Ind., and Debanshu Bhattacharya, Matteson, Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,670

Int. Cl.³ C22C 33/00

U.S. Cl. 75—129

11 Claims

1. A method for introducing lead and bismuth to steel, said method comprising the steps of:
adding to molten steel an alloy of 5-40 parts lead and 5-40 parts bismuth, said alloy being added as discrete particles thereof to enhance the uniformity of distribution in said molten steel of said lead and bismuth; and
including, as an addition in said alloy of lead and bismuth, at least one of 1.5-6 parts tellurium and 1.9-25 parts sulfur; said addition being present in an amount which substantially increases the melting point of said alloy while contributing to the machinability of the steel, whereby the amount of lead and bismuth retained in the steel is substantially increased.

4,244,738

METHOD OF AND APPARATUS FOR HOT PRESSING PARTICULATES

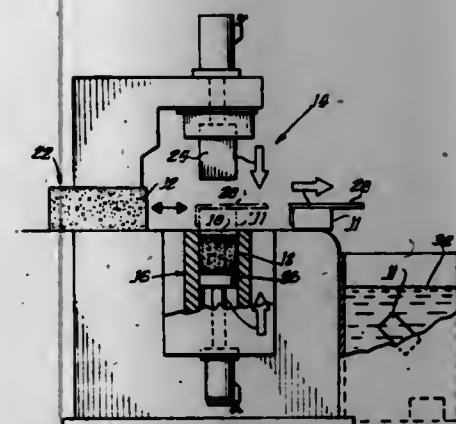
Samuel Storchheim, 2201 S. Stewart, Lombard, Ill. 60148

Filed Mar. 24, 1978, Ser. No. 889,745

Int. Cl.² B22F 3/14, 3/24

U.S. Cl. 75—211

22 Claims



1. A method for the manufacture of hot pressed articles from metallic or metallic alloy particles, said method comprising the steps of:

- providing particles having a dimension in one direction of at least 1,000 microns and having a surface area to volume relationship in the range of between about 3 and about 1,000 and providing sufficient metal volume for strain hardening when being hot pressed,
- preheating the particles to a predetermined temperature in the range from the recrystallization temperature to the incipient melting temperature for the metal or alloy and which is a sufficiently high temperature to provide high plasticity for the particles being worked and strain hardened during hot pressing, heating a die cavity to a temperature sufficient to maintain the particles at said predetermined temperature during subsequent hot pressing, introducing the heated particles into the heated die cavity, hot pressing the preheated particles in the die for a time period of less than 30 seconds while the particles are heated to said predetermined temperature at a pressure in excess of 12 tsi to work the highly plastic particles sufficiently to strain harden the particles and to consolidate the particles into a high density article, and
- removing the article from said heated die cavity.

18. A method in accordance with claim 1 in which the step of hot pressing the particles includes the step of heating the particles to a temperature close to about said solidus temperature for the metal alloy.

4,244,739

CATALYTIC SOLUTION FOR THE ELECTROLESS DEPOSITION OF METALS

Roberto Cagnassi, 98 via Ventimiglia, I-10126 Torino, Italy

Filed Jul. 10, 1979, Ser. No. 56,398

Claims priority, application Italy, Jul. 25, 1978, 68768 A/78

Int. Cl.³ B01J 31/02; C25D 3/52; C23C 3/02; B05D 3/10

U.S. Cl. 106—1,11

31 Claims

1. In a catalytic solution for the electroless deposition of metals onto electrically non conductive or only partially conductive supports, containing the products of a mixing and reaction of at least one water-soluble salt of a noble metal of group IB or group VIII of the periodic system, at least one water-soluble salt of a metal of group IV of the periodic system, and an acid capable of forming stable complexes with said salts, the improvement that at least most of said acid is an aliphatic sulphonic acid having the general formula RSO_3H , where R is a linear or branched aliphatic group containing from 1 to 6 carbon atoms.

4,244,740

PIPE COATING COMPOSITION UTILIZING CEMENT KILN DUST FILLER

Robert J. Harris, Marrero, La., assignor to H. C. Price Co., Bartlesville, Okla.

Continuation-in-part of Ser. No. 918,967, Jun. 26, 1978,

abandoned. This application Mar. 19, 1979, Ser. No. 21,722

Int. Cl.³ C09D 5/08

U.S. Cl. 106—14.34

5 Claims

1. A pipe coating composition comprising a thermoplastic binder, particulate material and cement stack dust filler.

4,244,741

INFRARED ABSORBER

Jurgen M. Kruse, Acton, Mass., assignor to United States Postal Service, Washington, D.C.

Filed Mar. 16, 1979, Ser. No. 8,635

Int. Cl.³ C09D 11/00, 5/32

U.S. Cl. 106—20

19 Claims

1. An infrared absorbing composition comprising an absorbing layer material, a reduced heteropolyacid selected from the group consisting of phosphomolybdic acid, phosphotungstic acid, silicomolybdic acid and silicotungstic acid and a solvent selected from the group consisting of water, alcohol and a glycol ether.

4,244,742

PROCESS FOR THE PRODUCTION OF AQUEOUS BASED INNER TIRE RELEASE COMPOSITIONS

Peter Huber, and Jürgen Meusel, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,739

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828122

Int. Cl.³ B28B 7/36

U.S. Cl. 106—38.22

11 Claims

1. In the process for the production of an aqueous-based inner tire release dispersion comprising the steps of dispersing at least one diorganopolysiloxane and at least one lubricant-acting inorganic silicate in water in the presence of lecithin and nonionic surface-active emulsifiers, and recovering said aqueous-based inner tire release dispersion, the improvement consisting essentially of emulsifying together said lecithin, at least a part of said nonionic surface-active emulsifier and water before this emulsion is mixed with at least 80% by weight of the total weight of diorganopolysiloxane in the form of an aqueous emulsion and the optionally present lubricants other than inorganic silicates and diorganopolysiloxanes.

4,244,743

SULFUR CONTAINING REFRACTORY FOR RESISTING REACTIVE MOLTEN METALS

Martin J. Blackburn, Kensington, Conn.; Steven Z. Hayden, Clifton Park, N.Y., and Michael P. Smith, Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 23, 1979, Ser. No. 32,197

Int. Cl.³ C04B 35/00

U.S. Cl. 106—55

11 Claims

1. A sintered material for resisting the attack of reactive molten metals having the atomic formula:



where O is oxygen and S is sulfur and where M is one element selected from the scandium sub-group of periodic table transition metals (scandium, yttrium and the rare earths) and aluminum or mixtures thereof and where a ranges from about 0.4 to 0.45, b from about 0.1 to 0.6, and c from about 0.2 to 0.6.

4,244,744

REFRACTORY GUN MIX

Nicholas Cassens, Jr., Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 6, 1979, Ser. No. 64,312
Int. Cl.³ C04B 35/04, 35/42

U.S. Cl. 106—53

6 Claims

1. A refractory gun mix consisting essentially of from 1 to 5% sodium silicate, from 0.3 to 3% gypsum, and from 0 to 5% bentonite, the balance being refractory aggregate, all percentages being by weight and based on the total weight of the composition.

4,244,745

HIGH-STRENGTH REFRACTORY CASTING COMPOUND FOR THE MANUFACTURE OF MONOLITHIC LININGS

Peter H. Havranek, and Lars O. Thorblad, both of Höganäs, Sweden, assignors to Höganäs AB, Höganäs, Sweden

Filed May 31, 1979, Ser. No. 44,327

Claims priority, application Sweden, Jun. 22, 1978, 7807178

Int. Cl.³ C04B 35/02, 7/32

U.S. Cl. 106—64

8 Claims

1. A refractory casting compound having high strength and high resistance to wear at high temperatures comprising (a) 80-90 parts by weight of a granular refractory filler, (b) 10-20 parts by weight of a mixture consisting of 5-15 parts by weight of reactive alumina and 1.5-5 parts by weight of calcium aluminate cement for a total of 100 parts by weight of said filler and said mixture, and (c) 6-10 parts by weight of a silica sol which contains at least 30 percent by weight of silica.

4,244,746

SINGLE PACKAGE ADDITIVE FOR THERMOPLASTIC FORMULATION

Paul H. Washebeck, and Ron G. Hale, both of Ponca City, Okla., assignors to Cosco, Inc., Ponca City, Okla.

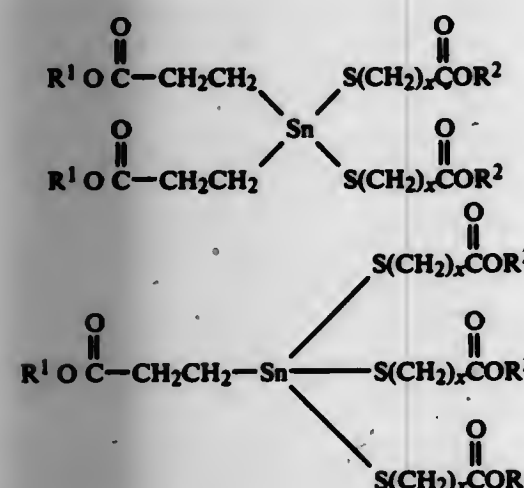
Filed Jul. 16, 1979, Ser. No. 57,785

Int. Cl.³ C08L 91/00, 91/06

U.S. Cl. 106—268

15 Claims

1. A process for producing an improved friable composition for addition for thermoplastic formulations during extrusion comprising mixing a paraffinic hydrocarbon wax, calcium hydroxide, and a fatty acid or a calcium salt with a fatty acid while heating to a temperature of at least 150° C. thereafter adding a stabilizer and cooling to recover a solid glass-like friable composition, said paraffinic hydrocarbon wax having a drop melting point of at least 43° C., an oil content of not greater than 50 percent by weight and a needle penetration value (25° C.) in the range of 1 mm to 20 mm, said fatty acid being a C₁₆-C₂₄ aliphatic hydrocarbon monocarboxylic acid or mixtures thereof; said stabilizer having a structure selected from the group consisting of



wherein R¹ is, independently, a saturated alkyl group containing from 1 to 10 carbon atoms, R² is independently a saturated

or unsaturated alkyl group containing from 1 to 25 carbon atoms, and x is 1 to 5.

4,244,747

MODIFIED ASPHALT PAVING COMPOSITIONS

John B. Leonard, Jr., Hillsborough, and Philip T. Selfridge, Sunnyvale, both of Calif., assignors to Chem-Crete Corporation, Menlo Park, Calif.

Filed Mar. 12, 1979, Ser. No. 19,739

Int. Cl.³ E01C 7/18, 7/22, 7/26

U.S. Cl. 106—271

9 Claims

1. A modified asphalt cement composition capable of improving the compressive strength characteristics of an aggregate-containing paving composition made therefrom comprising (a) a substantially unblown, unoxidized and unmodified asphalt cement having bitumens as a predominant constituent and being generally characterized by a penetration of less than about 400 measured at 25° C. and a viscosity greater than 65 poise at 60° C., and (b) between about 0.02 and 2.0 percent by weight of said unmodified asphalt cement of manganese chloride of copper chloride, alone or in combination, said manganese or copper chloride being uniformly dispersed or substantially dissolved in said asphalt cement.

4,244,748

METHOD FOR SEPARATING MILL STARCH TO OBTAIN A PROTEIN-RICH PRODUCT AND A STARCH-RICH PRODUCT

Vincent P. Chwalek, Bolingbrook, and Clifford W. Schwartz, Willowbrook, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

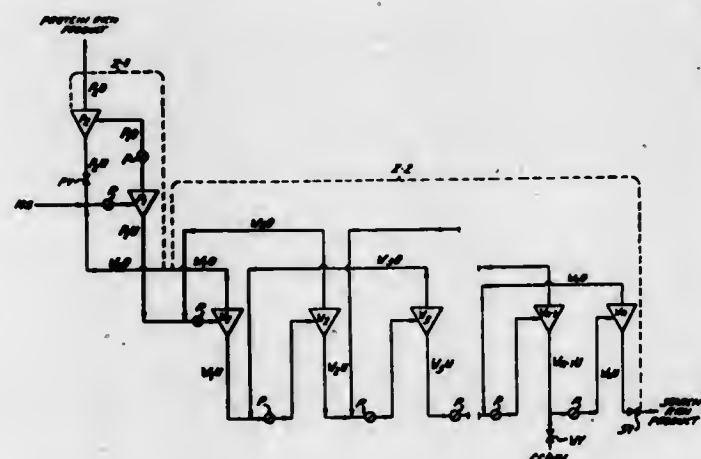
Division of Ser. No. 734,683, Oct. 22, 1976, Pat. No. 4,144,087.

This application Jan. 22, 1979, Ser. No. 5,537

Int. Cl.³ C13L 1/00

U.S. Cl. 127—67

15 Claims



1. A method for obtaining a protein-rich product and a starch-rich product from the mill starch fraction of a corn wet milling process, said method comprising:

adjusting said mill starch fraction to a pH of about 3.0-6.0 and a density at 60° F. of about 7.5-8.5° Be;

feeding said mill starch fraction through a first separation zone containing at least two protein separation stages and a second separation zone containing a plurality of starch washing stages, each stage of said protein separation stages and each stage of said starch washing stages comprising a plurality of hydrocyclones arranged in parallel within a housing, said hydrocyclones comprising a vortex member, a conical member and an apex member, said mill starch fraction being fed under pressure successively through said protein separation stages such that said mill starch fraction is separated into a protein-rich stream and a starch enriched stream, said protein-rich stream being discharged through the vortex members of said hydrocyclones in said protein separation stages and said starch-enriched stream being discharged through the apex mem-

bers of said hydrocyclones in said protein separation stages; concurrently feeding a counter current stream of wash water through said first and second separation zones, said wash water being introduced adjacent the penultimate stage of said starch washing stages at a rate of about 22-32 gals./100 lbs. corn on a dry substance basis; maintaining the pressure differential ΔP across each of said protein separation stages at at least about 100 p.s.i.; removing a protein-rich stream from the last stage of said protein separation stages; recombining the starch-enriched stream discharged from the apex member of the second of said protein separation stages with the initial feed of said mill starch fraction; feeding the starch enriched stream discharged from the apex member of the first of said protein separation stages under pressure successively through said plurality of starch washing stages such that lighter, slower settling materials are discharged through the vortex members of said hydrocyclones in said starch washing stages and the heavier, faster settling materials are discharged through the apex members of said hydrocyclones in said starch washing stages, said faster settling materials consisting essentially of an increasingly enriched starch stream; recombining the lighter, slower settling materials discharged from said second separation zone with the initial feed of said mill starch fraction; maintaining the pressure differential ΔPW across each successive starch washing stage at at least about 80 p.s.i.; maintaining the temperature in said first and second separation zones at a level no lower than about 90° F. and no higher than about 145° F.; recirculating said lighter, slower settling materials discharged from one of said starch washing stages to an upstream starch washing stage such that said lighter, slower settling materials are combined thereat with said starch enriched stream being fed to said upstream starch washing stage; removing the enriched starch stream from the last stage of said starch washing stages; and adjusting the pressure in said first and second separation zones such that the protein-rich stream obtained from said last protein separation stage contains no more than about 1.6 and no less than about 1.35 oz./gal. insoluble dry substance materials.

4,244,749

ULTRASONIC CLEANING METHOD AND APPARATUS FOR HEAT EXCHANGERS

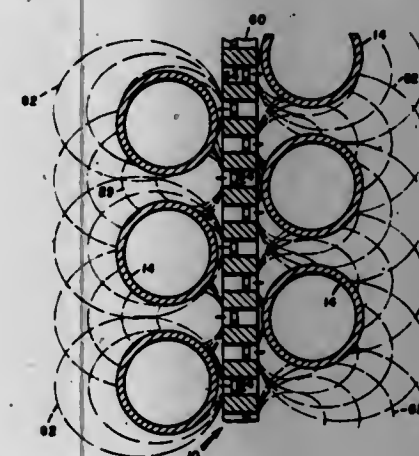
Samuel L. Sachs, Columbia, and Freeman K. Hill, Fulton, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Nov. 24, 1978, Ser. No. 963,417

Int. Cl.³ B08B 3/12

U.S. Cl. 134—1

38 Claims



32. A method for cleaning heat exchanger apparatuses functionally incorporating a plurality of spaced apart pipes having

the external surfaces thereof in contact with a liquid which causes buildup of substances on said surfaces and reduces the heat transfer through said surfaces comprising the steps of: positioning ultrasonic transducer means dimensioned for insertion between said spaced apart pipes within said liquid between said spaced apart pipes proximate to a surface of said pipes to be cleaned so that the energy radiated from said transducer is directed toward said surface; applying power to said ultrasonic transducer means; and moving said ultrasonic transducer means relative to said surface of said heat exchanger at a rate permitting the cleaning thereof.

4,244,750

PHOTOVOLTAIC GENERATOR

André Chenevas-Paul; Igor Melnick, both of Grenoble, and Line Vieux-Rochaz, Fontaine, all of France, assignors to Commissariat à l'Energie Atomique, Paris, France

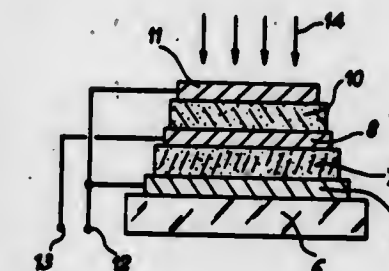
Filed Aug. 1, 1979, Ser. No. 62,791

Claims priority, application France, Aug. 2, 1978, 78 22826

Int. Cl.³ H01L 31/04

U.S. Cl. 136—255

8 Claims



1. A photovoltaic generator comprising a basic photovoltaic stack having a structure consisting of a semiconducting layer interposed between a layer forming an ohmic contact and a layer forming a Schottky-type contact, wherein at least one additional photovoltaic stack having a structure which is identical with that of the basic stack is formed on said basic stack and includes one of the layers forming an ohmic or Schottky contact, the layer or layers forming an ohmic contact being interconnected so as to constitute a first output terminal of the generator and the layer or layers forming a Schottky contact being interconnected so as to constitute a second output terminal of the terminal.

4,244,751

METHOD FOR MELT NITRIDING OF ALUMINUM OR ITS ALLOY

Saemum Hieki, Kashiwa; Toshihiro Yamada, Tomobomachi; Kazuyoshi Hatano, Minorimachi; Mitsuaki Haneda, Tomobomachi, and Shoji Imanaga, Shimoinayoshi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 26, 1979, Ser. No. 52,200

Claims priority, application Japan, Jun. 30, 1978, 53-78683

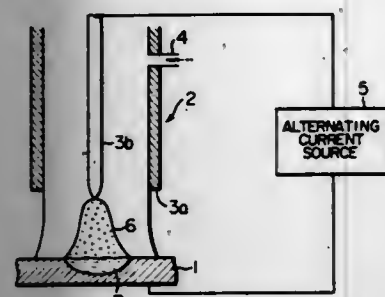
Int. Cl.³ C22F 1/04

U.S. Cl. 148—1

10 Claims

1. A method for melt nitriding of a surface layer of aluminum or its alloy comprising the steps of: maintaining a surface layer of the aluminum or its alloy in a

molten state for a predetermined period of time by heating the layer in an atmosphere of a gas mixture of inert gas and



nitrogen gas by the heat of an electric arc to effect nitriding of the surface layer; and gradually cooling the surface layer thereafter.

4,244,752

SINGLE MASK METHOD OF FABRICATING COMPLEMENTARY INTEGRATED CIRCUITS

Donald L. Henderson, Sr., Encinitas; Steven M. Baldwin, and Raymond Pong, both of Escondido, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 6, 1979, Ser. No. 17,842

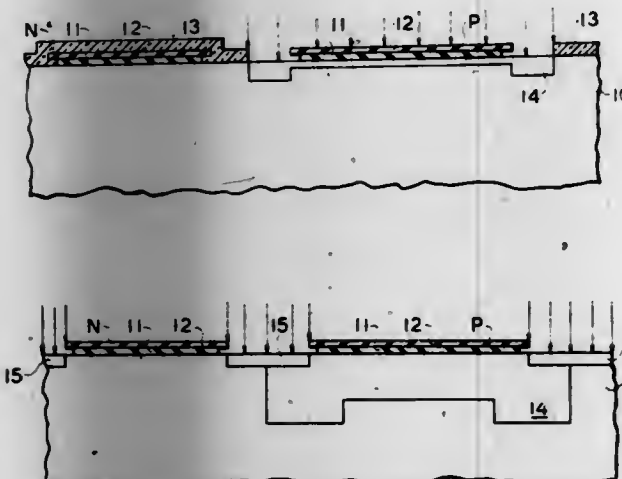
Int. Cl.³ H01L 21/263; B01J 17/00

U.S. Cl. 148—1.5

9 Claims

U.S. Cl. 148—12 R

6 Claims



9. A method of fabricating an integrated circuit having active devices with majority charge carriers of one conductivity type, and also having active devices with majority charge carriers opposite to said one conductivity type; said method including the steps of:

- forming a first layer of material which is impervious to oxygen diffusion therethrough over a major surface of a substrate with dopant atoms of said one conductivity type; patterning said first layer to cover those areas of said surface that are to be occupied by all of said active devices;
- forming a second layer of photoresist over said substrate surface and patterned first layer;
- opening holes in said second layer whose perimeters lie between said patterned first layer and expose those portions of said patterned first layer which overlie areas to be occupied by said active devices of said one conductivity type; and
- doping the substrate surface within the holes of said second layer with atoms of said opposite conductivity type to form wells for said active devices of said one conductivity type.

4,244,753

METHOD FOR PURIFICATION OF II-VI CRYSTALS

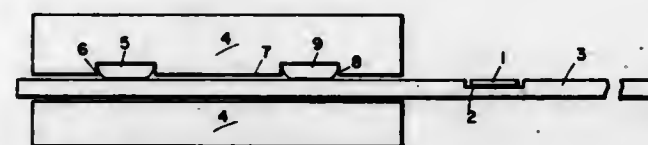
Phyllis M. Harnack, Hastings-on-Hudson, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,562

Int. Cl.³ H01L 21/388

U.S. Cl. 148—1.5

4 Claims



1. A method for the purification of a II-VI crystal comprising placing a said crystal in a graphite reactor, subjecting a surface of said crystal to the action of a melt capable of removing undesired materials from said crystal, and then physically removing the resultant contaminated melt from the surface of said crystal while said crystal remains in said graphite reactor.

4,244,754

PROCESS FOR PRODUCING HIGH DAMPING CAPACITY ALLOY AND PRODUCT

Hakaru Masumoto, and Showhachi Sawaya, both of Sendai, Japan, assignors to The Foundation: The Research Institute of Electric and Magnetic Alloys, Japan

Division of Ser. No. 701,499, Jul. 1, 1976, abandoned. This application Sep. 6, 1978, Ser. No. 940,220

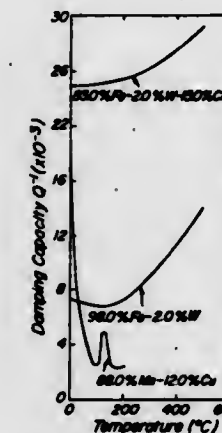
Claims priority, application Japan, Jul. 5, 1975, 50-82959; Jul. 16, 1975, 50-86902; Jul. 16, 1975, 50-86903

Int. Cl.³ C21D 7/02

9 Claims

U.S. Cl. 148—12 R

6 Claims



3. A process for producing a high damping capacity alloy consisting essentially of from 0.1 to 10% by weight of either tungsten, silicon, and titanium or mixtures thereof, with the balance being essentially iron, and at least one additional ingredient in an amount of from 0.01 to 45% by weight, which ingredient falls in at least one of the following groups (A) through (E):

- (A) up to 45% by weight of chromium,
 - (B) up to 10% by weight of aluminum, antimony, niobium, vanadium or tantalum,
 - (C) up to 5% by weight of silicon, tin, zinc, zirconium, cadmium, gadolinium, gallium, phosphorus, gold, silver, germanium, samarium, selenium, cerium, lanthanum, bismuth, platinum, palladium, beryllium, magnesium, rhodium, rhodium and yttrium,
 - (D) up to 1% by weight of lead, arsenic and boron,
 - (E) up to 0.5% by weight of europium and sulfur, having been formed into a shaped article at a temperature lower than 1,300° C. and subjected to a heat treatment according to the following schedule:
- (a) heating to a temperature of 800°–1600° C. but below its melting point for one minute to 100 hours to effect solution treatment, followed by:

- (b) quenching at a rate quicker than 1° C./sec. followed by:
 - (c) cold working, and then
 - (d) reheating to a temperature between 100° C. but lower than the temperature from which it was quenched, and then
 - (e) slow cooling the same
- said treatment being effective to achieve a damping capacity of more than 2×10^{-3} against vibration.

4,244,755

PROCESS FOR STABILIZING METALLIC CATHODE RAY TUBE PARTS

Thomas A. Brockway, Savona; Paul R. Grzesik, Painted Post, and Lawrence B. Hausheer, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,571

Int. Cl.³ C21D 1/48

U.S. Cl. 148—16

8 Claims

1. A process for improving the resistance of a stainless steel article to surface nodule formation on exposure to air at high temperatures which comprises the step of vacuumfiring the article at a temperature of at least about 500° C. for a time at least sufficient to reduce the nodule forming potential thereof.

4,244,756

FIN STOCKS FOR USE IN HEAT EXCHANGER MADE OF ALUMINUM ALLOY AND PRODUCTION METHOD THEREOF

Zenichi Tanabe; Yoshio Baba, both of Nagoya; Toshiyasu Fukui, Toyooka, and Satoshi Kimura, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Mar. 19, 1979, Ser. No. 21,631

Claims priority, application Japan, Mar. 22, 1978, 53-32773

Int. Cl.³ C22C 21/06

U.S. Cl. 148—32

3 Claims

1. A fin stock for use in a heat exchanger, said fin stock being made of an aluminum alloy consisting essentially of 0.03 to 0.3 wt. % of Sn, 0.03 to 0.8 wt. % of Mg, 0.3 to 1.5 wt. % of Mn, 0.1 to 0.8 wt. % of Fe, at least one component selected from the group consisting of 0.01 to 0.3 wt. % of Cr, 0.01 to 0.3 wt. % of Zr, 0.01 to 0.3 wt. % of Ti, 0.001 to 0.1 wt. % of B, 0.01 to 0.8 wt. % of Cu, 0.01 to 0.3 wt. % of In and not more than 1 wt. % of Zn, and the remainder consisting essentially of aluminum, wherein said fin stock has a thickness of 0.05 to 0.3 mm and has been produced by the steps comprising:

- casting said aluminum alloy to form a casting, hot rolling said casting at a temperature in the range of 400° to 550° C. to form a plate having a thickness of from 1.5 to 5 mm, and then cold rolling and annealing said plate to reduce the thickness thereof to from 0.05 to 0.3 mm.

4,244,757

PROCESSING FOR CUBE-ON-EDGE ORIENTED SILICON STEEL

Frank A. Malagari, Jr., Freeport, and Richard P. Schrecongost, Natrona Heights, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed May 21, 1979, Ser. No. 41,138

Int. Cl.³ H01F 1/04

U.S. Cl. 148—111

10 Claims

1. A process for producing electromagnetic silicon steel having a cube-on-edge orientation, which comprises the steps of: preparing a melt of silicon steel containing, by weight, from 0.02 to 0.06% carbon, from 0.015 to 0.15% manganese, from 0.0006 to 0.0080% boron, up to 0.0045% nitrogen, from 0.005 to 0.019% sulfur, no more than 0.0065% phosphorus and from 2.5 to 4.0% silicon; casting said steel; hot rolling said steel; welding said steel to another steel member of like chemistry; cold rolling said steel to a thickness no greater than 0.020 inch; decarburizing said steel; applying a refractory oxide coating to said steel; and final texture annealing said steel; said steel having a permeability of at least 1870(G/O₂) at 10 oersteds and a

core loss of no more than 0.700 watts per pound at 17 kilogauss—60 Hz.

4,244,758

IGNITION ENHANCER COATING COMPOSITIONS FOR AZIDE PROPELLANT

Eugene F. Garner, and Brian K. Hamilton, both of Canyon County, Calif., assignors to Allied Chemical Corporation, Morris County, Morris Township, N.J.

Filed May 15, 1978, Ser. No. 905,828

Int. Cl.³ C06B 45/34, 35/00, 45/10.

U.S. Cl. 149—7

8 Claims

1. An ignition enhancer composition for coating alkali metal azide-based pyrotechnic propellants which comprises:

- (a) about 2 to 15 weight percent of a combustible oxygen-containing polymeric compound selected from the group consisting of cellulose acetate resins and polyvinyl acetate resins;
 - (b) about 20 to 50 weight percent of an alkali metal azide; and
 - (c) about 40 to 80 weight percent of an inorganic oxidizer; wherein all weight percents are based on the total weight of the ignition enhancer composition.
8. An azide-based pyrotechnic propellant composition suitable for use in inflating an inflatable device, said composition comprising said propellant coated with an ignition enhancer composition, said ignition enhancer composition comprising:
- (a) about 2 to 15 weight percent of a combustible oxygen-containing polymeric compound selected from the group consisting of cellulose acetate and polyvinyl acetate resins;
 - (b) about 20 to 50 weight percent of an alkali metal azide; and
 - (c) about 40 to 80 weight percent of an inorganic oxidizer; wherein all weight percents are based on the total weight of the ignition enhancer composition.

4,244,759

METHOD OF IMPROVING THE LINEARITY OF A DOUBLE-FACE LATERAL PHOTO DETECTOR FOR POSITION DETERMINING PURPOSES

Göran P. Petersson, and Lars-Erik Lindholm, both of Gothenburg, Sweden, assignors to Selcom AB, Partille, Sweden

Continuation of Ser. No. 849,938, Nov. 9, 1977, abandoned,

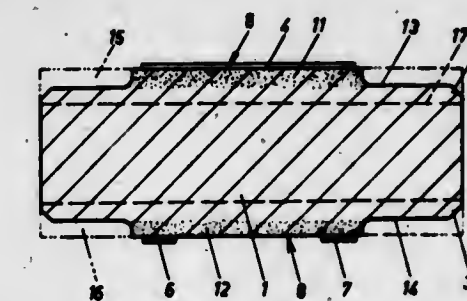
which is a continuation of Ser. No. 657,043, Feb. 11, 1976,

abandoned. This application Apr. 10, 1979, Ser. No. 28,645

Int. Cl.³ H01L 21/304, 21/306

U.S. Cl. 156—649

4 Claims



1. In a method of making a photo detector of the semiconductor type using electrical signals from pairs of electrodes to sense the position of an illuminated spot on a detector surface of said detector and having improved linearity comprising forming a semiconductor plate base layer, adding two doped conducting layers each one of which covers a respective opposite side of said base layer, positioning a p-n junction between said two doped conducting layers, and providing two pairs of electrodes, each of said pairs being arranged on a respective one of the doped conducting layers, said electrode pairs being shaped and positioned so that the pairs of electrodes define the

boundary of a parallelepiped, said parallelepiped encompassing respective portions of each of said doped conducting layers, and so that one pair of electrodes lie on the opposite side of the square of the parallelepiped lying on the surface of a conductive layer and the other pair of electrodes lie on the opposite side of the square of the parallelepiped lying on the surface of the other conductive layer such that the pairs of electrodes are normal to each other in the plane of the surface of the photodetector, the improvement comprises electrically isolating the portions of the respective doped conducting layers and the p-n junction positioned within said squares of the parallelepiped by removing the entire portion of said doped conducting layers and said junction surrounding said electrodes and surrounding the squares of the parallelepiped lying on the surface of the conductive layers.

4,244,760

FIXING OF ENDS OF WOOD OR REINFORCED PLASTIC RUNGS INTO PULTRUDED FIBREGLASS REINFORCED PLASTIC EXTENSION LADDER STILES WITHOUT THE USE OF METAL

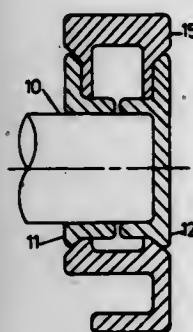
Francis C. Smith, 9 Glenview Rd., Strathmore, Victoria 3041, Australia

Continuation of Ser. No. 911,900, Jun. 2, 1978, abandoned. This application Aug. 24, 1979, Ser. No. 69,591

Claims priority, application Australia, Sep. 21, 1977, PD1759 Int. Cl.³ E06C 7/08, 7/10

U.S. Cl. 156—65

4 Claims



1. A method of rigidly adhesively bonding rungs to pultruded plastic extension ladder stiles without the use of metal comprising adhesively bonding each end of the rungs into holes in a complementary pair of plastic moulded sleeves, said sleeves being capable of fitting into holes in the web or webs of the stiles, said sleeves having shaped flanges of such configuration as to be capable of resisting torsional forces applied from the rung; the outer one of each pair of said shaped flanges being of such a configuration as to completely cover the entire end of the rung without an additional cover and each of the pair of said flanges being of such a size as to not project beyond the inner or outer boundaries defined by the stiles.

4,244,761

THERMALLY INSULATING SLABS MADE OF REFRACTORY FIBERS FOR THE INSULATION OF FURNACES AND THE LIKE

Jean-Pierre Remi, and Guy Gehin, both of Bron, France, assignors to Societe Europeenne des Produits Refractaires, Neuilly-sur-Seine, France

Filed Sep. 6, 1978, Ser. No. 940,106

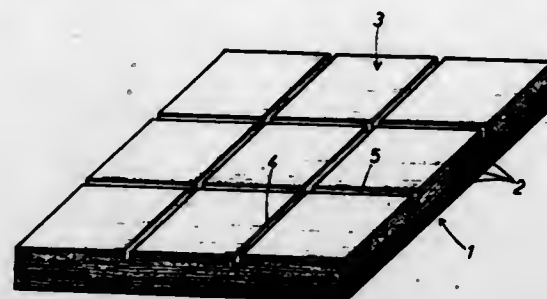
Claims priority, application France, Sep. 9, 1977, 77 27298 Int. Cl.³ E04F 13/20

U.S. Cl. 156—71

5 Claims

1. In a process for thermally insulating a solid surface by lining said surface with a plurality of thermally insulating slabs capable of withstanding normal in use temperatures of at least 1000° C., said slabs each comprising entangled refractory fibers with a major portion of said fibers being substantially parallel to opposed surfaces of said slabs, comprising the steps of providing only one of said surfaces of each said slab with a plurality of open grooves in intersecting relationship, coating said

one surface with a refractory cement so as to substantially fill said grooves, disposing said one surface toward the solid surface to be insulated, and maintaining each said slab against the solid surface until at least a partial setting of said cement, whereby the cement occupying said grooves effectively forms



a rigid frame for each said slab, which after the setting of the cement prevents contraction of the fibers of each said slab upon crystallization beyond a minimum extent, said slabs thereby being capable of withstanding in use temperatures higher than said normal temperatures without fiber contraction beyond said minimum extent.

4,244,762

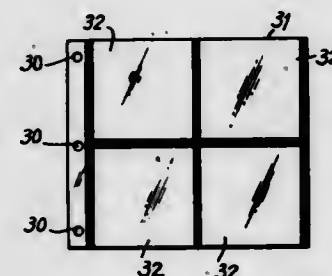
HEAT SEALED PHOTO ALBUM PAGE AND METHOD OF MAKING SAME

Sheldon Holson, Norwalk, Conn., assignor to The Holson Company, Wilton, Conn.

Filed May 10, 1979, Ser. No. 37,701

Int. Cl.³ B29C 27/08; B32B 3/06; B42F 5/04 U.S. Cl. 156—73.1

2 Claims



1. The method of forming a photographic album page comprising the steps of:

- (a) Providing a first rectangular fibrous non-heat sealable lamina;
- (b) Providing second and third rectangular clear heat-sealable laminae of substantially similar overall dimensions;
- (c) Placing said clear laminae in congruent relation with the fibrous lamina positioned between the clear laminae;
- (d) Using an ultrasonic stitching device, interconnecting said laminae by sealing the two outer laminae together to form plural pockets on each side of said fibrous lamina, said fibrous lamina being penetrated at the points of stitching in such manner that material comprising said lamina are vaporized under sealing heat to bring sealed areas of said clear laminae into integral relation to captivate said fibrous lamina therebetween.

4,244,763

METHOD OF APPLYING A LABEL TO AN OBJECT

Miquel A. Varon, Upland, and Paul F. Paddock, Riverside, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Division of Ser. No. 776,319, Mar. 10, 1977, Pat. No. 4,123,310. This application Aug. 18, 1978, Ser. No. 934,873

Int. Cl.³ B32B 31/16

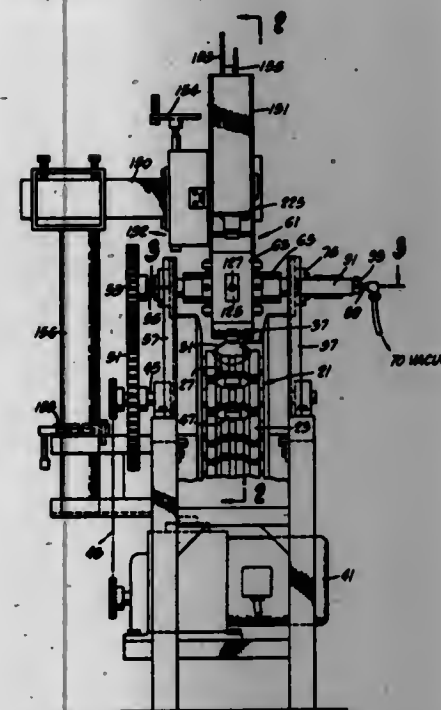
U.S. Cl. 156—74

7 Claims

1. The method of successively applying labels to a series of

objects as they are delivered to a labeling station, which comprises the steps of:

- intermittently moving a carrier tape with indexing movements to successively present labels adhesively affixed thereon at the labeling station;
- successively stripping the labels from the tape and positioning them in a frame holder with their adhesive surfaces upwardly disposed;



successively conveying objects to be labeled to the labeling station; and pneumatically successively gripping the detached labels in said frame holder and bodily moving them one-by-one from said frame holder to the labeling station with their adherent surface facing downwardly and into surface engagement with the objects as they arrive at the labeling station.

4,244,764

CUSHIONED TOILET SEAT WITH INNER TUBE

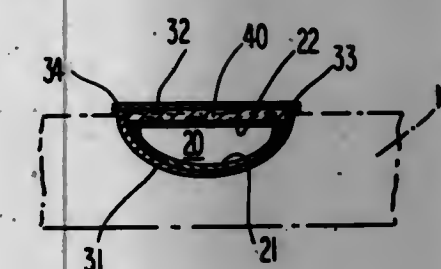
Milton Ginsburg, 1201 Sandringham Rd., Bala Cynwyd, Pa. 19004

Filed Aug. 16, 1979, Ser. No. 67,091

Int. Cl.³ B32B 5/18, 31/14, 31/02, 5/20; A47K 13/02; A47C 7/20

U.S. Cl. 156—78

6 Claims



1. A method of making a cushioned toilet seat comprising the steps of:

- a. molding, by vacuum forming in a mold, an open-top annulus comprising the first piece of a two-piece inner tube of flexible material substantially impervious to liquid and air;
- b. placing a second piece of flat similar inner tube material over the open-top annulus of said molded first piece while still in said mold;
- c. heat sealing together in said mold said first and second pieces of inner tube at the inner and outer peripheral edges of the annulus;

- d. removing the excess material both inside and outside of said inner and outer peripheral edges;
- e. removing the molded sealed inner tube from the mold;
- f. molding, by vacuum forming in a mold, an open-top annulus comprising the first piece of a two-piece cover of vinyl plastic;
- g. placing the valveless molded sealed inner tube into the open-top annulus of the cover while still in the mold;
- h. placing an annular rigid member into said open-top cover annulus on top of said sealed inner tube, the weight of said rigid member functioning to compress the air which is captive within said sealed inner tube, thereby to firm up the sealed inner tube;
- i. placing a second piece of flat similar cover material over the open-top annulus containing said inner tube and annular rigid member;
- j. heat sealing together in said mold said first and second pieces of cover material at the inner and outer peripheral edges of the annulus; and
- k. removing the excess cover material both inside and outside of said inner and outer peripheral edges.

4,244,765

METHOD FOR MANUFACTURING A RESIN-REINFORCED CARBON FIBER PRODUCT

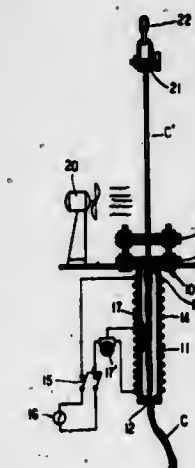
Tomotoshi Tokuno, 15-20, Shingashi 1-Chome, Itabashi-Ku, Tokyo, Japan

Filed Jan. 27, 1978, Ser. No. 919,696

Int. Cl.³ B29H 9/02

U.S. Cl. 156—180

11 Claims



1. A method for manufacturing a resin-reinforced carbon fabric bar product which comprises the steps of heating a thermal setting resin-impregnated carbon fabric bundle to a temperature sufficient to set said thermal setting resin to a semi-solid state, drawing said carbon fabric bundle through resilient constriction means to compress the carbon fibers in said carbon fabric bundle together to form an intermediate bar product, cooling said intermediate bar product to room temperature, winding a tape of water-containing cellophane about said intermediate bar product in a spiral manner to further tighten said carbon fibers in the carbon fiber bundle together, tensioning said carbon fiber bundle in the longitudinal direction of the bundle while heating the carbon fiber bundle until the resin impregnated in the carbon fabric bundle is completely set and removing said cellophane tape from said carbon fabric bundle.

4,244,766

LEG-SHEET PALLET ASSEMBLING DEVICE AND METHOD

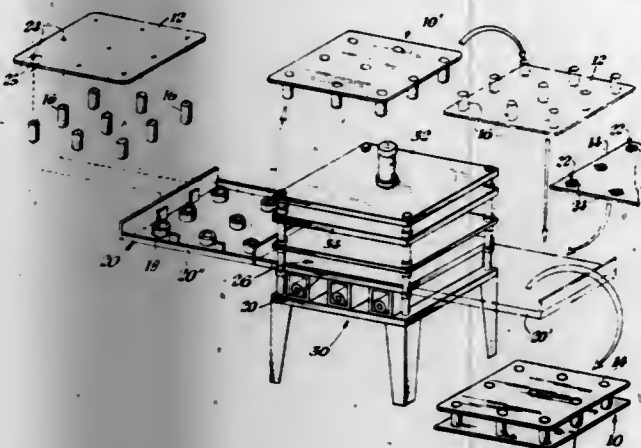
Robert Yellen, 1210 Bahama Bend, Apt. A-2, Coconut Creek, Fla. 33066

Filed Jan. 15, 1979, Ser. No. 3,710

Int. Cl.³ B31F 3/00

U.S. Cl. 156-211

8 Claims



1. A method for producing a corrugated board pallet from at least one corrugated pallet sheet and a plurality of legs, comprising the steps of:

- forming at least one corrugated pallet sheet with a predetermined pattern of scribed areas,
- positioning on a tray with a predetermined pattern of apertures the pallet members in the pattern similar to the pattern of scribed areas, a hollow leg positioned in relation to each aperture position and in contact with one said corrugated pallet sheet scribed areas for adhesively connecting the legs to said corrugated pallet sheet;
- after positioning each said hollow leg providing active adhesive connecting means on the pallet members in a predetermined pattern to the legs and to said corrugated pallet sheet by operating connecting apparatus through said apertures;
- thereafter pushing the scribed areas of the corrugated pallet sheet by compressing means for compressing the scribed areas into the interior surface of legs and into engagement with the interior of the legs to secure the one sheet to the interior surface of the legs.

4,244,767

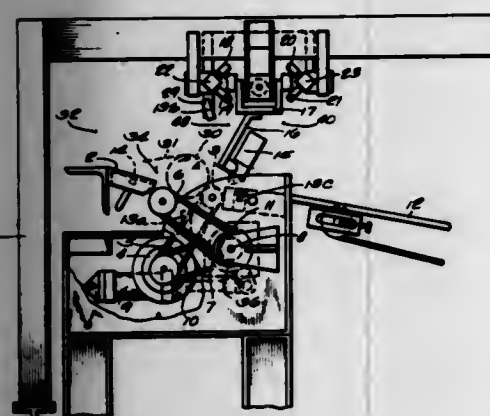
LINEAR TAIL SEALER

Cornelis H. W. Hoeboer, Hilvarenbeek, Netherlands, assignor to Maspent N.V., Curacao, Netherlands
Continuation-in-part of Ser. No. 873,255, Jan. 31, 1978, abandoned. This application Apr. 19, 1979, Ser. No. 31,453
Claims priority, application Netherlands, Jan. 31, 1977, 7700966

Int. Cl.³ G05G 15/00

U.S. Cl. 156-351

33 Claims



1. A device for sticking the end of a roll of wound sheet-like material to the roll comprising means for rotating the roll

about its longitudinal axis in the winding-up direction and blowing means for blowing the end of the sheet-like material off the roll, the blown-off end cooperating with a sensor for stopping the drive of the roll when said end has reached a position on a supporting member suitable for the application of glue, in which device two sensors are provided, the first sensor being disposed so that it detects a movement of the end of the sheet-like material in the direction toward the supporting member and then actuates the second sensor which is arranged adjacent the supporting member, the second sensor being arranged to stop the drive of the roll when the end of the strip of material uncovers the second sensor.

4,244,768

METHOD OF MANUFACTURING A GRATING CONSTRUCTED OF RESIN BONDED FIBERS

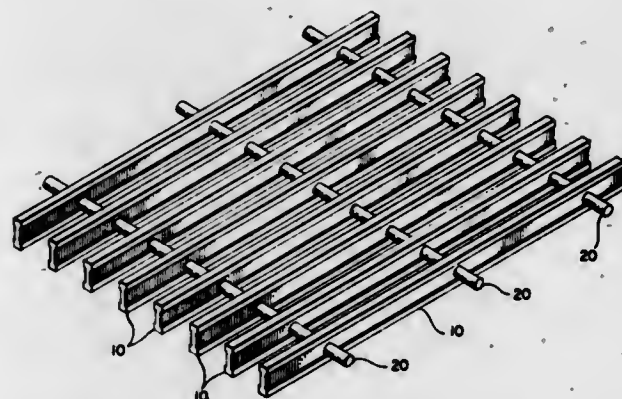
Joseph W. Wiechowaki, 420 Avenida Salvador, San Clemente, Calif. 92672; Delmar S. Miller, 918 W. Balboa Blvd., Newport Beach, Calif. 92661, and Richard C. Kostner, 2060 Agate St., Orange, Calif. 92667

Filed Dec. 23, 1977, Ser. No. 863,766

Int. Cl.³ E04C 2/22, 2/42

U.S. Cl. 156-293

17 Claims



- 1. A method of manufacturing a grating constructed of resin bonded fibers, comprising the steps of:
- extending a plurality of dowels through registered apertures in a plurality of I-elements, said apertures being substantially the same size as the cross-sectional size of the dowels;
- applying to the dowels adjacent to the I-elements a heat setting adhesive which has a long pot life of about an hour or more at ambient temperature and which becomes highly fluid for several seconds and then heat sets in several seconds when heated to a flow temperature of about 100° F. or more;
- heating the dowel and I-element intersection areas, including the adhesive, to said predetermined flow temperature to thereby cause the adhesive to become highly fluid thereby wetting the surface of the dowel and flowing by capillary action into the interior of the aperture in the I-element and thereafter heat setting to bond the dowel to the I-element.

4,244,769

METHOD OF CONSTRUCTING LARGE POSTERS FOR BACK-LIGHTED SIGNBOARDS

Charles H. Tracy, 16515 Kingswood Dr., Lakeville, Minn. 55044

Filed Nov. 30, 1979, Ser. No. 99,071

Int. Cl.³ G09F 15/00

U.S. Cl. 156-300

5 Claims

- 1. A method of constructing a large poster from a plurality of sheets containing image portions, for use on a back-lighted signboard, comprising the steps of

- (a) immersing the plurality of poster sheets in a solution of about 13% liquid silicone and about 87% mineral spirits, and removing the sheets from solution and drying them;

- (b) aligning a first group of adjacent image sheets in abutting image edge alignment;
- (c) overlaying the edge-aligned sheets with a clear film layer having adhesive surfaces
- (d) overlaying the clear film layer with a second group of matching image sheets and aligning said sheets in image registration with said first group of sheets; and
- (e) forming a laminated whole from said first group, said clear film layer, and said second group.

4,244,770

TIRE BUILDING MACHINE

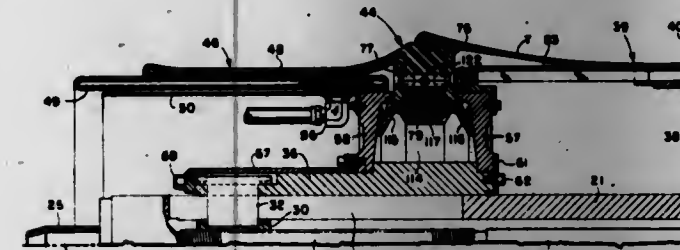
Daniel Shichman, Stow; S. Edward Nold, Lisbon, and George E. Enders, Salem, all of Ohio, assignors to NRM Corporation, Akron, Ohio

Filed Mar. 21, 1979, Ser. No. 22,429

Int. Cl.³ B29H 17/16, 17/26

U.S. Cl. 156-398

42 Claims



- 1. A tire building machine comprising bead locks, each comprising an outwardly opening annular trapezoidal chamber directly closed by an annular elastic ring of similar configuration, said chamber being in the form of a trapezoid having a more narrow end facing radially outwardly, and said elastic ring being in the configuration of an inverted T in radial section.

4,244,771

THERMOPLASTIC SHEET STRIP HEATER ASSEMBLY

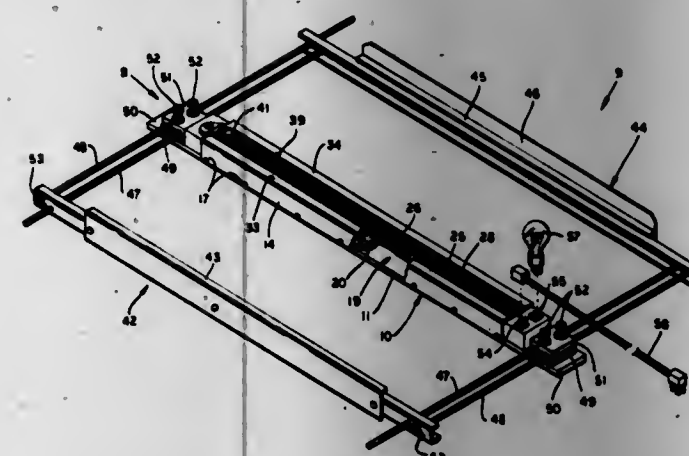
Larry L. Pierce, 4120 Vasant Rd., Douglasville, Ga. 30135

Continuation-in-part of Ser. No. 761,125, Jan. 21, 1977, abandoned. This application Dec. 5, 1978, Ser. No. 966,570

Int. Cl.³ B32B 31/00; B30B 5/02; H05B 1/00, 3/06

U.S. Cl. 156-499

26 Claims



- 1. A thermoplastic sheet strip heater assembly comprising:
- a bed of heat and electrical insulation material;
- an elongated heat development channel defined by said bed of insulation material, said elongated heat development channel including a heat escape flue defined along the length of said channel;
- an elongated electrical resistance heating element positioned within said heat development channel;
- a broad weave grid positioned adjacent the surface of said bed of insulation spanning across said heat escape flue;
- sheet support flanges located in spaced relationship from said bed of insulation on both sides of said heat escape flue

1002 O.G.-28

- and extending along the length of said flue, a space being defined between each said flange and said bed of insulation;
- strips of flexible thermal insulation material located to either side of said flue in the spaces between said flanges and said bed of insulation;
- at least a first heat shielding strip removably inserted below said strip of flexible insulation material in the space between at least one of said flanges and said bed of insulation, said heat shielding strip extending over a portion of said flue to narrow said flue; and,
- electrical circuit means for energizing said elongated electrical resistance heating element.

4,244,772

APPARATUS FOR APPLYING TRANSVERSE WELD SEAMS TO SUPERPOSED WEBS OF PLASTICS FILM

Fritz Achelpohl, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

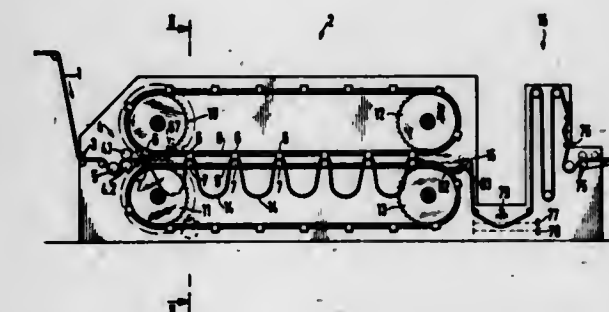
Filed Mar. 2, 1979, Ser. No. 17,076

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1978, 2809515

Int. Cl.³ B32B 31/00; B30B 5/04

U.S. Cl. 156-515

5 Claims



- 1. Device for the application of transverse weld seams to superposed webs of plastic film, preferably for the production of chains of sacks from semi-tubular plastic webs, with a plurality of tool-holders which are guided by endless chains in pairs along a planar path which is traversed by the webs, and at both sides of the webs, act in opposition to one another, enclose the webs between each other, are disposed transversely in relation to the webs, said tool holders comprising two parallel clamping bars each, between which the welding jaws of a welding tool are guided movably, characterized by the fact that, in order to form a loop, one welding jaw of the welding tool has been designed in such a way that it may be moved in between the clamping bars of the opposite tool holder.

4,244,773

APPARATUS FOR APPLYING WELDABLE BANDS TO PACKAGES OR THE LIKE

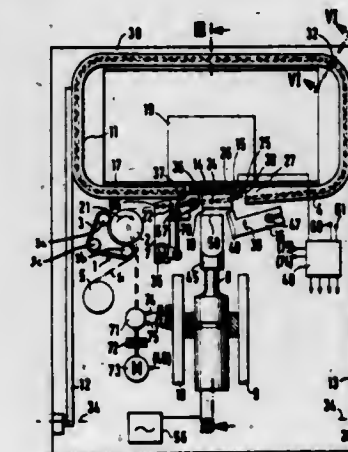
Gunter Siebeck, Panoramaweg 3, and Peter P. Lüdtke, Hohenstaufferstr. 1, both of 6930 Eberbach, Fed. Rep. of Germany
Filed Mar. 1, 1979, Ser. No. 16,529

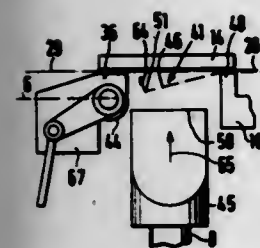
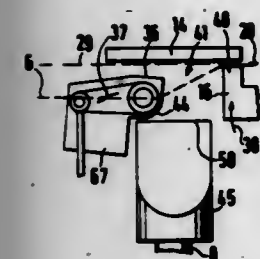
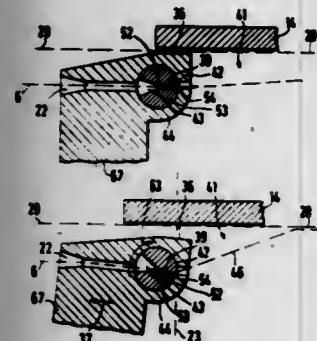
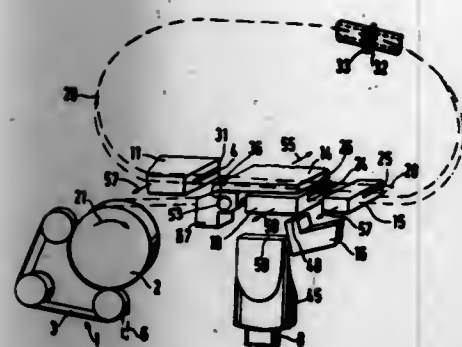
Claims priority, application Luxembourg, Mar. 3, 1978, 79160

Int. Cl.³ B32B 31/00; B35B 13/34, 13/00, 13/04

U.S. Cl. 156-522

17 Claims

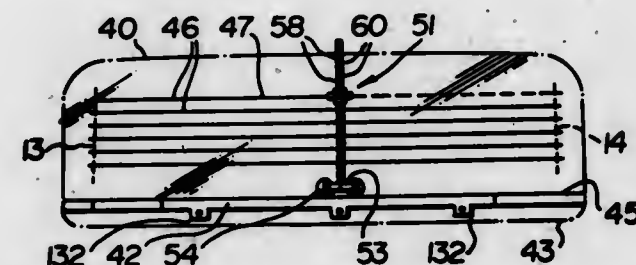




1. In an apparatus for applying webs around packages or other objects, the combination of a support; means for positioning an object on said support; a source of web; a device for looping the web around the object in said positioning means so that the looped section of the web includes overlapping inner and outer portions; means for bonding said overlapping portions to each other, including a bonding element movable toward and away from said outer portion along a first path; means for severing said outer portion from the source; and mobile holder means for moving said severing means along a second path to a first position in which said severing means is located in said first path and severs the outer portion along a cut located in a predetermined plane disposed within said first path and a second position in which said severing means is retracted from said first path so that said bonding element can

move toward said outer portion while said cut remains in said first path to connect said outer portion with said inner portion all the way to said cut.

4,244,774
APPARATUS TO APPLY PRE-GLUED STRIPS OF RESISTIVE MATERIAL TO A CAR REAR WINDOW
 Normand Dery, 190 8^e Ave. Sud, Sherbrooke, Quebec, Canada
 Continuation-in-part of Ser. No. 843,364, Oct. 19, 1977, abandoned, which is a division of Ser. No. 668,743, Mar. 19, 1976, Pat. No. 4,065,848. This application Sep. 5, 1979, Ser. No. 72,609
 Claims priority, application Canada, Mar. 15, 1976, 247966
 Int. Cl.³ B32B 31/04; B44C 7/00
 U.S. Cl. 156—574 20 Claims

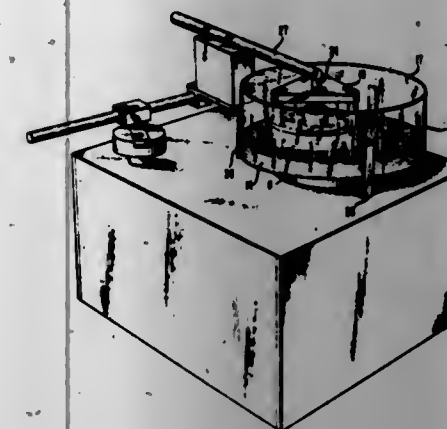


1. Apparatus for applying pre-glued conductors in strip form onto the inside surface of a rear window in a motor car thereby to provide a series of parallel, equally spaced apart heating conductors extending transversely of said rear window and adapted for defrosting said rear window, said apparatus comprising a guide member presenting a straight edge and having means for temporarily securing said guide member adjacent and parallel to the lower edge of said rear window, said apparatus also comprising a carrier consisting of a base, an upright shaft extending upwardly from said base, and a head releasably mounted to said shaft, said base comprising a cross-bar extending perpendicularly to said shaft and two spaced apart wheels, one at each end of said cross-bar with said wheels extending below the lower edge of said cross-bar in order to be able to roll along said straight edge while maintaining said shaft perpendicular to said straight edge, said shaft being essentially straight of constant cross-section and having a plurality of equally spaced apart index marks along its length, said head having locking means for releasably constraining same against displacement along said shaft, said head also comprising a coupling through which said shaft projects and a window engaging member pivotally supported on said coupling about a first axis which is essentially perpendicular to the length of said shaft, said coupling allowing at least some degree of rotation of said window engaging member about said shaft, said window engaging member having a pressure surface parallel to said first axis, and a groove leading toward one end of said pressure surface, said groove receiving and guiding said pre-glued strip of conductor toward said rear window and toward said pressure surface, said window engaging member also having means extending across said groove a short distance above the bottom of said groove which distance is just sufficient to allow free running of said pre-glued strip of conductor along said groove, said pressure surface comprising two spaced apart contact means adapted to run over said strip of conductor during application thereof.

4,244,775
PROCESS FOR THE CHEMICAL ETCH POLISHING OF SEMICONDUCTORS
 Lucian A. D'Asaro, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
 Filed Apr. 30, 1979, Ser. No. 34,491
 Int. Cl.³ H01L 21/306
 U.S. Cl. 156—636 6 Claims

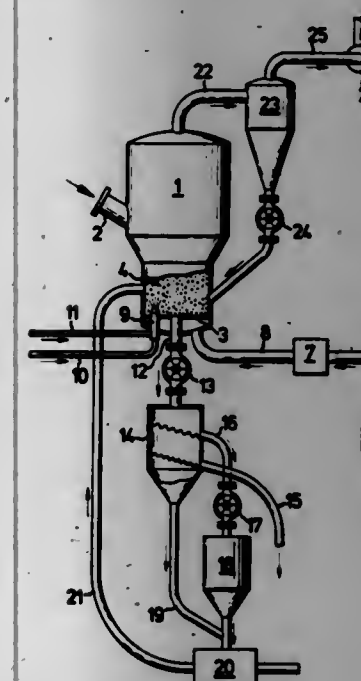
1. A method for treating a semiconductor body comprising

transversing a plate with said semiconductor body in the presence of a composition which induces the removal of the treated surface of said semiconductor body CHARACTERIZED IN THAT said plate is composed of a material having a



hardness greater than 2 on the mohs scale, said plate has grooves in the surface which allow said composition to wet the entire treated surface of said semiconductor body, and said composition comprises a chemical etchant substantially devoid of abrasive material.

4,244,776
FLUIDIZED BED TREATMENT OF GRANULAR POTASSIUM SORBATE
 Gerhard Nöltner, Frankfurt am Main; Horst Oehme, Bad Soden am Taunus; Rudolf Lademann, Kelkheim, and Helar Wendt, Salzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
 Filed Mar. 8, 1979, Ser. No. 18,731
 Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 28107020
 Int. Cl.³ C07C 57/10
 U.S. Cl. 159—48 R 9 Claims



1. A process for the continuous manufacture of potassium sorbate, which comprises contacting an aqueous potassium sorbate solution with a bed of potassium sorbate particles fluidized by heated air wherein the amount of potassium sorbate solution contacted with the fluidized bed is adjusted in such a manner that the temperature of the fluidized bed is from 40° to 80° C. and the relative humidity of the air leaving the fluidized bed does not exceed 20 weight %, relative to 60° C.

4,244,777
BLEACHING STILBENE YELLOW DYED WOOD PULP
 Maharaj K. Gupta, Renton, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
 Filed Nov. 7, 1979, Ser. No. 92,152
 Int. Cl.³ D21C 5/02 6 Claims

1. A process for bleaching stilbene yellow dyed wood pulp said dye not being bleachable by ozone, oxygen, hydrogen peroxide, chlorine or hypochlorite, comprising repulping stilbene yellow dyed paper in water to form an aqueous slurry of stilbene yellow dyed wood pulp, treating said slurry with chlorine dioxide in an amount sufficient to bleach and remove the yellow color of said wood pulp.

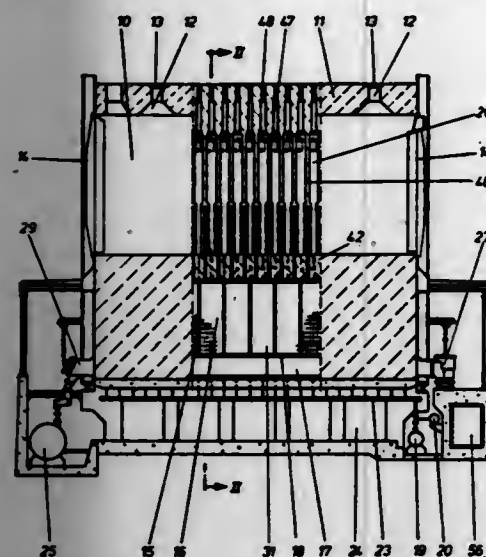
4,244,778
PROCESS FOR THE CHEMICAL REFINING OF CELLULOSE PULP
 Jonas A. I. Lindahl, Domarö, and Claes G. S. Svensson, Koda, both of Sweden, assignors to MoDo-Chemicals AB, Örnsköldsvik, Sweden
 Filed Apr. 2, 1979, Ser. No. 26,470
 Claims priority, application Sweden, Mar. 31, 1978, 7803674
 Int. Cl.³ D21C 3/26 20 Claims

1. A process for the chemical bleaching or alkaline refining of cellulose pulp which comprises, in sequence, the steps of:
 (1) impregnating the cellulose pulp with refining chemicals in an amount selected to effect chemical modification of the pulp;
 (2) adjusting the pulp consistency to within the range from about 30 to about 70%; and
 (3) passing the pulp in finely divided form and in turbulent flow through a reaction zone from one end to another end thereof in a gaseous atmosphere consisting essentially of steam at a superatmospheric pressure within the range from about 5 to about 400 kPa and a temperature within the range from about 100° to about 150° C. at which the chemical modification proceeds without a mechanical working sufficient to change the degree of beating of the pulp by more than about 2° (Schopper-Riegler) and the freeness of the pulp by more than about 10 ml, and with less than an 8% change in the pulp dry solids content, at a flow rate to create the turbulence such that the impregnated chemicals are substantially completely consumed by the time the pulp reaches the end of the zone.

4,244,779
METHOD OF TREATING SPENT PULPING LIQUOR IN A FLUIDIZED BED REACTOR
 Jorma J. Nieminen, Varkaus, and Folke Engström, Karhula, both of Finland, assignors to A Ahlstrom Osakeyhtiö, Noormarkku, Finland
 Continuation-in-part of Ser. No. 820,575, Aug. 1, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,457
 Claims priority, application Finland, Sep. 22, 1976, 762695; Feb. 21, 1977, 770546
 Int. Cl.³ D21C 11/12 8 Claims

1. A method of treating a material which is spent liquor from a pulping process which contains sodium compounds and the organic components in said material to be treated are carbon-containing combustibles, which comprises the steps of:
 (a) subjecting said material to combustion in a single fluidized bed reactor and recovering flue gases which have entrained hot solid particles;
 (b) introducing said flue gases and entrained hot solid particles from step (a) into a dust separator to remove the hot solid particles entrained in the flue gases;
 (c) introducing said hot solid particles free from the flue gases from step (b) into a prereactor and mixing therewith

said flue walls including side walls between pairs of heating flues, the lower part of each side wall having an internal passageway communicating with one of said pairs of regenerators and communicating through vertically-spaced exit orifices with each heating flue at the sides thereof, said side walls having upper parts extending into



load-bearing contact with a roof for said coke oven chambers, and means forming ducts for conducting gaseous media between each of the pairs of regenerators below an oven chamber and the internal passageways in alternate side walls of heating flues along each oven chamber.

4,244,787

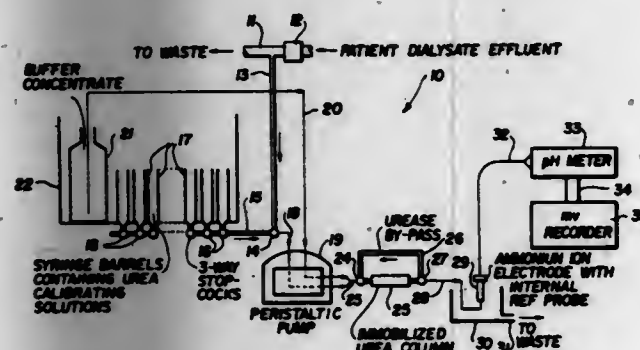
APPARATUS AND METHOD FOR DETERMINING SERUM CONCENTRATES OF METABOLITES BY MONITORING DIALYSATE FLUID

Elias Klein, New Orleans, La., and Ronald L. Wathen, Louisville, Ky., assignors to The United States of America as represented by the Secretary of the Department of Health, Education & Welfare, Washington, D.C.

Filed Jan. 11, 1979, Ser. No. 47,786
Int. Cl.³ G01N 27/30, 27/46, 3/14

U.S. Cl. 204-1 T

12 Claims



1. The method of determining the level of a predetermined metabolically important species in serum, without withdrawing blood or entering a sensor into the bloodstream, comprising the steps of:

diverting at least a portion of a dialysate effluent stream, obtained from equilibration with blood through a hemodialyzer, through a sampling apparatus, including an ion-specific electrode sensitive to a desired species; producing an electrode EMF proportional to the concentration of the sensed species; and converting the EMF to data indicating the dialysate concentrations of the species and determining the serum levels of the species from such data.

4,244,788

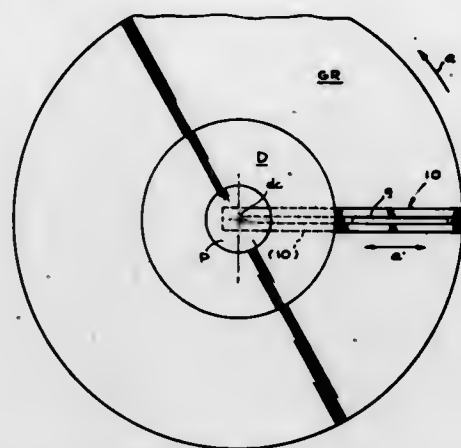
TRANSDUCER-PLATED MAGNETICALLY ANISOTROPIC METALLIC RECORDING FILMS, AND ASSOCIATED TECHNIQUES

John P. Faulkner, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 957,158, Nov. 2, 1978, abandoned, which is a continuation of Ser. No. 807,154, Jan. 16, 1977, Pat. No. 4,144,160. This application Jan. 28, 1980, Ser. No. 115,988
Int. Cl.³ C25D 5/02, 5/04, 3/56

U.S. Cl. 204-15

35 Claims



1. A "transducer-plated" magnetic record including a prescribed substrate and a magnetic recording film applied thereon by a "mag-trode" array in a plating arrangement, this array including plating electrode means arranged to electroplate on a prescribed zone of said record and, in operative combination with said plating means, magnetic circuit means adapted to project a prescribed magnetic alignment flux onto this zone.

4,244,789

METHOD OF METALLIZING MATERIALS

Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 871,308, Jan. 23, 1978, abandoned, which is a continuation of Ser. No. 735,243, Oct. 26, 1976, abandoned, which is a division of Ser. No. 561,957, Mar. 25, 1975, abandoned. This application Jan. 24, 1979, Ser. No. 6,141
Int. Cl.³ C23C 3/02

U.S. Cl. 204-20

14 Claims

1. A method of metallizing a substrate material comprising the steps of:

- coating the substrate material with a hydrophilic composite material comprised of a blend of (1) at least one film forming component selected from the group consisting of vinyl chloride, vinyl acetate, and copolymers thereof; and cellulose esters and polyvinyl acetals; and (2) at least one hydrophilic component of a water soluble polymeric component, the water soluble component being dispersed throughout the coating of the composite material;
- contacting the coated substrate with water or a water solution of salts to produce a microporous surface by dissolving the water soluble component;
- plating the composite material with a conductive metal by electroless metal plating; and
- electroplating a metal onto the electrolessly plated metal.

4,244,790

COMPOSITION AND METHOD FOR ELECTRODEPOSITION OF BLACK NICKEL

Walter J. Wleczniak, Utica, Mich., assignor to Oxy Metal Industries Corporation, Warren, Mich.

Filed Aug. 31, 1979, Ser. No. 71,610
Int. Cl.³ C25D 3/12

U.S. Cl. 204-49

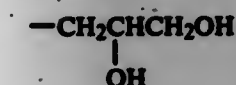
12 Claims

1. A bath for electrodepositing a substantially black nickel deposit on a substrate comprising an aqueous solution having a pH of about 4 to about 12 and containing about 2 to about 25 g/l nickel ions, and a bath soluble amine present in an amount to provide a mol ratio of nickel to amine in the solution of about 1:1 to about 1:4, said amine corresponding to the formula:



wherein:

n, m and p are integers and n is 2 or 3, m is 1 or 2 or 3, and p is 2 or 3;
X is O or NH; and
R and R' are the same or different and are H,
-CH₂CH=CH₂, -CH₂CH₂CH₂SO₃ or



4,244,791

ACIDIC ELECTROLYTE CONTAINING Sn^{II} IONS

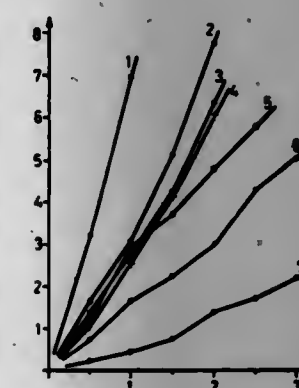
Jean F. Paulet, Siblingen, and Bruno Boetsch, Schaffhausen, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Sep. 10, 1979, Ser. No. 73,918
Claims priority, application Switzerland, Apr. 19, 1979, 3679/79

U.S. Cl. 204-54 R

Int. Cl.³ C25D 3/32

7 Claims



1. Aqueous acidic electrolyte containing Sn^{II} for coloring anodized aluminum and its alloys or electroplating the same, in which the said electrolyte contains an addition of soluble, non-aromatic, aliphatic organic thio-compounds to stabilize the Sn^{II} ions, wherein the stabilizing agent is a compound selected from the group consisting of saturated thio-alcohols, thio-carboxylic acids derived therefrom, and thio-ethers, said compound having the general structure of R₁-S-R₂, wherein R₁ is selected from the group consisting of hydrogen, a hydrocarbon, a hydroxy-containing hydrocarbon and a carboxy-containing hydrocarbon, and R₂ is selected from the group consisting of a hydroxy-containing hydrocarbon and a carboxy-containing hydrocarbon.

4,244,792

METHOD FOR STRIPPING ANODIZED ALUMINUM AND ALUMINUM ALLOYS

Philip C. Baldwin, El Segundo, Calif., assignor to Hixson Metal Finishing, Newport Beach, Calif.

Filed Feb. 26, 1980, Ser. No. 124,866
Int. Cl.³ C23G 1/12; C25D 11/04

U.S. Cl. 204-58

15 Claims

1. A method for removing metal oxides from the surfaces of aluminum-containing metal objects comprising: providing an aqueous solution comprising nitric acid and oxalic acid, and contacting the surfaces of said metal objects with said aqueous solution for a time sufficient to remove said metal oxides therefrom.

4,244,793

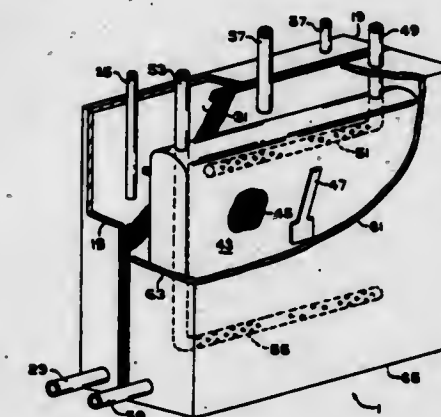
BRINE ELECTROLYSIS USING FIXED BED OXYGEN DEPOLARIZED CATHODE CHLOR-ALKALI CELL

Harlan B. Johnson, Rittman, and Ronald D. Chamberlin, Wadsworth, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 9, 1979, Ser. No. 82,841
Int. Cl.³ C25B 1/34

U.S. Cl. 204-98

20 Claims



1. In a method of electrolyzing an aqueous alkali metal chloride brine in an electrolytic cell having an anolyte compartment with an anode therein, a catholyte compartment with cathode means therein, and an ion permeable barrier therebetween, which method comprises feeding said brine to the anolyte compartment, feeding an oxidant to aid catholyte compartment, passing an electrical current from said anode to said cathode means, recovering chlorine from said anolyte compartment, and recovering aqueous alkali metal hydroxide as a catholyte product, the improvement wherein said cathode means comprises closely packed porous particles having HO₂-disproportionation catalyst areas.

4,244,794

HYDROGEN PRODUCTION BY THE DECOMPOSITION OF WATER

Charles M. Hollabaugh, and Melvin G. Bowman, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

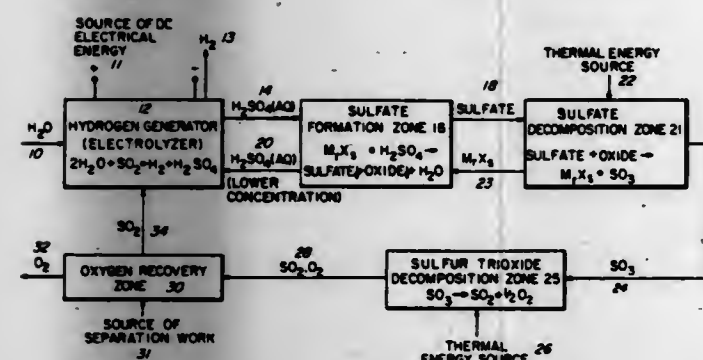
Filed Jul. 31, 1979, Ser. No. 62,373
Int. Cl.³ C25B 1/04, 1/22

U.S. Cl. 204-104

10 Claims

1. A process for producing hydrogen comprising:
(1) passing an electric current from a cathode to an anode through water containing sulfur dioxide so as to produce hydrogen gas at the cathode and so as to oxidize the sulfur dioxide to form sulfuric acid at the anode, thus producing an aqueous solution of sulfuric acid;
(2) separating said hydrogen gas from said aqueous solution of sulfuric acid;
(3) adding to said aqueous solution of sulfuric acid at least

one compound selected from the group consisting of M_rX_s , wherein M is at least one metal ion selected from the group consisting of Ba^{+2} , Ca^{+2} , Sr^{+2} , La^{+3} , and Pb^{+2} , wherein X is at least one radical selected from the group consisting of molybdate, tungstate, and metaborate, wherein r is an integer selected from the group consisting of 1 and 2, wherein s is an integer selected from the group consisting of 1, 2, and 3, producing a mixture of at least one water insoluble sulfate of M and at least one water insoluble oxide of molybdenum, tungsten, or boron;



- (4) filtering said mixture of water insoluble sulfate and water insoluble oxide;
- (5) heating said mixture of water insoluble sulfate and water insoluble oxide to a sulfate decomposition temperature which is sufficiently high to form sulfur trioxide gas and to reform said M_rX_s ;
- (6) separating said sulfur trioxide gas from said M_rX_s , which was reformed in step (5); and
- (7) recycling said M_rX_s to step (3) above.

4,244,795

PROCESS AND APPARATUS FOR ELECTROLYTICALLY REMOVING METAL IONS FROM A SOLUTION THEREOF

Christiaan M. S. Rants, Diephuis, and Marinus A. Geelen, Hengelo, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

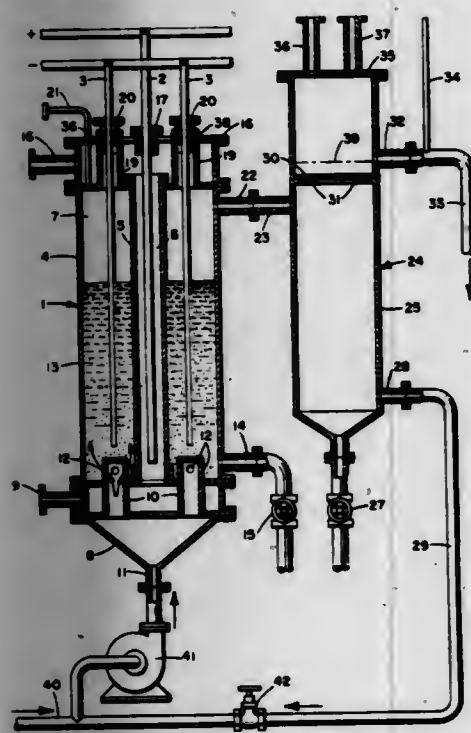
Filed May 22, 1979, Ser. No. 41,307

Claims priority, application Netherlands, May 24, 1978, 7805607

Int. Cl.³ C25C 1/00, 7/00

U.S. Cl. 204—105 R

10 Claims



1. A process for electrolytically removing metal ions from a solution thereof by means of an electrochemical cell having an anode compartment, a cathode compartment and a diaphragm

separating said compartments, said process comprising passing the solution upwardly through a bed of particles acting as cathodes in the cathode compartment of the cell and thereby bringing said bed to a fluidized state, recirculating a part of the solution leaving the cathode compartment through said bed and discharging the remainder thereof from the cell, passing an anode liquid through the anode compartment, passing said recirculated solution through a separator for gas present in the solution while maintaining in the separator a liquid surface of the solution and ventilating the space above the solution, said separator having a dividing surface with at least one opening for the passage of gas bubbles, maintaining an upward flow of the treated solution, flowing under the dividing surface the solution from the cathode compartment to the separator and returning said recirculated part of the solution to the cathode compartment, maintaining the liquid surface above the said dividing surface, discharging the treated solution from above the dividing surface, and maintaining a liquid surface in the top of the cathode compartment with at least one highly constricted part through which at least one cathode rod passes with a small clearance.

4,244,796

METHOD OF INFLUENCING THE DISTRIBUTION OF DIFFERENT CONSTITUENTS IN AN ELECTRICALLY CONDUCTIVE LIQUID

Theodor Rummel, Hanover, Fed. Rep. of Germany, and Wilfried Heinemann, Richterswil, Switzerland, assignors to Concast AG, Zürich, Switzerland

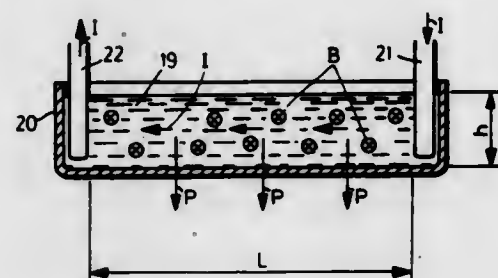
Filed Dec. 20, 1978, Ser. No. 971,205

Claims priority, application Switzerland, Dec. 27, 1977, 16043/77

Int. Cl.³ C25F 1/00; B22D 27/02

U.S. Cl. 204—140

3 Claims



1. A method of influencing the distribution of different constituents in an electrically conductive liquid metal, comprising the steps of: conducting an electric current through the liquid and at the same time forming a magnetic field approximately perpendicular to the direction of flow of the electric current, in order to increase the force of gravity of the constituents of the electrically conductive liquid.

4,244,797

QUANTITATIVE PROTEIN ANALYSIS BY IMMUNODIFFUSION

Frederick J. Aladjem, and Padmasini K. Ayengar, both of 845 Las Palmas Rd., Pasadena, Calif. 91102

Continuation-in-part of Ser. No. 892,953, Apr. 3, 1978, Pat. No. 4,162,208, which is a division of Ser. No. 546,351, Feb. 3, 1975, Pat. No. 4,097,149. This application Apr. 13, 1979, Ser. No. 29,772

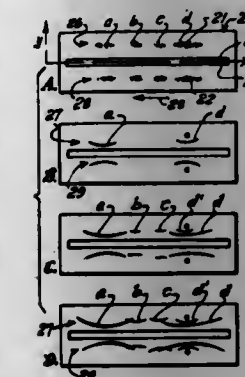
Int. Cl.³ G01N 27/26, 33/16

U.S. Cl. 204—180 G

4 Claims

1. The method of detecting presence of protein abnormality in an antigen sample which has been subjected to immunoelectrophoresis with an antibody source containing an antibody specific to said protein to produce at least one elongated precipitation zone; said method comprising scanning the zone by optical means to develop electrical

signals responsive to precipitate concentration at a two-dimensional array of positions distributed partly within the zone and partly outside the zone, deriving electronically from said electrical signals the corresponding values, at a plurality of positions along the zone,



of a zone parameter which is responsive to irregular or unsymmetrical precipitate distribution along the zone, and comparing said parameter values as a function of the positions along the zone length to detect presence of protein abnormality.

4,244,798

EXHAUST ELECTRODE PROCESS FOR EXHAUST GAS OXYGEN SENSOR

Terry J. Gold, Flint; Frederick L. Kennard, III, Holly; Paul C. Kikuchi, and Ralph V. Wilhelm, Jr., both of Flint, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 030,775, Apr. 17, 1979, abandoned. This application Oct. 29, 1979, Ser. No. 89,264

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 SP

3 Claims

1. In a method of sputtering a platinum exhaust gas electrode onto a vitrified zirconia solid electrolyte body for an electrochemical-type exhaust gas oxygen sensor, the improvement wherein a platinum target spaced at least 3.0 cm from the body is used in the sputtering, the platinum is sputtered at a pressure of about 10–20 millitorr, and a sputtering power of about 13–22 watts/cm² of target area is used, whereby the platinum electrode is porous as deposited and has an apparent surface area at least double the geometric area of the zirconia surface on which it lies.

4,244,799

FABRICATION OF INTEGRATED CIRCUITS UTILIZING THICK HIGH-RESOLUTION PATTERNS

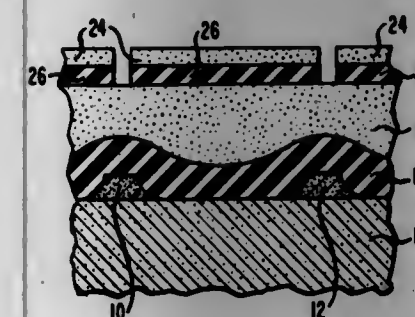
David B. Fraser, Berkeley Heights; Dan Maydan, Short Hills, and Joseph M. Moran, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 11, 1978, Ser. No. 941,369

Int. Cl.³ H01L 21/312

U.S. Cl. 204—192 E

14 Claims



1. A method of processing nonplanar surface portions of a structure in a high-resolution way with good linewidth control, said method comprising utilizing a relatively thin uniform-

thickness layer (20) of material and establishing a pattern therein definitive of the pattern in accordance with which the surface of said structure is to be processed, said relatively thin layer being insufficient by itself to provide step coverage and a uniform thickness layer if said relatively thin layer were applied directly on the nonplanar surface, characterized in that said method comprises

prior to depositing and patterning said relatively thin layer, forming a relatively thick sacrificial layer (18) of material on the nonplanar surface of said structure, said sacrificial layer exhibiting a conforming lower surface and an essentially planar upper surface, said relatively thin layer being deposited on said essentially planar surface, processing said relatively thick layer employing the relatively thin patterned layer as a mask to form in said relatively thick layer a pattern having near-vertical walls and substantially no undercutting, said near-vertical walls extending through the entire thickness of said relatively thick layer, which pattern in said relatively thick layer corresponds substantially exactly to the pattern in said relatively thin layer, processing the surface of said structure utilizing said relatively thick patterned layer as a mask therefore, and removing said relatively thick patterned layer from the surface of said structure after the surface has been processed.

4,244,800

APPARATUS FOR USE IN RAPID AND ACCURATE CONTROLLED-POTENTIAL COULOMETRIC ANALYSIS

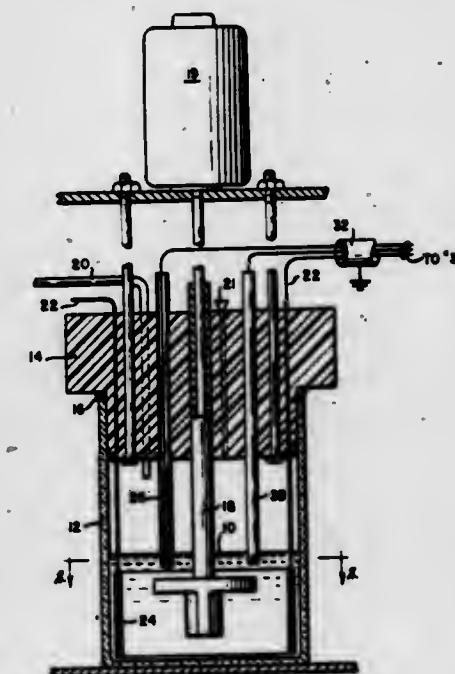
Thomas L. Frazzini, Frankfurt; Michael K. Holland, LaGrange Park; Charles E. Pietri, and Jon R. Weiss, both of Downers Grove, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1979, Ser. No. 69,152

Int. Cl.³ G01N 27/46

U.S. Cl. 204—195 R

10 Claims



5. In an apparatus for controlled-potential coulometry in which an electrostatic species is disposed in a cell containing electrodes and in which a voltage control means is connected to the electrodes to apply to them controlled voltages, an improved converter means connected to the voltage control means for converting a voltage proportional to current flow in the cell to a digital signal, the improvement comprising:

a first integrator means having first and second input means, means for adding signals received by said first and said second input means, said first input means receiving an

electrical signal from said voltage control means that is proportional to current flow in the cell, said second input means receiving a predetermined offset signal, a second integrator means connected to said offset signal producing a digital readout signal; and a display card connected to said first and second second integrator means for displaying a count proportional to current flow in the cell.

4,244,801

APPARATUS TO MEASURE THE DISTRIBUTION OF THE ANODE CURRENTS IN CELLS FOR ALKALI METAL CHLORIDE

Dieter Bergner, Winfried Hofmann, both of Kelkheim; Helmut Hund, Königstein; Lothar Pelz, Rödermark, and Gerhard Quetzsch, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 905,004, May 11, 1978, abandoned.

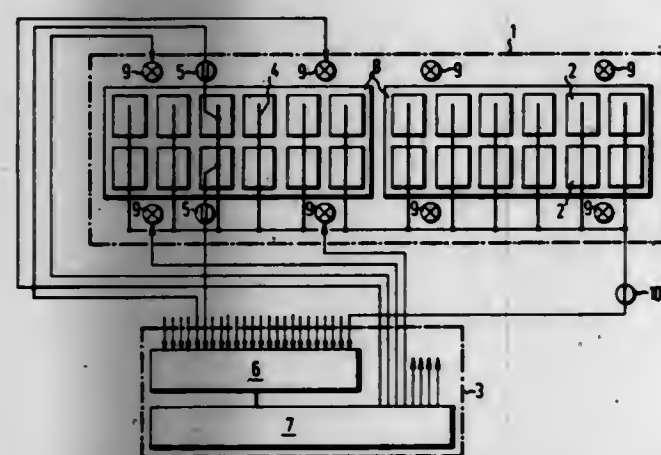
This application Jul. 13, 1979, Ser. No. 57,434

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721957

Int. Cl.³ C25B 1/16, 1/26, 15/04

U.S. Cl. 204—225

3 Claims



1. A system for controlling alkali metal chloride electrolysis apparatus operated according to the amalgam process, said apparatus including a number of cells each having an anode spaced from a common cathode, said system comprising a plurality of bus bars, each connected to at least one anode to supply current thereto; a plurality of voltmeters, each connected between a respective anode and said common cathode of a cell for providing measurements of the voltages across respective ones of said anodes and said common cathode for said cells; an ammeter connected in common to all of said cells for providing a measurement of the total anode current through all of said cells; means for obtaining respective measurements of the anode current through each cell on the basis of the voltage measured for that cell and the measured total anode current; distance changing means for changing the distance between respective ones of said anodes and said common cathode; and process control means for operating said distance changing means if respective ones of the measured anode currents and cell voltages exceed predetermined limits.

4,244,802

MONOPOLAR MEMBRANE CELL HAVING METAL LAMINATE CELL BODY

Gerald R. Potho, and Richard O. Olson, both of Mentor, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jan. 11, 1979, Ser. No. 47,298

Int. Cl.³ C25B 9/00, 11/03

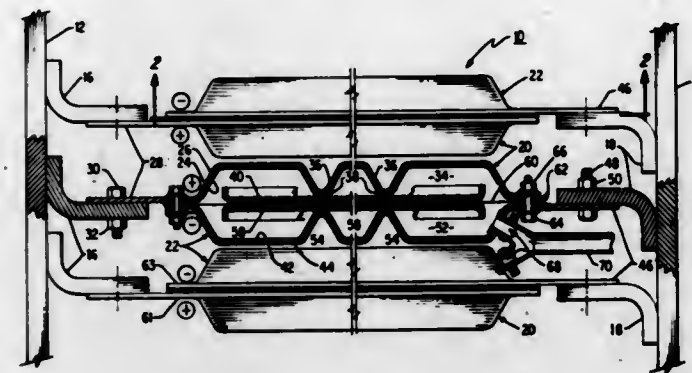
U.S. Cl. 204—252

1 Claim

1. A monopolar membrane-type electrolytic cell for electrolytic processes, the cell comprising: an anode chamber defined by said membrane, a generally planar foraminous titanium anode and a stamped metal laminate anode pan having an interior layer of titanium

bonded throughout its extent to a thicker outer layer of aluminum;

a cathode chamber defined by said membrane, a generally planar foraminous steel cathode and a stamped metal laminate cathode pan of identical form to said anode pan and having an interior layer of steel bonded throughout its extent to a thicker outer layer of aluminum;



said cell further characterized in that each said anode and cathode pan affords a recessed chamber with a plurality of inwardly extending rib portions, each said rib portion being welded to said respective anode and cathode; and said anode and cathode are substantially parallel to and closely spaced from said membrane.

4,244,803

QUANTITATIVE PROTEIN ANALYSIS BY IMMUNODIFFUSION

Frederick J. Aladjem, and Padmasini K. Ayengar, both of 845 Las Palmas Rd., Pasadena, Calif. 91105

Division of Ser. No. 29,772, Apr. 13, 1979, which is a continuation-in-part of Ser. No. 892,953, Apr. 3, 1978, Pat. No. 4,162,208, which is a division of Ser. No. 546,351, Feb. 3, 1975, Pat. No. 4,097,149. This application Nov. 27, 1979, Ser. No. 97,931

Int. Cl.³ G01N 27/26, 33/16, 21/00

U.S. Cl. 204—299 R

8 Claims



1. Apparatus for obtaining a quantitative measure of the concentration of a protein in an antigen sample, comprising means for supporting and illuminating a plate carrying a precipitation zone due to immunoelectrophoresis of said antigen sample with an antibody specific to said protein, photoresponsive means for extracting a plurality of electrical signals representing the light intensity at positions on said plate which correspond to respective sets of position representing signals, and electronic means for supplying to said photoresponsive means sets of position representing signals corresponding to positions in selected respective spatial relationship to said zone, and for deriving from the resulting light intensity representing signals the corresponding value of a parameter which varies in characteristic manner with said protein concentration.

4,244,804

SLIME AND SLUDGE DEWATERING

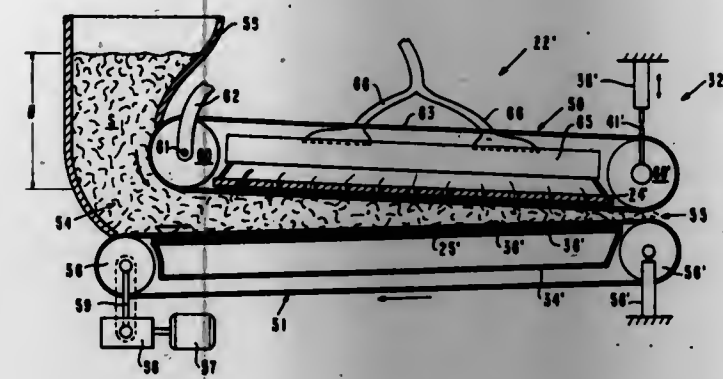
Karl Moeglich, Dunedin, Fla., assignor to Innova, Inc., Clearwater, Fla.

Filed Jan. 15, 1979, Ser. No. 3,538

Int. Cl.³ B01D 13/02

U.S. Cl. 204—300 R

15 Claims



1. Dewatering apparatus for a sludge or the like comprising (a) first and second electrodes comprising an anode and a cathode, the cathode constructed to allow water passage therethrough; (b) means for connecting up said electrodes to a D.C. source of e.m.f.; (c) means for maintaining sludge or the like to be treated between said electrodes during treatment; (d) means providing for feeding of sludge or the like between the electrodes and withdrawal from between the electrodes; (e) means for providing a continuation of the boundary layer of sludge or the like disposed between said electrodes, said means allowing the passage of water therethrough, and being disposed in intimate contact only with said cathode, not said anode, between said cathode and the sludge or the like; and (f) means for insuring continuous electrical contact between said electrodes and the sludge or the like during treatment so that during volume decreasing of the sludge or the like due to water removal, the electrodes are effectively closer together.

4,244,805

LIQUID YIELD FROM PYROLYSIS OF COAL LIQUEFACTION PRODUCTS

William J. Metrailler, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 883,356, Mar. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 711,706, Aug. 5, 1976, abandoned. This application Jan. 5, 1979, Ser. No. 45,683

Int. Cl.³ C10G 1/00, 57/00, 9/28

U.S. Cl. 208—8 LE

16 Claims

1. In a process for producing liquids from a coal feed which comprises liquefying the coal in a liquefaction zone under liquefaction conditions including the presence of hydrogen or a hydrogen donating material, recovering a liquid bottoms product from the liquefaction zone which comprises unconverted coal and coal derived liquids, passing the liquid bottoms product through a flash vessel to remove flashed liquids and thereafter passing the remainder to a coking zone and coking therein at least a portion of the bottoms product the improvement which comprises recovering a high boiling stream boiling at 1000° F.+ and having a Conradson Carbon content of at least 15 wt. % from the coking zone, recycling at least a portion thereof to said liquefaction zone and converting said high boiling stream in said liquefaction zone into lighter boiling fractions or to fractions containing a higher hydrogen to carbon ratio.

4,244,807

PROCESS FOR THE PREPARATION OF A HYDROCARBON MIXTURE RICH IN AROMATICS

Frits M. Dautzenberg, and Martinus M. P. Janssen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 21, 1979, Ser. No. 40,808

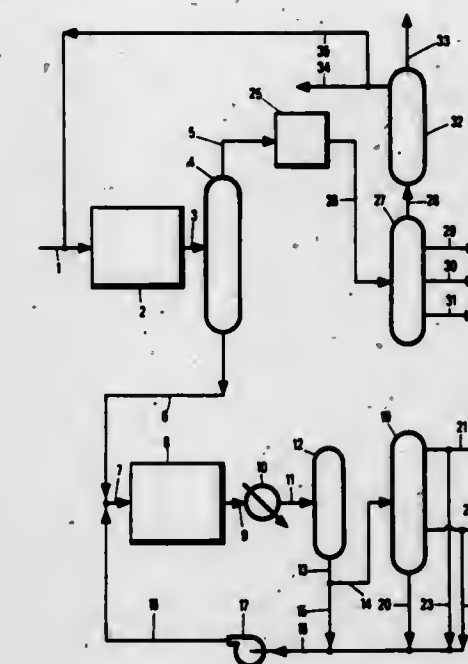
Claims priority, application Netherlands, May 25, 1978, 7805671

Int. Cl.³ C10G 63/04

U.S. Cl. 208—66

15 Claims

1. A process for the preparation of a hydrocarbon mixture

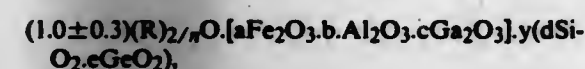


1. A process for producing an alkylate and gasoline of high isooctane content from an olefinic cut consisting essentially of C₄ hydrocarbons recovered from a cracking unit effluent, said process comprising the steps of:

(a) feeding the olefinic C₄ cut to a catalytic polymerization zone, wherein the catalyst consists essentially of silica-alumina, and converting therein at least 90% of the isobutene contained in the cut, the aggregate conversion of the normal butenes contained in the cut being kept lower than 10%; (b) fractionating the effluent from the polymerization zone in a fractionation zone and recovering therefrom (i) a fraction comprising in major part isobutene dimers and trimers, and (ii) a fraction comprising in major part isobutane, butane and butenes; (c) feeding fraction (i) from step (b) to a catalytic hydrogenation zone, hydrogenating said fraction therein and recovering therefrom an effluent consisting essentially of an isooctane fraction and an isododecane fraction; and (d) feeding fraction (ii) from step (b) to an alkylation zone and effecting an alkylation of said fraction therein, fractionating the resultant effluent, and recovering therefrom (iii) an alkylate gasoline fraction of high isooctane content, and (iv) a fraction consisting essentially of hydrocarbons with not more than 4 carbon atoms per molecule.

rich in aromatics from a hydrocarbon mixture low in aromatics and boiling in the gasoline range, which comprises

- (a) catalytically reforming said hydrocarbon mixture; and
- (b) contacting at least part of the reformat from step (a) at a temperature from 250° to 625° C. with a catalyst containing a crystalline silicate, which
 - (i) is thermally stable to temperatures above 600° C.,
 - (ii) after dehydration at 400° C. in vacuum, is capable of adsorbing more than 3% w water at 25° C. and saturated water vapor pressure, and
 - (iii) in dehydrated form, has the following overall composition, expressed in moles of the oxides:



where

- R = one or more mono or bivalent cations,
 $a > 0.5$,
 $b \geq 0$,
 $c \geq 0$,
 $a + b + c = 1$,
 $y = 10-300$,
 $d \geq 0.1$,
 $e \geq 0$,
 $d + e = 1$, and
 $n =$ the valency of R.

4,244,808

METHOD OF PROCESSING A HIGH-BOILING FRACTION OBTAINED IN THE CRACKING OF HYDROCARBONS

Udo Lang, Berndt Hörner, both of Munich, and Hans J. Wernicke, Wolftrabshausen, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

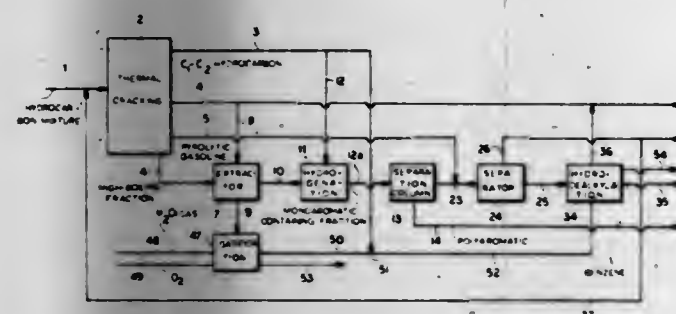
Filed Sep. 19, 1979, Ser. No. 76,828

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2840986

Int. Cl. C10G 53/32, 9/14, 53/04

U.S. Cl. 208—67

14 Claims



1. In a process in which a hydrocarbon mixture is subjected to thermal cracking to produce at least one hydrocarbon fraction having a boiling point range up to about 200° C. and a high-boiling cracking fraction having a boiling point range above about 200° C. in a cracking product containing polymeric components, the improvement which comprises the steps of:

- removing said polymeric components from said high boiling cracking fraction;
- hydrogenating the high boiling cracking fraction from which said polymer components have been removed to produce a hydrogenation product;
- controlling the hydrogenation conditions for the high-boiling cracking fraction so that said hydrogenated product has a high monoaromatic content; and
- separating polyaromatics from the hydrogenated product.

4,244,809 HYDROCARBON CONVERSION USING TITANIUM CLUSTERS AND NOBLE METAL ON ALUMINA CATALYST

Kenneth S. Wheelock, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
 Division of Ser. No. 970,936, Dec. 19, 1978, Pat. No. 4,219,447.
 This application Aug. 2, 1979, Ser. No. 62,920

Int. Cl. C10G 47/14, 47/02

U.S. Cl. 208—108

7 Claims

1. A process for the conversion of a hydrocarbon feed which comprises contacting said hydrocarbon feed at hydrocarbon conversion conditions with a catalyst which comprises a cluster of titanium metal oxide and a Group VIII noble metal deposited on the surface of an inorganic oxide support.

4,244,810

FLUIDIZED CATALYTIC CRACKING PROCESS FOR INCREASED HYDROGEN PRODUCTION

Douglas J. Youngblood, Lockport, Ill., and Gerald V. Nelson, Nederland, Tex., assignors to Texaco Inc., White Plains, N.Y.
 Continuation of Ser. No. 918,990, Jun. 26, 1978, abandoned.
 This application Dec. 10, 1979, Ser. No. 102,219

Int. Cl. C10G 11/05, 11/18

U.S. Cl. 208—120

4 Claims

1. In a fluidized catalytic cracking process wherein hydrocarbon charge and regenerated catalyst are contacted at fluidized cracking conditions using a crystalline zeolitic alumina-silicate cracking catalyst or an amorphous silica-containing cracking catalyst or a mixture thereof in a reaction zone for production of cracked vapors and coke contaminated spent catalyst, wherein said cracked vapors, recovered from said reaction zone, are fractionated in a fractionation zone into at least a gas fraction comprising hydrogen and light hydrocarbons and one or more liquid hydrocarbon fractions, wherein said spent catalyst from said reaction zone is regenerated by burning coke therefrom with air in a regeneration zone for production of regenerated catalyst, and wherein hot regenerated catalyst from said regeneration zone is returned to said reaction zone for contact with additional hydrocarbon charge; the improvement comprising:

- (a) adding in said fluidized catalytic cracking process compounds of metals selected from the group consisting of nickel, vanadium, iron and mixtures thereof sufficient to maintain from about 1000 to 10,000 ppmw of said metals upon said regenerated catalyst exiting said reaction zone; and
- (b) adding in said process compounds of sodium for deposition of sodium upon said regenerated catalyst in an amount within the range of 1000 to 5000 ppmw sufficient for increasing the hydrogen yield from cracking said hydrocarbon charge.

4,244,811

CATALYTIC CRACKING PROCESS WITH SIMULTANEOUS PRODUCTION OF A LOW BTU FUEL GAS AND CATALYST REGENERATION

Dane C. Grenoble, Plainfield, and Walter Weissman, Berkeley Heights, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 25, 1978, Ser. No. 927,830

Int. Cl. C10G 11/04, 53/14

U.S. Cl. 208—122

13 Claims

1. A continuous process for the catalytic cracking of a hydrocarbon feedstream and the simultaneous generation of a low BTU gas or hydrogen-rich gas from coke which process involves:

- (1) contacting a hydrocarbon feedstream with an acid catalyst comprising a catalytic component selected from the group consisting of oxides of tungsten, niobium and mixtures thereof and tungsten or niobium oxides in combination with one or more additional metal oxides selected

from the group consisting of tantalum oxide, hafnium oxide, chromium oxide, titanium oxide and zirconium oxide on an inorganic refractory oxide support selected from the group consisting of α -alumina γ -alumina, zirconia, boria, thoria, magnesia, zirconium-titanate, titania, chromia, kieselguhr and mixtures thereof, said catalyst being steamed prior to use, at a temperature, pressure and for a time sufficient to effect the desired catalytic change on the hydrocarbon feedstream and yield a coked catalyst;

- (2) regenerating the coked catalyst at regenerating conditions by contacting same with steam, oxygen-containing gas or mixture thereof to produce a regenerated catalyst and an H_2 rich gas, a low BTU gas rich in CO and a combination thereof; and
- (3) recirculating the regenerated catalyst of step (2) to the hydrocarbon conversion zone of step (1).

4,244,812

SYSTEM FOR PRODUCING A POWDERY COMPOSITION COMPRISING COAL PRODUCTS IN A COAL DEASHING PROCESS

Roger A. Baldwin, Warr Acres; Robert E. Davis, and Robert E. Leonard, both of Oklahoma City, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 691,573, Jun. 1, 1976,

abandoned. This application Dec. 28, 1978, Ser. No. 973,876

Int. Cl. C10G 21/12; C10L 5/00

U.S. Cl. 208—177

20 Claims

1. A process comprising:

providing a feed mixture comprising a deashing solvent, insoluble coal products and soluble coal products, said deashing solvent consisting essentially of at least one substance having a critical temperature below 800 degrees F. selected from the group consisting of aromatic hydrocarbons having a single benzene nucleus and normal boiling points below about 310 degrees F., cycloparaffin hydrocarbons having normal boiling points below about 310 degrees F., open chain mono-olefin hydrocarbons having normal boiling points below about 310 degrees F., open chain saturated hydrocarbons having normal boiling points below about 310 degrees F., mono-, di, and tri-open chain amines containing from about 2-8 carbon atoms, carbocyclic amines having a monocyclic structure containing from about 6-9 carbon atoms, heterocyclic amines containing from about 5-9 carbon atoms, and phenols containing from about 6-9 carbon atoms and their homologs;

- introducing the feed mixture into a first separation zone; maintaining the temperature level in the first separation zone below about 700 degrees F. and the pressure level in the first separation zone in a range of from about the critical pressure of the deashing solvent to about 1000 psig to effect a separation of the feed mixture in the first separation zone into a first light fraction comprising the soluble coal products and most of the deashing solvent and a first heavy fraction comprising the insoluble coal products and some deashing solvent;
- withdrawing the first heavy fraction from the first separation zone; and
- reducing the pressure level of the first heavy fraction by at least 100 psig to vaporize the deashing solvent from the first heavy fraction and yield a composition of matter comprising coal products in a powder-like form.

4,244,813

METHOD OF INCREASING FINE COAL FILTRATION EFFICIENCY

William H. Moyer, Jr., Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

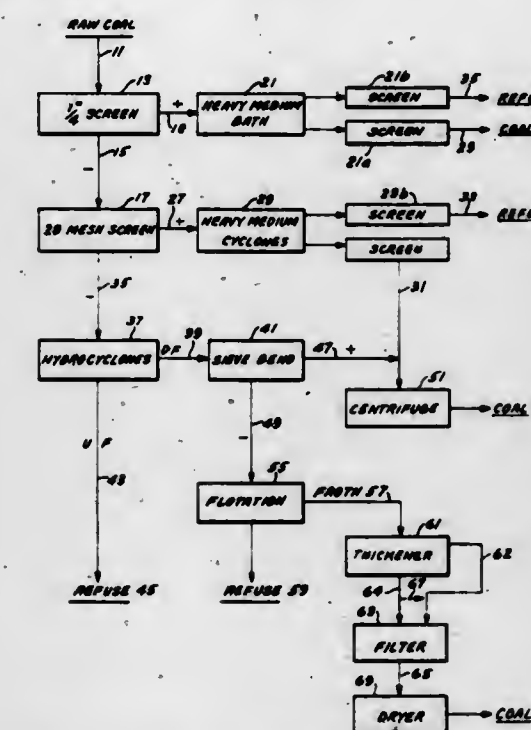
Continuation of Ser. No. 881,977, Feb. 27, 1978, Pat. No. 4,175,035. This application Aug. 8, 1979, Ser. No. 64,686

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl. B03D 1/02

U.S. Cl. 209—5

4 Claims



1. In a coal treatment process wherein raw coal fines of minus 65 mesh size are treated in a flotation process followed by filtration of the resultant flotation froth product containing water, coal particles and froth bubbles to isolate a fine coal product, the improvement comprising:

- (a) collecting the flotation froth product prior to filtration,
- (b) treating the collected flotation froth product in a thickening apparatus containing a sufficient body of aqueous liquid to physically decompose a portion of the froth and yield (1) a thickened froth which floats upon the surface of the body of aqueous liquid, (2) a coal containing aqueous liquid stream removed from a point between the surface of the aqueous liquid and the bottom of the thickening apparatus and (3) an underflow of a slurry of minus 65 mesh coal particles which sink to and are removed from the bottom of the thickening apparatus,
- (c) removing the thickened flotation froth from the thickening apparatus, and
- (d) filtering the thickened flotation froth to yield minus 65 mesh coal fines.

4,244,814

FLOSS SEPARATOR

Kunihiko Matsumura; Mitsuyoshi Fukauchi; Motoki Iizuka, and Yumitoyo Utsunomiya, all of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed May 14, 1979, Ser. No. 38,889

Int. Cl. B04C 3/00

U.S. Cl. 209—144

6 Claims

1. A floss separator consisting of a generally vertical lower cylindrical column and a cylindrical upper chamber connected directly to the upper part of said column and having a larger diameter than that of said column and a gas outlet in the upper part of said chamber; said vertical type lower cylindrical column having
- (a) an inlet pipe fixed in the lower outer surface of said column and inclined laterally thereto, for causing a mixture of air or nitrogen gas with entrained thermoplastic

- resin pellets to flow into the bottom of said column through the inlet and to form a helical ascending gas stream of said mixture in said column,
- (b) a discharging port provided below said inlet for discharging a thermoplastic resin pellet separated from said mixture; and
- (c) a blow-through part for gas current in the upper part of said column, said blow-through part comprising a plurality of baffles fixed onto the inner wall of said column at the uppermost part thereof, and the upper end part of said column,
- (d) said plurality of baffles
- (i) being counter-radially protruded from the inner wall of said column toward the axis of said column and
- (ii) each baffle having an angle of attack of 0° to 90° to the path of said helical ascending gas current, and also
- (iii) a sweptback angle of 0° to 30° to said gas current line at the lower margin of said baffles,
- (iv) at least the tip ends of at least two of said baffles partly



overlapping with each other on a plan view of said blow-through part.

6. A method for separating floss from thermoplastic resin pellets containing floss which comprises:
- (a) tangentially introducing floss-containing pellets carried in a gas stream adjacent the bottom of an elongated vertical separation zone,
- (b) causing said introduced gas stream and pellets to flow upwardly through the entire cross section of said elongated separation zone in the general path of an upward helix,
- (c) near the top of said separation zone breaking said upwardly moving helical flow patterns of the stream of gas and pellets by collision with baffles disposed at an angle to the axis of the separation zone so that the pellets will drop downwardly after collision and at least a large portion of the floss will not drop downwardly, and
- (d) removing de-flossed pellets adjacent the lower part of the separation zone and removing the gas stream at a point beyond the baffles.

4,244,815

PROCESS AND APPARATUS FOR THE AEROBIC BIOLOGICAL PURIFICATION OF LIQUID WASTES CONTAINING ORGANIC POLLUTANTS

Malcolm Chalkin, Centennial Park, and John R. McCracken, Kareela, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Continuation of Ser. No. 769,730, Feb. 17, 1977, abandoned.

This application Feb. 6, 1979, Ser. No. 9,970

Claims priority, application Australia, Feb. 27, 1976, PC5029

Int. Cl.³ C02F 3/20

U.S. Cl. 210—622

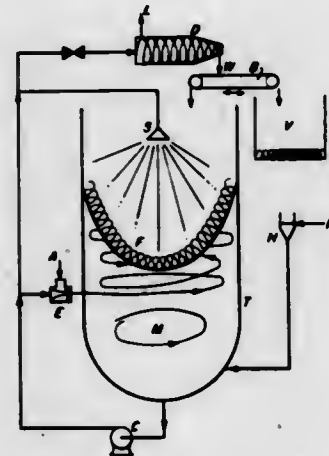
6 Claims

1. Apparatus for the aerobic biological purification of liquid wastes containing organic pollutants comprising a tank containing a liquid having a high biomass concentration, means to introduce a liquid to be purified into said tank, pump means

arranged to withdraw liquid from near the bottom of said tank, a fluid flow connection from said pump means to eductor means arranged to entrain air into said liquid, means to introduce said aerated liquid into said tank to cause a rapid circulatory movement of liquid in said tank and to produce a vortex at the surface thereof, spray means connected to the output of said pump to spray liquid onto said vortex, liquid metering means arranged to feed a predetermined proportion of said liquid to mechanical separating means arranged to separate out sludge from said liquid and capable of separating and concentrating the sludge to a concentration sufficiently high so that the concentrated sludge can be used to maintain the high biomass concentration in the tanks and means for introducing a proportion of said separated sludge directly into said tank.

4. The method for the aerobic biological purification of liquid wastes containing organic pollutants comprising:

- (a) introducing the liquid waste into a tank containing a liquid having a high predetermined biomass concentration;



- (b) withdrawing liquid from the tank and entraining air into the withdrawn liquid;
- (c) introducing the liquid with the entrained air into the tank in a manner so as to cause the liquid in the tank to circulate and produce a vortex at the surface of and a foam on the surface of the liquid in the tank to thereby oxygenate the liquid in the tank;
- (d) maintaining the height of the foam at a predetermined level by withdrawing liquid from the tank and spraying a portion of the withdrawn liquid on to the surface of the foam;
- (e) separating and concentrating the sludge therefrom by a mechanical separation device capable of producing a sludge of sufficiently high concentration to carry out step (f); and
- (f) recycling a portion of said concentrated sludge to the tank at a rate so as to maintain the biomass concentration within the tank at the predetermined level.

4,244,816

LIQUID MEMBRANE CAPSULE SYSTEMS RESISTANT TO COALESCENCE BY MEANS OF AN IRREVERSIBLE COATING

Tina C. Vogler, South Orange, and William J. Asher, Fanwood, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 874,245, Feb. 1, 1978,

abandoned. This application Jan. 22, 1979, Ser. No. 5,353

Int. Cl.³ B01D 31/00, 13/00; A61M 1/03

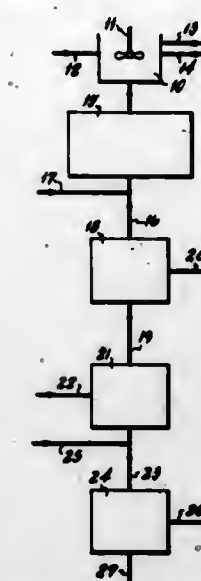
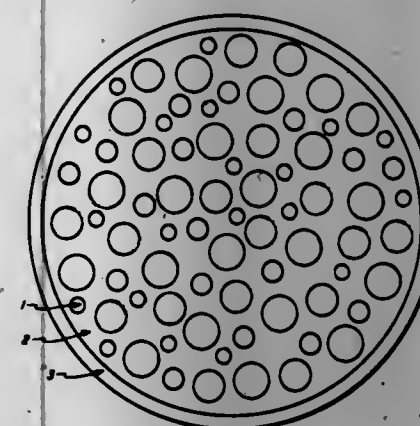
U.S. Cl. 210—638

33 Claims

1. An improved liquid membrane capsule resistant to coalescence, said capsule comprising a globule of an emulsion suspended in an aqueous suspending phase wherein said emulsion comprises discrete microdroplets of an aqueous interior phase surrounded by a continuous, nonaqueous, oil, exterior phase, wherein the improvement comprises an irreversible coating

component comprising a long chain polymer possessing surface activity and the ability to gel or chain crosslink present in the aqueous suspending phase which forms an irreversible coating around the oily, exterior phase of said capsule making same resistant to coalescence.

28. An improved hemodialysis process of the type wherein a stream of blood from a patient is passed over one side of a dialysis membrane through which membrane toxins diffuse from the blood which toxins are picked up by a dialysis fluid on the other side of the membrane, the purified blood being re-



residual metallic impurities to render the sludge substantially free of metallic impurities.

turned to the patient, the improvement comprising suspending in the dialysis fluid the stabilized liquid membrane capsule system (LMC) of claim 1, 2, 3 or 4 wherein the interior phase of the LMC is citric acid, which removes ammonia from the dialysis fluid, passing this dialysis fluid and the suspended LMC over activated carbon and phosphate ion exchange materials to remove other toxins and recirculating the dialysis fluid and suspended LMC to the dialysis membrane, the use of the LMC reducing the volume of dialysis fluid employed by about 99%.

4,244,817

PROCESS FOR PRODUCING SEMIPERMEABLE MEMBRANE

Hiroshi Yaginuma, Yokohama, Japan, assignor to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Sep. 12, 1978, Ser. No. 941,563

Claims priority, application Japan, Sep. 14, 1977, 52/110999

Int. Cl.³ B01D 13/00; C02F 1/44

U.S. Cl. 210—654

11 Claims

1. A process for preparing a semipermeable membrane, which comprises contacting a thin polyamine film applied to a liquid-permeable microporous substrate with a polyalicyclic diisocyanate or polyalicyclic dicarbonyl halide capable of reacting with the amino or imino groups in the polyamine, thereby to crosslink the polyamine at the surface portion of the thin film.

4,244,818

METHOD OF REMOVING METALLIC IMPURITIES FROM SEWAGE SLUDGE

James W. Abson, Chesham, England, assignor to Simon-Carves Limited, Chesham, England

Filed Mar. 27, 1979, Ser. No. 24,453

Claims priority, application United Kingdom, Apr. 15, 1978, 14901/78

Int. Cl.³ C02F 1/52

U.S. Cl. 210—721

9 Claims

1. A method of removing metallic impurities from sewage sludge comprising the steps of sufficiently acidifying the sludge to a pH lying approximately within the range 1-1.5 in the presence of an oxidising agent, holding the acidified sludge for a sufficient period of time to maximise the quantity of metallic impurities taken into solution, adding a flocculating agent, thickening said sludge by removing a substantial part of the liquid component containing the now solubilized metallic impurities, replacing the removed liquid with an aqueous liquid

which is free or substantially free from metallic impurities and subsequently removing more liquid thus to remove still further

4,244,819 FLOATING ANTI-POLLUTION BARRIER AND METHOD FOR USING THE SAME

Louis Ballu, Epernay, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, France

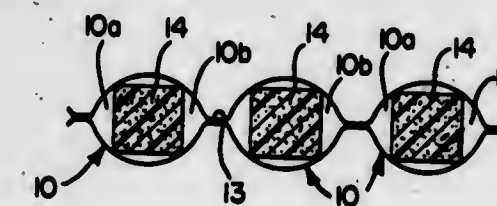
Continuation-in-part of Ser. No. 586,255, Jun. 12, 1975, abandoned, which is a continuation of Ser. No. 427,531, Dec. 26, 1973, abandoned. This application Nov. 24, 1976, Ser. No. 744,878

Claims priority, application France, Dec. 26, 1972, 72.46285; Mar. 11, 1976, 76 06977

Int. Cl.³ E02B 9/02; C02F 1/24

U.S. Cl. 210—242.3

3 Claims



1. In a floating anti-pollution barrier of the type including a submerged skirt-like structure, float means for supporting said skirt-like structure, said float means comprising a plurality of pocket-like means, each being air-tight and having an opening facing in the downward direction, said plurality of pocket-like means being connected with one another by a plurality of pliable bands separating each of said pocket-like means, and means for shaping said pocket-like means such that air filling said pocket-like means is imprisoned in said pocket-like means by water when the barrier is placed in water, the improvement comprising said means for shaping being spacing members which extend transversely to said pocket-like means and space apart opposite walls of said pocket-like means, said spacing members having a density of lower than water, and each of said spacing members having a volume less than the volume of each of said pocket-like means such that free air spaces which communicate with said opening of said pocket-like means are provided in each of said pocket-like means to effect primary floating support of said skirt-like structure by compressed air in said pocket-like means, wherein said spacing members are in the form of flat plates of air-tight cellular material having a major dimension disposed perpendicularly to said skirt-like structure, said flat plates being secured to opposing walls of said pocket-like means, and wherein said spacing members have a volume sufficiently large to provide secondary floating support of said skirt-

like structure by said pocket-like means in the event that water fills said pocket-like means.

4,244,820

FLUID PURIFICATION SYSTEM

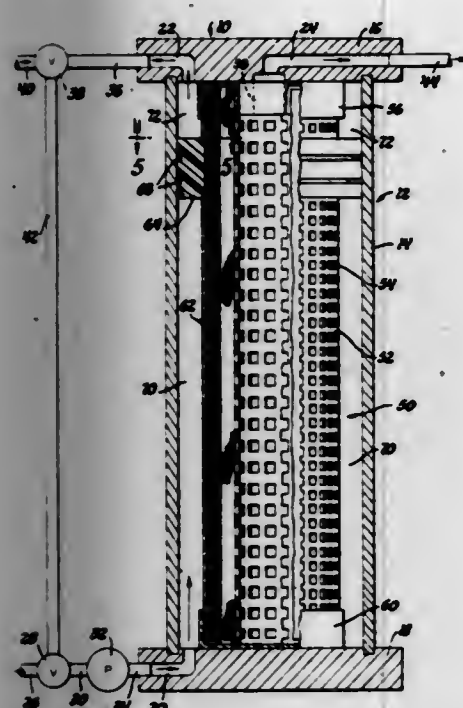
Dale I. Hank, Pinckney, and Gerald B. Tanny, Ann Arbor, both of Mich., assignors to Gelman Instrument Company, Ann Arbor, Mich.

Filed May 16, 1978, Ser. No. 906,499

Int. Cl.³ B01D 31/00

U.S. Cl. 210-194

24 Claims



1. A filter element for use in a cross-flow filtration system comprising a cylindrical composite sheet including an outer sheet of flexible, impervious material and an inner sheet of selective, permeable membrane material spaced from the outer sheet to form a flow channel for a feed fluid therebetween, the composite sheet being folded into radially projecting pleats along fold lines which define a flow axis parallel to the longitudinal axis of the cylindrical composite sheet, and having an opening at each end of said flow channel to permit flow of the feed fluid into said channel at one end thereof, then through the channel along the flow axis and over the surface of the selective, permeable membrane material to cause separation of constituents from the feed fluid by passage of the constituents through the selective, permeable membrane material to the interior of said cylindrical composite sheet, and then out of said channel at the other end thereof; an end cap at each end of said cylindrical composite sheet to which said sheet of selective, permeable membrane material is sealingly secured; and means for conducting from the interior of said cylindrical composite sheet the constituents separated from said feed fluid.

4,244,821

BACKFLUSHING SYSTEM

Allen E. Molvar, Barrington, R.I., assignor to Clevepak Corporation, White Plains, N.Y.

Division of Ser. No. 863,587, Dec. 22, 1977, Pat. No. 4,152,259.

This application Oct. 20, 1978, Ser. No. 952,953

Claims priority, application Japan, Nov. 22, 1977, 52-140554

Int. Cl.³ B01F 5/04, 13/02; C02F 7/00

U.S. Cl. 210-220

14 Claims

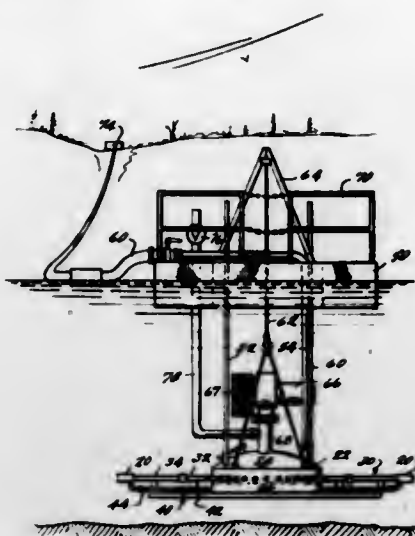
1. A system for mixing gas with a fluid in a body of fluid comprising:

a plurality of mixing chambers disposed in said body, each having a main passage for said fluid therethrough from an inlet to an outlet and at least one further passage opening into said main passage for supplying said gas into said main passage for mixing with said fluid;

a line connecting each said inlet to a backflush location higher than that inlet location and at a lower pressure;

a valve in said line having an open position and a closed position;

a pump and means connecting said pump to each said inlet for pumping said fluid through each said main passage; and



means for supplying gas to each said further passage so that said gas is forced into the associated main passage into which that further passage opens to mix with said fluid, said gas moving from that further passage through said associated main passage and said line to said backflush location to flush debris from said associated main passage when said pump is inoperative and said valve is in said open position, said valve in said closed position preventing flow through said line.

4,244,822

INDUSTRIAL TECHNIQUE MAGNETIC APPARATUS

John R. Slavens, Stow, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

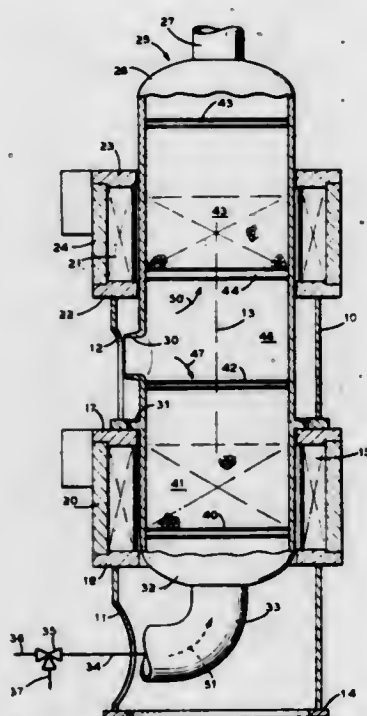
Continuation of Ser. No. 896,962, Apr. 17, 1978, abandoned.

This application Aug. 9, 1979, Ser. No. 65,245

Int. Cl.³ B01D 35/06

U.S. Cl. 210-222

2 Claims



1. A dual magnetic filter comprising:

a vessel;

an upper magnetizable fluidizable filter assembly disposed within said vessel;

a lower magnetizable fluidizable filter assembly disposed within said vessel;

said upper filter assembly being spaced above said lower filter assembly to provide a plenum therebetween;

a filtrate inlet conduit penetrating said vessel to establish fluid communication therebetween at said plenum;

an inlet conduit valve for selectively shutting said inlet conduit;

an upper filtrate discharge conduit penetrating said vessel to establish fluid communication therebetween above said upper filter assembly;

a lower filtrate discharge conduit penetrating said vessel to establish fluid communication therebetween below said lower filter assembly;

magnetizing means for individually selectively magnetizing said upper assembly and said lower assembly;

a three-way valve for selectively shutting said lower discharge conduit and for admitting wash fluid into said vessel through said lower discharge conduit;

said upper filter assembly including

an upper bed of magnetizable pellets,

an upper support screen extending across the interior of said vessel below said upper bed to support said upper bed, said upper support screen being apertured to preclude the passage of the pellets of said upper bed therethrough and to allow the passage of filtrate therethrough,

an upper restraining screen extending across the interior of said vessel above said upper bed, said upper restraining screen being apertured to preclude the passage of the pellets of said upper bed therethrough and to allow the passage of filtrate therethrough, said upper restraining screen being spaced a sufficient distance above said upper bed to allow said upper bed to fluidize when a sufficient flow rate of wash fluid is provided up therethrough; and

said lower filter assembly including

a lower bed of magnetizable pellets,

a lower support screen extending across the interior of said vessel below said lower bed to support said lower bed, said lower support screen being apertured to preclude the passage of the pellets of said lower bed therethrough and to allow the passage of filtrate therethrough,

a lower restraining screen extending across the interior of said vessel above said lower bed, said lower restraining screen being apertured to preclude the passage of the pellets of said lower bed therethrough and to allow the passage of filtrate therethrough, said lower restraining screen being spaced a sufficient distance above said lower bed to allow said lower bed to fluidize when a sufficient flow rate of wash fluid is provided up therethrough.

4,244,823

CENTRIFUGAL BASKET VALVE MECHANISM

Francis H. Wessel, North Bend; Matthew F. Kluesener, Cincinnati; Donald L. Hurley, and Joseph B. Bange, both of Hamilton, all of Ohio, assignors to The Western States Machine Company, Hamilton, Ohio

Filed Aug. 17, 1978, Ser. No. 934,477

Int. Cl.² B01D 33/06, 33/36

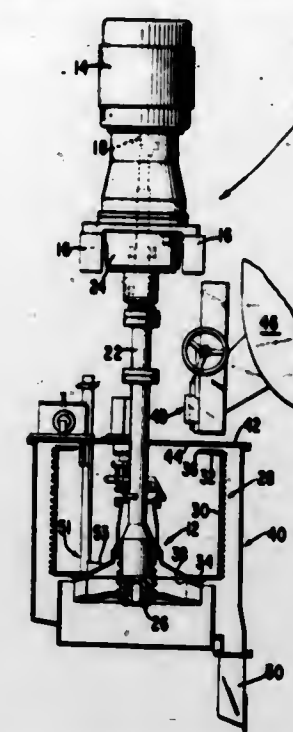
U.S. Cl. 210-371

7 Claims

1. In a centrifugal apparatus including a centrifugal basket having a supporting base structure spaced below its bottom wall and fixed to the lower end of a vertical spindle for rotation of the basket inside a casing surrounding the basket, said bottom wall having an opening therein about the spindle for discharge of centrifuged solids downwardly and then away through space between said base structure and said bottom wall, and a basket bottom valve member surrounding said spindle and movable axially relative thereto between a position closing said opening and an open position spaced below said opening,

means for positioning said valve member comprising a sleeve surrounding said spindle and joined at its lower end with said valve member, said sleeve having an outwardly open annular channel on its upper end, and valve operat-

ing means including a forked lever fulcrumed at one side of said spindle and having arms straddling said spindle, said arms carrying on their ends rollers confined in said



channel, and motive means mounted at said one side for displacing said lever and thereby moving said sleeve axially so as to dispose said valve member in either of its said positions.

4,244,824

MOLDED BODY WITH INCLUSIONS

Wolfgang Lange, Obernburg, and Klaus Gerlach, Obernau, both of Fed. Rep. of Germany, assignors to Enka AG, Wuppertal, Fed. Rep. of Germany

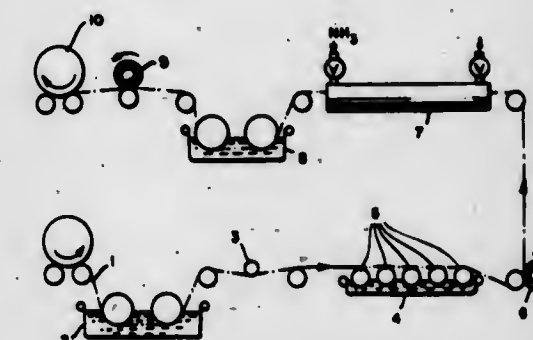
Filed Feb. 23, 1979, Ser. No. 14,572

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808293

Int. Cl.³ B01D 39/00

U.S. Cl. 210-500.2

8 Claims



1. A molded polymer body into which solid particles composed of a metal, metal compound or a mixture of the same have been incorporated as a finely divided inclusion, substantially free of particle agglomerates and with individual particles having a size between about 0.005 and 0.05 microns distributed in a uniform pattern extending from at least one surface of the molded body, as produced by an impregnation through said at least one surface of said molded polymer body with a solution of a reactive metal compound and a precipitation of fine metal-containing particles within the molded body by means of a gaseous precipitating agent introduced through said at least one surface by direct gassing.

4,244,825

BROMINATED CINNAMALACETOPHENONE
Lowell D. Grimsinger, Hoffman Estates, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 29, 1979, Ser. No. 43,581

The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.² C09K 3/28

U.S. Cl. 252—8.1

1 Claim

1. A composition particularly suited for imparting self-extinguishing properties to organic polymers, said composition consisting essentially of a mixture of from about 80 percent to 90 percent by weight on weight of mixture of chain brominated cinnamalacetophenone tetrabromide, from about 5 percent to 10 percent by weight on weight of mixture of chain brominated cinnamalacetophenone dibromide and from about 5 percent to about 10 percent by weight on weight of mixture of di-ring brominated cinnamalacetophenone hexabromide.

4,244,826

GELLED ACIDIC WELL TREATING COMPOSITION AND PROCESS

Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 17, 1978, Ser. No. 925,359

The portion of the term of this patent subsequent to Oct. 25, 1994, has been disclaimed.

Int. Cl.³ E21B 43/27

U.S. Cl. 252—8.55 C

12 Claims

1. A gelled acidic composition comprising:

water,
a water-thickening amount of a water-dispersible polymer selected from the group consisting of water-dispersible cellulose ethers, polyacrylamides, polymethacrylamides, guar gum, polyvinylpyrrolidone, and biopolysaccharides or heteropolysaccharides produced by the action of bacteria of the genus Xanthomonas upon carbohydrates, an amount of a non-oxidizing acid which is capable of, and sufficient for, reacting with a significant amount of the acid-soluble components of a subterranean formation, and a small, but effective amount, about 0.003 to about 1.2 weight percent, of one or more water-dispersible aldehyde(s) selected from the group consisting of aliphatic monoaldehydes having from one to about 10 carbon atoms per molecule, glyoxal, glutaraldehyde, and terephthalaldehyde and from about 0.001 to about 2 weight percent of one or more water-dispersible phenolic compounds selected from the group consisting of phenol, catechol, resorcinol, hydroquinone, phloroglucinol, pyrogallol, 4,4'-diphenol, and 1,3-dihydroxynaphthalene sufficient to cause gelation of an aqueous dispersion of said polymer, said acid, said aldehydes, and said phenolic compounds.

4,244,827

MIXTURE OF DI- OR TRITHIOPHOSPHORIC ACID DIESTERS, PROCESSES FOR PRODUCING IT AND ITS USE

Klaus P. Michaelis, Lindenfels, and Hermann O. Wirth, Bensheim, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 24, 1978, Ser. No. 871,865

Claims priority, application Switzerland, Feb. 3, 1977, 1315/77; Apr. 28, 1977, 5281/77

Int. Cl.² C10M 1/48; C07F 9/02

U.S. Cl. 252—46.4

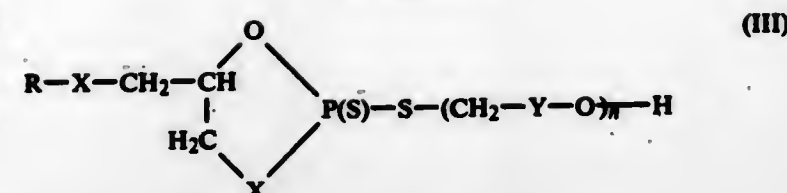
35 Claims

1. A product obtained by reacting

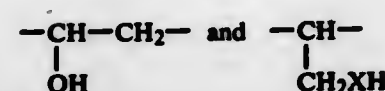
(a) a compound of the general formula I, II or III or mixtures thereof



-continued



wherein Y represents the groups



n represents a value of 0.5 to 10, both X's independently of one another represent an oxygen atom or sulfur atom, and R represents linear or branched alkyl of 1 to 30 carbon atoms; said alkyl interrupted by oxygen or sulfur; cycloalkyl of 5 to 12 carbon atoms; cycloalkylalkyl of 5 to 12 carbon atoms in the cycloalkyl ring; phenyl; benzyl; or said cycloalkyl, said cycloalkylalkyl, said phenyl or said benzyl substituted by 1 or 2 alkyl groups having 1 to 12 carbon atoms, with

(b) phosphorus pentasulfide; in a molar ratio of $\frac{1}{4}$ mol of phosphorus pentasulfide per mole of OH or SH groups of compounds I, II or III, at 0° to 150° C.; and adding and neutralizing at 20°–40° C. the product of (a) and (b) with (c) sufficient ammonia; or primary, secondary or tertiary amine to neutralize the free acidic PSH groups formed by the reaction of phosphorus pentasulfide with compounds I, II or III to give the corresponding ammonium salt.

4,244,828

LUBRICATING OIL COMPOSITION

John W. Hodge, Fishkill, and Harry Chafetz, Poughkeepsie, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

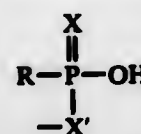
Filed Nov. 13, 1978, Ser. No. 960,517

Int. Cl.³ C10M 1/48

U.S. Cl. 252—46.7

3 Claims

1. An alkenethiophosphonic acid reaction product prepared by the process which comprises reacting an alkenethiophosphonic acid, in which the alkene radical has a molecular weight in the range of 400 to 20,000, and which contains the structural unit represented by the formula:



in which X and X' may be O or S and wherein an average of at least one is S, and R is an alkene radical derived from a monoolefinic polymer of similar molecular weight, with dimethylolpropionic acid in the presence of unreacted monoolefinic polymer and xylene solvent by refluxing about 168° C. to form a carboxylic acid intermediate product, and reacting said carboxylic acid intermediate product with diethylenetriamine at a temperature in the range of 185° to 195° C. to produce said reaction product.

2. An alkenethiophosphonic acid reaction product according to claim 1 in which said alkene radical has a molecular weight ranging from about 1050 to 1400.

3. A lubricating oil composition comprising a major proportion of a base oil of lubricating viscosity and a minor dispersant amount of an alkenethiophosphonic acid reaction product prepared by the process of claim 1.

4,244,829

HYDROCARBON-SOLUBLE EPOXIDIZED FATTY ACID ESTERS AS LUBRICITY MODIFIERS FOR LUBRICATING OILS

Keith Coupland, Sarnia, and Clinton R. Smith, Camlachie, both of Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 7, 1978, Ser. No. 884,132

Int. Cl.³ C10M 1/26

U.S. Cl. 252—56 R

9 Claims

1. In a lubricating motor oil composition comprising a major amount of a mineral lubricating oil and minor amounts of ashless dispersant, metal-containing detergent, viscosity index improver and zinc dihydrocarbyl phosphorodithioate additives, the improvement which comprises including in said composition as a fuel economy additive, a minor but at least friction-reducing amount in the range of about 0.2 to about 3 wt. % of an oil-soluble friction reducing polyepoxidized fatty acid ester selected from the group consisting of: methyl ester of soya bean fatty acids, C₁ to C₁₂ monohydric alcohol ester of linseed oil fatty acids, soya bean oil and linseed oil.

4,244,831

SILICONE-HYDROCARBON COMPOSITIONS
Robert A. Copper, Ridgefield, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 7, 1976, Ser. No. 674,649

Int. Cl.² C10M 3/46

U.S. Cl. 252—78.3

1 Claim

1. A composition of matter consisting essentially of (A) about 50 percent by volume of an alkoxy end-blocked dimethylsiloxane having the average formula



which has a pH of 7.0 in a 50%-50% water-isopropanol mixture at 10% concentration, a viscosity at 100° F. of 17.5 centistokes and 6.08 centistokes at 210° F., no detectable unreacted hydrolyzate cyclics and only 0.2% unreacted alcohol, and (B) about 50 percent by volume of a saturated olefin oligomer derived from n-decene-1 having a viscosity at 210° F. of about 5.82, a flash point of about 470 and a specific gravity of about 0.8247.

4,244,832

PHOSPHATE-FREE MACHINE DISHWASHING DETERGENTS USEFUL AT LOW TEMPERATURES
Thomas M. Kaneko, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

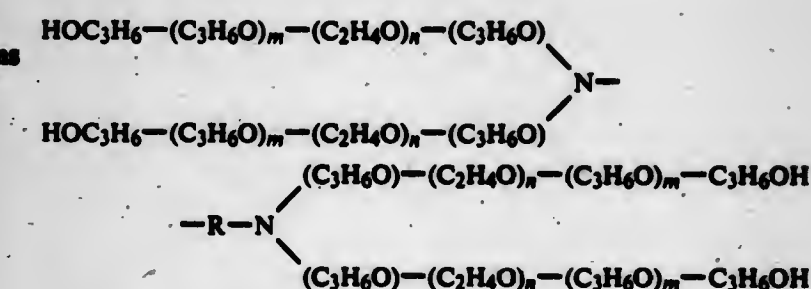
Filed Jul. 27, 1979, Ser. No. 61,119

Int. Cl.³ C11D 7/28, 7/54

U.S. Cl. 252—99

13 Claims

1. A method of washing dishware comprising the step wherein said dishware is brought into contact with water and 0.2 to 0.5 percent by weight of a detergent at a temperature of 71° C. to 38° C., said detergent consisting essentially of 1 to 9 weight percent of a phosphate-free, nonionic surfactant of the structural formula:



wherein n and m are such that the molecular weight attributable to the oxypropylene hydrophobe is 800 to 2000 per chain and the portion of the molecular weight attributable to oxyethylene units is 5 to 16 percent, R being a divalent organic radical containing 2 to 6 carbon atoms and 22 to 38 weight percent of sodium citrate, 15 to 25 percent by weight of sodium carbonate, 1 to 6 percent by weight of chlorinated cyanurate, and 20 to 40 percent by weight of sodium metasilicate.

4,244,833

COMPOSITION AND PROCESS FOR CHEMICALLY STRIPPING METALLIC DEPOSITS

Lillie C. Tomaszewski, Dearborn, Mich., assignor to Oxy Metal Industries Corporation, Warren, Mich.

Filed Nov. 15, 1979, Ser. No. 94,617

Int. Cl.³ C23G 1/04, 1/08

U.S. Cl. 252—101

26 Claims

1. A composition for chemically stripping metallic deposits from a substrate comprising an aqueous acidic solution containing nitric acid, chloride ions and manganous ions present in an amount sufficient to accelerate the initiation and rate of stripping of the metallic deposit.

4,244,830

METHOD OF PRODUCING A DIELECTRIC WITH PEROWSKITE STRUCTURE AND CONTAINING A COPPER OXIDE

Detlev Hennings, and Herbert Schreinemacher, both of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 863,224, Dec. 22, 1977, abandoned.

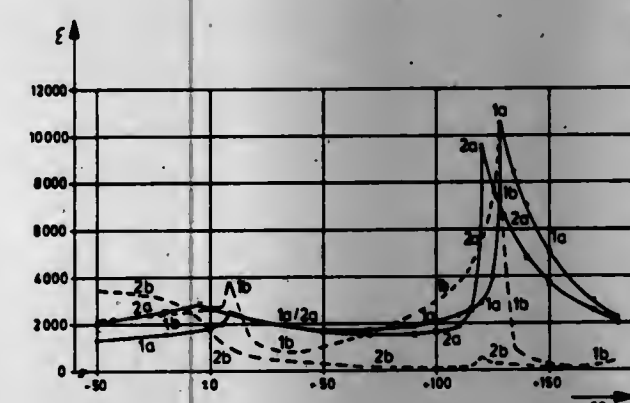
This application Mar. 28, 1979, Ser. No. 24,811

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1976, 2659016

Int. Cl.³ H01B 3/12

U.S. Cl. 106—39.5

7 Claims



1. A method of producing a dielectric material comprising perovskite-forming compounds consisting essentially of one or more of the group of stoichiometrical alkaline earth titanates, alkaline earth zirconates, alkaline earth stannates and mixed crystals thereof, said method comprising the steps of: admixing, with said perovskite-forming compounds, a quantity of eutectic-forming compounds which cannot be incorporated into the perovskite lattice to any substantial extent and which are capable of forming CuO.Cu₂O or CuO.Cu₂O.Me^{IV}O₂ when sintered in an oxygen atmosphere, where Me^{IV}O₂ is at least one oxide of an element from group IV of the periodic system of elements; and sintering said admixture, at a partial oxygen pressure of 0.2–1 bar, in the temperature range of 1000° C. to 1250° C.; said eutectic-forming compounds being present in sintering temperature lowering amounts.

4,244,834

CARPET CLEANING AND DEODORIZING COMPOSITIONS

Lawrence L. Schwalley, Whittier, and Richard C. Speak, Fullerton, both of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Jan. 5, 1979, Ser. No. 45,729
Int. Cl.³ C11D 3/04, 3/48

U.S. Cl. 252-106

11 Claims

1. A dry carpet cleaning and deodorizing composition comprising about 85 to 99.8% of hydrated sodium borate, about 0.2 to 15% of water-insoluble hydrated metal aluminosilicate and about 0.01 to 5% of perfume, said percentages by weight.
2. A composition according to claim 1 in which about 0.05 to 5% by weight of cationic quaternary ammonium salt is included.

4,244,835

METHOD OF DISPERSING ALPHA ALUMINA MONOHYDRATE

Jacob Block, Rockville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,547
Int. Cl.³ B01J 13/00

U.S. Cl. 252-313 R

10 Claims

1. A method of forming an aqueous pseudoplastic dispersion of $\alpha\text{-Al}_2\text{O}_3\cdot\text{H}_2\text{O}$ comprising forming a mixture of water, a water soluble base and solid, particulate $\alpha\text{-Al}_2\text{O}_3\cdot\text{H}_2\text{O}$, subjecting the mixture to high shear rates of greater than about 10,000 reciprocal seconds and for a time of from about 1 to about 60 minutes which is sufficient to cause a substantially complete aqueous pseudoplastic dispersion of said $\alpha\text{-Al}_2\text{O}_3\cdot\text{H}_2\text{O}$.

4,244,836

PROCESS FOR MANUFACTURING MICROCAPSULES OF POLYVINYL ALCOHOL WITH LIQUID WATER-INSOLUBLE CONTENT

Heinz Frensch, Frankfurt am Main; Rudolf Heinrich, and Konrad Albrecht, both of Kelheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 5, 1979, Ser. No. 9,682

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1978, 2805106

Int. Cl.³ B01J 13/02

U.S. Cl. 252-316

8 Claims

1. Process for microencapsulating a water-insoluble liquid in a water-soluble polyvinyl alcohol shell which comprises dispersing from 20 to 80% by volume of said liquid in from 80 to 20% by volume of an aqueous polyvinyl alcohol solution containing from 2 to 50% by weight of polyvinyl alcohol obtained by partial hydrolysis of polyvinyl acetate and having a degree of hydrolysis of from 72 to 99 mol % and a viscosity of from 2 to 18 cP, measured in a 4% aqueous solution at 20° C., and spray drying the resulting dispersion at a temperature between about 40° and 150° C. to a residual moisture content of less than about 0.5% by weight.

4,244,837

MULTI-PURPOSE BLOOD DILUENT FOR USE IN ELECTRONIC BLOOD ANALYSIS INSTRUMENTATION

Harold R. Crews, Miami; Dave Chastain, Jr., Ft. Lauderdale, and Stephen Ledia, Hialeah, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Division of Ser. No. 936,570, Aug. 22, 1978, Pat. No. 4,213,876.

This application Dec. 3, 1979, Ser. No. 99,757
Int. Cl.³ G01N 33/16; C09K 3/00

U.S. Cl. 252-408

6 Claims

1. A multi-purpose blood diluent suitable for use in electronic enumeration and sizing of blood cells, determination of hemoglobin concentration and their collective indices and

platelet parameters in a single blood sample by means of electronic instrumentation comprising:

- A. An osmotically balanced solution of sodium chloride, a monobasic phosphate salt, a dibasic phosphate salt and sodium sulfate,
- B. a hydroxyquinoline as a bacteriostatic agent,
- C. methohexital sodium barbiturate for maintaining desired red blood cell morphology during operation of said instrumentation,
- D. said diluent being an aqueous electrolytic solution maintained within a preselected range of pH and osmolality.

4,244,838

HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Donald E. Gessell, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1979, Ser. No. 51,586

Int. Cl.³ C08F 4/64

U.S. Cl. 252-429 B

30 Claims

1. A supported catalyst which is the solid, hydrocarbon insoluble reaction product formed by reacting in an inert diluent

- (1) the reaction product of (a) a magnesium component or mixture of such components represented by the formula $\text{MgR}_2\cdot x\text{MeR}'_x$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, each R' is independently a hydrocarbyl or a hydrocarbyloxy group having from 1 to about 20 carbon atoms, Me is aluminum, zinc or boron, x has a value of from zero to about 10, and x' has a value equal to the valence of Me; with
- (b) a sufficient amount of at least one of water, carbon dioxide or an organic, oxygen-containing compound free of halogen and nitrogen atoms, so as to react with the hydrocarbyl groups present in component (1-a) to produce a product which will not substantially reduce TiCl_4 at a temperature of about 25° C.; with
- (2) a halide-containing transition metal compound or mixture of such compounds represented by the formula $\text{TmY}_n\text{X}_{z-n}$ wherein Tm is a metal selected from groups IV-B, V-B and VI-B of the Periodic Table of Elements, Y is oxygen or OR, each X is a halogen, each R'' is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, z has a value equal to the valence of said transition metal, n has a value of from zero to 6 with the value of z-n being from at least 1 up to a value equal to the valence of the transition metal; said halide-containing transition metal compound being present in a quantity so as to convert substantially all of the substituent groups attached to a magnesium atom in component (1) to a halide group.

4,244,839

HIGH SURFACE AREA CATALYSTS

Clyde L. Aldridge, and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 847,898, Nov. 2, 1977, Pat. No. 4,134,825, which is a continuation-in-part of Ser. No. 702,227, Jul. 2, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 955,526

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.³ B01J 31/12, 27/04, 23/28, 23/88

U.S. Cl. 252-431 C

29 Claims

1. A high surface area catalyst prepared by the steps which comprise:
 - (a) dispersing in hydrocarbon oil chargestock having a Conradson carbon content up to about 50 weight percent, a thermally decomposable metal compound in an amount sufficient to provide a ratio of atoms of oil chargestock

Conradson carbon to atoms of metal constituent of said thermally decomposable metal compound of less than about 750 to 1, said metal constituent being selected from the group consisting of Group II, Group III, Group IV, Group V, Group VIB, Group VIIB, and Group VIII of the Periodic Table of Elements and mixtures thereof;

- (b) heating said thermally decomposable metal compound within said chargestock at an elevated temperature in the presence of a gas selected from the group consisting of hydrogen-containing gas, a hydrogen sulfide-containing gas, and a gas comprising hydrogen and hydrogen sulfide to produce a solid high surface area catalyst within said chargestock, and
- (c) recovering said high surface area catalyst.

4,244,840

SELF-OPACIFIED LIQUID HARD SURFACE CLEANING COMPOSITIONS

Alan Straw, Macclesfield, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 2, 1978, Ser. No. 902,142

Claims priority, application United Kingdom, May 10, 1977, 19559/77

Int. Cl.³ C11D 1/22, 1/83, 3/065

U.S. Cl. 252-540

10 Claims

1. A self-opacified, impalpable, homogeneous, liquid, hard surface cleaner consisting essentially of, by weight, from 2% to 6% of a water-soluble, synthetic, anionic, sulfated or sulfonated detergent salt containing an alkyl radical of 8 to 22 carbon atoms in the molecule, said salt being selected from the group consisting of ammonium, mono-, di- and triethanolammonium and alkali metal salts; from 1% to 4% of a water-soluble alkyleneoxylated nonionic detergent selected from the group consisting of condensates of $\text{C}_8\text{-C}_{18}$ alkanol with 2-15 moles of ethylene oxide, condensates of $\text{C}_6\text{-C}_{12}$ alkylphenol with 5 to 30 moles of ethylene oxide and condensates of $\text{C}_{10}\text{-C}_{16}$ alkanol with a heteric mixture of ethylene oxide and propylene oxide in a weight ratio of 2.5:1 to 4:1 with the total alkylene oxide content being 60% to 85% by weight, the weight ratio of anionic detergent to nonionic detergent being from 0.5:1 to 6:1; 2% to 15% of a water-soluble detergent builder salt, the weight ratio of builder salt to total detergent being in the range of 1:5 to 5:1; 0-2% of $\text{C}_8\text{-C}_{18}$ fatty acid, 0-8% of urea; and the balance water.

4,244,841

METHOD FOR RECYCLING RUBBER AND RECYCLED RUBBER PRODUCT

W. Howard Frankland, Tampa, Fla., assignor to Frankland Enterprises, Inc., Tampa, Fla.

Filed Mar. 24, 1980, Ser. No. 133,565

Int. Cl.³ B29G 5/02

U.S. Cl. 260-2.3

15 Claims

1. A method for recycling rubber scrap to yield a final product of at least about one inch in thickness, said method comprising the steps of:
 - a. preparing a cure mix by intimately mixing together about nine parts, by weight, sulfur and not more than about one part, by weight, zinc stearate;
 - b. admixing about 3-8 parts, by weight, of said cure mix with about 100 parts, by weight, dry ground rubber;
 - c. placing the resulting cure mix and ground rubber mixture into a mold;
 - d. closing said mold and compressing said mixture to a thickness of at least about one inch;
 - e. placing said closed mold into a steam autoclave;
 - f. curing said mixture within said mold in said steam autoclave for about 1.25-4 hours at a temperature of about 310° F. to less than about 350° F. while maintaining a steam pressure within said autoclave of about 77-130 psi;
 - g. removing said mold from said autoclave; and

h. removing the final recycled rubber product from said mold.

4,244,842

NICKEL AND COBALT CHELATE COMPLEXES AND THEIR USE

Hans Batzer, Ariesheim, Switzerland; Gerrit Knobloch, Lindenfels, Odenwald, and Joel Sinnreich, Bensheim, Bergstrasse, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 14, 1979, Ser. No. 11,969

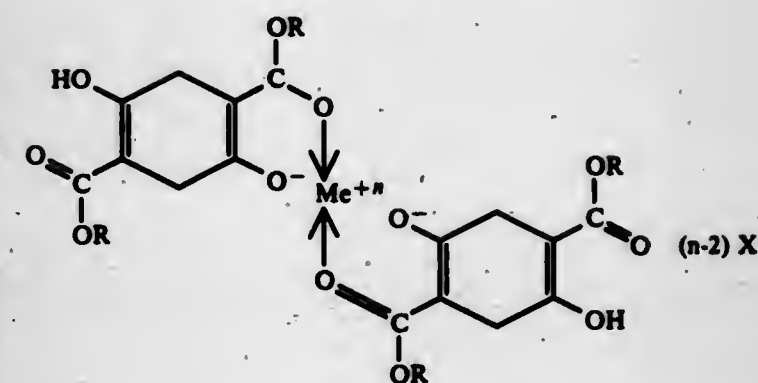
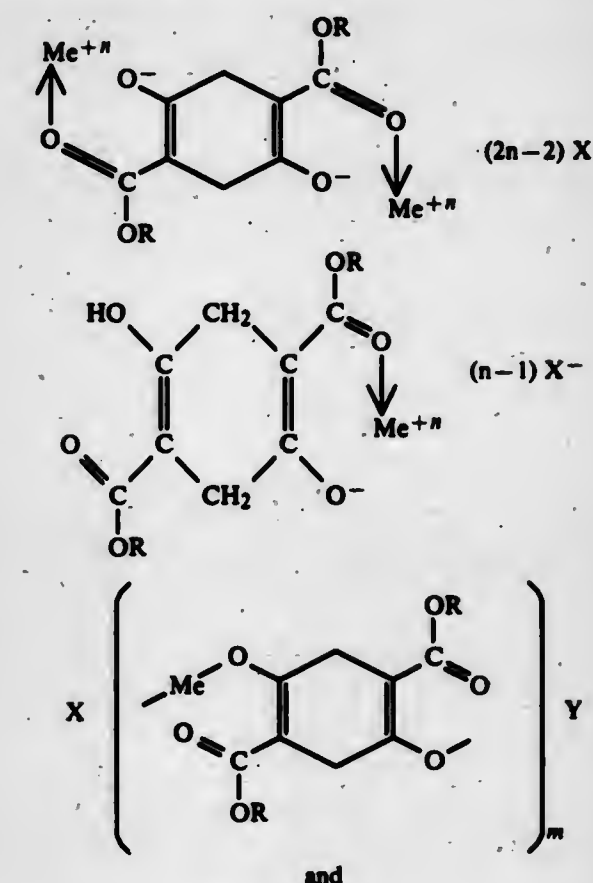
Claims priority, application Switzerland, Feb. 21, 1978, 1848/78

Int. Cl.³ C07F 15/04; C08L 15/02; C07F 15/06

U.S. Cl. 260-3.3

9 Claims

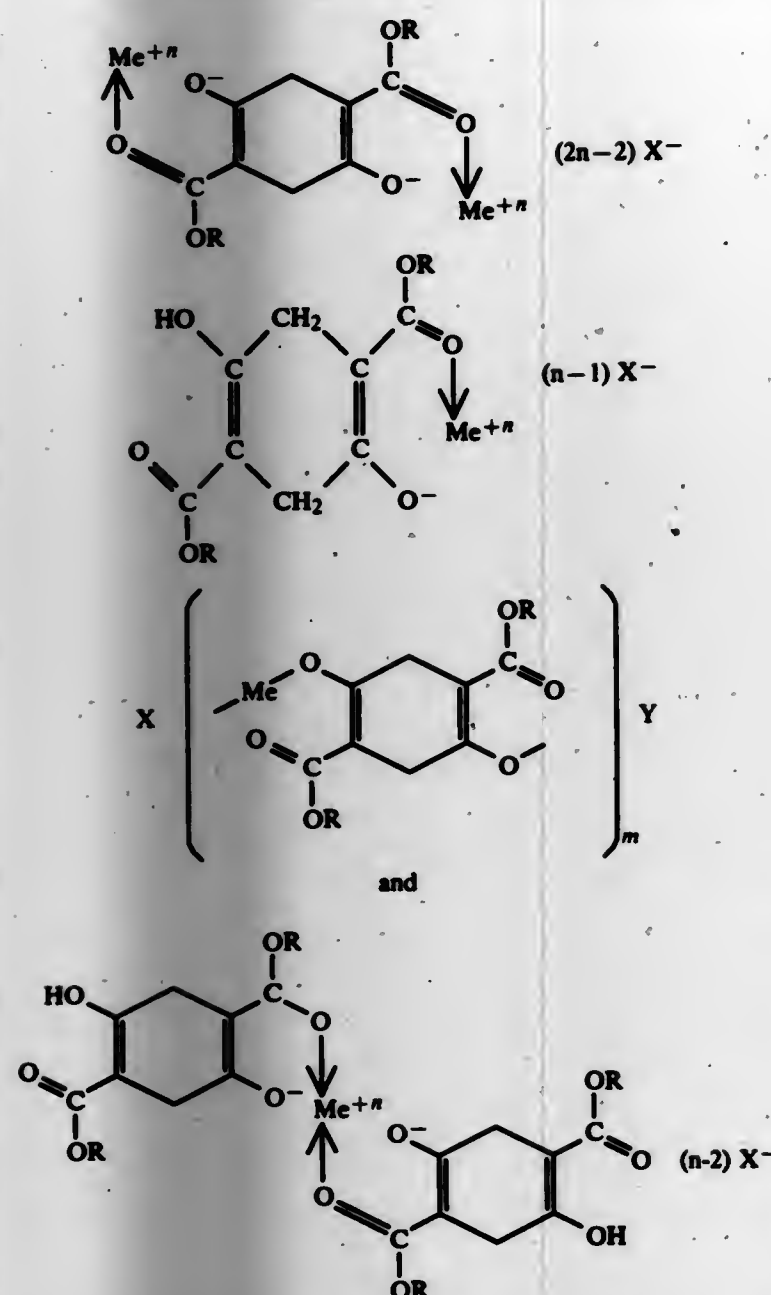
1. A nickel or cobalt chelate complex or mixture thereof selected from the group consisting of



wherein R represents a substituted or unsubstituted hydrocarbon radical of aliphatic or aromatic character, Me is nickel or cobalt, n is 2 or 3, X represents an inorganic or organic anion selected from the group consisting of nitrate, sulfate, phosphate, fluoride, chloride, bromide, iodide, cyanide, cyanate and an organic anion having 1 to 30 carbon atoms said organic anion being a carboxylate, phenolate, alkylphenolate, alkyl sulfate, aryl sulfate, alkylsulfonate, arylsulfonate, alkyl phosphate, aryl phosphate, alkylphosphonate, arylphosphonate, acetylacetonate, benzoylacetonate or quinacridonate, and Y is hydrogen or MeX.

7. A vulcanizable elastomer mixture which comprises
 - (a) a vulcanizable elastomer, and
 - (b) from 0.05 to 10% by weight, based on the elastomer (a),

of a nickel or cobalt complex or mixture thereof selected from the group consisting of



wherein R represents a substituted or unsubstituted hydrocarbon radical of aliphatic or aromatic character, Me is nickel or cobalt, n is 2 or 3, X represents an inorganic or organic anion selected from the group consisting of nitrate, sulfate, phosphate, fluoride, chloride, bromide, iodide, cyanide, cyanate and an organic anion having 1 to 30 carbon atoms, said organic anion being a carboxylate, phenolate, alkylphenolate, alkyl sulfate, aryl sulfate, alkylsulfonate, arylsulfonate, alkyl phosphate, aryl phosphate, alkylphosphonate, arylphosphonate, acetylacetonate, benzoylacetonate or quinacridonate, and Y is hydrogen or MeX.

4,244,843 COVULCANIZED RUBBER

Kenjiro Hashimoto; Shinichi Takagi, both of Kobe; Harunori Okamoto, Sakai, and Minoru Miura, Nishinomiya, all of Japan, assignors to Mitsubishi Belting, Ltd., Kobe, Japan
Division of Ser. No. 764,143, Jan. 31, 1977, which is a continuation of Ser. No. 444,218, Feb. 20, 1974, abandoned. This application Aug. 21, 1979, Ser. No. 68,364

Claims priority, application Japan, Apr. 28, 1973, 48-48789; Apr. 28, 1973, 48-48790

Int. Cl.³ C08L 7/00, 9/02, 9/06, 9/00

U.S. Cl. 260-5

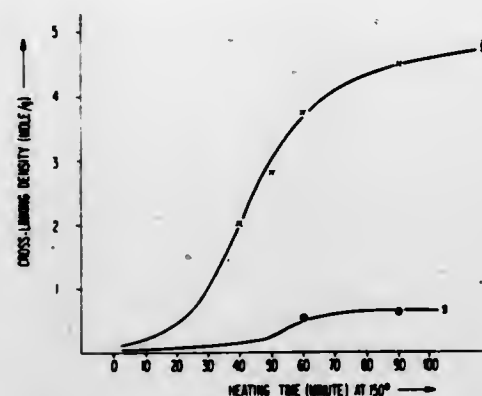
6 Claims

1. A process for producing a covulcanized rubber which comprises the steps of:

- (a) simultaneously incorporating sulfur and a sulfur cleaving agent selected from the group consisting of tertiary amines, secondary amines, primary amines, aliphatic polyamines, cyclic amines, thiazole-type accelerators, guani-

dine-type accelerators, thiourea-type accelerators, thiram-type accelerators, dithiocarbamic acid-type accelerators, metal salts of said dithiocarbamic acid, xanthogenates, phosphines, phosphites and nucleophilic reagents containing a cyano group, in an ethylenepropylene terpolymer or butyl rubber at a temperature of less than 60° C.;

(b) heating the resulting blend in the absence of a metal oxide at a temperature in excess of 60° C. to produce a substan-



tially uncrosslinked pendant rubber, the amount of said sulfur cleaving agent and said time of heating the blend being sufficient to produce said pendant rubber but insufficient to cause any substantial crosslinking thereof;
(c) blending the resulting substantially uncrosslinked pendant rubber with at least one high unsaturated rubber, and
(d) heating the blend of step (c) in the presence of a metal oxide selected from the group consisting of ZnO, CdO, MgO, PbO, CaO and NiO to produce said convulcanized rubber.

**4,244,844
AQUEOUS SIZE FOR GLASS FIBERS**
Jacques Molinier, La Motte Servolex; Jacques Mahler, Chambéry; Gilbert Bocquet, Challes Les Eaux; Bernard de Massey, Chambéry, all of France, and Robert Holtmann, Aachen, Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jan. 18, 1978, Ser. No. 870,507

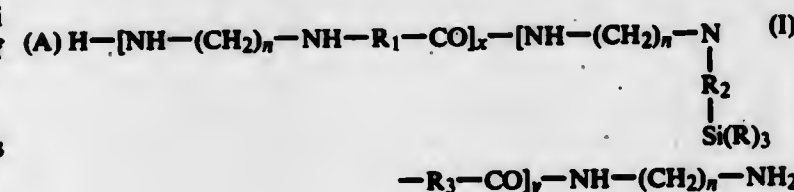
Claims priority, application France, Jan. 19, 1977, 77 01386
Int. Cl.³ C08L 3/08, 3/12, 83/08, 33/26

U.S. Cl. 260-9

7 Claims

1. Aqueous composition for the coating of glass fibers, characterized in that it comprises:

- 0.5 to 15% in weight of at least one starch,
- 0.05 to 5% of non-ionic lubricant,
- 0.03 to 2% of cationic lubricant,
- 0.02 to 1% of emulsifier,
- 0.1 to 2% of at least one organo silane selected from the group consisting of



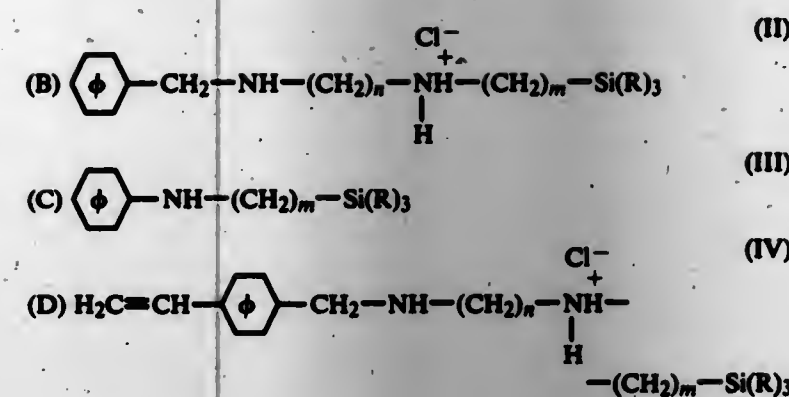
in which:

x/y is 0.5 to 15; n is 2 to 6,

R is a methoxy, ethoxy, propoxy, n-butoxy or β -methoxyethoxy radical,

R₁ and R₃ are alkylene divalent radicals containing 1 to 3 carbon atoms, and

R₂ represents a substituted or non-substituted cycloaliphatic or aromatic, aliphatic divalent radical; or



in which:

n is 2 to 6, preferably n=2 or 3

m is 1 to 10, preferably m is 1 to 4

R is a methoxy, ethoxy, propoxy, n-butoxy or β -methoxyethoxy radical.

**4,244,845
PRE-MIXED CATALYZED VINYL ACETATE
CO-POLYMER ADHESIVE COMPOSITION**
Ming C. Woo, Willingboro, N.J., assignor to National Casein of New Jersey, Riverton, N.J.
Continuation-in-part of Ser. No. 671,269, Mar. 29, 1976, Pat. No. 4,085,074. This application Feb. 13, 1978, Ser. No. 877,260
Int. Cl.³ C08L 1/28

U.S. Cl. 260-17 R

10 Claims

1. A pre-mixed catalyzed adhesive composition comprised of (a) an aqueous cross-linkable vinyl acetate resin emulsion of co-polymerized vinyl acetate, in which the co-polymerized vinyl acetate is made from a monomer mixture of about 90-98% vinyl acetate and about 2-10% of an N-alkylol derivative of an amide of an alpha, beta-unsaturated carboxylic acid in an aqueous medium containing about 3-6% by weight of a hydrocolloid selected from the group consisting of polyvinyl alcohol, hydroxyethylcellulose and carboxymethylcellulose, by weight of the monomer mixture, (b) an inorganic acid metal-salt cross-linking catalyst selected from the group consisting of aluminum chloride, aluminum nitrate, chromic chloride and chromic nitrate in an amount of about 0.0032 to 0.025 gram moles per 100 grams of the resin emulsion, and (c) a cross-linking inhibitor of triethanolamine wherein the mole ratio of the cross-linking inhibitor to catalyst ranges from a minimum of about 0.1 to 0.2 to a maximum of about 0.7 to 1.7.

4,244,846 SULFITE WASTE LIQUOR-UREA FORMALDEHYDE RESIN PLYWOOD GLUE

Folke J. Edler, Sandviken 13460, 44405 Ödeshög, Sweden
Continuation-in-part of Ser. No. 899,237, Apr. 24, 1978, Pat. No. 4,194,997, which is a continuation-in-part of Ser. No. 738,370, Nov. 3, 1976, abandoned, which is a continuation of Ser. No. 574,515, May 5, 1975, abandoned. This application Oct. 22, 1979, Ser. No. 86,805
Int. Cl.³ C08L 61/24

U.S. Cl. 260-17.3

11 Claims

1. A plywood glue comprising in aqueous admixture with each other and in parts by weight, dry solids basis:

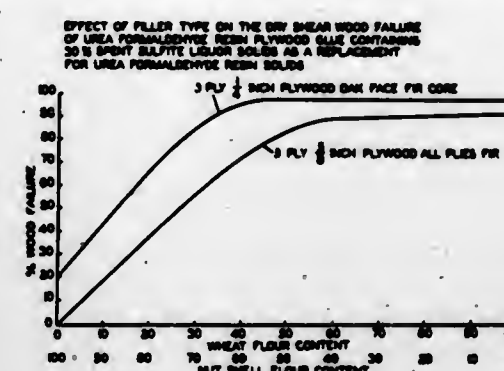
Urea-Formaldehyde Resin—30-90
Spent Liquor from the Acid Sulfite Pulping of Lignocellulose—10-70

the glue including also a filler comprising an amylaceous plywood glue filler used in the amount of from 30 to 300 parts for each 100 parts of the mixture of resin and spent liquor,

the glue containing from 0.2 to 4.0% by weight ammonium ion (expressed as NH₃) on a spent liquor solids basis, the spent liquor component of the mixture prior to mixing having a pH of from 3-9,

the urea formaldehyde resin component of the mixture prior

to mixing being characterized by a mol ratio of formaldehyde to urea of from 1.2 to 2.5; a pH of from 6 to 9; and



a methylol content corresponding to a Witte number of from 1.0 to 2.2.

4,244,847 FIBRATED ADMIX OR POLYMER AND PROCESS THEREFOR

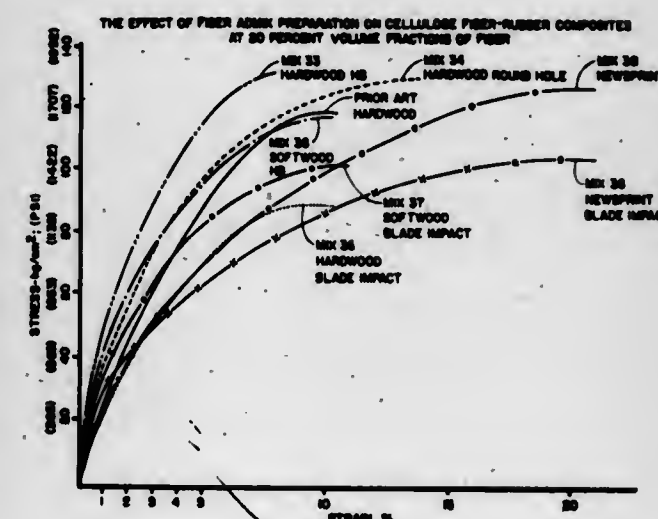
Richard W. Postviate, Lakewood, and Jonathan A. Johnston, Denver, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 783,926, Apr. 1, 1977, Pat. No. 4,125,493. This application Aug. 10, 1978, Ser. No. 932,578

Int. Cl.³ C08L 1/02; C08K 5/01

U.S. Cl. 260-17.4 CL

14 Claims



1. A fibrated admix comprising: synthetic discontinuous fibers selected from the group consisting of aramid, nylon and polyester, the fibers coated with a non-elastomeric stiffening agent and mechanically impacted and sized to pass through a discharge screen having openings with a breadth of about 0.5 mm to about 2 mm; carbon black particles dusted on the fibers and generally partitioning the fibers from each other; oil dispersed with and affixed to the fibers and carbon black particles.

**4,244,848
HALOGEN CONTAINING RESIN COMPOSITION**
Motonobu Minagawa, Koshigaya; Tetsuo Sekiguchi, Harada, and Kenji Nakazawa, Urawa, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,051

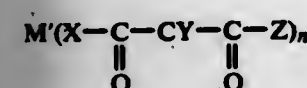
Claims priority, application Japan, Jan. 31, 1978, 53/9609
Int. Cl.³ C08K 5/11, 5/09, 5/07

U.S. Cl. 260-23 XA

14 Claims

1. An environmentally acceptable stabilizer composition for enhancing the resistance to deterioration upon heating at 175° C. of a vinyl chloride polymer from which lead, cadmium,

mercury, thallium, and arsenic are substantially excluded, comprising (A) at least one dialkyltin, zinc, alkali metal, or alkaline earth metal organic phosphate ester salt having per metal atom from one to a number equal to the valence of the metal of phosphate ester groups and from one to two organic groups per phosphate groups, the organic groups being alkyl, aryl, alkaryl, aralkyl, ether-interrupted alkyl, or ether-interrupted aralkyl groups having from 1 to about 80 carbon atoms; and (B) at least one betadiketone compound having 5 to about 30 carbon atoms which is a cyclic or open-chain betadiketone or a zinc, alkali metal or alkaline earth metal salt thereof, and is represented by the formula



in which n is one or two; X is linked with Y or with Z in a 5 to 6 membered carbocyclic or oxygen-heterocyclic ring structure or when not linked with Y or with Z is a hydrocarbon group, an alkoxyhydrocarbon group, or an alkylenedioxyhydrocarbon group having up to 18 carbon atoms; Y when not linked in a ring structure with X is a hydrogen atom, an acyl group



where R'' is alkyl or aryl, or a hydrocarbon, alkoxyhydrocarbon, or alkylenedioxyhydrocarbon X group; Z is a hydrogen atom, a halohydrocarbon group, or a hydrocarbon, alkoxyhydrocarbon, or alkylenedioxyhydrocarbon X group; and M' is hydrogen, potassium, sodium, lithium, zinc, barium, strontium, calcium, or magnesium.

14. An environmentally acceptable stabilized vinyl chloride polymer composition comprising a vinyl chloride polymer and a stabilizer composition according to claim 1.

4,244,849

SILICONE EMULSION WHICH PROVIDES AN ELASTOMERIC PRODUCT AND METHODS FOR PREPARATION

John C. Saam, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 6, 1979, Ser. No. 64,152

Int. Cl.³ C08L 83/10

U.S. Cl. 260—29.2 M

19 Claims

1. An aqueous silicone emulsion comprising a continuous water phase and a dispersed silicone phase free of colloidal silica prepared by:

(A) adding alkali metal silicate to anionically stabilized aqueous emulsion of hydroxyl endblocked polydiorganosiloxane,

(B) adjusting the pH of the emulsion within the range from 8.5 to 12 inclusive, and

(C) then aging the emulsion at the pH of 8.5 to 12 for a time period such that an elastomeric product is formed upon removal of the water under ambient conditions.

4,244,850

AIR CURABLE LATEX

Stamatios G. Mylonakis, Barrington, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 901,856, May 1, 1978, abandoned. This application Jan. 29, 1979, Ser. No. 7,516

Int. Cl.³ C08L 33/02

U.S. Cl. 260—29.6 M

13 Claims

1. An air drying and air curable latex coating composition comprising water having dispersed therein unsaturated resin particles which are aqueous emulsion copolymer particles having ethylenically unsaturated side chains thereon, and a

drier salt in solution in a water immiscible organic solvent emulsified in said latex.

4,244,851

PLASTICIZED POLYCARBONATE COMPOSITION EMPLOYING ALDEHYDE COMPOUNDS

Victor Mark, Evansville, and Phillip S. Wilson, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

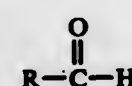
Division of Ser. No. 781,054, Mar. 24, 1977, Pat. No. 4,184,994. This application Nov. 3, 1978, Ser. No. 957,352

Int. Cl.³ C08K 5/07, 5/41

U.S. Cl. 260—30.8 R

5 Claims

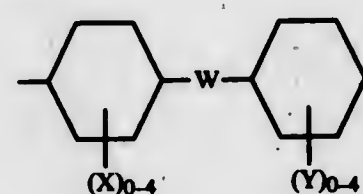
1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of an organic plasticizer selected from the following formulae:



wherein R is selected from the group consisting of C₁ to C₃₀ alkyl, aryl of 6 to 14 carbon atoms and substituted aryl wherein the substituents are C₁ to C₃₀ alkyl, halogen, C₁ to C₃₀ alkoxy, aryloxy of 6 to 14 carbon atoms, alkylthio of 1 to 30 carbon atoms, and arylthio of 6 to 14 carbon atoms;



wherein R is as defined above plus hydrogen, R₁ is C₁ to C₃₀ alkylene, arylene of 6 to 14 carbon atoms, alkarylene of 7 to 30 carbon atoms, aralkylene of 7 to 30 carbon atoms and



wherein W is selected from the group consisting of:



wherein n is an integer of 1 to 10 and X and Y are independently selected from the group consisting of halogen and C₁-C₁₂ alkyl.

4,244,852

RUBBER-MODIFIED HIGH NITRILE COPOLYMERS WITH IMPROVED IMPACT RESISTANCE

Dorothy C. Prem, Sagamore Hills; June T. Duke, Chagrin Falls, and Ralph E. Isley, Northfield, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 16, 1978, Ser. No. 968,937

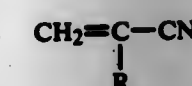
Int. Cl.³ C08K 5/12

U.S. Cl. 260—31.8 AN

7 Claims

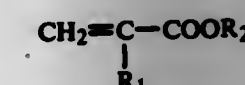
1. The process for preparing a resin having good impact resistance comprising polymerization in an aqueous medium at a temperature in the range of from 0° to 100° C. in the substantial absence of molecular oxygen 100 parts by weight of

(A) from 60 to 90% by weight of at least one nitrile having the structure

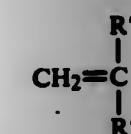


wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) from 10 to 40% by weight based on the combined weights of (A) and (B) of at least one member selected from the group consisting of



wherein R₁ is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R₂ is an alkyl group having from 1 to 6 carbon atoms,



wherein R' and R'' are alkyl groups having from 1 to 7 carbon atoms,

(3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

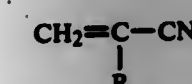
(4) vinyl acetate,

(5) styrene, and

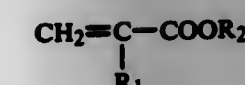
(6) indene,

in the presence of from 1 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure



wherein R has the foregoing designation, and an ester having the structure



wherein R₁ and R₂ have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of polymerized comonomer, said (C) having been prepared by carrying out the polymerization of the monomers in the presence of from 5 to 50 parts by weight per 100 parts of monomer of at least one plasticizer selected from the group consisting of dioctyl phthalate, di-2-ethyl hexyl phthalate, dioctyl adipate, di-2-ethyl hexyl adipate, didecyl adipate, dibutoxy ethyl adipate, dihexyl azelate, di-2-ethyl hexyl azelate, dioctyl sebacate, di-2-ethyl hexyl sebacate, dioctyl terphthalate, di-2-ethyl hexyl terphthalate, di-isopropoxyethoxymethyl glutarate, and di-isodecyl glutarate.

4,244,853

COMPOSITION AND METHOD FOR MAKING POLYIMIDE RESIN-REINFORCED FABRIC

Tito T. Serafini, Middleburg Heights, and Peter Delviga, Fairview Park, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 6, 1979, Ser. No. 27,557

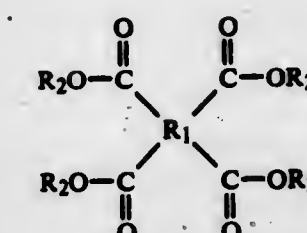
Int. Cl.³ C08K 5/05, 5/13

U.S. Cl. 260—33.4 R

4 Claims

1. In a composition of matter comprising a solution, in an organic solvent, of the following compounds:

(a) a polyfunctional ester having the formula:



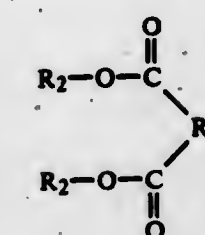
wherein R₁ is a tetravalent acryl radical and R₂ is alkyl or hydrogen, at least two R₂ groups being alkyl;

(b) a polyfunctional amine having the formula:

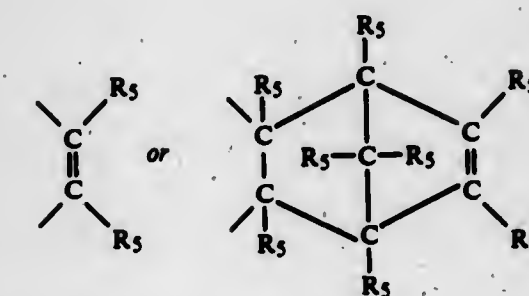


wherein R₃ is a divalent aryl radical; and

(c) an end-capping agent having the formula:



wherein R₂ is alkyl or hydrogen, at least one R₂ group being alkyl and R₄ is a divalent radical of the formula:



wherein R₅ is hydrogen or lower alkyl; the molar ratio of a:b:c being n:n+1:2 wherein n has a value of 1-20, said compounds being present in an amount of 30 to 70% by weight of the solution,

the improvement wherein said solution further comprises a copolymerizable, liquid, olefinic monomer compatible with the ingredients, said olefinic monomer having a boiling point of about 50° to 150° C., and being soluble in said solvent, the amount of said olefinic monomer dissolved in said solution being from 1 to 20% by weight based on the total weight of said polyfunctional ester, said polyfunctional amine, said end-capping agent, and said olefinic monomer.

4,244,854

ELASTOMER-BASED MASTER BATCH

Giacinto V. Manara, Via Carpaccio 3, Milan, Italy

Filed Mar. 23, 1979, Ser. No. 23,151

Claims priority, application Italy, Apr. 3, 1978, 21911 A/78

Int. Cl.³ C08K 5/01

U.S. Cl. 260—33.6 A

8 Claims

1. A master batch comprising an elastomeric material base and at least one auxiliary component in the amount of at least 8 parts per part of elastomeric material, wherein the said base comprises an elastomer or polymer of a monoethylenically unsaturated bicyclic terpene hydrocarbon which contains the ring structure of thujane, carane, pinane or camphane and polymerizable by ring-opening.

4,244,855

LIQUID GOLF BALL CENTER

Alvon R. Cox, Ashland, and Thomas A. Molyneux, Mansfield, both of Ohio, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 26, 1978, Ser. No. 945,949

Int. Cl.³ C08K 5/01

U.S. Cl. 260—33.6 AQ

14 Claims

1. A liquid golf ball center having a substantially spherical form and capable of being injection molded with precise size and weight control comprising:

- (a) a substantially spherical core wall comprising:
 - (i) a noncross-linked and uncured, butadiene-styrene radial block copolymer having a butadiene content in the range of about 60% to 80% by weight and a styrene content in the range of about 20% to 40% by weight; and
 - (ii) a filler material; and
- (b) a liquid center; said filler material composing at least one-half by weight of said golf ball core wall and said radial block copolymer having a molecular weight of at least 150,000.

4,244,856

SILICONE FILLERS FOR POLYSILOXANE COMPOSITIONS

Masayuki Hatanaka, 91-8 Shinakano, Ohra-machi, Ohra-gun, Gunma-ken, and Iwao Fukushima, 887-35 Ushizawa, Ohta-shi, Gunma-ken, both of Japan

Filed Jan. 10, 1979, Ser. No. 2,277

Int. Cl.³ C08L 83/04

U.S. Cl. 260—37 SB

21 Claims

1. A non-foaming hot air vulcanizable SiH-olefin platinum composition with excellent resiliency and compression set comprising:

- (A) 100 parts by weight of a polydiorganosiloxane having 1.98–2.002 organic groups per silican atom wherein said organic groups are selected from the class consisting of monovalent substituted and unsubstituted hydrocarbon groups and wherein 0.01–2 mole percent of the total number of organic groups are vinyl radicals and 1 molecule of the polymer contains at least 2 vinyl radicals, and the degree of polymerization is over 1,000.
- (B) from 0.1 to 10 parts by weight of a polyorganohydrogen-siloxane with at least 2 SiH bonds in 1 molecule;
- (C) from 10 to 200 parts by weight of a fine fired silica powder having a refractive index greater than 1.446 and an ignition loss not exceeding 3 percent which is obtained by providing heat treatment for a fine silica powder wherein said fine silica powder is obtained through the acid decomposition of a silicate whose major ingredient is a sodium silicate; and
- (D) from 0.0001 to 0.2 parts by weight of a zero valent platinum phosphorus complex.

4,244,857

CURING AGENT FOR POLYEPOXIDES AND EPOXY RESINS AND COMPOSITES CURED THEREWITH

Tito T. Serafini, Middleburg Hts.; Peter Delviga, Fairview Park, and Raymond D. Vannucci, Brooklyn, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

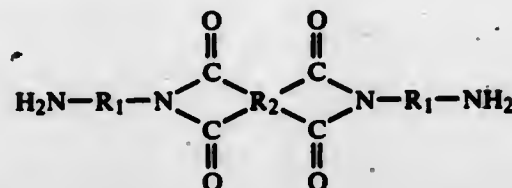
Filed Aug. 30, 1979, Ser. No. 70,771

Int. Cl.³ C08K 7/06; C08G 59/02; C07D 207/06

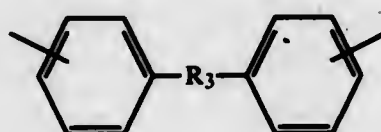
U.S. Cl. 260—37 EP

5 Claims

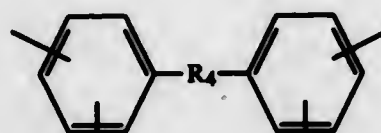
1. An aromatic bis (amino-imide) having the formula:



wherein R₁ is a divalent aryl radical having the formula:



wherein R₃ is selected from the group consisting of CH₂, O, and SO₂, and R₂ is a tetravalent aryl radical having the formula:



and wherein R₄ is CF₃-C-CF₃.

5. In a composite material comprising carbon fibers imbedded in a matrix of a cured epoxy resin, the improvement wherein the epoxy resin is cured with an aromatic bis (amino-imide) as claimed in claim 1.

4,244,858

FLAMEPROOF POLYAMIDE MOULDING COMPOSITIONS

Peter Tacke; Dieter Neuray, and Dietrich Michael, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,110

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810549

Int. Cl.³ C08K 3/32; C08L 77/06; C08K 7/14

U.S. Cl. 260—38

11 Claims

1. A self-extinguishing thermoplastic moulding composition comprising

- (1) from 40 to 95% by weight of polyamides,
- (2) from 0.5 to 20% by weight of an alkali metal and/or ammonium polyphosphate,
- (3) from 0.5 to 20% by weight of a phenol-aldehyde resin,
- (4) from 10 to 50% by weight of a reinforcing material and/or filler,

the sum of components (1) to (4) having to amount to 100% by weight.

4,244,859

AROMATIC POLYESTER COMPOSITION

Kiyoshi Sagie; Shizuka Kurisu; Shingo Emi; Shizuo Azuma; Tochiaki Harada, and Shoji Kawase, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 999,636

Claims priority, application Japan, Nov. 15, 1977, 52-136231; Dec. 14, 1977, 52-149375; Jan. 17, 1978, 53-2658

Int. Cl.³ C08K 3/34, 7/00

U.S. Cl. 260—40 R

6 Claims

1. A composition consisting essentially of 100 parts by weight of an aromatic polyester, 5 to 150 parts by weight of powdery feldspar up to a half of which may be replaced by another pulverulent inorganic filler, and 5 to 120 parts by weight of glass flakes.

4,244,860

PLASTIC MOLDING COMPOSITION

Werner Kühnel, Neunkirchen-Schoneshof; Karl-Günter Scharf, Troisdorf-Spich; Paul Spielan, Troisdorf-Eachmar, and Richard Weiss, Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 960,932, Nov. 15, 1978, abandoned.

This application Jun. 25, 1979, Ser. No. 51,422

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1975, 2558467

Int. Cl.³ C08K 9/06

U.S. Cl. 260—42.15

26 Claims

1. A thermoplastic molding composition which comprises a thermoplastic molding resin, at least one solid filler, and an effective amount of at least one additive for preventing separation of the fillers out of the composition during processing by extrusion, calendaring or injection molding, said additive consisting of β -chloroethyl triethoxysilane and said molding resin being polyvinyl chloride.

4,244,861

INJECTION MOLDING THERMOSET INTERPOLYMERS OF ETHYLENE-PROPYLENE AND PRODUCT THEREOF

Lawrence Spenadel, Westfield; Ilan Duvdevani, Leonia, and Edward N. Kresge, Watchung, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 864,340, Dec. 27, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,427

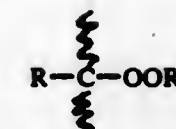
Int. Cl.³ C08L 23/16

U.S. Cl. 260—42.33

14 Claims

1. A process for preparing an injection-molded thermoset composition which comprises:

- (a) mixing an interpolymer comprising ethylene and propylene, said interpolymer having an ethylene content in the range of about 62 to about 80 weight percent of ethylene and a crystalline content in the range of about 10 to 25 weight percent with from 50 to 150 parts by weight, per hundred parts by weight of interpolymer, of a low density polyethylene having a melt index in the range of 2 to 40 and 50 to 150 parts by weight, per hundred parts by weight of interpolymer, of a reinforcing carbon black having a nitrogen surface area of about 30 to 100 M²/gram at a temperature above the crystalline melting temperature of the polyethylene thereby preparing a first mixture;
- (b) cooling said first mixture to a temperature below 130° C.;
- (c) adding to said first mixture from 0.5 to 5 parts by weight, per hundred parts by weight of interpolymer, of one or more polyfunctional vinyl or allylic monomer and from 1 to 10 parts by weight, per hundred parts by weight of interpolymer, of an organic peroxide comprising one or more peroxide moieties in the molecule having the following structure:



wherein R and R' are independently selected from the group consisting of C₁ to C₈ alkyl radicals said peroxide having a half-life when measured in low density polyethylene in excess of 5 hours at 130° C. and less than 1 minute at 230° C.;

- (d) admixing and fluxing said first mixture and said additives to a composition while maintaining the temperature below 130° C. the composition being flowable below 130° C.;
 - (e) introducing the mixed and fluxed composition into the mold of an injection molding machine;
 - (f) curing said composition to the crosslinked, thermoset state in the mold of said injection molding machine at a temperature of about 175° C. to about 230° C. for about 1 minute to about 10 minutes; and
 - (g) obtaining from said mold a thermoset composition having a flexural modulus of about 20,000 to about 30,000 psi at room temperature.
8. The product produced by the process of claim 1.

4,244,862

COMPOSITIONS FOR PAINTS AND PRINTING INKS

Minoru Handa; Takuzi Nishizawa; Hiroko Ogawa, and Shinichi Asai, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1977, Ser. No. 847,525

Claims priority, application Japan, Feb. 5, 1976, 51-11563; Mar. 31, 1977, 52-36443

Int. Cl.³ C08K 3/10; C08L 9/06

U.S. Cl. 260—42.47

7 Claims

1. Compositions for paints and printing inks comprising a binder matrix in which at least one inorganic pigment is disposed, wherein the binder matrix comprises:

- a vinyl-substituted copolymer comprising at least one polymer having a polar group introduced into at least one terminal of the molecular chain, which is obtained by reacting a vinyl-substituted aromatic hydrocarbon/conjugated diene block copolymer having at least one alkali metal atom linked to at least one terminal of the molecular chain with a polar reactant capable of reacting with the alkali metal atom, said block copolymer having said at least one terminal alkali metal atom being obtained by polymerizing vinyl-substituted aromatic hydrocarbon and conjugated diene monomers using an alkali metal or organo alkali metal initiator, said copolymer having polar groups introduced into said terminals having good wetting to pigments and good dispersibility of pigments thereon, wherein said at least one polymer containing at least one terminal polar group comprises more than about 4% by weight of the total polymer present.

4,244,863

PREPARATION OF PIGMENT CONCENTRATES

Heinz Hemmerich, Krefeld-Bockum; Jürgen Spille, Bergisch-Gladbach; Dietmar Kranz, Cologne; Peter Rasche, Aachen, and Hans J. Rosenkranz, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,063

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738511

Int. Cl.³ C08J 3/20

U.S. Cl. 260—42.55

2 Claims

1. Process for the preparation of a pigment concentrate intimately mixed with polymer containing carboxyl groups comprising coagulating, with electrolytes, an aqueous pigment suspension free from non-ionic surface active agents and con-

taining a latex or solution of said polymer having carboxyl groups while subjecting the pigment suspension to intensive mixing, said pigments of the group of titanium dioxide, chromium oxide and iron oxide, cadmium pigments based on the sulphide and sulphide/selenide, mixed phase pigments of the rutile or spinel type, copper phthalocyanine pigment, quinacridone pigment, diaryl yellow pigment, dioxazine pigment, anthanthrone pigment, thioindigo pigment, naphthalenetetracarboxylic acid pigment, perylenetetracarboxylic acid pigment and an azo pigment of the monazo and disazo series.

4,244,864

POLY(6-OXY-2,2,4-TRIALKYL-1,2-DIHYDROQUINOLINE)ALKYLENE COMPOUNDS AS ANTIDEGRADANTS FOR RUBBER

Robert H. Campbell; Raleigh W. Wise, and William A. Vaughn, all of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

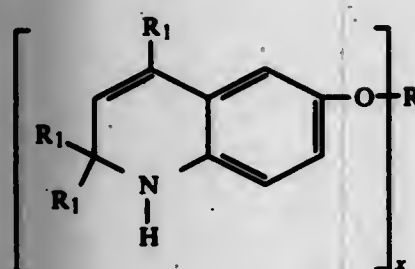
Filed Jul. 30, 1979, Ser. No. 62,266

Int. Cl.³ C08K 5/34; C07D 215/14

U.S. Cl. 260—45.8 NW

14 Claims

1. A compound of the formula:



wherein the R₁'s are the same or different lower alkyl radicals, R is a straight or branched chain alkenyl radical of from one to ten carbon atoms, having a valence of x, and x is an integer of from two to four.

8. Vulcanizable diene rubber having incorporated therein a stabilizing amount of the compound of claim 1.

4,244,865

α-HYDROXY TRIPEPTIDE SUBSTRATES

Akhtar Ali, Vernon Hills, and Robert G. Hiltbran, Gurnee, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

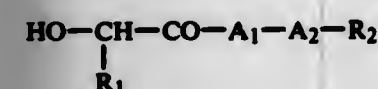
Filed Dec. 3, 1979, Ser. No. 99,376

Int. Cl.³ C07C 103/52; C07G 7/00

U.S. Cl. 260—112.5 R

8 Claims

1. A chromogenic substrate for the quantitative determination of proteolytic enzymes which split peptide bonds on the carboxyl side of arginine and lysine of the formula:



wherein R₁ is selected from the group consisting of hydrogen, lower alkyl (C₁-C₄) straight chain or branched and benzyl; R₂ is selected from the group consisting of paranitroanilide, nitrophenyl, methylnitrophenyl, dinitrophenyl, naphthyl and nitronaphthyl; A₁ is selected from the group of L amino acids consisting of glycine, alanine, valine, leucine, proline, isoleucine, serine, threonine, aspartic acid, asparagine, glutamic acid, glutamine, lysine, hydroglycine, histidine, arginine, phenylalanine, tyrosine, tryptophan, cysteine, pipercolic acid and methionine; and A₂ is either L-arginine or L-lysine.

4,244,866

CALCIUM RESINATES AND INKS

Rupert J. Scheffbauer, Hasbrouck Heights, N.J., assignor to Inmont Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 846,749, Oct. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 713,292, Aug. 11, 1976, abandoned. This application Sep. 29, 1978, Ser. No. 947,146

Int. Cl.³ C09D 11/06, 11/08; C08L 91/00

U.S. Cl. 260—23.7 C

22 Claims

1. A printing ink consisting of pigment dispersed in a vehicle consisting of a volatile hydrocarbon solution of a resinous binder wherein said binder comprises

- (1) a reaction product of rosin and calcium hydroxide, and
- (2) a minor amount of a substantially linear, polymeric, polycarboxylic acid or its reaction product with calcium hydroxide, wherein said polycarboxylic acid is the partial alkyl or aralkyl ester of a 1.3:1 maleic anhydride/α-olefin copolymer wherein the said alkyl and aralkyl group contains 1 to 18 carbon atoms, said α-olefin contains 8 to 30 carbon atoms, and 10 to 90% of the carboxylic group of said polycarboxylic acid are esterified; and wherein the polymeric polycarboxylic acid contributes 2.5 to 40% of the total carboxylic equivalents of the rosin and polycarboxylic acid and the amount of calcium is equal to 40 to 100% of the stoichiometric amount to form the calcium diresinate of all of the carboxyl groups.

4,244,867

PROCESS FOR THE PREPARATION OF IMIDAZOBENZODIAZEPINES

Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 043,417, May 29, 1979, Pat. No. 4,226,768.

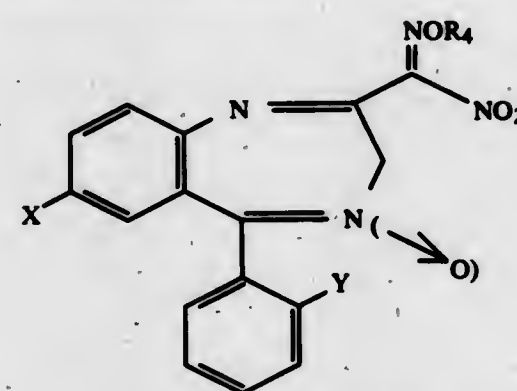
This application Feb. 21, 1980, Ser. No. 123,155

Int. Cl.³ C07D 245/06

U.S. Cl. 260—239 BD

1 Claim

1. A compound of the formula



wherein X is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl, Y is selected from the group consisting of hydrogen, halogen and trifluoromethyl and R₄ is lower alkyl.

4,244,868

PROCESS FOR THE PREPARATION OF IMIDAZOBENZODIAZEPINES

Armin Walser, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

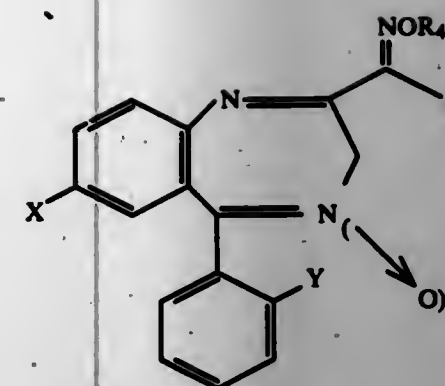
Division of Ser. No. 43,417, May 29, 1979. This application Feb. 21, 1980, Ser. No. 123,223

Int. Cl.³ C07D 245/06

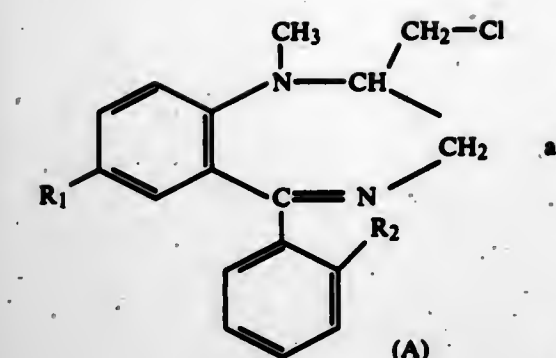
U.S. Cl. 260—239 BD

1 Claim

1. A compound of the formula



wherein X is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl and Y is selected from the group consisting of hydrogen, halogen and trifluoromethyl, R₄ is hydrogen or lower alkyl and R₃ is selected from the group consisting of an amino or substituted amino.



(B)

wherein R₁ and R₂ are as defined above; and reacting the resulting mixture in a solvent at an elevated temperature with a nucleophilic reactant selected from the groups consisting of alkali metal alkoxide, alkali metal carbonate, alkali metal hydroxide and alkali metal acetate and then reacting the reaction product of said reaction with dilute alkali metal hydroxide solution.

4,244,869

BENZODIAZEPINE DERIVATIVES AND PROCESS OF MAKING THEM

Wolfgang Milkowski, Burgdorf; Renke Budden, Peine; Siegfried Funke, Hanover; Rolf Hüschens, Hanover; Hans-Günther Liepmann, Hanover; Werner Stühmer, Eldagsen, and Horst Zeugner, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie A.G., Hannover, Fed. Rep. of Germany

Division of Ser. No. 725,989, Sep. 23, 1976, Pat. No. 4,098,786.

This application Mar. 16, 1978, Ser. No. 888,151

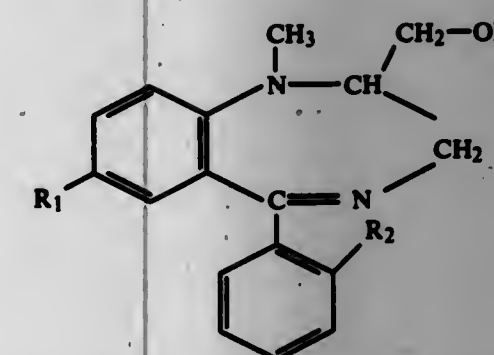
Claims priority, application Fed. Rep. of Germany, May 3, 1972, 2221558; May 10, 1975, 2520937

Int. Cl.³ C07D 243/16, 245/06, 243/24

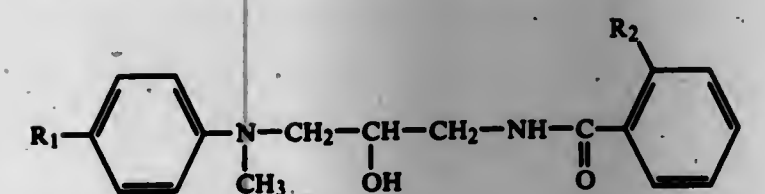
U.S. Cl. 260—239 BD

7 Claims

1. A method of producing compounds of the formula



wherein R₁ is hydrogen, bromine, chlorine or iodine, R₂ is hydrogen, halogen or trifluoromethyl and R₃ is hydrogen or primary or secondary alkyl of up to 6 carbon atoms, comprising reacting an acyldiamine of the formula



wherein R₁ and R₂ are as defined above, with an excess of phosphorus oxychloride sufficient to maintain the temperature throughout said reaction at the boiling point of phosphorus oxychloride,

separating the mixture of isomeric compounds thus obtained of the formula

4,244,870

DIMETHYL SULFOXIDE ADDUCTS OF PENICILLINS
Norihiko Tanno, Tokyo; Takashi Harimoto, Sonohigashi; Shinzi Ueda, Takarazuka, and Hisao Tobiki, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 29, 1979, Ser. No. 42,952

Claims priority, application Japan, May 31, 1978, 53/66144; May 31, 1978, 53/66145

Int. Cl.³ C07D 499/04, 499/18, 499/68

U.S. Cl. 260—239.1

8 Claims

1. A dimethyl sulfoxide adduct of sodium 6-[D(-)-α-(4-hydroxy-1,5-naphthyridine-3-carboxamido)phenylacetamido]penicillanate or its hydroxylated derivative at the p-position of the phenyl group.

4,244,871

SULFONAMIDO-BENZOIC ACID DERIVATIVES

Judit Kosary; Endre Kasztreiner; Zsuzsa Huszti; Agnes Kenesey; György Cséh; Veronika Szilagyi nee Pap, and Judit Stertecsky nee Sztrókay, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

This application Jul. 12, 1979, Ser. No. 58,363

Claims priority, application Hungary, Mar. 18, 1976, GO 1334

Int. Cl.³ C07C 103/22, 143/80; C07D 265/28

U.S. Cl. 260—239.7

6 Claims

1. 2-(4-Morpholino)-5-sulfonamidobenzoic acid methyl ester.

4,244,872

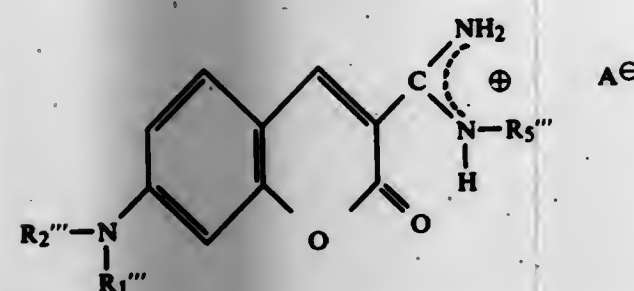
COUMARIN DYESTUFFS

Berthold Gertisser, Münchenstein, and Beat Henzi, Neuallschwil, both of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 591,602, Jan. 30, 1975, abandoned. This application Oct. 23, 1978, Ser. No. 953,562
Claims priority, application Switzerland, Jul. 3, 1974, 9103/74
Int. Cl.³ C07D 311/16

U.S. Cl. 260—343.45

9 Claims

1. A compound of formula I^{'''},

where

A[⊖] is an anion,

R₁^{'''} and R₂^{'''}, independently, are methyl or ethyl, R₅^{'''} is hydrogen, methyl, ethyl, propyl, butyl, cyclohexyl or 3-methoxypropyl,

and the dotted line indicates that the positive charge is not localized.

4,244,873

OMEGA-HYDROXY OR
ACYLOXY-ALKYL-γ-BUTYROLACTONES

Kiyonori Suzuki, Takeaki Eto, both of Noda; Takeyasu Otsuka, Nagareyama; Shozo Abe, Kashiwa, and Sadao Yoshikawa, Tokyo, all of Japan, assignors to Soda Koryo Kabushiki Kaisha, Japan

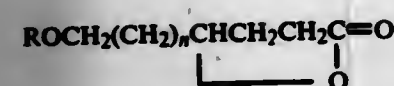
Filed Apr. 18, 1978, Ser. No. 897,641

Claims priority, application Japan, Apr. 26, 1977, 52/47346
Int. Cl.² C07D 307/32

U.S. Cl. 260—343.6

14 Claims

1. An omega-hydroxy or omega-acyloxy-alkyl-γ-butyrolactone of the formula



wherein R represents a hydrogen atom or an acyl group derived from an acyclic monocarboxylic acid having 1 to 10 carbon atoms, benzoic acid or phenylacetic acid and n represents an integer of 7 to 11.

4,244,874

3,8-DIOXO-SCIRPEN-4,8,15-DIOL ESTERS AND THEIR
USE AS ANTITUMOR AGENTS

Takashi Kaneko, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

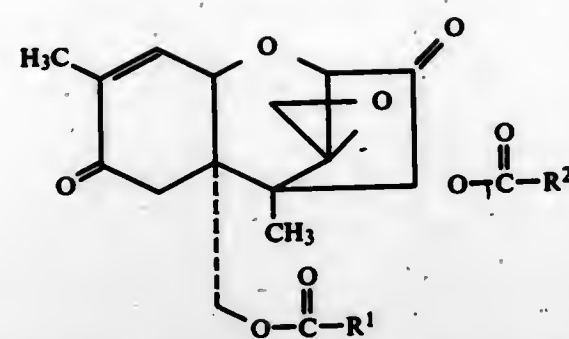
Filed Jul. 27, 1979, Ser. No. 61,213

Int. Cl.³ C07D 311/78

U.S. Cl. 260—345.2

7 Claims

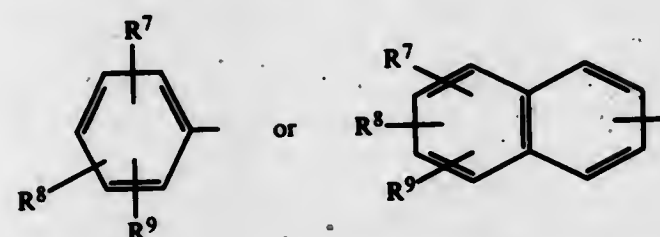
1. A compound of the formula



I^{'''} wherein R¹ and R² are each independently (lower)alkyl; halo-(lower)alkyl; alkenyl of the formula —CR³=CR⁴R⁵ in which R³ is hydrogen, (lower)alkyl or 1'-halo(lower)alkyl and R⁴ and R⁵ are each independently hydrogen or (lower)alkyl; alkynyl of the formula —C≡CR⁶ in which R⁶ is hydrogen or (lower)alkyl; or a radical of the formula



in which m is 0 or an integer from one to four and Ar is



wherein R⁷, R⁸ and R⁹ are each independently hydrogen, halogen, (lower)alkyl or (lower)alkoxy.

4,244,875

2-DECARBOXY-2-HYDROXYMETHYL-9-DEOXY-5,9α-
EPOXY-4,5-CIS-17,18-TETRADEHYDRO-PGF₁
COMPOUNDS

Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

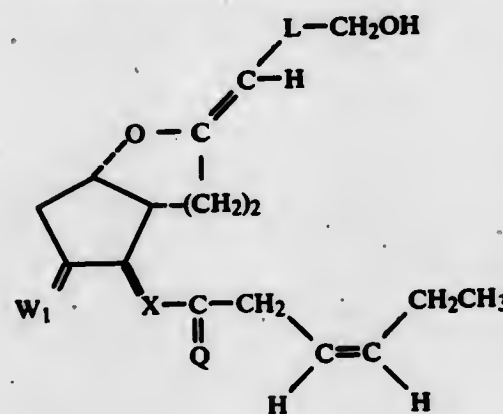
Division of Ser. No. 932,982, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,457

Int. Cl.³ C07D 311/02

U.S. Cl. 260—345.2

12 Claims

1. A compound of the formula



wherein W₁ is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH₂OH:β-H;

wherein L is

- (1) —(CH₂)_d—C(R₂)₂, or
- (2) —CH=CH—,

wherein d is zero to 5, R₂ is hydrogen, methyl, or fluoro, being

the same or different with the proviso that one R₂ is not methyl when the other is fluoro,
wherein Q is oxo, α-H:β-H, α-OH:β-R₃ or α-R₃:β-OH
wherein R₃ is hydrogen or alkyl of one to 4 carbon atoms, inclusive; and
wherein X is

- (1) trans—CH=CH—,
- (2) cis—CH=CH—,
- (3) —C=C—, or
- (4) —CH₂CH₂—;

including the lower alkanates thereof.

4,244,876

ACETAL-ACID COMPOSITIONS

Glenn H. Warner, St. Albans; Louis F. Thelling, Charleston, both of W. Va., and Marvin G. Freid, Putnam Valley, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 17, 1978, Ser. No. 961,714

Int. Cl.³ C07D 309/06; C07C 41/46, 47/198

U.S. Cl. 260—345.9 R

8 Claims

1. A storage stable composition comprising (I) at least one member selected from the group consisting of 2,6-dialkoxy tetrahydropyran, 5,5-dialkoxy-pentanal, 1,1,5,5-tetraalkoxy-pentane, or mixtures thereof and (II) from 0.25 to 2.5 weight percent, based on the weight of component I, of a soluble acid, wherein said alkoxy moieties contain from 1 to 3 carbon atoms.

4,244,877

PROCESS FOR THE PREPARATION OF
HEXAHYDROPHthalic ACID ANHYDRIDE

Kurt Halcour, Helmut Waldmann, and Wulf Schwerdtel, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,547

Int. Cl.³ C07D 307/89

U.S. Cl. 260—346.3

12 Claims

1. A process for the preparation of hexahydrophthalic acid anhydride which comprises hydrogenation Δ⁴-tetrahydrophthalic acid anhydride in the liquid phase at a temperature of from 70° to 150° C. and at a pressure of from 30 to 200 bar in the presence of a catalyst selected from palladium, ruthenium, nickel or mixtures thereof arranged in a fixed bed, wherein the catalyst is applied to a carrier of alumina of which at least 20% by weight has been converted into lithium aluminum spinel and the liquid phase is a mixture of Δ⁴-tetrahydrophthalic acid anhydride and hexahydrophthalic anhydride in a proportion by weight of from 1:1 to 1:100.

4,244,878

PREPARATION OF MALEIC ANHYDRIDE

Joseph X. McDermott, River Edge, N.J., assignor to Halcon Research and Development Corporation, New York, N.Y.

Division of Ser. No. 822,290, Aug. 5, 1977, Pat. No. 4,151,116.

This application Aug. 4, 1978, Ser. No. 931,631

Int. Cl.³ C07D 307/60

U.S. Cl. 260—346.75

9 Claims

1. A process for producing maleic anhydride which comprises oxidizing butane with molecular oxygen in the presence of a catalyst comprising an activated substrate containing phosphorus and vanadium, said substrate having a promoter post-deposited upon its surface after said substrate has been activated, said post-deposited promoter component comprising an element selected from the group consisting of magnesium, calcium, scandium, yttrium, lanthanum, cerium, uranium, chromium, manganese, iron, cobalt, nickel, copper, zinc, aluminum, gallium, indium, silicon, germanium, tin, antimony, bismuth and tellurium.

4,244,879

PREPARATION OF MALEIC ANHYDRIDE

Noel J. Bremer, Kent, and Dennis E. Dria, Spencer, both of Ohio, assignors to Standard Oil Company (Ohio), Cleveland, Ohio

Filed Dec. 26, 1979, Ser. No. 106,786

Int. Cl.³ C07D 307/60

U.S. Cl. 260—346.75

14 Claims

1. A process for the production of maleic anhydride by the oxidation of n-butane, n-butene, 1,3 butadiene or a mixture thereof with molecular oxygen or oxygen-containing gas in the vapor phase at a reaction temperature of 250° C.—600° C. in the presence of a catalyst containing the mixed oxides of vanadium and phosphorus, wherein said catalyst is prepared by

- (a) introducing a pentavalent vanadium-compound into an organic liquid capable of at least partially solubilizing and capable of reducing vanadium to a valence state less than +5 to form a reaction medium;
- (b) effecting reduction of at least a portion of vanadium to a valence state of +4;
- (c) removing unsolubilized vanadium-containing compounds having a particle size greater than about 0.1 mm diameter;
- (d) adding a pentavalent phosphorus-containing compound to the reaction medium resulting from step (c) to form a catalyst precursor precipitate;
- (e) recovering said catalyst precursor precipitate;
- (f) drying said catalyst precursor precipitate;
- (g) calcining said precipitate to form the active oxidation catalyst.

4,244,880

ANTHRACYCLINE SYNTHESIS

Jose Alexander, Kansas City, and Lester A. Mitscher, Lawrence, both of Kans., assignors to University of Kansas Endowment Association, Lawrence, Kans.

Filed Jan. 5, 1978, Ser. No. 912,842

Int. Cl.³ C07C 50/18, 50/16, 101/80, 103/75

U.S. Cl. 260—383

18 Claims

1. A process for producing 5,12-dihydroxy-1,2,3,4,6,11-hexahydro-2,6,11-trioxonaphthacene comprising:

- a. reacting p-benzoquinone with butadiene to produce 1,4,4a,5,8a-cis-hexahydro-5,8-dioxonaphthalene;
- b. alkylating with a C₁—C₆ alkyl group or benzylating with a benzyl group the reaction product of (a) to produce 5,8-dialkoxy or 5,8-dibenzoyloxy-1,4-dihydronaphthalene;
- c. hydrating the compound of (b) to produce 5,8-dialkoxy or 5,8-dibenzoyloxy-2-hydroxy-1,2,3,4-tetrahydronaphthalene;
- d. etherification of the compound of (c) in the presence of a t-butyl carbonium ion to produce 5,8-dialkoxy or 5,8-dibenzoyloxy-2-t-butoxy-1,2,3,4-tetrahydronaphthalene;
- e. brominating the ether of (d) to produce 5,8-dialkoxy or 5,8-dibenzoyloxy-6-and 7-bromo-2-t-butoxy-1,2,3,4-tetrahydronaphthalene;
- f. lithiating the compound of (e) followed by acylation of the lithio derivative with dimethyl phthalate to produce 5,8-dialkoxy or 5,8-dibenzoyloxy 2-t-butoxy-6 or 7-(2-methoxycarbonyl) benzoyl-1,2,3,4-tetrahydronaphthalene;
- g. cyclization and deprotection of the compound of (f) with a Fiedel-Crafts catalyst to produce 2,5,12-trihydroxy-1,2,3,4,6,11-hexahydro-6,11-dioxonaphthacene; and
- h. oxidation of the compound of (g) to produce 5,12-dihydroxy 1,2,3,4,6,11-hexahydro-2,6,11-trioxonaphthacene.

4,244,881

PROCESS FOR PREPARING ALPHA-NAPHTHOL ESTERS OF ALIPHATIC CARBOXYLIC ACIDS

Claudio Giordano, Novara; Aldo Belli, Intra, and Francesco Minicci, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

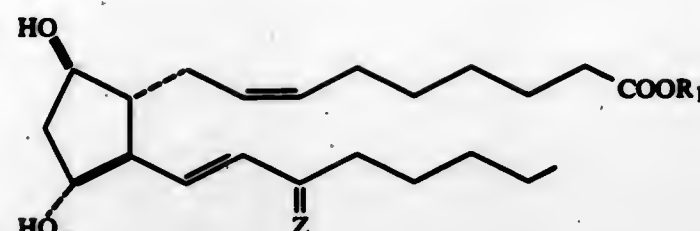
Filed Mar. 28, 1979, Ser. No. 24,857

Claims priority, application Italy, Mar. 29, 1978, 21717 A/78
Int. Cl.³ C07C 67/05

U.S. Cl. 260—410.5

15 Claims

1. A process for preparing alpha-naphthol esters of aliphatic carboxylic acids by reaction of naphthalene with aliphatic carboxylic acids, characterized in that naphthalene is reacted with an aliphatic carboxylic acid in a medium consisting of an aliphatic carboxylic acid and in the presence of a system composed of a compound of cobalt II selected from the group consisting of cobalt enolate, cobalt salts of inorganic anions, and cobalt salts of organic anions of aliphatic carboxylic acids R-COOH in which R is an alkyl group containing up to 10 carbon atoms; of a ketone containing in its structure at least a methylene or methine group in alpha position with respect to the carbonyl group; and of oxygen, at a temperature of from about 70° to about 110° C.



wherein

Z is α -OH: β -CH₃, α -CH₃: β -OH, α -OH: β -CH₂CH₃, or α -CH₂CH₃: β -OH; and

wherein R₁ is hydrogen, alkyl of one to 12 carbon atoms, inclusive,

—(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH₃,

—(p-Ph)—NH—CO—(p-Ph),

—(p-Ph)—NH—CO—CH₃,

—(p-Ph)—NH—CO—NH₃,

—(p-Ph)—CH=N—NH—CO—NH₂,

p-naphthyl, wherein p-Ph is para-substituted phenyl or p-phenylene, or pharmacologically acceptable salts thereof when R₁ is hydrogen.

4,244,884

CONTINUOUS PROCESS FOR MAKING PEROXYCARBOXYLIC ACIDS

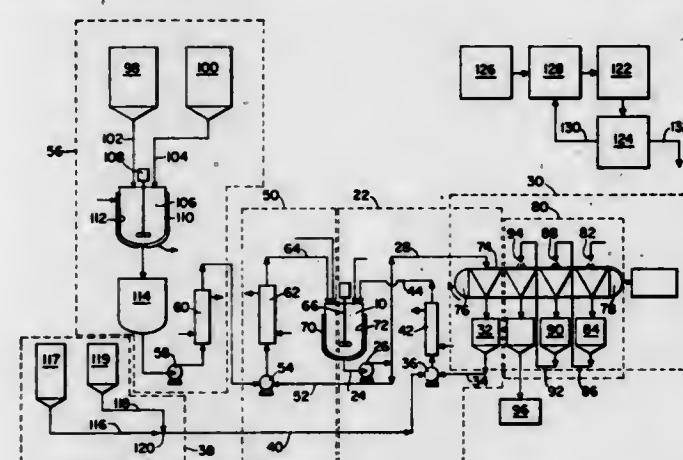
James P. Hutchins, Cincinnati, and Dana C. Wina, Springdale, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 12, 1979, Ser. No. 57,131

Int. Cl.³ C07C 179/10

U.S. Cl. 260—502 R

11 Claims



1. An improved continuous process for making a peroxyacid having about 6 to about 20 carbon atoms and at least one peroxyacid moiety, comprising the steps of:

(a) Maintaining a reaction slurry comprising a liquid phase and a solid phase;

i. Said liquid phase comprising 60 to 80% by mixture weight concentrated sulfuric acid, 2.5 to 12.5% by mixture weight hydrogen peroxide, and 7.5 to 37.5% by mixture weight water, and

ii. Said solid phase comprising a peroxyacid having about 6 to about 20 carbon atoms and the carboxylic acid starting material corresponding to said peroxyacid;

in a continuously stirred reaction vessel at a temperature between about 15 degrees Celsius and 45 degrees Celsius;

(b) Continuously withdrawing from said stirred reaction vessel a first portion of said slurry and substantially removing said solid phase therefrom using filtration means, whereby to form a filtrate stream and a separate filter cake;

(c) Mixing said filtrate stream with a quantity of hydrogen peroxide in water solution sufficient to maintain the hydrogen peroxide and water contents of said stirred reaction vessel, thereby forming a first reentering stream;

4,244,883

2A,2B-DIHOMO-15-ALKYL-PGF_{2B} COMPOUNDS

Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 3,153, Jan. 15, 1979, abandoned, which is a continuation of Ser. No. 884,430, Mar. 8, 1978, abandoned, which is a division of Ser. No. 663,362, Mar. 3, 1976, Pat. No. 4,082,783, which is a division of Ser. No. 551,220, Oct. 10, 1974, Pat. No. 3,974,195. This application Sep. 12, 1979, Ser. No. 74,696

Int. Cl.³ C07C 177/00

U.S. Cl. 260—410.9 R

7 Claims

1. An optically active compound of the formula:

4,244,887

SUBSTITUTED ω -PENTANORPROSTAGLANDINS

Janjit S. Bindra, Groton, and Michael R. Johnson, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

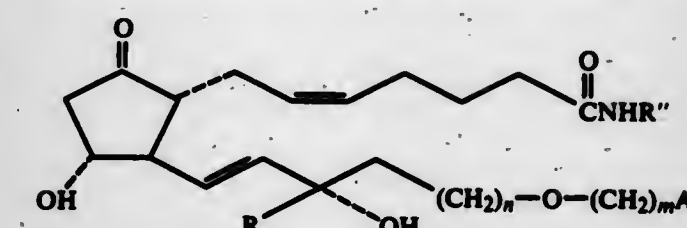
Continuation of Ser. No. 602,479, Aug. 6, 1975, abandoned, which is a division of Ser. No. 413,708, Nov. 7, 1973, Pat. No. 4,024,179, which is a continuation-in-part of Ser. No. 304,813, Nov. 8, 1972, abandoned. This application Aug. 20, 1979, Ser. No. 68,211

Int. Cl.³ C07C 177/00

U.S. Cl. 564—99

4 Claims

1. A compound selected from the group consisting of



and its C₁₅ epimer wherein Ar is phenyl, 3,4-dimethoxyphenyl, 3,4-methylenedioxyphenyl, 3,4,5-trimethoxyphenyl; α - or β -naphthyl or monosubstituted phenyl wherein said substituent is halo, trifluoromethyl, phenyl, lower alkyl, or lower alkoxy;

R is hydrogen or lower alkyl;

n and m are each integers from 0 to 3 with the proviso that the sum of n and m does not exceed 3 and

R' is alkanoyl having from 2-10 carbon atoms or cycloalkyl having from 4 to 8 carbon atoms; aryoyl or substituted aryoyl of from 7 to 11 carbon atoms wherein said substituent is methyl, halogen, or methoxy; alkylsulfonyl of from 1 to 7 carbon atoms; arylsulfonyl or substituted arylsulfonyl wherein said substituent is methyl, halogen or methoxy.

4,244,888

PLANT GROWTH REGULATING AND INSECTICIDAL COMPOSITIONS

Zoltan Budai, Ferenc Jurak, both of Budapest; Attila Kis-Tamas, Pilisvörösvár; Aranka Lay nee Konya, Budapest; Tibor Mezel, Budapest; Zoltan Vig, Budapest, and Terez Zubovits nee Kristof, Budapest, all of Hungary, assignors to Egy Gyogyszervezeseti Gyar, Budapest, Hungary

Filed Aug. 9, 1979, Ser. No. 65,156

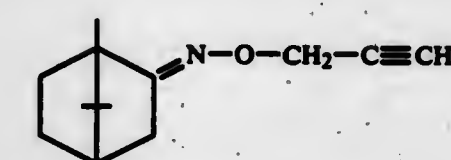
Claims priority, application Hungary, Aug. 22, 1978, EE 2589

Int. Cl.³ C07C 131/02

U.S. Cl. 564—257

1 Claim

1. Racemic or optically active 2-(propargyloxyimino)-1,7,7-trimethyl-bicyclo[2,2,1]heptane of the formula (I)



4,244,889

PRODUCTION OF ACETAMIDES WITH RHODIUM-MANGANESE CATALYSTS

William J. Bartley, and George L. O'Connor, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,244

Int. Cl.³ C07C 102/00

U.S. Cl. 564—132

6 Claims

1. A heterogeneous process for producing acetamides in which the acyl nitrogen is otherwise bonded to methyl, ethyl, hydrogen or combinations thereof which comprises contacting a mixture of carbon monoxide, hydrogen and a nitrogen-con-

- (d) Cooling said first reentering stream and inserting it into said stirred reaction vessel;
- (e) Continuously withdrawing from said stirred reaction vessel a second portion of said slurry;
- (f) Mixing said second portion of said slurry with sufficient quantities of said carboxylic acid starting material and said concentrated sulfuric acid to maintain the sulfuric acid and carboxylic acid starting material contents of said stirred reaction vessel, thereby forming a second reentering stream;
- (g) Cooling said second reentering stream and inserting it into said stirred reaction vessel; and
- (h) Washing said filter cake to form a peroxyacid product; whereby to continuously produce said peroxyacid product and remove it from said stirred reaction vessel while maintaining the composition and temperature of said slurry within the limits of step (a) hereof.

4,244,885

 α -SUBSTITUTED-3-(HALOMETHYL)-4-HYDROXYBENZENEACETIC ACIDS

Abraham Nudelman, Rehovot, and Abraham Patchornik, Ness-Ziyona, both of Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

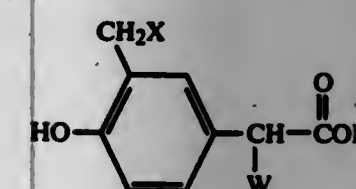
Filed Dec. 8, 1977, Ser. No. 858,724

Int. Cl.³ C07C 59/54, 101/72

U.S. Cl. 260—507 R

12 Claims

1. A compound of the formula



wherein X is chlorine or bromine, W is hydrogen, hydroxy, —SO₃H, —CO₂H or —NHCONHR₁ wherein R₁ is H, a lower alkyl group of from 1 to 4 carbon atoms, or a phenyl group; and acceptable salts thereof.

4,244,886

FLUOROSULFONYL OXAFLUOROALKANES AND THEIR DERIVATIVES

Gerardo Caporiccio, 13, Via E. Filiberto; Gianangelo Bargigia, 47, Via Federico Chopin, and Giampaolo Guidetti, 84, Corso Lodi, all of Milan, Italy

Division of Ser. No. 821,394, Aug. 3, 1977, abandoned. This application Mar. 9, 1979, Ser. No. 19,005

Claims priority, application Italy, Aug. 6, 1976, 26116 A/76; Mar. 2, 1977, 20831 A/77

Int. Cl.³ C07C 143/08, 143/10; C08F 28/02

U.S. Cl. 260—513 F

7 Claims

1. A compound of the formula:



wherein A is H or K, X is independently selected from the group consisting of F, CF₃ and Cl and n is 0-4.

taining compound selected from the group consisting of ammonia, nitric oxide and mixtures thereof with a heterogeneous solid catalyst comprising rhodium and manganese at reaction conditions which comprise a temperature of from about 200° to about 450° C., a pressure of from about 15 to about 10,000 psig and a mole ratio of hydrogen to carbon monoxide of from about 20:1 to about 1:20.

4,244,890

CYCLIC TERPENOID AMINES, THEIR PREPARATION AND USES

Bernard J. Kane, Atlantic Beach, and Richard A. Von Gnek, Jacksonville, both of Fla., assignors to SCM Corporation, New York, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,284
Int. Cl.³ C07E 83/00

U.S. Cl. 564—455

6 Claims

1. A process for cyclizing an acyclic terpenoid group of an amine represented by



where T_A is a neryl group or a geranyl group, R_1 is hydrogen or a C_{1-4} aliphatic group, and R_2 is hydrogen or a monovalent organic group, or R_1 and R_2 are joined together and with N to provide a cyclic group which comprises:

maintaining an acidic aqueous solution of said amine at a temperature of at least about 80° C. until said acyclic terpenoid group cyclizes, there being at least about 1.1 equivalents of acid per equivalent of said amine in said solution; and
recovering the resulting cyclic terpenoid amine from said solution.

4,244,891

PREPARATION OF HEXAFLUOROISOBUTYLENE

Michael Van Der Puy, Cheektowaga; Louis G. Anello, Hamburg; Bernard Sukornick, Williamsville; Richard F. Sweeney, Elms, and Robert A. Wiles, Hamburg, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 21, 1979, Ser. No. 106,327
Int. Cl.³ C07C 17/00

U.S. Cl. 570—140

10 Claims

1. The process for preparing hexafluoroisobutylene which comprises reacting, at elevated temperatures, ketene or a ketene-generating compound with hexafluoroacetone.

4,244,892

PROCESS FOR PREPARING ALLYL CHLORIDE

Nazim M. O. Guseinov, ulitsa Gusi-Gudzhieva, 3, kv. 12; Vagab S. Aliev, ulitsa Nizami, 66, blok 5, kv. 40; Alish I. Mustafae, ulitsa Gagarina, 23, kv. 3, all of Baku; Vladimir M. Zimin, 10 proezd Martinoi Roachi, 13, kv. 251, Moscow; Rafael S. Sveridlov, Rabochy prospekt, 5, kv. 6; Nina G. Shkondina, prospekt 50 let VLKSM, 5, kv. 39, both of Baku; Eleonora E. Chisurnashvili, ulitsa Schepkina, 4, Moscow; Margarita K. Morozova, ulitsa Nizami, 66, kv. 69; Rasim S. O. Mirzaev, ulitsa Musevi 4 kv. 12, both of Baku; Gabil S. O. Sharifov, 5 Mikrorajon, 2, kv. 6, Sumgait; Ramiz A. Dzhabiev, 4 Mikrorajon, ulitsa Koltsevaya, 62, kv. 80, Baku; Leonid A. Oshin, ulitsa Shkuleva, 3, kv. 107, and Lemel S. Genin, ulitsa Junykh Leninets, 82, kv. 19, both of Moscow, all of U.S.S.R.

Filed Feb. 15, 1979, Ser. No. 12,453

Claims priority, application U.S.S.R., Feb. 16, 1978, 2585604
Int. Cl.³ C07C 21/00

U.S. Cl. 570—223

4 Claims

1. A process for preparing allyl chloride comprising chlorination of propylene by hydrogen chloride in an upward stream consisting of propylene, hydrogen chloride and a catalyst which is manganese dioxide incorporated in leaned manganese ore in an amount of from 20 to 35% by weight at a temperature ranging from 300° to 500° C., the catalyst concentration in said

stream being 130 to 180 kg/m³, the time of contact between propylene, hydrogen chloride and the catalyst in the stream being 0.2 to 0.7 sec, volume ratio between propylene and hydrogen chloride in the stream being 1:3-5 respectively, followed by separation of the spent catalyst from the reaction mixture resulting from chlorination, regeneration of said catalyst by oxygen at a temperature ranging from 500° to 520° C. and recycling thereof to the process of propylene chlorination.

4,244,893

POLYPHOSPHORUS COMPOUNDS OBTAINED BY REACTING AN ALCOHOL, PHOSPHORUS ANHYDRIDE AND AN OXALKYLATING AGENT

Walter Dürsch, Königstein; Hans-Jörg Kleiner, Kronberg, and Fritz Linke, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Jan. 6, 1978, Ser. No. 913,083

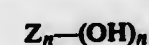
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726478

Int. Cl.³ C07F 9/09, 9/40

U.S. Cl. 260—928

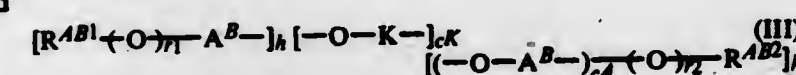
3 Claims

1. Oligomeric phosphorus compounds obtained by (a) reacting at a temperature of 0° to 180° C. 1 mol of a n-hydric alcohol of the formula II



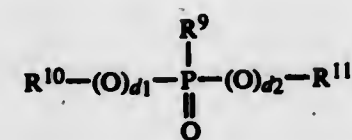
(II)

with about n+e anhydride equivalents of organic phosphorus anhydrides of the formula III

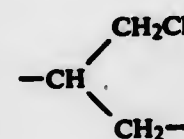


(III)

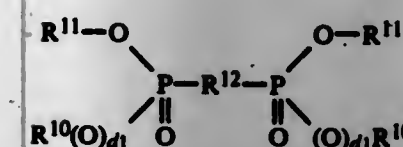
in which formulae II and III, Z_n is a functional radical from the group of straight-chain or branched hydrocarbon radicals with 1 to 18 C atoms, which can be interrupted by up to eight —O— and in general by up to (y/2-1) —O—, when y is the number of C atoms in Z_n , or by up to two carboxylate groups (—O—CO—) and by up to three —S— and/or NR^2 radicals in which R^2 = (C₁-C₄)-alkyl and/or can be substituted by fluorine, chlorine or bromine; or Z_n is an aromatic or araliphatic radical which is derived from benzene or alkylbenzenes with up to 18 C atoms or from naphthalene, diphenyl, diphenylmethane, diphenylethane or 2,2-diphenylpropane and which can be substituted in the nucleus by 1 or 2 methoxy or ethoxy groups and can be substituted in the nucleus and/or the side chains by F, Cl or Br atoms; or Z_n is a phosphorus-containing radical of the formula



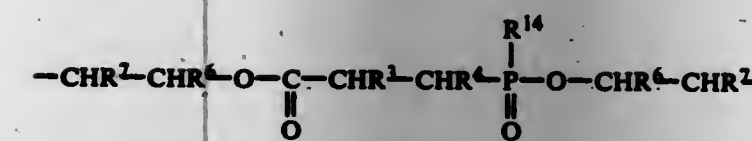
in which d_1 and d_2 independently of one another are 0 or 1 and R^9 is alkyl, hydroxylalkyl, aminoalkyl, mono-(C₁-C₂)-alkyl- or dialkyl-aminoalkyl, halogeno-alkyl with 1 to 3 C atoms, alkenyl with 2 or 3 C atoms or phenyl, which can be substituted by 1 or 2 halogen atoms, and R^{10} and R^{11} have the same meaning as R^9 when d_1 or d_2 is 0, or R^{10} and R^{11} are a (C₁-C₃)-alkylene radical when d_1 and d_2 are simultaneously 0, and are a straight-chain or branched alkylene radical with 2-5 C atoms or the radical



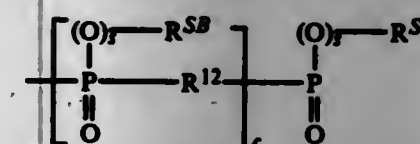
when d_1 and d_2 are 1, or a phosphorus-containing radical of the general formula



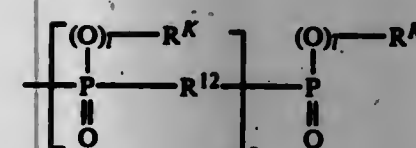
wherein d_1 , R^{10} and R^{11} are as defined above, R^{12} is alkylene, cycloalkylene, arylene or aralkylene or a group of the formula



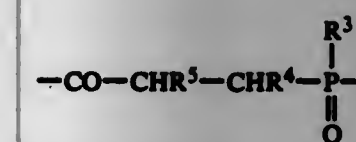
R^3 is (C₁-C₄)-alkyl which can be substituted by halogen, or is cycloalkyl with up to 8 C atoms, alkylene with up to 4 C atoms, phenyl or benzyl, which can be substituted by halogen, R^4 is hydrogen or (C₁-C₄)-alkyl, R^6 is hydrogen, methyl or chloromethyl, R^7 is hydrogen, methyl or ethyl, R^{14} has the meanings defined for R^3 or is the group —O—CHR⁶—CH—R⁷—, n is 1 to 6, e is number of free acid radicals in the organic phosphorus anhydride and is 0 to 6, R^{AB1} is alkyl or alkenyl each with 1-5 carbon atoms which if r_1 is 0, can be substituted by one or two chlorine or bromine atoms or R^{AB1} is hydrogen if r_1 is 1, R^{AB2} is alkyl or alkenyl each with 1-5 carbon atoms which, if r_2 is 0, can be substituted by one or two chlorine or bromine atoms or R^{AB2} is hydrogen, if r_2 is 1 or is CN—C₂—H₄— if r_2 is 0, A^B is a group of the formula



R^{SB} is alkyl or alkenyl each with 1-5 carbon atoms which, if s is 0, can be substituted by one or two chlorine or bromine atoms or R^{SB} is hydrogen if s is 1, f and s are 0 or 1, K is 1 to C^K times a group of the formula

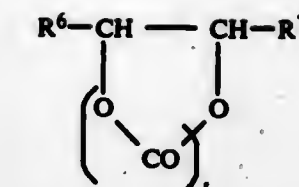


or 0 to C^K—1 times a group of the formula



R^K is alkyl or alkenyl each with 1-5 carbon atoms or, if i is zero, R^K is also (C₁-C₃)-chloro- or bromoalkyl or cyanoethyl, R^5 is hydrogen, methyl or ethyl, i and g are 0 or 1, C^K is 2 to 1200, C⁴ is 0 or 1, r_1 and r_2 are 0 or 1 and h is 0 or 1,

(b) after the reaction has ended, which is discernible by the disappearance of the anhydride band, mixing the resulting acid reaction product with the at least n+e fold molar amount of an oxalkylating agent of the formula IV



(IV)

in which t is 0 or 1, converting the mixture, at temperatures of 20° C. to 240° C., when t=0 and at temperatures of 80° to 240° C., when t=1, to the corresponding neutral hydroxyalkyl ester mixture and, after the reaction has ended, which is discernible by the disappearance of the acid number and, when t=1, also of the evolution of CO₂, repeating

the reaction steps (a) and (b) a total of 0 to 1200 times.

4,244,894

PROCESS AND APPARATUS FOR THE MANUFACTURE OF FILMS BY ELECTROSTATIC APPLICATION

Michel Segranan, St. Maurice de Beynost, and Jean-Claude Joly, Fontaines sur Saône, both of France, assignors to Societe la Cellophane, Paris, France

Filed Jan. 22, 1979, Ser. No. 5,492

Claims priority, application France, Jan. 25, 1978, 78 01981
Int. Cl.³ B29D 7/02

U.S. Cl. 264—22

15 Claims



1. A process for electrostatically pinning a dielectric film to an electrically conducting moving surface which is connected to a fixed potential, the film being applied to the moving surface with the aid of a corona electrode consisting of a metal wire fed with direct current which is arranged parallel to the said surface, and a second electrode being arranged near the corona electrode and parallel to the corona electrode, said process comprising the steps of:

providing as the second electrode an uninsulated counter-electrode having a concave face and made of an electrically conducting material, said corona electrode being located between the uninsulated counter electrode and said moving surface;

connecting the counter-electrode to a fixed potential which is approximately equal to the potential of the moving surface; and

locating the concave face of the counter-electrode in front of the corona electrode so that an electric current can be established between the corona electrode and the counter-electrode.

4,244,895

LEAK REPAIRING PROCESS FOR UNDERGROUND PIPE

Yasushi Nakashin, 5-9-10, Soya, Ichikawa-shi, Chiba-ken, Japan
Filed Mar. 26, 1979, Ser. No. 23,749

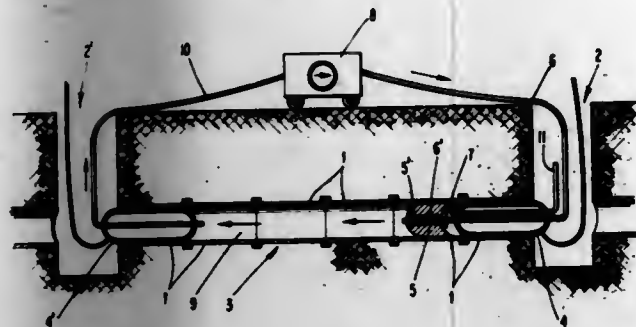
Claims priority, application Japan, Mar. 25, 1978, 53/33602
Int. Cl.³ F16L 1/00

U.S. Cl. 264—36

2 Claims

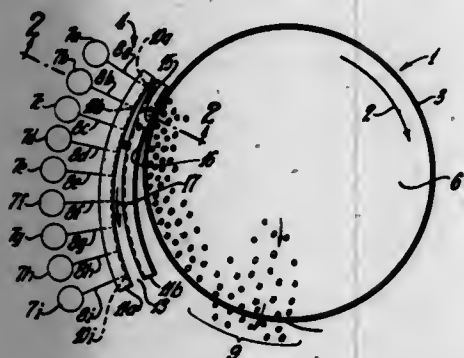
1. A repairing process for leaking underground pipe which comprises the steps of closing an upstream position and a

downstream position of said underground pipe constituting a fluid flow path to form an enclosed section therein, filling said enclosed section with grout of a slow-hardening type with a long hardening time under pressure thereby causing said grout to leak to the outside through the leaking portion of said pipe, keeping said grout flowing under pressure by utilization of



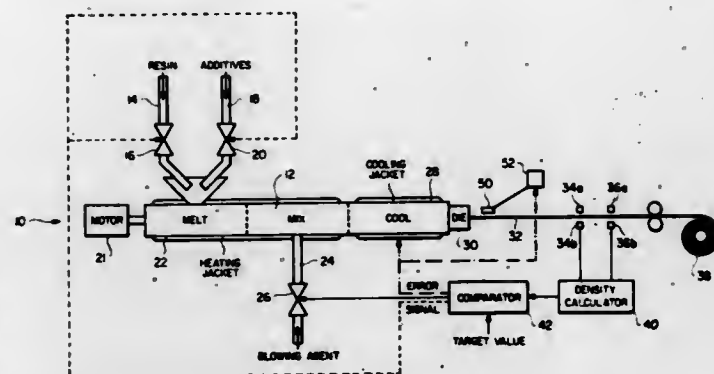
grout regenerating-circulating apparatus for a predetermined period, supplying anon-hardening liquid such as water under pressure into said enclosed section from one end thereof while ejecting grout remaining in said enclosed section from the other end thereof thereby substituting said non-hardening liquid for said grout, and keeping said non-hardening liquid under pressure for sufficient time until said grout has hardened.

4,244,896
METHOD FOR CONTROLLING THE SIZE OF PELLETS FORMED IN A PELLETIZER
Eugene C. Varraso, Heath, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio
Filed Dec. 29, 1978, Ser. No. 974,418
Int. Cl.³ B01J 2/14
U.S. Cl. 264-40.1 18 Claims



1. A method of controlling the size of pellets produced in a pelletizer in which liquid and particulate batch material are supplied to a slanted, rotating surface of said pelletizer whereby said particulate batch material is formed into pellets, said method comprising the steps of: (a) collecting at least a portion of the pellets produced by said pelletizer; (b) guiding the movement of said collected pellets; (c) determining the size of said collected pellets, as the movement of said collected pellets is being guided, by comparing the size of each of said collected pellets with a plurality of graded standards; and (d) varying the ratio of the rate of liquid supply to the rate of particulate batch material supply in response to the determined size, thereby controlling the size of the pellets produced in said pelletizer.

4,244,897
METHOD AND APPARATUS TO CONTROL THE DENSITY OF PRODUCTS PRODUCED FROM AN EXTRUSION PROCESS
William S. Moon, San Jose, Calif., assignor to Measurex Corporation, Cupertino, Calif.
Filed Mar. 22, 1979, Ser. No. 23,009
Int. Cl.³ B29D 27/00; G01G 11/00
U.S. Cl. 264-40.2 10 Claims



1. A method for continuously and automatically controlling the product from a foam extrusion process to maintain the density of said products at a pre-determined value, said process has an extruder wherein resin and additives are introduced and are heated, a blowing agent is then introduced, and is mixed with the resin and additives to form a mixture, said mixture is cooled and is extruded to produce said product; said method comprising:
continuously measuring the weight per unit area of said product by a basis weight sensor and generating an electrical signal related thereto;
continuously detecting the thickness of said product by a thickness sensor and generating an electrical signal related thereto;
generating an electrical signal related to the calculated value of density of said product based upon the electrical signal related to said basis weight measured and the electrical signal related to said thickness detected;
comparing the electrical signal related to said calculated density value to an electrical signal related to said pre-determined density value to produce an error signal; and
controlling the density of the product produced by said process based upon the error signal.

4,244,898
METHOD OF PREPARING POROUS, RIGID CERAMIC SEPARATORS FOR AN ELECTROCHEMICAL CELL
Gautam Bandyopadhyay, Naperville, and Joseph T. Dusek, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 30, 1979, Ser. No. 25,629
Int. Cl.³ C04B 21/02
U.S. Cl. 264-43 12 Claims

1. A method of preparing a porous, rigid ceramic sheet for use as an interelectrode separator in an electrochemical cell comprising:
calcining particulate ceramic material at a first temperature to agglomerate particles and reduce the ability of the ceramic material to sinter and densify into an integral mass;
blending additional particulate ceramic material with said calcined material, said additional material having smaller particle size and greater ability to sinter and densify into an integral mass than said agglomerated calcined material; pressing said blend of ceramic material to form a compacted sheet; and
sintering said compacted sheet at a second temperature below said first temperature to form a rigid, porous separator.

rator for use between electrodes in an electrochemical cell.

sheet being lengthened in the range of 50% to 70% of its initially-stretched length by such secondary stretching.

4,244,899
METHOD FOR CHEMICAL EMBOSING A FOAMABLE THERMOPLASTIC RESIN SHEET USING AN INK COMPOSITION CONTAINING A CHEMICAL BLOWING AGENT
David I. M. Henshaw, Barrington, England, assignor to Congoleum Corporation, Portsmouth, N.H.
Continuation-in-part of Ser. No. 725,125, Sep. 20, 1976, abandoned. This application Feb. 22, 1979, Ser. No. 14,157
Claims priority, application United Kingdom, Oct. 7, 1975, 40916/75
Int. Cl.³ B29D 27/00
U.S. Cl. 264-45.1 15 Claims

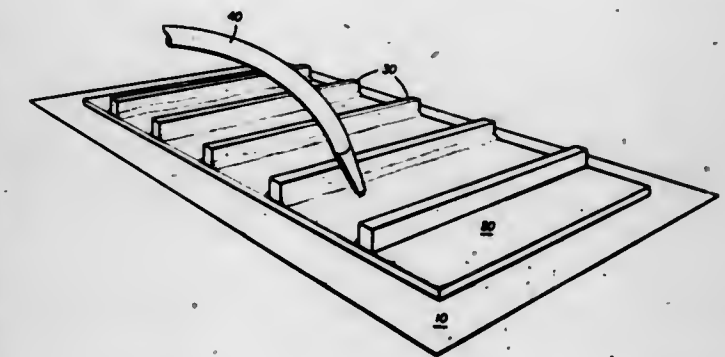
1. A process for embossing a thermoplastic polymeric material by selective expansion which comprises forming into sheet form an expandable mix containing a thermoplastic polymeric material and a chemical blowing agent, applying to selected areas of the surface of said sheet an activator ink composition in the form of a plastisol or organosol containing a vinyl resin, 10-200 parts by weight of a plasticizer for said vinyl resin per 100 parts of said vinyl resin, a chemical blowing agent, and a kicker for said chemical blowing agent in said expandable mix and in said activator ink composition, and heating said sheet to a temperature and for a time such that in those areas of said sheet in contact with said kicker-containing activator ink composition, said chemical blowing agent in said sheet is decomposed to a greater degree than in the remaining areas and said sheet is thereby differentially selectively expanded.

4,244,900
METHOD FOR THE CONTINUOUS PRODUCTION OF A CO-EXTRUDED HEAT-SHRINKABLE COMPOSITE FOAMED RESIN SHEET
James E. Heider, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 26, 1979, Ser. No. 24,237
Int. Cl.³ B29D 27/00; B29C 17/02
U.S. Cl. 264-46.1 7 Claims



1. The method of continuously producing a heat-shrinkable oriented film and foam thermoplastic polyolefin sheet material comprising the steps of co-extruding a layer of film and a layer of foam of said thermoplastic polyolefin material in tubular form, initially stretching the said co-extruded sheet of film and foam thermoplastic material in both longitudinal and transverse directions immediately following its co-extrusion, as a first step; and secondarily stretching the said co-extruded sheet longitudinally by feeding said sheet between the closely spaced peripheral surfaces of a pair of rolls rotating at different peripheral surface speeds, as a subsequent second step; said second step being effected with the temperature of said sheet below the melt point temperature of the polyolefin material, said

4,244,901
METHOD OF BONDING STRUCTURAL SUPPORT MEMBERS TO FLAT SHEETS
Stanley E. Wencley, Rochester, and Duane L. Headley, Oxford, both of Mich., assignors to Foamseal, Inc., Oxford, Mich.
Filed Aug. 31, 1978, Ser. No. 938,599
Int. Cl.³ B29D 27/04
U.S. Cl. 264-46.4 6 Claims



1. A method of permanently bonding structural support members to a flat, self-supporting flexible fiber sheet to form a structural building element, comprising the steps of:
(a) supporting said fiber sheet on a flat, horizontal support surface;
(b) placing said structural support members on the exposed surface of said sheet in the arrangement desired in the structural building element;
(c) directing a stream of foamable liquid polyurethane thermosetting resin at an angle under pressure at the juncture between the structural elements and the fiber sheet; and
(d) allowing the liquid polyurethane resin to foam and expand into the voids between the structural elements and the sheet and form a continuous bead at the juncture, permanently bonding the structural elements to the sheet and forming a flat, rigid structural building element.

4,244,902
PRESSURELESS METHOD OF FORMING A SILICON CARBIDE CERAMIC MATERIAL
Samuel S. Shinozaki, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jun. 18, 1979, Ser. No. 49,663
Int. Cl.³ C04B 35/56
U.S. Cl. 264-56 4 Claims



1. A pressureless method of densifying and sintering silicon carbide particles together without forming large areas of a feathered alpha silicon carbide microstructure, which method comprises the steps of:
heating the silicon carbide particles to be densified and sintered together to a temperature in the range from about 1850° C. to about 1920° C.; and
maintaining said silicon carbide particles at said temperature

in the range from about 1850° C. to about 1920° C. for a period of time from about 6 hours to about 12 hours whereby said silicon carbide particles are sintered together and densified without formation of large grains of a feathered alpha silicon carbide microstructure.

4,244,903

MANUFACTURE OF FLOWABLE COMPOSITE PARTICULATE MATERIAL

Rolf Schmause, Flurstrasse 14, 8501 Eckental, Fed. Rep. of Germany

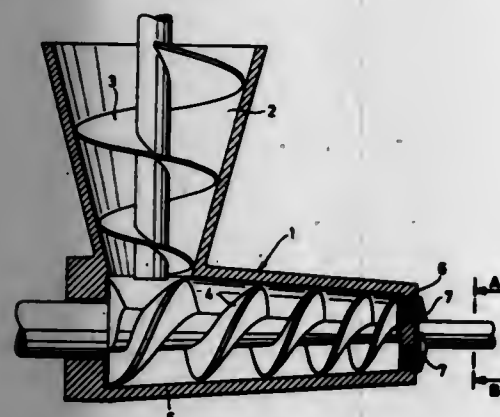
Filed Oct. 19, 1977, Ser. No. 843,699

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1976, 2647944

Int. Cl.³ B29C 17/00, 29/00

U.S. Cl. 264—68

5 Claims



1. A process of manufacturing a flowable composite particulate suitable for use in extrusion molding, comprising:

- (a) charging synthetic thermoplastic to an unheated extruder;
- (b) simultaneously charging and admixing a non-thermoplastic material to the extruder with the proviso that the non-thermoplastic material constitutes about 65% or more by volume of the total charged material;
- (c) extruding the mixture in the absence of external heat through the bores of a perforated die at a rate sufficient to generate frictional heat adequate to bond the thermoplastic and non-thermoplastic materials to one another as they pass through the die, but not before; and
- (d) severing the extrudate into a discrete flowable composite particulate; with the proviso that said flowable composite particulate has a bulk density of from 200 to 500 grams per liter.

4,244,904

METHOD AND APPARATUS FOR CURING MASONRY UNITS

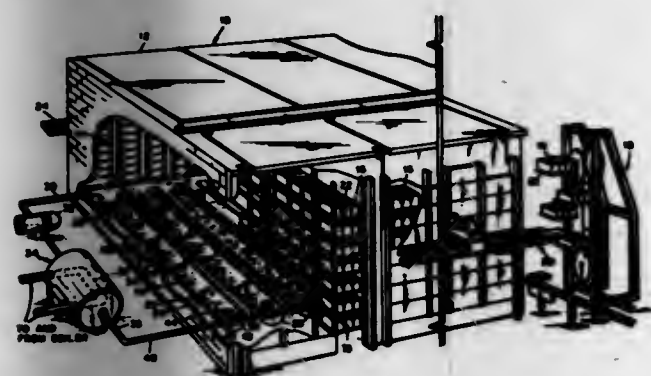
Bob R. Drain, Phoenix, Ariz., assignor to Paul M. Thomas, Paradise Valley, Ariz.

Filed Mar. 21, 1978, Ser. No. 888,630

Int. Cl.³ B28B 17/00

U.S. Cl. 264—82

3 Claims



1. In a method for curing masonry units in a substantially

closed chamber provided with an atmosphere including water vapor, the improvement comprising the steps of aspirating a portion of said kiln atmosphere into a flowing stream of heated water to mix said atmosphere with said water, and thereafter injecting said atmosphere and water mixture into a vessel of water disposed in said kiln at a plurality of locations disposed beneath the surface of water in said vessel whereupon said atmosphere is released into said water in the form of bubbles and rises upward therethrough to escape from the surface of said water and into the atmosphere of said chamber.

4,244,905

METHOD AND APPARATUS FOR THE MANUFACTURE OF MOLD BODIES, PARTICULARLY PELLETS FROM SECONDARY SLURRIES OF THE METALLURGICAL INDUSTRY

Peter Paschen; Rao, Chatty, both of Bergisch Gladbach; Helmut Preuss, Bornheim; Werner Wenzel, Waldkirch; Heinrich-Wilhelm Gadenau, and Reinhold Schöninger, both of Aachen, all of Fed. Rep. of Germany, assignors to Klückner-Humboldt-Deutz AG, Fed. Rep. of Germany

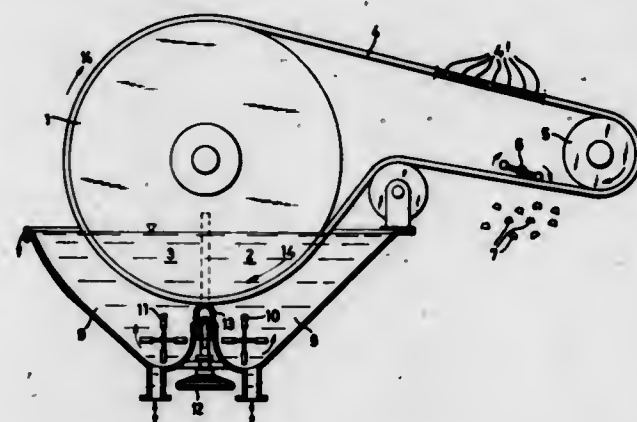
Filed Sep. 8, 1978, Ser. No. 940,561

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740372

Int. Cl.³ B28B 1/26

U.S. Cl. 264—86

6 Claims



1. A method for the production of molded bodies from physically separated slurries having solid particles of different sizes dispersed therein which comprises:

- (a) depositing coarser particles from a first slurry containing such particles on a moving molding surface having liquid permeable cavities while said surface passes through said first slurry to remove liquid from said first slurry,
- (b) depositing finer particles from a second slurry containing such particles over the previously deposited coarser particles while said surface moves through said second slurry, thereby forming discrete molded products having deposited layers of different sized solid particles in said cavities, and
- (c) removing the resulting molded products from said cavities in said molding surface.

4,244,906

PROCESS FOR MAKING PHENOL-ALDEHYDE RESINS

Karl-Heinz Heinemann; Georg Michalczyk, both of Neukirchen-Vluyn, and Gerd Ripkens, Kamp-Lintfort, all of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,613

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821294

Int. Cl.³ C08G 8/04, 8/10, 14/04

U.S. Cl. 264—109

14 Claims

1. Phenol-aldehyde resins prepared by condensing phenol with formaldehyde and isobutyraldehyde in the presence of an alkali wherein the mole ratio of phenol:aldehyde:alkali ranges

from 1:1.52 to 1.62:0.50 to 1.30 and wherein 0.05 to 0.40 mole of isobutyraldehyde per mole of phenol is employed.

8. The process for making a fiberboard product which comprises diluting the phenol aldehyde resin of claim 1 with water to form a mixture with a solids content of about 15 to 25 weight percent, adding a paraffin emulsion to the said resin mixture, applying the said resin mixture to a material selected from the group consisting of wood fibers and wood chips, precipitating the said resin mixture by addition of a mineral acid or salt thereof, subjecting the thus-treated material to a pressure to about 225 to 275 bar at a temperature of about 180° to 220° C. for about 1 to about 5 minutes and finally at a pressure of about 260 to 270 bar at the same temperature for about 1 to about 10 minutes thereby forming the fiberboard product.

4,244,907

SPIN-TEXTURE PROCESS

Wen-li Wu, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

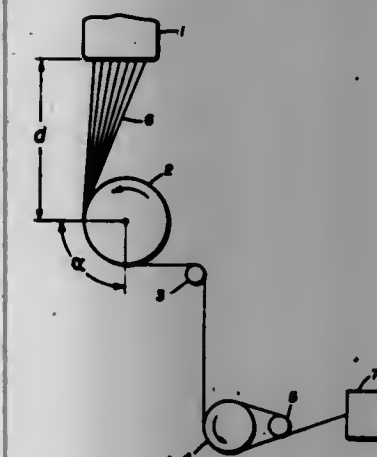
Continuation of Ser. No. 918,908, Jan. 26, 1978, abandoned.

This application Nov. 8, 1979, Ser. No. 93,082

Int. Cl.³ D01D 5/22

U.S. Cl. 264—168

5 Claims



1. A spin-draw process for producing fully drawn polyamide filaments, whereby spontaneous crimp is imparted to the filaments as they are being drawn, comprising:

- (a) extruding a fiber-forming polyamide through orifices of a spinneret at a given extrusion rate (E_R) to form filaments which cool as they move away from the spinneret,
- (b) passing said filaments over a quench roll before they are completely solidified but after they have cooled to a temperature below their stick temperature, wherein said roll (1) has a surface temperature (T_R) which is between 20° C. and 180° C. and lower than the average temperature at the center of said filaments, thereby cooling said filaments on one side, (2) is rotating at a peripheral speed (S_1) and (3) is positioned at a distance (d) below said spinneret, (c) drawing said filaments at a draw ratio (DR) between 1.5:1 and 6:1 as they leave said roll by withdrawing said filaments from said roll at a speed (S_2) which is at a speed sufficient to provide said draw ratio, and
- (d) collecting said filaments in the form of a yarn, said process being characterized in that (E_R), (d), (T_R) and (DR) are correlated to obtain filaments having sufficient spontaneous crimp to provide a yarn having at least 6.05% cold bulk.

4,244,908

CURE-IN-PLACE PROCESS FOR SEALS

Alan R. Hirasawa, Corona Del Mar, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 22, 1979, Ser. No. 22,896

Int. Cl.³ B29C 25/00; B29H 5/01; E21B 33/10

U.S. Cl. 264—236

9 Claims

1. A cure-in-place process for elastomeric seal elements

which eliminates stress induced when seal elements are elastomerically deformed and sealed, comprising the steps of: positioning in place a previously formed uncured elastomeric seal element, plastically deforming the uncured seal element to substantially its service configuration, applying heat to the thus deformed uncured seal element for curing the seal element by immersing the deformed uncured seal element in a geothermal well having fluid therein of a temperature of about 500° F.

4,244,909

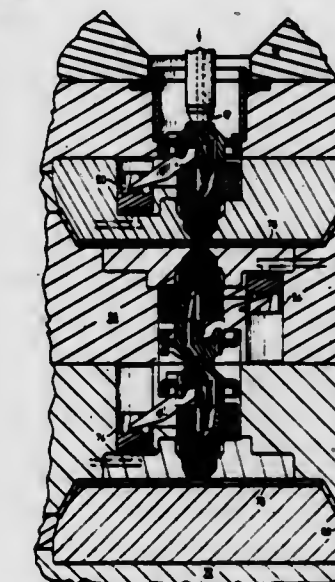
STACK INJECTION MOLDING MELT TRANSFER SYSTEM

Jobst U. Gallert, 11 Newton Rd., Brampton, Ontario, Canada
Division of Ser. No. 970,388, Dec. 18, 1978. This application
Sep. 26, 1979, Ser. No. 79,096

Int. Cl.³ B29F 1/03

U.S. Cl. 264—297

1 Claim



1. A method of stack injection molding using a mold having a plurality of cavities located on first and second parting lines, the first parting line extending between a stationary platen and a first moveable platen, the second parting line extending between said first moveable platen and a second moveable platen, the stationary platen having a first flow control valve unit which has a first runner passage extending from a molding machine inlet to a first controlled gate, the first moveable platen having a second flow control valve unit which has a second runner passage extending from a second controlled gate to communicate with said cavities, comprising the steps of repeatedly:

- (a) closing the mold along said first and second parting lines to form said cavities, said first and second controlled gates being in an abutting aligned relationship in this closed position;
- (b) actuating said first and second flow control valve units to open said first and second controlled gates to provide for the flow of pressurized melt from the molding machine through said first runner passage, through said open gates and through said second runner passage into said cavities;
- (c) actuating said first and second flow control valve units to close said first and second controlled gates, and then
- (d) opening the mold along said first and second parting lines to eject the molded parts after the melt has set.

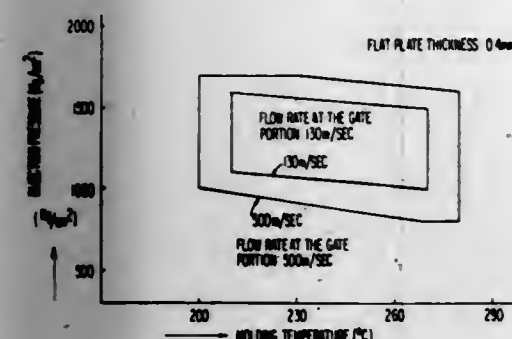
4,244,910

METHOD FOR INJECTION MOLDING OF POLYOLEFIN CONTAINING INORGANIC FILLER
Hiroshi Yui, Yoshihiro Sobajima, Ryoichi Ichikawa, and Shigekazu Ema, all of Yotsukaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1979, Ser. No. 78,755
Int. Cl.³ B29F 1/06

U.S. Cl. 264—328.12

16 Claims



1. A method for molding a polyolefin containing an inorganic filler to form articles having a thin wall thickness, which comprises kneading a composition comprising 30 to 95% by weight of a polyolefin and 5 to 70% by weight of an inorganic filler, and injection-molding the kneaded composition by shooting it into a cavity having a shape which will give a molded article the main portion of which has a thickness of about 0.2 to 1.0 mm at such a high speed that its flow rate at the gate portion of a mold is at least about 100 meters per second.

4,244,911

MICA-SILICONE COMPOSITES
Mitsuo Ishizaka, and Toshihiro Fujii, both of Ohta, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 970,034
Int. Cl.³ B28B 7/10

U.S. Cl. 264—331

14 Claims

1. A silicone resin-mica composite comprising:
 - (A) 100 parts by weight of a polyorganosiloxane resin having an average unit formula of $R_2^2Si(OR^3)_2O(4-b-c)/2$ wherein R^2 is a monovalent hydrocarbon group R^3 is a monovalent group selected from the class consisting of hydrogen and monovalent hydrocarbon radicals, b has a value of 1.0 to 1.5, and c has a value of 0.05 to 0.2, and
 - (B) 0.1 to 10 parts by weight of an acid phosphate ester or a mixture of not less than 2 types of acid phosphate ester as expressed in the general formula $(R^1O)_a-P(O)(OH)_3-a$ wherein R^1 denotes a substituted or non-substituted monovalent hydrocarbon and a is 1 or 2, and
 - (C) at least 0.01 parts by weight of mica.

4,244,912

MOLDING PROCESS USING CURABLE SILICONE RELEASE COMPOSITIONS

David R. Battice, Hickory, N.C., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 5, 1979, Ser. No. 17,227
Int. Cl.³ C08G 77/12, 77/20

U.S. Cl. 264—338

10 Claims

1. In a process for forming molded articles, said process comprising placing a molding composition in a mold, converting the molding composition to a solid molded article and thereafter separating the solid molded article from the mold, the improvement comprising applying to at least one shape-determining surface of the mold, and thereafter curing, before the molding composition is placed in contact therewith, a curable silicone release composition obtained by mixing components consisting essentially of

(I) a polydiorganosiloxane having the general formula



wherein x and y are integers whose sum has an average value sufficient to provide the polydiorganosiloxane with a viscosity at 25° C. of at least 1.0 pascal-seconds, Vi denotes a vinyl radical and each R denotes, independently, a monovalent radical selected from the group consisting of methyl, phenyl and saturated hydrogen radicals having from 2 to 6 carbon atoms, the total number of organic radicals in the polydiorganosiloxane consisting of at least 95 percent methyl radicals and no more than 1 percent vinyl radicals,

(II) a xylene-soluble copolymer of $(CH_3)_3SiO_4$, $(CH_3)_2(CH_2=CH)SiO_4$ and $SiO_4/2$ siloxane units, said copolymer having from 1 to 5 percent by weight of vinyl radicals, based on the weight of the copolymer, and a total of from 0.6 to 1.1 of said $(CH_3)_3SiO_4$ plus $(CH_3)_2(CH_2=CH)SiO_4$ siloxane units for every said $SiO_4/2$ siloxane unit,

(III) a methylhydrogenpolysiloxane, soluble in the mixture of (I) plus (II), and having an average of at least three silicon-bonded hydrogen radicals per molecule, said hydrogen radicals being bonded to separate silicon atoms, and

(IV) a catalytic amount of a hydrosilylation catalyst, said components being mixed in sufficient amounts to provide, in the curable silicone release composition, from 10 to 70 parts by weight of (II) for every 100 parts by weight of (I) plus (II) and from 2 to 10 silicon-bonded hydrogen radicals for every silicon-bonded vinyl radical.

4,244,913

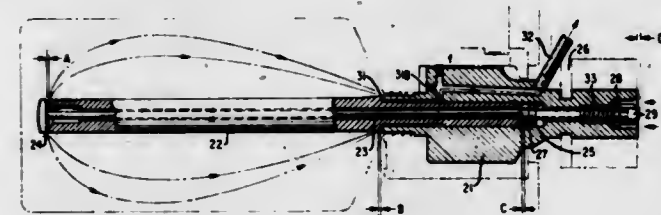
METHOD FOR INJECTION BLOW MOLDING

Leonard B. Ryder, 5 Sharon Dr., Whippany, N.J. 07981

Continuation-in-part of Ser. No. 851,106, Nov. 14, 1977, abandoned. This application May 25, 1979, Ser. No. 42,317
Int. Cl.³ B29C 25/00, 17/07

U.S. Cl. 264—348

1 Claim



1. Method for circulating blowing air through an injection blow molded article in the blow cooling cycle of an injection blow molding process utilizing a core rod assembly including an elongated core rod body having an axis and a hollow, axially slideable core rod head mounted therein, the core rod head having air passage slots machined into the end thereof, and a core rod stem having a core rod tip mounted within said core rod head, the core rod stem being fitted with adjustable locking nuts, a cam nut and a star locking nut having grooves machined therein which permit air to pass from an air source into the core rod body and then through the air passage slots in said core rod head into a space between said stem and head, each of which nuts permits limited axial movement of said core rod stem, a spring member which biases said core rod stem in a direction along said axis, and means for moving said core rod stem and core rod head with respect to said core rod body such that the adjustable locking nuts are locked in a position whereby said core rod stem has moved the core rod tip to a position spaced from said core rod head and a portion of the core rod head previously in abutment with the core rod body is spaced from the core rod body, thereby creating an air supply channel between the core rod tip and the core rod head and an air exhaust channel between the core rod body and said

portion of the core rod head so that air can be passed to and exhausted from a blown article simultaneously which comprises the steps of

- (a) actuating the cam nut to axially move the core rod stem and core rod tip against the bias of the spring, so forming an air inlet passage which is the air gap between the core rod tip and core rod head, and sequentially moving the core rod head by moving the stem outward and contacting the core rod head with the adjustable locking nuts, so creating an air exhaust channel in the air gap formed between the core rod head and core rod body, and
- (b) forming a cold air-water mist by atomizing water in a stream of dry sub-zero temperature air to yield atomized frozen moisture in the form of airborne crystals, and introducing the resultant mist into the air supply channel and moving air through the air exhaust channel, thereby continuously flushing said mist through the blown article.

4,244,914

PROCESS FOR PREPARING GAS-, VAPOR- AND ODOR-PROOF COUPLED AND COEXTRUDED MULTILAYER ARTICLES OF THERMOPLASTIC MATERIAL AND CLOSED-SURFACE BODIES COMPRISING THE SAME

Franco Ranalli, Milan, Italy; Leone Ortolani, 4, Via Palermo, Padua, Italy, and Quinto Tisi, Ferrara, Italy, assignors to Montedison S.p.A., Milan and Leone Ortolani, Padua, both of, Italy

Continuation of Ser. No. 769,680, Feb. 17, 1977, abandoned.

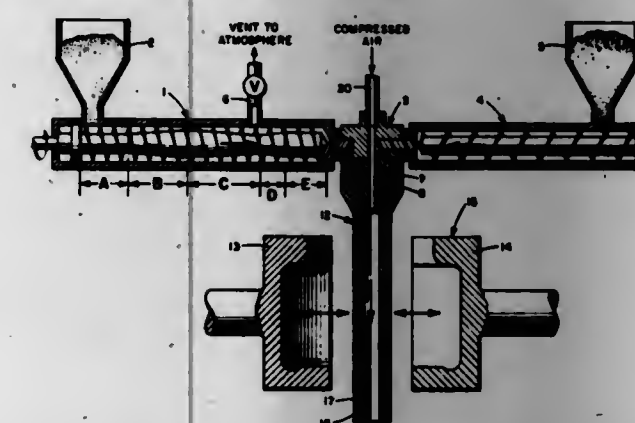
This application Jan. 5, 1978, Ser. No. 912,734

Claims priority, application Italy, Feb. 18, 1976, 20280 A/76; Feb. 18, 1976, 20281 A/76

Int. Cl.³ B29C 17/07

U.S. Cl. 264—515

19 Claims



1. A process for preparing multilayer articles consisting of at least two layers made of different thermoplastic materials and characterized in being impermeable to gases, vapors and odors, by coextruding at least two different thermoplastic polymers at least one of which is polyvinyl alcohol having a polymerization degree of from 600 to 1,500 and a hydrolysis degree of at least 85% by mols, and successively molding the coextruded article, said process comprising the following steps:

- (a) feeding to an extruder connected with a coextrusion head a polyvinyl alcohol having the stated hydrolysis degree pre-mixed with an aqueous mixture of plasticizing compounds in an amount not higher than 50% by weight with respect to the polyvinyl alcohol and heating the polyvinyl alcohol/aqueous plasticizing compounds mixture in the extruder under pressure to bring it to the plastisol state;
- (b) raising the temperature of the polyvinyl alcohol/aqueous plasticizing compounds mixture, before the mixture enters the coextrusion head, to the temperature at least equal to that reached by the mixture in the coextrusion head, and subjecting the mixture, while it is at such relatively high temperature, to rapid decompression with simultaneous venting of the evolved vapors;
- (c) separately feeding at least one other thermoplastic polymer in the molten state and selected from the group consisting of polystyrene, polyvinyl chloride, foamed poly-

styrene, nylon 6, nylon 66, polyethylene terephthalate, chlorinated polyethylene, polyvinylidene chloride, polyvinyl acetate, polyolefins obtained by polymerizing ethylenically unsaturated monomers of the formula $CH_2=CHR$, in which R is hydrogen or a hydrocarbon radical containing 1 to 20 C atoms either alone or with one another, and polymers obtained by polymerizing said monomers $CH_2=CHR$ with other comonomers copolymerizable therewith and containing from 0.05 to 20% by weight of comonomer, to the same coextrusion head;

- (d) adjusting the temperature of the polymers when they are in contact so that the temperature of the polyvinyl alcohol is at least equal to the temperature of the other coextruded polymer or polymers;
- (e) adjusting the flow rate of the polymers so that the out-flow linear velocities are equal or differ no more than $\pm 10\%$; and
- (f) coextruding the polyvinyl alcohol/aqueous mixture of plasticizing compounds and the other thermoplastic polymer and molding the article comprising the coextruded and bonded layers leaving the coextrusion head to obtain a shaped, manufactured article.

4,244,915

ROTARY THERMOFORMING PROCESS AND APPARATUS

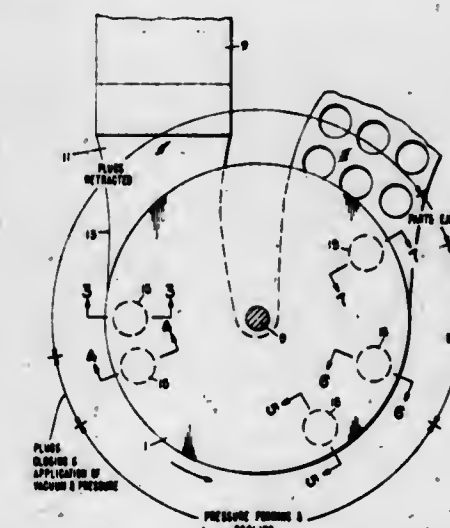
Bruce B. Boardman, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 29, 1978, Ser. No. 974,453

Int. Cl.³ B29C 17/04, 17/10

U.S. Cl. 264—551

3 Claims



1. A process for thermoforming plastic containers comprising:

extruding a sheet of thermoplastic material having a wedge-shaped cross-section vertically downwardly adjacent to the surface of at least one rotating disc and normal to its axis of rotation wherein the planar surface of said sheet is substantially parallel to the surface of said rotating disc; contacting said sheet, without utilization of any clamping means, with the surface of said disc wherein said disc is rotating in a vertical plane about a horizontal axis, said wedge-shaped cross-section of said sheet accommodating stretching caused by the arcuate movement of said sheet and the accompanying differential in tangential velocity across the radius of said disc and across the width of said sheet, said sheet being progressively thicker across its width toward the outer edge of said disc to provide additional material across the width of said sheet for presentation of a substantially uniform thickness of said sheet along the surface of said disc immediately prior to the step of; plugging portions of said sheet into mold cavities contained within said disc; thereafter applying a pressure differential across said

plugged portion of said sheet forcing said plugged portion of said sheet into intimate contact with said mold cavities; cooling said sheet; shearing said sheet at the periphery of said mold cavities to form a finished container; and stripping said sheet in its sheared condition and ejecting said finished containers from said disc.

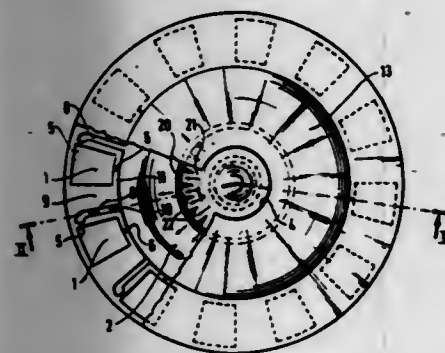
4,244,916

DEVICE FOR CONDITIONING A SAMPLE OF LIQUID FOR ANALYZING WITH INTERNAL FILTER

Jean Guigan, 8, rue Jean Mermoz, 75008 Paris, France
Continuation-in-part of Ser. No. 837,055, Sep. 28, 1977, Pat. No. 4,154,793. This application Feb. 5, 1979, Ser. No. 9,718
Claims priority, application France, Aug. 18, 1977, 7725225; Apr. 28, 1978, 78 12635

The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.³ G01N 21/07, 31/00; C12M 1/12; C02F 1/38
U.S. Cl. 422-72 6 Claims



1. In a device for conditioning a sample of liquid for analysis, said device comprising:
a central receptacle,
a plurality of calibrated peripheral cells on the periphery of the central receptacle, each cell having two parallel walls for an optical measurement and connected to said central receptacle receiving said sample, each of said cells being a reagent containing cell,
said device further comprising for each cell, means for conveying the sample of liquid from the receptacle to said cell to fill it completely by centrifuging and escape means for the air contained in said cell to said receptacle,
said conveying means comprising an inlet orifice in each cell,
said escape means comprising an orifice nearer to the axis of rotation than said inlet orifice and leading into said receptacle,
said orifices being of such size as to retain the liquid contained in each cell after complete filling thereof, and centrifuging has ceased,
the improvement comprising a filter disposed between the central receptacle and said calibrated peripheral cells for prevention of passage of solid particles in suspension from said central receptacle to said calibrated peripheral cells.

4,244,917

SAMPLE PYROLYSIS OVEN

Roger A. Woods, and Harry Dembicki, Jr., both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.
Filed May 9, 1979, Ser. No. 37,937

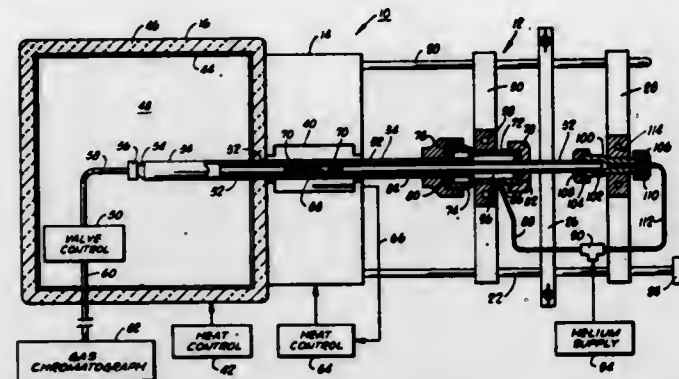
Int. Cl.³ G01N 31/08, 31/12

U.S. Cl. 422-78

7 Claims

1. A pyrolysis oven for deriving pyrolysis products from a selected sample, comprising:
furnace means having temperature controllable at a preselected level;
constant heat zone means disposed contiguous to said furnace means;
first glass tubing means supported to extend from a first end

external to the furnace means through said furnace means with the second end terminating in said constant heat zone means;
second glass tubing means containing a sample supported to extend from a first end at a point upstream of said first end of said first glass tubing means through said first glass tubing means first end and concentrically through said first glass tubing means to terminate within a lesser extension into said constant heat zone means then said first glass tubing means;



means for introducing inert gas under pressure to said second glass tubing means first end and to said first glass tubing means first end;
conduit means associated with said constant heat zone means and sealingly connected to said first glass tubing means second end to deliver the sample pyrolysis products;
first support means adjustably positionable in alignment with said furnace means to sealingly support said first and second glass tubing means; and
second support means adjustably positionable in alignment with said furnace means and said first support means to sealingly support said second glass tubing means.

4,244,918

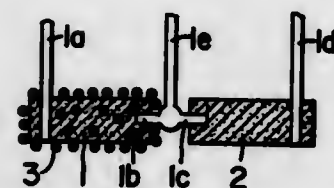
GAS COMPONENT DETECTION APPARATUS

Etsuro Yasuda; Susumu Sato; Yoshihiro Segawa; Tadashi Hattori, all of Okazaki, and Keiji Aoki, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan
Continuation-in-part of Ser. No. 751,956, Dec. 17, 1976, Pat. No. 4,099,922. This application Apr. 24, 1978, Ser. No. 899,397
Claims priority, application Japan, Apr. 25, 1977, 52-47702

Int. Cl.³ G01N 27/12

U.S. Cl. 422-95

5 Claims



1. A gas component detection apparatus comprising:
first and second gas sensing elements each including a metal oxide which exhibits variable electric resistances according to gaseous components and temperatures of gases to be detected;
a catalyst carried by said first sensing element for promoting oxidation reactions of the gaseous components of the gases;
a first pair of electrodes inserted into said sensing element for sensing a variation in electric resistance exhibited at that portion of said first sensing element subjected to catalytic action of said catalyst and resulting from the gaseous components and temperatures of the gases;
a second pair of electrodes inserted into said second sensing

element for sensing an electric resistance variation resulting mainly from the gas temperature,
circuit means adapted to be joined to said sensing elements for producing an output signal, and
means connecting the electrodes of the sensing elements to the circuit means in a manner whereby the variations in resistance of the sensing elements resulting from the gas temperatures offset one another and said output is representative of variations in resistance of the first sensing element resulting from the gaseous components.

4,244,919

SAMPLE DILUTING APPARATUS

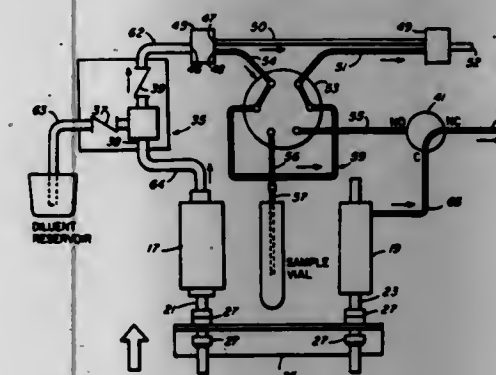
Bu S. Chen, Miami, Fla., assignor to Hyperion Incorporated, Miami, Fla.

Filed Mar. 19, 1979, Ser. No. 21,510

Int. Cl.³ G01N 1/14

U.S. Cl. 422-100

13 Claims



1. Automatic sample diluting apparatus comprising:
a reciprocable sample pump;
a reciprocable diluent pump, said pumps being coupled for conjoint operation;
sample intake means;
a diluent inlet;
a sample volume defining conduit;
output means through which sample and diluent are to be discharged;
a bipartite valving means engaging both ends of said conduit, said valving means providing a first state in which said conduit is interposed between said intake means and said sample pump, and a second state in which said conduit is interposed between said diluent pump and said output means; and
timing means for placing said valving means in said first state when said pumps are drawing and for placing said valving means in said second state when said pumps are discharging.

4,244,920

SPECIMEN COLLECTION ASSEMBLY

James G. Manachot, Eagle; Lawrence A. Salvadori, and Byron L. Mather, both of Milwaukee, all of Wis., assignors to Plastics, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 910,643, May 30, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,699

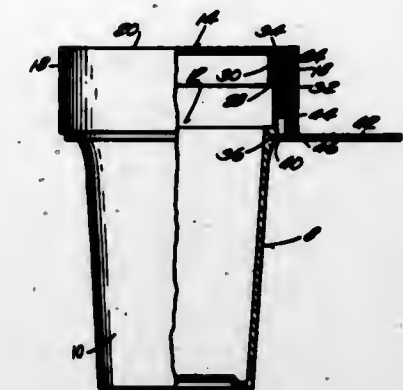
Int. Cl.³ B01L 3/00; B65D 41/04, 41/18

U.S. Cl. 422-102

13 Claims

1. A specimen collection assembly comprising:
a cup member having a body portion and an upper end cup closure portion, said cup member further having an outer protective wall spaced from said cup closure portion and extending vertically beyond the upper edge of said closure portion;
a cap member having a top portion and a cap closure portion, said cap member further having an outer protective wall spaced from said cap closure portion and extending vertically beyond the bottom edge of said cap closure portion;
connection means on said cup and cap closure portions to

connect said cap member to said cup member; and sealing means for sealing said cap member on said cup member



4,244,921

CONTACT NODE OF A SYSTEM FOR PRODUCTION OF SULPHURIC ACID

Andrzej Tasior; Marian Blicharz; Józef Kania, all of Cracow; Józef Strzelski, Krakow Nowa Huta, and Ignacy Kracki, Cracow, all of Poland, assignors to Przedsiębiorstwo Projektowania i Dostaw Kompletnych Obiektów Przemysłowych "Chemadex" w Warszawie, Oddział w Krakowie, Cracow, Poland

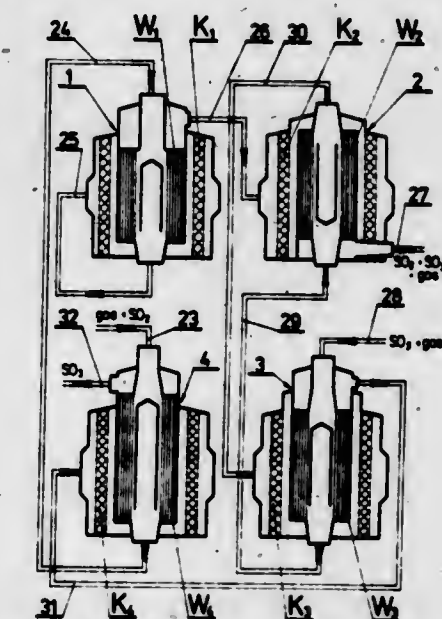
Filed May 18, 1979, Ser. No. 40,028

Claims priority, application Poland, Jan. 1, 1978, 207313

Int. Cl.³ C01B 17/48; F28D 7/00

U.S. Cl. 422-161

2 Claims



1. In a high capacity converter plant for the production of sulphuric acid, by means of a contact method in a conversion system of up to two-stages, and having separate contact units connected operatively with conduit means, the improvements which are characterized in that each contact apparatus comprises: an independent integral unit accommodated in a housing means having an outer cylindrical wall with openings therein, one cylindrical catalyst layer mounted on a support and defining an annular space therein, one heat exchanger means having a generally tubular shape, mounted on a separate support and positioned concentrically within the space defined by the catalyst layer, and forming therewith an annular gas duct means therebetween, said heat exchanger means having an inner wall and an outer jacket exposing said annular duct means to a heat exchange relation as gases pass from said catalyst layer through said duct means, and gas inlet guide means for supplying gas to the catalyst layer; said gas inlet means substantially completely surrounding said housing

means and formed in a generally spiral shape, said outer cylindrical wall of said housing means having said openings spaced apart over the whole circumference thereof for introduction of inlet gases to the cylindrical catalyst layer and for radially inward flow therethrough, whereby the reaction gases at lowest temperatures contact the outer cylindrical wall while gases at highest temperatures contact the inner wall of said heat exchanger means.

4,244,922

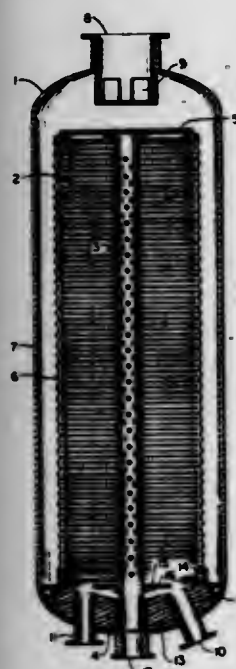
HOLD-DOWN DEVICE FOR VERTICALLY MOVABLE MEMBER IN APPARATUS WHICH CONTAINS CONTACT MATERIAL

Ben G. Burke, Lafayette, and Douglas J. Legg, Menlo Park, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 5, 1978, Ser. No. 939,765
Int. Cl.² B01J 8/02

U.S. Cl. 422-218

10 Claims



1. In radial flow reactor for contacting a fluid with a subdivided solid contact material, said apparatus having:

(a) a vertically elongated vessel having fluid inlet and outlet passageways;

(b) a vertically elongated perforate center member and a perforate outer contact-material retaining means, axially located in said vessel, the lower end of said member and retaining means being supported by said vessel at a lower portion of said vessel and said member and retaining means being vertically movable with respect to said vessel;

the improvement which comprises means for restraining vertical movement of said member or outer retaining means with respect to said vessel, said means being operably attached to a lower portion of said member or outer retaining means and having a substantially horizontal surface adapted to receive at least a substantial portion of force exerted by gravity on the contact material.

4,244,923

APPARATUS FOR AND METHODS OF CONTACTING MATERIALS

Theodor J. M. Hohlbaum, Ilford, England, assignor to RTL Contactor Holding S.A., Switzerland

Filed Nov. 22, 1978, Ser. No. 962,967
Int. Cl.³ B01F 3/12, 7/08

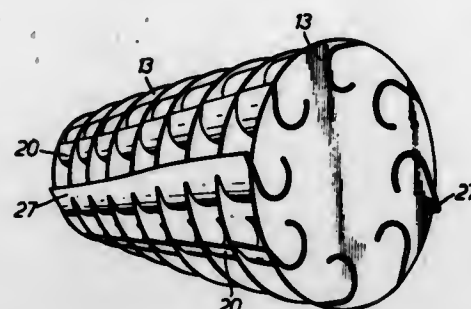
U.S. Cl. 422-225

13 Claims

1. A solids/liquid contactor comprising

(a) a drum through which a slurry phase and a liquid phase pass;

- (b) a rotor mounted for rotation within said drum, said rotor including
- (c) a plurality of axially-spaced discs dividing the interior of said drum into a series of compartments, the edges of said discs being spaced from the wall of said drum to form annular passages for the movement of said phases from compartment to compartment;
- (d) in each of at least some of said compartments, a plurality of receptacles mounted to rotate with said rotor and to



receive material of one said phase and to shower it into the other phase as said rotor turns; and

(e) at least one blade means which are carried by said rotor, which extends radially outwardly beyond the edges of said discs and axially over a substantial axial length of said rotor, and which are helical about the axis of said rotor, whereby movement of solids axially along said drum is promoted and said passages are kept at least partially clear of stationary solids.

4,244,924

DUAL TEMPERATURE CONCENTRATION SYSTEM

Jerome S. Spevack, New Rochelle, N.Y., assignor to Denterium Corporation, New Rochelle, N.Y.

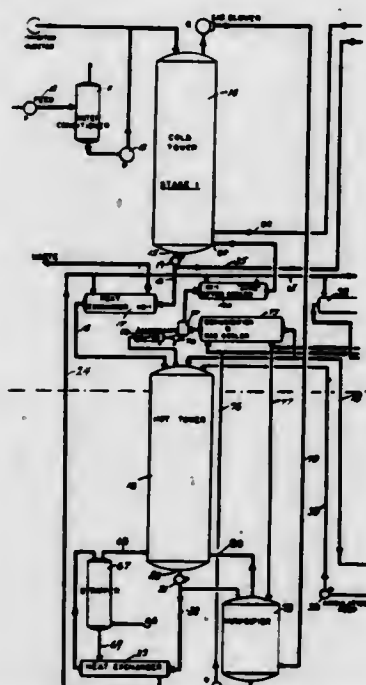
Continuation of Ser. No. 104,155, Jan. 5, 1971, abandoned, which is a division of Ser. No. 587,363, Sep. 26, 1966, Pat. No. 3,920,395, which is a continuation of Ser. No. 822,974, Jun. 25, 1959, abandoned, which is a division of Ser. No. 188,925, Sep. 29, 1950, Pat. No. 2,895,803. This application Jul. 14, 1975, Ser. No. 595,443

The portion of the term of this patent subsequent to Jul. 28, 1981, has been disclaimed.

Int. Cl.³ B01D 12/00

U.S. Cl. 422-256

10 Claims



1. Apparatus for producing a fluid containing a first material concentrated therein by exchanging, at two different temperatures, said first material with a second material between chemically different first and second fluid substances which are

physically separable from each other and which are each capable of containing each of said materials, said apparatus comprising, in combination, a first concentrating apparatus coupled to a second concentrating apparatus, said first concentrating apparatus comprising:

(a) a pair of counter-current direct contact exchange units each having first fluid inlet and outlet means and second fluid inlet and outlet means,

(b) means connected to the first fluid inlet and outlet means of said exchange units in series for passing a liquid feed stream of said first fluid substance through each of the first and second of said exchange units in that order and thence to a point of disposal,

(c) means connected to the second fluid inlet and outlet means for said exchange units for passing a gas stream of said second fluid substance in a flow through said second unit and thereafter through said first unit of said pair and then back again to said second unit of said pair, in that order, again and again, as a closed circulation,

(d) means for maintaining said first and second units at different temperatures such as to cause the liquid feed-to-disposal stream of said first fluid substance to become enriched with respect to said first material in passing through said first unit and to become impoverished with respect to said first material in passing through said second unit, while causing said gas stream of second fluid substance to become enriched with respect to said first material in passing through said second unit and to become impoverished with respect to said first material in passing through said first unit, whereby the liquid and gas streams leaving said first and second units, respectively, are enriched with respect to said first material and said gas stream passing back from said first unit to said second unit is impoverished with respect to said first material,

and said second concentrating apparatus having inlet means for admitting second fluid substance thereto and first and second outlet means for respectively delivering therefrom second fluid substance enriched in said first material and second fluid substance impoverished in said first material, respectively; said apparatus being improved in that it comprises

(e) a connection from said second outlet means of said second concentrating apparatus to said second fluid inlet means of said first unit,

(f) branching means connected in said means (e) between the second and first units of said pair for dividing into two flows the enriched gas stream of said closed circulation of second fluid substance being passed from said second unit to said first unit thereby,

(g) one branch of said branching means (f) being connected to said second fluid inlet means of said first unit of said pair for delivering to the first unit of said pair the first of said divided flows and

(h) the other branch of said branching means being connected to the inlet means of said second concentrating apparatus for passing the second of said divided flows through said second concentrating apparatus before its delivery to said first unit via said connection (e).

4,244,925

METHOD FOR PRODUCTION OF ALKALI METAL CHROMATES FROM CHROME ORES

Somanahalli N. Subbanna, Camillus; Thomas R. Morgan, Solway, and Douglas G. Frick, La Fayette, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 851,230, Nov. 14, 1977, Pat. No. 4,162,295. This application Jul. 20, 1979, Ser. No. 58,975. The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.

Int. Cl.³ C01G 37/14, 31/00

U.S. Cl. 423-61

23 Claims

1. A method for the manufacture of alkali metal chromates

having a low alumina content, which comprises the following steps:

(a) reacting a mixture comprising chrome ore, a diluent and an alkali metal salt, the amount of alkali metal salt being in the range of from about 30 to 80 percent of the stoichiometric amount required to react with chrome in said mixture, in an oxygen-containing atmosphere at a temperature of from about 900° to 1200° C., for a time period of at least about 30 minutes while maintaining a Bichromate Equivalent to aluminum oxide ratio in said mixture in the range of from about 1.5:1 to 10:1;

(b) leaching the roast mixture with a leach liquor having a pH of about 4.5 to 12 to remove the alkali metal chromate values and to form a roast mix residue; and

(c) recovering alkali metal chromate values.

12. A method as described in claim 1 which further comprises the following steps for recovery of vanadium values from the alkali metal chromate values recovered in step (c):

(a) adjusting the pH of the solution of alkali metal chromate values to a value between about 9 and 14;

(b) admixing the solution from step (a) with at least 6 but no more than about 10 times the stoichiometric amount of a member selected from the group consisting of CaO, Ca(OH)₂, CaCl₂, CaSO₄ and mixtures thereof while maintaining the temperature of the admixture so formed between about 70° and about 90° C. for at least about 10 minutes;

(c) separating the admixture into a solid residue containing vanadium values and a solution containing alkali metal chromate values and soluble calcium;

(d) recovering the vanadium values from the solid residue;

(e) admixing the solution from step (c) with at least about 2.5 times the stoichiometric amount of alkali metal carbonate required to precipitate the soluble calcium;

(f) separating the mixture so produced into solid calcium carbonate and a solution containing alkali metal chromate values; and

(g) recovering the alkali metal chromate values from the solution in step (f).

4,244,926

MOVING BED CHLORINATION OF BAUXITE AND ILMENITE

Ernest Foley, East Burwood, and Michael W. Wadley, East Brighton, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

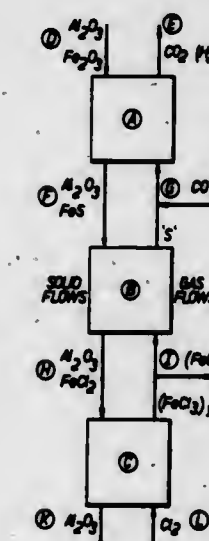
Filed Jun. 15, 1979, Ser. No. 49,024

Claims priority, application Australia, Jun. 15, 1978, PD4739/78

Int. Cl.³ C01G 23/02, 23/04; C01F 7/02

U.S. Cl. 423-77

6 Claims



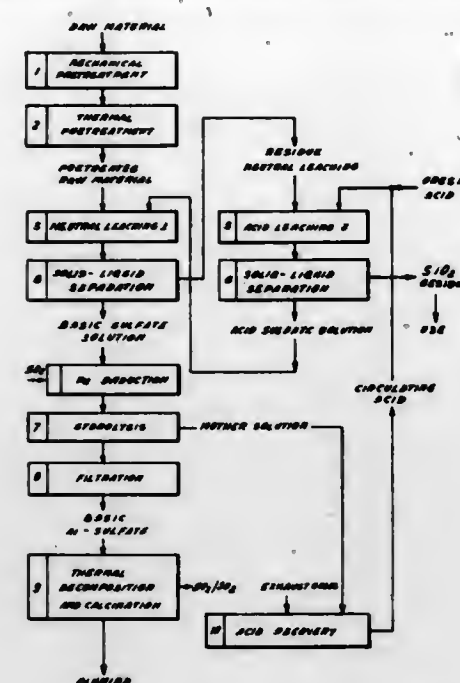
1. A process for the selective removal of iron from a ferruginous ore selected from the group consisting of bauxite and

ilmenite, which comprises feeding the dried heated ore into a countercurrent reactor comprising a sulphidizing zone, an intermediate zone and a chlorination zone, through which zones the ore moves in sequence and

- in the sulphidizing zone, introducing a reductant so that the iron values present in the ore react selectively with sulphur and/or volatile sulphur-containing compounds in the presence of the reductant to form iron sulphides;
- in the intermediate zone, introducing volatile ferric chloride formed in the chlorinating zone, which reacts with the sulphidized ore to convert the iron sulphides into ferrous chloride and reform the sulphur and/or volatile sulphur containing compounds;
- in the chlorination zone, introducing chlorine which converts the ferrous chloride formed in the intermediate zone into volatile ferric chloride;
- separately removing the volatile iron chlorides and the upgraded host oxide from the chlorination zone; and
- allowing any volatile host chloride produced to rise from the intermediate zone back to the sulphidizing zone where the chloride meets the incoming ore, and is reconverted to host oxide,

and wherein the temperature of the sulphidizing zone is in the range 550° C. to 800° C.; the temperature of the intermediate zone is in the range 500° to 750° C.; and the temperature of the chlorination zone is in the range of 350° to 750° C.

addition of active clay, basic aluminum sulfate or other chemicals which increase the basicity; and from the hydrolysis solution



tion precipitating basic aluminum sulfate at 220°-280°C. which is calcined to obtain alumina.

4,244,927

PROCESS FOR RECOVERING ARSENIC COMPOUNDS BY SODIUM HYDROXIDE LEACHING

James E. Reynolds, and Enzo L. Coltrani, both of Golden, Colo., assignors to Hazen Research, Inc., Denver, Colo.

Filed Jul. 27, 1979, Ser. No. 61,412

Int. Cl.³ C01B 27/02

U.S. Cl. 423-87

19 Claims

1. A process for recovering arsenic from materials containing ferric-arsenic compounds in which the arsenic is present in its pentavalent state, comprising:

- leaching the material with a stoichiometric excess of a sodium hydroxide solution;
- performing a liquid-solid separation on the leach materials; and
- crystallizing the soluble arsenic salt from the liquid of step (b).

4,244,928

PROCESS FOR THE PRODUCTION OF PURE ALUMINUM OXIDE

Stegfried Ziegenbalg, Gerhard Hanke, and Gunter Geller, all of Freiberg, German Democratic Rep., assignors to VEB Mansfeld Kombinat William Pieck, Eisenberg, German Democratic Rep.

Filed Jan. 8, 1979, Ser. No. 46,843

Claims priority, application German Democratic Rep., Jan. 13, 1978, 203210

Int. Cl.³ C01F 7/26

U.S. Cl. 423-123

4 Claims

1. An improved process for producing pure aluminum oxide of the type wherein clay or clay-containing minerals undergo a two-stage treatment with sulfuric acid under the use of pressure and increased temperature, separation of the insoluble residue, reduction of the iron, hydrolysis of the aluminum sulfate solution to solid basic aluminum sulfate, and decomposition of the hydrolysis product to aluminum oxide, said improvement comprising the steps of providing in the first leaching stage an Al_2O_3 excess in the starting material of 60-120% related to the Al_2O_3 component to be leached; adding to the filtrate of the first leaching stage which is supplied to the hydrolysis, to obtain a weight ratio $SO_3:Al_2O_3$ of 2.0-2.86, sufficient magnesium sulfate for the solution supplied to hydrolysis to contain 30-90 g/l $MgSO_4$; carrying out the hydrolysis under pressure with the exclusion of oxygen and without the

4,244,929

RECOVERY OF CHLORINE VALUES

John Lumsden, Avonmouth, and Charles E. E. Shackleton, London, both of England, assignors to Mineral Process Licensing Corporation BV, The Hague, Netherlands

Filed May 15, 1979, Ser. No. 39,293

Claims priority, application United Kingdom, May 16, 1978, 19966/78

Int. Cl.³ C01G 49/10

U.S. Cl. 423-149

7 Claims

1. A method for the recovery of chlorine values in the form of ferric chloride from an iron chloride dust by-produced in the chlorination of a titaniferous material containing more than 5% by weight iron oxide which method comprises the steps of:

- subjecting the iron chloride dust contaminated with other metal chlorides to a temperature above about 275° C. and below the melting point of ferrous chloride, in the presence of a predetermined quantity of chlorine and a predetermined quantity of iron oxide such that the ferrous chloride content of the iron chloride dust reacts with the chlorine and is converted to ferric chloride and that the reactive metal chlorides present as contaminants in the iron chloride dust react with the iron oxide to produce directly or indirectly ferric chloride and oxides of the metal contaminants; and
- volatilising and recovering the ferric chloride originally present in the iron chloride dust together with the ferric chloride obtained from the ferrous chloride and other metal chloride contaminants.

4,244,930

METHOD FOR THE WET SEPARATION OF IMPURITIES FROM GASES OF HIGHER TEMPERATURE

Ekkehard Weber, Amelsweg 6, 4300 Essen 17, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,197

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815446

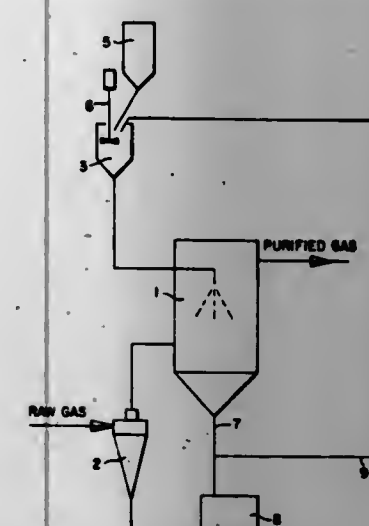
Int. Cl.³ B01D 53/34

U.S. Cl. 423-210.5

5 Claims

1. Method for the wet separation at high temperatures of gaseous acid impurities from gases containing the same produced in industrial processes which comprises passing a liquid

melt of an inorganic alkali metal compound reactive with said gaseous acid impurities in which a solid inorganic alkaline earth metal compound reactive with said gaseous acid impurities is dispersed therein, in intimate contact with the gases containing the gaseous acid impurities at a temperature above 575° K. to effect separation of acidic impurities from the gases,



said liquid alkali metal compound being more reactive than said solid alkaline earth metal compound and is saturated first by the gaseous acid impurities, and after intimate contact between the gases and the melt, discharging as separate streams, the purified gases from which the gaseous acid impurities have been removed and the melt with the dispersed solid alkaline earth metal compound containing the impurities.

4,244,931

DICALCIUM PHOSPHATE DIHYDRATE WITH IMPROVED STABILITY

William M. Jarvis, Webster Groves, and Kwon Y. Kim, Clayton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 29, 1979, Ser. No. 43,413

Int. Cl.³ C01B 25/00, 15/16, 25/26

U.S. Cl. 423-266

9 Claims

1. A composition which comprises dicalcium phosphate dihydrate and (a) from about 0.1 weight percent to about 5 weight percent P_2O_5 equivalent of pyrophosphate complex; (b) from about 0.1 weight percent to about 5 weight percent trimagnesium phosphate; and (c) from about 0.1 weight percent to about 3 weight percent of a pharmaceutically acceptable polyphosphate salt; based on the weight of the dicalcium phosphate dihydrate.

4,244,932

STABILIZED FERROMAGNETIC CHROMIUM DIOXIDE AND PROCESS FOR OBTAINING SAME

Giampiero Basile, Alessandria, and Giancarlo Boero, Asti, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 16, 1979, Ser. No. 57,817

Claims priority, application Italy, Jul. 21, 1978, 25960 A/78

Int. Cl.³ C01G 37/02

U.S. Cl. 423-274

6 Claims

1. A ferromagnetic chromium dioxide stabilized by coating the particles thereof with a stabilizing substance, characterized in that the stabilizing substance consists essentially of a mixture of ferrite $MeFe_2O_4$ with $\alpha-Fe_2O_3$ and MeO , wherein Me represents Cu, Co, Zn or Mg and where the molar ratio Fe_2O_3/MeO is equal to 1, said substance being present in an amount between 2 and 12% by weight based on the CrO_2 and having been formed in situ by precipitating onto the surface of the CrO_2 particles quantities of $Fe(OH)_3$ that are equivalent to a molar ratio Fe_2O_3/MeO of 1 and $Me(OH)_2$, drying the chromium dioxide coated with the hydroxides and calcining it at a temperature between 250° and 350° C., the quantity of the ferrite in the substance being that which is formed at said calcination temperature.

4,244,933

CALCIUM CARBONATE PARTICLES AND PROCESSES FOR PREPARING SAME

Hiroji Shibasaki, Takarazuka; Sotunji Edagawa, Nishinomiya; Hisashi Hasegawa, Nishinomiya, and Sotachi Kondo, Nishinomiya, all of Japan, assignors to Shirakishi Kogyo Kaisha, Ltd., Amagasaki, Japan

Filed Mar. 26, 1979, Ser. No. 23,962

Claims priority, application Japan, Apr. 5, 1978, 53-40668; Jan. 9, 1978, 53-69971

Int. Cl.³ C01F 5/24, 11/18

U.S. Cl. 423-430

23 Claims

1. A process for preparing calcium carbonate particles, said particles comprising a core about 0.5 to about 6.5 μm in average diameter and about 100 to about 4000 projections formed on the surface of the core and having a length (L) of about 0.25 to about 2.00 μm , a diameter (D) of about 0.08 to about 0.20 μm and an aspect ratio (L/D) of about 3 to about 10, the calcium carbonate having a void volume of about 1.0 to about 1.8 ml/g, a specific surface area of about 5 to about 15 m^2/g , an oil absorption of about 45 to about 60 ml/100 g., said process comprising:

- the first step of adding to a suspension of calcium hydroxide in a concentration of about 5 to about 15% by weight at least one of phosphoric acids and water-soluble salts thereof in an amount of about 0.01 to about 5.0 parts by weight, calculated as P_2O_5 , per 100 parts by weight of the calcium hydroxide, and spraying the mixture into a reactor in droplets of about 0.2 to about 1.0 mm in diameter at a temperature of about 30° to about 80° C. in countercurrent relation to a carbon dioxide-containing gas passed upward through the reactor at a superficial velocity of about 0.02 to about 1.0 m/sec;
- the second step of spraying the mixture from the first step into another reactor in droplets of about 1.0 to about 2.0 mm in diameter at a temperature of about 30° to about 80° C. in countercurrent relation to a carbon dioxide-containing gas passed upward through the reactor at a superficial velocity of about 0.5 to about 2.5 m/sec; and
- the third step of spraying the mixture from the second step into another reactor in droplets of about 1.5 to about 2.0 mm in diameter at a temperature of about 30° to about 80° C. in countercurrent relation to a carbon dioxide-containing gas passed upward through the reactor at a superficial velocity of about 1.5 to about 3.0 m/sec.

4,244,934

PROCESS FOR PRODUCING FLEXIBLE GRAPHITE PRODUCT

Teruhisa Kondo, No. 28-3, Higashitoyonaka-cho, 1-chome, Toyonaka-shi, Osaka-fu; Jiro Ishiguro, Takasato-danchi 2-4-308, No. 89, Ooeda, Ooaza, Kasukabe-shi, Saitama-ken, and Nobutsu Watanabe, No. 136, Uguisu-dai, Nagakakyoshi, Kyoto-fu, all of Japan

Filed Apr. 26, 1979, Ser. No. 33,658

Claims priority, application Japan, Dec. 2, 1978, 53-148648

Int. Cl.³ C01B 31/04

U.S. Cl. 423-448

10 Claims

1. A process for producing a flexible graphite product which comprises the steps of:

- subjecting graphite particles to oxidizing treatment with nitric acid having a concentration of about 60 to about 95% by weight and a permanganic acid salt;
- washing the treated graphite particles with water;
- contacting the washed graphite particles with an antioxidant comprising at least one metal salt of a boric acid ester of a member selected from the group consisting of a reduction product of a monosaccharide, a dimer of a monosaccharide and combinations thereof for a sufficient time for said antioxidant to permeate said washed graphite particles, said metal being a member selected from metals of the group II of the periodic table;

- (4) heating the resulting graphite particles to obtain expanded graphite masses; and
 (5) compressing the expanded graphite masses to form a flexible graphite product.

4,244,935

METHOD OF FORMING METAL CHLORIDES

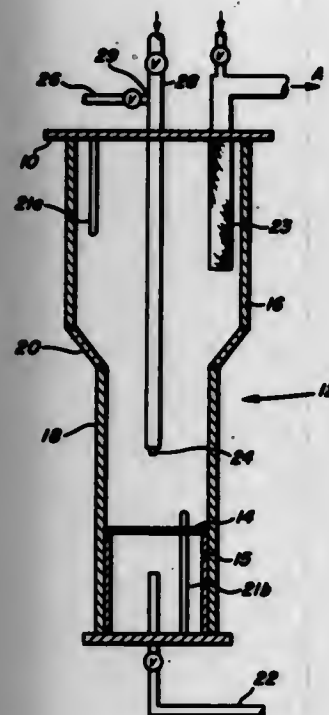
M. Benjamin Dell, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 20, 1978, Ser. No. 897,950

Int. Cl.³ C01B 9/00

U.S. Cl. 423—491

11 Claims



1. A method of chlorinating particles of a substance containing metal and oxygen, comprising:
 coking a liquid or gaseous coking charge stock on such particles for coating them with carbon which contains volatile matter under conditions permitting retention of volatile matter,
 heating the coated particles for driving off the volatile matter and for creating openings in the coating, and
 exposing the particles with the thus-opened coating to a source of chlorine for producing the chloride of said metal.

4,244,936

RECOVERY OF TELLURIUM FROM ACIDIC SULFONATED ION EXCHANGE RESINS BY ACID ELUTION

James G. Victor, Haddonfield, N.J.; Richard B. Papp, Norwood, and Alfred A. Wolsky, Ft. Washington, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 9, 1979, Ser. No. 82,832

Int. Cl.³ C01B 19/02, 19/04

U.S. Cl. 423—509

11 Claims

1. A process for the removal and recovery of tellurium from a strongly acidic sulfonated ion exchange resin, derived from treating a tellurium-containing vicinal glycol ester solution to remove and retain soluble tellurium compounds, which comprises the steps of:
 eluting the ion exchange resin at a temperature of from about 5° C. to 95° C. with a dilute mineral acid at concentrations of from about 0.1 Normal to 5.0 Normal to form a tellurium-containing acid eluate;
 stripping or distilling the tellurium-containing acid eluate to remove contained water and acid leaving a tellurium compound concentrate; and
 recovering tellurium from said tellurium concentrate.
 11. A process for the removal and recovery of tellurium from a strongly acid sulfonated polyaromatic ion exchange

resin, derived from treating a tellurium-containing ethylene glycol diacetate solution to remove and retain soluble tellurium compounds, which comprises the steps of:

- eluting the sulfonated polyaromatic ion exchange resin at a temperature of from about 15° C. to 30° C. with a dilute hydrochloric acid having a concentration of from about 1 Normal to 2 Normal to form a tellurium-containing hydrochloric acid eluate;
 distilling the acid eluate at a temperature of 120° C. to remove contained water and acid leaving a tellurium compound concentrate;
 treating the tellurium compound concentrate with air at a temperature of from about 700° C. to 950° C. to convert the contained tellurium to tellurium dioxide; and
 recovering said tellurium dioxide by cooling the TeO₂-air effluent.

4,244,937

SULFUR DIOXIDE OXIDATION CATALYST AND PROCESS

Joseph A. Durkin, Groves, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,734

Int. Cl.³ C01B 17/74

U.S. Cl. 423—522

9 Claims

1. A process for the conversion of gaseous sulfur compounds to sulfuric acid which comprises passing a mixture of a gaseous sulfur compound and an oxygen-containing gas into contact with a catalyst at a temperature in the range of 150° to 600° C. and a pressure in the range of 3.5 to 350 kPa in the presence of water vapor, said catalyst comprising 5 to 10 weight percent nickel and 15 to 30 weight percent tungsten based on the total weight of the catalyst composite said nickel and tungsten being added to the catalyst by impregnation of nickel and tungsten compounds onto a base comprising 40-90 weight percent amorphous oxide having active acid sites selected from the group consisting of silica, alumina, zirconia, magnesia and beryllia and mixtures and composites of said oxides with one another and 10 to 60 weight percent of a hydrogen crystalline zeolite.

4,244,938

PREPARATION OF TRANSITION METAL HYDRATES BY DIRECT METAL REACTION

Anthony Alkaitis, Cleveland Heights, Ohio, assignor to Mooney Chemicals, Inc., Cleveland, Ohio

Filed Nov. 20, 1978, Ser. No. 962,127

Int. Cl.³ C01G 51/04, 53/04

U.S. Cl. 423—592

15 Claims

1. A method of preparing cobalt and nickel hydroxides which comprises the steps of
 (a) providing a mixture comprising
 (i) cobalt or nickel metal,
 (ii) water,
 (iii) a nitrogen-containing compound selected from the group consisting essentially of ammonia, organic amines, or mixtures thereof,
 (iv) one or more aliphatic or alicyclic monocarboxylic acids at least one of which contains at least eight carbon atoms, and
 (v) a diluent, and
 (b) heating the mixture in the presence of oxygen for a period of time sufficient to form the insoluble metal hydroxide.

4,244,939

BARBITURIC ACID TRACERS AND THEIR PREPARATION

George H. Parsons, Jr., Arlington, and Ernest V. Groman, Somerville, both of Mass., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 12, 1978, Ser. No. 914,458

Int. Cl.² G01N 33/16; A61K 43/00

U.S. Cl. 424—1

31 Claims

1. In a radioimmunoassay for a predetermined 5,5'-substituted barbiturate wherein a barbiturate tracer is used, the improvement comprising using as said tracer said 5,5'-barbiturate having a radioiodinated substituent at the 1, 3 or 1 and 3 positions of the barbiturate ring, with the proviso that said substituent be nonantigenic and have a molecular weight of less than about 2000.

4,244,940

SINGLE-INCUBATION TWO-SITE IMMUNOASSAY

Henry J. Jeong; Judith I. Blakemore, both of Benicia, and Nathan Lewin, Corte Madera, all of Calif., assignors to BIO-RAD Laboratories, Inc., Richmond, Calif.

Filed Sep. 5, 1978, Ser. No. 939,577

Int. Cl.³ G01N 33/48; A61K 43/00; B01T 1/00

U.S. Cl. 424—1

20 Claims

1. An improved two-site immunoassay method, which comprises:
 bringing together in an aqueous medium in an essentially single-incubation mode (a) the sample containing the multivalent ligand to be determined, (b) a labeled receptor for said ligand, and (c) an excess of unlabeled receptor to bind substantially all said ligand, said unlabeled receptor being covalently bound to a solid-phase support which forms a substantially stable suspension;
 incubating said aqueous medium to produce a two-phase system, wherein the solid phase contains substantially all said ligand bound to both said unlabeled receptor and said labeled receptor; and the liquid phase contains the unbound portion of said labeled receptor;
 separating said solid and liquid phases from each other; and
 analyzing either phase for the labeled receptor, being a function of the concentration of said ligand in said sample.

4,244,941

CONTROLLED RELEASE COMPOSITION AND PROCESS FOR PREPARING SAME

Coenraad F. Lerk, Roden, Netherlands, assignor to Gist-Brocades N.V., Delft, Netherlands

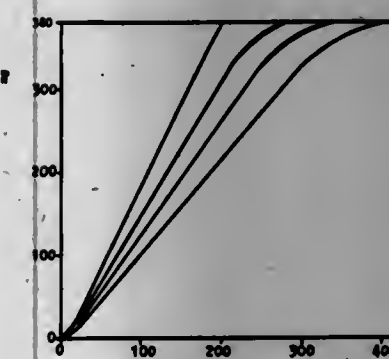
Continuation of Ser. No. 404,601, Oct. 9, 1973, abandoned. This application Oct. 23, 1975, Ser. No. 624,734

Claims priority, application United Kingdom, Oct. 6, 1972, 46299/72

Int. Cl.³ A01N 25/26; A61J 3/10; A61K 9/24; B05D 3/12

U.S. Cl. 424—21

16 Claims



1. A constant release composition wherein (a) the solution of soluble core substance within the core space remains saturated during dissolution and (b) the shape and (c) the surface of the coating and (d) the diffusion path for the soluble core substance through the porous coating remain constant while the

composition is in a liquid medium, comprising a core of the soluble substance and a rigid porous coating completely surrounding the core and which coating is substantially free of substances which are soluble or swellable in the liquid medium, said coating substance being selected from substances insoluble in the medium in which they are intended to be used and having been compressed in powder form to form an inert, non-disintegrating non-eroding porous coating.

8. A process for preparing a composition of claim 1 comprising dry mixing the components for the coating in the usual way, and coating the mixture so obtained completely around a core of soluble substance.

4,244,942

CREAMY PREPARATION CONTAINING STEROID AND PROCESS FOR THE PREPARATION THEREOF

Takuzo Kamishita, and Kazuhiko Kamishita, both of Takatsuki, Japan, assignors to Toko Yakuhin Kogyo Kabushiki Kaisha, Ooyodo, Japan

Filed Jun. 8, 1979, Ser. No. 46,931

Claims priority, application Japan, Mar. 7, 1978, 53-26314

Int. Cl.³ A61K 31/78, 31/56

U.S. Cl. 424—81

5 Claims

1. A creamy preparation which comprises 0.001 to 9% by weight of a corticosteroid or ester thereof, a solvent consisting of 2 to 10% by weight of crotonitron and from 2 to less than 20% by weight of propylene glycol; 5 to 50% by weight of a fluid oily substance selected from the group consisting of a fatty alcohol having 8 to 18 carbon atoms, a monovalent or divalent fatty acid having 8 to 18 carbon atoms, an alkyl ester of a monovalent or divalent fatty acid having 8 to 18 carbon atoms in the fatty acid moiety and having 1 to 18 carbon atoms in the alkyl moiety, and a mixture thereof; 0.5 to 5% by weight of a nonionic surfactant; and an aqueous solution of 0.1 to 3% by weight of carboxyvinyl polymer; said preparation being regulated at a pH of 4 to 7 by neutralizing with a basic substance selected from the group consisting of an alkylamine having 1 to 4 carbon atoms, a dialkylamine having 1 to 4 carbon atoms in each alkyl moiety, a trialkylamine having 1 to 4 carbon atoms in each alkyl moiety, an alkanolamine having 1 to 4 carbon atoms in the alkanol moiety, a dialkanolamine having 1 to 4 carbon atoms in each alkanol moiety, a trialkanolamine having 1 to 4 carbon atoms in each alkanol moiety, trimethylolaminomethane, ammonia, and an aqueous solution of an alkali metal hydroxide and having a viscosity of 10,000 to 100,000 centipoises at 20° C., said amount of each component being based upon the total weight of the preparation.

4,244,943

METHOD FOR PREPARING UROKINASE INJECTION

Yoshiya Yamahira, Ibaraki; Keiji Fujioke, Amagasaki; Yoshiko Okuzawa, Nishinomiya; Seiko Miura, and Shigeji Sato, both of Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 9, 1979, Ser. No. 37,280

Claims priority, application Japan, May 12, 1978, 53/56826

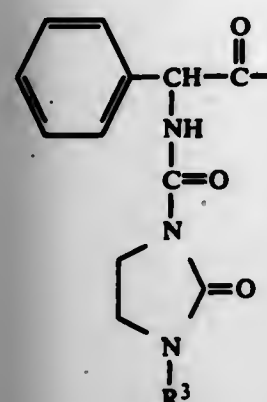
Int. Cl.³ A61K 37/48, 37/00; C12N 9/96, 9/72

U.S. Cl. 424—94

12 Claims

1. A method for preparing a stable urokinase composition suitable for injection into the human body by the lyophilization of urokinase which comprises lyophilizing an aqueous solution containing urokinase, human serum albumin and one or more amino acid compounds selected from the group consisting of glutamic acid, threonine, histidine, serine, glutamine, aspartic acid, arginine and salts thereof, said amino acid compound and human serum albumin being present in amounts effective to stabilize urokinase.

phenoxyacetyl, 2-amino-2-phenylacetyl, 2-amino-2-[4-hydroxyphenyl]acetyl, 2-carboxy-2-phenylacetyl, 2-carboxy-2-[2-thienyl]acetyl, 2-carboxy-2-[3-thienyl]acetyl, 2-(4-ethyl-2,3-dioxoiperazinocarbonylamino)-2-phenylacetyl and a group of the formula



wherein R^3 is selected from the group consisting of hydrogen, alkanoyl having from two to four carbons and alkylsulfonyl having from one to three carbons.

4,244,952

IMIDAZO[2,1-b]THIAZOLO[5,4-c]PYRIDINES AND COMPOSITION THEREOF FOR TREATING IMMUNE DISEASES

Tomohiko Munakata; Kazumi Saeki; Kazuhiro Goto, all of Nakatsu, and Kiyotaru Ikegami, Yoshio, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

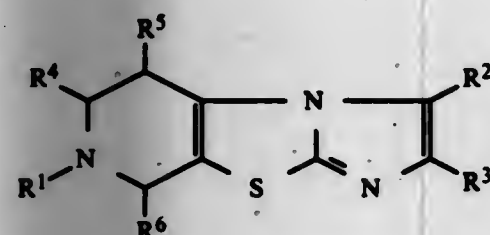
Filed Sep. 28, 1979, Ser. No. 79,723

Claims priority, application Japan, Sep. 28, 1978, 53-120041; Oct. 4, 1978, 53-123034

Int. Cl.³ A61K 31/44; C07D 513/14

U.S. Cl. 424-256

1. A heterocyclic compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, wherein R^1 is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, carbonyl, formyl, nitroso, C_{1-4} alkanoyl, benzoyl, phenylacetyl, phenacyl, phenyl C_{1-4} alkyl, α -(benzyloxycarbonyl)benzyl or α -carboxybenzyl; each of R^2 and R^3 is hydrogen, C_{1-4} alkyl or phenyl; all of R^4 , R^5 and R^6 are hydrogens, or both R^1 and R^6 , and R^4 and R^5 together form single bonds; in which definitions the term "benzoyl", "phenylacetyl", "phenacyl", "phenyl C_{1-4} alkyl" or "phenyl" means that it may be substituted by at least one substituent at any position(s) on the aromatic nucleus, each substituent being independently selected from C_{1-4} alkyl, C_{1-4} alkoxy, halogen, hydroxyl, phenyl, nitro, trifluoromethyl, methylthio, methanesulfonyl and methylenedioxy.

13. A pharmaceutical composition for treating immune diseases comprising an effective amount of the compound of claim 1 in combination with a pharmaceutically acceptable inert carrier or adjuvant.

4,244,953 SUBSTITUTED 6-PHENYL-5,6,7,8-TETRAHYDRO-1,2,4-TRIAZOLO-[4,3-a]PYRIDINES

Ronald I. Trust, Monsey, and Jay D. Albright, Nannet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

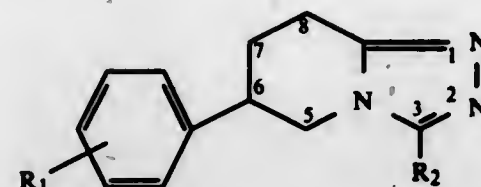
Filed Oct. 24, 1979, Ser. No. 87,907

Int. Cl.³ A61K 31/435; C07D 471/04

U.S. Cl. 424-256

16 Claims

1. A compound selected from the group consisting of those of the formula



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl (C_1-C_4), fluoro, chloro, bromo, trifluoromethyl, cyano, carboxyl, lower alkoxy, carbonyl (C_1-C_4), carbamoyl, amino, acetamido, N,N-dialkylamino with each alkyl group having up to 4 carbon atoms and the alkyl groups being the same or different and lower alkoxy (C_1-C_4); R_2 is selected from the group comprising hydrogen and lower alkyl (C_1-C_3) and the pharmacologically acceptable acid-addition salts thereof.

4,244,954

ACRIDINE COMPOUNDS AND METHODS OF COMBATTING VIRUSES WITH THEM

John W. Schulenberg, Rensselaer, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

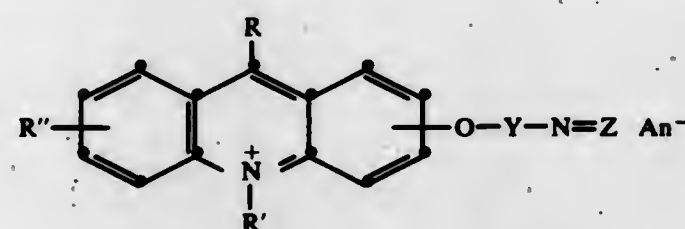
Continuation-in-part of Ser. No. 774,399, Mar. 4, 1977, Pat. No. 4,150,134, which is a continuation-in-part of Ser. No. 677,772, Apr. 16, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,715

Int. Cl.³ A61K 31/47; C07D 219/06

U.S. Cl. 424-257

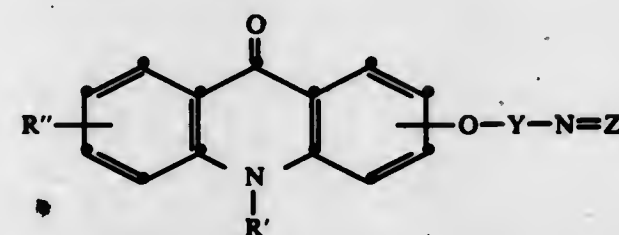
10 Claims

1. A pharmaceutically acceptable acid-addition salt of a compound of the formula



wherein R is phenyl, benzyl, or phenyl or benzyl substituted by a single substituent selected from the group consisting of lower-alkyl, lower-alkoxy or halogen; R' is lower-alkyl or benzyl; R'' is hydrogen, chloro or lower-alkoxy; $-Y-N=Z$ together is 9-methylgranatanin-3-yl; and An^- is a pharmaceutically acceptable anion.

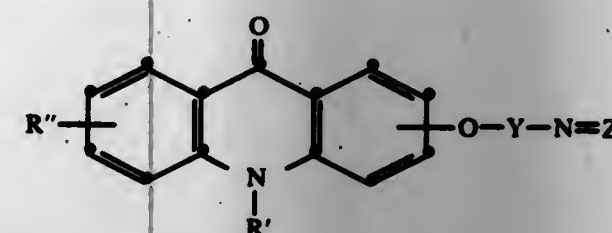
6. A compound of the formula



wherein R' is lower-alkyl or benzyl; R'' is hydrogen, chloro or lower-alkoxy; $-Y-N=Z$ together is 9-methylgranatanin-

3-yl; or a pharmaceutically acceptable acid-addition salt thereof.

8. A method for combatting viruses which comprises contacting the locus of said viruses with a composition containing an antivirally effective amount of at least one compound of the formula



wherein R' is lower-alkyl or benzyl; R'' is hydrogen, chloro or lower-alkoxy; Y is lower-alkylene of from two to four carbon atoms wherein the terminal valences are on separate carbon atoms; $N=Z$ is di-lower-alkylamino, piperidino, pyrrolidino, morpholino or N-methylpiperazino; or $Y-N=Z$ together is 9-methylgranatanin-3-yl; or a pharmaceutically acceptable acid-addition salt thereof; in admixture with a suitable carrier or diluent.

9. A method for combatting viruses which comprises contacting the locus of said viruses with a composition containing an antivirally effective amount of 1-(2-dimethylaminoethoxy)-10-methyl-9(10H)-acridinone or a pharmaceutically acceptable acid-addition salt thereof in admixture with a suitable carrier or diluent.

4,244,955

2,4A-ETHANOBENZ[*g*]ISOQUINOLIN-5(1H)-ONES AND THEIR USE AS ANTI-FERTILITY AND ANALGESIC AGENTS

Robert A. Farr, and Joseph E. Dolfini, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

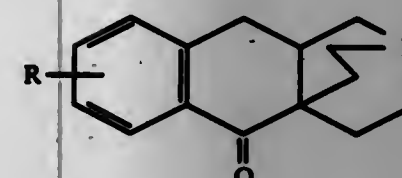
Filed Apr. 30, 1979, Ser. No. 34,357

Int. Cl.³ A61K 31/435; C07D 221/18

U.S. Cl. 424-258

5 Claims

1. A 2,4a-ethanobenz[*g*]isoquinolin-5(1H)-one having the formula



wherein R is selected from the group consisting of hydrogen, lower alkyl having from 1 to 4 carbon atoms and halogen, and the pharmaceutically acceptable salts thereof.

4. An analgesic composition in dosage unit form comprising an analgesic effective amount of from 5 to 500 mg of a compound of claim 1 in association with a pharmaceutical carrier.

5. An antifertility composition in dosage unit form comprising an anti-fertility effective amount of from 5 to 500 mg of a compound of claim 1 in association with a pharmaceutical carrier.

4,244,956

METHOD OF TREATING INFLAMMATION

Floyd E. Dewhirst, Cambridge, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

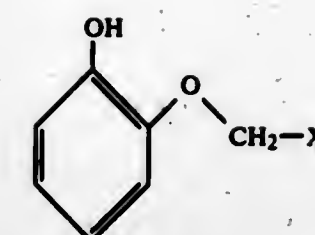
Filed Nov. 26, 1979, Ser. No. 97,506

Int. Cl.³ A61K 31/44, 31/47, 31/41, 31/09

U.S. Cl. 424-258

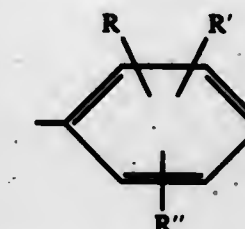
11 Claims

1. A method of treating inflammation in mammals, which method comprises administering to the mammal a therapeutically effective amount of a compound of the formula:



where X is selected from the group consisting of:

- (a) naphthyl, pyridyl, quinolyl and 2-benzimidazolyl; and
- (b) a substituted phenyl having the structural formula



where R , R' and R'' are hydrogen, halogen, C_1-C_6 alkyl, C_1-C_6 haloalkyl, C_1-C_6 alkoxy or combinations thereof and the nontoxic pharmaceutically acceptable salts thereof.

11. A pharmaceutical composition for the treatment of inflammation, which composition comprises a pharmaceutically accepted carrier material and from about 0.001% to 5% by weight of a 2-(arylmethoxy)phenol compound selected from the group consisting of:

- (a) 2-(2-methylphenylmethoxy)phenol;
- (b) 2-(3-chlorophenylmethoxy)phenol;
- (c) 2-(3-trifluoromethylphenylmethoxy)phenol;
- (d) 2-(4-methoxyphenylmethoxy)phenol;
- (e) 2-(2,5-dimethylphenylmethoxy)phenol;
- (f) 2-(2-naphthalenylmethoxy)phenol;
- (g) 2-(2-pyridylmethoxy)phenol;
- (h) 2-(2-benzimidazolylmethoxy)phenol; and
- (i) 2-(2-quinolylmethoxy)phenol

and their pharmaceutically accepted salts.

4,244,957

2-IMINO-IMIDAZOLIDINE DERIVATIVES

Henri Ramuz, Birsfelden, Switzerland, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Nov. 6, 1978, Ser. No. 958,300

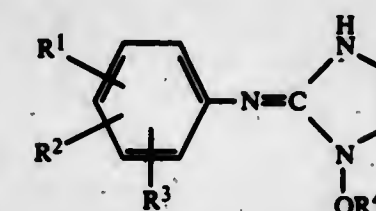
Claims priority, application Luxembourg, Nov. 7, 1977, 78467; Switzerland, Sep. 15, 1978, 9668/78

Int. Cl.³ C07D 401/12, 239/26, 241/12; A61K 31/44

U.S. Cl. 424-263

14 Claims

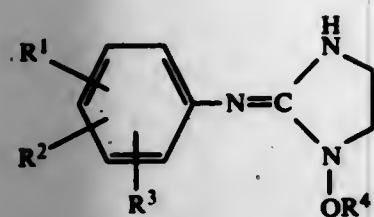
1. A compound of the formula



wherein R^1 , R^2 and R^3 , independently, are hydrogen, alkyl, alkoxy, alkylthio, halogen, trifluoromethyl, cyano or hydroxy and R^4 is [5-hydroxy-4-hydroxymethyl]-6-methyl-3-pyridyl]-methyl or an aromatic 6-membered heterocyclic residue selected from the group consisting of pyridyl, pyrimidinyl and pyrazinyl, which is bonded via a $-CH(R^5)-$ group and is optionally substituted by alkyl, alkoxy or the group $-COOR$, wherein R^5 is hydrogen, methyl, ethyl or n-propyl and R is hydrogen or alkyl, and wherein above, each occurrence, the alkyl, alkoxy and alkylthio groups, independently, are of 1-6

carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

14. A method of treating hypertension which comprises administering to a warm-blooded animal requiring such treatment a hypotensively effective amount of compound of the formula



wherein R^1 , R^2 and R^3 , independently, are hydrogen, alkyl, alkoxy, alkylthio, halogen, trifluoromethyl, cyano or hydroxy and R^4 is [5-hydroxy-4-(hydroxymethyl)-6-methyl-3-pyridyl]-methyl or an aromatic 6-membered heterocyclic residue selected from the group consisting of pyridyl, pyrimidinyl and pyrazinyl, which is bonded via a $-\text{CH}(\text{R}^5)-$ group and is optionally substituted by alkyl, alkoxy or the group $-\text{COOR}$, wherein R^5 is hydrogen, methyl, ethyl or n-propyl and R is hydrogen or alkyl, and wherein above, each occurrence, the alkyl, alkoxy and alkylthio groups, independently, are of 1-6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

4,244,958

HYPOLIPIDEMIC DERIVATIVES OF

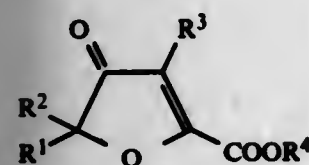
4,5-DIHYDRO-4-OXOFURAN-2-CARBOXYLIC ACID

Ivo L. Jirkovsky, Montreal; Dushan Dvornik, Mount Royal, and Mitchell N. Cayen, Cote St. Lac, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 912,798, Jan. 5, 1978, Pat. No. 4,169,202. This application May 10, 1979, Ser. No. 38,028

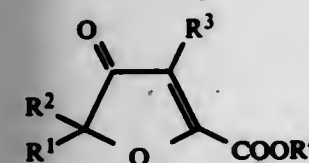
Int. Cl.³ A61K 31/34, 31/445; C07D 213/55, 307/68
U.S. Cl. 424-263

1. A compound of formula I



in which R^1 and R^2 each is lower alkyl, cyclo(lower)alkyl, lower alkoxy(lower)alkylene, phenyl or phenyl mono- or disubstituted with lower alkyl, lower alkoxy, halo, nitro or trifluoromethyl; or R^1 and R^2 together form a $-(\text{CH}_2)_m-\text{X}-$ chain wherein m and n each is an integer from one to four and X is methylene, oxa or thia; or R^1 and R^2 together with the carbon atom to which they are joined form a spiro[1,2,3,4-tetrahydronaphthalene]-1 or spiro[indan]-1 radical; R^3 is hydrogen or lower alkyl; and R^4 is hydrogen, lower alkyl, cyclo(lower)alkyl, phenyl(lower)alkylene, amino(lower)alkylene, lower alkylamino(lower)alkylene, di(lower alkyl)amino(lower)alkylene or 3-pyridinyl(lower)alkylene, or a therapeutically acceptable addition salt thereof.

26. A method of lowering lipid levels in a mammal, which comprises administering to said mammal an effective hypolipidemic amount of a compound of formula I



in which R^1 and R^2 each is lower alkyl, cyclo(lower)alkyl, lower alkoxy(lower)alkylene, phenyl or phenyl mono- or disubstituted with lower alkyl, lower alkoxy, halo, nitro or trifluoromethyl; or R^1 and R^2 together form a $-(\text{CH}_2)_m-\text{X}-$ chain wherein m and n each is an integer from one to four and X is methylene, oxa or thia; or R^1 and R^2 together with the carbon atom to which they are joined form a spiro[1,2,3,4-tetrahydronaphthalene]-1 or spiro[indan]-1 radical; R^3 is hydrogen or lower alkyl; and R^4 is hydrogen, lower alkyl, cyclo(lower)alkyl, phenyl(lower)alkylene, amino(lower)alkylene, lower alkylamino(lower)alkylene, di(lower alkyl)amino(lower)alkylene or 3-pyridinyl(lower)alkylene, or a therapeutically acceptable addition salt thereof.

oromethyl; or R^1 and R^2 together form a $-(\text{CH}_2)_m-\text{X}-$ chain wherein m and n each is an integer from one to four and X is methylene, oxa or thia; or R^1 and R^2 together with the carbon atom to which they are joined form a spiro[1,2,3,4-tetrahydronaphthalene]-1 or spiro[indan]-1 radical; R^3 is hydrogen or lower alkyl; and R^4 is hydrogen, lower alkyl, cyclo(lower)alkyl, phenyl(lower)alkylene, amino(lower)alkylene, lower alkylamino(lower)alkylene, di(lower alkyl)amino(lower)alkylene or 3-pyridinyl(lower)alkylene, or a therapeutically acceptable addition salt thereof.

4,244,959

FUNGICIDAL O-ACYL

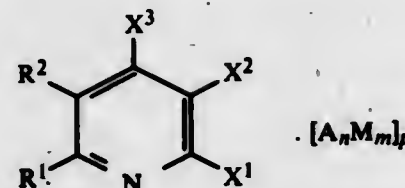
(ALPHA-NITRO-FORMALDOXIME) AND (ALPHA-HALO-FORMALDOXIME)-PYRIDINES

Francis J. Freenor, III, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

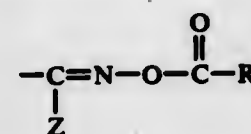
Filed Jul. 2, 1979, Ser. No. 54,217
Int. Cl.³ A01N 43/40; C07D 213/44

U.S. Cl. 424-263

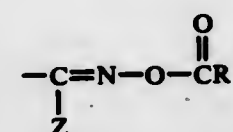
1. A compound of the formula



wherein R^1 and R^2 are individually hydrogen or alkyl of 1 to 4 carbon atoms; and X^1 , X^2 and X^3 individually are hydrogen, alkyl of 1 to 4 carbon atoms, or



wherein R is alkyl of 1 to 6 carbon atoms optionally substituted with 1 to 13 fluoro, chloro or bromo atoms, alkenyl of 1 to 6 carbon atoms optionally substituted with 1 to 11 fluoro, chloro or bromo atoms, alkenyl of 3 to 6 carbon atoms optionally substituted with 1 to 9 fluoro, chloro or bromo atoms, alkoxy-alkyl of 2 to 6 carbon atoms, phenyl, phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or nitro, and Z is chloro, bromo, fluoro, iodo or nitro; A is hydrogen ion or a Group III metal cation; M is an inorganic anion; n and m are individually integers 1 through 6; and p is 0, $\frac{1}{2}$ or 1; with the proviso that two of X^1 , X^2 and X^3 are hydrogen or alkyl as defined above and one of X^1 , X^2 or X^3 is



10. A method for the control of fungi which comprises contacting said fungi or their habitats with a fungicidally effective amount of a compound of the formula defined in claim 1.

13. A fungicidal composition comprising a biologically inert carrier and a fungicidally effective amount of a compound of the formula defined in claim 1.

4,244,960

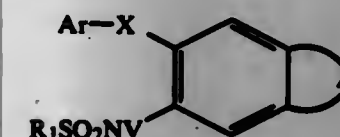
INDANYL DERIVATIVES AND THEIR USE

Eberhard Schröder; Clemens Rufer; Irmgard Büttcher, and Joachim-Friedrich Kapp, all of Berlin, Fed. Rep. of Germany, assignors to Schering, Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,779
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2833202; Jun. 11, 1979, 2923937

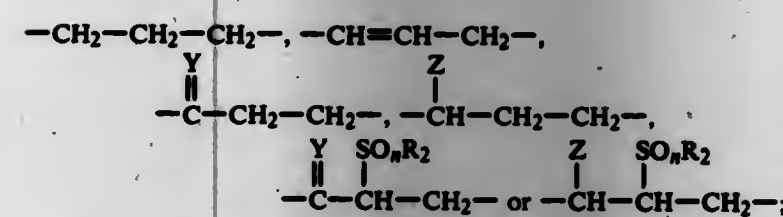
Int. Cl.³ A61K 31/44; C07D 213/63, 213/70; A61K 31/18
U.S. Cl. 424-263

1. A compound of the formula



wherein

Ar is phenyl, pyridyl, or phenyl or pyridyl substituted by halogen, alkyl of 1-4 carbon atoms or trifluoromethyl; X is oxygen or sulfur; R_1 is alkyl of 1-4 carbon atoms or alkyl of 1-4 carbon atoms substituted by fluorine or chlorine; A is



Y is oxo, oximino, C_{1-4} -alkoximino, phenylhydrazono or p-toluenesulfonylhydrazono; n is 0, 1 or 2; and R_2 is alkyl of 1-4 carbon atoms, phenyl or phenyl substituted by halogen, alkyl of 1-4 carbon atoms, nitro or carboxy; Z is hydroxy, alkoxy of 1 to 6 carbon atoms, $R_1\text{SO}_2-$ wherein R_1 has the meaning given above, amino, acyl-amino of 1 to 6 carbon atoms, $R_1\text{SO}_2\text{NH}-$ wherein R_1 has the meaning given above, or cyano, V is hydrogen, acyl of 1 to 6 carbon atoms or $R_1\text{SO}_2-$ wherein R_1 has the meaning given above, and the salts thereof with physiologically acceptable bases or acids, wherein "acyl" in each case is a carboxylic acid acyl group.

73. A method of treating inflammation in a patient which comprises administering to the patient an amount of a compound of claim 1 effective to treat inflammation.

4,244,961

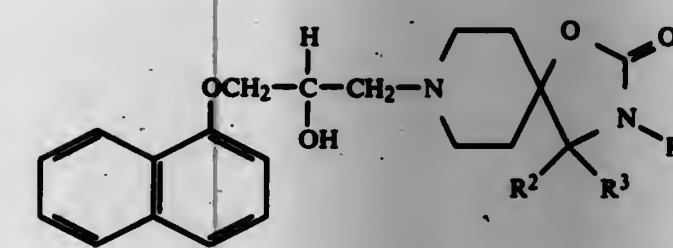
1-OXA-3,8-DIAZASPIRO[4.5]DECAN-2-ONES ANTIHYPERTENSIVE AGENTS

Arthur F. Kluge, Los Altos, and Stefan H. Ungar, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 26, 1978, Ser. No. 955,033
Int. Cl.³ A61K 31/445; C07D 498/10

U.S. Cl. 424-267

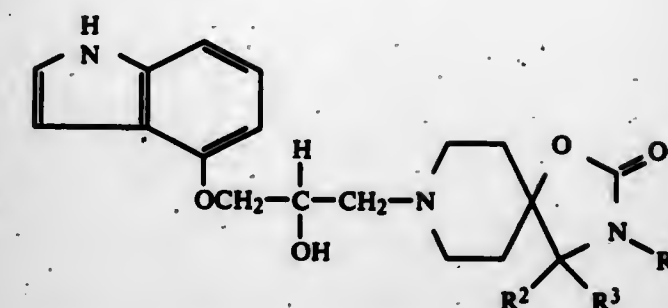
1. A compound of the formula



wherein R^1 , R^2 and R^3 are the same or different and are hydrogen, C_1 to C_6 alkyl, C_6 to C_{14} carbocyclic aryl or aralkyl of 1

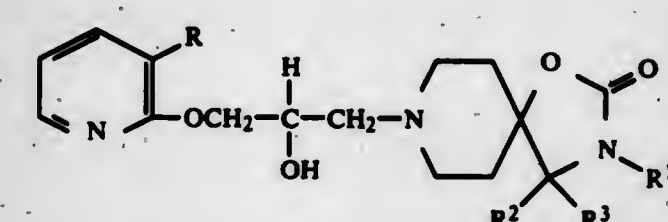
to 6 carbon atoms in the alkyl moiety and 6 to 12 carbon atoms in the carbocyclic aryl moiety.

8. A compound of the formula



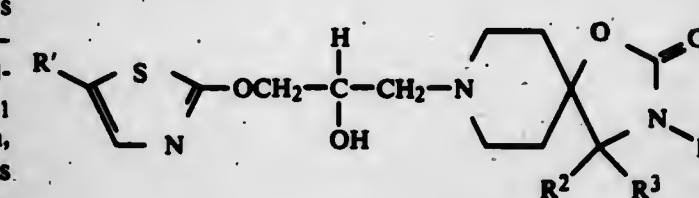
where R^1 , R^2 and R^3 are the same or different and are hydrogen, C_1 to C_6 alkyl, C_6 to C_{14} carbocyclic aryl or aralkyl of 1 to 6 carbon atoms in the alkyl moiety and 6 to 12 carbon atoms in the carbocyclic aryl moiety.

15. A compound of the formula



where R is C_1 to C_6 alkyl, C_1 to C_6 alkoxy, halo, cyano, $\text{AlkNHC(O)}-$ or $\text{AlkC(O)NH}-$ where Alk is C_1 to C_6 alkyl and R^1 , R^2 and R^3 are the same or different and are hydrogen, C_1 to C_6 alkyl, C_6 to C_{14} carbocyclic aryl or aralkyl of 1 to 6 carbon atoms in the alkyl moiety and 6 to 12 carbon atoms in the carbocyclic aryl moiety.

23. A compound of the formula



wherein R' is $\text{AlkNHC(O)}-$ or $\text{AlkC(O)NH}-$ where Alk is C_1 to C_6 alkyl and R^1 , R^2 and R^3 are the same or different and are hydrogen, C_1 to C_6 alkyl, C_6 to C_{14} carbocyclic aryl or aralkyl of 1 to 6 carbon atoms in the alkyl moiety and 6 to 12 carbon atoms in the carbocyclic aryl moiety.

32. A method for treating hypertension and cardiac disorders in mammals consisting of administering to said mammals an amount effective therefor of a compound according to claim 1, 8, 15 or 23.

4,244,962

FUNGICIDAL N-(PIPERIDINOACETYL)ANILINES

Adolf Hübeler, Magden; Walter Kunz, Oberwil, both of Switzerland, and Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

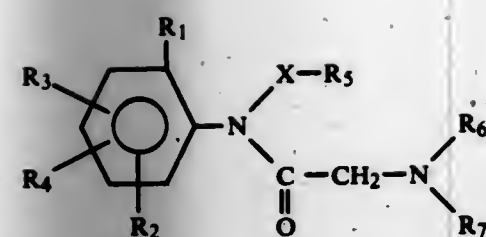
Division of Ser. No. 905,312, May 12, 1978, Pat. No. 4,165,381, which is a division of Ser. No. 726,320, Sep. 24, 1976, Pat. No. 4,098,895. This application May 14, 1979, Ser. No. 39,012

Claims priority, application Switzerland, Sep. 30, 1975, 12650/75; Sep. 30, 1975, 12651/75

Int. Cl.³ A01N 43/40; C07D 295/14
U.S. Cl. 424-267

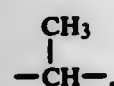
1. A compound of the formula

6 Claims

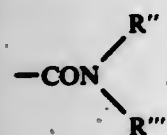


wherein

R₁ represents a C₁-C₄-alkyl group, a C₁-C₄-alkoxy group or a halogen atom,
 R₂ represents a hydrogen atom, a C₁-C₃-alkyl group, a C₁-C₄-alkoxy group or a halogen atom,
 R₃ represents a hydrogen atom, a C₁-C₃-alkyl group or a halogen atom,
 R₄ represents a hydrogen atom or a methyl group, with the proviso that the total number of carbon atoms contained by the substituents R₁, R₂, R₃ and R₄ in the phenyl ring does not exceed 8, and
 X represents —CH₂— or



R₅ represents —COOR', —COSR' or



wherein each of R', R'' and R''' independently represents a methyl or ethyl group,
 R₆ and R₇ together with the nitrogen atom to which they are attached represents piperidino which is unsubstituted or mono- or polysubstituted by halogen or C₁-C₃-alkyl, or a salt of a compound of the formula I with an inorganic or organic acid.

6. A method of controlling phytopathogenic fungi or of preventing fungus attack, which comprises applying to plants, parts of plants or their environment, a fungicidally effective amount of a compound of the formula I according to claim 1.

4,244,963

1-[2-(ALKYL AND ARYLSULFONYL)-2-PROPENYL AND PROPYL] SUBSTITUTED PIPERIDINES USEFUL AS ANTIMICROBIAL AND ANTIINFLAMMATORY AGENTS

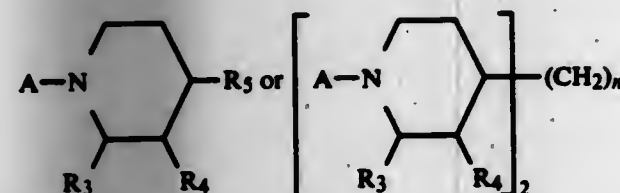
Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 27, 1979, Ser. No. 79,281
 Int. Cl. C07D 211/46; A61K 31/445

U.S. Cl. 424-267

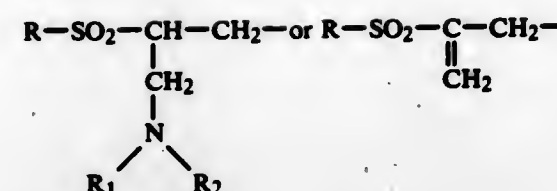
18 Claims

1. A compound of the formula:



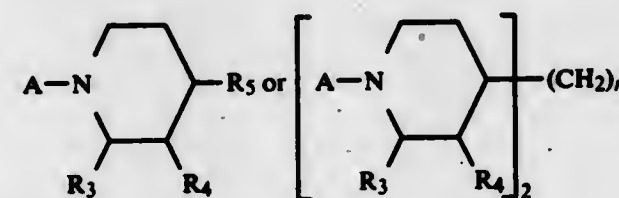
wherein A is

(I)

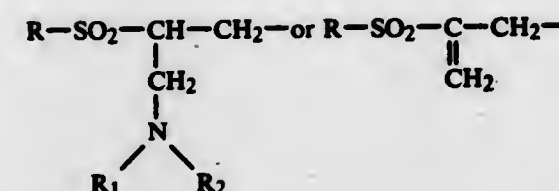


R is selected from the group consisting of C₃-₁₈ alkyl; straight or branched chain; C₂-₈ alkenyl; phenyl or naphthyl phenyl or naphthyl substituted with one or two members selected from the group consisting of halogen, C₁-₄ alkyl, C₁-₄ alkoxy, C₁-₄ alkoxy C₁-₄ alkyl, and nitro; phenyl-loweralkyl; phenyl-loweralkyl substituted with a member selected from the group consisting of halogen, C₁-₄ alkyl, C₁-₄ alkoxy, C₁-₄ alkoxy C₁-₄ alkyl, and nitro; and a heterocycle selected from the group consisting of imidazolyl, thienyl, thiazolyl, pyridyl, furyl, and tetrahydrofuran-2-yl;
 R₁ and R₂ are independently selected from the group consisting of hydrogen; C₁-₁₈ alkyl; C₂-₈ alkenyl; hydroxy C₁-₈ alkyl; and C₄-₈ cycloalkyl; or R₁ and R₂ taken together with the nitrogen atom to which they are attached form a pyrrolidine or piperidine ring substituted at the 2-, 3-, 4-positions with R₃, R₄, and R₅, respectively;
 R₃, R₄, and R₅ are selected from the group consisting of hydrogen; C₁-₃ alkyl; C₂-₃ alkenyl; halogen; hydroxy; hydroxy C₁-₃ alkyl; phenyl; carboxyl; carboxamido; C₁-₄ alkyl N-mono- and N,N-disubstituted carbonylamino; C₁-₄ alkoxy carbonyl; 1-pyrrolidinyl; and 1-piperidinyl; and n is 0 to 3; and acid addition and quaternary salts thereof.

14. An antimicrobial composition comprising an inert solid carrier and an antimicrobially effective amount of a compound of the formula:



wherein A is



R is selected from the group consisting of C₃-₁₈ alkyl; straight or branched chain; C₂-₈ alkenyl; phenyl or naphthyl; phenyl or naphthyl substituted with one or two members selected from the group consisting of halogen, C₁-₄ alkyl, C₁-₄ alkoxy, C₁-₄ alkoxy C₁-₄ alkyl, and nitro; phenyl-loweralkyl; phenyl-loweralkyl substituted with a member selected from the group consisting of halogen, C₁-₄ alkyl, C₁-₄ alkoxy, C₁-₄ alkoxy C₁-₄ alkyl, and nitro; and a heterocycle selected from the group consisting of imidazolyl, thienyl, thiazolyl, and pyridyl, furyl, and tetrahydrofuran-2-yl;
 R₁ and R₂ are independently selected from the group consisting of hydrogen; C₁-₁₈ alkyl; C₂-₈ alkenyl; hydroxy C₁-₈ alkyl; and C₄-₈ cycloalkyl; or R₁ and R₂ taken together with the nitrogen atom to which they are attached form a pyrrolidine or piperidine ring substituted at the 2-, 3-, 4-positions with R₃, R₄, and R₅, respectively;
 R₃, R₄, and R₅ are selected from the group consisting of hydrogen; C₁-₃ alkyl; C₂-₃ alkenyl; halogen; hydroxy; hydroxy C₁-₃ alkyl; phenyl; carboxyl; carboxamido; C₁-₄

alkyl N-mono- and N,N-disubstituted carbonylamino; C₁-₄ alkoxy carbonyl; 1-pyrrolidinyl; and 1-piperidinyl; and n is 0 to 3;
 and acid addition and quaternary salts thereof.
 16. A composition according to claim 14 wherein the compound is 1-[2-(n-propylsulfonyl)-2-propenyl]-4-piperidinol.

4,244,964

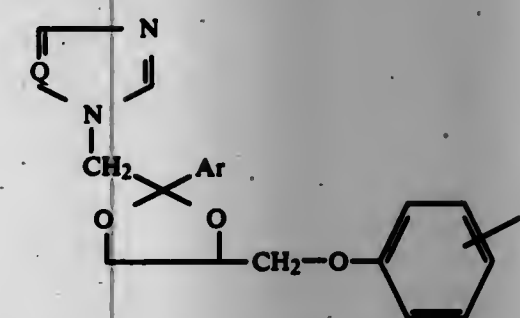
HETEROCYCLIC DERIVATIVES OF

1-(1,3-DIOXOLAN-2-YLMETHYL)-1H-1,2,4-TRIAZOLES.
 Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium
 Division of Ser. No. 853,726, Nov. 21, 1977, Pat. No. 4,160,841, which is a continuation-in-part of Ser. No. 764,263, Jan. 31, 1977, abandoned. This application Jun. 20, 1979, Ser. No. 50,367
 Int. Cl. A61K 31/41, 31/62; C07D 405/14

U.S. Cl. 424-269

4 Claims

1. A chemical compound selected from the group consisting of an azole derivative having the formula:

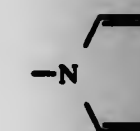


and the pharmaceutically acceptable acid addition salts and stereo-chemically isomeric forms thereof, wherein:

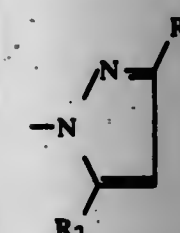
Q is N;

Ar is a member selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl and lower alkoxy; and
 the radical Y is a member selected from the group consisting of:

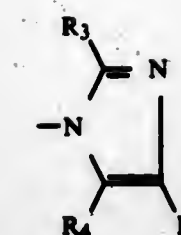
a 1H-pyrazol-1-yl radical of the formula



a 1H-pyrazol-1-yl radical of the formula

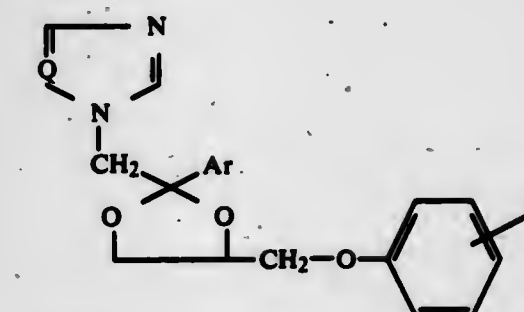


wherein R₁ is selected from the group consisting of hydrogen, lower alkyl, lower alkylthio and phenyl, and, R₂ is selected from the group consisting of hydrogen, lower alkyl and phenyl; and
 a 1H-imidazol-1-yl radical of the formula



wherein R₃ is selected from the group consisting of hydrogen, lower alkyl, phenyl, lower alkylthio, lower alkylsulfonyl and lower alkylsulfonyl, R₄ is selected from the group consisting of hydrogen, lower alkyl and phenyl, and, R₅ is selected from the group consisting of hydrogen and phenyl.

4. A composition for combatting the growth of a micro-organism selected from the group consisting of fungus and bacterium comprising an inert carrier material and as an active ingredient an effective amount of a compound selected from the group consisting of an azole derivative having the formula:

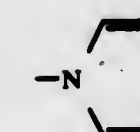


and the pharmaceutically acceptable acid addition salts and stereo-chemically isomeric forms thereof, wherein:

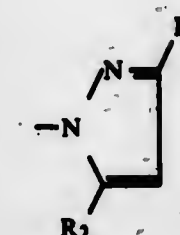
Q is N

Ar is a member selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl and lower alkoxy; and
 the radical Y is a member selected from the group of:

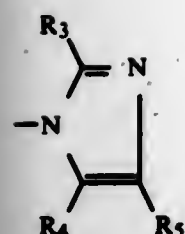
a 1H-pyrazol-1-yl radical of the formula



a 1H-pyrazol-1-yl radical of the formula



wherein R₁ is selected from the group consisting of hydrogen, lower alkyl, lower alkylthio and phenyl, and, R₂ is selected from the group consisting of hydrogen, lower alkyl and phenyl; and
 a 1H-imidazol-1-yl radical of the formula



wherein R_3 is selected from the group consisting of hydrogen, lower alkyl, phenyl, lower alkylthio, lower alkylsulfinyl and lower alkylsulfonyl, R_4 is selected from the group consisting of hydrogen, lower alkyl and phenyl, and, R_5 is selected from the group consisting of hydrogen and phenyl.

4,244,965

AZETIDINOYL ETHERS

Thomas T. Howarth, Reigate, and Eric Hunt, Betchworth, both of England, assignors to Beecham Group Limited, England
Filed Sep. 14, 1978, Ser. No. 942,348

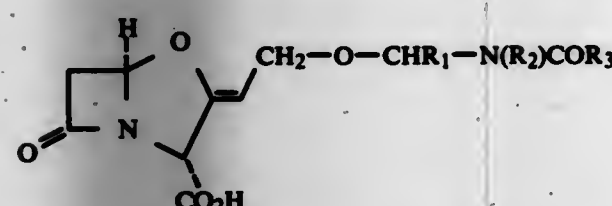
Claims priority, application United Kingdom, Jun. 15, 1978, 26989/78; Jun. 21, 1978, 27497/78; Jun. 28, 1978, 28209/78; Aug. 25, 1978, 34594/78

Int. Cl.³ C07D 498/04

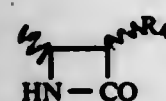
U.S. Cl. 424—272

100 Claims

1. A compound of the formula (I)



or a pharmaceutically acceptable salt or pharmaceutically acceptable ester thereof wherein R_3 is joined to R_1 to form a 4-, 5- or 6-membered ring or is joined to R_2 to form a 5- or 6-membered ring wherein R_1 is hydrogen or lower alkyl and R_2 and R_3 are hydrogen, lower alkyl or lower alkyl substituted by lower alkoxy, aryloxy, carboxylic acid or a pharmaceutically acceptable salt or lower alkyl or aralkyl ester thereof, or by amino or aryl, with the proviso that when R_2 is hydrogen, R_1 is not hydrogen and R_1 and R_3 are not joined to form a group of the sub-formula (a):



wherein R_4 is hydrogen or $\text{NH}\cdot\text{CO}\cdot\text{R}_5$, wherein R_5 is lower alkyl, lower alkoxy lower alkyl, aryl, aralkyl, aryloxyalkyl, lower alkoxy or aryloxy.

4,244,966

1,3-DIHYDRO-3-(2-HYDROXY-, 2-BROMO- OR 2-CHLOROETHYL)-2H-ISOINDOL-1-ONE DERIVATIVES

Wilbur Lippman, St. Laurent; Christopher A. Demerson, Montreal; Leslie G. Humber, Dollard des Ormeaux, and Jean-Marie Ferland, St. Laurent, all of Canada, assignors to American Home Products Corporation, New York, N.Y.
Filed Sep. 24, 1979, Ser. No. 78,546

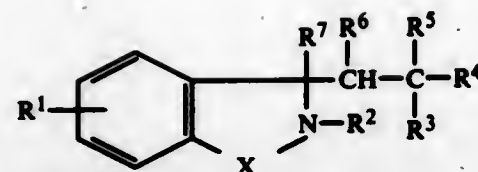
Int. Cl.³ A61K 31/40; C07D 209/46

U.S. Cl. 424—274

21 Claims

21. A pharmaceutical composition for treating hyperchlorhydria which comprises an effective amount of a compound of the formula

(c)



in which R^1 represents one or two substituents on the aromatic ring selected from hydrogen, lower alkyl, lower alkoxy, halo or trifluoromethyl; R^2 is hydrogen, lower alkyl or carboxymethyl; R^3 is hydrogen, lower alkyl or phenyl; R^4 is lower alkyl or phenyl; R^5 is bromo, chloro or hydroxy; R^6 is hydrogen or lower alkyl; R^7 is hydrogen or methyl and X is $\text{C}=\text{O}$; with the proviso that when R^1 , R^2 , R^6 and R^7 are hydrogen, R^3 and R^4 are methyl and X is $\text{C}=\text{O}$, then R^5 is bromo or chloro; and a pharmaceutically acceptable carrier therefor.

4,244,967

ANTIPHLOGISTIC PHARMACEUTICAL COMPOSITIONS CONTAINING A PHENYLETHANOLAMINE AND METHODS OF USE

Günther Engelhardt; Johannes Keck; Gerd Krüger, all of Biberach; Klaus Noll, Warthausen; Helmut Pieper, and Rainer Zimmermann, both of Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany
Filed Sep. 4, 1979, Ser. No. 72,553

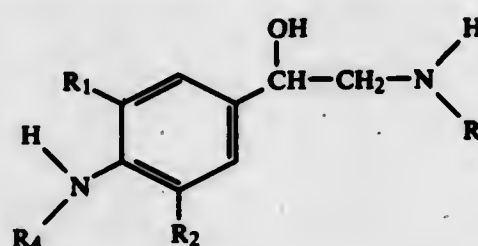
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838923

Int. Cl.³ A61K 31/17, 31/27, 31/275

U.S. Cl. 424—300

2 Claims

1. The method of counteracting inflammation in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective antiphlogistic amount of a compound of the formula



wherein

R_1 is hydrogen, fluorine, chlorine, bromine, iodine or cyano, R_2 is fluorine, cyano, trifluoromethyl, nitro or alkyl of 1 to 4 carbon atoms, R_3 is cycloalkyl or alkyl, each of 3 to 5 carbon atoms, and R_4 is hydrogen or $-\text{CO}\cdot\text{R}_5$, where R_5 is alkoxy of 1 to 5 carbon atoms, alkenyloxy of 2 to 5 carbon atoms, aryloxy of 6 to 10 carbon atoms, aralkoxy of 7 to 11 carbon atoms or amino, which may be mono- or di-substituted by alkyl of 1 to 5 carbon atoms, alkenyl of 2 to 5 carbon atoms, aryl of 6 to 10 carbon atoms and/or aralkyl of 7 to 11 carbon atoms, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,244,968

TREATMENT OF ARTHRITIS AND SUBSTANCES FOR USE IN SUCH TREATMENT

Charles A. Friedmann, Florence, Italy, assignor to Proter S.p.A., Milan, Italy
Filed Mar. 1, 1977, Ser. No. 773,406

Claims priority, application South Africa, Mar. 16, 1976, 76/1627

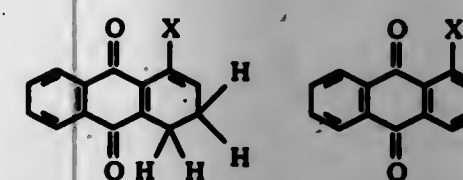
Int. Cl.³ A01N 37/10; A61K 31/245

U.S. Cl. 424—308

13 Claims

1. A method of treating the symptoms of arthritis comprising

administering an effective amount of an anthraquinone derivative derived from one of the following formulae A and B



in which formulae X is an $-\text{OH}$ or a $-\text{NH}_2$ group, in either of which there is a further substituent of at least one solubilising group selected from $-(\text{CH}_2)_n\text{COOH}$ groups, $-\text{CHOH}-(\text{CH}_2)_n\text{COOH}$ groups, $-\text{CO}-(\text{CH}_2)_n\text{COOH}$ groups, $-\text{CH}_2\text{O}-(\text{CH}_2)_n\text{COOH}$ groups, $-\text{CH}_2\text{O}-\text{CO}-(\text{CH}_2)_n\text{COOH}$ groups, $-\text{O}-(\text{CH}_2)_n\text{COOH}$ groups, $-\text{CH}_2\text{NH}_2$ groups, $-\text{CH}_2\text{NHMe}$ groups, $-\text{CH}_2\text{NMe}_2$ groups, $-\text{CH}_2\text{NHEt}$ groups, $-\text{CH}_2\text{NEt}_2$ groups, $-\text{SO}_3\text{H}$ groups, $-\text{SO}_2\text{NH}_2$ groups and pharmaceutically acceptable salts of such groups, wherein n is 0, or any integer not exceeding 10, and which may be substituted with no more than one additional hydroxyl group, or a pharmacological equivalent of a hydroxyl group, that must be in the 4,5 or 8 positions only, and in which there may be one or more inactive substituents selected from methyl, ethyl, propyl, butyl, methoxy and ethoxy groups, chlorine, bromine and iodine atoms, or the pharmacological equivalent of any such anthraquinone derivative.

4,244,969

HEART ACTIVE COMPOUNDS

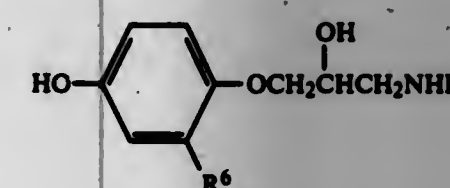
Einar I. Carlsson, Kungälv; Nils H. A. Persson, Dalby; Gustav B. R. Samuelson, Molnelycke, and Kjell I. L. Wetterlin, Sandby, all of Sweden, assignors to Aktiebolaget Hassle, Gothenburg, Sweden
Filed Feb. 13, 1975, Ser. No. 549,841

Claims priority, application Sweden, Feb. 14, 1974, 7401958

Int. Cl.³ A01N 33/02, 37/30; C07C 93/06
U.S. Cl. 424—330

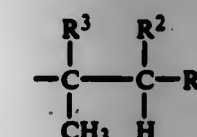
38 Claims

1. A compound of the formula I



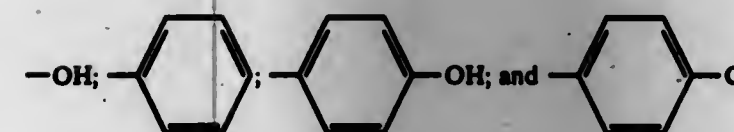
wherein

(a) R is selected from the group consisting of (i) cycloalkyl having at most 6 carbon atoms; and (ii)

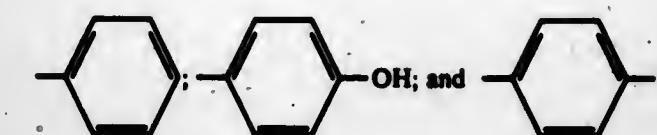


wherein

R^2 is selected from the group consisting of hydrogen and hydroxy; R^3 is selected from the group consisting of hydrogen and methyl; R^4 is selected from the group consisting of

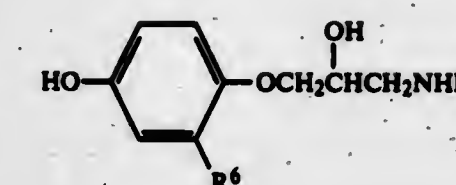


wherein R^2 is hydrogen, and R^4 is selected from the group consisting of

when R^2 is OH ; and

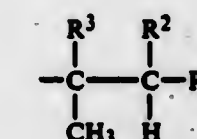
(b) R^6 is selected from the group consisting of hydrogen, halogen and allyl; or a pharmaceutically acceptable salt of a compound according to Formula I(a).

15. A method of stimulating the β -receptors of the heart by administering to mammals, including man, suffering from symptoms and signs of cardiac failure, in an amount sufficient to mitigate said symptoms, a compound of the general formula



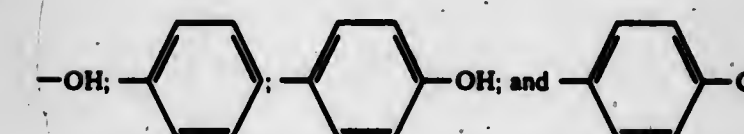
wherein

(a) R is selected from the group consisting of (i) cycloalkyl having at most 6 carbon atoms; and (ii)

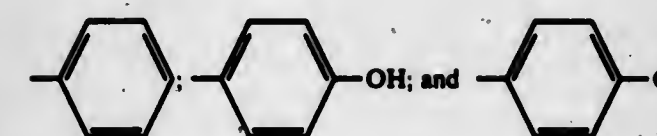


wherein

R^2 is selected from the group consisting of hydrogen and hydroxy; R^3 is selected from the group consisting of hydrogen and methyl; R^4 is selected from the group consisting of



wherein R^2 is hydrogen, and R^4 is selected from the group consisting of

when R^2 is OH ; and

(b) R^6 is selected from the group consisting of hydrogen, halogen and allyl; or a pharmaceutically acceptable salt of a compound according to formula I.

4,244,970

METHOD OF TREATING INFLAMMATION

Floyd E. Dewhirst, Cambridge, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

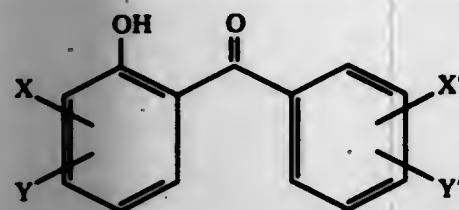
Filed Dec. 20, 1979, Ser. No. 105,717

Int. Cl.³ A61K 31/12

U.S. Cl. 424—331

20 Claims

1. A method of treating inflammation or pain in mammals, which method comprises administering to the mammal a therapeutically effective amount of a compound of the formula:



where X, Y, X', and Y' are hydrogen, halogen, C₁–C₈ alkyl, C₁–C₈ haloalkyl, C₁–C₈ alkoxy or combinations thereof and the nontoxic pharmaceutically acceptable salts thereof.

4,244,971

PROCESS AND PRODUCTS FOR THE MANUFACTURE OF CHEESE FLAVORED PRODUCTS

Robert J. Wargel, Winnetka; Steven P. Greiner, Waukegan, both of Ill., and David H. Hettinga, Orinda, Calif., assignors to Kraft, Inc., Glenview, Ill.

Filed Oct. 19, 1978, Ser. No. 952,813

Int. Cl.³ A23C 19/02, 19/12

U.S. Cl. 426—35

17 Claims

1. A process for the manufacture of cheese including the steps of preparing a protein concentrate comprising less than 50 percent moisture, the protein portion of the concentrate comprising more than 50 percent milk protein and containing lactose at a level which is soluble in the moisture present in the cheese, preparing a fat concentrate comprising at least 20 percent fat, proteolyzing a portion of milk protein in an amount equal to between about 5 percent and about 50 percent of the protein in the cheese with a protease used in cheese manufacture, lipolyzing milkfat in an amount of at least 5 percent of the fat in the cheese with a lipase used in cheese manufacture, forming a mixed fermentate of lipolyzed fat and proteolyzed milk protein, blending a minor amount of said mixed fermentate with said protein concentrate and said fat concentrate to provide a pre-mix, adding a cheese starter culture to the mixed fermentate or to the pre-mix to form a mixture thereof, and fermenting said pre-mix to develop acid and provide a cheese having a pH in the range of 5.3 to 4.9.

4,244,972

MANUFACTURE OF HARD, GRATING CHEESE

John D. Johnson, Evanston, Ill., assignor to Kraft, Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 874,359, Feb. 1, 1978, abandoned, which is a continuation of Ser. No. 716,526, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 650,287, Jan. 19, 1976, abandoned, which is a

continuation-in-part of Ser. No. 602,425, Aug. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 481,888, Jun. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 351,442, Apr. 16, 1973, abandoned. This application Nov. 6, 1978, Ser. No. 958,053

Int. Cl.³ A23C 19/02

U.S. Cl. 426—38

5 Claims

1. A method for the manufacture of hard, grating cheese comprising providing curd particles in whey, separating said whey from said curd particles, holding said curd particles under pressure and fermenting said curd particles for a period of time (sufficient that the pH of said curd is less than) of from about 4 to about 20 hours at a temperature of from about 110° F. to about 118° F. to develop acidity and to provide a pH of

from about 4.8 to about 5.1 and so that the fermentable sugars are substantially metabolized, permitting said curd particles to mat during the development of said pH, cooling said curd to a temperature of from about 90° F. to about 105° F., milling said cooled curd, adding salt to said milled curd, said salt being added to said curd at a level sufficient to provide from about 2.5 to about 3.5 percent by weight of salt in said curd during curing of said curd, placing said salted curd into containers, pressing said curd in said containers, withdrawing whey from said curd during said pressing until the moisture level (desired in the finished cheese is attained) is from about 28 percent to about 34 percent by weight of said curd and curing said curd in said containers for a sufficient period of time to provide a hard, grating cheese.

4,244,973

PROCESS FOR PRODUCING A DETOXIFIED RAPESEED PROTEIN CONCENTRATE

Wilhelmus H. van Megen, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Jun. 20, 1979, Ser. No. 50,384

Claims priority, application United Kingdom, Jun. 26, 1978, 27852/78

Int. Cl.³ A23J 3/00

U.S. Cl. 426—49

18 Claims

18. A process for producing a detoxified rapeseed protein concentrate, which comprises:

- producing a mixture consisting essentially of rapeseed meal, water, myrosinase and ascorbic acid, in which the ratio of water:meal ranges from 1.5:1 to 3:1, the proportion of myrosinase is at least equal to that naturally present in rapeseed meal and the proportion of ascorbic acid ranges from 0.1–1.0%, based on the weight of the meal,
- autolysing said mixture for a period of time and at a temperature such that hydrolysis of glycosinolates present in the meal is achieved,
- adding to the autolysed mixture an appropriate proportion of a polar, organic solvent to obtain a solvent phase having a water content ranging from 20–40%,
- extracting the autolysed mixture with the polar, organic solvent for a period of time and at a temperature sufficient to achieve an efficient extraction of toxic components and sugars from the meal,
- separating the solvent phase which contains the products of the hydrolysis of glycosinolates from the protein-containing residue, and
- drying the residue to obtain a rapeseed protein concentrate substantially free of toxic components.

4,244,974

MULTI-LAYER ALIMENTARY PASTE

Junichi Minami, Tondabayashi; Minoru Shigeto, and Sadaaki Ishibashi, both of Shiga, all of Japan, assignors to Nissin Shokuhin Kaisha, Limited, Osaka, Japan

Filed Dec. 27, 1978, Ser. No. 973,703

Claims priority, application Japan, Dec. 27, 1977, 52-160627; Dec. 27, 1977, 52-160628

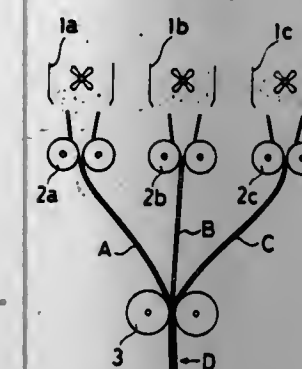
Int. Cl.³ A21D 2/08, 2/26, 2/18

U.S. Cl. 426—94

12 Claims

1. An alimentary paste product comprising, as the basic component thereof, wheat flour, and being in the form of a laminate of a plurality of layers including a pair of outer layers and at least one inner layer sandwiched therebetween, each

layer of the laminate being formed from an alimentary paste and wherein the ratio of the amount of starch contained in each



of said outer layers to the amount of protein contained in each of said outer layers is greater than that of an inner layer.

4,244,975

AQUEOUS, PROTEINACEOUS, CLEANING

CONCENTRATE FOR THE CLEANSING OF FOODSTUFF

Sigard Herbst, Cologne-Ortheim, and Rolf Bletz, Monheim, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holtthausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 948,221, Oct. 3, 1978, Pat. No. 4,177,294. This application Oct. 24, 1979, Ser. No. 87,679

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856086

Int. Cl.³ A23C 9/14

U.S. Cl. 426—271

10 Claims

1. An aqueous, proteinaceous concentrate for the cleansing of foodstuffs of animal or vegetable origin, consisting of:

- from 0.1% to 20% by weight of water-soluble to water-dispersible proteins,
- from 0 to 15% by weight of a water-soluble sequestering agent,
- an effective amount of a preservative selected from the group consisting of (1) from 0.01% to 1% by weight of water-soluble food preservatives and (2) from 5% to 30% of ethanol,
- from 0 to 0.5% by weight of food colors and food odorants, and
- the remainder to 100%, water.

4,244,976

INTERMEDIATE-MOISTURE FROZEN FOODS

Marvin L. Kahn, and Kuttikandathil E. Eapen, both of Buffalo, N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 917,379, Jun. 20, 1978, abandoned, Ser. No. 871,995, Jan. 24, 1978, Pat. No. 4,154,863, and Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652. This

application Mar. 26, 1979, Ser. No. 23,931

Int. Cl.³ A23L 1/32

U.S. Cl. 426—330.1

16 Claims

1. A microbiologically stable sugared egg yolk food product comprising egg yolk, water, sugar, and flavoring, wherein the product is substantially non-crystalline at freezer temperatures and comprises from about 15 to 55% water, sugar in a ratio to water of about from 0.8–2:1 and a minor but effective amount of flavoring, wherein the solutes content is adequate to provide the product with a water activity of about 0.8–0.9, the amount of fat is less than the amount of water, and said sugar component comprising at least about 50% dextrose plus fructose based upon the total sugar content, wherein the foregoing ingredients are effective to provide an egg yolk product which after storage at freezer temperatures is spoonable after a thawing period at room temperature of about 5 to 10 minutes.

4,244,977

INTERMEDIATE-MOISTURE FROZEN FOODS

Marvin L. Kahn, Williamsville, and Kuttikandathil E. Eapen, Kenmore, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 917,379, Jun. 20, 1978, abandoned, Ser. No. 871,995, Jan. 24, 1978, Pat. No. 4,154,863, and Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652. This application Mar. 26, 1979, Ser. No. 23,973

Int. Cl.³ A23G 9/00

U.S. Cl. 426—330.2

13 Claims

1. A microbiologically stable ice cream food product comprising milk solids water, sugar, flavoring and fat, wherein the product is substantially non-crystalline at freezer temperatures and comprises about from 15 to 55% water, sugar in a ratio to water of about from 0.8–2:1 and a minor but effective amount of flavoring, wherein the solutes content is adequate to provide the product with a water activity of about 0.8 to 0.9, the amount of fat is less than the amount of water, and said sugar is at least about 50% of dextrose plus fructose is based upon the total sugar content, and wherein the foregoing ingredients are effective to provide a spoonable product at about 10° F.

4,244,978

ATTACHMENT INHIBITION OF MEAT SPOILAGE ORGANISMS TO MEAT

Kent S. Barta, 214 N. Sarah, St. Louis, Mo. 63103

Continuation-in-part of Ser. No. 951,194, Oct. 13, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 67,682

Int. Cl.³ A23B 4/08

U.S. Cl. 426—332

3 Claims

2. The process of avoiding spoilage of freshly slaughtered meat comprising the steps of forming an aqueous solution of chlorine dioxide in a concentration of 0.04–1.0 ppm, said concentration being great enough to substantially inhibit the attachment of meat spoilage organisms to said meat and less than that which is substantially toxic to such meat spoilage organisms; washing, with said solution, freshly killed meat carcasses within a time prior to substantial attachment of such meat spoilage organisms to said meat carcasses, and thereafter intermittently applying said solution to said carcasses during chilling.

4,244,979

OVEN-TYPE APPARATUS AND METHOD

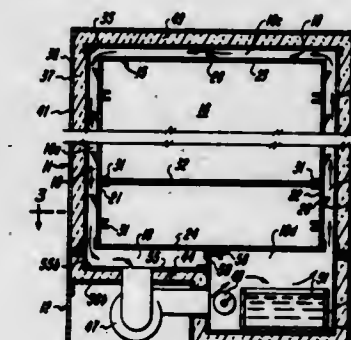
Ronald R. Roderick, Evergreen, Colo., assignor to National Equipment Corporation, Denver, Colo.

Filed May 10, 1979, Ser. No. 37,759

Int. Cl.³ A23L 1/00; C12C 3/04; A23B 4/04

U.S. Cl. 426—418

27 Claims



1. Oven-type apparatus for food and the like comprising: inner wall means defining an inner chamber and outer wall means including outer wall portions spaced from opposite inner wall portions of said inner wall means defining an air circulating passage extending in a loop around said inner

chamber through which a stream of circulating air is adapted to be passed, said passage including both generally horizontal and generally vertical passage sections, a pressure end and a suction end opposite said pressure end, said wall portions of said inner wall means having a plurality of restrictive apertures in both of said passage sections, said apertures being sufficiently narrow to confine circulating air substantially to said passage without a significant amount of airflow in direct contact with a food and the like disposed in said chamber and suitably positioned along said generally horizontal and generally vertical sections between said pressure and suction ends to enable moisture and heat to pass between said passage and said chamber via said apertures, to control moisture in the chamber and to establish a substantially uniform temperature throughout said chamber; means coupled between said pressure end and said suction end of said passage for moving a stream of circulating air via said passage; and means for heating said circulating air to a selected temperature.

4,244,980

FLOUR COMPOSITIONS

Leonard G. Fischer, Elkridge, Md.; Peter Kovacs, Alsenberg, Belgium; Alvin W. Russell, Lawrence, N.Y., and John E. Vey, Manchester, Md., assignors to Merck & Co., Inc., Rahway, N.J. and DCA Food Industries, Inc., New York, N.Y.

Filed May 10, 1977, Ser. No. 795,476
Int. Cl.³ A21D 2/18

U.S. Cl. 426—554

16 Claims

1. In a yeast-raised dough composition containing a soft wheat flour or a clear flour, the amount of soft wheat flour being up to 100 weight % of the total flour and the amount of clear flour being up to about 70 weight % of the total flour, the improvement wherein the pH of the soft wheat flour and of the clear flour is reduced to about 6.0 or below, and wherein the composition contains from about 0.20 to about 1.00 part of alkali metal calcium alginate per 100 parts of soft wheat flour and/or clear flour in the composition.

4,244,981

NON-DAIRY, AERATED FROZEN DESSERT CONTAINING CITRUS JUICE VESICLES

Jon R. Blake, Brooklyn Center, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed May 31, 1979, Ser. No. 44,798
Int. Cl.³ A23G 9/02, 9/04

U.S. Cl. 426—567

20 Claims

1. A non-dairy composition useful in the static-freezing preparation of a frozen dessert which is spoonable at freezer temperatures and which is heat-shock stable, comprising:

- A. from about 50% to 98% by weight of a comestible base prepared by:
- blending to form a blend
 - from about 25% to 65% by weight of the base of citrus juice vesicles having a moisture content of between 89% to 96% by weight of the vesicles;
 - from about 7% to 45% by weight of the base of a nutritive carbohydrate sweetening agent;
 - sufficient edible non-volatile acid or sodium salt thereof to provide the base with a final pH ranging between about 2.5 to 5.5;
 - from about 1% to 5% by weight of the base of an ungelatinized starch;
 - from about 8% to 60% by weight of the base of water; said blend having a Brookfield viscosity of between about 3,000 to 6,000 cp. at 190° F. and a water soluble pectin content of between about 0.1% to 0.4%; and
 - cooking the blend at a temperature of between 180° F. and 280° F. to form a cooked comestible base having;

- a moisture content of between about 30% to 60% by weight of the comestible base;
 - a Brookfield viscosity of between 7,000 and 10,000 cp. at 190° F.;
- B. from about 0.4% to 4% by weight of an acid-stable whipping agent;
- C. from about 0.05% to 0.5% by weight of an acid-stable polysaccharide gum;
- D. from about 1% to 15% of an edible fatty triglyceride oil; and
- wherein the dessert composition has a moisture content of about 48% to 65%.

4,244,982

PROCESS FOR PREPARING A FOOD MOUSSE

Robert Menzi, Geneva, and Georges Dove, Carouge, both of Switzerland, assignors to W. R. Grace & Co., New York, N.Y. Continuation of Ser. No. 820,121, Jul. 29, 1977, abandoned. This application Mar. 2, 1979, Ser. No. 16,762

Claims priority, application Switzerland, Aug. 5, 1976, 10045/76

Int. Cl.³ A23L 1/32

U.S. Cl. 426—568

12 Claims

1. A food product consisting of an aerated coagulated albumen and having a food dispersed herein, and having a spongy, cellular foam structure, produced by the process comprising:

- preparing a puree of a food and maintaining said puree at greater than about 60° C.;
- vigorously mixing an albumen proteinaceous substance, said mixing being sufficient to incorporate a substantial amount of air therein and yield a substance capable of substantially holding its foam shape;
- maintaining said puree at greater than about 60° C. by the addition of heat and incorporating said mixed albumen proteinaceous substance into said puree with a non-vigorous type of mixing for a period of 1 to 5 minutes whereby said albumen proteinaceous substance is coagulated during such mixing to form a set cellular foam structure food product which can be subjected to sterilization or pasteurization temperature without changing the aerated low density structure of said food product.

4,244,983

PREPARATION OF LOW FAT IMITATION CREAM CHEESE

Donald B. Baker, Tulsa, Okla., assignor to The Pro-Mark Companies, Tulsa, Okla.

Filed Feb. 6, 1979, Ser. No. 9,466
Int. Cl.³ A23C 19/02, 19/10, 19/12

U.S. Cl. 426—582

8 Claims

1. A method for making a low fat cheese product which resembles cream cheese in appearance, texture and taste comprising the steps of:

- admixing milk, a milk fat-containing carrier having a butterfat content of at least 30% by weight and a stabilizer, the relative proportions of milk and milk fat-containing carrier being selected to provide a fat content in the cheese product from about 0.7% to less than about 2% by weight;
- heating said mixture to a temperature in the range from about 170° to 185° F. for a time sufficient to form a uniform substantially homogeneous mixture and to effect pasteurization;
- admixing dry cottage cheese curd and said milk fat-containing carrier-stabilizer mixture to coat said cottage cheese curd therewith and to form a curd mixture wherein said curd comprises from 70 to 85% by weight of said curd and milk fat-containing carrier-stabilizer mixture;
- agitating said curd and milk fat-containing carrier-stabilizer mixture to form a substantially uniform and fluid mixture while maintaining said curd mixture at a temperature in the range from about 90° to 100° F.;

- adding flavorants comprising buttermilk flavor and bacterial culture to said agitated curd mixture from step (d);
- adding flavorants comprising salt, an edible acid and lipase modified butterfat products and a preservative comprising potassium sorbate to said mixture at any time prior to step (g); and
- homogenizing said curd mixture at pressures in the range 500 to 5000 psig.

4,244,984

DECOLORIZATION OF PINK GRAPEFRUIT JUICE

Stegfried Regling, Raynham, Mass., assignor to Ocean Spray Cranberries, Inc., Middleborough, Mass.

Filed Apr. 20, 1979, Ser. No. 32,094

Int. Cl.³ A23L 2/30

U.S. Cl. 426—599

3 Claims

1. A method of decolorizing pink grapefruit juice or concentrate which comprises preparing a vacuum filtration bed of coarse particulate diatomaceous earth of which at least 80% by weight has a particle size above 10 micrometers,

and subjecting to vacuum filtration at a pressure differential from 10 to 25 inches of mercury and at a flow rate from 0.1 to 0.5 gal/min/ft.sq. through said bed a pink grapefruit juice or concentrate to form a product having its citrus redness decreased by 10–25 units and its citrus yellowness decreased by 1–10 units as measured on a Hunter citrus colorimeter and having its total pulp content decreased by 50 to 90% by weight.

3. A method as claimed in claim 1 or 2 which method comprises the additional step of blending the product with white grapefruit juice to form a mixture containing up to 50% by weight of said product.

4,244,985

METHOD OF CURING THERMOSETTING PLASTIC POWDER COATINGS ON ELONGATED METALLIC MEMBERS

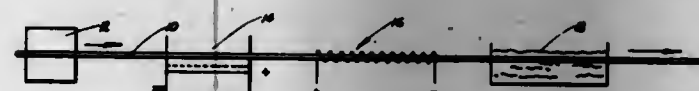
Hart F. Graff, Middletown, and Christy Christ, Trenton, both of Ohio, assignors to Armaco Inc., Middletown, Ohio

Continuation-in-part of Ser. No. 576,881, May 12, 1975, abandoned. This application Apr. 22, 1976, Ser. No. 679,386

Int. Cl.³ B05D 1/06

U.S. Cl. 427—27

10 Claims



1. A method of coating an elongated metallic member with a thermosetting plastic powder coating comprising the steps:

- cleaning the surface of said elongated member;
- applying to the surface of said elongated member a coating of thermosetting plastic powder having a specific curing time and curing temperature;
- passing said coated elongated metallic member through an induction coil to rapidly heat said member and thereby said coating above said curing temperature sufficient to reduce curing time significantly, said induction coil having an effective length to diameter ratio of at least 9 and an effective length of at least 250 millimeters, and
- cooling said coated elongated metallic member.

4,244,986

METHOD OF FORMING SODIUM BETA-AL₂O₃ FILMS AND COATINGS

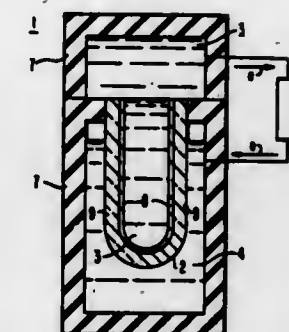
Deborah M. Paruso, Pittsburgh, and Bulent E. Yoldas, Churchill, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 24, 1979, Ser. No. 32,796

Int. Cl.³ B05D 5/12; H01M 4/36

U.S. Cl. 427—126.4

13 Claims



1. A method of making a highly ion-conductive, supported sodium-Beta alumina thin electrolyte film, which comprises the steps of:

- forming a fluid, sodium Beta-alumina precursor sol having an Al concentration equivalent to between about 0.5 and about 2.5 weight percent Al₂O₃, by the steps comprising, first reacting Na(OR) and Al(OR)₃ alkoxide compounds, where R is an alkyl group containing from 1 to 6 carbon atoms, and then peptizing and completely hydrolyzing the reactants; in a manner such that a Na compound is reacted with an Al compound to form a chemical bond between Na and Al through oxygen to form a slurry of non-crystalline, electrically surface active polymers containing Na, Al, OR, and OH groups before complete hydrolysis, and where a peptizing acid is added to the reactants and adsorbed on the polymer surface at some point in sol formation after alkoxide reaction to provide a non-crystalline, homogeneous, agglomerate-free, fluid sol;
- applying the fluid, non-crystalline precursor sol as a film to a substrate; and finally
- heating the precursor film at between 1200° C. and about 1450° C., to cause a phase change and formation of a uniform, low porosity, solid material comprising crystalline sodium Beta-alumina in film form firmly bonded to the substrate, where the solid film has pores with radii of up to about 250 Angstrom units, and where, in step (A) the Na compound and the Al compound are added in an amount effective to provide a mole ratio of Na:Al of from 1:5 to 1:1 in the final crystalline film formed after heating in step (C).

4,244,987

MAGNETIC STORAGE MEDIUM

Ingrid Aydin, Neuried; Karlchristian Schillfarth, Planegg, and Bernard Seidel, Garmisch-Partenkirchen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 851,402, Nov. 14, 1977, abandoned, and a continuation-in-part of Ser. No. 451,912, Mar. 18, 1974, abandoned. This application May 8, 1979, Ser. No. 37,137
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1973, 2314757

Int. Cl.³ H01F 10/02

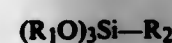
U.S. Cl. 427—130

1 Claim

1. A process for the preparation of a magnetic recording and storage material having a flexible layer support carrying and having adhered thereto a layer comprised of a film-forming polymer composition acting as a binder for ferromagnetic particles dispersed in the layer,

comprising the steps of dispersing ferromagnetic particles selected from the group consisting of CrO₂ and Fe₂O₃

particles in a film-forming composition which contains at least 50 percent by weight of a copolymer wherein the copolymer used contains a polymerizable alkoxy silane compound which is based on the formula



in which R_1 represents an alkyl group containing 1 to 9 carbon atoms, and R_2 represents a group which contains a copolymerizable double bond, having a backbone chain and having attached to the backbone chain recurring side chain trialkoxysilane groups

with one or more comonomers free of alkoxy silane groups selected from the group consisting of vinyl chloride, vinylidene chloride, vinyl acetate, vinyl ethers, acrylic acid esters, methacrylic acid esters, acrylonitrile and styrene; wherein the said copolymer based on the weight of the copolymer contains 3 to 10% by weight of trialkoxysilane units, said trialkoxysilane units being derived from trialkoxysilane compounds which contain copolymerizable carbon-carbon double bonds selected from the group consisting of vinyl trimethoxy silane, vinyl triethoxy silane, vinyl tri-tert. butoxy silane, methacryloxy-propyl trimethoxy silane,

and said film-forming composition contains from 0-50 percent by weight of a polymeric binder composition free from said alkoxy silane compounds, coating the dispersion of magnetizable material in the composition on a flexible support, and hardening the composition by cross-linking the side chains by a catalyzed reaction with a catalyst selected from the group of acid catalyzed-cross-linking catalysts and alkaline catalyzed-cross-linking catalysts.

4,244,988

METHOD OF COATING LINEAR POLYESTER WITH AQUEOUS LATEX

Geoffrey M. Dedwell, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland
Continuation of Ser. No. 777,285, Mar. 11, 1977, abandoned.

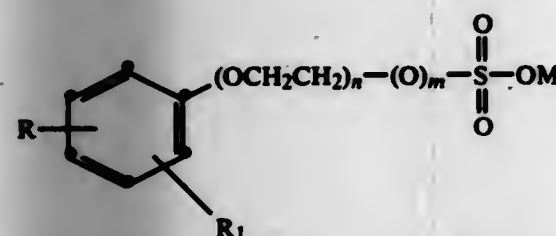
This application Aug. 21, 1978, Ser. No. 935,397
Claims priority, application United Kingdom, Apr. 14, 1976, 15165/76

Int. Cl.³ B05D 3/12; G03C 1/78

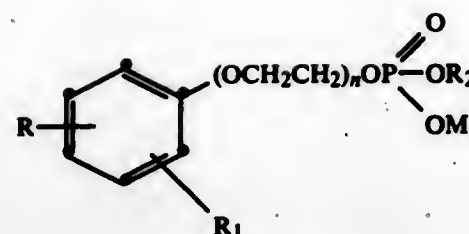
U.S. Cl. 427-173

8 Claims

1. In a method of preparing film base material consisting of biaxially oriented synthetic linear polyester of highly hydrophobic character which comprises coating as a layer on to a layer-respective film of linear polyester an aqueous latex of a copolymer which has been prepared by copolymerizing vinylidene chloride, an alkyl acrylate or methacrylate and optionally a copolymerizable acid and/or at least one allyl, methallyl or vinyl monomer which comprises either an active halogen group or an active methylene group, the improvement which comprises adding to said latex, a mixture of an anionic surfactant which is either an alkyl aryl polyether sulfate or sulfonate of the formula



or an alkyl aryl polyether phosphate of the formula



wherein

R is alkyl having 6 to 10 carbon atoms,

R_1 is hydrogen or alkyl having 1 to 5 carbon atoms,

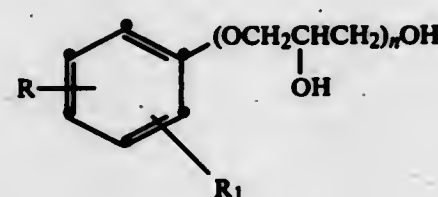
M is hydrogen, an alkali metal or ammonium,

R_2 is hydrogen, an alkali metal, ammonium or alkyl having 1 to 5 carbon atoms,

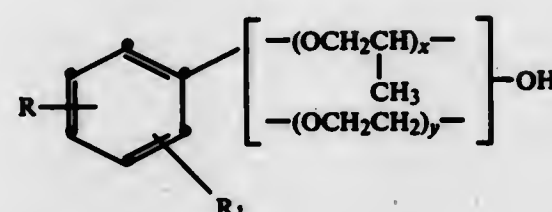
m is 0 or 1 and

n is 3 to 15,

and a nonionic surfactant which is an alkyl aryl polyalkylene oxide containing at least some hydroxypropylene oxide derived units of the formula



or of the formula



wherein

R , R_1 and n have the meanings assigned to them above,

x is 1 to 4, and

y is 3 to 10,

the proportions of nonionic to anionic surfactant being from 1 to 50 by weight up to 50 to 50 by weight, the total amount of surfactant present in the aqueous medium being up to 3%W/V of the monomers used, and then drying the coated layer and completing the orientation if it has not already been biaxially oriented.

4,244,989

METHOD OF CLEANING AND RUST-PROTECTING A METAL SURFACE

Arie Noomen, Voorhout, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Apr. 7, 1978, Ser. No. 894,414

Claims priority, application Netherlands, Apr. 12, 1977, 7703938

Int. Cl.³ B05D 1/12, 3/12

U.S. Cl. 427-180

13 Claims

1. A method of cleaning a corrodible metal surface and depositing a layer of corrosion resistant salt thereon prior to painting which comprises abrading the surface with abrasive particles having a coating of a corrosion-resistant salt bonded thereto with a binder which is compatible with the paint to be applied, said salt having a solubility in water at 20° C. of not more than 20 grams per liter.

13. An abrasive particle coated with a binder and a corrosion-resisting salt having a solubility of not more than 20 grams per liter in water at 20° C.

4,244,990

PROCESS FOR THE PRODUCTION OF A MELAMINE RESIN COATED PAPER

Herbert Mayerhoffer, Vienna, Austria, assignor to Österreichische Haig-Werke Aktiengesellschaft, Vienna, Austria

Filed May 3, 1979, Ser. No. 35,659

Claims priority, application Austria, May 3, 1978, 3233/78; Jul. 12, 1978, 5035/78; Nov. 23, 1978, 8386/78

Int. Cl.³ B05D 3/02, 1/28; B32B 27/08, 27/42

U.S. Cl. 427-211

17 Claims

1. A process for the production of a melamine resin coated paper for formation of hot pressed, scratch resistant surface layers on laminated synthetic and wooden materials comprising

- (1) impregnating a paper by coating such with a solution of a resin selected from the group consisting of (a) a urea resin which is water-soluble in a still unhardened state, and (b) an aminoplast rich in ureas and water-soluble in the still unhardened state;
- (2) hot drying the impregnated paper;
- (3) coating on at least one side of the impregnated paper a solution of a melamine resin which is water-soluble in the unhardened state, and then
- (4) hot drying the melamine coated resin paper to a residual moisture content between 5 and 10% by weight; where the degree of condensation of said resin used in (1) is higher than that of said melamine resin used in (3) and where the adsorption of said resin by said paper (1) is kept lower than is required for formation of a resin film covering the surface of said paper and where said hot drying (2) is to an extent that said resin impregnating said paper has been hardened at least to a point that it is substantially no longer soluble in said coating solution of said melamine resin used in (3).

4,244,991

METHOD OF APPLYING WATER PAINT

Hideo Ezaki, Toyota; Eiichi Imao, Nagoya; Takayuki Masuyama, Toyota, and Mamoru Sugizawa, Hekinan, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 749,375, Dec. 10, 1976. This application May 30, 1978, Ser. No. 910,907

Claims priority, application Japan, Dec. 15, 1975, 50-149239

Int. Cl.³ B05D 3/02

U.S. Cl. 427-226

1 Claim

1. The method of improving the sagging and/or popping characteristics of a paint composition after it has been applied to a surface, which method comprises

- (a) utilizing as the applied paint composition a water-dispersible paint or a blend of a water-dispersible paint and a water-soluble paint, which paint composition contains a polymer which increases its viscosity due to the addition of hydrogen ions,
 - (b) incorporating into said paint composition, before the paint composition is applied to a surface, a compound that will not increase the hydrogen ion composition of said paint composition unless said compound is heated, said compound being $(NH_4)_2CO_3$ or NH_2COONH_4 ,
 - (c) heating said paint composition and said compound after they have been applied to a surface so as to thereby cause said compound to increase the hydrogen ion concentration of said paint composition,
- whereby the sagging and/or popping characteristics of said applied paint composition are improved.

1002 O.G.—30

4,244,992

ANIMAL AND VEGETAL TISSUES PERMANENTLY PRESERVED BY SYNTHETIC RESIN IMPREGNATION

Gunther von Hagens, Jahnstr. 6, 6900 Heidelberg, Fed. Rep. of Germany

Division of Ser. No. 851,101, Nov. 14, 1977. This application Jul. 5, 1979, Ser. No. 55,076

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710147; May 7, 1977, 2720607

Int. Cl.³ A01N 1/00

U.S. Cl. 428-15

4 Claims

1. A preserved, substantially anhydrous animal or vegetal tissue having a water-soluble synthetic resin substantially uniformly distributed therein prepared by:

- (a) replacing the water content of a water-bearing body of animal or vegetal tissue with an organic solvent volatile in a vacuum at ambient temperature;
- (b) holding said body bearing said solvent in contact with a fluid precursor composition in a vacuum and at said temperature until said solvent is volatilized and replaced in said body by said composition, said composition being capable of being polymerized into a solid, water-insoluble, synthetic resin;
- (c) removing adhering precursor composition from the surface of said body; and
- (d) holding said body under polymerization conditions until said precursor composition in said body is cured to said solid resin.

4,244,993

METHOD FOR MAKING SIMULATED MARBLE AND PRODUCT OF THE METHOD

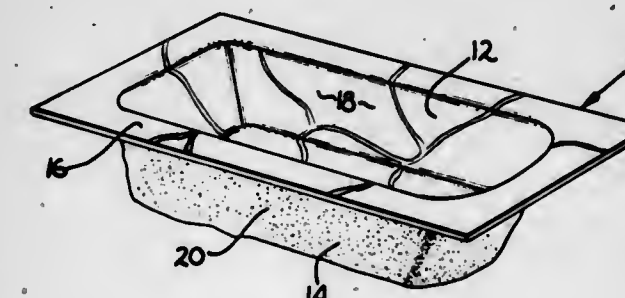
William J. Platka, III, Beverly Hills, and Richard A. Ganger, Carmel Valley, both of Calif., assignors to P & G Products, Inc., Van Nuys, Calif.

Filed Jul. 10, 1979, Ser. No. 56,342

Int. Cl.³ B29C 13/00, 21/00; B29D 9/00; B29G 7/00

U.S. Cl. 428-15

26 Claims



1. A process for making a reinforced simulated marble or onyx product comprising the step of:

- (a) providing a mold;
- (b) applying a thin and substantially clear, hardenable resin coating on said mold;
- (c) applying a first layer of a mixture of thermosetting polyester resin and filler over said hardenable resin coating, said polyester resin and filler selected such that said first layer is essentially translucent;
- (d) permitting said first layer to partially cure;
- (e) forming at least one groove in said partially cured first layer;
- (f) depositing visible veins of a mixture of finely divided filler and binder in said groove;
- (g) applying a layer of fibers over said first polyester resin/filler layer and said veins;
- (h) applying a second layer of polyester resin and filler over said fibers; and
- (i) permitting said various layers to cure thereby forming said product.

4,244,994

LAMINATED ARAMID FIBER FRICTION MEMBERS
James T. Trainer, Huntington, and Stanley F. Covaleski, Milford, both of Conn., assignors to Raybestos-Manhattan, Inc., Stratford, Conn.

Filed Jan. 21, 1979, Ser. No. 50,597
Int. Cl.² D04H 3/02, 3/07; B32B 31/04

U.S. Cl. 428—37

53 Claims U.S. Cl. 428—103



1. A friction member comprising a friction element formed of aramid fibers having a decomposition temperature of at least 850° F. impregnated with a heat-curable cement and disposed in a configuration to form a first preform, and a reinforcing element comprising non-aramid fibers impregnated with a heat-curable cement and disposed in a configuration to form a second preform, said cement with which said non-aramid fibers are impregnated being compatible with that with which said aramid fibers are impregnated, said first and second preforms having been superimposed one upon the other and subjected to heat and pressure to compress said preforms, to cure said cement and to bond said preforms together to form a unitary friction member.

4,244,995

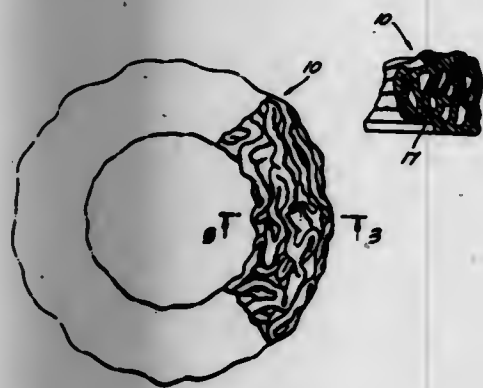
ONE PIECE MOLDED PICTURE FRAME AND METHOD OF MAKING THE SAME

Gerald E. W. Gunn, 3126 Division St., Los Angeles, Calif. 90065

Filed Mar. 28, 1979, Ser. No. 24,527
Int. Cl.³ A47G 1/06; B29C 17/07; B32B 3/28

U.S. Cl. 428—65

6 Claims



1. A picture frame formed in one piece comprising a ring of interfolded corrugations of tubular plastic having a generally planar rear face.

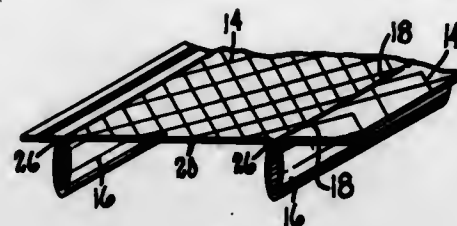
4,244,996

PATCHWORK FABRIC CONFIGURATION AND PROCESS

Jennifer A. Maloney, 4800 Oxborough Ln., Bloomington, Minn. 55437

Filed Feb. 2, 1979, Ser. No. 8,489
Int. Cl.² B32B 7/08

5 Claims



3. A method for simulating patchwork articles, said method utilizing a unitary piece of flexible fabric having first and second sides, the first side having imprinted thereon at least two defined regions of various designs and colors, comprising the steps of:

- abutting a linear portion in one defined region to a linear portion in a second defined region so that a fold area, originally positioned intermediate said linear portions, is gathered on the second side of said fabric; and
- fixedly adjoining said defined regions to one another, along an abutment defined by said abutting linear portions.

4,244,997

METHOD OF TREATING INTERLAYER MATERIAL AND LAMINATED WINDOWS COMPRISING INTERLAYER MATERIAL SO TREATED

Dennis S. Postupack, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 16, 1978, Ser. No. 887,563

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.² B32B 3/00

U.S. Cl. 428—174

11 Claims



1. A laminated window comprising an outer curved sheet of relatively rigid, transparent glazing material selected from the group consisting of glass, polycarbonates, acrylic resins, hard polyurethanes and polyesters and a substantially uniformly stressed, smooth layer of substantially uniform thickness of a relatively flexible plastic material suitable for use as an interlayer for laminated windows selected from the group consisting of plasticized polyvinyl butyral, polyurethanes, ionomers and silicones laminated to said outer sheet, said layer of relatively flexible plastic material having a coating of graded intensity along a longitudinal edge portion thereof, the intensity increasing transversely toward its longitudinal edge comprising said longitudinal edge portion, said layer being more uniformly stressed and of more uniform thickness than a corresponding layer subjected to non-uniform stretching thereof during the handling prior to its assembly and lamination to form said window and being essentially free of rub marks formed when a printing roller is axially reciprocated while rolling against said layer to print said coating of graded intensity prior to said assembly and lamination.

4,244,998

PATTERNED LAYERS INCLUDING MAGNETIZABLE MATERIAL

Andrew L. Smith, London, England, assignor to EMI Limited, Hayes, England

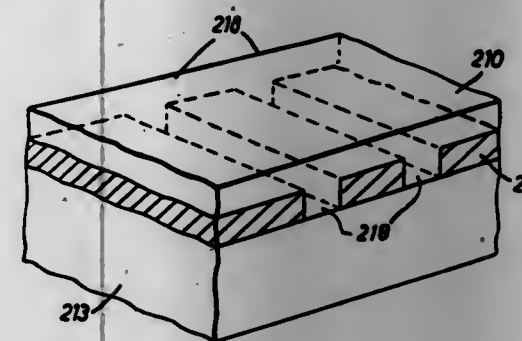
Filed Nov. 30, 1977, Ser. No. 856,135

Claims priority, application United Kingdom, Dec. 6, 1976, 50846/76; Jul. 21, 1977, 30720/77

Int. Cl.² B32B 7/02

U.S. Cl. 428—195

9 Claims U.S. Cl. 428—224



1. A security document including on a support a security feature layer formed by two overlaid coatings of differently pigmented materials of different magnetic susceptibility, the coating including the material of higher susceptibility breaking through the other coating to an outward surface thereof and at distinct fixed positions in the layer to form a pattern of the pigments one against the other, the material of higher susceptibility also forming a pattern of magnetizability variation in a layer region adjacent said outward surface of the pattern corresponding to said pattern of pigments, the fixed positions of the patterns providing the security feature.

4,244,999

METHOD OF MANUFACTURING A CUT TEXTILE PIECE POSSESSING VARIABLE STIFFNESS OVER ITS SURFACE

Zdenek Koula, Regensdorf, Switzerland, assignor to Stotz & Co., Zürich, Switzerland

Filed Feb. 3, 1977, Ser. No. 765,454

Claims priority, application Switzerland, Feb. 19, 1976, 2056/76

Int. Cl.³ B32B 3/00, 27/14

U.S. Cl. 428—196

21 Claims

1. A method of manufacturing a cut textile piece, comprising the steps of:

- producing a dimensionally stable web-like flat textile structure;
- forming from said flat textile structure cut textile pieces;
- applying to at least one such cut textile piece a preparation in a predetermined pattern and in a predetermined quantity; said preparation containing at least one substance capable of forming a film at least during the employed processing temperature, said film possessing a Shore hardness A of at least 50 at a temperature of about 20° C. and at a temperature of about 100° C. exhibiting a Shore hardness A which at most amounts to 80% of the hardness value measured at 20° C., wherein said film does not melt below about 180° C.; and
- then drying the thus processed cut textile piece, to thus obtain a wash-resistant variable stiffness over the surface of such cut textile piece.

16. The product produced according to the method of claim 1.

4,245,000

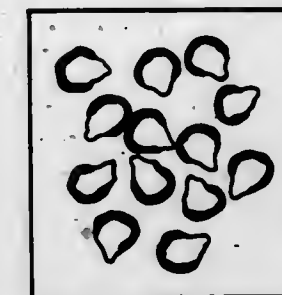
VISCOSE RAYON

Gregory C. Bockno, Media, Pa., assignor to Avtex Fibers Inc., Valley Forge, Pa.

Continuation-in-part of Ser. No. 793,572, May 4, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,150. The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.

Int. Cl.³ D03D 3/00

21 Claims



1. A regenerated cellulose fiber having a wet tenacity about 1.5 to 2.7 grams per denier, a conditioned tenacity of about 2.8 to 4.0 grams per denier, a wet % elongation between about 14% and 27%, a conditioned % elongation between 11% and 22%, and having a wet modulus between 5.0 and 12.0 and being further characterized in having a multilobular, skin core cross-section wherein the core is surrounded by a discontinuous broken skin, and a crimp level of 10 to 30 crimps per inch and having been formed by the method comprising

- preparing a modifier-free viscose containing from about 6% to 10% cellulose, from about 4% to 9% caustic soda, and from 28% to 45% carbon disulfide based upon the weight of cellulose, ripening the viscose to a sodium chloride salt index of 5.5 to 15 and a spinning ball fall of 60 to 110 seconds,
- extruding the ripened viscose into an aqueous spinning bath containing from about 4% to 8% sulfuric acid, from about 0.5% to 3.0% zinc sulfate and from about 16% to 22% sodium sulfate, maintained at a temperature between 40 and 60 degrees centigrade,
- withdrawing the filaments through an aqueous stretch bath maintained at a temperature between 80 and 98 degrees centigrade, and
- controlling residence time in the spin bath so as to allow stretching the filaments in the stretch bath from about 65% to 120%.

4,245,001

TEXTILE FILAMENTS AND YARNS

Bobby M. Phillips, James O. Casey, Jr., and Dale R. Gregory, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 834,034, Sep. 16, 1977, abandoned, which is a continuation of Ser. No. 763,258, Jan. 26, 1977, abandoned. This application May 7, 1979, Ser. No. 36,712

Int. Cl.³ D02G 3/00

U.S. Cl. 428—224

39 Claims

1. Fractured continuous filament textile yarn having a spun yarn character, said yarn comprising a bundle of continuous filaments on polyester, polyolefin or polyamide polymer, said filaments having a continuous body section with at least one wing member extending from and along said body section, said wing member being intermittently separated from said body

section and a fraction of the separated wing members being broken and providing free protruding ends extending from said



body section to provide the spun yarn character of said continuous filament yarn.

4,245,002

METHOD OF MAKING FISH PRINTS, AND PAPER AND CLOTH USED THEREFOR

Yokichi Morimi, 12-39, Nakabozumi 2-chome, Ibaraki City, Osaka Prefecture, Japan, and Masamichi Kuroda, Takarazuka, Japan, assignors to Fushimi Kabushiki Kaisha, Osaka and Yokichi Morimi, Ibaraki, both of, Japan

Filed May 17, 1979, Ser. No. 40,081

Claims priority, application Japan, May 18, 1978, 53-59312

Int. Cl.³ A61B 5/10

U.S. Cl. 428-224

7 Claims

1. A method of making fish prints on paper or cloth which comprises applying a paper or cloth to the surface of the fish to form an imprint of the fish upon the cloth or paper, said paper or cloth being previously treated with a chemical which shows a color reaction to the humor secreted at the surface of the fish, and drying the cloth or paper.

5. A paper or cloth for forming fish prints thereupon which comprises a paper or cloth treated with chemicals which show a color reaction to the humor secreted at the surface of a fish body.

4,245,003

COATED TRANSPARENT FILM FOR LASER IMAGING

Raymond L. Oransky, Portland, and David G. Savage, W. Buxton, both of Me., assignors to James River Graphics, Inc., South Hadley, Mass.

Continuation of Ser. No. 869,913, Jan. 16, 1978, abandoned. This application Aug. 17, 1979, Ser. No. 67,385

Int. Cl.³ B32B 5/16; B23K 9/00; B05D 3/06

U.S. Cl. 428-323

18 Claims

1. A laser-imageable member comprising a transparent film having thereon a dried, uniform coating comprising graphite particles and (sufficient) a non-self-oxidizing binder (to form a stable coating.) in sufficient quantity to prevent removal of the coating under normal handling conditions.

12. Method of making an imaged transparency comprising the steps of:

- (a) providing a laser-imageable member (which comprises) including a transparent film having thereon a dried uniform coating (comprising) of a liquid dispersion of graphite particles and a non-self-oxidizing binder in sufficient quantity to prevent removal of the coating under normal handling; and
- (b) directing laser energy in an image pattern to the coating to selectively remove the portion of the coating to which the laser energy is directed.

18. Method of producing a printing plate comprising intimately contacting with a lithographic printing surface, the

coated surface of a transparent film having a uniform coating of graphite particles and a non-self-oxidizing binder in sufficient quantity to prevent removal of the coating under normal handling conditions, and directing a laser beam image pattern through the transparent film for selectively transferring a portion of the coated surface corresponding to said image pattern from said film to said lithographic printing surface.

4,245,004

ETHOXYLATED POLYTETRAMETHYLENE GLYCOLS AS FIBER LUBRICANTS

Robert B. Login, Woodhaven, and David D. Newkirk, Trenton, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

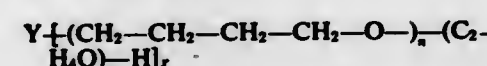
Filed May 26, 1978, Ser. No. 909,880

Int. Cl.³ B32B 27/34, 27/36

U.S. Cl. 428-394

5 Claims

1. A lubricated synthetic textile fiber comprising a polyester, polyamide, polyacrylic fiber or mixtures thereof and present on the surface thereof a lubricating amount of a lubricant comprising a block copolymer oxyalkylene compound derived from tetramethylene oxide (tetrahydrofuran) and ethylene oxide of the formula



wherein Y is the residue formed by the removal of x atoms of active hydrogen from an initiator having a total of not more than 20 carbon atoms and free of elements other than carbon, hydrogen, and oxygen; x is an integer of 1 to about 5; n is an integer such that the total tetramethylene oxide residue weight, n x, is about 90 to about 10 percent by weight of the total oxyalkylene residue weight; m is an integer such that the total ethylene oxide residue weight of the compound, m x, is about 10 to about 90 percent by weight of the total oxyalkylene residue weight; and the molecular weight of the tetramethylene oxide residue, nx, is about 500 to about 6000.

4,245,005

PELLICULAR COATED SUPPORT AND METHOD

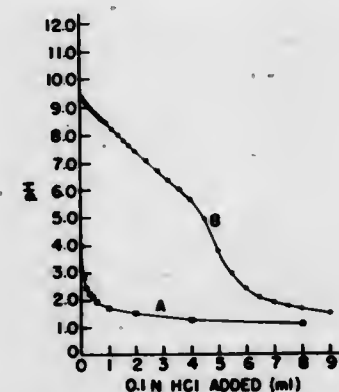
Frederick E. Regnier, West Lafayette, and Andrew J. Alpert, Lebanon, both of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Feb. 28, 1979, Ser. No. 16,031

Int. Cl.³ B01D 15/08; B05D 3/14; G01N 31/08

U.S. Cl. 428-420

38 Claims



1. A process for producing a pellicular coating on a support material, said process comprising: providing a support material having a surface with an affinity for an adsorbate; contacting the surface of said support material with an adsorbate such that a pellicular coating of said adsorbate is adsorbed to said surface by electrostatic forces; and causing said coating adsorbed to said surface to be cross-linked thereon.

19. A pellicular coated support material, comprising:

a support material having a surface with an affinity for an adsorbate; and a pellicular layer of adsorbate adsorbed by electrostatic forces to and cross-linked on said surface of said support material.

4,245,006

LOW-PRESSURE LOW-TEMPERATURE IN-MOLD COATING METHOD

Henry Shanowski, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed May 18, 1979, Ser. No. 40,255

Int. Cl.³ B32B 27/40

U.S. Cl. 428-423.7

14 Claims

1. The method which comprises in-mold coating a molded thermoset polyester resin glass fiber composition containing from about 25 to 75% by weight of glass fibers with an in-mold coating composition and curing said in-mold coating composition at a pressure of from about 25 to 50 p.s.i. and at a temperature of not above about 150° F. for from about 2 to 12 minutes, said in-mold coating composition comprising

- (a) an unsaturated aliphatic polyester diol having an average molecular weight of from about 1,500 to 4,500 and from about 8 to 30 internal aliphatic carbon-to-carbon double bonds,
- (b) a saturated aliphatic polyester diol flexibilizer having an average molecular weight of from about 1,500 to 3,000 (b) being present in a minor molar amount as compared to (a),
- (c) an aliphatic crosslinking polyol having from 3 to 6 hydroxyl groups and an average molecular weight of from about 92 to 1,000,
- (d) a diisocyanate selected from the group consisting of 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate, 4,4'-diphenyl methane diisocyanate, 4,4'-dicyclohexyl methane diisocyanate, polymeric forms of TDI, MDI and hydrogenated MDI, xylene diisocyanate, isophorone diisocyanate and hexamethylene diisocyanate and mixtures thereof, said diisocyanate being present in an amount by weight sufficient to provide from about 50 to 120% of the stoichiometric amount of —NCO groups required to react with all of the active hydrogen atoms in said coating composition, and
- (e) an ethylenically unsaturated monomer selected from the group consisting of styrene, alpha methyl styrene, vinyl toluene, methyl methacrylate, acrylamide, acrylonitrile, methyl acrylate and mixtures thereof, said monomer being present in an amount sufficient to copolymerize with and crosslink said unsaturated polyester, in admixture with
- (f) an organic free radical peroxide initiator in an amount of from about 2.5 to 5% by weight based on the weight of the unsaturated polyester and the unsaturated monomer,
- (g) an accelerator for said peroxide initiator selected from the group consisting of tertiary aromatic amines and cobalt salts of carboxylic acids in an amount not in excess of about 1.5% by weight based on the weight of the unsaturated polyester and the unsaturated monomer and
- (h) a polyurethane tin catalyst selected from the group consisting of organotin compounds and tin salts of carboxylic acids in an amount of from about 0.05 to 0.9 part by weight per 100 parts by weight total of the polyols.

4,245,007 1,4-BIS-[AZOL-2'-YL]-NAPHTHALENES AND PROCESS OF USING THE SAME

Leonardo Guglielmetti, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardley, N.Y.

Continuation of Ser. No. 727,119, Sep. 27, 1976, abandoned. This application Aug. 1, 1978, Ser. No. 930,111

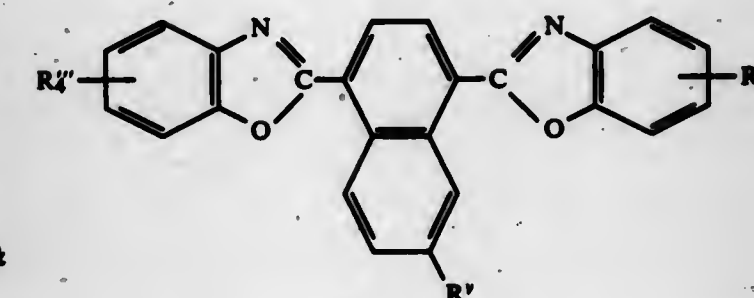
Claims priority, application Switzerland, Oct. 10, 1975, 13213/75

Int. Cl.³ B32B 27/36; D06L 3/12; C11D 9/44

U.S. Cl. 428-480

10 Claims

1. A 1,4-bis-[oxazol-2'-yl]-naphthalene, of the formula



in which R' denotes chlorine, and R'' denotes hydrogen, halogen in the 5-position or 6-position, alkyl with 1 to 4 carbon atoms or —COOY, wherein Y represents hydrogen, a salt-forming cation or alkyl with 1 to 4 carbon atoms, or denotes alkylsulphonyl with 1 to 4 carbon atoms.

6. Process for optically brightening organic materials, wherein a compound as defined in one of claim 1 is incorporated into these materials or is applied to the surface thereof.

8. Process according to claim 6 for optically brightening materials made of polyester.

4,245,008

CORROSION RESISTANT MAGNETIC RECORDING MEDIA

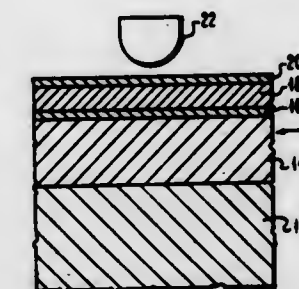
John D. Michaelson, Los Gatos; Daniel A. Nepela, and Peter B. P. Phipps, both of Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1978, Ser. No. 956,296

Int. Cl.³ B32B 15/04

U.S. Cl. 428-611

6 Claims

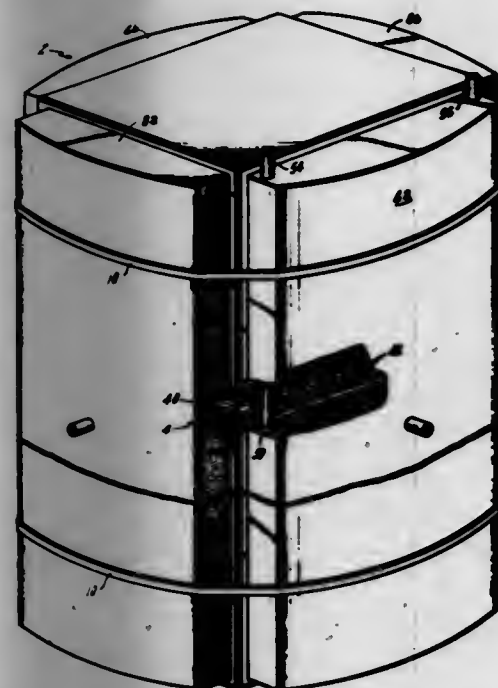


1. A recording media for storing magnetic transitions representative of data information over an extended portion, said media comprising:

- a substrate;
- an undercoat layer deposited on said substrate;
- a thin film layer of ferromagnetic material deposited on said undercoat layer; said ferromagnetic material consisting essentially of, in weight percentage from 0-55% cobalt, from 8-22% chromium, with the remainder being mainly iron;
- said thin film having a remanent magnetization product of remanence M_r times the thickness of said layer (t) greater than 1 × 10⁻³ emu/cm²;
- said layer having a thickness between 300 and 600 angstroms;
- said layer having a coercivity H_c between 300 and 800 oersted; and

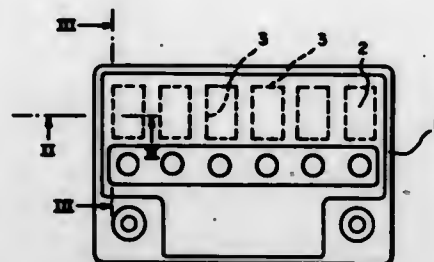
an overcoat protective layer deposited over said ferromagnetic material thin film layer.

4,245,009
POROUS COOLANT TUBE HOLDER FOR FUEL CELL STACK
Robin J. Guthrie, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Oct. 29, 1979, Ser. No. 88,995
Int. Cl.³ H01M 8/04
U.S. Cl. 429-16 6 Claims



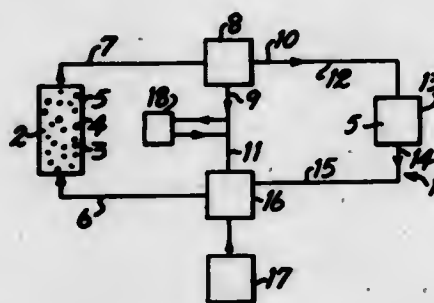
1. An electrochemical cell stack comprising first and second fuel cells separated by a cooler assembly, each cell comprising a pair of electrodes spaced apart with a matrix layer disposed therebetween for retaining electrolyte, each electrode including a gas porous substrate having a flat first surface facing said matrix layer and a second surface facing away from said matrix layer, said second surface including ribs which define grooves therebetween extending across said substrate for carrying reactant gas during cell operation, said cooler assembly comprising a gas porous, graphitized, resin bonded, carbon fiber tube holder having first and second oppositely facing surfaces and a gas impervious graphite plate having first and second oppositely facing surfaces, said first surface of said plate being contiguous with said second surface of one of said electrode substrates of said first cell, said second surface of said plate being contiguous with and resin bonded to said first surface of said holder, said second surface of said holder including, a plurality of parallel channels therein extending across the length of said holder, said cooler assembly including tubes disposed in said channels and passing through said holder for carrying a coolant into heat exchange relationship with said cells, said channels having a depth and width which is substantially the same as the outer diameter of said tubes, said second surface of said holder being contiguous with said second surface of an electrode of said second fuel cell, said channels in said holder being parallel to said grooves in said substrate contiguous therewith, said cooler assembly including gas seal means along each edge of said holder parallel to said channels to prevent gas leakage from said holder through said edges.

4,245,010
EXPLOSION PROTECTION FOR STORAGE BATTERIES
Hans-Joachim Golz, Hanover, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany
Filed Jan. 24, 1979, Ser. No. 6,097
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804750
Int. Cl.³ H01M 2/12
U.S. Cl. 429-56 9 Claims



1. Lead storage battery wherein at least one surface portion of the outer cell enclosure above the acid level contains a closed outline of material having reduced thickness, said outline of material defining two regions of said surface portion, the thickness of the region inside said outline of material being substantially equal to the thickness of the region outside said outline of material, and wherein said surface portion is substantially impervious to the flow of gas during normal operation of the battery.

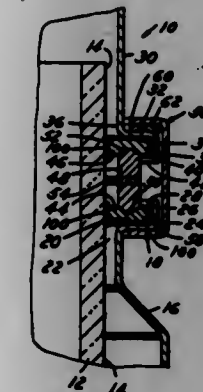
4,245,011
CHEMICAL AND ELECTROCHEMICAL DEVICES
Jean-Yves Machat, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Jul. 19, 1979, Ser. No. 59,075
Claims priority, application France, Jul. 27, 1978, 78 22545; Jul. 27, 1978, 78 22546
Int. Cl.³ H01M 2/36, 2/38
U.S. Cl. 429-70 8 Claims



1. A chemical and/or electrochemical device comprising at least one reaction chamber and means making it possible to cause a suspension of particles in a fluid to flow through said chamber, characterized by the fact that it comprises:
(a) means for separating the suspension emerging from the chamber into two fractions:
one fraction, the so-called "concentrated fraction," comprising the greater part or all of the particles,
one fraction, called the "fluid fraction," comprising the greater part or all of the fluid;
(b) means for introducing the "fluid fraction" into at least one reservoir;
(c) means for causing a flow of the fluid from the reservoir in such a manner that the reaction product or products contained in the "fluid fraction" and introduced into the reservoir with said fraction remain in the reservoir or are entrained by said flow, and that said flow is combined

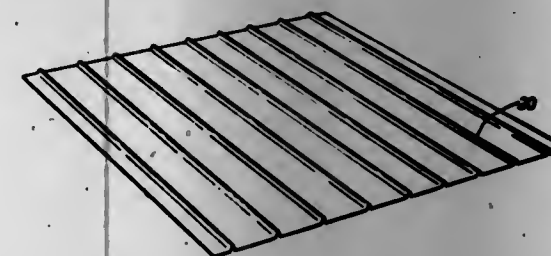
with the "concentrated fraction" in order to form a suspension; and
(d) means for introducing the suspension thus formed into the reaction chamber.

4,245,012
SODIUM SULFUR BATTERY SEAL
Mati Mikkor, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 28, 1979, Ser. No. 70,361
Int. Cl.³ H01M 10/39
U.S. Cl. 429-104 3 Claims



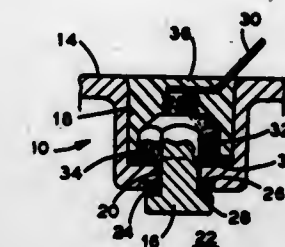
1. In a sodium sulfur battery construction which includes:
a container member,
a soft metal seal member,
a holding structure for holding said soft metal seal member in a sealing position with respect to said container member, and
a pressure applying structure for applying pressure on said soft seal member to seal said soft seal member to said container member while said soft seal member is being held by said holding structure, the improvement comprising:
a thin, well-adhered soft metal layer formed on the surface of the said container member of the sodium sulfur battery to which said soft metal seal member is sealed.

4,245,013
BATTERY SEPARATORS
Gordon A. Clegg, Rosendale, and Ernest J. Pearson, Swinton, both of England, assignors to Chloride Group Limited, London, England
Filed May 8, 1979, Ser. No. 37,165
Claims priority, application United Kingdom, May 11, 1978, 18987/78
Int. Cl.³ H01M 2/14
U.S. Cl. 429-144 13 Claims



1. A battery separator comprising a laminate of at least one first layer affording a profiled exterior appropriate for juxtaposition to the positive plate of a lead acid battery and containing at least 75% by weight of synthetic pulp and at least one other layer adherent to the first layer, said second layer containing from 30 to 60% by weight of cellulose fibers and not more than 70% by weight synthetic pulp.

4,245,014
HIGH PRESSURE POST SEAL FOR BATTERIES
William E. Velt, Jr., Ivyland, and Kunal K. Das, Wrightstown, both of Pa., assignors to ESB International Corp., Wilmington, Del.
Filed Aug. 30, 1979, Ser. No. 71,135
Int. Cl.³ H01M 2/06
U.S. Cl. 429-181 7 Claims



1. In combination with a battery, the battery including a case and at least one terminal post projecting through the case, a post seal system for preventing gas pressure leakage and electrolyte leakage about the post, the system comprising a recessed cavity formed within the case, the cavity including a bore communicating with the interior of the battery, the post extending through the bore, first sealing means disposed between the post and the bore, a sealant-containing member threadably engaging the post within the cavity, the member in sealing registry with the bore, cavity and post, second sealing means disposed within the cavity for sealing the cavity and means for connecting the post to external electrical components.

4,245,015
ELECTROLYTE FOR LEAD PLATE STORAGE BATTERY
Dallas Burke, 5046 Bonwell Dr., Concord, Calif. 94521
Filed Aug. 20, 1979, Ser. No. 68,099
Int. Cl.³ H01M 6/04
U.S. Cl. 429-188 3 Claims

1. An electrolyte for a lead plate storage battery consisting essentially of a solution of water, selenic acid (H_2SeO_4) having a concentration in the range of approximately 0.3 grams to approximately 4.0 grams per liter of electrolyte and at least one material of the group consisting of ferrous sulfate ($FeSO_4$) having a concentration in the range of approximately 0.1 grams to approximately 8.0 grams per liter of electrolyte, sodium chloride ($NaCl$) having a concentration in the range of approximately 0.1 grams to approximately 4.0 grams per liter of electrolyte, and manganous sulfate ($MnSO_4$) having a concentration in the range of approximately 0.005 grams to approximately 0.1 grams per liter of electrolyte.
3. In a storage battery comprising a fluid containing case, a positive plate composed principally of lead peroxide and a negative plate composed principally of lead, a separating material to prevent contact between said positive and negative plates, and an electrolyte filling said case consisting essentially of an aqueous solution of selenic acid (H_2SeO_4) having a concentration of approximately 0.38 grams per liter of electrolyte, and ferrous sulfate ($FeSO_4$) having a concentration of approximately 0.8 grams per liter of electrolyte, and sodium chloride ($NaCl$) having a concentration of approximately 0.45 grams per liter of electrolyte, and manganous sulfate ($MnSO_4$) having a concentration of approximately 0.01 grams per liter of electrolyte.

4,245,016

ELECTRODE COATING COMPOSED OF COPOLYMERS DERIVED FROM DIACETONE ACRYLAMIDE

Guy Rampel, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Dec. 5, 1978, Ser. No. 966,745
Int. Cl.³ H01M 4/62

U.S. Cl. 429—216

5 Claims

1. In a zinc electrode, the improvement comprising an electrode coating consisting essentially of a copolymer derived from diacetone acrylamide and a polymerizable monomer selected from acrylic acid or methacrylic acid; and a finely divided active zinc electrode material.

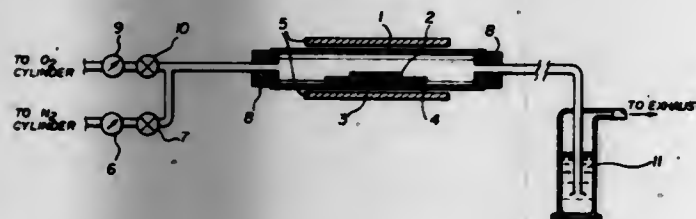
4,245,017

BATTERY CATHODE AND METHOD

Rudolph R. Haering, 647 Croydon Pl., Vancouver, British Columbia, Canada; James A. R. Stiles, 4133 Fairway Pl., North Vancouver, British Columbia, Canada, and Klaus Brandt, 318, 1741 W. 10th Ave., Vancouver, British Columbia, Canada
Continuation-in-part of Ser. No. 935,361, Aug. 21, 1978, abandoned. This application Apr. 26, 1979, Ser. No. 33,718
Int. Cl.³ H01M 4/04, 4/36

U.S. Cl. 429—218

19 Claims



1. A method of manufacturing a predominantly transition metal chalcogenide cathode, comprising applying a suspension of finely divided transition metal chalcogenide particles in oil as a film on a selected substrate and then alternately baking the substrate and applied film in an oxygen-containing atmosphere and in an inert atmosphere.

4,245,018

METHOD FOR STABILIZING ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES TO LIGHT AND A COLOR DIFFUSION TRANSFER MATERIAL

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 11, 1979, Ser. No. 56,674

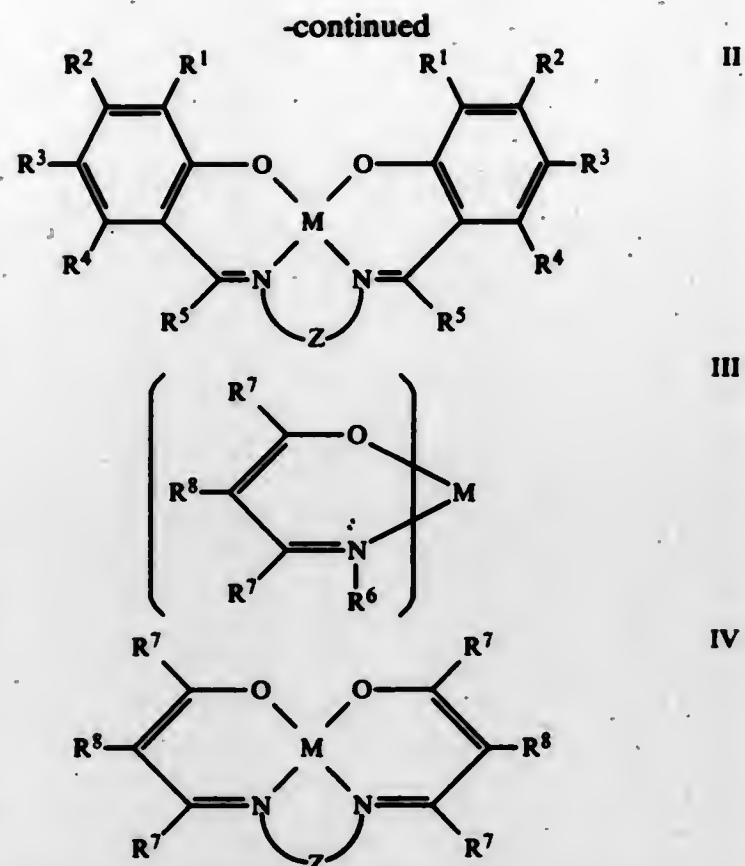
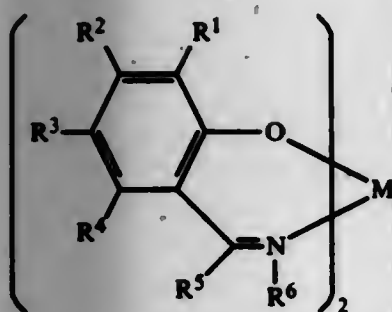
Claims priority, application Japan, Jul. 11, 1978, 53-8426

Int. Cl.³ G03C 1/40, 7/00, 1/84, 1/10

U.S. Cl. 430—14

27 Claims

15. A color photographic material comprising at least one exposed and developed silver halide emulsion and a mordant layer which contains a photographic dye image, wherein at least one layer containing a photographic dye image or an adjacent layer contains a compound of the formulae (I), (II), (III) or (IV) in an amount which stabilizes the photographic dye image to light;



wherein M represents Cu, Co, Ni, Pd, or Pt; R¹, R², R³, or R⁴ each represents a hydrogen atom, a halogen atom, a cyano group or an alkyl group, an aryl group, a cycloalkyl group, or a heterocyclic group, each of which can be bonded directly or through a divalent connecting group to the carbon atom of a benzene ring, or R¹ and R²; R² and R³; or R³ and R⁴ combine to represent the non-metallic atoms necessary to complete a 6-membered ring; R⁵ and R⁶ each represents a hydrogen atom, an alkyl group, or an aryl group; R⁶ represents a hydrogen atom, an alkyl group, an aryl group, or a hydroxyl group, R⁷ represents an alkyl group or an aryl group; and Z represents the non metallic atoms necessary to complete a 5-membered ring or a 6-membered ring, wherein said photographic dye image comprises a dye having an absorption maximum at about 300 nm to about 800 nm and wherein said dye is an anthraquinone dye, a quinonimine dye, an azo dye, a methine dye, a polymethine dye, an indoamine dye, an indophenol dye, or a formazan dye, said compound of the formulae (I) to (IV) not adversely affecting the color hue or color purity of the photographic dye image.

4,245,019

METHOD FOR REDUCING PATTERN STRIPES IN SLOTTED MASK SCREENS FOR CATHODE RAY TUBES

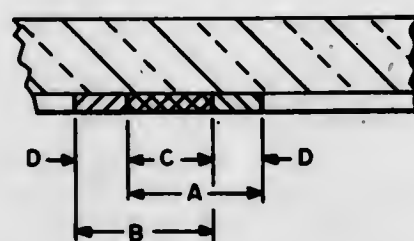
Robert L. Bergamo; Thaddeus V. Rychlewski, and Siegbert M. Wirth, all of Seneca Falls, N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 31, 1978, Ser. No. 929,744

Int. Cl.² H01J 29/32

U.S. Cl. 430—24

10 Claims



1. In a method for manufacture of a color cathode ray tube having a viewing panel whereon is formed a patterned screen having a multiplicity of discretely formed stripes spaced in accordance with and dimensionally smaller than multiple

openings of a mask member affixed to the viewing panel and spaced from the patterned screen, a method for forming the patterned screen comprising the steps of

coating the inner surface of a cathode ray tube viewing panel with a thin uniform layer of an aqueous solution of polyvinyl alcohol photosensitized with a dichromate material; exposing said viewing panel at a first positioned location to radiant energy beamed through said multiple openings of said mask member for a given period of time to partially polymerize discrete striped portions of said photosensitive coating;

moving said viewing panel to a second positional location and exposing said viewing panel to radiant energy beamed through said multiple openings of said mask member for a given period of time to partially polymerize other discrete striped portions of said photosensitive coating and to polymerize striped portions of said partially polymerized coating exposed to said radiant energy during exposure at said first positional location;

developing to remove the unexposed photosensitive coating from said viewing panel and leave polymerized and partially polymerized coating portions;

treating said polymerized and partially polymerized portions of said photosensitive coating with a dilute organic etching composition to erode said partially polymerized portions of said photosensitive coating; and

washing the exposed coating with pressurized water to remove said dilute organic etching composition and said eroded partially polymerized portions of said photosensitive coating whereby stripes of polymerized coating of a dimension smaller than the dimension of said openings of said mask member remain affixed to the inner surface of said viewing panel.

4,245,020

METHOD OF MAKING A DISPLAY SCREEN FOR A COLOR TELEVISION DISPLAY TUBE USING CHARGED PHOTOCONDUCTIVE LAYER

Jacob van den Berg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

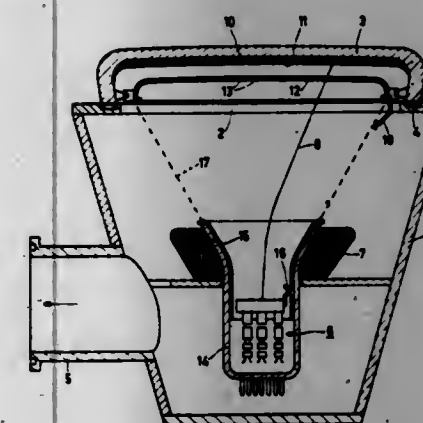
Filed Feb. 26, 1979, Ser. No. 15,548

Claims priority, application Netherlands, Mar. 21, 1978, 7803025

Int. Cl.³ G03G 13/01

U.S. Cl. 430—24

7 Claims



1. A method of making a colour display screen for a colour television display tube comprising the steps of applying a conductive layer on a window portion of the tube, applying a photoconductive layer on said conductive layer, providing a substantially uniform surface charge on said photoconductive layer, positioning an apertured colour selection electrode in front of said window portion so that the electrode is adjacent to and spaced from said photoconductive layer, scanning said photoconductive layer with an electron beam passing through the apertures in the colour selection electrode to thereby form a charge pattern on the photoconductive layer, the thickness of said photoconductive layer and the energy of the electrons in

the electron beam being such that the average depth of penetration of the electrons in the beam exceeds the thickness of the photoconductive layer, and developing the charge pattern with electrically charged particles.

2. The method according to claim 1 wherein, after said developing step, said surface charge providing and scanning steps are repeated to form a second charge pattern and developing said second charge pattern with charged particles of a type different from said first named particles.

4,245,021

ELECTROPHOTOGRAPHIC ELEMENT HAVING CHARGE TRANSPORT LAYER

Takeo Kazami; Kiyoshi Sakai, both of Tokyo; Mitsuru Hashimoto, Hino; Masao Sasaki, Tokyo; Kyoji Tetsui, Tokyo, and Masafumi Ohta, Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

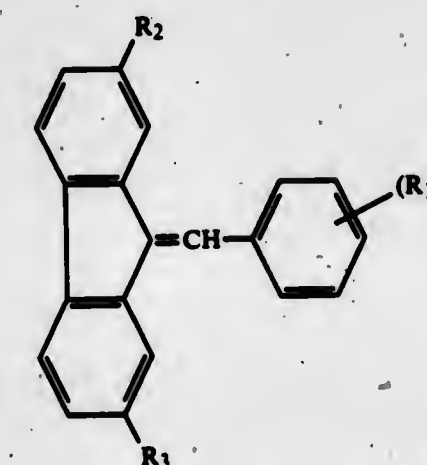
Filed Feb. 12, 1979, Ser. No. 11,063

Claims priority, application Japan, Feb. 17, 1978, 53-17445
Int. Cl.³ G03G 5/09

U.S. Cl. 430—58

16 Claims

1. An electrophotographic element which comprises an electroconductive support, a charge producing layer consisting essentially of a charge producing substance and a charge transport layer consisting essentially of a charge transport substance having the following general formula and a binder, said layers being superposed on said support in that order:



wherein n is the integer 1 or the integer 2, R₁ is hydrogen, alkyl, nitro, dialkylamino, alkoxy, nitrile or carboxylic ester group, and R₂ and R₃ are hydrogen, halogen, nitro or dialkylamino, respectively.

4,245,022

DRY ELECTROPHOTOGRAPHIC DEVELOPERS

Shigeru Sadamatsu, and Masakatsu Kimura, both of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1976, Ser. No. 731,482

Claims priority, application Japan, Oct. 13, 1975, 50-122443
Int. Cl.² G03G 9/10

U.S. Cl. 430—110

2 Claims

1. In a dry electrophotographic developer including a toner and a carrier, the improvement consisting essentially of: the addition thereto of 2 to 10% by weight of abrasive particles having a diameter of 100 to 800μ, which particles are not capable of any substantial degree of frictional charging and thus do not attract toner and carry same on their surfaces to any significant degree and wherein said particles have a toner retention capacity of one-tenth or less than that of the carrier, have the same degree of fluidity as the carrier, and exhibit no electrophotographic developing effect.

4,245,023

METHOD FOR THE DEVELOPMENT OF ELECTROSTATIC CHARGE IMAGES

Paul M. Cassiers, Mortsel, and Willy G. Verlinden, Edegem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

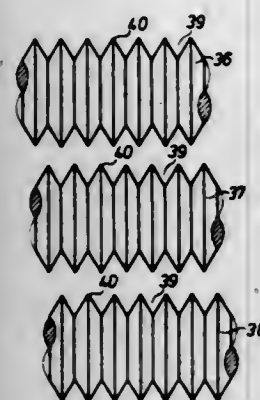
Filed Jan. 9, 1974, Ser. No. 432,036

Claims priority, application United Kingdom, Jan. 10, 1973, 1411/73

Int. Cl.³ G03G 15/10

U.S. Cl. 430—118

13 Claims



1. In a process of developing an imagewise electrostatic charge pattern on the surface of an insulating material which comprises the steps of selectively applying to the charged surface region of said material a developer liquid with respect to which the material surface is non-wettable when uncharged but wettable when charged, said liquid being applied from a rotatable applicator roller having substantially an entirety of its surface formed as a regular pattern of closely spaced capillary developer liquid holding recesses separated by ridges, said applicator roller surface during development having its ridges in substantial contact with said material surface, the improvement of providing better control over the liquid application and avoiding incomplete development by applying the same developer liquid to the same overall imagewise charged regions in plural successive stages by moving the material surface successively into contact with at least two of said rotatably patterned applicator rollers, the pattern of said ridges and recesses and the disposition of said rollers relative to each other being such that the paths of the ridges on the material surface of each such roller fall essentially within the paths of the recesses of the next succeeding roller whereby the locations of the quanta of developer liquid applied to the material surfaces from the recesses of each roller are out of registration with the quanta of liquid applied from the recesses of the next succeeding roller.

4,245,024

DEVELOPMENT PROCESS FOR AN ELECTROPHOTOGRAPHIC DUPLICATOR EMPLOYING MAGNETIC TONER

Keitaro Yamashita, Kamisato, and Toshio Numata, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 960,012

Claims priority, application Japan, Nov. 10, 1977, 52-135083

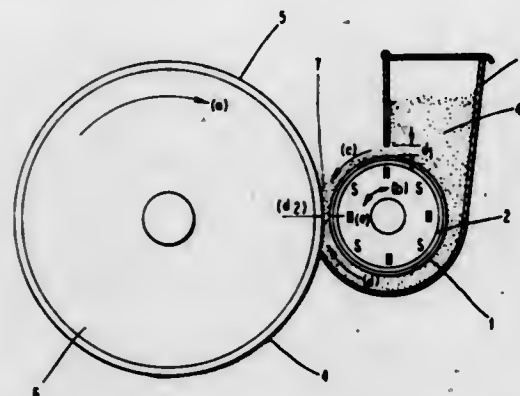
Int. Cl.³ B05D 1/06

U.S. Cl. 430—122

5 Claims

1. A development process for an electrophotographic duplicator employing magnetic toner comprising:
(a) transferring, by magnetic attraction, the magnetic toner of a maximum thickness of 1.5 mm onto a cylindrical non-magnetic sleeve enclosing a magnetic roll having a predetermined magnetic force on the surface of the non-magnetic sleeve wherein the magnetic toner comprises magnetite in the range of 40 to 70 percent by weight and has a volume specific resistivity higher than 10^7 ohm-cm and a granulometric measure of less than $30\mu\text{m}$;
(b) forming a latent image on a rotatable drum-shaped mem-

ber oppositely positioned to the sleeve wherein the member has a smooth surface of a photosensitive material selected from the group consisting of selenium, organic semiconductor, and cadmium sulfide with the application of a predetermined surface potential, said predetermined magnetic force and said predetermined surface potential having been selected in view of one another to be in proportion, wherein said magnetic force is between about 300 and 650 gauss when said surface potential is about 600 volts and said magnetic force is between about 600 and 1000 gauss when said surface potential is about 1200 volts;



(c) continuously conveying the transferred magnetic toner to a development section of the photosensitive material during rotation of the drum-shaped member for brushing the magnetic toner in contact with the photosensitive material wherein the distance between the non-magnetic sleeve and oppositely positioned photosensitive material is equal to or smaller than the maximum thickness of the magnetic toner; and
(d) electrostatically transferring the magnetic toner on the photosensitive material to a recording sheet.

4,245,025

TRANSFER SHEET AND PROCESS FOR PREPARATION THEREOF

Mamoru Kato, Susumu Yamaura, both of Hirakata; Yasutoki Kamezawa, Kyoto, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Sep. 8, 1978, Ser. No. 940,748

Claims priority, application Japan, Oct. 13, 1977, 52-121877

Int. Cl.³ G03G 13/14; B32B 9/04

U.S. Cl. 430—126

11 Claims

1. A transfer sheet for electrostatically transferring thereon an electrically conductive or electrically semiconductive toner in electrostatic photography or electrostatic printing, which comprises a paper substrate and a toner-receiving layer formed on at least one surface of said paper substrate, said toner-receiving layer consisting essentially of a mixture of (A) 100 parts by weight of a thermoplastic acrylic-styrene copolymer having an acid value from 10 to 170 and (B) 20 to 50 parts by weight of dry method finely divided silica.

5. In an electrostatic photographic process which comprises providing an electrostatic image on a surface of a photosensitive layer comprising a photoconductor, developing the electrostatic image by a magnetic brush of an electrically conductive or electrically semi-conductive toner to form a toner image, transferring said toner image onto a transfer sheet and fixing the toner image on the transfer sheet, the improvement wherein said transfer sheet comprises a paper substrate and a toner-receiving layer formed on at least one surface of said paper substrate, said toner-receiving layer consisting essentially of a mixture of (A) 100 parts by weight of a thermoplastic acrylic-styrene copolymer having an acid value from 10 to 170 and (B) 10 to 100 parts by weight of dry method finely divided silica, said mixture being applied in the form of an aqueous coating composition.

4,245,026

PRODUCTION OF LOW DENSITY COATED MAGNETIC POLYMER CARRIER PARTICULATE MATERIALS

Ronald F. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1979, Ser. No. 107,281

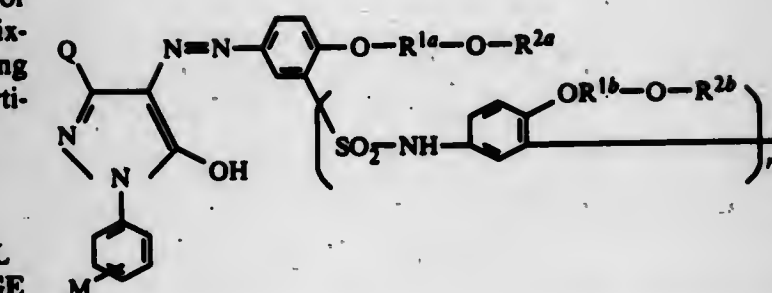
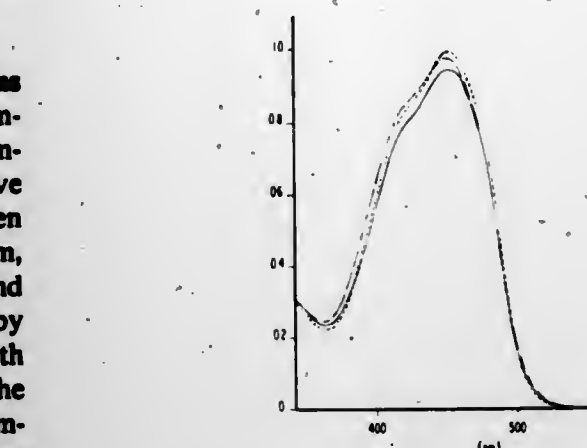
Int. Cl.³ G03G 9/14; B05D 7/00

U.S. Cl. 430—137

10 Claims

1. A process for preparing a magnetically responsive, composite electrostatic carrier particle, said process comprising placing in a suitable vessel particles of an imbibitive polymer material having an average bulk density of between about 0.95 and about 1.05 gram/cm³, a suspending medium, and a transition metal carbonyl selected from iron, cobalt, and nickel carbonyl, excluding air and moisture from said vessel by displacement with a dry inert gas, heating the mixture with agitation to reflux temperature for up to about 24 hours at the temperature of said suspending medium to thermally decompose said transition metal carbonyl whereupon said polymer material is impregnated with the magnetic elemental metal or metal oxide of said transition metal carbonyl, cooling the mixture, washing the composite particle with fresh suspending medium, and diethyl ether, and air drying the composite particle with heat and vibration.

said silver halide emulsion layers having associated therewith a compound represented by the following general formula (I):



4,245,027

LIGHT-SENSITIVE IMAGE RECORDING MATERIAL AND DRY PROCESS FOR RECORDING LIGHT IMAGE USING THE SAME

Keiji Takeda; Masayoshi Nagata, and Kenji Matsumoto, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 11, 1978, Ser. No. 924,014

Claims priority, application Japan, Jul. 11, 1977, 52-82690

Int. Cl.³ G03C 1/52, 5/24, 1/58

U.S. Cl. 430—141

25 Claims

1. A light-sensitive image recording material comprising, as a self-supporting film or in one or more layers on a support, at least

- (a) a heat sensitive coloring element comprising at least one polyvinyl pyridine and at least one polyvinylidene halide, and
- (b) a light sensitizing element comprising at least one of
 - (1) a compound which, on exposure to actinic radiation, is capable of complexing the polyvinyl pyridine of element (a) or is capable of forming a quaternary salt with the polyvinyl pyridine of element (a), or
 - (2) a compound which, on exposure to actinic radiation, is capable of releasing a precursor which is capable of complexing the polyvinyl pyridine of element (a) or is capable of forming a quaternary salt with the polyvinyl pyridine of element (a) under heating, wherein said compound (b)(1) or (b)(2) is iodoform, a quinone or a light-sensitive diazonium salt.

4,245,028

PHOTOGRAPHIC LIGHT-SENSITIVE SHEET FOR THE COLOR DIFFUSION TRANSFER PROCESS

Shinroku Fujita; Teoru Harada, and Katsusuke Endo, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 21, 1979, Ser. No. 13,998

Claims priority, application Japan, Feb. 20, 1978, 53-18372

Int. Cl.³ G03C 1/40, 1/10

U.S. Cl. 430—223

44 Claims

19. In a photographic film unit for the color diffusion transfer process which comprises a light-sensitive element, an image receiving element, a processing element and a developing agent, the improvement which comprises said light-sensitive element comprising a support having thereon at least one light-sensitive silver halide emulsion layer and at least one of

4,245,029

PHOTOCURABLE COMPOSITIONS USING TRIARYLSULFONIUM SALTS

James V. Crivello, Elmsford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

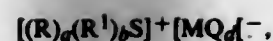
Continuation of Ser. No. 822,152, Aug. 5, 1977, abandoned, which is a continuation-in-part of Ser. No. 638,982, Dec. 9, 1975, Pat. No. 4,058,401, which is a continuation of Ser. No. 466,374, May 2, 1974, abandoned. This application Aug. 20, 1979, Ser. No. 67,613

The portion of the term of this patent subsequent to Nov. 15, 1994, has been disclaimed.
Int. Cl.³ G03C 1/68

U.S. Cl. 430—280

8 Claims

1. Photocurable compositions comprising
(A) a mixture of an aliphatically unsaturated organic material free of oxirane oxygen and oxirane containing monomeric or polymeric organic material and
(B) 0.5 to 15% by weight photocurable composition of a triarylsulfonium salt of the formula,



where R is selected from the group consisting of a C₍₆₋₁₃₎ aromatic hydrocarbon radical, a heterocyclic radical, and substituted derivative thereof, R¹ is selected from the group of a divalent aromatic hydrocarbon radical, a divalent heterocyclic radical and substituted derivatives thereof,

"a" is 1 or 3,

"b" is 0 or 1,

the valence of S can be satisfied by R alone or a combination of R and R¹,

"M" is a metal or metalloid,

"Q" is a halogen radical and

"d" has a value of from 4-6 inclusive.

4,245,030

PHOTOPOLYMERIZABLE MIXTURE CONTAINING IMPROVED PLASTICIZER

Raimund J. Faust, Wiesbaden, and Peter Lehmann, Maintal, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 23, 1979, Ser. No. 41,742

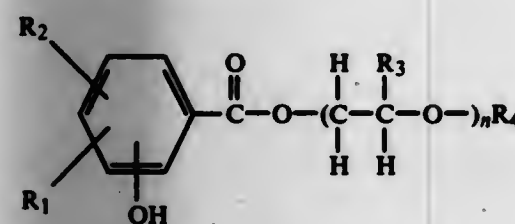
Int. Cl.³ G03C 1/68

U.S. Cl. 430-281

9 Claims

1. In a photopolymerizable mixture, comprising a polymeric binder which is soluble or at least swellable in aqueous-alkaline solutions, a compound with at least two acrylic or methacrylic acid ester groups and a boiling point above 100° C. which is capable of addition polymerization, a photoinitiator, and a plasticizer,

the improvement that the plasticizer is a compound corresponding to Formula I



wherein

R₁ is a hydrogen or halogen atom or an alkyl group with 1 to 4 carbon atoms,

R₂ is a hydrogen atom, an OH group, or an alkyl group with 1 to 4 carbon atoms,

R₃ is a hydrogen atom or a methyl group,

R₄ is an alkyl or alkenyl group with 1 to 20 carbon atoms, and

n is zero or a whole number from 1 to 20,

and wherein R₄ has at least 4 carbon atoms if n is zero or 1.

4,245,031

PHOTOPOLYMERIZABLE COMPOSITIONS BASED ON SALT-FORMING POLYMERS AND POLYHYDROXY POLYETHERS

William J. Chambers, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 892,296, Mar. 31, 1978, abandoned. This application Sep. 18, 1979, Ser. No. 76,621

Int. Cl.³ G03C 1/68

U.S. Cl. 430-288

13 Claims

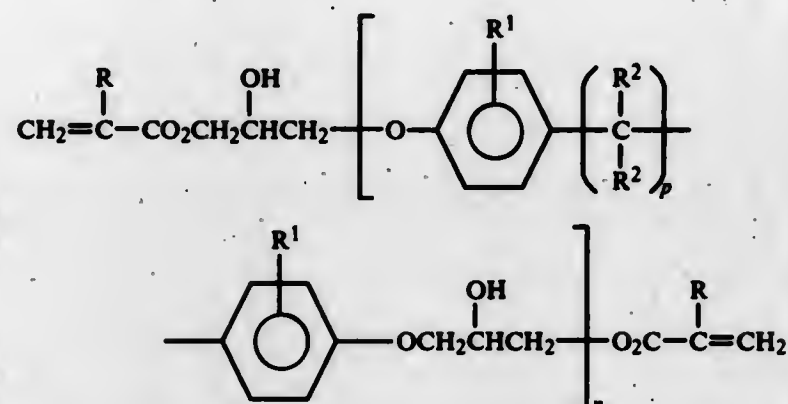
1. A photopolymerizable composition which comprises 0 to 70% by weight of components which do not contribute to the photoactivity of the composition and 30 to 100% by weight of photoactive system components consisting essentially of

(1) polymer having a number average molecular weight of at least 500, at least two salt-forming groups selected from the group consisting of carboxylic acid groups and amine groups

per polymer molecule, and at least 0.025 equivalent of salt-forming group per 1000 grams of polymer;

(2) addition-polymerizable, nongaseous, ethylenically unsaturated compound having at least one complementary salt-forming group selected from the group consisting of carboxylic acid groups and amine groups and being capable of forming a polymer by free-radical initiated, chain-propagating addition polymerization; the ratio of equivalents of complementary salt-forming groups in compound (2) to equivalents of salt-forming groups in polymer (1) being 1:2 to 50:1;

(3) ethylenically unsaturated diester polyhydroxy polyether of the formula



wherein R is H or CH₃; R¹ is H or an alkyl group of 1-4 carbon atoms; n is 1-15; p is 0 or 1; and when p is 1, R² is H or CH₃ and R³ is H, CH₃ or C₂H₅; the amount of polyether (3) being 10 to 75% by weight of the combined total of components (1), (2) and (3); and

(4) 1 to 20% by weight, based on the total photopolymerizable composition, of a free-radical generating system, activatable by actinic radiation, which initiates polymerization of the unsaturated compounds.

4,245,032

PHOTOCHROMIC AZIRIDINE RECORDING MEDIA
Dan L. Faselow, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 811,254, Jun. 29, 1977, abandoned.

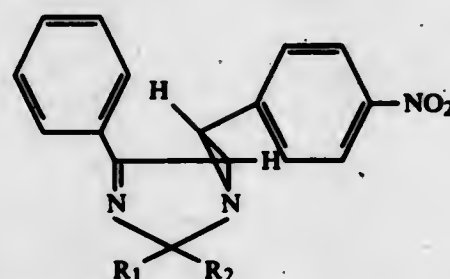
This application Dec. 28, 1978, Ser. No. 973,930

Int. Cl.³ G03C 1/52

U.S. Cl. 430-338

9 Claims

1. A thermally stable, optically erasable recording medium comprising a substrate having on at least one surface thereof a first coating of at least one microcrystalline photochromic aziridine of the formula



wherein R₁ and R₂ separately are hydrogen, phenyl, lower alkyl, or ortho or para lower alkyl or lower alkoxy-substituted phenyl or together are alkylene having 4 to 7 carbon atoms; and overlying said first coating, at least one substantially oxygen-impermeable barrier coating, said barrier coating being reasonably transparent to actinic radiation.

4,245,033

HEAT DEVELOPABLE PHOTSENSITIVE COMPOSITION AND A HEAT DEVELOPABLE PHOTSENSITIVE MEMBER HAVING A LAYER COMPRISING THE COMPOSITION

Tsuyoshi Eida, Chiba, and Ichiro Endo, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 643,810, Dec. 23, 1975, abandoned.

This application Aug. 25, 1977, Ser. No. 827,779

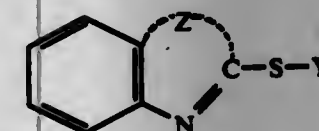
Claims priority, application Japan, Dec. 28, 1974, 49-2516

Int. Cl.³ G03C 1/02

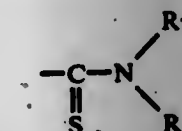
U.S. Cl. 430-353

27 Claims

1. A heat developable photosensitive composition adapted to form metallic silver grains at exposed portions in cooperation with a reducing agent comprising an organic silver salt, a halide and, as a compound to enhance formation of metallic silver grains at exposed portions and suppress formation of metallic silver grains at non-exposed portions, at least one member of sulfur compounds having the formula (1):



in which Y is selected from the class of hydrogen, alkyl, unsubstituted or substituted phenyl, aralkyl and



wherein R₇ is benzyl, Z is one or more atoms necessary for forming a 5- or 6-membered heterocyclic ring which may be substituted or unsubstituted.

4,245,034

METHOD AND APPARATUS FOR REGENERATING PHOTOGRAPHIC PROCESSING SOLUTION

Arnost Liblicky, Marly, and Walter E. Mueller, Fribourg, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 12, 1979, Ser. No. 2,914

Claims priority, application Switzerland, Jan. 17, 1978, 462/78

Int. Cl.³ G03C 5/30

U.S. Cl. 430-399

5 Claims

1. A method of regenerating and maintaining the activity of a lith developing solution in a continuous processing machine intermittently supplied with exposed photographic material, comprising adding a regenerator comprising at least a first and a second stable regenerating concentrate and diluting water, said first concentrate essentially containing, at a pH below 7, hydroquinone, sulphite and sodium formaldehyde bi-sulphite and said second concentrate essentially containing, at a pH higher than 7, alkali, buffer substances and, optionally, complexing agents and aromatic amines, both said first and said second concentrates being substantially free from bromine ions, to the lith developing solution either before, simultaneously with, or subsequent to the introduction of the photographic material in a quantity which is proportional to the unit exposed surface of the given photographic material; the relative proportion of said concentrates and the quantity of regenerator per unit exposed surface of the given photographic material being kept constant, while the volume proportion between both said concentrates and said diluting water is varied according to a given throughput of photographic material during a given period of time such that the degree of dilution is lower if the throughput is relatively small and higher if the throughput is relatively large.

4,245,035

PHOTO-IDENTIFICATION CARD

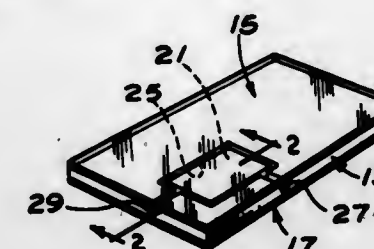
Gerald M. Poshkus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,406

Int. Cl.³ G03C 1/76, 1/48, 1/78; G03D 9/00

U.S. Cl. 430-496

6 Claims



1. A photographic card developable by a fluid, said card comprising:

- (1) a thin laminate including at least two vinyl layers permanently fused together, said laminate including a shallow compartment surrounded substantially entirely by said layers, and a narrow port extending from the exterior of said laminate to said compartment for introducing developing fluid to said compartment; and
- an unexposed film chip received in said compartment and protected against tampering by said layers, said chip being exposable through said laminate to record a latent image developable by the developing fluid to establish a print viewable through said laminate.

4,245,036

EMULSIFIER-FREE LATEXES AND PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENTS CONTAINING THEM

Walter F. De Winter, 's-Gravenwezel; Marcel J. Momballe, Mortsel; August M. Mariën, Oevel, and Antoine R. Van Rossum, Brustem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Oct. 19, 1979, Ser. No. 86,582

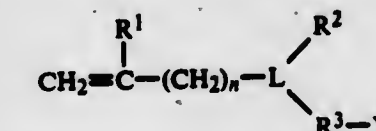
Claims priority, application United Kingdom, Oct. 20, 1978, 41446/78

Int. Cl.³ G03C 1/84, 1/78, 1/72, 1/31

U.S. Cl. 430-510

3 Claims

1. A photographic element comprising a support and one or more hydrophilic colloid layers including at least one light-sensitive silver halide emulsion layer, wherein at least one of said hydrophilic colloid layers is formed from a coating composition comprising a mixture of an aqueous solution of gelatin and a latex of a copolymer of ethyl acrylate, characterized in that the copolymer comprises 90 to 98% by weight of ethyl acrylate units and 2 to 10% by weight of units of an ionogenic comonomer corresponding to the general formula:

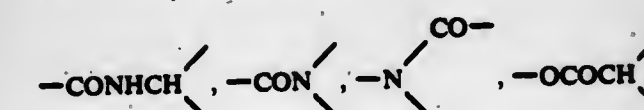


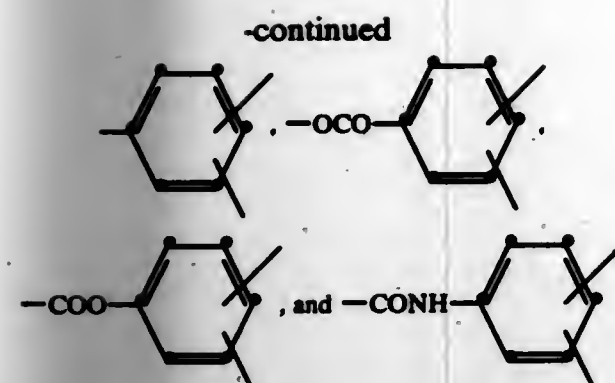
wherein:

R¹ is hydrogen or methyl,

n is 0 or an integer from 1 to 20,

L is a trivalent linking moiety of the group consisting of





R^2 is a hydrogen atom or an aliphatic branched or unbranched, saturated or unsaturated hydrocarbon group, R^3 is a monovalent chemical bond or a bivalent aliphatic hydrocarbon group, which may be interrupted by the group $-COO-$ or $-CONR-$, wherein R is hydrogen or C_1-C_4 alkyl, Y is a hydrophilic group selected from sulfo, sulphato and phosphono in acid or salt form, wherein at least one of the groups represented by $-(CH_2)_n-$, R^2 and R^3 is or comprises a hydrocarbon chain of at least 8 C-atoms, and wherein the copolymer particles in said latex have an average diameter of less than 100 nm.

4,245,037

DIRECT POSITIVE SILVER HALIDE LIGHT-SENSITIVE MATERIAL

Nobuyuki Tanjima; Shigeo Hirano, and Keiichi Adachi, all of Minami-ashigara, Japan, assigns to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

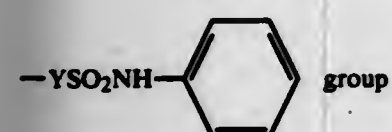
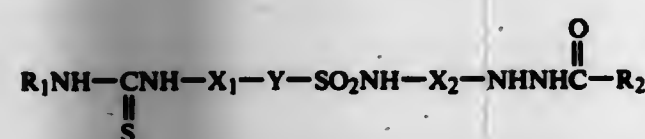
Filed Oct. 25, 1979, Ser. No. 88,232

Claims priority, application Japan, Nov. 30, 1978, 53-148522
Int. Cl.³ G03C 1/36

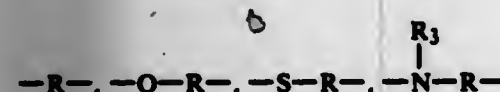
U.S. Cl. 430—559

16 Claims

1. A direct positive silver halide photographic light-sensitive material comprising a support having coated thereon a light-sensitive unfogged, internal latent image silver halide photographic emulsion layer and a hydrophilic colloid layer, at least one of said layers containing a compound represented by the formula (I):



wherein R_1 is selected from the group consisting of a straight chain or branched chain substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, an alkenyl group, an alkynyl group and a substituted or unsubstituted aryl group; R_2 is selected from the group consisting of a hydrogen atom, a straight chain or branched chain substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, an alkenyl group, an alkynyl group, and a substituted or unsubstituted aryl group; X_1 and X_2 , which are the same or different, each is a divalent substituted or unsubstituted aryl group; and Y represents



or a direct bond wherein the O or S is bonded to X_1 , R is selected from the group consisting of a straight chain or

branched chain alkylene group or a cycloalkylene group, each of which may contain a double or triple bond, and R_3 is selected from the group consisting of a straight or branched chain substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, an alkenyl group, an alkynyl group, and a substituted or unsubstituted aryl group, said compound (I) being present in a fogging amount which gives a suitable maximum density when the light-sensitive material is developed by a surface developing solution.

4,245,038

DETECTION OF NEISSERIA BACTERIA BY IMMUNOASSAY

Howard H. Weetall, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sep. 28, 1977, Ser. No. 837,364

Int. Cl.³ C12Q 1/66

U.S. Cl. 435—7

11 Claims

1. A method for detecting the presence of *Neisseria* bacteria in a fluid sample consisting of bringing antibodies specific to 1,2-propanediol dehydrogenase released from said bacteria during lysis thereof into contact with a lysed sample and reacting said antibodies with said 1,2-propanediol dehydrogenase forming a 1,2-propanediol dehydrogenase-antibody complex, and then testing for inhibition of enzyme activity.

4,245,039

STABLE CLUMPING FACTOR FOR THE IDENTIFICATION OF FIBRINOGEN AND FIBRIN CLEAVAGE PRODUCTS AND PROCESS FOR PREPARING IT

Norbert Heimburger; Friedrich Brauns, both of Marburg an der Lahn, and Kurt Fischer, Unterrosphe, all of Fed. Rep. of Germany, assigns to Behringwerke AG, Marburg an der Lahn, Fed. Rep. of Germany

Filed Jun. 8, 1976, Ser. No. 693,906

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1975, 2525804

Int. Cl.³ C12Q 1/56; C12N 1/20; C12R 1/445

U.S. Cl. 435—13

1 Claim

1. A homogeneous suspension of non-viable *Staphylococcus aureus* I. J. 7, positive to the clumping factor, in a buffered aqueous solution having a pH from 7.0 to 7.7 and containing from 3 to 50 percent by weight of at least one polyhydric alcohol soluble therein.

4,245,040

DETECTION AND MEASUREMENT OF CIRCULATING FIBRIN

Laurence Pilgeram, P.O. Box 1583, Goleta Station, Santa Barbara, Calif. 93107

Filed Nov. 20, 1978, Ser. No. 962,302

Int. Cl.³ C12Q 1/56, 1/48, 1/38

U.S. Cl. 435—13

3 Claims

1. In the process for the detection and quantitation of circulating plasma fibrin (Fs) comprising incubation at 37° C. of glycine-C14 ethyl ester and Factor XIII, or papain, with an 8 percent ethanol fraction of plasma, recovery of C14 labeled fibrin and measurement thereof, the improvement comprising substitution of whole plasma for the 8 percent ethanol fraction.

4,245,041

TRIGLYCERIDES ASSAY AND REAGENTS THEREFOR

Jerry W. Denney, Carmel, Ind., assignor to American Monitor Corporation, Indianapolis, Ind.

Filed Dec. 7, 1977, Ser. No. 858,187

Int. Cl.³ C12Q 1/32, 1/44

U.S. Cl. 435—15

6 Claims

1. In a method for the determination of triglycerides in biological fluids by enzymatically hydrolyzing the triglycer-

ides with lipase, converting the product thus formed to glycerol-1-phosphate with adenosine triphosphate (ATP) and the enzyme glycerol kinase (GK), and converting the glycerol-1-phosphate to dihydroxyacetone phosphate by the use of the enzyme glycerol phosphate dehydrogenase (GPDH) with the concomitant reduction of nicotinamide adenine dinucleotide (NAD) to the reduced form NADH,

the improvement, in said triglyceride assay, of reacting the NADH thus formed with iron in the oxidized (ferric) state to form reduced (ferrous) iron, said ferric ion being included in the same reaction mixture as the lipase while the lipase is present therein and is exerting its enzymatic effect, said reaction being mediated by an electron transfer agent, and reacting the reduced iron with an iron chelator to form a chromophore of high intensity, and thereafter quantitating the amount of triglyceride present in the biological fluid by measuring the amount of chromophore formed.

4,245,042

DEVICE FOR HARVESTING CELL CULTURES

Yacob Weinstein, Rehovot; Jehoshua Wolowelsky, Ramat Gan, and Nurit Gideon, Rehovot, all of Israel, assigns to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Jan. 22, 1979, Ser. No. 5,587

Claims priority, application Israel, Jan. 26, 1978, 53893

Int. Cl.³ C12Q 1/24

U.S. Cl. 435—30

6 Claims

1. A device for harvesting cells from a plurality of cells of a standard cell culture plate, comprising:

an upper block;
a lower block, complementary with said upper block;
attaching means for clamping said upper and lower blocks together with a tight fit;
first conduit means, provided within said lower block, for carrying washing fluid from a source thereof;
valve means, connected to said first conduit means, for controlling the flow of washing fluid therein;
a plurality of tubelets connected at the upper ends thereof to said first conduit means, the lower ends thereof extending below the bottom of said lower block, said tubelets being so spaced such that each of them fits into a well of the culture plate when in use;
a plurality of tubes, parallel with said tubelets, passing through said lower block, one end of each of said tubes extending below said lower block and the other end of each of said tubes terminating at a respective one of a plurality of outlets at the upper face of said lower block;
second conduit means, provided within said upper block, for connecting each of the outlets of said tubes in said lower block with a source of vacuum, said second conduit means including a plurality of openings in the lower face of said upper block, said openings being so spaced as to be opposite one of said outlets in said lower block when in use; and
a plurality of sealing means, one of said sealing means being disposed at each of said outlets, for creating a tight connection between said outlets in said lower block and said openings in said upper block when in use.

4,245,043

NEGATIVE CONTROL MEDIA DEVICE AND METHOD FOR MICROBIOLOGIC BIOCHEMICAL TESTS

Maryls E. Lund, Eden Prairie, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1979, Ser. No. 53,436

Int. Cl.³ C12Q 1/20; C12M 1/20

U.S. Cl. 435—33

19 Claims

1. A device for use in the identification of microorganisms, comprising a unitary tray member having a plurality of integrally formed test wells, at least some of said wells serving as identification test wells for microorganisms and containing biochemical test media which in hydrated form permits growth of said microorganisms with the generation of a vola-

tile color-forming compound, and corresponding negative control wells in close proximity to each of said test wells, said negative control wells containing negative control media including an inhibitor which in aqueous solution prevents color formation otherwise occurring therein from said volatile color forming compound, and wherein both said biochemical test media prior to inoculation with said microorganisms and said negative control media have the same color in hydrated form.

4,245,044

FAT EMULSION PYROGENICITY TEST

Harag-Shen Kuo, Pinole; Shantlal C. Mutha, El Cerrito, and Charles R. Thompson, Walnut Creek, all of Calif., assigns to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Feb. 1, 1979, Ser. No. 8,462

Int. Cl.³ C12Q 1/04

U.S. Cl. 435—34

7 Claims

1. A method of testing for the presence of pyrogens in an aqueous fat emulsion intended for intravenous administration which comprises incubating the fat emulsion with a Limulus lysate solution under conditions sufficient to effect gelation of at least some lysate constituents if pyrogens are present in the aqueous fat emulsion at a predetermined concentration.

4,245,045

METHOD OF PRODUCING ANTHRACYCLINE ANTIBIOTICS

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Toshikazu Oki, Yokohama, and Taiji Inai, Chigasaki, all of Japan, assigns to Zaidan Hojin Biosubaru Kagaku Kenkyu Kai, Tokyo, Japan

Division of Ser. No. 928,637, Jul. 27, 1978, which is a division of Ser. No. 838,617, Oct. 3, 1977, Pat. No. 4,207,313. This application May 10, 1979, Ser. No. 37,804

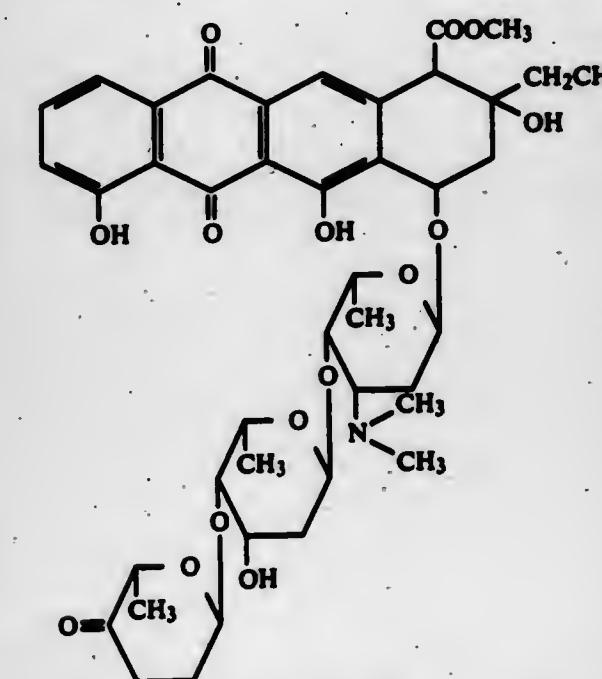
Claims priority, application Japan, Oct. 5, 1976, 51-1202370; May 24, 1977, 52-60908

Int. Cl.³ C12P 19/56

U.S. Cl. 435—78

5 Claims

1. A process for producing MA 144-N1 which comprises the steps of (1) incubating aclacinomycin A of the formula



in a medium containing an enzyme system capable of selectively reducing the keto group of the L-cinerulose A sugar moiety to a hydroxyl group and a coenzyme, said enzyme system being obtained from mammalian tissue or from Streptomyces strains and said coenzyme being NADPH or NADH and (2) recovering the MA 144-N1 from the medium in substantially pure form.

4,245,046

PROCESS FOR THE FERMENTATIVE PRODUCTION OF XANTHAN GUM WITH ORGANIC ACIDS

Arnold L. Demain, Wellesley, Mass., and Peter Sour, Muenster, Fed. Rep. of Germany, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 23, 1979, Ser. No. 23,213

Int. Cl.³ C09J 3/02

U.S. Cl. 435—104

6 Claims

1. In the process for the production of xanthan gum by the fermentative conversion of a nutrient composition containing a sugar carbon source with the bacterium *Xanthomonas campestris* NRRL B-1459, the improvement which comprises adding to said nutrient medium an organic acid that stimulates the conversion to xanthan gum, said organic acid selected from the group consisting of α -keto glutaric acid, pyruvic acid, salts thereof, esters thereof and mixtures thereof.

4,245,047

ANTIBIOTICS PRODUCED FROM THE MICROORGANISM NOCARDIA

Eiji Higashide, Takarazuka; Mitsuko Asai, Osaka, and Toru Hasegawa, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 815,050, Jul. 12, 1977, Pat. No. 4,187,292. This application Aug. 14, 1979, Ser. No. 66,823

Claims priority, application Japan, Apr. 1, 1977, 52/37884; Mar. 31, 1977, 52/37168

Int. Cl.³ C12P 13/00, 17/10

U.S. Cl. 435—128

2 Claims

1. A method of producing Antibiotic C-14919 E-1 and/or E-2 having the following characteristics:

- (a) Antibiotic C-14919 E-1
- (i) m.p. 187° C. (decomp.)
- (ii) Appearance: yellow crystals (needles or prisms)
- (iii) Solubility: Insoluble in: petroleum ether, hexane, water Sparingly soluble in: diethyl ether, benzene Soluble in: ethylacetate, chloroform, butanol, methyl isobutyl ketone, ethanol, acetone, metanol Readily soluble in: dimethylsulfoxide
- (iv) Acid, neutral or basic: a neutral substance
- (v) elemental analysis: C, 65.31; 65.05; 64.85 (%) H, 7.71; 7.58; 7.62 N, 5.01, 4.95, 5.01 O, 21.37; 22.83; 22.45
- (vi) Empirical formula: $C_{30}H_{42}N_2O_8$
- (vii) Ultraviolet absorption spectrum: λ_{max} MeOH: N-HCl(9:1) (nm) ($E_1^{1\%}$ cm): 274(455), 240(sh.), 397(43) λ_{max} MeOH(nm) ($E_1^{1\%}$ cm): 274(455), 240(sh.), 397(43) λ_{max} MeOH: N-NaOH(9:1) (nm) ($E_1^{1\%}$ cm): 236(585), 265(500), 550(56)
- (viii) Infrared absorption spectrum (KBr): Dominant peaks (cm^{-1}) at: 3430, 3340, 2950, 2910, 1740, 1692, 1660, 1645, 1605, 1500, 1375, 1315, 1120, 1100, 1085, 1060, 1025
- (ix) Specific rotation: $(\alpha)_D^{25} + 350 \pm 10^\circ$ (c=0.5, methanol)
- (x) Color reactions Negative ninhydrin, Ehrlich, peptide and 1% iron chloride-1% ferricyanide (1:1) reactions
- (b) Antibiotic C-14919 E-2
- (i) m.p. 148° C. (decomp.)
- Positive 1% iron chloride-1% ferricyanide (1:1) reaction (blue) characterized in that said method comprises cultivating an Antibiotic C-14919 E-1 and/or E-2 producing strain of the genus *Nocardia* in a culture medium to cause said strain to elaborate and accumulate a sufficient amount of Antibiotic C-14919 E-1 and/or E-2 in the resultant broth and harvesting said Antibiotic C-14919 E-1 and/or E-2 from the cultured broth.

4,245,048

PROCESS FOR PRODUCING COENZYME Q₁₀

Kunio Hata, Soka; Kikachiro Ohshima, Tokyo; Isao Kano, Tokyo; Motoi Matsui, Tokyo, and Tadaaki Sato, Akita, all of Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,430

Claims priority, application Japan, Sep. 25, 1978, 53-116732

Int. Cl.³ C12P 7/66

U.S. Cl. 435—133

8 Claims

1. A process for producing coenzyme Q₁₀ comprising cultivating the microorganism JY-155 which belongs to the genus *Trichosporon* (FERM-P4650, ATCC 20566) in a culture medium containing sulfite waste liquid as the carbon source to form and accumulate substantial amounts of coenzyme Q₁₀ in the culture, and then separating cultivated culture containing said coenzyme Q₁₀ from said culture to recover coenzyme Q₁₀ containing material.

4,245,049

PREPARATION OF 2-KETO-L-GULONIC ACID

Donald A. Kita, Essex, Conn., and Karlene E. Hall, Brooklyn, N.Y., assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,945

Int. Cl.³ C12P 7/60

U.S. Cl. 435—138

8 Claims

1. A process for producing 2-keto-L-gulonic acid or a salt thereof which comprises cultivating a 2-keto-L-gulonic acid-producing microorganism of the genus *Citrobacter* in an aqueous nutrient medium in the presence of 2,5-diketo-D-gluconic acid or a salt thereof.

4,245,050

PROCESS FOR THE PREPARATION OF CHOLINE OXIDASE BY FERMENTATION

Toru Nakanishi, Atrugi, and Yozo Machida, Machida, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 853,458, Nov. 21, 1977, abandoned.

This application Jul. 25, 1979, Ser. No. 60,282

Claims priority, application Japan, Nov. 19, 1976, 51-139120; Dec. 25, 1976, 51-155655

Int. Cl.³ C12N 9/06

U.S. Cl. 435—191

7 Claims

7. Choline oxidase produced by a microorganism belonging to the species *Brevibacterium album*, *Brevibacterium cerinum* or *Corynebacterium murisepticum* characterized by (a) catalyzing oxidation of choline to betaine aldehyde and that of betaine aldehyde to betaine; (b) a stable pH range of 7.0 to 8.3; (c) an optimum pH range for reaction of 7.5 to 9.0; (d) an optimum temperature range for reaction of 20° to 35° C.; (e) a stable temperature range of 20° to 45° C.; (f) a substrate specificity to choline or a salt thereof, a slight specificity to 2-dimethylaminoethanol, and no specificity to acetylcholine chloride, sarcosine, betaine, glycine, 2-methylaminoethanol and ethanolamine hydrochloride; (g) being stabilized by EDTA; (h) being inhibited by sodium azide; (i) a molecular weight of about 97,000; and (j) an isoelectric point of pH 4.05.

4,245,051

HUMAN SERUM PLASMINOGEN ACTIVATOR

Edward Reich, New York; Arubinda Guha, Pelham Manor, and Wolf-Dieter Schlenning, New York, all of N.Y., assignors to Rockefeller University, New York, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,808

Int. Cl.³ C12N 9/48; A61K 35/16

U.S. Cl. 435—212

4 Claims

1. An in vitro preparation of a plasminogen proactivator which is capable of being isolated from human plasma or serum and is free of particulate cellular material, characterized by having the following properties:

A. comprising a single polypeptide chain containing the

following amino acids in about the molar percentages shown:

8-9% Aspartic	5-6% Valine	3.5-5% Lysine
6 Threonine	1 Methionine	6-7 Arginine
5-7 Serine	1.5-2.5 Isoleucine	5-6 Half-Cystine
12-14 Glutamic	9-10 Leucine	Tryptophane
5-6 Proline	3-4 Tyrosine	(qualitative)
8.5-9.5 Glycine	3-4 Phenylalanine	Glutamine
8-10 Alanine	5-6 Histidine*	Asparagine

*greater than lysine

- B. an elemental analysis which corresponds approximately to: 54.6% C; 7.1% H; 15.7% N; balance O and S;
- C. a molecular weight, as determined by polyacrylamide gel electrophoresis in the presence of sodium dodecyl sulfate (SDS) and beta-mercaptoethanol, of about 92,000 daltons by reference to known standard proteins;
- D. an ultraviolet spectrum with a characteristic peak at 280 nm;
- E. being slightly soluble in water, aqueous ethanol and acetone but insoluble in lipophilic solvents;
- F. being heat sensitive and becoming about 50% inactivated upon heating to 100° C. for 15 minutes; and
- G. being substantially free of immunochemical cross-reactivity with antisera directed against human plasma kallikrein or human plasminogen
- H. being substantially unaffected by diisopropyl fluorophosphate.

4,245,052

DISPOSABLE MICROBIAL PROFILE TRAY

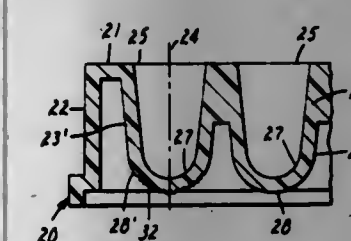
Marlys E. Lund, Eden Prairie, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1979, Ser. No. 53,437

Int. Cl.² C12M 1/20

U.S. Cl. 435—301

6 Claims



1. A microbial profile tray formed of a light-transmitting material and comprising a plurality of uniformly shaped cup-like receptacles having their openings integral with a planar surface, said cup-like receptacles having a lower end part, wherein some of said lower end parts have a surface finish which is smooth such that parallel light rays transmitted through said surfaces will continue to be generally parallel, and wherein some of said lower end parts have a light diffusing surface finish such that transmitted light will be diffused, and such that the diffusion due to said light diffusing surface finish will simulate the light diffusion which occurs when light is transmitted through a solution in which microbial growth has occurred.

4,245,053

MACRORETICULAR ITACONIC ACID ION EXCHANGE RESIN AND PROCESS FOR ITS PREPARATION

Susumu Nagai, Suita; Akira Ueda, Takahashi, and Kunie Toyoda, Fujisawa, all of Japan, assignors to Pfizer Inc., New York, N.Y. and City of Osaka, Osaka, Japan

Continuation-in-part of Ser. No. 870,704, Jan. 19, 1978, abandoned. This application Nov. 30, 1978, Ser. No. 964,858

Claims priority, application Japan, Jan. 26, 1977, 52-8124

Int. Cl.³ C08J 5/20

U.S. Cl. 521—38

6 Claims

1. A process for the preparation of an itaconic acid ion exchange resin with macroreticular structure having an average pore radius in the range between about 0.04 and 0.12 microns which comprises suspension copolymerizing in aqueous suspension medium (1) a beta-monoalkyl itaconate, (2) a cross-linking agent selected from the group consisting of divinyl benzene, allyl methacrylate and diallyl itaconate, and, if desired, (3) one or more other copolymerizable monounsaturated monomers in the presence of a pore forming agent selected from the group consisting of aliphatic hydrocarbons of from 5 to 8 carbon atoms, alicyclic hydrocarbons of from 5 to 8 carbon atoms and halogenated hydrocarbons of from 1 to 3 carbon atoms, which pore forming agent does not dissolve said beta-monoalkyl itaconate at room temperature, and then hydrolyzing the resulting copolymer.

4,245,054

PROCESS FOR THE MANUFACTURE OF A DRY MIXTURE FOR INSULATING STUCCO OR PLASTER

Frieder Hohwiler, Bad Dürkheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 103,839

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1978, 2854755

Int. Cl.³ C08J 9/22

U.S. Cl. 521—55

1 Claim

1. In a process for the manufacture of a dry plaster or stucco mixture for thermal insulation consisting of foamed polystyrene particles, cement, hydraulic binders and dispersing agents, the improvement comprises coating said foamed polystyrene particles with 1 to 4% by weight of methyl cellulose, based on the weight of foamed polystyrene.

4,245,055

EXPANDABLE RUBBER/RESIN BLEND AND RESULTING FOAM

Wayne E. Smith, Washington Boro, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation of Ser. No. 7,234, Jan. 29, 1979, abandoned. This application Dec. 14, 1979, Ser. No. 103,554

Int. Cl.³ C08J 9/10

U.S. Cl. 521—140

4 Claims

1. A low density, predominantly closed cell foam composition having a resin/rubber blend comprising relative proportions of:

- (a) 100 parts by weight of a nitrile-butadiene rubber consisting essentially of acrylonitrile and butadiene;
- (b) 40-200 parts by weight vinyl chloride resin selected from the group consisting of polyvinyl chloride, vinyl chloride-vinyl acetate copolymer, and mixtures thereof; and
- (c) 25-200 parts by weight polymethylmethacrylate in which said polymethylmethacrylate is present in an amount of at least about 9 percent by weight of the mixture of (a), (b), and (c).

4,245,056

CROSSLINKING HIGH DENSITY POLYETHYLENE WITH T-OCTYL SILICON PEROXIDES

Lawrence A. Beck, Walnut Creek, and Reider Halle, Novato, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

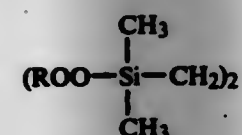
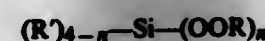
Division of Ser. No. 945,290, Sep. 25, 1978, Pat. No. 4,198,337. This application Nov. 23, 1979, Ser. No. 97,003

Int. Cl.³ C08F 8/06

U.S. Cl. 525—342

25 Claims

1. In the method for crosslinking high density polyethylene in the presence of an organic peroxide under crosslinking conditions, the improvement in which said organic peroxide is a silicon peroxide selected from the formulas:



wherein n is an integer of 1-3; R is a t-octyl group in which a tertiary carbon atom is directly bonded to the peroxy group; and R' is selected from alkyl, phenyl, and alkenyl (provided n is not more than 2), and a carbon chain which forms a saturated heterocyclic ring with the silicon atom, each R' group having up to about 10 carbon atoms.

4,245,057

IMPACT RESISTANT POLYSTYRENE BLENDS

Francis J. Slama, Aurora, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 838,555, Oct. 3, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 20,961

Int. Cl.³ C08L 51/04

U.S. Cl. 525—84

20 Claims

1. An impact resistant blend of components comprising (A) a styrene polymer having a number average molecular weight of about 200,000 to about 600,000 and a first Izod impact strength; and (B) a rubber modified styrene polymer having a second Izod impact strength and prepared by rapid mass polymerization, in stages, of a solution of a rubber in styrene monomer, a first stage of said polymerization being carried out at a temperature in excess of about 110° C., a second stage of said polymerization being carried out at a temperature higher than said first stage temperature and in excess of about 135° C., and at least one subsequent stage of the polymerization being carried out at about 170° to about 230° C. to achieve full conversion of monomer to polymer,

said blend having an Izod impact strength which exceeds the sum of said first and second Izod impact strengths.

4,245,058

POLYCARBONATE COMPOSITIONS

Ping Y. Lin, Naperville, Ill., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 27, 1979, Ser. No. 69,825

Int. Cl.³ C08L 69/00

U.S. Cl. 525—148

8 Claims

1. A ternary polycarbonate composition comprising in admixture, a high molecular weight aromatic polycarbonate which is based on a dihydric phenol, from about 2 to about 6 parts by weight per hundred parts of aromatic polycarbonate of an acrylate copolymer, which is a copolymer of a C₁-C₃ acrylate and a C₁-C₃ methacrylate, and from about 0.5 to about 4 parts by weight per hundred parts of aromatic polycarbonate of a polyolefin.

4,245,059

UNSATURATED POLYESTER COMPOSITION FOR MOLDING COMPOUND AND COATED MOLDED ARTICLE THEREOF

Yutaka Ichimura, Tokyo; Takahiro Kishino, Yokohama, and Naoyuki Fukahori, Kanagawa, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 721,529, Sep. 8, 1976, abandoned, which is a division of Ser. No. 500,858, Aug. 27, 1974, Pat. No. 3,997,629. This application Oct. 31, 1978, Ser. No. 956,335

Claims priority, application Japan, Aug. 29, 1973, 48-96088; Aug. 29, 1973, 48-96089; Sep. 19, 1973, 48-104910; Sep. 19, 1973, 48-104911

Int. Cl.³ C08L 67/06

U.S. Cl. 525—170

5 Claims

- (a) 1. A coated unsaturated polyester molded article obtained by applying a coating on a molded article and then curing the applied coating, said molded article being manufactured under application of heat and pressure from a composition consisting essentially of (1) 20 to 70 parts by weight of an unsaturated polyester obtained by condensing an acid component comprising predominantly an α,β -ethylenically unsaturated dicarboxylic acid with a polyol, (2) 25 to 75 parts by weight of a vinyl monomer copolymerizable with said unsaturated polyester (1), (3) 1 to 25 parts by weight of a thermoplastic polymer, and (4) an epoxy-group-containing vinyl monomer in a ratio of 1 to 40 parts by weight to 100 parts by weight of said unsaturated polyester (1), the sum of (1), (2), (3), and (4) being 100 parts by weight.
- (b)

4,245,060

FUNCTIONAL GROUP CONTAINING CYCLIC DIOLEFIN BUTYL RUBBERS

Kenneth W. Powers, Berkeley Heights; Robert Roper, Summit, and Martin L. Gorbaty, Fairwood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

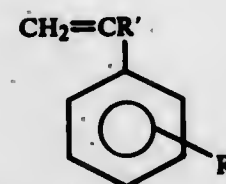
Division of Ser. No. 784,656, Apr. 4, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,329

Int. Cl.³ C08F 8/22, 8/46

U.S. Cl. 525—256

35 Claims

11. A tack-free, air-dryable elastomeric terpolymer having a viscosity average molecular weight of about 10,000 to 100,000 which comprises about 60 to 95 mol % isobutylene, about 3 to 15 mol % C₂-C₁₂ cyclic diolefin and about 0.5 to 30 mol % styrene compound represented by the formula



where R' is hydrogen or CH₃ and R is hydrogen, or an acyclic or alicyclic hydrocarbon radical having from 1 to 12 carbon atoms and wherein the terpolymer has attached thereto functional groups selected from the group consisting of anhydride, carboxy, hydroxy, silane, mercapto, epoxy, bromine and chlorine.

4,245,061

EPOXY-MODIFIED POLYOLEFIN WAX, PROCESS FOR PREPARATION THEREOF AND THERMOSETTING RESINOUS COMPOSITION COMPRISING SAID WAX

Akihiro Tachi; Toru Tomoshige, both of Otake; Harumi Furuta, Iwakuni, and Norio Matsuzawa, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 11, 1978, Ser. No. 967,905

Claims priority, application Japan, Dec. 14, 1977, 52-149346

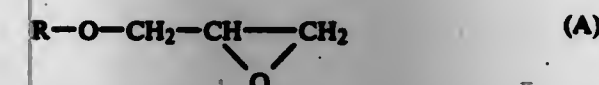
Int. Cl.³ C08F 269/00

U.S. Cl. 525—286

10 Claims

1. An epoxy-modified polyolefin wax, which consists of a

low-molecular-weight polyolefin grafted, copolymerized and modified with an epoxy group-containing, ethylenically unsaturated compound represented by the following formula (A) or (B):



wherein R stands for a monovalent hydrocarbon group containing a polymerizable ethylenically unsaturated bond, or



wherein R stands for a monovalent hydrocarbon group having a polymerizable ethylenically unsaturated bond, and R' stands for a hydrogen atom or an alkyl group having up to 4 carbon atoms, and has a number average molecular weight of from 600 to 10,000 and an epoxy equivalent of from 200 to 100,000.

4,245,062

PROCESS FOR PRODUCING PROPYLENE-ETHYLENE COPOLYMERS

Takeshi Suzuki; Hiromasa Chiba; Ryohichi Yasunaga, and Hiromasa Sekine, all of Ichihara, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sep. 11, 1979, Ser. No. 74,437

Claims priority, application Japan, Sep. 22, 1978, 53-117107

Int. Cl.³ C08L 23/16

U.S. Cl. 525—323

5 Claims

1. In a process for producing a modified polypropylene having an ethylene content of 5 to 20% by weight, by copolymerizing propylene with ethylene in the presence of a stereospecific catalyst comprising an organoaluminum compound component and a transition metal halide component, the improvement of the process which comprises a first step of carrying out polymerization so as to give a propylene polymer corresponding to 75 to 90% by weight based on the weight of a final modified polypropylene and having an ethylene content of 2% by weight or less; a second step of preparing an ethylene-propylene random copolymer (A) having an intrinsic viscosity of 12 dl/g or higher as measured in tetralin at 135° C. and an ethylene content of 50 to 95% by weight; and a third step of preparing an ethylene-propylene random copolymer (B) having an intrinsic viscosity of 9.5 dl/g or lower as measured in tetralin at 135° C. which is different from that of said ethylene-propylene random copolymer (A) and an ethylene content of 40 to 90% by weight, the proportion of said ethylene-propylene random copolymer (A) in the total amount of said ethylene-propylene random copolymers (A) and (B) being adjusted to 4 to 30% by weight and the first step being carried out always at first but the order of the second step and the third step being interexchangeable.

4,245,063

THERMOSETTING POWDER COATING COMPOSITION COMPRISING VINYL INTERPOLYMER AND POLYCARBOXYLIC ACID

Bruce P. Thill, and Donald A. Tomalia, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 443,264, Feb. 19, 1974, abandoned. This application Oct. 16, 1978, Ser. No. 951,544

Int. Cl.³ C08L 39/00

U.S. Cl. 525—329

10 Claims

1. A thermosetting powder-coating composition comprising a pulverulent solid mixture of: (A) a substantially linear vinyl addition interpolpolymer of at

least one member selected from the group consisting of a 2-vinyl-2-oxazoline, a 2-isopropenyl-2-oxazoline, a 2-vinyl-5,6-dihydro-4H-1,3-oxazine and a 2-isopropenyl-5,6-dihydro-4H-1,3-oxazine, and an ethylenically unsaturated compound(s) in such proportions as to obtain an interpolpolymer having

- (1) a plurality of pendant 2-oxazoline or 2-oxazine groups,
 - (2) a number average molecular weight of from about 5,000 to about 25,000 as determined by gel permeation chromatography, and
 - (3) a melting point of from about 60° C. to 90° C., said oxazoline or oxazine being present in the interpolpolymer in amounts of from about 10 to about 25 weight percent, based on the total weight of said interpolpolymer; and
- (B) a solid polycarboxylic acid having a melting point of from about 70° C. to about 180° C.; said acid being included in an amount of from about 0.75 to about 1.25 carboxy equivalents per pendant oxazoline or oxazine group on said interpolpolymer.

4,245,064

ACTIVATED SOLID CARRIER AND A METHOD OF ITS PREPARATION

Jaroslav Drobnik; Jaroslav Kalal; Jiri Labeky; Vladimir Sandek, all of Prague, and Frantisek Svec, Kladno, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Feb. 12, 1979, Ser. No. 11,428

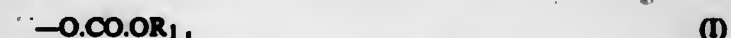
Claims priority, application Czechoslovakia, Feb. 22, 1978, 1125/78

Int. Cl.³ C08F 8/18; C08C 19/12; C07H 13/02; C12N 11/10

U.S. Cl. 525—329

4 Claims

1. A polymeric carrier containing hydroxyl groups which have been activated for bonding of nucleophilic groups, wherein this carrier is selected from the group comprising polysaccharides, phenol-formaldehyde resins, polyacrylates, polymethacrylates and polyacrylamides contains active groups of the general formula I



where R₁ is the residue selected from the group comprising 4-nitrophenyl, 2,4-dinitrophenyl, 2,4,6-trichlorophenyl, 2,4,5-trichlorophenyl, pentachlorophenyl, N-succinimidyl, N-phthalimidyl and 8-quinolinyl.

4,245,065

HEAT-SHRINKABLE OR HEAT-EXPANDABLE PRODUCTS FROM HYDROGENATED POLYBUTADIENE

Thomas A. Peters, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

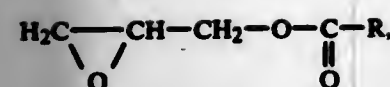
Division of Ser. No. 597,262, Jul. 18, 1975, Pat. No. 4,187,360. This application Jul. 25, 1979, Ser. No. 60,569

Int. Cl.³ C08F 8/04

U.S. Cl. 525—334

9 Claims

1. A dimensionally heat-unstable article of manufacture consisting of a shaped, vulcanized composition comprising a hydrogenated polybutadiene containing 0.01 to about 10 percent residual unsaturation which in its unvulcanized state contains from about 15 to 55 percent trans 1,4-addition and from about 15 to about 40 percent cis 1,4-addition said article having been subjected to a force sufficient to alter its dimensions at a temperature between room temperature and 150° C., said force being maintained for a time sufficient to allow the resulting shapealtered article to cool to room temperature, said article being in a dimensionally heat-unstable condition capable of altering its physical form upon application of heat alone.



where R represents an alkyl group having 4 to 10 carbon atoms, characterized in that the polymerization of the monomeric compounds is carried out in the presence of a 2 to 8 carbon atoms-containing mercaptomonocarboxylic acid and/or mercaptodicarboxylic acid as chain length regulator in an amount of 0.02 to 0.25 moles per mole of the monomeric compounds.

4,245,075

CARENE MODIFIED PETROLEUM RESINS

Andre Lepert, Rhode Saint Genese, Belgium, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 22, 1979, Ser. No. 51,009

Claims priority, application United Kingdom, Jan. 27, 1978, 27941/78

Int. Cl.³ C08F 110/00, 132/08, 136/00

U.S. Cl. 526—290 11 Claims

1. A process for the production of modified petroleum resins comprising copolymerizing, using a Friedel-Crafts catalyst, a mixture of

- a petroleum resin feed comprising C5 olefins and diolefins, C6 olefins and diolefins or a mixture of C5 and C6 olefins and diolefins, said feed being obtained from the cracking of petroleum feedstock and (ii) from 10 wt. % to 90 wt. % of carene based on the weight of the total mixture.

4,245,076

CROSS-LINKABLE VINYL COPOLYMERS CONTAINING HYDROXYL GROUPS

Klaus Marquardt, Burghausen, Fed. Rep. of Germany, assignor to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,749

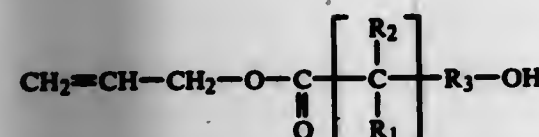
Claims priority, application Fed. Rep. of Germany, May 23, 1978, 2822436

Int. Cl.³ C08F 214/06, 218/08, 220/26

U.S. Cl. 526—320 8 Claims

1. Cross-linkable vinyl ester and/or vinyl halide copolymers containing hydroxyl groups consisting essentially of:

- from 50% to 99% by weight of monomer units selected from the group consisting of vinyl esters of alkanic acids having from 1 to 18 carbon atoms, vinyl halides, and mixtures of said vinyl esters and vinyl halides,
- from 0 to 40% by weight of mono-olefinically-unsaturated monomer units copolymerizable with vinyl esters and vinyl halide,
- from 1% to 50% by weight of allyl ester monomer units of the formula:



wherein R₃ is alkylene having from 4 to 10 carbon atoms, and the OH is a terminal OH, where said copolymer has a K-value of between 45 and 100.

4,245,077
STABILIZED ACID-CONTAINING ANAEROBIC COMPOSITIONS

JoAnn DeMarco, Wethersfield, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Mar. 29, 1978, Ser. No. 891,235

Int. Cl.³ C08F 22/10

U.S. Cl. 526—323.1 29 Claims

1. An anaerobic composition, containing at least about 0.1 milliequivalent of strong acid and/or equivalent strong acid precursors and stabilized against degradation caused by strong acid, comprising:

- at least one acrylate or methacrylate monomer;
- a free radical initiator in sufficient concentration to initiate cure of the monomer upon exclusion of oxygen;
- optionally, an inhibitor of free radical polymerization in sufficient concentration to prevent cure of the monomer prior to exclusion of oxygen;
- optionally, an accelerator of free radical polymerization; and
- as a stabilizer against degradation caused by strong acid, about 0.1 to about 10 percent by weight of the total composition of an epoxy selected from the group consisting of the epoxies of aromatic glycols and styrene oxide, linear epoxies of alkylene glycols, and epoxies of organic oils.

4,245,078

PROCESS FOR PRODUCING TEREPHTHALIC ACID

Takashi Suzuki, Niigata; Akira Tateishi, Toyosaka, and Susuma Naito, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sep. 1, 1976, Ser. No. 719,453

Claims priority, application Japan, Sep. 23, 1975, 50-115160

Int. Cl.³ C07C 51/16

U.S. Cl. 562—412 8 Claims

1. A process for producing terephthalic acid which comprises oxidizing p-tolualdehyde or a mixture of p-tolualdehyde and p-toluic acid with molecular oxygen in a lower aliphatic monocarboxylic acid solvent in the presence of a cobalt salt catalyst selected from the group consisting of cobalt carbonate, cobalt acetate, cobalt propionate, cobalt butyrate, cobalt valerate, cobalt toluate and a mixture thereof the process being characterized by charging p-tolualdehyde or the mixture of p-tolualdehyde and p-toluic acid continuously into a complete mixing type reactor and reacting them under the conditions that (1) the cobalt salt catalyst is present in the reaction solution in an amount of 0.05 to 0.70% by weight as a metallic cobalt based on the weight of the solvent and (2) p-toluic acid is present in the reaction solution during the reaction in an amount of 0.1 to 3.0 moles per gram atom of the metallic cobalt contained in the cobalt salt catalyst.

4,245,079

CURABLE ORGANOPOLYSILOXANE COMPOSITION

Yasuji Matsumoto, and Bunjiro Murai, both of Ohta, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,827

Int. Cl.³ C08G 77/06

U.S. Cl. 528—15 34 Claims

1. A curable organopolysiloxane composition consisting essentially of (A) an organopolysiloxane containing in the molecule at least one unit having the formula:



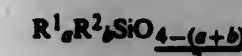
wherein R¹ is a substituted or unsubstituted monovalent hydrocarbon group, R² is a monovalent hydrocarbon group substituted with a trialkoxysilyl group which is bonded to the silicon atom through a chain containing at least 2 carbon atoms, a is 0, 1 or 2, b is 1 or 2, and the sum of a plus b is 1, 2 or 3, said organopolysiloxane also containing in the molecule at least

alkenyl groups bonded to silicon atoms, said organopolysiloxane having a viscosity of 50 to 1,000,000 cP measured at 25° C., (B) an organohydrogenpolysiloxane having units of the formula:



wherein R³ is a substituted or unsubstituted monovalent hydrocarbon group, c is 0, 1 or 2 and d is 1 or 2, and containing in the molecule at least 3 hydrogen atoms bonded to silicon atoms, the amount of said organohydrogenpolysiloxane being such that from 0.5 to 4.0 of hydrogen atoms bonded to silicon atoms are present per alkenyl group in said organopolysiloxane (A), and (C) a catalyst selected from the group consisting of platinum and platinum compounds in an amount of 1 to 100 ppm, calculated as platinum, based on said organopolysiloxane (A).

12. A curable organopolysiloxane composition consisting essentially of (A) an organopolysiloxane containing in the molecule at least one unit having the formula:

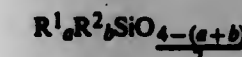


wherein R¹ is a substituted or unsubstituted monovalent hydrocarbon group, R² is selected from the group consisting of (1) a monovalent hydrocarbon group substituted with a monovalent group containing an oxycarbonyl group in which said oxycarbonyl group is bonded to the silicon atom by a chain containing at least 1 carbon atom and (2) a monovalent group containing a trialkoxysilyl group and an oxycarbonyl group in which said oxycarbonyl group is bonded to the silicon atom by a chain containing at least 1 carbon atom, a is 0, 1 or 2, b is 1 or 2, and the sum of a plus b is 1, 2 or 3, said organopolysiloxane also containing in the molecule at least 2 alkenyl groups bonded to silicon atoms, said organopolysiloxane having a viscosity of 50 to 1,000,000 cP measured at 25° C., (B) an organohydrogenpolysiloxane having units of the formula:



wherein R³ is a substituted or unsubstituted monovalent hydrocarbon group, c is 0, 1 or 2 and d is 1 or 2, and containing in the molecule at least 3 hydrogen atoms bonded to silicon atoms, the amount of said organohydrogenpolysiloxane being such that from 0.5 to 4.0 of hydrogen atoms bonded to silicon atoms are present per alkenyl group in said organopolysiloxane (A), and (C) a catalyst selected from the group consisting of platinum and platinum compounds in an amount of 1 to 100 ppm, calculated as platinum, based on said organopolysiloxane (A).

24. A curable organopolysiloxane composition consisting essentially of (A) an organopolysiloxane containing in the molecule at least one unit having the formula:



wherein R¹ is a substituted or unsubstituted monovalent hydrocarbon group, R² is a substituted monovalent hydrocarbon group substituted with a monovalent group containing an epoxy group, a is 0, 1 or 2, b is 1 or 2, and the sum of a plus b is 1, 2 or 3, said organopolysiloxane also containing in the molecule at least 2 alkenyl groups bonded to silicon atoms, said organopolysiloxane having a viscosity of 50 to 1,000,000 cP measured at 25° C., (B) an organohydrogenpolysiloxane having units of the formula:



wherein R³ is a substituted or unsubstituted monovalent hydrocarbon group, c is 0, 1 or 2 and d is 1 or 2, and containing in the molecule at least 3 hydrogen atoms bonded to silicon atoms, the amount of said organohydrogenpolysiloxane being such that from 0.5 to 4.0 of hydrogen atoms bonded to silicon atoms are present per alkenyl group in said organopolysiloxane (A), and (C) a catalyst selected from the group consisting of platinum and platinum compounds in an amount of 1 to 100 ppm, calculated as platinum, based on said organopolysiloxane (A).

4,245,080

POLYURETHANE-BASED LACQUER BINDERS PREPARED FROM

TRIS-(β-HYDROXYPROPYL)-ISOCYANURATE

Kurt C. Frisch, Detroit, Mich.; Daniel M. J. Tummers, and Anne Te Nijenhuis, both of Geleen, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 5, 1979, Ser. No. 17,281

Claims priority, application Netherlands, Mar. 4, 1978, 7802414

Int. Cl.³ C08G 18/32

U.S. Cl. 528—60 13 Claims

1. In a process for producing a lacquer binder by reacting a polyisocyanate with at least one polyol and at least one trifunctional hydroxyl compound, the improvement comprising forming a reaction product from:

- A-1—a polymeric polyhydroxy compound containing at least 2 hydroxyl groups and having a molecular weight of between about 300 and about 5000;
- A-2—a diol having a molecular weight of between about 60 and about 200, said diol present in an amount such that for every hydroxyl group derived from the polymeric polyol (A-1), there are present between 0 and 20 hydroxyl groups derived from the lower molecular weight diol A-2;
- B—tris-(β-hydroxypropyl)-isocyanurate, or ethoxylated tris-(β-hydroxypropyl)-isocyanurate present in an amount such that there are between 0.25 and 2.5 hydroxyl groups derived from the sum of the A-1 and A-2 polyols for every hydroxyl group derived from the tris-(β-hydroxypropyl)-isocyanurate or the ethoxylated tris-(β-hydroxypropyl)-isocyanurate; and
- C—at least one polyisocyanate containing at least 2 isocyanate groups per molecule, present in an amount such that there are between about 0.99 and about 1.10 NCO groups for every hydroxyl group.

4,245,081

PROCESS FOR THE PRODUCTION OF THERMOPLASTIC POLYURETHANE ELASTOMERS

Bernd Quiring, Leverkusen; Georg Niederellmann, Dormagen; Wilhelm Goyert, Cologne, and Hans Wagner, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,957

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817456

Int. Cl.³ C08G 18/32

U.S. Cl. 528—65 5 Claims

1. A continuous process for the production of thermoplastic polyurethanes by reacting

- one or more substantially linear polyols having molecular weights in the range from 400 to 10,000,
- One or more organic diisocyanates and
- a hydroxyl-group-containing chain extender having a molecular weight below 250, the ratio of the NCO-groups in component (B) to the Zerewitinoff-active groups in components (A) and (C) lying between 0.90 and 1.2, in extruders, characterized in that the chain extender (C)

used is a mixture of at least two different glycols, of which one is present in a quantity of from 50 to 90% by weight, based on the total amount of component (C), and a second in a quantity of from 1 to 50% by weight, based on the total amount of component (C).

4,245,082

POLYESTERS DERIVED FROM 3,4'-DIHYDROXY-BENZOPHENONES OR 3-HYDROXY-4'-(4-HYDROXYPHENYL)-BENZOPHENONE AND CERTAIN AROMATIC DICARBOXYLIC ACIDS AND FILAMENTS THEREOF

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

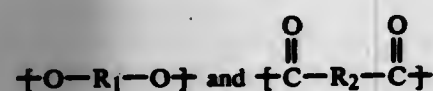
Continuation-in-part of Ser. No. 931,906, Aug. 8, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 54,448

Int. Cl.³ C08G 63/12, 63/18

U.S. Cl. 528-128

15 Claims

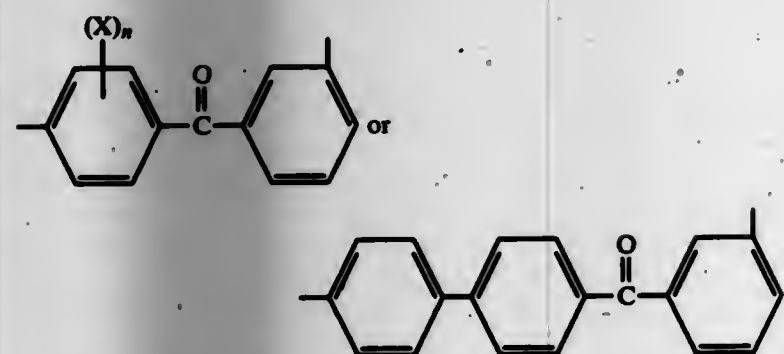
1. A fiber-forming (co)polyester consisting essentially of units having the structural formulas—



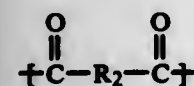
wherein R₁ in at least 85 mol % of the



units is



in which X is methyl or chloro and n is 0, 1 or 2 and wherein R₂ in at least 85 mol % of the



units is selected from the group consisting of p-phenylene, 2,6-naphthylene and p,p'-biphenylene with the proviso that when n is 1 or 2, R₂ is 2,6-naphthylene or p,p'-bi-phenylene.

4,245,083

PHENOLIC FORMALDEHYDE-SALICYLIC ACID CONDENSATION PRODUCTS

Günther Reitz, Cologne; Günther Boehmke, Leverkusen; Artur Haas, Overath, and Martin Meister, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 941,979

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741484

Int. Cl.³ C08G 8/18

U.S. Cl. 528-148

3 Claims

1. An alcohol-soluble condensation product of salicylic acid, formaldehyde and at least one phenolic material selected from the group consisting of phenol, cresol, bisphenol A, a 1:0.5-0.8 molar ratio condensation product of phenol and formaldehyde and a 1:0.5-0.8 molar ratio condensation product of cresol and formaldehyde, produced by reacting salicylic acid with form-

aldehyde in the presence of an acid catalyst in a first stage at a temperature from 100°-130° C. and then reacting the product under acidic condition with the phenolic material at 80°-140° C., the molar ratio of salicylic acid:formaldehyde:phenolic material being 1:1.2-10:1-10 and the molar ratio of the sum of salicylic acid plus phenol, cresol and bisphenol-A:formaldehyde being 1:0.6-0.9.

4,245,084

THERMOTROPIC, WHOLLY AROMATIC POLYTHIOLESTERS CAPABLE OF FORMING AN ANISOTROPIC MELT AND A PROCESS FOR PREPARING THE POLYTHIOLESTERS

Eui W. Choe, Randolph, and Gordon W. Calundann, N. Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

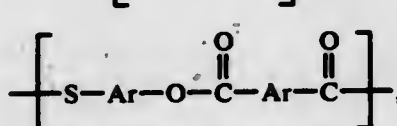
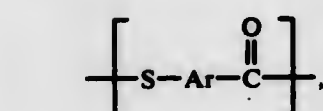
Filed May 7, 1979, Ser. No. 36,959

Int. Cl.³ C08G 63/68, 75/26

U.S. Cl. 528-293

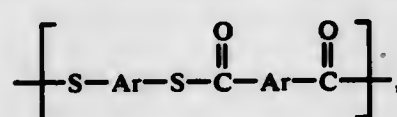
8 Claims

1. A thermotropic, wholly aromatic polythiolester capable of forming an anisotropic melt, said polythiolester being comprised of a recurring unit selected from the group consisting of:



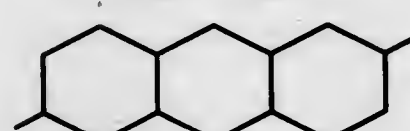
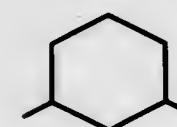
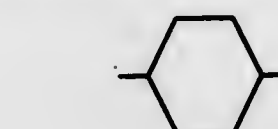
mixtures of I and II,

mixtures of at least one of I or II and

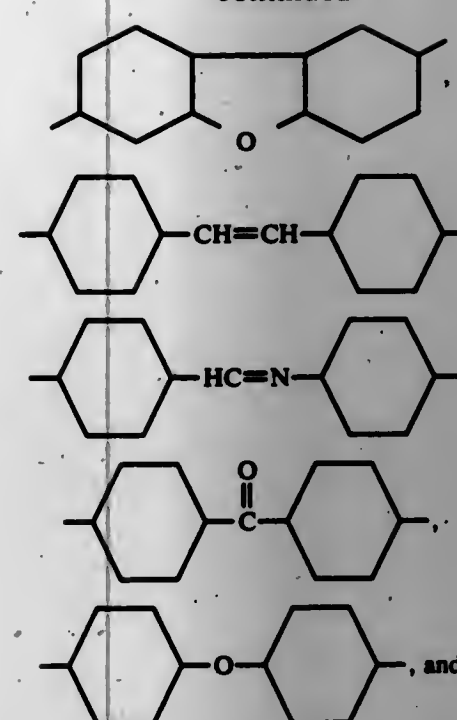


III mixtures of I and II,

IV mixtures of at least one of I or II and wherein Ar is unsubstituted or substituted aromatic moieties selected from the group consisting of:



-continued



(k) mixtures thereof.

4,245,085

1,2,4-OXADIAZOLE ELASTOMERS

Robert A. Froesch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Robert W. Rosser; Ibrahim M. Shalhoub, both of San Jose, and Hanoi Kwong, Sacramento, all of Calif.

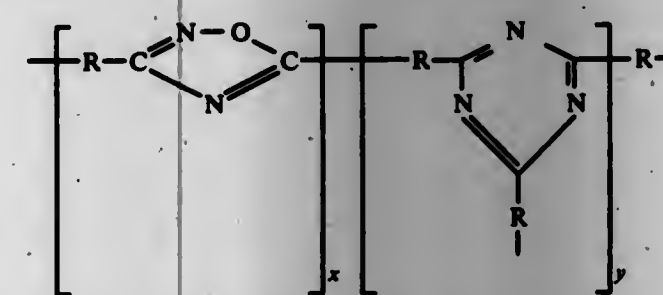
Filed Apr. 9, 1979, Ser. No. 28,301

Int. Cl.³ C08G 73/08

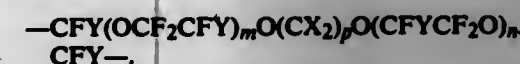
U.S. Cl. 528-310

2 Claims

1. A crosslinked 1,2,4-oxadiazole elastomeric polymer having the formula



wherein (a) R is a bivalent organic radical selected from the class consisting of alkylene radicals of the formula—(CX₂)_p— and alkylether radicals of the formula



or mixtures thereof, wherein X is fluorine or hydrogen, Y is fluorine or trifluoromethyl, p ranges from 1 to about 18, and m+n ranges from 2 to about 7; and (b) the triazine rings and the oxadiazole rings are randomly distributed and are present in proportions such that the ratio y:x ranges from 2:1 to 1:100.

4,245,086

PRODUCTION OF N-HYDROXYALKYLTRIMELLITIC ACID IMIDES POLYMERS

Kelichi Uno, and Takahito Miyagawa, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 754,357, Dec. 27, 1976, abandoned.

This application Oct. 30, 1978, Ser. No. 955,615

Claims priority, application Japan, Dec. 27, 1975, 50-158163

Int. Cl.³ C08G 73/16

U.S. Cl. 528-318

9 Claims

1. A process for preparing a poly(alkylenetrimellitate imide)

which comprises polycondensing an N-hydroxyalkyltrimellitic acid imide in the presence of at least one catalyst selected from the group consisting of a titanyl oxalate salt, a titanyl tartrate salt, bismuth trioxide, bismuth acetate and basic bismuth carbonate.

(f)

(g)

(h)

(i)

(j)

4,245,087

9-DEOXY-5,9α-EPOXY-3,6-DIDEHYDRO-PGF₁ AMIDES
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

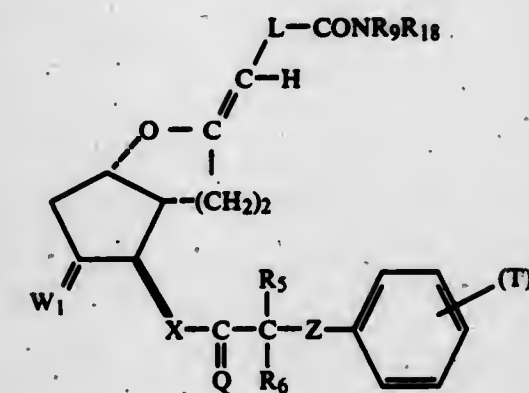
Division of Ser. No. 932,899, Aug. 11, 1978, which is a division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Sep. 7, 1979, Ser. No. 73,576

Int. Cl.³ C07D 311/02

U.S. Cl. 542-420

41 Claims

1. A compound of the formula



wherein W₁ is α-OH:β-H, α-H:β-OH, oxo, methylene, α-H:β-H, α-CH₂OH:β-H;

wherein L is —(CH₂)_d—C(R₂)₂—, wherein d is zero to 5, R₂ is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R₂ is not methyl when the other is fluoro;

wherein Q is oxo, α-H:β-H, α-OH:β-R₈ or α-R₈:β-OH wherein R₈ is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein R₉ is hydrogen, methyl, or ethyl, and wherein R₁₈ is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive;

wherein R₅ and R₆ are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R₅ and R₆ is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R₅ nor R₆ is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—), a valence bond or alkyl-

ene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR₅R₆— and the phenyl ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR₇—, wherein R₇ is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and wherein X is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) —C≡C—, or

(4) —CH₂CH₂—;

including the lower alkanates thereof.

4,245,088

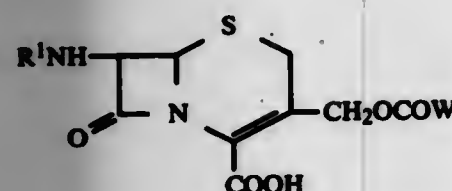
NOVEL 3-ACYLOXYMETHYL-CEPHEM COMPOUNDS USEFUL AS INTERMEDIATES FOR PREPARING CEPHALOSPORIN ANTIBIOTICS

Susumu Tsuchida, Saita; Michiyuki Sendai, Osaka, and Mitsuru Shirahishi, Saita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 882,914, Mar. 2, 1978, abandoned, which is a continuation of Ser. No. 660,408, Feb. 23, 1976, abandoned. This application Jun. 8, 1979, Ser. No. 46,708
Int. Cl.³ C07D 501/20

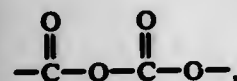
U.S. Cl. 544-16

34 Claims

1. A compound of the formula



wherein R¹ is an acyl group and W is acetonyl or —X—OH, in which X is a carbon chain which is capable of forming a five- or six-membered ring with



which carbon chain may include a double bond or at least one atom selected from the group consisting of oxygen, nitrogen and sulfur, and on which carbon chain one or more suitable substituents may be attached, or a salt thereof.

4,245,089

NOVEL INTERMEDIATES FOR β-LACTAMS

Roger J. Ponsford, Horsham, and Robert Southgate, Warham, Nr. Horsham, both of England, assignors to Beecham Group Limited, England

Filed Jan. 25, 1979, Ser. No. 6,435

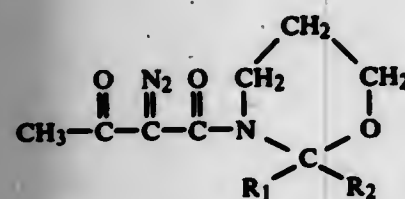
Claims priority, application United Kingdom, Feb. 2, 1978, 04178/78

Int. Cl.³ C07D 265/12

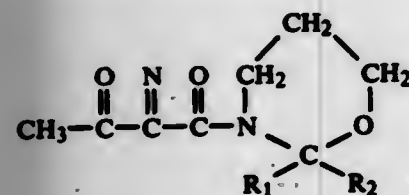
U.S. Cl. 544-71

7 Claims

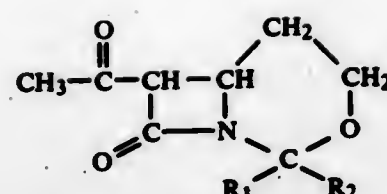
1. Process for the preparation of 7-(1-hydroxyethyl)-8-oxo-3-oxa-1-azabicyclo[4.2.0]octane of the formula:



wherein each of R₁ and R₂ is alkyl of 1 to 3 carbon atoms or together tetramethylene or pentamethylene and the configuration about the β-lactam ring is trans which comprises, effecting cyclization of an oxazine of the formula:

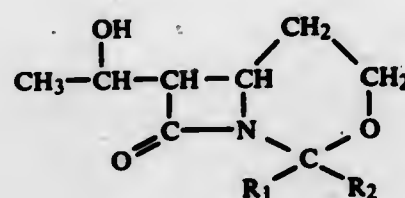


photolytically to yield a 7-acetyl-8-oxo-3-oxa-1-azabicyclo[4.2.0]octane of the formula:



and the reduction of said 7-acetyl compound.

4. A compound of the formula:



wherein R₁ and R₂ together are tetramethylene or pentamethylene and the configuration about the β-lactam ring is trans.

4,245,090

PROCESS FOR THE RECOVERY OF CYANURIC CHLORIDE

Ralf Goedecke, Rodenbach; Martin Liebert, Steinbach; Wolfgang Nischk, Wesseling, all of Fed. Rep. of Germany; Wolfgang Plötz, Mobile, Ala., and Kurt Paschner, Frankfurt, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,831

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843382

The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.

Int. Cl.³ C07D 251/28

U.S. Cl. 544-191

6 Claims

1. A process for the recovery of cyanuric chloride in solid or liquid form from the reaction mixture which results from the trimerization of cyanogen chloride wherein in order to recover the cyanuric chloride at will in liquid form, in solid form or in both liquid and solid form the process comprises the steps of introducing the gaseous reaction mixture into an apparatus consisting essentially of a stripping column and a condenser connected at the outlet side thereof above the stripping column, holding the sump of the stripping column at the boiling temperature of the cyanuric chloride, regulating the temperature at the outlet of the condenser in the range of 146° to 190° C. to partially condense the cyanuric chloride, removing cyanuric chloride to be recovered in liquid form from the lower end of the stripping column, leading the removed liquid cyanuric chloride to a spray tower, spraying the removed liquid cyanuric chloride to form solid cyanuric chloride and withdrawing the solid sprayed cyanuric chloride from the spray tower, conveying gas leaving the condenser and still containing cyanuric chloride to a separating chamber and recovering the residual cyanuric chloride therefrom as a solid by desublimation, the amount of cyanuric chloride in the residual gas being controlled by the temperature at the outlet of the condenser.

4,245,091

PROCESS FOR THE RECOVERY OF CYANURIC CHLORIDE

Ralf Goedecke, Rodenbach; Martin Liebert, Steinbach; Wolfgang Nischk, Wesseling, all of Fed. Rep. of Germany; Wolfgang Plötz, Mobile, Ala., and Kurt Paschner, Frankfurt, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,832

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843381

The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.

Int. Cl.³ C07D 251/28

U.S. Cl. 544-191

5 Claims

1. A process for the recovery of cyanuric chloride in solid or liquid form from the reaction mixture which results from the trimerization of cyanogen chloride wherein in order to recover the cyanuric chloride in liquid form or in both liquid and solid form the process comprises the steps of introducing the gaseous reaction mixture into an apparatus consisting essentially of a stripping column and a condenser connected at the outlet side thereof above the stripping column, holding the sump of the stripping column at the boiling temperature of the cyanuric chloride, regulating the temperature at the outlet of the condenser in the range of 146° to 190° C. to partially condense the cyanuric chloride, removing cyanuric chloride to be recovered in liquid form from the lower end of the stripping column, conveying the residual gas leaving the condenser and still containing cyanuric chloride to a separating chamber and recovering the residual cyanuric chloride therefrom, the amount of cyanuric chloride in the residual gas being controlled by the temperature at the outlet of the condenser.

4,245,092

PROCESS FOR THE RECOVERY OF CYANURIC CHLORIDE

Ralf Goedecke, Rodenbach; Martin Liebert, Steinbach; Wolfgang Nischk, Wesseling, all of Fed. Rep. of Germany; Wolfgang Plötz, Mobile, Ala., and Kurt Paschner, Frankfurt, Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,833

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843380

Int. Cl.³ C07D 251/28

U.S. Cl. 544-191

3 Claims

1. A process for the recovery of cyanuric chloride in solid or liquid form from the reaction mixture which results from the trimerization of cyanogen chloride wherein in order to recover the cyanuric chloride at will in liquid form, in solid form or in both liquid and solid form the process comprises the steps of introducing the gaseous reaction mixture into an apparatus consisting essentially of a stripping column and a condenser connected at the outlet side thereof above the stripping column, holding the sump of the stripping column at the boiling temperature of the cyanuric chloride, cooling the cyanuric chloride at the outlet of the condenser to a temperature in the range of 146° to 190° C. to form liquid cyanuric chloride, removing cyanuric chloride to be recovered in liquid form from the lower end of the stripping column, leading the removed liquid cyanuric chloride to a spray tower, spraying the removed liquid cyanuric chloride and withdrawing solid, fine-grained cyanuric chloride from the bottom of the spray tower.

4,245,093

PROCESS FOR THE PRODUCTION OF BASIC SUBSTITUTED ALKYLTHEOPHYLLINE DERIVATIVES

Karl H. Klingler, Langen; Franz Hitzel, Mürfelden, and Erich Bickel, Frankfurt, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Hanau, Fed. Rep. of Germany

Filed Jan. 21, 1979, Ser. No. 50,744

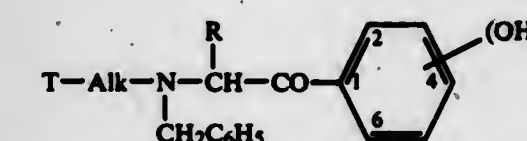
Claims priority, application United Kingdom, Jan. 23, 1978, 27707/78

Int. Cl.³ C07D 473/08

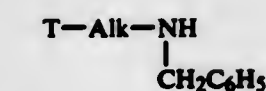
U.S. Cl. 544-267

21 Claims

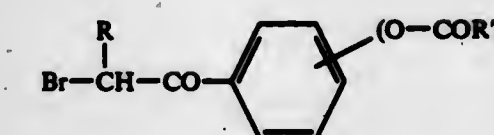
1. A process of preparing a theophylline derivative of the formula



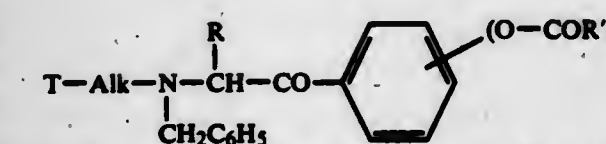
where T is the theophyllinyl-(7)-group, Alk is (CH₂)_n, R is hydrogen or a methyl group, n is 1 or 2 with the proviso that two hydroxy groups of the phenyl ring cannot be in the 3,4-positions comprising reacting an aminoalkyltheophylline of the formula



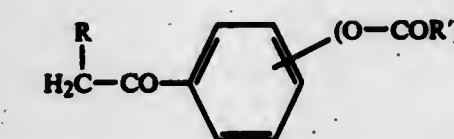
with a bromoketone of the formula



where R' is a lower alkyl group with the proviso that the two —OCOR' groups of the phenyl ring cannot be in the 3,4-positions to form an intermediate compound of the formula



and subsequently hydrolytically splitting off the R'CO protective group, said bromoketone of formula III having been produced free of dibromide by bromination of a ketone of the formula



with bromine following by treatment with a lower trialkyl phosphite.

4,245,094

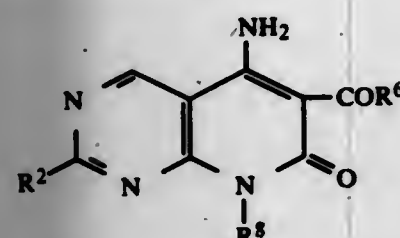
5-AMINO-2,8-DIALKYL-7,8-DIHYDRO-7-OXO-PYRIDO-[2,3-d]PYRIMIDINE-6-CARBOXYLIC ACID DERIVATIVES

Anthony C. Scotese, King of Prussia; Robert L. Morris, Devon, and Arthur A. Santilli, Havertown, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 116,123
Int. Cl.³ A61K 31/505; C07D 471/04

U.S. Cl. 544-279

1. A compound of the formula:



in which

- R² is alkyl of 1 to 6 carbon atoms;
R⁶ is alkoxy of 1 to 6 carbon atoms, amino, mono- and dialkylamino where each alkyl group has from 1 to 6 carbon atoms, 2-hydroxyethylamino, 2-alkoxyethylamino of 3 to 8 carbon atoms or 2-(dialkylamino)ethylamino in which each alkyl group has from 1 to 6 carbon atoms; and
R³ is alkyl of 1 to 6 carbon atoms;
or a pharmaceutically acceptable salt thereof.

4,245,095

INDOLO ISOQUINOLINE COMPOUNDS

David C. Horwell, Farnborough, and David E. Tupper, Bracknell, both of England, assignors to Lilly Industries Limited, London, England

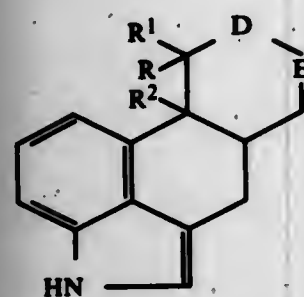
Division of Ser. No. 39,079, May 14, 1979. This application Feb. 1, 1980, Ser. No. 117,735

Claims priority, application United Kingdom, May 23, 1978, 21355/78; Apr. 12, 1979, 7912970/79

Int. Cl.³ C07D 471/06

U.S. Cl. 546-68

1. A compound of the formula:



where the moiety D-E represents a group of the formula:



wherein R³ represents hydrogen, C₁₋₆ alkyl, C₃₋₆ cycloalkyl, C₃₋₆ cycloalkyl-C₁₋₄ alkyl, benzyl, benzyl substituted with from 1-3 of the following substituents: halogen, methyl, methoxy, nitro; C₃₋₆ alkenyl or C₁₋₄ alkanoyl;

wherein R represents hydrogen, C₁₋₆ alkyl, C₃₋₆ cycloalkyl, benzyl, benzyl substituted with from 1-3 of the following substituents: halogen, methyl, methoxy, nitro; and
wherein R¹ and R² each represent hydrogen or taken together represent a chemical bond.

4,245,096

BIS-(2,4-DINITROPHENYL)-METHYL-PYRIDINIUM AND QUINOLINIUM COMPOUNDS

Anselm Rothe, Birkenau; Werner Gluthlein, Mannheim; Walter Ritterdorf, Mannheim, and Wolfgang Werner, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,720

Claims priority, application Fed. Rep. of Germany, May 17, 1978, 2821501

4 Claims 1978, 2821501

Int. Cl.³ C07D 213/26, 215/10, 215/12, 217/10

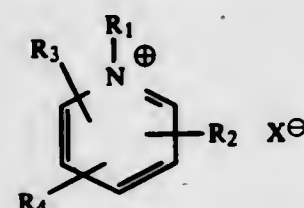
U.S. Cl. 546-180

10 Claims

Absorption spectra of Bis-(dinitro-phenyl)-4-2-pyridylpyridine-methide

Concentration	C = 3.58 x 10 ⁻³ Molar
Solvent	Methanol + 10% Phosphate
Buffer pH 10	
Pathlength	d = 1.0 cm

1. Bis-(2,4-dinitrophenyl)-methylpyridinium compound of the formula



wherein one of

- R₁ and R₂ is a bis-(2,4-dinitrophenyl)-methyl radical and the other is a lower alkyl radical;
R₂ can also be hydrogen atom or trifluoromethyl;
R₃ and R₄ are hydrogen or, together with the carbon atoms to which they are attached, represent a benzene ring; and
X⁻ is an appropriate acid anion or the betaine form of said compound.

4,245,097

4-(MONOSUBSTITUTED-ALKYL) AMINO] BENZOIC ACIDS AND ANALOGS AS HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC AGENTS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 27, 1978, Ser. No. 881,456

Int. Cl.³ C07D 295/08, 295/18

U.S. Cl. 546-245

3 Claims

- The compound 1-[4-(16-mercaptohexadecylamino)benzoyl]pyrrolidine.
- The compound 1-[4-(11-(n-butylthio)undecylamino)benzoyl]piperidine.

4,245,098

PROCESS FOR PRODUCING 2,3,5-TRICHLOROPYRIDINE, 2,4,4-TRICHLORO-4-FORMYL-BUTYRONITRILE AS A NOVEL COMPOUND AND A PROCESS FOR PRODUCING IT

Eginhard Steiner, Füllinsdorf; Pierre Martin, Rheinfelden, and Daniel Bellas, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,017

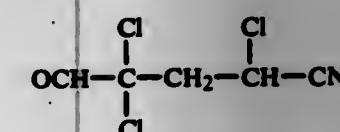
Claims priority, application Switzerland, Dec. 5, 1978, 12394/78; Dec. 5, 1978, 12395/78; Oct. 23, 1979, 9488/79; Oct. 23, 1979, 9489/79

Int. Cl.³ C07D 213/61

U.S. Cl. 546-250

29 Claims

1. A process for producing 2,3,5-trichloropyridine, which process comprises causing trichloroacetaldehyde to undergo an addition reaction, in the presence of a catalyst, with acrylonitrile, and cyclizing the formed 2,4,4-trichloro-4-formyl-butyronitrile of the formula I



with the splitting-off of water, to give 2,3,5-trichloropyridine.

4,245,099

2-ACYL-6-AMINOMETHYLPHENOL DERIVATIVES

Hiroaki Itoh, Osaka; Mitoshi Koano, Kyoto; Takao Tokuhito, Nagaokakyō; Sadahiko Iguchi, Yahata, and Masaki Hayashi, Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 24, 1979, Ser. No. 60,113

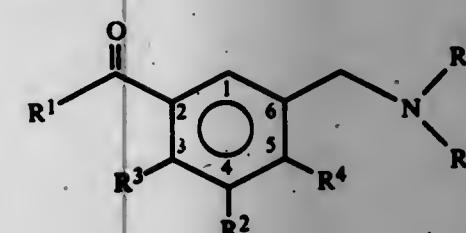
Claims priority, application Japan, Jul. 27, 1978, 53-91031

Int. Cl.³ C07D 213/50

U.S. Cl. 546-315

37 Claims

1. A 2-acyl-6-aminomethylphenol compound having the formula (I):



wherein R¹ represents a straight chain or branched chain alkyl group of 1 to 6 carbon atoms unsubstituted or substituted with 1 to 3 halogen atoms; a hydrogen atom or a group having the formula (II):



(II)

wherein n represents 0 or an integer of 1 to 6; R⁷ represents a cycloalkyl group of 3 to 8 carbon atoms unsubstituted or substituted with at least one lower alkyl group; a phenyl group unsubstituted or substituted with at least one lower alkyl group, a halogen atom, a lower alkoxy group or a lower alkylthio group; a lower alkoxy group; a lower alkylthio group; a lower alkylsulfinyl group; a lower alkylsulfonyl group; an N-lower alkylamino group; an N,N-di-lower alkylamino group; or a pyridyl, furyl or thienyl group; R² represents a straight chain or branched chain alkyl group of 1 to 6 carbon atoms; a cycloalkyl group of 4 to 8 carbon atoms unsubstituted or substituted with at least one lower alkyl group; or a phenyl group unsubstituted or substituted with at least one lower alkyl group, a lower alkoxy group, a lower alkylthio group or a halogen atom; or a lower alkylthio group; R³ and R⁴ each represents a hydrogen atom or R² and R³ or R² and R⁴ when taken together represent an alkylene group of 2 to 5 carbon

atoms unsubstituted or substituted with 1 or 2 lower alkyl groups; R⁵ represents a hydrogen atom or a lower alkyl group; and R⁶ represents a hydrogen atom, a lower alkyl group or a formyl group, an alkanoyl group of 2 to 5 carbon atoms unsubstituted or substituted with a halogen or a benzoyl group unsubstituted or substituted with at least one lower alkyl group, a hydroxy group or a halogen atom, and the pharmaceutically acceptable acid addition salt thereof.

18. 2-Nicotinyl-4-tert-butyl-6-aminomethylphenol according to claim 1.

4,245,100

SYDNONIMINE N-ACYL DERIVATIVES AND METHOD FOR PREPARING SAME

Leonid E. Kholodov, Vladimir G. Yashunsky, Roald A. Altshuler, Mikhail D. Mashkovsky, Valentina V. Ogorodnikova; Zoya A. Olovyanishnikova, all of Moscow; Anna S. Vitvitskaya, Leningrad; Valery A. Parshia, and Ekaterina A. Kekhazeva, both of Moscow, all of U.S.S.R., assignors to Vsesojuzny nauchno-issledovatel'skiy khimikofarmatsevticheskiy institut imeni S. Ordzhonikidze and Institut biofiziki, both of Moscow, U.S.S.R.

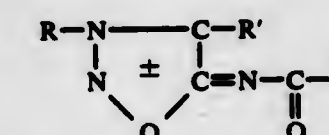
Filed Nov. 28, 1977, Ser. No. 855,246

Int. Cl.³ A61K 31/42; C07D 271/04

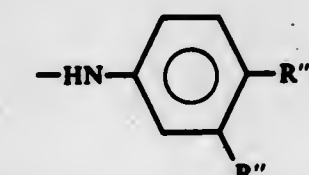
U.S. Cl. 548-125

11 Claims

1. An N-acyl sydnonimine of the formula:

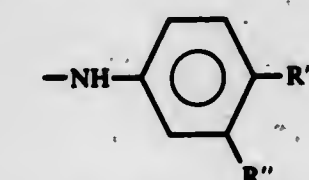


wherein R is selected from the group consisting of β-phenylethyl, di-α-methyl-β-phenylethyl and 1-α-methyl-β-phenylethyl; R' is selected from the group consisting of hydrogen and phenyl; X is selected from the group consisting of lower alkyl, and



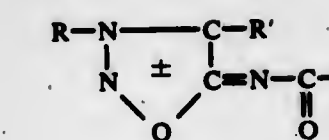
wherein R'' is selected from the group consisting of hydrogen, halogen and lower fluorinated alkyl; R''' is selected from the group consisting of hydrogen, a halogen and a lower alkyl; with the proviso that

when R is di-α-methyl-β-phenylethyl and R' is H, and R'' is Cl, then R''' can only be Cl; and when X is

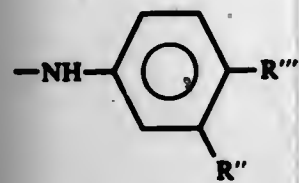


and R', R'' and R''' are each hydrogen, then R can only be 1-α-methyl-β-phenylethyl.

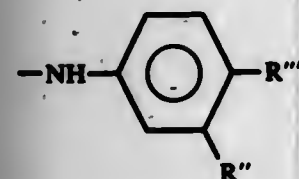
6. A method for preparing N-acyl derivatives of sydnonimine of the formula:



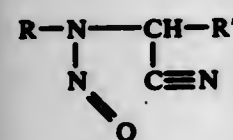
wherein R is selected from the group consisting of β -phenylethyl, dl- α -methyl- β -phenylethyl and l- α -methyl- β -phenylethyl; R' is selected from the group consisting of hydrogen and phenyl; X is selected from the group consisting of lower alkyl, and



wherein R'' is selected from the group consisting of hydrogen, halogen, and lower fluorinated alkyl; R''' is selected from the group consisting of hydrogen, halogen and lower alkyl; with the proviso that when R is dl- α -methyl- β -phenylethyl and R' is H, and R'' is Cl, then R''' can only be Cl; and when X is



and R', R'' and R''' are each hydrogen, then R can only be l- α -methyl- β -phenylethyl; comprising reacting N-nitroso derivatives of N-substituted nitriles of α -aminoacids of the formula:



wherein R is selected from the group consisting of β -phenylethyl, dl- α -methyl- β -phenylethyl, and l- α -methyl- β -phenylethyl; R' is selected from the group consisting of H and phenyl; with an acylation agent selected from the group consisting of acyl halides of carboxylic acids, anhydrides of carboxylic acids, phenyl and substituted phenyl isocyanates, in a medium of a suitable organic solvent in the presence of a basic amine catalyst selected from the group consisting of tertiary amines, followed by isolation of the desired product.

4,245,101

METHOD OF PREPARATION AND USE OF N-PHENYL-N'-1,2,3-THIAZOLE-5-YL-THIOUREA
Heinz Schulz, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany
Filed May 8, 1974, Ser. No. 468,031
Claims priority, application Fed. Rep. of Germany, May 14, 1973, 2324732

The portion of the term of this patent subsequent to May 13, 1992, has been disclaimed.

Int. Cl.³ A01N 47/36; C07D 285/06

U.S. Cl. 548-127

1 Claim

1. N-phenyl-N'-1,2,3-thiadiazol-5-yl-thiourea.

4,245,102 PROCESSES FOR THE PREPARATION OF TETRAMISOLE

Sivaraman Raghu, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 958,221, Nov. 6, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,278

Int. Cl.³ C07D 277/60

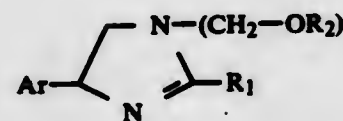
U.S. Cl. 548-155

3 Claims

1. A process for the preparation of tetramisole which comprises the steps of:

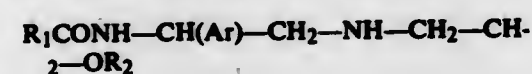
(a) reacting at a temperature between about -20°C . and 30°C . at from about one-half to about four hours at least equimolar amounts of an imidoaldehyde having the formula: $\text{X}-\text{C}(\text{R}_1)=\text{N}-\text{CH}(\text{Ar})-(\text{CH}_2)_2-\text{X}$ wherein Ar is phenyl, R_1 is hydrogen, lower alkyl, phenyl or lower alkyl-substituted phenyl, R_2 is hydrogen or lower alkyl, and X is halo, and hydroxyethylamine or an alkoxyethylamine having the formula: $\text{R}_2\text{O}-(\text{CH}_2)_2-\text{NH}_2$ wherein R_2 is hydrogen or lower alkyl to obtain an amidine hydrohalide;

(b) reacting the latter amidine hydrohalide having the formula: $\text{R}_2\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{C}(\text{R}_1)=\text{N}-\text{CH}(\text{Ar})-\text{CH}_2\text{X.HX}$ at a temperature ranging from -20°C . to 50°C . with either an inorganic base, hydroxyethylamine or alkoxyethylamine having the formula: $\text{H}_2\text{N}-\text{CH}_2-\text{CH}_2-\text{OR}_2$ in the presence of an inert halogenated hydrocarbon solvent to obtain an imidazoline having the formula:



where Ar, R_1 , and R_2 are as defined above;

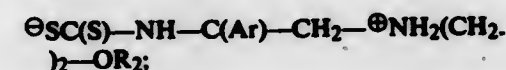
(c) hydrolyzing the latter imidazoline with an aqueous base or mineral acid at a temperature ranging from about 25°C . to about 150°C . to cleave the ring to thereby obtain an amidoamine having the formula:



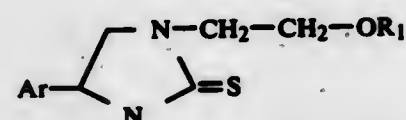
where Ar, R_1 , and R_2 are as above defined;

(d) further reacting the latter amidoamine with a suitable inorganic base or acid to obtain a diamine having the formula: $\text{NH}_2-\text{CH}(\text{Ar})-\text{CH}_2-\text{NH}-\text{CH}_2-\text{CH}_2-\text{OR}_2$ wherein Ar, R_1 , and R_2 are as above defined;

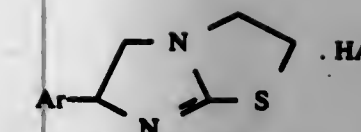
(e) reacting the latter diamine with carbon disulfide in an inert solvent at a temperature of from -10°C . to 40°C . for thirty minutes to about four hours to provide a dithiocarbamate having the tautomeric formula:



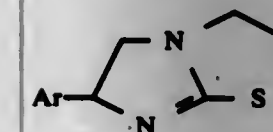
(f) heating at 80°C . to 150°C . from two to twenty hours the latter dithiocarbamate to produce a thione having



(g) reacting the latter thione with the acid having the formula: HA to provide an imidazothiazole having the formula:



wherein Ar, R_1 , and R_2 are as defined above, and A is an anion of a pharmaceutically acceptable acid, and
(h) neutralizing the latter with an inorganic base to obtain tetramisole having the formula:



4,245,103

PROCESSES FOR THE PREPARATION OF TETRAMISOLE

Sivaraman Raghu, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 958,222, Nov. 6, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 63,289

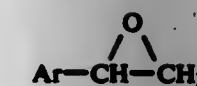
Int. Cl.³ C07D 277/60

U.S. Cl. 548-155

5 Claims

1. A process for the preparation of tetramisole which comprises the steps of:

(a) reacting at least equimolar quantities of an arylvinyl oxide having the formula:



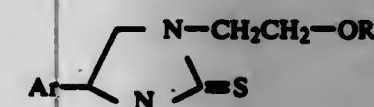
with an alkoxyethylamine having the formula: $\text{R}_1-\text{O}-(\text{C}-\text{H}_2)_2$ at a temperature of from 0°C . to 150°C . to obtain an N-(arylhydroxyalkyl)alkoxyethylamine having the formula: $\text{Ar}-\text{CH}(\text{OH})-\text{CH}_2-\text{NH}-\text{CH}_2-\text{CH}_2-\text{OR}_1$, wherein Ar is phenyl and R_1 is a lower alkyl group,

(b) reacting the latter N-substituted alkoxyethylamine in the presence of a mineral acid with a nitrile having the formula $\text{R}_2\text{C}|N$, where R_2 is hydrogen, alkyl, or aryl at a temperature of from -25°C . to 60°C . to obtain an amidoamine having the formula: $\text{R}_2-\text{C}(\text{O})-\text{NH}-\text{CH}(\text{Ar})-\text{CH}_2-\text{NH}-\text{CH}_2-\text{CH}_2-\text{OR}_1$, where Ar, R_1 , and R_2 are the same as hereinabove defined,

(c) hydrolyzing the latter amidoamine with an aqueous inorganic base or a mineral acid at a temperature ranging from about 0°C . to about 110°C . for a period of from one to six hours to obtain a diamine having the formula: $\text{NH}_2-\text{CH}(\text{Ar})-\text{CH}_2-\text{NH}-\text{CH}_2-\text{CH}_2-\text{OR}_1$ where R_1 and Ar are as above defined,

(d) reacting the resultant diamine with carbon disulfide in an inert organic solvent at a temperature ranging from about -10°C . to about 40°C . to obtain a dithiocarbamate,

(e) heating the latter dithiocarbamate at a temperature ranging from about 80°C . to about 150°C . for from two to twenty hours in an inert organic solvent to produce a thione having the formula:



(f) further reacting the latter resultant thione with an acid having the formula HA to provide an imidazothiazole having the formula:



where Ar is phenyl and A is an anion of a pharmaceutically acceptable acid, and
(g) thereafter, neutralizing said tetramisole salt with an aqueous inorganic base to obtain tetramisole per se.

4,245,104

ISOXAZOLINES AND ISOXAZOLIDINES

Enrico G. Baggiolini, Nutley; Hsi L. Lee, West Paterson, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

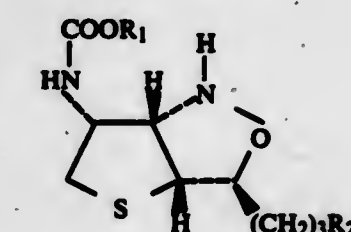
Continuation-in-part of Ser. No. 822,119, Aug. 5, 1977, Pat. No. 4,130,713. This application Dec. 1, 1978, Ser. No. 965,660

Int. Cl.³ C07P 515/04

U.S. Cl. 548-207

8 Claims

1. A compound of the formula:



XV

wherein

R_1 is lower alkyl, phenyl or naphthyl;

R_2 is $-\text{CH}_3$ or $-\text{CH}_2\text{OR}_3$; and

R_3 is lower alkyl, phenyl, naphthyl, benzyl or α -lower alkyl benzyl; said phenyl and naphthyl each are unsubstituted or substituted with a halogen, lower alkylendioxy having 2 to 5 carbon atoms, lower alkyl or lower alkoxy, with the lower alkyl and lower alkoxy moieties each having 1 to 7 carbon atoms,

or the racemate thereof.

4,245,105

3-(α -CYANOALKYL)CARBAMYL BENZIMIDAZOLYL CARBAMATES

Karoly Szabo, Vienna, Austria, assignor to Syracuse University Research Corporation, Syracuse, N.Y.

Filed Sep. 9, 1976, Ser. No. 721,905

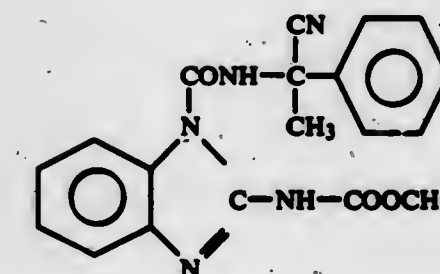
Claims priority, application France, Sep. 17, 1975, 75 28458

Int. Cl.³ C07D 235/32

U.S. Cl. 548-306

2 Claims

1. A compound which is 2-methoxycarbonylamino-3-[(1-cyano-1-phenyl)ethyl]carbamyl benzimidazole of the formula:



4,245,106

PROCESS FOR THE PREPARATION OF
1-ALKYL-3-ARYL-4-PYRAZOLECARBOXYLATES

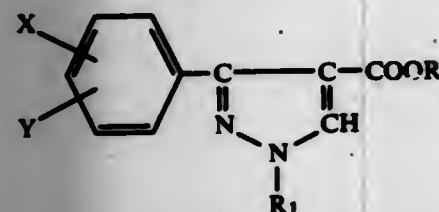
Lawrence H. Bramigan, Olivette; John E. Franz, Crestwood, and Robert K. Howe, Bridgeton, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 898,572, Apr. 21, 1978, abandoned, which is a division of Ser. No. 715,011, Aug. 18, 1976, Pat. No. 4,116,673, which is a continuation-in-part of Ser. No. 645,181, Dec. 29, 1975, abandoned. This application Jul. 5, 1979, Ser. No. 55,105

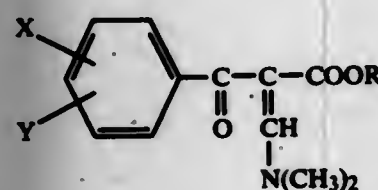
Int. Cl.³ C07D 231/14

U.S. Cl. 548—378

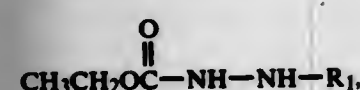
1. A method for the preparation of a compound of the formula



wherein R is selected from the group consisting of hydrogen, agriculturally acceptable cations, alkyl having from 1 to 8 carbon atoms, phenoxy lower alkyl, lower alkyl thio lower alkyl and tetrafluorocyclobutylmethyl; R₁ is lower alkyl; and X and Y are independently selected from the group consisting of hydrogen, trifluoromethyl, halo, lower alkyl and lower alkoxy; provided that X, Y and R may not simultaneously be hydrogen; which comprises reacting in the presence of acetic acid, a propenoic acid or ester having the formula



and a hydrazine having the formula



wherein R, R₁, X and Y are as defined above.

4,245,107

CEPHALOSPORIN DERIVATIVES AND PROCESS FOR
PREPARING THE SAME

Chisei Shibuya; Hirataka Itoh, both of Fuji; Yutaka Usubuchi, Yokohama, and Mitsunori Akamine, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan Division of Ser. No. 754,633, Dec. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 644,241, Dec. 24, 1975, Pat. No. 4,172,197. This application Sep. 27, 1979, Ser. No. 79,256

Claims priority, application Japan, Dec. 28, 1974, 49-149180; Jun. 11, 1975, 50-69589; Jul. 15, 1975, 50-85763

Int. Cl.³ C07D 333/24

U.S. Cl. 549—46

1. 2-thienylsulfonilacetic acid.

PROCESS FOR PREPARING
2-THIO-2-SUBSTITUTED-ALKANOIC ACID
DERIVATIVES

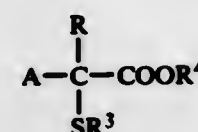
Kiyosi Kondo, Yamato; Daiel Tunemoto, Sagami; Akira Negishi, Yamato, and Minoru Sada, Sagami, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan Filed Aug. 17, 1978, Ser. No. 934,553

Claims priority, application Japan, Aug. 18, 1977, 52-98271; Sep. 7, 1977, 52-106826

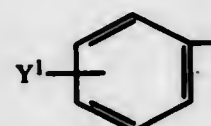
Int. Cl.³ C07C 149/40; C07D 333/24

U.S. Cl. 549—79

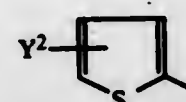
1. A process for preparing a 2-thio-2-substituted-alkanoic acid derivative represented by the formula (I)



wherein A represents (1) a substituted-phenyl group of the formula



in which Y¹ represents an unsubstituted- or substituted-phenoxy group wherein the substituent is a halogen atom, a trifluoromethyl group or an alkoxy group having 1 to 4 carbon atoms, or (2) a substituted-thienyl group of the formula



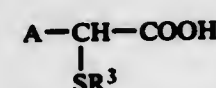
in which Y² represents an alkyl group having 1 to 4 carbon atoms; R represents an alkyl group having 1 to 4 carbon atoms; R³ represents a phenyl group, an alkylphenyl group wherein the alkyl group has 1 to 4 carbon atoms, or an alkyl group having 1 to 4 carbon atoms; and R⁴ represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, which comprises condensing an aldehyde compound of the formula (V)

A—CHO

wherein A is as defined above, with a haloform of the formula CHX₃ wherein X represents a halogen atom and a mercaptan compound of the formula (IV)

R³SH

wherein R³ is as defined above, in the presence of a base to produce a 2-(arylthio or alkylthio)-2-substituted-acetic acid of the formula (III)



wherein A and R³ are as defined above, and reacting the resulting 2-(arylthio or alkylthio)-2-substituted-acetic acid with an alkylating agent represented by the formula (II)

RZ

wherein R is as defined above, and Z represents a halogen atom, an alkyl- or arylsulfonyloxy group or a sulfuric acid ester residual group, in the presence of at least 2 mols of a base per mol of the 2-(arylthio or alkylthio)-2-substituted acetic acid, to

form the compound of the formula (I) wherein R⁴ represents a hydrogen atom and, optionally, converting the resulting compound to the compound of the formula (I) wherein R⁴ represents an alkyl group by esterification.

4,245,109

PROCESS FOR PRODUCING ASTAXANTHIN

Hans J. Mayer, Füllinsdorf, and Robert K. Müller, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

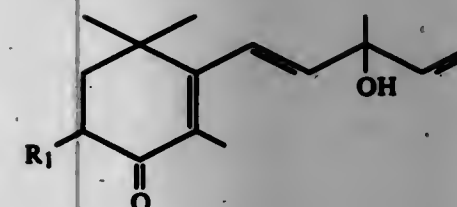
Filed May 21, 1979, Ser. No. 40,626

Claims priority, application Switzerland, Jun. 2, 1978, 6073/78; Mar. 29, 1979, 2921/79

Int. Cl.³ C07C 69/612

U.S. Cl. 560—61

1. A compound of the formula



wherein R₁ is acyloxy or an ether group convertible into a hydroxy group; and the dotted bond can be optionally hydrogenated.

4,245,110

POLYALKYLENE OXIDE-CONTAINING URETHANE
POLYOLS WITH SULPHONIC ACID GROUPS

Helmut Engelhard; Gerhard D. Wolf, both of Dormagen; Francis Bentz, Cologne, and Günther Nischk, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

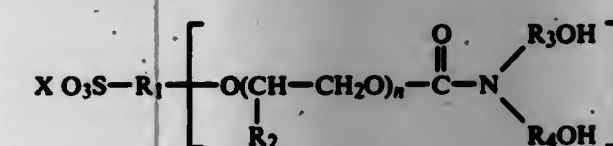
Filed Mar. 10, 1975, Ser. No. 557,202

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1974, 2412217

Int. Cl.³ C07C 143/675, 143/155

U.S. Cl. 560—160

1. Sulphonic acid group-containing polyalkylene oxide-containing urethane polyols corresponding to the formula:



wherein

X represents an NH₄ radical or an alkali metal atom; R₁ represents a straight- or branched-chain aliphatic group with from 2 to 7 carbon atoms or an aromatic group which consists of one ring or two fused rings which may be substituted by halogen, by aliphatic groups having from 1 to 5 carbon atoms or by further sulphonic acid groups or by nitro groups;

R₂ represents a hydrogen atom or a methyl group; R₃ and R₄ which may be the same or different, represent a divalent straight- or branched-chain aliphatic group with from 2 to 10 carbon atoms; n represents a number of from 1 to 50; and y represents an integer sufficient to satisfy the valence requirements of the group R₁.

1002 O.G.—31

4,245,111

METHOD OF PREPARING PROSTAGLANDIN B₁
DERIVATIVES

B. David Polis, deceased, late of Wyndmoor, Pa. (by Edith Polis, executrix), and Sara F. Kwong, New Britain, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1979, Ser. No. 25,819

Int. Cl.³ C07C 177/00

U.S. Cl. 560—121

1. A method of preparing a class of prostaglandin derivatives PGB_x for restoring oxidative phosphorylation in aged degraded mitochondria, comprising, in combination, the steps of: mixing substantially equal volumes of a 5% solution 15-keto PGB₁ methyl ester in ethanol and of 2 N base solution to form a first mixture; heating said first mixture about four hours at 80° C. to form a reaction product containing the derivatives PGB_x miscible in water; and extracting the residue derivatives PGB_x from said product.

4,245,112

NOVEL PENTEN-2-YL-DERIVATIVES

Jacqueline Fieci, Paris, and Jean-Pierre Genet, Fontenay aux Roses, both of France, assignors to Roussel Uclaf, Paris, France

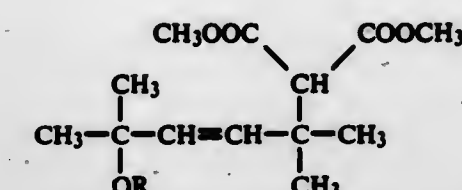
Filed Nov. 27, 1979, Ser. No. 97,709

Claims priority, application France, Dec. 13, 1978, 78 35047

Int. Cl.³ C07C 69/732

U.S. Cl. 560—181

1. A penten-2-yl derivative of the formula in the trans form



wherein R is selected from the group consisting of hydrogen and acetyl.

4,245,113

PROCESS FOR THE MANUFACTURE OF
2,3,4,4-TETRACHLORO-3-BUTENOIC ACID ESTERS

Günther Maske, and Konrad Rombach, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,204

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810397

Int. Cl.³ C07C 69/65

U.S. Cl. 560—219

1. A process for preparing a 2,3,4,4-tetrachloro-3-butenic acid ester which comprises reacting tetrachlorocyclobutenone in the presence of hexachloro-1,3-butadiene with an alcohol at a temperature of 125°–200° C.

4,245,114

GLYCOL ESTER PREPARATION

Alan Peltzman, New York, N.Y., assignor to Halcon Research and Development Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 753,139, Dec. 21, 1976, abandoned. This application Dec. 19, 1978, Ser. No. 971,133

Int. Cl.³ C07C 67/05

U.S. Cl. 560—246

1. In a continuous process for the preparation of glycol esters wherein an olefin, a carboxylic acid, and molecular oxygen are reacted in the presence of a catalyst system comprising a variable valent cation and bromine, chlorine, a bro-

mine-containing compound or a chlorine-containing compound, in an oxidation zone containing a body of liquid reaction medium comprising the carboxylic acid and liquid reaction products including said glycol esters and in which the variable valent cation exists during the reaction both in an insoluble form and in a soluble active form, the improvement which comprises employing an oxidation zone which is vertically elongated and has a vertical dimension which is at least 3 times and not greater than 40 times its traverse dimension, continuously withdrawing some of said reaction medium from the upper part of said body and returning at least some of said withdrawn reaction medium to the bottom part of said body in said reaction zone, while continuously introducing olefin, carboxylic acid, recycled unreacted gas and molecular oxygen into the lower part of said body to combine to impart to said reaction medium in said oxidation zone an upward, superficial velocity of at least 0.05 ft./sec., said recycle gas and molecular oxygen being introduced separately into said lower part of said body with the oxygen being introduced at a point above the point of introduction of the recycle gas, and the point of introduction of the recycle gas being above the point of introduction of said withdrawn reaction medium, whereby said insoluble form of said catalyst is continuously converted to the active soluble form to be available in the area of interaction among said oxygen, said olefin and said carboxylic acid to be effective to produce said glycol esters at a high rate and with high selectivity.

4,245,115

SELECTIVE CARBONYLATION OF OLEFINICALLY UNSATURATED HYDROCARBONS USING PALLADIUM-ARSINE OR -STIBINE CATALYSTS
Stephen A. Butler, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 577,362, May 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 447,709, Mar. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 8,699, Feb. 4, 1970, abandoned. This application Sep. 14, 1977, Ser. No. 833,194

Int. Cl.³ C07C 67/38

U.S. Cl. 560-233

12 Claims

1. A liquid phase process for the carbonylation of olefinically unsaturated hydrocarbon compounds carbonylatable to a mixture of iso and normal carbonyl-containing compounds by reacting an olefinically unsaturated hydrocarbon compound with carbon monoxide and a hydroxylic compound selected from the group consisting of alcohol, water and phenol in the presence of a palladium salt catalyst having the formula L_mPdX_n , in which L is a ligand member selected from the group consisting of phenyl or tolyl arsines and stibines, X is an acid function selected from the group consisting of halide, sulfate, phosphate, nitrate, borate, acetate, and propionate, m is an integer from 1 to 4 inclusive, and y is an integer or 1 or 2, the sum of m+y being an integer of from 2 to 6 inclusive wherein no external hydrogen or oxygen is added to said process and wherein said mixture of iso and normal carbonyl-containing compounds comprise iso and normal esters in a ratio of iso to normal of from about 3:1 to about 20:1 and wherein said carbonylation is carried out in the presence of 2-10 additional moles of said arsine or stibine ligand per mole of said catalyst.

4,245,116

RACEMIZATION OF OPTICALLY ACTIVE 2-(4-CHLOROPHENYL)-3-METHYLBUTYRIC ACID
Nobuo Ohno, Toyonaka; Masakazu Miyakado, and Hajime Hirai, both of Nishinomiyu, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Continuation of Ser. No. 811,926, Jan. 30, 1977, abandoned.
This application Dec. 11, 1978, Ser. No. 967,948
Claims priority, application Japan, Jan. 30, 1976, 51-78089
Int. Cl.³ C07B 20/00

U.S. Cl. 562-401

9 Claims

1. A method for racemization of optically active 2-(4-chlorophenyl)-3-methylbutyric acid which comprises the steps of:
(a) reacting said acid with a hydroxide or carbonate of an alkali metal or alkaline earth metal at a temperature of more than 110° C., wherein the amount of said hydroxide or carbonate is, on a molar basis, greater than the amount of said acid, to produce a racemate of the alkali metal or alkaline earth metal salt of said acid, and
(b) converting said racemate of the salt of said acid to said acid.

4,245,117

PROCESS FOR THE RECOVERY OF PURE L-CYSTINE
Paul Scherberich, Dietzenbach, Fed. Rep. of Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roesler, Frankfurt, Fed. Rep. of Germany
Division of Ser. No. 849,610, Nov. 8, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 52,240
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1976, 2653332

Int. Cl.³ C07C 149/247

U.S. Cl. 562-554

22 Claims

1. In a process for the recovery of pure L-cystine from a mixture with other amino carboxylic acid by fractional crystallization in the presence of an acid other than said amino carboxylic acids and water and wherein said other amino carboxylic acids include at least one selected from the group consisting of glycine, alanine, valine, leucine, β-phenylalanine, serine, threonine, tyrosine, aspartic acid, glutamic acid, lysine, arginine, histidine, methionine, proline and tryptophane, the improvement comprising starting with a mixture of said amino carboxylic acids, an alcoholic medium, water and an acid other than said amino carboxylic acids and carrying out the crystallization of the salt of L-cystine and the acid in said water containing alcoholic medium, there being present from said start 1 to 50 weight percent of water based on the total weight of the mixture of L-cystine, other amino carboxylic acid, alcoholic medium, water and acid other than an amino carboxylic acid.

4,245,118

OXIDATION OF UNSATURATED ALDEHYDES
Haruhisa Yamamoto; Kiyomori Ooura, and Shinichi Akiyama, all of Takaoka, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1979, Ser. No. 1,783

Claims priority, application Japan, Jan. 17, 1978, 53-3581
Int. Cl.³ C07C 51/25, 57/055

U.S. Cl. 562-532

6 Claims

1. A process for preparing an unsaturated carboxylic acid, which comprises catalytically oxidizing an unsaturated aldehyde selected from the group consisting of acrolein and methacrolein in the vapor phase using molecular oxygen in the presence of a catalyst expressed by the formula



wherein A represents at least one element selected from the group consisting of K, Rb, Cs and Tl; B represents at least one element selected from the group consisting of Be, Y, La, Nd, Sm and Hf; C represents at least one element selected from the group consisting of V, Cr, Ba, Sr, Al, Sn, Pb, Mn, Zr, W and Bi; a, b, c, d, e and f are the number of atoms of A, B, C, Mo,

P and O, respectively; and d is 12, a, b and e are independently 0.05 to 12, c is 0 to 12, and f is the number of oxygen atoms which satisfies the valences of the other elements.

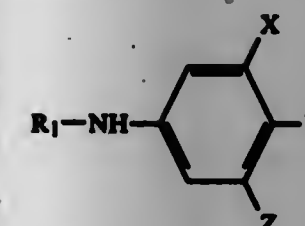
4,245,119

4-(MONOALKYLAMINO) BENZENE POLYCARBOXYLIC ACIDS
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 836,945, Sep. 27, 1977. This application Nov. 13, 1978, Ser. No. 999,537
Int. Cl.³ C07C 101/66

U.S. Cl. 562-458

6 Claims

1. A compound selected from the group consisting of those of the structural formula:



wherein R₁ is a straight chain or branched alkyl group of the formula C_nH_{2n+1} wherein n is an integer from 8 to 19, inclusive; X, Y and Z are each individually selected from the group consisting of hydrogen and COOR₃ wherein R₃ is selected from the group consisting of hydrogen, alkyl having up to 4 carbon atoms, carboxyalkyl, mono- or dihydroxyalkyl, dialkylaminohydroxyalkyl, polymethyleneiminohydroxyalkyl, phenyl, halophenyl, carboxyphenyl, benzyl, halobenzyl, carboxybenzyl, pyridylmethyl, halopyridylmethyl, carboxypyridylmethyl, 3-pyridyl, halo-3-pyridyl, carboxy-3-pyridyl, alkali metal cations or alkali earth metal cations with the proviso that one of X, Y and Z must be hydrogen and two of X, Y and Z must be COOR₃; or the pharmacologically acceptable acid addition salts thereof.

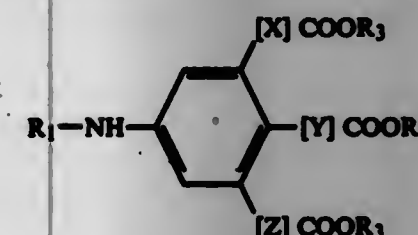
4,245,120

4-(MONOALKYLAMINO)BENZENE POLYCARBOXYLIC ACIDS
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 27, 1977, Ser. No. 836,945
Int. Cl.³ C07C 101/66

U.S. Cl. 562-458

17 Claims

1. A compound selected from the group consisting of those of the structural formula:



wherein R₁ is a straight chain or branched alkyl group of the formula C_nH_{2n+1} wherein n is an integer from 8 to 19, inclusive and R₃ is selected from the group consisting of hydrogen, alkyl having up to 4 carbon atoms, carboxyalkyl, mono- or dihydroxyalkyl, dialkylaminohydroxyalkyl, polymethyleneiminohydroxyalkyl, phenyl, halophenyl, carboxyphenyl, benzyl, halobenzyl, carboxybenzyl, pyridylmethyl, halopyridylmethyl, carboxypyridylmethyl, 3-pyridyl, halo-3-pyridyl, carboxy-3-pyridyl, alkali metal cations and alkali earth metal cations and the pharmaceutically acceptable acid addition salts thereof.

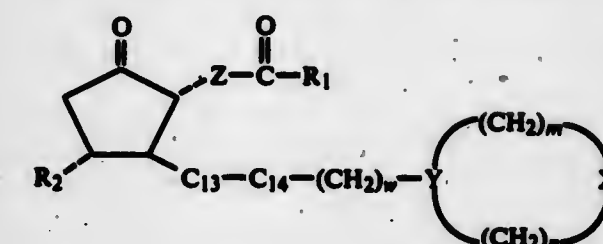
4,245,121

PROSTENOIC ACIDS AND ESTERS
Allan Wisner, Monsey, N.Y.; Martin J. Weiss, Oradell, and Karel F. Bernady, South Summerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 783,033, Mar. 30, 1977, Pat. No. 4,197,407.
This application Feb. 4, 1980, Ser. No. 118,276
Int. Cl.³ C07C 177/00

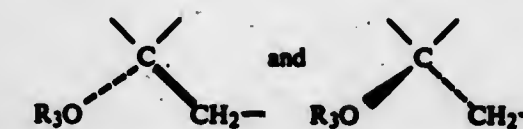
U.S. Cl. 562-500

20 Claims

1. An optically active compound of the formula:



wherein R₁ is selected from the group hydroxy, tri-(C₁ to C₄) alkylsilyloxy and C₁ to C₆ alkoxy; R₂ is selected from the group hydrogen, hydroxy, tri-(C₁ to C₄) alkylsilyloxy and C₂-C₃ alkanoyloxy; Y is a trivalent radical selected from the group



wherein R₃ is selected from the group hydrogen, tri-(C₁ to C₄) alkylsilyloxy and C₂-C₃ alkanoyl; X is a divalent radical selected from the group



wherein R₄ is selected from the group hydrogen and C₁ to C₇ alkyl; the moiety C₁₃-C₁₄ is trans-vinylene; m and n are individually an integer of from 0 to 4 with the proviso that the sum of m and n is equal to from 2 to 4; w is zero or 1; Z is



wherein thereof; the mirror image thereof; and the pharmacologically acceptable cationic salts thereof when R₁ is hydrogen.

4,245,122

PROCESS FOR THE PRODUCTION OF ALLYL ACETONE
Takao Yoshida, West Long Branch; Denis E. Hrusa, Sr., Brick Town, and John B. Hall, Rumson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Filed Dec. 5, 1979, Ser. No. 100,534
Int. Cl.³ C07C 45/45

U.S. Cl. 568-397

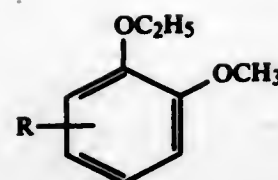
2 Claims

1. A process for preparing allyl acetone comprising the steps, in sequential order of:

- first mixing methyl acetoacetate or ethyl acetoacetate with sodium carbonate and tricapryl methyl ammonium chloride;
- heating the mixture to a temperature in the range of about 50° C.;
- adding allyl chloride to the resulting mixture while maintaining the temperature of the reaction mass in the range of from about 50° C. up to about 65° C.;

- (d) heating the reaction mass slowly to a temperature of about 100° C. over a period of three hours;
 (e) cooling the reaction mass to a temperature in the range of 20°-25° C.;
 (f) hydrolyzing the resulting reaction product using aqueous acetic acid at a temperature in the range of 20°-25° C.;
 (g) fractionally distilling the resulting reaction product yielding substantially pure allyl acetone.

The mole ratio of sodium carbonate:allyl chloride:ethyl or methyl acetoacetate being about 1:1:1; and the ratio of triacetyl ammonium chloride:allyl chloride being about 10 grams per mole, the reaction of the allyl chloride and methyl or ethyl acetoacetate taking place in the absence of solvent.



wherein
 R is an isocamp-5-yl radical in the 6- or 4-position relative to the ethoxy group.

4,245,125

NOVEL ADDUCTS

Hermann O. Wirth, Bensheim, and Hans-Helmut Friedrich, Lautertal, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 10, 1979, Ser. No. 37,599

Claims priority, application Switzerland, May 18, 1978, 5391/78; Aug. 4, 1978, 8360/78

Int. Cl.³ C07C 43/10, 43/11; C08F 120/18, 2/00

U.S. Cl. 568—680

4 Claims

1. A compound of formula I



(I)

wherein

A is a compound of formula III



(III)

m is a rational number between 0.8 and 4.0,

B is H₂O₂,R₁ is alkyl of 3 to 18 carbon atoms,

X is —O—,

n is 1 or 2, and

Q is —CH(OH)CH₂—.

4,245,126

PROCESS FOR THE PREPARATION OF A MIXTURE OF 2- AND 4-HYDROXYBENZYL ALCOHOL

Helmut Fiege, Leverkusen; Karlfried Wedemeyer, Cologne; Kurt Bauer, and Reiner Mölleken, both of Holzminnen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,427

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928554

Int. Cl.³ C07C 39/11

U.S. Cl. 568—764

7 Claims

1. In the known process for the preparation of a mixture of 2- and 4-hydroxybenzyl alcohol by reacting phenol with para-formaldehyde in the presence of a basic catalyst, the improvement comprising using as basic catalyst a compound which exhibits two or more tertiary nitrogen atoms per molecule and a pK_a value of ≥ 6.5 (measured at 20° C. in water).

4,245,127

PROCESS FOR CHLORINATING XYLENOLS

Teiziro Matsumoto; Moriyasu Matsuda; Hiroshi Mizokami; Tsuneo Kibamoto, and Katsuma Hatta, all of Kakogawa, Japan, assignors to Seltetsu Kagaku Co., Ltd., Hyogo, Japan

Filed Oct. 27, 1976, Ser. No. 736,029

Claims priority, application Japan, Oct. 31, 1975, 50-131685

Int. Cl.³ C07C 39/27

U.S. Cl. 568—779

7 Claims

1. In a process for chlorinating xyleneols which comprises employing as a catalyst 0.01 to 10% by weight of at least one metal chloride selected from the group consisting of ferric chloride, aluminum chloride, titanium tetrachloride, and antimony pentachloride based upon the weight of the xyleneols and introducing sulfuryl chloride as a chlorinating agent to the

4,245,123

METHOD FOR MANUFACTURING AN OXIDIZING AGENT AND METHOD FOR USING THE OXIDIZING AGENT

Makoto Inoue, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

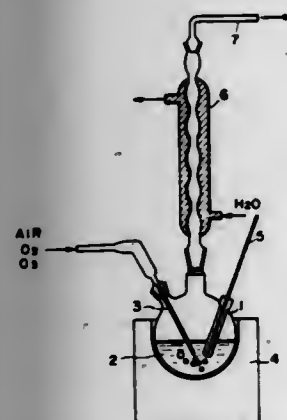
Filed Oct. 31, 1978, Ser. No. 956,406

Claims priority, application Japan, Nov. 2, 1977, 52/131832

Int. Cl.³ C07C 179/00

U.S. Cl. 568—577

1 Claim



1. A method of manufacturing an oxidizing agent containing an organic peroxide compound comprising the step of oxidizing an aqueous solution containing as its sole oxidizable agent more than 1% by weight of a polyoxyalkylene polyether, or a melted polyoxyalkylene polyether by introducing an oxidizing gas consisting of oxygen and ozone thereinto at a temperature between 50° and 100° C., said polyoxyalkylene polyether having an average molecular weight of 1,000 to 30,000 and being represented by the following general formula:



where R stands for an alkylene group represented by a general formula (CH₂)_m where m=2 or 3.

4,245,124

ISOCAMPYL-GUAIACOL-ETHYL ETHERS

Kurt Bauer, and Gerd-Karl Lange, both of Holzminnen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,802

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921139

Int. Cl.³ C07C 43/205, 43/21

U.S. Cl. 568—633

2 Claims

1. (Isocamp-5-yl)-guaiacyl ethers of the formula

reaction system, wherein the improvement comprises employing in the reaction system 0.001 to 1% by weight based upon the weight of the xyleneols of at least one saturated aliphatic mercaptan containing only carbon and hydrogen in the alkyl group and having 1 to 15 carbon atoms and carrying out the chlorination in the presence of a chlorinated hydrocarbon solvent.

4,245,128

PROCESS FOR CLEAVING DIHYDROXYDIPHENYL ALKANES

Nobukatsu Kato, Tokai; Tsutomu Takase, Nagoya; Yoshio Morimoto, Tokai; Tetsuo Yamaoka, and Minoru Hattori, both of Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Aug. 1, 1979, Ser. No. 62,810

Claims priority, application Japan, Aug. 14, 1978, 53-98268

Int. Cl.³ C07C 37/52

U.S. Cl. 568—806

14 Claims

1. A process for cleaving dihydroxydiphenyl alkane to produce an alkenyl phenol, alkenyl phenol polymer and mixtures thereof, which comprises continuously feeding said dihydroxydiphenyl alkane into an inert organic solvent reaction medium containing a basic catalyst wherein said basic catalyst is an oxide, hydroxide or carbonate of an alkali metal or an alkaline earth metal, an alkali metal salt of phenol or bisphenol A, or an alkali metal salt of a weakly acidic fatty acid, heating the reaction mixture at a temperature of 150° to 250° C. and at a pressure of 10 to 100 mmHg, maintaining the concentration of said dihydroxydiphenyl alkane in the reaction medium at not more than 30% by weight, cleaving said dihydroxydiphenyl alkane in said reaction medium; and continuously distilling the cleavage product out of the reaction system and recovering it.

4,245,129

PROCESS FOR PREPARING HEXANITROBIBENZYL

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1979, Ser. No. 66,599

Int. Cl.³ C07C 79/10

U.S. Cl. 568—931

9 Claims

1. A process for preparing 2,2',4,4',6,6'-hexanitrobibenzyl comprising the steps of adding an aqueous solution of an alkali or alkaline-earth metal hypochlorite containing a alkali or alkaline-earth metal hydroxide to a solution of trinitrotoluene in a solvent selected from the group consisting of methanol, ethanol, 2-methoxyethanol, isopropanol, acetone, tetrahydrofuran, N,N-dimethylformamide, N,N-dimethylacetamide, pyridine and N-methyl pyrrolidinone and then recovering said hexanitrobibenzyl.

4,245,130

ISOMERIZATION OF ALKYL AROMATICS USING A GALLIUM CONTAINING ALUMINOSILICATE CATALYST

John R. Jones, Weybridge, and Dennis C. Wood, Sanbury-on-Thames, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Apr. 18, 1979, Ser. No. 31,040

Claims priority, application United Kingdom, Jun. 2, 1978, 26296/78

Int. Cl.³ C07C 5/22

U.S. Cl. 585—481

10 Claims

1. A process for the hydrocatalytic treatment of a feedstock comprising a mixture of alkyl aromatics, containing at least one di- or polymethyl benzene and an alkyl benzene selected from ethylbenzene, methylethylbenzene and propylbenzene which process comprises contacting said mixture at a temperature of from 300° to 500° C., a pressure of from 0 to 100 bars gauge and in the presence of hydrogen with a catalyst composition consisting essentially of an aluminosilicate having a gallium compound deposited thereon and/or an aluminosilicate in which the cations have been exchanged with gallium ions so that the monoalkylbenzenes mainly undergo isomerization to form xylenes or polymethyl benzenes, and recovering a product containing isomerised di- or polymethyl benzenes and a reduced content of the alkyl benzene.

4,245,131

DIMERIZATION OF OLEFINS USING TANTALUM AND NIOBIUM CATALYSTS

Richard R. Schrock, Brighton, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

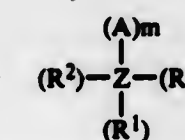
Continuation of Ser. No. 32, Jan. 2, 1979, which is a continuation-in-part of Ser. No. 883,628, Mar. 6, 1978, abandoned. This application Jul. 2, 1979, Ser. No. 54,211

Int. Cl.³ C07C 2/26

U.S. Cl. 585—511

12 Claims

1. The process of forming a 1-butene selectively which comprises contacting a C₂ to C₄ olefin with the catalyst of the formula



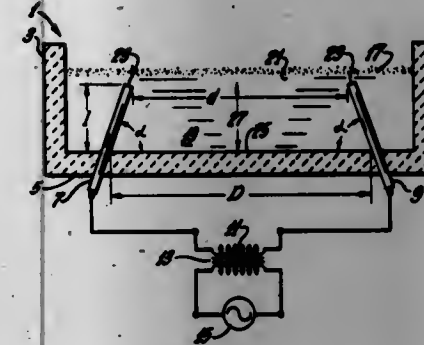
wherein R is cyclopentadienyl, C₅H₅Me_{5-x}, wherein x is an integer from 0 to 5, or neopentylidene, R¹ is neopentyl or benzyl, n is 0 or 1, R² is neopentylidene, benzylidene, tetramethylene or 2, 3-dimethyltetramethylene, A is halo or a moiety of the formula YR³R⁴R⁵ wherein Y is a group 5 element and R³, R⁴ and R⁵ can be the same or different and are C₁-C₄ alkyl, aralkyl, aryl or bipyridyl and Z is tantalum or niobium: m=1 or 2.

ELECTRICAL

4,245,132
ELECTRIC MELT FURNACE-ELECTRODES INCLINED
TOWARD EACH OTHER TO VARY THE FIRING PATH
DURING STEADY STATE OPERATION AND TO CREATE
HOT SPOTS AFTER HEAT LOSS OR DURING START-UP
Max G. Christman, Granville, Ohio, assignor to Owens-Corning
Fiberglass Corporation, Toledo, Ohio

Filed Oct. 30, 1978, Ser. No. 956,551
Int. Cl.³ C03B 5/02; H05B 3/00

U.S. Cl. 13-6



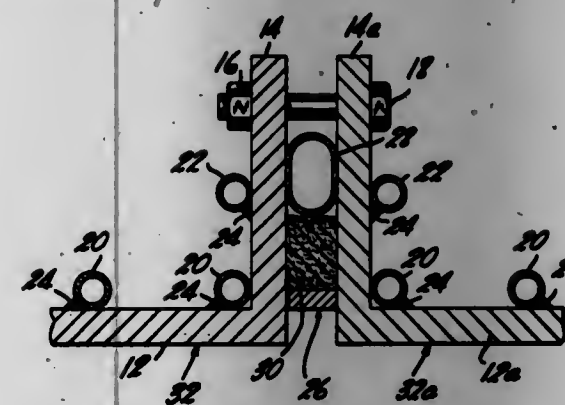
1. An electric furnace for resistive heating of molten glass by the Joule effect comprising: a chamber for containing a body of said glass; a first and second electrode, each of said electrodes having a first end which is the base thereof and a second end which is opposite said first end; means for mounting said first and second electrodes in a spaced relationship in said chamber such that at least one of said electrodes is inclined toward the other electrode so that the distance between said first ends of said electrodes defines a longer electrical current path than the electrical current path defined by the distance between said second ends; and means for applying electrical power to said glass through said first and second electrodes for heating said glass by the Joule effect.

4,245,133
ROOF FOR COVERED ELECTRIC SMELTING
FURNACES

Harald Krogerud, Gjettem, Norway, assignor to Elkem-Spigerværket, A/S, Oslo, Norway
Continuation-in-part of Ser. No. 966,270, Dec. 4, 1978, abandoned. This application Mar. 14, 1979, Ser. No. 20,427
Claims priority, application Norway, Dec. 6, 1977, 774162
Int. Cl.³ F27D 1/12

U.S. Cl. 13-35

10 Claims



1. In a roof for covered electric smelting furnaces wherein the roof comprises a plurality of abutting pie-shaped sections of steel plate, cooling pipes welded to the outside surface of the steel plates of the roof with continuous welds, the cooling pipes being of sufficient capacity and effective spacing to be capable of maintaining a temperature on the inside of the roof between 150° C. and 400° C. when said smelting furnace is in operation, and a cooling medium which flows through said cooling pipes, the length of the cooling pipes being such that there will be a rise in temperature of the cooling medium of no

more than about 25° C. from the introduction of the cooling medium to the cooling pipe until the cooling medium leaves the cooling pipe.

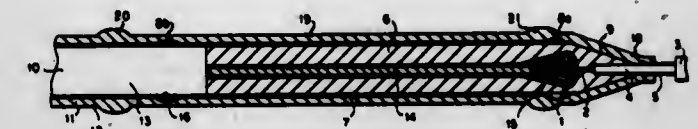
4,245,134
CABLE TERMINATION APPARATUS

Ronald C. Oldham, and Malcolm L. Hayward, both of Chandlersford, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,089
Int. Cl.³ H02G 9/02

U.S. Cl. 174-70 S

5 Claims



1. A termination assembly for water-tight connection of a tail coaxial cable to a submarine coaxial cable, said submarine cable having an inner conductor, a dielectric core surrounding said inner conductor, a generally tubular concentric outer conductor over said core and an outer jacket covering said outer conductor; said tail cable having a central conductor, a plastic dielectric about said central conductor and an outer conductor braid over said dielectric, comprising:
a generally conical ferrule of metallic material and a substantially coaxial hollow metallic tube in communication with the smaller end of said ferrule, the inner conductor of said submarine cable being inserted axially into said metallic tube and being mechanically and electrically affixed therein;
a molded dielectric plastic jacket over said ferrule and all except a projecting portion of said hollow metallic tube adjacent its end, said jacket tapering substantially down to the diameter of said plastic dielectric of said tail cable at its end opposite said hollow metallic tube projecting portion; first means including an auxiliary conductive braid placed over said molded jacket;
second means including a hollow conductive metallic generally conical member fitted over said molded jacket and being electrically and mechanically affixed to said first means braid at its larger end and to the outer conductor braid of said tail cable at its smaller end;
third means including a second molded plastic part filling the gap between said molded jacket and the indented end of said submarine cable core, all of said molded plastic piece parts being heat fused together to form a water-tight continuous jacket.

4,245,135
BUS BAR FOR A CARD FRAME FOR CIRCUIT CARDS
Harald Weiss, Bremen, Fed. Rep. of Germany, assignor to Vero Electronics GmbH, Bremen, Fed. Rep. of Germany
Filed Apr. 12, 1979, Ser. No. 29,339
Claims priority, application Fed. Rep. of Germany, May 18, 1978, 7811665[U]

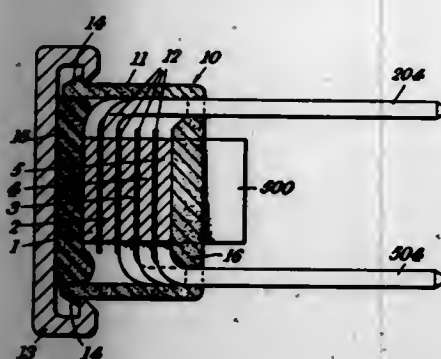
Int. Cl.³ H02G 3/04

U.S. Cl. 174-72 B

3 Claims

1. A bus bar for a card frame for receiving circuit cards, said bus bar comprising a one-piece electrically insulating housing, having a recess of U-section, a stack of electrically conducting strips separated by insulating foils and disposed in face contact with one another within the housing with the strips extending parallel to the base of the recess, a cover member clipped to the

open end of the housing and a pad of resilient material disposed in the recess between the stack and the cover member and



serving to maintain the stack in compression within the housing.

4,245,136

MONITOR AMPLIPHONES

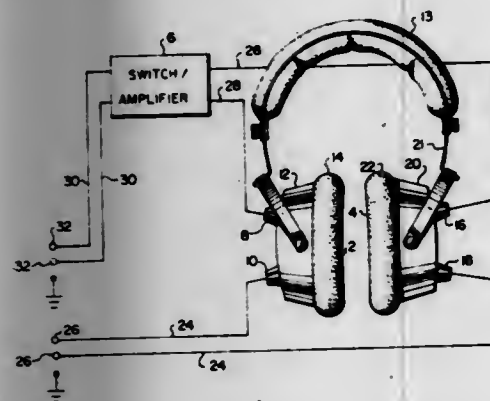
Robert W. Krasel, Jr., 615 Traffic St., Bossier City, La. 71111

Filed Oct. 12, 1978, Ser. No. 951,015

Int. Cl.³ H04S 3/00

U.S. Cl. 179—1 GQ

13 Claims



1. Headphone apparatus for comparing a reference performance to an independent performance of a musical work comprising:

right and left earpieces each comprising a generally cup-shaped casing adapted for covering the ears of a listener, first and second speaker means carried within each of said earpieces,

coupling means connected to said first speaker means in each earpiece for coupling a first source of audio frequency signals representing said reference performance to said first speaker means, and

electronic signal processing means, including amplifier means, having an input adapted for connection to a second source of audio frequency signals representing said independent performance and outputs connected to said second speaker means in each earpiece for coupling said second source to said second speaker means.

4,245,137

MULTI-FUNCTION ELECTRICAL CONTROLLING DEVICE

Akiyoshi Hirai, and Yasuo Hagisato, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 27, 1979, Ser. No. 24,258

Claims priority, application Japan, Aug. 8, 1978, 53-96533

Int. Cl.³ H01H 9/24, 3/46

U.S. Cl. 200—4

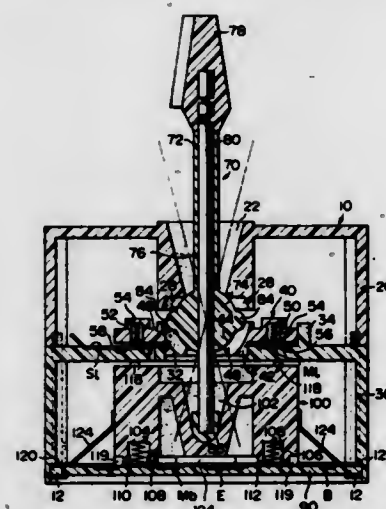
6 Claims

1. An electrical controlling device, comprising:
a housing having first and second plate portions arranged in

parallel to one another, said first plate portion being formed with a central opening;

a rotary switch assembly having stationary contact elements mounted on said first plate portion, a movable bearing member engaged in said central opening so as to be rotatable around its central axis, and movable contact elements supported by said movable bearing member so as to cooperate with said stationary contact elements;

an actuating lever having a bearing portion at a middle portion thereof and movably coupled to said housing with said bearing portion being received in said bearing member so as to be tiltable but not rotatable relative to said bearing member, said actuating lever further having one end projecting from said housing which is adapted to be



gripped by the hand of an operator for twisting and tilting operation and the other end extending toward said second plate portion;

a sliding switch assembly having stationary contact elements mounted on said second plate portion, a sliding member, and movable contact elements supported by said sliding member so as to cooperate with said stationary contact elements mounted on said second plate portion, said sliding member receiving said other end of said actuating lever so that said sliding member is slidably driven by said actuating lever when it is tilted; and
a stop which allows said sliding member to slide on said second plate portion and restrains said sliding member from rotating on said second plate portion.

4,245,138

TACTILE ELEMENT AND KEYBOARD INCLUDING THE TACTILE ELEMENT

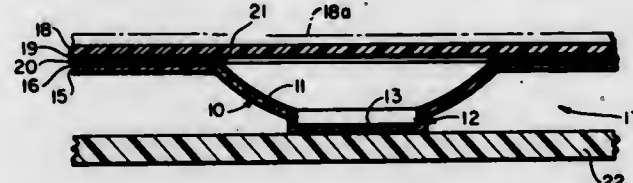
William P. Harper, Phoenix, Ariz., assignor to Rogers Corporation, Rogers, Conn.

Filed Nov. 17, 1978, Ser. No. 961,628

Int. Cl.³ H01H 9/00

U.S. Cl. 200—5 A

11 Claims



1. An electrical switch, said switch providing tactile feedback to a user to indicate actuation thereof, said switch including:

a tactile element, said tactile element comprising:

a planar base sheet;

a first circular depression formed in said base sheet, said depression defining a dome having an arcuate side wall of uninterrupted smooth contour between the plane of

said base sheet and a first plane parallel to the plane of said base sheet, said dome being convex when viewed from the exterior thereof; and

a cylindrically shaped hollow extension of said dome, said extension also being formed of said base sheet and extending between said first plane and a second plane parallel to said first plane, said cylindrical extension including an end portion lying at least partly in said second plane, the diameter of said extension being sufficiently less than the diameter of said depression at said base sheet to permit a portion of said arcuate side wall to undergo a reversal in the direction of slope with snap-action upon application of a force to said end portion of said cylindrical extension, said extension being sized and shaped to resist deformation;

first electrical contact means in contact with at least a first surface of said dome arcuate side wall for movement therewith; and

second electrical contact means supported in alignment with and normally spaced from said first contact means, the spacing between said first and second contact means being sufficient to prevent contact therebetween until after said reversal in slope of said dome arcuate side wall has occurred.

4,245,139

BRAKE CABLE SWITCH MEANS

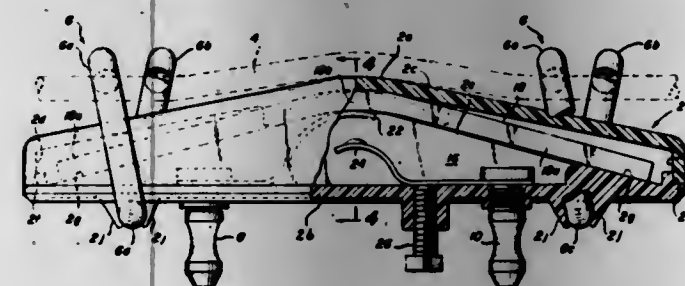
Donald W. Orscheln, Moberly, and Robert L. Helmann, Huntsville, both of Mo., assignors to Orscheln Co., Moberly, Mo.

Filed Jul. 24, 1979, Ser. No. 60,007

Int. Cl.³ H01H 17/08

U.S. Cl. 200—52 R

13 Claims



1. Apparatus for indicating cable tension, comprising
(a) a generally rectangular housing containing an hermetically sealed chamber and including bottom, top, side and end walls, said top wall being flexible and having, in a direction generally longitudinally along the housing, a convex external surface;
(b) means normally biasing the central portion of said top wall away from said bottom wall;
(c) a pair of switch contacts mounted in said chamber for operation between a normal first electrical condition and a second electrical condition; and
(d) fastening means arranged at opposite ends of said housing for attaching the housing, when the top wall surface thereof is adjacent a cable in the untensioned condition, to the cable and for deforming portions of the cable on opposite sides of the apex of the top wall convex portion toward the end portions of the external top wall surface, respectively, whereby when the cable is subsequently tensioned at or beyond a predetermined value relative to said biasing means, the central portion of the housing top wall is deformed toward the bottom wall to operate said switch contacts to their second electrical condition.

4,245,140

MANUAL AND MOTOR OPERATED CIRCUIT BREAKER

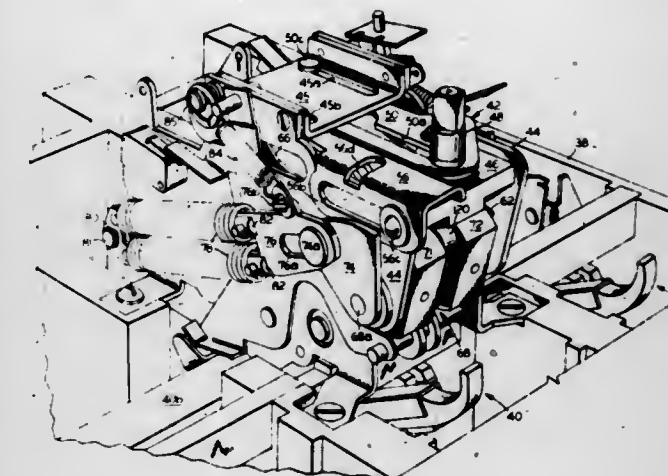
Charles L. Jencks, Avon; Roger N. Castonguay, Terryville, and Eric H. Rask, Newington, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 52,051

Int. Cl.³ H01H 9/20, 3/46, 73/12

U.S. Cl. 200—153 G

21 Claims



1. A circuit breaker comprising, in combination:
A. a manual operating handle;
B. a motor operator mechanism;
C. a slidably mounted manual operator member drivingly coupled with said handle for motivation thereby through a reciprocating first operating cycle;
D. a slidably mounted motor operator member drivingly coupled with said motor operator mechanism for motivation thereby through a reciprocating second operating cycle independent of said first operating cycle;
E. a contact operating mechanism including a mechanism spring capable of effecting breaker contact closure when charged and discharging to effect breaker contact opening; and
F. a charging member drivingly coupling said manual operator member and said motor operator member with said contact operating mechanism such that execution of an operating cycle by either of said members effectuates charging of said mechanism spring.

4,245,141

ELECTRICAL SWITCHES

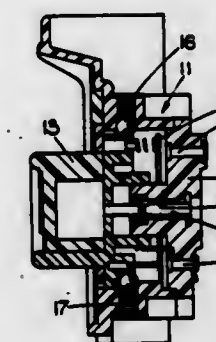
David Aspden, Burnley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Aug. 3, 1979, Ser. No. 63,400

Int. Cl.³ H01H 19/14

U.S. Cl. 200—314

7 Claims



1. An electrical switch comprising a body including a base, an operating member supported by the body for rotational and axial movement relative thereto, an aperture extending through the base and a light source support member received in said aperture, said support member and the wall of the aperture being so shaped that the support member can be

located in the base in either of first and second different axial positions relative to the base, and the support member including a blocking element, which in the first axial location of the support member relative to the base, extends into the path of either axial or rotational movement of the operating member relative to the body to prevent such movement of the operating member relative to the body, the second location of the support member relative to the base being such that said blocking element lies out of the path of either axial or rotational movement of the operating member so that both movements of the operating member relative to the body are permitted.

4,245,142

CONTROL UNIT AND ELECTRICAL SWITCH CONSTRUCTION THEREFOR AND METHODS OF MAKING SUCH A CONTROL UNIT AND ELECTRICAL SWITCH CONSTRUCTION

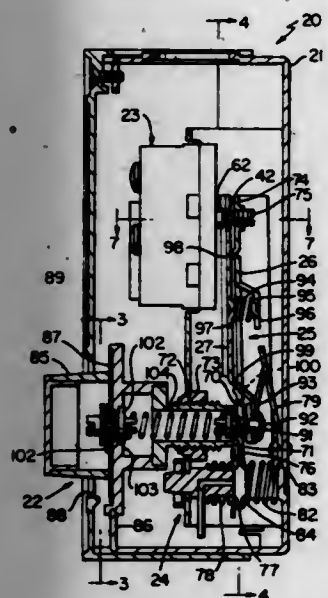
Werner R. Bauer, Radnor, and William N. Smith, Hatboro, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 707,635, Jul. 22, 1976, Pat. No. 4,109,121. This application Feb. 7, 1977, Ser. No. 766,018

Int. Cl.³ H01H 3/20

U.S. Cl. 200—332

17 Claims.



1. In a control unit having a condition selector means, an electrical switch having an actuator means provided with an adjustable movement differential, a condition responsive device for actuating said switch when said condition responsive device senses certain conditions selected by said selector means, and lever means carried by said unit and being operatively associated with said actuator means of said switch and said device whereby said device can actuate said switch by said lever means, the improvement wherein said lever means has a first adjustable lever operatively interconnected to said selector means and acting as a main range lever, said first lever being operatively interconnected to said condition responsive device and to said actuator means of said switch, said lever means having a second adjustable lever operatively interconnected to said selector means and to said actuator means of said switch for adjusting the movement differential of said actuator means of said switch.

4,245,143

MICROWAVE OVEN

Yoshio Miura, Yukio Fukui, and Katunobu Takeda, all of Yokohama, Japan, assignors to Hitachi Heating Appliances Co., Ltd., Japan

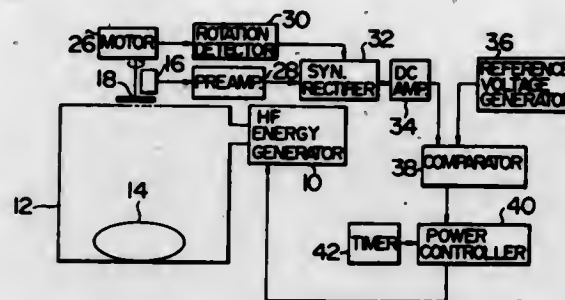
Filed Apr. 25, 1979, Ser. No. 33,263

Claims priority, application Japan, Apr. 28, 1978, 53/51129; May 24, 1978, 53/70250[U]

Int. Cl.² H05B 9/06

U.S. Cl. 219—10.55 B

13 Claims



1. A microwave oven comprising:
a heating chamber for heating an object to be heated therein;
means for producing high frequency energy and guiding it into said heating chamber;
means for detecting the amount of incoming infrared ray energy;
hood means provided on said infrared ray energy amount detecting means, for controlling the amount of infrared ray energy radiated from the object to be heated within said heating chamber to be received by said infrared ray energy amount detecting means;
means for limiting the amount of infrared ray energy which is incident upon the inner wall of said hood means and reflected therefrom to be received by said infrared ray energy amount detecting means; and
means for controlling the output of said high frequency energy generating and guiding means in response to the output of said infrared ray energy amount detecting means.

4,245,144

SPARK-MACHINING APPARATUS

Horst Wittenstein, Harry Neumann, and Günter Peddinghaus, all of Ennepetal, Fed. Rep. of Germany, assignors to Carl Dan. Peddinghaus, GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany

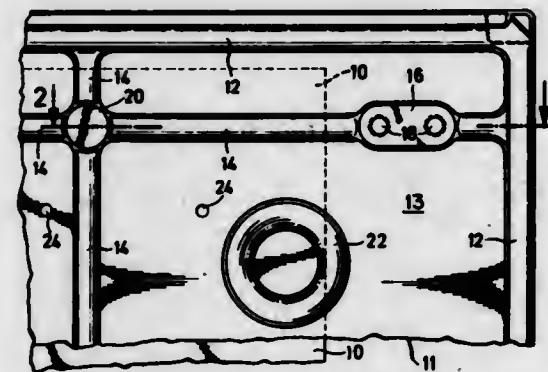
Filed Jan. 5, 1978, Ser. No. 912,415

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743275

Int. Cl.³ B23P 1/12

U.S. Cl. 219—69 E

1 Claim



1. A mounting plate for carrying a graphite electrode on the electrode assembly mounting plate in a spark machining apparatus, comprising
a broad and generally flat plate with rinsing bores there-

through and having opposite faces and a periphery, one face being flat for securing the graphite electrode thereto, the other face having walls, ribs and bosses protruding therefrom,
the walls extending around the periphery of the plate to engage the electrode assembly mounting plate and embrace a chamber for dielectric fluid adjacent the other face,
the ribs traversing the chamber in multiple directions and extending to the walls, and the ribs having a height from said other face less than the height of the walls and thereby permitting free flow of the dielectric fluid within the chamber, and
the bosses having a height from said other face identical to the height of the walls to lie flush therewith and to engage the electrode assembly mounting plate of the spark machining apparatus, certain of the bosses having tapped apertures therein and normal to the plate.

4,245,145

FERRITIC STAINLESS STEEL WELD WIRE SUITABLE FOR GMA WELDING

Gervant N. Maniar, Reading; Joseph B. Koch, Stinking Spring, and Royal D. Thomas, Jr., Narberth, all of Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed Aug. 31, 1979, Ser. No. 71,579

Int. Cl.³ B23K 35/30, 35/38

U.S. Cl. 219—146.1

9 Claims

1. Ferritic stainless steel weld wire for forming a ferritic weld deposit free of martensite under a gas blanket containing a reactive component, said weld wire consisting essentially in weight percent of about

	w/o
Carbon	0.04 maximum
Manganese	1.0 maximum
Silicon	1.0 maximum
Phosphorous	0.045 maximum
Sulfur	0.045 maximum
Chromium	10.50-12.00
Titanium	0.30-0.75
Nitrogen	0.02 maximum
Nickel	0.25 maximum
Molybdenum	0.50 maximum
Copper	0.50 maximum
Cobalt	0.25 maximum

the balance being essentially iron, and the ratio of the weight percent titanium to the sum of the weight percent carbon plus the weight percent nitrogen is at least 12.5:1 in said weld wire and at least 8:1 in said weld deposit.

4,245,146

HEATING ELEMENT MADE OF PTC CERAMIC MATERIAL

Ryoichi Shioi, Kazumasa Umezu, Kazumari Yonezuka, and Hisao Senzaki, all of Nikahomachi, Japan, assignors to TDK Electronics Company Limited, Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,922

Claims priority, application Japan, Mar. 7, 1977, 52-24997 Int. Cl.³ F24H 3/04; H05B 3/14; H01C 7/02; C04B 35/46

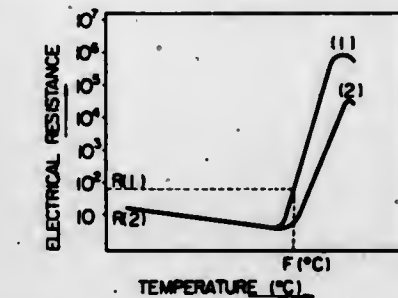
U.S. Cl. 219—381

3 Claims

1. In a heating element essentially consisting of:
a body of ceramic semiconductive material having a positive temperature coefficient of electrical resistance, said body including a number of channels for a fluid medium passage regularly arranged in the body having walls with a total surface area;
a pair of electrodes electrically connected to said ceramic body at the opposite sides of the body; and
a means for feeding said fluid medium through said channels; the improvement comprising using ceramic semiconductive material have a positive temperature coefficient of electri-

cal resistance of from 5 to 20%/°C., a Curie point in the range of from 150° to 185° C., and a breakdown voltage of from 250 to 950 V/cm,

wherein said ceramic material consists essentially of from 38.7 to 47.3 molar % of BaO, from 2.5 to 11 molar % of PbO, from 49.8 to 51 molar % of TiO₂, from 0.05 to 0.4 molar % of a semiconductor forming element consisting of an oxide of at least one metal selected from the group consisting of Bi, Sb, Ta, Nb, W and a rare earth metal, said



molar percentages being based on the total moles of BaO, PbO, TiO₂ and the semiconductor forming element in the ceramic semiconductive material, and from 0.002 to 0.015 parts by weight of Mn based on one hundred parts by weight of the total of BaO, PbO, TiO₂ and the semiconductor forming element; and

wherein when a voltage of 100 V is applied to the body and said fluid medium is fed at a rate of 400 l/minute, the ratio of heat generating amount relative to the total surface area of the walls of said channels is higher than 1.6 watt/cm².

4,245,147

VAPOR TRANSFER GRIDDLE WITH IMMERSED ELECTRICAL HEATING

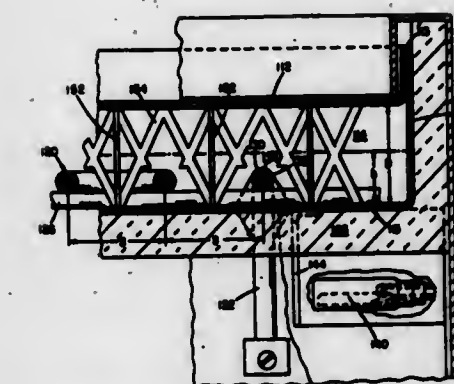
Gilbert A. Cummings, Gloucester, Mass., and Richard W. Hatch, Jr., Haverhill, N.H., assignors to Peters & Company, Inc., Dorchester, Mass.

Continuation-in-part of Ser. No. 954,650, Oct. 25, 1978, abandoned, which is a continuation of Ser. No. 614,901, Sep. 19, 1975, abandoned. This application Feb. 1, 1979, Ser. No. 8,349

Int. Cl.³ A47J 37/06; H05B 3/68

U.S. Cl. 219—462

7 Claims



1. A vapor transfer griddle unit or the like comprising a planar sheet metal heat conductive top member defining a horizontally extensive griddle surface,

a bottom wall sealed to the top member and defining therewith a corresponding vapor chamber disposed below said griddle top member;

a body of vaporizable heat transfer medium in liquid state partially filling said chamber with a vapor space between the surface of said liquid and said top member at rest as well as over the range of griddling temperatures;

a horizontally extensive electric heating array comprised of horizontally spaced elongated electric heater portions extending directly beneath and spaced below said top member and located above said bottom wall;

and a set of griddle supports mutually arrayed with said heater portions and extending between and engaging said top member and said bottom wall to provide a pattern of support across the underside of said griddle top member to maintain the griddle surface flat over its range of operations, said supports having openings permitting free self-leveling flow of liquid as well as free flow of vapor in said chamber;

said body of liquid fully immersing said array of heater portions throughout the range of griddling temperatures and comprising liquid which boils under vacuum conditions over said range;

said chamber being permanently evacuated to a level sufficient to enable said liquid to so boil and

said heater portions being heated by electrical resistance with associated controls to selectively heat said liquid to boil at any desired temperature in said range,

whereby while the griddle is maintained flat for griddling, vapor can be rapidly generated to heat the griddles to any selected griddling temperature in an energy-efficient manner.

4,245,148

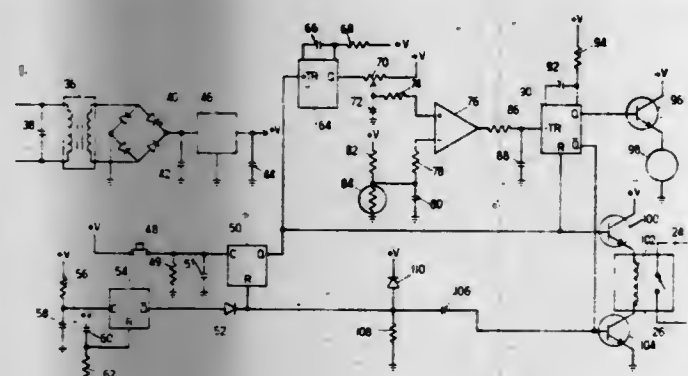
OPTICALLY SENSITIVE CONTROL CIRCUIT FOR A FOOD BROWNING DEVICE

Edward T. Giaske, and Robert J. Sandberg, both of Verona, Wis., assignors to Wisco Industries, Inc., Oregon, Wis.

Filed Sep. 14, 1979, Ser. No. 75,692
Int. Cl.³ H05B 1/02

U.S. Cl. 219-492

17 Claims



1. In a food browning device which utilizes a light generating heat source to brown food, the control circuit comprising:

a switching device connected to control the operation of the heat source;

a first resistive voltage divider including a variable resistor therein, the variable resistor being manually variable;

a second resistive voltage divider including a fixed resistor and a light sensitive variable resistor, the light sensitive variable resistor being optically coupled to light reflected from the food being browned;

a voltage comparator connected to both the first and second voltage dividers and connected so as to de-energize the switching device to turn off the heat source when the voltage generated by the second voltage divider achieves a pre-selected relation relative to the voltage generated by the first voltage divider;

a bistable circuit switchable between on and off states connected to the switching device so as to prevent operation

of the switching device when the bistable circuit is in its off state, the switching of the bistable circuit to its on state initiating operation of the switching device;

a timing circuit connected to the output of the voltage divider, the timing circuit creating a timing pulse, the timing circuit connected to the switching device so as to prevent operation of the switching device during the timing pulse and also connected to the bistable circuit to switch the bistable circuit to its off state at the end of the timing pulse; and

a manually operable start-up switch connected to the bistable circuit so as to be capable of switching the bistable circuit from its off state to its on state to initiate operation of the switching device, the operation of the control circuit thereafter being unaffected by the operation of the start-up switch.

4,245,149

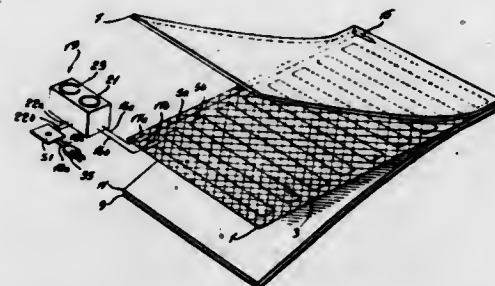
HEATING SYSTEM FOR CHAIRS

Ian F. Fairlie, 2062 Jeanne Mance St., Montreal, Quebec, Canada (H2X 2J5)

Filed Apr. 10, 1979, Ser. No. 28,828
Int. Cl.³ H05B 3/34

U.S. Cl. 219-528

7 Claims



1. A flexible heating element comprising:

a fibre fabric layer made of intermixed glass fibre strands; electrical resistance heating wires in said fibre fabric layer and defining a regular pattern in said fibre fabric layer;

a top layer of a thermoplastic material on one side of said fibre fabric layer;

a bottom layer of a thermoplastic material on the other side of said fibre fabric layer; and

a metallic foil layer applied to the bottom layer on the side remote from said fibre fabric layer;

said bottom layer and said metallic layer being fused to said fibre fabric layer, and

said top layer being fused with said bottom layer, whereby said top and bottom layers enclose said glass fibre fabric layer and said electrical resistance means to form an integral laminated sheet;

and further comprising means for connecting said resistance heating wires to a source of electrical power;

said means for connecting said resistance heating wires comprising terminals connected to said heating resistance wires and extending out of said laminated sheet;

control means in said connecting means for controlling power delivered to said resistance wire, and wherein said control means comprises a first control for setting a power level; and

a bimetallic switch;

said bimetallic switch being controlled by said power level and ambient temperature of air surrounding said control means;

whereby a comfort level is set by said first control and a duty ratio, sensitive to ambient temperature, is set by said bimetallic switch.

4,245,150

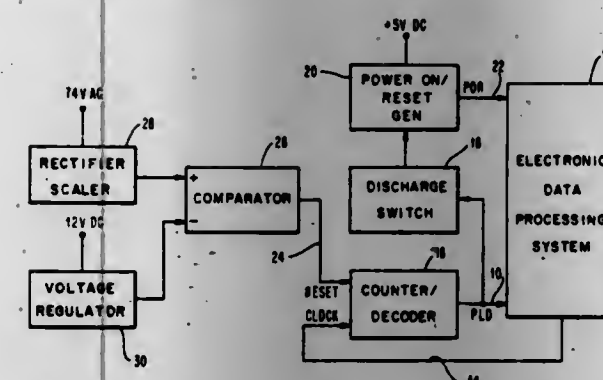
POWER LINE DISTURBANCE DETECTOR CIRCUIT

Carleton D. Driacoll, and James N. Hobbs, Jr., both of Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,268
Int. Cl.³ G06M 3/12; H02H 3/24

U.S. Cl. 235-92 FP

8 Claims



1. A power line disturbance detector for a data processing system comprising:

a comparator circuit for comparing an AC power voltage to a DC reference voltage to produce a reset pulse each time a peak value of the AC voltage exceeds a threshold value established by the DC reference voltage;

a digital counter having a clock input from an associated data processing system and a reset input from said comparator circuit, said counter being incremented by the system clock and being reset to a predetermined initial count by each reset pulse provided by said comparator circuit; and

decoder means responsive to a predetermined trigger count in said digital counter to generate a power line disturbance signal, said trigger count being beyond the range of counts attained between normally occurring reset pulses.

4,245,151

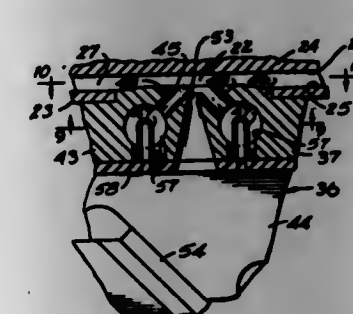
DUST DISPERSION SYSTEM FOR A DOCUMENT READER

Robert J. Thomas, Spokane, Wash., assignor to Key Tronic Corporation, Spokane, Wash.

Filed Dec. 12, 1979, Ser. No. 102,662
Int. Cl.³ G06K 7/14

U.S. Cl. 235-454

7 Claims



1. A document viewing assembly for reflecting light from a strip of visual indicia located along the face of a document, comprising:

a frame having a stationary wall surface area adapted to slidably engage the face of a document;

a light guiding slot formed within the frame in open communication with the stationary wall surface area;

a viewing slot formed through the frame and openly intersecting the light guiding slot at a location inwardly adjacent to the stationary wall surface;

heat emitting light means mounted on said frame within the

light guiding slot for illuminating the area of intersection between the light guiding slot and the viewing slot;

and upright ventilation duct means formed through the frame from an open bottom end to an open top end, said duct means being in open communication with the light guiding slot for directing convection air currents about said light means in response to the heat emitted thereby.

4,245,152

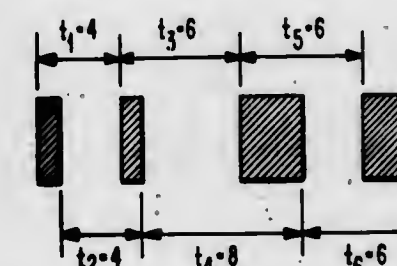
DECODING METHOD AND SYSTEM FOR ETAB BAR CODE

Gregory A. Flurry, and Marvin P. Smoak, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1979, Ser. No. 87,605
Int. Cl.³ G06K 7/10, 19/04, 9/00

U.S. Cl. 235-463

13 Claims



1. A decoding process for decoding graphical bar coded information, coded such that three relative distances between consecutive similar transitions, from mark to space and space to mark are used to characterize the binary coded data 0 and 1 in such a manner that one distance is used to code one binary value and two distances, i.e., a long distance and a short distance are used to code the other binary value, said process involving the following operations for decoding the (i+1)th coded bit:

measuring the distance between graphic edges characterizing said (i+1)th bit;

comparing the measured distance to a first or to a second predetermined threshold level depending whether the number of decoded binary one bits up to and including the ith bit was even or odd;

selecting the value of the (i+1)th bit based on the result of this comparison; and,

updating at least one of the threshold values based on the last bit value selected.

4,245,153

SUN TRACKING SYSTEM FOR SOLAR COLLECTOR

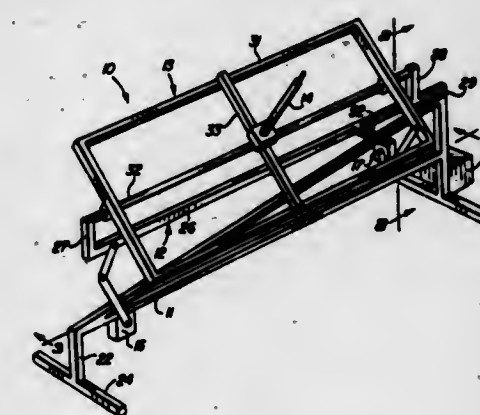
David R. Porter, 2116 E. Dunbar Dr., Tempe, Ariz. 85282

Filed Mar. 9, 1979, Ser. No. 18,947

Int. Cl.³ G01J 1/20

U.S. Cl. 250-203 R

3 Claims



1. A sun tracking apparatus comprising:

a base,

a support pivotally mounted at one end thereof on said base,

a collector supporting frame rotatably mounted on said support,
said support pivotally moving in a direction substantially perpendicular to the path of rotation of said frame,
an optical sensor mounted on said frame,
a first motor means actuated by said sensor for rotating said frame on said support to cause the rays of the sun to focus upon said sensor responsive to the altitude of the sun above the horizon,
said sensor comprising an elongated hollow tube having a photo-transistor mounted at the base thereof for receiving the sun's rays,
a second motor means for pivotally moving said support and said frame on said base for maintaining the rays of the sun on said sensor in an azimuth mode, and
a switch mounted on said base and actuated by said frame at a given point during the frame's rotation for actuating said second motor means to pivotally move said support a predetermined amount.

4,245,154

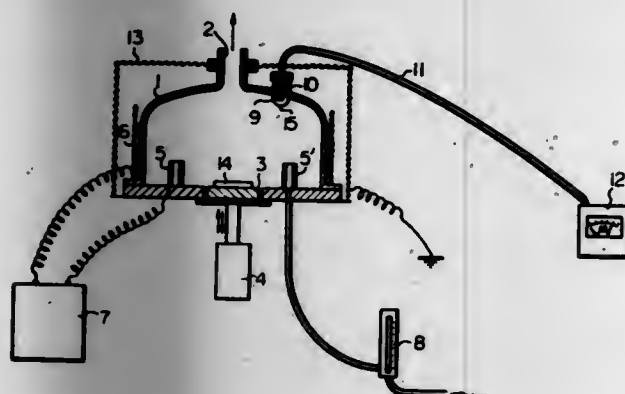
APPARATUS FOR TREATMENT-WITH GAS PLASMA
Akira Uehara, Yokohama; Hiroyuki Kiyota, Hiratsuka; Hisashi Nakane, Kawasaki, and Shozo Toda, Fujisawa, all of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 28, 1978, Ser. No. 919,856

Claims priority, application Japan, Sep. 24, 1977, 52-114977
Int. Cl.³ G02B 5/14

U.S. Cl. 250-227

9 Claims

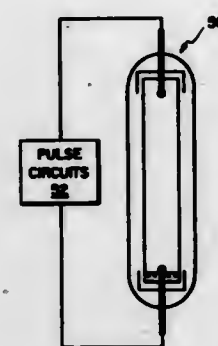


1. Plasma treatment apparatus for treatment of silicon semiconductor wafers and the like comprising:
a plasma reaction chamber having an inlet for plasma forming gas and an outlet for connection to a vacuum source, means for supporting a semiconductor wafer during plasma treatment and comprising,
a wafer table located within said chamber and being movable between upper and lower positions relative to said chamber,
high frequency electrode means associated with said chamber and connected to a high frequency generator for creating plasma within said chamber,
an optical fiberscope having first and second terminals, said first terminal penetrating a wall of the chamber and said second terminal being connected to a photoelectric transducer means for detecting light intensity, said second terminal and photoelectric transducer means being positioned at a location remote from said high frequency electrode means to avoid any significant electrical interference therefrom on said photoelectric transducer means, and
a condenser lens located within said chamber and being connected to said first terminal of said optical fiberscope for collecting light emitted from the plasma within said chamber.

4,245,155
PULSED CESIUM DISCHARGE LIGHT SOURCE
Harald L. Witting, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 907,792, May 19, 1978, Pat. No. 4,173,728, which is a continuation-in-part of Ser. No. 730,129, Oct. 6, 1976, abandoned. This application Dec. 22, 1978, Ser. No. 972,450-
Int. Cl.³ H05B 41/30

U.S. Cl. 250-227

9 Claims



1. In combination:
a cesium vapor discharge lamp including a solid metal anode and a cathode comprising a reservoir of liquid cesium;
a plurality of light-activated semiconductor switching elements; and
means for transmitting radiation emitted from said cesium vapor discharge lamp to light-sensitive areas of said semiconductor switching elements.

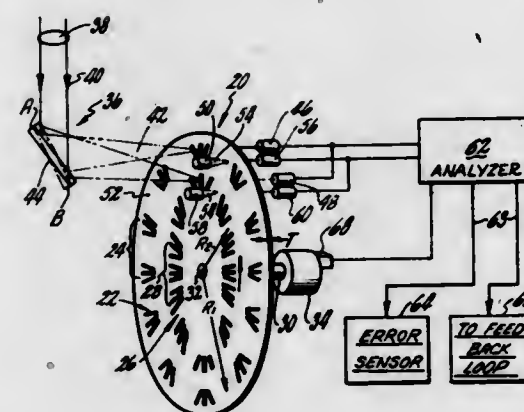
4,245,156
APPARATUS FOR MONITORING THE OPTICAL QUALITY OF A BEAM RADIATION
James E. Harvey, Albuquerque, N. Mex., and John H. Bluege, Lake Park, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1978, Ser. No. 973,192

Int. Cl.³ G01D 5/36

U.S. Cl. 250-233

13 Claims



1. An apparatus for monitoring the defocus, astigmatic errors and jitter of a beam of radiation comprising:
a disk adapted for rotation about a central axis;
means for rotating the disk about the central axis;
a plurality of rings of slit sets radially disposed within the disk symmetrically about the central axis at a plurality of radial positions wherein each ring of slit sets includes a wherein each ring of slit sets includes a multiplicity of triplet groups circumferentially and symmetrically disposed about a circumference of said ring wherein each triplet group comprises a leading slit set, a middle slit set circumferentially positioned adjacent the leading slit set and a trailing slit set circumferentially positioned adjacent the middle slit set and wherein said leading, middle and trailing slit sets are sequentially repeated within each of the triplet groups defining said ring wherein each slit set

includes a first slit and a second slit disposed in an angular relationship to the first slit;
means for focusing a beam of radiation through a slit in the slit set;
means for directing a focused beam of radiation from one ring of slit sets to another ring of slit sets;
detector means for sensing the radiation passing through a slit to provide a data signal;
means for providing a synchronization signal; and
means for monitoring the synchronization signal and the data signal to provide output signals proportional to beam quality and the amount and direction of beam motion.

4,245,157

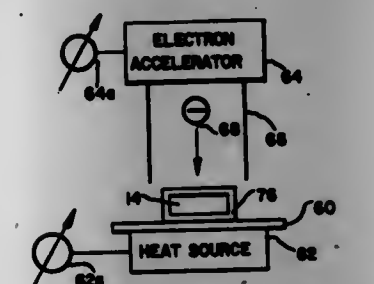
ELECTRON IRRADIATION METHOD FOR IMPROVING PERFORMANCE OF A RADIATION SENSOR
Robert S. Lewandowski, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1979, Ser. No. 25,014

Int. Cl.³ G01T 1/20

U.S. Cl. 250-362

10 Claims



1. A method for fabricating a sensor having an electrical output amplitude responsive to the amplitude of an incident radiation flux, comprising the steps of:
(a) providing a member of a scintillator material characterized by emission of optical photons responsive to incidence of said radiation flux upon the member material;
(b) then heating the member to a temperature above room temperature;
(c) then irradiating the heated member with electrons;
(d) then cooling the irradiated member to ambient temperature;
(e) providing a photon detector; and
(f) then finally assembling the sensor by positioning the photon detector to receive the optical photon emissions of the previously irradiated member to form the electrical output of said sensor with amplitude responsive to each reception of the radiation flux subsequently incident upon said sensor after final assembly thereof.

4,245,158

SOFT X-RAY SPECTROMETRIC IMAGING SYSTEM
Paul Burstein, Arlington, and Allen S. Krieger, Lexington, both of Mass., assignors to American Science and Engineering, Inc., Cambridge, Mass.

Filed Mar. 26, 1979, Ser. No. 23,914

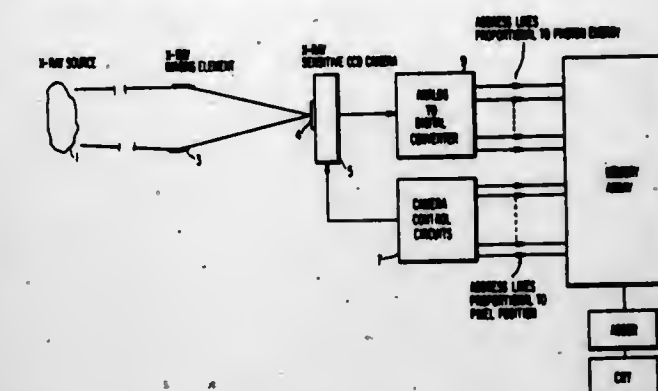
Int. Cl.³ G01T 1/22

U.S. Cl. 250-370

12 Claims

1. Apparatus for measuring the energy of single photons of radiation emitted by at least one radiation source, comprising:
a solid state array having a plurality of sensing elements, each element for receiving an incident photon of radiation over an integration period and generating a corresponding signal proportional to the energy of the incident photon;
control means for defining said integration period sufficiently small to provide an acceptably high probability

that a sensing element will receive not more than one photon during said integration period; and



memory means for storing a representation of the photon energy measured at each sensing element over at least one of said integration periods.

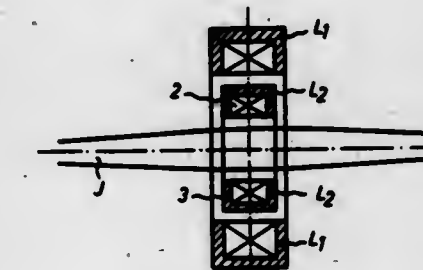
4,245,159

QUICK-ACTING ELECTRON-OPTICAL LENSES
Siegfried Beiswenger, Preetz, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany
Filed Nov. 21, 1978, Ser. No. 962,656
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752598

Int. Cl.³ G21K 1/08

U.S. Cl. 250-396 ML

11 Claims



1. An electro-optical electromagnetic lens arrangement for controlling and altering the focus of an electron beam comprising an electromagnetic static focussing lens system, an electromagnetic dynamic focussing lens system situated within the static lens system, and a screen incorporated between the dynamic and static lens systems so that the flux generated by the static lens system does not traverse the dynamic lens system, and the flux generated by the dynamic lens system does not traverse the static lens system.

4,245,160

IMAGE-INTENSIFIER APPARATUS
Norio Harao, Ayase, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Dec. 15, 1978, Ser. No. 969,827

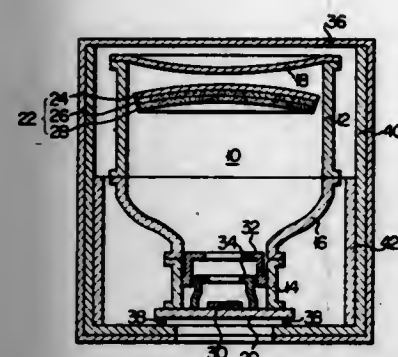
Claims priority, application Japan, Dec. 27, 1977, 52-156481
Int. Cl.³ G01N 23/22; H01J 31/50, 1/52

U.S. Cl. 250-460

10 Claims

1. An image intensifier apparatus having an input side including an input face for receiving a radiation image, and an output side for generating a visible image, comprising:
a magnetic-shielding input window, formed at said input side, including a first magnetic-shielding member covering said input face, for receiving said radiation image therethrough;
a radiation-electron conversion input screen mounted at said input side, behind said input window, said input screen including an input substrate, an input fluorescent layer and a photocathode layer;

an electron-light conversion output fluorescent screen formed at said output side; and



a side wall, constituted by a radiation leakage-preventing member and a second magnetic-shielding member, connecting said input window and said output fluorescent screen.

4,245,161

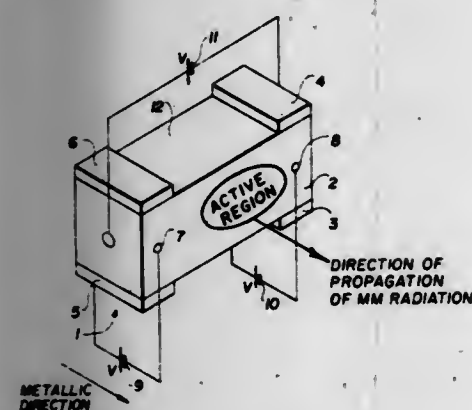
PEIERLS-TRANSITION FAR-INFRARED SOURCE

Frank J. Crowne, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 12, 1979, Ser. No. 84,048
Int. Cl.³ H01L 33/00, 45/00, 29/28

U.S. Cl. 250-504 R

8 Claims



1. A Peierls transition far-infrared radiation source comprising a member made of an organic one dimensional metal, means for exerting pressure near the ends of said member in a first direction perpendicular to the said one dimension, and means for creating a potential difference across said member near the ends thereof along said one dimension.

4,245,162

STEAM TURBINE POWER PLANT HAVING IMPROVED TESTING METHOD AND SYSTEM FOR TURBINE INLET VALVES ASSOCIATED WITH DOWNSTREAM INLET VALVES PREFERABLY HAVING FEEDFORWARD POSITION MANAGED CONTROL

Uri G. Ronnen, Monroeville, and Francesco Lardi, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

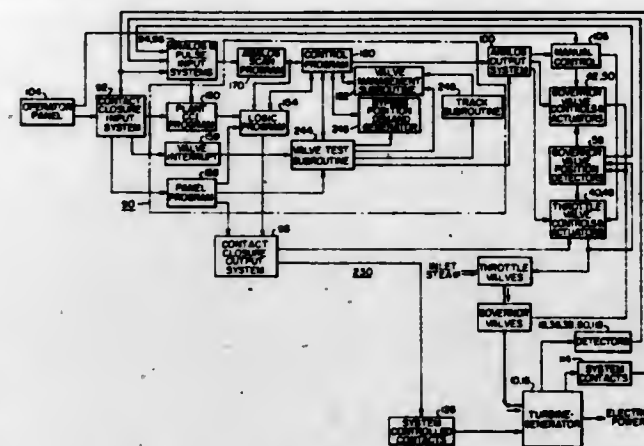
Filed Aug. 15, 1973, Ser. No. 388,534
Int. Cl.² F02N 11/06

U.S. Cl. 290-40 R

19 Claims

1. A steam turbine arrangement comprising a plurality of turbine sections and an inlet valve configuration including at least two main inlet valves and a plurality of position controllable valves downstream from each main inlet valve to supply steam to one of the turbine sections for driving a turbine rotor, means for operating said main inlet valves, means for positioning said downstream valves to satisfy a steam flow demand in a sequential valve mode or a single valve mode, means for closing and reopening the downstream valves associated with

a main inlet valve to be tested as said positioning means operates the downstream valves to satisfy the steam flow demand substantially without disturbing the turbine load generation, means for transferring said downstream valves between sequential and single valve operating modes during turbine load



operations and prior to a main inlet valve test substantially without disturbing the turbine load generation, and means for operating said main inlet valve operating means to close and reopen the main inlet valve to be tested after closure and prior to reopening of the associated downstream valves.

4,245,163

CONTROL INSTALLATION FOR AT LEAST TWO HYDRAULIC TURBINES

Maurice Philippe, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

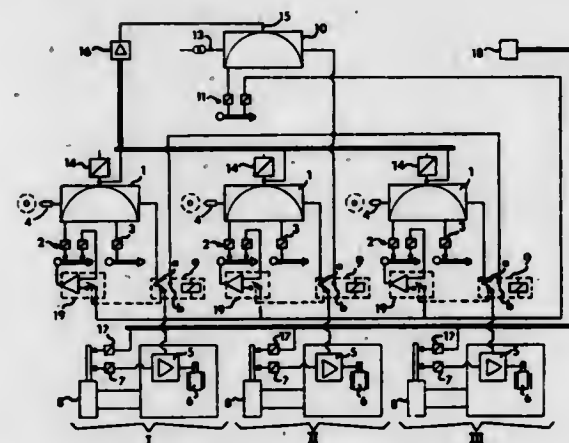
Filed Jun. 14, 1978, Ser. No. 915,990

Claims priority, application Switzerland, Jun. 30, 1977, 8044/77

Int. Cl.³ H02J 3/00

U.S. Cl. 290-52

5 Claims



1. A control installation for at least two hydraulic turbines, wherein each turbine is controlled by an independent network or simultaneously by a communal network, comprising a regulator for controlling each turbine individually responsive to operational changes of the turbine with which it is associated, and a communal regulator separate from and of the same type as said first named regulator for controlling the turbines simultaneously, and switching means for the regulators, said switching means having a first position in which the communal regulator controls the turbines and a second position in which the communal regulator is disconnected from the controls of the turbines and each turbine is separately controlled by its respective individual regulator.

4,245,164

SOLID STATE IMAGE PICKUP DEVICE

Kohel Funahashi, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 753,858, Dec. 23, 1976, abandoned.

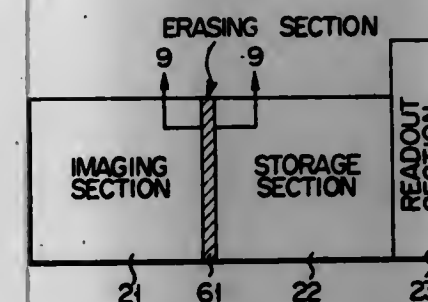
This application Aug. 28, 1978, Ser. No. 937,184

Claims priority, application Japan, Dec. 25, 1975, 50-156935

Int. Cl.³ G11C 19/28; H01L 29/78, 27/14, 31/00

U.S. Cl. 307-221 D

4 Claims



1. A solid state charge transfer image pickup device suitable for narrow band transmission, comprising:
an imaging section for converting projected optical images to electric charges, each conversion occurring within one-frame time;
a storage section for storing the electric charges of a selected one-frame image for a storage time which is longer than the one-frame time;
a readout section located on one side of the storage section to read out the electric charges from the storage section within the storage time;
an erasing means for erasing electric charges of unrequired frame images produced at the imaging section during the storage time, said erasing means comprising a drain provided between the imaging and storage sections formed by diffusing an impurity having a first conductivity type in a semiconductor substrate area having a second conductivity type, an erasing electrode electro-conductively connected to the drain, a first gate electrode provided on an insulating layer deposited on the imaging section and a second gate electrode provided on the insulating layer deposited on the storage section in which the electric charges of the unrequired images produced at the imaging section are erased by controlling a voltage applied to said electrodes; and
a drive means for transferring the electric charges of the required frame images to the erasing means from the imaging section and the electric charge of the selected frame image to the storage section from the imaging section through the erasing means.

4,245,165

REVERSIBLE ELECTRICALLY VARIABLE ACTIVE PARAMETER TRIMMING APPARATUS UTILIZING FLOATING GATE AS CONTROL

Charles R. Hoffman, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,323

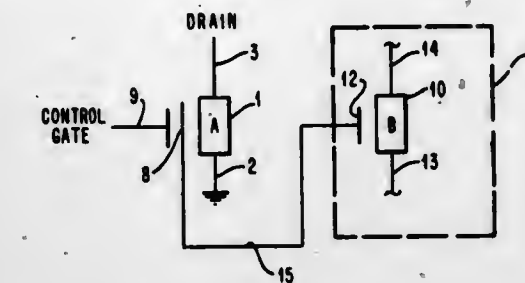
Int. Cl.³ H03K 5/00, 17/60, 3/26

U.S. Cl. 307-238

3 Claims

1. A reversible, electrically variable active conduction parameter trimming apparatus, comprising:
a floating gate first FET device having a source, drain, first floating gate and second control gate, respectively;
a second FET device having a source, drain, and a control gate, said second FET device being connected in a circuit whose conduction parameter is to be trimmed or adjusted; and
an electrically conductive means connecting said first gate of said first FET to said control gate of said second FET,

thereby applying the voltage level of said floating gate to said control gate and providing a means for adjustable



control of the level of current conduction in said second FET and the circuit in which it is connected.

4,245,166

THYRISTOR CONTROL CIRCUIT

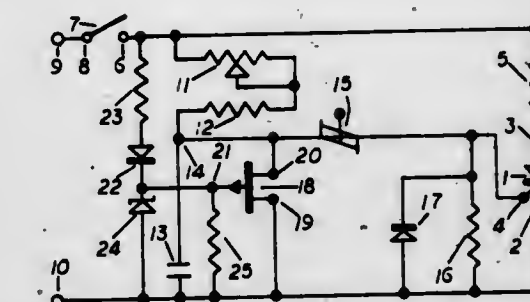
John C. Rankin, 908 S. Hobart Blvd., Los Angeles, Calif. 90006

Filed Mar. 6, 1979, Ser. No. 18,248

Int. Cl.³ H03K 17/72, 17/22, 17/292

U.S. Cl. 307-252 N

1 Claim



1. A thyristor control circuit comprising:
a timing circuit for firing a thyristor consisting of a resistor and a capacitor with the first lead of said resistor connected to the first terminal of a source of sine wave pulses, the second lead of said resistor connected to the first lead of said capacitor to form a junction, the second lead of said capacitor connected to the second terminal of said source of sine wave pulses;
a trigger device connected between said junction and gate of said thyristor;
a field effect transistor having a gate, source and drain with said drain effectively connected to said first lead of said capacitor and said source connected to said second lead of said capacitor;
a means for applying voltage pulses between said gate and said source of said field effect transistor so that the resistance between said drain and said source is high to allow charging of said capacitor through said resistor with the voltage polarity required to trigger said gate of said thyristor and so that the resistance between said drain and said source is low to discharge said capacitor when said sine wave pulses are at and passing through zero amplitude.

4,245,167

PULSE GENERATOR FOR PRODUCING FIXED WIDTH PULSES

Marc T. Stein, Tempe, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 8, 1978, Ser. No. 967,769

Int. Cl.³ H03K 3/017, 3/284, 5/153

U.S. Cl. 307-265

22 Claims

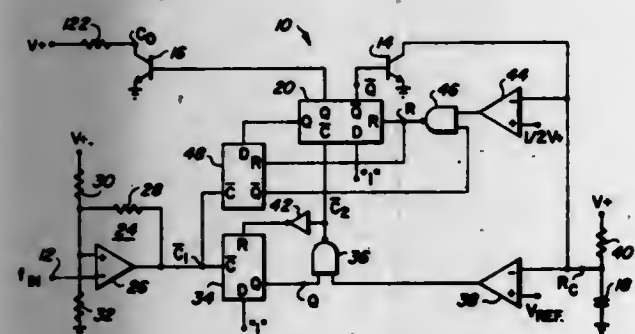
1. Apparatus responsive to an applied alternating input signal, for generating pulses having a fixed pulse width in response comprising:
output circuit means responsive to applied control signals

for producing the output pulses at an output terminal thereof;

control circuit means responsive to applied triggering signals and logic control signals for producing said control signals, said control circuit means includes a D-type flip-flop having first and second complementary outputs, clock input and reset input terminals, said clock input terminal receiving said triggering signals, said reset terminal receiving said logic control signals and said control signals appearing at said complementary output terminals thereof with said first complementary output being coupled to said output circuit means and said second complementary output being coupled to said circuit means for producing logic control signals;

circuit means for producing said logic control signals, said circuit means for producing logic control signals includes: a. switching means coupled to said second complementary output of said control circuit means and being rendered selectively conductive and nonconductive by said control signals appearing at said second complementary output;

b. charge circuit means coupled to said switching means, said charge means being responsive to said switching means being rendered nonconductive for producing a ramping output signal, said charge circuit means being discharged when said switching means is rendered conductive such that said output signal is held constant at a first predetermined value;



c. circuit means coupled to said charge circuit means and said switching means which is responsive to the magnitude of said ramping output signal becoming greater than a second predetermined value for producing at an output thereof said logic control signals; and

triggering circuit means responsive to the alternating input signal for producing said triggering signals at predetermined portions of the input alternating signal, said triggering circuit means includes:

a. first comparator means receiving the alternating input signal for producing a clocking signal having positive and negative going edges respectively at an output thereof;

b. first logic control circuit responsive to said clocking signal being applied thereto for producing first gate triggering signals at an output thereof on a predetermined one of said edges of said clocking signal;

c. second comparator means coupled to said charge circuit means for producing second gate triggering signals the state thereof being determined by the magnitude of said ramping output signal from said charge circuit means; and

d. first logic gating means responsive to said first and second gate triggering signals being applied thereto for producing said triggering signals at an output thereof, said output being coupled to said control circuit means and to said first logic control circuit for resetting said first logic control circuit.

4,245,168 INTEGRATABLE DRIVER FOR LIQUID CRYSTAL DISPLAYS AND THE LIKE

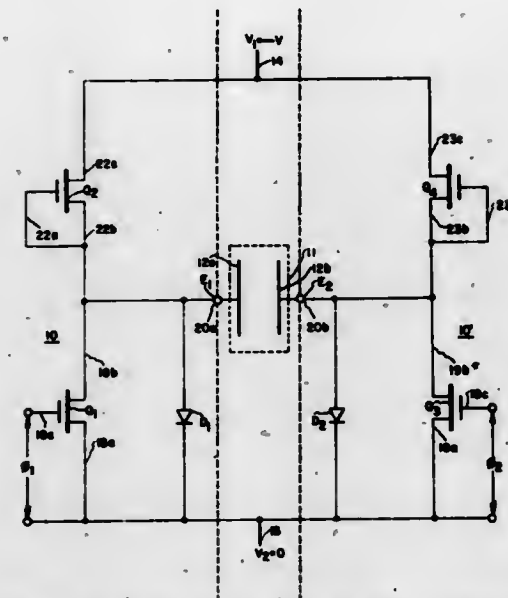
Wesley K. Waldron, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1978, Ser. No. 930,731

Int. Cl.² H03K 17/60; G02F 1/13; H03K 5/08

U.S. Cl. 307—270

7 Claims



1. An integratable circuit for driving a load, comprising: first and second bus means for coupling respectively to first and second electrical potentials;

an output terminal for coupling said circuit to said load;

a first semiconductor device having first, second and third electrodes; said first electrode being coupled to said first bus means and said second and third electrodes being coupled together and to said output terminal to cause a substantially constant current to flow from said first electrode towards said output terminal;

a second semiconductor device having first, second and third electrodes, with the magnitude of the impedance between said first and second electrodes being established by the magnitude of a voltage impressed between said second and third electrodes; said first and second electrodes being respectively coupled to said output terminal and said second bus means respectively; said third electrode receiving a voltage sufficient to reduce the impedance between said first and second electrodes for selectively causing substantially all of said substantially constant current to be conducted to said second bus means through said second semiconductor device responsive only to a first condition; and

an avalanche diode coupled between said output terminal and said second bus means for establishing an essentially constant voltage therebetween only when said second semiconductor device responds to a condition other than said first condition and does not conduct substantial current toward said second bus means.

4,245,169 SAMPLING CIRCUIT AND METHOD THEREFOR

Clark Hamilton, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation-in-part of Ser. No. 853,354, Nov. 21, 1977, abandoned. This application Mar. 14, 1979, Ser. No. 20,359

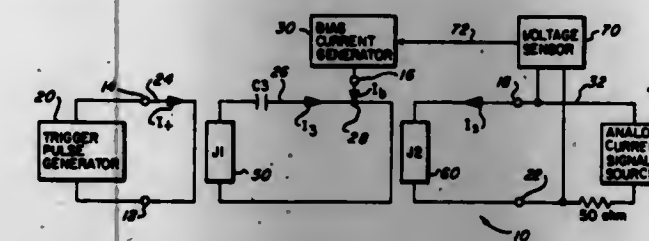
Int. Cl.³ H03K 5/153, 5/24

U.S. Cl. 307—350

8 Claims

1. A sampling circuit for determining the value of an analog current signal, said circuit comprising: means for generating sampling pulses, means for generating steps of increasing bias current, said sampling pulse generating means being capable of generat-

ing one sampling pulse at a predetermined time in each of said steps, and means receptive of said sampling current pulses, said bias current steps, and of said analog current signal for switching from a first state to a second state to generate an



output signal only when the sum of the current from said sample pulse, said analog signal, and from said bias step exceeds a predetermined value, the value of said bias current when said output signal is generated being proportional to said analog current value.

4,245,170 DETECTOR

Bernardus Verhoeven, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

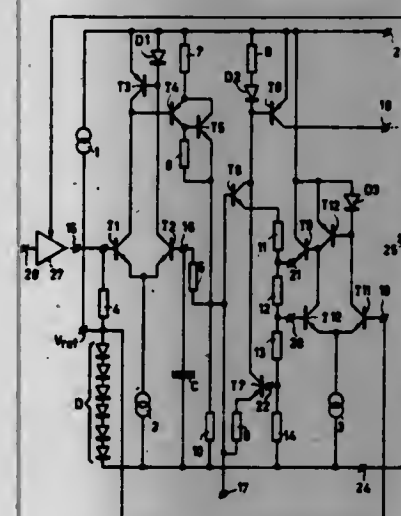
Filed Feb. 5, 1979, Ser. No. 9,210

Claims priority, application Netherlands, Feb. 21, 1978, 7801907

Int. Cl.³ H03K 5/153

U.S. Cl. 307—360

7 Claims



1. A detector comprising a preamplifier having an input and an output, and a first comparator circuit having a first input, which is coupled to the output of the preamplifier, and a second input for detecting whether a detection voltage at the second input is exceeded by the voltage on the first input of the comparator circuit, wherein said detector further comprises a reference voltage source, a first means for maintaining a d.c. level at the output of the preamplifier at the level of the reference voltage source, and a second means for raising the detection level of the comparator circuit by said reference voltage.

4,245,171 DEVICE FOR PRODUCING HIGH-POWERED RADIATION EMPLOYING STIMULATED RAMAN SCATTERING IN AN OFF-AXIS PATH BETWEEN A PAIR OF SPHERICAL MIRRORS

Paul Rabinowitz, Old Beth Page, N.Y., and Alexander Stein, Springfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 30, 1979, Ser. No. 25,401

Int. Cl.³ H03F 7/00

U.S. Cl. 307—426

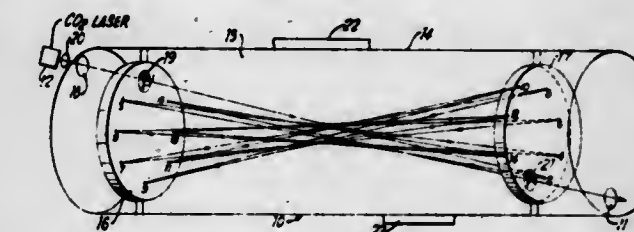
4 Claims

1. Apparatus for producing radiation by Raman scattering including: a first spherical mirror having a first concave reflecting

surface which is a section of a sphere having a first predetermined radius and a first center of curvature; a second spherical mirror having a second concave reflecting surface which is a section of a sphere having a second predetermined radius and a second center of curvature; means for mounting said first and second spherical mirrors with said first and second concave reflecting surfaces facing each other, defining an optical axis including said first and second centers of curvature, said optical axis intersecting said first and second concave reflecting surfaces;

a Raman active medium which responds to a first frequency of radiation to produce a second frequency of radiation by Raman scattering;

means for maintaining said Raman active medium between said first and second spherical mirrors;



focusing means for introducing radiation of said first frequency between said first and second spherical mirrors along a path which intersects said first and second spherical mirrors but is not parallel to said optical axis thereby producing radiation of said second frequency by stimulated Raman scattering; said focusing means also focusing said introduced radiation mode matching said introduced radiation to said first and second spherical mirrors; said first center of curvature being located between said second center of curvature and said second concave reflecting surface; and

said second center of curvature being located between said first center of curvature and said first concave reflecting surface.

4,245,172 TRANSDUCER FOR GENERATION AND DETECTION OF SHEAR WAVES

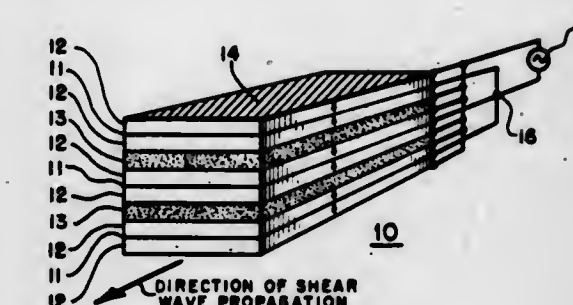
Donald J. Shirley, Leander, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1976, Ser. No. 737,759

Int. Cl.³ H01L 41/08

U.S. Cl. 310—332

15 Claims



1. An improved transducer for generating and detecting acoustical energy propagating in materials having a low acoustical impedance comprising:

a plurality of deformable bimorph elements, each of said elements being formed by two individual deformable members polarized in the same direction;

high compliance means coupled to said bimorph elements for separating each of said elements, said elements being

arranged such that the polarization of all of the members is oriented in the same direction; and means for providing electrical connections to each of said elements, said electrical connections and high compliance means being constructed and coupled to said elements in such manner as to enable the generation and detection of shear waves through said bimorph elements.

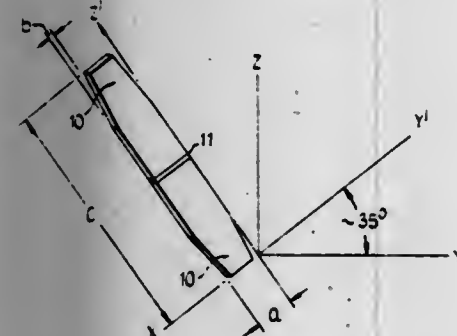
4,245,173

BEVELED, COUPLED MODE PIEZO-ELECTRIC RESONATOR

Alphonse E. Zamsteg, Solothurn, and Pavel Suda, Bienne, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland
Filed Mar. 27, 1979, Ser. No. 24,300
Int. Cl.³ H01L 41/08, 41/18

U.S. Cl. 310-361

17 Claims



1. A piezo-electric resonator in the form of a generally rectangular bar cut from a suitable material and provided with electrodes so as to vibrate when properly excited in a mode which is the resultant of coupling of a thickness shear mode and a flexural mode with flexural vibrations terminating on the longest narrow surfaces (b, c) and wherein bevels are cut in said longest narrow surfaces proximate the ends of the bar thereby to achieve energy trapping of said resultant coupled mode by frequency mismatch of flexural vibrations proximate the ends of the bar from those proximate the centre thereof.

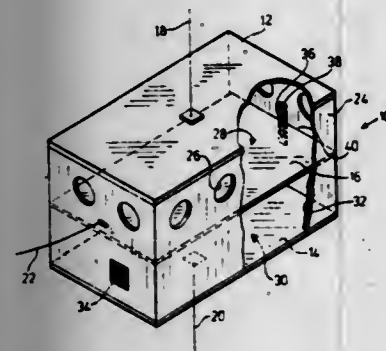
4,245,174

DUAL IONIZATION CHAMBER

John Mallory, and Zbigniew Turlej, both of Toronto, Canada, assignors to Isotec Industries Limited, Toronto, Canada
Filed Apr. 24, 1978, Ser. No. 899,179
Int. Cl.² H01J 39/28

U.S. Cl. 313-3

9 Claims



1. Dual ionization chambers adapted for use with an electronic smoke detection device comprising first and second chambers separated by a common electrically conductive partition and a single source of radioactive material provided on one side of a support having locating means associated therewith and adapted to cooperate with said partition to accurately and positively locate said source of radioactive material with a first portion which ionizes the air in said first

chamber and a second portion which ionizes the air in said second chamber independently of the first portion.

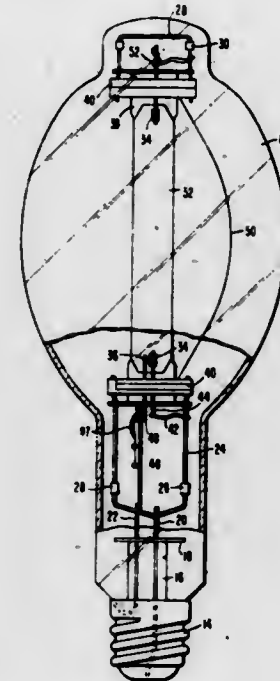
4,245,175

METAL HALIDE LAMP HAVING LEAD METAL POWDER TO REDUCE BLACKENING

William A. McAllister, Morris Township, Morris County, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 8, 1978, Ser. No. 967,809
Int. Cl.³ H01J 17/20, 61/18

U.S. Cl. 313-229

1 Claim



1. A high pressure discharge lamp of the metal halide type, said lamp comprising:

- an outer envelope sealed to a metal base;
- an arc tube mounted within said outer envelope having a pair of discharge sustaining electrodes at each end thereof, said discharge sustaining electrodes being electrically connected to said metal base; and
- a discharge sustaining fill, within said arc tube, said discharge sustaining fill including about 2 milligrams of scandium metal, about 16 milligrams of mercuric iodide, about 80 milligrams of sodium iodide, and about 148 milligrams of mercury, and wherein about 2 milligrams of lead metal powder is added to the discharge sustaining fill to enhance the maintenance of said lamp.

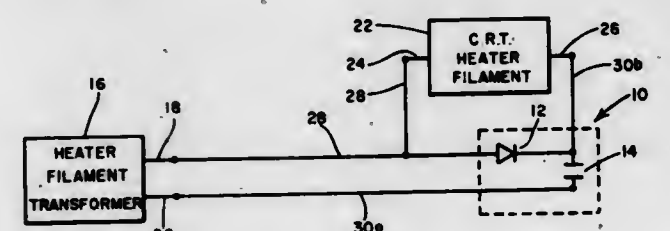
4,245,176

VOLTAGE MULTIPLIER DEVICE

Russell E. Anglin, 6157 Cottle Rd., San Jose, Calif. 95123
Continuation-in-part of Ser. No. 858,666, Dec. 8, 1977, abandoned. This application Aug. 24, 1978, Ser. No. 936,372
Int. Cl.³ H01J 19/82

U.S. Cl. 315-101

11 Claims



1. A voltage multiplier device for developing a voltage across the two leads of an electron emission tube heater filament that is greater than the voltage developed across two secondary leads of a heater filament transformer, the device comprising

first capacitor means having a first plate coupled to a first one of said secondary leads, and rectifier means coupling both a second one of said secondary leads and a first one of said heater filament leads to both a second plate of said first capacitor and a second one of said heater leads.

4,245,177

INVERTER FOR OPERATING A GASEOUS DISCHARGE LAMP

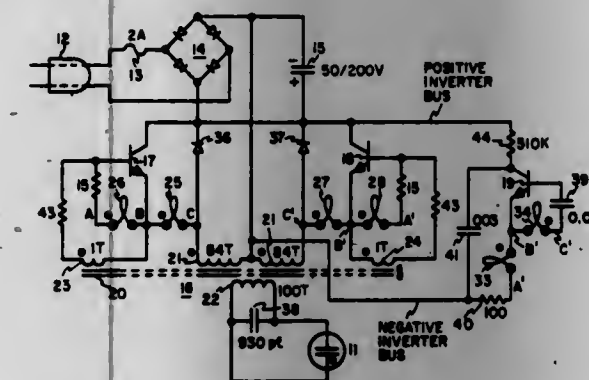
Nicholas A. Schmitz, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,351

Int. Cl.³ H05B 37/00, 39/00, 41/14

U.S. Cl. 315-205

6 Claims



1. A dc to ac inverter with power limiting for operation of a gaseous discharge light source through pre-ignition, arc stabilization, warm-up, and final run states comprising:

- A. input terminals for connection to a dc electrical source,
- B. output terminals for connection to a gas discharge light source,
- C. a transformer comprising:
 - (1) a core of substantially linear magnetic material for main flux pursuing a main magnetic path, aperture means in a localized region of said core defining a second magnetic path,
 - (2) a main primary winding and a main secondary winding associated with said main magnetic path, said main windings being loosely coupled to provide an equivalent output inductance having significant ballasting effect,
 - (3) magnetic state responsive control winding means comprising a primary and a secondary control winding traversing said aperture means, said secondary control winding being coupled through said second magnetic path to said primary control winding, substantially uncoupled to main flux in the absence of saturation effects, and producing an output which reverses in sense at a predetermined flux level,
- D. transistor switching means serially coupled with said main primary winding across said input terminals for producing a periodic output in said main output winding with substantial harmonic content, and responsive to said control winding to limit the average current supplied to said light source, said current limiting effect in combination with said equivalent output inductance precluding excessive power dissipation during warm-up and final run states of the lamp, and
- E. capacitive means connected in shunt with said output winding and across said output terminals to resonate with said equivalent inductance at a prescribed harmonic to produce the enhanced output voltage required for pre-ignition and arc stabilization.

4,245,178

HIGH-FREQUENCY ELECTRODELESS DISCHARGE DEVICE ENERGIZED BY COMPACT RF OSCILLATOR OPERATING IN CLASS E MODE

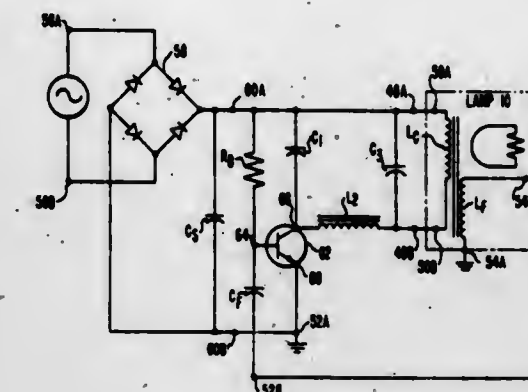
James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 21, 1979, Ser. No. 13,703

Int. Cl.³ H05B 41/16, 41/24

U.S. Cl. 315-248

7 Claims



1. In combination with an electrodeless discharge device designed to operate with a rated power consumption when energized with predetermined radio frequency energy as generated by a radio-frequency power source, said radio-frequency power source having an output portion comprising a tuned circuit having a resonant frequency which approximates said predetermined radio frequency at which said device is to be operated, said device comprising:

- a sealed light-transmitting globular-shaped envelope of predetermined dimensions, a discharge-sustaining medium within said envelope, and a layer comprising phosphor material carried on the interior surface of said envelope;
- a core operatively positioned in energy transferring relationship with respect to said envelope, said core principally comprising magnetic material of high permeability and having a looped configuration of predetermined dimensions and also having predetermined cross-sectional dimensions, and a power winding having a predetermined number of turns wrapped about said core;
- a pair of power input terminals connecting to said power winding for connection to said radio-frequency power source, said power winding and core comprising a part of said tuned circuit output portion of said radio-frequency power source, and during operation of said device, the radio-frequency energy passed through said power winding creates radio-frequency electromagnetic fields through and about said core and within said envelope to excite said discharge-sustaining medium to emit short wavelength radiations, and said layer comprising phosphor is responsive to said short wavelength radiations to emit visible radiations which pass through said envelope; and
- an additional feed-back signal winding having a predetermined number of turns wrapped about said core and connecting to a pair of feed-back signal output terminals of said device, the improved radio-frequency Class E oscillator circuit which is adapted to be connected to all of said device terminals for energizing said device, said oscillator circuit comprising:
 - (a) circuit input terminals adapted to be connected to a source of A.C. energizing potential, and circuit power output terminals adapted to be connected to said power input terminals of said device for connection to said device power winding;
 - (b) rectifier means connecting across said circuit input terminals for rectifying the A.C. energy to provide across first and second D.C. output terminals thereof a D.C. potential of predetermined value, said first D.C. output terminal

being positive with respect to said second D.C. output terminal;

- (c) transistor means for providing radio-frequency oscillations and having base, collector and emitter terminals, the base terminals of said transistor means connecting through a resistor of predetermined value to said first D.C. output terminal of said rectifier means and to one of said power output terminals, load-network capacitor means of predetermined value connecting between said first D.C. output terminal of said rectifier means and the collector terminal of said transistor means, and the other of said circuit power output terminals, said transistor means having a short collector current fall time; and,
- (d) tuned circuit capacitor means of predetermined value connected across said circuit power output terminals and forming with said device winding and said device core, as connected thereacross, a tuned circuit having a resonant frequency which establishes the radio frequency at which said device is to be operated; and
- (e) said oscillator circuit also having a pair of feed-back signal input terminals which are adapted to be connected to said feed-back signal output terminals of said device, one of said circuit feed-back signal input terminals electrically connects to one of said first and said second DC output terminals of said rectifier means, and the other of said circuit feed-back signal input terminals electrically connects to the base terminal of said transistor means through a phase-controlling capacitor so that when said device is connected to said oscillator circuit, there is provided feed-back oscillatory energy for said transistor means.

4,245,179

PLANAR ELECTRODELESS FLUORESCENT LIGHT SOURCE

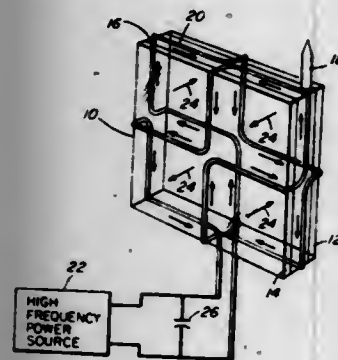
Carl F. Bahrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 18, 1979, Ser. No. 49,772

Int. Cl.³ H05B 41/16, 41/24

U.S. Cl. 315-248

11 Claims



1. A planar electrodeless fluorescent light source comprising:

- a planar electrodeless fluorescent lamp including
- a lamp envelope including two light transmitting substantially flat plates in parallel arrangement with a space therebetween and means for enclosing said space between said plates to form an enclosed volume, said lamp envelope having an inner surface and two planar outer surfaces,
 - a fill material, enclosed within said lamp envelope, which emits ultraviolet radiation upon excitation by high frequency power, and
 - a phosphor coating, disposed on the inner surface of said lamp envelope, which emits visible light upon absorption of ultraviolet radiation; and
 - means associated with said lamp for excitation of said fill material by high frequency power, including induction coil means located in sufficiently close proximity to said

lamp to cause excitation of said fill material and including a conductor disposed on at least one of said outer surfaces to form a plurality of substantially non-overlapping conductive loops, each in a plane substantially parallel to said outer surfaces.

4,245,180

REGULATED POWER SUPPLY DEVICE FOR A LINE SWEEP CIRCUIT IN A TELEVISION RECEIVER

Gerard Rilly, and Michel Facon, both of Paris, France, assignors to Thomson-Brandt, Paris, France

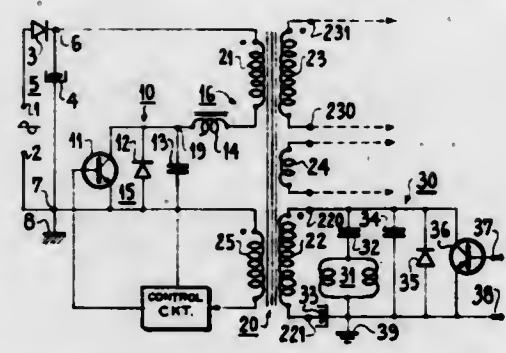
Filed Apr. 30, 1979, Ser. No. 35,217

Claims priority, application France, May 2, 1978, 78 12904; Mar. 2, 1979, 79 05504

Int. Cl.³ H01J 29/70

U.S. Cl. 315-411

8 Claims



1. A regulated power supply device, in particular for a line sweep circuit in a television receiver, whose output stage (30) contains a first electronic switch of the bidirectional type (36, 35), controlled periodically so as to be closed during the forward sweep and open during the fly-back, connected in parallel with a first series assembly containing line deviation coils (31) and a first capacitor (32), called the forward capacitor, which feeds these coils (31) during the closing of the first switch (36, 35), with a second capacitor (34), called the return capacitor, which forms a parallel resonant circuit with the inductance in particular of the coils (31) during the opening of the first switch (36, 35) and with a second series assembly containing a first winding (22) of a transformer (20), called the line transformer, and a third capacitor (33), called the power supply capacitor, which feeds the first winding (22) with D.C. voltage while the first switch (36, 35) is closed, the power supply device containing a chopper circuit (10) connected between the terminals (6, 7) of a D.C. power supply voltage source (5) and containing an inductor, called the chopper inductor, (16) and a second electronic switch (15), which is controlled, mounted in series, this second switch (15) containing a chopper transistor (11) controlled on its base by means of a recurring control signal, which is produced by means of the line return pulses picked up on a secondary winding (25) of the line transformer (20), in order to be alternately conducting and cut off during each line period, this chopper inductor (16) containing a second winding (21), called the power supply winding, of this transformer (20), which is intended for the transfer of energy between the chopper circuit (10) and the line sweep output stage (30), and being characterized by the fact that, the second switch (15) being also of the bidirectional type and containing, apart from the chopper transistor (11), which is operating in the saturated and cut off mode, a diode (12) mounted in parallel and in opposition with this transistor, the chopper circuit (10) contains also a fourth capacitor (13), called the turning capacitor, which forms a resonant circuit with the chopper inductor (16) during the opening periods of the second switch (15) which works with a constant cyclic ratio, the periods being obtained by means of a control signal which causes the cutting off of the chopper transistor (11) and their lengths being constant and greater than a half period of resonance of this resonant circuit (13, 16) whose length may reach about a half of a line period, and by the fact that the regulation of the energy exchanged between the chopper

circuit (10) and the output stage (30) is obtained by the variation of the delay between the respective opening instants of the first (36, 35) and second (15) switches.

4,245,181

METHOD AND APPARATUS FOR GENERATING AN AIR GAP FLUX SIGNAL FOR AN AC MACHINE FROM AC LINE VOLTAGE AND CURRENT VALUES

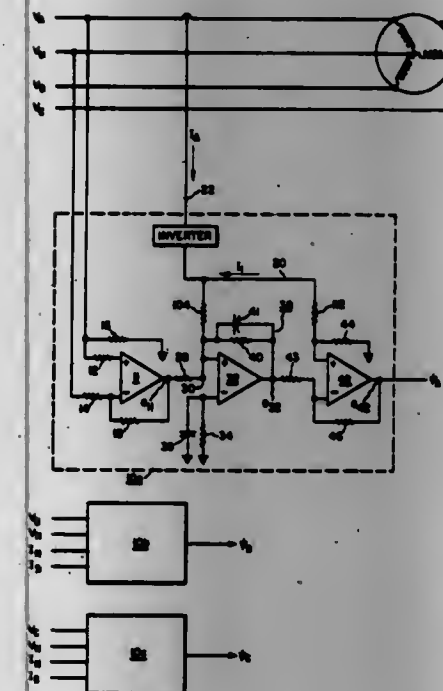
Allan B. Plunkett, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 26, 1979, Ser. No. 14,941

Int. Cl.³ H02P 5/28, 7/36; G01R 33/00

U.S. Cl. 318-805

12 Claims



1. A method for providing, from AC machine terminal voltages applied to, and current drawn by, said AC machine, a substantially smooth, continuous and sinusoidal signal representative of the air gap flux within an AC machine, comprising the steps of:

- deriving from the AC machine terminal voltage a voltage representative of the stator voltage within the machine;
- generating a first intermediate voltage proportional in magnitude to the voltage difference between said voltage representing the stator voltage and a voltage representing the resistive voltage drop component across the AC machine stator;
- integrating said first intermediate voltage to yield a second intermediate voltage; and
- algebraically summing said second intermediate voltage with a voltage representative of the stator flux leakage reactance of the AC machine stator to yield an air gap flux signal proportional to the voltage difference therebetween.

4,245,182

EXCITATION CONTROL APPARATUS FOR A GENERATOR

Hiroaki Aotsu, Nakaminato; Akira Isono, Hitachi; Masuo Goto, Hitachi; Koichi Kimura, Hitachi; Yasushi Momochi, Hitachi; Takaaki Kai, Ibaraki; Satoshi Kitamura; Akihisa Kaihara, both of Hitachi, and Hiroshi Okada, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Japan

Filed Mar. 28, 1978, Ser. No. 891,001

Claims priority, application Japan, Mar. 30, 1977, 52-34500

Int. Cl.³ H02P 9/14

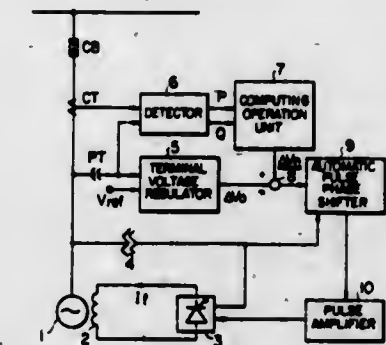
U.S. Cl. 322-20

17 Claims

12. A regulator system for an alternating circuit generator

having a field excitation winding and output terminals connected to an electrical system comprising:

- excitation means for supplying an excitation current to the field winding of the generator;
- control circuit means connected to the input of said excitation means for controlling the magnitude of the excitation current supplied to the field excitation winding of the generator;
- detector means for detecting and providing outputs of active and reactive power signals from the output of the generator in the form of scalar quantity;
- compensation/control value determining means responsive



to the output of said detector, for determining a compensation/control value for at least one operationally varying factor to be regulated in the generator depending on a predetermined function correlated with active and reactive power signals;

control signal generating means connected to the input of said control circuit, including first means for providing an output signal responsive to the difference between the output voltage of said generator and a reference voltage of predetermined magnitude and second means for summing the output signal of said first means and the compensation/control value as the output of said compensation/control value determining means.

4,245,183

RMS CIRCUIT FOR VOLTAGE REGULATION

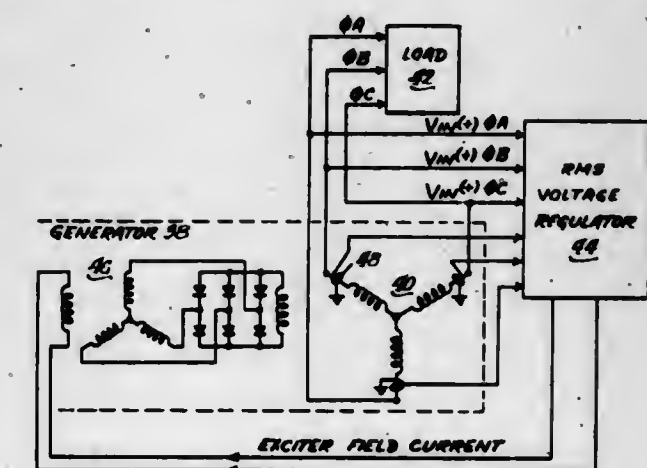
Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 31, 1978, Ser. No. 892,089

Int. Cl.³ H02P 9/30; G06G 7/20

U.S. Cl. 322-28

16 Claims



1. A circuit for providing a voltage proportional to the RMS value of a periodic waveform having a fixed frequency comprising:

- means for rectifying said periodic waveform to provide a first voltage;
- means for squaring the first voltage to provide a second voltage;
- means for integrating said second voltage over a period of

4,245,189

PROBE ASSEMBLY FOR MEASURING CONDUCTIVITY OF PLATED THROUGH HOLES

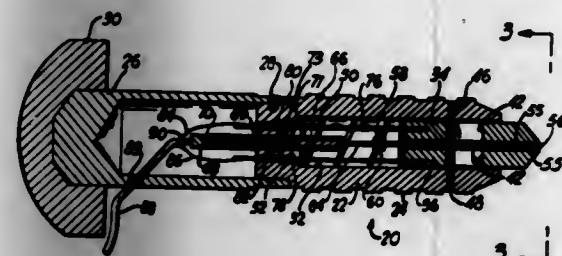
Robert O. Wahl, Sound Beach; Derek Lieber, North Merrick, and Jay M. Lesser, Freeport, all of N.Y., assignors to UPA Technology, Inc., Syosset, N.Y.

Filed Jan. 14, 1979, Ser. No. 48,547

Int. Cl.³ G01R 1/06, 27/14

U.S. Cl. 324—65 P

18 Claims



1. In apparatus for measuring the conductivity of a plated coating on a wall defining a circular hole of a through hole in a circuit board workpiece, an improved electrode probe comprising:

- an elongate housing having a longitudinal axis;
- a segmented first electrode assembly having an interstice between adjacent segments and located in the housing with a forward tip portion of such first electrode assembly extending beyond a forward end of the housing;
- the tip portion of the first electrode assembly shaped to engage substantially 360° of a circular edge formed by the intersection of the wall defining the through hole and the surface of the circuit board workpiece;
- a second electrode assembly mounted in the housing in the interstice between segments of the first electrode assembly, the second electrode assembly having a forward tip portion disposed adjacent the tip portion of the first electrode assembly and shaped to engage multiple points of such circular edge when the forward tip portion of the first electrode assembly is positioned to engage the circular edge; and
- insulating means between the first and second electrode assemblies for electrically insulating these assemblies from one and another.

4,245,190

LIGHTNING DETECTION SYSTEM UTILIZING TRIANGULATION AND FIELD AMPLITUDE COMPARISON TECHNIQUES

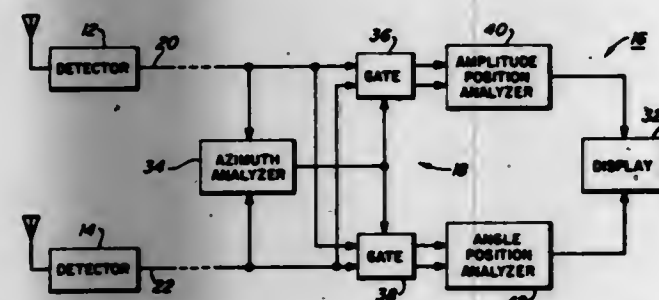
Edmond P. Krider; Ralph C. Noggle, both of Tucson, Ark., and Martin A. Uman, Gainesville, Fla., assignors to Lightning Location and Protection, Inc., Tucson, Ariz.

Filed Dec. 12, 1978, Ser. No. 968,665

Int. Cl.³ G01R 31/02

U.S. Cl. 324—72

3 Claims



1. A method of determining the location of a lightning discharge to ground comprising the steps of:

- detecting the field produced by the discharge at at least two remotely located sites and determining the amplitude of the field detected at each site as well as the relative direction of the discharge with respect to each site;
- comparing the relative directions to determine whether the

discharge occurred along or near a line passing through said two detectors;

determining the location of the discharge with respect to said sites utilizing said relative directions and triangulation techniques if the discharge did not occur along or near said line; and

determining the location of said discharge by comparing the relative amplitudes of the fields detected at each site if the discharge occurred along or near said line.

4,245,191

METHOD AND APPARATUS FOR DETECTING AND MEASURING INCLUSIONS IN SUBSOIL

Diether Schroeder, Im Schöntal, Oedekoven, Fed. Rep. of Germany

Division of Ser. No. 739,848, Nov. 9, 1976, Pat. No. 4,125,804.

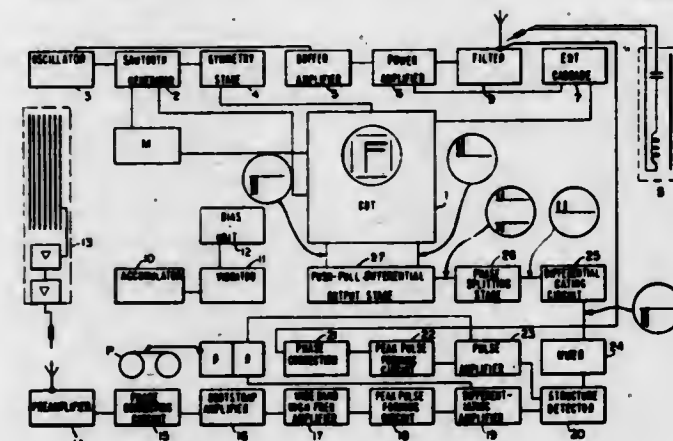
This application Nov. 7, 1978, Ser. No. 958,555

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1975, 2550715

Int. Cl.³ G01V 3/17, 3/12

U.S. Cl. 324—337

22 Claims



1. Apparatus for detecting and measuring inclusions contained in the subsoil comprising:

- a high frequency quartz oscillator;
- a signal amplifying means for amplifying the oscillator output signal;
- an antenna for transmitting the amplified signals as an unmodulated electromagnetic wave;
- a receiving antenna;
- a wide band high frequency amplifier for amplifying received signals;
- a signal mixer means for combining and processing signals derived from the transmitter on the one hand and from the wideband high frequency amplifier on the other hand including a peak pulse forming circuit which produces pulses of reduced width for supplying peak pulses to be mixed, a structure detector which cuts off negative going pulse portions of said peak pulses and means for differentiating and phase splitting the mixed peak pulses followed by a push-pull differential output stage; and
- a cathode ray tube display device to which the output from the mixer means is applied to deflect the scanning beam in one direction.

4,245,192

PERIODICITY VERIFICATION CIRCUIT

Maurice C. Whiffen, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Oct. 19, 1978, Ser. No. 952,820

Int. Cl.³ H03K 9/04, 9/06, 5/153

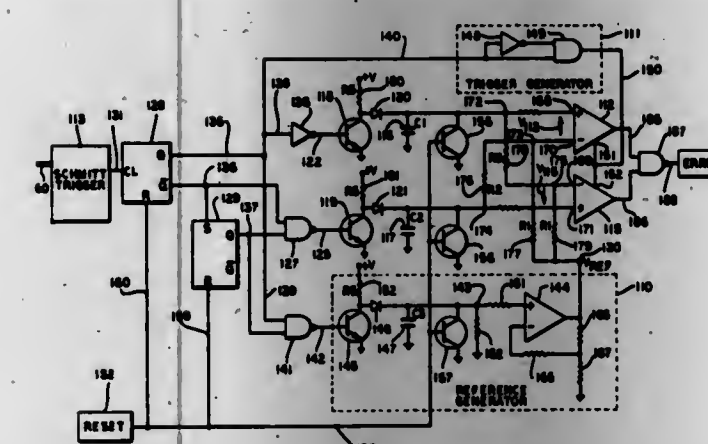
U.S. Cl. 328—140

7 Claims

1. Apparatus for detecting an aperiodic characteristic of a signal characterized by a plurality of cycles, each of said plurality of cycles having a time duration characterized by a beginning and an end occurring when said signal crosses a

predetermined reference value with a predetermined slope, comprising:

- first means for providing a first voltage proportional to the time duration of a first cycle of said plurality of cycles;
- second means for providing a second voltage proportional to the time duration of a second cycle of said plurality of cycles; and
- third means responsive to said first means and said second means for providing an output when said first voltage



does not bear a predetermined relationship to said second voltage, said third means comprising a comparator for comparing said first voltage to a sum of a first predetermined fraction of said second voltage and a second predetermined fraction of a reference voltage and including means for varying said reference voltage in proportion to said time duration of alternate cycles of said plurality of cycles upon an occurrence of a predetermined number of cycles.

4,245,193

HIGH-Q MULTI-MODE RESONATOR CONTROLLED SOURCE

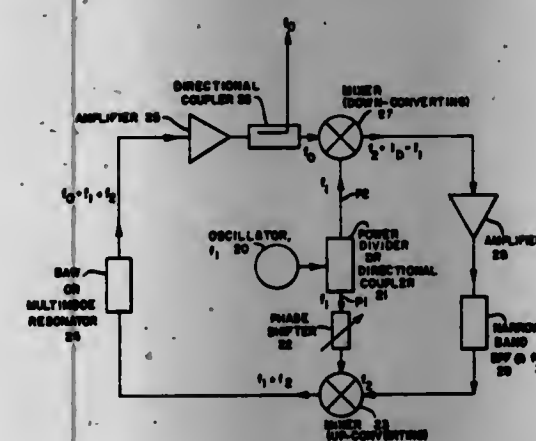
Jing-Jong Pan, and Milton P. Arnold, both of Melbourne, Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Aug. 9, 1978, Ser. No. 932,303

Int. Cl.² H03B 3/04, 5/30, 21/02

U.S. Cl. 331—39

14 Claims



1. An oscillation control circuit for providing an output signal at a constant predetermined frequency, comprising: an unregulated oscillator providing an output at a first frequency;

- a loop including high and low frequency portions;
- said high frequency portion of the loop including a multi-mode resonator for generating said output signal at said constant predetermined frequency;
- said low frequency portion of the loop including frequency down-converting means coupled to said high frequency portion of the loop and said oscillator for generating a signal at a second frequency selected to be equal to the

difference between said predetermined output frequency and said first frequency; and frequency up-converting means responsive to the output of said oscillator and the output of said low frequency portion of the loop for applying to said resonator a signal having a frequency equal to the sum of said first and second frequencies.

4,245,194

COMPACT PULSED GAS TRANSPORT LASER

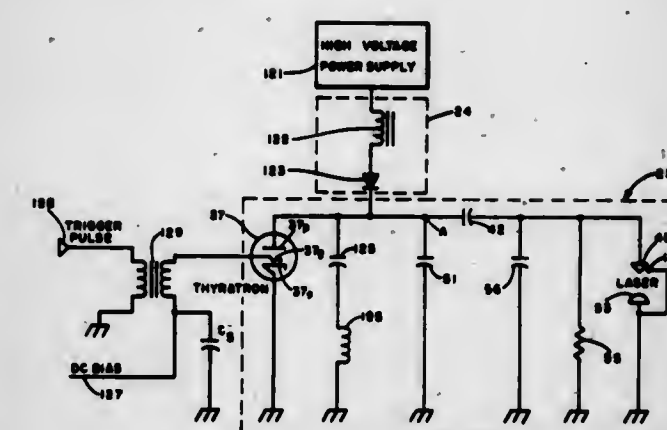
Theodore S. Fahlen, San Jose, and David J. Clark, Whittier, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 16, 1979, Ser. No. 57,928

Int. Cl.³ H01S 3/11

U.S. Cl. 331—94.5 D

12 Claims



1. A gas transport laser comprising:

- a hermetically sealed housing having an internal central plane partition dividing the housing interior into an upper channel and a lower channel interconnected at opposite ends to permit gas to recirculate in one direction through the upper channel and in the opposite direction through the lower channel;
- a heat exchanger supported on said housing at one of said ends of said channels;
- a plurality of blowers disposed in said lower channel at the other of said ends, each of said blowers having an axis of rotation extending perpendicular to the plane of said partition, said blowers having intake port means disposed to draw the gas from said upper channel into said intake port means parallel to said axes of rotation and having exhaust port means arranged to expel the gas into said lower channel at high velocity perpendicular to said axes;
- a motor mounted on the exterior of said housing for each of said blowers, each of said motors having a shaft extending through said housing and mechanically connected to the associated blower;
- means for hermetically sealing each of said shafts to said housing;
- an elongated anode in said upper channel extending adjacent to said partition transversely of the direction of gas flow between said channel ends;
- an elongated cathode spaced above and extending parallel to said anodes and defining therewith a discharge gap.

4,245,195

LASER OPTICAL RESONATOR ASSEMBLY

Theodore S. Fahlen, San Jose, and David J. Clark, Whittier, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 16, 1979, Ser. No. 57,929

Int. Cl.³ H01S 3/08

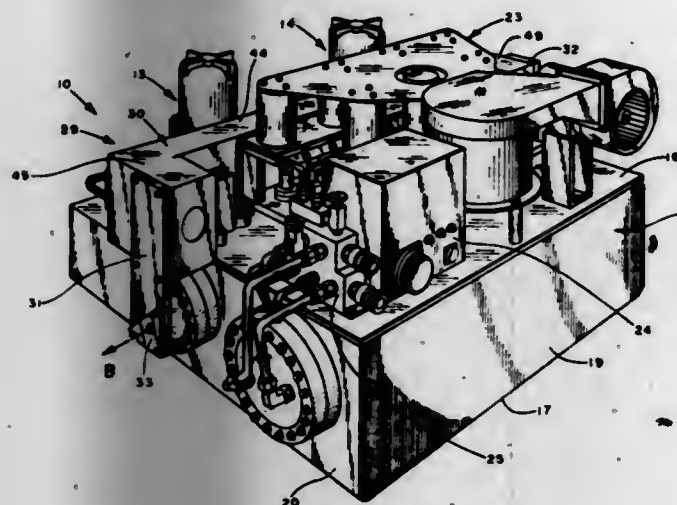
U.S. Cl. 331—94.5 C

7 Claims

1. In combination with a laser with a hermetically sealed housing having a top wall and laterally spaced parallel side walls intersecting said top wall, electrodes within said housing

extending in a direction transversely of said side walls and defining therebetween a discharge gap, means for energizing said electrodes for producing an electric discharge across said gap, Brewster windows in said side walls, respectively, and aligned with said gap, the improvement of an optical resonator assembly comprising:

a bench secured to said top wall having an elongated beam and parallel legs secured to and extending at right angles to opposite ends, respectively, of said beam,



a base secured to each of said legs and extending over said window in the adjacent side wall, said bases having apertures aligned with said windows, respectively, and mirror means mounted on said bases, respectively, in alignment with said apertures and defining the optical resonator of the laser.

4,245,196

HIGHLY-LINEAR CLOSED-LOOP FREQUENCY SWEEP GENERATOR

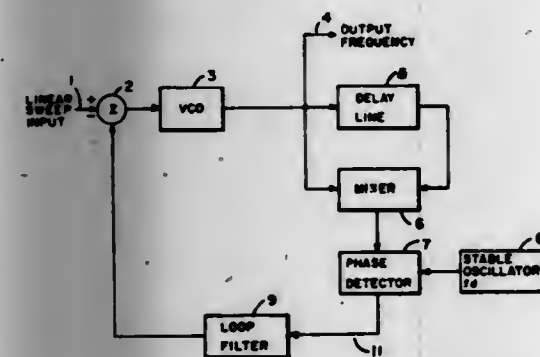
Peyton Z. Peebles, Jr., Knoxville, Tenn., and Augustus H. Green, Jr., Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 30, 1979, Ser. No. 62,099

Int. Cl.³ H03B 23/00; H03L 7/08

U.S. Cl. 331-178

4 Claims



1. In a system for controlling the linearity of a voltage controlled oscillator whose output is to sweep periodically in a linear fashion between two frequency values, the improvement comprising the method of detecting errors in the sweep of the voltage controlled oscillator; averaging these errors over a plurality of sweeps; and sending the average of the errors back to the voltage controlled oscillator so as to correct its output.

4,245,197

RADAR RECEIVER PROTECTOR WITH AUXILIARY SOURCE OF ELECTRON PRIMING

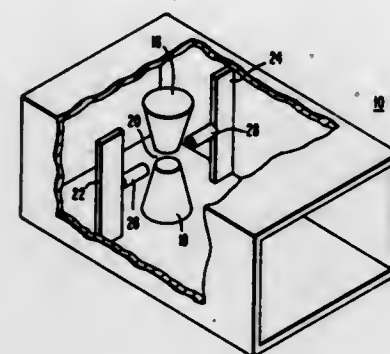
Harry Goldie, Randallstown, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1978, Ser. No. 881,956

Int. Cl.² H01P 1/14; H01J 7/46

U.S. Cl. 333-13

5 Claims



1. A radar receiver protector comprised of a waveguide section having disposed therein in a low pressure gaseous environment at least one pair of truncated cone electrodes forming at least one microwave discharge gap; at least two iris plates positioned in said waveguide section in relation to each pair of truncated cones to form a tuned resonant-filter to aid in the breakdown process of said receiver protector; and a radioactive ignitor for providing an auxiliary source of electrons for said microwave discharge gap to yield reliable and rapid low threshold cone gap breakdown protection against large-amplitude spike leakage to a receiver, said radioactive ignitor comprising:

at least one plate of radioactive metallic tritide material having at least one surface operative to emit beta particles as a result of nuclear decay of the metallic tritide, said each emitting surface being positioned substantially transverse to the elevation plane of said microwave spark gap for emitting beta particles hemispherically toward said microwave discharge gap;

a cylindrical enclosure of a circular cross-section for each radioactive plate, one end of each of said cylindrical enclosures being used to substantially enclose the emitting surface of a corresponding radioactive plate to restrict the hemispherical flow of beta particles from said plate to the channel of said cylindrical enclosure, the other end of said cylindrical enclosure, which is open, being directed towards said microwave discharge gap which is located a predetermined distance therefrom, said interior surface of said cylindrical enclosure being comprised of a material having the characteristics of high secondary emission of electrons, the length of said cylindrical enclosure being substantially greater than the diameter thereof to cause optimally a first portion of the emitted beta particles to strike the interior surface of said cylindrical enclosure rendering a first amount of additional electrons from the interior surface as a result of secondary emission, and to force a second portion of emitted beta particles to collide with the gas particles of said gaseous environment within the cylindrical enclosure releasing a second amount of additional electrons as a result of said gas particle collisions, said emitted beta particles and first and second amounts of additional electrons effecting a multiplication of the emitted beta particles which are guided by said cylindrical enclosure to said microwave discharge gap.

4,245,198

HIGH FREQUENCY FILTER DEVICE

Toshio Nishikawa, Nagaokakyo; Youhei Ishikawa; Sadahiro Tamura, both of Kyoto, and Haruo Matsumoto, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

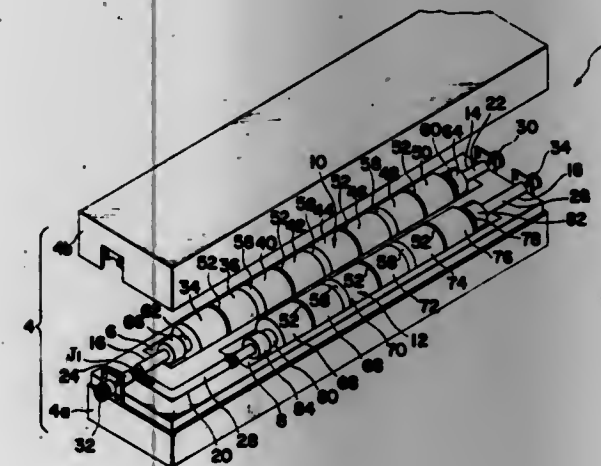
Filed May 4, 1979, Ser. No. 35,942

Claims priority, application Japan, May 10, 1978, 53-63173[U]; Jun. 22, 1978, 53-86352[U]; Jun. 22, 1978, 53-76038[U]; Jun. 29, 1978, 53-79668

Int. Cl.³ H01P 1/213, 1/212, 1/205

U.S. Cl. 333-134

13 Claims



1. A filter device comprising:

a first filter arrangement responsive to a TEM mode and employed for filtering a first signal having a first frequency; said first filter arrangement comprising at least one coaxial resonator of cylindrical shape and made of a dielectric material; said coaxial resonator having a length equal to m times one-quarter of the wavelength in said dielectric material at said first frequency, m being a positive integer less than three;

a second filter arrangement responsive to a TEM mode and employed for filtering a second signal having a second frequency different from said first frequency; said second filter arrangement comprising at least one coaxial resonator of cylindrical shape and made of a second dielectric material; said coaxial resonator having a length equal to n times one-quarter of the wavelength in said second dielectric material at said second frequency, n being a positive integer less than three;

a first terminal connected to one end of said first filter arrangement by means of a first cable;

a second cable connecting one end of said second filter arrangement to a portion of said first cable intermediate said first terminal and said one end of said first filter arrangement, and forming a junction with said first cable thereat; the length of said first cable between said junction and said one end of said first filter arrangement being such that a portion of said second signal reflected from said first filter arrangement will match in phase another portion of said second signal appearing at said junction, and the length of said second cable between said junction and said one end of said second filter arrangement being such that a portion of said first signal reflected from said second filter arrangement will match in phase another portion of said first signal appearing at said junction.

4,245,199

SEMICONDUCTOR CCD TRANSVERSAL FILTER WITH CONTROLLABLE THRESHOLD LEVEL

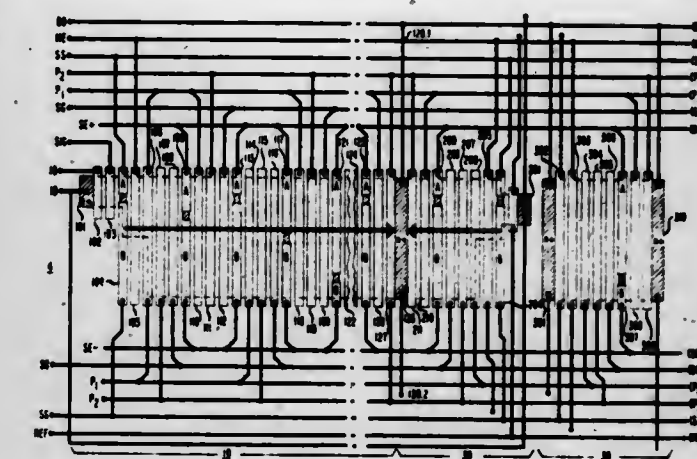
Paul I. Suci, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 11, 1978, Ser. No. 904,790

Int. Cl.³ H03H 15/02; H03K 5/135; G11C 19/28

U.S. Cl. 333-165

10 Claims



1. Semiconductor apparatus comprising:

a semiconductor charge coupled device having at least one array of split-electrodes, each split-electrode spanning across an underlying signal charge transfer channel of width W in a semiconductor medium arranged for transfer of signal charge packets through N transfer stages in a first transfer direction along said channel into a charge sink, and each split-electrode having a first segment (A) connected to a first common output terminal and a second segment (B) connected to a second common output terminal, thereby forming a first CCD section (10 or 100), CHARACTERIZED IN THAT said device includes an auxiliary charge transfer channel in said medium arranged for transfer of predetermined auxiliary charge packets, all of the same charge content, through n transfer stages in a second transfer direction N being at least an order of magnitude larger than n , at least one auxiliary split-electrode spanning the said auxiliary transfer channel and having first and second segments connected, respectively, to the said first and second common output terminals thereby forming a second CCD section (20 or 200), whereby the threshold level for signal detection by the first section is controlled by the second section.

4,245,200

METHOD OF INTERMEDIATE FREQUENCY FILTRATION IN A TELEVISION RECEIVER

Sadao Takahashi, Tokyo; Hitoshi Hirano, Kanagawa, and Sadao Matsumura, Inagi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 779,908, Mar. 21, 1977, abandoned. This application Nov. 22, 1978, Ser. No. 963,151

Claims priority, application Japan, Mar. 22, 1976, 51/29889

Int. Cl.³ H01L 41/18; H03H 9/64, 9/25

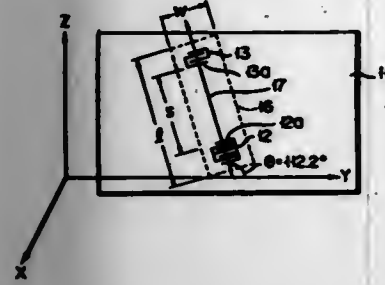
U.S. Cl. 333-193

8 Claims

1. A method of intermediate frequency filtration in a television receiver comprising:

applying a television intermediate frequency signal to an elastic surface wave device, which elastic surface wave device includes at least one transducer which includes an X-cut lithium tantalate (LiTaO_3) substrate in which the lithium tantalate crystal is vertically x-cut at an angle of $\pm 10^\circ$ from the substrate based on the IRE standard and the Y-axis based on the IRE standard in an axis projected on the X-cut substrate, said intermediate frequency signal being applied in a direction to produce an elastic surface wave propagated in a direction of $(112^\circ \pm 10^\circ)$ or $(112^\circ + 180^\circ \pm 10^\circ)$ to the Y-axis on the X-cut lithium tanta-

late substrate, said intermediate frequency signal being applied to electrodes on said substrate which are oriented on said substrate to produce said elastic surface wave; and



dimensioning said transducer such that the passband width of the filter is less than about 5 MHz.

4,245,201

ELASTIC SURFACE WAVE DEVICE

Sadao Takahashi, Tokyo; Hitoaki Hirano, Nako, and Sadao Matsumura, Inagi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 779,908, Mar. 21, 1977, abandoned.

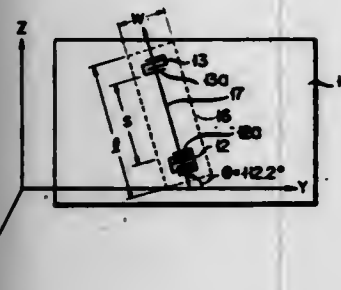
This application Nov. 22, 1978, Ser. No. 963,152

Claims priority, application Japan, Mar. 22, 1976, 51/29889

Int. Cl.³ H03H 9/25, 9/64; H01L 41/18

U.S. Cl. 333—194

7 Claims



1. An intermediate frequency filter for television receivers having a passband of less than about 5 MHz, improved temperature stability and improved adjacent channel spurious response suppression, including an elastic surface wave device comprising:

at least one transducer having an elastic surface wave propagated in a direction of $(112^\circ \pm 10^\circ)$ or $(112^\circ \pm 180^\circ \pm 10^\circ)$ to a Y-axis on an X-cut lithium tantalate (LiTaO_3) substrate, in which said LiTaO_3 crystal is vertically X-cut at an angle of $\pm 10^\circ$ from the substrate based on the IRE standard and said Y-axis based on the IRE standard is an axis projected on the X-cut substrate;

a pair of spaced apart signal electrodes on said substrate and aligned in said propagation direction, an elastic surface wave propagating in said transducer from one of said electrodes to the other responsive to an applied signal; and said transducer having dimensions such that the passband width of the filter is less than about 5 MHz.

4,245,202

FLOATING GYRATOR HAVING A CURRENT CANCELLATION CIRCUIT

Christopher R. Huntley, Burnaby, Canada, assignor to GTE Lenkurt Electric (Canada) Ltd., Burnaby, Canada

Filed Jan. 4, 1979, Ser. No. 45,164

Int. Cl.³ H03H 11/50

U.S. Cl. 333—215

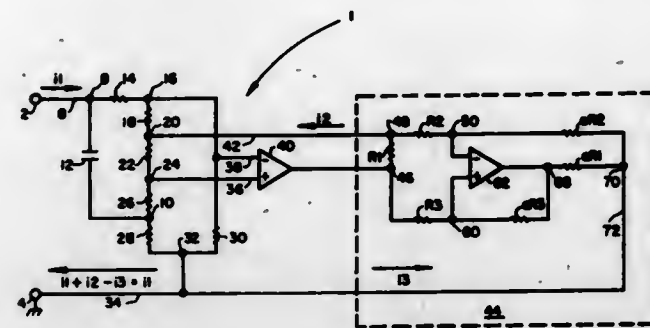
4 Claims

1. A network for simulating an ungrounded inductor which comprises:

a single operational amplifier gyrator circuit having an ungrounded port and a grounded port, said ungrounded port being terminated in a capacitor C so as to provide an input impedance, looking into the grounded port, which simu-

lates an inductor, and in which a current i_2 developed in said single operational amplifier appears at the grounded terminal of said grounded port; and

a current cancellation circuit connected to said gyrator



circuit, said current cancellation circuit deriving a current i_3 which is equal to but opposite in sign from said i_2 current, said i_3 current being applied to said grounded terminal so as to effectively cancel the i_2 current, whereby a simulated ungrounded inductor is obtained.

4,245,203

CIRCUIT INTERRUPTER WITH PIVOTING CONTACT ARM HAVING A CLINCH-TYPE CONTACT

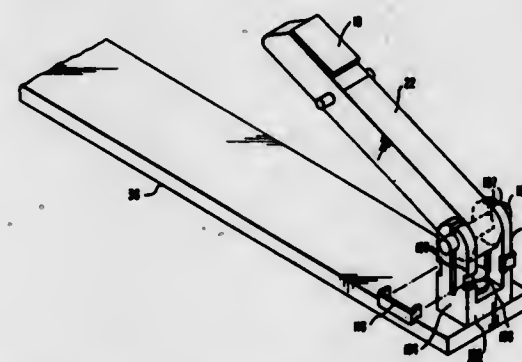
John A. Wafer, Beaver, Pa., and Miguel B. Yamat, Greendale, Wis., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 16, 1978, Ser. No. 951,940

Int. Cl.³ H01H 75/00, 77/00, 9/20

U.S. Cl. 335—16

13 Claims



1. A circuit interrupter, comprising:

first and second separable contacts;

a pivoting contact arm supporting one of said contacts, and comprising an axle member extending through one end of said contact arm and rigidly secured thereto; and

conductor means comprising a journal member having a pair of bifurcated upright arms perpendicular to said axle member, each upright arm holding said axle member between the bifurcations thereof to allow pivoting movement of said contact arm, current flow through said contacts also flowing through said conductor means to cause said bifurcations to squeeze together to generate a radial clamping contact force on said axle member and provide a low resistance electrical path between said conductor means and said contact arm.

4,245,204

CIRCUIT BREAKER MAGNETIC TRIP DEVICE

Charles I. Canning, Marlton, N.J., and Elmer H. Fredrickson, Ambler, Pa., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 3, 1978, Ser. No. 921,827

Int. Cl.³ H01H 9/00; H01F 7/00

U.S. Cl. 335—174

2 Claims

1. A magnetic trip unit for a circuit breaker, said circuit

4,245,205

CONVERGENCE ADJUSTMENT ARRANGEMENT USING MAGNETIC TABS WITH DIFFERENTIAL MOTION AND ROTARY DRIVE

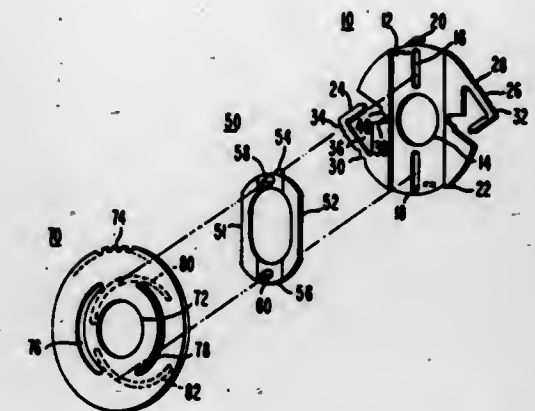
Myron H. Wardell, Jr., Littleton, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 14, 1979, Ser. No. 12,074

Int. Cl.³ H01F 1/00

U.S. Cl. 335—212

7 Claims



breaker having a movable contact arm, a movable contact thereon and a complementary contact; biasing means operable on said movable contact arm tending to drive said movable contact arm to open circuit position; means for closing said circuit breaker and means for maintaining said circuit breaker in closed position; said last mentioned means including a rotatable prop latch which may be rotated to a position in which the circuit breaker is tripped and the circuit breaker is no longer maintained in closed position;

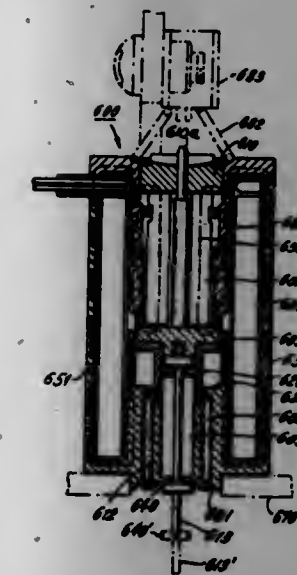
a magnetic trip unit comprising a permanent magnet having a pair of poles; an armature of magnetic material held by said permanent magnet and completing a first magnetic path through said permanent magnet;

means biasing said armature away from the poles of said permanent magnet;

an operating plunger carried by said armature and extending in one direction engageable with a portion of said prop latch when the armature is moved by said biasing means to rotate said prop latch to a tripped position;

said operating plunger also carrying a guide member extending axially thereof in a direction opposite to the part of the plunger engageable with said prop latch;

means for moving said armature against said armature biasing means to a position where said armature is held by said permanent region;



and a trip coil surrounding said permanent magnet; said trip coil, when energized, establishing an additional magnetic path through said armature and diminishing the force of the magnetic path through said permanent magnet and armature to an extent which permits the biasing means on said armature to drive said armature and plunger away from the poles of said permanent magnet to trip said circuit breaker open;

a casing of magnetic material surrounding said trip coil; said casing also having a bottom wall and a top wall of magnetic material;

said additional magnetic path passing through said armature and one of the poles of said permanent magnet, through said casing and the bottom and top walls thereof;

one portion of said additional magnetic path through said one pole of said permanent magnet being in a direction of opposite polarity to the first mentioned magnetic path; said casing having a bottom wall extending around said trip coil into the interior of said casing and extending adjacent said permanent magnet to complete said additional magnetic path;

wherein a portion of the bottom wall extending into the interior of said casing has an inward projection; said biasing means for said armature comprising a compression spring bearing between said inward projection and a portion of said plunger.

1. A convergence correction arrangement for a deflection yoke adapted to be disposed about and substantially coaxial with an in-line kinescope, comprising:

first and second magnetic field influencing tabs disposed at the rear of the yoke, said first and second tabs being located on opposite sides of the axis of the kinescope; and mounting and drive means for maintaining a substantially fixed separation between said first and second tabs and for providing for differential movement of said first and second tabs relative to said axis for adjustment,

wherein the improvement in said mounting and drive means comprises:

mounting means incorporating first track means coupled to the body of said yoke and to said tabs for restraining said tabs against tangential motion about said axis while allowing radial motion;

rotational drive means rotatably coupled to said mounting means and including second track means coupled to said tabs, said second track means having radially and tangentially-extending components, said second track means being coupled to said tabs for converting a rotational force on said rotational drive means to a radial force on said tabs; and

locking means comprising:

a flexible arm secured to one of said mounting means and drive means and selectively positionable between a first captive position and a second released position, said arm incorporating first coupling means; and second coupling means secured to the other of said mounting means and drive means and subject to engagement with said first coupling means to prevent rotation of said drive means with respect to said mounting means only when said arm is in its second position.

4,245,206

WINDING STRUCTURE FOR STATIC ELECTRICAL INDUCTION APPARATUS

Takahiro Daikoku; Masahiro Ikegawa, both of Ibaraki; Wataru Nakayama, Kashiwa, and Taisai Ueda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 22, 1978, Ser. No. 888,996

Claims priority, application Japan, Mar. 26, 1977, 52-33454; Mar. 26, 1977, 52-33455; Feb. 6, 1978, 53-11455; Feb. 6, 1978, 53-11457; Feb. 6, 1978, 53-11458

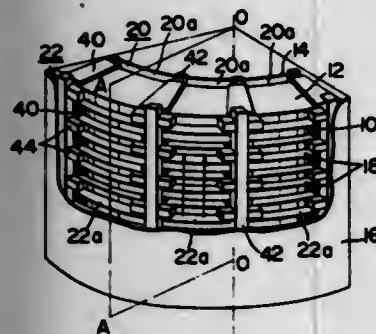
Int. Cl.³ H01F 27/08

U.S. Cl. 336—60

18 Claims

1. A static electrical induction apparatus comprising: a container having an axis extending in the vertical direction; a pair of inner and outer insulation continuous walls disposed

- in said container so as to commonly include said vertical axis thereby defining a predetermined space therebetween;
- a winding assembly disposed in said space in a manner so that an inner vertical coolant passage is formed between said winding assembly and said inner insulation continuous wall and an outer vertical coolant passage is formed between said winding assembly and said outer insulation continuous wall, said winding assembly being composed of a plurality of coil units stacked on one another in the vertical direction with separation at predetermined intervals so as to form a plurality of horizontal coolant passages between vertically adjacent ones of said coil units, said inner and outer vertical coolant passages communicating with each other through said horizontal coolant passages; and
- a plurality of coolant flow control members disposed in circumferentially and axially discrete relation from one another in at least a selected one of said inner and outer



vertical coolant passages in a manner so that a horizontal sectional area of said selected vertical coolant passage is decreased, but not substantially completely closed, periodically at a pitch of nP along the vertical direction where n represents an integer which is not smaller than two (2) and P represents a pitch of said coil units along the vertical direction for producing a high pressure below said flow control members causing coolant to flow radially away from said flow control members through respective horizontal coolant passages thereunder and a low pressure above said flow control members causing coolant to be drawn radially toward said flow control members through respective horizontal coolant passages thereabove, each of said coolant flow control members having a width in a radial direction perpendicular to said vertical axis being selected to closely correspond to a width in the radial direction of said selected vertical coolant passage and having a height in the vertical direction being selected to be not larger than a height in the vertical direction of each of said coil units.

4,245,207

MINIATURE HIGH FREQUENCY COIL ASSEMBLY OR TRANSFORMER

Hiroshi Murakami, Kawagoe; Masato Suzuki, Sakado, and Tutomu Suzuki, Kawagoe, all of Japan, assignors to Toko, Inc., Japan

Filed May 19, 1978, Ser. No. 907,576

Claims priority, application Japan, May 20, 1977, 52-63844; Jul. 4, 1977, 52-79655; Jul. 4, 1977, 52-79656

Int. Cl.³ H01F 15/02, 21/06

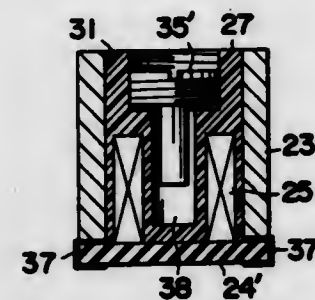
U.S. Cl. 336-45

5 Claims

1. A miniature high frequency coil assembly or transformer, comprising:
- a substrate having a plurality of electrodes thereon and a first through bore;
- an external core member mounted on said substrate, said external core member having a second through bore and made of a magnetic material, the arrangement of said external core member on said substrate being such that the longitudinal axis of said second through bore is substantially perpendicular to the surface of said substrate;
- a coil member having a central bore disposed on said sub-

strate and within said second through bore, and disposed coaxial with longitudinal axes of said first and second through bores;

an elastic material casting in said second through bore and about said coil member internally in said central bore and circumferentially thereof, and having a core-receiving bore therein, said core-receiving bore being disposed coaxially with the longitudinal axis of said core member and cast so as to have, in a stepped bore, first and second bore portions each having a different inner diameter, said first bore portion being further disposed axially from said



substrate than said second bore portion and having an inner diameter larger than said second bore portion; and

a movable core of a magnetic material movably received in said core-receiving bore and having first and second portions each having a different diameter, said first portion of said movable core having a screw thread along its length and with means for turning the same as its one end and having a larger diameter than said second portion of said movable core, and said first and second bore portions of said core-receiving bore respectively receiving said first and second portions of said movable core.

4,245,208

ELECTRIC FUSE HAVING OFF CENTER FUSIBLE ELEMENT

Richard A. Belcher, Hampton Falls, N.H., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 14, 1979, Ser. No. 75,623

Int. Cl.³ H01H 85/16

U.S. Cl. 337-231

4 Claims



1. An electric low-voltage fuse including a tubular casing of electric insulating material having a predetermined length, a fusible element whose length is considerably less than said predetermined length of said casing, arranged off-center of said casing and spaced a considerably smaller distance from one of the ends of said casing than from the opposite end thereof, a pair of terminal caps closing the ends of said casing, a pair of knife blade contacts projecting through the end surfaces of said

pair of terminal caps, and a pulverulent arc-quenching filler inside said casing, wherein the novel features consist in that

- (a) the length of the axially inner ends of said pair of knife blade contacts that project from the end surfaces of said pair of caps into said casing is approximately equal for both said pair of knife blade contacts and leaves a pair of gaps of unequal length between said axially inner ends of said pair of knife blade contacts and said fusible element; and in that
- (b) each of a pair of flexible metal strips extends across one of said pair of gaps conductively connecting the axially outer ends of said fusible element with the axially inner ends of said pair of knife blade contacts, said pair of flexible metal strips having a cross-sectional area substantially less than the cross-sectional area of each of said pair of knife blade contacts.

4,245,209

VOLTAGE DIVIDER INCLUDING A TAPPED RESISTOR DIFFUSED IN SEMICONDUCTOR SUBSTRATE

Franco Bertotti, Milan; Fausto Catellani, Correggio, and Giuseppe Gavioli, Modena, all of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

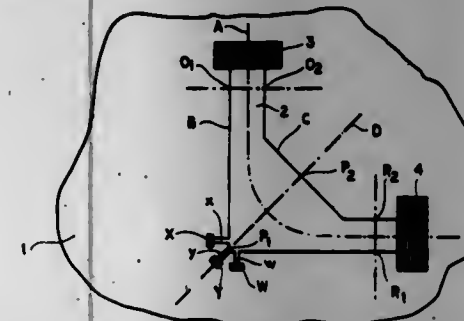
Filed Jun. 8, 1979, Ser. No. 46,602

Claims priority, application Italy, Jun. 13, 1978, 24992 A/78

Int. Cl.³ H01C 3/08

U.S. Cl. 338-217

6 Claims



1. A voltage divider comprising a resistor formed in a highly resistive semiconductor substrate by the diffusion of impurities into an elongate surface zone thereof, said zone having metallized ends connectable across a current source and varying in width from two relatively narrow sections adjacent said ends to a relatively broad intermediate section with an outwardly projecting lateral boundary on one side of the longitudinal median of said zone, thereby defining a region of maximum cross-sectional area and minimum resistance per unit length measured along said median, said zone being provided along said intermediate section and within said region with a plurality of branches of substantially the same resistivity closely spaced from one another and perpendicular to said lateral boundary, said branches terminating in metallized extremities forming taps whose potentials differ by a small fraction of the voltage drop existing between said ends in the presence of a current flow through said resistor.

4,245,210

THICK FILM RESISTOR ELEMENT AND METHOD OF FABRICATING

Norman R. Landry, Willingboro; Samuel L. Williams, Glassboro, and Robert L. Schelhorn, Cinnaminson, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,836

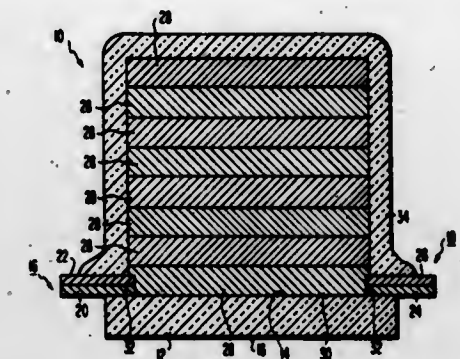
Int. Cl.³ H01C 1/012

U.S. Cl. 338-314

9 Claims

1. A thick film resistor element comprising:
- an electrically insulating thermally conducting substrate having a surface;
- a pair of spaced apart electrodes attached to said surface;
- several distinct layers of resistive material, one of said layers extending between and electrically contacting said electrodes, and the remainder of said layers overlying said one

layer, each said remaining layer being adjacent to and in electrical contact with at least one other of said layers, each said layer having a substantially uniform thickness throughout its extent and each of said layers having a



substantially uniform thickness with respect to each other; and

a layer of hermetic high temperature dielectric material overlying and coating said element.

4,245,211

MICR WAVEFORM ANALYZER

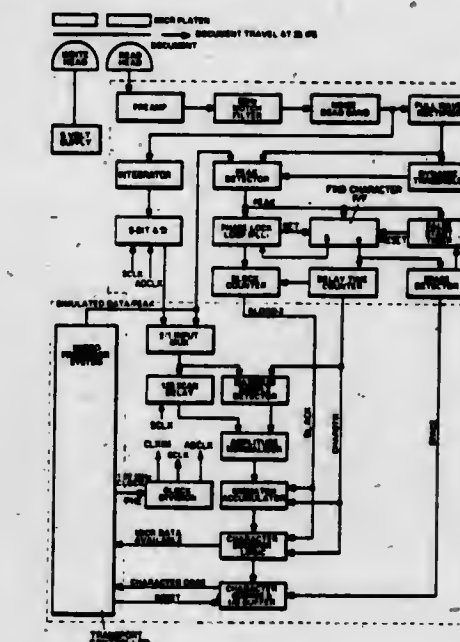
Charles T. Kao, Richardson, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Filed Nov. 13, 1978, Ser. No. 989,970

Int. Cl.³ G06K 9/62

U.S. Cl. 340-146.3 C

6 Claims



1. A waveform analyzer for reading magnetic ink characters wherein an electrical video signal is produced as the characters pass a pickup head, said video signal containing character data and possibly error data signals, comprising:
- means for integrating the video signal representative of an entire magnetic ink character to produce a character waveform;
- processing means for digitizing and then normalizing the digitized character waveform to normalize character ink strength variations; and
- sampling means for locating and selecting samples of the digitized character waveform as distinct from error data signals to present to a recognition system.

4,245,212

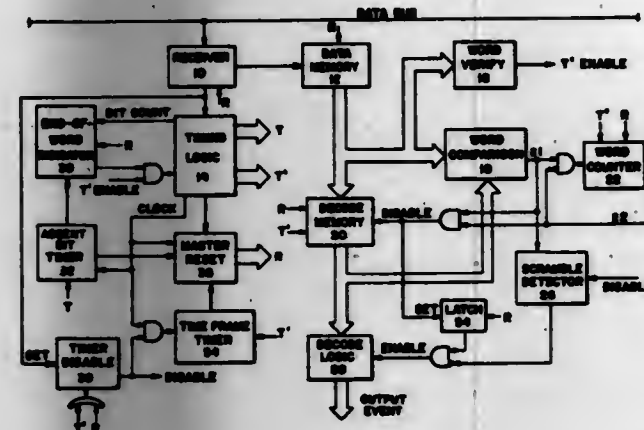
SERIAL DIGITAL DATA DECODER

Frank R. Cirimele, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 733,589, Oct. 18, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 885,726 Int. Cl.² H04Q 9/16

U.S. Cl. 340—147 LP

7 Claims



1. A serial digital data decoder comprising:
 - (a) means for receiving a serial data word from a data bus;
 - (b) means for storing said data word as it is received;
 - (c) means for verifying that said data word is addressed to said decoder;
 - (d) means for detecting n consecutive identical data words before enabling an output event specified by said data word;
 - (e) means for inhibiting said output event between consecutive data words when a spurious signal alters said output event data word; and
 - (f) means for deriving timing signals from said data word to operate the internal circuitry of said serial digital data decoder.

4,245,213

SECURITY SYSTEM

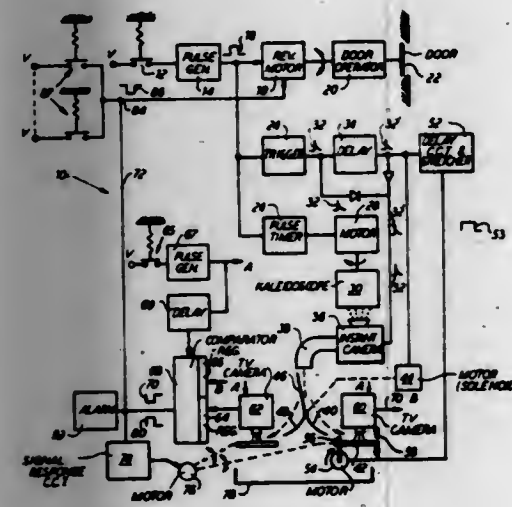
Igor Kriger, 5030 N. Marine Dr., #708, Chicago, Ill. 60640

Filed Aug. 20, 1979, Ser. No. 68,053

Int. Cl.² H04Q 3/00; G06K 9/00

U.S. Cl. 340—149 A

17 Claims



1. A security system comprising:
 - first means operable to close an opening;
 - second means connected to said first means and operable in response to the operation thereof to produce a kaleidoscopic image;
 - third means connected to said first means are operable in response to the operation thereof to produce first and second identical pictures of the kaleidoscopic image;
 - fourth means connected to said third means for storing one

of said pictures and ejecting the other outside of said system;

fifth means for reading and comparing said one picture and a picture introduced into said system; and

alarm means connected to said fifth means and operable in response to a non-parity condition of the pictures to emit an alarm signal.

4,245,214

SWITCHING MATRIX

Patrick R. Beirne, Stittsville, Canada, assignor to Mitel Corporation, Kanata, Canada

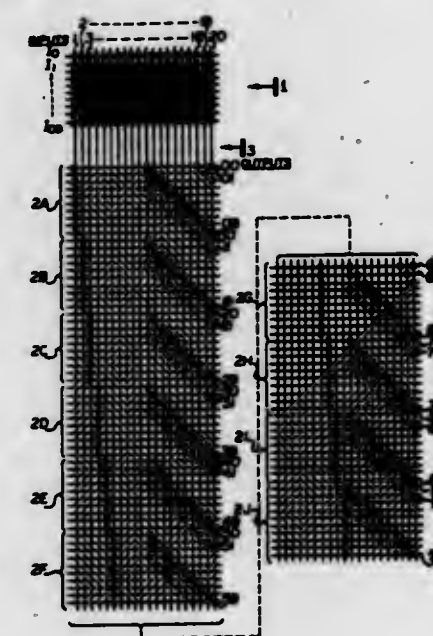
Filed Jan. 7, 1979, Ser. No. 46,346

Claims priority, application Canada, Mar. 29, 1979, 324425

Int. Cl.² H04Q 9/00

U.S. Cl. 340—166 R

10 Claims



1. A switching network comprising:
 - (a) a primary stage having n inputs each switchable to m outputs,
 - (b) a plurality of secondary stages, each having m inputs and p outputs,
 - (c) the outputs of each secondary stage being connected individually via switching crosspoints and the m inputs to a corresponding number of the m outputs of said primary stage in common with corresponding outputs of all of the other secondary stages, and
 - (d) all of the outputs of individual secondary stages being connected via further switching crosspoints to corresponding further individual dedicated ones of said m outputs.

4,245,215

POWER LINE SIGNALLING SYSTEM

Lorne D. O'Connor, Laval, Canada; Richard Saylor, Monsey, and Stephen H. Buckser, Hauppauge, both of N.Y., assignors to American District Telegraph Company, Jersey City, N.J.

Filed May 22, 1979, Ser. No. 41,532

Int. Cl.² H04B 3/54; H04Q 9/00; H04M 11/04

U.S. Cl. 340—310 A

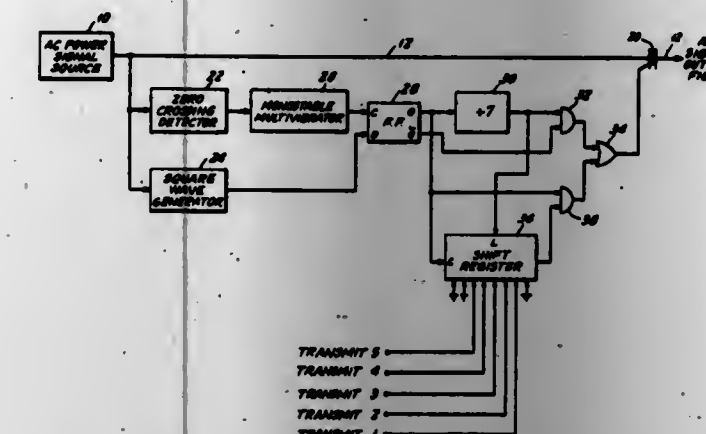
14 Claims

1. Apparatus for transmitting data from a transmitter to a receiver via an alternating current electrical signal supplied by the transmitter from an alternating current signal source to the receiver comprising:

- first transmitter means for suppressing a first pulse of the alternating current signal having a first polarity;
- second transmitter means for suppressing a second pulse of the alternating current signal having opposite second polarity a predetermined time interval after suppression of the first pulse, the time interval between the suppressed pulses indicating the data to be transmitted;

first receiver means for detecting the absence of a first pulse of the first polarity in the received alternating current signal; and

second receiver means responsive to the first receiver means



for detecting the absence of a pulse of the second polarity in the received alternating current signal after detection of the absence of the first pulse and for producing an output indication of the time interval between the absence of the first pulse and the absence of the second pulse.

4,245,216

ELECTRIC CRIBBAGE BOARD WITH COMMON HAND COUNT DISPLAY AND SELECTIVE ENTRY TO RESPECTIVE SETS OF GAME SCORE INDICATORS

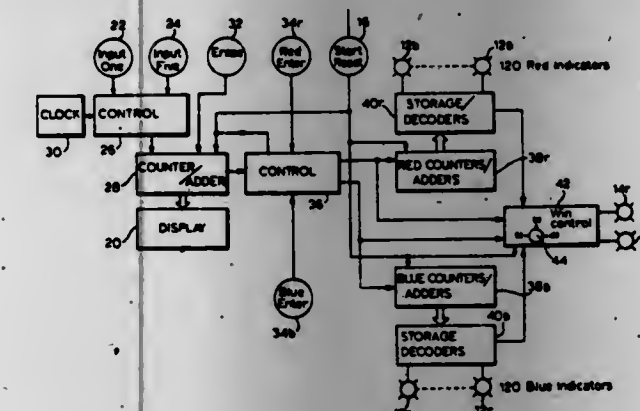
Roy D. Rintoul, R.R. #2, Campbellville, Ontario, Canada (LOP 1B0)

Continuation-in-part of Ser. No. 833,475, Sep. 15, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,410

Int. Cl.² G08B 23/00; A63B 71/00; A63F 9/00

U.S. Cl. 340—323 R

10 Claims



1. An electric cribbage board comprising:
 - at least two sets each of a series of indicators for displaying a score-count of a respective player by illumination of a selected one of the indicators of the series in the set;
 - a common hand count display means for all of the players;
 - player-operable input means for causing the hand count display means to display a hand-count and for erasing a hand-count at will from the hand-count display means;
 - separate player-operable means for each player enabling a player to cause said input means to pass a hand-count displayed by the common hand count display means selectively to a selected one of the respective set of indicators for that player, thereby causing said set of indicators to record and display the total score-count of the respective player;
 - said enabling means including circuit means to cause the selected indicator in said selected set of indicators to be illuminated thereby representing the said total score-count.

4,245,217

PASSIVE INFRARED ALARM DEVICE

Peter-Wilhelm Steinhage, Wiesbaden, Fed. Rep. of Germany, assignor to Helmann GmbH, Wiesbaden, Fed. Rep. of Germany

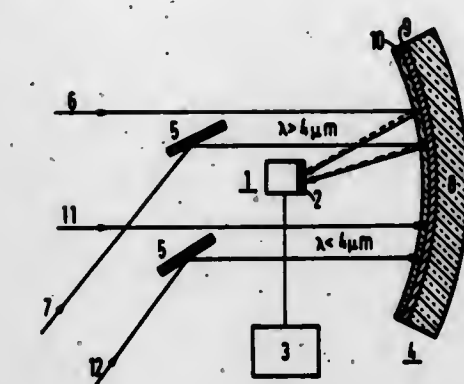
Filed Jul. 13, 1978, Ser. No. 924,163

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734157

Int. Cl.² G08B 13/18; G02B 5/20

U.S. Cl. 340—555

15 Claims



1. Passive infrared alarm device, containing:
 - (a) an infrared radiation detector;
 - (b) an optical device with at least one reflecting element, which directs the infrared radiation from one or several room angles to be monitored onto the detector;
 - (c) an evaluating device, which processes an output signal delivered by the detector and, where applicable, releases an alarm signal;
 - (d) a radiation filter which is placed between the optical device and detector, which radiation filter keeps undesired radiation up to a critical boundary wavelength away from the detector; characterized by the feature;
 - (e) said reflecting element having a reflecting surface area and including filter means for the prevention of a heating of said radiation filter by keeping rays up to its critical boundary wavelength away from it.

4,245,218

FOOT ALARM FOR RUNNERS

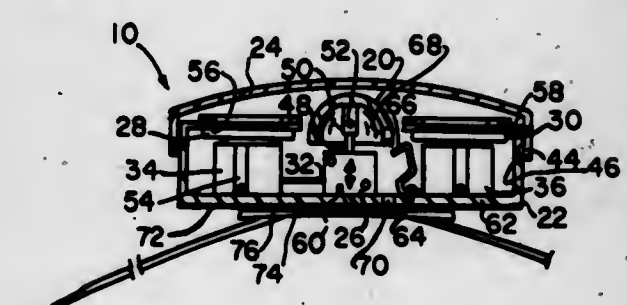
Linda F. Berkebile, and Robert J. Berkebile, both of 8309 Old Harford Rd., Baltimore, Md. 21234

Filed Jan. 10, 1980, Ser. No. 111,120

Int. Cl.² G08B 15/00

U.S. Cl. 340—574

13 Claims



1. An alarm system for runners wearing shoes comprising:
 - sounding means, means for detachably attaching the sounding means to a said runner's shoe over the bridge of said runner's foot, and means for actuating the sounding means by a kick of either foot of said runner.

4,245,219

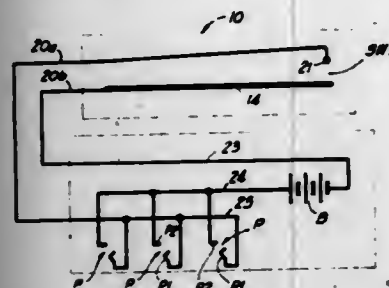
TREADLE ALARM SYSTEM

Gene M. Dempsey, 2095 Surrey Trail, College Park, Ga. 30349, and Jack M. Dempsey, 2669 Cardinal Lake Cir., Duluth, Ga. 30136

Filed May 24, 1979, Ser. No. 41,946
Int. Cl.³ G08B 13/10

U.S. Cl. 390—666

5 Claims



1. An alarm device comprising:

- a readily movable treadle device having a pair of opposed upper and lower panels and a common hinge disposed along one edge, said common hinge yieldingly supporting one of said panels in spaced relationship above the other panel; the lower of said panels being disposed flat against an essentially horizontal supporting surface, the upper of said panels being disposed thereabove in essentially parallel relationship to the lower panel, said panels each being rectangular and generally of approximately the same size and shape for defining a pad on which a person steps;
- switch means having elements thereof connected respectively to said panels, said switch elements being disposed along the edge portions of said panels opposite to said common hinge;
- a cable leading from said treadle device, said cable having a pair of wires respectively connected to the elements of said switch means;
- a control unit, the other end of said cable being connected to said control unit;
- a battery disposed within said control unit, one of said wires of said cable being connected electrically to one of the terminals of said battery;
- socket means mounted in said control unit, the other wire of said cable being connected to one of the elements of said socket means, the other terminal of said battery being connected to the other element of said socket means; and
- an alarm means connected to said socket means.

4,245,220

TARGET LOCATION SYSTEMS

Phillip L. M. Johnson, Yeovil Marsh, Nr. Yeovil, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Apr. 12, 1979, Ser. No. 29,539
Claims priority, application United Kingdom, Apr. 14, 1978, 14693/78

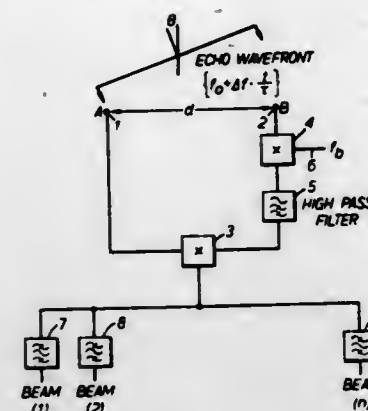
Int. Cl.³ G01S 3/14, 13/06, 15/06

U.S. Cl. 343—16 R

8 Claims

1. A target location system comprising a signal transmitter arrangement for transmitting pulses having a frequency which increases progressively during each pulse period from a frequency f to a frequency $f + \Delta f$, and an echo signal receiver arrangement comprising a pair of echo signal receiver transducers arranged in spaced apart relationship for receiving an echo signal, a first mixer having two input signal terminals and an output terminal, a second mixer having two input terminals and an output terminal, one input terminal of said second mixer being fed from one transducer of the pair, the other input terminal of the second mixer being fed with a local oscillator signal, said second mixer producing a mixer output signal at said output terminal of said second mixer, a first filter connected to the output terminal of the second mixer for producing one side band output signal of said mixer output signal from

the said second mixer, said one side band output signal being fed to one input terminal of the said first mixer, the other input terminal of said first mixer being fed from the other transducer of the pair, said first mixer producing a further mixer output signal at said output terminal of said first mixer, and a plurality of band pass filters forming a filter bank connected to the



output terminal of the first mixer, the filters of the bank each having a different pass band slot wherein all slot of said filters in aggregate cover a predetermined frequency band, one of said filters indicating the bearing of the target from which an echo signal is received in accordance with the corresponding slot in which the echo signal is received.

4,245,221

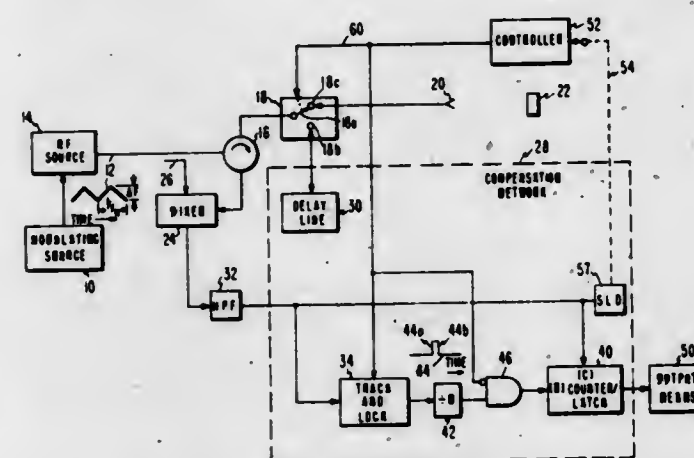
FM-CW RADAR RANGING SYSTEM WITH AUTOMATIC CALIBRATION

Ronald W. Kipp, Croydon Manor, Pa., and Henry C. Johnson, Neshanic, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,826
Int. Cl.³ G01S 7/40

U.S. Cl. 343—17.7

7 Claims



1. In a frequency modulated continuous wave ranging system of the type including:

- first means for generating a continuous wave interrogation signal, said interrogation signal being frequency modulated in accordance with a desired waveform and having predetermined parameters enabling measurement of the range R of a target of interest, at least one of said parameters being subject to undesired change in value, causing the measured range to be incorrect;
- second means for transmitting said interrogation signal to a target of interest and receiving reflected signals from said target of interest;
- third means responsive to said interrogation signal for producing a reflected signal indicative of a target at known range, X;
- fourth means for deriving difference signals indicative of the frequency difference of said reflected signals of said target of interest and known range target from the instantaneous

frequency of said interrogation signal, said difference signals being indicative of said ranges R and X, respectively; and

fifth means responsive to said difference signals from said fourth means for scaling said signals indicative of range R by said signals indicative of range X; wherein the improvement comprises:

sixth means coupled between said first means and second and third means for alternatively coupling said first and second means and said first and third means such that said fourth means alternatively produces signals indicative of range R and range X; and

seventh means responsive to signals from said fourth means for storing one of said indications of range X and range R and wherein said fifth means is responsive to said difference signals stored by said seventh means representing one of ranges R and X and said signals from said fourth means, representing the one of ranges R and X not stored by said seventh means, for scaling said signals indicative of range R by said signals indicative of range X.

4,245,222

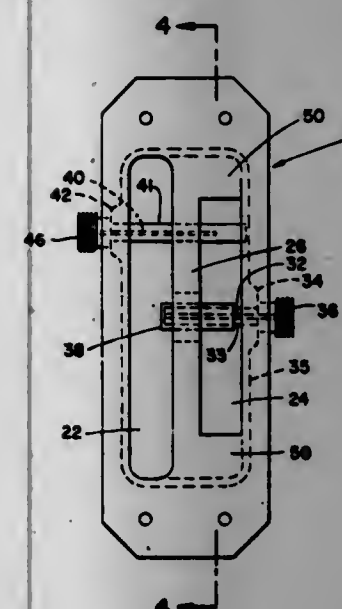
DUAL FUNCTION ANTENNA

Edward Eag; Glen D. Gibbons, both of San Jose; David L. Thomas, Mountain View, and John W. Tse, Sunnyvale, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 15, 1978, Ser. No. 942,859
Int. Cl.³ H01Q 1/28

U.S. Cl. 343—708

4 Claims



2. A dual function antenna system for a conical aerospace re-entry vehicle comprising:

- a pair of flush-mounted, circumferential cavity-backed slot antennas located diametrically opposite each other near the base of said re-entry body, each of said antennas having
 - an approximately rectangular housing having a back and sides,
 - a faceplate integral with and enclosing the front of said housing, said faceplate having a pair of parallel circumferential slots therein the length of said housing to form a slotted cavity and having a cross-bar separating said slots,
 - a first probe inserted through one of the longitudinal sides of said housing at the midpoint and through a flange protruding into said slotted cavity to form a tee-bar transition such that when said first probe is electrically excited said cavity resonates at a low-band frequency, and
 - a second probe inserted through the opposite longitudinal side of said housing from said first probe at a point laterally spaced from said first probe and extending to the longitudinal side of said first probe such that when

said second probe is electrically excited said cavity resonates at a high-band frequency which is a harmonic of said low-band frequency;

- means for feeding said antennas out-of-phase to produce a gain pattern with peaks at nose-on and aft aspects; and
- means for exciting each of said antennas at said low-band frequency and at said high-band frequency.

4,245,223

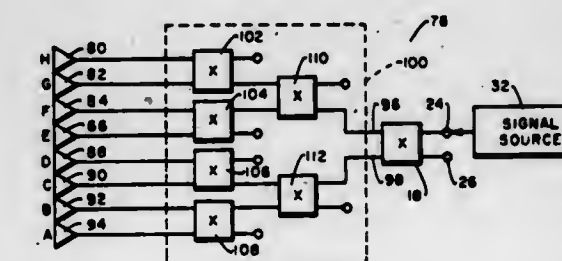
SELF-MULTIPLEXING ANTENNA EMPLOYING ORTHOGONAL BEAMS

Gary E. Evans, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1977, Ser. No. 793,030
Int. Cl.³ H01Q 19/12, 21/22

U.S. Cl. 343—778

3 Claims



1. An antenna system for radiating wave energy in a desired radiation pattern comprising:

- antenna means for radiating a plurality of superimposed beams comprising a wave energy pattern from a common aperture in response to sources of wave energy excitations applied thereto, said antenna means including an array of radiating elements as a common aperture;
- a common reflector disposed adjacent said antenna means to reflect said plurality of superimposed beams comprising a wave energy pattern; and
- means for supplying said wave energy excitations to said antenna means with predetermined relative phases and amplitudes to develop said wave energy patterns with each said beam therein being orthogonal in phase with respect to each other said beam by virtue of phase variation across said beams in space due to predetermined relative phases of said wave energy even when the amplitudes thereof are identical;
- said wave energy applied to each said input port generating a separate orthogonal beam from each of said radiating elements;
- said supplying means including:
 - at least one input port; and
 - a matrix of directional couplers coupled between each said input port and said radiating elements such that said matrix includes a plurality of series-conducted levels with the number of directional couplers in each level being related to the number of directional couplers in adjacent levels by geometric progression, said directional couplers being interconnected between levels by transmission lines;
- the phase difference between each of said beams being introduced by said directional coupler matrix; said beams operable to be displaced by displacement of said radiating elements off the focal axis of said common reflector; whereby each wave energy source applied to any one of said at least one input port will independently produce a plurality of identically shaped beams from said radiating elements without loss and the beams being radiated from said common reflector being orthogonal in phase rather than angles, the phase combination of the plurality of beams producing the desired wave energy pattern.

4,245,224

DRIVE CIRCUIT FOR INK JET DISCHARGING HEAD

Takuro Iwayama, Tokyo; Takashi Takemoto; Tsutomu Sato, both of Yokohama, and Takao Fukazawa, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

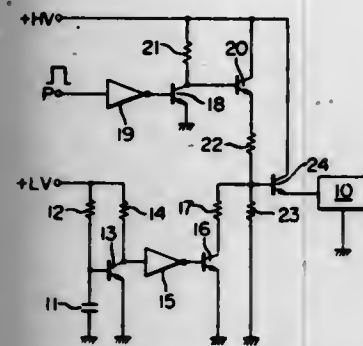
Filed Sep. 20, 1978, Ser. No. 943,945

Claims priority, application Japan, Sep. 26, 1977, 52-114722

Int. Cl.³ G01D 15/18

U.S. Cl. 346—75

2 Claims



1. A drive circuit for an ink-on-demand type ink jet discharging head comprising:

- a ink-on-demand type head having a piezoelectric crystal element,
- a high voltage power source,
- a first transformation circuit for transforming the high voltage from said high voltage power source to a voltage corresponding to an input signal and for applying the transformed high voltage to said piezoelectric crystal element of said ink-on-demand type head,
- a low voltage power source,
- a second transformation circuit for transforming said high voltage to a low voltage and for applying said transformed low voltage to said piezoelectric crystal element of said ink-on-demand type head, and
- timing control means functioning when the low voltage from said low voltage power source is applied thereto, for effectively increasing the amplitude of said transformed high voltage for a predetermined initial period.

4,245,225

INK JET HEAD

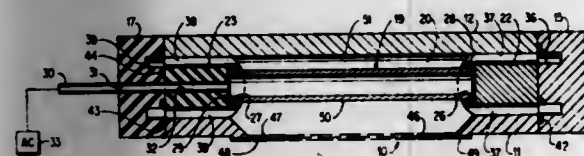
Gary L. Fillmore, Boulder; Arthur R. Hoffman, Longmont, and Thomas Young, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,916

Int. Cl.³ G01D 15/18

U.S. Cl. 346—75

106 Claims



1. An ink jet head for supplying at least one stream of ink droplets including:

- outer means having an inner cylindrical surface defining a longitudinal passage therethrough;
- an inner cylindrical tube disposed within said longitudinal passage in said outer means and having its outer cylindrical surface spaced from the inner cylindrical surface of said outer means, said inner cylindrical tube having its longitudinal axis substantially parallel to the longitudinal axis of the inner cylindrical surface of said outer means or coaxial therewith;
- an ink cavity formed between the outer cylindrical surface of said inner cylindrical tube and the inner cylindrical

surface of said outer means and having pressurized ink therein;

at least one ink jet nozzle in communication with said ink cavity and from which a stream of ink droplets is supplied; each of said ink jet nozzles having its axis substantially perpendicular to the longitudinal axis of said inner cylindrical tube; and at least said inner cylindrical tube being formed of a piezoelectric material and vibrating radially when electrically excited to produce vibrations within the ink in said ink cavity so that a stream of substantially uniformly spaced ink droplets is supplied from any of said ink jet nozzles.

4,245,226

INK JET PRINTER WITH HEATED DEFLECTION ELECTRODE

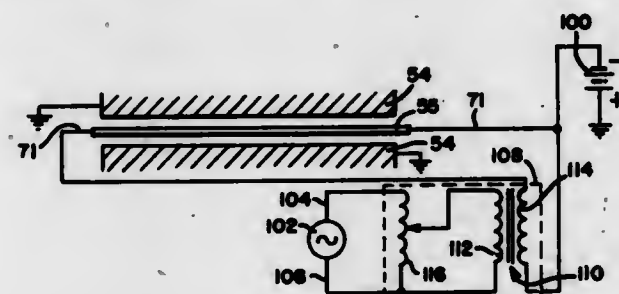
Suresh C. Paranjpe, Dallas, Tex., and John A. Robertson, Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 6, 1979, Ser. No. 55,411

Int. Cl.³ G01D 15/16

U.S. Cl. 346—75

28 Claims



1. An ink jet printer for depositing a plurality of ink drops upon a moving print receiving medium to form a print image thereon, comprising:

- print head means for generating a plurality of jet drop streams directed at said moving print receiving medium, said streams being arranged in a pair of parallel rows,
- drop charging means, adjacent each of said jet drop streams, for selectively charging drops in said drop streams,
- a drop ingesting catcher extending parallel to said row of jet drop streams and spaced therefrom for catching drops deflected into catch trajectories such that said drops are not deposited upon said print receiving medium,
- a substantially electrically conductive deflection electrode extending parallel to said drop ingesting catcher, such that said row of jet drop streams passes between said deflection electrode and said drop ingesting catcher,
- means for applying a d.c. deflection potential to said deflection electrode, such that appropriately charged drops are deflected into catch trajectories and are caught by said catcher, and
- means for heating said deflection electrode to prevent drop condensation thereon, thus preventing shorting of said deflection electrode to adjacent electrically grounded printer structure.

4,245,227

INK JET HEAD HAVING AN OUTER WALL OF INK CAVITY OF PIEZOELECTRIC MATERIAL

Konrad A. Krause, Mt. View, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 958,855, Nov. 8, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,490

Int. Cl.³ G01D 15/18

U.S. Cl. 346—75

18 Claims

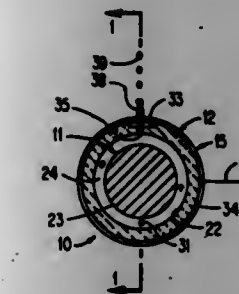
1. An ink jet head for supplying a plurality of streams of ink droplets including:

- outer means having an inner cylindrical surface;
- an inner cylindrical tube disposed within the inner cylindri-

cal surface of said outer means and having its outer cylindrical surface spaced from the inner cylindrical surface of said outer means, said inner cylindrical tube having its longitudinal axis substantially parallel to the longitudinal axis of the inner cylindrical surface of said outer means or coaxial therewith;

an ink cavity formed between the outer cylindrical surface of said inner cylindrical tube and the inner cylindrical surface of said outer means and having pressurized ink therein;

a plurality of arrays of ink jet nozzles communicating through said outer means with said ink cavity and from



which the streams of ink droplets are supplied, said plurality of arrays of ink jet nozzles being spaced from each other about the periphery of said outer means;

each of said ink jet nozzles having its axis substantially perpendicular to the longitudinal axis of said inner cylindrical tube;

and only said outer means being formed of a piezoelectric material and vibrating radially when electrically excited to produce vibrations within the ink in said ink cavity so that a stream of substantially uniformly spaced ink droplets is supplied from each of said ink jet nozzles with substantially the same break-off point.

4,245,228

LASER PLOTTER

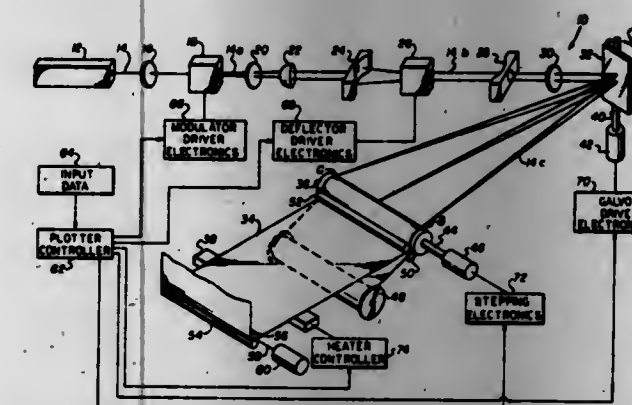
George F. Cook, Houston, Tex., assignor to Sequential Data Machines, Inc., Houston, Tex.

Filed Feb. 6, 1978, Ser. No. 875,431

Int. Cl.³ G01D 9/42

U.S. Cl. 346—108

60 Claims



1. Apparatus for recording information comprising:

- (a) a light source;
- (b) intensity modulation means for selectively modulating light from said light source over a selected range of intensity values in accordance with information to be recorded;
- (c) first deflection means for selectively and repetitively deflecting said light from said light source along a first direction; and
- (d) second deflection means for selectively deflecting said light from said light source along a second direction such that said first and second deflection means cooperate for causing said light from said light source to scan a recording medium along a scan direction while sweeping back and forth generally transverse to said scan direction such

4,245,229

OPTICAL RECORDING MEDIUM

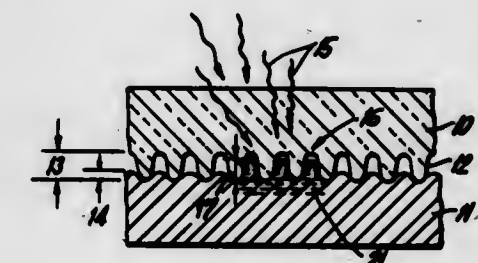
Richard B. Stephens, New Providence, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 26, 1979, Ser. No. 6,599

Int. Cl.³ G01D 15/34

U.S. Cl. 346—135.1

19 Claims



1. An optical recording medium comprising a surface which is characterized as having cavities of average depth D and average spacing S such that for contemplated incident radiation of wavelength λ, S is less than about λ/20 and D is either greater than or less than about λ/6 and is capable of being selectively altered to either less than or greater than about λ/6, respectively, said altered surface having respectively decreased or increased reflectivity of said incident radiation therefrom.

4,245,230

RESISTIVE SCHOTTKY BARRIER GATE MICROWAVE SWITCH

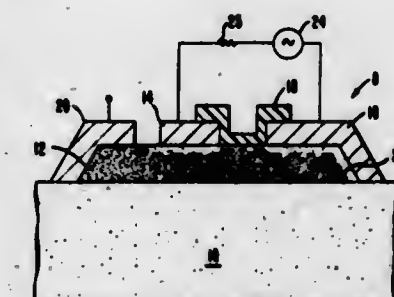
Siang-Ping Kwok, and Glenn O. Ladd, Jr., both of Rancho Palos Verdes, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 28, 1979, Ser. No. 79,854

Int. Cl.³ H01L 29/64, 29/80

U.S. Cl. 357—15

6 Claims



1. A microwave switch which comprises:

- (a) a semiconductive substrate having oppositely disposed first and second surfaces;
- (b) first and second metallizations on said first surface of said substrate for applying a signal to said switch;
- (c) a high resistivity gate on said first surface of said substrate between said first and second metallizations, said resistive gate forming a Schottky barrier with said semiconductive substrate; and
- (d) means for controlling the depth of the Schottky depletion region so that said signal traverses an electrical path of variable conductivity.

4,245,231

COMBINATION CAPACITOR AND TRANSISTOR STRUCTURE FOR USE IN MONOLITHIC CIRCUITS

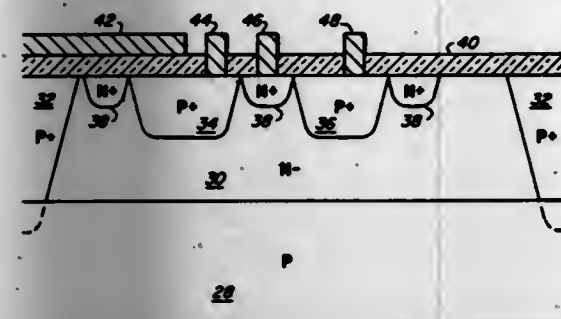
Robert B. Davies, Tempe, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 26, 1978, Ser. No. 973,407

Int. Cl.³ H01L 27/02

U.S. Cl. 357-51

3 Claims



1. In a monolithic integrated circuit having a substrate region of semiconductor material of a first conductivity type, an epitaxial region of semiconductor material of a second conductivity type formed on the substrate region, a portion of the epitaxial region being isolated by an isolation region of semiconductor material of the first conductivity type from the remainder thereof wherein an isolation pocket of the epitaxial region is defined, a combination capacitor and transistor structure, the improvement comprising:

the isolated epitaxial pocket region having an outwardly planar facing surface and being the base region of the transistor, the substrate region lying under the isolated epitaxial pocket region being the collector region of the transistor;

a first defined region of semiconductor material of the first conductivity type formed in the isolated epitaxial pocket region and having an outwardly facing surface coplanar with said outwardly facing surface of said isolated epitaxial pocket region, said first region being the emitter region of the transistor;

a layer of dielectric material formed over said first region; a layer of metallic material formed over the dielectric material and said first region; and

said layer of metallic material, in combination with said dielectric material and said first region forming a capacitor with said metallic material being a first plate of the capacitor and the active emitter region of the transistor being a second plate of the capacitor wherein the combined capacitor and transistor structure is realized by the capacitor being formed integrally with the active emitter region of the transistor.

4,245,232

OVER-VOLTAGE CLIPPING DIODE

Pierre Becavler, Tours, France, assignor to Le Silicium Semiconducteur SSC, Paris, France

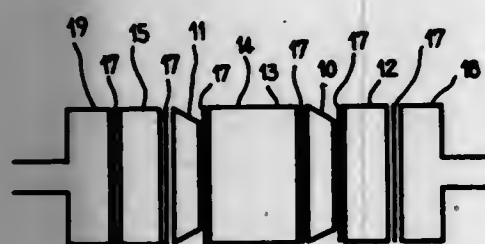
Filed Dec. 14, 1978, Ser. No. 969,415

Claims priority, application France, Dec. 15, 1977, 77 37857

Int. Cl.³ H01L 23/32, 23/16, 23/42

U.S. Cl. 357-76

5 Claims



1. An over-voltage clipping diode comprising a plurality of diode chips serially arranged in the same conduction direction, each of said diode chips being sandwiched between two dis-

tributor blocks of a material having a high thermal conductivity and a large thermal capacity with respect to the semi-conductive body of the respective diode chips, the thickness of the distributor blocks being larger than the thermal propagation length in the material for the pulses having the maximum time duration to be clipped by the diode.

4,245,233

PHOTOSENSITIVE DEVICE ARRANGEMENT USING A DRIFT FIELD CHARGE TRANSFER MECHANISM

Jan Lohstroff, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 824,392, Aug. 15, 1977, abandoned.

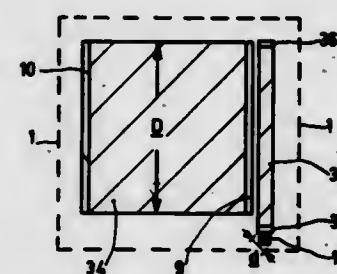
This application Feb. 14, 1979, Ser. No. 12,164

Claims priority, application United Kingdom, Aug. 26, 1976, 35533/76

Int. Cl.³ H03K 3/42; G11C 19/28; H01L 29/78, 27/14

U.S. Cl. 307-311

8 Claims



1. A photosensitive device arrangement comprising a semiconductor body having a photosensitive element responsive to incident radiation which operates in a charge-transfer and charge-storage mode, said photosensitive element comprising a semiconductor body portion of a first type conductivity, an insulating layer on a major surface of said body portion, an electrode layer on said insulating layer and extending over a photosensitive area of said body portion, in which photosensitive area mobile charge-carriers are generated in response to incident radiation to be detected, said electrode layer forming with said underlying body portion a charge-transfer structure having means for applying bias potential to the electrode layer to capacitively form a depletion layer in said underlying body portion during operation without inverting the conductivity type across the surface of said body portion, means for producing a drift field in said depletion layer which extends across said photosensitive area, substantially parallel to said major surface and in the direction of an edge portion of said electrode layer to cause photo-generated charge carriers from the entire photo-sensitive area to be transported along said drift field towards said edge portion, said means for producing the drift field comprising a first resistive electrode of said electrode layer which extends over said photosensitive area and has first and second connections for applying a potential difference along said first resistive electrode and a second, elongate resistive electrode of said electrode layer which extends alongside the first resistive electrode, is electrically insulated therefrom, and has a smaller area than said first resistive electrode, said first connection to the first resistive electrode being present adjacent the elongate resistive electrode and said second connection thereto being present adjacent an opposite edge of said first resistive electrode, a localized charge-storage zone in said body portion and adjacent said edge portion of said electrode layer for collecting the photo-generated charge carriers transported to said charge-storage zone by said drift field, the largest dimension of said charge-storage zone being at least an order of magnitude smaller than the smallest dimension across the entire photosensitive area underlying the electrode layer measured parallel to said major surface, said charge-storage zone being provided adjacent one end of said elongate resistive electrode and said elongate resistive electrode having connections adjacent its opposite ends for applying a potential differ-

ence therebetween to produce a drift field in the underlying body portion in the direction of said charge-storage zone, and means associated with said charge-storage zone for detecting the charge state of said charge-storage zone.

4,245,234

METHOD OF RECORDING COLOR TELEVISION SIGNALS AS A REPETITIVE SERIES OF NORMALLY RECORDED LINES AND PHASE REVERSED LINES

Harald E. Melwisch, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

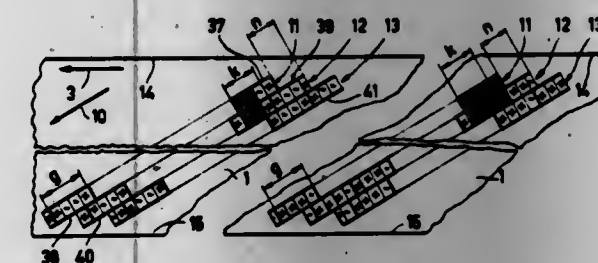
Filed Nov. 13, 1978, Ser. No. 960,427

Claims priority, application Austria, Dec. 2, 1977, 8654/77

Int. Cl.² H04N 5/79

U.S. Cl. 358-8

9 Claims



1. An improved method of recording color television signals in accordance with which the individual line period sectors in adjoining tracks on the record carrier are aligned relative to each other in a direction perpendicular to the tracks, and wherein in at least one of two adjoining tracks the polarity of the signals to be recorded, which are modulated on a carrier, is switched periodically in the line periods, while for signals which exhibit maxima in the frequency spectrum at distances corresponding to half the line frequency the signals of two consecutive line periods in a track relative to the two line periods adjoining these in an adjacent track exhibit alternately in pairs the same and different polarities, and for signals which exhibit maxima in the frequency spectrum at distances corresponding to the whole line frequency, the signals of the individual consecutive line periods in adjacent tracks alternately exhibit the same and different polarities with respect to each other, the improvement being characterized in that in all tracks the polarities of the signals in the line periods are switched in periodically recurring groups with the same pattern of consecutive polarities, the groups comprising at least four line periods, and are offset relative to each other by at least one line period in adjacent tracks.

4,245,235

METHOD AND SYSTEM FOR TRANSMITTING AND/OR RECORDING COLOR T.V. SIGNALS

Dieter Poetsch, Ober Ramstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 29, 1977, Ser. No. 810,961

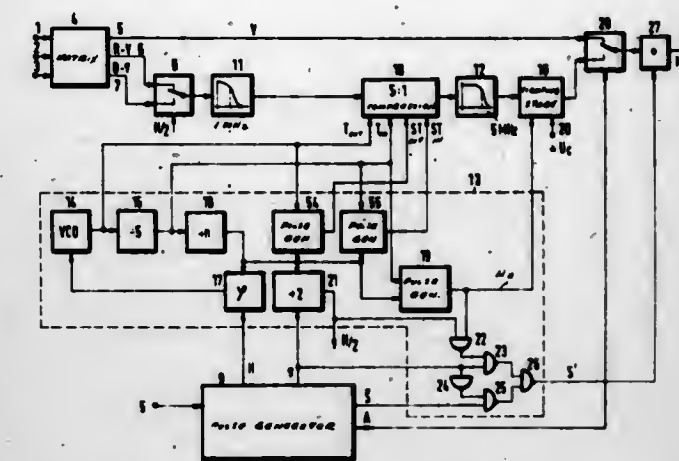
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629706

Int. Cl.³ H04N 9/40, 5/04

U.S. Cl. 358-14

14 Claims

14. In a method of transmitting color T.V. signals in analog form from a receiver into a recorder, from a transmitter to a receiver, from a color T.V. camera into a transmitter, or the like, the step of transmitting a synchronizing pulse during



during which the synchronizing pulse is transmitted alternating with those in which the blanking-level signal is transmitted.

4,245,236

CHROMINANCE TAKE-OFF CIRCUIT

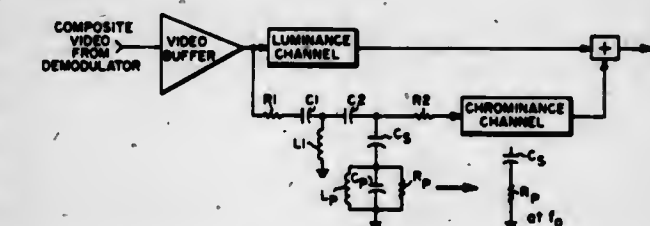
Rangaswamy Arumugham, Acton, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Oct. 11, 1978, Ser. No. 950,500

Int. Cl.² H04N 9/535

U.S. Cl. 358-31

14 Claims



1. A chrominance take-off circuit comprising:
a first capacitive branch, coupled at a first end to the output of the video channel and to the input of the chrominance processing circuitry, and
a parallel RLC branch coupled at one end to the other end of the capacitive branch and at the other end to a reference potential, said parallel branch resonant at approximately the chrominance subcarrier frequency.

4,245,237

CONTROLLABLE NON-LINEAR PROCESSING OF VIDEO SIGNALS

William A. Lagoni, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 38,015

Int. Cl.³ H04N 9/535

U.S. Cl. 358-31

10 Claims

1. A circuit for processing video signals, comprising:
first means for linearly translating said signals with a first gain greater than zero;
second means for linearly translating said signals with a second gain greater than zero;
third means having a non-linear signal transfer function for translating small amplitude excursions of said signal with a third gain greater than zero in a first region, and for translating moderate amplitude excursions of said signal with a fourth gain greater than said third gain in a second region;
means for combining signal outputs from said second and

samples representing the intensities of elements of a picture, including the steps of:

- linearly transforming the intensity values for a first block of picture elements (pels) to a corresponding set of coefficient values,
- predicting the values of said coefficients, and
- encoding an error signal indicative of the difference between ones of said coefficient values and the predicted values thereof,

wherein said predicting step is CHARACTERIZED BY

- estimating the displacement of objects in said picture between a previous frame and the present frame, and
- predicting said values using the coefficients of a second block of pels in said previous frame which is displaced from said first block by said estimate.

4,245,249

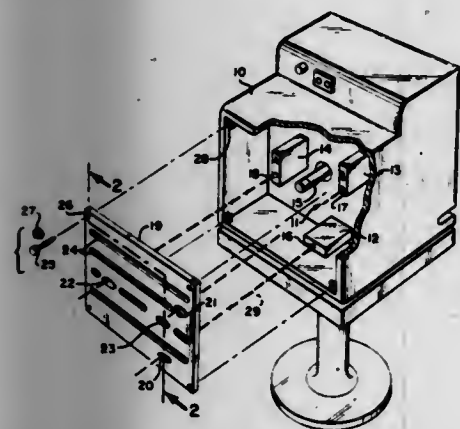
CONSUMER ELECTRONIC MALFUNCTION ALERTING SYSTEM

Pierre L. Tisot, 863 Via de la Paz, Pacific Palisades, Calif. 90272

Filed Apr. 20, 1979, Ser. No. 32,102
Int. Cl.³ H04N 5/64, 7/02; G08B 21/00

U.S. Cl. 358-139

4 Claims



1. A consumer electronic malfunction alerting system for an electronic chassis supporting a plurality of modules, including, in combination:

- a light emitting diode on each module connected to emit light only so long as said module is functioning;
- a back panel for said chassis having a plurality of openings respectively dimensioned and directed to the line of sight alignment with only the light emitting diode on said plurality of modules so that no ambiguity exists as to an opening and its associated module;
- identifying means on said module so that they can be visually distinguished when removed; and
- corresponding identifying means on said back panel positioned adjacent to said openings so that each opening has an identification corresponding to the identification of only that module whose light emitting diode is in the line of sight of said opening,

whereby a consumer can immediately observe through said openings which one or ones of said modules are functioning by the absence of light and immediately identify such module by said identifying means on said back panel adjacent to the opening from which no light is visible so that a new module can be ordered without having to remove said back panel until such time as such module is to be replaced.

4,245,250 SCAN CONVERTER FOR ULTRASONIC SECTOR SCANNER

Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

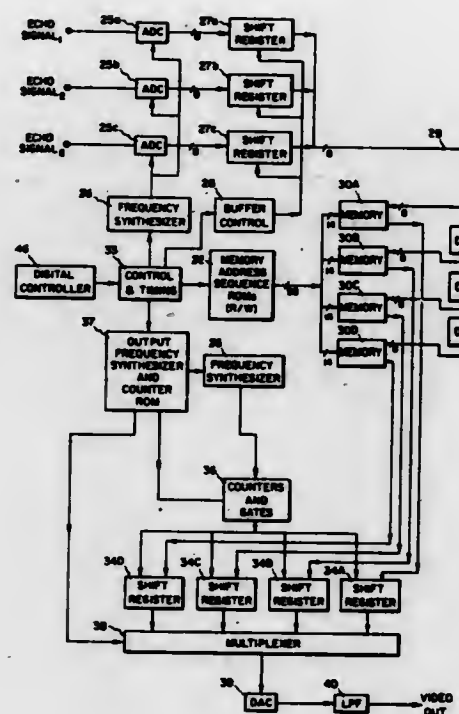
Continuation of Ser. No. 853,347, Nov. 21, 1977, abandoned.

This application Sep. 13, 1979, Ser. No. 75,255

Int. Cl.³ H04N 5/02; G01S 7/10, 9/68; H01B 10/00

U.S. Cl. 358-140

8 Claims



1. An ultrasonic imaging system incorporating a scan converter for the conversion of echo signals in sector scan format to raster format for display comprising:

- means for sequentially generating pulses of ultrasound that are transmitted along multiple scan lines on either side of the normal having substantially equal tangent increments to perform a sector scan and for detecting received echoes and producing focused echo signals;
- means for sampling and converting the focused echo signals to digital echo amplitude data at rates which vary inversely with the cosine of the angle of the scan lines, whereby sampling points are along lateral raster lines perpendicular to the normal and are equally spaced in each raster line;

a digital memory having a matrix of storage cell locations in columns and rows each corresponding to a sampling point;

means for writing the digital echo data for one scan line into a column of said memory and for sequentially writing the digital echo data for other scan lines into adjacent columns of said memory, and means for reading out the stored echo data row by row into an output buffer storage; means for serially reading out the digital echo data from said output buffer storage at a variable rate dependent on the width of the sector at the raster line being read out and delayed in time dependent on the location of the edge of the sector from a reference line; and

means for converting the digital data read out of said output buffer storage to analog data to produce a video signal for controlling the electron beam intensity of a cathode ray tube.

4,245,251 AFPC PHASE DETECTOR WITH NO OUTPUT FROM ALTERNATE SYNC PULSES

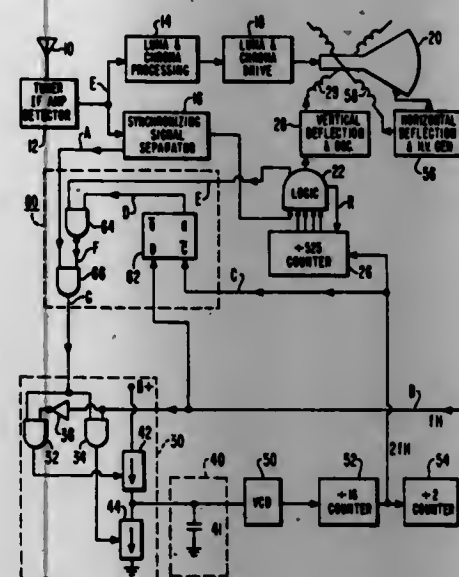
Steven A. Steckler, Clark, and Alvin R. Balaban, Lebanon, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 9, 1979, Ser. No. 37,401

Int. Cl.³ H04N 5/04

U.S. Cl. 358-158

9 Claims



1. A television phase-lock loop apparatus for the horizontal oscillator of a television receiver, comprising: controllable oscillator means including an output terminal at which oscillator signals are generated and also including a control input terminal;

phase detection means including a first input terminal coupled to the output terminal of said controllable oscillator means, a second input terminal, and an output terminal coupled to the control input terminal of said controllable oscillator means;

a source of horizontal synchronizing signals having an output terminal, said synchronizing signals including horizontal-rate pulses, said synchronizing signals also including interstitial pulses occurring in the interval between said horizontal rate pulses, said interstitial pulses occurring during at least a portion of the vertical blanking interval; and

means having a first input coupled to said output terminal of said controllable oscillator means, a second input coupled to the output terminal of said source of horizontal synchronizing signals, and an output coupled to the second input terminal of said phase detection means for forming a phase-lock loop apparatus responsive to said synchronizing signals for locking the frequency and controlling the phase of said oscillator means,

wherein said forming means further comprises controlled inhibiting means for preventing said phase detection means from producing an oscillator control signal in response to said interstitial pulses whereby the phase-lock loop apparatus responds to said horizontal rate synchronizing pulses to the exclusion of said interstitial pulses.

4,245,252

TELEVISION CAMERA HAVING A CHARACTER DISPLAY

Fumio Nagumo, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 4, 1977, Ser. No. 821,820

Claims priority, application Japan, Aug. 19, 1976, 51-99026; Aug. 20, 1976, 51-99960

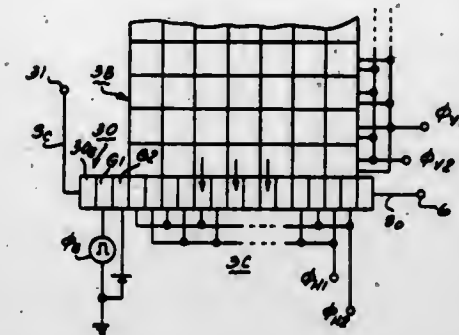
Int. Cl.³ H04N 3/14, 7/08, 5/22, 9/07

U.S. Cl. 358-213

3 Claims

1. A television camera comprising: a solid state image sensor means for generating a picked-up

signal corresponding to an object in order to produce a picture of the object; a pattern generator means for generating a pattern signal to be inserted in the picked-up signal for the picture; a synchronizing signal generator means for creating horizontal and vertical driving pulses for said solid state image sensor means and said pattern generator means; said solid state image sensor means including means for



mixing said pattern signal with the picked-up signal to create a mixed signal from the image sensor means; an encoder means for converting the mixed signal into a desired video signal; said image sensor means comprising a charge coupled device including a photo sensitive array and a horizontal read out shift register; and said pattern signal being supplied to said horizontal read out shift register.

4,245,253

FRAME-RATE CONVERTING FILM SCANNER HAVING CONTINUOUSLY VARIABLE PROJECTION SPEED

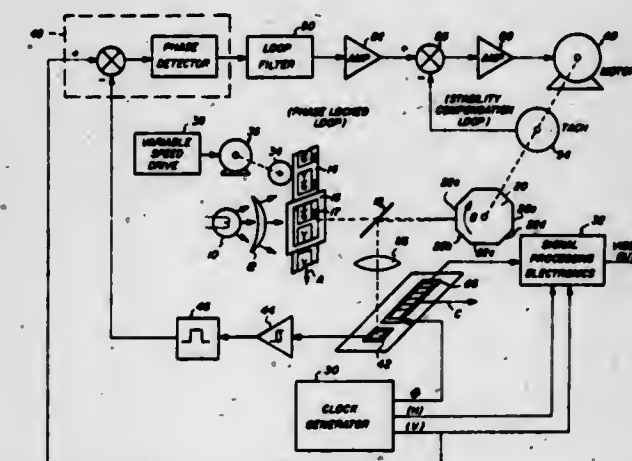
William T. Fearnside, Victor, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,029

Int. Cl.³ H04N 3/36

U.S. Cl. 358-214

1 Claim



1. Apparatus for scanning motion picture film bearing frame location indicia to produce a standard television signal comprising:

film drive means for continuously moving the film, the film drive means including control means adjustable over a range of frame rates for controlling the speed of the film drive means;

projection means having an optical path, including a light source and a scan lens for projecting an image of a portion of the moving film, the projected image including an image of the frame position indicia;

solid-state line sensing array means for scanning the projected image of the moving film in a direction generally perpendicular to the length of the film at a standard television line rate to produce a television signal;

rotatable multifacet mirror means, disposed in the optical path between the film and the line sensing array means, for displacing the image of the moving film relative to the line sensing means in a direction generally parallel to the length of the film;

indicia sensing means for sensing the displaced image of the frame position indicia and producing a frame position signal in response thereto;

drive means for rotating the mirror means;

means for supplying a periodic reference having a period equal to that of a standard television vertical synchronization signal; and

phase locked loop servo control means responsive to the reference signal and the frame position signal for controlling the speed of the mirror drive means so that the frame position signal occurs in phase with the periodic reference signal.

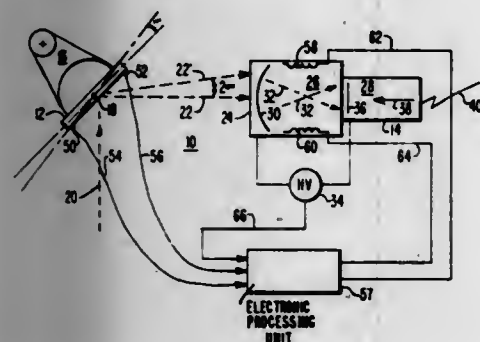
4,245,254

IMAGE MOTION COMPENSATOR

Emil L. Svensson, Ellicott City, and Craig D. Walrath, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 30, 1978, Ser. No. 938,164
Int. Cl.³ H04N 5/00

U.S. Cl. 358—222



1. In an electro-optical system including a TV camera having an image intensifier portion and a plurality of deflection coils disposed therein for deflecting the electron image of said TV camera as a function of the current passing therethrough; and at least one optical element disposed external to said TV camera for guiding the line-of-sight path of said TV camera to project predetermined target images on the receiving area of said TV camera, said at least one optical element incurring, at times, both desirable tracking stabilization movement to substantially prevent image movements with respect to said TV camera and undesirable vibrating movements causing unwanted resolution distortions to said projected target images in said TV camera, an electronic image motion compensator comprising:

at least two accelerometers coupled to said at least one optical element in said electro-optical system for generating signals representative of translational and rotational movement of said at least one optical element with respect to at least one axis thereof;

first means for eliminating from said accelerometer signals that portion representative of said translational movement and that portion representative of said rotational movement having frequencies substantially within a first frequency range to separate substantially from said accelerometer signals a first signal representative of said undesirable rotational vibrating movements of said at least one optical element having frequencies falling within a second frequency range which is greater than said first frequency range;

second means for converting said separated first signal into a second signal which is representative of said resolution distortion to said predetermined target images; and third means for supplying current to said plurality of deflection coils as a function of said second signal to electronically

cally compensate for said resolution distortion of said projected target images in said TV camera.

4,245,255

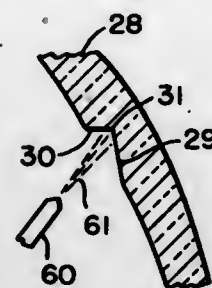
IMPLOSION PROTECTION FOR TV TUBES

John S. McCartney, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,567
Int. Cl.³ H01J 29/87

U.S. Cl. 358—245

12 Claims



1. In a television tube having a neck, funnel, and panel, fused together in a conventional manner, an implosion protection controlled surface discontinuity is formed in a rearward portion of the funnel near a location of approximate maximum stress concentration for establishing a controlled failure zone for stress concentration, such that in the event of destructive impact to the panel, the neck and a rearward portion of the funnel of the tube will crack off in the failure zone as a result of the controlled surface discontinuity and reduce the implosion potential of the tube.

4,245,256

VIDEO PROJECTOR AND MOUNTING STRUCTURE

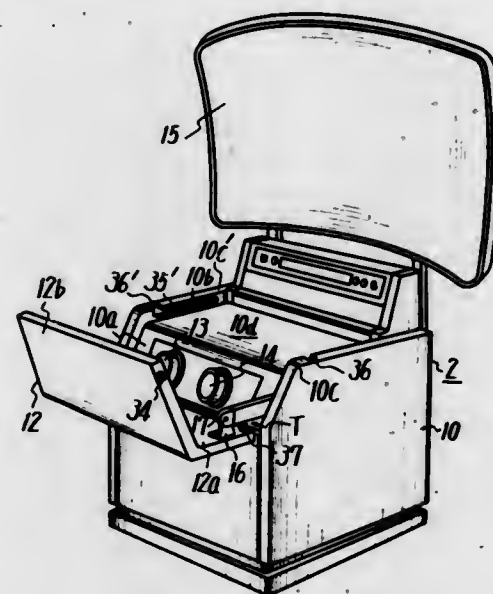
Takashi Kokubo, Akabanenishi, Yoshiaki Takano, Koganei, and Minoru Okuda, Ohayaguchikita, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 75,024
Claims priority, application Japan, Sep. 20, 1978, 53-129277[U]

U.S. Cl. 358—254

Int. Cl.³ H04N 5/64

5 Claims



1. A color video projector comprising a cabinet, said cabinet having a step-like recess including a front upper half surface and a top deck having side edges defining a track along the sides of said top deck, a mounting board of substantially L-shaped, a mirror on the inner surface of said mounting board at a point where it lies over said top deck, a pair of support arms

for said mounting board slidably mounted on said track, said mounting board being slidably movable out of and into position over said top deck, said cabinet having means restraining said mounting board from upward movement and from rocking movement except when said mounting board is in a predetermined fully-out position, said mounting board being rockable about the forward end of said support arms, and means for preventing rocking of said mounting board except when said mounting board is in its outer position in front of said cabinet.

4,245,257

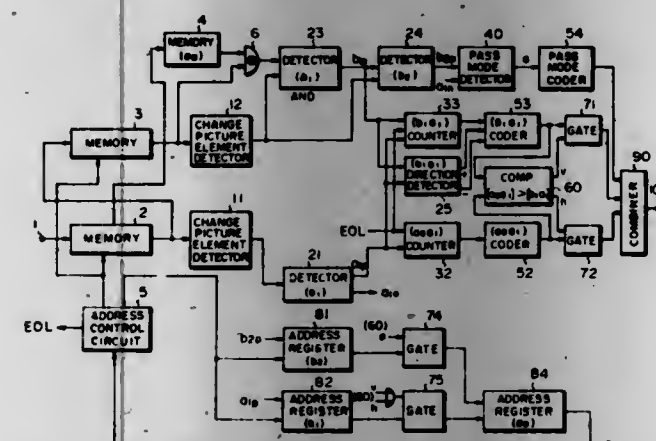
TRANSMISSION METHOD AND SYSTEM FOR FACSIMILE SIGNAL

Yasuhiro Yamazaki, Hiratsuka; Yasushi Wakahara, Tokyo; Kiyohiro Yuki, and Toyomichi Yamada, both of Yokosuka, all of Japan, assignors to Kokusai Densha Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 62,036
Claims priority, application Japan, Jul. 31, 1978, 53-92533; Dec. 13, 1978, 53-154716; Jan. 24, 1979, 54-6030
Int. Cl.³ H04N 1/00; G08C 9/00

U.S. Cl. 358—260

12 Claims



1. A transmission method for a facsimile signal, in which a two-level facsimile signal obtained by scanning an original picture and successively sampling the scanning output into picture elements is received, as an input, and in which the position of an information change picture element having changed from one to the other of two signal levels is coded and sent out, the improvement of the method comprising:

- a first step of setting a starting picture element on a coding scanning line to be coded from which the coding starts;
- a second step of detecting a first information change picture element lying next to the starting picture element on the coding scanning line;
- a third step of detecting a first reference picture element, which is a first information change picture element lying after a picture element just above the starting picture element on a reference scanning line immediately preceding the coding scanning line and has a signal level different from that of the starting picture element, and a second reference picture element of an information change picture element next to the first reference picture element;
- a fourth step of detecting, as a first mode, the state in which the second reference picture element precedes a picture element just above the first information change picture element by more than n (n being 0 or a positive integer) picture elements;
- a fifth step of detecting, as not the first mode, the state in which the second reference picture element does not precede a picture element just above the first information change picture element by more than n picture elements;
- a sixth step of comparing a first correlation between the starting picture element and the first information change picture element with a second correlation between the first information change picture element and the first reference picture element when the abovesaid state is detected as not the first mode;
- a seventh step of coding the presence of the first and second

reference picture elements as the first mode and setting the picture element just below the second reference picture element as the starting picture element in the first step when the first mode is detected;

an eighth step of coding a distance between the starting picture element and the first information change picture element as a second mode and setting the first information change picture element as the starting picture element in the first step when the first correlation is higher than the second correlation;

a ninth step of coding the distance between the first information change picture element and the first reference picture element as a third mode and setting the first information change picture element as the starting picture element in the first step when the first correlation is not higher than the second correlation; and

a tenth step of sending out the coded outputs of the seventh, eighth and ninth steps after combining them into a composite signal of two-dimensional codes.

4,245,258

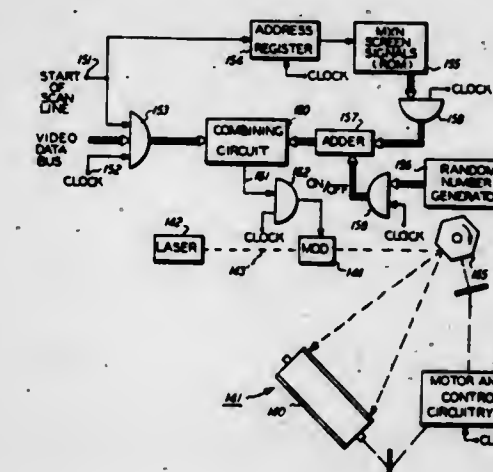
METHOD AND APPARATUS FOR REDUCTION OF FALSE CONTOURS IN ELECTRICALLY SCREENED IMAGES

Thomas M. Holladay, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 5, 1979, Ser. No. 91,282
Int. Cl.³ H04N 1/40

U.S. Cl. 358—283

16 Claims



1. An electrical screening method for suppressing false contours in recordings made on binary graphic or display media comprising

- defining a halftone cell including a group of pixels organized in an $m \times n$ matrix with each pixel representing areas on a medium capable of assuming either of two gray levels, assigning $m \times n$ different values representative of gray levels to $m \times n$ different screen signals with the values being separated from adjacent values by at least a minimum difference D and organizing the screen signals in a pattern corresponding to a halftone cell,
- changing the value of screen signals by an amount between zero and D inclusive, and
- combining the changed screen signals with electrical image signals representative of the gray level of a pixel in an original image for generating an output marking signal capable of setting a corresponding pixel in a medium to one or the other of its two gray levels in response to the combining.

4,245,259

INERTIA DRIVE HEAD FOR OPTICAL SCANNING AND READOUT

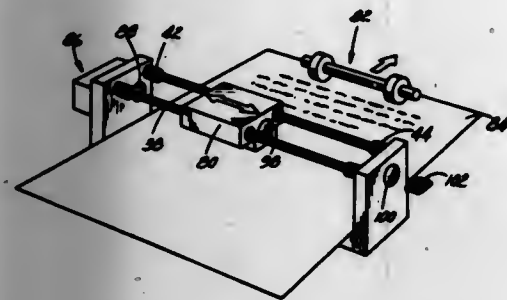
George G. Pick, Mendham, N.J., assignor to AM International, Inc., Los Angeles, Calif.

Continuation of Ser. No. 709,276, Jul. 28, 1976, abandoned. This application Mar. 1, 1978, Ser. No. 882,505

Int. Cl.² H04N 1/04, 1/10

U.S. Cl. 358—285

3 Claims



1. An oscillating motion machine for reading from and recording onto a record medium, the machine comprising: an inertial drive shuttle carriage of finite mass; way means; bearing means mounting said carriage on said way means for reciprocal oscillation; a first and second terminal spaced apart with said way means and carriage therebetween; spring means disposed at each terminal for intercepting said carriage, said spring means absorbing the kinetic energy of said finite mass to bring the mass to a stop, and thereafter applying the energy in a recoil action to propel said mass to the opposite terminal; a pulley means disposed relative to the first terminal; and a motor drive means disposed relative to the second terminal and coupled to the pulley means and to the carriage for imparting startup motion to the carriage, and thereafter supplying makeup energy to keep the carriage in oscillating motion in response to an applied voltage.

4,245,260

METHOD FOR IMPROVED REPRODUCTION OF EDGES BY ENGRAVING SCREENED PRINTING FORMS

Juergen Deelvoe, Kiel, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

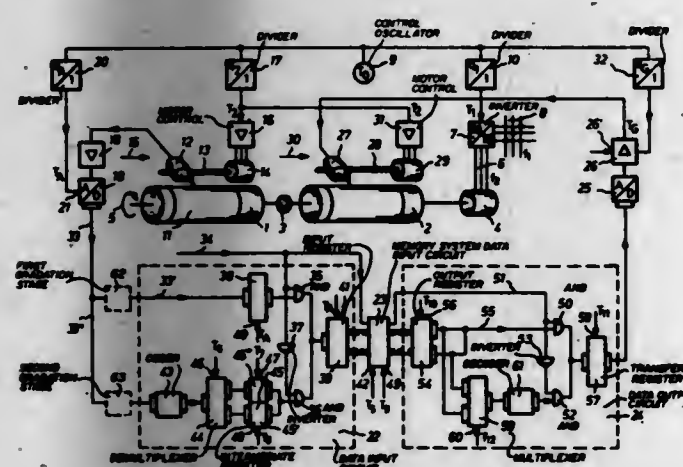
Filed Sep. 11, 1978, Ser. No. 941,542

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741953

Int. Cl.³ H04N 1/22, 1/40

U.S. Cl. 358—239

18 Claims



1. A method for improved reproduction of sharp change in tone density edges occurring during the engraving of screened printing forms, wherein an engraving tool of an electromagnetic engraving member cuts a plurality of cups arranged in a printing screen into said printing forms, said engraving member being controlled by an engraving signal derived from

superposition of an image signal and a screening signal, and wherein said screening signal for producing said printing screen actuates an oscillating movement of said engraving tool at a frequency of the screening signal, whereby the engraving tool in each case has its largest deflection in the direction of the printing form at a periodically recurrent amplitude value of the screening signal, the method comprising the steps of, scanning an original with a resolution in the scanning direction which is higher than that of the printing screen to generate said image signal, digitalizing said image signal into principal image values at the frequency of the screening signal and into additional intermediate image values occurring between said principal image values, said image values having predetermined word lengths, identifying edges which coincide with sharp changes in tone-density of the original and generating a recognition signal if an edge occurs, recoding the principal and intermediate image values into image values of shorter word lengths if said recognition signal occurs, combining a principal image value of shorter word length and the associated intermediate image value into one combined memory word, storing in a memory intermediately the combined memory word, separating said combined memory word after reading out from the memory into the principal image value and the associated intermediate image value, if said recognition signal does not occur, storing only the principal image values as memory words in said memory, superimposing said read out principal image values onto said screening signal at the instants of its recurrent amplitude values, and superimposing said intermediate image values in the sequence and at the instants of their creation.

4,245,261

DIGITAL DISPLACEMENT TRANSDUCER AND METHOD FOR MEASUREMENT

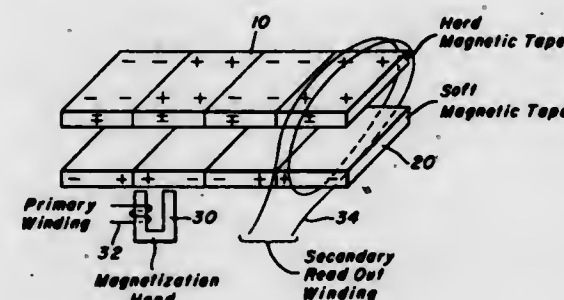
Jack W. Shilling, Monroeville, Pa.; Jeffrey A. Dierker, Longwood, Fla., and Chester A. Mitchell, Worthington, Ohio, assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1977, Ser. No. 852,136

Int. Cl.³ G11B 5/86, 5/78

U.S. Cl. 360—17

10 Claims



1. A method of producing a digital output related to the linear displacement of a reference surface of an object, comprising: coupling a tape of hard magnetic material with magnetic coded information therein characteristic of the displacement of the reference surface of the object; juxtaposing a magnetic means with the tape in a flux closed position therewith, so that the magnetic means assumes the coded characteristic of the magnetic coded information of the tape, said magnetic means having two states of magnetization; pulsing said magnetic means to switch the magnetic means solely from one of the two states of magnetization; and, reading said magnetic means and providing an output indicative of switching events taking place in the magnetic means.

4,245,262

DROPOUT COMPENSATING DEVICE

Masamitsu Ohira, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

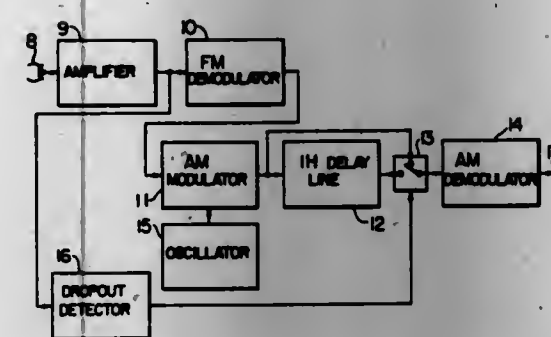
Filed Jul. 30, 1979, Ser. No. 61,986

Claims priority, application Japan, Aug. 3, 1978, 53-95313

Int. Cl.³ H04N 5/795, 5/76

U.S. Cl. 360—38

5 Claims



1. A dropout compensating device comprising a first demodulating means for obtaining a reproduced video signal through the angle demodulation of the angle-modulated signal reproduced from a recording medium recording angle-modulated video signals therein; a carrier generating means for generating a carrier wave; a modulating means for phase- or amplitude-modulating said carrier wave by said reproduced video signal to produce a remodulated video signal; a delaying means for obtaining a compensating signal by delaying the phase- or amplitude-modulated signal about one horizontal scanning period; a detecting means for detecting the amplitude of said angle-modulated signal reproduced from said recording medium and for delivering a signal indicative of a dropout when the detected amplitude is below a preset level; a switching means for transmitting said compensating signal in place of said remodulated video signal signal when there is an output of said detecting means; and a second demodulating means for obtaining a demodulated video signal by demodulating the output of said switching means.

4,245,263

WRITE PRECOMPENSATION AND WRITE ENCODING FOR FM AND MFM RECORDING

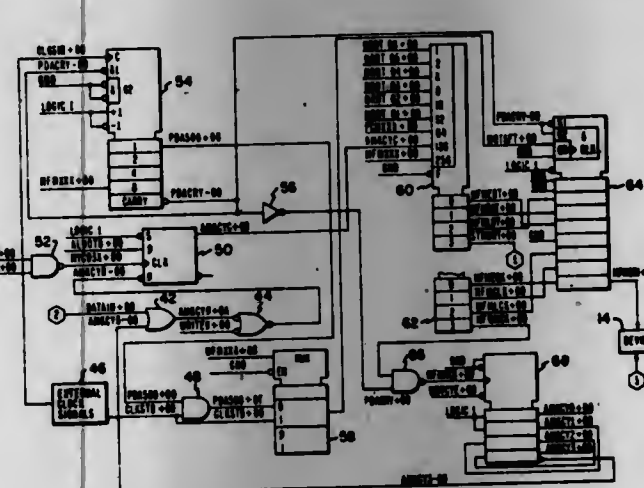
Donald J. Rathbun, Andover, Mass., and Peter P. Campbell, Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 14, 1979, Ser. No. 39,054

Int. Cl.³ G11B 5/09

U.S. Cl. 360—45

7 Claims



1. A system for writing digital information on a media in either a frequency modulation (FM) mode or a modified frequency modulation (MFM) mode comprising:

- a. buffer memory means for storing said digital information;
- b. first shift register means coupled to said buffer memory means for receiving said digital information serially and providing parallel output signals as said digital information shifts through said shift register means;
- c. read only means coupled to said first shift register means and responsive to said parallel output signals for generating clock signals and data signals;
- d. second shift register means coupled to said read only means and responsive to said clock and said data signals for generating said digital information for writing on said media; and,
- e. address mark cycle means coupled to said read only means and responsive to a missing clock signal for generating an address mark signal in a first state for selecting said clock and said data signals indicative of said address mark.

4,245,264

APPARATUS AND METHOD FOR DIGITALLY SYNCHRONIZING THE TIMING OF A SEQUENCE OF ELECTRICAL OUTPUT PULSES IN ACCORDANCE WITH A SELECTABLE, PERMISSIBLY NON-LINEAR FUNCTION OF THE TIMING OF A SEQUENCE OF ELECTRICAL INPUT PULSES

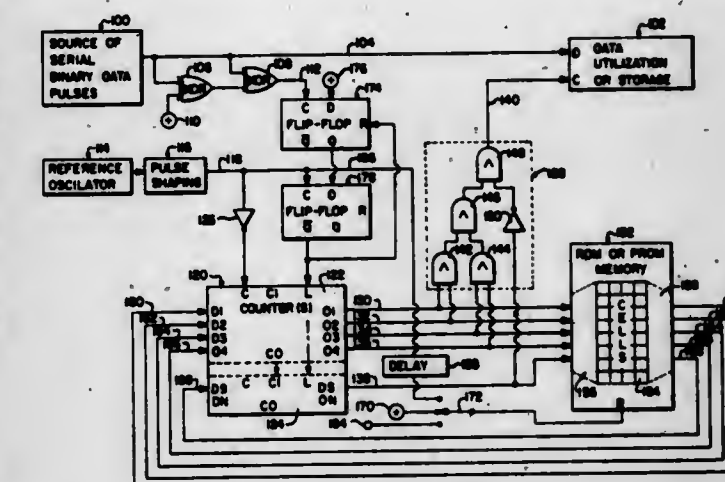
David M. Allen, Overland Park, Kans., assignor to Control Systems, Inc., Kansas City, Kans.

Filed Jul. 19, 1979, Ser. No. 58,906

Int. Cl.³ G11B 5/09

U.S. Cl. 360—51

16 Claims



1. In a method for serially reading binary bit data magnetically recorded along a data track upon a medium moving relative to a scanning read head assembly operable to provide an electrical input signal of changing level corresponding to the polarity of magnetic recording of data being sensed by said assembly into a clockable data utilization device, the steps of: providing an electrical time reference signal comprising a sequence of pulses having a substantially constant repetition rate equal to a preselected integer multiple of the expected approximate average rate of scanning of successive bits of data along said track by said assembly; digitally and cyclically counting the occurrence of said pulses of said time reference signal to a numeric modulus equal to said preselected integer multiple; storing in accessible addressed memory digital correction values predetermined by a preselected correlation function for each possible value respectively of the count of occurrences of pulses of said time reference signal; detecting the occurrence of each change of level of said input signal representing a transition in the polarity of magnetic recording of data being sensed by said assembly; upon each said detection of the occurrence of such a change of level of said input signal, accessing from memory the correction value stored in memory at the address corresponding to the then existing value of said count, and

substituting said accessed correction value for said then existing value of said count;
producing an output signal pulse whenever said count is of a preselected value; and
applying said output signal pulses to said data utilization device for clocking the latter in synchronization with said input signal according to said preselected correlation function.

4,245,265

AUTOMATIC TAPE BIAS ADJUSTING AND SIGNAL COMPENSATION RECORDING AND REPRODUCING APPARATUS

Takuyo Kogure, Neyagawa, and Hidemasa Kitagawa, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

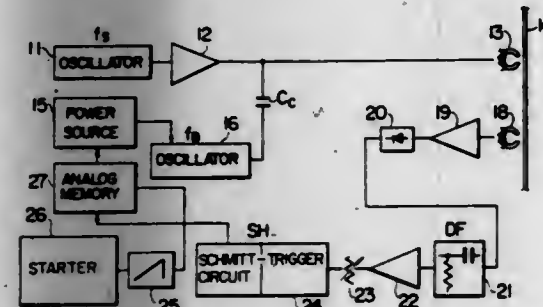
Filed Oct. 31, 1978, Ser. No. 956,366

Claims priority, application Japan, Apr. 20, 1978, 53-47343

Int. Cl.³ G11B 5/47, 27/36

U.S. Cl. 360-66

2 Claims



1. A magnetic recording and reproducing apparatus comprising:

- first means for generating a reference signal;
- second means for generating an AC bias current;
- third means for producing a recorded signal on a magnetic tape consisting of the reference signal and AC bias current in superposed relation to each other;
- fourth means for changing the magnitude of the AC bias current with time at a predetermined rate;
- fifth means for reproducing the recorded signal from the tape;
- sixth means for differentiating the reproduced signal to produce a substantially zero level differentiated output signal when the reproduced signal reaches a peak level;
- seventh means for controlling said fourth means to stop the change of magnitude of the AC bias current in response to detection of said substantially zero level differentiated output signal; and,
- eighth means for storing and holding the magnitude of the AC bias current when the magnitude change of the latter has stopped, whereby an optimum AC bias current is selected for a magnetic tape used in the recording and reproducing apparatus.

4,245,266

ARRANGEMENT FOR AUTOMATICALLY LOADING A FLOPPY DISC INTO A FLOPPY DISC DRIVE UNIT

Paul Bauer, Ergolding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,071

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812637

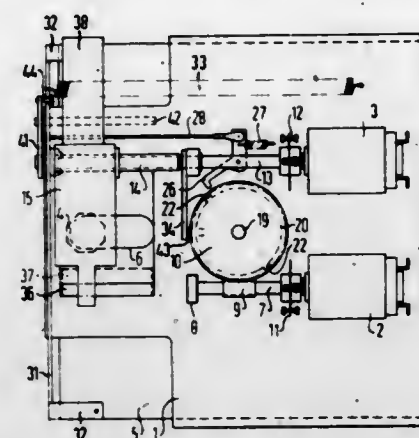
Int. Cl.³ G11B 5/016, 17/04

U.S. Cl. 360-99

7 Claims

- 1. A floppy disc drive unit including device for automatically loading a floppy disc, said device comprising:
 - a gripping arrangement movably mounted in said drive unit for gripping and moving a floppy disc between a loading/unloading position and a transducing position;

- a magnetic head carrier with a magnetic head mounted thereon;
- a positioning motor operatively coupled to said magnetic head carrier for moving said carrier in first and second directions to position said magnetic head on various tracks



on the disc, said directions being the directions of loading and unloading, respectively, of the floppy disc; and connecting means releasably coupling said head carrier to said gripping arrangement so that operation of said positioning motor causes movement of said gripping arrangement.

4,245,267

SUSPENSION DEVICE FOR MAGNETIC TRANSDUCERS

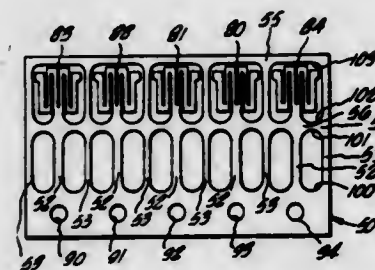
Robert W. Herman, Laguna Beach, Calif., assignor to New World Computer Company, Inc., Costa Mesa, Calif.

Filed Jan. 1, 1979, Ser. No. 44,536

Int. Cl.³ G11B 5/60, 17/32, 21/20

U.S. Cl. 360-104

14 Claims



1. A suspension device for supporting a plurality of adjacent magnetic heads against a fluid bearing formed between said magnetic heads and a moving magnetic surface, comprising:

- a body member with an axis parallel to the movement of the said moving magnetic surface; and
- a plurality of adjacent gimbal sets each having a first sinuous gimbal member and a second sinuous gimbal member, said first and second sinuous gimbal members each comprising a plurality of laterally adjacent gimbal legs parallel to said axis, each said gimbal leg having a first and second end, said gimbal leg first and second ends alternately joined to form said sinuous gimbal members, said first and second sinuous gimbal members each further having a first and inner end and a second and outer end, said first end inner ends joined in substantially close proximity to said body member, each said first and second sinuous gimbal members further comprising an extension member joined at a first end to said second and outer ends and extending therefrom to a bonding surface for bonding to said magnetic heads.

4,245,268

MAGNETIC HEAD WITH MEANS FOR ELIMINATING NOISE

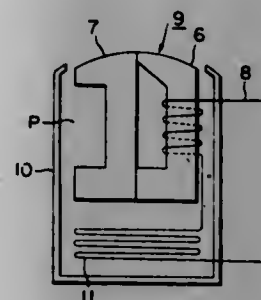
Naohiko Toshimitsu, Chichibu, Japan, assignor to Canon Kabushiki Kaisha and Canon Denchi Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 845,434, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 663,115, Mar. 2, 1976, abandoned. This application Apr. 12, 1979, Ser. No. 29,464

Claims priority, application Japan, Mar. 10, 1975, 50-29338 Int. Cl.³ G11B 5/12

U.S. Cl. 360-124

6 Claims



1. A miniaturized magnetic head comprising:

- a first core half;
- an output winding having a finite number of turns wound around said first core half;
- a second core half mated with said first core half to form a magnetic gap therebetween;
- a shield case substantially enclosing at least said first and second core halves and said output winding; and
- a compensating coil, disposed outside of said shield case and having one end connected to one end of said output winding, said compensating coil being spaced adjacent to said shield case so that said compensating coil captures the external noise fluxes which pass outwardly through said shield case and through at least said first core half, and having a fewer number of turns than said output winding such that the total induced voltage in said compensating coil substantially neutralizes the induced voltage from the external magnetic flux passing through said output winding;

whereby the reduced size of the compensating coil resulting from the utilization of the magnetic flux passing through said shield case and said first core half reduces the overall size of the magnetic head.

4,245,269

MAGNETIC HEAD AND METHOD OF FABRICATING THE SAME

Rimvidas P. Yasinavichjus, ulitsa Vyarkja, 20, kv. 60; Vladimir I. Trufanov, ulitsa Zhirmun, 52, kv. 30; Anxutis A. Yakshas, ulitsa Krylova, 4, kv. 10; Jury S. Epishkin, ulitsa Vershinskaja, 73, kv. 37, and Vladimir V. Rakov, ulitsa Varpa, 2, kv. 1, all of Vilnius, U.S.S.R.

Filed Mar. 8, 1978, Ser. No. 885,025

Claims priority, application U.S.S.R., Mar. 15, 1977, 2457120(I); May 3, 1977, 2481799

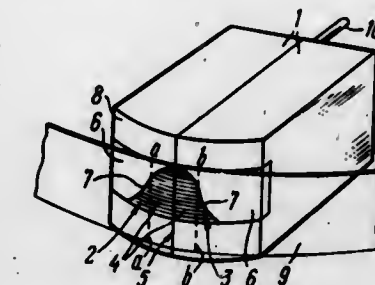
Int. Cl.³ G11B 5/12, 5/22

U.S. Cl. 360-125

5 Claims

- 1. A magnetic head comprising:
 - first and second half-core members, said half-core members each including a front face, and four side faces perpendicular thereto;
 - a non-magnetic layer;
 - said first and second half-core members being assembled together with respective ones of said side faces adjacent one another and with said non-magnetic layer interposed therebetween to form a front working surface of the head with a planar working gap therein;
 - at least one winding mounted on said first and second half-core members;
 - said front faces of said first and second half-core member

cooperatively defining said front working surface, said half-core members each being provided with a cavity extending in part in said front face, in one of said side surfaces adjacent to and in the side face remote from the side face forming said gap, said cavity having a bounding edge at said front face which constitutes the edge of said front working surface, said bounding edges of each of said core halves combining to form a bell-shaped curve symmetrically disposed about the plane of said working gap;



a hollow cover member having at least one slot which receives said first and second half-core members, said slot extending beyond said bounding edges to expose said front surfaces of said half-core members beyond said bounding edges,

a non-magnetic adhesive material filling said cavities and forming a continuous surface with said front working surface which is exposed through said slot; and terminals mounted in said hollow member and electrically coupled to said winding.

4,245,270

CIRCUIT CARD WITH SOFT POWER SWITCH

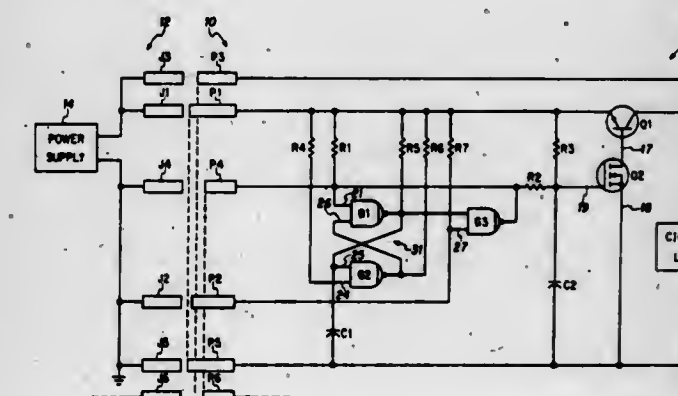
W. Ray Busby, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 26, 1978, Ser. No. 972,753

Int. Cl.³ H02H 7/20

U.S. Cl. 361-58

16 Claims

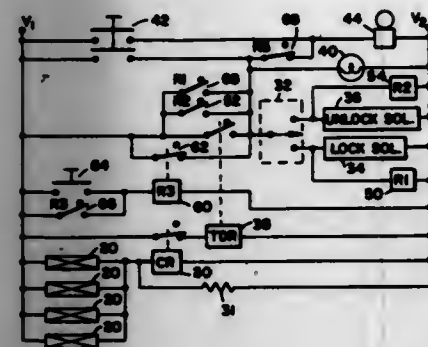


- 1. In a circuit card of the type having a plurality of connector pins for electrically connecting to a system upon insertion of the card and disconnecting from the system upon removal of the card, and wherein the system includes a power supply voltage, and the circuit card includes an electrical circuit comprising a load for connection to the power supply voltage, the improvement comprising means interposed between said load and the system power supply voltage for gradually coupling said circuit load to the power supply voltage upon insertion of the card, said means for gradually coupling, including means for coupling between an input terminal thereof and an output terminal thereof, to an extent which is substantially continuously dependent upon a signal at a control terminal, and means for applying to said control terminal a gradually varying signal.

4,245,271

CRANE SYSTEM OR CARGO CONTAINERS
 Steve W. Gwin, 1177 Alberdan Cir., Pinalo, Calif. 94564
 Filed May 18, 1979, Ser. No. 40,137
 Int. Cl. B66C 1/00; H01H 47/00
 U.S. Cl. 361-189

10 Claims



1. In a crane system for moving a cargo container, including a spreader means adapted to be locked onto the container to be moved, said spreader means having a plurality of remotely operated locking members located substantially at the corners of said spreader means for engaging mating locking devices provided on the container, and further including proximity sensing means positioned on said spreader means for sensing when said spreader means is properly positioned with respect to the container for locking thereto, manual switching means for coupling power, when power is connected to said switching means, to either a locking solenoid or an unlocking solenoid for controlling thereby the locking or unlocking of said spreader locking members, and means responsive to said proximity sensing means for coupling power to said manual switching means when said spreader means is in its said proper position with respect to the container, the improvement comprising:

a first relay means;
 means for actuating and maintaining said first relay means in an actuated state so long as said manual switching means couples power to said locking solenoid, said first relay means in said actuated state acting to create a first separate path for coupling power to said manual switching means whereby coupling of power is maintained to said manual switching means independent of the subsequent state of said proximity sensing means.

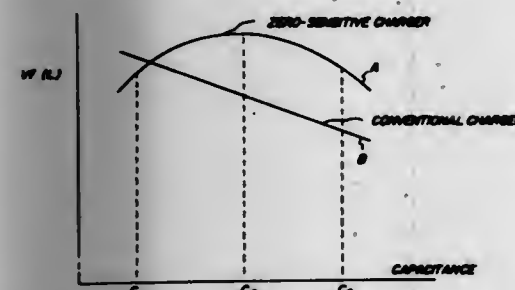
4,245,272

APPARATUS AND METHOD FOR LOW SENSITIVITY CORONA CHARGING OF A MOVING PHOTOCONDUCTOR

Allen J. Rushing, Webster; Bruce R. Benwood, Spencerport, and Paul A. LaChapelle, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
 Filed Apr. 30, 1979, Ser. No. 34,228
 Int. Cl. H01T 19/00

U.S. Cl. 361-229

28 Claims



1. In electrophotographic apparatus of the type in which a photoconductor is moved downstream through a primary charging station, an improved corona charging device for

forming a primary charge of nominal potential on an imaging surface of the photoconductor, said device comprising:

- (a) first corona means for charging such surface, during passage through a first portion of said charging station, to an overcharge potential which is of the same polarity as said nominal potential and is substantially in excess of said nominal potential; and
- (b) second corona means for discharging such surface, during passage through a second portion of said charging zone downstream from said first portion, toward a potential that is below said nominal potential by a predetermined magnitude such that said surface exits said charging zone at said nominal potential;

whereby nominal charge is placed on such surface with improved low-sensitivity to variations in charging system parameters such as photoconductor capacitance, photoconductor velocity and charging efficiency.

4,245,273

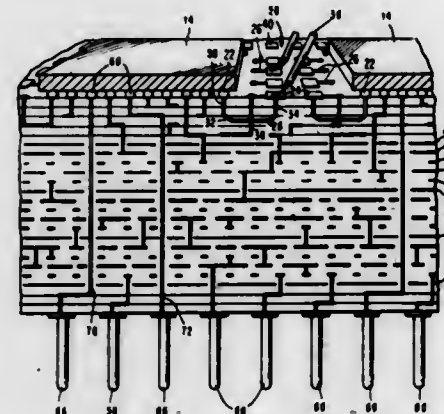
PACKAGE FOR MOUNTING AND INTERCONNECTING A PLURALITY OF LARGE SCALE INTEGRATED SEMICONDUCTOR DEVICES

Irving Feinberg, and Jack L. Langdon, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 29, 1979, Ser. No. 53,477
 Int. Cl. H05K 7/20

U.S. Cl. 361-382

5 Claims



1. A package for mounting, interconnecting, and cooling a large number of sophisticated integrated circuit semiconductor devices comprising

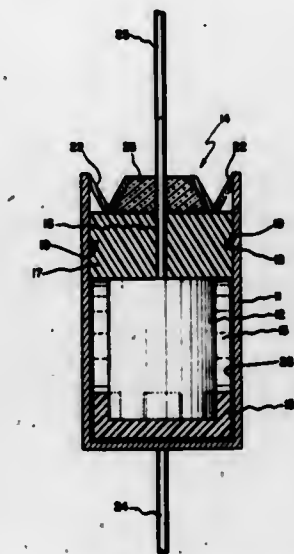
a sintered multilayer ceramic substrate of a material having a coefficient of expansion that substantially matches the coefficient of expansion of silicon, said substrate provided with an internal metallurgy network made up of voltage planes, X and Y signal planes, and fan-out planes, said substrate further provided with input/output pins on the bottom surface, and a plurality of asymmetrical solder pad clusters for solder bonding to a plurality of integrated circuit semiconductor devices, a plurality of integrated circuit semiconductor devices solder bonded to said solder pad clusters, at least one row of elongated engineering change pads surrounding each pad cluster, said internal metallurgy network including conductive lines in said fan-out planes joining a solder pad connected to a signal terminal of a device to one end of one of said elongated engineering change pads, and a line joined to the other end of said engineering pads joined to the said internal metallurgy network, the intermediate section of said elongated engineering change pads serving as a severable surface link, said internal metallurgy network arranged with said conductive voltage planes positioned above and below at least one pair of said signal planes in the X and the Y direction to thereby obtain a transmission line effect for the signal lines which confines the electric fields, said input/output pins connected to said internal network arranged in clusters with the powering voltages of each

4,245,275

REFRACTORY METAL ALLOY CASE CAPACITOR
 Henry T. Cannon, Newberry, S.C., assignor to Mepco/Electra, Inc., Columbia, S.C.
 Filed Jan. 23, 1978, Ser. No. 918,673
 Int. Cl. H01G 9/00

U.S. Cl. 361-433

11 Claims



semiconductor device located directly beneath the device thereby minimizing the voltage drops, and signals connected through input/output pins interspersed between said clusters of power input/output pins,
 a cap forming an enclosure over at least the top surface of said ceramic substrate,
 a rectangular annular flange element having an inside surface brazed to said ceramic substrate and having a portion extending outwardly beyond the edge of said substrate, said cap provided with a seating surface contacting said extending portion of said flange,
 a clamping member engaging said extending portion of said flange and maintaining it in engagement with said seating surface, and
 a cooling means associated with said cap for removing heat from said devices.

4,245,274

READOUT AND CIRCUIT BOARD WITH TEST ACCESS
 Douglas B. MacDonald, Des Plaines, and Desi de Perzel, Chicago, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Continuation of Ser. No. 832,335, Sep. 12, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,474
 Int. Cl. H05K 7/18

U.S. Cl. 361-429

11 Claims



1. An electronic readout assembly comprising a readout unit of the flat plate type containing display electrodes and having terminal fingers extending therefrom along an edge thereof for connection with control circuitry; a circuit board having circuit means operative to control energization of the readout display through connection with said terminal fingers established on the circuit board at predetermined positions thereon aligning with said fingers in the assembled condition of the readout with the circuit board; and a frame structure operative to support said readout unit on said circuit board with said fingers respectively in operative alignment with corresponding connection points on the board, said frame structure comprising complementary frame sections each including a horizontal cross arm from opposite ends of which depend a side leg, said legs having free ends each meeting with the free end of a correspondingly positioned leg on the other section in the assembly of said sections to define the frame, said cross arms and legs each having channel portions adapted to fit over edge portions of the readout unit to mask such edge portions including the edge portions from which the fingers project as aforesaid; a lower one of said sections having mounting configurations supportably engaging with said circuit board and with the fingers positioned in alignment with the respective connection points as aforesaid, said lower frame section further having an open access portion adjacent said circuit board to expose portions of said fingers for test purposes.

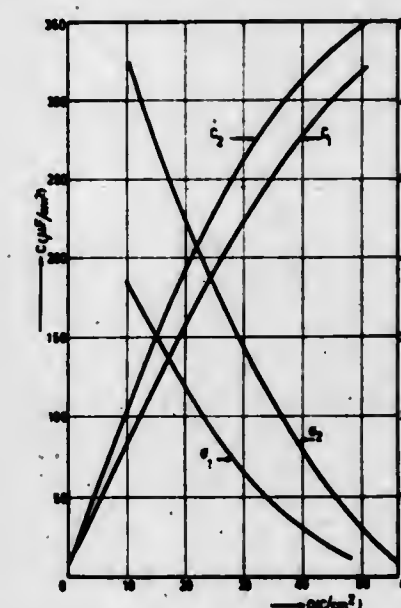
4,245,276

ALUMINUM-MANGANESE CATHODE FOIL FOR ELECTROLYTIC CAPACITORS HAVING CONTROLLED AMOUNTS OF COPPER AND TITANIUM
 Arend Van Herwijnen, and Pieter M. Vogel, both of Zwolle, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 4, 1978, Ser. No. 930,916
 Claims priority, application Netherlands, Aug. 22, 1977, 7709231

U.S. Cl. 361-433

6 Claims



1. A cathode foil for electrolytic capacitors comprising an aluminum-manganese alloy having between 0.2 and 2 weight % of Mn, and a copper content in said alloy of between 0.15 and 5.3 weight %.

4,245,277

ELECTROLYTIC CAPACITOR PROVIDED WITH A PRESSURE RELIEF VALVE

Cornelis L. M. van Gils; Marius H. van der Dussen, and Pieter Kemkers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

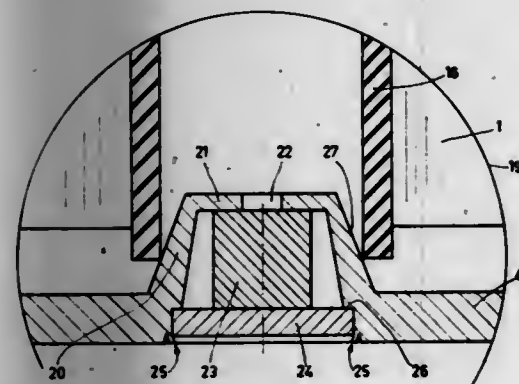
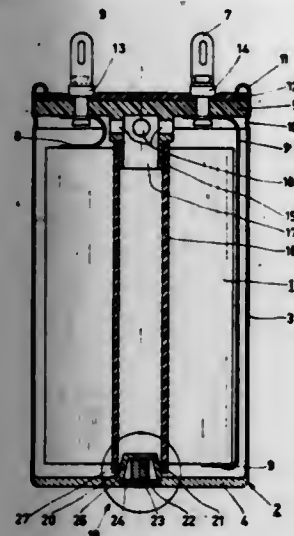
Filed Oct. 13, 1978, Ser. No. 951,225

Claims priority, application Netherlands, Nov. 16, 1977, 7712605

Int. Cl.³ H01G 9/00; B01J 17/00

U.S. Cl. 361-433

6 Claims



1. An electrolytic capacitor comprising:
 - (a) a housing accommodating a capacitor roll having electrical connections passing through a lid of said housing; and an excess pressure relief valve including
 - (b) a bowl-shaped recess member having a blow-off aperture at a portion facing said lid,
 - (c) an elastic member closing said blow-off aperture, said elastic member being elastically deformable according to a predetermined excess pressure to form an open communication to surroundings of said housing, and
 - (d) a softenable thermoplastic strip mechanically biasing said elastic member against said bowl-shaped recess member to close said blow-off aperture; said thermoplastic strip being secured by deformation of said housing wall in the vicinity of the edge of said bowl-shaped recess member.

4,245,278

ELECTROLYTIC CAPACITOR CONTAINING A METATUNGSTATE ELECTROLYTE

Mannal Finkelstein, North Adams; Franz S. Dunkl, and Sidney D. Ross, both of Williamstown, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 21, 1979, Ser. No. 22,551

Int. Cl.³ H01G 9/02

U.S. Cl. 361-433

11 Claims

1. An electrolytic capacitor that retains at least 70% capacity at 40° C. comprising two electrodes at least one of said electrodes having a thin barrier layer dielectric oxide on the

surface thereof, and as electrolyte in contact with said electrodes a solution of a metatungstate salt in a polar organic solvent containing 1 to 22 wt percent water.

4,245,279

PHOTOFLASH UNIT WITH INVERTED FLASHLAMPS

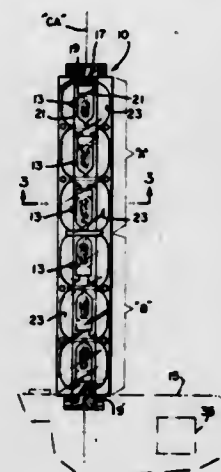
Andre C. Bouchard, Peabody, Mass.; Donald E. Armstrong, Williamsport; Ronald E. Sindlinger, Muncy, both of, Pa.; John W. Shaffer, and Daniel W. Bricker, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 4, 1979, Ser. No. 72,526

Int. Cl.³ F21K 5/02; G03B 15/02

U.S. Cl. 362-13

10 Claims



1. A multilamp photoflash unit for being electrically activated when connected to a power source associated with a camera, said unit comprising:

an elongated housing defining first and second separate regions therein and including first and second mounting devices secured thereto or forming a part thereof for mounting said housing on said camera, said first and second mounting devices located adjacent said first and second separate regions, respectively, said first mounting device separated from said second region by said first region, said second mounting device separated from said first region by said second region;

first and second pluralities of electrically actuated flashlamps, each of said flashlamps including a light-transmitting envelope having a quantity of filamentary combustible material therein and a sealed end portion having a pair of conductive lead-in wires therein, said first plurality of flashlamps electrically connected together and positioned within said first region of said housing such that said sealed end portions of said envelopes thereof face away from said second regions, said second plurality of flashlamps electrically connected together and positioned within said second region of said housing such that said sealed end portions of said envelopes thereof face away from said first region; and

coupling means for transmitting lamp-firing pulses applied by said camera power source from said second mounting device to said first plurality of flashlamps and from said first mounting device to said second plurality of flashlamps.

4,245,280

MULTILAMP PHOTOFLASH UNIT CONSTRUCTION

Donald W. Hartman, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 4, 1979, Ser. No. 72,529

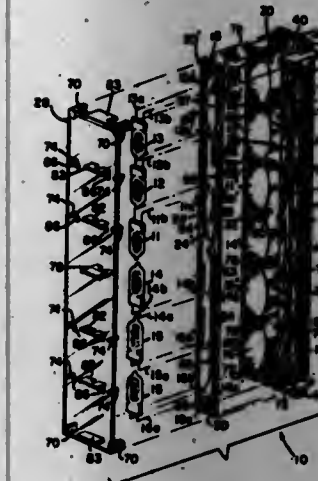
Int. Cl.³ F21K 5/02; G03B 15/02

U.S. Cl. 362-13

15 Claims

1. In a multilamp photoflash unit comprising an elongated housing member having a longitudinal channel therein, and a

plurality of flashlamps mounted in said channel, a substantially rectangular light-transmitting cover panel enclosing said flashlamps in the channel and attached to said housing member by means comprising: four end slots in said housing member, each pair of said end slots being located at respective ends of said housing member on opposite sides of said channel, a corner post projecting from each of the four corners of said cover panel and disposed normal to the plane thereof, each of said corner posts fitting into a respective one of said end slots and



being secured thereto, a pair of center slots at the midportion of said housing member in opposite sidewalls of said channel, and a transverse web projecting from the center of said cover panel and fitting into said center slots and being secured thereto, whereby each pair of said corner posts straddles respective ends of said housing member and grips the outer sides thereof, and said transverse web bridges said channel at the midportion thereof to provide oppositely directed forces with respect to said corner posts.

4,245,281

ADJUSTABLE HULL LIGHT ASSEMBLY

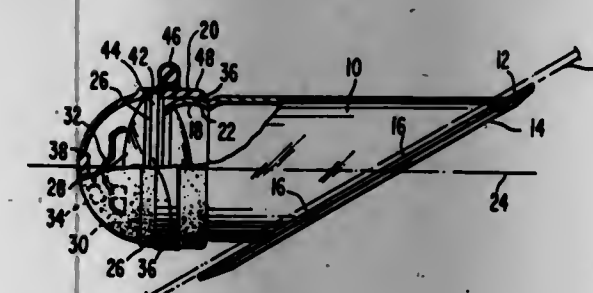
Theodore Zlayek, Jr., Yardley, Pa.

Filed Jan. 26, 1978, Ser. No. 872,522

Int. Cl.³ B60G 1/00

U.S. Cl. 362-61

10 Claims



1. An adjustable hull light assembly comprising:

(a) a generally tubular housing member including a hull flange means extending laterally therefrom at one end thereof, said housing further including an adjustment means at the opposite end of said housing from said flange means, said adjustment means comprising the outer surface of an arcuate section of said tubular housing being longitudinally arcuate with respect to the axis of said tubular housing;

(b) a lamp socket means of rubber and adjustably secured only to the outer surface of said arcuate section of said generally tubular housing to form said adjustment means, said lamp socket means being adapted to receive a sealed beam lamp means therein to shine light outward through said tubular housing in a direction parallel with respect to the axis of said generally tubular housing member, said lamp socket means including:

(1) a lip means fitted peripherally about said adjustment

means and said arcuate section to fit snugly therearound and provide an adjustment capacity to collimate a lamp means positioned within said lamp socket means with respect to the axis of said generally tubular housing;

(2) a rear section extending from said lip means and covering the rear area of a lamp means;

(3) a slot means defined peripherally in the interior surface of said lamp socket means to provide a mounting location for a lamp means positioned within said lamp socket means; and

(4) a sealing means formed by the inner section of the mated surfaces of said slot means and a sealed beam lamp mounted within said slot means to prevent the flow of water and other contaminants from the external environment inwardly through said housing member.

4,245,282

ILLUMINATING DEVICE

Peter L. Sokol, 1197 London Rd., Coboes, N.Y. 12047

Filed Jan. 25, 1979, Ser. No. 51,729

Int. Cl.³ F21V 9/16; F21S 3/00

U.S. Cl. 362-84

6 Claims



1. An illuminating device comprising a fluorescent lamp and phosphorescent material affixed in close proximity to said lamp by means of a net impregnated with said phosphorescent material, said net being operative when said fluorescent lamp is extinguished to provide continued illumination for a temporary period.

4,245,283

LAMPSHADE WITH ARCUATE WALLED FLEXIBLE CONNECTING MECHANISM

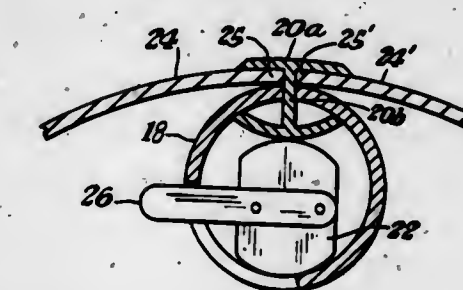
Wilbur F. Hahlen, 2010 NE. 19th St., Ft. Lauderdale, Fla. 33305

Filed Jan. 19, 1978, Ser. No. 916,341

Int. Cl.³ F21V 7/00

U.S. Cl. 362-306

3 Claims



1. A lampshade device having a plurality of removable light diffusing panels comprising:

at least three rigid vertically disposed frame members, each of said frame members including a first rigid vertical support means having an arcuate wall portion and a second support means connected to said first member having a wall portion, said members connected together so that the adjacent wall portions provide a lampshade panel recess;

a means for rigidly connecting said vertical frame members together; and

a plurality of flexible light diffusing lampshade panels including side edges, each of said panels tensionally connected between adjacent frame members, said side edges of said panels connected in said recess formed by said frame member and said support means,

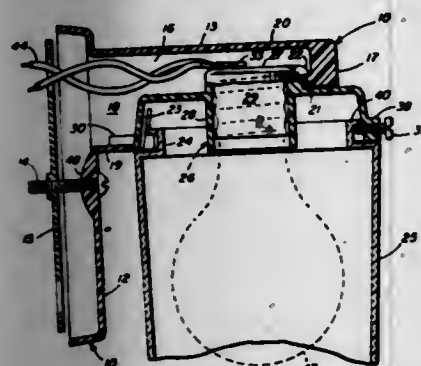
said first frame member is a rigid tubular frame member having a slot disposed along a longitudinal portion, said support means is a plurality of flexible connectors, each flexible connector having first and second arcuate walls connected by a generally straight wall positioned so that said first arcuate wall provides gripping jaws in relation to the outside surface of said frame member, and said second arcuate wall being positioned on the inside of said frame member.

4,245,284
ELECTRIC LIGHTING FIXTURE AND GLOBE SUPPORT
Kenneth M. Moore, Parkersburg, W. Va., and Frank N. Cotten, Cincinnati, Ohio, assignors to Union Insulating Company, Parkersburg, W. Va.

Filed Jan. 13, 1979, Ser. No. 48,210
Int. Cl.³ F21V 3/00

U.S. Cl. 362—311

3 Claims



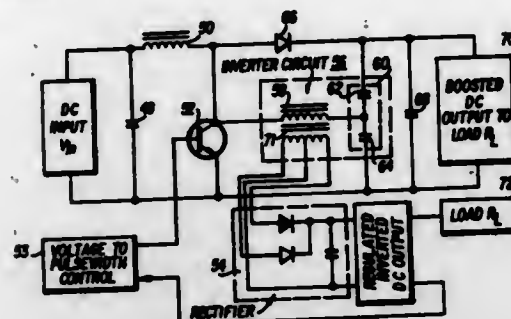
1. An electric lighting fixture comprising: a base section having an attaching portion and an integral arm projecting outwardly therefrom; said arm being hollow and having a top wall, a closed outer end wall, side walls, and a short bottom wall connecting the portions of said side walls adjacent to the attaching portion of said base section; said outer end wall, short bottom wall, and side walls providing said arm with a downwardly facing opening; said outer end wall having a first latching means comprising a protrusion integral therewith and extending into said opening; a pair of projections spaced apart on said short bottom wall of said arm; and a lamp carrying section closing the opening in said arm, the lamp carrying section comprising a top wall and depending peripheral wall of a size to receive the neck of a globe; the top wall of said lamp carrying section abutting the lower edges of said side walls, the bottom edge of said end wall, and the outer edge of said short bottom wall of said arm; said lamp carrying section including a lamp socket housing disposed in the top wall of said lamp carrying section; a pair of slots in said depending peripheral wall spaced apart to receive said pair of projections, said pair of projections and said pair of slots coacting to provide support for the lamp carrying section adjacent to the short bottom wall of said arm; said slots having a region of a first width to receive said projections and a region of a second narrow width whereby there is provided between said pair of slots a resilient section in said depending peripheral wall; and a second latching means comprising a protrusion integral with said lamp carrying section; whereby said resilient section of said depending peripheral wall bears flexibly against the front edge of said short bottom wall, urging said second latching means toward said first latching means, said first and second latching means coacting to provide support for the lamp carrying section adjacent to the outer end wall of said arm.

4,245,285
BOOSTER-INVERTER POWER SUPPLY CIRCUIT
Ernest Weiss, Coral Springs, Fla., assignor to Barron's Corporation, Detroit, Mich.

Filed Aug. 31, 1979, Ser. No. 71,525
Int. Cl.³ H02P 13/22; H02M 3/335

9 Claims

U.S. Cl. 363—17



1. In a booster-inverter power supply circuit including an unregulated DC input, a booster choke for receiving the DC input, a switch for controlling the booster choke, a voltage to pulsewidth control connected to said switch for controlling said switch, an AC to DC converter for providing a DC to said voltage to pulsewidth control and an output circuit having an output diode, the improvement comprising: an inverter circuit having an inverter transformer and a voltage control circuit, the inverter transformer connected at one end to said switch, said booster choke, and said output diode, said switch controlling the voltage on said inverter transformer, the output of said inverter transformer being a regulated AC output fed to said AC to DC converter, said voltage control circuit being connected to other end of said inverter transformer for maintaining a constant voltage.

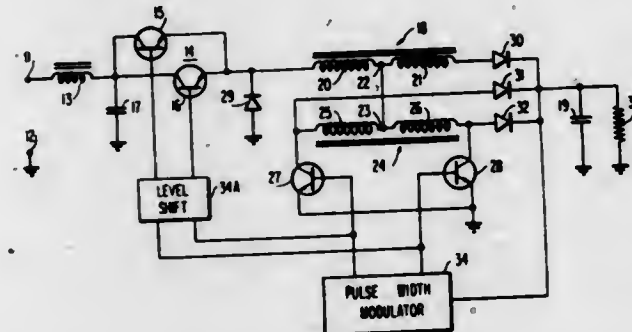
4,245,286
BUCK/BOOST REGULATOR
John Paulkovich, Lanham, and G. Ernest Rodriguez, Silver Spring, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 21, 1979, Ser. No. 41,164

Int. Cl.³ H02M 3/335

8 Claims

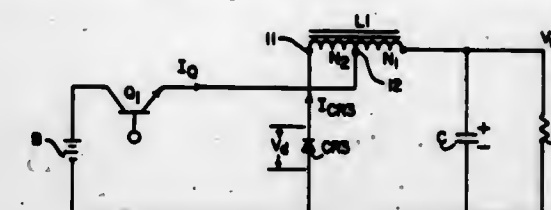
U.S. Cl. 363—21



1. A voltage regulated DC to DC converter operable over a wide range of input voltage including voltages greater or less than the desired output voltage comprising: an inductor comprising two windings having a number of turns N1 and N2, respectively, one end of each winding being connected to a common junction, a transformer having first and second windings each having a number of turns N1 and one end connected to a center tap, said center tap being connected to said common junction, a storage capacitor connected between the output of said converter and ground, a first diode connected between the inductor winding having N2 turns and said storage capacitor,

a second diode connected between said first transformer winding and said storage capacitor, a third diode connected between said second transformer winding and said storage capacitor, a fourth diode connected between the inductor winding having N1 turns and ground, first switch means connected between a source of said input voltage and the junction between said inductor and said fourth diode, second switch means connected between said first transformer winding and ground, third switch means connected between said second transformer winding and ground, and pulse width modulating means connected to said output of said converter and to each of said first, second, and third switch means for alternately closing and then opening said second and third switch means and closing said first switch means each time either of said second or third switch means are closed, the duty cycle of the closing and opening of the said switch means being adjusted by said pulse width modulator to regulate said output voltage.

being polarized to conduct return current through said load when said switching power transistor is off, whereby current



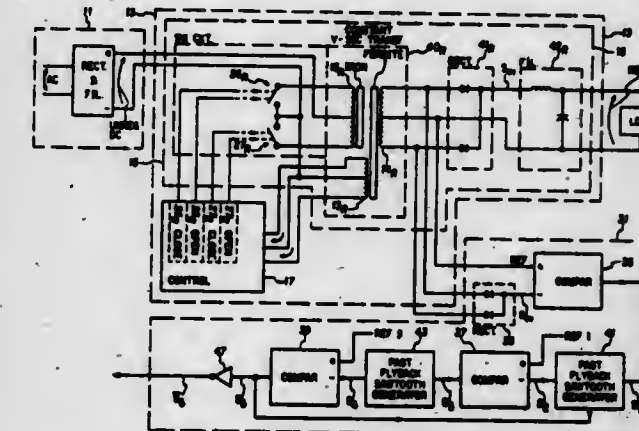
spikes due to minority-carrier sweepout time in the commutating diode is eliminated.

4,245,289
POWER SUPPLY MONITOR
David W. Mineck, Cedar Rapids, and Glen E. Mohr, Walker, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 25, 1978, Ser. No. 954,394
Int. Cl.³ H02P 13/18

U.S. Cl. 363—41

16 Claims



1. Apparatus comprising (i) duty cycle modulated power regulating means for, in accordance with a duty cycle, alternately allowing, for a variable time T_x , and inhibiting, for a variable time T_y , contribution of an unregulated DC source to the regulating means output, said T_x varying in response to variation in said unregulated DC source so that a substantially constant voltage-time area per $(T_x + T_y)$ interval is maintained at the regulating means output, and (ii) detection means for monitoring said duty cycle and providing a signal indicative of the value of said duty cycle.

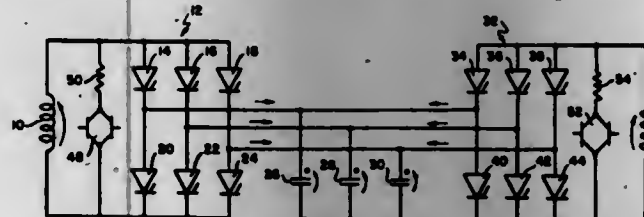
4,245,287
METHOD OF CONTROLLING SWITCHING OF A MULTIPHASE INDUCTOR-CONVERTER BRIDGE
Robert L. Keston, Palos Heights, and Raymond E. Fuja, Justice, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 28, 1979, Ser. No. 16,037

Int. Cl.³ H02J 15/00

U.S. Cl. 363—27

7 Claims



1. A method of obtaining a desired change in the rate of energy transfer in an inductor-converter circuit in which a storage inductor is connected to a storage thyristor bridge, thence through commutating capacitors to a load thyristor bridge, thence to a load inductor, the method comprising: determining a desired change in phase angle corresponding to the desired change in the rate of energy transfer; changing phase of one of the thyristor bridges by one-half the desired change in phase angle at an arbitrary time; and changing phase of the one of the thyristor bridges by one-half the desired change in phase angle at an angle that is one-half cycle later in time than the arbitrary time.

4,245,288
ELIMINATION OF CURRENT SPIKES IN BUCK POWER CONVERTERS

Robert A. Froesch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and William T. McLyman, Lakewood, Calif.

Filed Oct. 31, 1978, Ser. No. 956,166

Int. Cl.³ H02M 1/14

U.S. Cl. 363—40

7 Claims

1. A buck converter having at least one switching power transistor for coupling a source of DC power to a load through an inductance in series with the load, and having at least one commutating diode for shunting the input of said inductance to the return current path of said load when said switching power transistor is off, the improvement comprising a tapped inductor for said inductor with a coupling from the tap thereof to said transistor and a connection of said commutating diode to one end of said tapped inductor remote from said load, said diode

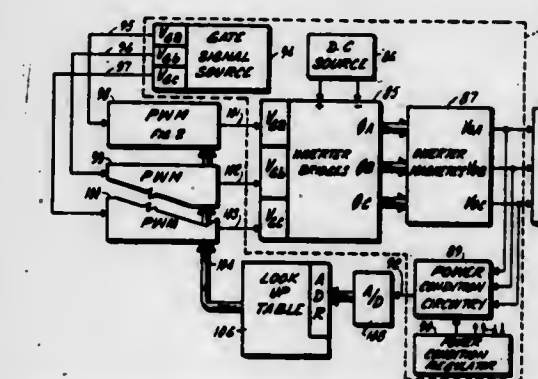
4,245,290
SLIDING NOTCH PULSE WIDTH MODULATION (PWM)
Kenneth Lipman, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 18, 1978, Ser. No. 970,765

Int. Cl.³ H02M 1/12

U.S. Cl. 363—41

3 Claims



1. Apparatus for regulating the RMS voltage value of an

output sine wave signal from an inverter by pulse width modulation of the rectangular output signal of the inverter bridge in response to a control signal at a magnitude representative of a selected RMS value, the bridge providing the output signal at a waveform and frequency in dependence on rectangular waveform gate signals presented from a gate signal source to a gate input of the bridge, the apparatus comprising:

look-up table means for storing a plurality of information sets and responsive to the control signal presented thereto, each information set being associated with a particular control signal magnitude and each information set defining the pulse width and location of a single pulse width modulation notch with respect to each half cycle of the rectangular waveform gate signals, said look-up table means providing the associated one of said plurality of information sets at an output thereof in response to the presence of the particular control signal magnitude at an input thereof; and

pulse width modulation means, interconnected between the inverter gate signal source and the inverter bridge and responsive to the rectangular gate signals and to said information sets from said look-up table means, for providing pulse width modulation of the gate signals with a single pulse width modulation notch at a pulse width and location in each half cycle in dependence on that defined by a present information set, said modulation means presenting said modulated gate signal to the inverter bridge to provide pulse width modulation of the output signal in dependence thereof.

4,245,291

ELECTRIC POWER CONVERTER APPARATUS FOR AN A.C. ELECTRIC ROLLING STOCK

Yoshio Tsutsui, Katsuta; Kyoza Tachibana, Yokohama, and Hiroaki Ishikawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

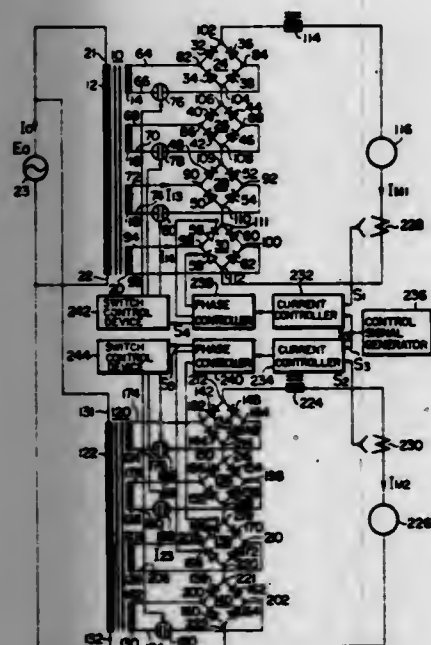
Filed May 23, 1979, Ser. No. 41,886

Claims priority, application Japan, May 25, 1978, 53-61687; Jul. 26, 1978, 53-90420

Int. Cl.³ H02M 7/19; H02P 13/16

U.S. Cl. 363-68

3 Claims



1. A power converter apparatus for an a.c. electric rolling stock comprising
a first transformer including a primary winding and a plurality of secondary windings, said secondary windings having different internal reactances,
a single-phase a.c. power source connected to said primary winding of said first transformer,
first rectifier means including the same number of bridge rectifier circuits as said secondary windings, said bridge rectifier circuits having a.c. terminals connected to their associated secondary windings of said first transformer

and d.c. terminals connected together in series between d.c. output terminals of said first rectifier means, one of said bridge rectifier circuits being a first phase-controlled bridge rectifier circuit including at least two thyristors, and the others of said bridge rectifier circuits being non-phase-controlled bridge rectifier circuits,

first load means connected between the d.c. output terminals of said first rectifier means,

first phase control means having a plurality of output terminals connected to the gate terminals of their associated thyristors of said first phase-controlled bridge rectifier circuit, said first phase control means including means for generating a first switch command and simultaneously returning phase control angles of the thyristors of said first phase-controlled bridge rectifier circuit to maximum phases when the phase control angles of said thyristors reach minimum phases,

first switching means responsive to the first switch command for allowing one of said non-phase-controlled bridge rectifier circuits of said first rectifier means to produce its maximum d.c. output voltage,

a second transformer including a primary winding connected together with the primary winding of said first transformer to said single-phase a.c. power source, and the same number of secondary windings as those of said first transformer, said secondary windings of said second transformer having the same internal reactances and output voltages as those of said first transformer,

second rectifier means including the same number of bridge rectifier circuits as said secondary windings of said second transformer, said bridge rectifier circuits having a.c. terminals connected to their associated secondary windings of said second transformer and d.c. terminals connected together in series between d.c. output terminals of said second rectifier means, one of said bridge rectifier circuits being a second phase-controlled bridge rectifier circuit including at least two thyristors, the secondary winding connected to said second phase-controlled bridge rectifier circuit being different in internal reactance from said secondary winding connected to said first phase-controlled bridge rectifier circuit, and the others of said bridge rectifier circuits being non-phase-controlled bridge rectifier circuits,

second load means connected between the d.c. output terminals of said second rectifier means,

second phase control means having a plurality of output terminals connected to the gate terminals of their associated thyristors of said second phase-controlled bridge rectifier circuit, said second phase control means including means for generating a second switch command and simultaneously returning phase control angles of the thyristors of said second phase-controlled bridge rectifier circuit to maximum phases when the phase control angles of said thyristors reach minimum phases, and

second switching means responsive to the second switch command for allowing one of said non-phase-controlled bridge rectifier circuits of said second rectifier means to produce its maximum d.c. output voltage.

4,245,292 **METHOD OF DIGITAL CONTROL OF M-PHASE THYRISTOR-PULSE D-C CONVERTERS AND APPARATUS FOR EFFECTING SAME**

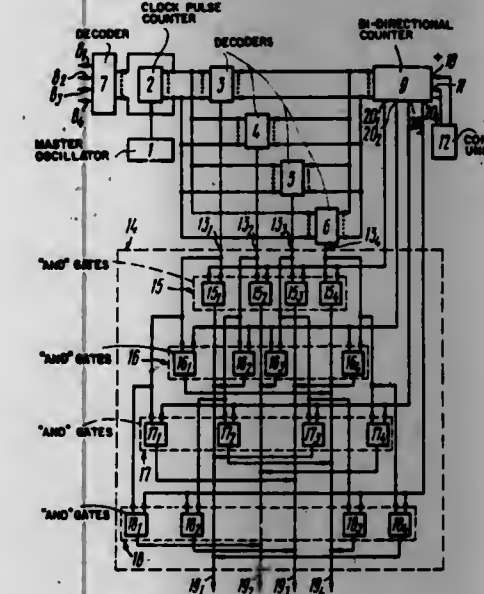
Anatoly Y. Kalinichenko, Orekhovo-Zavensky proezd, 6, kv. 16; Viktor I. Kirillov, Volgogradsky prospekt, 118/7, korpus 1, kv. 47; Aron A. Rablavin, ulitsa Lobanova, 2/21, kv. 107; Vladimir V. Maleev, Grokholsky pereulok, 30, korpus 1, kv. 97, and Vagiz S. Saknnev, Ferganskyy proezd, 7, korpus 1, kv. 112, all of Moscow, U.S.S.R.

Filed Aug. 15, 1978, Ser. No. 934,052

Int. Cl.³ H02P 13/24

U.S. Cl. 363-87

3 Claims



1. A method of digital control of thyristors of m-phase thyristor-pulse d-c converters, comprising:
generating time-shifted and time-constant pulse trains in each of "m" control channels within the control zone of each control channel;
successively connecting each of said control channels to said thyristors of a respective phase of said m-phase thyristor-pulse converter upon achieving the maximum limit of the control zone for each of said control channels within the entire control zone; and
changing the duration of the conductive state of said thyristors by feeding them with said pulse trains from each control channel, while simultaneously shifting the onset of operation of each said phase of said m-phase thyristor-pulse d-c converter by $(1/m)T$, where m is the number of phases of the thyristor-pulse d-c converter and T is the switching period of said thyristors.

4,245,293

POWER CONVERTER SYSTEM

Mutsuhito Teranuma, Mito; Setya Shima, and Kunio Saito, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

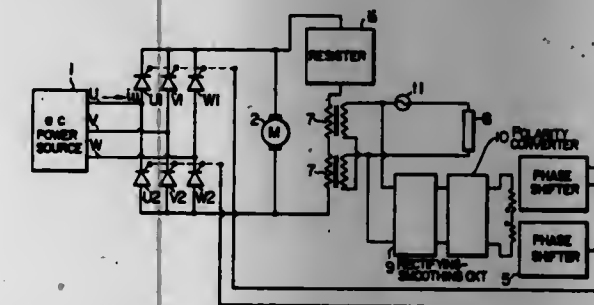
Filed Oct. 6, 1978, Ser. No. 949,120

Claims priority, application Japan, Oct. 8, 1977, 52-121257

Int. Cl.³ H02P 13/26

U.S. Cl. 363-87

8 Claims



1. In a power converter system comprising a polyphase full-wave bridge circuit having thyristors connected in all of

bridge arms, a polyphase ac power source connected to the ac terminal of the polyphase full-wave bridge circuit, a dc load connected across dc terminals of the polyphase full-wave bridge circuit, and means for controlling the firing of the thyristors, the improvement wherein said thyristor firing controlling means comprises first firing controlling means having a short-circuiting mode in which within a range of small absolute value of the dc output voltage from said polyphase full-wave bridge circuit, the dc terminals of said polyphase full-wave bridge circuit are short-circuited through two thyristors connected in series in said polyphase full-wave bridge circuit, and second firing controlling means not having said short-circuiting mode within a range of large absolute values of said dc output voltage.

4,245,294

POWER SUPPLY PROVIDING CONSTANT POWER OUTPUT

Stephen J. Brolin, Livingston, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,377

Int. Cl.³ H02M 7/06

U.S. Cl. 363-126

7 Claims



1. A power supply of the type comprising an alternating polarity source feeding a combination of rectifier means and inductor means serially connected between said rectifier means and a load resistance, characterized by capacitor means interposed in series relation between said source and said rectifier, wherein the power dissipated in said load resistance is constant for resistance values below $1/(4fC)$, f being the frequency of said source and C being the capacitance of said capacitor.

4,245,295

APPARATUS FOR THE CONTROLLED VOLTAGE SUPPLY OF D.C. DRIVES

Georg F. Götz, Bubenreuth, and Hans Gross, Neunkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,768

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742973

Int. Cl.³ H02M 7/155

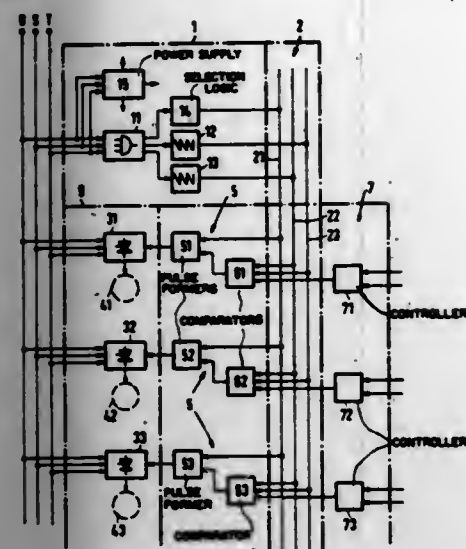
U.S. Cl. 363-129

1 Claim

1. An apparatus for providing controlled DC voltage to at least two DC drive motors for machine tools and the like, comprising

each drive motor being coupled via a thyristor frequency converter to a three-phase supply network and each converter having a control unit,
a first integrator for providing a sawtooth voltage for controlling the thyristors associated with all negative half-waves of the three phase supply voltages in all the frequency converters,
a second sawtooth integrator for providing a saw-tooth voltage for controlling the thyristors associated with all positive half-waves of the three-phase supply voltages in all the frequency converters,

a selection logic circuit for phase-dependent release of the thyristors,



and a multi-conductor bus coupling the integrators and the selection logic circuit to the control units of the converters.

4,245,296

MEANS AND METHOD FOR CONTROLLING THE OPERATION OF AN APPLIANCE AND THE LIKE

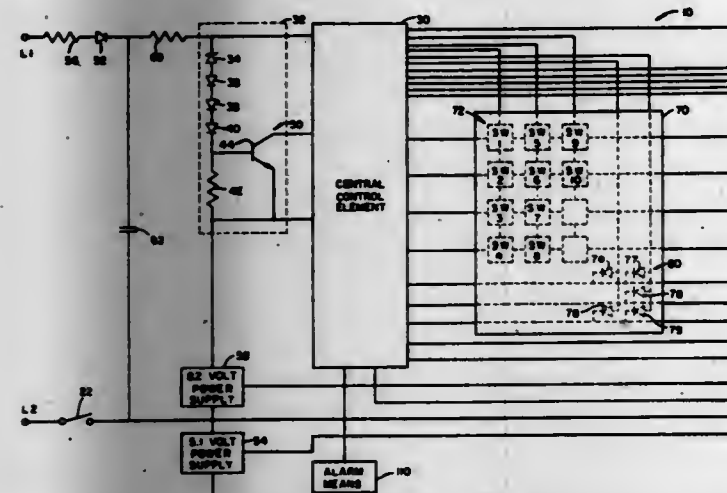
James E. Small, Indianapolis, and Mark E. David, New Palestine, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Dec. 11, 1978, Ser. No. 968,285

Int. Cl.³ G05B 19/08; G06F 15/46; H01H 43/04

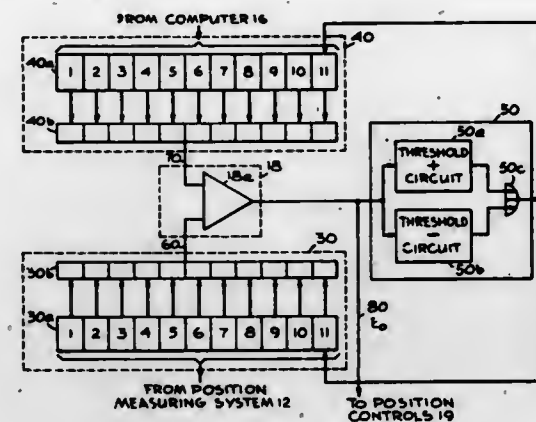
U.S. Cl. 364-104

2 Claims



2. A method for controlling the cycle of operation of the heating function of a microwave oven comprising the steps of: storing a repertoire of instructions and a plurality of indices of fixed time periods in a microcomputer memory of a control element; determining one index from said plurality of indices for use by said control element in controlling said cycle of operation; determining a plurality of variable time periods independently of said fixed time periods stored in said microcomputer memory; allowing selection of a period from said determined index of fixed periods and said plurality of variable periods for controlling said cycle of operation of said heating function; and controlling said cycle of operation of said heating function in response to a selection of one of either said fixed periods or said variable periods.

4,245,297
POSITIONING CONTROL SYSTEM
Sidney Bertram, Los Angeles, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Jul. 27, 1964, Ser. No. 385,252
Int. Cl.³ G05B 19/21
U.S. Cl. 364-118 9 Claims



1. In a system wherein an element is positionable in response to a first set of positioning digital signals of N bit accuracy and wherein the position of the element is indicated by a second set of digital signals of N bit accuracy, the arrangement comprising: first means for converting the positioning digital signals in M least significant bits of the first set of digital signals of N bit accuracy into a related first analog signal, M being smaller than N and selected so that digital signals converted therein are indicative of a position magnitude which is at least twice as great as a maximum allowable difference in the positions indicated by said first and second sets of digital signals; second means for converting the digital signals in the M least significant bits of the second set of digital signals of N bit accuracy into a related second analog signal; means for providing a first output signal substantially equal to the difference between said first and second analog signals; means for providing a second output signal whenever the level of said first output signal is substantially equal to or greater than a predetermined threshold level which is at least equal to the level of a signal indicative of a position range corresponding to said maximum allowable difference in the positions indicated by said first and second sets of digital signals; and means responsive to said second output signal for complementing the most significant bit of each group of said M bits in said first and second means.

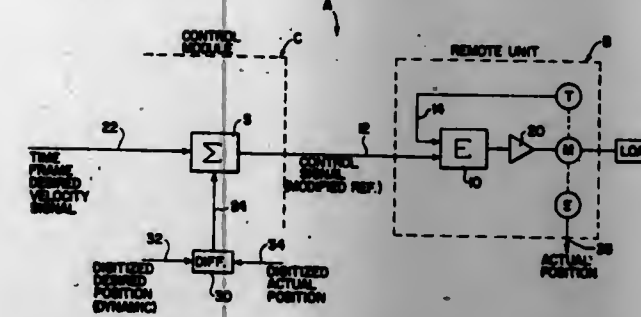
4,245,298
SYSTEM FOR CREATING A SERVO CONTROL SIGNAL
Dan Slater, La Habra, Calif., assignor to Magcam, Inc., Hollywood, Calif.
Filed Jan. 15, 1979, Ser. No. 3,742
Int. Cl.³ G06F 15/46

U.S. Cl. 364-118

28 Claims

14. A system for creating a control reference signal for a remote electrical servo device having a movable output unit wherein the velocity and position of said output unit are controlled by the magnitude of said control reference signal, said system operable over a cycle including a number of separate controlled time intervals including means responsive to a binary code for creating a first fixed analog signal indicative of a fixed velocity of said unit during a preselected controlled time interval; means for creating a desired time base positional profile in digital form during said time interval; means for detecting the actual time base positional profile of said unit during said time interval; means for creating a digital representation of said actual profile; means for creating a second analog

signal generally proportional to the algebraic difference between said digital actual profile and said digital desired time base positional profiles at various times during said interval;

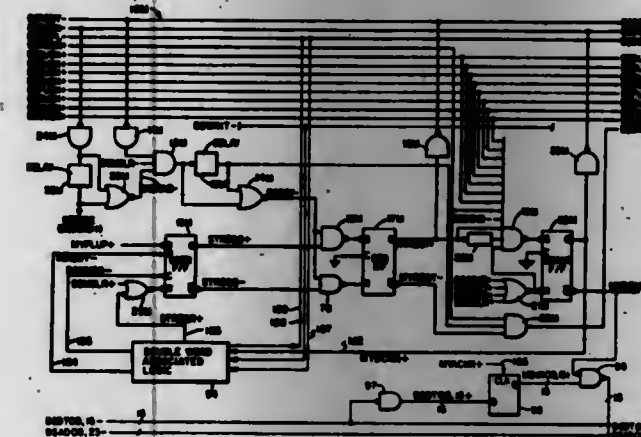


means for creating said control reference signal as a function of said first and second analog signals; and means for changing said binary code for successive time intervals of said cycle.

4,245,299
SYSTEM PROVIDING ADAPTIVE RESPONSE IN INFORMATION REQUESTING UNIT
William E. Woods, Natick; Richard A. Lemay, Bolton, and John L. Curley, Sudbury, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 5, 1978, Ser. No. 867,262
Int. Cl.³ G06F 3/04; G08C 15/00

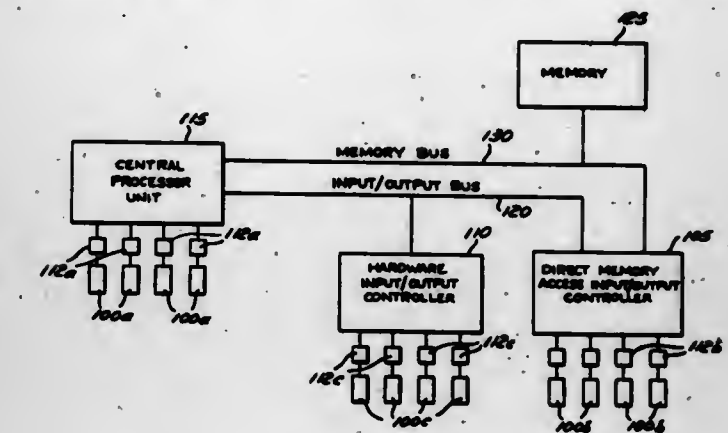
U.S. Cl. 364-200

13 Claims



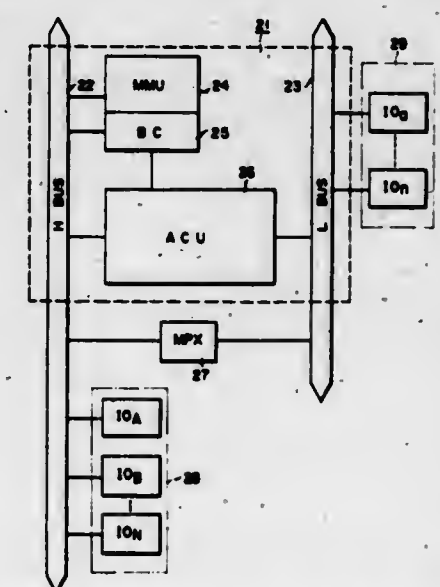
1. In a system including a plurality of units coupled to transfer information over a common bus between any two of said plurality of units asynchronously generated information transfer cycles, the combination comprising:
 - A. request means included in a first unit of said plurality of units for transmitting a fetch request during a first information transfer cycle via said common bus to another unit of said plurality of units, said fetch request including a multiple fetch signal calling for multiple parts of response information;
 - B. fetch means included in said other unit for fetching response information in response to said fetch request;
 - C. response means cooperating with said fetch means for enabling transfer of said response information to said first unit via said common bus, said response means including cycle means responsive to said multiple fetch signal for timing the transfer of said response information to occur during a predetermined number of responding transfer cycles greater than one;
 - D. control means included in said response means for controlling said cycle means in response to a predetermined condition of said fetch means to time the transfer of said response information to occur during a number of responding transfer cycles less than said predetermined number; and
 - E. means included in said response means for incorporating in said response information a signal identifying the last of said responding transfer cycles.

4,245,300
INTEGRATED AND DISTRIBUTED INPUT/OUTPUT SYSTEM FOR A COMPUTER
Phillip A. Kaufman, Saratoga, and Jerry R. Washburn, Mission Viejo, both of Calif., assignors to Computer Automation, Irvine, Calif.
Filed Jan. 5, 1978, Ser. No. 912,852
Int. Cl.³ G06F 3/00
U.S. Cl. 364-200 16 Claims



1. A computer system comprising: a computer including a central processor and a memory; a first plurality of peripheral devices; controller means connected to said computer and to said first plurality of peripheral devices for selecting and prioritizing data transfers with said first plurality of peripheral devices in accordance with instructions stored in said memory and a command from said central processor; and a second plurality of peripheral devices connected to said central processor, said central processor selecting and prioritizing data transfers with said second plurality of peripheral devices in accordance with instructions stored in said memory.

4,245,301
INFORMATION PROCESSING SYSTEM
Takashi Rokutanda, Tachikawa; Yukio Shiraogawa, Kunitachi; Yutaka Nakajima, Koganei; Keizo Aoyagi, and Takashi Hiraoka, both of Fuchu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Aug. 2, 1978, Ser. No. 930,406
Claims priority, application Japan, Aug. 3, 1977, 52-92572
Int. Cl.³ G06F 9/46, 15/16
U.S. Cl. 364-200 10 Claims



1. An information processing system including a main memory unit, arithmetic control unit and a plurality of input/output units; a first bidirectional bus through which said main memory

- (c) connection means between said plurality of memory-module-system-controllers for interchange of data and control signals, said connection means including:
- (c1) a system communication-control bus;
 - (c2) a memory repeater bus;
- (d) means to provide a system name to a system-group of processors, wherein said system name is indicative of the hierarchical level of each system-group in the network;
- (e) means, in said system control unit, for a sender processor to communicate with a plurality of processors by addressing them via a system name;
- (f) means, in said system control unit, to select, from those processors having the addressed system name, the first processor which is idle, said first idle processor being selected to receive a message from said sender processor.

4,245,307

CONTROLLER FOR DATA PROCESSING SYSTEM

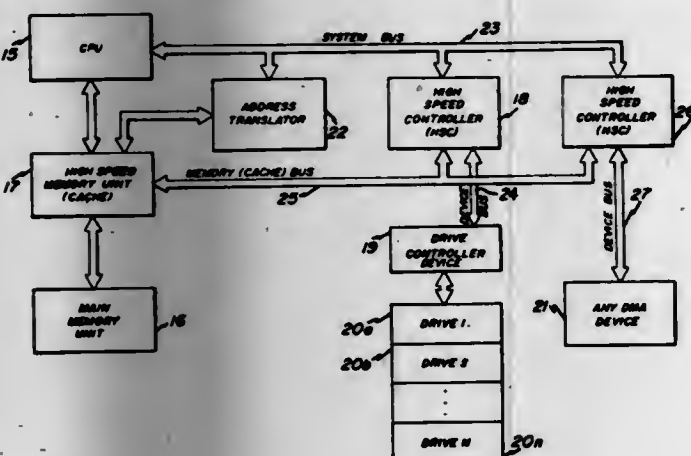
Charles L. Kapachian, Vincentown; Charles C. Garman, Palmyra, and Paul R. Malneti, Delran, all of N.J., assignors to Formation, Inc., Mount Laurel, N.J.

Continuation of Ser. No. 836,071, Sep. 22, 1977, abandoned. This application Sep. 14, 1979, Ser. No. 75,419

Int. Cl.³ G06F 13/00

U.S. Cl. 364-200

15 Claims



1. A controller system for use in a data processing system having a CPU, a main memory, a high speed memory and a cache bus, the controller system having a high speed controller, a drive controller and a device bus coupled to and between said high speed controller and said drive controller for handling data, address and control signals, said drive controller coupled to a plurality of secondary storage devices each having storage media, the system bus coupled to and between the CPU and the high speed controller and having the same data, address and control formats as the device bus where said data is the data stored on the device storage media, the high speed memory coupled to and between the CPU and the main memory, and the cache bus coupled to and between the high speed memory and the high speed controller for handling data, address and control signals comprising

- (a) (1) means for varying the timing of the control and address signals provided by the drive controller on the device bus for timing compatibility with the control and address signals on the system bus whereby the drive controller seizes control over the system bus to initiate a transfer of data between the storage devices and the system bus,
- (2) the drive controller including means for assembling and reformatting bytes of data from the storage media and producing address and control signals in the format of the system bus whereby such data is transferred between the storage devices and the system bus,
- (b) (1) means for varying the timing of the control and address signals provided by the system bus when the drive controller has relinquished control over the system bus upon completion of said data transfer,
- (2) said drive controller including means for accepting ad-

- dress and control signals in the format of the system bus, and
- (c) means for transferring address, data and control signals between the device bus and the cache bus.

4,245,308

INTELLIGENT DATA PROCESSING TERMINAL HAVING AN INTERLOCK SYSTEM

Joel A. Hirschman, San Jose, Calif.; Roger J. Llewellyn, Winchester, and Anthony H. Rogers, Ramsey, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

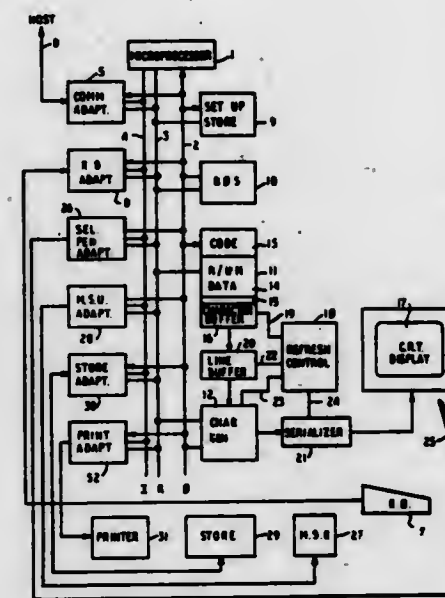
Filed Sep. 25, 1979, Ser. No. 78,760

Claims priority, application United Kingdom, Oct. 2, 1978, 39002/78

Int. Cl.³ G06F 9/46, 3/02

U.S. Cl. 364-200

8 Claims



1. In a data processing system including a data processor, a data processing terminal for communicating with said data processor, comprising:

- a set-up store for storing therein terminal-characterizing information including a keyboard language indicator;
- a keyboard including a first set of keys for storing said keyboard language indicator in said set-up store and a second set of keys for communicating with said data processor in the keyboard language; and
- a terminal controller connected to said set-up store and said keyboard for controlling the operation of said terminal comprising:
 - means for detecting the absence of said keyboard language indicator in said set-up store,
 - means for enabling operation of said first set of keys consequent upon said detecting means detecting the absence of said keyboard language indicator in said set-up store; and
 - means for disabling operation of said second set of keys to thereby disable communication with said data processor, consequent upon said detecting means detecting the absence of said keyboard language indicator in said set-up store.

4,245,309

MICROPROCESSOR BASED CONTROL CIRCUIT FOR WASHING APPLIANCES WITH DIAGNOSTIC SYSTEM

George E. Kiefer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 18, 1978, Ser. No. 970,695

Int. Cl.³ G05B 19/04; G06F 11/22, 15/46

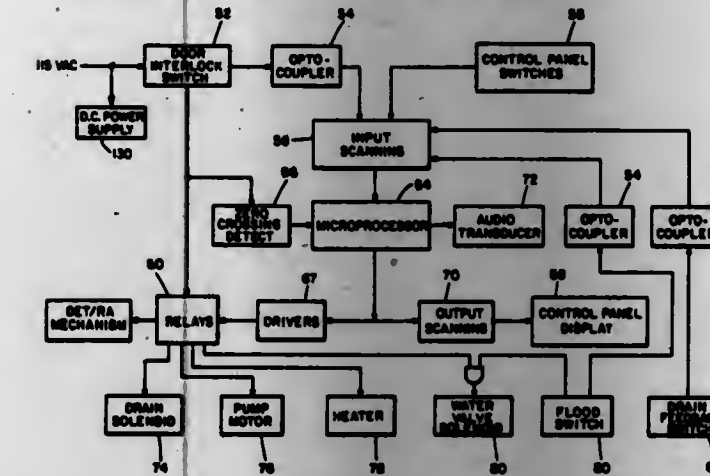
U.S. Cl. 364-400

8 Claims

1. A control circuit for permitting a user to selectively operate a washing appliance having electromechanical means for

filling, circulating, and draining water in said appliance, said circuit comprising:

- (a) a microprocessor including a read only memory having a supervisory program stored therein,
- (b) input means permitting user selection of desired operation cycles and including means for communication with said microprocessor to permit the latter to determine the cycle selected by the user, said microprocessor controlling said electromechanical means responsive to said user selected cycles,
- (c) display means for providing the user with information regarding the operating state of the appliance,



- (d) means for interconnecting said display means to said microprocessor, said microprocessor periodically updating said display means during operation of said appliance,
- (e) diagnostic means for verifying correct operation of said appliance, operative to sequentially actuate said electromechanical means to initiate the operating cycles provided by each of said electromechanical means,
- (f) means for initiating operation of said diagnostic means in response to operator input, and
- (g) means for selectively canceling operation of desired ones of said electromechanical means.

4,245,310

MICROPROCESSOR BASED CONTROL CIRCUIT FOR WASHING APPLIANCES WITH OVERFILL PROTECTION

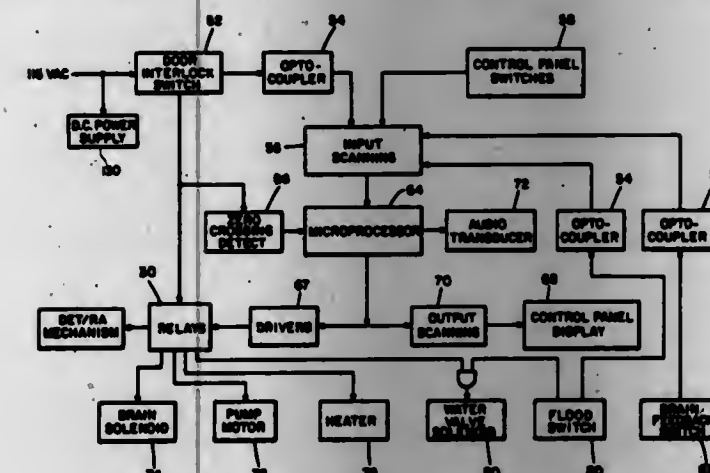
George E. Kiefer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 18, 1978, Ser. No. 970,696

Int. Cl.³ G05B 19/04; G06F 15/46

U.S. Cl. 364-400

9 Claims



1. A control circuit for permitting a user to selectively operate a washing appliance having electro-mechanical means for filling, circulating and draining water in said appliance, said circuit comprising:

- (a) control means for controlling said electromechanical means,

- (b) connecting means adapted for connecting said control means to an external power supply,
 - (c) input means permitting user selection of desired operating cycles and including means for communicating with said control means to permit said control means to determine the cycles selected by the user for controlling said electro-mechanical means in accordance therewith,
 - (d) overflow means for detecting excess water in said appliance and producing an electrical signal indicative thereof, said control means including means for detecting said signal and responsive thereto
- said overflow means being operative to produce said signal and said control means being operative in response thereto to initiate operation of the draining means at any time provided said connecting means is operatively coupled to the external power supply; the duration of the period in which draining is enabled by said control means in response to said signal being determined by the duration of said signal.

4,245,311

ELECTRONIC CASH REGISTER

Goshi Nakamura, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 8,888

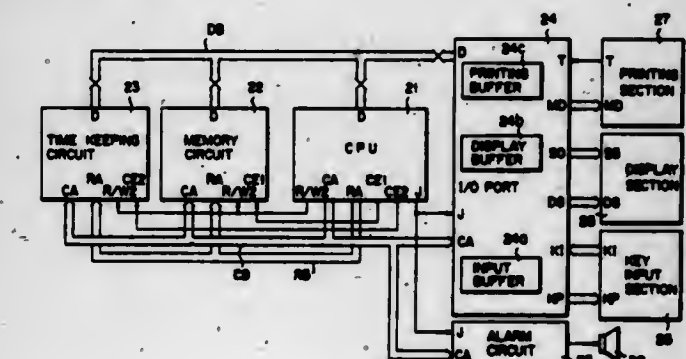
Claims priority, application Japan, Feb. 10, 1978, 53-14346;

Feb. 10, 1978, 53-14347

Int. Cl.³ G06F 15/21, 15/02

U.S. Cl. 364-405

3 Claims



1. An electronic cash register comprising:

- a keyboard having data input keys for inputting numeral data, a registration complete key for completing a registration operation and issuing a receipt and a time display key for instructing a time indication;
- a central processing unit coupled to said keyboard;
- memory means coupled to said central processing unit and having means for storing input data therein;
- a printing section coupled to said memory means for printing said input data;
- a flag memory coupled to said central processing unit and storing therein a flag indicating a time period elapsing from an operation of said registration complete key to a start of the next registration operation;
- time counting means coupled to said central processing unit and in which a present time data is set; and
- display means coupled to said memory means and to said time counting means for normally displaying input data inputted by operation of said data input keys, and for displaying present time responsive to when said time display key is operated and a flag of said flag memory indicates said time period elapsing from the operation of the registration complete key to the start of the next registration operation.

4,245,312

ELECTRONIC FUEL INJECTION COMPENSATION

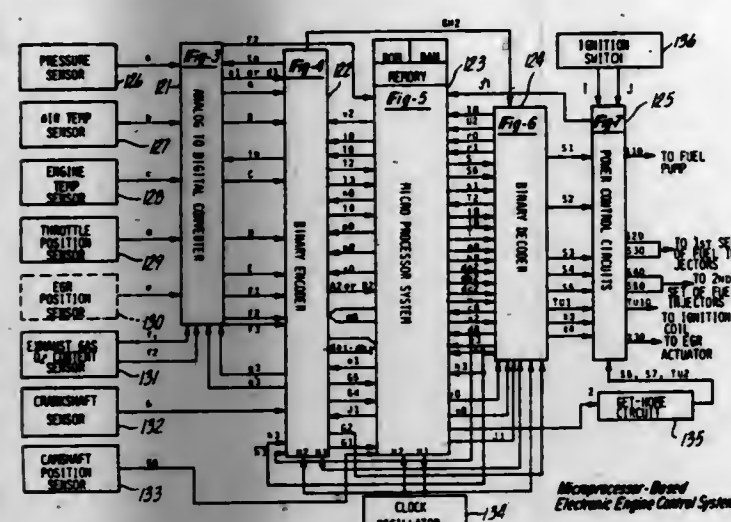
Didier J. deValpierre, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,983

Int. Cl.³ F02B 3/10; F02D 5/00; F02M 7/06

U.S. Cl. 364-431

11 Claims



1. An electronic engine control system for controlling the supply of fuel to an engine comprising means for measuring the time interval between engine position pulses and computing a digital number indicative of engine speed, computation means, memory means for storing a program for implementing at least one fuel control law, said program being executed by said computation means for implementing said at least one fuel control law to normally compute a primary fuel control pulse for controlling the supply of fuel to said engine, means for detecting engine operating conditions indicative of a need for acceleration enrichment and generating an acceleration enrichment request signal, means responsive to said acceleration enrichment request signal for addressing said memory means with said stored digital number indicative of engine speed for generating an acceleration enrichment modifier value signal which is a function of engine speed, said computational means executing said stored program for implementing said at least one fuel control law and programmably modifying the normally-computed primary fuel control pulse with said calculated acceleration enrichment modifier value signal for generating an elongated, acceleration enrichment-compensated primary fuel control pulse for controlling the supply of fuel to said engine to maintain smooth engine performance while avoiding "stumbling" and the like.

4,245,313

METHOD AND APPARATUS FOR DETERMINING CHARACTERISTICS OF SUBSURFACE EARTH FORMATIONS

George R. Coates, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,908

Claims priority, application United Kingdom, May 1, 1973, 20611/73

Int. Cl.³ G01V 3/28; G06F 15/00

U.S. Cl. 364-422

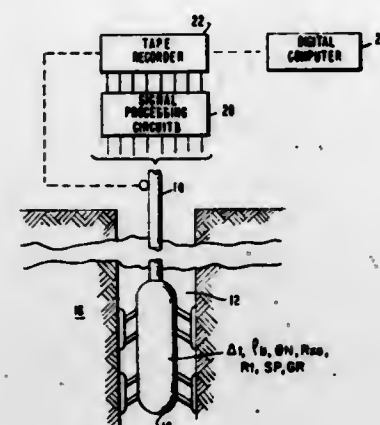
16 Claims

1. A method of machine processing well logging data to determine characteristics of subsurface earth formations, comprising:

- deriving a plurality of well logging measurements representative of various characteristics of subsurface earth formations;
- combining said measurements to produce parameters functionally related to the water resistivity, formation resistivity and the formation porosity;
- combining said parameters to produce a lithological

parameter functionally related to the formation porosity and ratio of water resistivity to formation resistivity;

- determining whether said formation is at irreducible water saturation;
- determining, if the formation is at a reducible water saturation, whether there is shale present in the formation; and



(f) combining, if there is no shale present in the formation, said lithological parameter with the parameters functionally related to the water resistivity, formation resistivity and formation porosity to obtain a parameter related to the water saturation in the formation.

4,245,314

OXYGEN SENSOR QUALIFIER

Robert S. Heinrich, Farmington Hills; Thomas W. Hartford, Livonia, and James A. Kessler, Troy, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

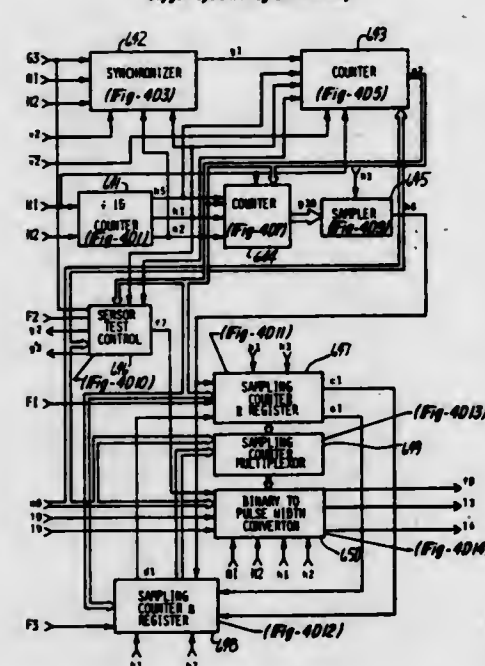
Filed Feb. 27, 1978, Ser. No. 881,922

Int. Cl.³ F02B 75/10; F02D 28/00; G01N 31/00

U.S. Cl. 364-431

10 Claims

Oxygen Sensor Qualifier Circuitry



2. In an internal combustion engine system having intake means, an exhaust system, an engine block, a plurality of cylinders disposed in said engine block, a piston operatively mounted for reciprocal movement within each of said plurality of cylinders, means for selectively controlling the quantity of air supplied from said intake means to a selected one or more of said plurality of cylinders, means for selectively supplying a controlled quantity of fuel into a selected one or more of said plurality of cylinders to establish a predetermined air-fuel mixture in said exhaust system in response to the combustion of said supplied fuel and air in said cylinders, an oxygen sensor feedback system including oxygen sensing means operatively

disposed at least partially within said exhaust system for measuring the relative air-fuel mixture of the gases contained therein and generating an oxygen sensor output signal indicative of either a "lean" air-fuel ratio measurement or a "rich" air-fuel ratio measurement, means responsive to said oxygen sensor output signal for generating properly amplified and shaped signals indicative of said lean and rich air-fuel ratio measurements and means responsive to said properly amplified and shaped signals for controlling at least one of said air supplying means and said fuel supplying means for controllably maintaining a predetermined desired air-fuel ratio in said internal combustion engine system in a closed loop manner, the improvement comprising:

means for generating an oxygen sensor test current for measuring the internal impedance of said oxygen sensor means as an indication of its operating temperature and generating a first test output signal indicative of a high impedance and therefore a "cold" oxygen sensor means whose output signal indicative of the measured air-fuel ratio in said exhaust system is relatively unreliable and a second test output signal indicative of a relatively lower oxygen sensor internal impedance and hence a "warm" oxygen sensor means whose output signal indicative of the measured air-fuel ratio in said exhaust system is relatively reliable;

means responsive to said first test output signal for generating an INHIBIT signal to prevent said oxygen sensor output signals indicative of said lean and rich measured air-fuel ratios from being used for control purposes and further responsive to said second test output signal for generating a SENSOR ACTIVE signal to enable said oxygen sensor output signals indicative of said lean and rich measured air-fuel ratios in said exhaust system to be used for feedback control purposes;

circuit means for preventing inter-reaction between said oxygen sensor output signals indicative of said lean and rich measured air-fuel ratios existing in said exhaust system and said oxygen sensor test output signals indicative of the reliability of said oxygen sensor means to avoid masking of the oxygen sensor output signals by said test output signals; and

selectively operable switching means for periodically generating said test current on a sampling basis wherein the duty cycle of said test current is relatively small compared to the overall operation of said oxygen sensor feedback system.

4,245,315

IGNITION LIMP HOME CIRCUIT FOR ELECTRONIC ENGINE CONTROL SYSTEMS

Alan W. Barman, Oak Park; Thomas W. Hartford, Livonia, and Robert S. Heinrich, Farmington Hills, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,984

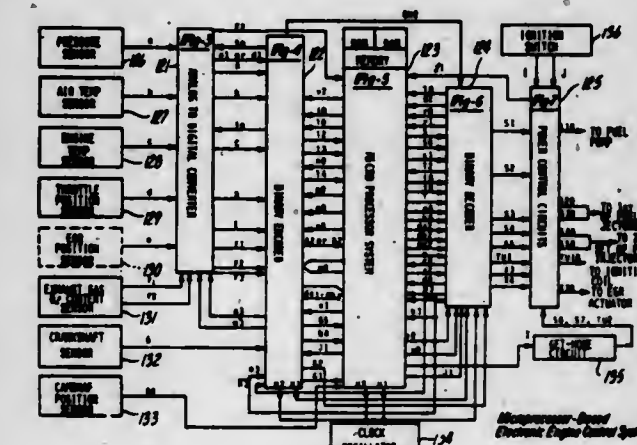
Int. Cl.³ F02P 5/08, 11/06

U.S. Cl. 364-431

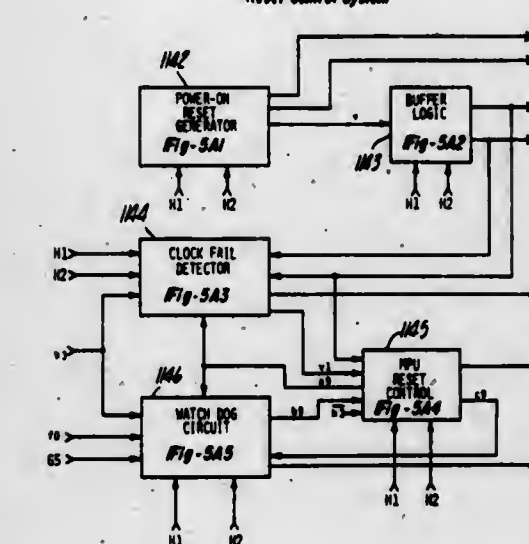
4 Claims

1. In an internal combustion engine system having an intake system, an exhaust system, an engine block, a plurality of engine cylinders disposed in said engine block, a piston operatively disposed for reciprocal movement within each of said plurality of cylinders, means for controllably supplying fuel to a selected one or more of said plurality of cylinders, means responsive to ignition control pulses for controlling the ignition of said fuel supplied to said selected one or more of said plurality of cylinders, sensor means for detecting when each of said pistons has attained a predetermined reference position within its corresponding cylinder and for generating an engine position pulse indicative thereof, said engine position pulses being representative of engine speed or period, a computer-based engine control system including computer means, memory means operatively associated with said computer means, program means stored within said memory means for implementing at least one control law, additional sensor, means associated with said engine for measuring a plurality of engine-operating parameters and generating digital words indicative

of said measured values and usable by said computer means, at least one multi-dimensional control surface to compute a modifier value functionally related to the actual measured value of said engine-operating parameter represented by said digital word and for implementing said at least one control law utilizing said computed modifier value for generating ignition control commands, means responsive to said ignition control commands for normally generating computer-calculated ignition control pulses, said means for controlling the ignition of said fuel supplied to a selected one or more of said plurality of cylinders being normally responsive to said computer-calculated ignition control pulses for controlling the time and duration of ignition in said selected one or more of said plurality of cylinders, the improvement comprising means for monitoring the normal operation of said computer means and said program means for detecting a malfunction in the operation thereof and generating a "fail" signal whenever the reliability of one or more of said computer-generated ignition control



Reset Control System



commands could be unreliable, means responsive to said engine position pulses for generating secondary ignition control pulses, and gating means responsive to the generation of said "fail" signal for terminating the supply of said normally-generated computer-calculated ignition control pulses to said ignition control means and supplying instead said secondary fuel control pulses to said ignition control means for controllably operating same so that the operation of said internal combustion engine, while degraded, is not terminated or controlled by unreliable or unsafe system commands, said computer means being responsive to the normal execution of said program means for generating a predetermined sequence of programmably spaced "operation OK" signals indicating that the operation of said computer means and said program means is normal and wherein said means for monitoring the normal operation, detecting a malfunction and generating said "fail" signal includes first counter means for counting engine position pulses, said first counter means being reset by the arrival of each subsequent "operation OK" signal for clearing and reset-

ting said first counter means but being responsive to the attainment of a predetermined failure-indicating count representative of a failure of said first counter means to receive one of said resetting "operation OK" signals during the counting of a predetermined number of said engine position pulses for generating a "fail once" signal, means responsive to said "fail once" signal for generating a "master reset" signal for resetting said computer means, second counter means responsive to said "master reset" signal for initiating a second count, said second counter means counting out a predetermined test interval, said second counter means being responsive to the resumption of normal system operating as indicated by the resumption of the generation of said "operation OK" signals resetting said first counter means and preventing said predetermined failure-indicating count from being attained during the duration of said test interval, and means responsive to said second counter means completing said test count interval without said first counter means again attaining said predetermined failure-indicating count indicating that said "master reset" operation was successful and for erasing all memory of the first failure but responsive to a second attainment of said predetermined failure-indicating count in said first counter means during said test interval of said second counter means for indicating the occurrence of two successive failures and generating said "fail" signal to indicate the unreliability of said computer-calculated ignition control pulses.

4,245,316 SYSTEM FOR PROVIDING TIME CONTROL DATA IN A NUMERICAL CONTROL SYSTEM

Noriyuki Kofukawa; Tetsuo Ohkubo, and Masashi Kawasumi, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

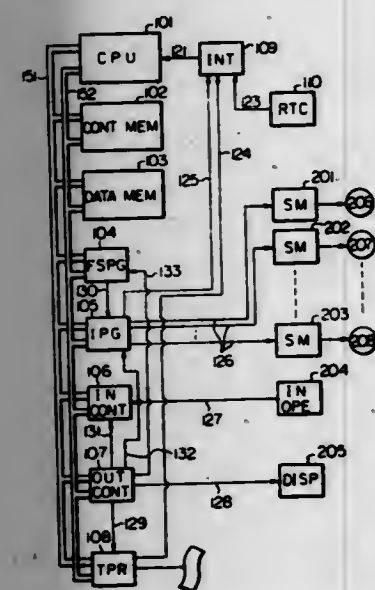
Filed Jun. 16, 1978, Ser. No. 916,223

Claims priority, application Japan, Jun. 29, 1977, 52-76591

Int. Cl.³ G06F 15/46

U.S. Cl. 364-474

8 Claims



1. A system for providing time control data in a numerical control system comprising data memory means having a plurality of flags, a flag being provided for every time control item and activated only when said item is in active operation, clock means for providing signals at predetermined intervals, input device means for inputting command information to said memory, display/alarm means for displaying content of said memory and giving warning, means for counting said clock when a flag in said memory is activated and applying result of the counting to said display/alarm means, and control means for controlling operation of the above elements.

4,245,317 START AND WARM UP FEATURES FOR ELECTRONIC FUEL MANAGEMENT SYSTEMS

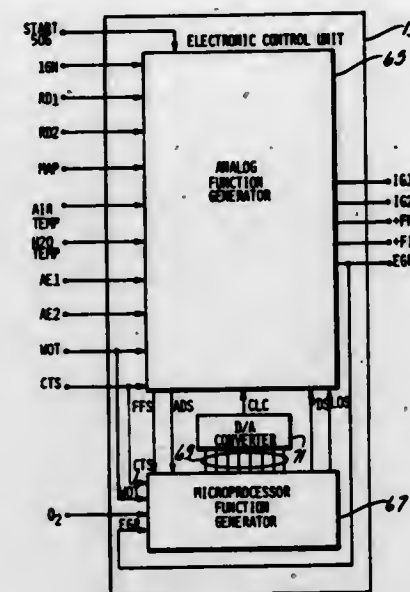
Roman O. Marchak, Northville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 22, 1978, Ser. No. 917,991

Int. Cl.³ G06F 15/20; F02B 3/00; G05B 13/02

U.S. Cl. 364-431

10 Claims



1. An electronic control unit for the management of the air/fuel ratio of an internal combustion engine, said electronic control unit comprising:
base calibration means for regulating the air/fuel ratio of the engine in response to sensed engine operating parameters indicative of the mass air flow and mass fuel flow inducted into the engine, said base calibration means regulating the air/fuel ratio by sensing one of said mass air flow and said mass fuel flow and calculating the other from a schedule of desired air/fuel ratios; and
warm-up means for enriching the air/fuel ratio during warm up periods of the internal combustion engine, including:
a first warm up current generator means for generating a first warm up current proportional to the desired warm up enrichment which is time and temperature dependent, said first warm up current having a temperature dependent holding level current which remains constant for a predetermined duration, said first warm up current then decaying to a minimum value from said holding level after the predetermined duration of the holding level has ended; and
holding defeat means for defeating said holding duration and causing said first current to decay from said holding level immediately when the temperature of the internal combustion engine is in excess of a predetermined temperature.

4,245,318 CIRCUIT BREAKER DEMONSTRATOR AND DISTRIBUTION CIRCUIT PROTECTION COORDINATOR APPARATUS

Gregory C. Eckart, Southington; Lewis W. Jacobs, Simsbury, and Morris J. Kornblit, Newington, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed May 7, 1979, Ser. No. 36,936

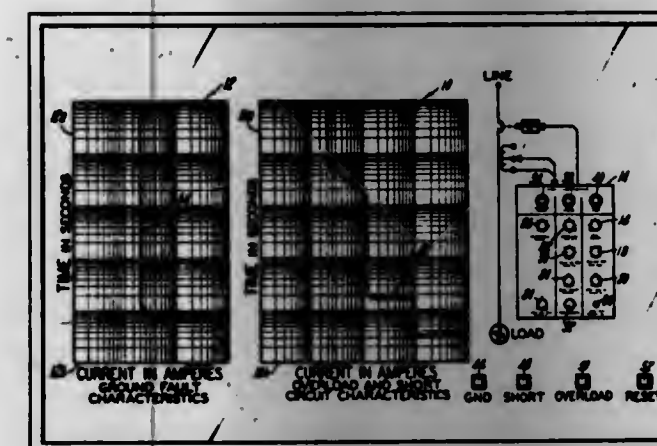
Int. Cl.³ G06G 7/62

U.S. Cl. 364-481

9 Claims

1. Apparatus for displaying the time-current response characteristics of circuit protective devices, said apparatus comprising, in combination:
A. a graphical display including a fixed vertical time coordinate in logarithmic scale and a fixed horizontal current coordinate in logarithmic scale;
B. first variable means connected to said display for selectively electrically generating for portrayal on said display a first portion of a time-current response curve representing the long time response characteristics of a selected circuit protective device;

tively electrically generating for portrayal on said display a first portion of a time-current response curve representing the long time response characteristics of a selected circuit protective device;
C. second variable means connected to said display for selectively electrically generating for portrayal on said display a second portion of said time-current response curve representing the short time response characteristics of the selected circuit protective device; and



D. third variable means connected to said display for selectively electrically generating for portrayal on said display a third portion of said time-current response curve representing the instantaneous response characteristics of the selected circuit protective device;
(1) said first, second and third curve portions as portrayed on said display providing a true and continuous graphical display in log-log coordinate scale of the selected circuit protective device's time-current response curve over the entire overcurrent range.

4,245,319 ENERGY MANAGEMENT METHOD AND APPARATUS UTILIZING DUTY CYCLE REDUCTION SYNCHRONIZED WITH THE ZERO POINTS OF THE APPLIED VOLTAGE

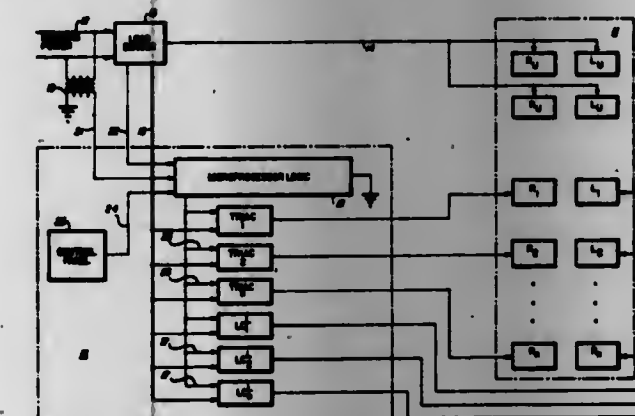
Walter P. Hodges, Laveen, Ariz., assignor to Cyborex Laboratories, Inc., Phoenix, Ariz.

Filed Mar. 19, 1979, Ser. No. 21,347

Int. Cl.³ H02J 13/00; G05B 19/00

U.S. Cl. 364-493

2 Claims



2. Energy-management apparatus for use in a demand-limited alternating current circuit, which circuit includes a plurality of separate loads, including resistive loads, and means for automatically shedding certain of said loads when the actual demand of said circuit exceeds said demand limit, said apparatus including:
(a) means for establishing a demand limit for said circuit;
(b) means for sensing the actual demand of those loads in said circuit which are in operation, including separately

sensing the demand imposed by at least certain of the operative resistive loads in said circuit; and
(c) means for reducing the duty cycle of the applied power furnished to at least certain ones of said operative resistive loads by switching said loads "off" and "on" synchronously with the zero points of the applied voltage, to effect an overall reduction in the actual demand of said circuit when the failure to make such reduction would otherwise cause certain of said operating loads to be completely shed.

4,245,320 METHOD AND DEVICE FOR MEASURING THE SLOPE OF THE ENVELOPE DELAY CHARACTERISTIC OF A TRANSMISSION CHANNEL AND THEIR APPLICATION TO AN AUTOMATIC EQUALIZER SELECTION TECHNIQUE

Andre E. Desblache, Nice, France, assignor to International Business Machines Corporation, Armonk, N.Y.

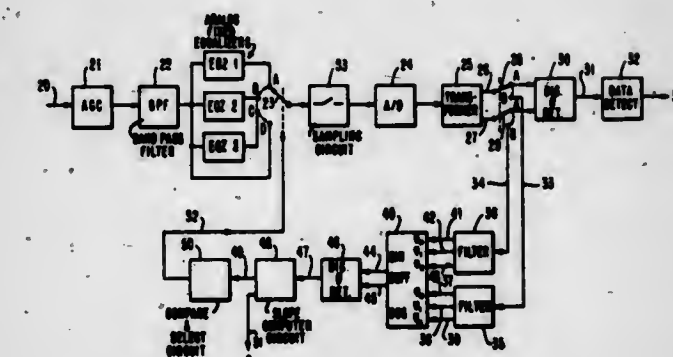
Filed Oct. 11, 1978, Ser. No. 950,489

Claims priority, application France, Oct. 27, 1977, 77-33120

Int. Cl.³ H04B 3/46; G06F 15/31

U.S. Cl. 364-514

13 Claims



1. A fixed-equalizer selection device for a data transmission system wherein a receiver includes a set of fixed equalizers, said device including:
means for transmitting a measurement signal over a system transmission channel having a carrier frequency f_0 that undergoes consecutive phase changes of $+\pi/2$ and $-\pi/2$ radians at a signaling rate $1/T$;
means for extracting from the received measurement signal components thereof at frequencies f_0 , f_1 and f_2 , said frequencies f_1 and f_2 being defined as

$$f_1 = f_0 - 1/T \text{ and } f_2 = f_0 + 1/T;$$

means for extracting instantaneous phases ψ_0 , ψ_1 and ψ_2 from the components at frequencies f_0 , f_1 and f_2 of the received measurement signal;
means for determining a quantity θ representative of the slope of the transmission channel envelope delay characteristic in accordance with the relation

$$\theta = \pi + 2\psi_0 - \psi_1 - \psi_2$$

means for comparing said computed quantity θ with reference values that define different intervals, each of said intervals being associated with one of said fixed equalizers;
means for determining within which interval said computed quantity θ lies; and
means for selecting the fixed equalizer associated with the determined interval.

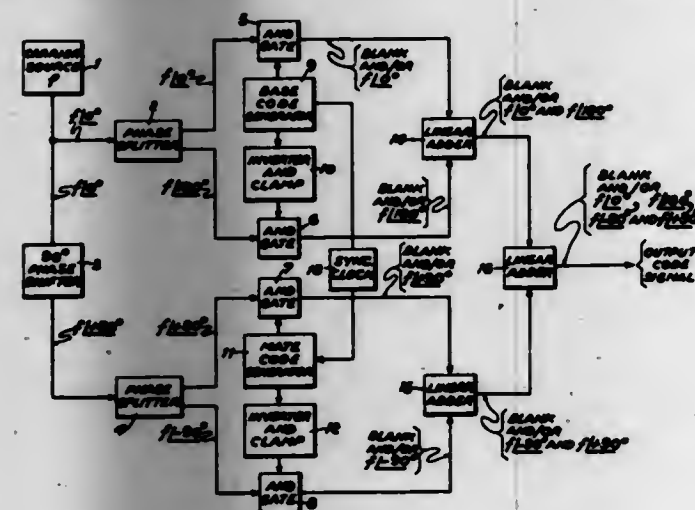
form for said MF signal samples delivered from said logic circuit;
fourth operation means for detecting the input frequencies of said MF signal samples which are discrete-Fourier-transformed at said third operation means; and
output means for delivering signals corresponding to the input frequencies of said MF signal samples detected by said fourth operation means.

4,245,326 IMPULSE AUTOCORRELATION FUNCTION CODE GENERATOR

Frank S. Gutleber, Wayne, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 29, 1967, Ser. No. 664,115
Int. Cl.³ G06F 15/34

U.S. Cl. 364-728

10 Claims



1. A code generator comprising:
a source of four carrier signals each having the same frequency and a different phase thereof;
first means to provide first and second code signals each having at least two different code conditions and cooperating autocorrelation functions to produce an impulse autocorrelation function having an impulse output at a given time and a zero output at all other times;
second means coupled to said source and said first means responsive to said first code signal to represent one of said two code conditions thereof by a first of said four carrier signals and the other of said two code conditions thereof by a second of said four carrier signals;
third means coupled to said source and said first means responsive to said second code signal to represent one of said two code conditions thereof by the third of said four carrier signals and the other of said two code conditions thereof by the fourth of said four carrier signals; and
fourth means coupled to said second and third means to combine the outputs therefrom to produce an output code signal of at least the quaternary type having said impulse autocorrelation function.

4,245,327 DATA PROCESSOR HAVING TWO TYPES OF CARRY FLAGS

Yoshiaki Moriya, Inagi; Ichiro Kobayashi, Kawasaki, and Yukio Kitagawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

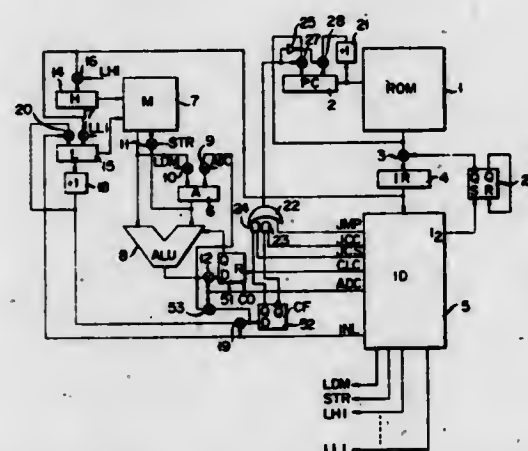
Filed Mar. 5, 1979, Ser. No. 17,617
Claims priority, application Japan, Mar. 6, 1978, 53-25281
Int. Cl.³ G06F 7/50

U.S. Cl. 364-768

2 Claims

1. A data processor comprising:
first memory means for addressably storing instructions in storage locations;
instruction decoding means coupled with said first memory means for decoding instructions stored in said first mem-

ory means and for producing control signals responsive to the decoding of said instructions;
conditional circuit means receiving said decoded instructions from said instruction decoding means for producing an output signal for controlling said first memory means;
second memory means for addressably storing data in storage locations and for outputting said stored data in response to said control signal;
register means for storing an address of a said storage location in said second memory means;
means incrementing the address stored in said register means, said register means generating a first carry information signal when said incrementing means increments said address stored in said register means beyond the storage capacity of said register means;



arithmetic logic unit means for performing arithmetic and logic operations on data stored in said storage location having said address (1) stored in said register means, and (2) outputted from said second memory means under the control of a said control signal produced by said instruction decoding means;

first carry information storing means for storing said first carry information signal produced by said register means and for supplying said first carry information signal to said conditional circuit means; and
second carry information storing means for storing said second carry information signal generated by a said arithmetic logic unit means and for providing said second carry information signal to said arithmetic logic unit means.

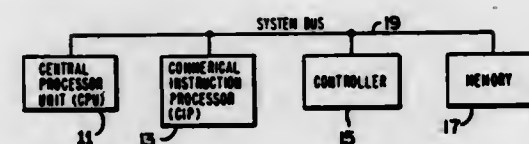
4,245,328 BINARY CODED DECIMAL CORRECTION APPARATUS FOR USE IN AN ARITHMETIC UNIT OF A DATA PROCESSING UNIT

Virendra S. Negi, Pepperell, and Arthur Peters, Sudbury, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 3, 1979, Ser. No. 735
Int. Cl.³ G06F 7/50

U.S. Cl. 364-771

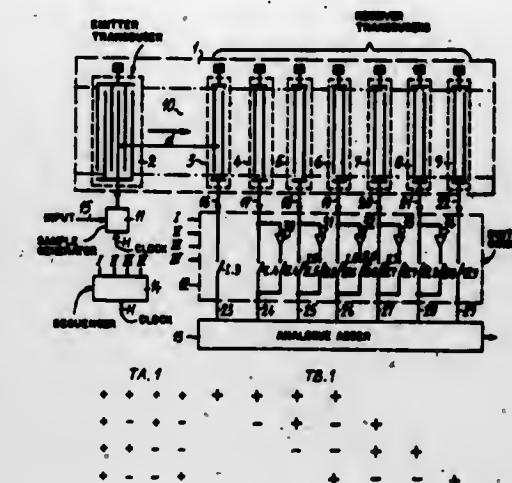
9 Claims



1. Apparatus for performing binary coded decimal arithmetic by use of an arithmetic logic unit designed for performing binary arithmetic, said apparatus comprising:

A. a binary arithmetic logic unit for performing binary arithmetic on a first operand and a second operand and thereby producing a result, wherein said first and second operands are in binary coded decimal form;
B. first means for determining whether the arithmetic opera-

tion to be performed by said unit is an add operation or a subtract operation;
C. second means, coupled with said logic unit, for determining whether the result of said arithmetic operation on said first operand and said second operand has produced a carry output; and
D. correction logic, responsive to the result produced by said unit and responsive to said first means and said second means for determining, for providing a corrected result of the result produced by said unit, which corrected result is a value in binary coded decimal form, said correction logic including a plurality of storage locations, each of said locations including stored therein a said corrected result corresponding to the result produced by said unit and the operation and possible carry output indicated by said first and second means for determining.



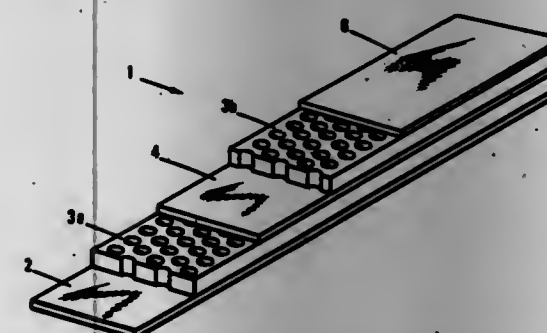
4,245,329 ELONGATED SEISMIC RECEIVER OF CONTINUOUS STRUCTURE

Jean-Claude Dubois, Royan, France, assignor to Institut Français du Pétrole, France

Continuation-in-part of Ser. No. 578,185, May 16, 1975, abandoned. This application Sep. 2, 1977, Ser. No. 830,217
Claims priority, application France, May 17, 1974, 74 17545
Int. Cl.³ H04B 11/00

U.S. Cl. 367-140

43 Claims



1. A receiver of continuous structure for seismic prospecting comprising at least one pair of sensitive elements, each of said sensitive elements including two electrodes, made of a conducting material, placed at opposite sides of a deformable element subjected to a permanent electric polarization and at least one adjacent electrically insulating compressible element, and said pair of sensitive elements being separated by an insulating element, the respective electrodes of the sensitive elements being at opposite polarities.

4,245,330 ELASTIC SURFACE WAVE HADAMARD TRANSFORMER

Jean-Claude Rebourg, 95, Ave. de la Clairière, 78120 Rambouillet, France

Filed Oct. 23, 1978; Ser. No. 952,680
Claims priority, application France, Oct. 24, 1977, 77 32539
Int. Cl.³ G06G 7/12; H04N 3/14

U.S. Cl. 364-826

16 Claims

1. A signal transformation system driven by periodic sample signals which deliver an output series of signals in transformed terms, said system comprising transformer means including an elastic surface wave substrate having at least one transducer means of a first type and at least one transducer means of a second type mounted thereon to transmit signals via a single track on said elastic surface wave device, signal generator means for causing one type of said transducer means to transmit periodic samples of the signal to be transformed over said single track, the other type of said transducer means being arranged to receive signals from said transmitted sample signals, the various transducer means being positioned at equal distances behind one another along said track, said equal distance being equal to the path on said track traversed by the sample during a single period in the output of said signal gener-

ator means, algebraic adder means for providing the first transformed term by adding output signals from the other type transducer means, switching means interposed between said transformer means and said adder means for combining signals

in any of many predetermined orders to create predetermined transformed output signals, the switching means selectively connecting the other type transducer means to said adder means with the algebraic signs of the additions being determined according to the coefficients of a Hadamard matrix.

4,245,331 MEMORY PACK

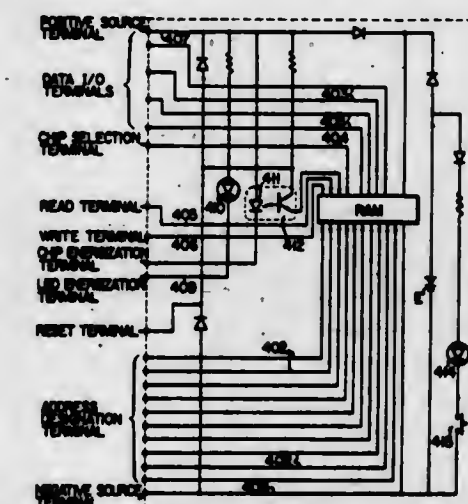
Koichi Hamano; Takao Morimoto; Junko Watanabe; Kaoru Ono, and Norio Yagi, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1978, Ser. No. 945,124
Claims priority, application Japan, Oct. 8, 1977, 52-121103; Oct. 8, 1977, 52-121106

Int. Cl.³ G11C 5/06, 7/00

U.S. Cl. 364-900

5 Claims



1. A memory pack mechanically, electrically and removably coupled with an electronic cash register, the electronic cash register including a data processing unit and a signal generator producing a chip energization signal serving to set a chip energization terminal at given potential in response to a predetermined control signal from the data processing unit, the memory pack comprising:

first and second power source terminals which are connectable to said cash register for supplying power from a power source;
memory means connected between said first and second power source terminals, said memory means being selectively settable in read and write modes;
at least one address terminal coupled to said memory means and connectable to said cash register for providing an

address signal to said memory means from said cash register;

at least one data input/output terminal coupled to said memory means and connectable to said cash register for providing data to said memory means from said cash register; read and write control terminals coupled to said memory means and connectable to said cash register for respectively receiving read and write control signals to set the read/write mode of said memory means;

said chip energization terminal being connectable between said signal generator of said cash register and a photocoupler to receive said chip energization signal; and said photocoupler including a light emitting element coupled to said chip energization terminal and to one of said power source terminals for emitting light in response to said chip energization signal applied to said chip energization terminal from said signal generator, and a phototransistor associated with said light emitting element and coupled between one of said power source terminals and memory means and which is energized in response to light generated from said light emitting element for energizing said memory means;

whereby, the memory means, is not energized as long as a chip energization signal is not supplied to the chip energization terminal, and the data stored in the memory means is not influenced even if an erroneous address signal has been applied to the memory means or noise has occurred in the power source line.

4,245,332

RECEIVER CIRCUIT FOR AN ECHO-SOUNDING SYSTEM

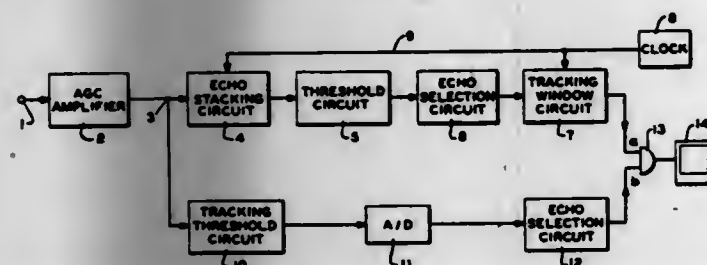
Horst Schaefer, Kiel, Fed. Rep. of Germany, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 12, 1979, Ser. No. 29,179

Int. Cl.³ G01S 15/02

U.S. Cl. 367-98

4 Claims



1. In an echo-sounding system for indicating echos from a desired target, said system including an echo stacking circuit for summing corresponding echo signals from successive sounding periods, an echo selection circuit for admitting only a first significant echo signal during each sounding period, a tracking window circuit for producing a signal corresponding to only a portion of the total distance range dependent on distance to the target, and a threshold circuit for admitting only echo signals whose amplitude exceeds a threshold derived from the most recent target echo, an improved receiver circuit comprising:

- a first receiver channel connected to receive input signals which may include primary echo signals from a desired target and interfering signals, said first channel including an echo stacking circuit, a first echo selection circuit, and a tracking window circuit for producing a characteristic signal during an interval whose duration is established by said tracking window circuit and whose timing is established at least in part by detection of a primary echo signal by said echo stacking circuit and said first echo selection circuit;
- a second receiver channel connected to receive said input signals, said second channel including a tracking threshold circuit and a second echo selection circuit for producing a characteristic signal when a primary echo is detected;

a utilization device having an input terminal for receiving signals representative of target echos; and an AND gate having first and second input terminals connected respectively to said first and second receiver channels and an output terminal connected to the input terminal of said utilization device, whereby a signal is supplied to said utilization device when characteristic signals are being produced by both first and second receiver channels.

4,245,333

BEAMFORMING UTILIZING A SURFACE ACOUSTIC WAVE DEVICE

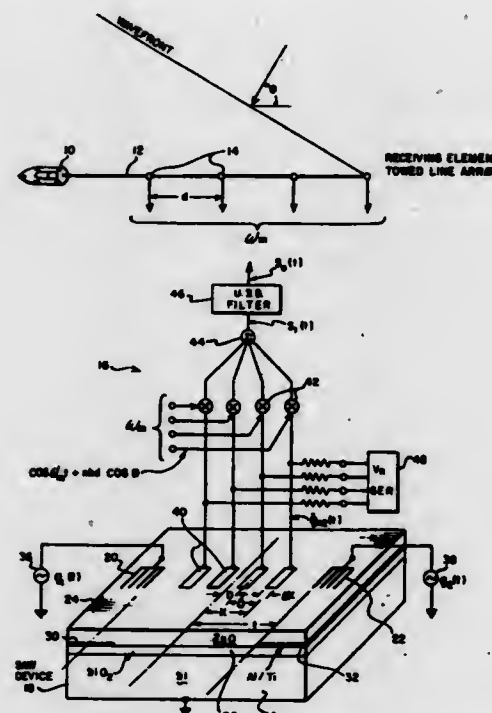
Edward C. Jelks, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1979, Ser. No. 41,114

Int. Cl.³ G01S 3/84

U.S. Cl. 367-121

9 Claims



1. A beamforming apparatus for processing the outputs of a linear array of spaced apart receiving elements comprising:
 - a surface acoustic wave (SAW) device having a pair of transducers mounted on a substrate in a spaced apart relationship, each transducer being capable of receiving and converting an electrical chirp signal into an acoustic signal for propagation across the surface of the SAW device;
 - the substrate of the SAW device having a zinc oxide layer on a silicon/silicon oxide base;
 - a plurality of taps, wherein each tap is adapted to receive a bias voltage, mounted on the substrate in a spaced apart relationship between said pair of transducers for operating in cooperation with the substrate to receive, square and convert the acoustic signals back into electrical signals;
 - the spacing between the taps being proportionally matched to the spacing between the receiving elements;
 - means for mixing the signal from each tap with a signal from a respective receiving element so as to produce a plurality of mixed output signals; and
 - means for summing the mixed output signals so as to provide a summed output signal.

4,245,334

DEVICE FOR MEASURING AND INDICATING THE TIME BETWEEN THE RECEPTION OF FIRST AND SECOND AIRBORNE SIGNALS

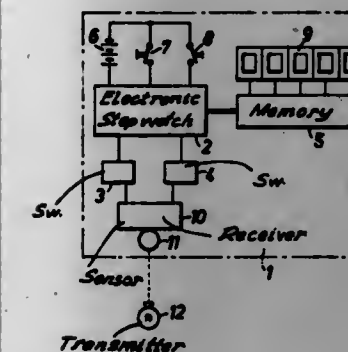
Erich Bieramperl, In der Stockwiesen 3, A-4020 Linz, Austria

Filed Jun. 29, 1979, Ser. No. 53,404

Int. Cl.³ G04F 8/00

U.S. Cl. 368-2

7 Claims



1. A system mounted on a vehicle for measuring and indicating the time required for a movement from a first location to a second location spaced from the first location, said system comprising:

- a first transmitter located at said first location and adapted to transmit a first energy signal;
- a second transmitter located at said second location and adapted to transmit a second energy signal;
- an electronic stopwatch for delivering clock signals;
- a memory coupled to said watch for receiving and storing said clock signals;
- display means coupled to said memory means for providing a visual indication of the clock signals stored by said memory;
- an energy signal receiver having a sensor for receiving said first and second energy signals;
- a start switch for coupling the output of said receiver to the input of said stopwatch and responsive to said first energy signal, so as to turn on said watch to provide clock signals; and
- a stop switch for coupling the output of said receiver to the input of said stopwatch and responsive to said second energy signal, so as to turn off said watch and terminate the clock signals.

4,245,335

WATCH DISPLAY

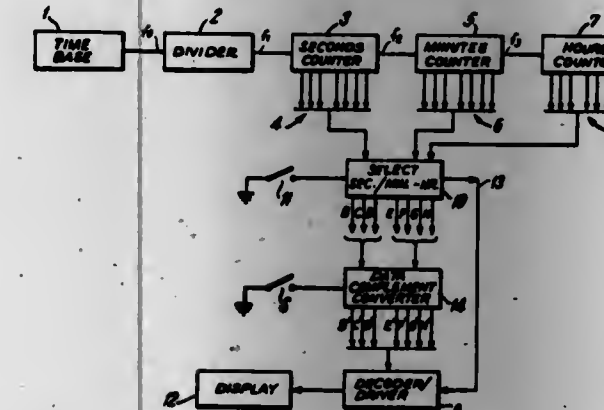
Leo Wiesner, Kew Gardens, N.Y., assignor to Timex Corporation, Middlebury, Conn.

Filed Sep. 28, 1979, Ser. No. 79,733

Int. Cl.³ G04C 17/00, 19/00

U.S. Cl. 368-70

6 Claims



1. A digital wristwatch having a manually operable control switch comprising:

a quartz oscillator means for generating a relatively high frequency time standard signal;

divider means responsive to the time standard signal to produce low frequency timekeeping signals;

counting circuit means responsive to the timekeeping signals adapted to count specific units of time and provide at least a binary coded elapsed minutes signal and an hours signal representative of the present time;

data complement converter means responsive to said elapsed minutes signal and responsive to said manually operable control switch to selectively provide either the elapsed minutes signal for a remaining minutes signal representative of the minutes remaining until the end of the present time hour signal, said converter means comprising a logic circuit providing a binary coded signal corresponding to remaining minutes for each of said binary coded elapsed minute signals; and

electrooptical digital display means responsive to the elapsed minutes and hours signal to display the present time and responsive to the remaining minutes signal to display the minutes remaining in the hour of the present time.

4,245,336

ELECTRONIC TONE GENERATOR

Horst Stietenroth, Glade, Fed. Rep. of Germany, assignor to RCA Corporation, New York, N.Y.

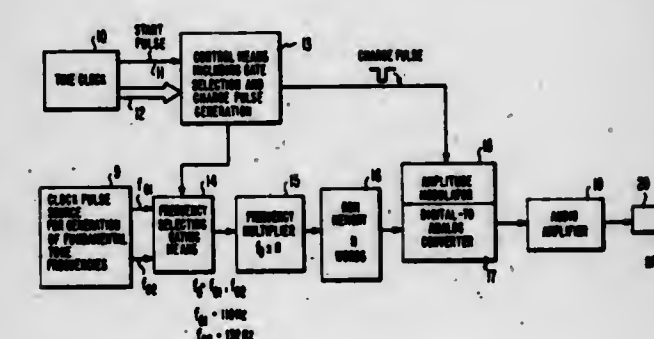
Filed Oct. 18, 1978, Ser. No. 952,349

Claims priority, application United Kingdom, Sep. 28, 1978, 38575/78

Int. Cl.³ G04B 21/02; G10H 1/00

U.S. Cl. 368-75

10 Claims



1. An electronic chime clock comprising:
 - a clock comprising means for indicating the time of day; and
 - means for generating selected chime sequences comprising:
 - memory means containing N sequentially stored binary words represented successive amplitude samplings of a periodic waveform of period T₀ which contains predetermined harmonics of the fundamental tone frequency f₀, where f₀ = 1/T₀, f₀₁, f₀₂, . . . f_{0n};
 - accessing means including means for generating scanning signals of frequencies Nf₀₁, Nf₀₂, . . . Nf_{0n} for reading out the binary words stored in said memory means; means for determining times of day
 - control means responsive to predetermined times of day to supply predetermined sequences of said scanning signals to said accessing means to iteratively read out the N binary words stored in said memory means; and
 - means for converting said read out binary words into audible chime sequences.

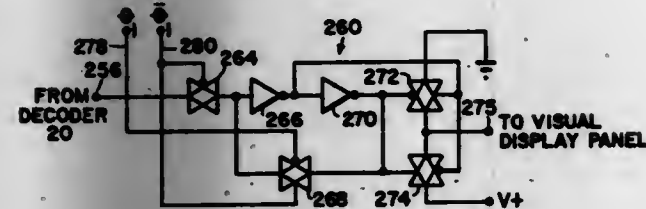
4,245,337

DIGITAL WATCH

Richard G. Daniels; Richard S. Walton, and Roy K. Yamanouchi, all of Tempe, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 592,842, Jul. 2, 1975. This application Oct. 20, 1978, Ser. No. 953,308
Int. Cl.³ G04C 19/00

U.S. Cl. 368—82



1. A digital watch including time keeping circuitry, displaying circuit for displaying time information, a decoder circuit, latch circuitry and a control circuit for both multiplexing information from the time keeping circuitry through the decoder circuit into the latch circuitry and for demultiplexing the latch circuitry to cause the time information to be continuously displayed and updated on the displaying circuitry, the improvement comprising the latch circuitry including a plurality of individual latch driver circuits each having:

- first transmission gate means having first and second control terminals, and first and second terminals, said first terminal being coupled to a respective output of the decoder circuit, said first and second control terminals being coupled to the control circuit for receiving respectively first and second phasing control signals thereat;
- second transmission gate means having first and second control terminals, and first and second terminals, said first and second control terminals receiving said second and first phasing control signals respectively, said second electrode being coupled to said electrode of said first transmission gate means;
- inverter means having input and first and second output terminals, said input terminal being coupled to said second terminal of said first transmission gate means, said second output terminal being coupled to said first terminal of said second transmission gate means, said inverter means being responsive to a signal being applied at the input terminal thereof for providing the complement of said applied signal at said first output terminal and the complement of the output signal at said first output terminal at said second output terminal; and
- output gate means having first and second terminals, first and second control terminals and an output terminal, said first terminal of said output gate means being coupled to a source of operating potential, said second terminal of said output gate means being coupled to a ground reference terminal, said first control terminal of said output gate means being coupled with said first output terminal of said inverter means, said second control terminal of said output gate means being coupled to said second output terminal of said inverter means, and said output terminal of said output gate means being coupled to the displaying circuit.

4,245,338

TIME CORRECTION SYSTEM FOR AN ELECTRONIC TIMEPIECE

Fukuo Sekiya, Tokorozawa, and Takashi Yamada, Sayama, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

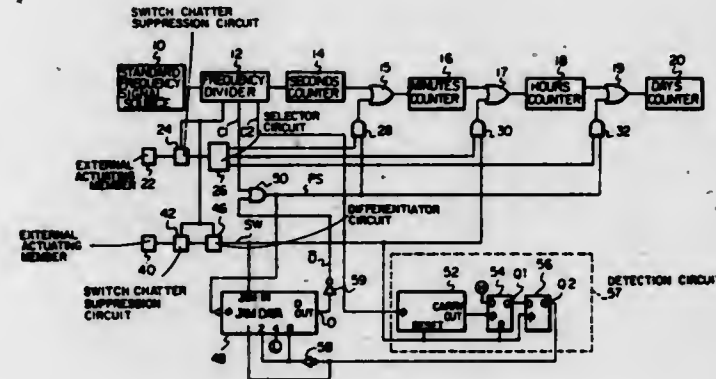
Filed Nov. 7, 1978, Ser. No. 958,579

Claims priority, application Japan, Nov. 10, 1977, 52/134111; Nov. 25, 1977, 52/140737

Int. Cl.³ G04C 9/00

U.S. Cl. 368—188

12 Claims



1. A time correction system for an electronic timepiece having a standard frequency, a frequency divider responsive to an output signal from said standard frequency to provide a standard time signal, timekeeping and time display means responsive to said standard time signal for recording and displaying time information, and setting circuit means coupled to said timekeeping and time display means for setting a desired value of said time information, comprising:

- switch means to be actuated by an external actuating member for producing actuation pulses;
 - a setting pulse generation circuit responsive to each of said actuation pulses for producing at least one setting pulses to be applied to said timekeeping and time display means; and
 - control signal generation means for generating a control signal to be applied to said setting pulse generation circuit to control the number of said setting pulses generated in response to each one of said actuation pulses;
- said control signal generation means comprising a detection circuit means for detecting the duration of a time interval between at least two successive actuation pulses and for varying a logic level potential of said control signal in accordance with said duration of said time interval, whereby said control signal causes said setting pulse generation circuit to generate a first number of said setting pulses being greater than one in response to each of said actuation pulses when said detection circuit detects that said duration of a time interval between at least two successive actuation pulses is less than a predetermined value, and whereby said control signal causes said setting pulse generation circuit to generate a second number of said setting pulses being less than said first number of said setting pulses in response to each of said actuation pulses when said detection circuit detects that said duration of a time interval between at least two successive actuation pulses is greater than said predetermined value.

4,245,339

TELECOMMUNICATION SWITCHING NETWORK HAVING A MULTISTAGE REVERSED TRUNKING SCHEME

Manfred Agricola; Willfried Kranthirmer, both of Frankfurt, and Karl-Heinz Reimer, Ober-Roden, all of Fed. Rep. of Germany, assignors to Telefonbau und Normalzeit, GmbH, Fed. Rep. of Germany

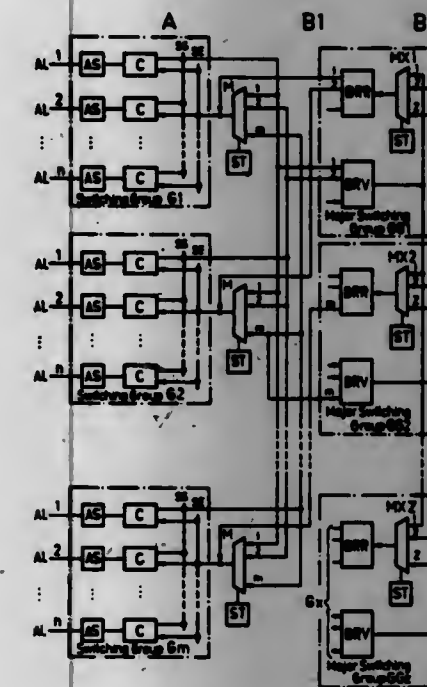
Filed Apr. 20, 1979, Ser. No. 31,758

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819126

Int. Cl.³ H04Q 11/04

U.S. Cl. 370—58

7 Claims



1. A multistage switching network having a reversed trunking scheme for four-wire switching of connections between terminal lines of a pulse code modulated (PCM) telecommunication exchange with time and space division multiplex switching stages comprising:

- a plurality of terminal lines, connected with individual termination circuits (AS),
- a first switching stage (A) with time division multiplex comprising a plurality of termination circuits (AS) each connected with an individual codec (C), said switching stage being formed by a plurality of individual switching groups (G1 to Gm) consisting of a number of said termination circuits and said codecs, and each switching group of said first switching stage being provided with an individual transmitting (SS) and receiving (SE) highway the latter connected to the output of a group individual multiplexer (M) and all codecs (C) of each respective switching group being connected to both highways (SS, SE),
- a plurality of major switching groups (GG1 to GGz) each being formed by a number of switching groups,
- a second switching stage (B1) with space division multiplex comprising a plurality of PCM-lines or highways equal to the number of switching groups (G1 to Gm) of said first switching stage forming one major switching group (GG), whereby each transmitting highway (SS) of one switching group (G) of the first switching stage (A) is connected to an individual PCM-line or highway of the second switching stage (B1) and all said PCM-lines or highways are connected to individual inputs of said multiplexers (M),
- a third switching stage (B2) with space division multiplex comprising a plurality of said major switching groups (GG1 to GGz) and consisting of a number of PCM-lines or highways equal to the number of said major switching groups which are connected for the incoming direction to the transmitting (SS) and in the outgoing direction to the receiving (SE) highways of the individual switching groups (G) of the first switching stage (A).

4,245,340

DATA LINK FOR DIGITAL CHANNEL BANK SYSTEMS

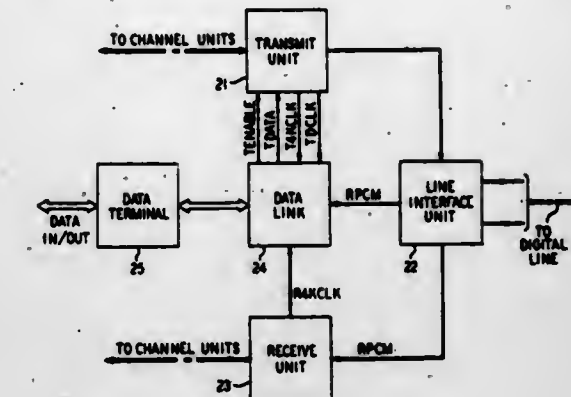
Joseph E. Landry, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 5, 1978, Ser. No. 966,637

Int. Cl.³ H04J 3/12

U.S. Cl. 370—111

7 Claims



1. In a digital transmission system which comprises digital terminals and wherein a plurality of digital message signals are transmitted between terminals in a plurality of time division multiplexed channels, a terminal framing bit being included in the transmitted multiplexed signal in alternate frames, the least significant bit of each channel being borrowed for signaling purposes every 6th frame, with the location of the signaling bits being identified by the signaling framing pattern of 111000 ... in the framing bit position of alternate frames, the bits of the signaling subframe channel alternating every frame with the terminal framing bits, said transmission system being characterized by means (FIG. 3 and FIG. 8) at a local terminal for time division multiplexing a data channel into the signaling subframe channel, said means serving to transmit the aforementioned signaling framing pattern in an intermittent periodic manner with predetermined data bit blocks of multiple data bits interposed between successive signaling framing patterns, signaling subframe recovery means (FIG. 7) at a remote terminal responsive to said signaling framing pattern for recovering the framing pattern embedded in the multiplexed subframe channel, and means (FIG. 4) responsive to said recovery means for separating out the data bits in the multiplexed subframe channel.

4,245,341

DEVICE FOR TRANSMITTING STOCHASTICALLY CODED INFORMATION

Jean-Claude Hoffman; Francis Costantini, both of Toulouse; Henri Crabere, L'Union; Jean-Pierre Verdier, Caseres, and Norbert Volsin, Bruguieres, all of France, assignors to Societe Nationale Industrielle Aeronautique, Paris, France

Filed Nov. 2, 1978, Ser. No. 956,965

Claims priority, application France, Nov. 9, 1977, 77 33775

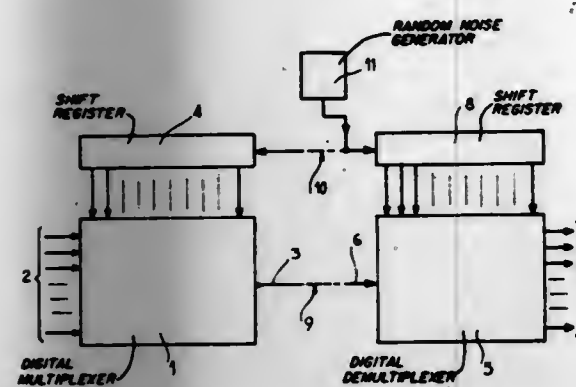
Int. Cl.³ H04J 3/04

U.S. Cl. 370—112

3 Claims

1. A device for transmitting stochastically coded information comprising:
- a digital multiplexer with n inputs, each of which is adapted to receive one of n stochastic input signals, and a multiplexer output;
 - multiplexer addressing means for controlling the passage of said stochastic input signals between said inputs and said multiplexer output;
 - a digital demultiplexer with a demultiplexer input and n outputs, at each of which one of n stochastic output signals appears;
 - connecting means between said multiplexer output and said demultiplexer input;
 - demultiplexer addressing means for controlling the passage of stochastic signals between said demultiplexer input and said outputs; and

a first random noise generator with a probability equal to 0.5 simultaneously controlling said multiplexer addressing



means and said demultiplexer addressing means, whereby each of said n stochastic output signals has an amplitude which is $1/n$ times that of the corresponding input signal.

4,245,342

ONE-FOR-N MODEM CONTROL APPARATUS

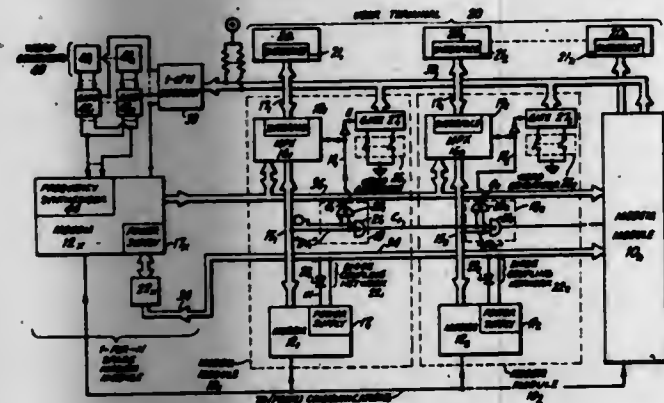
Alan W. Estenmann, Hicksville, N.Y., assignor to Intech Laboratories, Inc., Bohemia, N.Y.

Filed Jan. 10, 1979, Ser. No. 2,332

Int. Cl.³ G06F 11/00; H04B 17/00

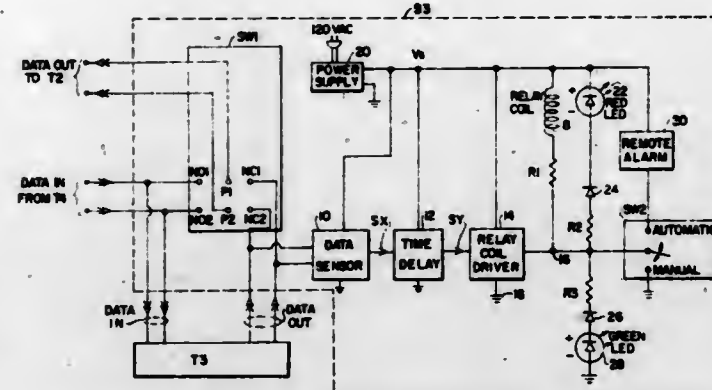
U.S. Cl. 371-8

3 Claims



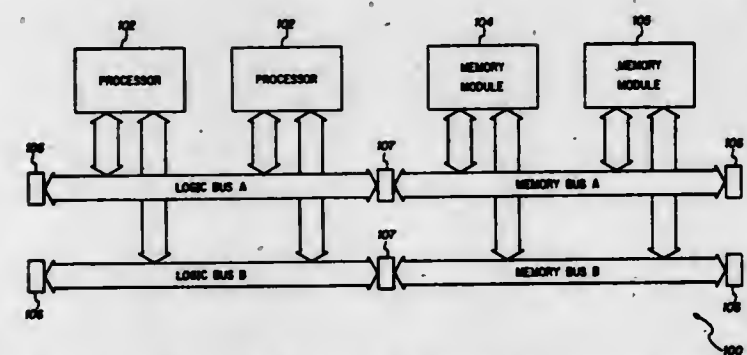
1. In combination, plural on-line modem modules each including heterodyning and signalling modem means and controlled multiplexing means for connecting a first port thereof with one of second and third ports, said second port being connected to said modem means, a redundant modem module having heterodyning and signalling modem means connected to said third ports of said multiplexers in said on-line modem modules, said heterodyning means in said redundant module being frequency adjustable in accordance with a frequency control signal, priority assignment control means connected to said modem means and said multiplexers of said on-line modem modules for normally controlling said multiplexers to connect said first and second ports and responsive to sensing a failure of said modem means for connecting said first and third ports of said multiplexer of a failed one of said modem means, said control means including priority assignment means for connecting said first and third ports of only one of said multiplexers in accordance with a predetermined modem hierarchy, and frequency implementing means responsive to said control means connecting said first and third ports of a failed modem means for supplying said frequency control signal to said heterodyne modem means in said redundant modem module to substantially duplicate the operational frequency of said failed modem means said priority assignment control means comprising plural cascaded logic circuit means, one of said logic circuit means being included in each of said modem modules.

4,245,343
AUTOMATIC SHUNT DEVICE
Ronald G. Frey, Emerson, N.J., assignor to Data Line Corporation, Dumont, N.J.
Filed Sep. 22, 1978, Ser. No. 944,804
Int. Cl.³ G06F 11/20
U.S. Cl. 371-11 7 Claims



1. An automatic shunt system for bypassing a data terminal having input terminals connected to an input data cable and output terminals for supplying output data comprising: means for sensing the presence of absence of output data at said output data terminals; and switching means responsive to an output signal of said sensing means for connecting said output data terminals to an output data cable only when data is present at said output data terminals, and for connecting said input data cable to said output data cable when data is absent at said output data terminals.

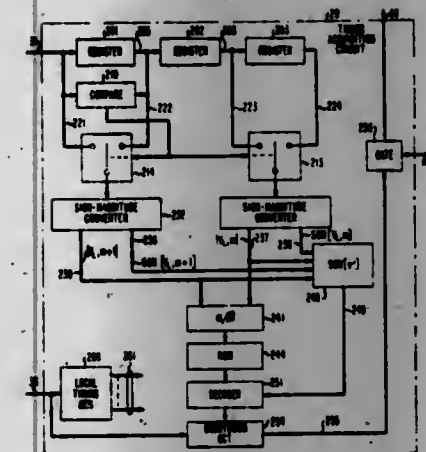
4,245,344
PROCESSING SYSTEM WITH DUAL BUSES
David L. Richter, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 2, 1979, Ser. No. 25,815
Int. Cl.³ G06F 11/14, 11/10
U.S. Cl. 371-68 13 Claims



1. In a data processing system of the kind wherein multiple devices such as processors and memory modules communicate amongst themselves by transmitting in parallel a plurality of bits on a bus from a sending device to an addressed device, with each of said devices typically being capable of acting as a sending or an addressed device, the improvement comprising: a first bus having a first plurality of electrical signal conductors with the capacity for carrying in parallel a plurality of bits including a device address and a set of bits which can include data; a second bus having a second plurality of electrical signal conductors, of at least the same capacity as said first bus; an interface at each device capable of acting as a sending and addressed device, including means for simultaneously transmitting in parallel a plurality of bits on conductors of said first bus, and for transmitting the same bits on conductors of the second bus; means for examining transmitted bits as received on each bus for an error involving any number of bits, including means

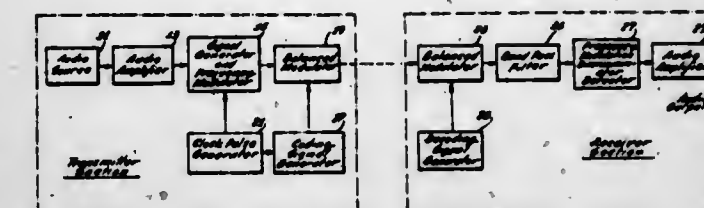
for comparing every bit in said set of bits on said first bus with the corresponding bit in said set of bits on the second bus, and for generating an indication of a good comparison only when all the compared bits match; and means, responsive to the results of said examining, for computing whether to utilize said set of bits received on the first bus and whether to utilize said set of bits received on the second bus.

4,245,345
TIMING ACQUISITION IN VOICEBAND DATA SETS
Richard D. Gitlin, Monmouth Beach; Edmond Y. Ho, Colts Neck Township, Monmouth County; Howard C. Meadors, Jr., Ocean, and Stephen B. Weinstein, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sep. 14, 1979, Ser. No. 75,646
Int. Cl.³ H04B 3/04; H03H 15/00
U.S. Cl. 375-13 48 Claims



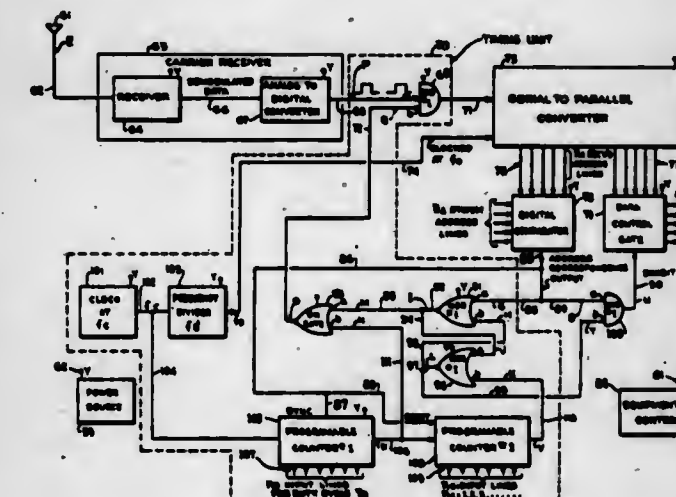
30. Circuitry for use in a data receiver to which a predetermined timing acquisition signal is transmitted from a data source, said circuitry including means (21, 23, 27) for forming line samples of said timing acquisition signal at a predetermined sampling rate, said line sample forming means forming said line samples at sampling points displaced from desired sampling points on said timing acquisition signal by a time τ , signal processing means (46, 53, 55, 56, 57, 64, 65, 81, 91) for forming a plurality of timing acquisition outputs in response to said line samples at a rate of $1/T$ per second, and means (29) for determining the value of τ in response to at least first and second ones of said timing acquisition outputs and for adjusting the phase of said line sample forming means by the value of τ thus determined, characterized in that said signal processing means includes means (46, 53, 55, 56, 64, 65) for filtering said line samples with a predetermined filter characteristic associated with said source, said filter characteristic and said desired sampling points being such that said timing acquisition outputs have a predetermined amplitude relationship to one another when said line samples are formed at said desired sampling points and further characterized in that said timing acquisition signals has spectral components only at frequencies within the non-rolloff region of the transfer function for said timing acquisition signal from the source thereof through said signal processing means.

4,245,346
COMMUNICATION SYSTEM
Robert J. Grady, Garden Grove, and Harry G. Posthumus, Los Angeles, both of Calif., assignors to Magnavox Government and Industrial Electronics Co., Fort Wayne, Ind.
Filed Feb. 7, 1962, Ser. No. 172,061
Int. Cl.³ H04K 1/00
U.S. Cl. 455-28 45 Claims



1. In combination: a signal source for producing a signal having characteristic variations representative of intelligence, a first code source for producing a first code signal having apparently random characteristic variations but actually having characteristic variations conforming to a first particular code sequence which repeats after a relatively short time interval, a second code source for producing a second code signal likewise having apparently random characteristic variations but actually having characteristic variations conforming to a second particular code sequence which may repeat after a relatively long time interval, modifying circuit means responsive to the intelligence signal from the signal source and to a coded signal for modifying the characteristics of the coded signal in accordance with the characteristics of the intelligence signal, and means responsive to the signals from the first code source and to the signals from the second code source for initially introducing the first code signal to the modifying means for modification of such signal in accordance with the characteristics of the intelligence signal and of the first code signal and for subsequently introducing the second code signal to the modifying means for modification of the second code signal in accordance with the characteristics of the intelligence signal.

4,245,347
REMOTE EQUIPMENT CONTROL SYSTEM WITH LOW DUTY CYCLE COMMUNICATIONS LINK
Thomas J. Hutton, 22 W. Swissvale Ave., Pittsburgh, Pa. 15218, and John W. Kramer, Jr., 5530 Wilkins Ave., Pittsburgh, Pa. 15217
Filed Jan. 18, 1978, Ser. No. 870,446
Int. Cl.³ H04B 1/06; H04Q 1/32
U.S. Cl. 455-70 8 Claims



1. A remote equipment control system having a low duty cycle communication link between a remote command transmitter and a remote receiver, said remote receiver controlling coupled to said equipment,

said remote command transmitter including means to transmit a message signal of a set time duration at a preselected message separation interval,
 said remote receiver including a decoding means and a timing means, said decoding means responsive to a portion of a first received message to provide an enabling signal to be delivered to said timing means,
 said timing means upon receipt of said enabling signal provides an output to said decoding means to prevent entry of any message signal to said decoder for a time duration matching said preselected message separation interval and allowing entry of a message signal for a time duration matching said set time duration of said message signal,
 said decoding means including means responsive to said enabling signal such that said decoding means is in a condition to accept the next arriving message signal allowed entry when said next arriving message signal has a message portion that matches said portion of said first received message signal whereupon said decoding means decodes the remaining portion of said next arriving message signal and allows a command signal to be delivered to said equipment to be controlled.

4,245,348

CENTER FREQUENCY TUNING SYSTEM FOR RADIO-FREQUENCY SIGNAL RECEIVER

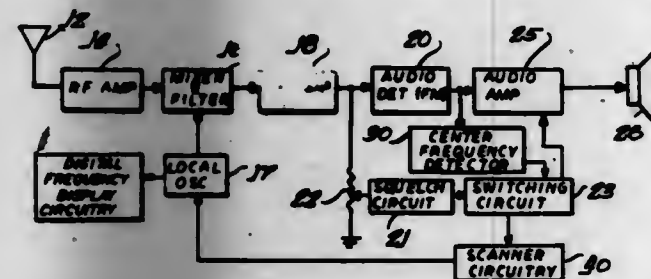
Kazuyoshi Imanishi, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan

Filed May 27, 1977, Ser. No. 801,084

Int. Cl. H04B 1/10, 1/16

U.S. Cl. 455-158

5 Claims



5. In a signal-seeking receiver which automatically and incrementally scans a plurality of predetermined radio frequencies and tunes to a received signal having a frequency corresponding to one of said predetermined frequencies, a system for ensuring that the receiver continues scanning until it is tuned to the center frequency of said received signal, comprising: variable tuning means adapted to selectively tune said receiver to said predetermined frequencies and produces a corresponding intermediate frequency signal, said variable tuning means including a frequency-synthesized local oscillator for tuning the receiver in discrete increments; scanning means for causing said variable tuning means to automatically and sequentially tune said receiver to each of said predetermined frequencies; frequency discriminator means coupled to said variable tuning means and tuned to a predetermined frequency, said frequency discriminator means being responsive to said intermediate frequency signal for developing an output signal having a DC component which varies systematically in accordance with the deviation of said intermediate frequency signal from said predetermined frequency; amplitude detecting means coupled to said discriminator means and responsive to said DC signal component for developing a control signal, said control signal having a first value when said DC component is between preselected upper and lower threshold values and said control signal having a second value when said DC component is not between said upper and lower threshold values, the frequency range between said upper and lower threshold values being wider than the frequency range of said discrete increments; and switching means coupled to said scanning means and responsive to said control signal for stopping said scanning means only when said control signal has said first value said detecting means includes a pair of voltage comparators and an AND gate having at least two input terminals, with one of said pair of voltage comparators being set to develop a preselected output voltage when said DC component exceeds a predetermined positive magnitude and the other comparator of said pair set to develop a preselected output voltage when said DC component exceeds a predetermined negative magnitude, and with said output voltages being applied to different input terminals of said AND gate, whereby said AND gate develops a predetermined output voltage only when both comparator output voltages have their respective preselected values.

Michiaki Kamaoka, and Shinji Aoshima, both of Shizuoka, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

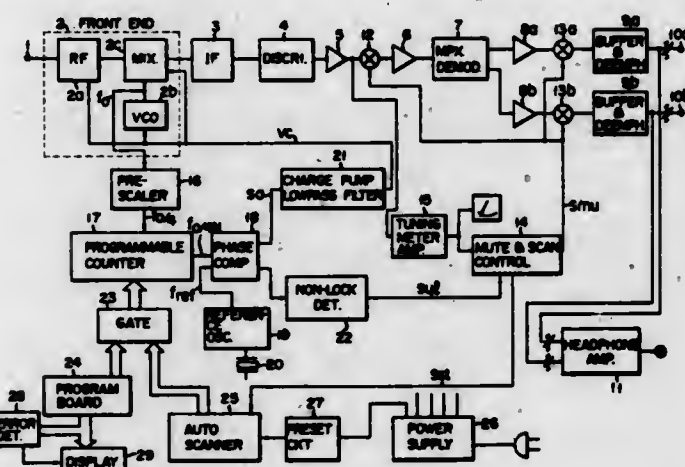
4,245,349

AUTOMATIC FREQUENCY SCANNING RADIO RECEIVER

Filed Dec. 27, 1978, Ser. No. 973,631
 Claims priority, application Japan, Dec. 29, 1977, 52-160009; Jan. 9, 1978, 53-975(a); Jan. 25, 1978, 53-6849; Jan. 25, 1978, 53-6850

Int. Cl. H03J 9/28
 U.S. Cl. 455-165

7 Claims



1. An automatic frequency scanning FM radio receiver comprising:

- a phase-locked loop frequency synthesizer acting as a local oscillator circuit tunable to different radio frequencies and having a voltage-controlled oscillator, a programmable counter for dividing the output frequency of said voltage-controlled oscillator, the dividing factor of said programmable counter being changeable in integral steps by a program input code signal applied thereto, a reference oscillator, a phase comparator for comparing in phase an output signal of said reference oscillator with an output signal of said programmable counter, and a loop filter connected between an output of said phase comparator and a control input of said voltage-controlled oscillator, the output frequency of said voltage-controlled oscillator being changed in steps in response to change in the dividing factor of said programmable counter provided by the program input signal;
- a mixer circuit coupled to said voltage-controlled oscillator for mixing an incoming radio frequency signal with the output signal of said voltage-controlled oscillator to produce an intermediate-frequency FM signal;
- a scan clock pulse source;
- scan counter means coupled to said scan clock pulse source for counting scan clock pulses to supply said programmable counter with the program input code signal whose code numbers change in integral steps, whereby said frequency synthesizer is caused automatically to scan channels having frequencies corresponding to the code numbers within a radiobroadcasting frequency band, said scan counter means comprising an up/down counter;

a tuning detection means for detecting that the receiver is tuned to a broadcast signal having an input level above a predetermined level, said tuning detection means comprising a frequency discriminator connected to receive the intermediate-frequency FM signal, a first circuit means for detecting the level of noise appearing at the output of said frequency discriminator, a second circuit means for detecting the level of a direct-current voltage indicating the degree of tuning of the receiver which appears at the output of said frequency discriminator, and a third circuit means producing a control signal to disable said scan clock pulse source from producing the scan clock pulses when the noise level detected by said first circuit means is below a squelch level and the DC output level of said frequency discriminator detected by said second circuit means indicates that the receiver is completely tuned;
 means for disabling said scan clock pulse source from producing the scan clock pulses when the receiver is completely tuned to said broadcast signal in response to said control signal of said tuning detection means;
 one-step manual scanning control switch means connected to said scan counter means and to said disabling means for disabling the scan clock pulse source from producing the scan clock pulses, said one-step manual scanning control switch means, when operated, actuating said disabling means and changing the count number in said scan counter means by one step for each operation thereof, and having a first switch for increasing the count number in said scan counter means by one step for each operation thereof and a second switch for decreasing said count number by one step for each operation thereof; and
 a control means for reversing the counting direction of said up/down counter when the count number in said up/down counter attains a value corresponding to the minimum frequency in said frequency band.

4,245,350

AUTOMATIC GAIN CONTROL SYSTEM FOR DIRECT-ACCESS TELEVISION RECEIVER

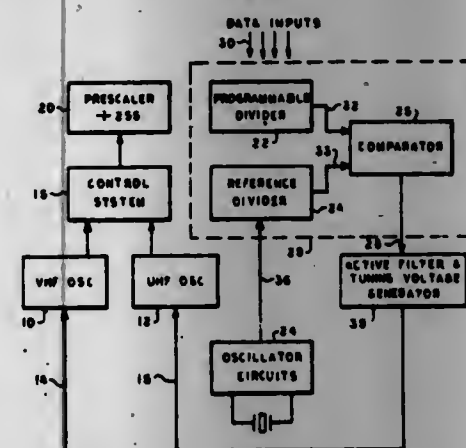
Frederic J. Moore, Des Plaines, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 22, 1979, Ser. No. 51,267

Int. Cl. H04B 1/26

U.S. Cl. 455-100

8 Claims



1. In a television receiver adapted to receive multi-band television signals and having a direct access tuning system including at least one local oscillator which is tuneable over a plurality of the receivable television bands, and having a prescaler for counting and dividing-down the signal generated by the local oscillator to develop a lower frequency oscillator signal for further processing by the tuning system, a control system for automatically compensating for amplitude variations in the oscillator signal as the oscillator is tuned from channel to channel and from band to band so as to confine the amplitude of the oscillator signal to a predetermined amplitude range within which the prescaler is adapted to count, comprising:
 gain-control means receiving a control signal and the oscilla-

tor signal for controlling the amplitude of the oscillator signal as a function of the value of the control signal;
 means receiving the gain-controlled oscillator signal from said gain-control means for detecting the amplitude thereof and for generating the control signal whose value is representative of the difference between the detected amplitude of the gain-controlled oscillator signal and the prescaler's amplitude range;
 means for applying the control signal to said gain-control means to adjust its gain such that the gain-controlled oscillator signal has an amplitude within the predetermined amplitude range of the prescaler irrespective of the frequency to which the oscillator is tuned; and
 means for applying the gain-controlled oscillator signal to the prescaler,
 whereby an oscillator signal whose amplitude fluctuates as the oscillator is tuned from channel to channel and from band to band is automatically brought within the amplitude range of the prescaler and is thereby reliably counted and divided-down by the prescaler.

4,245,351

AFT ARRANGEMENT FOR A PHASE LOCKED LOOP TUNING SYSTEM

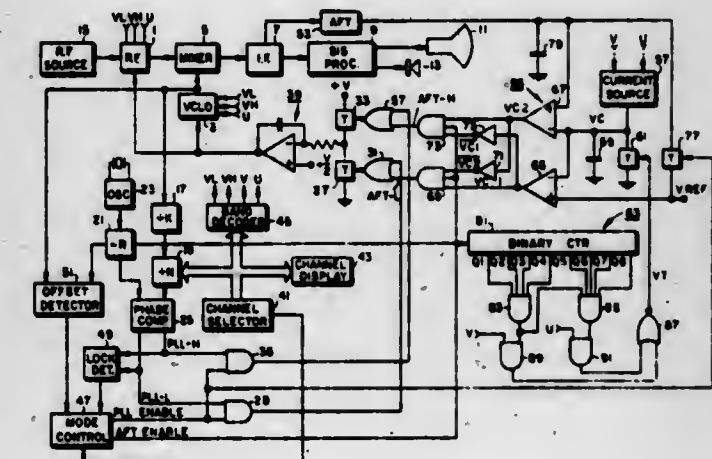
Juri Tufts, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,956

Int. Cl. H04B 1/26

U.S. Cl. 455-182

11 Claims



1. Apparatus for tuning a receiver to the RF signal associated with a selected channel, comprising:
 controlled oscillator means for generating a local oscillator signal having a frequency controlled in response to a tuning control signal;
 mixer means for combining said RF signal and said local oscillator signal to generate an IF signal, the frequency of said IF signal having a nominal value;
 frequency divider means for dividing the frequency of said local oscillator signal by a factor related to said selected channel to generate a frequency-divided signal;
 frequency reference means for generating a frequency reference signal;
 phase comparator means for generating first and second error signals including pulses with durations representing the magnitudes of respective opposite deviations of at least one of the phases and frequencies of said frequency-divided signal from said frequency reference signal;
 tuning control means responsive to said first and second error signals for generating said tuning control signals so as to reduce the deviations of said frequency-divided signal from said frequency signals;
 discriminator means responsive to said IF signal for generating an AFT signal having an amplitude versus frequency characteristic with amplitudes above and below a refer-

ence amplitude representing the magnitudes of respective opposite deviations between the frequency of said IF signal and said nominal value;

pulse converter means for generating third and fourth error signals including pulses with durations corresponding to respective opposite deviations between the amplitude of said AFT signal and said reference amplitude; and mode control means for selectively enabling said tuning control means to be responsive to said third and fourth error signals so as to reduce the deviations between said IF signal and said nominal value.

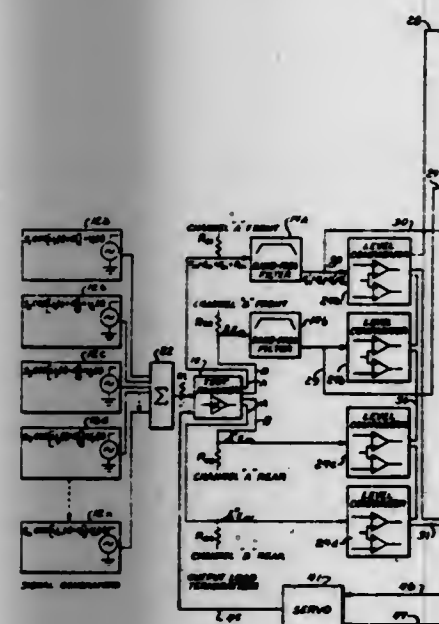
4,245,352 AUTOMATED SYSTEM FOR TESTING RADIO RECEIVERS

Oleh Karpowycz, West Chicago, and Narendra C. Thakkar, Roselle, both of Ill., assignors to International Jensen Incorporated, Westchester, Ill.

Filed Mar. 7, 1979, Ser. No. 18,445
Int. Cl.³ H04B 17/00

U.S. Cl. 455—226

25 Claims

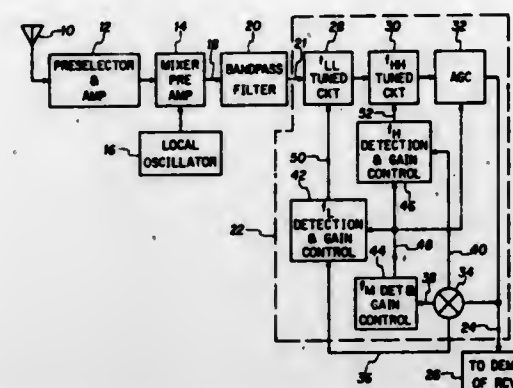


1. An automated system for conducting a plurality of performance tests on a radio receiver for determining the full response characteristics of the receiver, the system being of the type including means for producing a plurality of predetermined simulated broadcast signals, means for introducing the simulated signals into the receiver, said receiver producing an output signal responsive to each one of said simulated broadcast signals, means connected to said receiver for detecting each said output signal, and means connected to said receiver for analyzing the quality of each said output signal, the improvement comprising:

- a plurality of said analyzing means in parallel, each of said analyzing means comprising means for comparing a particular one of each said receiver output signals with respect to a specific set of preset parameters for conducting one of said plurality of performance tests;
- means for selecting and activating a specific one of said analyzing means in response to the particular output signal produced by the receiver, and
- one of said simulated broadcast signals including a plurality of separate and distinct components, said receiver being responsive to said broadcast signals to produce an output signal comprising a like plurality of separate and distinct components, said analyzing means including means for comparing the relative strengths of the respective components of the output signal.

4,245,353
AMPLITUDE TILT CORRECTION APPARATUS
Brian T. Bynum, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 17, 1979, Ser. No. 4,091
Int. Cl.³ H04B 1/12; H03H 21/00
U.S. Cl. 455—234

6 Claims

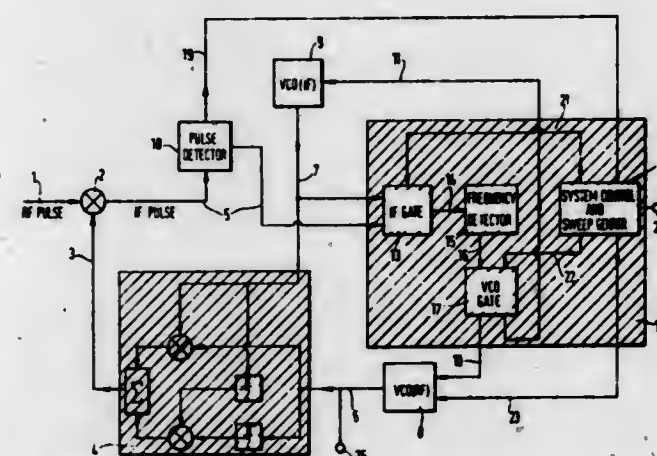


4. The method of automatically adjusting an incoming signal, the spectrum of which is sloped over a given frequency band in the frequency domain, to a signal whose spectrum has substantially zero slope in the same band comprising the steps of:

- passing the incoming signal through a variable Q tuned circuit whose center frequency is outside the given frequency band;
- detecting the amplitude of signal components at a predetermined frequency in said frequency band and providing a control signal indicative of that amplitude; and
- adjusting the Q of said tuned circuit in accordance with said control signal such that the amplitude of each of the signal components of the incoming signal in the given frequency band is changed toward values which are substantially identical.

4,245,354
RADIO FREQUENCY REGENERATORS
Ashley W. Guest, Bristol, England, assignor to British Aerospace, Surrey, England
Filed Mar. 7, 1978, Ser. No. 884,208
Claims priority, application United Kingdom, Mar. 17, 1977, 11282/77
Int. Cl.³ H04B 1/26
U.S. Cl. 455—259

6 Claims

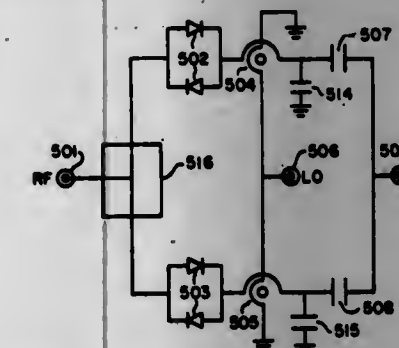


1. A method of regenerating an incoming R.F. signal in a radio or radar receiver, the method comprising: combining the outputs of a first and a second local oscillator in a single sideband generator to form a mixing signal, the first local oscillator being operable for producing a variable frequency R.F. output and the second local oscillator being operable for producing an output at an I.F. reference frequency;

mixing said mixing signal with said incoming R.F. signal to produce a derived I.F. signal, and varying the output frequency of said first local oscillator to cause the frequency of said derived I.F. signal to become equal to said I.F. reference frequency and, thereby, to cause the output frequency of said first local oscillator to become equal to the frequency of said incoming R.F. signal.

4,245,355
MICROWAVE FREQUENCY CONVERTER
Robert W. Pascoe, and Richard W. Thill, both of San Jose, Calif., assignors to Eaton Corporation, Cleveland, Ohio
Filed Aug. 8, 1979, Ser. No. 64,551
Int. Cl.³ H04B 1/26
U.S. Cl. 455—326

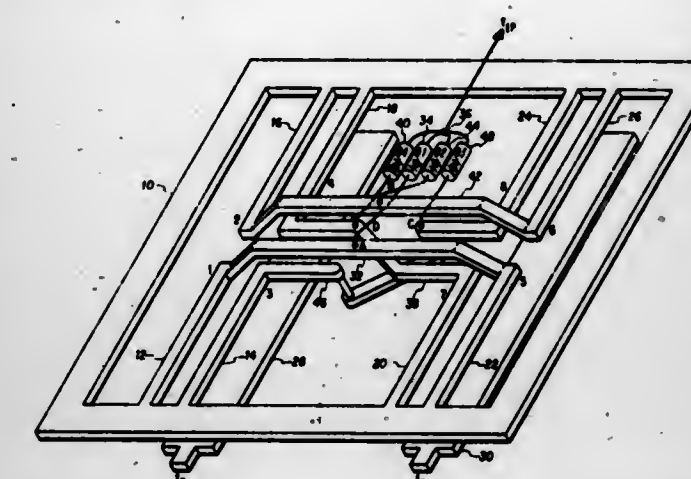
5 Claims



1. A frequency converter comprising:
- a subharmonic mixer having one RF, one IF and two LO ports, said mixer including two pair of antiparallel diodes with each diode pair being connected to one respective LO port,
 - a band-pass filter having an input port and a pair of output ports, said output ports being connected to the LO ports of said subharmonic mixer, and
 - a local oscillator signal source having an output port at which a number of signals at different frequencies are produced simultaneously, said source output port being connected to the input port of said filter to supply said mixer through said filter with an LO signal at a single frequency selected from said number of signals from said source.

4,245,356
FREQUENCY TRANSLATOR
Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 27, 1979, Ser. No. 34,045
Int. Cl.³ H04B 1/26
U.S. Cl. 455—327

4 Claims



1. Balanced frequency translating apparatus comprising, in combination:
- RF (radio frequency) signal terminal means and IF (intermediate frequency) signal terminal means one of which supplies translating apparatus received signals to the apparatus for frequency translation and the other of which supplies translated output signals;
 - planar transmission line means, including first and second balun pairs, for providing signal interfacing between said RF signal terminal means and the translating apparatus;
 - carrier signal supplying means, including third and fourth balun pairs, for supplying carrier signals to the translating apparatus;
 - first nonlinear circuit means for mixing translating apparatus received signals with the carrier signals;
 - means connecting said first and third balun pairs in parallel to said first nonlinear circuit means;
 - second nonlinear circuit means for mixing translating apparatus received signals with the carrier signals;
 - means connecting said second and fourth balun pairs in parallel and to said second nonlinear circuit means whereby RF and carrier signals are isolated from passing between said RF signal terminal means and said carrier signal supplying means; and
 - means connecting said IF signal terminal means to said first and second nonlinear circuit means.

DESIGN PATENTS

GRANTED JAN. 13, 1981

ERRATA

For	See
CLASS	PATENT NO.
D03-320	257,799
D12-031	257,823
D23-072	257,893
D03-033	257,906

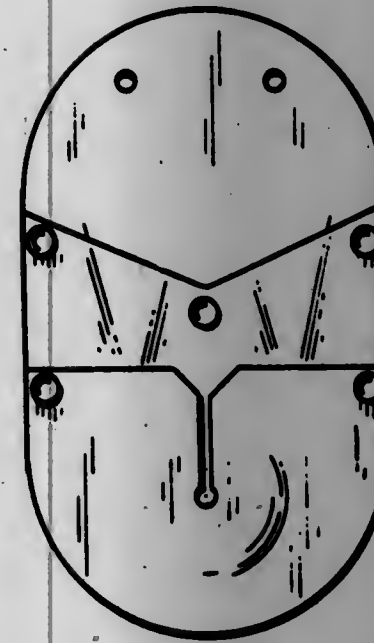
DESIGNS

JANUARY 13, 1981

257,796
COMBINED GOLF TEE AND BALL MARKER HOLDER
Robert A. Winbaser, 301 NW. 35 Ct., Apt. 10, Pompano Beach,
Fla. 33064

Filed Mar. 17, 1978, Ser. No. 887,643
Term of patent 14 years
Int. Cl. D02-99

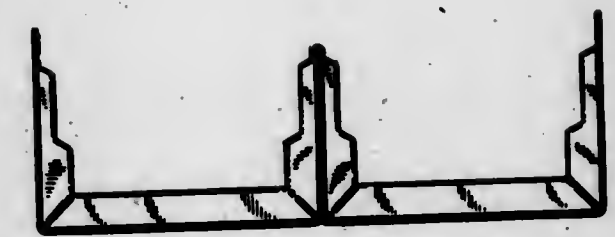
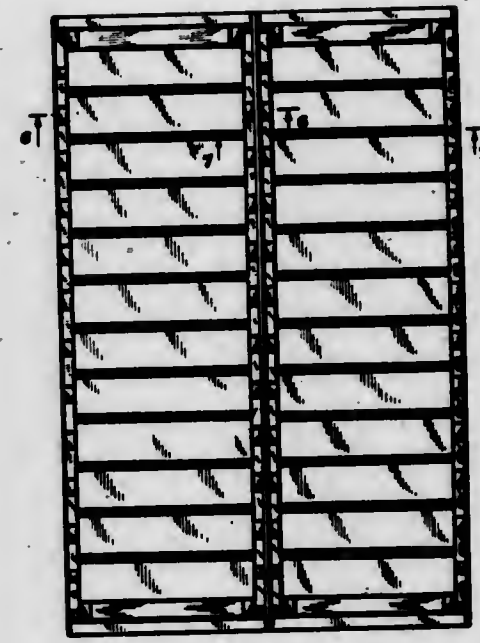
U.S. Cl. D2-400



257,797
TRAY INSERT FOR TAPE CARTRIDGES AND TAPE
CASSETTES
Vaughn Aprahamian, Rego Park, N.Y., assignor to LE-BO
Products Company, Inc., Maspeth, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,425
Term of patent 14 years
Int. Cl. D3-02; D6-04

U.S. Cl. D3-35



257,798

DETACHABLE FILE FOLDER FOR AN ATTACHE CASE

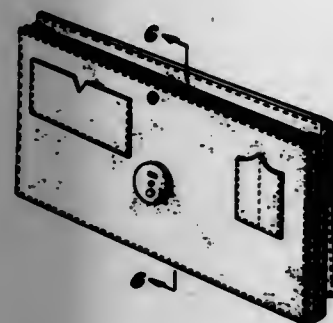
George Rapoport, 8787 Shoreham Dr., Number "C", Los Angeles, Calif. 90057

Filed Jun. 20, 1978, Ser. No. 917,390

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-79



257,800

VANITY CASE

Erling H. Pedersen, Lyngby, Denmark, assignor to Stig Rayn A/S, Farum, Denmark

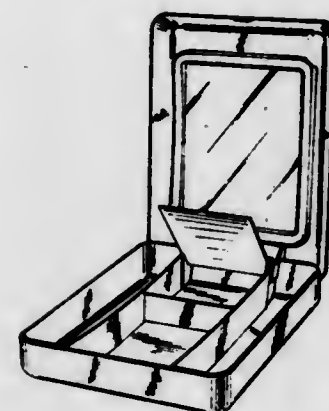
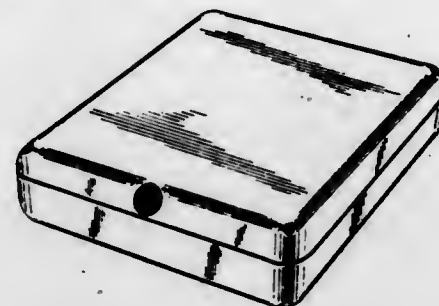
Filed Aug. 3, 1978, Ser. No. 930,820

Claims priority, application Denmark, Feb. 3, 1978, 108/78

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-39

257,799
SOLE

Luc Combarot, Bellefeuille, Canada, assignor to Baron Rubber Limited, St. Jerome, Canada

Filed Jun. 16, 1978, Ser. No. 916,228

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-320

257,801
LUGGAGE

Murray J. Lubliner, New York, N.Y., assignor to United States Luggage Corp., Fall River, Mass.

Filed May 8, 1978, Ser. No. 903,984

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-71



257,802

BED PEDESTAL OR SIMILAR ARTICLE

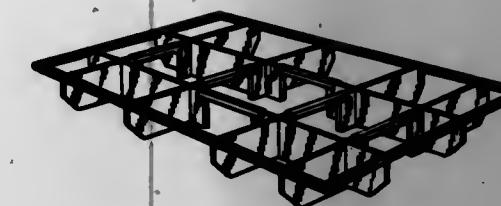
Ronald G. Underwood, 1415 W. North St., Anaheim, Calif. 92801

Filed Apr. 27, 1978, Ser. No. 908,440

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-84



257,803

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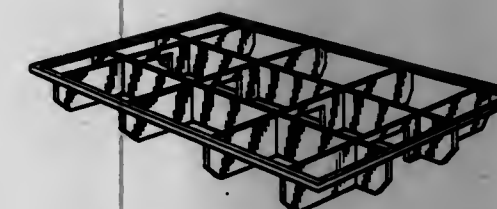
Ronald G. Underwood, 1415 W. North St., Anaheim, Calif. 92801

Filed Apr. 27, 1978, Ser. No. 901,025

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-84



257,804

BED PEDESTAL OR SIMILAR ARTICLE

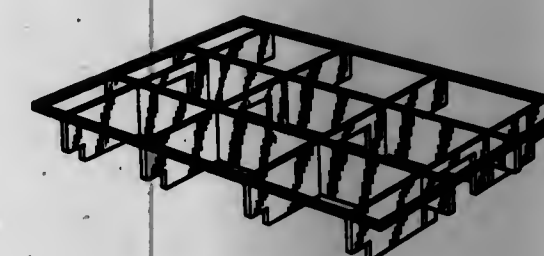
Ronald G. Underwood, 1415 W. North St., Anaheim, Calif. 92801

Filed Apr. 27, 1978, Ser. No. 901,026

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-84



257,805

COVER FOR ROLLED PAPER

Eugene M. Havener, and Joanne M. Havener, both of 928 N. 82nd St., Apt. H213, Scottsdale, Ariz. 85257

Filed Jun. 18, 1979, Ser. No. 49,930

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D6-86

257,806
BOOKEND

James J. Maune, 121 Harvard Dr., Plainview, N.Y. 11803

Filed Dec. 19, 1977, Ser. No. 862,216

Term of patent 14 years

Int. Cl. D6-06

U.S. Cl. D6-106



257,807

JEWELRY RACK

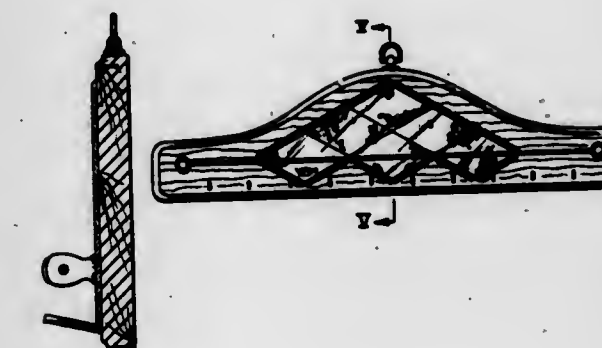
Richard Vander Velden, 5106 Curtis, SW., and Mary F. V. Alwelt, 3700 Michael, SW., both of Wyoming, Mich. 49509

Filed Sep. 11, 1978, Ser. No. 941,809

Term of patent 14 years

Int. Cl. D6-04

U.S. Cl. D6-114



257,808
BENCHRobert E. Haggard, First St. & A St., Snohomish, Wash. 98290
Filed May 19, 1978, Ser. No. 907,869Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-60



257,809

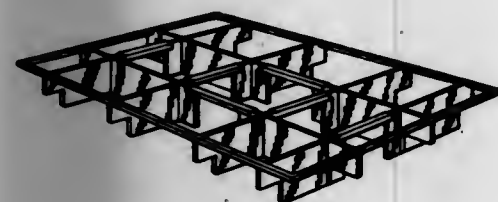
BED PEDESTAL OR SIMILAR ARTICLE

Ronald G. Underwood, 1415 W. North St., Ste. 718, Anaheim, Calif. 92801

Filed Apr. 27, 1978, Ser. No. 900,439

Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-84



257,810

ADJUSTABLE WALL MOUNTED BRACKET FOR
HOLDING A FLOWER POTJohn B. Wilson, P.O. Box 157, Banner Elk, N.C. 28604
Filed May 22, 1978, Ser. No. 908,105Term of patent 14 years
Int. Cl. D6-06; D8-08

U.S. Cl. D6-137



257,811

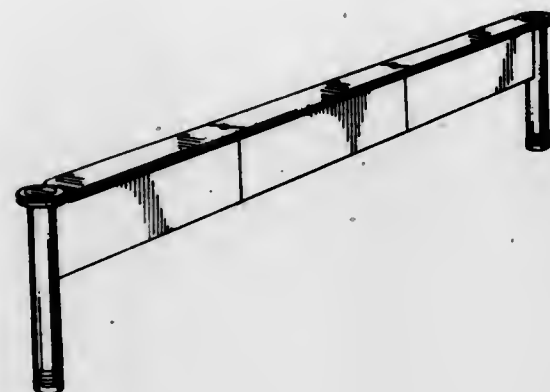
ROOM DIVIDER

Douglas C. Ball, Sennerville, Canada, assignor to Hauserman Ltd., Waterloo, Canada

Filed Jun. 12, 1978, Ser. No. 914,708
Term of patent 14 years

Int. Cl. D6-06; D25-02

U.S. Cl. D6-139



257,812

PANEL FOR PARTITIONS OR THE LIKE

Kathryn L. Cyplik, La Grange, Ill., assignor to Beatrice Foods Co., Denver, Colo.

Filed Oct. 4, 1978, Ser. No. 948,521

Term of patent 14 years
Int. Cl. D6-06

U.S. Cl. D6-139



257,813

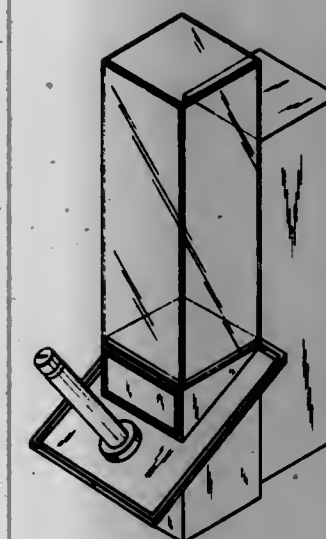
DISPLAY DISPENSER FOR PERFUMES OR THE LIKE

Curtis J. Oestreich, East Windsor; Michael Radice, Oakland, both of N.J., and John J. Scalice, New York, N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 886,176

Term of patent 14 years
Int. Cl. D20-02; D9-01

U.S. Cl. D6-157

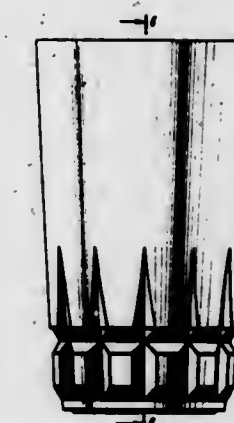
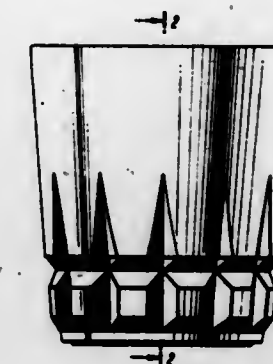


257,815

TUMBLER OR SIMILAR ARTICLE

Jean-Jacques Durand, 62510 Arques, La Garenne, France
Filed May 25, 1979, Ser. No. 42,429Term of patent 14 years
Int. Cl. D07-01

U.S. Cl. D7-14



257,816

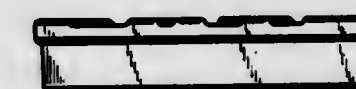
BLOCK FOR FLATTENING A FOOD PASTE

Robert A. Bruce, Painted Post, N.Y., assignor to Corning Glass Works

Filed Nov. 9, 1978, Ser. No. 959,371

Term of patent 14 years
Int. Cl. D07-04

U.S. Cl. D7-41



257,814

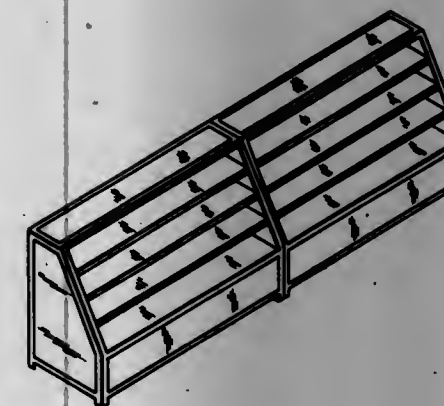
SET OF MODULAR DISPLAY UNITS

Fred W. Kates, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,159

Term of patent 14 years
Int. Cl. D20-02; D6-04

U.S. Cl. D6-186



257,817

MINI CAKE PAN OR SIMILAR ARTICLE

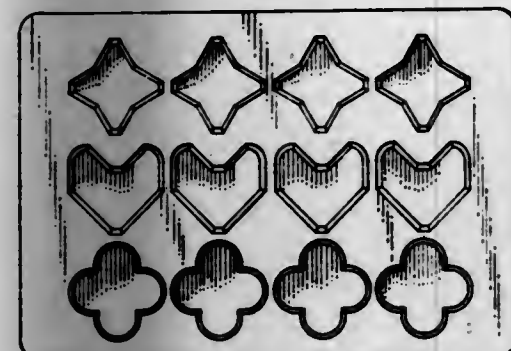
Nancy T. Young, 5831 Kilanea Ave., Honolulu, HI. 96816

Filed May 1, 1978, Ser. No. 981,978

Term of patent 14 years

Int. Cl. D07-02

U.S. Cl. D7-43



257,819

CONDIMENT CONTAINER

Andre Morin, Montreal, Canada, assignor to Les Industries

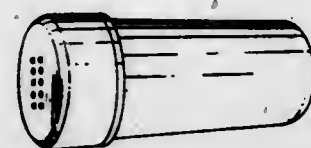
Provinciales Ltée., St-Damien, Canada

Filed Apr. 20, 1978, Ser. No. 898,499

Term of patent 14 years

Int. Cl. D7-06

U.S. Cl. D7-54



257,820

BUN TOASTER

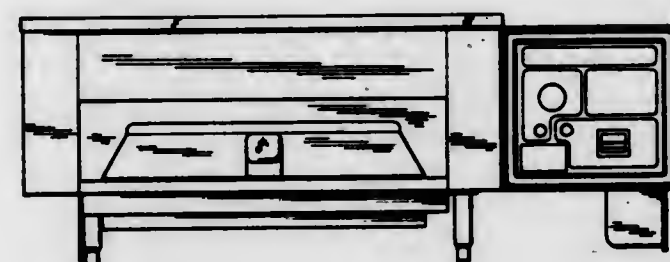
Rodney Hegeland, Baraboo, Wis., assignor to Wisco Industries, Inc., Oregon, Wis.

Filed Feb. 27, 1978, Ser. No. 881,867

Term of patent 14 years

Int. Cl. D7-02

U.S. Cl. D7-91



257,818

DECANTER

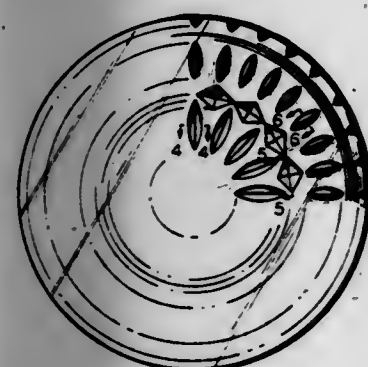
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Oct. 27, 1978, Ser. No. 955,423

Term of patent 14 years

Int. Cl. D07-01, 06

U.S. Cl. D7-52



257,821

INFANT AND INCAPACITANT FEEDING SPOON

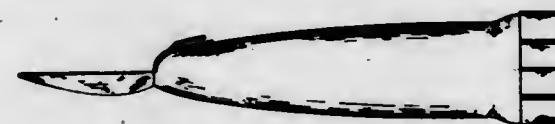
Timothy A. Pike, 3909 N. 60th, Omaha, Nebr. 68104

Filed Jun. 5, 1978, Ser. No. 912,814

Term of patent 14 years

Int. Cl. D07-03

U.S. Cl. D7-141



257,822

CAN OPENER

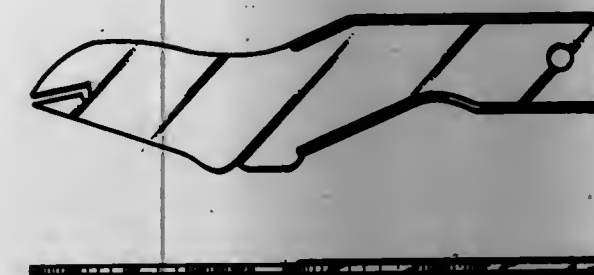
William P. Bay, Jr., Rte. 1, Box 53, Ormond Beach, Fla. 32074

Filed Jul. 5, 1978, Ser. No. 922,090

Term of patent 14 years

Int. Cl. D07-99

U.S. Cl. D8-18



257,824

TOOL FOR IMPRINTING NON-REPEATING STONE PATTERNS IN FRESH CONCRETE

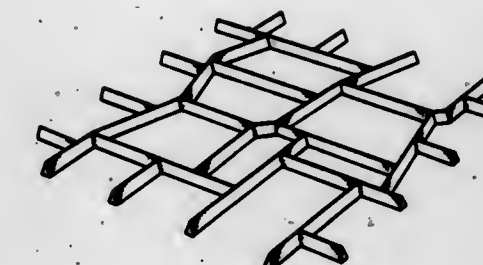
John L. Puccini, 432 Upper Lake Rd., Thousand Oaks, Calif. 91360, and Edward F. Shea, Jr., 2855 E. Wastach Ct., Westlake Village, Calif. 91361

Filed Feb. 27, 1978, Ser. No. 881,836

Term of patent 14 years

Int. Cl. D8-05

U.S. Cl. D8-45



257,823

DOLLY PLATE FOR A REFUSE CONTAINER

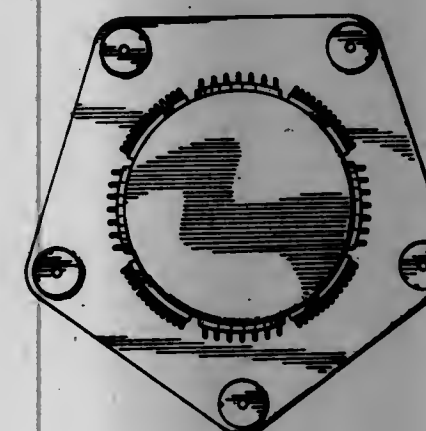
Dale T. Maza, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.

Filed Mar. 3, 1978, Ser. No. 883,338

Term of patent 14 years

Int. Cl. D12-02

U.S. Cl. D12-31



257,825

TOOL FOR IMPRINTING NON-REPEATING STONE PATTERNS IN FRESH CONCRETE

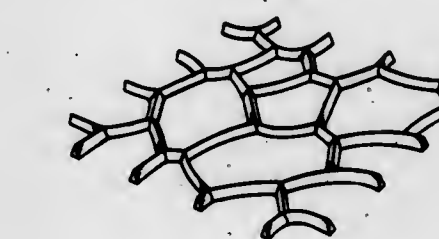
John L. Puccini, 432 Upper Lake Rd., Thousand Oaks, Calif. 91360, and Edward F. Shea, Jr., 2855 E. Wastach Ct., Westlake Village, Calif. 91361

Filed Feb. 27, 1978, Ser. No. 881,839

Term of patent 14 years

Int. Cl. D8-05

U.S. Cl. D8-45

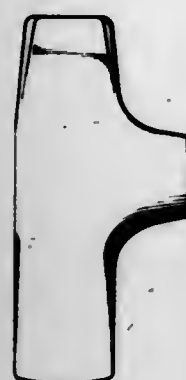


257,826

IMPLEMENT HEAD

Dale A. Jones, Rte. 1, Palmetto, Ga. 30268
 Filed Dec. 5, 1977, Ser. No. 857,797
 Term of patent 14 years
 Int. Cl. D8-03

U.S. Cl. D8-78



257,827

COMBINED BOTTLE AND CLOSURE

Gordon A. Strand, Toledo, and Richard L. Weckman, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc.
 Filed Oct. 3, 1977, Ser. No. 838,513
 Term of patent 14 years
 Int. Cl. D9-01

U.S. Cl. D9-412



257,828

BOTTLE

Gordon A. Strand, Toledo, and Richard L. Weckman, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc.
 Filed Oct. 3, 1977, Ser. No. 838,512
 Term of patent 14 years
 Int. Cl. D9-01

U.S. Cl. D9-412

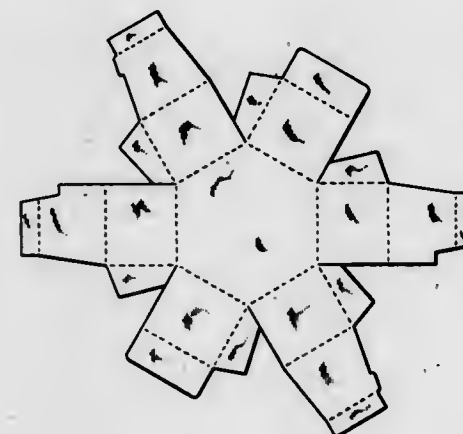


257,829

INTERLOCKING FLAP CONFIGURATION BLANK

George P. Webinger, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.
 Filed Aug. 11, 1978, Ser. No. 932,868
 Term of patent 14 years
 Int. Cl. D9-03

U.S. Cl. D9-430

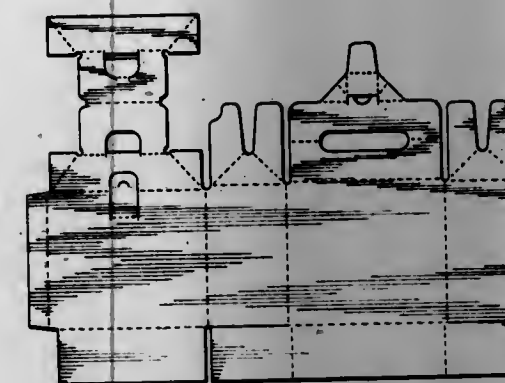


257,830

DISPLAY CARRY CONTAINER BLANK

David R. Card, Memphis, Tenn., assignor to Champion International Corporation, Stamford, Conn.
 Filed Aug. 17, 1978, Ser. No. 934,339
 Term of patent 14 years
 Int. Cl. D9-03

U.S. Cl. D9-432

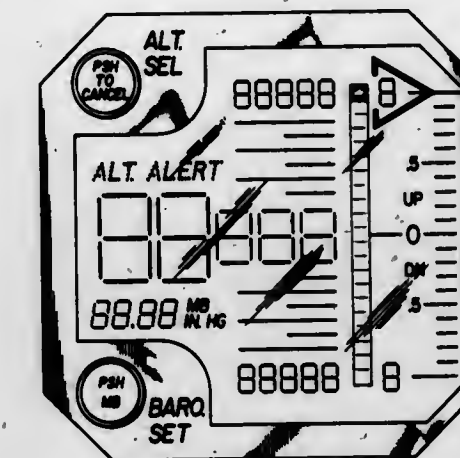


257,832

ALTITUDE/VERTICAL SPEED INDICATOR

Roger L. Flint, Marion, Iowa, and Siegfried Knemeyer, Yellow Springs, Ohio, assignors to Rockwell International Corporation, El Segundo, Calif.
 Filed May 1, 1978, Ser. No. 901,931
 Term of patent 14 years
 Int. Cl. D10-05

U.S. Cl. D10-67

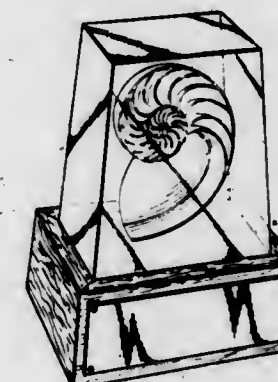


257,833

TROPHY

William D. Brock, Alexandria, and Gilbert F. Meekins, Hague, both of Va.
 Filed Apr. 25, 1978, Ser. No. 899,835
 Term of patent 14 years
 Int. Cl. D11-02

U.S. Cl. D11-157



257,831

CLOSURE OVERCAP

Bing Welch, Richmond, Ind., assignor to Aluminum Company of America
 Filed Sep. 25, 1978, Ser. No. 945,582
 Term of patent 14 years
 Int. Cl. D09-07

U.S. Cl. D9-445

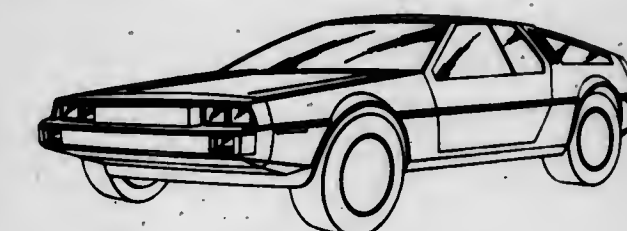


257,834

AUTOMOBILE

Giorgetto Giugiaro, Casella Postale 417, 10100 Turin, Italy
 Filed May 10, 1978, Ser. No. 904,716
 Term of patent 14 years
 Int. Cl. D12-08

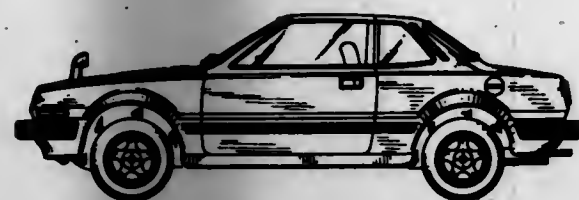
U.S. Cl. D12-92



257,835
MOTORCAR

Masahito Nakano, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 19, 1979, Ser. No. 31,480
Claims priority, application Japan, Nov. 21, 1978, 53-49769
Term of patent 14 years
Int. Cl. D12-08

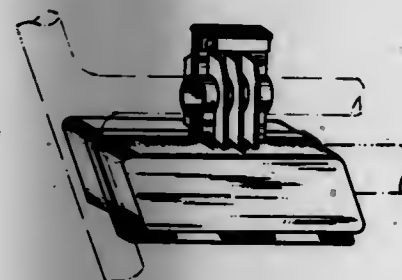
U.S. Cl. D12-92



257,836
CYCLE PUMP HOLDER

David E. Halter, 64 Merritt St., Marblehead, Mass. 01945
Filed Nov. 3, 1978, Ser. No. 957,477
Term of patent 14 years
Int. Cl. D12-11

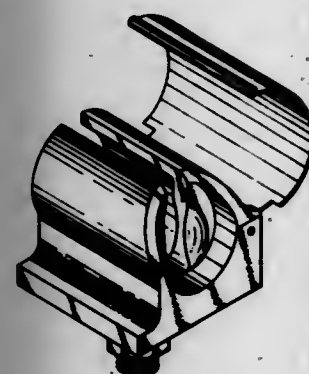
U.S. Cl. D12-158



257,837
SAFETY CHAIN HOLDER

Harless Pierce, 1212 W. Longview, Stockton, Calif. 95209
Filed Mar. 9, 1979, Ser. No. 19,113
Term of patent 14 years
Int. Cl. D12-16

U.S. Cl. D12-162



257,838
MOTORCYCLE FAIRING

John Mockett, Watford, England, assignor to Yamaha Motor N.V.
Filed Jul. 18, 1978, Ser. No. 925,887
Claims priority, application Benelux, Jan. 18, 1978, 52434-00
Term of patent 14 years
Int. Cl. D12-17

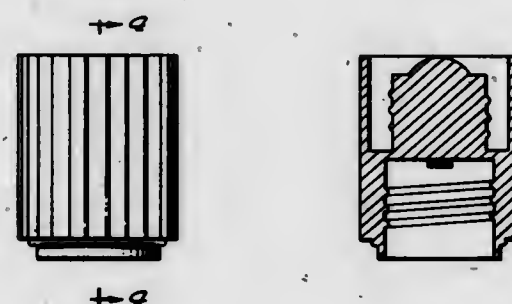
U.S. Cl. D12-182



257,839
LIGHTBULB DIMMER SOCKET
Robert A. Moussette, 2922 Arizona Ave., Apt. 1, Santa Monica, Calif. 90404

Filed Oct. 16, 1978, Ser. No. 951,407
Term of patent 14 years
Int. Cl. D13-03

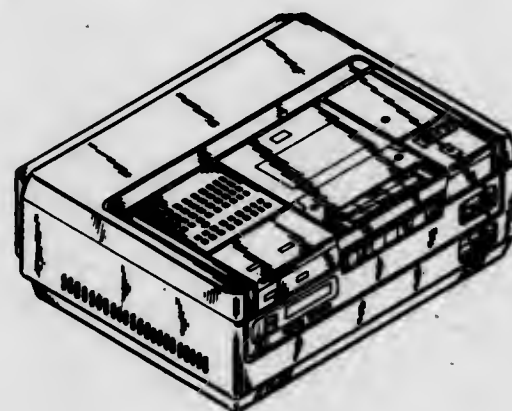
U.S. Cl. D13-25



257,840
VIDEO TAPE RECORDER

Noriaki Kotsuka, 1661-126 Fukaya-cho, Totsuka-ku, Yokohama-shi, Kanagawa, and Mitsuru Inaba, 3-179 Hongo-cho, Naka-ku, Yokohama-shi, Kanagawa, both of Japan
Filed Jan. 6, 1978, Ser. No. 867,628
Claims priority, application Japan, Jul. 8, 1977, 52-26745
Term of patent 14 years
Int. Cl. D14-01

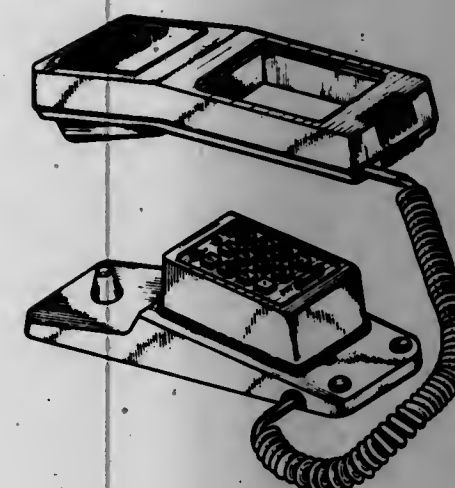
U.S. Cl. 14-2



257,841
TELEPHONE SET

Narumi Tada, Takarazaka, Japan, assignor to Toa Electric Company, Ltd., Kobe, Japan
Filed Apr. 24, 1978, Ser. No. 899,454
Term of patent 14 years
Int. Cl. D14-03

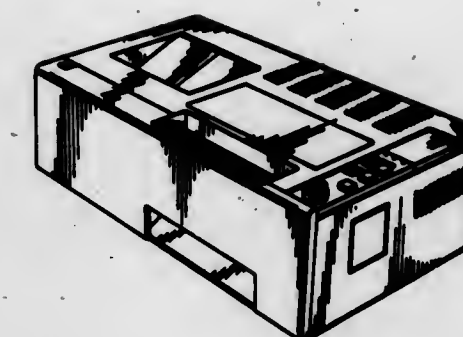
U.S. Cl. 14-53



257,843
FACSIMILE TRANSCIVER

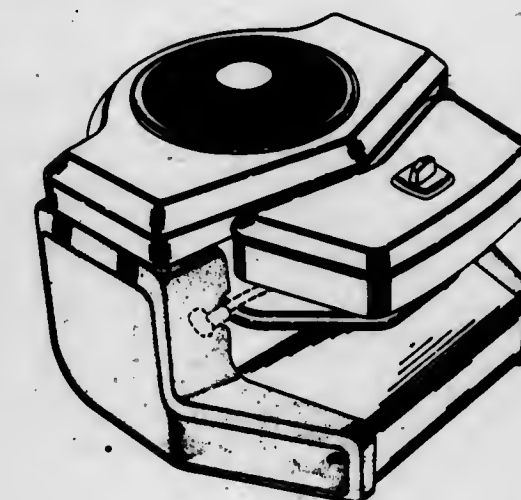
Shuichi Kohno, Mitaka, and Yoshio Fujita, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Apr. 26, 1978, Ser. No. 908,332
Claims priority, application Japan, Oct. 31, 1977, 52-42939; Oct. 31, 1977, 52-42939
Term of patent 14 years
Int. Cl. D14-07

U.S. Cl. D14-94



257,844
TWO-CYLINDER VERTICAL SHAFT INTERNAL COMBUSTION ENGINE
Clifford B. Stevens, Milwaukee, Wis., assignor to Briggs & Stratton Corporation
Filed Oct. 31, 1977, Ser. No. 847,119
Term of patent 14 years
Int. Cl. D15-1

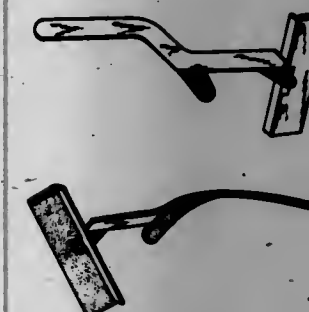
U.S. Cl. D15-1



257,842
TELEPHONE CRADLE

Sin T. Chow, 29B, Broadway, 3rd floor, Mei Foo San Chuen, Kowloon, Hong Kong
Filed Jul. 28, 1978, Ser. No. 928,861
Term of patent 14 years
Int. Cl. D14-03, 99

U.S. Cl. D14-65



257,845
SWEEPER

Ralph C. Penbody, Minneapolis, and Robert D. Hennessey, Golden Valley, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed May 12, 1978, Ser. No. 905,420
Term of patent 14 years
Int. Cl. D15—05

U.S. Cl. D15—50

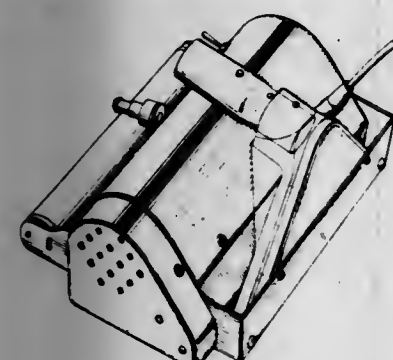


257,846
POWER SCRUBBER

Carl Parise; Gary L. Fullerton, and Wallace O. Birdsall, all of Reno, Nev., assignors to Parise & Sons, Inc., Reno, Nev.

Filed Apr. 18, 1978, Ser. No. 897,607
Term of patent 14 years
Int. Cl. D15—05

U.S. Cl. D15—63

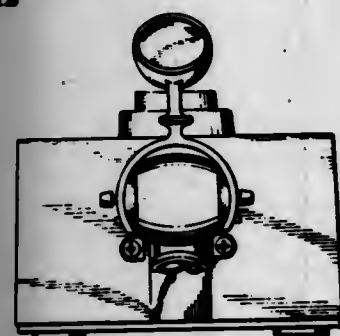


257,847
DISPENSER

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,144
Term of patent 14 years
Int. Cl. D15—08

U.S. Cl. D15—112

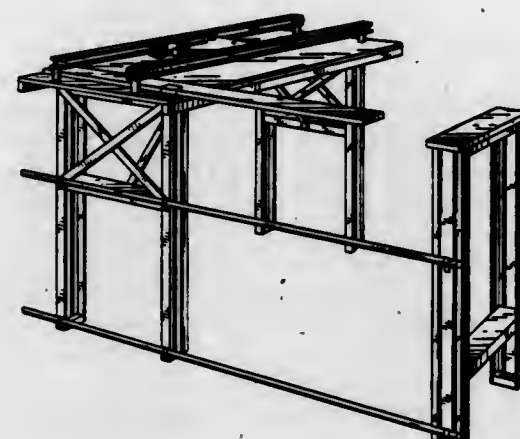


257,848
SAW TABLE

Milton E. Handler, Northbrook; Richard Sylvan, Glenview, and Herbert Baisch, Niles, all of Ill., assignors to Hirsch Company, Skokie, Ill.

Filed Oct. 2, 1978, Ser. No. 947,760
Term of patent 14 years
Int. Cl. D15—09

U.S. Cl. D15—133

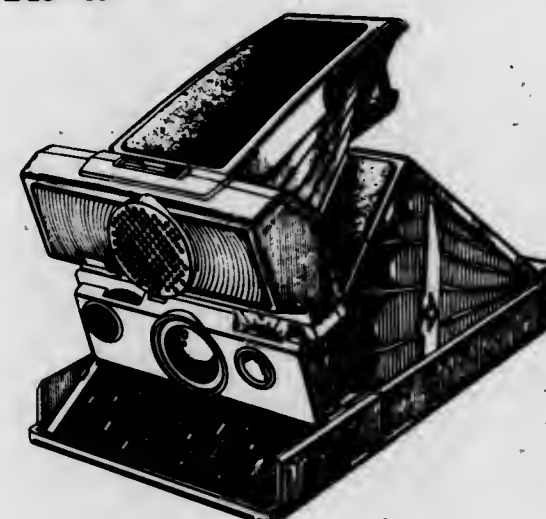


257,849
FOLDING PHOTOGRAPHIC CAMERA OR SIMILAR ARTICLE

James M. Conner, Harrison, N.Y.; Patrick L. Finelli, Sudbury; John C. Ostrowski, Maynard, both of Mass.; James M. Ryan, New York, N.Y., and Frederick Slavitter, Needham, Mass., assignors to Polaroid Corporation

Filed Apr. 25, 1978, Ser. No. 899,887
Term of patent 14 years
Int. Cl. D16—01

U.S. Cl. D16—05

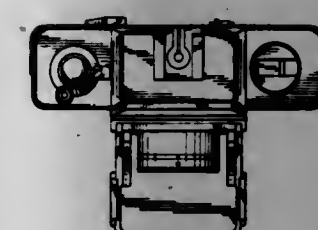
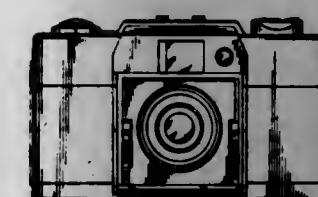


257,850
CAMERA

Nobuki Matsumoto, Yokohama, Japan, assignor to Ricoh Company, Ltd.

Filed Jun. 1, 1978, Ser. No. 911,438
Claims priority, application Japan, Dec. 7, 1977, 52-48224
Term of patent 7 years
Int. Cl. D16—01

U.S. Cl. D16—06



257,852

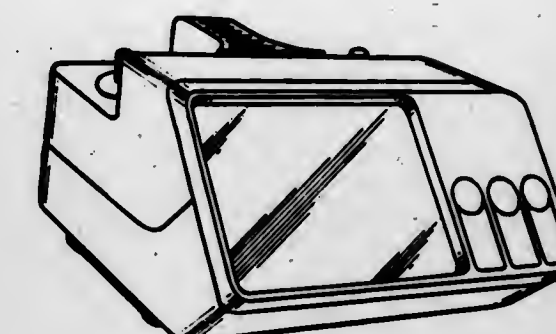
REAR SCREEN MOTION PICTURE PROJECTOR

Norbert Schlagheck, and Herbert Schultes, both of Fuerstenfeldbruck, Fed. Rep. of Germany, assignors to AFGA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 12, 1978, Ser. No. 895,657
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 5526149

Term of patent 14 years
Int. Cl. D16—02

U.S. Cl. D16—14



257,853

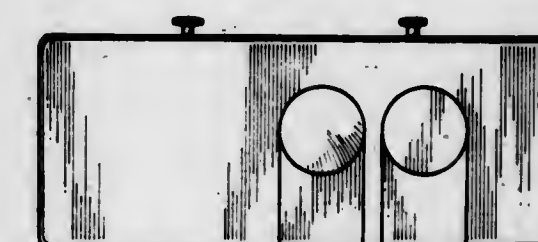
ATTACHABLE LAMP FOR A MOVIE CAMERA

Norbert Schlagheck, and Herbert Schultes, both of Fuerstenfeldbruck, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 12, 1978, Ser. No. 895,658
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 5526149

Term of patent 14 years
Int. Cl. D16—05

U.S. Cl. D16—42



257,851
LIGHT METER

Richard P. Speck, 375 S. Ogden, Denver, Colo. 80209

Filed Mar. 13, 1978, Ser. No. 886,909
Term of patent 14 years
Int. Cl. D16—05

U.S. Cl. D16—39



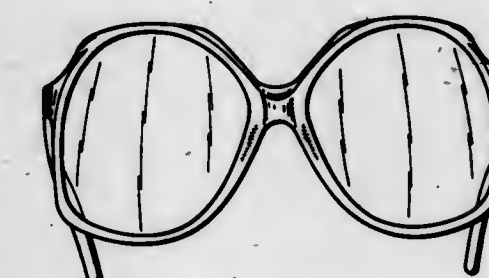
257,854

PAIR OF SPECTACLES

Richard M. Boone, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 31, 1978, Ser. No. 938,294
Term of patent 14 years
Int. Cl. D16—06

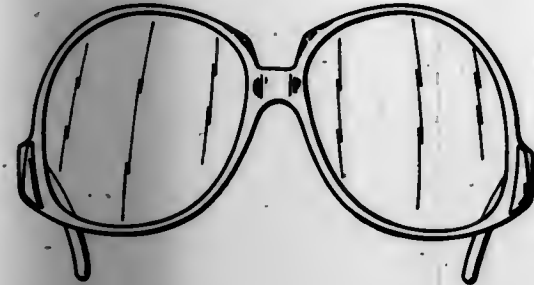
U.S. Cl. D16—65



257,855
PAIR OF SPECTACLES

Richard M. Boone, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Aug. 31, 1978, Ser. No. 938,296
Term of patent 14 years
Int. Cl. D16-06

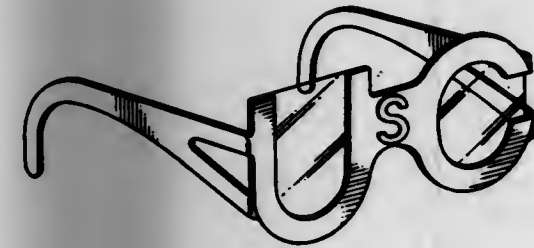
U.S. Cl. D16-65



257,856
EYEGLASSES

Kurt W. Wittke, 7055 Corbin, Camoga Park, Calif. 91305, and
Addie L. Klotz, 18742 Labrador, Northridge, Calif. 91324
Filed Jan. 26, 1978, Ser. No. 919,376
Term of patent 14 years
Int. Cl. D16-06

U.S. Cl. D16-71



257,857
DRAWING PEN

John P. Leuenberger, Bethlehem, and Wolfgang Witz, Easton, both of Pa., assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.
Filed Oct. 11, 1978, Ser. No. 950,343
Term of patent 14 years
Int. Cl. D19-06

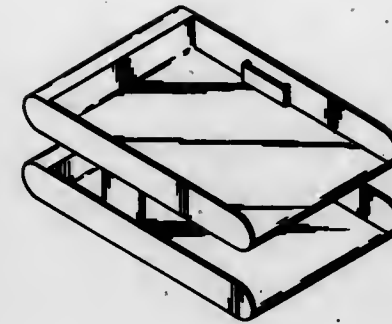
U.S. Cl. D19-49



257,858
TWO TIER LETTER TRAY

William B. Sklaroff, 722 E. Conshohocken State Rd., Penn Valley, Pa. 19072
Filed Apr. 23, 1979, Ser. No. 32,055
Term of patent 14 years
Int. Cl. D19-02

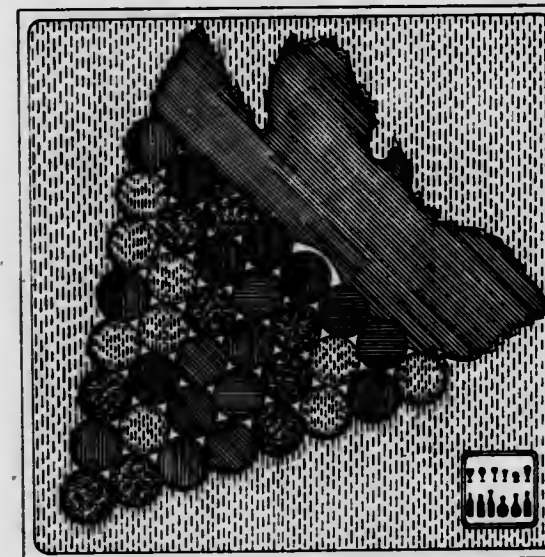
U.S. Cl. D19-92



257,859
GAME BOARD

Sheila Hoffman, New York, N.Y., assignor to Wine Diversions, Ltd., Denver, Colo.
Filed Nov. 20, 1978, Ser. No. 962,146
Term of patent 14 years
Int. Cl. D21-01

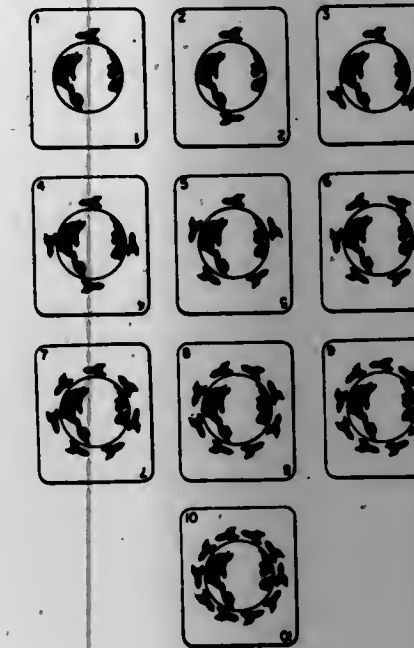
U.S. Cl. D21-34



257,860
DECK OF PLAYING CARDS

Dwight N. Middleton, 424 Summit House, West Chester, Pa. 19380
Filed Nov. 6, 1978, Ser. No. 957,938
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-42



257,861
SEPARABLE GAME PIECE

Fredric J. Hodkin, 2648 Scott St., Hollywood, Fla. 33020
Filed Mar. 14, 1977, Ser. No. 777,759
Term of patent 14 years
Int. Cl. D21-01

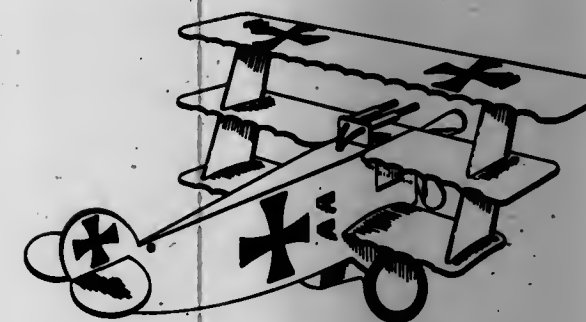
U.S. Cl. D21-51



257,862
TOY AIRPLANE

Robert R. Schoch, 517 Otteray Dr., High Point, N.C. 27260
Filed Jan. 26, 1978, Ser. No. 919,260
Term of patent 14 years
Int. Cl. D21-01

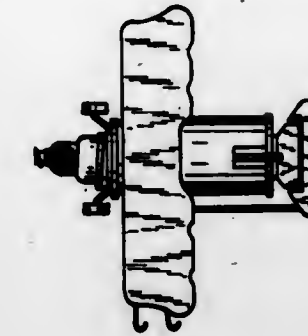
U.S. Cl. D21-89



257,863
TOY AIRPLANE

Robert H. Ezman, 1142 Elm St., Reading, Pa. 19601
Filed Jan. 7, 1978, Ser. No. 913,529
Term of patent 14 years
Int. Cl. D21-01

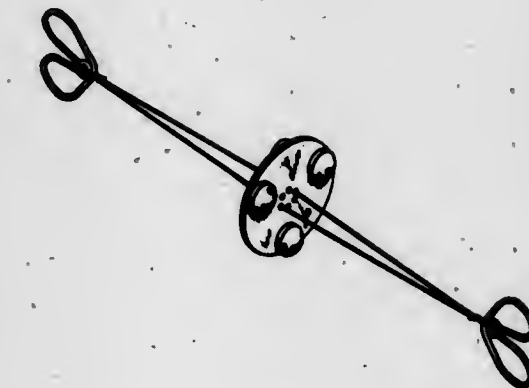
U.S. Cl. D21-90



257,864
COMBINED SPINNING AND WHISTLING TOY

Alan H. Goldman, 11 Willow Dr., Briarcliff Manor, N.Y. 10510
Filed Oct. 7, 1977, Ser. No. 840,142
Term of patent 14 years
Int. Cl. D21-01

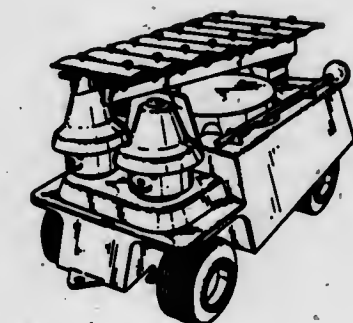
U.S. Cl. D21-98



257,865
MUSICAL TOY TRUCK

Dennis G. Wyman, Broadstairs, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 24, 1978, Ser. No. 872,357
Term of patent 14 years
Int. Cl. D21-01

U.S. Cl. D21-134



257,866

VAULTING BOX

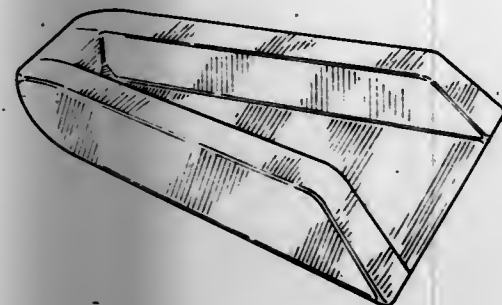
Bruce A. Simpson, 237 Borden St., Toronto, Ontario, Canada (M5S 2N5)

Filed Mar. 1, 1978, Ser. No. 882,427

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-191



257,867

BALL PADDLE FOR TABLE GAME

Bertrand Castelli, c/o Myron Salislan, 251 S. Lake Ave., Suite 701, Pasadena, Calif. 91101

Filed Sep. 25, 1978, Ser. No. 945,185

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-213



257,868

GOLF PUTTER

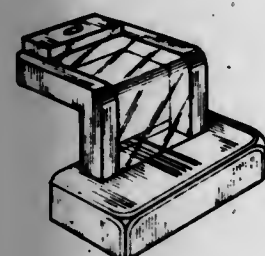
Bobby J. Shelton, Rte. 1 Box 34A1, Mocksville, N.C. 27028

Filed Oct. 6, 1977, Ser. No. 839,972

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-217



257,869

GOLF CLUB HEAD

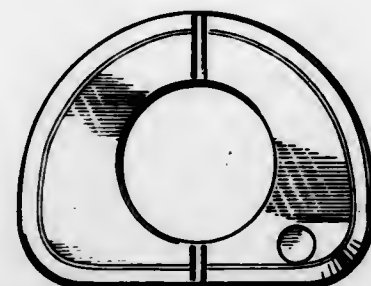
Alexander S. O. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108

Filed Dec. 13, 1977, Ser. No. 860,119

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-219



257,870

GOLF CLUB HEAD

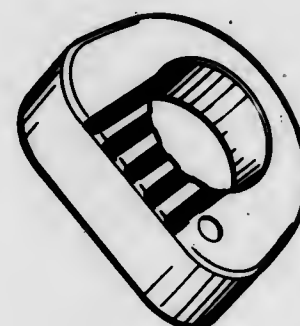
Alexander S. O. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108

Filed Jul. 20, 1978, Ser. No. 926,256

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-219



257,871

GOLF CLUB HEAD

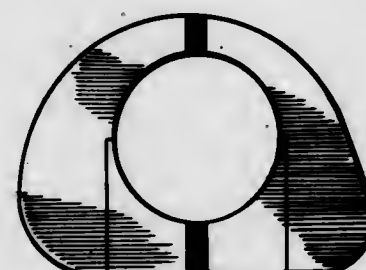
Alexander S. O. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108

Filed Jul. 20, 1978, Ser. No. 926,257

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-219



257,872

GOLF CLUB HEAD

Alexander S. O. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108

Filed Jul. 20, 1978, Ser. No. 926,258

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-219



257,873

GOLF CLUB HEAD

Alexander S. O. MacDougall, 495 Valley Club Rd., Santa Barbara, Calif. 93108

Filed Jul. 20, 1978, Ser. No. 926,259

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-219



257,874

SKATEBOARD RAMP

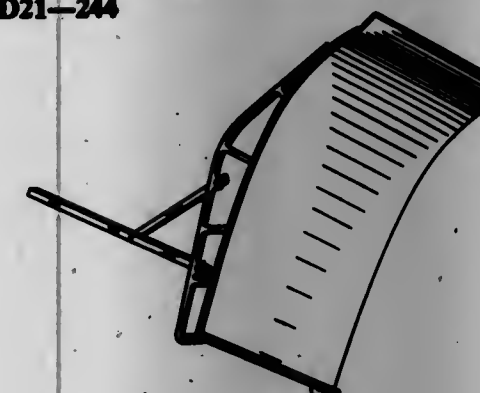
Richard D. Sheehan, Eagle Rock, and R. J. Louis, Chatsworth, both of Calif., assignors to R. J. Louis Enterprises, Inc., Chatsworth, Calif.

Filed Sep. 13, 1978, Ser. No. 942,176

Term of patent 14 years

Int. Cl. D21-03

U.S. Cl. D21-244



257,875

BULLDOZER PLAYGROUND CLIMBER

Richard Rudy, Reedsville, Pa., assignor to Kilgore Corporation, Toone, Tenn.

Filed Nov. 2, 1978, Ser. No. 956,927

Term of patent 14 years

Int. Cl. D21-03

U.S. Cl. D21-245



257,876

WINDOW FOR TENT OR THE LIKE

Marvin A. Bareis, New Haven, Mo., assignor to Kallwood Company, St. Louis, Mo.

Filed Apr. 7, 1978, Ser. No. 894,622

Term of patent 3 1/2 years

Int. Cl. D21-04

U.S. Cl. D21-254



257,877

COMBINED FISHING PLIERS AND CUTTER

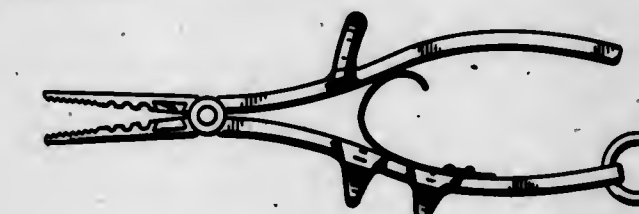
James B. Patterson, 6915 Schiller St., Houston, Tex. 77055

Filed Jan. 5, 1978, Ser. No. 912,574

Term of patent 14 years

Int. Cl. D22-05; D8-03

U.S. Cl. D22-31



257,878

AIR FOOT PUMP

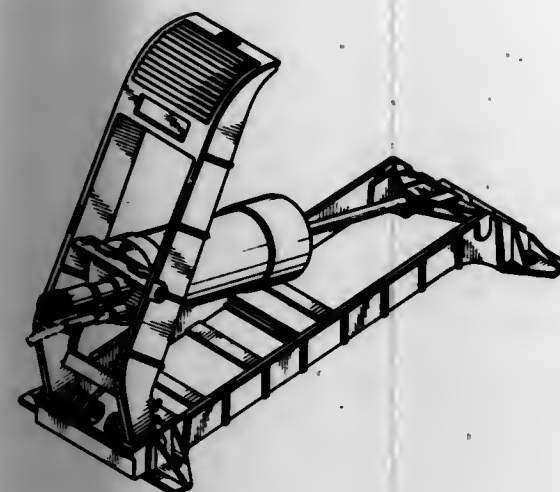
Edwin L. Schwartz, 16604 Park Lane Pl., Los Angeles, Calif. 90049

Filed Sep. 28, 1978, Ser. No. 946,666

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—14



257,879

TOILET CHAIR

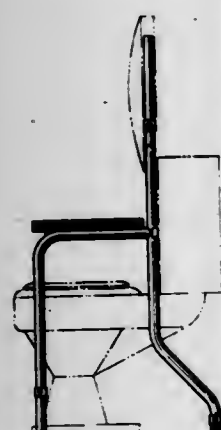
Cyril E. Hicks, 3386 Ormond Rd., Cleveland, Ohio 44118

Filed Apr. 17, 1978, Ser. No. 897,528

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—48



257,880

CANTILEVERED FIREPLACE

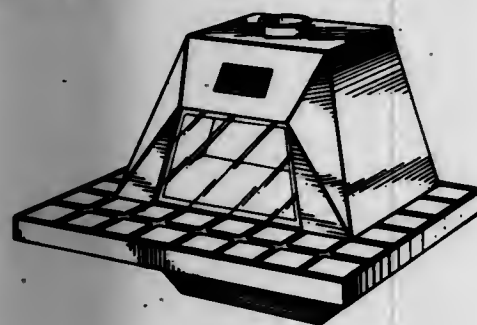
Glen Crownever, Santa Rosa, Calif., assignor to Malm Fireplaces, Inc., Santa Rosa, Calif.

Filed Apr. 2, 1979, Ser. No. 25,882

Term of patent 14 years

Int. Cl. D23—03

U.S. Cl. D23—97



257,881

COMBINED LENS CABINET AND WRITING DESK

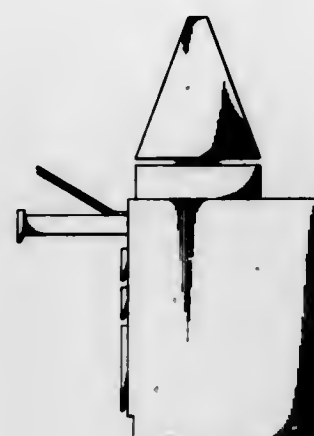
Stephen U. Wing, Narberth, Pa., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 4, 1978, Ser. No. 893,659

Term of patent 14 years

Int. Cl. D24—01; D6—04

U.S. Cl. D24—1.1



257,882

COMBINATION DIAGNOSTIC INSTRUMENT AND INDUCTION CHARGER THEREFOR

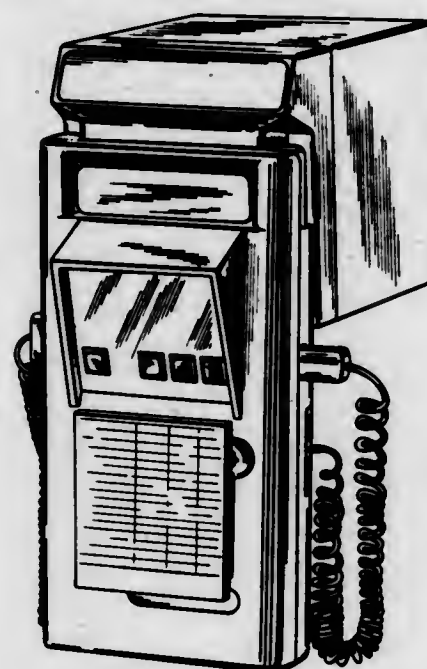
Paul O. Rawson, Easton, and Louis E. Nagy, Killingworth, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Nov. 28, 1977, Ser. No. 855,445

Term of patent 14 years

Int. Cl. D10—04; D13—02

U.S. Cl. D24—17



257,883

FOOT MASSAGE DEVICE

Göte E. Y. Holmberg, Postlinda 2010, S-330 20 Anderstorp, Sweden

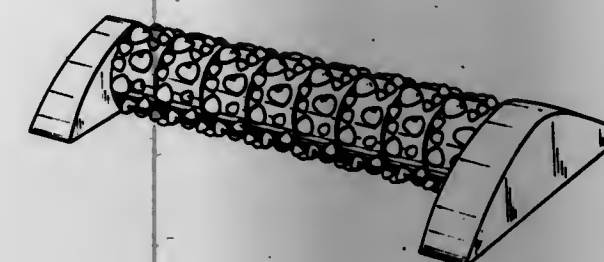
Filed Apr. 28, 1978, Ser. No. 901,273

Claims priority, application Sweden, Nov. 2, 1977, 772222

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D24—36



257,884

ELASTOSIZED BABY PANTS FOR HOLDING DIAPERS

Maj I. Ternström, Gothenburg, Sweden, assignor to Molalys Aktiebolag, Gothenburg, Sweden

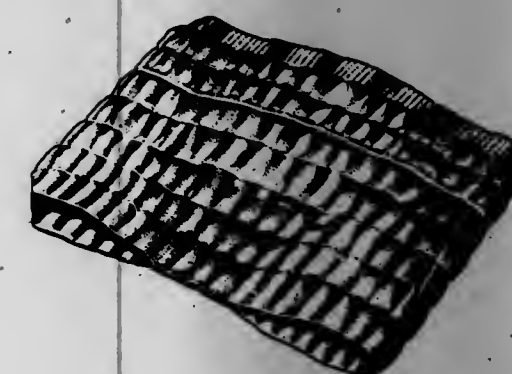
Filed Jan. 21, 1978, Ser. No. 917,743

Claims priority, application Sweden, Dec. 29, 1977, 772696

Term of patent 14 years

Int. Cl. D24—04; D2—01

U.S. Cl. D24—50



257,885

WINGED NEEDLE

Lee K. Kulle, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 27, 1978, Ser. No. 890,424

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—52



257,886

PIERCING CANNULA FOR ADMINISTERING PARENTERAL FLUID OR THE LIKE

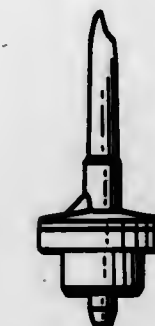
Jean Kersten, Villers-Saint-Amand, Belgium, assignor to Baxter Travenol Laboratories, Inc.

Filed Mar. 30, 1978, Ser. No. 891,576

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—52



257,887

MODULE FREEZING PLANT

John Klarman, Billerholm, Sweden, assignor to Frigoscandia Contracting AB, Sweden

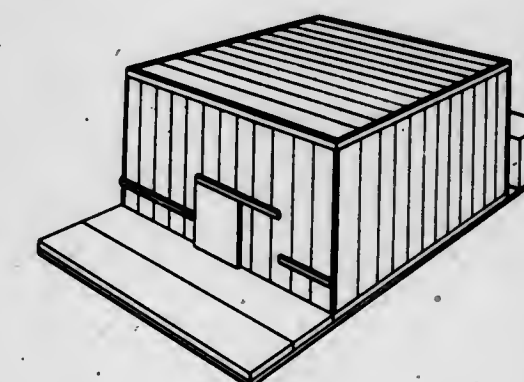
Filed Oct. 18, 1978, Ser. No. 952,530

Claims priority, application Sweden, May 22, 1978, 781328

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—33



257,888

NIGHT LIGHT

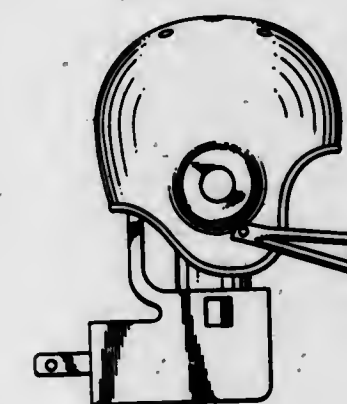
John Perich, 332 S. Myers Ave., Sharon, Pa. 16146

Filed Nov. 14, 1977, Ser. No. 851,622

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D26—26



257,889

LANTERN ASSEMBLY

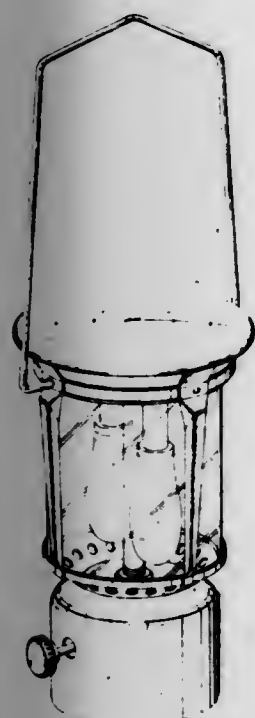
Ming K. Chan, 58 Pan Chung St., Tokwawan, Kowloon, Hong Kong

Filed Dec. 28, 1977, Ser. No. 965,319

Claims priority, application United Kingdom, Jan. 30, 1977, 980605/77

Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—40



257,891

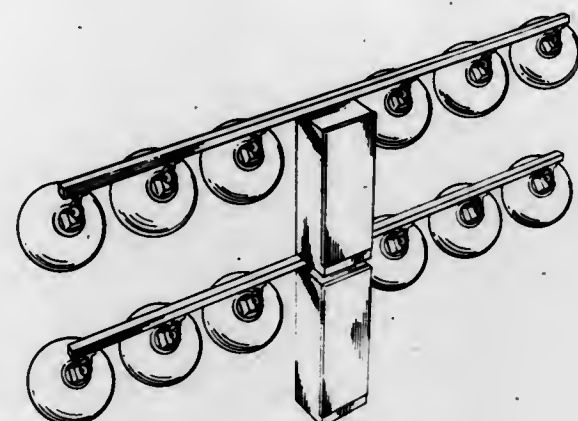
FLOOD LIGHTING ASSEMBLY

James L. Drost, and Myron K. Gordin, both of Oskaloosa, Iowa, assignors to Muscatine Lighting Manufacturing Co., Inc., Muscatine, Iowa

Filed May 12, 1978, Ser. No. 905,418

Term of patent 14 years
Int. Cl. D26—03

U.S. Cl. D26—69



257,892

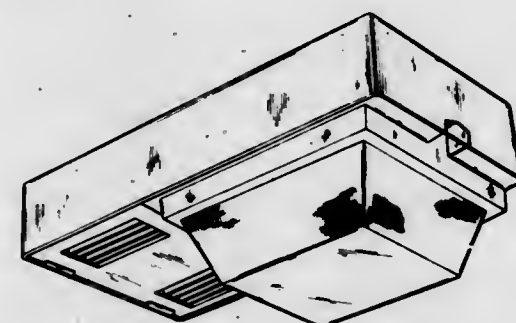
LUMINAIRE

John R. Dean, Memphis, Tenn., and James T. Asaki, Fair Haven, N.J., assignors to International Telephone and Telegraph Corporation

Filed Nov. 20, 1978, Ser. No. 962,145

Term of patent 14 years
Int. Cl. D26—03

U.S. Cl. D26—71



257,893

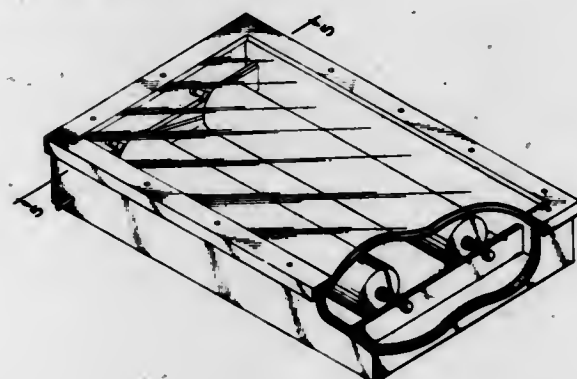
FLUSH MOUNTED PASSIVE DOMESTIC SOLAR WATER HEATER MODULE

Gary A. Millhollen, 5836 Robertson Ave., Carmichael, Calif. 95608

Filed Dec. 5, 1978, Ser. No. 966,640

Term of patent 14 years
Int. Cl. D23—03

U.S. Cl. D23—72



257,890

SPOT LAMP

Daniel L. Aree, Northridge, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.

Filed Nov. 20, 1978, Ser. No. 962,293

Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—63



257,894

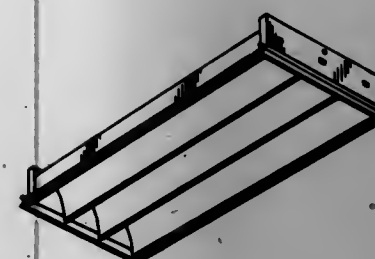
LIGHT FIXTURE, OR SIMILAR ARTICLE

Joseph A. DiBernardo, New York, N.Y., assignor to Lighting Products, Inc., Highland Park, Ill.

Filed Nov. 14, 1978, Ser. No. 964,576

Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—75



257,895

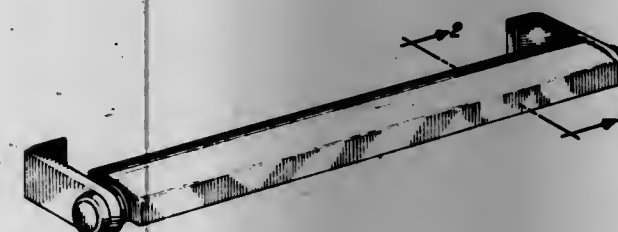
LIGHT FIXTURE

Joseph R. Wotowicz, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,861

Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—85



257,896

MODULAR LAMP STAND FOR INDIRECT LIGHTING
Alfred O. Scholze, New Canaan, Conn., and Thomas A. Williams, Melrose, Mass., assignors to Lam Inc., Wakefield, Mass.

Filed Feb. 21, 1978, Ser. No. 879,672

Term of patent 14 years
Int. Cl. D26—03

U.S. Cl. D26—93



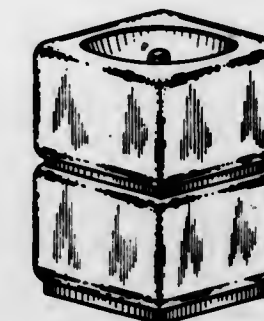
257,897

MODULAR LAMP STAND FOR INDIRECT LIGHTING
Alfred O. Scholze, New Canaan, Conn., and Thomas A. Williams, Melrose, Mass., assignors to Lam Inc., Wakefield, Mass.

Filed Feb. 21, 1978, Ser. No. 879,673

Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—93



257,898

MODULAR LAMP STAND FOR INDIRECT LIGHTING
Alfred O. Scholze, New Canaan, Conn., and Thomas A. Williams, Melrose, Mass., assignors to Lam Inc., Wakefield, Mass.

Filed Feb. 21, 1978, Ser. No. 879,674

Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—93



257,899

MODULAR LAMP STAND FOR INDIRECT LIGHTING
Alfred O. Scholze, New Canaan, Conn., and Thomas A. Williams, Melrose, Mass., assignors to Lam Inc., Wakefield, Mass.

Filed Feb. 21, 1978, Ser. No. 879,675

Term of patent 14 years
Int. Cl. D26—05

U.S. Cl. D26—93



257,900

MODULAR LAMP STAND FOR INDIRECT LIGHTING
 Alfred O. Scholze, New Canaan, Conn., and Thomas A. Williams, Melrose, Mass., assignors to Lam Inc., Wakefield, Mass.

Filed Feb. 21, 1978, Ser. No. 879,676
 Term of patent 14 years
 Int. Cl. D26—05

U.S. Cl. D26—93



257,903

MODULAR LAMP STAND FOR INDIRECT LIGHTING
 Alfred O. Scholze, New Canaan, Conn., and Thomas A. Williams, Melrose, Mass., assignors to Lam Inc., Wakefield, Mass.

Filed Feb. 21, 1978, Ser. No. 879,681
 Term of patent 14 years
 Int. Cl. D26—05

U.S. Cl. D26—93

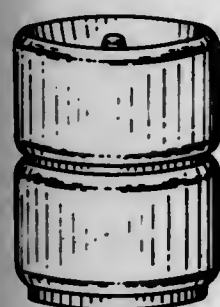


257,901

MODULAR LAMP STAND FOR INDIRECT LIGHTING
 Alfred O. Scholze, New Canaan, Conn., and Thomas A. Williams, Melrose, Mass., assignors to Lam Inc., Wakefield, Mass.

Filed Feb. 21, 1978, Ser. No. 879,677
 Term of patent 14 years
 Int. Cl. D26—05

U.S. Cl. D26—93

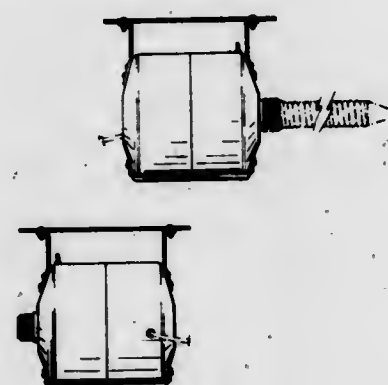


257,904

PORTABLE ANIMAL BLOW DRYER
 Edgar L. Hamm, Jr., Rte. 4, Frederick, Okla. 73542

Filed Jan. 19, 1978, Ser. No. 916,720
 Term of patent 14 years
 Int. Cl. D30—99

U.S. Cl. D30—40

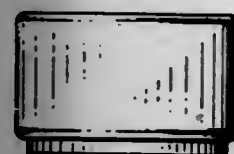


257,902

MODULAR LAMP STAND FOR INDIRECT LIGHTING
 Alfred O. Scholze, New Canaan, Conn., and Thomas A. Williams, Melrose, Mass., assignors to Lam Inc., Wakefield, Mass.

Filed Feb. 21, 1978, Ser. No. 879,678
 Term of patent 14 years
 Int. Cl. D26—05

U.S. Cl. D26—93

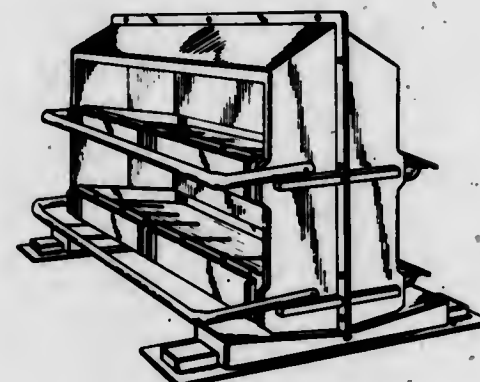


257,905

POULTRY NEST BANK UNIT
 Allan R. Cocklersee, 18 Chaumont Sq., NW., Atlanta, Ga. 30327

Filed Mar. 14, 1979, Ser. No. 20,424
 Term of patent 14 years
 Int. Cl. D30—06

U.S. Cl. D30—41



257,906

CAMERA BAG

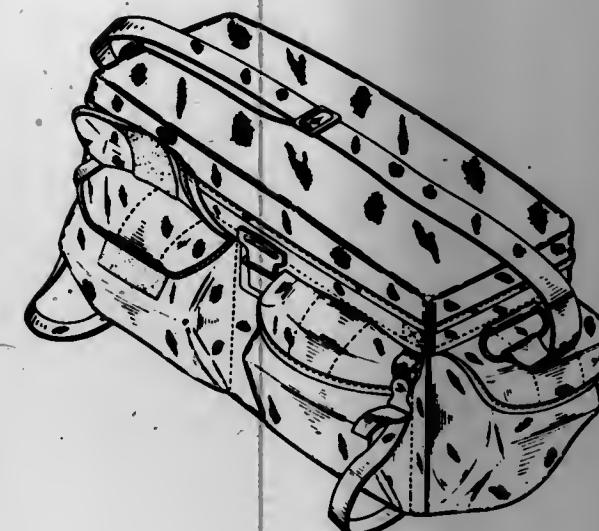
Robert Weinreb, 510 Broadway, New York, N.Y. 10012

Filed Oct. 4, 1979, Ser. No. 81,672

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D3—33



257,907

ULTRASONIC PEST REPELLING DEVICE

Lester B. Hall, 249 Kinsey Ave., Kenmore, N.Y. 14217, assignor to Gary Lester Hall, Kenmore, N.Y.

Filed May 11, 1978, Ser. No. 905,105

Term of patent 14 years

Int. Cl. D99—

U.S. Cl. D99—99



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF JANUARY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name
(in accordance with city and telephone directory practice).

- A Ahlstrom Oskayhtio: See—
Niemenen, Jorma J.; and Engstrom, Folke, 4,244,779, Cl. 162-30.00R.
- A. Christiaens Societe Anonyme: See—
De Ridder, Rene R.; Georges, Andre H.; Ghys, Arlette; Lapiere, Charles L.; Delarge, Jacques E.; and Thunus, Leopold N., 4,244,930, Cl. 424-248.500.
- AB Smulan: See—
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- Abbott Laboratories: See—
Ali, Akhtar; and Hiltbrun, Robert G., 4,244,865, Cl. 260-112.50R.
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Wilson, Thomas D.; and Scott, William G., 4,244,409, Cl. 150-0.500.
- Abe, Shozo: See—
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- Abex Corporation: See—
Smilges, Robert, 4,244,275, Cl. 91-420.000.
- Abraham, Nedumpampil A.; Bellini, Francesco; Immer, Hans U.; and Kobric, Marvin M., to Ayerst McKenna and Harrison Inc. Carba decapeptide derivatives of [TYR]⁶-somatostatin, 4,244,947, Cl. 424-177.000.
- Abrahamson, LeRoy E., to Shell Oil Company. Apparatus for reducing thermal fatigue in a piping suspension system for a high temperature furnace, 4,244,606, Cl. 285-14.000.
- Abrasive & Air Equipment Co.: See—
Welch, Alphonso K., 4,244,347, Cl. 125-11.0PH.
- Abson, James W., to Simon-Carves Limited. Method of removing metallic impurities from sewage sludge, 4,244,818, Cl. 210-721.000.
- Ace Orthopedic Manufacturing, Inc.: See—
Dohogne, Charles L., 4,244,360, Cl. 128-92.00A.
- Achelpohl, Fritz, to Windmoller & Holcher. Apparatus for applying transverse weld seams to superposed webs of plastics film, 4,244,772, Cl. 156-515.000.
- Acrow (Automation) Limited: See—
Tang, Alexander R., 4,244,476, Cl. 211-192.000.
- Actionair Equipment Limited: See—
Magill, Robert J.; and Field, Sydney J., 4,244,397, Cl. 137-601.000.
- Adachi, Keiichi: See—
Tsujino, Nobuyuki; Hirano, Shigeo; and Adachi, Keiichi, 4,245,037, Cl. 430-559.000.
- Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic keyboard musical instrument, 4,244,261, Cl. 84-1.240.
- Adam, Jean-Marie, to Ciba-Geigy Corporation. Novel water-soluble anthraquinone dyes, 4,244,691, Cl. 8-676.000.
- Adams, Brian J., to Evrika Pack Corp. Foldable pack belt, 4,244,499, Cl. 224-224.000.
- Adams, Richard R., to Chromalloy American Corporation. Waterproof boot with knee protection, 4,244,121, Cl. 36-2.00R.
- Adell, Lars; and Mansson, Kent, to Forenade Fabriksverken. Method and apparatus for setting up tools, work pieces and similar on a rotatable spindle, 4,244,248, Cl. 82-44.000.
- Agence Nationale de Valorisation de la Recherche (ANVAR): See—
Traynard, Olivier; and Bruggeman, Jean-Pierre, 4,244,170, Cl. 57-124.000.
- AGFA-Gevaert, A.G.: See—
Aydin, Ingrid; Schillfarth, Karichristian; and Seidel, Bernard, 4,244,987, Cl. 427-130.000.
Hofmann, Wilfried; Lueder, Guenther; Nassl, Peter; Puechler, Peter; Krueger, John; Rauffer, Walter; and Lusch, Herbert, 4,244,641, Cl. 353-27.00R.
- AGFA-GEVAERT N.V.: See—
Cassiers, Paul M.; and Vertinden, Willy G., 4,245,023, Cl. 430-118.000.
De Winter, Walter F.; Monbaliu, Marcel J.; Marien, August M.; and Van Rossen, Antoine R., 4,245,036, Cl. 430-510.000.
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- Agricola, Manfred; Krautkramer, Wilfried; and Reimer, Karl-Heinz, to Telefonbau und Normalzeit, GmbH. Telecommunication switching network having a multistage reversed trunking scheme, 4,245,339, Cl. 370-58.000.
- Aizawa, Tatsuo: See—
Kato, Mamoru; Yamaura, Susumu; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 4,245,025, Cl. 430-126.000.
- Akado, Hajime: See—
Yamaguchi, Akihiko; Akado, Hajime; and Teramura, Mitsuyoshi, 4,244,343, Cl. 123-556.000.
- Akamine, Mitsuaki: See—
Shibuya, Chisei; Itoh, Hirataka; Usubuchi, Yutaka; and Akamine, Mitsuaki, 4,245,107, Cl. 549-66.000.
- Akashi, Shunji, to Yoshida Kogyo K.K. Separable slide fastener, 4,244,087, Cl. 24-205.11R.
- Akimoto, Taizo: See—
Asai, Eiichi; Shiota, Kazuo; and Akimoto, Taizo, 4,244,654, Cl. 356-404.000.
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- Akiyama, Shinichi: See—
Yamamoto, Haruhisa; Ooura, Kiyomori; and Akiyama, Shinichi, 4,245,118, Cl. 562-532.000.
- Akiyama, Toshiyuki: See—
Sato, Kazuhiro; Umamoto, Masuo; Izumita, Moriaki; Akiyama, Toshiyuki; and Nagahara, Shusaku, 4,245,241, Cl. 358-44.000.
- Aktiebolaget Carl Munter: See—
Hallgren, Karl, 4,244,422, Cl. 165-1.000.
- Aktiebolaget Hassle: See—
Carlsson, Einar I.; Persson, Nils H. A.; Samuelsson, Gustav B. R.; and Wetterlin, Kjell I. L., 4,244,969, Cl. 424-330.000.
- Akzo N.V.: See—
Buter, Roelof, 4,245,074, Cl. 526-214.000.
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Raata, Christian M. S.; and Geelen, Marinus A., 4,244,795, Cl. 204-105.00R.
- Aladjem, Frederick J.; and Ayengar, Padmasini K. Quantitative protein analysis by immunodiffusion, 4,244,797, Cl. 204-180.00G.
- Aladjem, Frederick J.; and Ayengar, Padmasini K. Quantitative protein analysis by immunodiffusion, 4,244,803, Cl. 204-299.00R.
- Albany International Corp.: See—
Noddin, Emerson L., 4,244,718, Cl. 55-377.000.
- Albert-Frankenthal AG: See—
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- Albrecht, Konrad: See—
Frensch, Heinz; Heinrich, Rudolf; and Albrecht, Konrad, 4,244,836, Cl. 252-316.000.
- Albright, Jay D.: See—
Trust, Ronald I.; and Albright, Jay D., 4,244,953, Cl. 424-256.000.
- Alderman, Lewis. Method for operating a battery of coke ovens, 4,244,785, Cl. 201-41.000.
- Aldrich, J. Winthrop; and Stella, Joseph A., to Polaroid Corporation. Film cassette having friction pad pull strip stress reliever, 4,244,640, Cl. 352-130.000.
- Aldridge, Clyde L.; and Bearden, Roby, Jr., to Exxon Research & Engineering Co. High surface area catalysts, 4,244,839, Cl. 252-431.00C.
- Alexander, Jose; and Mitscher, Lester A., to University of Kansas Endowment Association. Anthracene synthesis, 4,244,880, Cl. 260-383.000.
- Alexander, Holger: See—
Jakobson, Per; and Alexandersson, Holger, 4,244,256, Cl. 83-862.000.
- Ali, Akhtar; and Hiltbrun, Robert G., to Abbott Laboratories. α -hydroxy tripeptide substrates, 4,244,865, Cl. 260-112.50R.
- Aliev, Vagab S.: See—
Guseinov, Nazim M. O.; Aliev, Vagab S.; Mustafaev, Aliah I.; Zimin, Vladimir M.; Sverdlov, Rafael S.; Shkondina, Nina G.; Chinarashvili, Eleonora E.; Morozova, Margarita K.; Mirzoev, Rasim S. O.; Sharifov, Gabil S. O.; Dzhabiev, Ramiz A.; Oshin, Leonid A.; and Genin, Lemel S., 4,244,892, Cl. 570-223.000.
- Alkatis, Anthony, to Mooney Chemicals, Inc. Preparation of transition metal hydrates by direct metal reaction, 4,244,938, Cl. 423-592.000.
- Allegheny Ludlum Steel Corporation: See—
Malagari, Frank A., Jr.; and Schrecongost, Richard P., 4,244,757, Cl. 148-111.000.
Shilling, Jack W.; Dierker, Jeffrey A.; and Mitchell, Chester A., 4,245,261, Cl. 360-17.000.
- Allen, David M., to Control Systems, Inc. Apparatus and method for digitally synchronizing the timing of a sequence of electrical output pulses in accordance with a selectable, permitably non-linear function of the timing of a sequence of electrical input pulses, 4,245,264, Cl. 360-51.000.
- Allen Group, Inc.: See—
Barber, Ivan J., 4,244,071, Cl. 15-53.00A.
- Allen, Robert J.: See—
Kauffman, Ivan L.; Allen, Robert J.; and Dwyer, Gregory J., 4,244,281, Cl. 493-123.000.
- Allergan Pharmaceuticals, Inc.: See—
Boghossian, Malcolm P.; and Koda, Robert T., 4,244,948, Cl. 424-230.000.

- Allied Chemical Corporation: See—
Garner, Eugene F.; and Hamilton, Brian K., 4,244,758, Cl. 149-7.000.
Subbanna, Somanahalli N.; Morgan, Thomas R.; and Frick, Douglas G., 4,244,925, Cl. 423-61.000.
Van Der Puy, Michael; Anello, Louis G.; Sukornick, Bernard; Sweeney, Richard F.; and Wiles, Robert A., 4,244,891, Cl. 570-140.000.
- Alliger, Howard. Emulsified fuel oil and method of production. 4,244,702, Cl. 44-51.000.
- Allis-Chalmers Corporation: See—
Seidl, Robert M.; and Enright, Francis J., 4,244,705, Cl. 48-77.000.
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- Allsop Automatic, Inc.: See—
Allsop, Jon I.; and Stern, Donald J., 4,244,602, Cl. 280-821.000.
Allsop, Jon I.; and Stern, Donald J., to Allsop Automatic, Inc. Shock-absorbing ski pole grip and method of adjusting the same. 4,244,602, Cl. 280-821.000.
- Almhults Bruk Aktiebolag: See—
Gustafsson, Olle, 4,244,401, Cl. 139-142.000.
- Alpert, Andrew J.: See—
Regnier, Frederick E.; and Alpert, Andrew J., 4,245,005, Cl. 428-420.000.
- Altdorf, Erich: See—
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- Altes, Jürgen: See—
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- Althammer, Klaus P., to Sulzer Brothers Limited. Method and apparatus for producing knit fabric. 4,244,197, Cl. 66-19.000.
- Alton Box Board Company: See—
Russell, Dennis E., 4,244,128, Cl. 40-154.000.
- Altshuler, Roald A.: See—
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- Aluminum Company of America: See—
Dell, M. Benjamin, 4,244,935, Cl. 423-491.000.
Stokes, John J., Jr.; Cargnel, Robert A.; and Crooks, James H., 4,244,505, Cl. 228-223.000.
Stokes, John J., Jr.; Cargnel, Robert A.; and Crooks, James H., 4,244,506, Cl. 228-223.000.
- AM International, Inc.: See—
Pick, George G., 4,245,259, Cl. 358-285.000.
- Amdahl, Carlton G., to Magnuson Computer Systems, Inc. Computer and method for executing target instructions. 4,245,302, Cl. 364-200.000.
- American Cyanamid Company: See—
Raghu, Sivaraman, 4,245,102, Cl. 548-155.000.
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Shepherd, Robert G., 4,245,097, Cl. 546-245.000.
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- American District Telegraph Company: See—
O'Connor, Lorne D.; Saylor, Richard; and Buckser, Stephen H., 4,245,215, Cl. 340-310.00A.
- American Home Products Corporation: See—
Jirkovsky, Ivo L.; Dvornik, Dushan; and Cayen, Mitchell N., 4,244,958, Cl. 424-263.000.
Lippman, Wilbur; Demerson, Christopher A.; Humber, Leslie G.; and Ferland, Jean-Marie, 4,244,966, Cl. 424-274.000.
Scotese, Anthony C.; Morris, Robert L.; and Santilli, Arthur A., 4,245,094, Cl. 544-279.000.
- American Medical Systems, Inc.: See—
Furlow, William L.; and Mikulich, Michael A., 4,244,370, Cl. 128-303.00R.
- American Monitor Corporation: See—
Denney, Jerry W., 4,245,041, Cl. 435-15.000.
- American Optical Corporation: See—
Dianetti, Joseph C.; and Leonard, Robert W., 4,244,634, Cl. 350-31.000.
- American Science and Engineering, Inc.: See—
Burnstein, Paul; and Krieger, Allen S., 4,245,158, Cl. 250-370.000.
- AMP Incorporated: See—
Little, David M.; and Wolfe, Brian A., 4,244,638, Cl. 339-103.00M.
- Amunson, Milton, to Art's-Way Manufacturing Company. Drag feed device for grinder-mixer machines. 4,244,674, Cl. 414-523.000.
- Anderson, Charles C. Endotracheal tube control device. 4,244,362, Cl. 128-200.260.
- Anderson Company of Indiana, The: See—
Harbison, William H.; Plisky, John J.; and Mohnach, Michael G., 4,244,077, Cl. 15-250.320.
- Anderson, Leroy E.; Schmidt, Michael P.; and Weaver, William W., to Manufacture Systems, Inc. Apparatus for making corrugated flexible metal tubing. 4,244,202, Cl. 72-49.000.
- Ando, Shigeo: See—
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- Anello, Louis G.: See—
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- Angell, William M.: See—
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- Anglin, Russell E. Voltage multiplier device. 4,245,176, Cl. 315-101.000.
- Aoki, Keiji: See—
Yasuda, Eituro; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,244,918, Cl. 422-95.000.
- Aosima, Sinzi: See—
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- Aotsu, Hiroaki; Isono, Akira; Goto, Masuo; Kimura, Koichi; Momochi, Yasushi; Kai, Takaaki; Kitamura, Satoshi; Kaihara, Akihisa; and Okada, Hiroshi, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Excitation control apparatus for a generator. 4,245,182, Cl. 322-20.000.
- Aoyagi, Keizo: See—
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- Aoyama, Hiroshi: See—
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- Arai, Kenichi: See—
Tsuya, Noboru; and Arai, Kenichi, 4,244,722, Cl. 65-32.000.
- Arakawa, Akio: See—
Hasegawa, Junzo; Yoshida, Kazunori; Suzuki, Fuzio; Suzuki, Hajime; Arakawa, Hiroshi; Kobayashi, Akira; Arakawa, Akio; and Yamazato, Munehika, 4,244,402, Cl. 139-435.000.
- Arakawa, Hiroshi: See—
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- Arakawa Industry Company Limited: See—
Yamada, Eisuke, 4,244,550, Cl. 248-534.000.
- Archenholtz, Ake, to ASEA Aktiebolag. Powder injection apparatus for injection of powder into molten metal. 4,244,562, Cl. 266-216.000.
- Arenka, Leonard R.; and Cook, Harold D., to Teletype Corporation. Cable clamp. 4,244,083, Cl. 24-16.00R.
- Argus Chemical Corporation: See—
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Minagawa, Motonobu; Sekiguchi, Tetsuo; and Nakazawa, Kenji, 4,244,848, Cl. 260-23.0XA.
- Arias, Henry: See—
Breslow, Jeffrey D.; Ferris, Michael J.; and Arias, Henry, 4,244,573, Cl. 273-119.00R.
- Aristo-Werke Dennert & Pape KG (GmbH & Co.): See—
Puritz, Wolfgang; and Voss, Gerhard, 4,244,669, Cl. 409-137.000.
- Armco Inc.: See—
Graff, Hart F.; and Christ, Christy, 4,244,985, Cl. 427-27.000.
- Armstrong Cork Company: See—
Smith, Wayne E., 4,245,055, Cl. 521-140.000.
- Armstrong, Donald E.: See—
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- Arndt, Friedrich: See—
Schulz, Heinz; and Arndt, Friedrich, 4,245,101, Cl. 548-127.000.
- Arnheim, Erik M. Contact lens applicator. 4,244,466, Cl. 206-5.100.
- Arnold, Milton P.: See—
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- Aronson, George L. Containing markers in interleaved relationship. 4,244,660, Cl. 402-79.000.
- Arth, Michael J. Flow controlled shower head. 4,244,526, Cl. 239-533.100.
- Art's-Way Manufacturing Company: See—
Amunson, Milton, 4,244,674, Cl. 414-523.000.
- Arumugham, Rangaswamy; and Kam, George H., to GTE Products Corporation. Tuning voltage interface circuit for electronic tuners. 4,245,186, Cl. 323-225.000.
- Arumugham, Rangaswamy, to GTE Products Corporation. Chrominance take-off circuit. 4,245,236, Cl. 358-31.000.
- Asada, Eizi: See—
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- Asahi Kogyo Kogyo Kabushiki Kaisha: See—
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Umetu, Junji, 4,244,591, Cl. 277-212.00F.
- Asai, Eiichi; Matsumoto, Fumio; and Terasita, Takaaki, to Fuji Photo Film Co., Ltd. Color detecting device for color printer. 4,244,653, Cl. 356-404.000.
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- Asai, Masahiro, to Nippondenso Co., Ltd. Ignition system for internal combustion engines. 4,244,337, Cl. 123-603.000.

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- Asai, Shinichiro: See—
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- Asher, William J.: See—
Vogler, Tina C.; and Asher, William J., 4,244,816, Cl. 210-638.000.
- Ashland Oil, Inc.: See—
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- Ashman, Arthur. Endosseous plastic implant. 4,244,689, Cl. 433-175.000.
- Aspen, David, to Lucas Industries Limited. Electrical switches. 4,245,141, Cl. 200-314.000.
- Association pour la Recherche et le Développement des Methodes et Processus Industriels (A.R.M.I.N.E.S.): See—
Chabanon, Francoise M.; and Royer, Henri J., 4,244,148, Cl. 47-58.000.
- Atari, Inc.: See—
Milner, Ronald E.; and Bushnell, Nolan K., 4,244,574, Cl. 273-121.00A.
- Ateliers des Charmilles S.A.: See—
Philippe, Maurice, 4,245,163, Cl. 290-52.000.
- Atlantic Richfield Company: See—
Victor, James G.; Papp, Richard B.; and Wolaky, Alfred A., 4,244,936, Cl. 423-509.000.
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- Autodynamica, Inc.: See—
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- Automatech Industries Inc.: See—
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- Avis, William D., to Parker-Hannifin Corporation. Redundant servo with fail-safe electric system. 4,244,277, Cl. 91-459.000.
- Avtex Fibers Inc.: See—
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- Aydin, Ingrid; Schillfirth, Karlchristian; and Seidel, Bernard, to AG-FA-Gevaert, A.G. Magnetic storage medium. 4,244,987, Cl. 427-130.000.
- Ayengar, Padmasini K.: See—
Aladiem, Frederick J.; and Ayengar, Padmasini K., 4,244,797, Cl. 204-180.00G.
- Aladiem, Frederick J.; and Ayengar, Padmasini K., 4,244,803, Cl. 204-299.00R.
- Ayerst McKenna and Harrison Inc.: See—
Abraham, Nedumparampil A.; Bellini, Francesco; Immer, Hans U.; and Kobric, Marvin M., 4,244,947, Cl. 424-177.000.
- Azuma, Shizuo: See—
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- Baba, Yoshio: See—
Tanabe, Zenichi; Baba, Yoshio; Fukui, Toshiyasu; and Kimura, Satoshi, 4,244,756, Cl. 148-32.000.
- Babcock & Wilcox Company, The: See—
Dukelow, Samuel G., 4,244,216, Cl. 73-190.00H.
- Slavens, John R., 4,244,822, Cl. 210-222.000.
- Backs, Leo J. J.: See—
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- Bacon, Roger J.: See—
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- Bacuvier, Pierre, to Le Silicium Semiconducteur SSC. Over-voltage clipping diode. 4,245,232, Cl. 357-76.000.
- Baggiolini, Enrico G.; Lee, Hsi L.; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Isoxazolines and isoxazolidines. 4,245,104, Cl. 548-207.000.
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- Baker, Donald B., to Pro-Mark Companies, The. Preparation of low fat imitation cream cheese. 4,244,983, Cl. 426-582.000.
- Baker, James F. Oven. 4,244,285, Cl. 99-339.000.
- Balaban, Alvin R.: See—
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- Baldauf, Dale; and Pingry, Larry J., to Paul Revere Corporation. Auxiliary hydrostatic drive system. 4,244,184, Cl. 60-420.000.
- Baldwin, Philip C., to Hixson Metal Finishing. Method for stripping anodized aluminum and aluminum alloys. 4,244,792, Cl. 204-58.000.
- Baldwin, Roger A.; Davis, Robert E.; and Leonard, Robert E., to Kerr-McGee Corporation. System for producing a powdery composition comprising coal products in a coal deashing process. 4,244,812, Cl. 208-177.000.
- Baldwin, Steven M.: See—
Henderson, Donald L., Sr.; Baldwin, Steven M.; and Pong, Raymond, 4,244,752, Cl. 148-1.500.
- Balu, Louis, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Floating anti-pollution barrier and method for using the same. 4,244,819, Cl. 210-242.300.
- Bally Manufacturing Corporation: See—
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- Bals, Roger J.: See—
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- Bane, William F. Apparatus for cleaning a carpet on location. 4,244,079, Cl. 15-321.000.
- Bange, Joseph B.: See—
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- Bankstahl, Herbert A., to Brunswick Corporation. Cone clutch. 4,244,454, Cl. 192-21.000.
- Barber, Ivan J., to Allen Group, Inc., The. Compact rollover vehicle wash apparatus. 4,244,071, Cl. 15-53.00A.
- Barcikowski, Donna M.; Temple, Rodger G.; Jones, James E.; and Seiner, Jerome A., to PPG Industries, Inc. Pad applicator. 4,244,074, Cl. 15-114.000.
- Barcus, Victor D., to General Electric Company. Method of assembling a dynamoelectric machine and an auxiliary cooling device. 4,244,098, Cl. 29-596.000.
- Bargigia, Gianangelo: See—
Caporiccio, Gerardo; Bargigia, Gianangelo; and Guidetti, Giampiero, 4,244,886, Cl. 260-513.00F.
- Barham, Jarius P.; and Meyer, Norman L., to Norlin Industries, Inc. Strike line adjuster. 4,244,268, Cl. 84-432.000.
- Barkov, Leonid A.: See—
Vydrin, Vladimir N.; Pastukhov, Valery V.; Barkov, Leonid A.; Sychev, Pavel M.; Dolgov, Sergei T.; Novikov, Dmitry S.; Mymrin, Sergei A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; and Shegal, Anatoly A., 4,244,204, Cl. 72-224.000.
- Barman, Alan W.; Hartford, Thomas W.; and Henrich, Robert S., to Bendix Corporation. The. Ignition limp home circuit for electronic engine control systems. 4,245,315, Cl. 364-431.000.
- Barna, Alex J. Stress relieving bracket for mounting a pulley on the end of a compound bow. 4,244,346, Cl. 124-24.00R.
- Barrett, Walter H., to Columbia Chase Corporation. Solar collector. 4,244,356, Cl. 126-450.000.
- Barriac, Jacques, to Societe d'Applications Generales d'Electricite et de Mecanique (SAGEM). Devices for measuring the azimuth and the slope of a drilling line. 4,244,116, Cl. 33-304.000.
- Barta, Kent S. Attachment inhibition of meat spoilage organisms to meat. 4,244,978, Cl. 426-332.000.
- Bartley, Thomas S., to V-V Systems, Inc. Conveyor apparatus. 4,244,463, Cl. 198-508.000.
- Bartley, William J.; and O'Connor, George L., to Union Carbide Corporation. Production of acetamides with rhodium-manganese catalysts. 4,244,889, Cl. 564-132.000.
- Baruffaldi Frizioni S.p.A.: See—
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- BASF Aktiengesellschaft: See—
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- BASF Wyandotte Corporation: See—
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- Batchelor, Richard W., to Lucas Industries Limited. Transducer circuit for use in the measurement of the rotary speed of a shaft or other rotary member. 4,245,322, Cl. 364-565.000.
- Battice, David R., to Dow Corning Corporation. Molding process using curable silicone release compositions. 4,244,912, Cl. 264-338.000.
- Batzner, Hans; Knobloch, Gerrit; and Sinnreich, Joel, to Ciba-Geigy Corporation. Nickel and cobalt chelate complexes and their use. 4,244,842, Cl. 260-3.300.
- Bauer, Claude J.; and Johnson, Roger D., to GTE Products Corporation. Electrical wiring box. 4,244,483, Cl. 220-3.200.
- Bauer, Kurt; and Lange, Gerd-Karl, to Bayer Aktiengesellschaft. Iso-camphyl-guacicol-ethyl ethers. 4,245,124, Cl. 568-633.000.
- Bauer, Kurt: See—
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- Bauer, Paul, to Siemens Aktiengesellschaft. Arrangement for automatically loading a floppy disc into a floppy disc drive unit. 4,245,266, Cl. 360-99.000.
- Bauer, Peter. Fluidic oscillator flowmeter. 4,244,230, Cl. 73-861.190.
- Bauer, Werner R.; and Smith, William N., to Robertshaw Controls Company. Control unit and electrical switch construction therefor and methods of making such a control unit and electrical switch construction. 4,245,142, Cl. 200-332.000.
- Baugh, James D.; Shaw, Terrence M.; Primus, Roy J.; and Glasson, Richard E., to Cummins Engine Company, Inc. Engine cylinder liner having a mid stop. 4,244,330, Cl. 123-41.840.
- Baumgart, Frank; Jorde, Joachim; Optiz, Karl; and Rywalski, Heinrich, to Fried, Krupp Gesellschaft mit beschränkter Haftung. Multi-layer container. 4,244,482, Cl. 220-3.000.
- Baur, Guenter; Greubel, Waldemar; Krueger, Hans; and Schauer, Alois, to Siemens Aktiengesellschaft. Display device for the represen-

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- Bayard, Thomas. Therapeutic toilet seat. 4,244,063, Cl. 4-237.000.
- Bayer Aktiengesellschaft: See—
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- Bean, Garnet S. Modular shelter system. 4,244,384, Cl. 135-4.00R.
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- Becker, Wilfried: See—
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- Beckman Instruments, Inc.: See—
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- Becham Group Limited: See—
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- Behr, Joseph L., to Emerson Electric Co. Apparatus for controlling refrigerant feed rate in a refrigeration system. 4,244,182, Cl. 62-211.000.
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- Beirne, Patrick R., to Mitel Corporation. Switching matrix. 4,245,214, Cl. 340-166.00R.
- Beisswenger, Siegfried, to Dr. Ing. Rudolf Hell GmbH. Quick-acting electron-optical lenses. 4,245,159, Cl. 250-396.00L.
- Belart, Juan, to ITT Industries, Inc. Master cylinder for hydraulic brake system. 4,244,185, Cl. 60-550.000.
- Belart, Juan; and Burgdorf, Jochen, to ITT Industries, Inc. Arrangement for a hydraulic brake booster. 4,244,278, Cl. 91-468.000.
- Belcher, Richard A., to Gould Inc. Electric fuse having off center fusible element. 4,245,208, Cl. 337-231.000.
- Bell Telephone Laboratories, Incorporated: See—
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- Gitlin, Richard D.; Ho, Edmond Y.; Meadors, Howard C., Jr.; and Weinstein, Stephen B., 4,245,345, Cl. 375-13.000.
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- Netravali, Arun N.; and Stuller, John A., 4,245,248, Cl. 358-136.000.
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- Bellamy, Clifford J.: See—
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- Belius, Daniel: See—
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- Bendix Corporation, The: See—
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- Berger, J. Louis; and Cross, L. Eric, to United States of America, Army. Ferroelectric length measuring and moving target transducer with memory. 4,244,652, Cl. 356-383.000.
- Bergner, Dieter; Hofmann, Winfried; Hund, Helmut; Pelz, Lothar; and Quitzsch, Gerhard, to Hoechst Aktiengesellschaft. Apparatus to measure the distribution of the anode currents in cells for alkali metal chloride. 4,244,801, Cl. 204-225.000.
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- Berry, Richard C., to Crouse-Hinds Company. Cable tray conduit clamp. 4,244,545, Cl. 248-72.000.
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- Bertram, Sidney, to Bunker Ramo Corporation. Positioning control system. 4,245,297, Cl. 364-118.000.
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- Beyer, Karl; and Zellweger, Conrad, to La National S.A. Hinge for spectacles. 4,244,081, Cl. 16-128.00A.
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- Bialy, Edward, to Singer Company, The. Tailor tacking attachment. 4,244,312, Cl. 112-235.000.
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- Bierampel, Erich. Device for measuring and indicating the time between the reception of first and second airborne signals. 4,245,334, Cl. 368-2.000.
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- Billings, William W.; and Luebrecht, Richard E., to Westinghouse Electric Corp. AC Solid-state circuit breaker. 4,245,184, Cl. 323-235.000.
- Billings, William W.: See—
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- Bindra, Jasjit S.; and Johnson, Michael R., to Pfizer Inc. Substituted α -pentanorprostaglandins. 4,244,887, Cl. 564-99.000.
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- Black & Decker Inc.: See—
Timmons, Russell M., 4,244,667, Cl. 408-201.000.
- Black & Decker Manufacturing Co., The: See—
Stieler, Henry J., 4,244,406, Cl. 144-136.00C.
- Blackburn, Martin J.; Hayden, Steven Z.; and Smith, Michael P., to United Technologies Corporation. Sulfur containing refractory for resisting reactive molten metals. 4,244,743, Cl. 106-55.000.
- Blake, James E.: See—
Lijewski, Robert R.; Blake, James E.; and Lambert, Thomas W., 4,245,244, Cl. 358-111.000.
- Blake, Jon R., to General Mills, Inc. Non-dairy, aerated frozen dessert containing citrus juice vesicles. 4,244,981, Cl. 426-567.000.
- Blakemore, Judith I.: See—
Jeong, Henry J.; Blakemore, Judith I.; and Lewin, Nathan, 4,244,940, Cl. 424-1.000.
- Bliamptis, Emmanuel. System for the multipurpose utilization of solar energy. 4,244,189, Cl. 60-641.000.
- Blicharz, Marian: See—
Tasior, Andrzej; Blicharz, Marian; Kania, Jozef; Strzelski, Jozef; and Kracik, Ignacy, 4,244,921, Cl. 422-161.000.
- Block, Jacob, to W. R. Grace & Co. Method of dispersing alpha alumina monohydrate. 4,244,835, Cl. 252-313.00R.

- Blose, Thomas L., to Hydriil Company. Cylindrical threaded connection. 4,244,607, Cl. 285-92.000.
- Bluege, John H.: See—
Harvey, James E.; and Bluege, John H., 4,245,156, Cl. 250-233.000.
- Boardman, Bruce B., to Hercules Incorporated. Rotary thermoforming process and apparatus. 4,244,915, Cl. 264-551.000.
- Bobkowicz, Andrew J., to Bobtex Corporation, Ltd., The. Poy yarn compositions. 4,244,174, Cl. 57-232.000.
- Bobtex Corporation, Ltd., The: See—
Bobkowicz, Andrew J., 4,244,174, Cl. 57-232.000.
- Bochumer Eisenhütte Heintzmann GmbH & Co.: See—
Guse, Kuno, 4,244,521, Cl. 239-110.000.
- Bock, Lawrence A.; and Halle, Reidar, to Argus Chemical Corporation. Crosslinking high density polyethylene with t-octyl silicon peroxides. 4,245,056, Cl. 525-342.000.
- Bockno, Gregory C., to Avtex Fibers Inc. Viscose rayon. 4,245,000, Cl. 428-224.000.
- Bocquet, Gilbert: See—
Molinier, Jacques; Mahler, Jacques; Bocquet, Gilbert; de Massey, Bernard; and Holtmann, Robert, 4,244,844, Cl. 260-9.000.
- Bodig, Bernd: See—
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- Boehmke, Gunther: See—
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- Boehringer Ingelheim GmbH: See—
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- Boehringer Mannheim GmbH: See—
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- Boeing Company, The: See—
Dorn, Rupert I., 4,244,541, Cl. 244-221.000.
- Boen, Howard E.; de Muinck, Andre R.; Miller, John H.; and Genson, Samuel R., to Johns-Manville Corporation. Fiber waste and cullet collection process and apparatus therefor. 4,244,720, Cl. 65-8.000.
- Boero, Giancarlo: See—
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- Boetsch, Bruno: See—
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- Boghossian, Malcolm P.; and Koda, Robert T., to Allergan Pharmaceuticals, Inc. Medical use of esters of acetylsalicylic acid to treat acne. 4,244,948, Cl. 424-230.000.
- Boliden Aktiebolag: See—
Peterson, Stig A.; Eriksson, Bengt S.; and Fridfeldt, Arne C., 4,244,733, Cl. 75-72.000.
- Bolles, Milton M., to Milliken Research Corporation. Carpet cutting machine. 4,244,102, Cl. 30-27.00B.
- Boorman, Earl D., Jr., to General Electric Company. Track assembly. 4,244,637, Cl. 312-350.000.
- Boring & Tunneling Company of America, Inc.: See—
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- Borner, Paul: See—
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- Boshold, Raymond F., to Wean United Inc. Apparatus for aligning extrusion producing members of a press. 4,244,205, Cl. 72-263.000.
- Bottcher, Irmgard: See—
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- Bouchard, Andre C.; Armstrong, Donald E.; Sindlinger, Ronald E.; Shaffer, John W.; and Bricker, Daniel W., to GTE Products Corporation. Photoflash unit with inverted flashlamps. 4,245,279, Cl. 362-13.000.
- Bourgeois, Pierre: See—
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- Bove, Francis S.: See—
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- Bowen, Howard: See—
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- Bower, John R., to Worthington Pump, Inc. Multi-stage barrel type centrifugal pump with resilient compensator means for maintaining the seals between interstage pumping assemblies. 4,244,675, Cl. 415-135.000.
- Bowman, Melvin G.: See—
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- Boyer, Peter W.; and Dent, Jonathan D., to PHD, Inc. Pressure fluid operated gripping apparatus. 4,244,618, Cl. 294-88.000.
- Brandt, Klaus: See—
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- Brannigan, Lawrence H.; Franz, John E.; and Howe, Robert K., to Monsanto Company. Process for the preparation of 1-alkyl-3-aryl-4-pyrazolecarboxylates. 4,245,106, Cl. 548-378.000.
- Bratchenko, Boris F.: See—
Chukhanov, Zinoviy F.; Chukhanov, Zinoviy Z.; Tsuprov, Sergei A.; Karasov, Vadim A.; Nikolaev, Anatoly M.; Shibaev, Robert M.; Bratchenko, Boris F.; and Lyashenko, Ivan V., 4,244,700, Cl. 44-1.00R.
- Brauns, Frank E., to Kaiser Engineers, Inc.; and Societe Nationale de Siderurgie. Manufacture of steel from ores containing high phosphorous and other undesirable constituents. 4,244,732, Cl. 75-38.000.
- Brauns, Friedrich: See—
Heimbürger, Norbert; Brauns, Friedrich; and Fischer, Kurt, 4,245,039, Cl. 435-13.000.
- Bremer, Noel J.; and Dria, Dennis E., to Standard Oil Company (Ohio). Preparation of maleic anhydride. 4,244,879, Cl. 260-346.750.
- Brema, John H. Reciprocating indexing mechanism. 4,244,233, Cl. 74-89.000.
- Breslow, Jeffrey D.; Ferris, Michael J.; and Arias, Henry, to Marvin Glass & Associates. Competitive game apparatus. 4,244,573, Cl. 273-119.00R.
- Brewbaker, James L.; Marzett, Rodrigue L.; and Sprenger, William A., to Dow Chemical Company. The. Low profile additives for unsaturated polyester resins. 4,245,068, Cl. 525-447.000.
- Bricker, Daniel W.: See—
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- Bridgestone Tire Company Limited: See—
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- Takahashi, Takuya; Iijima, Masayoshi; and Ishikawa, Norio, 4,244,413, Cl. 152-323.000.
- Brignola, Dominic J., to West Company, The. Pressure responsive one-way valve for medical systems. 4,244,378, Cl. 128-766.000.
- Bristol-Myers Company: See—
Kaneko, Takashi, 4,244,874, Cl. 260-345.200.
- British Aerospace: See—
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- British Petroleum Company Limited, The: See—
Jones, John R.; and Wood, Dennis C., 4,245,130, Cl. 585-481.000.
- Brockner, Bruce A.; and Caspersen, Rand R., to Domain Industries, Inc. Rotary piston filler. 4,244,404, Cl. 141-146.000.
- Brockway, Thomas A.; Grzesik, Paul R.; and Hausheer, Lawrence B., to Corning Glass Works. Process for stabilizing metallic cathode ray tube parts. 4,244,755, Cl. 148-16.000.
- Brolin, Stephen J., to Bell Telephone Laboratories, Incorporated. Power supply providing constant power output. 4,245,294, Cl. 363-126.000.
- Brother Kogyo Kabushiki Kaisha: See—
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- Brown, James A., to Matson Navigation Company. Lifting spreader actuated crank. 4,244,615, Cl. 294-67.00A.
- Brown, Michael A., to Pitney Bowes Inc. Control system for a collator. 4,244,564, Cl. 270-53.000.
- Brown, Philip H., to Inland Container Corporation. Stacked shipping unit. 4,244,472, Cl. 206-597.000.
- Bruggeman, Jean-Pierre: See—
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- Brunswick Corporation: See—
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- Fitzner, Arthur O., 4,244,336, Cl. 123-418.000.
- Buchalet, Christian, to Framatome. Tool for exchanging and transporting irradiation capsules of a nuclear reactor. 4,244,616, Cl. 294-86.00A.
- Buckser, Stephen H.: See—
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- Budai, Zoltan; Jurak, Ferenc; Kis-Tamas, Attila; Lay nee Konya, Aranka; Mezei, Tibor; Vig, Zoltan; and Zubovits nee Kristof, Terez, to Egyt Gyogyszervegyezeti Gyar. Plant growth regulating and insecticidal compositions. 4,244,888, Cl. 564-257.000.
- Budden, Renke: See—
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- Buhles, Adolf: See—
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- Buhrer, Carl F., to GTE Laboratories Incorporated. Planar electrodeless fluorescent light source. 4,245,179, Cl. 315-248.000.
- Bunker Ramo Corporation: See—
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- Burgdorf, Jochen: See—
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- Burger, Manfred R. Air purification electrostatic charcoal filter and method. 4,244,710, Cl. 55-6.000.
- Burke, Ben G.; and Legg, Douglas J., to Chevron Research Company. Hold-down device for vertically movable member in apparatus which contains contact material. 4,244,922, Cl. 422-218.000.
- Burke, Dallas. Electrolyte for lead plate storage battery. 4,245,015, Cl. 429-188.000.
- Burnham, John M., to Howard Johnson Company. Individual ice cream dispensing receptacle. 4,244,470, Cl. 206-525.000.
- Burnham, Louise S. Nasal drip absorbing device. 4,244,057, Cl. 2-160.000.
- Burrin Medical, Inc.: See—
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- Burroughs Corporation: See—
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- Faulkner, John P., 4,244,788, Cl. 204-15.000.
- Henderson, Donald L., Sr.; Baldwin, Steven M.; and Pong, Raymond, 4,244,752, Cl. 148-1.500.

- Lund, George E., 4,244,672, Cl. 414-134.000.
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- Burroughs Wellcome Co.: See—
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- Burstein, Paul; and Krieger, Allen S., to American Science and Engineering, Inc. Soft x-ray spectrometric imaging system. 4,245,158, Cl. 250-370.000.
- Busby, W. Ray, to Rockwell International Corporation. Circuit card with soft power switch. 4,245,270, Cl. 361-58.000.
- Bushnell, Nolan K.: See—
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- Butcher, Robert W., to General Motors Corporation. System for collecting solid particles entrained in a gas stream. 4,244,717, Cl. 55-364.000.
- Buter, Roelof, to Akzo N.V. Method for the preparation of an acrylate copolymer and liquid coating composition having a high solids content based on an acrylate copolymer thus prepared. 4,245,074, Cl. 526-214.000.
- Butter, Stephen A., to Mobil Oil Corporation. Selective carbonylation of olefinically unsaturated hydrocarbons using palladium-amine or -stibine catalysts. 4,245,115, Cl. 560-233.000.
- Buzzard, George. Interconnectable picture frames. 4,244,127, Cl. 40-152.100.
- Bynum, Brian T., to Rockwell International Corporation. Amplitude tilt correction apparatus. 4,245,353, Cl. 455-234.000.
- Cadaret, Patrick M., to Rockwell International Corporation. Hub and bearing assembly. 4,244,631, Cl. 308-210.000.
- Cagnassi, Roberto. Catalytic solution for the electrodeless deposition of metals. 4,244,739, Cl. 106-1.110.
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- California-Texas Oil Company: See—
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- Calundann, Gordon W.: See—
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- Campagnolo, Tullio. Pedal for bicycles. 4,244,239, Cl. 74-560.000.
- Campbell, Hallis D.: See—
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- Campbell, Peter P.: See—
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- Campbell, Richard F.; and Stein, Dennis, to United States of America, Army. Airborne hoist. 4,244,561, Cl. 254-288.000.
- Campbell, Robert H.; Wise, Raleigh W.; and Vaughn, William A., to Monsanto Company. Poly(6-oxo-2,2,4-trialkyl-1,2-dihydroquinoline)alkylene compounds as antidegradants for rubber. 4,244,864, Cl. 260-45.8NW.
- Campos, Luis B. Board game. 4,244,579, Cl. 273-243.000.
- Canadian General Electric Company Limited: See—
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- Canon Kabushiki Kaisha: See—
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- Cantarella, Robert; Tasctano, Paul; and Strickholm, George E., to Cantarella, Robert; and Tasctano, Paul. Electronic inclination gauge. 4,244,117, Cl. 33-366.000.
- Canty, Herbert G.: See—
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- Caporiccio, Gerardo; Bergigia, Gianangelo; and Guidetti, Giampiero. Fluorosulphonyl oxasulfonalkanes and their derivatives. 4,244,886, Cl. 260-513.00F.
- Caradonna, Peter W., to Gilman Brothers Inc. Incontinent garment. 4,244,368, Cl. 128-287.000.
- Carguel, Robert A.: See—
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- Carl Dan Peddinghaus, GmbH & Co. KG: See—
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- Carlsson, Enar I.; Persson, Nils H. A.; Samuelsson, Gustav B. R.; and Wetterlin, Kjell I. L., to Aktiebolaget Hassle. Heart active compounds. 4,244,969, Cl. 424-330.000.
- Carmel Energy, Inc.: See—
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- Cara, William R. Metallurgical vessel with removable trunnion pins. 4,244,563, Cl. 266-246.000.
- Carolan, Donald L., to Doere & Company. Ignition interlock system for self-propelled walk-behind lawn mower. 4,244,160, Cl. 56-10.500.
- Carpenter Technology Corporation: See—
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- Carpino, Ugo, to T.E.A. Tecniche Elettroniche Applicate S.r.l. Apparatus for measuring small weight capacities of liquids. 4,244,211, Cl. 73-113.000.
- Carstedt, Howard B. Fluid dispensing apparatus. 4,244,319, Cl. 118-411.000.
- Casey, James O., Jr.: See—
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- Casio Computer Co., Ltd.: See—
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- Casolino, Vincenzo: See—
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- Caspersen, Rand R.: See—
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- Cassens, Nicholas, Jr., to Kaiser Aluminum & Chemical Corporation. Refractory gun mix. 4,244,744, Cl. 106-58.000.
- Cassiers, Paul M.; and Verlinden, Willy G., to AGFA-GEVAERT N.V. Method for the development of electrostatic charge images. 4,245,023, Cl. 430-118.000.
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- Castonguay, Roger N.: See—
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- Catellani, Fausto: See—
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- Caterpillar Tractor Co.: See—
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- Causilla, Humberto, Jr.: See—
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- Cavaler, Paul. Method of constructing box springs or the like. 4,244,089, Cl. 29-91.100.
- Cavazza, Claudio, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Device for the extemporaneous preparation of a solution under sterile conditions. 4,244,467, Cl. 206-222.000.
- Cayen, Mitchell N.: See—
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- CBS Inc.: See—
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- Celanes Corporation: See—
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- Centro Ricerche Fiat S.p.A.: See—
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- Ceramicali, John. Testing of fluidic devices. 4,244,209, Cl. 73-49.800.
- Ceskoslovenska akademie ved: See—
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- Chabanon, Françoise M.; and Royer, Henri J., to Association pour la Recherche et le Développement des Methodes et Processus Industriels (A.R.M.I.N.E.S.). Process and device for air-conditioning greenhouses. 4,244,148, Cl. 47-58.000.
- Chafetz, Harry: See—
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- Chaikin, Malcolm; and McCracken, John R., to Unisearch Limited. Process and apparatus for the aerobic biological purification of liquid wastes containing organic pollutants. 4,244,815, Cl. 210-622.000.
- Chamberlin, Ronald D.: See—
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- Chambers, William J., to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions based on salt-forming polymers and polyhydroxy polyethers. 4,245,031, Cl. 430-288.000.
- Champion International Corporation: See—
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- Garmon, Ivan E., 4,244,507, Cl. 229-33.000.
- Chang, Ching M., to Union Carbide Corporation. High intensity ionization-electrostatic precipitation system for particle removal and method of operation. 4,244,709, Cl. 55-2.000.
- Charles Winn (Valves) Limited: See—
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- Chastain, Dave, Jr.: See—
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- Chellia, Fred F., to Helix Technology Corporation. Refrigeration system and reciprocating compressor therefor with pressure stabilizing seal. 4,244,192, Cl. 62-6.000.
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- Chemische Werke Huels, A.G.: See—
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- Chen, Bu S., to Hyperion Incorporated. Sample diluting apparatus. 4,244,919, Cl. 422-100.000.
- Chen, T. F., to Sperry Corporation. Thin particulate film spin coater. 4,244,318, Cl. 118-52.000.

- Chenevas-Paule, Andre; Melnick, Igor; and Vieux-Rochaz, Line, to Commissariat a l'Energie Atomique. Photovoltaic generator. 4,244,750, Cl. 136-255.000.
- Cheung, Shiu H. Pay TV system. 4,245,246, Cl. 358-124.000.
- Chevron Research Company: See—
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- Chianurashvili, Eleonora E.: See—
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- Chiba, Hiromasa: See—
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- Chicago Pneumatic Tool Company: See—
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- Chisso Corporation: See—
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- Chloride Group Limited: See—
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- Choe, Eui W.; and Calundann, Gordon W., to Celanese Corporation. Thermotropic, wholly aromatic polythioesters capable of forming an anisotropic melt and a process for preparing the polythioesters. 4,245,084, Cl. 528-293.000.
- Chrisman, Max G., to Owens-Corning Fiberglass Corporation. Electric melt furnace-electrodes inclined toward each other to vary the firing path during steady state operation and to create hot spots after heat loss or during start-up. 4,245,132, Cl. 13-6.000.
- Christ, Christy: See—
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- Christensen, Inc.: See—
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- Christiansen, Jori U., to Tour & Anderson Aktiebolag. Control unit for starting a climatization procedure in a building. 4,244,516, Cl. 236-46.00R.
- Chromalloy American Corporation: See—
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- Chrysler United Kingdom Limited: See—
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- Chubb, Talbot A., to United States of America, Navy. Solar energy heat-storage tank. 4,244,350, Cl. 126-400.000.
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- Collins, Stephen, to Oakside Industrial, 19167, Holdings, Ltd. Apparatus for marking strip material. 4,244,289, Cl. 101-93.180.
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- Congoleum Corporation: See—
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- Conn, Alvie P. Automatic sampler for gas and liquid. 4,244,224, Cl. 73-422.0TC.
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- Consortium fur Elektrochemische Industrie GmbH: See—
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- Container Corporation of America: See—
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Brockway, Thomas A.; Grzesik, Paul R.; and Hausheer, Lawrence B., 4,244,755, Cl. 148-16.000.

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Cosper, David R.: See—
Rende, Dominic S.; and Cosper, David R., 4,244,780, Cl. 162-72.000.

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Feist, Roy L., 4,244,388, Cl. 137-116.000.

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Crivello, James V., to General Electric Company. Photocurable compositions using triarylsulfonium salts. 4,245,029, Cl. 430-280.000.

Croghan, Stephen M., to Marathon Manufacturing Company. Apparatus for restricting pipe motion. 4,244,663, Cl. 405-195.000.

Croll, Lionel. Archery target. 4,244,585, Cl. 273-408.000.

Crooks, James H.: See—
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Machol, Guenther K.; and Cross, Jon L., 4,245,324, Cl. 364-716.000.

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Berger, J. Louis; and Cross, L. Eric, 4,244,652, Cl. 356-383.000.

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Berry, Richard C., 4,244,545, Cl. 248-72.000.

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Coudreyre, Jacques; and Guidot, Claude, 4,244,391, Cl. 137-119.000.

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Crowne, Frank J., to United States of America, Army. Perieris-transition far-infrared source. 4,245,161, Cl. 250-504.00R.

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Kosary, Judit; Kasztreiner, Endre; Huszti, Zsuzsa; Kenessey, Agnes; Cseh, Gyorgy; Szilagyi nee Pap, Veronika; and Stvertczky nee Sztrokay, Judit, 4,244,871, Cl. 260-239.700.

Cummings, Gilbert A.; and Hatch, Richard W., Jr., to Peters & Company, Inc. Vapor transfer griddle with immersed electrical heating. 4,245,147, Cl. 219-462.000.

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Baugh, James D.; Shaw, Terrence M.; Primus, Roy J.; and Glasson, Richard E., 4,244,330, Cl. 123-41.840.

Cupper, Robert A., to Union Carbide Corporation. Silicone-hydrocarbon compositions. 4,244,831, Cl. 252-78.300.

Curley, John L.: See—
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Curran, William F. Visual tire valve. 4,244,214, Cl. 73-146.800.

Cutter Laboratories, Inc.: See—
Kuo, Harn-Shen; Mutha, Shantilal C.; and Thompson, Charles R., 4,245,044, Cl. 435-34.000.

McGill, Lee E.; and Watkins, Susan J., 4,244,365, Cl. 128-214.00E.

Cyborrex Laboratories, Inc.: See—
Hedges, Walter P., 4,245,319, Cl. 364-493.000.

Cybulsky, Michael: See—
Terkelsen, Bruce E.; Cybulsky, Michael; and Perron, James S., 4,244,551, Cl. 249-134.000.

Czech, Joachim: See—
Lorscheid, Willy; and Wingen, Ludwig, 4,244,495, Cl. 222-153.000.

Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Uede, Taisei, to Hitachi, Ltd. Winding structure for static electrical induction apparatus. 4,245,206, Cl. 336-60.000.

Daimler-Benz Aktiengesellschaft: See—
Mehren, Herbert, 4,244,186, Cl. 60-560.000.

Dain, Richard J., to Davy-Loewy Limited. Apparatus for feeding a horizontal continuous casting mold. 4,244,420, Cl. 164-440.000.

Dandl, John E. Side mounting assembly for tractor implement. 4,244,597, Cl. 280-473.000.

Daniels, Richard G.; Walton, Richard S.; and Yamanouchi, Roy K., to Motorola Inc. Digital watch. 4,245,337, Cl. 368-82.000.

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Veit, William E., Jr.; and Das, Kusal K., 4,245,014, Cl. 429-181.000.

D'Asaro, Lucian A., to Bell Telephone Laboratories, Incorporated. Process for the chemical etch polishing of semiconductors. 4,244,775, Cl. 156-636.000.

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Frey, Ronald G., 4,245,343, Cl. 371-11.000.

Daugherty, Paul W.: See—
Rudolph, Dale C.; Ray, Michael D.; Hansher, Richard L.; and Daugherty, Paul W., 4,244,227, Cl. 73-621.000.

Dautzenberg, Frits M.; and Janssen, Martinus M. F., to Shell Oil Company. Process for the preparation of a hydrocarbon mixture rich in aromatics. 4,244,807, Cl. 208-66.000.

David, Mark E.: See—
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Davies, Robert B., to Motorola Inc. Combination capacitor and transistor structure for use in monolithic circuits. 4,245,231, Cl. 357-51.000.

Davis, Neil M.: See—
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Davis, Robert E.: See—
Baldwin, Roger A.; Davis, Robert E.; and Leonard, Robert E., 4,244,812, Cl. 208-177.000.

Davy-Loewy Limited: See—
Dain, Richard J., 4,244,420, Cl. 164-440.000.

Day, Joseph G., to Johnson, Matthey & Co., Limited. Yttrium containing alloys. 4,244,736, Cl. 75-129.000.

Dayco Corporation: See—
Standley, Paul M., 4,244,234, Cl. 474-263.000.

DCA Food Industries, Inc.: See—
Fischer, Leonard G.; Kovacs, Peter; Russell, Alvin W.; and Vey, John E., 4,244,980, Cl. 426-554.000.

Deere & Company: See—
Carolan, Donald L., 4,244,160, Cl. 56-10.500.

Guitier, Jack L., 4,244,161, Cl. 56-13.600.

Hartwig, Donald R., 4,244,522, Cl. 239-148.000.

Zirker, Eugene S.; Redman, Andrew P.; Pierrot, Victor C.; Menzel, Alvin L.; and Kurt, Lynn E., 4,244,405, Cl. 144-34.00E.

De Fusco, Giuseppe, to Gema AG Apparatebau. Electrostatic spray gun. 4,244,527, Cl. 239-691.000.

DeGabriele, Robert M.; and Causilla, Humberto, Jr., to Cleveland Cliffs Iron Company, The. Inerting of pulverizing mills for combustible materials. 4,244,529, Cl. 241-18.000.

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De Ridder, Rene R.; Georges, Andre H.; Ghys, Arlette; Lapiere, Charles L.; Delarge, Jacques E.; and Thunus, Leopold N., 4,244,950, Cl. 424-248.500.

Dell, M. Benjamin, to Aluminum Company of America. Method of forming metal chlorides. 4,244,935, Cl. 423-491.000.

DelliColli, Humbert T.; Dilling, Peter; and Falkehaag, Sten I., to Westvaco Corporation. Cross-linked lignin gels. 4,244,728, Cl. 71-65.000.

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Serafini, Tito T.; and Delvigs, Peter, 4,244,853, Cl. 260-33.40R.

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de Macedo, Pedro B.: See—
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de Macedo, Pedro Buarque: See—
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Demain, Arnold L.; and Souw, Peter, to Massachusetts Institute of Technology. Process for the fermentative production of xanthan gum with organic acids. 4,245,046, Cl. 435-104.000.

DeMarco, JoAnn, to Loctite Corporation. Stabilized acid-containing anaerobic compositions. 4,245,077, Cl. 526-323.100.

de Massey, Bernard: See—
Molinier, Jacques; Mahler, Jacques; Bocquet, Gilbert; de Massey, Bernard; and Holtmann, Robert, 4,244,844, Cl. 260-9.000.

Dembicki, Harry, Jr.: See—
Woods, Roger A.; and Dembicki, Harry, Jr., 4,244,917, Cl. 422-78.000.

Demerson, Christopher A.: See—
Lippman, Wilbur; Demerson, Christopher A.; Humber, Leslie G.; and Ferland, Jean-Marie, 4,244,966, Cl. 424-274.000.

De Monti, Laura, to Prototypen Establishment. Book, more particularly pocket dictionary. 4,244,603, Cl. 281-15.00R.

Dempsey, Gene M.; and Dempsey, Jack M. Treadle alarm system. 4,245,219, Cl. 390-666.000.

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de Muinck, Andre R.: See—
Boen, Howard E.; de Muinck, Andre R.; Miller, John H.; and Genaon, Samuel R., 4,244,720, Cl. 65-8.000.

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Deneau, Kenneth S., to Minnesota Mining and Manufacturing Company. Material for forming graphics. 4,244,605, Cl. 282-27.500.

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Handa, Minoru; Nishizawa, Takuzi; Ogawa, Hiroko; and Asai, Shinichiro, 4,244,862, Cl. 260-42.470.

Denney, Jerry W., to American Monitor Corporation. Triglycerides assay and reagents therefor. 4,245,041, Cl. 435-15.000.

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Boyer, Peter W.; and Dent, Jonathan D., 4,244,618, Cl. 294-88.000.

DePauw, Richard A.; Dunn, Neil C.; and Lucas, James R., to International Harvester Company. Adjustable transport vanes for axial flow combine. 4,244,380, Cl. 130-27.00T.

de Perczel, Desi: See—
MacDonald, Douglas B.; and de Perczel, Desi, 4,245,274, Cl. 361-429.000.

De Ridder, Rene R.; Georges, Andre H.; Ghys, Arlette; Lapiere, Charles L.; Delarge, Jacques E.; and Thunus, Leopold N., to A. Christiens Societe Anonyme. Derivatives of 4-amino-3-sulfonamido-pyridine, their preparation and use. 4,244,950, Cl. 424-248.500.

deRussy, John H. Control of vehicle engine fuel feed by electro-stress means. 4,244,335, Cl. 123-350.000.

Dervy, Aram J., to McDonnell Douglas Corporation. Fastener means and joint for laminates. 4,244,661, Cl. 403-243.000.

Dery, Normand. Apparatus to apply pre-glued strips of resistive material to a car rear window. 4,244,774, Cl. 156-574.000.

Desblache, Andre E., to International Business Machines Corporation. Method and device for measuring the slope of the envelope delay characteristic of a transmission channel and their application to an automatic equalizer selection technique. 4,245,320, Cl. 364-514.000.

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Mylonakis, Stamatios G., 4,244,850, Cl. 260-29.60M.

Deuterium Corporation: See—
Spevack, Jerome S., 4,244,924, Cl. 422-256.000.

Deutch, Leslie J.: See—
Deutch, Ralph; and Deutch, Leslie J., 4,244,263, Cl. 84-345.000.

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Goedecke, Ralf; Liebert, Martin; Nischk, Wolfgang; Plotz, Wolfgang; and Puschner, Kurt, 4,245,090, Cl. 544-191.000.

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Scherberich, Paul, 4,245,117, Cl. 562-554.000.

Deutsche Texaco Aktiengesellschaft: See—
Heinemann, Karl-Heinz; Michalczyk, Georg; and Riptens, Gerd, 4,244,906, Cl. 264-109.000.

Deutscher Verein des Gas- und Wasserfachs e.V., "DVGW-Forschungsinstitut": See—
Wolff, Peter, 4,244,696, Cl. 23-230.00R.

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Dewhurst, Floyd E., to Forsyth Dental Infirmary for Children. Method of treating inflammation. 4,244,956, Cl. 424-258.000.

Dewhurst, Floyd E., to Forsyth Dental Infirmary for Children. Method of treating inflammation. 4,244,970, Cl. 424-331.000.

De Winter, Walter F.; Monbaliu, Marcel J.; Marien, August M.; and Van Rossum, Antoine R., to AGFA-GEVAERT N.V. Emulsifier-free latexes and photographic light-sensitive elements containing them. 4,245,036, Cl. 430-510.000.

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Pohto, Gerald R.; and Olson, Richard O., 4,244,802, Cl. 204-252.000.

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Diesel Kiki Co., Ltd.: See—
Ishizuka, Yutaka; and Kobayashi, Shinichi, 4,244,680, Cl. 418-97.000.

Dieterich, Alfred. Orthopedic sandal. 4,244,359, Cl. 128-81.00R.

Digital Equipment Corporation: See—
Durvasula, Srirama S.; Levy, John V.; and Rado, Peter J., 4,245,303, Cl. 364-200.000.

Dilling, Peter: See—
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DiMauro, Joseph; Kaemmer, Herbert H.; Otto, Noel A.; and Riefler, Roger G., to Automatic Switch Company. Springless diaphragm valve. 4,244,554, Cl. 251-61.100.

DiTullio, Flavia, to Hanes Corporation. Apparatus for constructing breast cups. 4,244,249, Cl. 83-139.000.

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Claiborne, J. Lyle, 4,244,692, Cl. 8-116.00P.

Diugopolaki, Joseph, to Fidelity Container Corporation. Stackable folding box with truncated cross section. 4,244,509, Cl. 229-36.000.

Dr. C. Otto & Comp. G.m.b.H.: See—
Thubeauville, Heinz, 4,244,786, Cl. 202-142.000.

Dr. Ing. Rudolf Hell GmbH: See—
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- Dukelow, Samuel G., to Babcock & Wilcox Company. The. Heat flow meter. 4,244,216, Cl. 73-190.00H.
- Dunham, Harry K.: See—
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- Dunn, Neil C.: See—
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- Du Pont de Nemours, E. I., and Company: See—
Chambers, William J., 4,245,031, Cl. 430-288.000.
- Irwin, Robert S., 4,245,082, Cl. 528-128.000.
- Lulay, Arthur, 4,244,173, Cl. 57-227.000.
- Durkin, Joseph A., to Texaco Inc. Sulfur dioxide oxidation catalyst and process. 4,244,937, Cl. 423-522.000.
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- Duske, Wilfried P., to Progressive Development Inc. Skimmer apparatus for centrifugal separators. 4,244,716, Cl. 55-340.000.
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- Duverne, Jean-Claude. Method and apparatus for on-site treatment of mud and silt. 4,244,664, Cl. 405-263.000.
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- Dwyer, Gregory J.: See—
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- Dybas, Richard A.: See—
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- Dzhabiev, Ramiz A.: See—
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- Eastman Kodak Company: See—
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- Fike, Bruce G.; Howe, Dennis G.; and Edwards, Evan A., 4,245,247, Cl. 358-128.600.
- Phillips, Bobby M.; Casey, James O., Jr.; and Gregory, Dale R., 4,245,001, Cl. 428-224.000.
- Poshkus, Gerald M., 4,245,035, Cl. 430-496.000.
- Rushing, Allen J.; Benwood, Bruce R.; and LaChapelle, Paul A., 4,245,272, Cl. 361-229.000.
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- Eberlein, Dietmar: See—
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- Edwards, Jack N. Hand weaving looms. 4,244,400, Cl. 139-33.000.
- Egypt Gyogyszervegyezeti Gyar: See—
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- Eisenbarth, Manfred, to Mannesmann Demag AG. Dust removal apparatus. 4,244,715, Cl. 55-315.000.
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- Elkem-Spigerverket, A/S: See—
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- Emhart Industries, Inc.: See—
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- Empire of Carolina, Inc.: See—
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- Endo, Katsusuke: See—
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- Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus; Pieper, Helmut; and Zimmermann, Rainer, to Boehringer Ingelheim GmbH. Antiplogistic pharmaceutical compositions containing a phenylethanamine and methods of use. 4,244,967, Cl. 424-300.000.
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- Engstrom, Folke: See—
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Seidl, Robert M.; and Enright, Francis J., 4,244,705, Cl. 48-77.000.
- Entenman, Alan W., to Intech Laboratories, Inc. One-for-n modem control apparatus. 4,245,342, Cl. 371-8.000.
- Enters, Edward W.; and Bacon, Roger J., to Gilson Brothers Company. Tiller with rotatable tines and guiding handle. 4,244,427, Cl. 172-42.000.
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- Erbstoesser, Steven R., to Exxon Production Research Company. Low density ball sealers for use in well treatment fluid diversions. 4,244,425, Cl. 166-284.000.
- Erickson, Erick E.; and Kuna, Wayne A., to Marvin Glass & Associates. Eating doll. 4,244,139, Cl. 46-141.000.
- Erickson, Robert A.; Friedline, Ernest J.; and Warren, Donald W., to Kennametal Inc. Pin lock tool holder. 4,244,666, Cl. 407-105.000.

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- ESB International Corp.: See—
Veit, William E., Jr.; and Das, Kusal K., 4,245,014, Cl. 429-181.000.
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- Escobosa, Alfonso S. Hydraulic actuation system for engine valves. 4,244,553, Cl. 251-57.000.
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- Eshghy, Stavash, to Rockwell International Corporation. Tension control of fasteners. 4,244,095, Cl. 29-407.000.
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- Coupland, Keith; and Smith, Clinton R., 4,244,829, Cl. 252-56.00R.
- Ericson, Ernest A., 4,244,543, Cl. 248-55.000.
- Grenoble, Dane C.; and Weissman, Walter, 4,244,811, Cl. 208-122.000.
- Lepert, Andre, 4,245,075, Cl. 526-280.000.
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- Powers, Kenneth W.; Roper, Robert; and Gorbaty, Martin L., 4,245,060, Cl. 525-256.000.
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- Wheelock, Kenneth S., 4,244,809, Cl. 208-108.000.
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- Fag Kugelfischer Georg Schafer & Co.: See—
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- Fahlen, Theodore S.; and Clark, David J., to GTE Products Corporation. Laser optical resonator assembly. 4,245,195, Cl. 331-94.50C.
- Fairlie, Ian F. Heating system for chairs. 4,245,149, Cl. 219-528.000.
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- Fanselow, Dan L., to Minnesota Mining and Manufacturing Company. Photochromic aziridine recording media. 4,245,032, Cl. 430-338.000.
- Farin, Gunter, to Erbe Elektromedizin GmbH & Co. KG. High-frequency surgical apparatus. 4,244,371, Cl. 128-303.140.
- Farina, Peter R.; Ordonez, Kathy P.; and Siewers, Iris J., to Union Carbide Corporation. Reactor/separator device for use in automated solid phase immunoassay. 4,244,694, Cl. 23-230.00B.
- Farr, Robert A.; and Dolfini, Joseph E., to Richardson-Merrell Inc. 2,4a-Ethanobenzylisoquinolin-5(IH)-ones and their use as anti-fertility and analgesic agents. 4,244,955, Cl. 424-258.000.
- Farrar, Alfred O.; Hochberg, Howard M.; and Jones, Flavie L., to Hoffmann-La Roche Inc. Transcutaneous electrode with finger operative attachment assembly. 4,244,375, Cl. 128-642.000.
- Faulkner, John P., to Burroughs Corporation. Transducer-plated magnetically anisotropic metallic recording films, and associated techniques. 4,244,788, Cl. 204-15.000.
- Faust, Raimund J.; and Lehmann, Peter, to Hoechst Aktiengesellschaft. Photopolymerizable mixture containing improved plasticizer. 4,245,030, Cl. 430-281.000.
- Fayer, Ervin; Setzer, Steven H.; and Gillette, Donald A., to Coulter Corporation. Centrifuge unit. 4,244,513, Cl. 233-23.00R.
- Fearnside, William T., to Eastman Kodak Company. Frame-rate converting film scanner having continuously variable projection speed. 4,245,253, Cl. 358-214.000.
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- Fedotov, Vladimir M.: See—
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- Fellot, Dominique, to Thomson-CSF. System for registering and selecting stops in a musical instrument. 4,244,264, Cl. 84-345.000.
- Fenne, Ivor, to Lucas Industries Limited. Fuel injection system. 4,244,342, Cl. 123-501.000.
- Fenton, Frank A., to Emhart Industries, Inc. Glassware handling systems. 4,244,725, Cl. 65-260.000.
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- Fidelity Container Corporation: See—
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- Fiege, Helmut; Wedemeyer, Karlfried; Bauer, Kurt; and Molleken, Reiner, to Bayer Aktiengesellschaft. Process for the preparation of a mixture of 2- and 4-hydroxybenzyl alcohol. 4,245,126, Cl. 568-764.000.
- Field, Sydney J.: See—
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- Fielder, Coy M.: See—
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- Fike, Bruce G.; Howe, Dennis G.; and Edwards, Evan A., to Eastman Kodak Company. Hard copy reproduction from video disc information. 4,245,247, Cl. 358-128.600.
- Fillmore, Gary L.; Hoffman, Arthur R.; and Young, Thomas, to International Business Machines Corporation. Ink jet head. 4,245,225, Cl. 346-75.000.
- Finch, Robert A., to CBS Inc. Rhythm system for electronic organ. 4,244,258, Cl. 84-1.030.
- Finkelstein, Manuel; Dunkl, Franz S.; and Ross, Sidney D., to Sprague Electric Company. Electrolytic capacitor containing a metatungstate electrolyte. 4,245,278, Cl. 361-433.000.
- Fischer, Kurt: See—
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- Fischer, Leonard G.; Kovacs, Peter; Russell, Alvin W.; and Vey, John E., to Merck & Co., Inc.; and DCA Food Industries, Inc. Flour compositions. 4,244,980, Cl. 426-554.000.
- Fischer, Robert; and Stab, Rudolf, to Albert-Frankenthal AG. Deflecting device for folded sheet products. 4,244,461, Cl. 198-456.000.
- Fish, Darrell D., to Reynolds Metals Company. Carton for cutting and dispensing sheet material. 4,244,254, Cl. 83-589.000.
- Fisher, Charles B.; and Fisher, Sidney T. Measurement of evoked nervous system potentials. 4,244,376, Cl. 128-731.000.
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- Fitzner, Arthur O., to Brunswick Corporation. Low speed limiter unit for internal combustion engine ignition systems. 4,244,336, Cl. 123-418.000.
- Flanigan, Richard J., to Houdaille Industries, Inc. Cutting guide attachment for power tools. 4,244,253, Cl. 83-411.00R.
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- Tsujino, Nobuyuki; Hirano, Shigeo; and Adachi, Keiichi, 4,245,037, Cl. 430-559.000.
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- Fujiwara, Tsuyoshi: See—
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- Goldberg, Benjamin L.; and Meyer, Burton C., to Marvin Glass & Associates. Toy motor vehicle. 4,244,144, Cl. 46-202.000.
- Goldie, Harry, to Westinghouse Electric Corp. Radar receiver protector with auxiliary source of electron priming. 4,245,197, Cl. 333-13.000.
- Golz, Hans-Joachim, to Varta Batterie Aktiengesellschaft. Explosion protection for storage batteries. 4,245,010, Cl. 429-56.000.
- Gonda, William V.: See—
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- Goodwin, Brian, to Mediashield Corporation Limited. The Apparatus for analysis of absorbed gases. 4,244,713, Cl. 55-158.000.
- Gorbaty, Martin L.: See—
Powers, Kenneth W.; Roper, Robert; and Gorbaty, Martin L., 4,245,060, Cl. 523-256.000.
- Gorell, Frederick R., to Transco, Inc. Prong-type fastener. 4,244,269, Cl. 411-477.000.
- Gorille, Ingo, to Robert Bosch GmbH. Method and system to control ignition timing of an internal combustion engine in dependence on an exhaust gas composition signal. 4,244,339, Cl. 123-416.000.
- Gorow, Bernard J., to Lambert, W. B. Four-in-one scope sighting-in target. 4,244,586, Cl. 273-409.000.
- Goto, Kazuhiro: See—
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- Goto, Masuo: See—
Aotsu, Hiroaki; Isono, Akira; Goto, Masuo; Kimura, Koichi; Momochi, Yasushi; Kai, Takashi; Kitamura, Satoshi; Kaihara, Akihisa; and Okada, Hiroshi, 4,245,182, Cl. 322-20.000.
- Goto, Seichi: See—
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- Gotz, Georg F.; and Gross, Hans, to Siemens Aktiengesellschaft. Apparatus for the controlled voltage supply of D.C. drives. 4,245,295, Cl. 363-129.000.
- Gould Inc.: See—
Belcher, Richard A., 4,245,208, Cl. 337-231.000.
- Clausing, Charles I.; and Fredrickson, Einar H., 4,245,204, Cl. 335-174.000.
- Gossio, Constantine C. Polytrack digital scale. 4,244,105, Cl. 33-1.00M.
- Goyert, Wilhelm: See—
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- Grady, Robert J.; and Posthumus, Harry G., to Magnavox Government and Industrial Electronics Co. Communication system. 4,245,346, Cl. 455-28.000.
- Graff, Hart F.; and Christ, Christy, to Armco Inc. Method of curing thermosetting plastic powder coatings on elongated metallic members. 4,244,985, Cl. 427-27.000.
- Grams, Guenter A. Ear probe for use in closed-loop caloric irrigation. 4,244,377, Cl. 128-742.000.
- Green, Augustus H., Jr.: See—
Peebles, Peyton Z., Jr.; and Green, Augustus H., Jr., 4,245,196, Cl. 331-178.000.
- Green, John R., to Neptune Dynamics Ltd. Fish sorter. 4,244,475, Cl. 209-588.000.
- Green, Norman F.; Keiles, Yoel; Newbold, William F.; Searle, John L.; and Wilda, Douglas W., to Honeywell Inc. Distance measuring apparatus and a differential pressure transmitter utilizing the same. 4,244,226, Cl. 73-703.000.
- Greenwood, John C., to IIT Industries, Inc. Mechanical resonator arrangements. 4,244,225, Cl. 73-517.0AV.
- Gregg, James S., to Samsonite Corporation. Zipper closure lock. 4,244,086, Cl. 24-205.11L.
- Gregory, Dale R.: See—
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- Greiner, Steven P.: See—
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- Grenoble, Dane C.; and Weissman, Walter, to Exxon Research & Engineering Co. Catalytic cracking process with simultaneous production of a low BTU fuel gas and catalyst regeneration. 4,244,811, Cl. 208-122.000.
- Greubel, Waldemar: See—
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- Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., to Merck & Co., Inc. 1-[2-(Alkyl and arylsulfonyl)-2-propenyl and propyl] substituted piperidines useful as antimicrobial and antiinflammatory agents. 4,244,963, Cl. 424-267.000.
- Griggs, John C.: See—
Webster, Cyril J. D.; and Griggs, John C., 4,244,061, Cl. 4-144.100.
- Grininger, Lowell D., to PPG Industries, Inc. Brominated cinnamylacetophenone. 4,244,825, Cl. 252-8.100.
- Griswold Controls: See—
Griswold, David E.; and Veit, Richard E., 4,244,392, Cl. 137-218.000.
- Griswold, David E.; and Veit, Richard E., 4,244,395, Cl. 137-484.200.
- Griswold, David E.; and Veit, Richard E., to Griswold Controls. Backflow prevention apparatus. 4,244,392, Cl. 137-218.000.
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- Grob, Jean; and Roch, Roger, to J. Bobet & Fils, S.A. Apparatus for controlling the movement of a web of material continuously delivered to a machine processing the web. 4,244,504, Cl. 226-114.000.
- Groman, Ernest V.: See—
Parsons, George H., Jr.; and Groman, Ernest V., 4,244,939, Cl. 424-1.000.
- Grondahl, Clayton M.; and Germain, Malcolm R., to General Electric Company. Cooling system for a gas turbine using a cylindrical insert having V-shaped notch weirs. 4,244,676, Cl. 416-92.000.
- Gross, Hans: See—
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- Grossman, David G., to Corning Glass Works. Spontaneously-formed mullite glass-ceramics. 4,244,723, Cl. 65-33.000.
- Groszwend, Werner; Moll, Manfred; and Becker, Wilfried, to Rheinmetall GmbH. Projectile designed for recoilless and virtually noiseless firing. 4,244,293, Cl. 102-38.0RL.
- Groundwater, Fergus M. Process and equipment to form modules of biscuits or other like products. 4,244,460, Cl. 198-429.000.
- Grube, George. Multiple use chain saw mill. 4,244,104, Cl. 30-371.000.
- Grube, Gerhard: See—
Gutjahr, Lothar; and Grube, Gerhard, 4,245,243, Cl. 358-106.000.
- Grushkin, Harold. Combination intra-venous flow-meter and low level fluid mechanism. 4,244,364, Cl. 128-214.00B.
- Grzesik, Paul R.: See—
Brockway, Thomas A.; Grzesik, Paul R.; and Hausheer, Lawrence B., 4,244,755, Cl. 148-16.000.
- GSE, Inc.: See—
Marcinkiewicz, Eugene J., 4,244,213, Cl. 73-139.000.
- GTE Laboratories Incorporated: See—
Buhner, Carl F., 4,245,179, Cl. 315-248.000.
- GTE Lenkurt Electric (Canada) Ltd.: See—
Huntley, Christopher R., 4,245,202, Cl. 333-215.000.
- GTE Products Corporation: See—
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- Arumugham, Rangaswamy, 4,245,236, Cl. 358-31.000.
- Bauer, Claude J.; and Johnson, Roger D., 4,244,483, Cl. 220-3.200.
- Bergamo, Robert L.; Rychlewski, Thaddeus V.; and Wirth, Siegfert M., 4,245,019, Cl. 430-24.000.
- Bouchard, Andre C.; Armstrong, Donald E.; Sindlinger, Ronald E.; Shaffer, John W.; and Bricker, Daniel W., 4,245,279, Cl. 362-13.000.

- Fahlen, Theodore S.; and Clark, David J., 4,245,194, Cl. 331-94.50D.
- Fahlen, Theodore S.; and Clark, David J., 4,245,195, Cl. 331-94.50C.
- Hartman, Donald W., 4,245,280, Cl. 362-13.000.
- Shaffer, John W., 4,244,295, Cl. 102-205.000.
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Paschen, Peter; Rao, Chaitry; Preuss, Helmut; Wenzel, Werner; Gudenus, Heinrich-Wilhelm; and Schonberger, Reinhold, 4,244,905, Cl. 264-86.000.
- Guest, Ashley W., to British Aerospace. Radio frequency regenerators. 4,245,354, Cl. 455-259.000.
- Guglielmetti, Leonardo, to Ciba-Geigy Corporation. 1,4-Bis-[azol-2'-yl]-naphthalenes and process of using the same. 4,245,007, Cl. 428-480.000.
- Guha, Arabinda: See—
Reich, Edward; Guha, Arabinda; and Schleuning, Wolf-Dieter, 4,245,051, Cl. 435-212.000.
- Guidetti, Giampiero: See—
Caporiccio, Gerardo; Bargigia, Gianangelo; and Guidetti, Giampiero, 4,244,886, Cl. 260-513.00F.
- Guidot, Claude: See—
Coudreyre, Jacques; and Guidot, Claude, 4,244,391, Cl. 137-119.000.
- Guigan, Jean. Device for conditioning a sample of liquid for analyzing with internal filter. 4,244,916, Cl. 422-72.000.
- Guitier, Jack L., to Deere & Company. Harvester header with drive mechanism for oscillating knife cutters. 4,244,161, Cl. 56-13.600.
- Gunn, Gerald E. W. One piece molded picture frame and method of making the same. 4,244,995, Cl. 428-65.000.
- Gunter & Pellaton, Inc.: See—
Pellaton, Roy C., 4,244,252, Cl. 83-356.300.
- Guon, Jerold, to United States of America, Energy. Method and composition for testing for the presence of an alkali metal. 4,244,693, Cl. 23-230.00L.
- Gupta, Gopi N., to Population Council, Inc. The Manufacture of long term contraceptive implant. 4,244,949, Cl. 424-243.000.
- Gupta, Maharaj K., to Weyerhaeuser Company. Bleaching stilbene yellow dyed wood pulp. 4,244,777, Cl. 162-6.000.
- Gupta, Prabhat K.; Drexhage, Martin G.; and de Macedo, Pedro B., to de Macedo, Pedro Buarque; and Litovitz, Theodore A. Method of making composite borosilicate glass articles. 4,244,721, Cl. 65-31.000.
- Guritz, Kenneth E.; and Guritz, Michael L. Service fitting assembly. 4,244,484, Cl. 220-3.700.
- Guritz, Michael L.: See—
Guritz, Kenneth E.; and Guritz, Michael L., 4,244,484, Cl. 220-3.700.
- Guse, Kuno, to Bochumer Eisenhuetten Heintzmann GmbH & Co. Arrangement for discharging liquid medium under high pressure. 4,244,521, Cl. 239-110.000.
- Guseinov, Nazim M. O.; Aliiev, Vagab S.; Mustafaev, Aliah I.; Zimin, Vladimir M.; Sverdlov, Rafael S.; Shkondina, Nina G.; Chianurashvili, Eleonora E.; Morozova, Margarita K.; Mirzoev, Rasim S. O.; Sharifov, Gabil S. O.; Dzhabiev, Ramiz A.; Oshin, Leonid A.; and Genin, Lemel S. Process for preparing allyl chloride. 4,244,892, Cl. 570-223.000.
- Gustafsson, Oile, to Almhults Bruk Aktiebolag. Hydraulic driver for a shuttle. 4,244,401, Cl. 139-142.000.
- Guthlein, Werner: See—
Rothe, Anselm; Guthlein, Werner; Rittersdorf, Walter; and Werner, Wolfgang, 4,245,096, Cl. 546-180.000.
- Guthrie, Robin J., to United Technologies Corporation. Porous coolant tube holder for fuel cell stack. 4,245,009, Cl. 429-16.000.
- Gutjahr, Lothar; and Grube, Gerhard, to Kloeckner-Werke AG. System for registering and sorting out not properly filled deep-drawn packages in a packaging machine. 4,245,243, Cl. 358-106.000.
- Gutleber, Frank S., to International Telephone and Telegraph Corporation. Impulse autocorrelation function code generator. 4,245,326, Cl. 364-728.000.
- Gutnajer, Ludwig: See—
Beyerstedt, Ronald J.; Gutnajer, Ludwig; and Laszewski, Michael W., 4,244,492, Cl. 220-453.000.
- Guy, Richard. Frame-positioning device for mounting canvas and like material. 4,244,558, Cl. 269-254.00R.
- Gwin, Steve W. Crane system or cargo containers. 4,245,271, Cl. 361-189.000.
- H. C. Price Co.: See—
Harris, Robert J., 4,244,740, Cl. 106-14.340.
- H. Krummenauer KG: See—
Konieczny, Klaus; Schmitt, Erich; and Buhles, Adolf, 4,244,626, Cl. 299-90.000.
- Haake, Gerhard: See—
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- Haakenson, Marian H. Ambient air cooling system. 4,244,193, Cl. 62-180.000.
- Habermann, Helmut, to Societe Europeenne de Propulsion. Device for the horizontal stabilization of a vertically supported mass. 4,244,629, Cl. 308-10.000.
- Hackmack, Klaus-Georg: See—
Thiele, Willi; Hackmack, Klaus-Georg; and Hohm, Reinhard, 4,244,382, Cl. 131-21.00B.
- Haering, Rudolph R.; Stiles, James A. R.; and Brandt, Klaus. Battery cathode and method. 4,245,017, Cl. 429-218.000.
- Haestens, Hermann; Altdorf, Erich; Lorenz, Siegfried; and Forsting, Bernd, to Ford Motor Company. Evaporator, particularly for air conditioning devices. 4,244,194, Cl. 62-515.000.
- Hagisato, Yasuo: See—
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- Haglof, Robert W. Baseball game apparatus. 4,244,571, Cl. 273-93.00R.
- Hahnen, Wilbur F. Lampshade with arcuate walled flexible connecting mechanism. 4,245,283, Cl. 362-306.000.
- Halcon Research and Development Corporation: See—
McDermott, Joseph X., 4,244,878, Cl. 260-346.750.
- Peltzman, Alan, 4,245,114, Cl. 560-246.000.
- Halcour, Kurt; Waldmann, Helmut; and Schwerdtel, Wulf, to Bayer Aktiengesellschaft. Process for the preparation of hexahydrophthalic acid anhydride. 4,244,877, Cl. 260-346.300.
- Hale, James M., to Xerox Corporation. Method and apparatus for binding sheets. 4,244,069, Cl. 11-1.0AD.
- Hale, Ron G.: See—
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- Hall, Garth O.; Tengler, Harvey N.; and Eriksson, Neal C., to UOP Inc. Multi-position armrest. 4,244,623, Cl. 297-417.000.
- Hall, John B.: See—
Yoshida, Takao; Hruza, Denis E., Sr.; and Hall, John B., 4,245,122, Cl. 568-397.000.
- Hall, Karlene E.: See—
Kita, Donald A.; and Hall, Karlene E., 4,245,049, Cl. 435-138.000.
- Halle, Reidar: See—
Bock, Lawrence A.; and Halle, Reidar, 4,245,056, Cl. 525-342.000.
- Hallford, Ben R., to Rockwell International Corporation. Frequency translator. 4,245,356, Cl. 455-327.000.
- Hallgren, Karl, to Aktiebolaget Carl Munters. Method and device for defrosting heat exchanger without impairment of its heat exchange efficiency. 4,244,422, Cl. 165-1.000.
- Halvorsen, William J., to Consolidation Coal Company. Integrated coal cleaning and slurry preparation process. 4,244,530, Cl. 241-24.000.
- Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, to Tokyo Electric Co., Ltd. Memory pack. 4,245,331, Cl. 364-900.000.
- Hamilton, Brian K.: See—
Garner, Eugene F.; and Hamilton, Brian K., 4,244,758, Cl. 149-7.000.
- Hamilton, Clark, to United States of America, Commerce. Sampling circuit and method therefor. 4,245,169, Cl. 307-350.000.
- Handa, Minoru; Nishizawa, Takuzi; Ogawa, Hiroko; and Asai, Shinichi, to Denki Kagaku Kogyo Kabushiki Kaisha. Compositions for paints and printing inks. 4,244,862, Cl. 260-42.470.
- Handel, Jurgen: See—
Renk, Friedrich; and Handel, Jurgen, 4,244,449, Cl. 187-9.00E.
- Handman, Richard, to MPL, Inc. Closure assembly for unit dose vial. 4,244,478, Cl. 215-249.000.
- Haneda, Mitsuaki: See—
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- Hanes Corporation: See—
DiTullio, Flavia, 4,244,249, Cl. 83-139.000.
- Hanitz, John R., to Northwest Engineering Company. Mobile power crane-excavator with open gear greasing. 4,244,447, Cl. 184-6.220.
- Hansher, Richard L.: See—
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- Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method for stabilizing organic substrate materials including photographic dye images to light and a color diffusion transfer material. 4,245,018, Cl. 430-14.000.
- Harada, Tooru: See—
Fujita, Shinaku; Harada, Tooru; and Endo, Katsusuke, 4,245,028, Cl. 430-223.000.
- Harada, Tohiaki: See—
Sugie, Kiyoshi; Kurisu, Shiruka; Emi, Shingo; Azuma, Shizuo; Harada, Tohiaki; and Kawase, Shoji, 4,244,859, Cl. 260-40.00R.
- Haseo, Norio, to Tokyo Shibaura Denki Kabushiki Kaisha. Image-intensifier apparatus. 4,245,160, Cl. 250-460.000.
- Harsina, Yasuhiro, to Kyodo Insatsu Kabushiki Kaisha. Flying printer. 4,244,288, Cl. 101-93.020.
- Harbison, William H.; Plisky, John J.; and Mohnach, Michael G., to Anderson Company of Indiana, The. Connection for windshield wiper. 4,244,077, Cl. 15-250.320.
- Hardesty, Thomas K. C., to United States of America, Navy. Valve having pyrotechnic separation device. 4,244,386, Cl. 137-68.00A.
- Hardy, Bruce N., to Silver Street, Incorporated. Drumhead deadening device. 4,244,266, Cl. 84-411.00M.
- Harimoto, Takashi: See—
Tanno, Norihiko; Harimoto, Takashi; Ueda, Shinzi; and Tobiki, Hideo, 4,244,870, Cl. 260-239.100.
- Harnack, Phyllis M., to North American Philips Corporation. Method for purification of II-VI crystals. 4,244,753, Cl. 144-1.500.
- Harper, George C., Jr., to Pittsburgh-Des Moines Steel Company. Joint for geodesic dome. 4,244,152, Cl. 52-81.000.
- Harper, John S.: See—
Comerford, Liam D.; Crow, John D.; and Harper, John S., 4,244,681, Cl. 425-3.000.
- Harper, William P., to Rogers Corporation. Tactile element and keyboard including the tactile element. 4,245,138, Cl. 200-5.00A.
- Harralson, John C.: See—
Schaab, Rudolph S.; and Harralson, John C., 4,244,198, Cl. 66-191.000.
- Harrill, Thomas D. Extension cord reel. 4,244,536, Cl. 242-96.000.
- Harris Corporation: See—
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Harris, Robert J., to H. C. Price Co. Pipe coating composition utilizing cement kiln dust filler. 4,244,740, Cl. 106-14.340.

Harris, William T., to United States of America, Navy. Acceleration cueing simulation device. 4,244,120, Cl. 434-59.000.

Harrison, Kenneth S., and Caldwell, Robert J., to Mohasco Corporation. Wall-proximity reclining chair. 4,244,620, Cl. 297-85.000.

Harrison, Thomas S., to Sterling Drug Inc. Arrangement for sealing a bag containing pre-moistened towlelettes and for dispensing towlelettes therefrom. 4,244,493, Cl. 221-46.000.

Harrod, Donald J., Jr.: See—

Lane, Jeff K.; Negri, Joseph M.; and Harrod, Donald J., 4,244,187, Cl. 60-602.000.

Hart, Wallace F.; Watts, David O.; and Reed, Robert D., to John Zink Company. Disposal of oxides of nitrogen and heat recovery in a single self-contained structure. 4,244,325, Cl. 122-4.00R.

Hartford, Thomas W.: See—

Barman, Alan W.; Hartford, Thomas W.; and Henrich, Robert S., 4,245,315, Cl. 364-431.000.

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Hartman, Donald W., to GTE Products Corporation. Multilamp photo-flash unit construction. 4,245,280, Cl. 362-13.000.

Hartselle, William, III. Cold weather faucet insulation apparatus and fastening means therefor. 4,244,394, Cl. 137-375.000.

Hartwell, David. Water bed construction. 4,244,065, Cl. 5-400.000.

Hartwig, Donald R., to Deere & Company. Liquid storage and distribution apparatus for agricultural implements. 4,244,522, Cl. 239-148.000.

Harvey, James E., and Bluge, John H., to United Technologies Corporation. Apparatus for monitoring the optical quality of a beam radiation. 4,245,156, Cl. 250-233.000.

Harwoods, Harry A. Fly and insect trap. 4,244,135, Cl. 43-122.000.

Hasegawa, Gary K.: See—

Fridl, James J.; Hasegawa, Gary K.; and Richardson, Donald R., 4,244,488, Cl. 220-260.000.

Hasegawa, Hisashi: See—

Shibazaki, Hiroji; Edagawa, Setsuji; Hasegawa, Hisashi; and Kondo, Satoshi, 4,244,933, Cl. 423-430.000.

Hasegawa, Junzo; Yoshida, Kazunori; Suzuki, Fuzio; Suzuki, Hajime; Arakawa, Hiroshi; Kobayashi, Akira; Arakawa, Akio; and Yamazaki, Munekichi, to Kabushiki Kaisha Toyota Jidoshokki Seisakusho; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Device for inserting a weft yarn in jet operated weaving machines. 4,244,402, Cl. 139-435.000.

Hasegawa, Toru: See—

Higashide, Eiji; Asai, Mitsuko; and Hasegawa, Toru, 4,245,047, Cl. 435-128.000.

Hashimoto, Kenjiro; Takagi, Shinichi; Okamoto, Harunori; and Miura, Minoru, to Mitsubishi Belting, Ltd. Covulcanized rubber. 4,244,843, Cl. 260-5.000.

Hashimoto, Mitsuru: See—

Kazami, Takeo; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masao; and Tsutsui, Kyoji; and Ohta, Masafumi, 4,245,021, Cl. 430-58.000.

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Hastings, Russell, Jr., to Clark Equipment Company. Lift cylinder assembly. 4,244,627, Cl. 308-4.00R.

Hata, Kunio; Ohshima, Kihachiro; Kano, Isao; Matsui, Motoi; and Sato, Tadaaki, to Jujo Paper Co., Ltd. Process for producing coenzyme Q10. 4,245,048, Cl. 435-133.000.

Hatakeyama, Korechika, to Tomy Kogyo Co., Inc. Board game having movable target. 4,244,572, Cl. 273-120.00R.

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Hatano, Kazuyoshi: See—

Hioki, Susumu; Yamada, Toshihiro; Hatano, Kazuyoshi; Haneda, Mitsuaki; and Imanaga, Shoji, 4,244,751, Cl. 148-1.000.

Hatch, Richard W., Jr.: See—

Cummings, Gilbert A.; and Hatch, Richard W., Jr., 4,245,147, Cl. 219-462.000.

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Hatta, Katsuma: See—

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Hattori, Minoru: See—

Kato, Nobukatsu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, 4,245,128, Cl. 568-806.000.

Hattori, Tadaaki: See—

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Hauk, Dale I., and Tanny, Gerald B., to Gelman Instrument Company. Fluid purification system. 4,244,820, Cl. 210-194.000.

Hauk, Ernest D., and Kirkpatrick, Jesse C., to Service Equipment Design Co., Inc. High-pressure leak testing apparatus and packer. 4,244,208, Cl. 73-46.000.

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Rudezinat, Willy, 4,244,250, Cl. 83-310.000.

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Haus, Artur: See—

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Hawthorne, V. Terrey; and Schwam, Stuart A., to Railroad Dynamics, Inc. Freight car truck assembly. 4,244,298, Cl. 105-197.00D.

Hayashi, Masaki: See—

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Hayashibara, Yasushi: See—

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Blackburn, Martin J.; Hayden, Steven Z.; and Smith, Michael P., 4,244,743, Cl. 106-55.000.

Haydon, Arthur W., to Tri-Tech, Inc. Method of making an electric rotating machine. 4,244,099, Cl. 29-596.000.

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Forney, Albert J.; and Haynes, William P., 4,244,706, Cl. 48-202.000.

Hayward, Frank E., to Chromalloy American Corporation. Bale rolling machine. 4,244,166, Cl. 56-341.000.

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Oldham, Ronald C.; and Hayward, Malcolm L., 4,245,134, Cl. 174-70.00S.

Hazen Research, Inc.: See—

Reynolds, James E.; and Coltrinari, Enzo L., 4,244,734, Cl. 75-101.00R.

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Headley, Duane L.: See—

Wencley, Stanley E.; and Headley, Duane L., 4,244,901, Cl. 264-46.400.

Heard, James E., Sr. Dial indicator holders. 4,244,111, Cl. 33-180.00R.

Heckman, Peter F., to Nicolet, Inc. Non-asbestos millboard composition. 4,244,781, Cl. 162-145.000.

Hedges, Walter P., to Cyborex Laboratories, Inc. Energy management method and apparatus utilizing duty cycle reduction synchronized with the zero points of the applied voltage. 4,245,319, Cl. 364-493.000.

Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., to Janssen Pharmaceutica N.V. Heterocyclic derivatives of 1-(1,3-dioxolan-2-ylmethyl)-1H-1,2,4-triazoles. 4,244,964, Cl. 424-269.000.

Heider, James E., to Owens-Illinois, Inc. Method for the continuous production of a co-extruded heat-shrinkable composite foamed resin sheet. 4,244,900, Cl. 264-46.100.

Heimann GmbH: See—

Steinhage, Peter-Wilhelm, 4,245,217, Cl. 340-555.000.

Heimann, Robert L.: See—

Orscheln, Donald W.; and Heimann, Robert L., 4,245,139, Cl. 200-52.00R.

Heimbürger, Norbert; Brauns, Friedrich; and Fischer, Kurt, to Behringwerke AG. Stable clumping factor for the identification of fibrinogen and fibrin cleavage products and process for preparing it. 4,245,039, Cl. 435-13.000.

Heinemann, Karl-Heinz; Michalczyk, Georg; and Ripkens, Gerd, to Deutsche Texaco Aktiengesellschaft. Process for making phenol-aldehyde resins. 4,244,906, Cl. 264-109.000.

Heinemann, Wilfried: See—

Rummel, Theodor; and Heinemann, Wilfried, 4,244,796, Cl. 204-140.000.

Heinrich, Rudolf: See—

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Chellis, Fred F., 4,244,192, Cl. 62-6.000.

Hellnick, Dieter H., to Jo-Way Tool Company, Inc. Method and apparatus for machining pipe collars. 4,244,068, Cl. 10-101.00R.

Hemmerich, Heinz; Spille, Jürgen; Kranz, Dietmar; Rasche, Peter; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Preparation of pigment concentrates. 4,244,863, Cl. 260-42.550.

Henderson, Donald L., Sr.; Baldwin, Steven M.; and Pong, Raymond, to Burroughs Corporation. Single mask method of fabricating complementary integrated circuits. 4,244,752, Cl. 148-1.500.

Henderson, William W., to Emerson Plastics. Consecutive wafer transfer apparatus and method. 4,244,673, Cl. 414-405.000.

Hendriks, Rudolf, to Thomassen Holland B.V. Gas turbine plant. 4,244,191, Cl. 60-728.000.

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Herbst, Sigurd; and Bietz, Rolf, 4,244,975, Cl. 426-271.000.

Hennings, Detlev; and Schreinemacher, Herbert, to U.S. Philips Corporation. Method of producing a dielectric with perovskite structure and containing a copper oxide. 4,244,830, Cl. 106-39.500.

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Henrich, Robert S.: See—

Barman, Alan W.; Hartford, Thomas W.; and Henrich, Robert S., 4,245,315, Cl. 364-431.000.

Henshaw, David I. M., to Congoleum Corporation. Method for chemical embossing a foamable thermoplastic resin sheet using an ink composition containing a chemical blowing agent. 4,244,899, Cl. 264-45.100.

Henson, John W.; and Prove, Robert J., to Dresser Industries, Inc. Ski-pole support structure for a stem and dial-type thermometer. 4,244,220, Cl. 73-343.00R.

Henzi, Beat: See—

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Hercules Incorporated: See—

Boardman, Bruce B., 4,244,915, Cl. 264-551.000.

Herman, Avrum S.; and Reider, Samuel B., to General Motors Corporation. Porous laminated combustor structure. 4,244,178, Cl. 60-754.000.

Herman, Robert W., to New World Computer Company, Inc. Suspension device for magnetic transducers. 4,245,267, Cl. 360-104.000.

Herth, Harro; Schürle, Hans; Ulrich, Singer, Erich; Kraus, Bernd; and Werner, Peter, to Robert Bosch GmbH. Method and apparatus for controlling fuel management for an internal combustion engine. 4,244,340, Cl. 123-440.000.

Herz, Kurt P. Garment cover, hanger and carrier with removable container for accessories, etc. 4,244,453, Cl. 190-43.000.

Hetrick, Vernon L., to Meyer Products, Inc. Modified power unit for snow plows. 4,244,122, Cl. 37-41.000.

Hettinga, David H.: See—

Wargel, Robert J.; Greiner, Steven P.; and Hettinga, David H., 4,244,971, Cl. 426-35.000.

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Hill, Freeman K.: See—

Sachs, Samuel L.; and Hill, Freeman K., 4,244,749, Cl. 134-1.000.

Hiltbran, Robert G.: See—

Ali, Akhtar; and Hiltbran, Robert G., 4,244,865, Cl. 260-112.50R.

Hines, Ivan C. Creeper brake device. 4,244,594, Cl. 280-32.600.

Hioki, Susumu; Yamada, Toshihiro; Hatano, Kazuyoshi; Haneda, Mitsuaki; and Imanaga, Shoji, to Hitachi, Ltd. Method for melt nitriding of aluminum or its alloy. 4,244,751, Cl. 148-1.000.

Hirai, Akiyoshi; and Hagaato, Yasuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Multi-function electrical controlling device. 4,245,137, Cl. 200-4.000.

Hirai, Hajime: See—

Ohno, Nobuo; Miyakado, Masakazu; and Hirai, Hajime, 4,245,116, Cl. 562-401.000.

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Takahashi, Keiichi; Aoyama, Hiroshi; Hirakawa, Kikuya; and Sarusawa, Yukio, 4,244,491, Cl. 220-270.000.

Hirano, Hitooshi: See—

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Hirano, Shigeo: See—

Tsujino, Nobuyuki; Hirano, Shigeo; and Adachi, Keiichi, 4,245,037, Cl. 430-559.000.

Hiroaka, Takashi: See—

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Hirasuna, Alan R., to United States of America, Energy. Cure-in-place process for seals. 4,244,908, Cl. 264-236.000.

Hirrmann, Georg, to Polyprodukte AG. Measuring arrangement. 4,244,113, Cl. 33-203.180.

Hirschman, Joel A.; Llewellyn, Roger J.; and Rogers, Anthony H., to International Business Machines Corporation. Intelligent data processing terminal having an interlock system. 4,245,308, Cl. 364-200.000.

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Hitachi Chemical Company, Ltd.: See—

Maekawa, Iwao; Kageyama, Akira; and Uchigasaki, Isao, 4,245,067, Cl. 525-440.000.

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Aotsu, Hiroaki; Isono, Akira; Goto, Masuo; Kimura, Koichi; Momochi, Yasushi; Kai, Takashi; Kitamura, Satoshi; Kaihara, Akihisa; and Okada, Hiroshi, 4,245,182, Cl. 322-20.000.

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Miura, Yoshio; Fukui, Yukio; and Takeda, Katunobu, 4,245,143, Cl. 219-10.55B.

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Takeda, Renzo; Kurihara, Kunitoshi; Yamamoto, Masaki; Uchikawa, Sadao; Yokomi, Michio; Yamashita, Junichi; and Shimoshige, Takao; 4,244,784, Cl. 176-54.000.

Taneda, Yukinori; Kobayashi, Takashi; Yano, Kiyoshi; Isobe, Mitsuobu; and Sugimoto, Noboru, 4,244,539, Cl. 242-138.00R.

Terunuma, Mutsuhiro; Shima, Seiya; and Saito, Kunio, 4,245,293, Cl. 363-87.000.

Tsutsui, Yoshio; Tachibana, Kyoze; and Ishikawa, Hiroaki, 4,245,291, Cl. 363-68.000.

Hitachi Metals, Ltd.: See—

Yamashita, Keitaro; and Numata, Toshio, 4,245,024, Cl. 430-122.000.

Hitzel, Franz: See—

Klingler, Karl H.; Hitzel, Franz; and Bickel, Erich, 4,245,093, Cl. 544-267.000.

Hixson Metal Finishing: See—

Baldwin, Philip C., 4,244,792, Cl. 204-58.000.

Ho, Edmond Y.: See—

Gitlin, Richard D.; Ho, Edmond Y.; Meadows, Howard C., Jr.; and Weinstein, Stephen B., 4,245,345, Cl. 375-13.000.

Hobbs, James N., Jr.: See—

Driscoll, Carleton D.; and Hobbs, James N., Jr., 4,245,150, Cl. 235-92.00P.

Hochberg, Howard M.: See—

Farrar, Alfred O.; Hochberg, Howard M.; and Jones, Flave L., 4,244,375, Cl. 128-642.000.

Hodge, John W.; and Chafetz, Harry, to Texaco Inc. Lubricating oil composition. 4,244,828, Cl. 252-46.700.

Hoebner, Cornelis H. W., to Mapatent N.V. Linear tail sealer. 4,244,767, Cl. 156-351.000.

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Dursch, Walter; Kleiner, Hans-Jerg; and Linke, Fritz, 4,244,893, Cl. 260-928.000.

Faust, Raimund J.; and Lehmann, Peter, 4,245,030, Cl. 430-281.000.

Frensch, Heinz; Heinrich, Rudolf; and Albrecht, Konrad, 4,244,836, Cl. 252-316.000.

Melzer, Werner; and Jaenicke, Dieter, 4,244,695, Cl. 23-230.00P.

Noltner, Gerhard; Oehme, Horst; Lademann, Rudolf; and Wendt, Heinz, 4,244,776, Cl. 159-48.00R.

Hoffer, Kenneth J. Intraocular lens. 4,244,060, Cl. 3-13.000.

Hoffman, Arthur R.: See—

Fillmore, Gary L.; Hoffman, Arthur R.; and Young, Thomas, 4,245,225, Cl. 346-75.000.

Hoffman, Charles R., to International Business Machines Corporation. Reversible electrically variable active parameter trimming apparatus utilizing floating gate as control. 4,245,165, Cl. 307-238.000.

Hoffman, Jean-Claude; Castanie, Francis; Crabere, Henri; Verdier, Jean-Pierre; and Voisin, Norbert, to Societe Nationale Industrielle Aerospatiale. Device for transmitting stochastically coded information. 4,245,341, Cl. 370-112.000.

Hoffman-La Roche Inc.: See—

Ramuz, Henri, 4,244,957, Cl. 424-263.000.

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Hoffmann-La Roche Inc.: See—

Baggiolini, Enrico G.; Lee, Hsi L.; and Uskokovic, Milan R., 4,245,104, Cl. 548-207.000.

Farrar, Alfred O.; Hochberg, Howard M.; and Jones, Flave L., 4,244,375, Cl. 128-642.000.

Mayer, Hans J.; and Muller, Robert K., 4,245,109, Cl. 560-61.000.

Walser, Armin, 4,244,867, Cl. 260-239.00D.

Walser, Armin, 4,244,868, Cl. 260-239.00D.

Hofmann, Wilfried; Lueder, Guenther; Nasel, Peter; Puschler, Peter; Krueger, John; Rauffer, Walter; and Lusch, Herbert, to AGFA-Gevaert, A.G. Microfilm reader. 4,244,641, Cl. 353-27.00R.

Hofmann, Winfried: See—

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Hoganas AB: See—

Havranek, Peter H.; and Thornblad, Lars O., 4,244,745, Cl. 106-64.000.

Hohlbaum, Theodor J. M., to RTL Contactor Holding S.A. Apparatus for contacting liquids and solids with liquids. 4,244,656, Cl. 366-180.000.

Hohlbaum, Theodor J. M., to RTL Contactor Holding S.A. Apparatus for and methods of contacting materials. 4,244,923, Cl. 422-225.000.

Hohm, Reinhard: See—

Thiele, Willi; Hackmack, Klaus-Georg; and Hohm, Reinhard, 4,244,382, Cl. 131-21.00B.

Hohwiler, Frieder, to BASF Aktiengesellschaft. Process for the manufacture of a dry mixture for insulating stucco or plaster. 4,245,054, Cl. 521-55.000.

Hokuyo Automatic Co., Ltd.: See—

Kondo, Hiroatsu, 4,244,515, Cl. 235-132.00R.

Holahan, Edward T.; Meyer, Burton C.; and Webb, Terry E., to Marvin Glass & Associates. Animated action toy bird. 4,244,138, Cl. 46-124.000.

Hollabaugh, Charles M.; and Bowman, Melvin G., to United States of America, Energy. Hydrogen production by the decomposition of water. 4,244,794, Cl. 204-104.000.

- Holladay, Thomas M., to Xerox Corporation. Method and apparatus for reduction of false contours in electrically screened images. 4,245,258, Cl. 358-283.000.
- Holland, Michael K.: See—
Frazzini, Thomas L.; Holland, Michael K.; Pietri, Charles E.; and Weiss, Jon R., 4,244,800, Cl. 204-195.00R.
- Holowaty, Michael O.; and Bhattacharya, Debanahu, to Inland Steel Company. Method and alloy for introducing machinability increasing ingredients to steel. 4,244,737, Cl. 75-129.000.
- Holson Company, The: See—
Holson, Sheldon, 4,244,762, Cl. 156-73.100.
- Holson, Sheldon, to Holson Company, The. Heat sealed photo album page and method of making same. 4,244,762, Cl. 156-73.100.
- Holt, Reginald W.: See—
Hoffman, Richard C.; and Holt, Reginald W., 4,244,132, Cl. 43-21.200.
- Holtmann, Robert: See—
Mollner, Jacques; Mahler, Jacques; Bocquet, Gilbert; de Massey, Bernard; and Holtmann, Robert, 4,244,844, Cl. 260-9.000.
- Horn, Hawkins. Direct drive for a motor vehicle. 4,244,435, Cl. 180-70.00R.
- Honeywell Inc.: See—
Garfunkel, James H.; and Koeneman, Kenneth P., 4,244,650, Cl. 356-71.000.
- Green, Norman F.; Keiles, Yoel; Newbold, William F.; Searle, John L.; and Wilda, Douglas W., 4,244,226, Cl. 73-703.000.
- Schaefer, Horst, 4,243,332, Cl. 367-98.000.
- Honeywell Information Systems Inc.: See—
Negi, Virendra S.; and Peters, Arthur, 4,245,328, Cl. 364-771.000.
- Porter, Marion G.; Norman, Robert W., Jr.; and Shelly, William A., 4,245,304, Cl. 364-200.000.
- Rathbun, Donald J.; and Campbell, Peter P., 4,245,263, Cl. 360-45.000.
- Woods, William E.; Lemay, Richard A.; and Curley, John L., 4,245,299, Cl. 364-200.000.
- Hori, Noritoshi, to Tomy Kogyo Co., Inc. Pinball game having active targets. 4,244,575, Cl. 273-127.00D.
- Horner, Berndt: See—
Lang, Udo; Horner, Berndt; and Wernicke, Hans J., 4,244,808, Cl. 208-67.000.
- Horwell, David C.; and Tupper, David E., to Lilly Industries Limited. Indole isquinoline compounds. 4,245,095, Cl. 546-68.000.
- Hosaka, Toshihiko: See—
Matsumoto, Katsuki; Saeki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kunaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
- Hosine, William. Fluent material level control system. 4,244,385, Cl. 137-1.000.
- Houdaille Industries, Inc.: See—
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- Howard, John R., to Drackett Company, The. Broom rake. 4,244,168, Cl. 56-400.170.
- Howard Johnson Company: See—
Burnham, John M., 4,244,470, Cl. 206-525.000.
- Howarth, Thomas T.; and Hunt, Eric, to Beecham Group Limited. Azetidinoylethers. 4,244,965, Cl. 424-272.000.
- Howe, Dennis G.: See—
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- Howe, Robert K.: See—
Brannigan, Lawrence H.; Franz, John E.; and Howe, Robert K., 4,245,106, Cl. 548-378.000.
- Hoyer, John Z.; and Scott, John C., to General Electric Company. Instrumentation probe. 4,244,222, Cl. 73-349.000.
- Hoyle, Francis X. Multivariant board game apparatus. 4,244,580, Cl. 273-272.000.
- Hruza, Denis E., Sr.: See—
Yoshida, Takao; Hruza, Denis E., Sr.; and Hall, John B., 4,245,122, Cl. 568-397.000.
- Hubele, Adolf; Kunz, Walter; and Eckhardt, Wolfgang, to Ciba-Geigy Corporation. Fungicidal N-(piperidinocetyl)anilines. 4,244,962, Cl. 424-267.000.
- Huber, Peter; and Meusel, Jürgen, to Wacker-Chemie GmbH. Process for the production of aqueous based inner tire release compositions. 4,244,742, Cl. 106-38.220.
- Hudock, Joseph A.: See—
Terry, Edgar R.; and Hudock, Joseph A., 4,244,272, Cl. 89-41.00A.
- Hughes Aircraft Company: See—
Cleary, Frederick W., 4,244,097, Cl. 29-571.000.
- Kwok, Siang-Ping; and Ladd, Glenn O., Jr., 4,245,230, Cl. 357-15.000.
- Hughes, Richard J.; and Bowen, Howard, to Research Technology, Inc. Method and apparatus for cleaning film. 4,244,078, Cl. 15-302.000.
- Humber, Leslie G.: See—
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- Hund, Helmut: See—
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- Hunt, Eric: See—
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- Huntley, Christopher R., to GTE Lenkurt Electric (Canada) Ltd. Floating gyrator having a current cancellation circuit. 4,245,202, Cl. 333-215.000.
- Hurley, Donald L.: See—
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- Huschens, Rolf: See—
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Huchens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,244,869, Cl. 260-239.00D.
- Hussey Manufacturing Company, Inc.: See—
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- Husztli, Zsuzsa: See—
Kosary, Judith; Kasztreiner, Endre; Husztli, Zsuzsa; Kenessey, Agnes; Csah, Gyorgy; Szilagyi nee Pap, Veronika; and Stvertczky nee Sztrokay, Judit, 4,244,871, Cl. 260-239.700.
- Hutchins, James P.; and Winn, Dana C., to Procter & Gamble Company, The. Continuous process for making peroxycarboxylic acids. 4,244,884, Cl. 260-502.00R.
- Hutton, Thomas J.; and Kramer, John W., Jr. Remote equipment control system with low duty cycle communications link. 4,243,347, Cl. 455-70.000.
- Hydriol Company: See—
Blase, Thomas L., 4,244,607, Cl. 285-92.000.
- Hyperion Incorporated: See—
Chen, Bu S., 4,244,919, Cl. 422-100.000.
- Ichikawa, Ryoichi: See—
Yui, Hiroshi; Sobajima, Yoshihiro; Ichikawa, Ryoichi; and Ema, Shigekazu, 4,244,910, Cl. 264-328.120.
- Ichimura, Yutaka; Kishino, Takahiro; and Fukahori, Naoyuki, to Mitsubishi Rayon Co., Ltd. Unsaturated polyester composition for molding compound and coated molded article thereof. 4,245,059, Cl. 525-170.000.
- Idaho Research Foundation, Inc.: See—
Peterson, Charles L.; and Dowding, Edwin A., 4,244,306, Cl. 111-7.000.
- Iguchi, Sadahiko: See—
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- Iijima, Masayoshi: See—
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- Iizuka, Motoki: See—
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- Ikegami, Kiyoteru: See—
Munakata, Tomohiko; Saeki, Kazumi; Goto, Kazuhiro; and Ikegami, Kiyoteru, 4,244,952, Cl. 424-256.000.
- Ikegawa, Masahiro: See—
Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Ueda, Taisai, 4,245,206, Cl. 336-60.000.
- Imagawa, Hitoshi: See—
Kikuchi, Shiro; Imagawa, Hitoshi; and Iwase, Yasumasa, 4,245,325, Cl. 364-724.000.
- Imai, Atsushi, to Roland Corporation. Echo-machine employing low pass filters with a variable cut-off frequency. 4,244,262, Cl. 84-1.240.
- Imanaga, Shoji: See—
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- Imao, Eiichi: See—
Ezaki, Hideo; Imao, Eiichi; Masuyama, Takayuki; and Sugiyama, Mamoru, 4,244,991, Cl. 427-226.000.
- Imatt, Alex, to Marvin Glass & Associates. Game with pieces preventing adjacent placement. 4,244,581, Cl. 273-282.000.
- Imazeki, Kazuyoshi, to General Research of Electronics, Inc. Center frequency tuning system for radio-frequency signal receiver. 4,245,348, Cl. 455-158.000.
- Immer, Hans U.: See—
Abraham, Nedumparampil A.; Bellini, Francesco; Immer, Hans U.; and Kobric, Marvin M., 4,244,947, Cl. 424-177.000.
- Ing, C. Olivetti & C., S.p.A.: See—
Gechele, Walter; and Casolino, Vincenzo, 4,245,305, Cl. 364-200.000.
- Ingram, Charles E., to Four Star Corporation. Slidable bracket for luggage rack. 4,244,301, Cl. 224-324.000.
- Inland Container Corporation: See—
Brown, Philip H., 4,244,472, Cl. 206-597.000.
- Inland Steel Company: See—
Holowaty, Michael O.; and Bhattacharya, Debanahu, 4,244,737, Cl. 75-129.000.
- Inmont Corporation: See—
Scheffbauer, Rupert J., 4,244,866, Cl. 260-23.70C.
- Innova, Inc.: See—
Moeglich, Karl, 4,244,804, Cl. 204-300.00R.
- Inoue, Makoto, to Sony Corporation. Method for manufacturing an oxidizing agent and method for using the oxidizing agent. 4,245,123, Cl. 568-577.000.
- Institut biofiziki: See—
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- Institut Français du Pétrole: See—
Dubois, Jean-Claude, 4,245,329, Cl. 367-140.000.

- Le Page, Jean-Francois; Cosyns, Jean; Miquel, Jean; and Juguin, Bernard, 4,244,806, Cl. 208-49.000.
- Institut Textile de France: See—
Traynard, Olivier; and Bruggeman, Jean-Pierre, 4,244,170, Cl. 57-124.000.
- Insul Company, Inc.: See—
Perri, Joseph A., 4,244,552, Cl. 249-197.000.
- Intech Laboratories, Inc.: See—
Entenman, Alan W., 4,245,342, Cl. 371-8.000.
- International Business Machines Corporation: See—
Comerford, Liam D.; Crow, John D.; and Harper, John S., 4,244,681, Cl. 425-3.000.
- Desblache, Andre E., 4,245,320, Cl. 364-514.000.
- Driscoll, Carleton D.; and Hobbs, James N., Jr., 4,245,150, Cl. 235-92.00P.
- Feinberg, Irving; and Langdon, Jack L., 4,245,273, Cl. 361-382.000.
- Fillmore, Gary L.; Hoffman, Arthur R.; and Young, Thomas, 4,245,225, Cl. 346-75.000.
- Flurry, Gregory A.; and Smoak, Marvin P., 4,245,152, Cl. 235-463.000.
- Hirschman, Joel A.; Llewellyn, Rojer J.; and Rogers, Anthony H., 4,245,308, Cl. 364-200.000.
- Hoffman, Charles R., 4,245,165, Cl. 307-238.000.
- Krause, Konrad A., 4,245,227, Cl. 346-75.000.
- Machol, Guenther K.; and Cross, Jon L., 4,245,324, Cl. 364-716.000.
- Michaelsen, John D.; Nepela, Daniel A.; and Phipps, Peter B. P., 4,245,008, Cl. 428-611.000.
- International Flavors & Fragrances Inc.: See—
Yoshida, Takao; Hruza, Denis E., Sr.; and Hall, John B., 4,245,122, Cl. 568-397.000.
- International Harvester Company: See—
DePauw, Richard A.; Dunn, Neil C.; and Lucas, James R., 4,244,380, Cl. 130-27.00T.
- Sprunger, Loren G., 4,244,237, Cl. 74-493.000.
- Sylvester, Raymond L., 4,244,236, Cl. 74-493.000.
- Wahoski, Edward S., 4,244,611, Cl. 292-113.000.
- International Jensen Incorporated: See—
Karpowicz, Oleh; and Thakkar, Narendra C., 4,245,352, Cl. 455-226.000.
- International Standard Electric Corporation: See—
Oldham, Ronald C.; and Hayward, Malcolm L., 4,245,134, Cl. 174-70.00S.
- International Telephone and Telegraph Corporation: See—
Gutleber, Frank S., 4,245,326, Cl. 364-728.000.
- InterTechnology/Solar Corporation: See—
Loeb, Sidney; and Mehta, Gurmukh D., 4,244,351, Cl. 126-415.000.
- Intong Aktiebolag: See—
Jakobson, Per; and Alexandersson, Holger, 4,244,256, Cl. 83-862.000.
- Inui, Taiji: See—
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- Invento AG: See—
Ernst, Werner, 4,244,457, Cl. 198-321.000.
- Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Polyesters derived from 3,4'-dihydroxy-benzophenones or 3-hydroxy-4'-hydroxyphenyl-benzophenone and certain aromatic dicarboxylic acids and filaments thereof. 4,245,082, Cl. 528-128.000.
- Ira, Hiroshi; Karube, Kenji; and Nakayama, Junichi, to Lion Fat & Oil Co., Ltd., The; and Mitsubishi Chemical Industries Ltd. Process for continuous production of full esters of polyols. 4,244,882, Cl. 260-410.600.
- Ishayama, Takuro; Takemoto, Takeshi; Sato, Tsutomu; and Fukazawa, Takao, to Ricoh Co., Ltd. Drive circuit for ink jet discharging head. 4,245,224, Cl. 346-75.000.
- Iseki, Takeo, to Tomy Kogyo Co., Inc. Toy camera having picture ejection mechanism. 4,244,137, Cl. 46-39.000.
- Ishibashi, Sadaaki: See—
Minami, Junichi; Shigeto, Minoru; and Ishibashi, Sadaaki, 4,244,974, Cl. 426-94.000.
- Ishidoshiro, Hiroshi: See—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,244,200, Cl. 68-202.000.
- Ishiguro, Jiro: See—
Kondo, Teruhisa; Ishiguro, Jiro; and Watanabe, Nobuatsu, 4,244,934, Cl. 423-448.000.
- Ishikawa, Hiroaki: See—
Tatsui, Yoahio; Tachibana, Kyozo; and Ishikawa, Hiroaki, 4,245,291, Cl. 363-68.000.
- Ishikawa, Kikuichi: See—
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shunji; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,244,731, Cl. 71-105.000.
- Ishikawa, Norio: See—
Takahashi, Takuya; Iijima, Masayoshi; and Ishikawa, Norio, 4,244,413, Cl. 152-323.000.
- Ishikawa, Youhei: See—
Nishikawa, Toshiro; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, 4,245,198, Cl. 333-134.000.
- Ishizaka, Mitsuo; and Fujii, Toshihiro, to Toshiba Silicone Co., Ltd. Mica-silicone composites. 4,244,911, Cl. 264-331.000.
- Ishizuka, Yutaka; and Kobayashi, Shinichi, to Diesel Kiki Co., Ltd. Rotary vane compressor with oil separating means. 4,244,680, Cl. 418-97.000.
- Ishley, Ralph E.: See—
Prem, Dorothy C.; Duke, June T.; and Ishley, Ralph E., 4,244,852, Cl. 260-31.8AN.
- Isobe, Mitsunobu: See—
Taneda, Yukinori; Kobayashi, Takashi; Yano, Kiyoshi; Isobe, Mitsunobu; and Sugimoto, Noboru, 4,244,539, Cl. 242-158.00R.
- Isono, Akira: See—
Aotsu, Hiroaki; Isono, Akira; Goto, Masuo; Kimura, Koichi; Momochi, Yasushi; Kai, Takashi; Kitamura, Setoshi; Kaihara, Akihisa; and Okada, Hiroshi, 4,245,182, Cl. 322-20.000.
- Isotec Industries Limited: See—
Mallory, John; and Turlej, Zbigniew, 4,245,174, Cl. 313-3.000.
- Ito, Noboru: See—
Kodaira, Kozo; and Ito, Noboru, 4,244,291, Cl. 101-99.000.
- Itoh, Hirataka: See—
Shibuya, Chiesi; Itoh, Hirataka; Usabuchi, Yutaka; and Akamine, Mitsuki, 4,245,107, Cl. 549-66.000.
- Itoh, Hiroyuki; Konno, Mitoshi; Tokuhiko, Takao; Iguchi, Sadahiko; and Hayashi, Masaki, to Ono Pharmaceutical Co., Ltd. 2-Acyl-6-aminomethylphenol derivatives. 4,245,099, Cl. 546-315.000.
- ITT Industries, Inc.: See—
Belart, Juan, 4,244,185, Cl. 60-550.000.
- Belart, Juan; and Burgdorf, Jochen, 4,244,278, Cl. 91-468.000.
- Greenwood, John C., 4,244,225, Cl. 73-517.0AV.
- Prohaska, Hans; and Schmid, Eckhardt, 4,244,210, Cl. 73-113.000.
- Iveter, Sven: See—
Reed, Steven P., 4,244,502, Cl. 225-13.000.
- Iwano, Souichi; Suzuki, Norihiko; Doi, Yasuhiko; Shimizu, Shigemitsu; and Morikawa, Takeshi, to Minolta Camera Kabushiki Kaisha. Full rotation-type paper web cutting device. 4,244,251, Cl. 83-349.000.
- Iwase, Yasumasa: See—
Kikuchi, Shiro; Imagawa, Hitoshi; and Iwase, Yasumasa, 4,245,325, Cl. 364-724.000.
- Iwata, Michiyoshi, to Teijin Seiki Company Limited. Hydraulic circuit. 4,244,276, Cl. 91-447.000.
- Izumita, Moriaki: See—
Sato, Kazuhiro; Umemoto, Masuo; Izumita, Moriaki; Akiyama, Toshiyuki; and Nagahara, Shusaku, 4,245,241, Cl. 358-44.000.
- J. Bobst & Fils, S.A.: See—
Grob, Jean; and Roch, Roger, 4,244,504, Cl. 226-114.000.
- J. I. Case Company: See—
Nissen, Roland N., 4,244,429, Cl. 172-804.000.
- J. M. Huber Corporation: See—
Wason, Satish K., 4,244,707, Cl. 51-308.000.
- J. O. Bernst & Associates Limited: See—
Bernst, Jorgen O.; and Forster, Barry C., 4,244,687, Cl. 432-118.000.
- Jack, Rohe D., Jr.: See—
Snyder, Robert G.; and Jack, Rohe D., Jr., 4,244,510, Cl. 229-52.0AL.
- Jackson, Dennis H. Steam generating system. 4,244,326, Cl. 122-20.00B.
- Jacobs, David R.: See—
Spanel, Abram N.; and Jacobs, David R., 4,244,309, Cl. 112-79.00A.
- Jacobs, Lewis W.: See—
Eckart, Gregory C.; Jacobs, Lewis W.; and Kornblit, Morris J., 4,245,318, Cl. 364-481.000.
- Jaenicke, Dieter: See—
Melzer, Werner; and Jaenicke, Dieter, 4,244,695, Cl. 23-230.0PC.
- Jakobson, Per; and Alexandersson, Holger, to Intong Aktiebolag. Profile shaping apparatus and method. 4,244,256, Cl. 83-862.000.
- James, Don S. Lamp shade reminder clock. 4,244,126, Cl. 40-112.000.
- James River Graphics, Inc.: See—
Oransky, Raymond L.; and Savage, David G., 4,245,003, Cl. 428-323.000.
- Plumadore, John D., 4,244,321, Cl. 118-648.000.
- Janome Sewing Machine Co., Ltd.: See—
Sano, Yasuro, 4,244,311, Cl. 112-158.00A.
- Jansen, Harvey B.: See—
Wiher, Wilfried; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Hatch, Robert A.; and Lewis, Leon D., 4,244,181, Cl. 60-39.16R.
- Janssen, Martinus M. P.: See—
Dautzenberg, Frits M.; and Janssen, Martinus M. P., 4,244,807, Cl. 208-66.000.
- Janssen Pharmaceutica N.V.: See—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,244,964, Cl. 424-269.000.
- Jarvis, William M.; and Kim, Keun Y., to Monsanto Company. Dicalcium phosphate dihydrate with improved stability. 4,244,931, Cl. 423-266.000.
- Jaycox, Doyle W.: See—
Rutter, Harold T.; and Jaycox, Doyle W., 4,244,195, Cl. 64-9.00R.
- Jelks, Edward C., to United States of America, Navy. Beamforming utilizing a surface acoustic wave device. 4,245,333, Cl. 367-121.000.
- Jencks, Charles L.; Castonguay, Roger N.; and Rank, Eric H., to General Electric Company. Manual and motor operated circuit breaker. 4,245,140, Cl. 200-153.00G.
- Jenkins, Merrill M. E., Sr.: See—
Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., 4,244,284, Cl. 99-327.000.
- Jeong, Henry J.; Blakemore, Judith I.; and Lewin, Nathan, to BIO-RAD Laboratories, Inc. Single-incubation two-site immunoassay. 4,244,940, Cl. 424-1.000.
- Jidoshakiki Co., Ltd.: See—
Shimura, Yoshiyuki; and Kuroda, Asaji, 4,244,389, Cl. 137-117.000.

Jirkovsky, Ivo L.; Dvornik, Dushan; and Cayen, Mitchell N., to American Home Products Corporation. Hypolipidemic derivatives of 4,5-dihydro-4-oxofuran-2-carboxylic acid. 4,244,958, Cl. 424-263.000.

Jo-Way Tool Company, Inc.: See—
Hellnick, Dieter H., 4,244,068, Cl. 10-101.00R.

Johannsen, Donald D., to Bendix Corporation, The. Disc brake and pin assembly therefor. 4,244,451, Cl. 188-73.300.

Johannsen, Peter: See—
Peter, Julius; Johannsen, Peter; and Mauk, Gerhard, 4,244,415, Cl. 152-361.00R.

John Zink Company: See—
Hart, Wallace F.; Watts, David O.; and Reed, Robert D., 4,244,325, Cl. 122-4.00R.

Johns Hopkins University, The: See—
Rabenhorst, David W., 4,244,240, Cl. 74-572.000.

Sachs, Samuel L.; and Hill, Freeman K., 4,244,749, Cl. 134-1.000.

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Boen, Howard E.; de Muinck, Andre R.; Miller, John H.; and Genson, Samuel R., 4,244,720, Cl. 65-8.000.

Johnson, Gary R., to Tri-State Oil Tool Industries, Inc. Drilling apparatus with dual drill pipe and cross-over. 4,244,431, Cl. 175-320.000.

Johnson, Harlan B.; and Chamberlin, Ronald D., to PPG Industries, Inc. Brine electrolysis using fixed bed oxygen depolarized cathode chlor-alkali cell. 4,244,793, Cl. 204-98.000.

Johnson, Henry C.: See—
Kipp, Ronald W.; and Johnson, Henry C., 4,245,221, Cl. 343-17.700.

Johnson, Herbert A.: See—
King, Robert J.; and Johnson, Herbert A., 4,244,698, Cl. 23-313.00B.

Johnson, John D., to Kraft, Inc. Manufacture of hard, grating cheese. 4,244,972, Cl. 426-38.000.

Johnson, Matthew & Co., Limited: See—
Day, Joseph G., 4,244,736, Cl. 75-129.000.

Johnson, Michael R.: See—
Bindra, Jasjit S.; and Johnson, Michael R., 4,244,887, Cl. 564-99.000.

Johnson, Phillip L. M., to Plessey Handel und Investments AG. Target location systems. 4,245,220, Cl. 343-16.00R.

Johnson, Roger D.: See—
Bauer, Claude J.; and Johnson, Roger D., 4,244,483, Cl. 220-3.200.

Johnson, Roy A., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-9-deoxy-5,9a-epoxy-4,5-cis-17,18-tetradecahydro-PGF₁ compounds. 4,244,875, Cl. 260-345.200.

Johnson, Roy A., to Upjohn Company, The. 9-Deoxy-5,9a-epoxy-5,6-didehydro-PGF₁ amides. 4,245,087, Cl. 342-420.000.

Johnston, Jonathan A.: See—
Posiviat, Richard W.; and Johnston, Jonathan A., 4,244,847, Cl. 260-17.4CL.

Joly, Jean-Claude: See—
Segransan, Michel; and Joly, Jean-Claude, 4,244,894, Cl. 264-22.000.

Jones, Flave L.: See—
Farrar, Alfred O.; Hochberg, Howard M.; and Jones, Flave L., 4,244,375, Cl. 128-642.000.

Jones, James E.: See—
Barcikowski, Donna M.; Temple, Rodger G.; Jones, James E.; and Seiner, Jerome A., 4,244,074, Cl. 15-114.000.

Jones, John R.; and Wood, Dennis C., to British Petroleum Company Limited, The. Isomerization of alkyl aromatics using a gallium containing aluminosilicate catalyst. 4,245,130, Cl. 585-481.000.

Jorde, Joachim: See—
Baumgart, Frank; Jorde, Joachim; Opitz, Karl; and Rywalaki, Heinrich, 4,244,482, Cl. 220-3.000.

Joy, John R., to Williams Research Corporation. Methanol fueled spark ignition engine. 4,244,188, Cl. 60-624.000.

Juengel, Richard O.: See—
Bailey, Kurt W.; and Juengel, Richard O., 4,244,108, Cl. 33-143.00L.

Juguin, Bernard: See—
Le Page, Jean-Francois; Cosyns, Jean; Miquel, Jean; and Juguin, Bernard, 4,244,806, Cl. 208-49.000.

Jujo Paper Co., Ltd.: See—
Hata, Kunio; Ohshima, Kihachiro; Kano, Isao; Matsui, Motoi; and Sato, Tadaaki, 4,245,048, Cl. 435-133.000.

Jundt, Werner: See—
Werner, Peter; Jundt, Werner; Roozenbeek, Herman; and Bodig, Bernd, 4,244,344, Cl. 123-650.000.

Jurak, Ferenc: See—
Budai, Zoltan; Jurak, Ferenc; Kis-Tamas, Attila; Lay nee Konya, Aranka; Mezei, Tibor; Vig, Zoltan; and Zubovits nee Kristof, Terez, 4,244,884, Cl. 564-257.000.

Justice, James W. H., to Westinghouse Electric Corp. High-frequency electrodeless discharge device energized by compact RF oscillator operating in class E mode. 4,245,178, Cl. 315-248.000.

Kabushiki Kaisha Komatsu Seisakusho: See—
Uehara, Kazuo; Toma, Hideaki; and Sato, Yoshito, 4,244,678, Cl. 417-218.000.

Kabushiki Kaisha Naka Gijutsu Kenkyusho: See—
Naka, Hiromitsu, 4,244,443, Cl. 182-84.000.

Kabushiki Kaisha Suwa Seikosha: See—
Kodaira, Kozo; and Ito, Noboru, 4,244,291, Cl. 101-99.000.

Mori, Masahiko, 4,244,658, Cl. 400-124.000.

Tamai, Kazuto; Sawada, Shigeru; Nakamura, Osamu; and Nakagaki, Norio, 4,244,290, Cl. 101-99.000.

Kabushiki Kaisha Toyota Jidoshokki Seisakusho: See—
Hasegawa, Junzo; Yoshida, Kazunori; Suzuki, Fuzio; Suzuki, Hajime; Arakawa, Hiroshi; Kobayashi, Akira; Arakawa, Akio; and Yamazato, Munehika, 4,244,402, Cl. 139-435.000.

Nakayama, Shozo; Kato, Kimio; Mukai, Takamitsu; Fujii, Tomoo; Kono, Hiroya; Fukuoka, Tatsuhiko; Asada, Eizi; and Futamura, Kenichiro, 4,244,679, Cl. 417-269.000.

Shimizu, Takeshi; and Mitsuya, Kinpei, 4,244,176, Cl. 57-295.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: See—
Hasegawa, Junzo; Yoshida, Kazunori; Suzuki, Fuzio; Suzuki, Hajime; Arakawa, Hiroshi; Kobayashi, Akira; Arakawa, Akio; and Yamazato, Munehika, 4,244,402, Cl. 139-435.000.

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Yoshikawa, Kunihiko, 4,244,235, Cl. 74-489.000.

Kaelin, Joseph R., to Escoppe Trading Company Aktiengesellschaft. Aiming device for a firearm. 4,244,131, Cl. 42-1.00A.

Kaemmer, Herbert H.: See—
DiMauro, Joseph; Kaemmer, Herbert H.; Otto, Noel A.; and Riefler, Roger G., 4,244,554, Cl. 251-61.100.

Kageyama, Akira: See—
Maekawa, Iwao; Kageyama, Akira; and Uchigasaki, Isao, 4,245,067, Cl. 525-440.000.

Kahler, Richard W. Smoking device. 4,244,383, Cl. 131-180.000.

Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Intermediate-moisture frozen foods. 4,244,976, Cl. 426-330.100.

Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Intermediate-moisture frozen foods. 4,244,977, Cl. 426-330.200.

Kai, Takaaki: See—
Aotsu, Hiroaki; Isono, Akira; Goto, Masuo; Kimura, Koichi; Momochi, Yasushi; Kai, Takaaki; Kitamura, Satoshi; Kaihara, Akihisa; and Okada, Hiroshi, 4,245,182, Cl. 322-20.000.

Kaihara, Akihisa: See—
Aotsu, Hiroaki; Isono, Akira; Goto, Masuo; Kimura, Koichi; Momochi, Yasushi; Kai, Takaaki; Kitamura, Satoshi; Kaihara, Akihisa; and Okada, Hiroshi, 4,245,182, Cl. 322-20.000.

Kainov, Gennady P.; Kuznetsov, Vladimir G.; Polyakov, Anatoly M.; and Shleenskoy, Igor A. Annular combustion chamber for gas turbine engines. 4,244,179, Cl. 60-39.360.

Kaiser Aluminum & Chemical Corporation: See—
Cassens, Nicholas, Jr., 4,244,744, Cl. 106-58.000.

Kaiser Engineers, Inc.: See—
Brauns, Frank E., 4,244,732, Cl. 75-38.000.

Kakoschke, Benito: See—
Rennebaum, Heinrich; and Kakoschke, Benito, 4,244,534, Cl. 242-72.100.

Kalal, Jaroslav: See—
Drobnik, Jaroslav; Kalal, Jaroslav; Labsky, Jiri; Saudek, Vladimir; and Svec, Frantisek, 4,245,064, Cl. 525-329.000.

Kali-Chemie A.G.: See—
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Husc-hens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,244,869, Cl. 260-239.00D.

Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S. Method of digital control of m-phase thyristor-pulse d-c converters and apparatus for effecting same. 4,245,292, Cl. 363-87.000.

Kam, George H.: See—
Arumugham, Rangaswamy; and Kam, George H., 4,245,186, Cl. 323-225.000.

Kamezawa, Yasutoki: See—
Kato, Mamoru; Yamaura, Susumu; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 4,245,025, Cl. 430-126.000.

Kamimura, Kuniaki: See—
Toriumi, Shiro; Endo, Hiroshi; Saijo, Takao; Saito, Takanori; and Kamimura, Kuniaki, 4,244,642, Cl. 353-27.00R.

Kamishita, Kazuhiko: See—
Kamishita, Takuzo; and Kamishita, Kazuhiko, 4,244,942, Cl. 424-81.000.

Kamishita, Takuzo; and Kamishita, Kazuhiko, to Toko Yakuhin Kogyo Kabushiki Kaisha. Creamy preparation containing steroid and process for the preparation thereof. 4,244,942, Cl. 424-81.000.

Kamiya, Osamu: See—
Sasaki, Toshio; and Kamiya, Osamu, 4,244,310, Cl. 112-126.000.

Kamohara, Toshiyuki: See—
Umeda, Yasukazu; Kamohara, Toshiyuki; Goto, Seiichi; Tsuji, Shintaro; and Miyaniishi, Yoshio, 4,244,450, Cl. 187-29.00R.

Kampf, Richard S., to Beckman Instruments, Inc. Sample vial guide. 4,244,458, Cl. 198-339.000.

Kanaya, Yasuhiro: See—
Sato, Kanji; Kushihe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,244,690, Cl. 8-465.000.

Kanazashi, Tetuo: See—
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Kanda, Masami. Lens sizing device. 4,244,639, Cl. 351-5.000.

Kane, Bernard J.; and Von Genk, Richard A., to SCM Corporation. Cyclic terpenoid amines, their preparation and uses. 4,244,890, Cl. 564-455.000.

Kaneko, Takushi, to Bristol-Myers Company. 3,8-Dioxo-scirpen-4,8,15-diol esters and their use as antitumor agents. 4,244,874, Cl. 260-345.200.

Kaneko, Thomas M., to BASF Wyandotte Corporation. Phosphate-free machine dishwashing detergents useful at low temperatures. 4,244,832, Cl. 252-99.000.

Kania, Jozef: See—
Tasior, Andrzej; Blicharz, Marian; Kania, Jozef; Strzelaki, Jozef; and Kracik, Ignacy, 4,244,921, Cl. 422-161.000.

Kano, Isao: See—
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Kano, Yoshiaki: See—
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Kao, Charles T., to Recognition Equipment Incorporated. MICR Waveform analyzer. 4,245,211, Cl. 340-146.30C.

Kapeghian, Charles L.; Garman, Charles C.; and Malnati, Paul R., to Formation, Inc. Controller for data processing system. 4,245,307, Cl. 364-200.000.

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Kasper, Klaus: See—
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Sato, Kanji; Kushihe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,244,690, Cl. 8-465.000.

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Deutsch, Ralph; and Deutsch, Lealie J., 4,244,263, Cl. 84-345.000.

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Kawasumi, Masashi: See—
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Kazami, Takeo; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masao; Tsutsui, Kyoji; and Ohta, Masafumi, to Ricoh Co., Ltd. Electrophotographic element having charge transport layer. 4,245,021, Cl. 430-58.000.

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van Gils, Cornelis L. M.; van der Dussen, Marius H.; and Kemkers, Pieter, 4,245,277, Cl. 361-433.000.

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Kennametal Inc.: See—
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Gold, Terry J.; Kennard, Frederick L., III; Kikuchi, Paul C.; and Wilhelm, Ralph V., Jr., 4,244,798, Cl. 204-192.00SP.

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McElwain, Kenneth L., 4,244,165, Cl. 56-327.00R.

Kennedy, Warren C.: See—
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Schwarzer, Klemens; Kroger, Wolfgang; Escherich, Karl-Heinz; Kasper, Klaus; and Altes, Jurgen, 4,244,153, Cl. 52-169.500.

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Henrich, Robert S.; Hartford, Thomas W.; and Keasler, James A., 4,245,314, Cl. 364-431.000.

Keuffel & Esser Company: See—
Kooi, J. Peter E., 4,244,547, Cl. 248-180.000.

Key Tronic Corporation: See—
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- Kim, Keun Y.: See—
Jarvis, William M.; and Kim, Keun Y., 4,244,931, Cl. 423-266.000.
- Kim, Kibong: Toys with shape memory alloys, 4,244,140, Cl. 46-145.000.
- Kimble, Jack; and Paine, Walter W., to Gates Rubber Company, The: Hose crimping apparatus, 4,244,091, Cl. 29-237.000.
- Kimura, Koichi: See—
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- Kimura, Masakatsu: See—
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- Kimura, Satoshi: See—
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- King, Robert J.; and Johnson, Herbert A., to Dow Chemical Company, The: Method for drying magnesium sulfate, 4,244,698, Cl. 23-313.0FB.
- Kipp, Ronald W.; and Johnson, Henry C., to RCA Corporation: FM-CW Radar ranging system with automatic calibration, 4,245,221, Cl. 343-17.700.
- Kirillov, Viktor I.: See—
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- Kirkpatrick, Jesse C.: See—
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- Kis-Tamas, Attila: See—
Budai, Zoltan; Jurak, Ferenc; Kis-Tamas, Attila; Lay nee Konya, Aranka; Mezei, Tibor; Vig, Zoltan; and Zubovits nee Kristof, Terez, 4,244,888, Cl. 564-257.000.
- Kishino, Takahiro: See—
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- Kita, Donald A.; and Hall, Karlene E., to Pfizer Inc.: Preparation of 2-keto-L-gulonate acid, 4,245,049, Cl. 435-138.000.
- Kitagawa, Hidemasa: See—
Kogure, Takuyo; and Kitagawa, Hidemasa, 4,245,265, Cl. 360-66.000.
- Kitagawa, Yukio: See—
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- Kitamura, Satoshi: See—
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- Kiyota, Hiroyuki: See—
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- Klein, Elias; and Wathen, Ronald L., to United States of America, Health, Education & Welfare: Apparatus and method for determining serum concentrations of metabolites by monitoring dialysate fluid, 4,244,787, Cl. 204-1.00T.
- Klein, Gerald B.: Method for the manufacture of a can lid having a triple-fold pushdown gate, 4,244,315, Cl. 113-121.00C.
- Klein, Gerald B.: Pressure relief vent in a push-down gate for a can end, 4,244,489, Cl. 220-268.000.
- Klein, Gerald B.: Conical can end with push down gate, 4,244,490, Cl. 220-268.000.
- Kleiner, Hans-Jerg: See—
Dursch, Walter; Kleiner, Hans-Jerg; and Linke, Fritz, 4,244,893, Cl. 260-928.000.
- Klingensmith, Fred: Tubing slip pulling tool, 4,244,093, Cl. 29-256.000.
- Klingler, Karl H.; Hitzel, Franz; and Bickel, Erich, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: Process for the production of basic substituted alkyltheophylline derivatives, 4,245,093, Cl. 544-267.000.
- Klockner-Humboldt-Deutz AG: See—
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- Kloockner-Werke AG: See—
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- Klok, Henri: Protractable straight-edge with vise, 4,244,119, Cl. 33-437.000.
- Kluessner, Matthew F.: See—
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- Kluge, Arthur F.; and Unger, Stefan H., to Syntex (U.S.A.) Inc.: 1-Oxa-3,6-diazaspiro[4.5]decan-2-ones antihypertensive agents, 4,244,961, Cl. 424-267.000.
- Kniepkamp, Alberto; and Moore, Douglas R., to Norlin Industries, Inc.: Footage volume control circuit, 4,244,260, Cl. 84-1.210.
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- Kobayashi, Akira: See—
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- Kobayashi, Ichiro: See—
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- Kobayashi, Shinichi: See—
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- Kobayashi, Takashi: See—
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- Kobric, Marvin M.: See—
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- Kobzina, John W., to Chevron Research Company: Herbicidal N-haloacetyl-2-alkyl-6-acylanilines, 4,244,730, Cl. 71-88.000.
- Koch, Joseph B.: See—
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- Koda, Robert T.: See—
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- Kodaira, Kozo; and Ito, Noboru, to Kabushiki Kaisha Suwa Seikosa: Printer with a fixed and an axially movable character ring, 4,244,291, Cl. 101-99.000.
- Koenenman, Kenneth P.: See—
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- Kogure, Takuyo; and Kitagawa, Hidemasa, to Matsushita Electric Industrial Co., Ltd.: Automatic tape bias adjusting and signal compensation recording and reproducing apparatus, 4,245,265, Cl. 360-66.000.
- Koikawa, Noriyuki; Ohkubo, Tetsuo; and Kawasumi, Masashi, to OKI Electric Industry Co., Ltd.: System for providing time control data in a numerical control system, 4,243,316, Cl. 364-474.000.
- Koike, Masahiko, to Nippon Gakki Seizo Kabushiki Kaisha: Electronic musical instrument with memory to store tone control information, 4,244,259, Cl. 84-1.190.
- Kokubo, Takashi; Takano, Yoshiaki; and Okuda, Minoru, to Sony Corporation: Video projector and mounting structure, 4,245,256, Cl. 358-254.000.
- Kokusai Denshin Denwa Kabushiki Kaisha: See—
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- Kondo, Hiroatsu, to Hokuyo Automatic Co., Ltd.: Preset counter, 4,244,515, Cl. 235-132.00R.
- Kondo, Kiyosi; Tunemoto, Daiei; Negishi, Akira; and Suda, Minoru, to Sagami Chemical Research Center: Process for preparing 2-thio-2-substituted-alkanoic acid derivatives, 4,245,108, Cl. 549-79.000.
- Kondo, Satoshi: See—
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- Kondo, Teruhisa; Ishiguro, Jiro; and Watanabe, Nobuatsu: Process for producing flexible graphite product, 4,244,934, Cl. 423-448.000.
- Kondo, Yoza; Kasai, Toshikazu; and Kano, Yoshiaki, to Solvay & Cie: Low pressure polymerization of olefins, 4,245,071, Cl. 526-114.000.
- Konieczny, Klaus; Schmitt, Erich; and Buhles, Adolf, to Gesteins- und Tiefbau GmbH; and H. Krummenauer KG: Rotary cutter for gouging out ore from mine faces or the like, 4,244,626, Cl. 299-90.000.
- Konishi, Hiroyuki: See—
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- Konno, Mitoshi: See—
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- Kono, Hiroya: See—
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- Kooi, J. Peter E., to Keuffel & Esser Company: Theodolite leveling means, 4,244,547, Cl. 248-180.000.
- Koppers Company, Inc.: See—
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- Kornat, Kazimierz F., to Ford Motor Company: Holders for cables and conduits, 4,244,544, Cl. 248-68.00R.
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- Kornelis' Kunstharz Producten Industrie BV: See—
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- Kornelis, Wiebren D. H., to Kornelis' Kunstharz Producten Industrie BV: Closure cap with sealing ring, 4,244,481, Cl. 215-348.000.
- Kosaka, Minoru: See—
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- Kosary, Judith; Kasztreiner, Endre; Huszti, Zsuzsa; Kenessey, Agnes; Cseh, Gyorgy; Szilagyi nee Pap, Veronika; and Stvertcecky nee Sztrokay, Judit, to Richter Gedeon Vegyeszeti Gyar RT: Sulfonamido-benzoic acid derivatives, 4,244,871, Cl. 260-239.700.
- Kostner, Richard C.: See—
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- Koula, Zdenek, to Stotz & Co.: Method of manufacturing a cut textile piece possessing variable stiffness over its surface, 4,244,999, Cl. 428-196.000.
- Kovacs, Peter: See—
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- Koyama, Mitsuki: See—
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- Kracik, Ignacy: See—
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- Kraft, Inc.: See—
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- Kramer, Steven G.: Dispenser for flexible material, 4,244,503, Cl. 225-46.000.
- Kranz, Dale P.: Revolving greenhouse, 4,244,146, Cl. 47-17.000.
- Kranz, Dietmar: See—
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- Kratky, Frank, to Westguard Products, Inc.: Livestock containment device, 4,244,324, Cl. 119-27.000.
- Krauel, Robert W., Jr.: Monitor ampliphones, 4,245,136, Cl. 179-1.0GQ.
- Kraus, Bernd: See—
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- Krause, Konrad A., to International Business Machines Corporation: Ink jet head having an outer wall of ink cavity of piezoelectric material, 4,245,227, Cl. 346-75.000.
- Krautkramer, Wilfried: See—
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- Kreage, Edward N.: See—
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- Krider, Edmond P.; Noggle, Ralph C.; and Uman, Martin A., to Lightning Location and Protection, Inc.: Lightning detection system utilizing triangulation and field amplitude comparison techniques, 4,245,190, Cl. 324-72.000.
- Krieger, Allen S.: See—
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- Kruger, Igor: Security system, 4,245,213, Cl. 340-149.00A.
- Krob, Erwin: See—
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- Kroening, Gerald E.; and Werginz, Karl B., to Litton Systems, Inc.: Crusher swing jaw, 4,244,532, Cl. 241-264.000.
- Kroger, Wolfgang: See—
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- Krogard, Harald, to Elkem-Spigerverket, A/S: Roof for covered electric smelting furnaces, 4,245,133, Cl. 13-35.000.
- Kronseder, Hermann: Bottle table for labeling machines, 4,244,462, Cl. 198-500.000.
- Kropf, Laurent: See—
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- Krueger, Hans: See—
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- Kruger, Gerd: See—
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- Krull, Lore: Toothed belt pulley, 4,244,206, Cl. 72-377.000.
- Kruse, Jurgen M., to United States Postal Service: Infrared absorber, 4,244,741, Cl. 106-20.000.
- Kublan, Neal, to Mego Corp.: Suspending and propelling means for toy figures, 4,244,136, Cl. 46-32.000.
- Kubota Ltd.: See—
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- Kulichenko, Walter, to Pennwalt Corporation: Marine vessel safeguard steering mechanism, 4,244,316, Cl. 114-144.00R.
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- Kuna, Wayne A.: See—
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- Kurz, Craven H.: Pulsating orthodontic appliance, 4,244,688, Cl. 433-5.000.
- Kusche, David W.; and Gagnier, Keith M.: Induction system for a V-type two-cycle engine, 4,244,332, Cl. 123-59.00B.
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- Labeur, Lucas, to N.V. Klippan S.A.: Adjustable sensor responsive to vehicle acceleration, 4,244,537, Cl. 242-107.40A.
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- LaChapelle, Paul A.: See—
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- Ladd, Glenn O., Jr.: See—
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- Lagoni, William A., to RCA Corporation: Controllable non-linear processing of video signals, 4,245,237, Cl. 358-31.000.
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- Landry, Norman R.; Williams, Samuel L.; and Schellhorn, Robert L.; to RCA Corporation: Thick film resistor element and method of fabricating, 4,245,210, Cl. 338-314.000.
- Lane, Jeff K.; Negri, Joseph M.; and Harrod, Donald J.: Vehicle engine with turbine bypass for exhaust treatment device warm-up, 4,244,187, Cl. 60-602.000.
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Maloney, Jennifer A. Patchwork fabric configuration and process. 4,244,996, Cl. 428-103.000.
Malt, Lillian G. Keyboard arrangement. 4,244,659, Cl. 400-486.000.
Man-El, Daniel. Focusing solar collector. 4,244,374, Cl. 126-438.000.
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Mansson, Kent: See—
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Manufacture Provencale de Matieres Plastiques SA: See—
Zeltner, Bernard; and Marmonnier, Gaston, 4,244,149, Cl. 47-81.000.
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Anderson, Leroy E.; Schmidt, Michael P.; and Weaver, William W., 4,244,202, Cl. 72-49.000.
Mapatent N.V.: See—
Hoeboer, Cornelis H. W., 4,244,767, Cl. 156-351.000.
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Croghan, Stephen M., 4,244,663, Cl. 405-195.000.
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Marcinkiewicz, Eugene J., to GSE, Inc. Retorque measuring apparatus. 4,244,213, Cl. 73-139.000.
Marien, August M.: See—
De Winter, Walter F.; Monbaliu, Marcel J.; Marien, August M.; and Van Rossum, Antoine R., 4,245,036, Cl. 430-510.000.
Mark, Victor; and Wilson, Phillip S., to General Electric Company. Plasticized polycarbonate composition employing aldehyde compounds. 4,244,851, Cl. 260-30.80R.
Marmonnier, Gaston: See—
Zeltner, Bernard; and Marmonnier, Gaston, 4,244,149, Cl. 47-81.000.
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Steiner, Eginhard; Martin, Pierre; and Bellus, Daniel, 4,245,098, Cl. 546-250.000.
Martinek, Michael A., to Rockwell International Corporation. Barbed fishing lure with pivoted spring means for attaching a plastic worm thereto. 4,244,133, Cl. 43-42.250.
Marvin Glass & Associates: See—
Breslow, Jeffrey D.; Ferris, Michael J.; and Arisa, Henry, 4,244,573, Cl. 273-119.00R.
Erickson, Erick E.; and Kuna, Wayne A., 4,244,139, Cl. 46-141.000.
Ferris, Michael J.; and Meyer, Burton C., 4,244,568, Cl. 273-1.00R.
Goldberg, Benjamin L.; and Meyer, Burton C., 4,244,144, Cl. 46-202.000.
Holahan, Edward T.; Meyer, Burton C.; and Webb, Terry E., 4,244,138, Cl. 46-124.000.
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- Mashkovsky, Mikhail D.: See—
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- Massachusetts Institute of Technology: See—
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Schrock, Richard R., 4,245,131, Cl. 585-511.000.
- Masara, Giacinto V. Elastomer-based master batch. 4,244,854, Cl. 260-33.60A.
- Masuda, Takayuki: See—
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- Matheny, William F., III; Bernard, Clay, II; and Angell, William M., to Clay Bernard Systems International Ltd. Article consolidation system. 4,244,448, Cl. 186-55.000.
- Mather, Byron L.: See—
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- Mathews, Lyle H. Conduit spacer system. 4,244,542, Cl. 248-49.000.
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- Matsuda, Moriyasu: See—
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- Matsui, Motoi: See—
Hata, Kunio; Ohshima, Kihachiro; Kano, Isao; Matsui, Motoi; and Sato, Tadashi, 4,245,048, Cl. 435-133.000.
- Matsumoto, Fumio: See—
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- Matsumoto, Hiromitsu, to Yamaha Hatsukoki Kabushiki Kaisha. Induction system for an internal combustion engine. 4,244,333, Cl. 123-432.000.
- Matsumoto, Katsuaki; Saeiki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, to Pioneer Electronic Corporation. Interactive CATV system. 4,245,245, Cl. 358-122.000.
- Matsumoto, Kenji: See—
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- Matsumoto, Teiziro; Matsuda, Moriyasu; Mizokami, Hiroshi; Kibamoto, Tsuneo; and Hatta, Katsuma, to Seitetsu Kagaku Co., Ltd. Process for chlorinating xylenols. 4,245,127, Cl. 568-779.000.
- Matsumoto, Yumji; and Murai, Bunjiro, to Toshiba Silicone Co., Ltd. Curable organopolysiloxane composition. 4,245,079, Cl. 528-15.000.
- Matsumura, Kuniaki; Fukuchi, Mitsuyoshi; Iizuka, Motoki; and Usumiomiya, Yumioyoshi, to Chisso Corporation. Floss separator. 4,244,814, Cl. 209-144.000.
- Matsumura, Sadao: See—
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- Matsumura, Shunji: See—
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- Matta, Ram K.; and Clapper, William S., to General Electric Company. Apparatus for suppressing internally generated gas turbine engine low frequency noise. 4,244,440, Cl. 181-213.000.
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- Mattson, George B.: See—
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- Matuszak, Chester. Alignment device for hand held cutting tools. 4,244,118, Cl. 33-430.000.
- Mauk, Gerhard: See—
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- Maydan, Dan: See—
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- Mayer, Hans J.; and Muller, Robert K., to Hoffmann-La Roche Inc. Process for producing astaxanthin. 4,245,109, Cl. 560-61.000.
- Mayerhoffer, Herbert, to Osterreichische Haig-Werke Aktiengesellschaft. Process for the production of a melamine resin coated paper. 4,244,990, Cl. 427-211.000.
- McAllister, William A., to Westinghouse Electric Corp. Metal halide lamp having lead metal powder to reduce blackening. 4,245,175, Cl. 313-229.000.
- McAvinn, James D.; and Canty, Herbert G., to Kendall Company, The. Surgical sponge with visually detectable element. 4,244,369, Cl. 128-296.000.
- McCartney, John S., to Corning Glass Works. Implosion protection for TV tubes. 4,245,255, Cl. 358-245.000.
- McCaw, Thomas M. Variable leverage gearing. 4,244,243, Cl. 74-713.000.
- McCracken, John R.: See—
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- McCurdy, William. Wallpaper trough assembly. 4,244,320, Cl. 118-419.000.
- McDermott, Joseph X., to Halcon Research and Development Corporation. Preparation of maleic anhydride. 4,244,878, Cl. 260-346.750.
- McDonnell Douglas Corporation: See—
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- McDowell, Robert E.: See—
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- McElwain, Kenneth L., to Kennco Manufacturing, Inc. Harvester apparatus. 4,244,165, Cl. 56-327.00R.
- McGill, Lee E.; and Watkins, Susan J., to Cutter Laboratories, Inc. Device for use in detecting occlusion in an infusion system. 4,244,365, Cl. 128-214.00E.
- McGuire, Richard E.: See—
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- McGuire, Robert C., to Dresser Industries, Inc. Sump divider for demister unit. 4,244,714, Cl. 55-238.000.
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- McMullin, Jerry L. Mechanical log splitter. 4,244,407, Cl. 144-193.00H.
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- Meister, Martin: See—
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- Melwisch, Harald E., to U.S. Philips Corporation. Method of recording color television signals as a repetitive series of normally recorded lines and phase reversed lines. 4,245,234, Cl. 358-8.000.
- Melzer, Werner; and Jaenicke, Dieter, to Hoechst Aktiengesellschaft. Process for the quantitative determination of the oxygen demand of water containing oxidizable matter. 4,244,695, Cl. 23-230.0PC.
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- Menzi, Robert; and Dove, Georges, to W. R. Grace & Co. Process for preparing a food mousse. 4,244,982, Cl. 426-568.000.
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- Merck & Co., Inc.: See—
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- Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung: See—
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- Metrailler, William J., to Exxon Research & Engineering Co. Liquid yield from pyrolysis of coal liquefaction products. 4,244,805, Cl. 208-8.0LE.
- Metzner, Robert N. Free piston gas generator assemblies. 4,244,331, Cl. 123-46.00A.
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- Holahan, Edward T.; Meyer, Burton C.; and Webb, Terry E., 4,244,138, Cl. 46-124.000.
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- Meyer, Walter, to Trias Burstenfabrik AG. Method and forming tool for the fabrication of a bristle support for a brush, especially a hair brush. 4,244,076, Cl. 15-188.000.
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- Minami, Junichi; Shigetou, Minoru; and Ishibashi, Sadaaki, to Nissin Shokuhin Kaisha, Limited. Multi-layer alimentary paste. 4,244,974, Cl. 426-94.000.
- Mineck, David W.; and Mohr, Glen E., to Rockwell International Corporation. Power supply monitor. 4,245,289, Cl. 363-41.000.
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- Minnesota Mining and Manufacturing Company: See—
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- Fraser, William J., 4,244,604, Cl. 282-27.500.
- Kellie, Truman F., 4,244,633, Cl. 350-3.780.
- Lund, Marys E., 4,245,052, Cl. 435-301.000.
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Mineck, David W.; and Mohr, Glen E., 4,245,289, Cl. 363-41.000.

Molinari, Gloria G. Calligrapher's portable desk. 4,244,632, Cl. 312-231.000.

Molinier, Jacques; Mahler, Jacques; Bocquet, Gilbert; de Massey, Bernard; and Holtmann, Robert, to Saint-Gobain Industries. Aqueous size for glass fibers. 4,244,844, Cl. 260-9.000.

Moll, Manfred: See—
Grosswendt, Werner; Moll, Manfred; and Becker, Wilfried, 4,244,293, Cl. 102-38.0RL.

Molken, Reiner: See—
Fiege, Helmut; Wedemeyer, Karlfried; Bauer, Kurt; and Molken, Reiner, 4,245,126, Cl. 568-764.000.

Molovinsky, Gale. Levitation device. 4,244,566, Cl. 272-9.000.

Molvar, Allen E., to Clevepak Corporation. Backflushing system. 4,244,821, Cl. 210-220.000.

Molynaux, Thomas A.: See—
Cox, Alvon R.; and Molynaux, Thomas A., 4,244,855, Cl. 260-33.6AQ.

Momochi, Yasushi: See—
Aotsu, Hiroaki; Isono, Akira; Goto, Masuo; Kimura, Koichi; Momochi, Yasushi; Kai, Takaaki; Kitamura, Satoshi; Kaihara, Akihisa; and Okada, Hiroshi, 4,245,182, Cl. 322-20.000.

Monbaliu, Marcel J.: See—
De Winter, Walter F.; Monbaliu, Marcel J.; Marien, August M.; and Van Rossem, Antoine R., 4,245,036, Cl. 430-510.000.

Monsanto Company: See—
Brannigan, Lawrence H.; Franz, John E.; and Howe, Robert K., 4,245,106, Cl. 548-378.000.

Campbell, Robert H.; Wise, Raleigh W.; and Vaughn, William A., 4,244,864, Cl. 260-45.8NW.

Jarvis, William M.; and Kim, Keun Y., 4,244,931, Cl. 423-266.000.

Terry, Alvah B., 4,244,100, Cl. 29-714.000.

Wu, Wen-li, 4,244,907, Cl. 264-168.000.

Monelle, Dale E. Articulated railway car trucks. 4,244,297, Cl. 105-168.000.

Montedison S.p.A.: See—
Basile, Giampiero; and Boero, Giancarlo, 4,244,932, Cl. 423-274.000.

Giordano, Claudio; Belli, Aldo; and Minisci, Francesco, 4,244,881, Cl. 260-410.500.

Ranalli, Franco; Ortolani, Leone; and Tisi, Quinto, 4,244,914, Cl. 264-515.000.

Moodie, Donald E., to Polaroid Corporation. Separable film spool and method of loading film cassette therewith. 4,244,535, Cl. 242-71.800.

Moog Inc.: See—
Tengan, Alfred K., 4,244,398, Cl. 137-430.190.

Moon, William S., to Meureux Corporation. Method and apparatus to control the density of products produced from an extrusion process. 4,244,897, Cl. 264-40.200.

Mooney Chemicals, Inc.: See—
Alkaitis, Anthony, 4,244,938, Cl. 423-592.000.

Moore, Douglas R.: See—
Knipkamp, Alberto; and Moore, Douglas R., 4,244,260, Cl. 84-1.210.

Moore, Frederic J., to Zenith Radio Corporation. Automatic gain control system for direct-access television receiver. 4,245,350, Cl. 455-180.000.

Moore, Kenneth M.; and Cotten, Frank N., to Union Insulating Company. Electric lighting fixture and globe support. 4,245,284, Cl. 362-311.000.

Moore, Robert W., Jr.; and Weinrich, Stanley C., to Weinrich, Stanley C. Disposable anesthesia circuit. 4,244,363, Cl. 128-205.170.

Moore, William P., Jr., to Ashland Oil, Inc. Urea-formaldehyde solution for foliar fertilization. 4,244,727, Cl. 71-29.000.

Moran, Joseph M.: See—
Fraser, David B.; Maydan, Dan; and Moran, Joseph M., 4,244,799, Cl. 204-192.00E.

Moretti, Renzo: See—
Maggioni, Virginio; and Moretti, Renzo, 4,244,555, Cl. 251-82.000.

Morgan, Thomas R.: See—
Subbana, Somanahalli N.; Morgan, Thomas R.; and Frick, Douglas G., 4,244,925, Cl. 423-61.000.

Mori, Masahiko, to Kabushiki Kaisha Suwa Seikosha. Dot printer head. 4,244,658, Cl. 400-124.000.

Morii, Takashi: See—
Matsumoto, Katsuaki; Saeki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.

Morikawa, Takeshi: See—
Iwao, Souichi; Suzuki, Norihiko; Doi, Yasuhiko; Shimizu, Shigemitsu; and Morikawa, Takeshi, 4,244,251, Cl. 83-349.000.

Morimi, Yokichi; and Kuroda, Masamichi, to Fushimi Kabushiki Kaisha; and Morimi, Yokichi. Method of making fish prints, and paper and cloth used therefor. 4,245,002, Cl. 428-224.000.

Morimoto, Takao: See—
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,245,331, Cl. 364-900.000.

Morimoto, Yoshio: See—
Kato, Nobukatu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, 4,245,128, Cl. 568-806.000.

Morimura, Shinji, to Bridgestone Tire Company Limited. Apparatus for floating and sinking fish breeding netted tanks. 4,244,323, Cl. 119-3.000.

Moriya, Yoshiaki; Kobayashi, Ichiro; and Kitagawa, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processor having two types of carry flags. 4,245,327, Cl. 364-768.000.

Morozova, Margarita K.: See—
Guseinov, Nazim M. O.; Aliev, Vagab S.; Mustafaev, Alish I.; Zimin, Vladimir M.; Sverdlov, Rafael S.; Shkondina, Nina G.; Chianurashvili, Eleonora E.; Morozova, Margarita K.; Mirzoev, Rasim S. O.; Sharifov, Gabil S. O.; Dzhabiev, Ramiz A.; Oshin, Leonid A.; and Genin, Lemel S., 4,244,892, Cl. 570-223.000.

Morris, Robert L.: See—
Scotese, Anthony C.; Morris, Robert L.; and Santilli, Arthur A., 4,245,094, Cl. 544-279.000.

Morrison, Richard A. Method and apparatus for homogeneously irradiating the vaginal mucosa with a linear source uterovaginal applicator. 4,244,357, Cl. 128-1.200.

Mosier, Jack M.; and Mosier, Jeanette E. Golf practice apparatus. 4,244,576, Cl. 273-176.00F.

Mosier, Jeanette E.: See—
Mosier, Jack M.; and Mosier, Jeanette E., 4,244,576, Cl. 273-176.00F.

Mostmans, Joseph H.: See—
Heeres, Jan; Backs, Leo J. J.; and Mostmans, Joseph H., 4,244,964, Cl. 424-269.000.

Mote, Ray R., to Vassar, Jack K., a part interest. Belt tightening tool. 4,244,559, Cl. 254-129.000.

Motorola Inc.: See—
Daniels, Richard G.; Walton, Richard S.; and Yamanouchi, Roy K., 4,245,337, Cl. 368-82.000.

Davies, Robert B., 4,245,231, Cl. 357-51.000.

Stein, Marc T., 4,245,167, Cl. 307-265.000.

Moyer, William H., Jr., to Bethlehem Steel Corporation. Method of increasing fine coal filtration efficiency. 4,244,813, Cl. 209-5.000.

MPL, Inc.: See—
Handman, Richard, 4,244,478, Cl. 215-249.000.

Mueller, Walter E.: See—
Libicky, Arnost; and Mueller, Walter E., 4,245,034, Cl. 430-399.000.

Mukai, Takamitsu: See—
Nakayama, Shozo; Kato, Kimio; Mukai, Takamitsu; Fujii, Tomoo; Kono, Hiroya; Fukuoka, Tatsuhiko; Asada, Eizi; and Futamura, Kenichiro, 4,244,679, Cl. 417-269.000.

Muller, Robert K.: See—
Mayer, Hans J.; and Muller, Robert K., 4,245,109, Cl. 560-61.000.

Munakata, Tomohiko; Saeki, Kazumi; Goto, Kazuhiro; and Ikegami, Kiyoteru, to Yoshitomi Pharmaceutical Industries, Ltd. Imidazo[2',1':2,3]-thiazolo[5,4-c]pyridines and composition thereof for treating immune diseases. 4,244,952, Cl. 424-256.000.

Murai, Bunjiro: See—
Matsumoto, Yasuji; and Murai, Bunjiro, 4,245,079, Cl. 528-15.000.

Murakami, Hiromi; Suzuki, Masato; and Suzuki, Tsutomu, to Toko, Inc. Miniature high frequency coil assembly or transformer. 4,245,207, Cl. 336-65.000.

Murata Manufacturing Co., Ltd.: See—
Nishikawa, Toshio; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, 4,245,198, Cl. 333-134.000.

Murayama, Yoshinobu, to Kubota Ltd. Tractor transmission mechanism. 4,244,232, Cl. 74-15.660.

Murrey, Gordon W., Sr. Method for resurfacing bowling alleys. 4,244,570, Cl. 273-51.000.

Mustafaev, Alish I.: See—
Guseinov, Nazim M. O.; Aliev, Vagab S.; Mustafaev, Alish I.; Zimin, Vladimir M.; Sverdlov, Rafael S.; Shkondina, Nina G.; Chianurashvili, Eleonora E.; Morozova, Margarita K.; Mirzoev, Rasim S. O.; Sharifov, Gabil S. O.; Dzhabiev, Ramiz A.; Oshin, Leonid A.; and Genin, Lemel S., 4,244,892, Cl. 570-223.000.

Mutha, Shantilal C.: See—
Kuo, Harnq-Shen; Mutha, Shantilal C.; and Thompson, Charles R., 4,245,044, Cl. 435-34.000.

Mylonakis, Stamatios G., to DeSoto, Inc. Air curable latex. 4,244,850, Cl. 260-29.60M.

Mymrin, Sergei A.: See—
Vydrin, Vladimir N.; Pastukhov, Valery V.; Barkov, Leonid A.; Sychev, Pavel M.; Dolgov, Sergei I.; Novikov, Dmitry S.; Mymrin, Sergei A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; and Shegai, Anatoly A., 4,244,204, Cl. 72-224.000.

Nachman, Marvin J. Electrical stimulation dental device. 4,244,373, Cl. 128-419.00F.

Nagahara, Shusaku: See—
Sato, Kazuhiro; Umemoto, Masuo; Izumita, Morishi; Akiyama, Toshiyuki; and Nagahara, Shusaku, 4,245,241, Cl. 358-44.000.

Nagai, Susumu; Ueda, Akira; and Toyoda, Kuniei, to Pfizer Inc.; and City of Osaka. Macroreticular itaconic acid ion exchange resin and process for its preparation. 4,245,053, Cl. 521-38.000.

Nagata, Masayoshi: See—
Takeda, Keiji; Nagata, Masayoshi; and Matsumoto, Kenji, 4,245,027, Cl. 430-141.000.

Nagumo, Fumio, to Sony Corporation. Television camera having a character display. 4,245,252, Cl. 358-213.000.

Naito, Susumu: See—
Suzuki, Takashi; Tateishi, Akira; and Naito, Susumu, 4,245,078, Cl. 562-412.000.

Naka, Hiromitsu, to Kabushiki Kaisha Naka Gijutsu Kenkyusho. Drawer type emergency escape. 4,244,443, Cl. 182-84.000.

Nakagaki, Norio: See—
Tantai, Kazuto; Sawada, Shigeru; Nakamura, Osamu; and Nakagaki, Norio, 4,244,290, Cl. 101-99.000.

Nakagawa, Yasuo; Shimada, Keizo; and Nakamura, Tsutomu, to Teijin Limited. Wholly aromatic polyamide blend composition. 4,245,066, Cl. 525-432.000.

Nakajima, Yutaka: See—
Rokutanda, Takashi; Shiraogawa, Yukio; Nakajima, Yutaka; Aoyagi, Keizo; and Hiraoka, Takashi, 4,245,301, Cl. 364-200.000.

Nakamura, Goshi, to Casio Computer Co., Ltd. Electronic cash register. 4,245,311, Cl. 364-405.000.

Nakamura, Kotaro: See—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,245,018, Cl. 430-14.000.

Nakamura, Osamu: See—
Tamai, Kazuto; Sawada, Shigeru; Nakamura, Osamu; and Nakagaki, Norio, 4,244,290, Cl. 101-99.000.

Nakamura, Tsutomu: See—
Nakagawa, Yasuo; Shimada, Keizo; and Nakamura, Tsutomu, 4,245,066, Cl. 525-432.000.

Nakamura, Shozo: See—
Matsumoto, Katsuaki; Saeki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.

Nakane, Hisashi: See—
Uehara, Akira; Kiyota, Hiroyuki; Nakane, Hisashi; and Toda, Shozo, 4,245,154, Cl. 250-227.000.

Nakanishi, Toru; and Machida, Yozo, to Kyowa Hakko Kogyo Co., Ltd. Process for the preparation of choline oxidase by fermentation. 4,245,050, Cl. 435-191.000.

Nakashin, Yasushi. Leak repairing process for underground pipe. 4,244,895, Cl. 264-36.000.

Nakatsu, Daniel T. Corner shelf array. 4,244,301, Cl. 108-149.000.

Nakayama, Junichi: See—
Isa, Hiroshi; Karube, Kenji; and Nakayama, Junichi, 4,244,882, Cl. 260-410.600.

Nakayama, Shozo; Kato, Kimio; Mukai, Takamitsu; Fujii, Tomoo; Kono, Hiroya; Fukuoka, Tatsuhiko; Asada, Eizi; and Futamura, Kenichiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho; and Taiho Kogyo Kabushiki Kaisha. Swash-plate-type compressor for air-conditioning vehicles. 4,244,679, Cl. 417-269.000.

Nakayama, Wataru: See—
Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Ueda, Taisei, 4,245,206, Cl. 336-60.000.

Nakazawa, Kenji: See—
Minagawa, Motonobu; Sekiguchi, Tetsuo; and Nakazawa, Kenji, 4,244,848, Cl. 260-23.0XA.

Nalco Chemical Company: See—
Rende, Dominic S.; and Cosper, David R., 4,244,780, Cl. 162-72.000.

Nasal, Peter: See—
Hofmann, Wilfried; Lueder, Guenther; Nasal, Peter; Puechler, Peter; Krueger, John; Rauffer, Walter; and Lusch, Herbert, 4,244,641, Cl. 353-27.00R.

National Casing of New Jersey: See—
Woo, Ming C., 4,244,845, Cl. 260-17.00R.

National Equipment Corporation: See—
Roderick, Ronald R., 4,244,979, Cl. 426-418.000.

National Research Development Corporation: See—
Webster, Cyril J. D.; and Griggs, John C., 4,244,061, Cl. 4-144.100.

Nayler, Douglas W. J.; and Scaff, Michael R., Sr., to NL Industries, Inc. Guide roller assembly. 4,244,628, Cl. 308-6.00R.

Negi, Virendra S.; and Peters, Arthur, to Honeywell Information Systems Inc. Binary coded decimal correction apparatus for use in an arithmetic unit of a data processing unit. 4,245,328, Cl. 364-771.000.

Negishi, Akira: See—
Kondo, Kiyosi; Tunemoto, Daiei; Negishi, Akira; and Suda, Minoru, 4,245,108, Cl. 549-79.000.

Negri, Joseph M.: See—
Lane, Jeff K.; Negri, Joseph M.; and Harrod, Donald J., 4,244,187, Cl. 60-602.000.

Nelham, Roy W., to R. Nelham & Associates Incorporated. Package forming method and apparatus. 4,244,158, Cl. 53-412.000.

Nelson, Gary W.: See—
Merics, Paul; and Nelson, Gary W., 4,244,546, Cl. 248-258.000.

Nelson, Gerald V.: See—
Youngblood, Douglas J.; and Nelson, Gerald V., 4,244,810, Cl. 208-120.000.

Nemeth, James J. Percussion instrument. 4,244,267, Cl. 84-418.000.

Nepela, Daniel A.: See—
Michaelsen, John D.; Nepela, Daniel A.; and Phipps, Peter B. P., 4,245,008, Cl. 428-611.000.

Neptune Dynamics Ltd.: See—
Green, John R., 4,244,475, Cl. 209-588.000.

Netravali, Arun N.; and Stuller, John A., to Bell Telephone Laboratories, Incorporated. Motion estimation and encoding of video signals in the transform domain. 4,245,248, Cl. 358-136.000.

Neubert, Herbert O. Portable electrical inhalator. 4,244,361, Cl. 128-200.140.

Neumann, Harry: See—
Wittenstein, Horst; Neumann, Harry; and Peddinghaus, Gunter, 4,245,144, Cl. 219-69.00E.

Neumann, Herwig. Structural element system. 4,244,665, Cl. 405-286.000.

Neuray, Dieter: See—
Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, 4,244,858, Cl. 260-38.000.

New Archery Products Corp.: See—
Simo, Miroslav A.; and Tosovsky, Josef, 4,244,345, Cl. 124-24.00R.

New World Computer Company, Inc.: See—
Herman, Robert W., 4,245,267, Cl. 360-104.000.

Newbold, William F.: See—
Green, Norman F.; Keiles, Yoel; Newbold, William F.; Searle, John L.; and Wilda, Douglas W., 4,244,226, Cl. 73-703.000.

Newkirk, David D.: See—
Login, Robert B.; and Newkirk, David D., 4,245,004, Cl. 428-394.000.

Newton, Robert P., to Autodynamics, Inc. Tire buffing machine system. 4,244,416, Cl. 157-13.000.

Nicolet, Inc.: See—
Heckman, Peter F., 4,244,781, Cl. 162-145.000.

Niederdelmann, Georg: See—
Quiring, Bernd; Niederdelmann, Georg; Goyert, Wilhelm; and Wagner, Hans, 4,245,081, Cl. 528-63.000.

Niemen, Jorma J.; and Engstrom, Folke, to A Ahlstrom Osakeyhtio. Method of treating spent pulping liquor in a fluidized bed reactor. 4,244,779, Cl. 162-30.00R.

Niimi, Koji; Kondo, Takayasu; and Ando, Shigeo, to Nippon Gakki Seizo Kabushiki Kaisha. Wave-shape generator for electronic musical instruments. 4,244,257, Cl. 84-1.010.

Nikolaev, Anatoly M.: See—
Chukhanov, Zinoviy F.; Chukhanov, Zinoviy Z.; Tsuprov, Sergei A.; Karasev, Vadim A.; Nikolaev, Anatoly M.; Shibaev, Robert M.; Bratchenko, Boris F.; and Lyashenko, Ivan V., 4,244,700, Cl. 44-1.00R.

Nilsson, Thomas. Device in connection with safety belts for vehicles. 4,244,601, Cl. 280-805.000.

Nippon Gakki Seizo Kabushiki Kaisha: See—
Adachi, Takeshi, 4,244,261, Cl. 84-1.240.

Koike, Masahiko, 4,244,259, Cl. 84-1.190.

Kumaoka, Michiaki; and Aoseima, Sinzi, 4,245,349, Cl. 455-165.000.

Niimi, Koji; Kondo, Takayasu; and Ando, Shigeo, 4,244,257, Cl. 84-1.010.

Nippon Soken, Inc.: See—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Tanaka, Taro, 4,244,341, Cl. 123-449.000.

Yasuda, Eituro; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,244,918, Cl. 422-95.000.

Nippon Telegraph and Telephone Public Corporation: See—
Kikuchi, Shiro; Imagawa, Hitoshi; and Iwase, Yasumasa, 4,245,325, Cl. 364-724.000.

Nippon Zeon Co. Ltd.: See—
Yaginuma, Hiroshi, 4,244,817, Cl. 210-654.000.

Yamamoto, Haruhisa; Ooura, Kiyomori; and Akiyama, Shinichi, 4,245,118, Cl. 562-532.000.

Nippondenso Co., Ltd.: See—
Asai, Masahiro, 4,244,337, Cl. 123-603.000.

Yamaguchi, Akihiko; Akado, Hajime; and Teramura, Mitsuyoshi, 4,244,343, Cl. 123-556.000.

Nischk, Gunther: See—
Engelhard, Helmut; Wolf, Gerhard D.; Bentz, Francis; and Nischk, Gunther, 4,245,110, Cl. 560-160.000.

Nischk, Wolfgang: See—
Goedecke, Ralf; Liebert, Martin; Nischk, Wolfgang; Plotz, Wolfgang; and Puschner, Kurt, 4,245,090, Cl. 544-191.000.

Goedecke, Ralf; Liebert, Martin; Nischk, Wolfgang; Plotz, Wolfgang; and Puschner, Kurt, 4,245,091, Cl. 544-191.000.

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Nishii, Masaru: See—
Sato, Kanji; Kushibe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,244,690, Cl. 8-465.000.

Nishikawa, Toshio; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, to Murata Manufacturing Co., Ltd. High frequency filter device. 4,245,198, Cl. 333-134.000.

Nishizawa, Takuzi: See—
Handa, Minoru; Nishizawa, Takuzi; Ogawa, Hiroko; and Asai, Shinichiro, 4,244,862, Cl. 260-42.470.

- Nissan Motor Company, Limited: See—
Nomura, Hiroyuki; Mogi, Takaaki; Kawasaki, Teruo; Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takaaki; and Matsuoka, Hideoki, 4,244,514, Cl. 235-92.0DN.
- Nissen, Roland N., to J. I. Case Company. Mounting mechanism for angle dozer blade. 4,244,429, Cl. 172-804.000.
- Nissin Shokuhin Kaisha, Limited: See—
Minami, Junichi; Shigetou, Minoru; and Ishibashi, Sadaaki, 4,244,974, Cl. 426-94.000.
- Nitzberg, Leonard R., to Reclamite, Ltd. Method for reclaiming high-walls at mining sites with partially mined ore veins. 4,244,624, Cl. 299-13.000.
- NL Industries, Inc.: See—
Naylor, Douglas W. J.; and Scalf, Michael R., Sr., 4,244,628, Cl. 308-6.00R.
- Noddin, Emerson L., to Albany International Corp. Reverse gas-flow bag filter. 4,244,718, Cl. 55-377.000.
- Noehren, William L.; Ferris, Donald L.; and Ogle, Peter C., to United Technologies Corporation. Cross-beam helicopter rotor with readily replaceable subblades. 4,244,677, Cl. 416-134.00A.
- Noel, Stephane, to Solvay & Cie. Process for the polymerization of vinyl chloride in aqueous suspension. 4,245,073, Cl. 526-230.500.
- Noggle, Ralph C.: See—
Kridner, Edmond P.; Noggle, Ralph C.; and Uman, Martin A., 4,245,190, Cl. 324-72.000.
- Noguchi, Masaki; Tanaka, Yukiyasu; and Tanaka, Taro, to Nippon Soken, Inc. Fuel injection system for an internal combustion engine. 4,244,341, Cl. 123-449.000.
- Nold, S. Edward: See—
Shichman, Daniel; Nold, S. Edward; and Enders, George E., 4,244,770, Cl. 156-398.000.
- Noll, Klaus: See—
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus; Pieper, Helmut; and Zimmermann, Rainer, 4,244,967, Cl. 424-300.000.
- Nolter, Gerhard; Oehme, Horst; Lademann, Rudolf; and Wendt, Heinz, to Hoechst Aktiengesellschaft. Fluidized bed treatment of granular potassium sorbate. 4,244,776, Cl. 159-48.00R.
- Nomura, Hiroyuki; Mogi, Takaaki; Kawasaki, Teruo; Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takaaki; and Matsuoka, Hideoki, to Nissan Motor Company, Limited. Electronic trip meter with an alarm for an automotive vehicle. 4,244,514, Cl. 235-92.0DN.
- Nomura, Yutaka; Koyama, Mitsuki; and Katou, Masahiro, to Tokyo Shibaura Electric Co., Ltd. Magnetic brush type developing apparatus. 4,244,322, Cl. 118-658.000.
- Noomen, Arie, to Akzo N.V. Method of cleaning and rust-protecting a metal surface. 4,244,989, Cl. 427-180.000.
- Norlin Industries, Inc.: See—
Barham, Jairus P.; and Meyer, Norman L., 4,244,268, Cl. 84-432.000.
- Kniepamp, Alberto; and Moore, Douglas R., 4,244,260, Cl. 84-1.210.
- Norman, Robert W., Jr.: See—
Porter, Marion G.; Norman, Robert W., Jr.; and Shelly, William A., 4,245,304, Cl. 364-200.000.
- North American Philips Corporation: See—
Harnack, Phyllis M., 4,244,753, Cl. 148-1.500.
- Northup, John D., to Northup, Jr.; J. D.; Lehrkind, Nancy Northup; Northup, Mary; to Northup, Ruth B., part interest to each. Apparatus for manufacturing glass bottles. 4,244,726, Cl. 65-264.000.
- Northup, Jr.; J. D.: See—
Northup, John D., 4,244,726, Cl. 65-264.000.
- Northup, Mary: See—
Northup, John D., 4,244,726, Cl. 65-264.000.
- Northup, Ruth B.: See—
Northup, John D., 4,244,726, Cl. 65-264.000.
- Northwest Engineering Company: See—
Hanitz, John R., 4,244,447, Cl. 184-6.220.
- Nortti-Tuote Oy: See—
Lahtinen, Paavo, 4,244,685, Cl. 431-265.000.
- Novikov, Dmitry S.: See—
Vydin, Vladimir N.; Pastukhov, Valery V.; Barkov, Leonid A.; Sychev, Pavel M.; Dolgov, Sergei I.; Novikov, Dmitry S.; Mymrin, Sergei A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; and Shegai, Anatoly A., 4,244,204, Cl. 72-224.000.
- NRM Corporation: See—
Shichman, Daniel; Nold, S. Edward; and Enders, George E., 4,244,770, Cl. 156-398.000.
- Nudelman, Abraham; and Patchornik, Abraham, to Yeda Research and Development Co. Ltd. α -Substituted-3-(halomethyl)-4-hydroxybenzeneacetic acids. 4,244,885, Cl. 260-507.00R.
- Nukem, GmbH: See—
Vietzke, Horst; Borner, Paul; and Wagner, Gerhard, 4,244,697, Cl. 23-294.00R.
- Numata, Toshio: See—
Yamashita, Keitaro; and Numata, Toshio, 4,245,024, Cl. 430-122.000.
- N.V. Klippan S.A.: See—
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- O & K Orenstein & Koppel Aktiengesellschaft: See—
Renk, Friedrich; and Handel, Jurgen, 4,244,449, Cl. 187-9.00E.
- Oakside Industrial, 19167, Holdings, Ltd.: See—
Collins, Stephen, 4,244,289, Cl. 101-93.180.
- Ocean Spray Cranberries, Inc.: See—
Regling, Siegfried, 4,244,984, Cl. 426-599.000.
- O'Connor, George L.: See—
Bartley, William J.; and O'Connor, George L., 4,244,889, Cl. 564-132.000.
- O'Connor, Lorne D.; Saylor, Richard; and Buckner, Stephen H., to American District Telegraph Company. Power line signalling system. 4,245,215, Cl. 340-310.00A.
- Odier, Marc. Method and apparatus for series photography of a subject in motion. 4,244,644, Cl. 354-122.000.
- Oehme, Horst: See—
Nolter, Gerhard; Oehme, Horst; Lademann, Rudolf; and Wendt, Heinz, 4,244,776, Cl. 159-48.00R.
- Oellers, Walter M.: See—
Leifeld, Ferdinand; Oellers, Walter M.; and Reiche, Johannes W., 4,244,082, Cl. 19-81.000.
- Oerlikon Italiana SpA: See—
Stacheli, Nicolas; Maiocchi, Francesco; and Wuerth, Walter, 4,244,196, Cl. 64-21.000.
- Ogawa, Hiroko: See—
Handa, Minoru; Nishizawa, Takuzi; Ogawa, Hiroko; and Asai, Shinichiro, 4,244,862, Cl. 260-42.470.
- Ogle, Peter C.: See—
Noehren, William L.; Ferris, Donald L.; and Ogle, Peter C., 4,244,677, Cl. 416-134.00A.
- Ogorodnikova, Valentina V.: See—
Kholodov, Leonid E.; Yashunsky, Vladimir G.; Altschuler, Roald A.; Mashkovsky, Mikhail D.; Ogorodnikova, Valentina V.; Olovyanishnikova, Zoya A.; Vitvitskaya, Anna S.; Parshin, Valery A.; and Kelekhsaeva, Ekaterina A., 4,245,100, Cl. 548-125.000.
- Oguni, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Cylinder control device of hydraulic cylinder apparatus. 4,244,274, Cl. 91-308.000.
- Ohkubo, Tetsuo: See—
Koikawa, Noriyuki; Ohkubo, Tetsuo; and Kawasumi, Masashi, 4,245,316, Cl. 364-474.000.
- Ohno, Nobuo; Miyakado, Masakazu; and Hirai, Hajime, to Sumitomo Chemical Company, Limited. Racemization of optically active 2-(4-chlorophenyl)-3-methylbutyric acid. 4,245,116, Cl. 562-401.000.
- Ohshima, Kihachiro: See—
Hata, Kunio; Ohshima, Kihachiro; Kano, Isao; Matsui, Motoi; and Sato, Tadaaki, 4,245,048, Cl. 435-133.000.
- Ohta, Masafumi: See—
Kazami, Takeo; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masao; Tsutsui, Kyoji; and Ohta, Masafumi, 4,245,021, Cl. 430-58.000.
- Ohtsu, Masamitsu, to Matsushita Electric Industrial Co., Ltd. Dropout compensating device. 4,245,262, Cl. 360-38.000.
- Oka, Morihisa: See—
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- Oka, Takaaki: See—
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- Okada, Hiroshi: See—
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- Okamoto, Harunori: See—
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- Okamoto, Kentaro: See—
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- OKI Electric Industry Co., Ltd.: See—
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- Oki, Toshikazu: See—
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- Okuda, Minoru: See—
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- Okuzawa, Yoshiko: See—
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- Oldfield, Clifford T. Self straightening picture hanger. 4,244,549, Cl. 248-494.000.
- Oldham, Ronald C.; and Hayward, Malcolm L., to International Standard Electric Corporation. Cable termination apparatus. 4,245,134, Cl. 174-70.00S.
- Olin Corporation: See—
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- Olovyanishnikova, Zoya A.: See—
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- Olson, James L. Snow groomer. 4,244,662, Cl. 404-118.000.

- Olson, Richard O.: See—
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- Olympus Optical Co., Ltd.: See—
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- Onembo, Eli N., to Singer Company, The. Auxiliary feed stitch regulator mechanism. 4,244,314, Cl. 112-313.000.
- Ono, Kaoru: See—
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,245,331, Cl. 364-900.000.
- Ono Pharmaceutical Co., Ltd.: See—
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- Ooura, Kiyomori: See—
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- Opitz, Karl: See—
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- Opuzanski, Theodore: See—
Rovin, Herman; Levine, Lawrence J.; Opuzanski, Theodore; Pellicano, Joseph; and Swenson, Alan F., 4,244,313, Cl. 112-279.000.
- Oransky, Raymond L.; and Savage, David G., to James River Graphics, Inc. Coated transparent film for laser imaging. 4,245,003, Cl. 428-323.000.
- Ordenez, Kathy P.: See—
Farina, Peter R.; Ordenez, Kathy P.; and Siewers, Iris J., 4,244,694, Cl. 23-230.00B.
- Orscheln Co.: See—
Orscheln, Donald W.; and Heimann, Robert L., 4,245,139, Cl. 200-52.00R.
- Orscheln, Donald W.; and Heimann, Robert L., to Orscheln Co. Brake cable switch means. 4,245,139, Cl. 200-52.00R.
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- Oshin, Leonid A.: See—
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- Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shunji; Ishikawa, Kikuchi; and Yoneyama, Eiichi, to Sumitomo Chemical Company, Limited. Method for controlling the growth of plants. 4,244,731, Cl. 71-105.000.
- Osterreichische Haig-Werke Aktiengesellschaft: See—
Mayerhoffer, Herbert, 4,244,990, Cl. 427-211.000.
- Otisa Industries, Ltd.: See—
Smith, Clay D.; and Keller, Douglas V., Jr., 4,244,699, Cl. 44-1.0SR.
- Otsuka, Takeyasu: See—
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- Otterson, Harry J. Disposable pest trap. 4,244,134, Cl. 43-58.000.
- Otto, Noel A.: See—
DiMauro, Joseph; Kaemmer, Herbert H.; Otto, Noel A.; and Riefler, Roger G., 4,244,554, Cl. 251-61.100.
- Owens-Corning Fiberglass Corporation: See—
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- Varraso, Eugene C., 4,244,896, Cl. 264-40.100.
- Weiner, George R., 4,244,719, Cl. 65-4.00R.
- Owens-Illinois, Inc.: See—
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- Smalley, Ned J., 4,244,479, Cl. 215-256.000.
- Oxy Metal Industries Corporation: See—
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- Wieczerniak, Walter J., 4,244,790, Cl. 204-49.000.
- P & G Products, Inc.: See—
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- Paddock, Paul F.: See—
Varon, Miguel A.; and Paddock, Paul F., 4,244,763, Cl. 156-74.000.
- Paine, Walter W.: See—
Kimble, Jack; and Paine, Walter W., 4,244,091, Cl. 29-237.000.
- Palau, Joseph; and Bourgeois, Pierre, to Societe Anonyme des Etablissements Staubli. Shed locating device for doobies. 4,244,399, Cl. 139-1.00E.
- Pan, Jing-Jong; and Arnold, Milton P., to Harris Corporation. High-Q multi-mode resonator controlled source. 4,245,193, Cl. 331-39.000.
- Papp, Richard B.: See—
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- Paranjpe, Suresh C.; and Robertson, John A., to Mead Corporation. The Ink jet printer with heated deflection electrode. 4,245,226, Cl. 346-75.000.
- Park Metal: See—
Dykstra, Peter, 4,244,255, Cl. 83-631.000.
- Parker-Hannifin Corporation: See—
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- Sharp, Bernard C., 4,244,548, Cl. 248-481.000.
- Parr, Linda C. Step stool construction. 4,244,064, Cl. 4-254.000.
- Parshin, Valery A.: See—
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- Valery A.; and Kelekhsaeva, Ekaterina A., 4,245,100, Cl. 548-125.000.
- Parsons, George H., Jr.; and Groman, Ernest V., to Baxter Travenol Laboratories, Inc. Barbituric acid tracers and their preparation. 4,244,939, Cl. 424-1.000.
- Paruso, Deborah M.; and Yoldas, Bulent E., to Westinghouse Electric Corp. Method of forming sodium beta-Al₂O₃ films and coatings. 4,244,986, Cl. 427-126.400.
- Paschen, Peter; Rao, Chatty; Preuss, Helmut; Wenzel, Werner; Gudeanu, Heinrich-Wilhelm; and Schonberger, Reinhold, to Klockner-Humboldt-Deutz AG. Method and apparatus for the manufacture of mold bodies, particularly pellets from secondary slurries of the metallurgical industry. 4,244,903, Cl. 264-96.000.
- Pascoe, Robert W.; and Thill, Richard W., to Eaton Corporation. Microwave frequency converter. 4,245,355, Cl. 453-326.000.
- Pastukhov, Valery V.: See—
Vydin, Vladimir N.; Pastukhov, Valery V.; Barkov, Leonid A.; Sychev, Pavel M.; Dolgov, Sergei I.; Novikov, Dmitry S.; Mymrin, Sergei A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; and Shegai, Anatoly A., 4,244,204, Cl. 72-224.000.
- Patchornik, Abraham: See—
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- Pate, James E.: See—
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- Patsiora, Marya D.: See—
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- Paul Revere Corporation: See—
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- Paulet, Jean F.; and Boetsch, Bruno, to Swiss Aluminium Ltd. Acidic electrolyte containing Sn²⁺ ions. 4,244,791, Cl. 204-54.00R.
- Paulkovich, John; and Rodriguez, O. Ernest, to United States of America, National Aeronautics and Space Administration. Buck/boost regulator. 4,245,286, Cl. 363-21.000.
- Pavitt, Frederick C. Apparatus to aid alignment of motor vehicle wheels. 4,244,112, Cl. 33-203.150.
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- Peddinghaus, Gunter: See—
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- Peelies, Peyton Z., Jr.; and Green, Augustus H., Jr., to United States of America, Army. Highly-linear closed-loop frequency sweep generator. 4,245,196, Cl. 331-178.000.
- Pellaton, Roy C., to Guntert & Pellaton, Inc. Onion conveyor and slicer. 4,244,252, Cl. 83-356.300.
- Pellicano, Joseph: See—
Rovin, Herman; Levine, Lawrence J.; Opuzanski, Theodore; Pellicano, Joseph; and Swenson, Alan F., 4,244,313, Cl. 112-279.000.
- Peltz, Alan, to Halcon Research and Development Corporation. Glycol ester preparation. 4,245,114, Cl. 560-246.000.
- Pelz, Lothar: See—
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- Pennwalt Corporation: See—
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- Perkin-Elmer Corporation, The: See—
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- Permavision: See—
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- Perri, Joseph A., to Insul Company, Inc. Corner wedging consumable hot top. 4,244,352, Cl. 249-197.000.
- Perron, James S.: See—
Terkelsen, Bruce E.; Cybulsky, Michael; and Perron, James S., 4,244,551, Cl. 249-134.000.
- Perrson, Nils H. A.: See—
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- Pertec Computer Corporation: See—
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- Peter, Julius; Johansen, Peter; and Mauk, Gerhard, to Continental Gummi-Werke Aktiengesellschaft. Pneumatic vehicle tire with at least two tread strips arranged in spaced relationship to each other. 4,244,415, Cl. 152-361.00R.
- Peters, Arthur: See—
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- Peters, Carl H., to Platanufaktur AB. Composite packing. 4,244,473, Cl. 206-605.000.
- Peters & Company, Inc.: See—
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- Peters, Thomas A., to Phillips Petroleum Company. Heat-shrinkable or heat-expandable products from hydrogenated polybutadiene. 4,245,065, Cl. 525-334.000.
- Peterson, Charles L.; and Dowding, Edwin A., to Idaho Research Foundation, Inc. Minimum tillage planter. 4,244,306, Cl. 111-7.000.
- Peterson, William H., to Pullman Incorporated. Railway side door hopper car locking mechanism. 4,244,299, Cl. 105-251.000.
- Peterson, Goran P.; and Lindholm, Lars-Erik, to Selcom AB. Method of improving the linearity of a double-face lateral photo detector for position determining purposes. 4,244,759, Cl. 156-649.000.

- Peterson, Stig A.; Erikson, Bengt S.; and Fridfeldt, Arne C., to Boliden Aktiebolag. Method of producing blister copper from copper raw material containing antimony. 4,244,733, Cl. 75-72.000.
- Petrova, Natalya P.: See—
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- Pfizer Inc.: See—
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Kita, Donald A.; and Hall, Karlene E., 4,245,049, Cl. 435-138.000.
Nagai, Susumu; Ueda, Akira; and Toyoda, Kunie, 4,245,053, Cl. 521-38.000.
- Pflaumer, Phillip F., to Procter & Gamble Company. The Nether garment for and method of controlling crotch odors. 4,244,059, Cl. 2-400.000.
- PHD, Inc.: See—
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- Philip Morris Incorporated: See—
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- Phillippe, Maurice, to Ateliers des Charmilles S.A. Control installation for at least two hydraulic turbines. 4,245,163, Cl. 290-52.000.
- Phillips, Bobby M.; Casey, James O., Jr.; and Gregory, Dale R., to Eastman Kodak Company. Textile filaments and yarns. 4,245,001, Cl. 428-224.000.
- Phillips Petroleum Company: See—
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Uraneck, Carl A.; and Clark, Earl, 4,245,072, Cl. 526-195.000.
- Phipps, Peter B. P.: See—
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- Photomailer, Inc.: See—
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- Pick, George G., to AM International, Inc. Inertia drive head for optical scanning and readout. 4,245,259, Cl. 358-285.000.
- Pidcock, Frederick, to Whirly Bird Services Limited. Container tie down. 4,244,670, Cl. 410-103.000.
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Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus; Pieper, Helmut; and Zimmermann, Rainer, 4,244,967, Cl. 424-300.000.
- Pierce, Donald C. Device for describing an ellipse. 4,244,106, Cl. 33-31.000.
- Pierce, Larry L. Thermoplastic sheet strip heater assembly. 4,244,771, Cl. 156-499.000.
- Pierrot, Victor C.: See—
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- Pietri, Charles E.: See—
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- Pilgeram, Laurence. Detection and measurement of circulating fibrin. 4,245,040, Cl. 435-13.000.
- Pingry, Larry J.: See—
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- Pitney Bowes Inc.: See—
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- Pittsburgh-Des Moines Steel Company: See—
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- Plante, Robert F., to Whirlpool Corporation. Packaging system. 4,244,471, Cl. 206-586.000.
- Plastronics, Inc.: See—
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- Platka, William J., III; and Ganger, Richard A., to P & G Products, Inc. Method for making simulated marble and product of the method. 4,244,993, Cl. 428-15.000.
- Platmanufaktur AB: See—
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- Plessey Handel und Investments AG: See—
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- Plisky, John J.: See—
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- Plotz, Wolfgang: See—
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- Plumadore, John D., to James River Graphics, Inc. Electrographic development electrode. 4,244,321, Cl. 118-648.000.
- Plunkett, Allan B., to General Electric Company. Method and apparatus for generating an air gap flux signal for an AC machine from AC line voltage and current values. 4,245,181, Cl. 318-805.000.
- Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: See—
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- Poclain: See—
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- Poetsch, Dieter, to Robert Bosch GmbH. Method and system for transmitting and/or recording color T.V. signals. 4,245,235, Cl. 358-14.000.
- Pohio, Gerald R.; and Olson, Richard O., to Diamond Shamrock Corporation. Monopolar membrane cell having metal laminate cell body. 4,244,802, Cl. 204-252.000.
- Polacek, David D. Indoor plant growing apparatus. 4,244,145, Cl. 47-17.000.
- Polaroid Corporation: See—
Aldrich, J. Winthrop; and Stella, Joseph A., 4,244,640, Cl. 352-130.000.
Moodie, Donald E., 4,244,535, Cl. 242-71.800.
- Polhede, Wilhelm; and Reiter, Reinhard, to Leybold-Heraeus GmbH. High vacuum seal. 4,244,557, Cl. 251-167.000.
- Polis, B. David, deceased (by Polis, Edith, executrix); and Kwong, Sara F., to United States of America, Navy. Method of preparing prostaglandin B₁ derivatives. 4,245,111, Cl. 560-121.000.
- Polis, Edith, executrix: See—
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- Polyakov, Anatoly M.: See—
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- Polyprodukte AG: See—
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- Pong, Raymond: See—
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- Ponsford, Roger J.; and Southgate, Robert, to Beecham Group Limited. Novel intermediates for β -lactams. 4,245,089, Cl. 544-71.000.
- Population Council, Inc.: See—
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- Porter, David R. Sun tracking system for solar collector. 4,245,153, Cl. 250-203.00R.
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- Rabenhorst, David W., to Johns Hopkins University. The Elastic internal flywheel gimbal. 4,244,240, Cl. 74-572.000.
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- Randall, James E., to Lin-N-Look Company, Inc. Disposable cap construction. 4,244,058, Cl. 2-197.000.
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- Richter, David L., to Rockwell International Corporation. Processing system with dual buses. 4,245,344, Cl. 371-68.000.
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- Rollenhagen, Janet T. Protective panty brief. 4,244,367, Cl. 128-288.000.
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- Rowe, Richard D. Hand tool for working with wire and cable. 4,244,067, Cl. 7-107.000.
- Rowland, William P., to Reflexite Corporation. Apparatus for compression molding of retroreflective sheeting. 4,244,683, Cl. 425-143.000.
- Rowley, David S.; Walker, Bruce H.; and Fielder, Coy M., to Christensen, Inc. Earth-boring drill bits. 4,244,432, Cl. 175-329.000.
- Royer, Henri J.: See—
Chabanon, Francois M.; and Royer, Henri J., 4,244,148, Cl. 47-58.000.
- RTL Contactor Holding S.A.: See—
Hohlbaum, Theodor J. M., 4,244,656, Cl. 366-180.000.
- Hohlbaum, Theodor J. M., 4,244,923, Cl. 422-225.000.
- Rucinaki, Marek, to Fabryka Narzedzi Chirurgicznych. Instrument for removing exchangeable blades from surgical scalpels. 4,244,094, Cl. 29-270.000.
- Rudolph, Dale C.; Ray, Michael D.; Hansher, Richard L.; and Daugherty, Paul W., to Unirad Corporation. Interchangeable component identification system. 4,244,227, Cl. 73-621.000.
- Rudazinat, Willy, to Hauni-Werke Korber & Co. KG. Apparatus for transporting tools in machines for the processing of rod-shaped articles. 4,244,250, Cl. 83-310.000.
- Rufer, Clemens: See—
Schroder, Eberhard; Rufier, Clemens; Bottcher, Irmgard; and Kapp, Joachim-Friedrich, 4,244,960, Cl. 424-263.000.
- Rukawina, Emma. Mattress assembly. 4,244,066, Cl. 5-463.000.
- Rummel, Theodor; and Heinemann, Wilfried, to Concast AG. Method of influencing the distribution of different constituents in an electrically conductive liquid. 4,244,796, Cl. 204-140.000.
- Rushing, Allen J.; Benwood, Bruce R.; and LaChapelle, Paul A., to Eastman Kodak Company. Apparatus and method for low sensitivity corona charging of a moving photoconductor. 4,245,272, Cl. 361-229.000.
- Russell, Alvin W.: See—
Fischer, Leonard G.; Kovacs, Peter; Russell, Alvin W.; and Vey, John E., 4,244,980, Cl. 426-554.000.
- Russell, Dennis E., to Alton Box Board Company. Paperboard picture display. 4,244,128, Cl. 40-154.000.
- Rust, Robert R., to Universal Foods Corporation. Apparatus and method for making cheese. 4,244,286, Cl. 99-459.000.
- Rutter, Harold T.; and Jaycox, Doyle W., to Sunnen Products Company. Connection means. 4,244,195, Cl. 64-9.00R.
- Ruzand, Andre E.; and Ernst, Francois L., to Etablissements Ruby. Box erecting apparatus. 4,244,282, Cl. 493-23.000.
- Rychlewski, Thaddeus V.: See—
Bergamo, Robert L.; Rychlewski, Thaddeus V.; and Wirth, Siegfert M., 4,245,019, Cl. 430-24.000.
- Ryder, Leonard B. Method for injection blow molding. 4,244,913, Cl. 264-348.000.
- Rywalski, Heinrich: See—
Baumgart, Frank; Jorde, Joachim; Opitz, Karl; and Rywalski, Heinrich, 4,244,482, Cl. 220-3.000.
- S.M.N. Corporation: See—
Seem, Charles T., 4,244,151, Cl. 52-60.000.
- Seam, John C., to Dow Corning Corporation. Silicone emulsion which provides an elastomeric product and methods for preparation. 4,244,849, Cl. 260-29.20M.
- Sachs, Samuel L.; and Hill, Freeman K., to Johns Hopkins University. The Ultrasonic cleaning method and apparatus for heat exchangers. 4,244,749, Cl. 134-1.000.
- Sadamatsu, Shigeru; and Kimura, Masakatsu, to Fuji Xerox Co., Ltd. Dry electrophotographic developers. 4,245,022, Cl. 430-110.000.
- Saeiki, Kazumi: See—
Munakata, Tomohiko; Saeiki, Kazumi; Goto, Kazuhiro; and Ikegami, Kiyoteru, 4,244,952, Cl. 424-256.000.
- Saeiki, Yoshifumi: See—
Matsumoto, Katsuaki; Saeiki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
- Sagami Chemical Research Center: See—
Kondo, Kiyosi; Tunemoto, Daiji; Negishi, Akira; and Suda, Minoru, 4,245,108, Cl. 549-79.000.
- Sagawa, Sizu. Pipeline pig. 4,244,073, Cl. 15-104.06A.
- Sagert, Darrell L. Hand truck for banded masonry products. 4,244,595, Cl. 280-47.290.
- Saijo, Takao: See—
Toriumi, Shiro; Endo, Hiroshi; Saijo, Takao; Saito, Takanori; and Kamimura, Kuniaki, 4,244,642, Cl. 353-27.00R.
- Saint-Gobain Industries: See—
Moliner, Jacques; Mahler, Jacques; Bocquet, Gilbert; de Massey, Bernard; and Holtmann, Robert, 4,244,844, Cl. 260-9.000.
- St. Laurent, Wilfred H., Jr., to Bellofram Corporation. Sealed shaft of reduced diameter. 4,244,589, Cl. 277-30.000.
- Saito, Kunio: See—
Terunuma, Mutsuhiro; Shima, Seiya; and Saito, Kunio, 4,245,293, Cl. 363-87.000.
- Saito, Masaki: See—
Matsumoto, Katsuaki; Saeiki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
- Saito, Takanori: See—
Toriumi, Shiro; Endo, Hiroshi; Saijo, Takao; Saito, Takanori; and Kamimura, Kuniaki, 4,244,642, Cl. 353-27.00R.
- Sakaev, Vagiz S.: See—
Kalinichenko, Anatoly Y.; Kirillov, Viktor I.; Rabinovich, Aron A.; Maleev, Vladimir V.; and Sakaev, Vagiz S., 4,245,292, Cl. 363-87.000.
- Sakai, Kiyoshi: See—
Kazami, Takeo; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masaomi; Tsutsui, Kyoji; and Ohta, Masafumi, 4,245,021, Cl. 430-58.000.
- Sakura Instrument Co. Ltd.: See—
Takahashi, Isao, 4,244,219, Cl. 73-309.000.
- Salk Institute for Biological Studies, The: See—
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,244,946, Cl. 424-177.000.
- Salvadori, Lawrence A.: See—
Manschet, James G.; Salvadori, Lawrence A.; and Mather, Byron L., 4,244,920, Cl. 422-102.000.
- Samsonite Corporation: See—
Gregg, James S., 4,244,086, Cl. 24-205.11L.
- Samuel Colgate, Robert Ramey and Associates, A Limited Partnership: See—
Colgate, Samuel D.; and Ramey, Robert A., 4,244,494, Cl. 222-1.000.
- Samuelson, Gustav B. R.: See—
Carlsson, Enar I.; Persson, Nils H. A.; Samuelson, Gustav B. R.; and Wetterlin, Kjell I. L., 4,244,969, Cl. 424-330.000.
- Sandberg, Robert J.: See—
Giske, Edward T.; and Sandberg, Robert J., 4,245,148, Cl. 219-492.000.
- Sando Iron Works Co., Ltd.: See—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,244,200, Cl. 68-202.000.
- Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Apparatus for supplying a definite amount of a treating liquid to a textile product continuously. 4,244,200, Cl. 68-202.000.
- Sandor Ltd.: See—
Gertisser, Berthold; and Henzi, Beat, 4,244,872, Cl. 260-343.450.
- Sanford, Lawrence. Inflatable packer construction. 4,244,590, Cl. 277-34.300.
- Sangamo Weston Controls, Limited: See—
Pullen, Roger J., 4,244,229, Cl. 73-722.000.
- Sano, Yasuro, to Janome Sewing Machine Co., Ltd. Zigzag sewing machine with a pattern selecting device. 4,244,311, Cl. 112-158.00A.
- Santilli, Arthur A.: See—
Scotese, Anthony C.; Morris, Robert L.; and Santilli, Arthur A., 4,245,094, Cl. 544-279.000.
- Sanui, Yoshio: See—
Uno, Makoto; Sanui, Yoshio; and Yasui, Yasuyoshi, 4,244,242, Cl. 74-710.000.
- Sardemann, Jurgen: See—
von Starck, Axel; Gerbig, Hans-Erwin; Schrewe, Hans; and Sardemann, Jurgen, 4,244,419, Cl. 164-147.000.
- Sarusawa, Yukio: See—
Takahashi, Keiichi; Aoyama, Hiroshi; Hirakawa, Kikuya; and Sarusawa, Yukio, 4,244,491, Cl. 220-270.000.
- Sasaki, Masaomi: See—
Kazami, Takeo; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masaomi; Tsutsui, Kyoji; and Ohta, Masafumi, 4,245,021, Cl. 430-58.000.
- Sasaki, Takehiko; and Yashiro, Yuji, to Sharp Kabushiki Kaisha. Go board using liquid crystal display or electrochromic display. 4,244,635, Cl. 350-336.000.
- Sasaki, Toshio; and Kamiya, Osamu, to Brother Kogyo Kabushiki Kaisha. Zigzag sewing machine with a trimming device. 4,244,310, Cl. 112-126.000.
- Sasaki, Yoshiyuki; Kumakawa, Shiro; and Kaseoka, Katsuyuki, to Teijin Limited. Bulkable filamentary yarn. 4,244,171, Cl. 57-208.000.
- Sato, Kanji; Kushihe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, to Tokai Denka Kogyo Kabushiki Kaisha. Method of dyeing fibrous products. 4,244,690, Cl. 8-465.000.
- Sato, Kazuhiro; Umemoto, Masuo; Izumita, Morishi; Akiyama, Toshiyuki; and Nagahara, Shusaku, to Hitachi, Ltd. Solid-state color imaging device. 4,245,241, Cl. 358-44.000.
- Sato, Shigeji: See—
Yamahira, Yoshiya; Fujioka, Keiji; Okuzawa, Yoshiko; Miura, Seiko; and Sato, Shigeji, 4,244,943, Cl. 424-94.000.
- Sato, Susumu: See—
Yasuda, Etsuro; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,244,918, Cl. 422-95.000.
- Sato, Tadaaki: See—
Hata, Kunio; Ohshima, Kihachiro; Kano, Isao; Matsui, Motoi; and Sato, Tadaaki, 4,245,048, Cl. 435-133.000.

Sato, Tsutomu: See—
Isayama, Takuro; Takemoto, Takeshi; Sato, Tsutomu; and Fukazawa, Takao, 4,245,224, Cl. 346-75.000.

Sato, Yoshito: See—
Uehara, Kazuo; Toma, Hideaki; and Sato, Yoshito, 4,244,678, Cl. 417-218.000.

Saudek, Vladimir: See—
Drobnik, Jaroslav; Kalal, Jaroslav; Labaky, Jiri; Saudek, Vladimir; and Svec, Frantisek, 4,245,064, Cl. 525-329.000.

Sauer, Heinz, to Rasmussen GmbH. Hose clip, 4,244,088, Cl. 24-274.00R.

Savage, David G.: See—
Oransky, Raymond L.; and Savage, David G., 4,245,003, Cl. 428-323.000.

Savin Corporation: See—
Schultes, Max; and Eberlein, Dietmar, 4,244,648, Cl. 355-14.0SH.

Sawada, Shigeru: See—
Tamai, Kazuto; Sawada, Shigeru; Nakamura, Osamu; and Nakagaki, Norio, 4,244,290, Cl. 101-99.000.

Sawaya, Showhachi: See—
Masumoto, Hakaru; and Sawaya, Showhachi, 4,244,754, Cl. 148-12.00R.

Saylor, Richard: See—
O'Connor, Lorne D.; Saylor, Richard; and Buckser, Stephen H., 4,245,215, Cl. 340-310.00A.

Scalf, Michael R., Sr.: See—
Naylor, Douglas W. J.; and Scalf, Michael R., Sr., 4,244,628, Cl. 308-6.00R.

Scapa-Porritt Limited: See—
Gisbourne, Bryan J., 4,244,084, Cl. 24-33.00C.

Scarton, Henry A.; Kennedy, Warren C.; and Gaylo, Keith R., to Rensselaer Polytechnic Institute. Method and apparatus for treating exhaust gases particularly for air-operated tools, 4,244,442, Cl. 181-230.000.

Schaab, Rudolph S.; and Harralson, John C. Sliver loop knit fabric, 4,244,198, Cl. 66-191.000.

Schaefer, Horst, to Honeywell Inc. Receiver circuit for an echo-sounding system, 4,245,332, Cl. 367-98.000.

Scharf, Karl-Gunter: See—
Kunzel, Werner; Scharf, Karl-Gunter; Spielau, Paul; and Weiss, Richard, 4,244,860, Cl. 260-42.150.

Schauer, Alois: See—
Baur, Guenter; Greubel, Waldemar; Krueger, Hans; and Schauer, Alois, 4,244,636, Cl. 350-345.000.

Scheffbauer, Rupert J., to Inmont Corporation. Calcium resinate and inks, 4,244,866, Cl. 260-23.70C.

Schellhorn, Robert L.: See—
Landry, Norman R.; Williams, Samuel L.; and Schellhorn, Robert L., 4,245,210, Cl. 338-314.000.

Scherberich, Paul, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the recovery of pure L-cystine, 4,245,117, Cl. 562-554.000.

Schering, Aktiengesellschaft: See—
Schroder, Eberhard; Rufer, Clemens; Bottcher, Irmgard; and Kapp, Joachim-Friedrich, 4,244,960, Cl. 424-263.000.

Schulz, Heinz; and Arndt, Friedrich, 4,245,101, Cl. 548-127.000.

Scheu Manufacturing Company: See—
Velle, Wallace W.; and Macias, Hector, 4,244,349, Cl. 126-110.00C.

Schillfarth, Karlchristian: See—
Aydin, Ingrid; Schillfarth, Karlchristian; and Seidel, Bernard, 4,244,987, Cl. 427-130.000.

Schleuning, Wolf-Dieter: See—
Reich, Edward; Guha, Arabinda; and Schleuning, Wolf-Dieter, 4,245,051, Cl. 435-212.000.

Schlumberger Technology Corporation: See—
Coates, George R., 4,245,313, Cl. 364-422.000.

Schmid, Eckhardt: See—
Prohaska, Hans; and Schmid, Eckhardt, 4,244,210, Cl. 73-113.000.

Schmidt, Michael P.: See—
Anderson, Leroy E.; Schmidt, Michael P.; and Weaver, William W., 4,244,202, Cl. 72-49.000.

Schmitt, Erich: See—
Konieczny, Klaus; Schmitt, Erich; and Buhles, Adolf, 4,244,626, Cl. 299-90.000.

Schmitz, Nicholas A., to General Electric Company. Inverter for operating a gaseous discharge lamp, 4,245,177, Cl. 315-205.000.

Schnause, Rolf. Manufacture of flowable composite particulate material, 4,244,903, Cl. 264-68.000.

Schnurle, Hans: See—
Herth, Harro; Schnurle, Hans; Drews, Ulrich; Singer, Erich; Kraus, Bernd; and Werner, Peter, 4,244,340, Cl. 123-440.000.

Schonberger, Reinhold: See—
Paschen, Peter; Rao, Chatty; Preuss, Helmut; Wenzel, Werner; Gudenau, Heinrich-Wilhelm; and Schonberger, Reinhold, 4,244,905, Cl. 264-86.000.

Schrecongost, Richard P.: See—
Malagari, Frank A., Jr.; and Schrecongost, Richard P., 4,244,757, Cl. 148-111.000.

Schreinemacher, Herbert: See—
Henninga, Detlev; and Schreinemacher, Herbert, 4,244,830, Cl. 106-39.500.

Schrewe, Hans: See—
von Starck, Axel; Gerbig, Hans-Erwin; Schrewe, Hans; and Sar-demann, Jurgen, 4,244,419, Cl. 164-147.000.

Schrock, Richard R., to Massachusetts Institute of Technology. Dimerization of olefins using tantalum and niobium catalysts, 4,245,131, Cl. 585-511.000.

Schroder, Eberhard; Rufer, Clemens; Bottcher, Irmgard; and Kapp, Joachim-Friedrich, to Schering, Aktiengesellschaft. Indanyl derivatives and their use, 4,244,960, Cl. 424-263.000.

Schroeder, Diether. Method and apparatus for detecting and measuring inclusions in subsoil, 4,245,191, Cl. 324-337.000.

Schulenberg, John W., to Sterling Drug Inc. Acridine compounds and methods of combatting viruses with them, 4,244,954, Cl. 424-257.000.

Schulman, Kenneth B., to Millen Industries, Inc. Shoe box, 4,244,508, Cl. 229-34.00R.

Schulte, Elwood V., to Koppers Company, Inc. Process for minimizing the deposition of materials in the ammonia liquor coolers in the coking of carbonaceous materials, 4,244,711, Cl. 55-89.000.

Schultes, Max; and Eberlein, Dietmar, to Savin Corporation. Misfeed detector for copy machine, 4,244,648, Cl. 355-14.0SH.

Schulz, Heinz; and Arndt, Friedrich, to Schering Aktiengesellschaft. Method of preparation and use of N-phenyl-N'-1,2,3-thiadiazole-5-ylthiourea, 4,245,101, Cl. 548-127.000.

Schurman, Peter T. Molded plastic snap-on latch for plastic receptacle, 4,244,612, Cl. 292-249.000.

Schwalley, Lawrence L.; and Speak, Richard C., to United States Borax & Chemical Corporation. Carpet cleaning and deodorizing compositions, 4,244,834, Cl. 252-106.000.

Schwam, Stuart A.: See—
Hawthorne, V. Terrey; and Schwam, Stuart A., 4,244,298, Cl. 105-197.00D.

Schwartz, Clifford W.: See—
Chwalek, Vincent P.; and Schwartz, Clifford W., 4,244,748, Cl. 127-67.000.

Schwarzer, Klemens; Kroger, Wolfgang; Escherich, Karl-Heinz; Kasper, Klaus; and Altes, Jurgen, to Kernforschungsanlage Julich. Gesellschaft mit beschränkter Haftung. Earth covered in-the-ground nuclear reactor facility, 4,244,153, Cl. 52-169.500.

Schweizer, Eduard H. Apparatus for cleaning records, 4,244,587, Cl. 15-104.800.

Schwerdtel, Wulf: See—
Halcour, Kurt; Waldmann, Helmut; and Schwerdtel, Wulf, 4,244,877, Cl. 260-346.300.

SCM Corporation: See—
Kane, Bernard J.; and Von Genk, Richard A., 4,244,890, Cl. 564-455.000.

Scotese, Anthony C.; Morris, Robert L.; and Santilli, Arthur A., to American Home Products Corporation. 5-Amino-2,8-dialkyl-7,8-dihydro-7-oxo-pyrido[2,3-d]pyrimidine-6 carboxylic acid derivatives, 4,245,094, Cl. 544-279.000.

Scott, John C., to General Electric Company. Removable instrumentation probe, 4,244,221, Cl. 73-349.000.

Scott, John C.: See—
Hoyer, John Z.; and Scott, John C., 4,244,222, Cl. 73-349.000.

Scott, William G.: See—
Wilson, Thomas D.; and Scott, William G., 4,244,409, Cl. 150-0.500.

Scott, Wilmore S., Jr., to General Electric Company. Energy saving furnace and method of operating same, 4,244,686, Cl. 432-26.000.

Scriven, Eric Thomas: See—
Wohrl, Josef, 4,244,218, Cl. 73-309.000.

Scully, Terrence A. Highway game, 4,244,143, Cl. 46-202.000.

Searle, John L.: See—
Green, Norman F.; Keiles, Yoel; Newbold, William F.; Searle, John L.; and Wilda, Douglas W., 4,244,226, Cl. 73-703.000.

Seefeld, Dean E.; and Campbell, Hallis D., to Gehl Company. Rotary baler for forming cylindrical hay bales, 4,244,167, Cl. 56-341.000.

Seel, Jerry E. Container for potable liquid, 4,244,477, Cl. 215-229.000.

Seem, Charles T., to S.M.N. Corporation. Roof construction, 4,244,151, Cl. 52-60.000.

Segawa, Yoshihiro: See—
Yasuda, Eituro; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,244,918, Cl. 422-95.000.

Seggio, Gianfranco. Anti-skid device for vehicle wheels, 4,244,412, Cl. 152-218.000.

Segransan, Michel; and Joly, Jean-Claude, to Societe la Cellophane. Process and apparatus for the manufacture of films by electrostatic application, 4,244,894, Cl. 264-22.000.

Seidel, Bernard: See—
Aydin, Ingrid; Schillfarth, Karlchristian; and Seidel, Bernard, 4,244,987, Cl. 427-130.000.

Seidl, Robert M.; and Enright, Francis J., to Allis-Chalmers Corporation. Triple rotary gas lock seal system for transferring coal continuously into, or ash out of, a pressurized process vessel, 4,244,705, Cl. 48-77.000.

Seiner, Jerome A.: See—
Barcikowski, Donna M.; Temple, Rodger G.; Jones, James E.; and Seiner, Jerome A., 4,244,074, Cl. 15-114.000.

Seitetsu Kagaku Co., Ltd.: See—
Matsumoto, Teiziro; Matsuda, Moriyasu; Mizokami, Hiroshi; Kibamoto, Tsuneo; and Hatta, Katsuma, 4,245,127, Cl. 568-779.000.

Sekiguchi, Tetsuo: See—
Minagawa, Motonobu; Sekiguchi, Tetsuo; and Nakazawa, Kenji, 4,244,848, Cl. 260-23.0XA.

Sekine, Hironaka: See—
Suzuki, Takeshi; Chiba, Hiromasa; Yasunaga, Ryohichi; and Sekine, Hironaka, 4,245,062, Cl. 525-323.000.

Sekiya, Fukuo; and Yamada, Takashi, to Citizen Watch Company Limited. Time correction system for an electronic timepiece, 4,245,338, Cl. 368-188.000.

Selcom AB: See—
Peterson, Goran P.; and Lindholm, Lars-Erik, 4,244,759, Cl. 156-649.000.

Selfridge, Philip T.: See—
Leonard, John B., Jr.; and Selfridge, Philip T., 4,244,747, Cl. 106-271.000.

Sendai, Michiyuki: See—
Tushima, Susumu; Sendai, Michiyuki; and Shiraishi, Mitsuru, 4,245,088, Cl. 544-16.000.

Senzaki, Hiaso: See—
Shioi, Ryoichi; Umeya, Kazumasa; Yonezuka, Kazunari; and Senzaki, Hiaso, 4,245,146, Cl. 219-381.000.

Sequential Data Machines, Inc.: See—
Cook, George F., 4,245,228, Cl. 346-108.000.

Sera, Franklin J.; Gonda, William V.; and McDowell, Robert E., to FMC Corporation. Mechanism for destacking and discharging nested articles, 4,244,671, Cl. 414-128.000.

Serafini, Tito T.; and Delviga, Peter, to United States of America, National Aeronautics and Space Administration. Composition and method for making polyimide resin-reinforced fabric, 4,244,853, Cl. 260-33.40R.

Serafini, Tito T.; Delviga, Peter; and Vannucci, Raymond D., to United States of America, National Aeronautics and Space Administration. Curing agent for polyepoxides and epoxy resins and composites cured therewith, 4,244,857, Cl. 260-37.0EP.

Sergeev, Nikolai N.: See—
Vydrin, Vladimir N.; Pastukhov, Valery V.; Barkov, Leonid A.; Sychev, Pavel M.; Dolgov, Sergei I.; Novikov, Dmitry S.; Mymrin, Sergei A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; and Shegai, Anatoly A., 4,244,204, Cl. 72-224.000.

Service Equipment Design Co., Inc.: See—
Hauk, Ernest D.; and Kirkpatrick, Jesse C., 4,244,208, Cl. 73-46.000.

Setzer, Steven H.: See—
Fayer, Ervin; Setzer, Steven H.; and Gillette, Donald A., 4,244,513, Cl. 233-23.00R.

Seynhaeve, Andre G., to Societe Delsey. Suitcase with rollers, 4,244,452, Cl. 190-18.00A.

SGS-ATES Componenti Elettronici S.p.A.: See—
Bertotti, Franco; Catellani, Fausto; and Gavioli, Giuseppe, 4,245,209, Cl. 338-217.000.

Shackleton, Charles E. E.: See—
Lumsden, John; and Shackleton, Charles E. E., 4,244,929, Cl. 423-149.000.

Shaffer, John W., to GTE Products Corporation. Radiant energy activated pyrotechnic cap having desiccant therein, 4,244,295, Cl. 102-205.000.

Shaffer, John W.: See—
Bouchard, Andre C.; Armstrong, Donald E.; Sindlinger, Ronald E.; Shaffer, John W.; and Bricker, Daniel W., 4,245,279, Cl. 362-13.000.

Shalhoub, Ibrahim M.: See—
United States of America, National Aeronautics and Space Administration; Rosser, Robert W.; Shalhoub, Ibrahim M.; and Kwong, Hanoi, 4,245,085, Cl. 528-310.000.

Shanooki, Henry, to General Tire & Rubber Company. The Low-pressure low-temperature in-mold coating method, 4,245,006, Cl. 428-423.700.

Sharifov, Gabil S. O.: See—
Guseinov, Nazim M. O.; Aliev, Vagab S.; Mustafae, Alish I.; Zimin, Vladimir M.; Sverdllov, Rafael S.; Shkondina, Nina G.; Chianurashvili, Eleonora E.; Morozova, Margarita K.; Mirzoev, Rasim S. O.; Sharifov, Gabil S. O.; Dzhabiev, Ramiz A.; Oshin, Leonid A.; and Genin, Lemel S., 4,244,892, Cl. 570-223.000.

Sharp, Bernard C., to Parker-Hannifin Corporation. Mirror clamping assembly, 4,244,548, Cl. 248-481.000.

Sharp Kabushiki Kaisha: See—
Sasaki, Takehiko; and Yaishiro, Yuji, 4,244,635, Cl. 350-336.000.

Shaw, Terrence M.: See—
Baugh, James D.; Shaw, Terrence M.; Primus, Roy J.; and Glasson, Richard E., 4,244,330, Cl. 123-41.840.

Shegai, Anatoly A.: See—
Vydrin, Vladimir N.; Pastukhov, Valery V.; Barkov, Leonid A.; Sychev, Pavel M.; Dolgov, Sergei I.; Novikov, Dmitry S.; Mymrin, Sergei A.; Maxudov, Pulat S.; Sergeev, Nikolai N.; and Shegai, Anatoly A., 4,244,204, Cl. 72-224.000.

Shell Oil Company: See—
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Cavazza, Claudio, 4,244,467, Cl. 206-222.000.

Silver, Louis J. Pad holder for a scouring device, 4,244,075, Cl. 15-145.000.

Silver Street, Incorporated: See—
Hardy, Bruce N., 4,244,266, Cl. 84-411.00M.

Silverman, Ira, to Pertec Computer Corporation. Apparatus for mounting and aligning printed circuit board, 4,244,109, Cl. 33-180.00R.

- Silverman, Max. Hampers with improved lifting apparatus. 4,244,410, Cl. 150-51.000.
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- Absen, James W., 4,244,818, Cl. 210-721.000.
- Simpson, Clifford G. Hanging chair. 4,244,622, Cl. 297-273.000.
- Sindlinger, Norman E.: See—
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- Singer Company, The: See—
- Bialy, Edward, 4,244,312, Cl. 112-235.000.
- Onembo, Eli N., 4,244,314, Cl. 112-313.000.
- Singer, Erich: See—
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- Sinnreich, Joel: See—
- Batzer, Hans; Knobloch, Gerrit; and Sinnreich, Joel, 4,244,842, Cl. 260-3.300.
- Sintokogio Ltd.: See—
- Terada, Hideto; and Yosikawa, Masanori, 4,244,418, Cl. 164-147.000.
- Skalatsky, Viktor K.: See—
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- Slavens, John R., to Babcock & Wilcox Company, The. Industrial technique magnetic apparatus. 4,244,822, Cl. 210-222.000.
- Sloan, Tom J., to Allis-Chalmers Corporation. Tool bar wing fold restraining mechanism. 4,244,428, Cl. 172-126.000.
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- Smalley, Ned J., to Owens-Illinois, Inc. Tamperproof closure member. 4,244,479, Cl. 215-256.000.
- Smilges, Robert, to Abex Corporation. Counterbalance valve. 4,244,275, Cl. 91-420.000.
- Smith, Andrew L., to EMI Limited. Patterned layers including magnetizable material. 4,244,998, Cl. 428-195.000.
- Smith, Clay D.; and Keller, Douglas V., Jr., to Otis Industries, Ltd. Treating and cleaning coal methods. 4,244,699, Cl. 44-1.0SR.
- Smith, Clinton R.: See—
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- Rees, James D.; Redden, David N.; Smith, Craig A.; and Stiebitz, Paul H., 4,244,649, Cl. 355-61.000.
- Smith, Francis C. Fixing of ends of wood or reinforced plastic rungs into pultruded fiberglass reinforced plastic extension ladder stiles without the use of metal. 4,244,760, Cl. 156-65.000.
- Smith, Gordon E., to Quest Medical, Inc. Check valve for blood drawing apparatus. 4,244,379, Cl. 128-766.000.
- Smith International, Inc.: See—
- Kellner, Jackson M., 4,244,433, Cl. 175-344.000.
- Smith, Michael P.: See—
- Blackburn, Martin J.; Hayden, Steven Z.; and Smith, Michael P., 4,244,743, Cl. 106-55.000.
- Smith, Wayne E., to Armstrong Cork Company. Expandable rubber/resin blend and resulting foam. 4,245,055, Cl. 521-140.000.
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- Smitka, Gunter. Sheet-metal corner piece for joining profiles of gas duct flange joint. 4,244,609, Cl. 285-405.000.
- Smoak, Marvin P.: See—
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- Snyder, Robert G.; and Jack, Rohe D., Jr., to Engineering Industries, Inc. Bucket-like carton. 4,244,510, Cl. 229-52.0AL.
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- Yui, Hiroshi; Sobajima, Yoshihiro; Ichikawa, Ryoichi; and Ema, Shigekazu, 4,244,910, Cl. 264-328.120.
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- Foerster, Gerhard A.; and Soboleski, Thaddeus J., 4,244,129, Cl. 40-373.200.
- S.p.A. Luigi Rizzi & C.: See—
- Repetto, Silvio, 4,244,201, Cl. 69-9.000.
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- Traynard, Olivier; and Bruggeman, Jean-Pierre, 4,244,170, Cl. 57-124.000.
- Societe Anonyme DBA: See—
- Kervagoret, Gilbert, 4,244,390, Cl. 137-118.000.
- Societe Anonyme des Etablissements Staubli: See—
- Palau, Joseph; and Bourgeois, Pierre, 4,244,399, Cl. 139-1.00E.
- Societe d'Applications Generales d'Electricite et de Mecanique (SAGEM): See—
- Barriac, Jacques, 4,244,116, Cl. 33-304.000.
- Societe Delsey: See—
- Seynhaeve, Andre G., 4,244,452, Cl. 190-18.00A.
- Societe Europeenne de Propulsion: See—
- Habermann, Helmut, 4,244,629, Cl. 308-10.000.
- Societe Europeenne des Produits Refractaires: See—
- Remi, Jean-Pierre; and Gehin, Guy, 4,244,761, Cl. 156-71.000.
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- Segransan, Michel; and Joly, Jean-Claude, 4,244,894, Cl. 264-22.000.
- Societe Nationale de Siderurgie: See—
- Brauns, Frank E., 4,244,732, Cl. 75-38.000.
- Societe Nationale Industrielle Aerospatiale: See—
- Hoffman, Jean-Claude; Castanie, Francis; Crabere, Henri; Verdier, Jean-Pierre; and Voisin, Norbert, 4,245,341, Cl. 370-112.000.
- Societe Suisse pour l'Industrie Horlogere Management Services S.A.: See—
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- Sokol, Peter L. Illuminating device. 4,245,282, Cl. 362-84.000.
- Solvay & Cie.: See—
- Kondo, Yojo; Kasai, Toshikazu; and Kano, Yoshiaki, 4,245,071, Cl. 526-114.000.
- Noel, Stephane, 4,245,073, Cl. 526-230.500.
- Sony Corporation: See—
- Inoue, Makoto, 4,245,123, Cl. 568-577.000.
- Kokubo, Takashi; Takano, Yoshiaki; and Okuda, Minoru, 4,245,256, Cl. 358-254.000.
- Nagumo, Fumio, 4,245,252, Cl. 358-213.000.
- Southgate, Robert: See—
- Ponsford, Roger J.; and Southgate, Robert, 4,245,089, Cl. 544-71.000.
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- Speak, Richard C.: See—
- Schwalley, Lawrence L.; and Speak, Richard C., 4,244,834, Cl. 252-106.000.
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- Sperry Corporation: See—
- Chen, T. F., 4,244,318, Cl. 118-52.000.
- Pucher, Richard A., 4,244,162, Cl. 56-14.200.
- Sperry, John S.; and Krajicek, Richard W., to Carmel Energy, Inc. Method for controlling corrosion in thermal vapor injection gases. 4,244,684, Cl. 431-4.000.
- Spevack, Jerome S., to Deuterium Corporation. Dual temperature concentration system. 4,244,924, Cl. 422-256.000.
- Spielau, Paul: See—
- Kunzel, Werner; Scharf, Karl-Gunter; Spielau, Paul; and Weiss, Richard, 4,244,860, Cl. 260-42.150.
- Spille, Jurgen: See—
- Hemmerich, Heinz; Spille, Jurgen; Kranz, Dietmar; Rasche, Peter; and Rosenkranz, Hans J., 4,244,863, Cl. 260-42.550.
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- Finkelstein, Manuel; Dunkl, Franz S.; and Ross, Sidney D., 4,245,278, Cl. 361-433.000.
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- Brewbaker, James L.; Marzett, Rodrique L.; and Sprenger, William A., 4,245,068, Cl. 525-447.000.
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- Sprunger, Loren G., to International Harvester Company. Tilt steering column mechanism. 4,244,237, Cl. 74-493.000.
- Sainegurki, Eugen, to Combustion Engineering, Inc. Steam generator arrangement. 4,244,327, Cl. 122-235.00A.
- Stab, Rudolf: See—
- Fischer, Robert; and Stab, Rudolf, 4,244,461, Cl. 198-456.000.
- Stacheli, Nicolas; Maiocchi, Francesco; and Wuerth, Walter, to Oerlikon Italiana SpA. Homokinetic joint. 4,244,196, Cl. 64-21.000.
- Stamcarbon, B.V.: See—
- Friach, Kurt C.; Tummers, Daniel M. J.; and Te Nijenhuis, Anne, 4,245,080, Cl. 528-60.000.
- Standard Oil Company, The: See—
- Prem, Dorothy C.; Duke, June T.; and Ialey, Ralph E., 4,244,852, Cl. 260-31.8AN.
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- Bremer, Noel J.; and Dria, Dennis E., 4,244,879, Cl. 260-346.750.
- Standley, Paul M., to Dayco Corporation. Power transmission belt structure and method of making same. 4,244,234, Cl. 474-263.000.
- Stanke, Dennis A.; and Rentmeester, Paul C., to Trane Company, The. Temperature control for variable volume air conditioning system. 4,244,517, Cl. 236-49.000.
- Stauffer Chemical Company: See—
- Coll-Palagos, Miguel, 4,244,789, Cl. 204-20.000.
- Staunton, John J. J., to Perkin-Elmer Corporation, The. Temperature standard. 4,244,207, Cl. 73-1.00F.

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- Rabinowitz, Paul; and Stein, Alexander, 4,245,171, Cl. 307-426.000.
- Stein, Dennis: See—
- Campbell, Richard F.; and Stein, Dennis, 4,244,561, Cl. 254-288.000.
- Stein, Marc T., to Motorola Inc. Pulse generator for producing fixed width pulses. 4,245,167, Cl. 307-265.000.
- Steiner, Eginhard; Martin, Pierre; and Bellus, Daniel, to Ciba-Geigy Corporation. Process for producing 2,3,5-trichloropyridine, 2,4,4-trichloro-4-formyl-butynitrile as a novel compound and a process for producing it. 4,245,098, Cl. 546-250.000.
- Steinhage, Peter-Wilhelm, to Heimann GmbH. Passive infrared alarm device. 4,245,217, Cl. 340-355.000.
- Stella, Joseph A.: See—
- Aldrich, J. Winthrop; and Stella, Joseph A., 4,244,640, Cl. 352-130.000.
- Stephens, Richard B., to Exxon Research & Engineering Co. Optical recording medium. 4,245,229, Cl. 346-135.100.
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- Turner, Gilbert M.; and Stepp, Clarence L., 4,244,625, Cl. 299-83.000.
- Sterling Drug Inc.: See—
- Harrison, Thomas S., 4,244,493, Cl. 221-46.000.
- Schulenberg, John W., 4,244,954, Cl. 424-257.000.
- Stern, Donald J.: See—
- Allsop, Jon I.; and Stern, Donald J., 4,244,602, Cl. 280-821.000.
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- Condon, Richard W.; and Stewart, Charles, 4,244,436, Cl. 180-191.000.
- Stewart, Max E.; and Lucas, James R., to General Motors Corporation. Hydrostatic transmission lubrication. 4,244,279, Cl. 91-488.000.
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- Stielper, Henry J., to Black & Decker Manufacturing Co., The. Safety switch for portable power-operated device. 4,244,406, Cl. 144-136.00C.
- Stietenroth, Horst, to RCA Corporation. Electronic tone generator. 4,245,336, Cl. 368-75.000.
- Stignani, David A., to United States of America, Air Force. Fluidic pressure ratio sensor. 4,244,212, Cl. 73-115.000.
- Stiles, James A. R.: See—
- Haering, Rudolph R.; Stiles, James A. R.; and Brandt, Klaus, 4,245,017, Cl. 429-218.000.
- Stine, James G., to Automatic Devices Company. Door mounting and operating apparatus for security transaction enclosures and the like. 4,244,302, Cl. 109-2.000.
- Stokes, John J., Jr.; Cargnel, Robert A.; and Crooks, James H., to Aluminum Company of America. Recovery of flux residues from rinse water in dip brazing. 4,244,505, Cl. 228-223.000.
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- Storchheim, Samuel. Method of and apparatus for hot pressing particulates. 4,244,738, Cl. 75-211.000.
- Stotz & Co.: See—
- Koula, Zdenek, 4,244,999, Cl. 428-196.000.
- Stout, Jack. Modular structurally integrated solar panel. 4,244,355, Cl. 126-450.000.
- Strahan, Travis R. Stepped platform ramp eight for firearms. 4,244,114, Cl. 33-257.000.
- Straw, Alan, to Colgate-Palmolive Company. Self-opsified liquid hard surface cleaning compositions. 4,244,840, Cl. 252-340.000.
- Straza, George T. Solar heating shingle roof structure. 4,244,353, Cl. 126-432.000.
- Strickholm, George E.: See—
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- Strzelaki, Jozef: See—
- Tanior, Andrzej; Blicharz, Marian; Kania, Jozef; Strzelaki, Jozef; and Krack, Ignacy, 4,244,921, Cl. 422-161.000.
- Stuenkel, Robert E., to Gates Rubber Company, The. Female coupling with staple lock. 4,244,608, Cl. 285-305.000.
- Stuhmer, Werner: See—
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- Koosy, Judit; Kasztreiner, Endre; Huarti, Zsuzsa; Kenessey, Agnes; Cseh, Gyorgy; Szilagyi nee Pap, Veronika; and Stvertczky nee Sztrokay, Judit, 4,244,871, Cl. 260-239.700.
- Subbanna, Somanahalli N.; Morgan, Thomas R.; and Frick, Douglas G., to Allied Chemical Corporation. Method for production of alkali metal chromates from chrome ores. 4,244,925, Cl. 423-61.000.
- Suciu, Paul I., to Bell Telephone Laboratories, Incorporated. Semiconductor CCD transversal filter with controllable threshold level. 4,245,199, Cl. 333-165.000.
- Suda, Minoru: See—
- Kondo, Kiyoshi; Tunemoto, Daiei; Negishi, Akira; and Suda, Minoru, 4,245,108, Cl. 549-79.000.
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- Sugimoto, Noboru: See—
- Taneda, Yukinori; Kobayashi, Takashi; Yano, Kiyoshi; Isobe, Mitsunobu; and Sugimoto, Noboru, 4,244,539, Cl. 242-158.00R.
- Sugiura, Mamoru: See—
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- Sulzer Brothers Limited: See—
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- Ohno, Nobuo; Miyakado, Masakazu; and Hirai, Hajime, 4,245,116, Cl. 562-401.000.
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- Tanno, Norihiko; Harimoto, Takashi; Ueda, Shinzi; and Tobiki, Hisao, 4,244,870, Cl. 260-239.100.
- Yamahira, Yoshiya; Fujioka, Keiji; Okuzawa, Yoshiko; Miura, Seiko; and Sato, Shigeji, 4,244,943, Cl. 424-94.000.
- Sumitomo Light Metal Industries, Ltd.: See—
- Tanabe, Zenichi; Baba, Yoshio; Fukui, Toshiyasu; and Kimura, Satochi, 4,244,756, Cl. 148-32.000.
- Sun Chemical Corporation: See—
- Williams, Robert; and Rohr, Albin, 4,244,292, Cl. 101-350.000.
- Sundstrand Corporation: See—
- Glennon, Timothy F., 4,245,183, Cl. 322-28.000.
- Sundwiger Eisenhutte Maschinenfabrik Grah & Co.: See—
- Rennebaum, Heinrich; and Kakoschke, Benito, 4,244,534, Cl. 242-72.100.
- Sunkist Growers, Inc.: See—
- Varon, Miguel A.; and Paddock, Paul F., 4,244,763, Cl. 156-74.000.
- Sunnen Products Company: See—
- Rutter, Harold T.; and Jaycox, Doyle W., 4,244,195, Cl. 64-9.00R.
- Suzuki, Fuzio: See—
- Hasegawa, Junzo; Yoshida, Kazunori; Suzuki, Fuzio; Suzuki, Hajime; Arakawa, Hiroshi; Kobayashi, Akira; Arakawa, Akio; and Yamazato, Munekichika, 4,244,402, Cl. 139-435.000.
- Suzuki, Hajime: See—
- Hasegawa, Junzo; Yoshida, Kazunori; Suzuki, Fuzio; Suzuki, Hajime; Arakawa, Hiroshi; Kobayashi, Akira; Arakawa, Akio; and Yamazato, Munekichika, 4,244,402, Cl. 139-435.000.
- Suzuki, Kiyonori; Eto, Takeaki; Otsuka, Takeyasu; Abe, Shozo; and Yoshikawa, Sadao, to Soda Koryo Kabushiki Kaisha. Omega-hydroxy or acyloxy-alkyl-y-butyrolactones. 4,244,873, Cl. 260-343.600.
- Suzuki, Masato; Mima, Yasushi; and Okamoto, Kentaro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Remote control wire apparatus. 4,244,238, Cl. 74-501.00R.
- Suzuki, Masato: See—
- Murakami, Hiromi; Suzuki, Masato; and Suzuki, Tutomu, 4,245,207, Cl. 336-65.000.
- Suzuki, Norihiko: See—
- Iwao, Souichi; Suzuki, Norihiko; Doi, Yasuhiko; Shimizu, Shigemitsu; and Morikawa, Takeshi, 4,244,251, Cl. 83-349.000.
- Suzuki, Takashi; Tateishi, Akira; and Naito, Susumu, to Mitsubishi Gas Chemical Company, Inc. Process for producing terephthalic acid. 4,245,078, Cl. 562-412.000.
- Suzuki, Takashi; Chiba, Hiromasa; Yasunaga, Ryohichi; and Sekine, Hironaka, to Chisso Corporation. Process for producing propylene-ethylene copolymers. 4,245,062, Cl. 525-323.000.
- Suzuki, Tutomu: See—
- Matsumoto, Katsuki; Saeki, Yoshifumi; Tazawa, Osamu; Koeaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tutomu; Takaoaka, Saburo; Suzuki, Tutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kuniaki; Tada, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
- Suzuki, Tutomu: See—
- Murakami, Hiromi; Suzuki, Masato; and Suzuki, Tutomu, 4,245,207, Cl. 336-65.000.
- Suzuki, Yoshiaki: See—
- Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,245,018, Cl. 430-14.000.
- Svec, Frantisek: See—
- Drobnik, Jaroslav; Kalal, Jaroslav; Labaky, Jiri; Saudak, Vladimir; and Svec, Frantisek, 4,245,064, Cl. 525-329.000.
- Svensson, Claes G. S.: See—
- Lindahl, Jonas A. I.; and Svensson, Claes G. S., 4,244,778, Cl. 162-17.000.
- Svensson, Emil L.; and Walrath, Craig D., to Westinghouse Electric Corp. Image motion compensator. 4,245,254, Cl. 358-222.000.
- Sverdlov, Rafael S.: See—
- Guseinov, Nazim M. O.; Aliev, Vagab S.; Mustafae, Alish I.; Zimin, Vladimir M.; Sverdlov, Rafael S.; Shkondina, Nina G.; Chianurashvili, Eleonora E.; Morozova, Margarita K.; Mirzoev,

- Rasim S. O.; Sharifov, Gabil S. O.; Dzhabiev, Ramiz A.; Oshin, Leonid A.; and Genin, Lemel S., 4,244,892, Cl. 570-223.000.
- Svoboda, Josef; and Krob, Erwin, to TMC Corporation. Adjusting mechanism for ski bindings. 4,244,598, Cl. 280-633.000.
- Swain, Dennis W.: See—
Frignac, Jean-Paul; Swain, Dennis W.; and Kavie, Arthur J., 4,244,294, Cl. 102-49.300.
- Swanson, Billy L., to Phillips Petroleum Company. Gelled acidic well treating composition and process. 4,244,826, Cl. 252-8.55C.
- Sweeney, Richard F.: See—
Van Der Puy, Michael; Anello, Louis G.; Sukornick, Bernard; Sweeney, Richard F.; and Wiles, Robert A., 4,244,891, Cl. 570-140.000.
- Sweeney, William M.; and Bove, Francis S., to Texaco Inc. Gasoline composition. 4,244,704, Cl. 44-78.000.
- Swenson, Alan F.: See—
Rovin, Herman; Levine, Lawrence J.; Opuszenski, Theodore; Pellicano, Joseph; and Swenson, Alan F., 4,244,313, Cl. 112-279.000.
- Swiger, Arthur R. Block interlocking insert. 4,244,155, Cl. 52-442.000.
- Swiss Aluminium Ltd.: See—
Paulet, Jean F.; and Boetsch, Bruno, 4,244,791, Cl. 204-54.00R.
- Sychev, Pavel M.: See—
Vydrin, Vladimir N.; Pastukhov, Valery V.; Barkov, Leonid A.; Sychev, Pavel M.; Dolgov, Sergei I.; Novikov, Dmitry S.; Mymrin, Sergei A.; Masudov, Pulat S.; Sergeev, Nikolai N.; and Shegai, Anatoly A., 4,244,204, Cl. 72-224.000.
- Sylvester, Raymond L., to International Harvester Company. Tilt steering column mechanism. 4,244,236, Cl. 74-493.000.
- Syntex (U.S.A.) Inc.: See—
Kluge, Arthur F.; and Unger, Stefan H., 4,244,961, Cl. 424-267.000.
- Syracuse University Research Corporation: See—
Szabo, Karoly, 4,245,105, Cl. 548-306.000.
- Szabo, Karoly, to Syracuse University Research Corporation. 3-(α -Cyanoalkyl)carbamyl benzimidazolyl carbamates. 4,245,105, Cl. 548-306.000.
- Szegvari, Andrew, to Union Process, Inc. Agitated-media mill with a baffled inner wall. 4,244,531, Cl. 241-172.000.
- Szilagyi nee Pap, Veronika: See—
Kosary, Judit; Kasztreiner, Endre; Huszti, Zsuzsa; Kenessey, Agnes; Cseh, Gyorgy; Szilagyi nee Pap, Veronika; and Stvertczky nee Sztrokay, Judit, 4,244,871, Cl. 260-239.700.
- Szymanis, Edward, to Canadian General Electric Company Limited. Safety lawn mower and grass collector. 4,244,164, Cl. 56-202.000.
- T.E.A. Tecniche Elettroniche Applicata S.r.l.: See—
Carpino, Ugo, 4,244,211, Cl. 73-113.000.
- Tachi, Akihiro; Tomoshige, Toru; Furuta, Harumi; and Matsuzawa, Norio, to Mitsui Petrochemical Industries, Ltd. Epoxy-modified polyolefin wax, process for preparation thereof and thermosetting resinous composition comprising said wax. 4,245,061, Cl. 525-286.000.
- Tachibana, Kyozeo: See—
Tsutsui, Yoshio; Tachibana, Kyozeo; and Ishikawa, Hiroaki, 4,245,291, Cl. 363-68.000.
- Tacke, Peter; Neuray, Dieter; and Michael, Dietrich, to Bayer Aktiengesellschaft. Flameproof polyamide moulding compositions. 4,244,858, Cl. 260-38.000.
- Taihei Chemicals Limited: See—
Hishikawa, Shintaro; and Yamada, Hideo, 4,244,465, Cl. 198-691.000.
- Taiho Kogyo Kabushiki Kaisha: See—
Nakayama, Shozo; Kato, Kimio; Mukai, Takamitsu; Fujii, Tomoo; Kono, Hiroya; Fukuoaka, Tatsuhiko; Asada, Eizi; and Futamura, Kenichiro, 4,244,679, Cl. 417-269.000.
- Takada, Juichiro. Deactivatable locking retractor for vehicle seat belt systems. 4,244,600, Cl. 280-803.000.
- Takagi, Sadaaki. Method and apparatus for manufacturing a three-dimensional crimp filament. 4,244,175, Cl. 57-282.000.
- Takagi, Shinichi: See—
Hashimoto, Kenjiro; Takagi, Shinichi; Okamoto, Harunori; and Miura, Minoru, 4,244,843, Cl. 260-5.000.
- Takahashi, Isao, to Sakura Instrument Co. Ltd. Liquid-level meter. 4,244,219, Cl. 73-309.000.
- Takahashi, Keiichi; Aoyama, Hiroshi; Hirakawa, Kikuya; and Sarusawa, Yukio, to Tokan Kogyo Co., Ltd. Container cover member having synthetic resin openable portion. 4,244,491, Cl. 220-70.000.
- Takahashi, Koji: See—
Asai, Eiichi; Shiota, Kazuo; Takahashi, Koji; and Akimoto, Taizo, 4,244,655, Cl. 356-404.000.
- Takahashi, Sadao; Hirano, Hitoshi; and Matsumura, Sadao, to Tokyo Shibaura Electric Co., Ltd. Method of intermediate frequency filtration in a television receiver. 4,245,200, Cl. 333-193.000.
- Takahashi, Sadao; Hirano, Hitoshi; and Matsumura, Sadao, to Tokyo Shibaura Electric Co., Ltd. Elastic surface wave device. 4,245,201, Cl. 333-194.000.
- Takahashi, Takuya; Iijima, Masayoshi; and Ishikawa, Norio, to Bridgestone Tire Company Limited. Solid tire and wheel assembly for vehicle moving through a tubular conduit. 4,244,413, Cl. 152-323.000.
- Takano, Yoshiaki: See—
Kokubo, Takashi; Takano, Yoshiaki; and Okuda, Minoru, 4,245,256, Cl. 358-254.000.
- Takaoka, Saburo: See—
Matsumoto, Katsuaki; Saeki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
- TDK Electronics Company Limited: See—
Shioi, Ryoichi; Umeya, Kazumasa; Yonezuka, Kazunari; and Senzaki, Hisao, 4,245,146, Cl. 219-381.000.
- Teco Iberica, S.A.: See—
Puig Planas, Antonio, 4,244,480, Cl. 215-320.000.
- Teijin Limited: See—
Nakagawa, Yasuo; Shimada, Keizo; and Nakamura, Tsutomu, 4,245,066, Cl. 525-432.000.
- Sasaki, Yoshiyuki; Kumakawa, Shiro; and Kasaoka, Katsuyuki, 4,244,171, Cl. 57-208.000.
- Sugie, Kiyoshi; Kurisu, Shizuka; Emi, Shingo; Azuma, Shizuo; Harada, Toshiaki; and Kawase, Shoji, 4,244,859, Cl. 260-40.00R.
- Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
- Takase, Tsutomu: See—
Kato, Nobukatsu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, 4,245,128, Cl. 568-806.000.
- Takeda Chemical Industries, Ltd.: See—
Higashide, Eiji; Asai, Mitsuko; and Hasegawa, Toru, 4,245,047, Cl. 435-128.000.
- Tsushima, Susumu; Sendai, Michiyuki; and Shiraiishi, Mitsuru, 4,245,088, Cl. 544-16.000.
- Takeda, Katunobu: See—
Miura, Yoshio; Fukui, Yukio; and Takeda, Katunobu, 4,245,143, Cl. 219-10.55B.
- Takeda, Keiji; Nagata, Masayoshi; and Matsumoto, Kenji, to Fuji Photo Film Co., Ltd. Light-sensitive image recording material and dry process for recording light image using the same. 4,245,027, Cl. 430-141.000.
- Takeda, Renzo; Kurihara, Kunitoshi; Yamamoto, Masaaki; Uchikawa, Sadao; Yokomi, Michiro; Yamashita, Junichi; and Shimoshige, Takanori, to Hitachi, Ltd. Construction of nuclear reactor core. 4,244,784, Cl. 176-54.000.
- Takemoto, Takeshi: See—
Isayama, Takuro; Takemoto, Takeshi; Sato, Tsutomu; and Fukazawa, Takao, 4,245,224, Cl. 346-75.000.
- Takeuchi, Tomio: See—
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,245,045, Cl. 435-78.000.
- Talbot, Kenneth J., to Chromalloy American Corporation. Magnetic casing depth marker. 4,244,424, Cl. 166-66.000.
- Talley, Lloyd A., to Eubanks Engineering Co. Apparatus for attaching terminals to electric conductors. 4,244,101, Cl. 29-753.000.
- Tamai, Kazuto; Sawada, Shigeru; Nakamura, Osamu; and Nakagaki, Norio, to Kabushiki Kaisha Suwa Seikosha. Miniature printer. 4,244,290, Cl. 101-99.000.
- Tamura, Sadahiro: See—
Nishikawa, Toshio; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, 4,245,198, Cl. 333-134.000.
- Tanabe, Zenichi; Baba, Yoshio; Fukui, Toshiyasu; and Kimura, Satoshi, to Sumitomo Light Metal Industries, Ltd. Fin stocks for use in heat exchanger made of aluminum alloy and production method thereof. 4,244,756, Cl. 148-32.000.
- Tanaka, Isao: See—
Kawano, Akio; and Tanaka, Isao, 4,244,305, Cl. 110-245.000.
- Tanaka, Shunpei, to Olympus Optical Co., Ltd. Color camera having linear scanning arrays and vertical scanning mirror. 4,245,240, Cl. 358-43.000.
- Tanaka, Taro: See—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Tanaka, Taro, 4,244,341, Cl. 123-449.000.
- Tanaka, Yukiyasu: See—
Noguchi, Masaaki; Tanaka, Yukiyasu; and Tanaka, Taro, 4,244,341, Cl. 123-449.000.
- Taneda, Yukinori; Kobayashi, Takashi; Yano, Kiyoshi; Isobe, Mitsunobu; and Sugimoto, Noboru, to Hitachi, Ltd. Perfect layer coil winding apparatus. 4,244,539, Cl. 242-158.00R.
- Tang, Alexander R., to Acrow (Automation) Limited. Racking. 4,244,476, Cl. 211-192.000.
- Tanno, Norihiko; Harimoto, Takashi; Ueda, Shinzi; and Tobiki, Hisao, to Sumitomo Chemical Company, Limited. Dimethyl sulfoxide adducts of penicillins. 4,244,870, Cl. 260-239.100.
- Tanny, Gerald B.: See—
Hauk, Dale I.; and Tanny, Gerald B., 4,244,820, Cl. 210-194.000.
- Tasetano, Paul: See—
Cantarella, Robert; Tasetano, Paul; and Strickholm, George E., 4,244,117, Cl. 33-366.000.
- Tasior, Andrzej; Blicharz, Marian; Kania, Jozef; Strzelski, Jozef; and Krack, Ignacy, to Przedsiębiorstwo Projektowania i Dostaw Kompletnych Obiektów Przemysłowych "Chemadex" w Warszawie. Oddział w Krakowie. Contact node of a system for production of sulphuric acid. 4,244,921, Cl. 422-161.000.
- Tassie, Douglas P., to General Electric Company. Feeder for a gun. 4,244,270, Cl. 89-33.00C.
- Tateishi, Akira: See—
Suzuki, Takashi; Tateishi, Akira; and Naito, Susumu, 4,245,078, Cl. 562-412.000.
- Taylor, Robert B., to R. L. Kuss & Co., Inc. Flexible door wiper seal. 4,244,417, Cl. 160-243.000.
- Tazawa, Osamu: See—
Matsumoto, Katsuaki; Saeki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toshihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
- TDK Electronics Company Limited: See—
Shioi, Ryoichi; Umeya, Kazumasa; Yonezuka, Kazunari; and Senzaki, Hisao, 4,245,146, Cl. 219-381.000.
- Teco Iberica, S.A.: See—
Puig Planas, Antonio, 4,244,480, Cl. 215-320.000.
- Teijin Limited: See—
Nakagawa, Yasuo; Shimada, Keizo; and Nakamura, Tsutomu, 4,245,066, Cl. 525-432.000.
- Sasaki, Yoshiyuki; Kumakawa, Shiro; and Kasaoka, Katsuyuki, 4,244,171, Cl. 57-208.000.
- Sugie, Kiyoshi; Kurisu, Shizuka; Emi, Shingo; Azuma, Shizuo; Harada, Toshiaki; and Kawase, Shoji, 4,244,859, Cl. 260-40.00R.

- Teijin Seiki Company Limited: See—
Iwata, Michiyoshi, 4,244,276, Cl. 91-447.000.
- Telefonbau und Normalzeit, GmbH: See—
Agricola, Manfred; Krautkramer, Willfried; and Reimer, Karl-Heinz, 4,245,339, Cl. 370-58.000.
- Teletype Corporation: See—
Arenka, Leonard R.; and Cook, Harold D., 4,244,083, Cl. 24-16.00R.
- Temple, Rodger G.: See—
Barcikowski, Donna M.; Temple, Rodger G.; Jones, James E.; and Seiner, Jerome A., 4,244,074, Cl. 15-114.000.
- Tengan, Alfred K., to Moog Inc. Check valve assembly having valve opening prior to passing flow and flow shut off prior to valve closing. 4,244,398, Cl. 137-630.190.
- Tengler, Harvey N.: See—
Hall, Garth O.; Tengler, Harvey N.; and Erikson, Neal C., 4,244,623, Cl. 297-417.000.
- Te Nijenhuis, Anne: See—
Frisch, Kurt C.; Tummers, Daniel M. J.; and Te Nijenhuis, Anne, 4,245,080, Cl. 528-60.000.
- Terada, Hideto; and Yosikawa, Masanori, to Sintokogio Ltd. Apparatus for forming vacuum-sealed mould. 4,244,418, Cl. 164-147.000.
- Teramura, Mitsuyoshi: See—
Yamaguchi, Akihide; Akado, Hajime; and Teramura, Mitsuyoshi, 4,244,343, Cl. 123-556.000.
- Terasita, Takaaki: See—
Asai, Eiichi; Matsumoto, Fumio; and Terasita, Takaaki, 4,244,653, Cl. 356-404.000.
- Terkelsen, Bruce E.; Cybulsky, Michael; and Perron, James S., to United Technologies Corporation. Composite shell molds for the production of superalloy castings. 4,244,551, Cl. 249-134.000.
- Terry, Alvah B., to Monsanto Company. Apparatus for making a fiber bed element. 4,244,100, Cl. 29-714.000.
- Terry, Edgar R.; and Hudock, Joseph A., to General Electric Company. Dispersion-controlled multibarrel gun system. 4,244,272, Cl. 89-41.00A.
- Terunuma, Mutsuhiro; Shima, Seiya; and Saito, Kunio, to Hitachi, Ltd. Power converter system. 4,245,293, Cl. 363-87.000.
- Teterevyanikov, Lev N. Method for measuring mass flow of a substance. 4,244,231, Cl. 73-861.420.
- Texaco Inc.: See—
Durkin, Joseph A., 4,244,937, Cl. 423-522.000.
- Hodge, John W.; and Chafetz, Harry, 4,244,828, Cl. 252-46.700.
- Sweeney, William M.; and Bove, Francis S., 4,244,704, Cl. 44-78.000.
- Youngblood, Douglas J.; and Nelson, Gerald V., 4,244,810, Cl. 208-120.000.
- Thakkar, Narendra C.: See—
Karpowycz, Oleh; and Thakkar, Narendra C., 4,245,352, Cl. 455-226.000.
- Theiling, Louis F.: See—
Warner, Glenn H.; Theiling, Louis F.; and Freid, Marvin G., 4,244,876, Cl. 260-345.90R.
- Theros, Brian S., to Container Corporation of America. Spool. 4,244,538, Cl. 242-118.000.
- Thiele, Willi; Hackmack, Klaus-Georg; and Hohm, Reinhard, to Hauni-Werke Korber & Co. KG. Method and apparatus for delivering particles of tobacco to shredding machines. 4,244,382, Cl. 131-21.00B.
- Thill, Bruce P.; and Tomalia, Donald A., to Dow Chemical Company, The. Thermosetting powder coating composition comprising vinyl interpolymers and polycarboxylic acid. 4,245,063, Cl. 525-329.000.
- Thill, Richard W.: See—
Pascoe, Robert W.; and Thill, Richard W., 4,245,355, Cl. 455-326.000.
- Thomas, David L.: See—
Eng, Edward; Gibbons, Glen D.; Thomas, David L.; and Tee, John W., 4,245,222, Cl. 343-708.000.
- Thomas, Paul M.: See—
Drain, Bob R., 4,244,904, Cl. 264-82.000.
- Thomas, Robert J., to Key Tronic Corporation. Dust dispersion system for a document reader. 4,245,151, Cl. 235-454.000.
- Thomas, Royal D., Jr.: See—
Maniar, Gunvant N.; Koch, Joseph B.; and Thomas, Royal D., Jr., 4,245,145, Cl. 219-146.100.
- Thomassen Holland B.V.: See—
Hendriks, Rudolf, 4,244,191, Cl. 60-728.000.
- Thompson, Charles R.: See—
Kuo, Harn-Shen; Mutha, Shantilal C.; and Thompson, Charles R., 4,245,044, Cl. 435-34.000.
- Thomson-Brandt: See—
Rilly, Gerard; and Facon, Michel, 4,245,180, Cl. 315-411.000.
- Thomson-CSF: See—
Fellot, Dominique, 4,244,264, Cl. 84-345.000.
- Thomson-Leeds Company, Inc.: See—
Frois, Mauricio, 4,244,130, Cl. 40-442.000.
- Thornblad, Lars O.: See—
Havranek, Peter H.; and Thornblad, Lars O., 4,244,745, Cl. 106-64.000.
- Three Rivers Development Corporation: See—
Flavan, David B., Jr.; Jenkins, Merrill M. E., Sr.; White, James S.; and Pate, James E., 4,244,284, Cl. 99-327.000.
- Thubeauville, Heinz, to Dr. C. Otto & Comp. G.m.b.H. Double flue arrangement in heating walls for horizontal coke ovens. 4,244,786, Cl. 202-142.000.
- Thunus, Leopold N.: See—
De Ridder, Rene R.; Georges, Andre H.; Ghys, Arlette; Lapiere, Charles L.; Delarge, Jacques E.; and Thunus, Leopold N., 4,244,950, Cl. 424-248.500.
- Thut, Bruno H.; and Lehman, Dale T. Heat exchanger. 4,244,423, Cl. 163-82.000.
- Tiemann, Jerome J., to General Electric Company. Scan converter for ultrasonic sector scanner. 4,245,250, Cl. 358-140.000.
- Tillman, Lattie M. Fuse holder extractor and replacer tool. 4,244,613, Cl. 294-19.00R.
- Timex Corporation: See—
Wiesner, Leo, 4,245,335, Cl. 368-70.000.
- Timmons, Russell M., to Black & Decker Inc. Boring tool. 4,244,667, Cl. 408-201.000.
- Ting, Hui-Tzeng. Clean spark ignition internal combustion engine. 4,244,329, Cl. 123-261.000.
- Tischer, Roland, to Fag Kugelfischer Georg Schafer & Co. Journal mounting for the shaft of a water pump or the like. 4,244,630, Cl. 308-189.00R.
- Tisi, Quinto: See—
Ranalli, Franco; Ortolani, Leone; and Tisi, Quinto, 4,244,914, Cl. 264-515.000.
- Tissot, Pierre L. Consumer electronic malfunction alerting system. 4,245,249, Cl. 358-139.000.
- TMC Corporation: See—
Svoboda, Josef; and Krob, Erwin, 4,244,598, Cl. 280-633.000.
- Tobiki, Hisao: See—
Tanno, Norihiko; Harimoto, Takashi; Ueda, Shinzi; and Tobiki, Hisao, 4,244,870, Cl. 260-239.100.
- Toda, Shozo: See—
Uehara, Akira; Kiyota, Hiroyuki; Nakane, Hisashi; and Toda, Shozo, 4,245,154, Cl. 250-227.000.
- Tokai Denka Kogyo Kabushiki Kaisha: See—
Sato, Kanji; Kushihe, Kazuyoshi; Nishii, Masaru; Kanaya, Yasuhiro; and Kawabe, Yasumasa, 4,244,690, Cl. 8-465.000.
- Tokan Kogyo Co., Ltd.: See—
Takahashi, Keiichi; Aoyama, Hiroshi; Hirakawa, Kikuya; and Sarusawa, Yukio, 4,244,491, Cl. 220-270.000.
- Toko, Inc.: See—
Murakami, Hiromi; Suzuki, Masato; and Suzuki, Tutomu, 4,245,207, Cl. 336-65.000.
- Toko Yakuhin Kogyo Kabushiki Kaisha: See—
Kamishita, Takuzo; and Kamishita, Kazuhiko, 4,244,942, Cl. 424-81.000.
- Tokuhiro, Takao: See—
Itoh, Hiroyuki; Konno, Mitoshi; Tokuhiro, Takao; Iguchi, Sadahiko; and Hayashi, Masaki, 4,245,099, Cl. 546-315.000.
- Tokuno, Tomotoshi. Method for manufacturing a resin-reinforced carbon fiber product. 4,244,765, Cl. 156-180.000.
- Tokutomi, Seijiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Manual setting device in digital type electrical control camera. 4,244,643, Cl. 354-23.00D.
- Tokyo Electric Co., Ltd.: See—
Hamano, Koichi; Morimoto, Takao; Watanabe, Junko; Ono, Kaoru; and Yagi, Norio, 4,245,331, Cl. 364-900.000.
- Tokyo Ohka Kogyo Kabushiki Kaisha: See—
Uehara, Akira; Kiyota, Hiroyuki; Nakane, Hisashi; and Toda, Shozo, 4,245,154, Cl. 250-227.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Harao, Norio, 4,245,160, Cl. 250-460.000.
- Moriya, Yoshiaki; Kobayashi, Ichiro; and Kitagawa, Yukio, 4,245,327, Cl. 364-768.000.
- Rokutanda, Takashi; Shiraogawa, Yukio; Nakajima, Yutaka; Aoyagi, Keizo; and Hirakawa, Takashi, 4,245,301, Cl. 364-200.000.
- Tokyo Shibaura Electric Co., Ltd.: See—
Funahashi, Kohei, 4,245,164, Cl. 307-221.00D.
- Nomura, Yutaka; Koyama, Mitsuaki; and Katou, Masahiro, 4,244,322, Cl. 118-658.000.
- Takahashi, Sadao; Hirano, Hitoshi; and Matsumura, Sadao, 4,245,200, Cl. 333-193.000.
- Takahashi, Sadao; Hirano, Hitoshi; and Matsumura, Sadao, 4,245,201, Cl. 333-194.000.
- Tolman, Alan G., to Garrett Corporation. The. Broad band acoustic attenuator. 4,244,441, Cl. 181-213.000.
- Toma, Hideaki: See—
Uehara, Kazuo; Toma, Hideaki; and Sato, Yoshito, 4,244,678, Cl. 417-218.000.
- Tomalia, Donald A.: See—
Thill, Bruce P.; and Tomalia, Donald A., 4,245,063, Cl. 525-329.000.
- Tomaszewski, Lillie C., to Oxy Metal Industries Corporation. Composition and process for chemically stripping metallic deposits. 4,244,833, Cl. 252-101.000.
- Tomoshige, Toru: See—
Tachi, Akihiro; Tomoshige, Toru; Furuta, Harumi; and Matsuzawa, Norio, 4,245,061, Cl. 525-286.000.
- Tomy Kogyo Co., Inc.: See—
Hatakeyama, Korechika, 4,244,572, Cl. 273-120.00R.
- Hori, Noritoshi, 4,244,573, Cl. 273-127.00D.
- Ieki, Takeo, 4,244,137, Cl. 46-39.000.
- Tongret, Stewart R. Cleansing system using treated recirculating air. 4,244,712, Cl. 55-124.000.
- Toriumi, Shiro; Endo, Hiroshi; Saijo, Takao; Saito, Takanori; and Kamimura, Kuniaki, to Minolta Camera Kabushiki Kaisha. Aperture card reader with automatic and manual card feed. 4,244,642, Cl. 353-27.00R.

Tohshiba Silicone Co., Ltd.: See—
Ishizuka, Mitsuo; and Fujii, Toohihiro, 4,244,911, Cl. 264-331.000.
Matsumoto, Yasuji; and Murai, Bunjiro, 4,245,079, Cl. 528-15.000.
Tohshimitu, Naohiko, to Canon Kabushiki Kaisha; and Canon Denchi Kabushiki Kaisha. Magnetic head with means for eliminating noise. 4,245,268, Cl. 360-124.000.
Tosovsky, Josef: See—
Simo, Miroslav A.; and Tosovsky, Josef, 4,244,345, Cl. 124-24.00R.
Tour & Anderson Aktiebolag: See—
Christiansen, Jørn U., 4,244,516, Cl. 236-46.00R.
Toyo Boseki Kabushiki Kaisha: See—
Uno, Keiichi; and Miyagawa, Takahito, 4,245,086, Cl. 528-318.000.
Toyo Rubber Industry Co., Ltd., The: See—
Uemura, Yukihisa; and Miyoshi, Shoji, 4,244,414, Cl. 152-354.00R.
Toyoda, Kuniei: See—
Nagai, Susumu; Ueda, Akira; and Toyoda, Kuniei, 4,245,053, Cl. 521-38.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: See—
Erzaki, Hideo; Imao, Eiichi; Masuyama, Takayuki; and Sugiura, Mamoru, 4,244,991, Cl. 427-226.000.
Hirai, Akiyoshi; and Hagisato, Yasuo, 4,245,137, Cl. 200-4.000.
Suzuki, Masato; Mima, Yasushi; and Okamoto, Kentaro, 4,244,238, Cl. 74-301.00R.
Uno, Makoto; Sanui, Yoshio; and Yasui, Yasuyoshi, 4,244,242, Cl. 74-710.000.
Yamaguchi, Akihide; Akado, Hajime; and Teramura, Mitsuyoshi, 4,244,343, Cl. 123-556.000.
Yasuda, Etsuro; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, 4,244,918, Cl. 422-95.000.
Tracy, Charles H. Method of constructing large posters for back-lighted signboards. 4,244,769, Cl. 156-300.000.
Trainor, James T.; and Covaleski, Stanley P., to Raybestos-Manhattan, Inc. Laminated aramid fiber friction members. 4,244,994, Cl. 428-37.000.
Trammell, Louis T. Collapsible basket. 4,244,485, Cl. 220-6.000.
Trane Company, The: See—
Stanke, Dennis A.; and Rentmeester, Paul C., 4,244,517, Cl. 236-49.000.
Transco, Inc.: See—
Gorell, Frederick R., 4,244,269, Cl. 411-477.000.
Traynard, Olivier; and Bruggeman, Jean-Pierre, to Societe Alsacienne de Constructions Mecaniques de Mulhouse; Institut Textile de France; and Agence Nationale de Valorisation de la Recherche (ANVAR). Spinning device comprising a ring rotatably supported on a fluid bearing. 4,244,170, Cl. 57-124.000.
Treka, James S., to Rockwell International Corporation. Contrast enhancement of multicolor displays. 4,245,242, Cl. 358-64.000.
Treadwell, Alan F., to Chrysler United Kingdom Limited. Final drive units for motor vehicles. 4,244,241, Cl. 74-695.000.
Tri-State Oil Tool Industries, Inc.: See—
Johnson, Gary R., 4,244,431, Cl. 175-320.000.
Tri-Tech, Inc.: See—
Haydon, Arthur W., 4,244,099, Cl. 29-596.000.
Tria Burstenfabrik AG: See—
Meyer, Walter, 4,244,076, Cl. 15-188.000.
Trufanov, Vladimir I.: See—
Yasinovich, Rimvidas P.; Trufanov, Vladimir I.; Yakshits, Auzitis A.; Epishkin, Jury S.; and Rakov, Vladimir V., 4,245,269, Cl. 360-125.000.
Trust, Ronald L.; and Albright, Jay D., to American Cyanamid Company. Substituted 6-phenyl-5,6,7,8-tetrahydro-1,2,4-triazolo-[4,3-b]pyridine. 4,244,953, Cl. 424-256.000.
Trutzschler GmbH & Co. KG: See—
Leifeld, Ferdinand; Oellers, Walter M.; and Reiche, Johannes W., 4,244,082, Cl. 19-81.000.
Tsao-Tsung, Wei. Pin for documents. 4,244,085, Cl. 24-85.00C.
Tsataniidi, Kim N.: See—
Kapitanov, Nikolai N.; Fedotov, Vladimir M.; Petrova, Natalya P.; Patalora, Marya D.; Tsataniidi, Kim N.; and Milonov, Oleg B., 4,244,372, Cl. 128-334.00R.
Tse, John W.: See—
Eng, Edward; Gibbons, Glen D.; Thomas, David L.; and Tse, John W., 4,245,222, Cl. 343-708.000.
Tsuda, Youichiro: See—
Matsumoto, Katsuaki; Saeki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toohihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
Tsuiji, Shintaro: See—
Umeda, Yasukazu; Kamohara, Tohiyuki; Goto, Seichi; Tsuiji, Shintaro; and Miyazaki, Yoshio, 4,244,450, Cl. 187-29.00R.
Tsujino, Nobuyuki; Hirano, Shigeo; and Adachi, Keiichi, to Fuji Photo Film Co., Ltd. Direct positive silver halide light-sensitive material. 4,245,037, Cl. 430-559.000.
Tsupro, Sergei A.: See—
Chukhanov, Zinoviy F.; Chukhanov, Zinoviy Z.; Tsupro, Sergei A.; Karnev, Vadim A.; Nikolaev, Anatoly M.; Shibaev, Robert M.; Bratschenko, Boris F.; and Lyashenko, Ivan V., 4,244,700, Cl. 44-1.00R.
Tsuchida, Susumu; Sendai, Michiyuki; and Shiraishi, Mitsuru, to Takeda Chemical Industries, Ltd. Novel 3-acyloxymethyl-cephem compounds useful as intermediates for preparing cephalosporin antibiotics. 4,245,088, Cl. 544-16.000.
Tsutsui, Kyoji: See—
Kazami, Takeo; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masao; Tsutsui, Kyoji; and Ohta, Masafumi, 4,245,021, Cl. 430-58.000.
Tsutsui, Yoshio; Tachibana, Kyozi; and Ishikawa, Hiroaki, to Hitachi, Ltd. Electric power converter apparatus for an a.c. electric rolling stock. 4,245,291, Cl. 363-68.000.
Tsuya, Noboru; and Arai, Kenichi, to Tsuya, Noboru. Method for manufacturing thin and flexible ribbon of dielectric material having high dielectric constant. 4,244,722, Cl. 65-32.000.
Tulst, Juri, to RCA Corporation. AFT Arrangement for a phase locked loop tuning system. 4,245,351, Cl. 455-182.000.
Tummers, Daniel M. J.: See—
Frisch, Kurt C.; Tummers, Daniel M. J.; and Te Nijenhuis, Anne, 4,245,080, Cl. 528-60.000.
Tunemoto, Daiei: See—
Kondo, Kiyosi; Tunemoto, Daiei; Negishi, Akira; and Suda, Minoru, 4,245,108, Cl. 549-79.000.
Tupper, David E.: See—
Horwell, David C.; and Tupper, David E., 4,245,095, Cl. 546-68.000.
Turlej, Zbigniew: See—
Mallory, John; and Turlej, Zbigniew, 4,245,174, Cl. 313-3.000.
Turner, Gilbert M.; and Stepp, Clarence L., to Boring & Tunneling Company of America, Inc. Apparatus for cutting hard earth formations. 4,244,625, Cl. 299-83.000.
Tuttrup, Gene J. Drum apparatus. 4,244,265, Cl. 84-411.00R.
U-Brand Corporation: See—
Miller, Don R., 4,244,556, Cl. 251-118.000.
Uchigasaki, Isao: See—
Maekawa, Iwao; Kageyama, Akira; and Uchigasaki, Isao, 4,245,067, Cl. 525-440.000.
Uchikawa, Sadao: See—
Takeda, Renzo; Kurihara, Kunitoshi; Yamamoto, Masaaki; Uchikawa, Sadao; Yokomi, Michiro; Yamashita, Junichi; and Shimoshige, Takanori, 4,244,784, Cl. 176-54.000.
Ueda, Akira: See—
Nagai, Susumu; Ueda, Akira; and Toyoda, Kuniei, 4,245,053, Cl. 521-38.000.
Ueda, Shinzi: See—
Tanno, Norihiko; Harimoto, Takashi; Ueda, Shinzi; and Tobiki, Hisao, 4,244,870, Cl. 260-239.100.
Uede, Taisei: See—
Daikoku, Takahiro; Ikegawa, Masahiro; Nakayama, Wataru; and Uede, Taisei, 4,245,206, Cl. 336-60.000.
Uehara, Akira; Kiyota, Hiroyuki; Nakane, Hisashi; and Toda, Shozo, to Tokyo Ohka Kogyo Kabushiki Kaisha. Apparatus for treatment with gas plasma. 4,245,154, Cl. 250-227.000.
Uehara, Kazuo; Toma, Hideaki; and Sato, Yoshito, to Kabushiki Kaisha Komatsu Seisakusho. Displacement control system for variable displacement pump. 4,244,678, Cl. 417-218.000.
Uemura, Hiroki: See—
Matsumoto, Katsuaki; Saeki, Yoshifumi; Tazawa, Osamu; Kosaka, Minoru; Saito, Masaki; Uemura, Hiroki; Kanazashi, Tetuo; Hashimoto, Seiji; Fujiwara, Tsuyoshi; Fukui, Tsutomu; Takaoka, Saburo; Suzuki, Tsutomu; Nakamura, Shozo; Hosaka, Toohihiko; Shiratori, Kuniaki; Tsuda, Youichiro; Morii, Takashi; Matsumura, Sumitaka; and Oka, Morihisa, 4,245,245, Cl. 358-122.000.
Uemura, Yukihisa; and Miyoshi, Shoji, to Toyo Rubber Industry Co., Ltd., The. Radial tires for heavy duty vehicles. 4,244,414, Cl. 152-354.00R.
Ughi, Edoardo. Sole with heel for women footwears or shoes, and method for quickly and economically making said soles with corresponding heels. 4,244,070, Cl. 12-142.00J.
Ultraflo Corporation: See—
Kern, Ronald C., 4,244,487, Cl. 220-216.000.
Uman, Martin A.: See—
Kridler, Edmond P.; Noggle, Ralph C.; and Uman, Martin A., 4,245,190, Cl. 324-72.000.
Umeda, Yasukazu; Kamohara, Tohiyuki; Goto, Seichi; Tsuiji, Shintaro; and Miyazaki, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Group supervisory system of elevator cars. 4,244,450, Cl. 187-29.00R.
Umamoto, Masuo: See—
Sato, Kazuhiro; Umamoto, Masuo; Izumita, Moriaki; Akiyama, Tohiyuki; and Nagahara, Shusaku, 4,245,241, Cl. 358-44.000.
Umetsu, Junji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for protecting the operating section of a camera from water drops and dust. 4,244,591, Cl. 277-212.00F.
Umeya, Kazumasa: See—
Shioi, Ryoichi; Umeya, Kazumasa; Yonezuka, Kazunari; and Senzaki, Hisao, 4,245,146, Cl. 219-381.000.
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Method of producing anthracycline antibiotics. 4,245,045, Cl. 435-78.000.
Unger, Stefan H.: See—
Kluge, Arthur F.; and Unger, Stefan H., 4,244,961, Cl. 424-267.000.
Union Carbide Corporation: See—
Bartley, William J.; and O'Connor, George L., 4,244,889, Cl. 564-132.000.
Chang, Ching M., 4,244,709, Cl. 55-2.000.
Copper, Robert A., 4,244,831, Cl. 252-78.300.
Farina, Peter R.; Ordonez, Kathy P.; and Siewers, Iris J., 4,244,694, Cl. 23-230.00B.
Warner, Glenn H.; Theiling, Louis F.; and Freid, Marvin G., 4,244,876, Cl. 260-345.90R.

Union Insulating Company: See—
Moore, Kenneth M.; and Cotten, Frank N., 4,245,284, Cl. 362-311.000.
Union Oil Company of California: See—
Liefers, William C., 4,244,190, Cl. 60-641.000.
Union Process, Inc.: See—
Szevari, Andrew, 4,244,531, Cl. 241-172.000.
Unirad Corporation: See—
Rudolph, Dale C.; Ray, Michael D.; Hanaber, Richard L.; and Daugherty, Paul W., 4,244,227, Cl. 73-621.000.
Unisearch Limited: See—
Chaikin, Malcolm; and McCracken, John R., 4,244,815, Cl. 210-622.000.
United States Borax & Chemical Corporation: See—
Schwalley, Lawrence L.; and Speak, Richard C., 4,244,834, Cl. 252-106.000.
United States of America
Air Force: See—
Gaboriault, Roger E., 4,244,271, Cl. 89-33.00BB.
Stignani, David A., 4,244,212, Cl. 73-115.000.
Army: See—
Berger, J. Louis; and Cross, L. Eric, 4,244,652, Cl. 356-383.000.
Campbell, Richard P.; and Stein, Dennis, 4,244,561, Cl. 254-288.000.
Crown, Frank J., 4,245,161, Cl. 250-504.00R.
Gilbert, Everett E., 4,245,129, Cl. 568-931.000.
Peebles, Peyton Z., Jr.; and Green, Augustus H., Jr., 4,245,196, Cl. 331-178.000.
Commerce: See—
Hamilton, Clark, 4,245,169, Cl. 307-350.000.
Energy: See—
Bandyopadhyay, Gautam; and Dusek, Joseph T., 4,244,898, Cl. 264-43.000.
Corbett, James A.; and Meacham, Sterling A., 4,244,783, Cl. 176-19.00R.
Forney, Albert J.; and Haynes, William P., 4,244,706, Cl. 48-202.000.
Frazzini, Thomas L.; Holland, Michael K.; Pietri, Charles E.; and Weiss, Joa R., 4,244,800, Cl. 204-195.00R.
Guon, Jerold, 4,244,693, Cl. 23-230.00L.
Hirasuna, Alan R., 4,244,908, Cl. 264-236.000.
Hollabaugh, Charles M.; and Bowman, Melvin G., 4,244,794, Cl. 204-104.000.
Kuston, Robert L.; and Fujia, Raymond E., 4,245,287, Cl. 363-27.000.
Health, Education & Welfare: See—
Klein, Elias; and Wathen, Ronald L., 4,244,787, Cl. 204-1.00T.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
McLymann, William T. Elimination of current spikes in buck power converters. 4,245,288, Cl. 363-40.000.
Merhav, Samuel J. Autonomous navigation system. 4,244,215, Cl. 73-178.00R.
Roser, Robert W.; Shalhoub, Ibrahim M.; and Kwong, Hanol, 1,2,4-Oxadiazole elastomers. 4,245,083, Cl. 528-310.000.
National Aeronautics and Space Administration: See—
Paukovich, John; and Rodriguez, G. Ernest, 4,245,286, Cl. 363-21.000.
Serafini, Tito T.; and Delviga, Peter, 4,244,853, Cl. 260-33.40R.
Serafini, Tito T.; Delviga, Peter; and Vannucci, Raymond D., 4,244,857, Cl. 260-37.0EP.
Navy: See—
Chubb, Talbot A., 4,244,350, Cl. 126-400.000.
Cirimele, Frank R., 4,245,212, Cl. 340-147.0LP.
Eng, Edward; Gibbons, Glen D.; Thomas, David L.; and Tse, John W., 4,245,222, Cl. 343-708.000.
Evans, Gary E., 4,245,223, Cl. 343-778.000.
Gennetten, Edward W., 4,245,321, Cl. 364-321.000.
Hardesty, Thomas K. C., 4,244,386, Cl. 137-68.00A.
Harris, William T., 4,244,120, Cl. 434-59.000.
Jelka, Edward C., 4,245,333, Cl. 367-121.000.
Loker, W. Aleck, 4,244,455, Cl. 192-24.000.
Loker, W. Aleck, 4,244,456, Cl. 192-27.000.
Polia, B. David, deceased; and Kwong, Sara F., 4,245,111, Cl. 360-121.000.
Shirley, Donald J., 4,245,172, Cl. 310-332.000.
Vollmerhausen, Richard H., 4,244,540, Cl. 244-3.160.
Wagner, Neal K.; and Davis, Neil M., 4,245,187, Cl. 324-54.000.
U.S. Philips Corporation: See—
Hennings, Detlev; and Schreinemacher, Herbert, 4,244,830, Cl. 106-39.500.
Lohstroh, Jan, 4,245,233, Cl. 307-311.000.
Melwisch, Harald E., 4,245,234, Cl. 358-8.000.
van den Berg, Jacob, 4,245,020, Cl. 430-24.000.
van Gils, Cornelia L. M.; van der Dussen, Marius H.; and Kemkers, Pieter, 4,245,277, Cl. 361-433.000.
Van Herwijnen, Arend; and Vogel, Pieter M., 4,245,276, Cl. 361-433.000.
Verhoeven, Bernardus, 4,245,170, Cl. 307-360.000.
United States Postal Service: See—
Kruze, Jurgen M., 4,244,741, Cl. 106-20.000.
United Technologies Corporation: See—
Blackburn, Martin J.; Hayden, Steven Z.; and Smith, Michael P., 4,244,743, Cl. 106-55.000.
Guthrie, Robin J., 4,245,009, Cl. 429-16.000.
Harvey, James E.; and Bluege, John H., 4,245,156, Cl. 250-233.000.
Lipman, Kenneth, 4,245,290, Cl. 363-41.000.
Noehren, William L.; Ferris, Donald L.; and Ogle, Peter C., 4,244,677, Cl. 416-134.00A.
Preti, Edmund, 4,244,183, Cl. 60-224.000.
Terkelsen, Bruce E.; Cybulsky, Michael; and Perrow, James S., 4,244,551, Cl. 249-134.000.
Universal Foods Corporation: See—
Rust, Robert R., 4,244,286, Cl. 99-459.000.
University of Kansas Endowment Association: See—
Alexander, Jose; and Mitcher, Lester A., 4,244,880, Cl. 260-383.000.
Uno, Keiichi; and Miyagawa, Takahito, to Toyo Boseki Kabushiki Kaisha. Production of N-hydroxyalkyltrimellitic acid imides polymers. 4,245,086, Cl. 528-318.000.
Uno, Makoto; Sanui, Yoshio; and Yasui, Yasuyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Lubrication system for differential gear unit. 4,244,242, Cl. 74-710.000.
UOP Inc.: See—
Hall, Garth O.; Teagler, Harvey N.; and Erikson, Neal C., 4,244,623, Cl. 297-417.000.
Maffet, Vere, 4,244,287, Cl. 100-37.000.
UPA Technology, Inc.: See—
Wahl, Robert O.; Lieber, Derek; and Lesser, Jay M., 4,245,189, Cl. 324-65.00P.
Upjohn Company, The: See—
Johnson, Roy A., 4,244,875, Cl. 260-345.200.
Johnson, Roy A., 4,245,087, Cl. 542-420.000.
Youngdale, Gilbert A., 4,244,883, Cl. 260-410.90R.
Uraneck, Carl A.; and Clark, Earl, to Phillips Petroleum Company. Emulsion polymerization process utilizing a highly dispersed organosulfur molecular weight modifier. 4,245,072, Cl. 526-195.000.
Ukokovic, Milan R.: See—
Baggiolini, Enrico G.; Lee, Hsi L.; and Ukokovic, Milan R., 4,245,104, Cl. 548-207.000.
Usubuchi, Yutaka: See—
Shibuya, Chiesi; Itoh, Hiratake; Usubuchi, Yutaka; and Akamine, Mitsuki, 4,245,107, Cl. 549-66.000.
Utsunomiya, Yumitoyo: See—
Matsumura, Kunihiko; Fukuchi, Mitsuyoshi; Iizuka, Motoki; and Utsunomiya, Yumitoyo, 4,244,814, Cl. 209-144.000.
V-V Systems, Inc.: See—
Bartley, Thomas S., 4,244,463, Cl. 198-308.000.
Vackier, Leo N.; Van der Vliet, Lucien P.; and Bala, Roger J., to AGFA-GEVAERT N.V. Daylight loading system for microfiche cassettes. 4,244,645, Cl. 354-310.000.
Vale, Wylie W., Jr.: See—
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,244,946, Cl. 424-177.000.
Valeron Corporation, The: See—
Bailey, Kurt W.; and Juengel, Richard O., 4,244,108, Cl. 33-143.00L.
van Capelleveen, Pieter, to Gebr. van Capelleveen B.V. Conveyor, in particular for eggs. 4,244,464, Cl. 198-688.000.
van den Berg, Jacob, to U.S. Philips Corporation. Method of making a display screen for a color television display tube using charged photoconductive layer. 4,245,020, Cl. 430-24.000.
van der Dussen, Marius H.: See—
van Gils, Cornelia L. M.; van der Dussen, Marius H.; and Kemkers, Pieter, 4,245,277, Cl. 361-433.000.
van der Lely, Cornelia. Broadcast seeder including driven tools and roller. 4,244,307, Cl. 111-11.000.
Van Der Puy, Michael; Anello, Louis G.; Sakornick, Bernard; Sweeney, Richard P.; and Wiles, Robert A., to Allied Chemical Corporation. Preparation of hexafluoroisobutylene. 4,244,891, Cl. 570-140.000.
Van der Vliet, Lucien P.: See—
Vackier, Leo N.; Van der Vliet, Lucien P.; and Bala, Roger J., 4,244,645, Cl. 354-310.000.
van Gils, Cornelia L. M.; van der Dussen, Marius H.; and Kemkers, Pieter, to U.S. Philips Corporation. Electrolytic capacitor provided with a pressure relief valve. 4,245,277, Cl. 361-433.000.
Van Herwijnen, Arend; and Vogel, Pieter M., to U.S. Philips Corporation. Aluminum-manganese cathode foil for electrolytic capacitors having controlled amounts of copper and titanium. 4,245,276, Cl. 361-433.000.
van Meegen, Wilhelmus H., to Lever Brothers Company. Process for producing a detoxified rapeseed protein concentrate. 4,244,973, Cl. 426-49.000.
Vannucci, Raymond D.: See—
Serafini, Tito T.; Delviga, Peter; and Vannucci, Raymond D., 4,244,857, Cl. 260-37.0EP.
Van Rossum, Antoine R.: See—
De Winter, Walter F.; Monbaliu, Marcel J.; Maries, August M.; and Van Rossum, Antoine R., 4,245,036, Cl. 430-510.000.
Varon, Miguel A.; and Paddock, Paul F., to Sunkist Growers, Inc. Method of applying a label to an object. 4,244,763, Cl. 156-74.000.
Varraso, Eugene C., to Owens-Corning Fiberglass Corporation. Method for controlling the size of pellets formed in a pelletizer. 4,244,896, Cl. 264-40.100.
Varta Batterie Aktiengesellschaft: See—
Golz, Hans-Joachim, 4,245,010, Cl. 429-56.000.
Vassar, Jack K.: See—
Mote, Ray R., 4,244,559, Cl. 254-129.000.
Vaughn, William A.: See—
Campbell, Robert H.; Wise, Raleigh W.; and Vaughn, William A., 4,244,864, Cl. 260-45.8NW.

VEB Mansfeld Kombinat William Pieck: See—
Ziegenbalg, Siegfried; Haake, Gerhard; and Geiler, Gunter, 4,244,928, Cl. 423-123.000.

Veit, Richard E.: See—
Griswold, David E.; and Veit, Richard E., 4,244,392, Cl. 137-218.000.
Griswold, David E.; and Veit, Richard E., 4,244,395, Cl. 137-484.200.

Veit, William E., Jr.; and Das, Kusal K., to ESB International Corp. High pressure post seal for batteries. 4,245,014, Cl. 429-181.000.

Velle, Wallace W.; and Macias, Hector, to Scheu Manufacturing Company. Portable forced air heater. 4,244,349, Cl. 126-110.00C.

Verdier, Jean-Pierre: See—
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Weiss, Harald, 4,245,135, Cl. 174-72.00B.

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Wadley, Michael W.: See—
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Wagner, Gerhard: See—
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Wagner, Hans: See—
Quiring, Bernd; Niederdelmann, Georg; Goyert, Wilhelm; and Wagner, Hans, 4,245,081, Cl. 528-65.000.

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Wahl, Robert O.; Lieber, Derek; and Lesser, Jay M., to UPA Technology, Inc. Probe assembly for measuring conductivity of plated through holes. 4,245,189, Cl. 324-65.00P.

Wahoski, Edward S., to International Harvester Company. Bias over-center latch with positive locking feature. 4,244,611, Cl. 292-113.000.

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Yamazaki, Yasuhiro; Wakahara, Yasushi; Youki, Kiyohiro; and Yamada, Toyomichi, 4,245,257, Cl. 358-260.000.

Waldmann, Helmut: See—
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Wardell, Myron H., Jr., to RCA Corporation. Convergence adjustment arrangement using magnetic tabs with differential motion and rotary drive. 4,245,205, Cl. 335-212.000.

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Warner, Glenn H.; Theiling, Louis F.; and Freid, Marvin G., to Union Carbide Corporation. Acetal-acid compositions. 4,244,876, Cl. 260-345.90R.

Warner & Swasey Company, The: See—
Fournier, Roger H., 4,244,110, Cl. 33-180.00R.

Warren, Donald W.: See—
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Washburn, Jerry R.: See—
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Washecheck, Paul H.; and Hale, Ron G., to Conoco, Inc. Single package additive for thermoplastic formulation. 4,244,746, Cl. 106-268.000.

Wason, Satish K., to J. M. Huber Corporation. Abrasive composition for use in toothpaste. 4,244,707, Cl. 51-308.000.

Wasyluk, Thomas M., to Zaner-Bloser, Inc. Font and method for printing cursive script. 4,244,657, Cl. 400-109.000.

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Watts, David O.: See—
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Watts, Ridley, Jr. Pole and piling protector. 4,244,156, Cl. 52-746.000.

Wean United Inc.: See—
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Weaver, Richard H. Staircase and method of construction. 4,244,154, Cl. 52-185.000.

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Webb, Terry E.: See—
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Weber, Ekkehard. Method for the wet separation of impurities from gases of higher temperature. 4,244,930, Cl. 423-210.500.

Webster, Cyril J. D.; and Griggs, John C., to National Research Development Corporation. Urinals. 4,244,061, Cl. 4-144.100.

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Fiege, Helmut; Wedemeyer, Karlfried; Bauer, Kurt; and Molleken, Reiner, 4,245,126, Cl. 568-764.000.

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Moore, Robert W., Jr.; and Weinrich, Stanley C., 4,244,363, Cl. 128-205.170.

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Weiss, Harald, to Vero Electronics GmbH. Bus bar for a card frame for circuit cards. 4,245,135, Cl. 174-72.00B.

Weiss, Jon R.: See—
Frazzini, Thomas L.; Holland, Michael K.; Pietri, Charles E.; and Weiss, Jon R., 4,244,800, Cl. 204-195.00R.

Weiss, Martin J.: See—
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Wellings, Ronald H., to Purex Engineering Services. Epicyclic nozzle drive, an orbital nozzle unit and a hydraulic cleaning head incorporating the same. 4,244,524, Cl. 239-227.000.

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Noltner, Gerhard; Oehme, Horst; Lademann, Rudolf; and Wendt, Heinz, 4,244,776, Cl. 159-48.00R.

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Wessel, Hans. Suction nozzles for vacuum cleaners. 4,244,080, Cl. 15-325.000.

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Brignola, Dominic J., 4,244,378, Cl. 128-766.000.

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Billings, William W.; and Luebrecht, Richard E., 4,245,184, Cl. 323-235.000.

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McAllister, William A., 4,245,175, Cl. 313-229.000.

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Wheelock, Kenneth S., to Exxon Research & Engineering Co. Hydrocarbon conversion using titanium clusters and noble metal on alumina catalyst. 4,244,809, Cl. 208-108.000.

Whiffen, Maurice C., to Lockheed Corporation. Periodicity verification circuit. 4,245,192, Cl. 328-140.000.

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Wieczniak, Walter J., to Oxy Metal Industries Corporation. Composition and method for electrodeposition of black nickel. 4,244,790, Cl. 204-49.000.

Wiesner, Leo, to Timex Corporation. Watch display. 4,245,335, Cl. 368-70.000.

Wiher, Wilfried; Woodhouse, Geoffrey D.; Mattson, George B.; Jansen, Harvey B.; Hatch, Robert A.; and Lewis, Leon D., to Garrett Corporation. The Variable geometry gas turbine engine fuel and guide vane control. 4,244,181, Cl. 60-39.16R.

Wilde, Douglas W.: See—
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Wilkinson, Samuel, to Burroughs Wellcome Co. Treatment of diarrhoea and dysentery. 4,244,944, Cl. 424-177.000.

Wilkinson, Samuel, to Burroughs Wellcome Co. Biologically active substance. 4,244,945, Cl. 424-177.000.

Williams, Douglas J. Solar panel. 4,244,354, Cl. 126-448.000.

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Williams, Robert; and Rohr, Albin, to Sun Chemical Corporation. Inker apparatus. 4,244,292, Cl. 101-350.000.

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Willingham, John H. Portable concrete molding apparatus. 4,244,682, Cl. 425-62.000.

Willmann, Michael, to Volkswagenwerk Aktiengesellschaft. Encased internal combustion engine, in particular for an automobile. 4,244,438, Cl. 181-204.000.

Wilson, John T. R. Electronically indicating torque wrench. 4,244,434, Cl. 177-245.000.

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Wilson, Thomas D.; and Scott, William G., to Abbott Laboratories. Collapsible solution container. 4,244,409, Cl. 150-0.500.

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Wirth, Hermann O.: See—
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Wise, Raleigh W.: See—
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Wissner, Allan; Weiss, Martin J.; and Bernady, Karel F., to American Cyanamid Company. Protenoic acids and esters. 4,245,121, Cl. 562-500.000.

Wittenstein, Horst; Neumann, Harry; and Peddinghaus, Gunter, to Carl Dan. Peddinghaus, GmbH & Co. KG. Spark-machining apparatus. 4,245,144, Cl. 219-69.00E.

- Witting, Harald L., to General Electric Company. Pulsed cesium discharge light source. 4,245,155, Cl. 250-227.000.
- Witzel, Bruce E.: See—
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- Wohrl, Josef, to Scriven, Eric Thomas, a part interest. Fluid measuring device. 4,244,218, Cl. 73-309.000.
- Wolf, Gerhard D.: See—
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- Wolfe, Brian A.: See—
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- Wolff, Peter, to Deutscher Verein des Gas- und Wasserfachs e.V., "DVGW-Forschungstelle". Method and apparatus for determining the chemical oxygen demand of organic materials dissolved in water. 4,244,696, Cl. 23-230.00R.
- Wolowelsky, Jehoshua: See—
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- Wolsky, Alfred A.: See—
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- Wong, James K. Basketball practicing apparatus. 4,244,569, Cl. 273-1.50A.
- Woo, Ming C., to National Casein of New Jersey. Pre-mixed catalyzed vinyl acetate co-polymer adhesive composition. 4,244,845, Cl. 260-17.00R.
- Wood, Dennis C.: See—
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- Wood, Eugene L.; and Cooke, Alfred M. Self scoring target for darts and similar projectiles. 4,244,583, Cl. 273-373.000.
- Woodhouse, Geoffrey D.: See—
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- Woods, Roger A.; and Dembicki, Harry, Jr., to Conoco, Inc. Sample pyrolysis oven. 4,244,917, Cl. 422-78.000.
- Woods, William E.; Lemay, Richard A.; and Curley, John L., to Honeywell Information Systems Inc. System providing adaptive response in information requesting unit. 4,245,299, Cl. 364-200.000.
- Worthington Pump, Inc.: See—
Bower, John R., 4,244,675, Cl. 415-135.000.
- Wu, Wen-li, to Monsanto Company. Spin-texture process. 4,244,907, Cl. 264-168.000.
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- Wurmli, Arthur, to Rieter Machine Works Ltd. Thread guide for ring spinning and ring twisting machines. 4,244,177, Cl. 57-353.000.
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- Holladay, Thomas M., 4,245,258, Cl. 358-283.000.
- Rees, James D.; Redden, David N.; Smith, Craig A.; and Stiebitz, Paul H., 4,244,649, Cl. 355-61.000.
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- Yagi, Norio: See—
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- Yaginuma, Hiroshi, to Nippon Zeon Co. Ltd. Process for producing semipermeable membrane. 4,244,817, Cl. 210-654.000.
- Yakshita, Auxutis A.: See—
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- Yamada, Eisuke, to Arakawa Industry Company Limited. Umbrella supporting device for bicycle. 4,244,550, Cl. 248-534.000.
- Yamada, Hideo: See—
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- Yamada, Takashi: See—
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- Yamada, Toyomichi: See—
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- Yamaha Hatsukoki Kabushiki Kaisha: See—
Matsumoto, Hiromitsu, 4,244,333, Cl. 123-432.000.
- Yamahira, Yoshiya; Fujioka, Keiji; Okuzawa, Yoshiko; Miura, Seiko; and Sato, Shigeji, to Sumitomo Chemical Company, Limited. Method for preparing urokinase injection. 4,244,943, Cl. 424-94.000.
- Yamaki, Kiyoshi: See—
Nomura, Hiroyuki; Mogi, Takashi; Kawasaki, Teruo; Mizote, Masanori; Yamaki, Kiyoshi; Oka, Takashi; and Matsuoka, Hideo, 4,244,514, Cl. 235-92.0DN.
- Yamamoto, Haruhisa; Ooura, Kiyomori; and Akiyama, Shinichi, to Nippon Zeon Co., Ltd. Oxidation of unsaturated aldehydes. 4,245,118, Cl. 562-532.000.
- Yamamoto, Masaaki: See—
Takeda, Renzo; Kurihara, Kunitoshi; Yamamoto, Masaaki; Uchikawa, Sadao; Yokomi, Michiro; Yamashita, Junichi; and Shimoshige, Takanori, 4,244,784, Cl. 176-54.000.
- Yamanouchi, Roy K.: See—
Daniels, Richard G.; Walton, Richard S.; and Yamanouchi, Roy K., 4,245,337, Cl. 368-82.000.
- Yamashita, Junichi: See—
Takeda, Renzo; Kurihara, Kunitoshi; Yamamoto, Masaaki; Uchikawa, Sadao; Yokomi, Michiro; Yamashita, Junichi; and Shimoshige, Takanori, 4,244,784, Cl. 176-54.000.
- Yamashita, Keitaro; and Numata, Toshio, to Hitachi Metals, Ltd. Development process for an electrophotographic duplicator employing magnetic toner. 4,245,024, Cl. 430-122.000.
- Yamashita, Yasui, to Yamashita, Yasui. Powdered fuel (gasoline substitution). 4,244,701, Cl. 44-1.00C.
- Yamat, Miguel B.: See—
Wafer, John A.; and Yamat, Miguel B., 4,245,203, Cl. 335-16.000.
- Yamatoya Company Limited: See—
Shoda, Otome, 4,244,408, Cl. 150-1.700.
- Yamaura, Susumu: See—
Kato, Mamoru; Yamaura, Susumu; Kamezawa, Yasutoki; and Aizawa, Tatsuo, 4,245,025, Cl. 430-126.000.
- Yamazaki, Masaru; and Fujimoto, Kunimitsu, to Copal Co., Ltd. Electronic calculator with time display function. 4,245,323, Cl. 364-705.000.
- Yamazaki, Yasuhiro; Wakahara, Yasushi; Yuuki, Kiyohiro; and Yamada, Toyomichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Transmission method and system for facsimile signal. 4,245,257, Cl. 358-260.000.
- Yamazato, Munehika: See—
Hasegawa, Junzo; Yoshida, Kazunori; Suzuki, Fuzio; Suzuki, Hajime; Arakawa, Hiroshi; Kobayashi, Akira; Arakawa, Akio; and Yamazato, Munehika, 4,244,402, Cl. 139-435.000.
- Yano, Kiyoshi: See—
Taneda, Yukinori; Kobayashi, Takashi; Yano, Kiyoshi; Isobe, Mitsunobu; and Sugimoto, Noboru, 4,244,539, Cl. 242-158.00R.
- Yashiro, Yuji: See—
Sasaki, Takehiko; and Yashiro, Yuji, 4,244,635, Cl. 350-336.000.
- Yashunsky, Vladimir G.: See—
Kholodov, Leonid E.; Yashunsky, Vladimir G.; Altshuler, Roald A.; Mashkovsky, Mikhail D.; Ogorodnikov, Valentina V.; Olovyanishnikova, Zoya A.; Vitvitskaya, Anna S.; Parahin, Valery A.; and Kelekhsaeva, Ekaterina A., 4,245,100, Cl. 548-125.000.
- Yasinavichius, Rimvidas P.; Trufanov, Vladimir I.; Yakshita, Auxutis A.; Epishkin, Yuri S.; and Rakov, Vladimir V. Magnetic head and method of fabricating the same. 4,245,269, Cl. 360-125.000.
- Yasuda, Eituro; Sato, Susumu; Segawa, Yoshihiro; Hattori, Tadashi; and Aoki, Keiji, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Gas component detection apparatus. 4,244,918, Cl. 422-93.000.
- Yasui, Yasuyoshi: See—
Uno, Makoto; Sanui, Yoshio; and Yasui, Yasuyoshi, 4,244,242, Cl. 74-710.000.
- Yasunaga, Ryohichi: See—
Suzuki, Takeshi; Chiba, Hiromasa; Yasunaga, Ryohichi; and Sekine, Hironaka, 4,245,062, Cl. 525-323.000.
- Yeda Research and Development Co. Ltd.: See—
Nudelman, Abraham; and Patchornik, Abraham, 4,244,885, Cl. 260-507.00R.
- Weinstein, Jacob; Wolowelsky, Jehoshua; and Gideon, Nurit, 4,245,042, Cl. 435-30.000.
- Yellen, Robert. Leg-sheet pallet assembling device and method. 4,244,766, Cl. 156-211.000.
- Yokomi, Michiro: See—
Takeda, Renzo; Kurihara, Kunitoshi; Yamamoto, Masaaki; Uchikawa, Sadao; Yokomi, Michiro; Yamashita, Junichi; and Shimoshige, Takanori, 4,244,784, Cl. 176-54.000.
- Yoldas, Bulent E.: See—
Paruso, Deborah M.; and Yoldas, Bulent E., 4,244,986, Cl. 427-126.400.
- Yoneyama, Eiichi: See—
Oshio, Hiromichi; Konishi, Hiroyuki; Matsumura, Shunji; Ishikawa, Kikuichi; and Yoneyama, Eiichi, 4,244,731, Cl. 71-105.000.
- Yonezuka, Kazunari: See—
Shioi, Ryoichi; Umea, Kazumasa; Yonezuka, Kazunari; and Senzaki, Hisao, 4,245,146, Cl. 219-381.000.
- Yoshida, Kazunori: See—
Hasegawa, Junzo; Yoshida, Kazunori; Suzuki, Fuzio; Suzuki, Hajime; Arakawa, Hiroshi; Kobayashi, Akira; Arakawa, Akio; and Yamazato, Munehika, 4,244,402, Cl. 139-435.000.
- Yoshida Kogyo K.K.: See—
Akashi, Shunji, 4,244,087, Cl. 24-205.11R.
- Yoshida, Takao; Hruza, Denis E., Sr.; and Hall, John B., to International Flavors & Fragrances Inc. Process for the production of allyl acetone. 4,245,122, Cl. 568-397.000.
- Yoshikawa, Kunihiko, to Kabushiki Kaisha Yoshikawa Seisakusho. Apparatus for attaching a brake lever stay to a handle bar of a bicycle. 4,244,235, Cl. 74-489.000.
- Yoshikawa, Sadao: See—
Suzuki, Kiyonori; Eto, Takeaki; Otsuka, Takeyasu; Abe, Shozo; and Yoshikawa, Sadao, 4,244,873, Cl. 260-343.600.
- Yoshimura, Junzo. Folding chair. 4,244,619, Cl. 297-34.000.

- Yoshitomi Pharmaceutical Industries, Ltd.: See—
Munakata, Tomohiko; Seki, Kazumi; Goto, Kazuhiro; and Ikegami, Kiyoteru, 4,244,952, Cl. 424-256.000.
- Yosikawa, Masanori: See—
Terada, Hideo; and Yosikawa, Masanori, 4,244,418, Cl. 164-147.000.
- Young, Thomas: See—
Fillmore, Gary L.; Hoffman, Arthur R.; and Young, Thomas, 4,245,225, Cl. 346-9.000.
- Youngblood, Douglas J.; and Nelson, Gerald V., to Texaco Inc. Fluidized catalytic cracking process for increased hydrogen production. 4,244,810, Cl. 208-120.000.
- Youngdale, Gilbert A., to Upjohn Company, The. 2a,2b-Dihomo-15-alkyl-PGF₂ compounds. 4,244,883, Cl. 260-410.90R.
- Yuasa, Teruo: See—
Kato, Nobukatsu; Takase, Tsutomu; Morimoto, Yoshio; Yuasa, Teruo; and Hattori, Minoru, 4,245,128, Cl. 568-806.000.
- Yui, Hiroshi; Sobajima, Yoshihiro; Ichikawa, Ryoichi; and Ema, Shigeakazu, to Mitsubishi Petrochemical Co., Ltd. Method for injection molding of polyolefin containing inorganic filler. 4,244,910, Cl. 264-328.120.
- Yuuki, Kiyohiro: See—
Yamazaki, Yasuhiro; Wakahara, Yasushi; Yuuki, Kiyohiro; and Yamada, Toyomichi, 4,245,257, Cl. 358-260.000.
- Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: See—
Umezawa, Haruo; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,245,045, Cl. 435-78.000.
- Zakhryamin, Anatoly D.: See—
Glushko, Mikhail F.; Skalatky, Viktor K.; Zakrzhevsky, Anatoly I.; and Zakhryamin, Anatoly D., 4,244,172, Cl. 57-215.000.
- Zakrzhevsky, Anatoly I.: See—
Glushko, Mikhail F.; Skalatky, Viktor K.; Zakrzhevsky, Anatoly I.; and Zakhryamin, Anatoly D., 4,244,172, Cl. 57-215.000.
- Zaner-Bloser, Inc.: See—
Wasyluk, Thomas M., 4,244,657, Cl. 400-109.000.
- Zaninelli, Ettore, to Baruffaldi Frizioni S.p.A. Turret with elastic action device for the positioning of the tool-carrying body. 4,244,247, Cl. 82-36.00A.
- Zellweger, Conrad: See—
Beyer, Karl; and Zellweger, Conrad, 4,244,081, Cl. 16-128.00A.
- Zeltner, Bernard; and Marmonnier, Gaston, to Manufacture Provencale de Matieres Plastiques SA. Water distributing soil support for plant containers. 4,244,149, Cl. 47-81.000.
- Zenith Radio Corporation: See—
Moore, Frederic J., 4,245,350, Cl. 455-180.000.
- Zeugner, Horst: See—
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Hueschens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,244,869, Cl. 260-239.0BD.
- Ziaylek, Theodore, Jr. Adjustable hull light assembly. 4,245,281, Cl. 362-61.000.
- Ziegenbalg, Siegfried; Haake, Gerhard; and Geiler, Gunter, to VEB Mansfeld Kombinat William Fleck. Process for the production of pure aluminum oxide. 4,244,928, Cl. 423-123.000.
- Zimin, Vladimir M.: See—
Guseinov, Nazim M. O.; Aliev, Vagab S.; Mustafae, Allah I.; Zimin, Vladimir M.; Sverdlov, Rafael S.; Shkondina, Nina G.; Chianurashvili, Eleonora E.; Morozova, Margarita K.; Mirzoev, Rasim S. O.; Sharifov, Gabil S. O.; Dzhabiev, Ramiz A.; Oshin, Leonid A.; and Genin, Lemel S., 4,244,892, Cl. 570-223.000.
- Zimmermann, Rainer: See—
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus; Pieper, Helmut; and Zimmermann, Rainer, 4,244,967, Cl. 424-300.000.
- Ziolo, Ronald F., to Xerox Corporation. Production of low density coated magnetic polymer carrier particulate materials. 4,245,026, Cl. 430-137.000.
- Zirker, Eugene S.; Redman, Andrew P.; Pierrot, Victor C.; Menzel, Alvin L.; and Kurt, Lynn E., to Deere & Company. Tree shear head and controls therefor. 4,244,403, Cl. 144-34.00E.
- Zornig, Harold F.; and Godbey, Luther C. Solar heated and cooled building. 4,244,519, Cl. 126-430.000.
- Zubovits nee Kristof, Terez: See—
Budai, Zoltan; Jurak, Ferenc; Kis-Tamas, Attila; Lay nee Konya, Aranka; Mezei, Tibor; Vig, Zoltan; and Zubovits nee Kristof, Terez, 4,244,888, Cl. 564-237.000.
- Zumsteg, Alphonse E.; and Suda, Pavel, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Beveled, coupled mode piezo-electric resonator. 4,245,173, Cl. 310-361.000.
- Zurcher, Erwin: See—
Ligones, Hubert; Kropf, Laurent; and Zurcher, Erwin, 4,244,169, Cl. 57-22.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF JANUARY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Athey, Stuart E.: See—
Fraula, Louis F.; and Athey, Stuart E., Re. 30,478, Cl. 134-57.000.
Bayer Aktiengesellschaft: See—
Jennen, Friedrich; and Linden, Hermann, Re. 30,476, Cl. 38-102.200.
Cohen, Ernest; Huberman, Marshall N.; Krieve, Walter, deceased; by Krieve, Bernice C., heir; by Krieve, Christine A., heir; and Lear, Charles W., to TRW Inc. Method of removing particles and fluids from a gas stream by charged droplets. Re. 30,479, Cl. 55-10.000.
Envirotech Corporation: See—
Gelfand, Peter C., Re. 30,480, Cl. 55-136.000.
Fraula, Louis F.; and Athey, Stuart E., to Hobart Corporation. Apparatus for rinsing and chemically sanitizing food ware items. Re. 30,478, Cl. 134-57.000.
Gardiner, Kenneth W.; and Schaefer, Louis F., to Savin Corporation. Electrophotographic liquid developing system. Re. 30,477, Cl. 118-689.000.
Gelfand, Peter C., to Envirotech Corporation. Electric field directed control of dust in electrostatic precipitators. Re. 30,480, Cl. 55-136.000.
Heinze, Richard, Jr., heir: See—
Heinze, Richard, Sr., deceased; and Heinze, Richard, Jr., heir, Re. 30,475, Cl. 16-163.000.
Heinze, Richard, Sr., deceased; and by Heinze, Richard, Jr., heir. Hinges. Re. 30,475, Cl. 16-163.000.
Hobart Corporation: See—
Fraula, Louis F.; and Athey, Stuart E., Re. 30,478, Cl. 134-57.000.
Huberman, Marshall N.: See—
Cohen, Ernest; Huberman, Marshall N.; Krieve, Walter, deceased; Krieve, Bernice C., heir; Krieve, Christine A., heir; and Lear, Charles W., Re. 30,479, Cl. 55-10.000.
Jennen, Friedrich; and Linden, Hermann, to Bayer Aktiengesellschaft. Devices for the fold-free stretching and holding of liquid crystal films. Re. 30,476, Cl. 38-102.200.
Koppers Company, Inc.: See—
Lacona, Joseph, Re. 30,481, Cl. 528-302.000.
Krieve, Bernice C., heir: See—
Cohen, Ernest; Huberman, Marshall N.; Krieve, Walter, deceased; Krieve, Bernice C., heir; Krieve, Christine A., heir; and Lear, Charles W., Re. 30,479, Cl. 55-10.000.
Krieve, Christine A., heir: See—
Cohen, Ernest; Huberman, Marshall N.; Krieve, Walter, deceased; Krieve, Bernice C., heir; Krieve, Christine A., heir; and Lear, Charles W., Re. 30,479, Cl. 55-10.000.
Krieve, Walter, deceased: See—
Cohen, Ernest; Huberman, Marshall N.; Krieve, Walter, deceased; Krieve, Bernice C., heir; Krieve, Christine A., heir; and Lear, Charles W., Re. 30,479, Cl. 55-10.000.
Lacona, Joseph, to Koppers Company, Inc. Process for reducing the processing time in the production of polyesters. Re. 30,481, Cl. 528-302.000.
Lase Industries, Inc.: See—
Whitlock, William E., Re. 30,482, Cl. 360-32.000.
Lear, Charles W.: See—
Cohen, Ernest; Huberman, Marshall N.; Krieve, Walter, deceased; Krieve, Bernice C., heir; Krieve, Christine A., heir; and Lear, Charles W., Re. 30,479, Cl. 55-10.000.
Linden, Hermann: See—
Jennen, Friedrich; and Linden, Hermann, Re. 30,476, Cl. 38-102.200.
Savin Corporation: See—
Gardiner, Kenneth W.; and Schaefer, Louis F., Re. 30,477, Cl. 118-689.000.
Schaefer, Louis F.: See—
Gardiner, Kenneth W.; and Schaefer, Louis F., Re. 30,477, Cl. 118-689.000.
TRW Inc.: See—
Cohen, Ernest; Huberman, Marshall N.; Krieve, Walter, deceased; Krieve, Bernice C., heir; Krieve, Christine A., heir; and Lear, Charles W., Re. 30,479, Cl. 55-10.000.
Whitlock, William E., to Lase Industries, Inc. Pulse code modulated digital audio system. Re. 30,482, Cl. 360-32.000.

LIST OF DESIGN PATENTEES

AFGA-Gevaert, A.G.: See—
Schlagheck, Norbert; and Schultes, Herbert, 257,852, Cl. D16-14.000.
AGFA-Gevaert, A.G.: See—
Schlagheck, Norbert; and Schultes, Herbert, 257,853, Cl. D16-42.000.
Allwelt, Mary F. V.: See—
Vander Velde, Richard; and Allwelt, Mary F. V., 257,807, Cl. D6-114.000.
Aluminum Company of America: See—
Welch, Bing, 257,831, Cl. D9-445.000.
American Optical Corporation: See—
Beane, Richard M., 257,854, Cl. D16-65.000.
Beane, Richard M., 257,855, Cl. D16-65.000.
Winig, Stephen U., 257,881, Cl. D24-1.100.
Aprahamian, Vaughn, to LE-BO Products Company, Inc. Tray insert for tape cartridges and tape cassettes. 257,797, 1-13-81, Cl. D3-35.000.
Aron, Daniel L., to Mole-Richardson Co. Spot lamp. 257,890, 1-13-81, Cl. D26-63.000.
Asaki, James T.: See—
Dean, John R.; and Asaki, James T., 257,892, Cl. D26-71.000.
Baisch, Herbert: See—
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, 257,848, Cl. D15-133.000.
Ball, Douglas C., to Hauserman Ltd. Room divider. 257,811, 1-13-81, Cl. D6-139.000.
Bareis, Marvin A., to Kellwood Company. Window for tent or the like. 257,876, 1-13-81, Cl. D21-254.000.
Baron Rubber Limited: See—
Combarret, Luc, 257,799, Cl. D2-320.000.
Baxter Travenol Laboratories, Inc.: See—
Kersten, Jean, 257,886, Cl. D24-52.000.
Kulle, Lee K., 257,885, Cl. D24-52.000.
Bay, William P., Jr. Can opener. 257,822, 1-13-81, Cl. D8-18.000.
Beane, Richard M., to American Optical Corporation. Pair of spectacles. 257,854, 1-13-81, Cl. D16-65.000.
Beane, Richard M., to American Optical Corporation. Pair of spectacles. 257,855, 1-13-81, Cl. D16-65.000.
Beatrice Foods Co.: See—
Cyplick, Kathryn L., 257,812, Cl. D6-139.000.
Birdsall, Wallace O.: See—
Parise, Carl; Fullerton, Gary L.; and Birdsall, Wallace O., 257,846, Cl. D15-63.000.
Bowls, Thurman: See—
Wotowicz, Joseph R.; and Bowls, Thurman, 257,895, Cl. D26-85.000.
Briggs & Stratton Corporation: See—
Stevens, Clifford B., 257,844, Cl. D15-1.000.
Brook, William D.; and Meekins, Gilbert F. Trophy. 257,833, 1-13-81, Cl. D11-157.000.
Bruce, Robert A., to Corning Glass Works. Block for flattening a food paste. 257,816, 1-13-81, Cl. D7-41.000.
Card, David R., to Champion International Corporation. Display carry container blank. 257,830, 1-13-81, Cl. D9-432.000.
Castelli, Bertrand. Ball paddle for table game. 257,867, 1-13-81, Cl. D21-213.000.
Champion International Corporation: See—
Card, David R., 257,830, Cl. D9-432.000.
Webinger, George P., 257,829, Cl. D9-430.000.
Chan, Ming K. Lantern assembly. 257,889, 1-13-81, Cl. D26-40.000.
Chow, Siu T. Telephone cradle. 257,842, 1-13-81, Cl. D14-65.000.
Cocklece, Allan R. Poultry nest bank unit. 257,905, 1-13-81, Cl. D30-41.000.
Combarret, Luc, to Baron Rubber Limited. Sole. 257,799, 1-13-81, Cl. D2-320.000.
Conner, James M.; Finelli, Patrick L.; Ostrowski, John C.; Ryan, James M.; and Slavitter, Frederick, to Polaroid Corporation. Folding photographic camera or similar article. 257,849, 1-13-81, Cl. D16-05.000.
Continental Group, Inc.: See—
Walter, John, 257,847, Cl. D15-112.000.
Corning Glass Works: See—
Bruce, Robert A., 257,816, Cl. D7-41.000.
Crownover, Glen, to Malm Fireplaces, Inc. Cantilevered fireplace. 257,880, 1-13-81, Cl. D23-97.000.
Cyplick, Kathryn L., to Beatrice Foods Co. Panel for partitions or the like. 257,812, 1-13-81, Cl. D6-139.000.

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LIST OF DESIGN PATENTEES

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Dean, John R.; and Asaki, James T., to International Telephone and Telegraph Corporation. Luminaire. 257,892, 1-13-81, Cl. D26-71.000.
DiBernardo, Joseph A., to Lighting Products, Inc. Light fixture, or similar article. 257,894, 1-13-81, Cl. D26-75.000.
Drost, James L.; and Gordin, Myron K., to Muscatine Lighting Manufacturing Co., Inc. Flood lighting assembly. 257,891, 1-13-81, Cl. D26-69.000.
Durand, Jean-Jacques. Tumbler or similar article. 257,815, 1-13-81, Cl. D7-14.000.
Enzman, Robert H. Toy airplane. 257,863, 1-13-81, Cl. D21-90.000.
Finelli, Patrick L.: See—
Conner, James M.; Finelli, Patrick L.; Ostrowski, John C.; Ryan, James M.; and Slavitter, Frederick, 257,849, Cl. D16-05.000.
Flint, Roger L.; and Knemeyer, Siegfried, to Rockwell International Corporation. Altitude/vertical speed indicator. 257,832, 1-13-81, Cl. D10-67.000.
Frigoscandia Contracting AB: See—
Klarman, John, 257,887, Cl. D25-33.000.
Fujita, Yoshio: See—
Kohno, Shuichi; and Fujita, Yoshio, 257,843, Cl. D14-94.000.
Fullerton, Gary L.: See—
Parise, Carl; Fullerton, Gary L.; and Birdsall, Wallace O., 257,846, Cl. D15-63.000.
General Electric Company: See—
Wotowicz, Joseph R.; and Bowls, Thurman, 257,895, Cl. D26-85.000.
Giugiaro, Giorgetto. Automobile. 257,834, 1-13-81, Cl. D12-92.000.
Goldman, Alan H. Combined spinning and whistling toy. 257,864, 1-13-81, Cl. D21-98.000.
Gordin, Myron K.: See—
Drost, James L.; and Gordin, Myron K., 257,891, Cl. D26-69.000.
Haggard, Robert E. Bench. 257,808, 1-13-81, Cl. D6-60.000.
Hall, Gary Lester: See—
Hall, Lester B., 257,907, Cl. D99-99.000.
Hall, Lester B., to Hall, Gary Lester. Ultrasonic pest repelling device. 257,907, 1-13-81, Cl. D99-99.000.
Halter, David E. Cycle pump holder. 257,836, 1-13-81, Cl. D12-158.000.
Hamm, Edgar L., Jr. Portable animal blow dryer. 257,904, 1-13-81, Cl. D30-40.000.
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Saw table. 257,848, 1-13-81, Cl. D15-133.000.
Hauserman Ltd.: See—
Ball, Douglas C., 257,811, Cl. D6-139.000.
Havener, Eugene M.; and Havener, Joanne M. Cover for rolled paper. 257,805, 1-13-81, Cl. D6-86.000.
Havener, Joanne M.: See—
Havener, Eugene M.; and Havener, Joanne M., 257,805, Cl. D6-86.000.
Hegeland, Rodney, to Wisco Industries, Inc. Bun toaster. 257,820, 1-13-81, Cl. D7-91.000.
Hennessey, Robert D.: See—
Peabody, Ralph C.; and Hennessey, Robert D., 257,845, Cl. D15-30.000.
Hicks, Cyril E. Toilet chair. 257,879, 1-13-81, Cl. D23-48.000.
Hilary Page "Sensible" Toys Limited: See—
Wyman, Dennis G., 257,865, Cl. D21-134.000.
Hirsh Company: See—
Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, 257,848, Cl. D15-133.000.
Hitachi, Ltd.: See—
Kohno, Shuichi; and Fujita, Yoshio, 257,843, Cl. D14-94.000.
Hodkin, Fredric J. Separable game piece. 257,861, 1-13-81, Cl. D21-51.000.
Hoffman, Sheila, to Wine Diversions, Ltd. Game board. 257,839, 1-13-81, Cl. D21-34.000.
Holmberg, Gote E. Y. Foot massage device. 257,883, 1-13-81, Cl. D24-36.000.
Honda Giken Kogyo Kabushiki Kaisha: See—
Nakano, Masahito, 257,835, Cl. D12-92.000.
Inaba, Mitsuru: See—
Kotsuka, Noriaki; and Inaba, Mitsuru, 257,840, Cl. 14-2.000.
International Telephone and Telegraph Corporation: See—
Dean, John R.; and Asaki, James T., 257,892, Cl. D26-71.000.
Jones, Dale A. Implement head. 257,826, 1-13-81, Cl. D8-78.000.
Kates, Fred W., to Revlon, Inc. Set of modular display units. 257,814, 1-13-81, Cl. D6-186.000.
Kellwood Company: See—
Bareis, Marvin A., 257,876, Cl. D21-254.000.
Kersten, Jean, to Baxter Travenol Laboratories, Inc. Piercing cannula for administering parenteral fluid or the like. 257,886, 1-13-81, Cl. D24-52.000.
Kilgore Corporation: See—
Rudy, Richard, 257,875, Cl. D21-245.000.
Klarman, John, to Frigoscandia Contracting AB. Module freezing plant. 257,887, 1-13-81, Cl. D25-33.000.
Klotz, Addie L.: See—
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Knemeyer, Siegfried: See—
Flint, Roger L.; and Knemeyer, Siegfried, 257,832, Cl. D10-67.000.
Koh-I-Noor Rapidograph, Inc.: See—
Leuenberger, John P.; and Witz, Wolfgang, 257,857, Cl. D19-49.000.
Kohno, Shuichi; and Fujita, Yoshio, to Hitachi, Ltd. Facsimile transmitter. 257,843, 1-13-81, Cl. D14-94.000.
Kotsuka, Noriaki; and Inaba, Mitsuru. Video tape recorder. 257,840, 1-13-81, Cl. 14-2.000.
Kulle, Lee K., to Baxter Travenol Laboratories, Inc. Winged needle. 257,885, 1-13-81, Cl. D24-52.000.
Lam Inc.: See—
Scholze, Alfred O.; and Williams, Thomas A., 257,896, Cl. D26-93.000.
Scholze, Alfred O.; and Williams, Thomas A., 257,897, Cl. D26-93.000.
Scholze, Alfred O.; and Williams, Thomas A., 257,898, Cl. D26-93.000.
Scholze, Alfred O.; and Williams, Thomas A., 257,899, Cl. D26-93.000.
Scholze, Alfred O.; and Williams, Thomas A., 257,900, Cl. D26-93.000.
Scholze, Alfred O.; and Williams, Thomas A., 257,901, Cl. D26-93.000.
Scholze, Alfred O.; and Williams, Thomas A., 257,902, Cl. D26-93.000.
Scholze, Alfred O.; and Williams, Thomas A., 257,903, Cl. D26-93.000.
LE-BO Products Company, Inc.: See—
Aprahamian, Vaughn, 257,797, Cl. D3-35.000.
Les Industries Provinciales Ltee.: See—
Morin, Andre, 257,819, Cl. D7-54.000.
Leuenberger, John P.; and Witz, Wolfgang, to Koh-I-Noor Rapidograph, Inc. Drawing pen. 257,857, 1-13-81, Cl. D19-49.000.
Lighting Products, Inc.: See—
DiBernardo, Joseph A., 257,894, Cl. D26-75.000.
Louis, R. J.: See—
Sheehan, Richard D.; and Louis, R. J., 257,874, Cl. D21-244.000.
Lubliner, Murray J., to United States Luggage Corp. Luggage. 257,801, 1-13-81, Cl. D3-71.000.
MacDougall, Alexander S. O. Golf club head. 257,869, 1-13-81, Cl. D21-219.000.
MacDougall, Alexander S. O. Golf club head. 257,870, 1-13-81, Cl. D21-219.000.
MacDougall, Alexander S. O. Golf club head. 257,871, 1-13-81, Cl. D21-219.000.
MacDougall, Alexander S. O. Golf club head. 257,872, 1-13-81, Cl. D21-219.000.
MacDougall, Alexander S. O. Golf club head. 257,873, 1-13-81, Cl. D21-219.000.
Malm Fireplaces, Inc.: See—
Crownover, Glen, 257,880, Cl. D23-97.000.
Matsumoto, Nobuki, to Ricoh Company, Ltd. Camera. 257,850, 1-13-81, Cl. D16-06.000.
Maune, James J. Bookend. 257,806, 1-13-81, Cl. D6-106.000.
Maza, Dale T.; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Dolly plate for a refuse container. 257,823, 1-13-81, Cl. D12-31.000.
Meekins, Gilbert F.: See—
Brock, William D.; and Meekins, Gilbert F., 257,833, Cl. D11-157.000.
Middleton, Dwight N. Deck of playing cards. 257,860, 1-13-81, Cl. D21-42.000.
Millhollen, Gary A. Flush mounted passive domestic solar water heater module. 257,893, 1-13-81, Cl. D25-72.000.
Mockett, John, to Yamaha Motor N.V. Motorcycle fairing. 257,838, 1-13-81, Cl. D12-182.000.
Mole-Richardson Co.: See—
Aron, Daniel L., 257,890, Cl. D26-63.000.
Molnyske Aktiebolag: See—
Ternstrom, Maj I., 257,884, Cl. D24-50.000.
Morin, Andre, to Les Industries Provinciales Ltee. Condiment container. 257,819, 1-13-81, Cl. D7-54.000.
Moussette, Robert A. Lightbulb dimmer socket. 257,839, 1-13-81, Cl. D13-25.000.
Muscatine Lighting Manufacturing Co., Inc.: See—
Drost, James L.; and Gordin, Myron K., 257,891, Cl. D26-69.000.
Nagy, Louis E.: See—
Rawson, Paul O.; and Nagy, Louis E., 257,882, Cl. D24-17.000.
Nakano, Masahito, to Honda Giken Kogyo Kabushiki Kaisha. Motorcar. 257,835, 1-13-81, Cl. D12-92.000.
Oestreich, Curtis J.; Radice, Michael; and Sealice, John J., to Revlon, Inc. Display dispenser for perfumes or the like. 257,813, 1-13-81, Cl. D6-157.000.
Ostrowski, John C.: See—
Conner, James M.; Finelli, Patrick L.; Ostrowski, John C.; Ryan, James M.; and Slavitter, Frederick, 257,849, Cl. D16-05.000.
Owens-Illinois, Inc.: See—
Plummer, James E., 257,818, Cl. D7-52.000.
Strand, Gordon A.; and Weckman, Richard L., 257,827, Cl. D9-412.000.
Strand, Gordon A.; and Weckman, Richard L., 257,828, Cl. D9-412.000.
Parise, Carl; Fullerton, Gary L.; and Birdsall, Wallace O., to Parise & Sons, Inc. Power scrubber. 257,846, 1-13-81, Cl. D15-63.000.
Parise & Sons, Inc.: See—
Parise, Carl; Fullerton, Gary L.; and Birdsall, Wallace O., 257,846, Cl. D15-63.000.
Patterson, James B. Combined fishing pliers and cutter. 257,877, 1-13-81, Cl. D22-31.000.
Peabody, Ralph C.; and Hennessey, Robert D., to Tennant Company. Sweeper. 257,845, 1-13-81, Cl. D15-30.000.

- Pedersen, Erling H., to Stig Ravn A/S. Vanity case. 257,800, 1-13-81, Cl. D3-39.000.
- Perich, John. Night light. 257,888, 1-13-81, Cl. D26-26.000.
- Pierce, Harless. Safety chain holder. 257,837, 1-13-81, Cl. D12-162.000.
- Pike, Timothy A. Infant and incapacitant feeding spoon. 257,821, 1-13-81, Cl. D7-141.000.
- Plummer, James E., to Owens-Illinois, Inc. Decanter. 257,818, 1-13-81, Cl. D7-52.000.
- Polaroid Corporation: See—
- Conner, James M.; Finelli, Patrick L.; Ostrowski, John C.; Ryan, James M.; and Slavitter, Frederick, 257,849, Cl. D16-05.000.
- Puccini, John L.; and Shea, Edward F., Jr. Tool for imprinting non-repeating stone patterns in fresh concrete. 257,824, 1-13-81, Cl. D8-45.000.
- Puccini, John L.; and Shea, Edward F., Jr. Tool for imprinting non-repeating stone patterns in fresh concrete. 257,825, 1-13-81, Cl. D8-45.000.
- R. J. Louis Enterprises, Inc.: See—
- Sheehan, Richard D.; and Louis, R. J., 257,874, Cl. D21-244.000.
- Radice, Michael: See—
- Oestreich, Curtis J.; Radice, Michael; and Scalice, John J., 257,813, Cl. D6-157.000.
- Rapoport, George. Detachable file folder for an attache case. 257,798, 1-13-81, Cl. D3-79.000.
- Rawson, Paul O.; and Nagy, Louis E., to United States Surgical Corporation. Combination diagnostic instrument and induction charger therefor. 257,882, 1-13-81, Cl. D24-17.000.
- Revlon, Inc.: See—
- Kates, Fred W., 257,814, Cl. D6-186.000.
- Oestreich, Curtis J.; Radice, Michael; and Scalice, John J., 257,813, Cl. D6-157.000.
- Ricoh Company, Ltd.: See—
- Matsumoto, Nobuki, 257,850, Cl. D16-06.000.
- Rockwell International Corporation: See—
- Flint, Roger L.; and Knemeyer, Siegfried, 257,832, Cl. D10-67.000.
- Rubbermaid Commercial Products Inc.: See—
- Maza, Dale T.; and Tomblin, Glen E., 257,823, Cl. D12-31.000.
- Rudy, Richard, to Kilgore Corporation. Bulldozer playground climber. 257,875, 1-13-81, Cl. D21-245.000.
- Ryan, James M.: See—
- Conner, James M.; Finelli, Patrick L.; Ostrowski, John C.; Ryan, James M.; and Slavitter, Frederick, 257,849, Cl. D16-05.000.
- Scalice, John J.: See—
- Oestreich, Curtis J.; Radice, Michael; and Scalice, John J., 257,813, Cl. D6-157.000.
- Schlagheck, Norbert; and Schultes, Herbert, to AFGA-Gevaert, A.G. Rear screen motion picture projector. 257,852, 1-13-81, Cl. D16-14.000.
- Schlagheck, Norbert; and Schultes, Herbert, to AGFA-Gevaert, A.G. Attachable lamp for a movie camera. 257,853, 1-13-81, Cl. D16-42.000.
- Schoch, Robert R. Toy airplane. 257,862, 1-13-81, Cl. D21-89.000.
- Scholze, Alfred O.; and Williams, Thomas A., to Lam Inc. Modular lamp stand for indirect lighting. 257,896, 1-13-81, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., to Lam Inc. Modular lamp stand for indirect lighting. 257,897, 1-13-81, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., to Lam Inc. Modular lamp stand for indirect lighting. 257,898, 1-13-81, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., to Lam Inc. Modular lamp stand for indirect lighting. 257,899, 1-13-81, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., to Lam Inc. Modular lamp stand for indirect lighting. 257,900, 1-13-81, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., to Lam Inc. Modular lamp stand for indirect lighting. 257,901, 1-13-81, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., to Lam Inc. Modular lamp stand for indirect lighting. 257,902, 1-13-81, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., to Lam Inc. Modular lamp stand for indirect lighting. 257,903, 1-13-81, Cl. D26-93.000.
- Schultes, Herbert: See—
- Schlagheck, Norbert; and Schultes, Herbert, 257,852, Cl. D16-14.000.
- Schlagheck, Norbert; and Schultes, Herbert, 257,853, Cl. D16-42.000.
- Schwartz, Edwin L. Air foot pump. 257,878, 1-13-81, Cl. D23-14.000.
- Shea, Edward F., Jr.: See—
- Puccini, John L.; and Shea, Edward F., Jr., 257,824, Cl. D8-45.000.
- Puccini, John L.; and Shea, Edward F., Jr., 257,825, Cl. D8-45.000.
- Sheehan, Richard D.; and Louis, R. J., to R. J. Louis Enterprises, Inc. Skateboard ramp. 257,874, 1-13-81, Cl. D21-244.000.
- Shelton, Bobby J. Golf putter. 257,868, 1-13-81, Cl. D21-217.000.
- Simpson, Bruce A. Vaulting box. 257,866, 1-13-81, Cl. D21-191.000.
- Sklaroff, William B. Two tier letter tray. 257,858, 1-13-81, Cl. D19-92.000.
- Slavitter, Frederick: See—
- Conner, James M.; Finelli, Patrick L.; Ostrowski, John C.; Ryan, James M.; and Slavitter, Frederick, 257,849, Cl. D16-05.000.
- Speck, Richard P. Light meter. 257,851, 1-13-81, Cl. D16-39.000.
- Stevens, Clifford B., to Briggs & Stratton Corporation. Two-cylinder vertical shaft internal combustion engine. 257,844, 1-13-81, Cl. D15-1.000.
- Stig Ravn A/S: See—
- Pedersen, Erling H., 257,800, Cl. D3-39.000.
- Strand, Gordon A.; and Weckman, Richard L., to Owens-Illinois, Inc. Combined bottle and closure. 257,827, 1-13-81, Cl. D9-412.000.
- Strand, Gordon A.; and Weckman, Richard L., to Owens-Illinois, Inc. Bottle. 257,828, 1-13-81, Cl. D9-412.000.
- Sylvan, Richard: See—
- Handler, Milton E.; Sylvan, Richard; and Baisch, Herbert, 257,848, Cl. D15-133.000.
- Tada, Narumi, to Toa Electric Company, Ltd. Telephone set. 257,841, 1-13-81, Cl. 14-53.000.
- Tennant Company: See—
- Peabody, Ralph C.; and Hennessey, Robert D., 257,845, Cl. D15-50.000.
- Ternstrom, Maj I., to Moilycke Aktiebolag. Elastosized baby pants for holding diapers. 257,884, 1-13-81, Cl. D24-50.000.
- Toa Electric Company, Ltd.: See—
- Tada, Narumi, 257,841, Cl. 14-53.000.
- Tomblin, Glen E.: See—
- Maza, Dale T.; and Tomblin, Glen E., 257,823, Cl. D12-31.000.
- Underwood, Ronald G. Bed pedestal or similar article. 257,802, 1-13-81, Cl. D6-84.000.
- Underwood, Ronald G. Bed pedestal or similar article. 257,803, 1-13-81, Cl. D6-84.000.
- Underwood, Ronald G. Bed pedestal or similar article. 257,804, 1-13-81, Cl. D6-84.000.
- Underwood, Ronald G. Bed pedestal or similar article. 257,809, 1-13-81, Cl. D6-84.000.
- United States Luggage Corp.: See—
- Lubliner, Murray J., 257,801, Cl. D3-71.000.
- United States Surgical Corporation: See—
- Rawson, Paul O.; and Nagy, Louis E., 257,882, Cl. D24-17.000.
- Vander Velde, Richard; and Allwelt, Mary F. V. Jewelry rack. 257,807, 1-13-81, Cl. D6-114.000.
- Walter, John, to Continental Group, Inc., The. Dispenser. 257,847, 1-13-81, Cl. D15-112.000.
- Webinger, George P., to Champion International Corporation. Interlocking flap configuration blank. 257,829, 1-13-81, Cl. D9-430.000.
- Weckman, Richard L.: See—
- Strand, Gordon A.; and Weckman, Richard L., 257,827, Cl. D9-412.000.
- Strand, Gordon A.; and Weckman, Richard L., 257,828, Cl. D9-412.000.
- Weinreb, Robert. Camera bag. 257,906, 1-13-81, Cl. D3-33.000.
- Welch, Bing, to Aluminum Company of America. Closure overcap. 257,831, 1-13-81, Cl. D9-445.000.
- Williams, Thomas A.: See—
- Scholze, Alfred O.; and Williams, Thomas A., 257,896, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., 257,897, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., 257,898, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., 257,899, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., 257,900, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., 257,901, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., 257,902, Cl. D26-93.000.
- Scholze, Alfred O.; and Williams, Thomas A., 257,903, Cl. D26-93.000.
- Wilson, John B. Adjustable wall mounted bracket for holding a flower pot. 257,810, 1-13-81, Cl. D6-137.000.
- Winbauer, Robert A. Combined golf tee and ball marker holder. 257,796, 1-13-81, Cl. D2-400.000.
- Wine Diversions, Ltd.: See—
- Hoffman, Sheila, 257,859, Cl. D21-34.000.
- Winig, Stephen U., to American Optical Corporation. Combined lens cabinet and writing desk. 257,881, 1-13-81, Cl. D24-1.100.
- Wisco Industries, Inc.: See—
- Hegeland, Rodney, 257,820, Cl. D7-91.000.
- Witke, Kurt W.; and Klotz, Addie L. Eyeglasses. 257,856, 1-13-81, Cl. D16-71.000.
- Witz, Wolfgang: See—
- Leuenberger, John P.; and Witz, Wolfgang, 257,857, Cl. D19-49.000.
- Wotowiec, Joseph R.; and Bowls, Thurman, to General Electric Company. Light fixture. 257,895, 1-13-81, Cl. D26-85.000.
- Wyman, Dennis G., to Hilary Page "Sensible" Toys Limited. Musical toy truck. 257,865, 1-13-81, Cl. D21-134.000.
- Yamaha Motor N.V.: See—
- Mockett, John, 257,838, Cl. D12-182.000.
- Young, Nancy T. Mini cake pan or similar article. 257,817, 1-13-81, Cl. D7-43.000.

LIST OF PLANT PATENTEEES

- Duffett, William E.: See—
- Jessel, Walter H., Jr.; and Duffett, William E., 4,622, Cl. 74.000.
- Jessel, Walter H., Jr.; and Duffett, William E., 4,623, Cl. 74.000.
- Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,622, 1-13-81, Cl. 74.000.
- Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,623, 1-13-81, Cl. 74.000.
- Kitahara, Kei: See—
- Kitahara, Lawrence K.; and Kitahara, Kei, 4,621, Cl. 38.000.
- Kitahara, Lawrence K.; and Kitahara, Kei, 4,621, 1-13-81, Cl. 38.000.
- Moore, Ralph S. Rose plant. 4,618, 1-13-81, Cl. 8.000.
- Moore, Ralph S. Miniature rose plant. 4,619, 1-13-81, Cl. 9.000.
- Walter, John C.: See—
- Winchel, Joseph F., 4,620, Cl. 11.000.
- Winchel, Joseph F., to Walter, John C. Rose plant. 4,620, 1-13-81, Cl. 11.000.
- Yoder Brothers, Inc.: See—
- Jessel, Walter H., Jr.; and Duffett, William E., 4,622, Cl. 74.000.
- Jessel, Walter H., Jr.; and Duffett, William E., 4,623, Cl. 74.000.

ISSUED JANUARY 13, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2		CLASS 33		6	4,244,710	CLASS 73		488	4,244,279	20 B	4,244,326
160	4,244,057	1 M	4,244,105	10	Re.30,479	1 F	4,244,207	159	4,244,280	235 A	4,244,327
197	4,244,058	31	4,244,106	89	4,244,711	46	4,244,208				
400	4,244,059	143 J	4,244,107	124	4,244,712	49.8	4,244,209				
		143 L	4,244,108	136	Re.30,480	113	4,244,210				
CLASS 3		180 R	4,244,109	158	4,244,713	115	4,244,211	56	4,244,283		
13	4,244,060		4,244,110	238	4,244,714	119	4,244,212				
			4,244,111	315	4,244,715	125	4,244,213				
CLASS 4		203.15	4,244,112	340	4,244,716	146.8	4,244,214	327	4,244,284		
144.1	4,244,061	203.18	4,244,113	364	4,244,717	178 R	4,244,215	359	4,244,285		
228	4,244,062	257	4,244,114	377	4,244,718	190 H	4,244,216	459	4,244,286		
237	4,244,063	265	4,244,115			204	4,244,217				
254	4,244,064	304	4,244,116	CLASS 36		309	4,244,218				
		366	4,244,117	10.5	4,244,160		4,244,219				
CLASS 5		430	4,244,118	13.6	4,244,161	343 R	4,244,220	37	4,244,287		
400	4,244,065	437	4,244,119	14.2	4,244,162		4,244,221				
463	4,244,066			192	4,244,163		4,244,222	93.02	4,244,288		
		CLASS 36		202	4,244,164	382 G	4,244,223	93.18	4,244,289		
CLASS 7		2 R	4,244,121	327 R	4,244,165	422 TC	4,244,224	99	4,244,290		
107	4,244,067			341	4,244,166	517 AV	4,244,225				
		CLASS 37		400.17	4,244,167	621	4,244,226	350	4,244,291		
CLASS 8		41	4,244,122		4,244,168	703	4,244,227				
116 P	4,244,692	193	4,244,123	CLASS 37		716	4,244,228				
465	4,244,690			41	4,244,124	722	4,244,229	38 RL	4,244,293		
676	4,244,691	77.82	4,244,124	CLASS 38		861.19	4,244,230	49.3	4,244,294		
		102.2	Re.30,476	22	4,244,169	861.42	4,244,231	205	4,244,295		
CLASS 10				124	4,244,170						
101 R	4,244,068	CLASS 40		208	4,244,171	CLASS 74					
		2 R	4,244,125	215	4,244,172	15.66	4,244,232	138 G	4,244,296		
CLASS 11		112	4,244,126	227	4,244,173	89	4,244,233				
1 AD	4,244,069	152	4,244,127	232	4,244,174	489	4,244,234				
		154	4,244,128	282	4,244,175	493	4,244,235	168	4,244,297		
CLASS 12		373.2	4,244,129	295	4,244,176	501 R	4,244,236	197 D	4,244,298		
142 J	4,244,070	442	4,244,130	353	4,244,177	560	4,244,237	251	4,244,299		
		CLASS 13				572	4,244,238				
6	4,245,132	CLASS 43		39.04	4,244,180	675	4,244,239				
35	4,245,133	1 A	4,244,131	39.16 R	4,244,181	710	4,244,240	1.11	4,244,739		
		CLASS 43		39.36	4,244,179	716	4,244,241	14.34	4,244,740		
CLASS 15		21.2	4,244,132	224	4,244,183	713	4,244,242	20	4,244,741		
53 A	4,244,071	42.25	4,244,133	420	4,244,184	866	4,244,243	38.22	4,244,742		
104.06 A	4,244,073	58	4,244,134	550	4,244,185		4,244,244	39.5	4,244,743		
104.1 R	4,244,072	122	4,244,135	560	4,244,186	CLASS 75		55	4,244,740		
104.8	4,244,587			602	4,244,187	38	4,244,732	58	4,244,741		
114	4,244,074	CLASS 44		624	4,244,188	72	4,244,733	64	4,244,745		
145	4,244,075	1 C	4,244,701	641	4,244,189	101 R	4,244,734	268	4,244,746		
188	4,244,076	1 R	4,244,700		4,244,190	129	4,244,735	271	4,244,747		
250.32	4,244,077	1 SR	4,244,699	728	4,244,191		4,244,736				
302	4,244,078	51	4,244,702	754	4,244,192	211	4,244,737	116	4,244,300		
321	4,244,079	56	4,244,703		4,244,193		4,244,738	149	4,244,301		
325	4,244,080	78	4,244,704	CLASS 62		125	4,244,246				
		CLASS 46		6	4,244,192	469	4,244,245	2	4,244,302		
128 A	4,244,081	32	4,244,136	180	4,244,193		4,244,246	23	4,244,303		
163	Re.30,475	39	4,244,137	211	4,244,182	CLASS 82		52	4,244,304		
		124	4,244,138	515	4,244,194	36 A	4,244,247				
CLASS 19		141	4,244,139	CLASS 64		44	4,244,248				
81	4,244,082	145	4,244,140	9 R	4,244,195						
		150	4,244,141	21	4,244,196	CLASS 83					
CLASS 23		154	4,244,142	CLASS 68		139	4,244,249				
230 B	4,244,694	202	4,244,143	4 R	4,244,719	310	4,244,250				
230 L	4,244,693		4,244,144	8	4,244,720	349	4,244,251	7	4,244,307		
230 PC	4,244,695			31	4,244,721	356.3	4,244,252	89	4,244,308		
230 R	4,244,696	CLASS 47		32	4,244,722	411 R	4,244,253				
294 R	4,244,697	17	4,244,145	33	4,244,723	589	4,244,254				
313 FB	4,244,698	39	4,244,146	106	4,244,724	631	4,244,255	79 A	4,244,309		
		58	4,244,147	260	4,244,725	862	4,244,256	126	4,244,310		
CLASS 24		81	4,244,148	264	4,244,726			158 A	4,244,311		
16 R	4,244,083		4,244,149	CLASS 66		1.01	4,244,257	235	4,244,312		
33 C	4,244,084	CLASS 48		19	4,244,197	1.03	4,244,258	279	4,244,313		
85 C	4,244,085			191	4,244,198	1.19	4,244,259	313	4,244,314		
205.11 L	4,244,086	77	4,244,705	193	4,244,199	1.21	4,244,260				
205.11 R	4,244,087	202	4,244,706	CLASS 68		1.24	4,244,261	121 C	4,244,315		
274 R	4,244,088	CLASS 51		202	4,244,200	345	4,244,262				
		308	4,244,707	CLASS 69		411 M	4,244,263	144 R	4,244,316		
CLASS 29		434	4,244,150	411 R	4,244,201	418	4,244,264				
91.1	4,244,089	CLASS 52		432	4,244,267		4,244,265	202	4,244,317		
235	4,244,090	60	4,244,151	CLASS 71		55	4,244,266				
237	4,244,091	81	4,244,152	29	4,244,727	33 BB	4,244,271	52	4,244,318		
252	4,244,092	169.5	4,244,153	65	4,244,728	33 C	4,244,270	419	4,244,319		
256	4,244,093	442	4,244,154	88	4,244,729	41 C	4,244,272	648	4,244,321		
270	4,244,094	746	4,244,155	105	4,244,731	193	4,244,273	658	4,244,322		
407	4,244,095	CLASS 53		CLASS 72				689	Re.30,477		
432	4,244,096	254	4,244,157	49	4,244,202	308	4,244,274				
457	4,244,097	412	4,244,158	205	4,244,203	420	4,244,275	3	4,244,323		
596	4,244,098	567	4,244,159	224	4,244,204	447	4,244,276	27	4,244,324		
	4,244,099	CLASS 55		263	4,244,205	459	4,244,277				
714	4,244,100	CLASS 58		377	4,244,206	468	4,244,278	4 R	4,244,325		
753	4,244,101	2	4,244,708								
		1									
27 B	4,244,102	CLASS 123									
276	4,244,103	3	4,244,328								
371	4,244,104	41.84	4,244,330								
		46 A	4,244,331								
		59 B	4,244,332								
		190 A	4,244,338								
		261	4,244,329								
		325	4,244,339								
		350	4,244,335								
		416	4,244,339								
		418	4,244,336								
		432	4,244,333								
		440	4,244,340								
		449	4,244,341								
		501	4,244,342								
		556	4,244,343								
		603	4,244,337								
		650	4,244,344								
		CLASS 124									
		24 R	4,244,345								
			4,244,346								
		CLASS 125									
		11 PH	4,244,347								
		23 R	4,244,348								
		CLASS 126									
		110 C	4,244,349								
		400	4,244,350								
		415	4,244,351								
		422	4,244,352								
		430	4,244,359								
		432	4,244,353								
		438	4,244,374								
		448	4,244,354								
		450	4,244,355								
			4,244,356								
		CLASS 127									
		67	4,244,748								
		CLASS 128									
		1.2	4,244,357								
		74	4,244,358								
		81 R	4,244,359								
		92 A	4,244,360								
		200.14	4,244,361								
		200.26	4,244,362								
		205.17	4,244,363								
		214 E	4,244,364								
			4,2								

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118	4,244,390		597	4,244,472	CLASS 236	37 EP	4,244,857	764	4,244,599
119	4,244,391		605	4,244,473		37 SB	4,244,856	803	4,244,600
218	4,244,392	227	4,244,430	612	4,244,474	46 R	4,244,516	805	4,244,601
240	4,244,393	320	4,244,431			49	4,244,517	821	4,244,602
375	4,244,394	329	4,244,432	CLASS 208		58	4,244,518		
484.2	4,244,395	344	4,244,433	8 LE	4,244,805			CLASS 281	
487.5	4,244,396			49	4,244,806	CLASS 239	4,244,862	15 R	4,244,603
601	4,244,397	9	4,244,782	66	4,244,807	88	4,244,520		
630.19	4,244,398	19 R	4,244,783	67	4,244,808	110	4,244,521	CLASS 282	
		54	4,244,784	108	4,244,809	148	4,244,522	27.5	4,244,604
				120	4,244,810	227	4,244,523		4,244,605
				122	4,244,811		4,244,524	CLASS 285	
				177	4,244,812	289	4,244,525		
		245	4,244,434			533.1	4,244,526	239.1	4,244,870
						691	4,244,527	239.7	4,244,871
		1 GQ	4,245,136					343.45	4,244,872
								343.6	4,244,873
		CLASS 179		CLASS 209				345.2	4,244,874
		CLASS 180				5	4,244,528		4,244,875
		70 R	4,244,435			18	4,244,529		4,244,876
		191	4,244,436	CLASS 210		24	4,244,530	345.9 R	40 R
						172	4,244,531	346.3	4,245,162
						264	4,244,532	346.75	4,245,163
									CLASS 292

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94.5 C	4,245,195	43	4,245,240	771	4,245,328	77	4,244,926	56	4,245,010	432	4,245,066
94.5 D	4,245,194	44	4,245,241	826	4,245,330	87	4,244,927	70	4,245,011	440	4,245,067
178	4,245,196	64	4,245,242	900	4,245,331	123	4,244,928	104	4,245,012	447	4,245,068
CLASS 333		106	4,245,243			149	4,244,929	144	4,245,013	479	4,245,069
13	4,245,197	111	4,245,244	CLASS 366		210.5	4,244,930	181	4,245,014	CLASS 526	
134	4,245,198	122	4,245,245	180	4,244,656	266	4,244,931	188	4,245,015	75	4,245,070
165	4,245,199	124	4,245,246	CLASS 367		274	4,244,932	216	4,245,016	114	4,245,071
193	4,245,200	128.6	4,245,247	98	4,245,332	430	4,244,933	218	4,245,017	195	4,245,072
194	4,245,201	136	4,245,248	121	4,245,333	448	4,244,934			214	4,245,074
215	4,245,202	139	4,245,249	140	4,245,329	491	4,244,935			230.5	4,245,075
CLASS 335		140	4,245,250			509	4,244,936	14	4,245,018	280	4,245,075
16	4,245,203	158	4,245,251	CLASS 368		522	4,244,937	24	4,245,019	320	4,245,076
174	4,245,204	213	4,245,252	2	4,245,334	592	4,244,938			323.1	4,245,077
212	4,245,205	214	4,245,253	70	4,245,335						
CLASS 336		222	4,245,254	75	4,245,336	CLASS 424		58	4,245,020	CLASS 528	
60	4,245,206	245	4,245,255	82	4,245,337	1	4,244,939	110	4,245,021	15	4,245,079
65	4,245,207	245	4,245,256	188	4,245,338	21	4,244,940	128	4,245,022	60	4,245,080
CLASS 337		260	4,245,257			81	4,244,941	126	4,245,023	65	4,245,081
231	4,245,208	283	4,245,258	CLASS 370		94	4,244,942	137	4,245,024	128	4,245,082
CLASS 338		285	4,245,259	58	4,245,339	177	4,244,943	141	4,245,025	148	4,245,083
217	4,245,209	299	4,245,260	111	4,245,340		4,244,944	223	4,245,026	293	4,245,084
314	4,245,210			112	4,245,341		4,244,945	280	4,245,027	302	Re.30,481
CLASS 339		17	4,245,261	CLASS 371			4,244,946	281	4,245,028	318	4,245,085
103 M	4,244,638	32	Re.30,482	8	4,245,342	230	4,244,947	288	4,245,029		
CLASS 340		38	4,245,262	11	4,245,343	243	4,244,948	338	4,245,030	CLASS 544	
146.3 C	4,245,211	45	4,245,263	68	4,245,344	248.5	4,244,949	353	4,245,031	71	4,245,088
147 LP	4,245,212	51	4,245,264	13	4,245,345	250	4,244,950	399	4,245,032	191	4,245,090
149 A	4,245,213	66	4,245,265	CLASS 375		256	4,244,951	496	4,245,033	267	4,245,091
166 R	4,245,214	99	4,245,266	109	4,244,657	257	4,244,952	510	4,245,034	279	4,245,092
310 A	4,245,215	104	4,245,267	CLASS 390		258	4,244,953	559	4,245,035	420	4,245,097
323 R	4,245,216	124	4,245,268	666	4,245,219		4,244,954			16	4,245,088
555	4,245,217	125	4,245,269	CLASS 400		263	4,244,955			71	4,245,089
574	4,245,218	58	4,245,270	CLASS 401			4,244,956	4	4,244,684	191	4,245,090
16 R	4,245,220	189	4,245,271	109	4,244,657		4,244,957	265	4,244,685	267	4,245,091
17.7	4,245,221	229	4,245,272	124	4,244,658	267	4,244,958			279	4,245,092
708	4,245,222	382	4,245,273	486	4,244,659		4,244,959	26	4,244,686	420	4,245,097
778	4,245,223	429	4,245,274	CLASS 402			4,244,960	118	4,244,687	16	4,245,088
CLASS 343		433	4,245,275	79	4,244,660	269	4,244,961			71	4,245,089
75	4,245,224		4,245,276	CLASS 403		272	4,244,962			191	4,245,090
CLASS 346		13	4,245,277	243	4,244,661		4,244,963			267	4,245,091
108	4,245,227	61	4,245,278	286	4,244,662	267	4,244,964			279	4,245,092
135.1	4,245,229	84	4,245,279	CLASS 404		300	4,244,965			420	4,245,097
CLASS 350		306	4,245,280	118	4,244,663	308	4,244,966			16	4,245,088
3.78	4,244,633	311	4,245,281	CLASS 405		330	4,244,967			71	4,245,089
31	4,244,634		4,245,282	195	4,244,664	331	4,244,968			191	4,245,090
336	4,244,635	61	4,245,283	263	4,244,665		4,244,969			267	4,245,091
345	4,244,636	84	4,245,284	286	4,244,666	3	4,244,970			279	4,245,092
CLASS 351		306	4,245,285	CLASS 406		62	4,244,971			420	4,245,097
5	4,244,639	311	4,245,286	105	4,244,667	143	4,244,972			16	4,245,088
CLASS 352			4,245,287	201	4,244,668		4,244,973			71	4,245,089
130	4,244,640	46	4,245,288	CLASS 407		35	4,244,974			191	4,245,090
CLASS 353		137	4,245,289	405	4,244,669	38	4,244,975			267	4,245,091
27 R	4,244,641	103	4,245,290	CLASS 408		49	4,244,976			279	4,245,092
CLASS 354		477	4,245,291	137	4,244,670	94	4,244,977			420	4,245,097
23 D	4,244,643		4,245,292	103	4,244,671	271	4,244,978			16	4,245,088
122	4,244,644	126	4,245,293	CLASS 409		330.2	4,244,979			71	4,245,089
310	4,244,645	129	4,245,294	CLASS 410		418	4,244,980			191	4,245,090
CLASS 355			4,245,295	CLASS 411		554	4,244,981			267	4,245,091
3 R	4,244,646	104	4,245,296	477	4,244,672	567	4,244,982			279	4,245,092
14 R	4,244,647	118	4,245,297	CLASS 412		568	4,244,983			420	4,245,097
14 SH	4,244,648		4,245,298	CLASS 413		582	4,244,984			16	4,245,088
61	4,244,649	200	4,245,299	128	4,244,673	599	4,244,985			71	4,245,089
CLASS 356			4,245,300	134	4,244,674		4,244,986			191	4,245,090
71	4,244,650		4,245,301	CLASS 414			4,244,987			267	4,245,091
142	4,244,651	104	4,245,302	CLASS 415			4,244,988			279	4,245,092
383	4,244,652	118	4,245,303	128	4,244,675		4,244,989			420	4,245,097
404	4,244,653		4,245,304	134	4,244,676		4,244,990			16	4,245,088
CLASS 357			4,245,305	CLASS 416			4,244,991			71	4,245,089
15	4,245,230	400	4,245,306	CLASS 417			4,244,992			191	4,245,090
51	4,245,231	405	4,245,307	218	4,244,677		4,244,993			267	4,245,091
76	4,245,232	422	4,245,308	269	4,244,678		4,244,994			279	4,245,092
CLASS 358		431	4,245,309	97	4,244,679		4,244,995			420	4,245,097
8	4,245,234		4,245,310	CLASS 418			4,244,996			16	4,245,088
14	4,245,235		4,245,311	CLASS 419			4,244,997			71	4,245,089
31	4,245,236		4,245,312	CLASS 420			4,244,998			191	4,245,090
CLASS 359			4,245,313	CLASS 421			4,244,999			267	4,245,091
37	4,245,237		4,245,314	CLASS 422			4,245,000			279	4,245,092
CLASS 360			4,245,315	CLASS 423			4,245,001			420	4,245,097
16	4,245,238		4,245,316	CLASS 424			4,245,002			16	4,245,088
174	4,245,239		4,245,317	CLASS 425			4,245,003			71	4,245,089
212	4,245,240		4,245,318	CLASS 426			4,245,004			191	4,245,090
CLASS 361			4,245,319	CLASS 427			4,245,005			267	4,245,091
217	4,245,241		4,245,320	CLASS 428			4,245,006			279	4,245,092
314	4,245,242		4,245,321	CLASS 429			4,245,007			420	4,245,097
CLASS 362			4,245,322	CLASS 430			4,245,008			16	4,245,088
103 M	4,244,638		4,245,323	CLASS 431			4,245,009			71	4,245,089
146.3 C	4,245,211		4,245,324	CLASS 432			4,245,010			191	4,245,090
147 LP	4,245,212		4,245,325	CLASS 433			4,245,011			267	4,245,091
149 A	4,245,213		4,245,326	CLASS 434			4,245,012			279	4,245,092
166 R	4,245,214		4,245,327	CLASS 435			4,245,013			420	4,245,097
310 A	4,245,215		4,245,328	CLASS 436			4,245,014			16	4,245,088
323 R	4,245,216		4,245,329	CLASS 437			4,245,015			71	4,245,089
555	4,245,217		4,245,330	CLASS 438			4,245,016			191	4,245,090
574	4,245,218		4,245,331	CLASS 439			4,245,017			267	4,245,091
CLASS 363			4,245,332	CLASS 440			4,245,018			279	4,245,092
16 R	4,245,220		4,245,333	CLASS 441			4,245,019			420	4,245,097
17.7	4,245,221		4,245,334	CLASS 442			4,245,020			16	4,245,088
708	4,245,222		4,245,335	CLASS 443			4,245,021			71	4,245,089
778	4,245,223		4,245,336	CLASS 444			4,245,022			191	4,245,090
CLASS 364			4,245,337	CLASS 445			4,245,023			267	4,245,091
75	4,245,224		4,245,338	CLASS 446			4,245,024			279	4,245,092
CLASS 365			4,245,339	CLASS 447			4,245,025			420	4,245,097
108	4,245,227		4,245,340	CLASS 448			4,245,026			16	4,245,088
135.1	4,245,229		4,245,341	CLASS 449			4,245,027			71	4,245,089
CLASS 366			4,245,342	CLASS 450			4,245,028			191	4,245,090
3.78	4,244,633		4,245,343	CLASS 451			4,245,029			267	4,245,091
31	4,244,634		4,245,344	CLASS 452			4,245,030			279	4,245,092
336	4,244,635		4,245,345	CLASS 453			4,245,031			420	4,245,097
345	4,244,636		4,245,346	CLASS 454			4,245,032			16	

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D2— 320 257,799	D7— 186 257,814	D10— 67 257,832	39 257,851	257,871	D26— 26 257,888
400 257,796	14 257,815	D11— 157 257,833	42 257,853	257,872	40 257,889
D3— 33 257,906	41 257,816	D12— 31 257,834	65 257,854	257,873	63 257,890
35 257,797	43 257,817	92 257,835	257,855	257,874	69 257,891
39 257,800	52 257,818	257,836	71 257,856	257,875	71 257,892
71 257,801	54 257,819	138 257,837	49 257,857	257,876	75 257,894
79 257,798	91 257,820	162 257,838	92 257,858	257,877	85 257,895
60 257,808	141 257,821	182 257,839	34 257,859	257,878	93 257,896
84 257,802	D8— 18 257,822	D13— 25 257,839	42 257,860	257,879	257,897
257,803	45 257,824	D14— 65 257,842	51 257,861	257,880	257,898
257,804	257,825	94 257,843	89 257,862	257,881	257,899
257,809	78 257,826	D15— 1 257,844	90 257,863	257,882	257,900
86 257,805	D9— 412 257,827	30 257,845	98 257,864	257,883	257,901
106 257,806	257,828	63 257,846	134 257,865	257,884	257,902
114 257,807	430 257,829	112 257,847	191 257,866	257,885	257,903
137 257,810	432 257,830	133 257,848	213 257,867	257,886	257,904
139 257,811	445 257,831	D16— 05 257,849	217 257,868	257,887	257,905
257,812	2 257,840	06 257,850	219 257,869	257,888	257,907
157 257,813	14— 53 257,841	14 257,852	257,870	257,889	

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1 : 4,244,463	4,244,126	4,244,768	4,244,327	13 : 4,245,285	4,244,972
4 : 4,245,167	4,244,180	4,244,788	4,244,490	4,244,102	4,245,057
5 : 4,244,128	4,244,181	4,244,792	4,244,525	4,244,114	4,245,058
6 : 4,244,141	4,244,190	4,244,797	4,244,551	4,244,199	4,245,183
4,244,263	4,244,208	4,244,803	4,244,564	4,244,478	4,245,213
4,244,301	4,244,246	4,244,834	4,244,612	4,244,771	4,245,274
4,244,360	4,244,252	4,244,897	4,244,673	4,245,192	4,245,287
4,244,433	4,244,267	4,244,908	4,244,677	4,245,215	4,245,350
4,244,497	4,244,277	4,244,922	4,244,683	4,244,145	4,245,352
4,244,498	4,244,300	4,244,940	4,244,735	4,244,569	4,245,372
4,244,622	4,244,331	4,244,946	4,244,743	4,244,577	4,245,377
4,244,732	4,244,349	4,244,948	4,244,831	4,244,599	4,245,396
4,244,993	4,244,353	4,244,959	4,244,887	4,244,603	4,245,409
4,245,227	4,244,354	4,244,961	4,244,994	4,244,669	4,245,417
4,245,271	4,244,365	4,244,995	4,245,009	4,244,678	4,245,436
4,245,297	4,244,367	4,245,008	4,245,049	4,244,683	4,245,472
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4,245,302	4,244,385	4,245,040	4,245,077	4,244,683	4,245,472
4,245,333	4,244,392	4,245,044	4,245,102	4,244,683	4,245,472
8 : 4,244,227	4,244,395	4,245,056	4,245,103	4,244,683	4,245,472
4,244,979	4,244,398	4,245,085	4,245,140	4,244,683	4,245,472
4,245,169	4,244,431	4,245,166	4,245,173	4,244,683	4,245,472
4,245,225	4,244,434	4,245,176	4,245,173	4,244,683	4,245,472
9 : 4,244,099	4,244,458	4,245,187	4,245,187	4,244,683	4,245,472
4,244,762	4,244,466	4,245,194	4,245,194	4,244,683	4,245,472
4,245,290	4,244,502	4,245,195	4,245,195	4,244,683	4,245,472
04 : 4,244,123	4,244,503	4,245,212	4,245,212	4,244,683	4,245,472
4,244,294	4,244,540	4,245,222	4,245,222	4,244,683	4,245,472
4,244,326	4,244,546	4,245,230	4,245,230	4,244,683	4,245,472
4,244,358	4,244,553	4,245,249	4,245,249	4,244,683	4,245,472
4,244,441	4,244,558	4,245,267	4,245,267	4,244,683	4,245,472
4,244,542	4,244,570	4,245,288	4,245,288	4,244,683	4,245,472
4,244,701	4,244,571	4,245,300	4,245,300	4,244,683	4,245,472
4,244,904	4,244,574	4,245,306	4,245,306	4,244,683	4,245,472
4,245,138	4,244,576	4,245,308	4,245,308	4,244,683	4,245,472
4,245,153	4,244,579	4,245,321	4,245,321	4,244,683	4,245,472
4,245,190	4,244,597	4,245,324	4,245,324	4,244,683	4,245,472
4,245,231	4,244,610	4,245,346	4,245,346	4,244,683	4,245,472
4,245,304	4,244,615	4,245,355	4,245,355	4,244,683	4,245,472
4,245,319	4,244,632	4,244,086	4,244,086	4,244,683	4,245,472
4,245,337	4,244,661	4,244,091	4,244,091	4,244,683	4,245,472
06 : Re. 30,477	4,244,671	4,244,315	4,244,315	4,244,683	4,245,472
Re. 30,479	4,244,688	4,244,324	4,244,324	4,244,683	4,245,472
Re. 30,482	4,244,693	4,244,489	4,244,489	4,244,683	4,245,472
4,244,057	4,244,703	4,244,608	4,244,608	4,244,683	4,245,472
4,244,060	4,244,712	4,244,639	4,244,639	4,244,683	4,245,472
4,244,062	4,244,719	4,244,734	4,244,734	4,244,683	4,245,472
4,244,075	4,244,730	4,244,847	4,244,847	4,244,683	4,245,472
4,244,097	4,244,744	4,244,927	4,244,927	4,244,683	4,245,472
4,244,101	4,244,747	4,244,944	4,244,944	4,244,683	4,245,472
4,244,104	4,244,752	4,244,959	4,244,959	4,244,683	4,245,472
4,244,106	4,244,758	4,244,971	4,244,971	4,244,683	4,245,472
4,244,124	4,244,763	4,244,983	4,244,983	4,244,683	4,245,472

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January 20, 1981

Volume 1002

Number 3

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Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

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Designation fee.....	45.00

June 17, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

D. 253,051, Re. S.N. 183,286, Filed Sep. 2, 1980, Cl. D12/95, FLUID TRANSPORT TANK, Raymond E. Pletcher, Owner of Record: S.E.M. Corporation, Springer, Okla., Attorney or Agent: William R. Lancy, et al., Ex. Gp.: 290

1002 O.G.—110

3,822,459, Re. S.N. 182,265, Filed Sep. 22, 1980, Cl. 29/283, MACHINE FOR PRODUCING A PLASTIC-COVERED GLASS CONTAINER, Stephen W. Amberg, et al., Owner of Record: Owens-Illinois, Inc., Toledo, Ohio, Attorney or Agent: D. T. Innis, et al., Ex. Gp.: 323

3,909,600, Re. S.N. 179,277, Filed Aug. 18, 1980, Cl. 364/513, METHOD AND APPARATUS FOR CONTROLLING AN AUTOMATION ALONG A PREDETERMINED PATH, Richard E. Horn, Owner of Record: Cincinnati Milacron, Inc., Cincinnati, Ohio, Attorney or Agent: C. Richard Eby, et al., Ex. Gp.: 236

4,009,115, Re. S.N. 189,741, Filed Sep. 23, 1980, Cl. 252/142, COMPOSITION AND METHOD FOR CLEANING ALUMINUM AT LOW TEMPERATURES, Robert Eric Binns, Owner of Record: Amchem Products, Inc., Ambler, Pa., Attorney or Agent: Alexis Barron, et al., Ex. Gp.: 166

4,046,908, Re. S.N. 186,823, Filed Sep. 12, 1980, Cl. 424/273 R, BENZIMIDAZOLE DERIVATIVES, COMPOSITIONS THEREOF AND METHOD OF USE AS ANTHELMINTICS, Rudiger D. Haugwitz, et al., Owner of Record: E. R. Squibb & Sons, Inc., Princeton, N.J., Attorney or Agent: Lawrence S. Levinson, et al., Ex. Gp.: 125

4,115,927, Re. S.N. 190,934, Filed Sep. 24, 1980, Cl. 34/1, PROCESS FOR OPERATING A MAGNETICALLY STABILIZED FLUIDIZED BED, Ronald E. Rosensweig, Owner of Record: Exxon Research Engineering Company, Florham Park, N.J., Attorney or Agent: Albert P. Halluin, et al., Ex. Gp.: 344

PATENT NOTICES

Certificates of Correction for the Week of Jan. 20, 1981

Re. 30,309	4,207,570	4,215,654	4,221,091
D. 256,985	4,208,406	4,216,385	4,221,185
3,880,865	4,210,646	4,217,185	4,221,908
3,947,346	4,211,479	4,217,309	4,222,857
4,108,053	4,211,569	4,217,659	4,224,320
4,155,135	4,211,577	4,217,952	4,224,496
4,157,313	4,211,693	4,218,271	4,225,127
4,159,516	4,212,678	4,218,317	4,225,663
4,168,994	4,212,915	4,218,383	4,226,399
4,172,961	4,212,933	4,218,647	4,226,422
4,188,338	4,213,229	4,219,044	4,227,310
4,189,363	4,213,667	4,219,370	4,227,483
4,196,278	4,214,105	4,219,591	4,228,226
4,198,241	4,214,154	4,220,097	4,228,503
4,199,815	4,215,119	4,220,388	4,228,510
4,202,360	4,215,214	4,221,040	4,228,626
4,207,265	4,215,261	4,221,064	4,229,658
4,207,535	4,215,346		

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS Notice of Availability for Licensing

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Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
Office of Government Inventions and Patents,
Springfield, Va. 22161

Patent application 6-186,871. Flame Resistant Insulation Materials, Composition and Method. Filed Sept. 12, 1980.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts., N.W.,
Washington, D.C. 20240

Patent 4,199,974. Eolian Sand Trap. Filed Sept. 15, 1978. Patented Apr. 29, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent application 6-168,943. Pressure Suit Joint Analyzer. Filed July 11, 1980.

Patent application 6-168,944. Apparatus for Sequentially Transporting Containers. Filed July 11, 1980.

Patent application 6-172,098. Active Notch Filter Network With Variable Notch Depth, Width and Frequency. Filed July 25, 1980.

Patent application 6-172,099. Complementary Cross-Slot Phased Array Antenna. Filed July 25, 1980.

Patent application 6-173,518. Reconfiguring Redundancy Management. Filed July 30, 1980.

Patent application 6-178,524. Low Intensity X-Ray and Gamma-Ray Imaging Spectrometer. Filed July 30, 1980.

Patent 4,089,004. Collapsible Corrugated Horn Antenna. Filed May 20, 1977. Patented May 9, 1978. Not available NTIS.

Patent 4,191,159. System for Slicing Silicon Wafers. Filed Oct. 16, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,212,199. System for Use in Conducting Wake Investigation for a Wing in Flight. Filed Feb. 28, 1979. Patented July 15, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-034,229. Vibrating Fuel Grapple. Filed Apr. 30, 1979.

Patent application 6-055,209. Between-Cycle Laser System for Depressurization and Resealing of Modified Design Nuclear Fuel Assemblies. Filed July 5, 1979.

Patent application 6-064,592. Infinite Blender for High Temperature Gas-Cooled Reactor Fuel Microspheres. Filed Aug. 7, 1979.

Patent application 6-077,821. Liquid-Metal-Cooled Reactor. Filed Sept. 21, 1979.

Patent application 6-078,758. High Temperature Solar Energy Absorbing Surfaces. Filed Sept. 25, 1979.

Patent application 6-085,551. Method of Preparation of Novel Fiber Reinforced Titanium Diboride Composite Bodies and Uses Therefor. Filed Oct. 6, 1979.

Patent application 6-090,845. Rapid Scanning System for Fuel Drawers. Filed Nov. 2, 1979.

Patent application 6-092,154. Digital Pressure Transducer for Use at High Temperatures. Filed Nov. 7, 1979.

Patent application 6-096,261. Fabrication of Thorium Bearing Carbide Fuels. Filed Nov. 20, 1979.

Patent 4,162,206. Separation of Iodine From Mercury Containing Scrubbing Solutions. Filed Nov. 16, 1978. Patented July 24, 1979. Not available NTIS.

Patent 4,164,849. Method and Apparatus for Thermal Power Generation. Filed Sept. 30, 1976. Patented Aug. 21, 1979. Not available NTIS.

Patent 4,181,572. Closure Head for a Nuclear Reactor. Filed June 16, 1977. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,192,583. Solar Receiver Heliostat Reflector Having a Linear Drive and Position Information System. Filed Oct. 21, 1977. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,200,831. Compensated Pulsed Alternator. Filed Aug. 3, 1978. Patented Apr. 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/Patent Council for the
Navy, Office of Naval Research, Code 302
Arlington, Va. 22217

Patent application 6-160,877. Environmental Mapping System. Filed June 19, 1980.

Patent application 6-168,987. Dual Dependent Stores Ejector Assembly for Angular Rate and Position Control. Filed July 14, 1980.

Patent application 6-175,454. Method of Synthesizing Resin Prepolymers. Filed Aug. 5, 1980.

Patent application 6-181,026. Fragment-Tolerant Transmission Line. Filed Aug. 27, 1980.

Patent 4,209,458. Fluorinated Phthalonitriles. Filed Apr. 4, 1979. Patented June 24, 1980. Not available NTIS.

Patent 4,210,871. Optimum Diversity Combining Circuit for a Plurality of Channels. Filed Sept. 1, 1978. Patented July 1, 1980. Not available NTIS.

Patent 4,213,089. Hydrophone Preamplifier and Calibration Circuit. Filed Nov. 20, 1978. Patented July 15, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP-2, Washington, D.C. 20546

Patent 4,212,199. System for Use in Conducting Wake Investigation for a Wing in Flight. Filed Feb. 28, 1979. Patented July 15, 1980. Not available NTIS.

1002 O.G.—111

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administrative
Service Division, Federal Bldg., Science and Education
Administration, Hyattsville, Md. 20782

Patent 4,208,920. Automatic Spinning Strength Tester. Filed
Apr. 30, 1979. Patented June 24, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch,
Westwood Bldg., Bethesda, Md. 20205

Patent application 6-165,690. A Short Total Synthesis of
Dihydrothebaine, Dihydrocodeinone and Nordihydro-
codeinone. Filed July 3, 1980.

DEPARTMENT OF THE ARMY, OTJAG
Chief, Intellectual Property Division, Room 2D 444,
Pentagon, Washington, D.C. 20310

Patent 3,838,497. Attachment of Rotating Band to Shell
Casing by Brazing. Filed Nov. 15, 1972. Patented Oct. 1,
1974. Not available NTIS.

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RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

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Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.
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Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.
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Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Information Dissemination.
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director..... 6-1-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director..... 3-19-79
Building Structures; Rafts; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents..... Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents..... Numbers 2,295 to 2,323, inclusive

REISSUES

JANUARY 20, 1981

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,483 PIPEETTE

Lamont J. Seltz, Huntington Beach, and Louis Jerg, Costa Mesa, both of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Original No. 3,498,135, dated Mar. 3, 1970, Ser. No. 775,252, Nov. 13, 1968. Application for reissue Apr. 19, 1978, Ser. No. 897,871

Int. Cl.² G01N 1/14

U.S. Cl. 73—425.6

10 Claims



1. A syringe type of measuring instrument including: an outer tube; a rod slidable in said tube; a hollow elongated member attached to one end of said tube in coaxial relationship therewith for receiving said rod and defining a chamber which, when its volume changes, causes a replaceable tip to fill with fluid when said rod is moved in a first direction with respect to said tube and causes discharge of fluid from the replaceable tip when said rod is moved in the opposite direction; a stop member mounted in said tube at an intermediate position therein; a first spring member surrounding said rod and exerting a force between said stop member and said rod to bias said rod along the longitudinal axis of said tube and in said first direction; a second spring member surrounding said rod and interposed between said stop member and the inner end of said hollow end member; and a first limit member mounted on said rod in position to engage said stop member when the rod is moved in the first direction and to compress said second spring member when said rod is moved in said opposite direction beyond a predetermined limit.

Re. 30,484

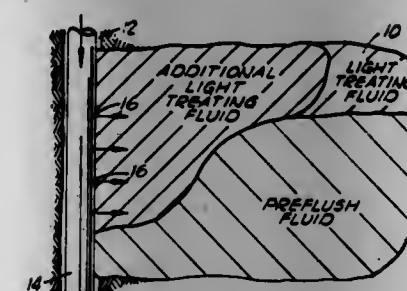
ZONAL FRACTURE TREATMENT OF WELL FORMATIONS

Gene C. Broadus, and Sherman E. Fredrickson, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Original No. 3,954,142, dated May 4, 1976, Ser. No. 499,241, Aug. 21, 1974. Application for reissue Dec. 5, 1977, Ser. No. 857,734

Int. Cl.³ E21B 43/26, 43/267, 43/27

U.S. Cl. 166—307

26 Claims



16. A method for placing a treating fluid into a desired zone of a fracture in an underground well formation comprising: introducing a preflush fluid having a known specific gravity into at least one substantially vertically-oriented fracture selected from the group consisting of natural and induced fractures; said introducing of said pre-flush fluid being performed via a well bore penetrating said formation in fluid communication with said fracture at a treating pressure at least equal to a hydraulic pressure sufficient to open said fracture and to maintain said fracture in an open

position, and immediately thereafter while maintaining said treating pressure and ceasing introduction of said preflush fluid; introducing into said fracture via said well bore a treating fluid having a specific gravity not equal to the specific gravity of said preflush fluid, the specific gravity of said treating fluid being at least about 0.1 less than the specific gravity of said preflush fluid; whereby said treating fluid having a lower specific gravity than said preflush fluid is caused to override said preflush fluid into a desired upper zone of said fracture; wherein said preflush fluid is selected from the group consisting of hydrocarbon liquids, water, aqueous sodium chloride solutions, aqueous calcium chloride solutions, and aqueous potassium chloride solutions.

Re. 30,485

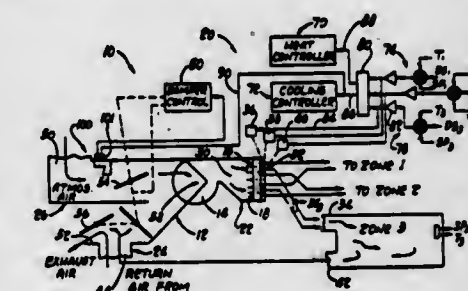
AIR CONDITIONING CONTROL SYSTEM

Russell G. Attridge, Jr., and Andrew Kulick, both of Columbus, Ohio, assignors to Ranco Incorporated, Columbus, Ohio
Original No. 3,970,246, dated Jul. 20, 1976, Ser. No. 605,908, Aug. 19, 1975. Division of Ser. No. 438,755, Feb. 1, 1974, Pat. No. 3,915,376. Application for reissue Jul. 10, 1978, Ser. No. 923,085

Int. Cl.² G05D 22/00

U.S. Cl. 236—44 C

15 Claims



1. A control device responsive to ambient air temperature and moisture content levels comprising:
a. a control unit operable between first and second control conditions;
b. an operating member for said control unit, said operating member supported for movement between first and second positions in which said control unit is in said first and second conditions, respectively;
c. relative humidity responsive means for moving said operating member and comprising an elongated humidity sensing element comprised of a material which changes length in response to changes in relative humidity of air ambient said element and supporting structure for said element;
d. air temperature responsive means cooperating with said relative humidity responsive means to prevent actuation of said operating member in response to changes in ambient air relative humidity occurring as a result of air temperature changes within a given range, said operating member being moved substantially only in response to sensed changes in moisture content of the air in said temperature range; and
e. said temperature responsive means comprising a link member movable to a first position in response to sensed air temperatures above said range to prevent actuation of said operating member to its first position by said humidity responsive means, said link member movable to a second position in response to sensed air temperatures below said

range to prevent actuation of said operating member to its second position by said humidity responsive means.

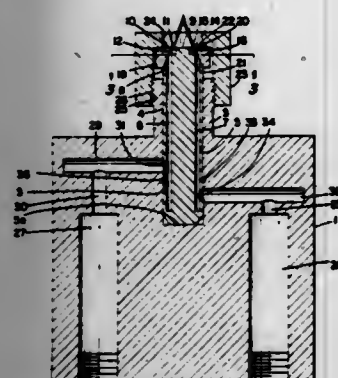
Re. 30,486

NOZZLE ASSEMBLIES FOR ATOMIZING AND MIXING DIFFERENT FLUIDS AND COMBINING THE MIXTURE WITH SOLIDS AND THE LIKE

Louis Beck, 6399 Crossview Rd., Seven Hills, Ohio 44131
Original No. 3,986,673, dated Oct. 19, 1976, Ser. No. 610,656, Sep. 5, 1975. Application for reissue Oct. 25, 1977, Ser. No. 844,515

Int. Cl.² B05B 7/00

U.S. Cl. 239—423



1. In a nozzle assembly of the character described, a body having passageways for flow of separate fluids therethrough, a nozzle or stem mounted in said body and having parallel passageways communicating with said first-named passageways, said stem having a conical surface at its upper end, said second-named passageways terminating at said conical surface, said stem having spaces offset inwardly from said terminal ends of said second-named passageways, but in communication with said terminal ends, and a cap mounted on said stem and having a conical lower surface seated on said first-named conical surface, and effective to cause fluids emerging from said second-named passageways to be diverted into said spaces.

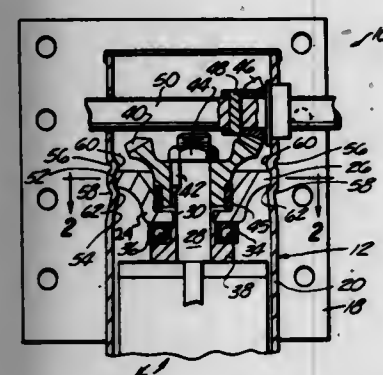
Re. 30,487

LANDING GEAR CONSTRUCTION

Jack T. Belke, Grand Rapids, Mich., assignor to Westran Corporation, Muskegon, Mich.
Original No. 4,004,830, dated Jan. 25, 1977, Ser. No. 599,051, Jul. 25, 1975. Application for reissue Feb. 13, 1978, Ser. No. 877,564

Int. Cl.² B60S 9/02

U.S. Cl. 280—763



1. In a trailer landing gear assembly having a generally cylindrical housing and means for securing said housing to said trailer, a landing gear foot adapted to engage the ground and an extension assembly having a gear base plate received in said housing and a downwardly depending axle adapted to be received in two registering apertures in said foot, said gear base plate having an annular flange adjacent to the inner surface of said housing, the improvement comprising vertical load supporting means formed in said housing for connecting said extension assembly to said housing and for connecting said foot to said housing, said means comprising at least two upper and

two lower inwardly projecting projections integral with said housing, wherein said upper projections are positioned on said housing to abut against the upper surface of said gear base plate flange and said lower projections abut against the lower surface of said gear base plate flange whereby said [cylindrical portions and said] projections support the vertical load of said landing gear assembly between the extension assembly and the landing gear housing.

Re. 30,488

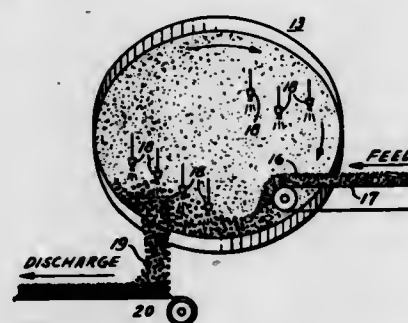
METHOD FOR PREPARING DRY COLLECTED FUME FOR USE IN METALLURGICAL FURNACES

John W. Kreiger, and Charles E. Jablonski, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.
Original No. 4,003,736, dated Jan. 18, 1977, Ser. No. 592,288, Jul. 1, 1975. Application for reissue May 5, 1978, Ser. No. 903,298

Int. Cl.² C22B 1/08

U.S. Cl. 75—3

3 Claims



1. A method for preparing strong, stable green balls, suitable for charging into metallurgical furnaces, from dry-collected iron-bearing fume containing not less than a total of about 8% combined amount of lime (CaO) and magnesia (MgO), formed in basic oxygen steelmaking furnaces, said method comprising:
(a) charging said fume onto a balling device,
(b) agglomerating said fume into green balls on said balling device while adding an amount of water continuously to said fume and retaining said fume on said balling device for a time sufficient for said water to
(i) combine stoichiometrically with substantially all of said lime and magnesia in said fume, and
(ii) leave an amount of moisture between about 7% and 12% to act as a binder in said green balls discharged from said balling device.

Re. 30,489

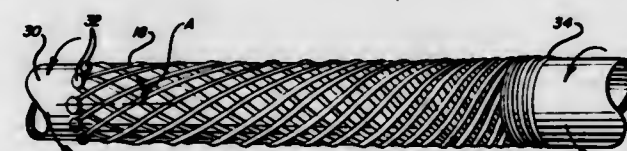
LONGITUDINAL LOAD CARRYING METHOD FOR FIBER REINFORCED FILAMENT WOUND STRUCTURES

Harry T. Abbott, Lincoln, Nebr., assignor to Brunswick Corporation, Skokie, Ill.
Original No. 4,118,262, dated Oct. 3, 1978, Ser. No. 688,746, May 21, 1976. Application for reissue Jul. 23, 1979, Ser. No. 59,728

Int. Cl.³ B65H 81/00

U.S. Cl. 156—175

20 Claims



7. In a method of manufacturing a lightweight filament wound casing having connector openings in at least one end comprising the steps of:

(1) preparing a casing core having an axis by inserting a predetermined number of projecting pegs spaced apart about said axis near an end portion of said core to form said connector openings;

(2) rotating said core about said axis as said core is moved in one direction substantially parallel to said axis;
(3) feeding a continuous resin impregnated filament to the surface of said core to lay the filament up in a helical form at an angle with respect to said axis;
(4) controlling the speed of the movement of the core so as to decrease the angle the filament makes with respect to said axis of the core as the fiber approaches the area of the pegs and increase the angle as the filament leaves the area of the pegs, said filament being passed around one of said pegs as the direction of the movement of the core relative to its axis is reversed, the filament being laid up along a helical path around the core back to a starting point, each layer of filament including at least one pass around each peg in said core to orient said filaments in a formed and cured casing so as to receive and transfer loads applied to the walls of said openings in a direction substantially parallel to said axis;
(5) curing the wound casing;
(6) removing the pegs from the core; and
(7) removing the casing from the core.

Re. 30,490

TRIGGERING CIRCUIT FOR SPARK GAP ASSEMBLIES
Stanley A. Miske, Jr., Elnora, N.Y., and James S. Kresge, Pittsfield, Mass., assignors to General Electric Company
Original No. 3,518,492, dated Jun. 30, 1970, Ser. No. 728,604, May 13, 1968. Application for reissue Jun. 21, 1978, Ser. No. 918,295

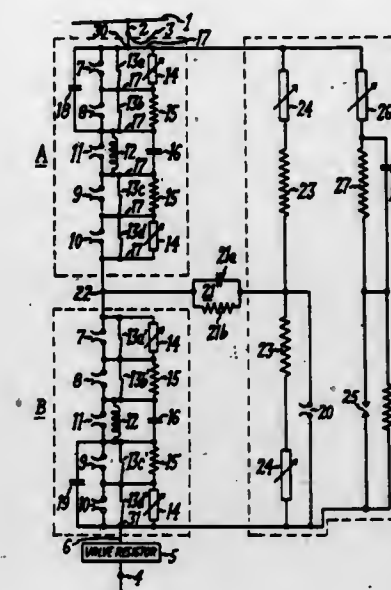
Int. Cl.² H02H 9/06

U.S. Cl. 361—128

21 Claims

1. A spark gap assembly comprising [means defining]:
a plurality of main spark gaps electrically connected in a first and a second series circuit, a trigger gap connected in shunt relation with [a first portion of] said first series circuit, said first and second series circuits including a predetermined number of pairs of said main spark gaps, each

pair of said main gaps being shunted by a first linear resistor and a first nonlinear resistor in series, impedance means electrically connected in series with said trigger gap [in said shunt circuit relation,] whereby a [predetermined proportional increment of a] voltage across said first series circuit is impressed across said trigger gap, said



trigger gap having a sparkover voltage substantially higher than the sparkover voltage of one of said main gaps and substantially lower than the sparkover voltage of [the] said first series circuit when it is not triggered, said first linear and nonlinear resistors being selected to provide a uniform distribution of voltage across said mains gaps.

PLANT PATENTS

GRANTED JANUARY 20, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,624

ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277
Filed Sep. 4, 1979, Ser. No. 71,922
Int. Cl.³ A01H 5/00

U.S. Cl. Pkt.—10

1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit substantially as illustrated and described, characterized by very double flowers of a doubleness and form resembling that of a carnation, the buds and flowers resembling Fire Princess (miniature — U.S. Plant Pat. No. 3,084) in size and color; and further characterized by a plant which is vigorous, yet more compact than Fire Princess, said plant being easy to propagate from cuttings, or by budding, with an abundance of small to medium size semi-glossy foliage and an abundance of flowers borne usually in small to medium size clusters.

4,625

ROSE PLANT-MEIGRONURI VARIETY

Marie-Louise Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.
Filed Jun. 22, 1979, Ser. No. 51,237
Int. Cl.³ A01H 5/00

U.S. Cl. Pkt.—24

1 Claim

1. A new and distinct variety of Floribunda rose plant characterized by the fact that:
from the physical point of view the plant is bushy, the mature wood is light green, the flower is double and the petals are of a lemon yellow color suffused with buttercup yellow; and from the biological point of view the vegetation is vigorous, the flowering habit is very abundant, the flowers are long lasting, and the petals drop off cleanly; substantially as shown and described.

4,626

ROSE PLANT

Jacob Nieuwkoop, De Kwakel, Netherlands, assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Jun. 25, 1979, Ser. No. 51,354
Int. Cl.³ A01H 5/00

U.S. Cl. Pkt.—25

1 Claim

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the orange or salmon colored hue of bud and bloom on the plant otherwise identical to the variety Mercedes.

4,627

DOGWOOD TREE-PURPLE GLORY VARIETY

Clark C. Boyd, McMinnville, Tenn., assignor to The Boyd Brothers Company, McMinnville, Tenn.
Filed Mar. 2, 1979, Ser. No. 17,170
Int. Cl.³ A01H 5/00

U.S. Cl. Pkt.—51

1 Claim

1. A new and distinct variety of Pink Flowering Dogwood tree, botanically known as *Cornus florida*, substantially as illustrated and described, characterized particularly as to novelty by the unique combination of (1) a rapid upright growth habit, (2) distinctive leaf coloration which initially is light purple changing to dark purple as the leaves mature, and (3) the ability substantially to retain said purple leaf coloration throughout the growing season and into the fall even when the tree is grown in full sunlight.

4,628

POTENTILLA

David A. Barker, Much Hadham, England, assignor to Monrovia Nursery Company, Azusa, Calif.
Filed Apr. 5, 1979, Ser. No. 27,233
Int. Cl.³ A01H 5/00

U.S. Cl. Pkt.—54

1 Claim

1. A new and distinct variety of *Potentilla fruticosa* substantially as described herein and capable of producing flowers having a range of colors of red to pink, distinct from previously known Potentillas.

4,629

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed May 9, 1979, Ser. No. 37,574
Int. Cl.³ A01H 5/00

U.S. Cl. Pkt.—74

1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name of Cherub as described and illustrated and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form, anemone capitulum type, lavender ray floret color, diameter across face of capitulum ranging from 45 to 50 mm. at maturity, uniform late nine week flowering response, tall plant height when grown as a pinched spray pot, and semi-spreading branching pattern.

PATENTS

GRANTED JAN. 20, 1981

ERRATA

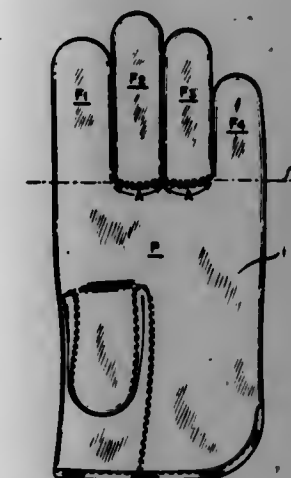
For CLASS	See PATENT NO.
434-093	4,245,400
434-430	4,245,401
434-019	4,245,402
434-011	4,245,403
434-312	4,245,404
434-178	4,245,405
137-357	4,245,412
474-111	4,245,518
411-342	4,245,545
493-439	4,245,829
404-072	4,245,925
052-301	4,245,931
294-086 LS	4,245,941
209-291	4,246,108
564-050	4,246,196
564-169	4,246,197
564-158	4,246,198
564-124	4,246,199
564-248	4,246,200
564-317	4,246,201
564-423	4,246,202
568-385	4,246,203
568-017	4,246,204
570-220	4,246,205
369-136	4,246,446
250-409	4,246,460
455-612	4,246,475
455-076	4,246,539
336-192	4,246,562
370-032	4,246,582
354-104	4,246,605
367-042	4,246,652

PATENTS

GRANTED JANUARY 20, 1981

GENERAL AND MECHANICAL

4,245,357
CURVED GLOVE CONSTRUCTION
 John R. Connelly, Deerfield, Ill., assignor to Marmon Company,
 Chicago, Ill.
 Filed May 15, 1979, Ser. No. 39,168
 Int. Cl.³ A41D 19/00
 U.S. Cl. 2-163 2 Claims

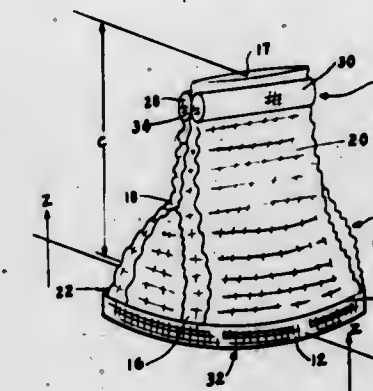


1. A gunn-cut glove construction having a palm piece including first and fourth front finger portions forming the front parts of the first and fourth fingers of the glove, a back piece including first, second, third and fourth back finger portions forming the back parts of the first, second, third and fourth fingers of the glove, and a middle piece including second and third front finger portions forming the front parts of the second and third fingers of the glove with said palm piece, back piece and the middle piece being stitched together about part of their peripheries to form said glove; the improvement comprising in that the longitudinal length of each back finger portion forming part of an individual finger is greater than the longitudinal length of an associated front finger portion, in that a part of the base of each of the second and third front finger portions of the middle piece has a concave edge, in that part of the periphery of said palm piece adjoining each said base is curved in a concave shape, and in that the stitching distance around the periphery of each front piece portion forming part of an individual finger is equalized with the stitching distance of an associated back finger portion whereby the fingers of said glove are curved inwardly.

4,245,358
NONTRAUMATIC PROSTHETIC VALVE WITH MAGNETIC CLOSURE
 Manoutcher Moasser, Rte. 301 & Central Ave., Waldorf, Md. 20601
 Filed Jan. 24, 1979, Ser. No. 6,027
 Int. Cl.³ A61F 1/22 10 Claims

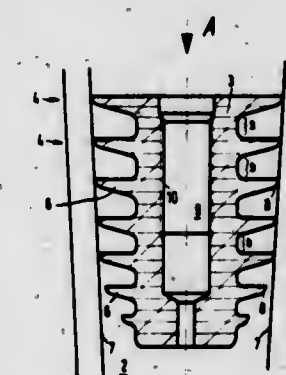
U.S. Cl. 3-1.5
 1. A prosthetic valve for causing unidirectional flow of a pulsatory fluid comprising:
 (a) mounting means positionable upstream within the flow of pulsatory fluid for forming an inlet through which the pulsatory fluid may flow into the valve;
 (b) valve outlet means for moving from a first configuration in which fluid flow through said inlet is cut off to a second configuration in which fluid may freely flow through said inlet from the upstream side to the downstream side of the valve in response to the fluid pressure upstream of the valve increasing above the fluid pressure downstream of the valve, said valve outlet means including a pair of flexible collapsible wall segments positioned on opposite sides of said mounting means, said flexible collapsible wall segments being deformed into contact to close said flow

passage when said valve outlet means is in said first configuration, and being moved apart to open said flow passage when said valve outlet means moves to said second configuration; and
 (c) magnetic closure assisting means positioned adjacent the downstream end of said flexible-collapsible wall segments providing a continuous bias force to said flexible collapsible wall segments tending to collapse said collapsible



material to close said flow passage, said bias force being insufficient to maintain said collapsed condition when the upstream pressure is sufficiently greater than the downstream pressure to move said valve outlet means to said second configuration, said closure assisting means including a pair of opposed magnetic force created elements mounted, respectively, on opposite sides of said flexible collapsible wall segments adjacent the downstream end of said flexible collapsible wall segments.

4,245,359
PLUG FOR OPENINGS PRODUCED BY OPERATIVE PROCEDURES IN MEDULLATED BONES
 Karl-Gerhard Stahmer, Ravensburg, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
 Filed Mar. 16, 1979, Ser. No. 21,182
 Claims priority, application Switzerland, Mar. 28, 1978, 3282/78
 Int. Cl.³ A61F 1/00, 1/24 11 Claims



1. A plug for insertion in an opening formed in a medullated bone to act as a cement barrier, said plug having a plurality of coaxial rings disposed in axially spaced relation along a longitudinal axis of said plug, each said ring including a plurality of circumferentially spaced radially directed flanges defining alternating slots of radially outwardly increasing width, each said flange being elastically deformable at least axially of said plug.

4,245,360

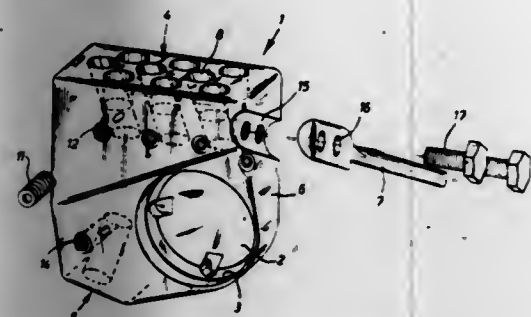
PARTIAL PELVIC PROSTHESIS

Paul Brinckmann, Rinscheweg 3, and Jurgen Polster, Stettiner Str. 106, both of D-4400 Munster, Fed. Rep. of Germany
 Filed Mar. 5, 1979, Ser. No. 16,962
 Claims priority, application Fed. Rep. of Germany, Mar. 6, 1978, 2809556

Int. Cl.³ A61F 1/03

U.S. Cl. 3—1,912

4 Claims



1. A partial pelvic prosthesis comprising:
 - (a) an implant piece adapted to be secured within the resected pelvis of a human patient and having a recess, adapted to receive an acetabular fossa, the first, second and third edges adapted to be apposed to the ilium or sacrum, the ischium, and the pubis respectively of said resected pelvis;
 - (b) means for securing said implant piece in said pelvis comprising a plurality of connecting pins having first ends adapted to be cemented in holes bored in the bones of said pelvis, means in said edges of said implant piece for receiving the second ends of said pins, and means mechanically securing said second ends to said implant piece; and
 - (c) said first edge of said implant piece including a plurality of orifices adapted to receive the second end of a connecting pin, said second end including a constriction and said orifices including cross bores and set screws to engage said constriction.

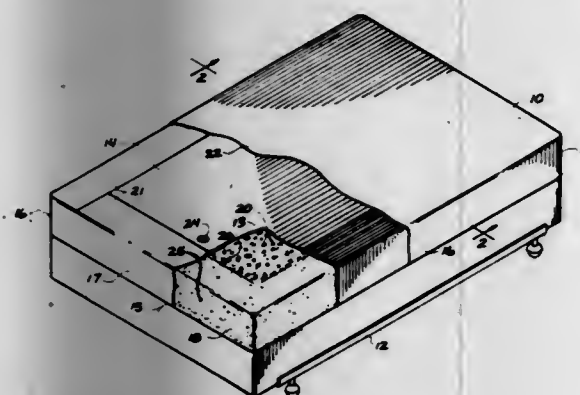
4,245,361

WATER BED MATTRESS

Robert Evanson, S. 6102 Helena, Spokane, Wash. 99203
 Filed Oct. 26, 1979, Ser. No. 88,578
 Int. Cl.³ A47C 27/08

U.S. Cl. 5—450

9 Claims



1. A water bed mattress, comprising:
 - sealed plastic liquid enclosure means for holding a quantity of liquid, said enclosure means including:
 - a horizontal upper wall;
 - a horizontal lower wall beneath said upper wall;
 - a pair of vertical side walls joining the upper and lower walls at opposite sides thereof;
 - a pair of vertical end walls joining the upper and lower walls at opposite ends thereof and joining the side walls at corresponding ends thereof;
 - a peripheral cushion of self-supporting resilient foam material arranged as an interior border within the enclosure,

the peripheral cushion having upright outer surfaces in abutment with the interiors of the respective vertical side and end walls, said peripheral cushion having a constant height at its upright outer surfaces equal to the vertical separation between said upper and lower walls and surrounding an interior cavity defined by upright inner surfaces spaced from one another;
 an interior filling of resilient open cell foam material filling the area of the interior cavity within the enclosure and abutting the inner upright cushion surface; the resiliency of the interior filling being substantially greater than that of the peripheral cushion;
 said enclosure adapted to be fully filled with liquid material.

4,245,362

FLOTATION MATTRESS

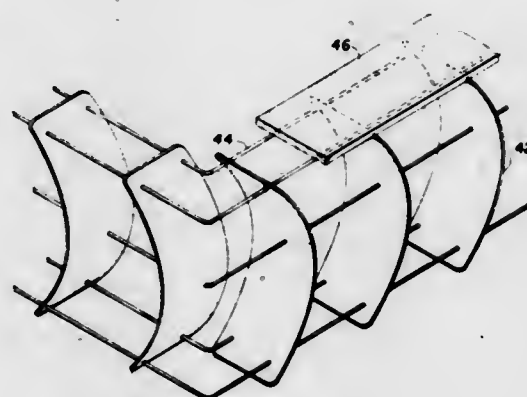
Leo F. Mueller, Billings, Mont., assignor to Watercoil, Inc., Billings, Mont.

Filed Sep. 1, 1978, Ser. No. 939,049

Int. Cl.³ A47C 27/08

U.S. Cl. 5—451

29 Claims



1. A waterbed mattress comprising:
 - (a) a planar, flexible bag adapted to hold water during use thereof and having a generally vertical peripheral side wall;
 - (b) a vertically resilient annular spring assembly disposed about and surrounding said peripheral side wall in the plane of said bag, said assembly having an inner wall juxtaposed in close proximity to said side wall; and
 - (c) means operatively connected to said annular spring assembly, said means being adapted to prevent the lateral expansion of said bag.

4,245,363

FLOTATION MATTRESS

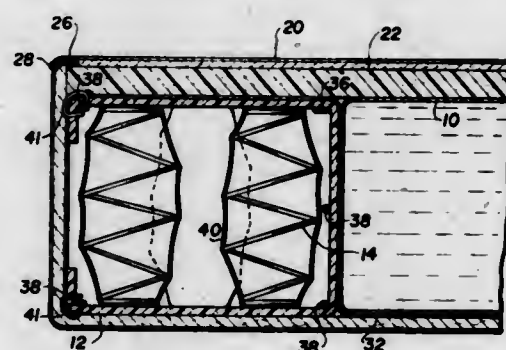
Milton A. Callaway, Sandy, Utah, assignor to Watercoil, Inc., Billings, Mont.

Filed Sep. 1, 1978, Ser. No. 939,050

Int. Cl.³ A47C 27/08, 23/047, 25/02

U.S. Cl. 5—451

25 Claims



1. A waterbed mattress comprising:
 - (a) a planar, flexible bag adapted to hold water during use of the mattress;

- (b) an annular compartment surrounding said bag in the plane of said bag, said annular compartment being collapsible in the direction perpendicular to the plane of said bag;
- (c) a plurality of coil springs disposed in said compartment with their axes of resiliency perpendicular to the plane of said bag, said springs biasing said compartment to its uncollapsed position; and
- (d) means in said annular compartment adapted to prevent the lateral expansion of said bag.

4,245,364

WATERBED SAFETY LINER

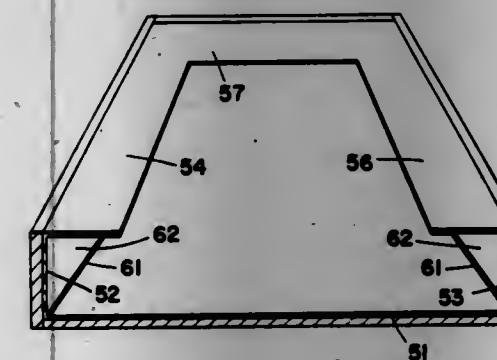
David P. Calleeance, 1945 - 23rd Ave., San Francisco, Calif. 94116

Continuation-in-part of Ser. No. 927,299, Jul. 25, 1978, Pat. No. 4,193,151. This application Jun. 28, 1979, Ser. No. 52,765

Int. Cl.³ A47C 27/08

U.S. Cl. 5—452

9 Claims



1. In a waterbed including a liquid filled bladder disposed within a supporting frame; an improved safety liner comprising a base sheet extending beneath the bladder, sidewalls extending upwardly from said base sheet and forming a coffer containing the bladder, lateral panels extending inwardly from the upper edges of said sidewalls, and a plurality of oblique panels, each extending from a vertex of said base sheet and a sidewall to a distal portion of the respective lateral panel; said oblique panel, sidewall, and lateral panel defining a border chamber.

4,245,365

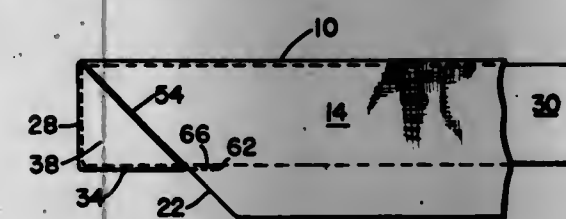
FITTED TOP CONTOUR SHEET

Helen F. Large, 25 A Center St., Rumson, N.J. 07760
 Filed Nov. 14, 1979, Ser. No. 94,326

Int. Cl.³ A47G 9/02, 9/04

U.S. Cl. 5—496

5 Claims



1. A fitted contour top sheet for use on a mattress comprising: a top panel having a front, a rear, and length and width dimensions approximately the same as the mattress with which the sheet is used, said top panel having opposed, rear corners; side panels along opposed sides of said top panel and terminating at the respective said corners, each said side panel having rear edges angled at about 45° from rear corner, forwardly to an outboard edge of said side panel; a pocket formed at the rear of said top panel comprising a vertical panel joined to said top panel, interconnecting said top panel rear corners, and having a height approximately the same as the thickness of the mattress with which the sheet is used, said vertical panel having a width generally equal to the width of said top panel, a horizontal bottom panel having a width dimension generally the same as that of said vertical panel and having a rear elongate edge joined to said vertical panel at a lower, rear edge thereof, a pair

of side, generally triangular gusset members joined to adjacent side edges of said vertical and horizontal bottom members to thereby form a pocket which is fitted over the foot and a part of the bottom of the mattress with which the sheet is used; and means on said horizontal bottom panel cooperating with means attachable to the mattress for releasably attaching said bottom panel to the mattress.

4,245,366

ROTARY WIRE BRUSHES

Claude E. G. Arnal, 91 Rue du Faubourg St., Antoine, Paris 75011, France

Filed Mar. 27, 1979, Ser. No. 24,378

Int. Cl.³ A46B 9/02, 13/02

U.S. Cl. 15—164

14 Claims



1. In combination, a first brush containing wires extending substantially in a direction perpendicular to a predetermined axis forming a circular cylinder around said axis; and another brush also extending along said axis at least at one end thereof, containing wires extending substantially perpendicular to another axis perpendicular to, and intersecting with said first axis, forming a quadrangular cylinder around said other axis; said quadrangular cylinder having at least one portion of its surface curved to substantially coincide with the curvature of said circular cylinder.

4,245,367

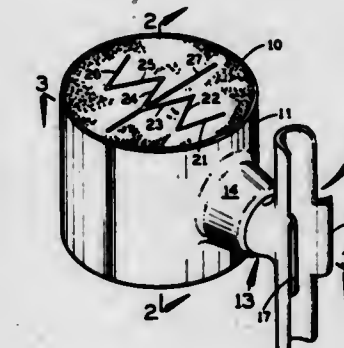
DIP STICK WIPER

Noel C. Stoute, 5821 SW. 29th Ter., Ft. Lauderdale, Fla. 33312
 Filed Jul. 24, 1979, Ser. No. 60,138

Int. Cl.³ G01F 15/12

U.S. Cl. 15—210 B

3 Claims



1. In a dip stick wiper comprising:
 - a holder ring;
 - and an absorbent wiper pad inside said ring formed with a plurality of narrow slits extending the entire length of the pad from end to end, each of said slits being shaped and dimensioned to slidably pass with wiping contact and oil dip stick inserted endwise therethrough;
 - the improvement wherein:
 - said slits adjoin one another in succession and form a sawtooth pattern of slits extending across the pad.

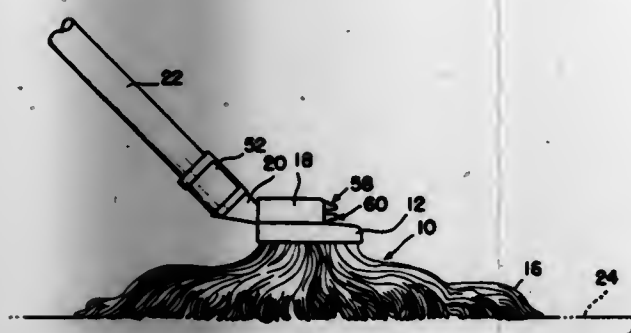
4,245,368 DUST MOP

John Cotey, Pennsauken, and Lee Volpe, Collingswood, both of N.J., assignors to Quickie Manufacturing Corporation, Cincinnati, N.J.

Filed May 29, 1979, Ser. No. 42,769
Int. Cl.³ A47L 13/12

U.S. Cl. 15—229 A

22 Claims



1. In a dust mop construction of the type including a plurality of dust gathering yarns, the combination of a mop head, the mop head comprising groove means to receive therein portions of the yarns, the groove means comprising a downwardly open groove, the groove being peripherally positioned about the mop head; retainer means adapted to position within the groove means to secure the said portions of the yarns; and connecting means to interconnect the mop head and the retainer means with the portions of the yarns secured therebetween.

4,245,369

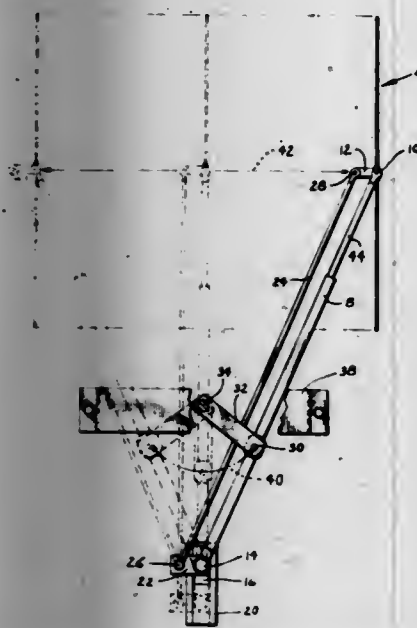
STRAIGHT SWEEP WINDSHIELD WIPER

John L. Clem, Michigan City, Ind., assignor to Sprague Devices, Inc., Michigan City, Ind.

Filed Jul. 2, 1979, Ser. No. 54,276
Int. Cl.³ B60S 1/44

U.S. Cl. 15—250.23

5 Claims



1. In a windshield wiper, in combination, a wiper blade having an angularly extending link; a wiper arm pivotally mounting said wiper blade adjacent said link, a track secured to a vehicle, a member slidable in said track and pivotally mounting said wiper arm, said slidable member including a laterally projecting link parallel to said first link and positioned adjacent to said arm pivot, a wiper motor having a shaft, an arm mounted on a wiper motor shaft to swing one end thereof laterally as said motor operates, the swinging end of said motor arm being pivoted to said wiper arm, and an elongated link connected to said first named links and cooperating with said first named links and said wiper arm to define a parallelogram.

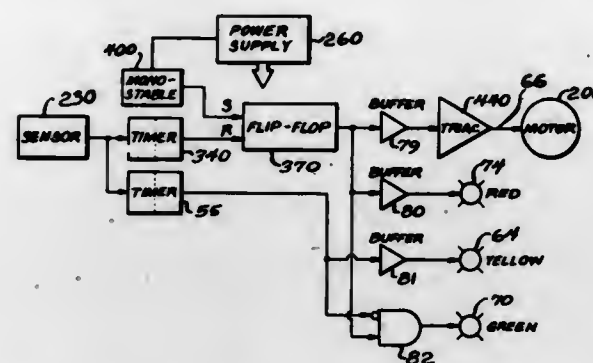
4,245,370 CONTROL CIRCUIT FOR PROTECTING VACUUM CLEANER MOTOR FROM JAMMED BEATER BRUSH DAMAGE

Daniel A. Baker, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 8, 1979, Ser. No. 1,823
Int. Cl.³ H02H 7/08; A47L 9/28

U.S. Cl. 15—319

30 Claims



1. In a vacuum cleaner structure having a suction head, means for drawing air and entrained material through said head, a beater brush rotatably mounted to said head for loosening material on a surface being cleaned to cause entrainment thereof in the drawn air, and a drive for rotating said brush including an electric motor and power transmission means rotatively coupling said brush to said motor, the improvement comprising:

means for providing magnetic pulses at a rate directly corresponding to the speed of rotation of the beater brush; and control means for sensing said pulses and discontinuing energization of the motor whenever the rate of said pulses drops below a preselected value, said power transmission means comprising a driven pulley driven by the motor, a driver pulley for driving the beater brush, and a belt coupling said pulleys, and said control means for discontinuing energization of the motor comprises means including a first switching device which is latched during normal operation of the beater brush and unlatched if the time between said pulses exceeds a predetermined threshold time and a second switching device arranged to positively turn off said motor as an incident of the unlatching of said first switching device, for discontinuing such energization upon a preselected reduction in the speed of rotation of said beater brush from the normal operating speed thereof.

4,245,371

CARPET SCRUBBER

Larry S. Satterfield, Moore, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

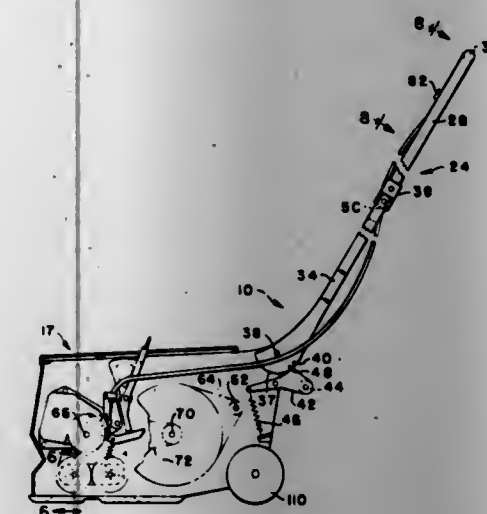
Filed Jul. 16, 1979, Ser. No. 57,622
Int. Cl.³ A47L 11/00

U.S. Cl. 15—320

4 Claims

1. A carpet cleaning apparatus comprising: a frame, a housing mounted on said frame, means forming a powder dispensing chamber, a brush chamber and a vacuum chamber in said housing, a powder dispensing roll in said dispensing chamber, a collection bag in said vacuum chamber, brush means in said brush chamber, a single drive means driving said powder dispensing roll and said brush means, and handle means to

move said carpet cleaning apparatus over an area to be cleaned, said apparatus including a conversion means to deactivate the powder dispensing roll and to allow said apparatus to perform as a vacuum cleaner.



vate the powder dispensing roll and to allow said apparatus to perform as a vacuum cleaner.

4,245,372

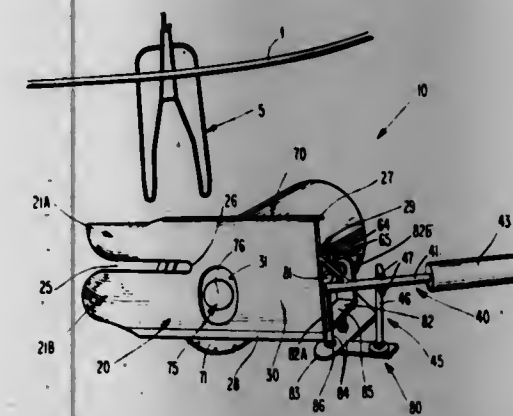
APPARATUS FOR PROCESSING OF POULTRY

Charles R. Messner, Fayetteville, Ark., assignor to Campbell Soup Company, Camden, N.J.

Filed Jan. 22, 1979, Ser. No. 5,349
Int. Cl.³ A22C 21/00

U.S. Cl. 17—11

16 Claims



1. In poultry processing equipment for the automated severance of tails of birds from the bodies thereof, the birds being suspended on eviscerating shackles and conveyed to a cutter, the improvement which comprises:

- a support member;
- an inflexible guide pivotally mounted with said support member including first means for capturing and directing said tail to said cutter and second means in operative engagement with said first means for pivotally counterbalancing said first means to repeatedly position same to receive said tails of variously sized birds and for operating together with said first means to present said tails to said cutter for their removal.

4,245,373

PROCESS EQUIPMENT FOR PREPARING BEEF FOR USE ON A VERTICAL ROTISSERIE

James H. Coronados, 11335 Frederick Rd., West Friendship, Md. 21794

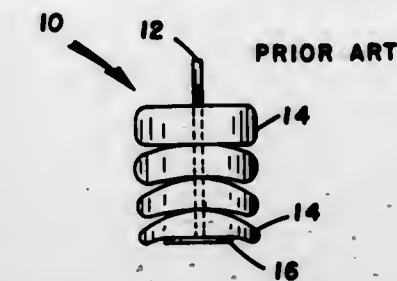
Filed Jan. 19, 1978, Ser. No. 917,077
Int. Cl.³ A22C 7/00

U.S. Cl. 17—32

7 Claims

1. A processed meat compressing device comprising: a base means; a molding means, said molding means being removably affixed to said base means; and a compressing means, said compressing means being affixed

to said base means, said compressing means consisting of a compression plate and a leverage mechanism, said compression plate being sized to fit entirely within said molding means, said compression plate having an aperture therethrough and said aperture being centrally located therein, said compression plate having a guide collar centrally located on the exterior thereof and affixed thereto, said guide collar having an aperture therethrough



and coinciding with said aperture in said compression plate, said apertures in said compression plate and said guide collar being square in configuration, said leverage mechanism being pivotally affixed to said compression plate, said leverage mechanism having a fulcrum point, said fulcrum point being pivotally secured to said base means, said leverage mechanism providing complete solid compaction of said processed meat by said compressing means.

4,245,374

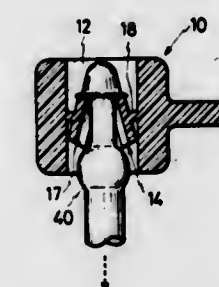
CONNECTOR

Tadashi Suzuki, Saitama, Japan, assignor to Satogosei Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1979, Ser. No. 87,573
Claims priority, application Japan, Apr. 13, 1979, 54-45118
Int. Cl.³ B65D 55/06, 63/00

U.S. Cl. 24—16 PB

7 Claims



1. A connector consisting of a flexible rod-like connecting member having at one end a female connector head provided with opposed elongated pivotal locking lugs within a socket aperture, a male locking head on the opposite end of the flexible rod-like connector having a flexible radial flange adjacent an inner end and a bulbous stopper spaced from said male locking head a distance greater than the length of said male locking lugs wherein said opposed pivotal locking lugs are connected and held respectively in the middle portions of the wall surfaces of the socket aperture so as to be positioned in the center of the socket aperture and including an inserting space for the male locking head formed between opposed facing cylindrical surfaces of the male locking lugs spaced so that the male locking lug can be inserted to a locking position past the elongated pivotal locking lugs which remain parallel during such insertion, said flexible radial flange being dimensioned to engage the pivotal locking lugs when in the locking position in response to reverse movement of the connecting member to pivot the locking lugs beneath the flexible radial flange member to preclude further outward movement of the male locking head and a bulbous stopper of greater diameter than that of the inserting space separated from said male locking head by a relatively small diameter rod portion of the connecting mem-

ber of a length approximately equal the length of said elongated pivotal locking lugs.

4,245,375

SHEET-CONNECTING STRUCTURE

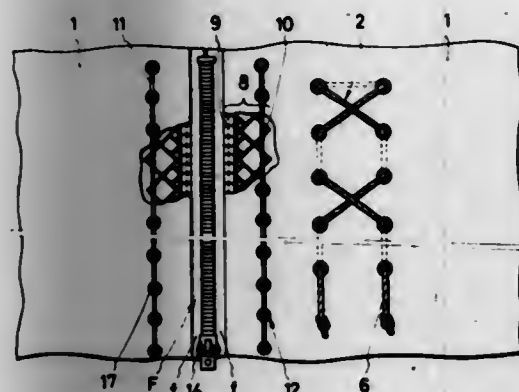
Hiroshi Yoshida, Uozu, and Kiyoo Yoneya, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan
Filed Mar. 10, 1978, Ser. No. 885,277

Claims priority, application Japan, Mar. 11, 1977, 52-30297[U]

Int. Cl.³ A44B 21/00

U.S. Cl. 24-73 R

1 Claim



1. A sheet-connecting and stretching structure for use with a large loosely fitting cover or the like, comprising a slide fastener attached to connecting edges of a sheet and a tightening device disposed in an intermediate portion of the sheet and extending generally parallel to, but substantially spaced from said slide fastener, said tightening device being so constructed that the cover may be tightened following slide fastening or relaxed prior to slide unfastening in a direction intersecting said connecting edges of the sheet at right angles, wherein each of stringers of the slide fastener is attached to the sheet through an adaptor having on one side a band-like portion and on the other side a net portion in which the mesh size is gradually increased as the net portion separates from the band-like portion, and the net portion is releasably caught on and attached to a hanging member passing through the sheet, and wherein said sheet overlaps and covers said band-like portion and adapter.

4,245,376

LOCK FOR SAFETY BELTS

Jakob Laseche, Dunningen, Fed. Rep. of Germany, assignor to Hugo Kern und Liebers & Co., Schramberg, Fed. Rep. of Germany

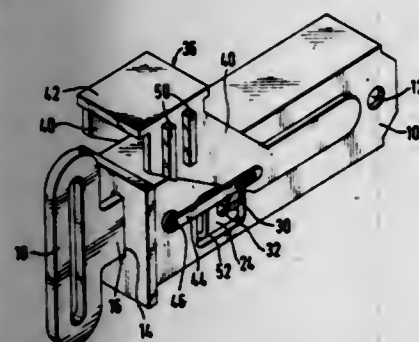
Filed Jan. 30, 1978, Ser. No. 921,060

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730885

Int. Cl.³ A44B 19/00; A62B 35/00

U.S. Cl. 24-230 AL

8 Claims



1. A lock for safety belts having a lock housing secured to a surface of a vehicle and an inner housing slideably located in said lock housing and held therein by spring tension; and provided with a latch tongue, insertable into said inner housing; and with a latch positioned within the inner housing adapted to engage a depression in said latch tongue under bias spring loading, with the latch tongue inserted into the inner housing,

preventing the withdrawal of said latch tongue therefrom; and with a release key located on said lock housing and operable from the outside thereof, comprising:

a lever (44) pivotable on a pivot (46 or 54) comprising part of said lock housing (10) and engaged by said release key; wherein said lever (44) bears upon said latch (30) and, upon depression of said release key (36), disengages the latch (30) from said depression (22), and wherein a displacement of said inner housing (24) against the loading of spring means (26) moves the point of engagement of said latch by said lever toward the fixed pivot of said lever on said lock housing.

4,245,377

JEWELRY CHAIN CLASP

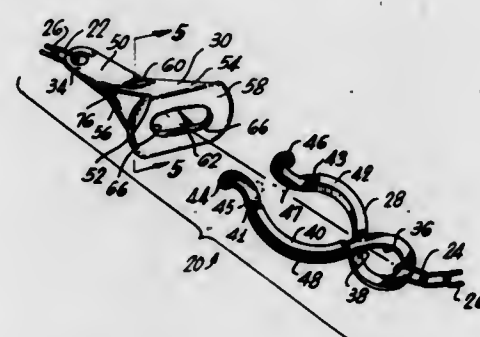
Isaac B. Soltes, 1923 S. McPherrin Ave., Monterey Park, Calif. 91754

Filed Jul. 24, 1978, Ser. No. 927,629

Int. Cl.³ A44B 11/25

U.S. Cl. 24-230 R

22 Claims



1. A jewelry chain clasp adapted to engage the terminal links of a chain, comprising:

a receptacle having a means for engaging a terminal link of a chain and a front face disposed generally in a plane perpendicular to the axis of said chain and having a central opening therein, said opening having an inwardly directed lip around the periphery of said opening; and a unitary spring catch including a chain link engaging loop and a pair of elongated arms each terminating in a means for engaging said receptacle adjacent said opening.

4,245,378

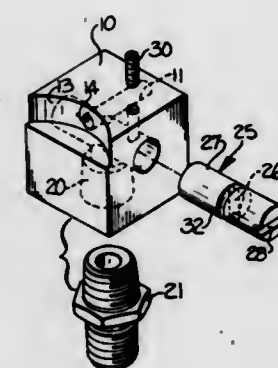
AIR JET FOR INTERLACING MULTIFILAMENT YARN
Samuel T. Price, Kennett Square, Pa., assignor to Enterprise Machine and Development Corp., New Castle, Del.

Filed Sep. 24, 1979, Ser. No. 77,798

Int. Cl.³ D02G 1/16

U.S. Cl. 28-271

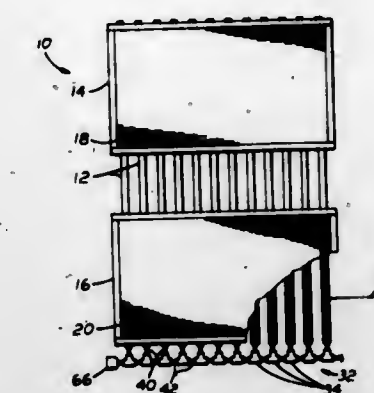
3 Claims



1. An air jet for interlacing yarns comprising a body member, a yarn processing bore extending through said body member and providing a yarn entry opening at one end of said body member and a yarn exit opening at the other end of said body member so that yarn may be passed through said bore of said air jet, an air entry passage extending from the outer surface of said body member and inwardly toward but terminating short

of said yarn processing bore, and adjustable air directing means carried by said body member and positioned between said air entry passage and adjacent one side of said yarn processing bore, said air directing means comprising an air directing pin supported for rotational adjustment in said body member and about an axis disposed perpendicular to the axis of said yarn processing bore, and wherein said air passageway extends through said air directing pin, said air directing pin being supported for rotational adjustment adjacent one side of said yarn processing bore with said air passageway communicatively connecting said air entry passage with one side of said yarn processing bore so that said air passageway may be positioned to direct the air against the yarn in perpendicular, upstream or downstream directions.

substantially simultaneously charging each of said heat pipes by introducing a selected amount of transfer fluid into said heat



pipes through a passage in fluid communication with said conduit means; and sealing said passage.

4,245,379

METHOD OF FABRICATION OF FLAT GRIDS OF PYROLITIC GRAPHITE FOR ELECTRON TUBES

Pierre Gerlach, and Roger Host, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 19, 1979, Ser. No. 76,864

Claims priority, application France, Sep. 19, 1978, 78 26818

Int. Cl.³ H01J 9/14

U.S. Cl. 29-25.18

2 Claims



1. A method of fabrication of a flat grid of pyrolytic graphite for an electron tube, wherein said method involves the following successive operations:

preparation of a cylindrical blank of pyrolytic graphite by epitaxial growth on a hot mandrel;
precision machining of the cylindrical blank in order to bring said blank to the thickness of the final flat grid;
cutting of a disc to the dimension of the grid, said disc being cut out of said blank;
flattening of the cut-out disc by applying a pressure on one face of said disc;
if necessary a final truing operation by grinding the flat disc obtained as a result of the previous operation;
machining of the disc by any known means such as the sand-jet process in order to produce a network of thin wires defining openings between said wires, said network being formed within an edge portion of relatively greater thickness;
mounting of the grid in extension within a stressing frame.

4,245,380

MULTIPLE HEAT PIPE HEAT EXCHANGER AND METHOD FOR MAKING

Dale E. Maxson, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Division of Ser. No. 850,865, Nov. 14, 1977, Pat. No. 4,180,127.

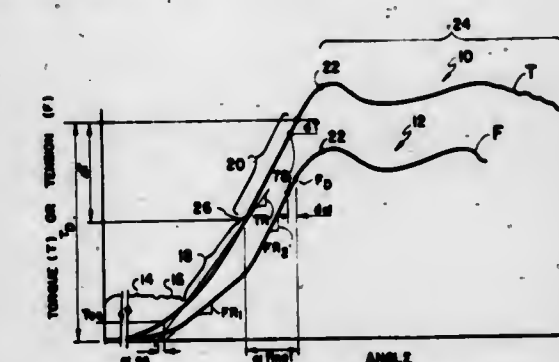
This application Nov. 1, 1978, Ser. No. 956,548

Int. Cl.³ B23P 15/26

U.S. Cl. 29-157.3 H

7 Claims

1. A method for making a heat exchanger comprising the steps of: Providing a plurality of heat pipes, each of said heat pipes having a closed top end and an open bottom end; interconnecting the open ends of said heat pipes with conduit means to permit fluid communication between said heat pipes; and



1. Apparatus for tightening a threaded fastener to a final desired stress value occurring at an average final torque applied to the fastener, comprising

a tightening tool for applying torque to the fastener;
means for sensing torque applied to the fastener;
means for sensing the angle of advance of the fastener;
means for storing substantially all of the torque and angle sensings commencing with a predetermined storage threshold occurring at a minor fraction of the average final torque and terminating adjacent completion of tightening and retaining the stored values at least until the final torque value is attained;
means for recalling the torque and angle sensings;
means for conducting a data processing operation using the recalled torque and angle sensings; and
means for generating a signal in response to the data processing means.

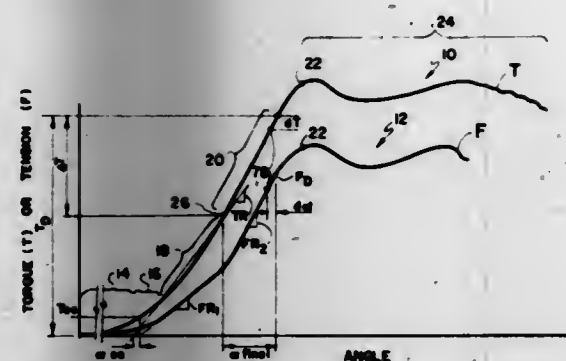
4,245,382

TENSION CONTROL OF FASTENERS

Slavaash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Division of Ser. No. 912,151, Jan. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,360
Int. Cl.³ B23P 19/06

U.S. Cl. 29—407

4 Claims



1. Apparatus for simultaneously tightening a joint including a threaded fastener to an average final torque value and conducting a quality control procedure to determine whether the fastener is threadably advancing, comprising:
 - a powered rotatable tool having means for sensing the torque delivered thereby;
 - means for determining the duration of tool rotation; and
 - means for terminating rotation of the tool in the event that a predetermined minimum torque value is not attained prior to the end of a predetermined duration of rotation, the predetermined minimum torque value being a value equal to a minor fraction of the sum of prevailing torque of the fastener and 20–30% of the average final torque value.

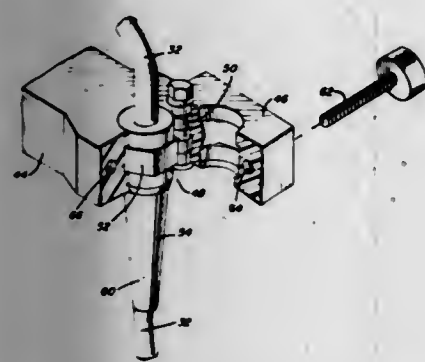
4,245,383

CENTRIFUGAL PROCESSING APPARATUS WITH REDUCED-LOAD TUBING

Daniel R. Boggs, Vernon Hills, Ill., assignor to Baxter Travenol Laboratories, Inc.
Division of Ser. No. 841,288, Oct. 12, 1977, Pat. No. 4,164,318.
This application Nov. 8, 1978, Ser. No. 958,902
Int. Cl.³ B21D 39/03

U.S. Cl. 29—428

3 Claims



1. A method for reducing the load of flexible umbilical cable segment used with centrifugal processing apparatus, which comprises the steps of:
 - providing an elongated flexible plastic tube defining a plurality of longitudinal channels;
 - applying heat to a portion of said tube;
 - stretching said heated portion longitudinally to provide a cable segment with the stretched portion having a smaller cross-sectional area dimension than the cross-sectional area dimensions of the portions on opposite ends of the stretched portion;

fastening a tube to each of the walls defining said channels at the ends of said umbilical cable segments;
fastening flexible sheath members adjacent each end of said flexible umbilical cable segment; and
connecting said umbilical cable segment to centrifugal processing apparatus.

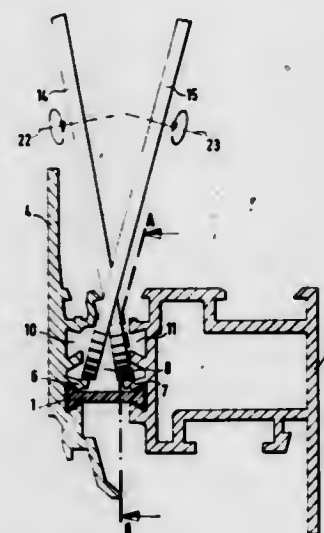
4,245,384

METHOD OF MAKING HEAT-INSULATED STRUCTURAL SECTION ASSEMBLIES

Rudolf Egerer, Bellenberg, Fed. Rep. of Germany, assignor to Wieland-Werke Aktiengesellschaft, Postfach, Fed. Rep. of Germany
Filed Dec. 7, 1978, Ser. No. 967,536
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755669
Int. Cl.³ B23P 19/04

U.S. Cl. 29—433

3 Claims



1. A method for making structural section assemblies for window and door frames, the assembly consisting of two structural metal sections transversely connected to each other by a pair of parallel, spaced heat-insulating bars received between opposing pairs of longitudinally extending grooves defined by upper and lower flanges in said structural sections, whereby said pair of heat-insulating bars define an enclosed space, in which method the grooves loosely receiving first one of said heat-insulating bars are closed upon said first heat-insulating bar by continuously pressing the upper flanges against said first heat-insulating bar, wherein said method comprises the following successive steps:
 - (a) the first received heat-insulating bar is longitudinally pulled in between grooves in said structural sections;
 - (b) the flanges which are adjacent to said enclosed space are firmly pressed by pressure rollers, against said first heat-insulating bar;
 - (c) a second heat-insulating bar is longitudinally pulled between opposing grooves in said structural sections; and
 - (d) the flanges which are remote from said enclosed space and engage said second heat-insulating bar are firmly pressed by said pressure rollers against said second heat-insulating bar.

4,245,385

RADIAL LEAD COMPONENT INSERTION MACHINE

Albert W. Zemek, Windsor; Frederick G. Tomko, Vestal, both of N.Y.; Crawford Matson, Wyalusing, and Burr Darrow, New Milford, both of Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.
Division of Ser. No. 907,564, May 19, 1978, Pat. No. 4,203,583.
This application Jul. 9, 1979, Ser. No. 56,076
Int. Cl.³ B23P 23/00

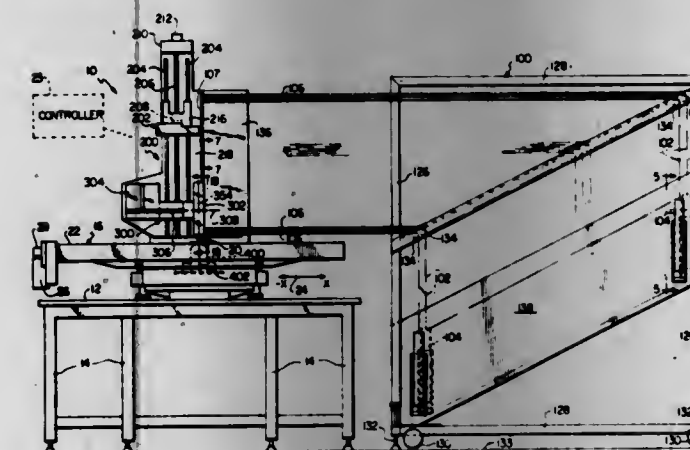
U.S. Cl. 29—564.8

17 Claims

1. The radial lead component insertion machine for selection of radial leaded components from storage and insertion of the

leads of said components into predrilled holes in a printed circuit board, comprising:

- means for supporting and laterally positioning a printed circuit board, whereby the x-y positions of said printed circuit board are determined;
- a storage unit, holding a component strip, said component strip including a backing strip with the component leads transversely attached thereto with the component bodies extending away from said backing strip, said components being of one size and type and spaced uniformly along said backing strip, and perforations in said backing strip, one perforation located between each of said components, one end of said component strip being accessible at an interface;
- a shuttle, said shuttle, when directed, moving between said interface and a pick-up area adjacent said circuit board, said shuttle including means for moving one of said components adjacent said interface into said shuttle;
- first cutting means for severing said component strip at said interface whereby said component in said shuttle is separated from the remainder of said component strip in said storage unit;



- second cutting means for severing the leads of said component in said shuttle whereby said component in said shuttle is separated from said backing strip;
- an insertion head adjacent said pick-up area, said insertion head having a gripper for clamping said shuttle-held component and means for inserting the leads of said component into said predrilled holes in said circuit board, and for releasing said component from said gripper;
- and control means to direct said means for positioning said circuit board, said shuttle, said cutting means, and said insertion head;
- whereby said circuit board is positioned; said shuttle moves to said interface and draws in one of said components from storage; said first cutting means severs said one component from the remainder of said component strip; said shuttle moves with said selected component to said pick-up area; said insertion head grips said component while said second cutting means separates said component from said backing strip; said insertion heads inserts said component leads into said predrilled holes in said circuit board, releases said component, and withdraws.

4,245,386

METHOD OF MANUFACTURING A SOLAR CELL BATTERY

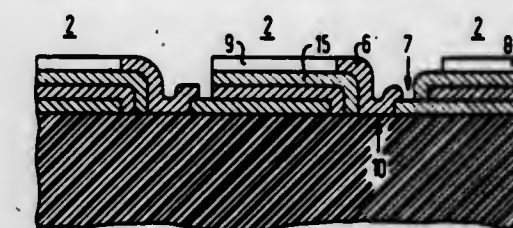
Helmold Kausche; Gerhard Mayer, and Karl-Ulrich Stein, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jun. 13, 1979, Ser. No. 48,054
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1978, 2827049
Int. Cl.³ H01L 31/04

U.S. Cl. 29—572

15 Claims

1. A method of manufacturing solar cell batteries, comprising the steps of:

- moving an elongate insulating strip in its longitudinal direction;
- vapor depositing a first plurality of spaced elongate aluminum strips onto the insulating strip continuously parallel to the direction of movement of said insulating strip;
- applying active zones comprising at least one layer of doped semiconductor material on the first aluminum strips offset to leave uncovered portions of the strips continuously parallel to the direction of movement of said insulating strip;
- vapor depositing a second plurality of spaced elongate aluminum strips continuously parallel to the direction of movement of said insulating strip so that each of said second aluminum strips contacts an active zone and contacts the uncovered portion of the adjacent first aluminum strip,



- whereby a plurality of elongate series-connected solar cells are formed extending in the longitudinal direction; and
- cutting through the series-connected solar cells transverse to said longitudinal direction at random locations to thereby segment said series-connected solar cells,
- whereby a plurality of series-connected solar batteries are formed from the segments.

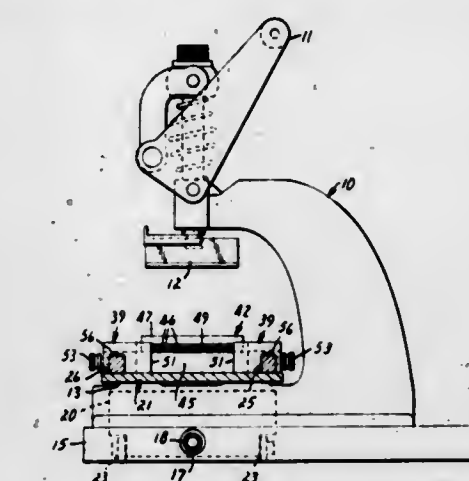
4,245,387

CABLE HARNESS ASSEMBLY FIXTURE

Dean K. Reidt, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Jun. 14, 1979, Ser. No. 48,674
Int. Cl.³ H01R 43/04

U.S. Cl. 29—749

5 Claims



1. A cable harness assembly fixture comprising:
 - a crimping station defining a crimping position for applying a cable connector to a multi-conductor flat cable,
 - an elongate base plate supported for movement with respect to said crimping station longitudinally of said base plate to position selected portions thereof in said crimping position,
 - a pair of spaced, parallel, locator support rails supported on said base plate parallel to the longitudinal edges thereof, said support rails being movable transversely of said base plate to vary the spacing between them,
 - means for retaining said locator support rails at selected spacings,
 - a plurality of connector locators supported on each of said

locator support rails, said connector locators being slidable along said rails, being securable to said support rails and being formed such that with said support rails set at a predetermined spacing two connector locators positioned in opposition, one on each of said support rails, will engage and position the body of a cable connector between them on said base plate, and means for aligning a multi-conductor flat cable with a cable connector body positioned between an opposed pair of said connector locators.

4,245,388

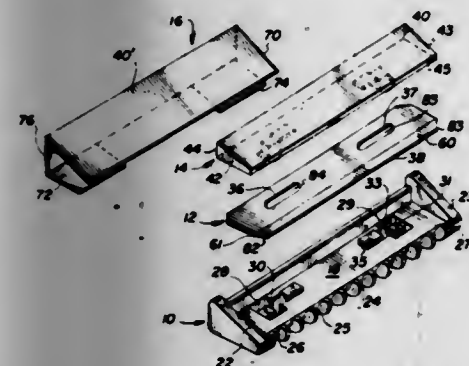
SAFETY RAZOR

Jan Dawidowicz, 10 Valley Ln., Fairfield, Conn. 06432, and John D. Watts, 2 Mohawk Dr., Clinton, Conn. 06413
Filed Dec. 19, 1977, Ser. No. 862,004

Int. Cl.³ B26B 21/54

U.S. Cl. 30—47

14 Claims



1. A safety razor comprising: a cap member having a planar skin abutting upper surface for guiding said razor over skin surfaces, said cap upper surface defining a first plane; a blade having a cutting edge at one end thereof in a second plane, said cutting edge extending forwardly from beneath said cap member; said first and second planes intersecting at an angle of about 15° to about 25°; and a blade seat member located beneath said blade and including means extending forwardly from beneath said cutting edge for guarding skin surfaces from said cutting edge; said skin guarding means being oriented with respect to said cap upper surface to permit said cutting edge to contact skin surfaces only when said cap upper surface is in contact with such skin surfaces, and said skin guarding means being in contact, at spaced intervals, with said cutting edge.

4,245,389

SAFETY RAZOR

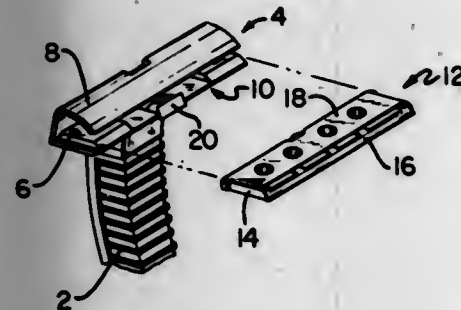
Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jul. 18, 1979, Ser. No. 58,573

Int. Cl.³ B26B 21/16

U.S. Cl. 30—47

3 Claims



1. A razor comprising a grip portion and a head portion, said

head portion including a base portion extending transversely of said grip portion at one end of said grip portion and a cap portion overlying and spaced from said base portion to form a cavity therebetween adapted to receive a shaving unit, a leaf spring member fixed to said razor, said spring member having a cam portion adapted to extend into said cavity, said spring member cam portion being adapted to engage an underside of said shaving unit when said shaving unit is disposed in said cavity, said spring member being provided with a pair of ears, and button means having opposed wing portions having apertures, said ears being received in said apertures to pivotally connect said button to said spring member, said button being operative, upon having pressure applied thereto by an operator, to remove said spring member cam portion from said cavity and from engagement with said underside of said shaving unit, whereby to free said shaving unit for removal from said cavity.

4,245,390

SCORING ATTACHMENT FOR POWER SAWS

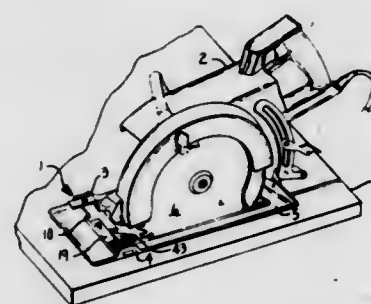
David L. Bond, 13325 Applewood Dr., Grandview, Mo. 64030

Filed Mar. 30, 1979, Ser. No. 25,671

Int. Cl.³ B27B 9/00

U.S. Cl. 30—164.95

8 Claims



1. A scoring device for preventing splintering of an article and for attachment to a saw having a power driven saw blade and a planar structure for engaging an article to be sawn, said scoring device comprising:

- (a) a wheel having a sharp, knife-like, continuous cutting edge therearound;
- (b) mounting means for rotatably attaching said wheel to the planar structure of a saw adjacent to a saw blade so that said wheel has a cutting direction substantially parallel with the path of the saw blade as it moves through an article, said mounting means having biasing means therewith urging said wheel outwardly so that the cutting edge thereof extends outwardly from the saw planar surface to engage and continuously penetrate a surface portion of the article being moved relative thereto so that said wheel rotates at a corresponding rate of speed to the speed the saw moves over the article to be sawn for forming an indented continuous line in the surface portion which would thereby prevent splintering when said article is sawn.

4,245,391

GOLF CLUB ADJUSTMENT APPARATUS

Walter R. Heller, 4 N. 321 Route 53, Addison, Ill. 60601

Filed Jul. 13, 1979, Ser. No. 57,218

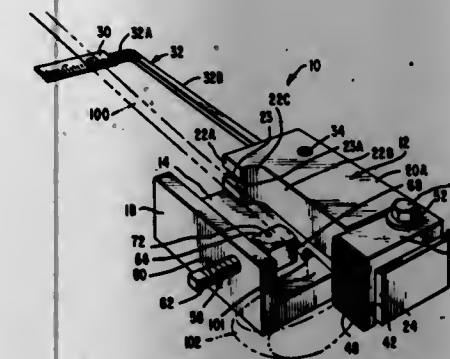
Int. Cl.³ G01B 5/24

U.S. Cl. 33—174 F

8 Claims

1. A golf club adjusting apparatus for modifying the relationship of the club shaft and head comprising: a base element including means for supporting the club shaft at a first position and means for supporting a portion of the club adjacent the hosel at a second position spaced a predetermined distance from the first position; means on the base for applying a deflecting force to the club at a third selected position intermediate the first and sec-

ond positions to produce controlled deflection of the golf club shaft relative to the club head to selectively modify the shaft-head relationship, without damaging or marring any of the club surface; and



means for indicating the amount of said controlled deflection.

4,245,392

DEVICE FOR MEASURING AND ADJUSTING THE LIE AND FACE OF GOLF CLUB

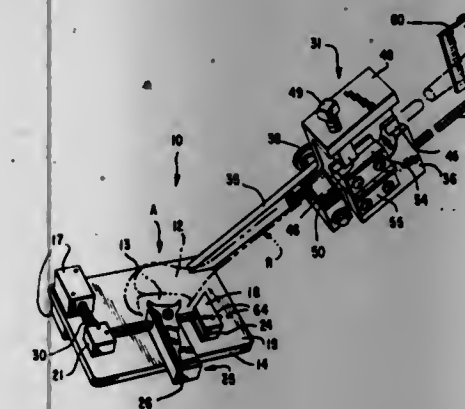
Walter R. Heller, 4 N. 321 Rte. 53, Addison, Ill. 60101

Filed Jan. 24, 1980, Ser. No. 114,732

Int. Cl.³ G01B 5/24

U.S. Cl. 33—174 F

18 Claims



1. A device for measuring and adjusting the angle of lie and face angle of a golf club having a shaft and a head at one end with a ball hitting face and sole, said device comprising:

- a base element including a generally flattened reference surface for evenly supporting the sole of the golf club thereon when the golf club is in a first position;
- means spaced from said base element for supporting the shaft when the golf club is in said first position;
- means for attaching said shaft supporting means to said base element;
- means on said attaching means and said shaft supporting means coaxing to measure the angle of lie;
- means coaxing with said base element for measuring the face angle including means for engaging the ball hitting face when the golf club is in the first position;
- means for connecting said face angle measuring means to said base element;
- and means on said shaft supporting means for adjusting the angle of lie and the face angle when the golf club is in a second position in a predetermined oriented relation only with respect to said shaft supporting means.

4,245,393

INSTANT POSITION FINDER AND COURSE PLOTTER

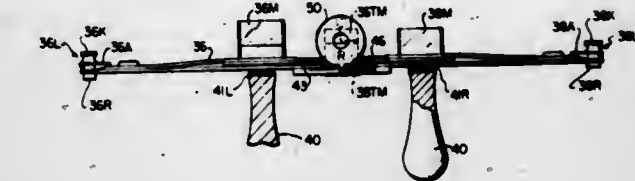
Anthony J. Zane, 3011 NW. Second Ave., Pompano Beach, Fla. 33064, and Frederick C. Beurer, 3100 Riverside Dr., Apt. 206, Coral Springs, Fla. 33065

Filed Jan. 18, 1979, Ser. No. 4,571

Int. Cl.³ G01C 3/00

U.S. Cl. 33—276

12 Claims



1. An instant position finder and course plotter comprising: a base member including an outwardly projecting fixed central arm, said base member being constructed of a transparent material and including a center grid inscribed thereon for aligning said base member with an appropriate meridian or parallel on a navigational chart, said outwardly projecting fixed central arm including a slit there-through extending from said base member to a point adjacent to the outer extremity of said central arm and said outwardly projecting fixed central arm further including nautical mile measuring scales inscribed thereon;
- a left quadrant including a left index mirror movably mounted as a unit on said base member;
- a right quadrant including a right index mirror movably mounted as a unit on said base member;
- fixed left and right target mirrors positioned in operable relationship to said left and right index mirrors, whereby three objects may be simultaneously sighted with the left target mirror and the left index mirror, the right target mirror and the right index mirror, and the fixed central arm;
- a left handle means operatively connected to said left index mirror; and
- a right handle means operatively connected to said right index mirror;
- said left and right handle means being adapted to permit an individual to readily hold and use the instant position finder and being further adapted to permit rotation of said left index mirror and right index mirror, respectively.

4,245,394

CLAMPING DEVICE FOR STRAIGHT EDGE

Jerald G. Peterson, 4115 SE. 30th Ave., Edmond, Okla. 73034

Filed Feb. 2, 1979, Ser. No. 8,772

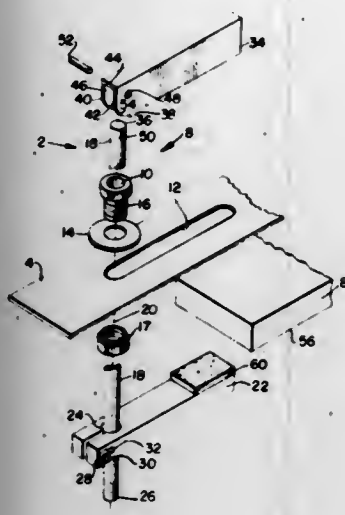
Int. Cl.² B43L 13/02

U.S. Cl. 33—430

9 Claims

1. A clamping device for clamping a straight edge to a board at any desired angle relative to the edge of said board comprising: a bearing member including an aperture therethrough, means coupled with said bearing member for connecting said bearing member to said straight edge, an elongated shaft moveably extending through said aperture, a first clamping member moveably interconnected to one end of said shaft, a second clamping member moveably interconnected to the other end of said shaft, and means coupled with said clamping members for operatively locking said clamping members in place upon said shaft, said clamping members being moveable relative to each other and said shaft such that when said clamping members are so locked in place said first clamping member engages and

exerts a compressive force against one surface of said board and said second clamping member engages said bearing mem-



ber and thereby exerts an opposing compressive force to lock said straight edge in place.

4,245,395

FLUIDIZED BED DRYING

Owen E. Potter, Camberwell, Australia, assignor to Monash University, Victoria, Austria

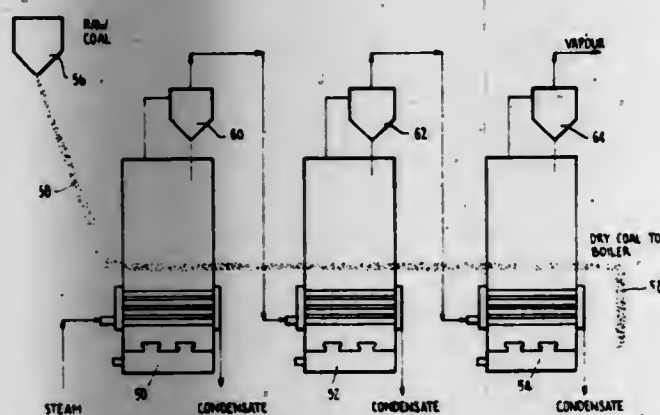
Filed Dec. 29, 1978, Ser. No. 974,246

Claims priority, application Australia, Oct. 2, 1974, PD3344

Int. Cl.³ F26B 3/08, 3/10

U.S. Cl. 34—10

18 Claims



1. A fluidized bed multiple effect drying apparatus, comprising at least first and second fluidized bed-housings, means for feeding solid material containing vapourisable material to each housing to form the bed, means for removing solid material having a reduced vapourisable material content from each housing, means for removing vapourisable material driven off from the solid material from the housing, and means for indirectly heating each fluidized bed, wherein means is provided to enable the vapourisable material driven off from the first fluidized bed to supply heat to the indirect heating means of the second fluidized bed.

4,245,396 PROCESS FOR DRYING AND GRANULATING SEWAGE SLUDGE

Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 22,910, Mar. 22, 1979, and Ser. No. 22,914, Mar. 22, 1979, each is a continuation-in-part of Ser. No. 909,587, May 25, 1978, Pat. No. 4,193,206, and Ser. No.

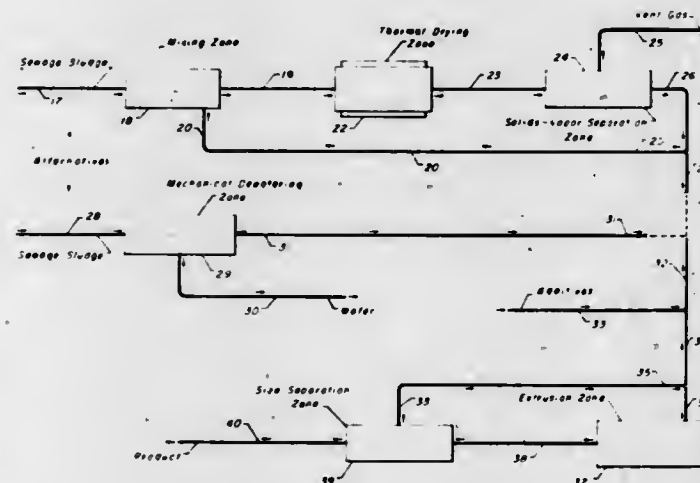
891,437, Mar. 29, 1978, Pat. No. 4,160,732, which is a continuation-in-part of Ser. No. 813,577, Jul. 7, 1977, Pat. No. 4,098,006, said Ser. No. 909,587, is a continuation-in-part of Ser. No. 891,437, Ser. No. 858,879, Dec. 8, 1977, Pat. No. 4,161,825, Ser. No. 844,097, Oct. 20, 1977, Pat. No. 4,121,349, Ser. No. 813,577, Ser. No. 813,578, Jul. 7, 1977, Pat. No. 4,099,366, and Ser. No. 775,673, Mar. 8, 1977, Pat. No. 4,128,946, said Ser. No. 858,879, is a continuation-in-part of Ser. No. 813,577, and Ser. No. 813,578, each is a continuation-in-part of Ser. No. 775,673, Mar. 8, 1977, Pat. No. 4,128,946. This application Jul. 9, 1979, Ser. No. 55,568

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.³ F26B 7/00, 5/14

U.S. Cl. 34—12

7 Claims



1. A process for drying sewage sludge which comprises the steps of:

- passing a feed stream comprising sewage sludge into a drying zone operated at drying conditions and effecting the evaporation of water contained in the feed stream, and the production of a drying zone effluent stream comprising particles of sewage sludge derived from the feed stream and water vapor;
- separating the drying zone effluent stream in a solids-vapor separating zone and producing a vapor stream comprising water vapor and a dry solids stream comprising dried sewage sludge and containing less than about 15 wt. % water;
- admixing a plasticizer into at least a first portion of the dry solids stream, with the amount of plasticizer which is added being less than 5 wt. % of the first portion of the dry solids stream; and
- extruding the first portion of the dry solids stream in an extrusion zone under conditions sufficient to effect the formation of a product stream having a bulk density greater than about 30 lb/ft³.

4,245,397 APPARATUS FOR DRYING WEBS OF PHOTOGRAPHIC PAPER OR THE LIKE

Erwin Laar, Taufkirchen; Friedrich Ganser, Feldkirchen, and Thomas Hammer, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

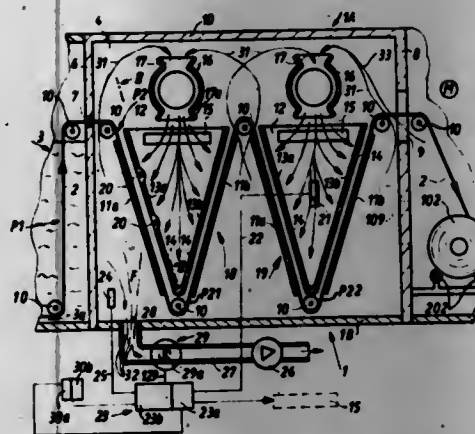
Filed Jul. 18, 1978, Ser. No. 925,794

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734326

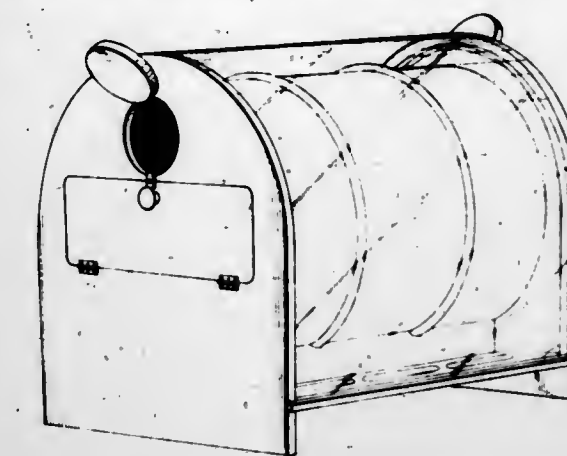
Int. Cl.³ F26B 21/12

U.S. Cl. 34—54

30 Claims



vertical baffle means located therein for guiding the air that enters said floor opening around said solar heated cylinder,



said solar heated air passing through said opening in the bottom surface of said cylinder and out said opening means whereby vegetation on said tray is dehydrated.

4,245,399

MATERIAL DRYER WITH AIR AND SCREW AGITATOR

Rudolf Müller; Hans-Jürgen Radeklaus; Harald Doefke, and Detlef Krieger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

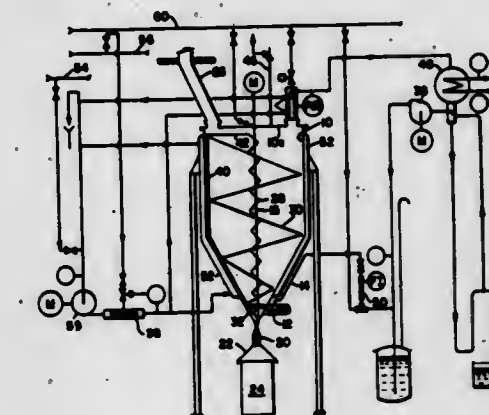
Filed Apr. 26, 1979, Ser. No. 33,619

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818863

Int. Cl.³ F26B 17/14

U.S. Cl. 34—166

10 Claims



1. Apparatus adapted for drying products generally moistened throughout, as by organic solvents; and comprising a generally cylindrical vertically oriented vessel with a downwardly conically tapered lower end portion terminating in a product discharge opening, and a closed top end portion with means for admitting products to the vessel; agitating means centrally mounted for rotation within the vessel for distributing products therein and including a rotating shaft centrally and vertically disposed in fixed position within the vessel and carrying a skeletal helical screw of a radial extent at least approximating surface contact with the interior surface of the vessel and extending substantially throughout the vertical extent thereof including the tapered lower end portion to the product discharge opening; and conduit means including a feed conduit for directing drying gas to the tapered lower end portion of the vessel above and transversely across the discharge opening and the path of the helical screw in the tapered lower end portion of the vessel for movement through the agitated products and in countercurrent to movement of the products toward the discharge opening within the outer radial extent of the skeletal helical screw.

4,245,398

SOLAR DEHYDRATOR

Leandre A. Poisson, Cherry Hill Rd., Box 119, Harrisville, N.H. 03450

Filed May 15, 1979, Ser. No. 39,165

Int. Cl.³ F26B 19/00

U.S. Cl. 34—93

1 Claim

1. A solar heated dehydrator for removing water from vegetation comprising: a substantially horizontal, thin sheet cylinder closed at both ends supported above a floor, said floor having one or more opening therein, said cylinder having a blackened outer surface for absorbing solar energy, a transparent, outer structural hood surrounding the cylinder for transmitting solar radiation to said cylinder blackened outer surface, one or more openings in the bottom surface of said cylinder for admitting air into said cylinder, opening means formed in said cylinder closed ends for exhausting heated air from said cylinder, a plurality of screened trays supported in said cylinder for supporting vegetation to be dehydrated, an access aperture in one of the closed ends of the cylinder, a hinged door member covering said aperture, said transparent hood and blackened cylinder surface forming a substantial curved space having a

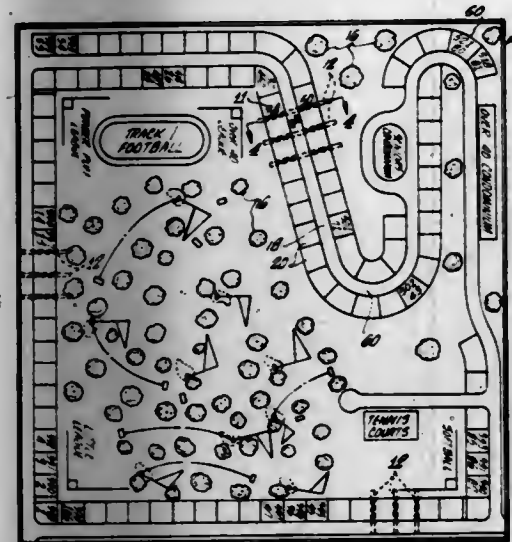
4,245,400

THREE DIMENSIONAL EDUCATIONAL TOY MODEL SUBDIVISION

Burton R. Johnson, 1431 McKianley, Escondido, Calif. 92027
Continuation-in-part of Ser. No. 409,784, Oct. 26, 1973,
abandoned. This application Oct. 17, 1978, Ser. No. 952,152
Int. Cl.³ G09B 19/00

U.S. Cl. 434-93

10 Claims



1. A three dimensional educational toy for use with soil in constructing the topography of a land development, said toy comprising a base member having indicia thereon; a plurality of profile retaining members adapted to be vertically mounted on said base member at locations defined by said indicia and retain soil disposed on said base member between said profile retaining members, each of said profile retaining members having a contoured upper edge; and a plurality of profile elements adapted to be secured to and extend between said profile retaining members thereby providing support for said profile retaining members, each of said profile elements having a contoured upper edge such that upon securing said profile elements to said profile retaining members and filling the area between said profile retaining members with soil to a level defined by said contoured upper edges of said profile retaining members and said profile elements, said soil and said edges define the contour of said topography.

4,245,401

PLANNING DEVICE

Harald Riehle, Anna-Schieber-Weg-16, 7300 Esslingen, Fed. Rep. of Germany
Continuation of Ser. No. 884,314, Mar. 7, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 83,063

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720906

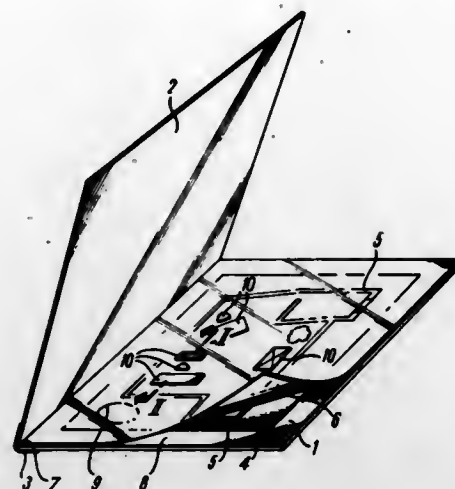
Int. Cl.³ G09B 29/00; G09F 7/12

U.S. Cl. 434-430

11 Claims

1. A planning device comprising a base foil having a self-adhering smooth surface, a paper sheet having a graphic representation thereon of a building plan or the like, said paper sheet being smaller in size than said base foil and removably disposed in overlying relationship with said base foil with the marginal edges of said paper sheet defining a marginal strip on said base foil, a transparent foil having two opposed self-adhering smooth surfaces, connection means for hingedly connecting said transparent foil to said base foil along one edge whereby said transparent foil is hingedly movable into overlying relationship with said base foil with releasable adherence between said base foil marginal strip and corresponding portions of one

of said surfaces of said transparent foil and with said paper sheet sandwiched therebetween and at least one planning



element having a smooth surface which may be repeatedly and releasably adhered to the other surface of said transparent foil.

4,245,402

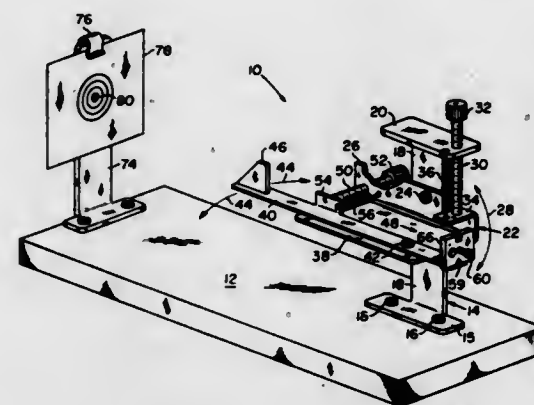
FIREARM SIGHT PICTURE SIMULATOR AND TEACHING AID

Richard A. Lanese, 6 Summit La., New Hyde Park, N.Y. 11040
Filed Dec. 6, 1978, Ser. No. 966,966

Int. Cl.³ F41F 27/00

U.S. Cl. 434-19

9 Claims



1. In an apparatus for teaching firearm sight picture alignment, an elongated sight arm carrying front sight means and rear sight means relatively spaced along the length thereof so as to simulate the arrangement of a firearm barrel, said arm having movement along substantially perpendicular first and second planes so as to permit corresponding movement of said front and rear sight means, means for supporting said sight arm, first adjustable means operatively cooperating with said supporting means for moving the supporting means and said sight arm along the first plane and for automatically retaining said sight arm against further movement along the first plane when said sight arm is moved to a selected position therealong, and second adjustable means operatively cooperating with said supporting means and with said sight arm for moving said sight arm along the second plane relative to said supporting means and for automatically retaining said sight arm against further movement along the second plane when said sight arm is moved to a selected position therealong, the adjustment of said sight arm to said selected positions along the first and second planes being effected to enable one to properly align said front and rear sight means with respect to a remotely fixedly positioned target such that the resulting sight picture alignment may subsequently be

inspected by another to determine the accuracy thereof by reason of the retention of said sight arm at said selectively adjusted positions by said first and second adjustable means, said supporting means being a bracket supporting said sight arm and arranged for pivotal movement along the first plane in response to operation of said first adjustable means for carrying said sight arm through selected pivotal movement along the first plane, said sight means being pivotally supported on said bracket for pivotal movement relative thereto along the second plane in response to operation of said second adjustable means and independent of the pivotal position of said bracket along the first plane.

4,245,403

APPARATUS FOR DISPLAYING THE DETONATING, LIGHT FLASH AND SMOKE DEVELOPMENT OF AMMUNITION

Jan Hipp, SchulteBdamm 57, 2000 Hamburg 64, Fed. Rep. of Germany

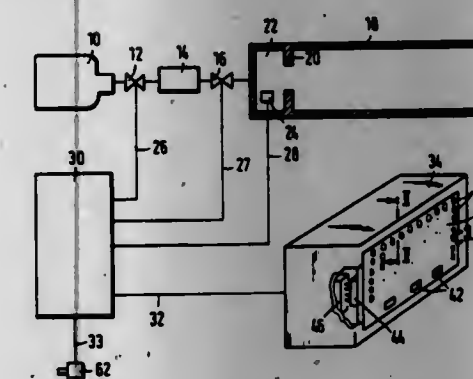
Filed Jan. 19, 1979, Ser. No. 5,027

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802478

Int. Cl.³ G09B 9/00

U.S. Cl. 434-11

13 Claims



1. An apparatus for simulating the light flash and smoke development of ammunition comprising:
(a) a support having arranged thereon a plurality of pyrotechnic charges, each said charge having a detonator, and a plurality of electrical connecting leads for supplying current for each detonator for selective firing of each charge;
(b) a control unit responsive to a firing command, for selectively igniting selected ones of said pyrotechnic charges; and
(c) means for releasably connecting said support as a disposable magazine to said control unit, and for electrically connecting each said connecting lead to said control unit.

4,245,404

AUDIO-VISUAL TEACHING MACHINE

Yukiyoichi Yoshinari, Akishima, Japan, assignor to Shinano Kikaku Company Limited, Tokyo, Japan

Filed Jan. 23, 1979, Ser. No. 5,920

Claims priority, application Japan, Jan. 26, 1978, 53-7672; Jan. 26, 1978, 53-7673; Jan. 26, 1978, 53-8260

Int. Cl.³ G09B 5/06

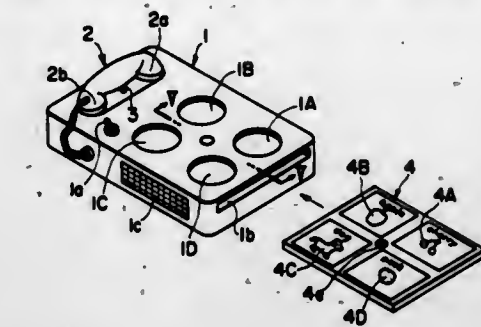
U.S. Cl. 35-35 C

5 Claims

1. An audio-visual teaching machine to be used together with a teaching card having on one surface a plurality of visual teaching informations and on the other surface a plurality of magnetic tracks containing audio teaching informations, related with said visual teaching informations said machine comprising:

a body case having a plurality of windows formed in the top wall thereof and able to respectively independently indicate said plurality of visual teaching informations,

a plurality of vertically movable window frames provided respectively to said plurality of windows, first switches arranged adjacently respectively to said plurality of window frames and able to be closed when said window frames are pushed, and a magnetic reproducing device including a plurality of reproducing heads rotatable while in contact with said



4,245,405

MACHINE FOR TEACHING READING

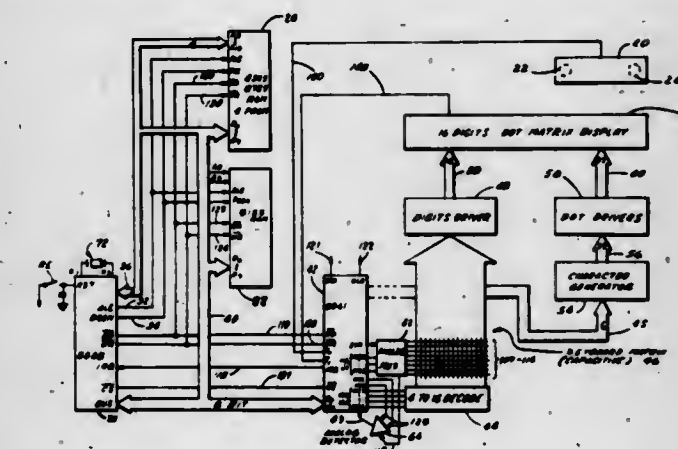
Ming T. Lien, Del Mar, Calif., and Eric F. Burtis, 167 Constitution Dr., Menlo Park, Calif. 94025, assignors to Eric F. Burtis, by said Ming T. Lien, Menlo Park, Calif.

Continuation of Ser. No. 913,283, Jun. 7, 1978, Pat. No. 4,151,659. This application Apr. 30, 1979, Ser. No. 34,681. The portion of the term of this patent subsequent to May 1, 1996, has been disclaimed.

Int. Cl.³ G09B 7/02

U.S. Cl. 434-178

15 Claims



1. A portable machine for teaching students to read comprising:
keyboard means having manually actuatable switches at least some of which correspond to separate grammatical characteristics,
display means comprised of a plurality of character positions for providing a visual display of words by generating images of words internally transmitted thereto in electronically encoded form,
indicators of correctness and incorrectness,
word set defining means for storing a multiplicity of words in electronically encoded form, and for assembling said words in sets wherein said sets are separately selected in response to separate actuation of said switch means corresponding to structural characteristics of words,
random selection means connected to said word set defining means for selecting words at random from among words in a selected set and for transmitting words so selected to

said display means for generation of an image containing at least one such word for visual observation, means for internally associating the actuation of at least one of said manually actuatable switches with each of said displayed words, comparison means for sensing actuation of at least one manually selected switch and for ascertaining whether said actuation of all selected switches is internally associated with said image, and for providing an output indicative of the comparison results to said indicators of correctness and incorrectness.

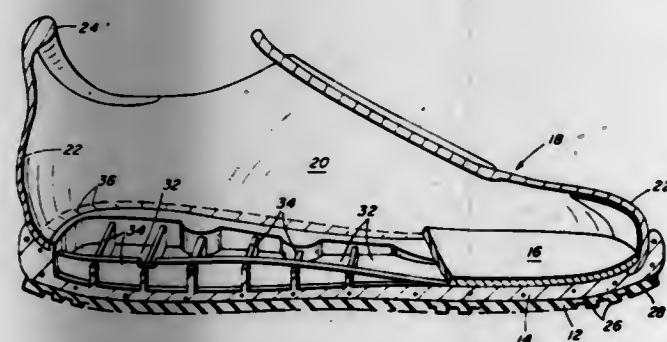
4,245,406 ATHLETIC SHOE

David L. Landay, Brookline, and Alvan H. Wolf, Worcester, both of Mass., assignors to Brookfield Athletic Shoe Company, Inc., East Brookfield, Mass.

Filed May 3, 1979, Ser. No. 35,614
Int. Cl.³ 264 244; A43C 13/08

U.S. Cl. 36—14

13 Claims



1. A flexible athletic shoe comprising: an upper including a lower edge adapted for bonding to polyurethane, a flexible rubber outsole conformable to the flexing foot and having an outer surface providing playing court traction, a foamed polyurethane, injection molded midsole in situ bonded by said polyurethane to both said outsole and to said upper, whereby said rubber outsole and polyurethane foam midsole combine to provide a relatively inexpensive, lightweight and flexible athletic shoe compressively conformable to the flexing foot with a flexible sole having strong court traction and long wear.

4,245,407

ARCH AND HEEL ASSEMBLY FOR SHOES

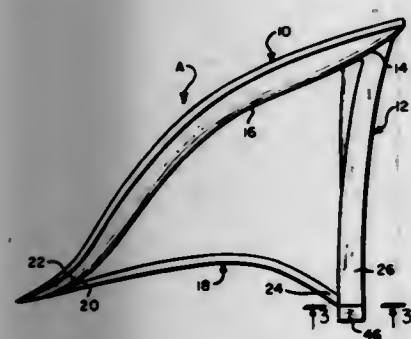
Jean Mazabra, Romans, France, assignor to Societe des Chaussures Seducta Charles Jourdan & Fils, Romans, France

Filed May 24, 1979, Ser. No. 42,193

Claims priority, application France, Jun. 30, 1978, 78 19627
Int. Cl.³ A43B 13/28, 21/00

U.S. Cl. 36—24.5

9 Claims



1. An arch and heel assembly for shoes comprising an arch, a heel secured at the upper end thereof to the rear end of said arch, and a connecting link secured at the front end thereof to the base of the arch and at the rear end thereof to the base of

said heel whereby to define a substantially triangular open area between said arch, heel and connecting link, the rear end of said link being provided with a stud connected to said link by a bridge, and said heel being provided at its base with a slot complementary to said stud whereby said stud is insertable into said slot.

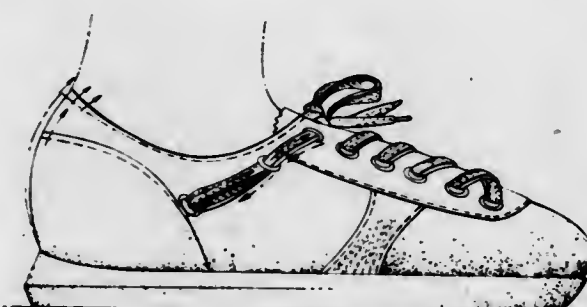
4,245,408 ATHLETIC SHOE

John E. Larsen, Hingham, and Rob R. McGregor, Concord, both of Mass., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,366

Int. Cl.³ A43B 11/00, 23/28, 5/00
U.S. Cl. 36—50

4 Claims



1. An athletic shoe comprising:

- a sole;
- an upper affixed to the sole having a toe portion, a heel portion and a connecting portion therebetween;
- said heel portion having a heel portion embracing counter means having a forwardly extending portion at each side of the heel portion and a rearward portion;
- said shoe having an upwardly facing opening in said upper having an edge, through which the ankle portion of a foot protrudes when said shoe is worn;
- an eyelet containing substantially U-shaped portion in said connecting portion extending from proximately rearward of said toe portion to said edge of said opening of said upper and having a row of spaced eyelets in each of said legs of said U-shaped portion by means of which said shoe is laced and tied;
- a first ring connecting means affixed to the forwardly extending portions of said counter means at each side of the upper;
- a second ring connecting means affixed to said U-shaped portion near said edge of said opening of said upper;
- said counter means having a guide loop affixed at proximately the rearward portion;
- an elongated lace having a middle portion threaded through said guide loop and one end portion of the lace is threaded through said first ring connecting means, then threaded through said second ring connecting means, thereafter is again threaded around and through said first ring connecting means and then again is threaded through said second ring connecting means all on the same side of the shoe; and the other end portion of the lace is threaded through said first ring connecting means, then threaded through said second ring connecting means, thereafter is again threaded around and through said first ring connecting means and then again is threaded through said second ring connecting means all on the other side of the shoe;
- the lace is of sufficient length whereby there are end portions capable of being tied over the top portion of the U-shaped eyelet portion to thereby produce drawing together stress between the first ring connecting means and the second ring connecting means at each side of the shoe.

4,245,409 SKI BOOT

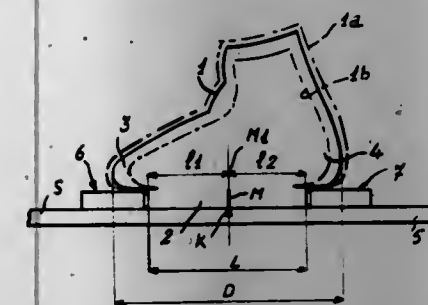
Jean J. A. Beyl, Nevers, France, assignor to Look, S.A., Nevers, France

Filed Nov. 20, 1978, Ser. No. 962,185

Claims priority, application France, Dec. 2, 1977, 77 36281
Int. Cl.³ A43B 5/04, 13/14

U.S. Cl. 36—117

16 Claims



1. A ski boot for detachable engagement with a ski, said ski boot comprising: a sole unitarily and non-detachably disposed on said boot and truncated at its front and rear ends so as to provide a bottom bearing surface having a constant length irrespective of the boot size, whereby said bottom bearing surface is adapted for direct contact alternatively with the ground and with the ski.

4,245,410 FOAMED SKI BOOT

Robert P. Molitor, South Hadley, Mass., assignor to Questor Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 830,688, Sep. 6, 1977. This application May 14, 1979, Ser. No. 38,485

Int. Cl.³ A43B 5/04

U.S. Cl. 36—117

20 Claims



1. A ski boot having an inner boot and an outer shell said outer shell being formed from a structural polymeric material having a flexural modulus of at least 0.025 x 10 psi, which incorporates an outer skin, an inner skin, and a foam core therebetween, wherein said outer skin, said inner skin, and said foam core are integral and are formed in situ.

4,245,411

MANUAL SCOOP TYPE SNOW PUSHER/LIFTER

Edward W. McMath, 4305 Ridge Rd., Baltimore, Md. 21236

Filed Jan. 19, 1979, Ser. No. 50,068

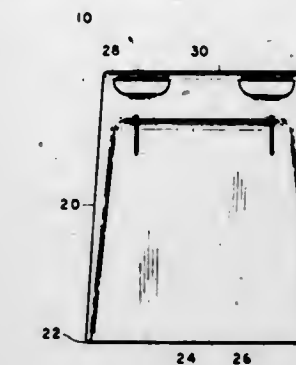
Int. Cl.³ E01H 5/02

U.S. Cl. 37—53

1 Claim

1. In a scoop-type snow scraper/lifter having a pan with sides tapering in height, handle means, and a transverse scraping edge at the bottom, the improvement comprising: means permitting a user safely to urge the snow scraper/lifter with the user's hips, including: said snow scraper/lifter having

length reaching upward at a snow scraping angle from the transverse scraping edge at the lower end to the nominal level of a user's hips from a ground surface to be scraped, a transverse top on the snow scraper/lifter, means for cushioning contact between the transverse top and a user's hips by automatically interposing the user's hands between the transverse top and a user's hips including a pair of laterally spaced transverse handgrips faired-in to the transverse top with a center spacing substantially equal to the nominal center spacing between a user's hips; the back of the pan having therealong a



planar central reinforcing portion broader than the nominal width of a user's knee and in position for a user's knee to bear on in pivoting the snow scraper/lifter to lift a load of snow and discharge it to the side; means permitting the handgrips to be grasped comfortably with the hands turned up or down, comprising the handgrips being rounded in shape in cross section; the pan and sides having a taper in thickness increasing from the transverse scraping edge upward to the transverse top; and a pair of laterally spaced skids adjacent the scraping edge and extending outwardly therefrom in a rearward direction.

4,245,412

STEAM POWER PLANT, ESPECIALLY NUCLEAR POWER PLANT

Hans-Peter Schabert, Erlangen, and Erwin Laurer, Möhrndorf, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

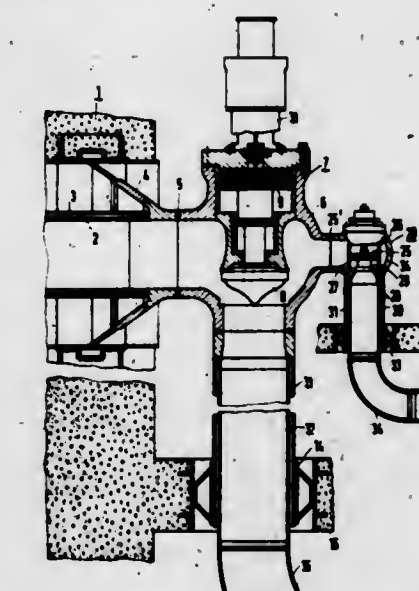
Filed Feb. 27, 1978, Ser. No. 881,176

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1977, 2708642; Sep. 9, 1977, 2740761

Int. Cl.³ F22B 37/44

U.S. Cl. 137—357

12 Claims



1. Steam power plant having a steam line passing through a wall, and a valve disposed in the course of the steam line and formed with a housing, comprising a plurality of additional valve fittings connected adjacent one another to the housing of the valve, each of said valve fittings having a smaller nominal diameter than that of the valve and having a respective housing joined to the valve housing and connected to respective addi-

tional lines downstream from the valve, the locations at which the valve housing and the respective housings of the valve fittings are joined having a bending resistance moment that is at least double the bending resistance moment of said additional lines.

4,245,413

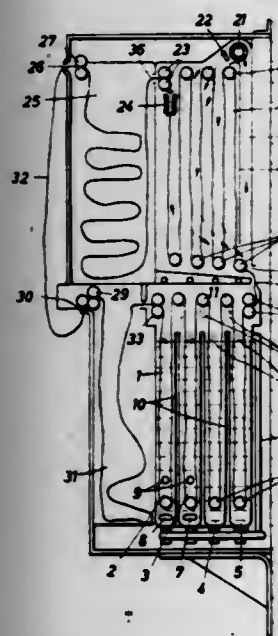
AUTOMATIC TOWEL DISPENSER

Wolfgang Oberhoff, Krefeld, and Hugo W. Geschka, Dusseldorf, both of Fed. Rep. of Germany
Continuation of Ser. No. 941,852, Sep. 13, 1978, abandoned, which is a continuation of Ser. No. 761,878, Jan. 24, 1977, abandoned. This application Jul. 9, 1979, Ser. No. 55,915
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1976, 2602278

Int. Cl.³ A47K 10/30

U.S. Cl. 38—2

14 Claims



1. Automatic towel dispenser having a box-shaped housing provided with a mutually separated washing chamber and a drying chamber for an endless towel to be guided there-through, an outlet opening and an inlet opening formed in said housing, the towel having a cleaned partial length thereof available for respective use and being guidable over a locking device for limiting the clean partial length of the towel to be dispensed and guided outside the housing between said outlet opening and said inlet opening formed in the housing, a first storage chamber, as viewed in travel direction of the towel, located in the housing between the inlet opening and the washing chamber for variably piling up therein a plurality of used partial lengths of the towel, and a second storage chamber, as viewed in travel direction of the towel, located in the housing between the drying chamber and the outlet opening for variably piling up therein a plurality of cleaned partial lengths of the towel, and means being activatable, upon the emptying, to a given extent of the cleaned partial lengths of the towel in the second storage chamber, for passing used partial lengths of the towel through the washing and drying chamber after start-up of a washing and drying operation and for depositing cleaned partial lengths of the towel in the second storage chamber, the improvement therein comprising a plurality of guide rollers disposed in a respective upper and lower region of both the washing chamber and the drying chamber for guiding the endless towel in a multiplicity of loops, the washing chamber comprising at least one washing section and at least one rinsing section, said section being separated by respective partitions, an air shaft separated by a partition from said drying chamber, heating means and blower means both disposed in the drying chamber, said blower means, said heating means and said air shaft cooperating to produce a circulating dry air current flowing through the drying chamber, and means for depositing and stacking the cleaned and dried partial lengths of the towel and the used partial lengths of the towel from above into the

respective second and first storage chambers and for withdrawing them upwardly from below the stored supply disposed thereabove.

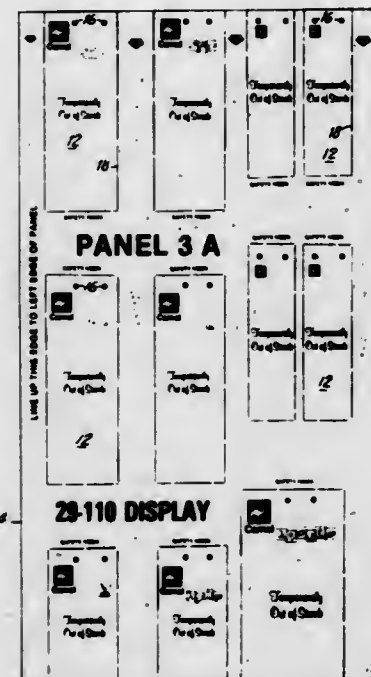
4,245,414

DISPLAY RACK AND CARD THEREFOR

Michael W. Shypula, Bridgeport, Conn., assignor to National Distillers and Chemical Corp., New York, N.Y.
Filed Jul. 17, 1978, Ser. No. 925,124
Int. Cl.³ G09F 1/10

U.S. Cl. 40—124

6 Claims



1. A system for displaying hardware items or products, comprising:
a panel member having a number of apertures provided in an orderly matrix or array;
a carrier sheet constituting an integrated arrangement of discrete indicia-bearing members each of which identifies a particular hardware product, connected by a webbing, said indicia-bearing members having perforations along their borders with the webbing and carrying first apertures which are located so that they line up with predetermined corresponding second apertures in said panel member when the carrier sheet is brought into closely spaced relationship with the panel member, whereby hooks can be readily inserted successively through said first and second apertures and the webbing can be removed.

4,245,415

FILE CARD FOR FILING SYSTEM

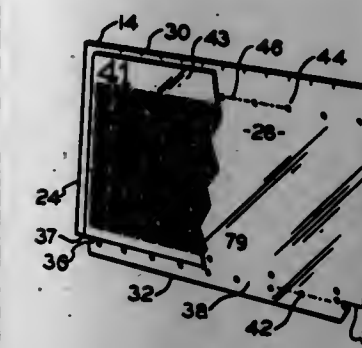
Arthur T. Spees, Tustin, Calif., assignor to Visu-Flex Company, Pico Rivera, Calif.
Continuation-in-part of Ser. No. 296,020, Oct. 10, 1972, Pat. No. 3,913,250, which is a continuation-in-part of Ser. No. 883,113, Dec. 8, 1969, Pat. No. 3,785,520, which is a continuation-in-part of Ser. No. 612,202, Jan. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 328,798, Dec. 9, 1963, Pat. No. 3,301,263. This application Oct. 20, 1975, Ser. No. 624,065
Int. Cl.² B42F 17/00

U.S. Cl. 40—380

43 Claims

1. A file card for use in adjacent relation with similar file cards one behind the other with data cards removably interposed between said file cards in a file receptacle, said file card comprising:
a sheet having top, bottom, and side edges and front and rear faces;
means on one face of said sheet and positioned along a fulcrum line at a location closer to said bottom edge than said top edge and spaced above said bottom edge for separating said one face of said sheet from an adjacent file card,

thereby causing fanning apart of said top edges of said disposed between the back board and the leg so as to be substantially concealed.
bottom edges thereof toward one another; and



means for automatically preferentially holding by attraction a readily removable data card against said front face of said sheet when said sheet and said adjacent file card are fanned apart.

4,245,416

PICTURE MOUNT

Frederick J. Maguire, Braintree, Mass., assignor to Charles D. Burnes Company, Boston, Mass.
Filed Nov. 6, 1978, Ser. No. 958,191
Int. Cl.³ G09F 1/12

U.S. Cl. 40—152.1

2 Claims



1. A picture mount comprising a rigid frame defining a window opening of predetermined configuration, said frame comprising a unitary molding of plastic structured to have a planar back side surface and a front side surface comprising a planar portion parallel to the plane of the planar back side surface and curved surfaces defining the outer peripheral edge of the frame and the inner peripheral edge bounding the window opening, a U-shaped spacer adhesively attached to said back side surface comprising a part extending along the bottom of the frame and parts extending along the two opposite sides of the frame, but open at the top side, said spacer being narrower in width than the back side of the frame and so positioned that the inner and outer edges of the spacer are spaced from and parallel to the outer edge of the frame and the edge of the window opening, a back board coextensive in area with the outside dimensions of the spacer such that the edges of the frame extend beyond the edges of the spacer and back board and thus conceal the same, hinge means attaching one end of the back board to the portion of the spacer extending along the bottom, said hinge means comprising a flexible sheet of paper adhesively attached to the spacer and back board and bridging the parallel coinciding edges of the spacer and back board at the bottom, rivets connecting the distal ends of the parts of the spacer extending along the sides to the upper end of the back board, said spacer and back board defining in conjunction with the planar back side surface of the frame a pocket behind the window opening of larger area than said window opening for receiving a picture and, optionally, a transparent window element, the front to back depth of the molded frame, to wit, the thickness of the frame perpendicular to its planar back surface exceeding the combined thickness of the back board and spacer, and a tapered leg, and a leaf hinge connecting the narrow end of the leg to the back board, said hinge being

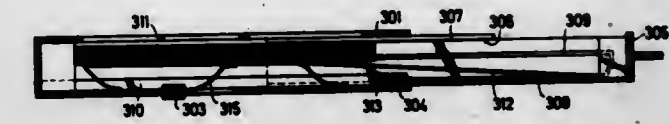
4,245,417

PICTURE VIEWER

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland
Filed Sep. 18, 1978, Ser. No. 943,366
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742349
Int. Cl.³ G09F 11/30

U.S. Cl. 40—513

23 Claims



1. A picture viewer for a pile of pictures, comprising enclosure means including a frame defining a viewing window and a slider reciprocally mounted on the frame, the frame and slider having relative obverse and reverse sliding movements in opposite directions along the window, the enclosure means also defining a picture compartment having one end adjacent the window to contain a pile of pictures with a picture at one end disposed at said one end of the compartment and adjacent the window, a picture changing mechanism adjacent the picture compartment for removing an individual picture from one end of the pile and returning the individual picture to the other end of the pile in response to said relative obverse and reverse sliding movements of the frame and slider to present a new picture at the window for display, said picture changing mechanism including a pile transporter and an individual picture transporter, one of the transporters being connected with the frame and movable therewith and the other of the transporters being connected with the slider and movable therewith, the pile transporter being disposed at one side of the compartment to engage one side of the pile of pictures, the picture transporter being disposed at one end of the compartment to engage such an individual picture at the corresponding end of the pile of pictures, the transporters producing relative movement of the pile of pictures and of the individual picture during changing of the picture at the window, one of the transporters having controllable means operable between alternate functional and non-functional conditions to produce said relative movement when rendered functional, and
a disabling means including a disabling control movably mounted on the enclosure means at the exterior thereof, said disabling control having connection with the controllable means of said one transporter for rendering said one transporter non-functional for producing the relative movement in response to movement of the disabling control at the exterior of the enclosure means.

4,245,418

MAGAZINE CATCH FOR FIREARMS

Ralph C. Kennedy, South Windsor, Conn., assignor to High Standard, Inc., East Hartford, Conn.
Filed Mar. 9, 1979, Ser. No. 19,222
Int. Cl.³ F41C 25/02

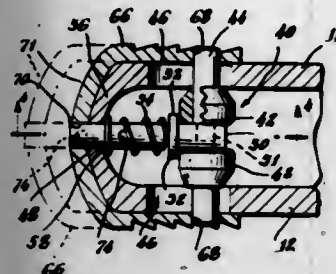
U.S. Cl. 42—7

6 Claims

1. In a firearm having a frame including substantially parallel side walls and an end wall, a cartridge magazine detachably mounted between the side walls of said frame for storing cartridges and delivering them to a position for chambering, said frame having a magazine-positioning stop, and a magazine catch for detachably securing the magazine against said positioning stop, said catch having a latch member mounted on said frame for movement into wedging engagement with said

magazine and spring means for urging said latch member into such wedging engagement, the improvement in said magazine catch wherein said latch member comprises

- a latch pin guided on said frame for movement transversely of itself from a retracted position to a latching position,
- a pair of rollers rotatably mounted on said latch pin for



engagement with said magazine when said latch pin is moved to said latching position, and

- a locking pin supported independent of said latch pin, one end of said locking pin extending through a hole in the end wall of said frame, and said locking pin being urged longitudinally by said spring means into locking engagement at its other end with said latch pin.

4,245,419

QUICK-RELEASE HOLDER

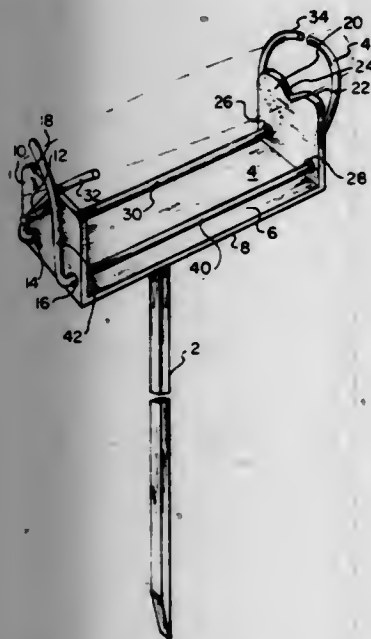
Regis P. McManus, 1325 Oakhill St., Pittsburgh, Pa. 15212

Filed Jun. 19, 1979, Ser. No. 49,929

Int. Cl.³ A01K 97/10

U.S. Cl. 43-21.2

3 Claims



1. A quick-release holder for releasably supporting a fishing pole comprising

- (a) a base member; and
- (b) opposed axially freely rotatable members spaced apart by the base member, and having
 - (i) cooperating front end portions movable between a first non-engaging position in which said front end portions are spaced apart and a second engaging support position in which each end portion extends upwardly from the base member and inwardly to cross the other forming a rigid V-support for the fishing pole to rest, and
 - (ii) cooperating rear end portions movable with said front end portions between a first position in which said rear end portions are spaced apart and a second position in which said rear end members encircle a perimeter of the fishing pole which remains encircled so long as the V-support configuration in the front end portion is maintained, each rear end portion extending upwardly from the base member and disposed to approach the other.

4,245,420

ARTIFICIAL BAIT FOR AQUATIC SPECIES

William E. S. Carr, 603 Mariposa St., St. Augustine Beach, Fla. 32084

Filed Mar. 13, 1979, Ser. No. 20,089

Int. Cl.³ A01K 85/00

U.S. Cl. 43-42.06

14 Claims

1. An artificial bait comprising a semi-rigid, flexible, water-insoluble, hydrophilic matrix which is permeable, by diffusion, to the passage of an attractant for aquatic species incorporated therein and which is capable of releasing said attractant upon immersion in an aqueous medium at a predetermined and controlled rate over a prolonged period of time, said matrix further characterized as the semi-solid phase of a colloidal solution of a liquid in a macromolecular water-insoluble, hydrophilic protein.

4,245,421

FISHING LURE

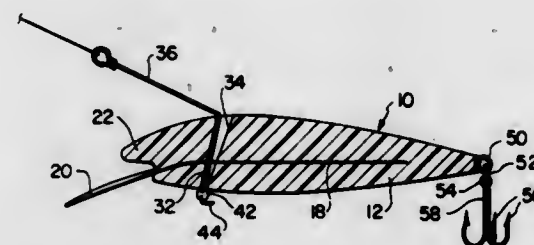
Paul R. Phillips, Rt. 1, Rowell La., Abrams, Wis. 54101

Filed Aug. 15, 1979, Ser. No. 66,820

Int. Cl.³ A01K 85/00

U.S. Cl. 43-42.47

9 Claims



1. An artificial fishing lure adapted to be attached to a fishing line and pulled thereby through water, comprising:

- (a) an elongated lure body having a fish-like exterior configuration including a head portion, a tail portion, and an intermediate body portion there between;
- (b) an action lip extending longitudinally from a position adjacent said head portion at least to said intermediate portion, said action lip being in a plane approximately at or slightly below a horizontal median plane through said body, said lip comprising side flanges which extend laterally from the sides of said body to form planing surfaces, and a front portion integrally formed with said side flanges, said front portion tapering in width from a maximum width at the juncture with said side flanges to a minimum width at the extreme front end thereof, said front portion also tapering downwardly whereby the extreme front end thereof is in generally the same plane as the bottom of said body, said front portion serving as a further planing surface and causing said lure to submerge in the water when the lure body is pulled by the line while in a generally horizontal position in the water;
- (c) an opening formed in said intermediate body portion;
- (d) a swivel arm comprising a first section loosely positioned in said opening and a second section integrally formed with said first section and extending exteriorly of said body at an angle relative to said first section, the outer end of said second section being connected to a fishing line, said second section being rotatable about the axis of said first section so as to move the outer end of said second section to which said line is attached to either side of a vertical longitudinal plane through said body, and
- (e) hook means operatively associated with said lure body, whereby, said lure, by virtue of said action lip and said swivel arm, is capable of rapid upward, downward and

sideward movement thereby to closely simulate the swimming action of live bait.

4,245,422

CONTAINER INCLUDING PULL-OUT STACKING TRAY STRUCTURE

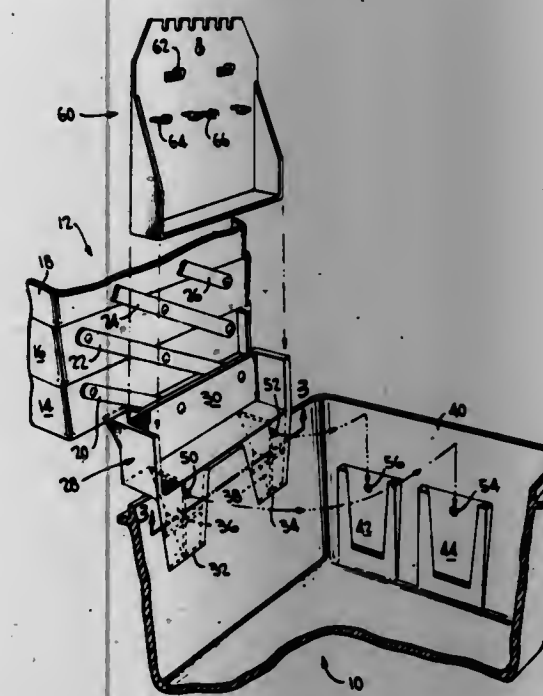
Anthony J. Souza, Lancaster, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed May 25, 1979, Ser. No. 42,417

Int. Cl.³ A01K 97/06

U.S. Cl. 43-57.5 R

10 Claims



1. A box arrangement comprising:
a container portion having an interior;
at least one tray having opposite ends;
pivotal linkage means at each end of said tray for permitting selective pivotal raising and lowering of said tray with respect to said container portion;
attaching means at each end of said tray for attaching said linkage means to the interior of said container portion at opposite locations, respectively, of said container portion, said attaching means comprising:
an intermediate member at each end of said tray;
means pivotally securing said linkage means to a respective intermediate member; and
connecting means for connecting each intermediate member to the interior of said container portion;
wherein at least one intermediate member defines a compartment with a side of said container portion; and
a storage rack removably disposed in said compartment.

4,245,423

ANIMAL TRAP

Anthony J. Souza, and Joseph H. Bumsted, both of Lancaster, Pa., assignors to Woodstream Corporation, Lititz, Pa.

Filed Dec. 1, 1978, Ser. No. 965,477

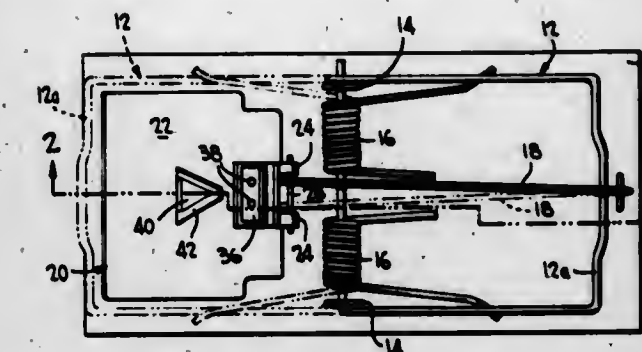
Int. Cl.³ A01M 23/30

U.S. Cl. 43-81

9 Claims

1. In an animal trap comprising a substantially planar baseboard means, a generally U-shaped jaw member, means pivotally mounting free ends of said jaw member to said baseboard means about a pivot axis substantially parallel to the plane of said baseboard means, spring means operative between said baseboard means and said jaw member for urging said jaw member toward a sprung position in which a cross bar section of said member engages said baseboard means on one side of said pivot axis and trigger means for releasably maintaining said jaw in set position in opposition to said spring means, said cross bar section being disposed in said set position adjacent the baseboard means on the opposite side of said pivot axis, said trigger means comprising a rod pivotally mounted to said

baseboard means on said opposite side to said pivot axis and a bait pedal pivotally mounted to said baseboard means on said one side of said pivot axis, said rod extending in said set position over said cross bar section and across said pivot axis and the free end of said rod engaging an engagement surface of said bait pedal to retain the jaw member in set position whereby depression of the bait pedal releases the free end of said rod from said engagement surface to spring the trap, the improvement comprising adjustment means for providing different



sensitivities for springing the trap in response to respective different levels of depression of the bait pedal, said adjustment means comprising separate sections of said engagement surface selectively engageable by the free end of said rod; wherein said bait pedal comprises a substantially planar main body portion, said engagement surface including a planar first section substantially parallel to said main body portion and a planar second section adjacent said first section and which is inclined with respect to said main body portion.

4,245,424

TRAP SETTING DEVICE AND METHOD

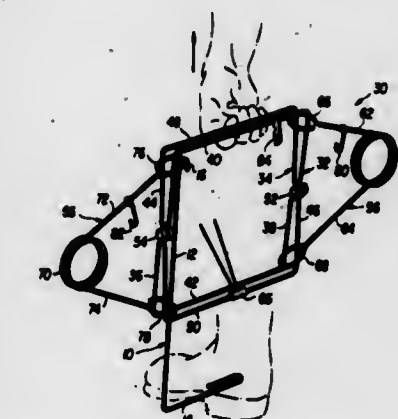
William B. Smith, Rte. #1, Colton, N.Y. 13625

Filed Jun. 27, 1979, Ser. No. 52,352

Int. Cl.³ A01M 23/28

U.S. Cl. 43-97

6 Claims



1. A device for setting a rotating frame animal trap of the type comprising two similar frames pivotally connected at adjacent sides for rotation about a common axis, each of said frames having two jaw-forming end members that lie in a common plane and side members extending therebetween to support said end members, said side members each having a central portion in which the frames are pivotally connected through adjacent sides for rotation about a common axis between a set position and a closed position, at least one actuator capable of rapidly and forcefully effecting said rotation, said actuator having two arms which are spring-biased at one end and each of which terminates in a ring at the other end which encircles adjacent sides of both frames on opposite sides of said common axis, and a trigger means for releasably maintaining the trap in the set position, wherein said device comprises a single piece of hooked L-shaped rod consisting of a vertical arm, a horizontal arm rigidly attached to and substantially

perpendicular to the lower end of said vertical arm, the end of said horizontal arm being bent back parallel to the remainder of said horizontal arm to form a support to permit its being secured against a horizontal surface by a human foot, and a downwardly extending hook bent from the upper end of said vertical arm, wherein the length of said vertical arm is such that when the hook attached to said vertical arm is placed adjacent to one of the end members of one of the frames the vertical arm extends the length of the side members of said frame and beyond the other end member of said frame a distance sufficient to permit a human foot to be inserted between said end member and said horizontal arm, and wherein the length of said horizontal arm is sufficient to permit its being secured against a horizontal surface by a human foot.

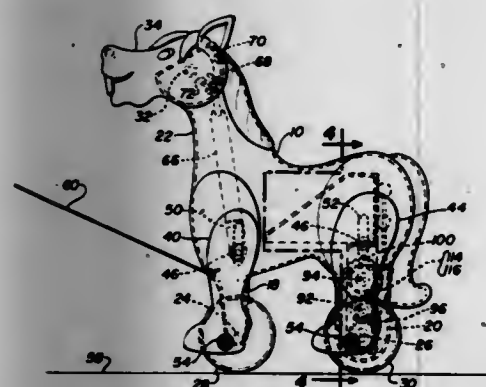
4,245,425

TOY HORSE WITH MECHANISM TO PRODUCE TROTTING SOUND

Bruce M. D'Andrade, Whitehouse Station, N.J., assignor to Arco Industries Ltd., Hong Kong, Hong Kong
Filed Oct. 3, 1979, Ser. No. 81,472
Int. Cl.³ A63H 5/00, 13/02

U.S. Cl. 46—98

8 Claims



1. A toy horse comprising a hollow rigid body enclosing sound mechanism imitating the clip-clop of a horse trotting along a hard surface, fore and aft projections depending respectively from the forward and rearward ends of said body rotatably supporting transverse axles, wheels mounted on opposite ends of said axles, front and rear legs mounted on opposite sides of said body, means on said horse supporting the upper ends of said legs for vertical movement and crank pins on said wheels engaging the lower ends of said legs and operable to gyrate the lower ends of said legs in sequence with each other while vertically moving the upper ends thereof, whereby as said body is pulled along a horizontal surface said leg movements simulate the trot of a horse, in combination with a sound-generating unit inside said body and one said depending projection thereon, said unit comprising a gear train including one gear fixed to the axle supported by said one projection for rotation thereby when the horse is pulled as aforesaid and another gear connected to compound cam means rotatable about a horizontal axis and including circumferentially and axially spaced cam drop-offs, a rigid sounding panel fixed to said unit, and a pair of elongated clappers of different lengths connected at one end to a support portion of said unit and engageable intermediately of the ends thereof by said cam means to produce an intermittent pattern of engagements of said sounding panel by said pair of clappers to produce different tones resembling the clip-clop of a horse.

4,245,426

WHEELED FIGURE

Mark Sullivan, Rte. 1, Box 182A, East New Market, Md. 21631
Filed May 31, 1979, Ser. No. 44,090

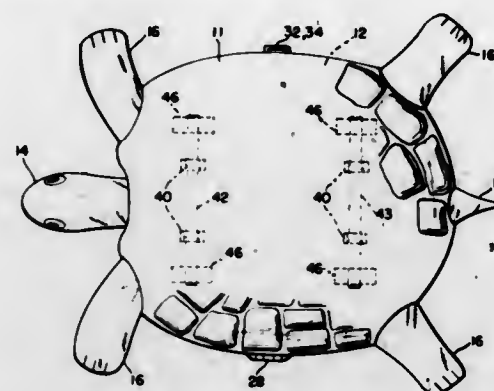
Int. Cl.³ A63H 11/10

U.S. Cl. 46—103

2 Claims

1. A toy that simulates a creature of nature having a hard outer shell, comprising:

a rigid shell comprised of first and second shell segments that are separable from each other;
means for releasably holding said shell segments together to simulate the outer shell of a given creature of nature;
said shell segments being rigid and shaped to provide an interior void space when together;
an interior body portion separate and independent from said shell and adapted to fit within the void space when the shell segments are together;



appendages on said body portion simulating natural appendages on said creature of nature;
said body portion being soft and pliable and having a thickness adequate for serving as a pillow when removed from said shell;
means on said shell for permitting said appendages to extend exteriorly of the shell; and
wheels mounted on the shell for permitting translation thereof.

4,245,427

TOY VEHICLE WITH NOISEMAKER

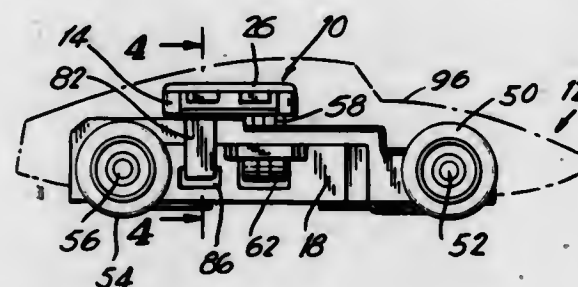
Louis Accornero, Hempstead, N.Y., assignor to Aurora Products Canada Limited, Rexdale, Canada

Filed Jan. 16, 1979, Ser. No. 3,832

Int. Cl.³ A63H 5/00

U.S. Cl. 46—111

18 Claims



1. A miniature toy vehicle comprising:
a vehicle frame including wheels mounted for rotation;
a cam profile operatively connected to at least one of said wheels;
a cam follower engaging said cam profile whereby said cam follower moves relative to said cam profile when said at least one operatively connected wheel is rotated;
noisemaking means coupled to said cam follower for making a sound in response to each cycle of displacement of said cam follower, said sound being repeated at a frequency proportional to the speed of rotation of said at least one wheel, said noisemaking means including a flexible diaphragm, said diaphragm being flexed and released by said cam follower when said cam follower and said cam profile move relatively one to the other and;
a mechanical stop, said diaphragm when released striking said stop to produce said sound;
whereby a sound is produced in direct relationship to rotation of said at least one operatively connected wheel.

4,245,428

HAND-CONTROLLED PUPPET

Anita L. Bowen, 250 Old Mill Rd., Santa Barbara, Calif. 93110
Filed Jul. 30, 1979, Ser. No. 61,997

Int. Cl.³ A63H 7/00, 3/30, 13/16

U.S. Cl. 42—126

15 Claims



1. A hand-controlled puppet comprising
a conical-shaped support member having a hollowed-out central area which terminates in a first aperture at the tip end of the conical-shaped support member and which terminates in a second aperture at the base end of the conical-shaped support member, each aperture being in axial alignment with the axis of the conical-shaped support member and with the center of the other;
an elongated rod positioned in the hollowed-out central area of the conical-shaped support member and extending axially therethrough and past and beyond the first aperture at the tip end of the conical-shaped support member and past and beyond the second aperture at the base of the conical-shaped support member, said elongated rod being adapted to be moved vertically relative to said support member along the axis of the conical-shaped support member and through the first aperture and second aperture and being adapted to be rotated relative to said support member about said axis in at least one of a clockwise and counterclockwise direction in any vertical position;
a simulated head mounted on the end of the elongated rod adjacent to the second aperture;
a bilaminar covering having a back and a front positioned adjacent said second aperture and adapted to have the portion of the elongated rod extending past and beyond the base located between the back and front of the bilaminar covering, said bilaminar covering having an elongated top portion extending from the back thereof which is positioned around and attached to the back portion of the head which is affixed to the end of the elongated rod adjacent the second aperture, a pair of opposed extending arms and a bottom portion which is affixed to the base of the conical-shaped support member to enclose said second aperture, said bilaminar covering having a positive bias which urges the bilaminar covering into an arcuate shape with the opposed arms bending slightly toward the front; and
an adhesive joining the elongated top portion of the back member of the bilaminar covering to the back portion of the head and joining a portion of the interior of the back and front of the bilaminar covering to that portion of the elongated rod extending between the back and front of the bilaminar covering to form a simulated backbone and to limit the rotation of the elongated rod relative to said bilaminar covering in both the clockwise and counterclockwise direction, said elongated rod, head and bilaminar covering affixed thereto being adapted to move in a first vertical direction toward the first aperture to draw the head and bilaminar covering to the interior of the hollowed-out central area of the conical-shaped support member and to move in a second vertical direction toward the second aperture to transport the head and bilaminar covering out of the hollowed-out central area enabling the

head and rod to extend the bilaminar covering between the head and base; said elongated rod being adapted to be rotated in at least one of a clockwise and counterclockwise direction relative to the conical-shaped support member to rotate the top and back of the bilaminar covering in the direction of the rotation of the rod relative to the bottom of the bilaminar covering affixed to the base of the conical-shaped support member to cause one of the opposed extending arms to move in an upward direction toward the head and the other opposed extending arm to move in a downward direction toward the base to enable a user to hold the conical-shaped support member in one hand and to move the elongated rod with the other hand in the first vertical direction to draw the head and bilaminar covering into the hollowed-out central area of the conical-shaped support member and in the second vertical direction to transport the head and the bilaminar covering from the hollowed-out central area and to rotate the elongated rod through the limited rotation in at least one of a clockwise and counterclockwise direction causing movement of the opposed extending arms relative to the head.
15. The method of claim 14 further comprising the step of forming the bilaminar covering by sewing a back portion and a smaller front portion together along the edge thereof to form a positive bias which urges the pair of opposed arms into an arcuate shape toward the front of the bilaminar covering.

4,245,429

BABY DOLL

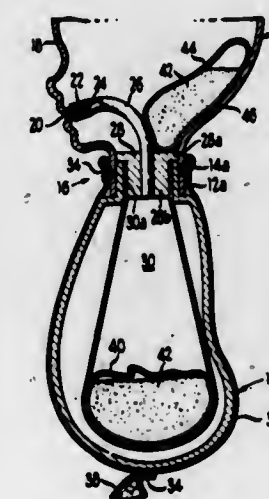
Allison W. Katzman; Edward T. Holahan, both of Chicago, and Harry Diako, South Barrington, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 1, 1980, Ser. No. 117,812

Int. Cl.³ A63H 29/12, 3/48

U.S. Cl. 46—164

12 Claims



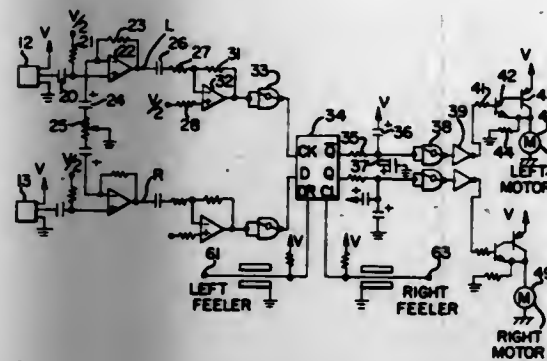
1. A baby doll comprising:
a hollow body and a hollow head interconnected at a neck;
a hollow, sealed, head bladder in said hollow head having a volume less than said head and having a closed flexible wall with only a small portion of the wall secured to an inside surface of said head; and
filler means in said bladder comprising a plurality of discrete particles contained and movable within said bladder for changing the shape thereof to enable changing the center of gravity of said head when said body or head is moved.

4,245,430

VOICE RESPONSIVE TOY

Steven D. Hoyt, Rte. 3, Box 44, Lake Geneva, Wis. 53147

Filed Jul. 16, 1979, Ser. No. 57,738

Int. Cl.³ A63H 11/00, 33/26; B60V 1/00; B64C 13/18
U.S. Cl. 46—266 9 Claims

1. A toy, comprising in combination, solid surface contacting means, motive means including a power source for actuating said contacting means and moving said toy, an electronic circuit including audio sound responsive means, said electronic circuit including at least two positionally spaced microphones for providing a signal in response to incident sound, a signal processing channel connected to each of said microphones, said channels converting the signal from the respective microphones into pulses, and means for combining the output of said channels and providing an output dependent on the time delay between the pulses on said channels, and means for activating said motive means dependent on said time delay.

4,245,431

APPARATUS FOR MAKING SEEDLING TUBES

Adrian Barbaescu, Ste-Foy; Rodrigue Boulet, Duberger; Jean-Paul Charland, Charlesbourg, and Paul Fortin, Loretteville, all of Canada, assignors to Centre de Recherche Industrielle du Quebec, Sainte-Foy, Canada

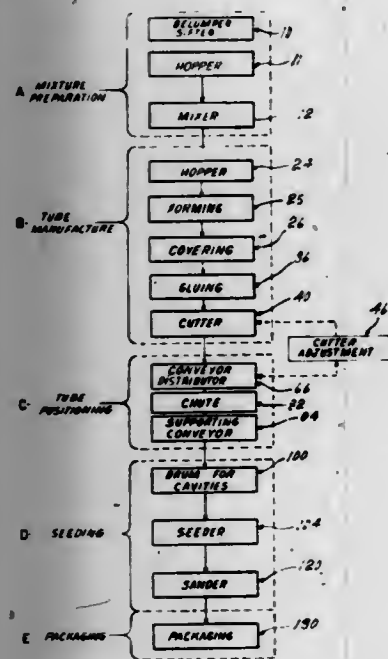
Filed Aug. 31, 1979, Ser. No. 71,569

Claims priority, application Canada, May 30, 1979, 328724

Int. Cl.³ B65B 1/00

U.S. Cl. 47—1 A

16 Claims



1. An apparatus for making packaged seedling tubes from a mixture of peat and water, comprising:

- (a) means for supplying peat and water to a mixer used in preparing said mixture;
- (b) forming means receiving said mixture from said mixer and producing, at its outlet, a continuous cylinder moving at a given speed,

(c) means for covering said continuous cylinder as it emerges from said forming means; and

(d) a rotary cutter with a spiral blade to cut the continuous covered cylinder progressively into a series of cylinders of pre-determined length; the rotational velocity of the blade being constant, in order to obtain cylinders of constant length.

4,245,432

SEED COATINGS

Clarence C. Dannelly, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,546

Int. Cl.³ A01C 1/06

U.S. Cl. 47—57.6

13 Claims



1. A plant seed having a substantially continuous coating on the surface thereof, said coating comprising a polyelectrolyte complex of an acidic polymer and basic polymer, said polyelectrolyte complex being water insoluble, but adapted to swell and disintegrate when in contact with water.

4,245,433

METHOD AND APPARATUS OF GROWING PLANTS WITHOUT SOIL

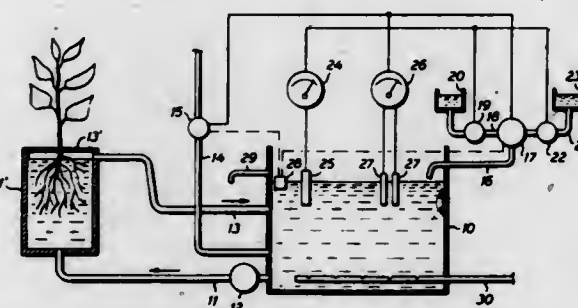
Ernst H. S. Sjostedt, Bolestad Handelstradgard, S-260 73 Ostra Ljungby, and Jim A. Nissmo, Repslagarevagen 8, S-245 00 Staffanstorps, both of Sweden

Continuation of Ser. No. 888,318, Mar. 20, 1978, abandoned, which is a continuation of Ser. No. 723,984, Sep. 16, 1976, abandoned. This application Jun. 12, 1979, Ser. No. 47,760

Int. Cl.³ A01G 31/00

U.S. Cl. 47—59

34 Claims



1. An apparatus for growing plants in the absence of soil, comprising:

- means providing a circulating liquid plant nutrient medium;
- means to measure the conductivity of the nutrient medium;
- means to measure the pH of the nutrient medium;
- means providing a source of a first stock nutrient solution;
- means providing a source of a second stock nutrient solution;
- said first stock solution having a supply of nitrate nitrogen and said second stock solution having a supply of ammonium nitrogen;
- first control means actuable by said means to measure the conductivity of the nutrient medium;
- said first control means being actuated to feed either said first or said second stock nutrient solution to said nutrient medium when the conductivity of said medium falls to a first predetermined value;

second control means actuable by said means to measure the pH of the nutrient medium;

said second control means being actuated to select either said first or said second stock solution for feeding to the nutrient medium by said first control means;

said first stock solution being selected by said second control means when the pH of the nutrient medium is below a predetermined pH value; and

said second stock solution being selected by said second control means when the pH of the nutrient medium is above said predetermined pH value.

4,245,434

METHOD AND APPARATUS FOR IRRIGATING CONTAINER-GROWN PLANTS

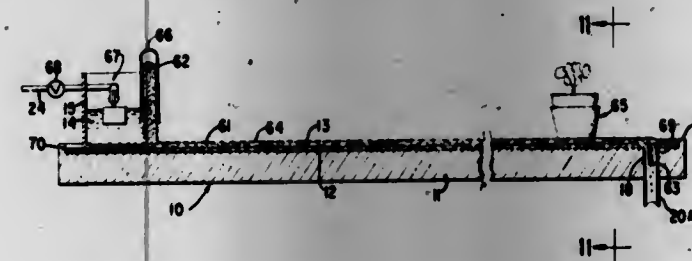
Evert Green, 14 Kenneth Ave., N. Bellmore, N.Y. 11710

Continuation-in-part of Ser. No. 19,563, Mar. 12, 1979. This application Jun. 18, 1979, Ser. No. 49,325

Int. Cl.³ A01G 27/00

U.S. Cl. 47—80

7 Claims



1. A soil irrigation system for supplying water to soil in a plant container by capillary travel upwardly into said soil through an opening in the bottom of said container which system comprises a support bed for supporting one or more of said containers that presents a substantially level water impervious wettable surface, a capillary sheet disposed in overlying relation with respect to said surface the under surface of which is wettable and is in face-to-face unbonded relation with respect to the upper surface presented by said support bed and the upper surface of which is disposed for making contact with a plant container placed thereon, and water-feeding means for feeding water into the interface between said surface and said capillary sheet, said water feeding means comprising a reservoir, a wick extending from the interior of said reservoir over the rim of said reservoir and thence along the upper surface of said capillary sheet, strip of plastic overlying and protecting said wick having substantially greater lateral dimensions than said wick and having a wettable under surface in direct contact with said wick and overlying said capillary sheet on opposite sides of said wick, said capillary sheet having a multiplicity of substantially evenly spaced capillary openings therein that are essentially from about 0.05 to about 0.145 inch in diameter.

4,245,435

HIGH THERMAL EFFICIENCY WINDOW

Roger Ulbricht, Hicksville, N.Y., assignor to Flour City Architectural Metals, a division of the Segrave Corporation, New York, N.Y.

Filed Oct. 4, 1979, Ser. No. 81,638

Int. Cl.³ E06B 7/08

U.S. Cl. 49—64

12 Claims

6. A thermal window structure comprising a low conductivity window frame including a head portion, a sill portion and side members, first and second pane members fixed to said frame in spaced parallel position, and a blind assembly disposed between said panes and shiftable between privacy and see-through configurations, said blind assembly, in combination with said panes, dividing the space between said frames into a series of vertically spaced, substantially completely closed cells in both said privacy and said see-through configurations, said blind assembly including a first series of slats extending from the inner face of said first pane part way toward said second pane, a second series of slats extending from the inner



other said series in said privacy and said see-through configurations, and operator means for shifting said slats between said privacy and said see-through configurations, the pane-adjacent edges of said slats being retained in juxtaposition to said inner faces of said panes in the course of said shifting movement.

4,245,436

METAL WINDOW WITH OFFSET SASH AND BALANCE MECHANISMS

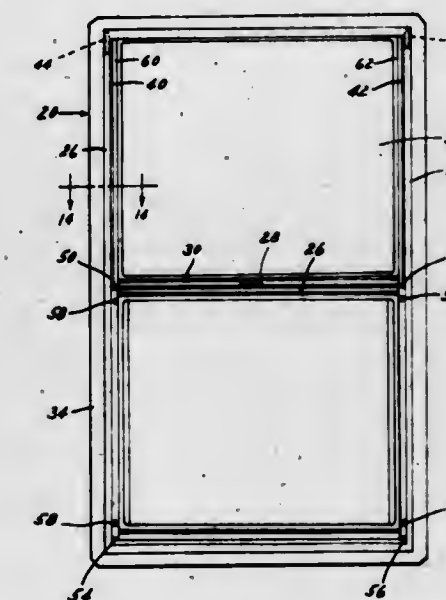
Harry M. Riegelman, Diamond Bar, and Vernon E. Madison, Orange, both of Calif., assignors to Rusco Industries, Inc., Fullerton, Calif.

Filed Sep. 14, 1979, Ser. No. 75,793

Int. Cl.³ E05D 13/10

U.S. Cl. 49—446

6 Claims



1. A metal window structure comprising:
a vertical frame having jambs for a sash said frame being channel shaped with a rib extending from one wall and terminating in a flat surface parallel to said one wall and to the opposite wall of said frame;
a sash having stiles extending into said jambs and slidable therein,
the stile in each jamb being disposed between the flat surface of said rib and the opposite wall of said frame;
a pair of balance mechanisms in said frame,

each balance mechanism being located between the plane of said flat surface and said one wall of said frame, whereby lateral movement of said sash for takeout or reinsertion is effected parallel to and without interference relation with said balance mechanisms;

a respective balance foot structure coupling each balance mechanism to the sash,

said balance foot structures including respective clip elements extending past said plane and in the paths of said stiles of said sash;

and stop means in said frame engageable by said balance foot structures at a predetermined elevated position of said sash, such that said sash disengages from said balance foot structures upon vertical movement of said sash above said predetermined position and is thereby free for takeout.

4,245,437

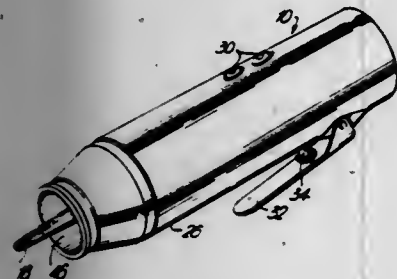
ROTARY TOOL SUCTION HOUSING

Miksa Marton, 3620 Rankin Blvd., Windsor, Ontario, Canada
Filed Oct. 3, 1978, Ser. No. 948,305

Claims priority, application Canada, Nov. 23, 1977, 291557
Int. Cl.³ B24B 55/06

U.S. Cl. 51—273

3 Claims



1. A vacuum housing for a hand-held rotary tool and adapted for connection to a vacuum source, said housing comprising a generally hollow tubular casing of a greater diameter than the body of the tool and being adapted to be concentrically positioned about the body of the tool to encase the same and detachably secured thereto with a space between the body of the tool and the interior of the casing; the tubular casing including a changeable nose portion detachably mounted at one end thereof for telescopic movement relative to the casing itself, the nose having an opening for protrusion therefrom of an operating bit of the tool, a path for air flow being provided from said nose opening at said one end of the tubular casing through said space along the body of the tool to the other end of said tubular casing; spring means provided intermediate the nose portion of the casing to bias the nose in an extended position; and means for connecting a vacuum source to said housing at the end thereof remote from the changeable nose portion and in alignment therewith so that air is drawn through said opening and along the tool body to the collecting means at the far end thereof, the vacuum connection means being coaxially positioned with means for driving the rotary tool.

4,245,438

FINISHING DISK HUB ASSEMBLY

Harold S. van Buren, Jr., Lincoln, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed Sep. 10, 1979, Ser. No. 73,824

Int. Cl.³ B24D 17/00

U.S. Cl. 51—377

15 Claims

1. A hub assembly for a finishing disk comprising

A. an adapter,

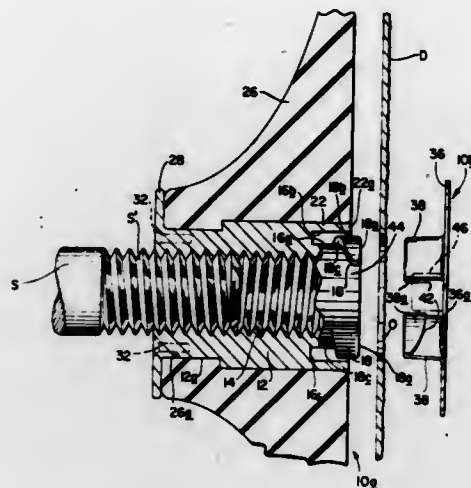
B. means defining an axial threaded passage in the adapter,

C. an annular socket formed in an end of the adapter,

D. a set of similar radial threads spaced around a side wall of the socket leaving gaps between the ends of the threads, said threads being spaced from the bottom wall of the

socket, the sides of the threads spaced opposite said bottom wall having the same axial pitch,

E. a locking plate, said plate having a flat planar section and a set of legs projecting substantially perpendicularly from that section, said legs being arranged and adapted to slide into the adapter socket through said thread gaps so that the planar section is coaxial with the adapter, and



F. laterally extending abutments formed on said legs near the free ends thereof, said abutments being arranged and adapted to engage under the adapter threads when the legs are inserted into the socket so that when the plate is turned through an angle relative to the adapter, the abutments ride up on the threads and draw the plate toward said end of the adapter.

4,245,439

ELEMENT FOR PREFABRICATED BUILDING AND BUILDING OBTAINED WITH SUCH AN ELEMENT

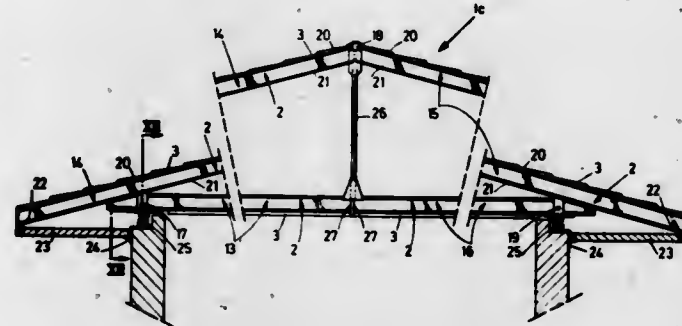
Maurice Flaba, Hannut, Belgium, assignor to Foldaway Research International Anstalt, Vaduz, Liechtenstein

Filed Oct. 13, 1978, Ser. No. 951,252

Claims priority, application Belgium, Oct. 13, 1977, 181691
Int. Cl.³ E04B 7/16

U.S. Cl. 52—71

20 Claims



1. Element for prefabricating building, which comprises at least one frame and at least one closing panel which extends between the inner edges of said frame, connecting means being provided between the frame and the panel, said means being so arranged as to let the frame and panel move relative to one another, along a direction substantially in parallel relationship with the element thickness, to lie in two end positions, the one position in which the panel is received within the thickness of the frame and the other position in which the panel projects relative to said frame.

4,245,440

CABLE AND FABRIC ROOF STRUCTURE

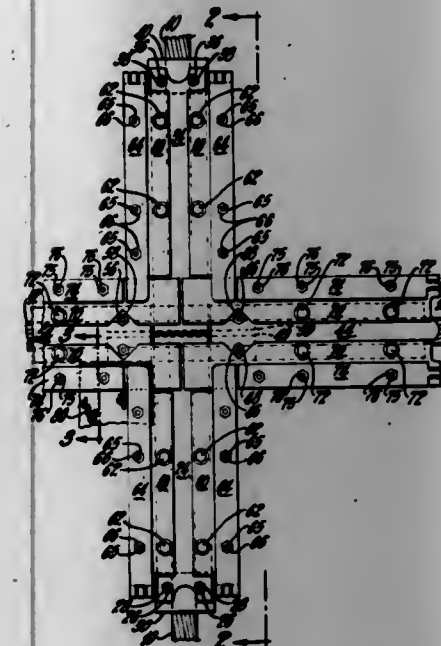
Vernon S. Oase, Toledo, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed May 14, 1979, Ser. No. 39,053

Int. Cl.³ E04B 1/34

U.S. Cl. 52—83

6 Claims



1. A cable and fabric roof structure comprising a pair of cables (10, 12) intersecting substantially at right angles to each other in plan view to provide four cable segments radiating from the cable intersection and dividing the area thereabout into four quadrants, one (12) of the cables being below the other (10), means (13, 14, 16, 18, 19, 20, 21, 22) securing the cables (10, 12) together at their intersection, and means above the cables (10, 12) adjacent their intersection clamping adjacent corners of four fabric panels (80) disposed respectively in the four quadrants, the clamping means comprising four elongated base plates (24, 34, 44, 54) mounted on and extending respectively along the four cable segments, four positive fastening means (26, 28, 36, 38, 46, 48, 56, 58) respectively securing the base plates (24, 34, 44, 54) to their cable segments, each positive fastening means securing the respective base plate to the respective cable segment at only one of two opposite end portions of the base plate, the fastening means (46, 48, 56, 58) for the two base plates (44, 54) on one (12) of the cables being disposed respectively at end portions thereof adjacent the other (10) of the cables and the fastening means (26, 28, 36, 38) for the two base plates (24, 34) on the other (10) of the cables being disposed respectively at end portions thereof remote from the one (12) of the cables, each base plate (24, 34, 44, 54) having a pair of elongated lower clamping plates (60, 70) secured thereto and extending respectively along opposite longitudinal edge portions thereof, and each lower clamping plate (60, 70) having an elongated upper clamping plate (64, 74) secured thereto and clamping an edge portion of one of the fabric panels (80) therebetween.

4,245,441

TELESCOPING AERIAL LIFT

Raymond E. Smith, Jr., 385 E. Greenwood, Lake Forest, Ill. 60045

Division of Ser. No. 839,721, Oct. 5, 1977, Pat. No. 4,188,757, which is a continuation-in-part of Ser. No. 758,810, Jan. 12, 1977, Pat. No. 4,070,807. This application Mar. 19, 1979, Ser. No. 22,066

Int. Cl.³ B66C 23/00; E04G 1/22

U.S. Cl. 52—111

11 Claims

1. An aerial lift, comprising:

supporting means;

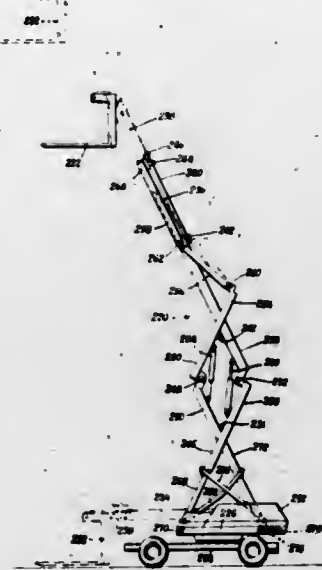
first and second pivotable scissors members having lower ends and upper ends;

means for pivotally mounting the lower ends of said scissors members to said supporting means;

a boom having an extensible load end and a pivot end pivotally coupled to the upper end of said first scissors member;

a support arm extending between and pivotally connected to the upper end of the second scissors member and said boom;

means rigidly coupling said support arm to the extensible portion of said boom;



means for pivoting and extending said scissors members and for raising said boom such that, as said boom is raised, said support arm pivots about the upper end of said second scissors member and said boom and said means coupling said support arm to the extensible portion of said boom causes said extensible portion to extend for raising the load end substantially vertically.

4,245,442

REUSABLE INTERIOR WALL AND CEILING CONSTRUCTION SYSTEM FOR BUILDINGS

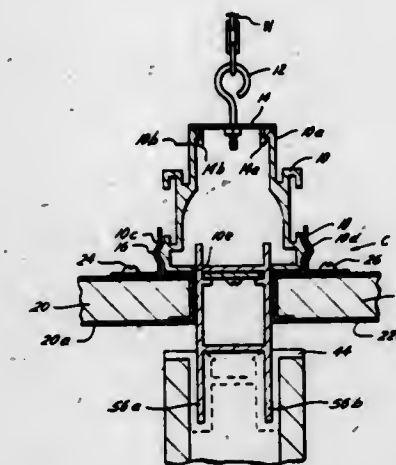
I. Milt Durham, 5065 Westheimer, Suite 840, Houston, Tex. 77056

Filed Jul. 19, 1979, Ser. No. 58,858

Int. Cl.³ E04B 2/78

U.S. Cl. 52—122

5 Claims



1. A reusable modular wall panel unit apparatus adapted to connect to adjacent modular wall panel units to form an interior wall, including:

a hollow rectangular metal frame having a horizontal bottom frame member and a pair of upstanding vertical side members, one of said upstanding side members connected to one end of said bottom frame member and the other of said upstanding side members to the other end of said bottom frame member, said frame having a horizontal upper frame member connected at one end to one of said

upstanding members and with the other end of said upper member connected to the other of said upstanding members;

said bottom member and said top member along with said upstanding side members defining an outer peripheral rim of the modular wall panel unit;

a plurality of internal support members disposed in parallel relationship with said upstanding side members, each of said plurality of internal support members having one end connected to said bottom member and the other end connected to said top member;

support projections mounted on said bottom, top and two upstanding members and extending outwardly on both sides of said peripheral edge for providing a support for a panel disposed on each side of said metal frame; and

said peripheral rim having a central recess and having a first slot formed parallel to and on a first side of said central recess and a second slot formed parallel to and on the other side of said central recess;

support means for said metal frame having a floor engaging member and a mounting member having a pair of upwardly extending parallel projections that are received within said slots on said bottom frame member, said support means having means for connecting said floor engaging member and said mounting member to adjustably position said wall panel unit relative to the floor; and

means for releasably connecting said horizontal upper frame member with a modular suspended ceiling for supporting said modular wall panel unit apparatus perpendicular to the floor.

4,245,443

SEEPAGE CONTROL DEVICE

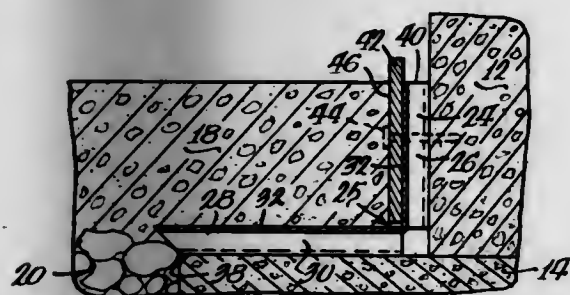
Paul R. Beechen, 16410 Beverly Ave., Tinley Park, Ill. 60477

Filed May 18, 1979, Ser. No. 40,600

Int. Cl.³ E04B 1/70; E04F 17/00

U.S. Cl. 52-169.5

4 Claims



1. A seepage control arrangement for preventing seepage water from running over the floor of basements or the like which include vertical side walls resting on a transverse footing, a portion of which extends inwardly from each respective side wall, and a poured concrete floor, the arrangement comprising: a plurality of contiguous unitary structures, each structure including a vertical leg defining sequential vertical drainage channels between the floor and the walls, and a horizontal leg defining sequential horizontal drainage channels between the floor and the footing, each horizontal drainage channel communicating with a corresponding vertical drainage channel to afford egress for water seeping through the walls and to conduct the water beneath the floor, and a separate flat, water impermeable facing strip positioned between the floor and the vertical leg and extending to a height above the height of the vertical leg and the floor to prevent overflow of seepage water onto the floor.

4,245,444
SMOOTH FLOOR CONSTRUCTION FOR THE
CHAMBER BENEATH CARDING AND SIMILAR
TEXTILE MACHINES

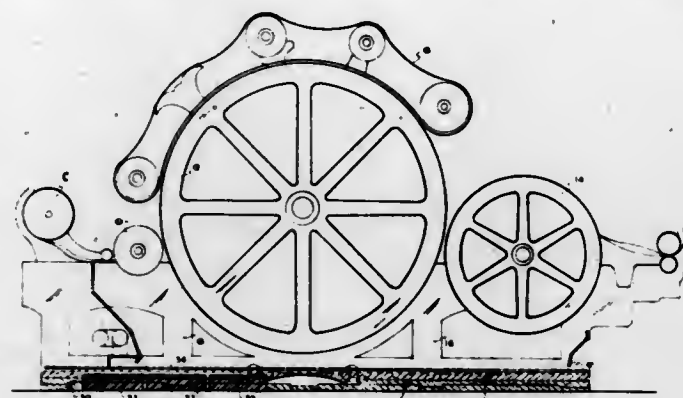
Harry H. Hicks, Winston-Salem, N.C., assignor to Industrial Air, Inc., Greensboro, N.C.

Filed Apr. 23, 1979, Ser. No. 32,526

Int. Cl.³ E04H 14/00; D01G 15/82

U.S. Cl. 52-173 R

7 Claims



1. In a fiber processing textile machine of the type having fiber processing elements mounted on a frame, walls substantially covering the sides and ends of the frame between the top of the frame and the floor forming a chamber thereunder, a smooth chamber floor construction comprising a grout-like material having the characteristics of being substantially liquid when applied so that it flows to a smooth level upper surface, then cures to form a solid material, said grout material covering the area of the chamber between the end walls and the side walls and being of such a thickness as to cover and seal any existing cracks between the bottom of the frame and the surface on which the machine rests.

4,245,445

METHOD FOR MAKING A FIRE-PROOF PASSAGE AND PASSAGE OBTAINED THEREBY

Hans D. J. Heinen, Malmédy, Belgium, assignor to Intellectual Trade Cy S.A. Great Duchy of Luxemburg, Charlotte, Luxembourg

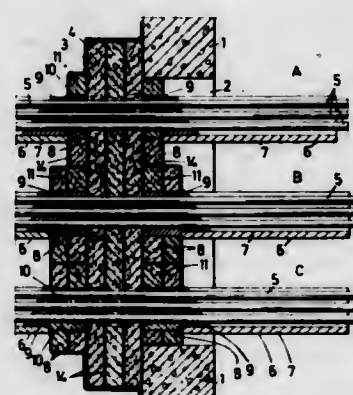
Filed Jan. 31, 1978, Ser. No. 873,815

Claims priority, application France, Feb. 1, 1977, 77 02738

Int. Cl.² F16L 5/00; E04B 5/48

U.S. Cl. 52-221

25 Claims



18. Passage for the fire-proof passing of elements such as electric cables, ducts, pipes, etc., which comprises a cushion from fire-proof material which is coated with a fire-resisting compound, a number of openings provided in said cushion, and at least one flange of fire-proof material coated with fire-resisting compound, said flange being positioned against said cushion, and fire-proof material for filling the space between said flange and the elements.

4,245,446
FUSIBLE PANEL CLIP

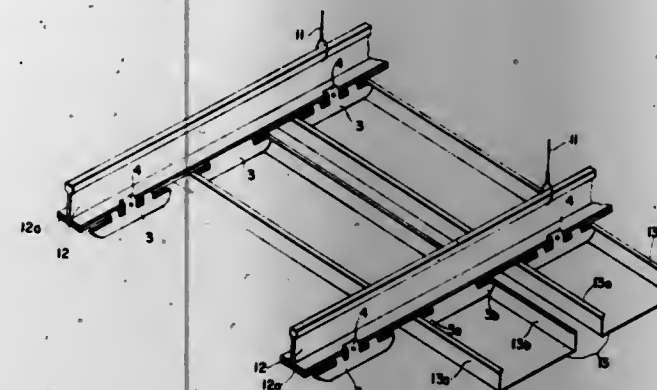
Thomas E. Judkins, Baltimore, Md., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Jul. 14, 1978, Ser. No. 924,805

Int. Cl.³ E04C 2/00

U.S. Cl. 52-232

9 Claims



1. In combination with a support rail for supporting ceiling panels, a one-piece panel clip for supporting a plurality of elongate panels, said panel clip comprising:

a central, elongate strip which engages the bottom surface of the support rail along the length of the support rail;

means, comprising at least three bendable tabs formed integrally with said strip and located in spaced relationship along both sides of said strip, for resiliently holding said elongate strip in a mating position along the bottom surface of the support rail; and

means, comprising at least three evenly spaced panel hanging portions formed integrally with said strip and extending outwardly from both of the sides of said strip, for supporting a plurality of elongate ceiling panels, said clip being made of a material with a melting point substantially below that of the support rail such that said clip, upon exposure to fire, will disengage from the support rail.

4,245,447

MULTI-USE METAL BUILDING

Paul Depondt, Saisy-sous-Montmorency; Claude Echallier, Paris; Albert Levy, Saint-Germain-les-Corbeilles, and Louis Bousin, Champigny-sur-Marne, all of France, assignors to Societe Nouvelle de Constructions Industrialisees, Yerres and Architectes Internationaux Paul Depondt, Cergy, both of, France

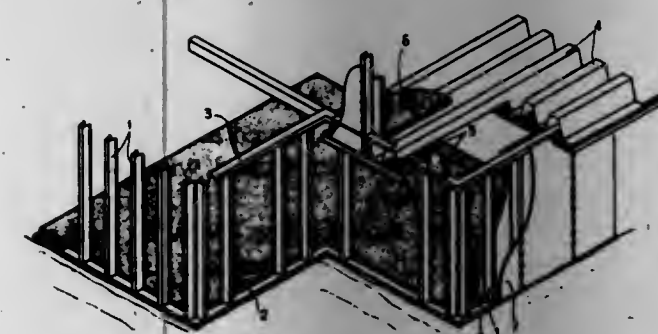
Filed Feb. 9, 1979, Ser. No. 10,685

Claims priority, application France, Feb. 9, 1978, 78 03684

Int. Cl.³ E04B 7/00

U.S. Cl. 52-262

3 Claims



1. A metal building comprising:

a vertical frame including a skeleton of vertical posts, said posts being arranged at predetermined spacings, and upper and lower longitudinal girders connecting said posts;

an outer skin fixed to said frame to one side thereof;

an inner lining fixed to said frame at the other side thereof;

a plurality of positioning elements fixed to opposing ones of

said upper girders, said positioning elements having a predetermined profile and being spaced by said predetermined spacing of said posts; and

at least one corrugated, self-supporting metal trough element, the troughs of said corrugation being spaced by said predetermined spacing and having the same profile as said positioning elements, said at least one trough element being positioned on said upper longitudinal girders with said positioning elements inserted within said troughs, whereby said at least one trough element is held on said frame.

4,245,448

MODIFIED SUSPENSION ASSEMBLY FOR PARTITION PANEL

Robert S. Agar, Markham, Canada, assignor to Robert S. Agar, Inc., Markham; Thorrell Holdings Ltd., Edmonton and Mudlake Holdings Ltd., Calgary, all of, Canada

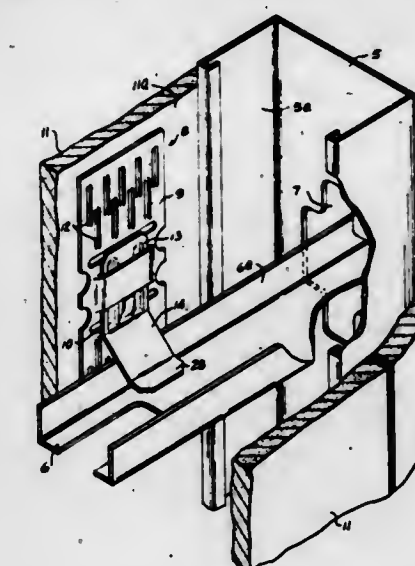
Filed Aug. 13, 1979, Ser. No. 66,084

Claims priority, application Canada, Sep. 1, 1978, 310542

Int. Cl.³ E04B 5/52

U.S. Cl. 52-489

3 Claims



1. A suspension assembly for suspending a gypsum board panel from a support member of a support structure, said suspension assembly comprising:

a plate having upper and lower portions and a neck portion therebetween, a plurality of transverse lines of weakness in the neck portion comprising transverse slots extending substantially across the width of the plate and pairs of notch means cut into opposed side edges of the plate, each pair of notches being substantially in alignment with a transverse slot, a plurality of panel piercing tangs on the upper and lower plate portions extending substantially normal to one face of the plate,

channel means formed by said neck portion having upper and lower open ends; and

a suspension clip having upper and lower portions, and stop means therebetween, said upper portion being slidably received in the channel means to engage the plate, said stop means being arranged to prevent upward extension of the upper clip portion past the neck portion of the plate, the lower clip portion overlying the lower plate portion, and said lower clip portion being inclined outwardly from the plane of the lower plate portion to engage the support member, whereby when the gypsum board panel is suspended from the support structure the load applied between the clip and the plate causes the neck portion of the plate to bend outwardly from the panel along said lines of weakness, while the upper and lower plate portions remain affixed to the panel.

4,245,449

TRUSS EMPLOYING BOTH METALLIC AND NON-METALLIC WEBS

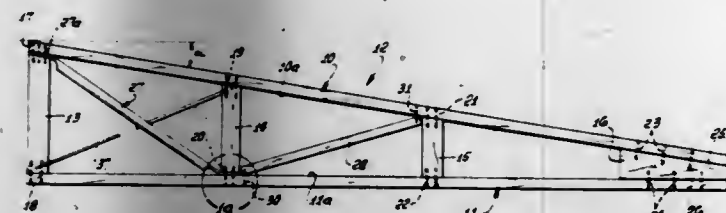
Thomas E. Jackson, Woodland, Calif., assignor to Steel Web Corporation, Alta Loma, Calif.

Filed Feb. 21, 1979, Ser. No. 13,328

Int. Cl.³ E04B 1/32

U.S. Cl. 52-639

12 Claims



1. In a truss, the combination comprising
 - (a) upper and lower chord members extending in generally the same longitudinal direction and in spaced apart relation,
 - (b) means connected to said upper and lower chord members and including multiple upright blocks which are longitudinally spaced apart along the lengths of said chord members and located therebetween, the vertical dimensions of said blocks decreasing between high and low ends of the truss,
 - (c) said means including multiple load carrying webs in spaces between the blocks, each web extending diagonally between said chord members,
 - (d) said webs including a metallic web extending between two blocks closest the high end of the truss, and a non-metallic web located between two blocks each of which is spaced from the block closest to said high end of the truss, said metallic web having flat ends respectively confined between ends of said two blocks closest the high end of the truss and said chord members, one of the blocks having an end portion operatively connected to ends of the metallic web and of the non-metallic web, said ends located adjacent the side of the lower chord which faces the upper chord.

4,245,450

CONNECTING STRUCTURE OF ORNAMENTAL TRIMS OR TRIM STRIPS

Kozi Narita, Nagoya, Japan, assignor to Inoue Gomu Kogyo Kabushiki Kaisha, Aichi, Japan

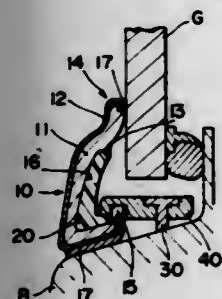
Filed Dec. 8, 1978, Ser. No. 967,628

Claims priority, application Japan, Dec. 4, 1978, 53-166946

Int. Cl.³ E04F 19/02

U.S. Cl. 52-716

8 Claims



1. An ornamental trim structure comprising at least two trim strips each of said trim strips comprising a plastic substrate and a metal foil laminated on the front surface of said substrate, said substrate having a groove of a predetermined shape formed in the rear surface thereof, said groove extending over the entire length of said substrate, and a projection means extending from the substrate at one edge of said groove; and a junction means having a portion thereof in the grooves of adjacent ones of said at least two trim strips, said junction means having a shape

which is the same as said predetermined shape and wherein said projection means engages said junction means to hold said junction means in said groove.

4,245,451

AUTOMATIC METHOD AND APPARATUS FOR LAYING BLOCK UNITS

Ernest J. Taylor-Smith, 2905 W. 37th Ave., Vancouver, British Columbia, Canada (V6N 2T8)

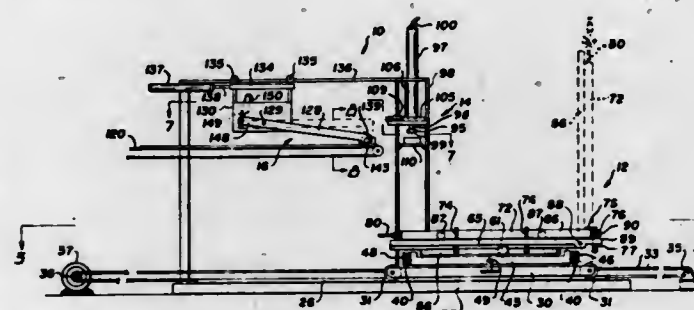
Division of Ser. No. 733,155, Oct. 18, 1976, Pat. No. 4,106,259.

This application Jun. 29, 1978, Ser. No. 920,165

Int. Cl.³ E04G 21/22

U.S. Cl. 52-747

4 Claims



1. The method of automatically laying block units to form a substantially horizontal wall-like structure comprising picking up a block unit by a gripping head, placing said block unit on a substantially horizontal movable table at a predetermined position, laterally shifting said table from said predetermined position to clear the head from the placed block unit a distance substantially equal to the length of said block unit, picking up another block unit by the head and placing it at said predetermined position beside the first-mentioned block unit, continuing the picking up, lateral shifting and placing operations until a predetermined number of block units are placed side by side in a first course, shifting said table in the direction normal to said lateral shift a distance substantially equal to the width of said block unit, continuing the picking up, lateral shifting and placing operations to form a second course of block units against said block units of said first course, and continuing the picking up, lateral and normal shifting, and placing operations to form a predetermined number of courses to form a substantially horizontal wall-like structure of said block units of predetermined dimensions.

4,245,452

METHOD AND APPARATUS FOR WRAPPING AN OBJECT IN A SHEET

Masaki Fujio, Suita, Japan, assignor to Fuji Seal Industry Co., Ltd., Osaka, Japan

Filed Jun. 21, 1979, Ser. No. 50,763

Claims priority, application Japan, May 7, 1978, 53-81557

Int. Cl.³ B65B 21/24

U.S. Cl. 53-399

8 Claims

5. A method for wrapping an object in a sheet, wherein: a retainer formed with a slot is moved along a work path; a pressure plate and a first and second wrapping arm are moved with the retainer; wherein, as the retainer moves along the work path, in the specified order, the following operations are performed:
 - (a) a sheet supply unit supplies the sheet so that it is located across the opening of the slot;
 - (b) an object charging unit charges the object into the slot so that it pushes the sheet to the back of the slot, with a part of the sheet protruding on each side of the object, between it and that side of the slot; and so that a part of the surface of the object is free;
 - (c) a means for moving the pressure plate moves it so that it is adjacent to the free part of the surface of the object, with the part of the surface of the pressure plate remote from the object being smooth;

- (d) a means for moving the first wrapping arm moves it so that it wraps one side of the sheet which projects on one side of the object, between it and that side of the slot, around the object and around the smooth part of the pressure plate;
- (e) a means for moving the second wrapping arm moves it so that it wraps the other side of the sheet which projects on

object only during one of said two stages for packing the object into the bag following partial entry thereof during the other of said two stages, said bag being dimensionally expanded by the nozzle means during said one of the two stages.

4,245,454

LINE METERING APPARATUS

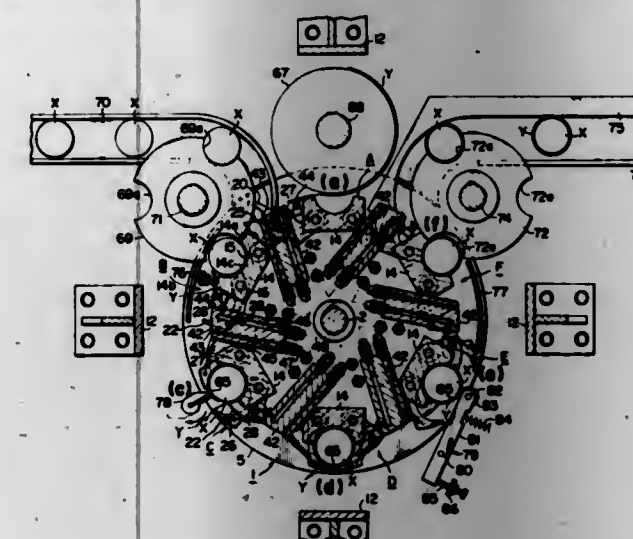
Gerald J. Zien, Prior Lake, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Feb. 12, 1979, Ser. No. 11,142

Int. Cl.³ A01D 55/18, 55/26

U.S. Cl. 56-12.7

25 Claims



- the other side of the object, between it and that side of the slot, around the object and around the smooth part of the pressure plate, so that this side of the sheet overlaps the part which was wrapped during operation (d);
- (f) a joiner joins the overlapped parts of the sheet by bearing against the smooth part of the pressure plate; and
- (g) an object discharging unit discharges the object from the slot.

4,245,453

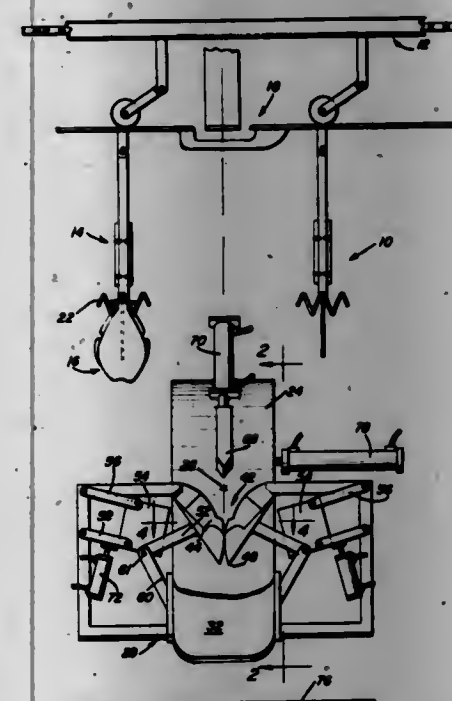
TWO-STAGE OPERATED NOZZLE FOR TIGHT BAGGING SYSTEM

William F. Altenpohl, and Paul J. Altenpohl, both of High Point, N.C., assignors to W. F. Altenpohl, Inc., High Point, N.C. Continuation-in-part of Ser. No. 956,994, Oct. 31, 1978, and a continuation-in-part of Ser. No. 845,231, Oct. 25, 1977. This application Jan. 24, 1979, Ser. No. 6,238

Int. Cl.³ B65B 63/02, 43/36, 39/02

U.S. Cl. 53-530

10 Claims



9. In combination with a moving conveyor from which an object is dropped at a bagging station for guided gravitational descent along an entry passage into an opened bag, nozzle means for establishing said entry passage, control means connected to the nozzle means for projection thereof into the bag in two stages of operation, and ram means engageable with the

1. In a vegetation cutting device in which a flexible filament is rotatably driven about a substantially vertical axis with a free end of the filament defining a cutting plane, apparatus for metering discrete lengths of the filament comprising:
 - driving means for rotatably driving the flexible filament;
 - driven means selectively coupled to said driving means for selective rotation therewith;
 - spool means upon which flexible filament may be wound, said spool means being coupled to one of said driven and driving means for rotation therewith;
 - means for metering discrete lengths of filament from said spool means;
 - said metering means including means for rapidly decelerating said driving means, and means for disengaging said driven means from said driving means during rapid deceleration caused by said decelerating means whereby said driven means is free to rotate a discrete amount relative to said driving means and to thereby play out a length of filament from said spool means; and
 - biasing means for biasing said driven means into driving engagement with said driving means during normal acceleration and deceleration at rates less than caused by said decelerating means.

4,245,455

LAWN MOWER

Kenneth G. Martin, Middridge, England, assignor to Flymo Societe Anonyme, Zug, Switzerland

Filed Mar. 12, 1979, Ser. No. 19,904

Claims priority, application United Kingdom, Mar. 13, 1978, 9792/78

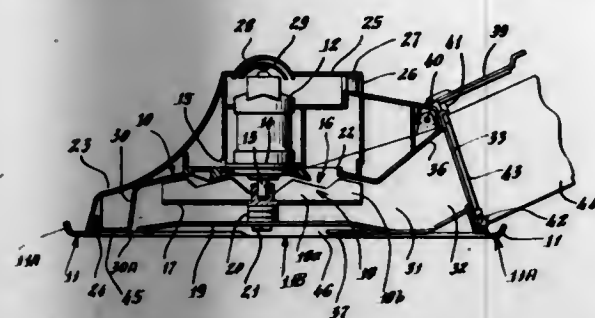
Int. Cl.³ A01D 53/00

U.S. Cl. 56-12.8

13 Claims

1. A lawn mower of the type which when operative is supported on a cushion of air comprising a motor driven blade rotatable about a vertical axis, a fan rotatable about said vertical axis, and a hood enclosing said blade and fan having at least one inlet for air forming the cushion of air, and an outlet opening for grass cut by said blade, said hood having a generally

vertical wall portion which substantially surrounds said blade and is curved in a horizontal plane and extends adjacent to the circular path of the blade tips over an arc of at least 180°, said vertical wall portion being arranged relative to the outlet opening whereby the cut grass is ejected through said outlet opening, said hood having an outwardly directed peripheral lip extending in a generally horizontal direction from the lower



extremity of said vertical wall portion, the lowest part of said peripheral lip lying in a horizontal plane which is in a plane below said lower extremity, said hood having a substantially plane horizontal surface between said lowest part of the peripheral lip and said lower extremity of said vertical wall portion, said surface being spaced in a plane above said horizontal plane.

4,245,456

ROTARY LAWNMOWER WITH GRASS CLEARING MEANS

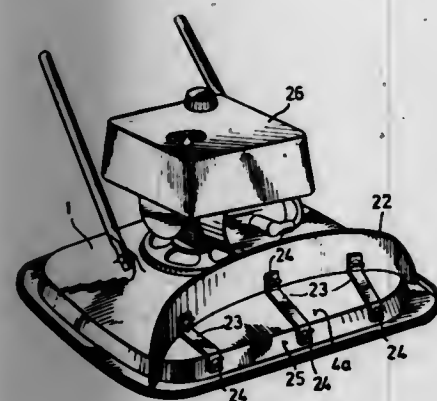
Heinz Zipfel, Steinmütz 18, D-8630 Coburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 805,999, Jun. 13, 1977, abandoned. This application Apr. 3, 1979, Ser. No. 26,655
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2627167

Int. Cl.³ A01D 35/26

U.S. Cl. 56—12.8

14 Claims



1. A rotary lawnmower provided with a housing having an outer surface and rotary blade therein, said rotary blade having at least one tip for cutting grass, said grass cut by said blade forming an accumulation between the tip of said rotary blade and an inner wall of the right-hand side of the housing as viewed from above, said housing having a portion extending at least partially below the level of the tip of said blade which comprises at least one grass clearing plate located on the outer housing surface and in the front thereof, viewed in the direction of movement of said lawnmower, for collecting said accumulated cut grass on a part of said outer housing surface remote from said inner wall upon a subsequent movement of the lawnmower to directly engage said accumulation by said grass clearing plate.

4,245,457

HAYMAKING MACHINE

Frédéric Gerlinger, Ottersthal, France, assignor to Kuhn, S.A., Saverne, France

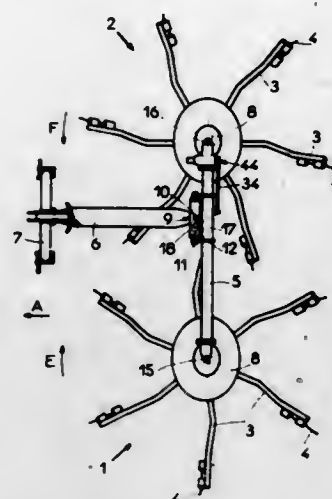
Filed Dec. 5, 1978, Ser. No. 966,556

Claims priority, application France, Dec. 16, 1977, 77 38721

Int. Cl.³ A01D 79/00

U.S. Cl. 56—370

8 Claims



1. A combined haymaking machine for central tedding and lateral windrowing, comprising at least two rotary rake heads, a support chassis that interconnects said rake heads, a connection beam extending forward from the chassis, pivot means comprising a substantially vertical spindle which is pivotally mounted on said connection beam and a substantially horizontal spindle which is pivotally mounted on said support chassis and is substantially parallel to said support chassis, and means connected with the said support chassis and connection beam and adapted automatically and simultaneously to cause a pivoting of the support chassis of the rotary rake heads about the substantially horizontal spindle of the said pivot means when the said support chassis is pivoted about the substantially vertical spindle of the said pivot means, in order to modify the orientation of said support chassis in relation to the intended direction of travel of the machine during the transposition from the central tedding position into the lateral windrowing position and vice versa.

4,245,458

EXTENDABLE TOOL BAR FOR HAY RAKES

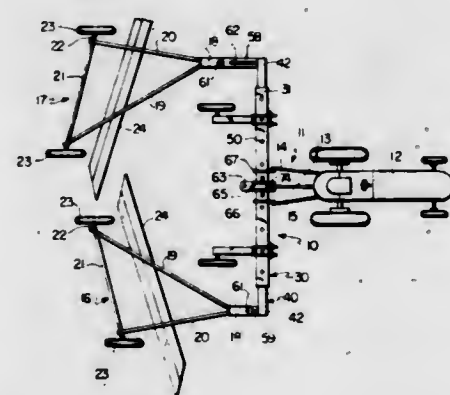
Howard Smith, 215 E. Amber Way, Hanford, Calif. 93230

Filed Nov. 24, 1978, Ser. No. 963,643

Int. Cl.³ A01D 77/06

U.S. Cl. 56—376

1 Claim



1. The combination of a tool bar and a pair of raking implements comprising an adjustable tool bar apparatus which is selectively connected to a propelling vehicle having a three-point mast hitch and a pair of hay rakes, each of said hay rakes having a frame mounted on an axle and wheel assembly and extending forwardly therefrom toward said tool bar apparatus,

raking means mounted forwardly of said axle and wheel assembly and hitch means extending from said frame means, said adjustable tool bar apparatus having an elongated hollow main tool bar having a bore which is non-circular in cross-section, said main tool bar being disposed generally normal to the path of travel of the vehicle, first and second auxiliary tool bars telescopically received within said bore at opposite ends of said main tool bar, each of said auxiliary tool bars having an external configuration generally complementary to the bore of said main tool bar, means for attaching said auxiliary tool bars to said main tool bar in fixed adjusted position, said first auxiliary tool bar having a first tool bar tongue fixed thereto adjacent to the outer end and extending rearwardly relative to the vehicle a predetermined distance, said second auxiliary tool bar having a second tool bar tongue of a second length which is greater than the length of said first tool bar tongue, means on each tool bar tongue for attaching one of said hay rake hitch means thereto, at least one upwardly extending bracket mounted on said main tool bar, said bracket having means for selectively receiving the upper arm of the mast hitch, a pair of spaced mounting members mounted on said main tool bar on opposite sides of said bracket and extending generally forwardly thereof, said mounting members having means for selectively receiving the lower arms of the mast hitch, gauge wheels means mounted on said main tool bar so as to extend downwardly and rearwardly of said hollow main tool bar and forwardly of said raking means of said hay rakes, whereby said hay rakes connected to said first and second tool bar tongues will be longitudinally spaced with respect to the line of movement of the propelling vehicle selectively transversely adjustable with respect to one another and selectively adjustable vertically as said raking means is selectively elevated with respect to the earth's surface as the three-point hitch of the propelling vehicle is raised pivoting said hay rake frames about said axle and wheel assemblies.

4,245,459

SPINNING CHAMBER OF APPARATUS FOR OPEN-END SPINNING

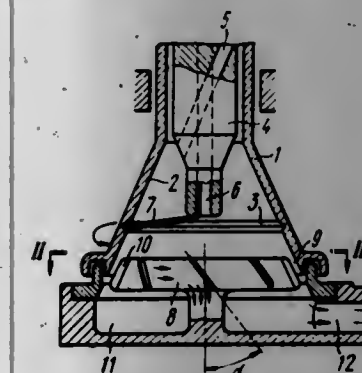
Valentin N. Tikhonov, ulitsa Sh. Rustavelli, 55, kv. 28; Gennady N. Shlykov, Chilanazar, kvartal 19, 31, kv. 3; Vitaly I. Zhestkov, Chilanazar, kvartal 19, 26, kv. 41; Gennady V. Zhigalov, ulitsa B. Khmel'nitskogo, korpus 2, 69, kv. 6; Viktor M. Mukhin, ulitsa B. Khmel'nitskogo, korpus 5, 69, kv. 31, and Vasily M. Dyachkov, Chilanazar, kvartal 7, 18 "V", kv. 8, all of Tashkent, U.S.S.R.

Filed Feb. 21, 1979, Ser. No. 13,131

Int. Cl.³ D01H 7/885

U.S. Cl. 57—58.89

3 Claims



1. A spinning chamber of an apparatus for open-end spinning, comprising: a rotatable housing shaped as a truncated cone and having an annular trough-like groove in the chamber of said housing on an inner surface thereof and intended for the formation of yarn from a stream of disintegrated fibers fed into the rotatable housing, said housing being opened on the side of a larger base of the truncated cone; and at the periphery of the rotatable housing a conical disc is placed on the side of the larger base concentrically with the inner surface of said rotatable housing and with a clearance between an outer conical surface of said disc and the inner surface of said rotatable

housing; whereby dust and other fiber debris is eliminated from said chamber due to the intensified flow between the inner surface of said housing and the outer conical surface of said disc.

4,245,460

OPEN-END SPINNING UNIT

Helmut Staufert, Holbeinweg 40, 7000 Stuttgart 1, Fed. Rep. of Germany, and Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignors to Helmut Staufert, Fed. Rep. of Germany

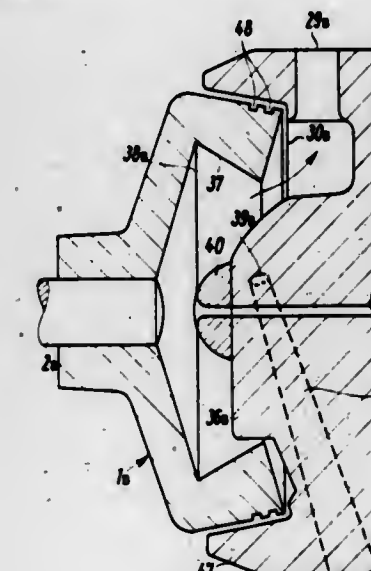
Filed Mar. 2, 1979, Ser. No. 16,874

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2809008

Int. Cl.³ D01H 7/882

U.S. Cl. 57—58.89

31 Claims



1. Open-end spinning unit with a spinning rotor open on one side and having a closed bottom and closed lateral walls, the open side of which spinning rotor is covered with a closing component containing fiber supply means directed at a slide wall of the spinning rotor, a yarn take-off duct, and a suction duct, wherein the suction duct includes an orifice opening into the spinning rotor, at least part of said orifice being disposed in the radial direction of the rotor closer to the slide wall than to the fiber supply means.

4,245,461

NON-EXPANSIBLE LINKAGE BRACELET AND METHOD OF MANUFACTURE THEREOF

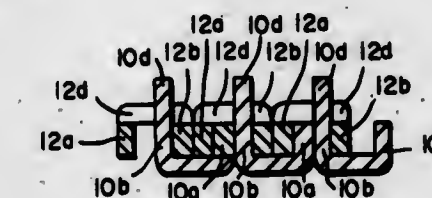
Stephen F. Bert, West Warwick, R.I., assignor to Textron, Inc., Providence, R.I.

Filed Jun. 27, 1979, Ser. No. 52,677

Int. Cl.³ F16G 13/18

U.S. Cl. 59—82

16 Claims



1. A non-expansible linkage bracelet comprising: a set of laterally adjacent top links having channel-shaped sections with parallel side members joined by top members, one side member of each top link having at least one bendable locking lug protruding therefrom; a set of laterally adjacent bottom links having channel-shaped sections inverted relative to the channel-shaped sections of said top links, the channel-shaped sections of said bottom links having parallel side members

joined by bottom members with apertures therein; the side members of adjacent links of one set being arranged in a confronting relationship between the side members of individual links of the other set, with the locking lugs of said top links being received in the apertures in the bottom members of said bottom links, the locking lugs of said top links being bent to overlap the bottom link side members located between the side members of said top links, thereby establishing an interlocked relationship between the links of both sets.

4,245,462

STARTING SYSTEM FOR A TURBINE ENGINE

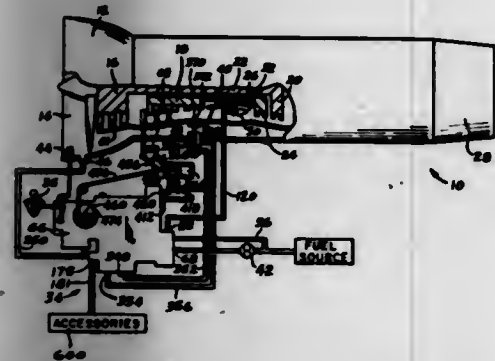
Howard L. McCombs, Jr., South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 29, 1978, Ser. No. 964,770

Int. Cl.³ F02C 7/262, 9/28

U.S. Cl. 60—39.14 R

43 Claims



1. In a turbine engine having a compressor with a bleed valve device and a variable geometry apparatus responsive to an operational control member for regulating the flow rate of fuel supplied through a conduit to the turbine engine as a function of atmospheric pressure and the temperature of the air supplied to the compressor in response to an operator input, the improvement wherein starting control means schedules fuel flow to said turbine engine as a function of time, said starting control including:

- first compensating means for modifying said scheduled fuel flow in response to changes in temperature; and
- second compensating means for modifying said function of time in response to changes in altitude.

4,245,463

GAS TURBINE PLANT

Martin Mansson, and Ragnar Torstenfelt, both of Finspong, Sweden, assignors to Stal-Laval Turbin AB, Vasteras, Sweden

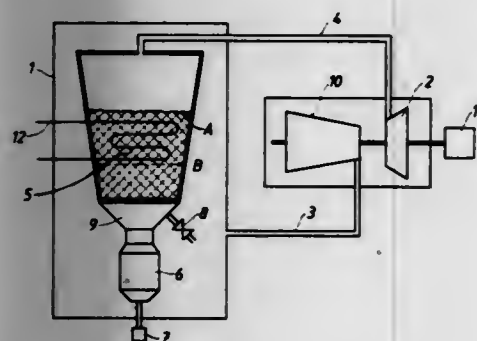
Filed Apr. 9, 1979, Ser. No. 28,619

Claims priority, application Sweden, Apr. 11, 1978, 7804024

Int. Cl.³ F02C 7/26

U.S. Cl. 60—39.14 M

5 Claims



1. A gas turbine plant comprising:
a gas turbine;
compressor means operatively associated with said turbine for generating compressed gas;

combustion chamber means for containing a fluidized bed combustor;
starter motor means for rotating said compressor means during an initial starting period;
pressure casing means enclosing said combustion chamber means and defining a volume between said combustion chamber means and said pressure casing means, said pressure casing means being connected to said compressor means for receiving said compressed gas into said volume; distribution means connected to said combustion chamber means and disposed within said pressure casing means for receiving said compressed gas from said volume and passing it to said fluidized bed combustor;
ignition combustion chamber means connected to said distribution means and at least partially disposed within said pressure casing means for receiving at least a portion of said compressed gas from said volume, said ignition combustion chamber means being supplied with ignition fuel and operable to apply heated compressed gas during said starting period for igniting the fuel in said fluidized bed combustor; and
means connecting said combustion chamber means to said gas turbine for applying combustion gases to rotate said gas turbine.

4,245,464

QUICK RELEASE TURBINE GATE VALVE

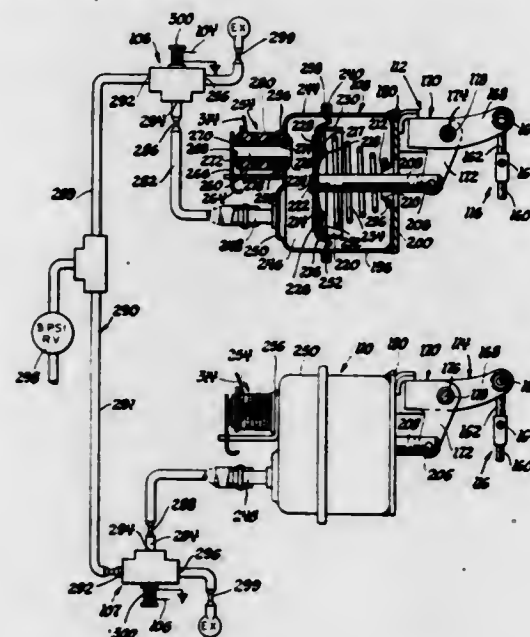
Alan L. Hitzelberger, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 20, 1979, Ser. No. 50,150

Int. Cl.³ F02C 9/02

U.S. Cl. 60—39.25

5 Claims



1. A gas turbine engine gate valve control system for regulating gas flow through the turbine nozzle downstream of a source of motive fluid including air flow from a compressor in response to engine speed and temperature comprising: a pneumatic operator having a pressure chamber and a diaphragm with one side forming one wall of said pressure chamber and being movable in response to changes in pressure therein, said diaphragm having the opposite side thereof exposed to atmosphere and including a gate valve operator shaft connected thereto extending from said opposite side exteriorly of the pneumatic operator for reciprocating a turbine nozzle gate into and out of overlying relationship with the inlet to the turbine nozzle, spring means for biasing said diaphragm in opposition to fluid pressure in said chamber, a regulated source of pressure, means including flow restriction orifice means for maintaining said regulated source of pressure at a controlled rate to and from said pressure chamber during first and second modes of gas turbine engine operation to cause controlled slow velocity strokes of said operator shaft that move the valve gate

between an open position out of overlying relationship with the turbine nozzle and a closed relationship therewith to slowly vary gas flow therethrough so as to progressively adjust engine power at a rate determined by flow across said orifice means, and dump means in communication with said pressure chamber operative when a predetermined engine speed error signal occurs upon engine acceleration to produce a quick dump of pressure from said pressure chamber and an immediate retraction of said gate by said spring means from its overlying relationship with the turbine nozzle into its open position thereby to avoid interference of said gate with increased gas flow to the inlet of said turbine nozzle, thereby to avoid compressor surge during gas turbine demand acceleration mode of operation.

4,245,465

GAS TURBINE ENGINE LUBRICATION SYSTEM INCLUDING THREE STAGE FLOW CONTROL VALVE

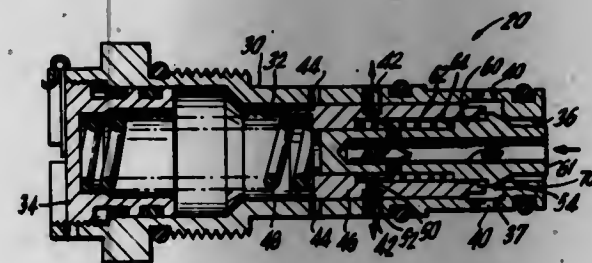
George T. Milo, Bridgeport, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Aug. 30, 1979, Ser. No. 71,230

Int. Cl.³ F02C 7/06

U.S. Cl. 60—39.08

3 Claims



1. In a gas turbine engine, a lubrication supply system for providing a lubricated part with a programmed flow of lubricant that is a function of the engine speed comprising:

- a source of lubricant which is pressurized as a function of the engine speed;

valve means interconnecting said source of pressurized lubricant to the lubricated part; and

bypass conduit means providing direct communication between said valve means and said source of pressurized lubricant, said valve means being a multi-poppet valve comprising a housing, said housing being in communication with said source of pressurized lubricant at one end thereof, while the opposite end of said housing is closed; said housing having therein a spring bearing against the closed end of the housing and against a modulating poppet member, urging the modulating poppet member away from the closed end, said housing also containing a start-up poppet member and a spring between the modulating poppet member and the start-up poppet member biasing the start-up poppet member toward said one end of said housing; said housing having first transverse aperture means adjacent said open end and in communication with the lubricated part, with the flow of lubricant through said first aperture means being a function of the position of said start-up poppet member, and second and third transverse aperture means being intermediate the length of the housing and in communication with said by-pass conduit means, with the flow of lubricant through said second and third transverse aperture means being a function of the positioning of said start-up and modulating poppet members; said start-up poppet including an axially-extending channel therein, one end of which is closed while the other end thereof is open and in communication with the open end of said housing; said start-up poppet including a transverse hole which is alternatively in communication with said second and third transverse aperture means, whereby:

- (i) during the start-up and shut-down operation of the engine, lubricant from the source of lubricant passes through

the channel in the start-up poppet and thence through the second transverse aperture means to the by-pass conduit means;

(ii) during idle power operation of the engine, lubricant from the source of lubricant causes actuation of the start-up poppet such that lubricant passes through the first transverse aperture means to the lubricated part and also through the second transverse aperture means to the by-pass conduit means; and

(iii) during high speed operation of the engine, lubricant from the source of lubricant causes actuation of both the start-up poppet and the modulating poppet such that lubricant passes through the first transverse aperture means to the lubricated part and also through the third transverse aperture means to the by-pass conduit means.

4,245,466

DELTA ELECTROMAGNETIC CONTROL VALVE

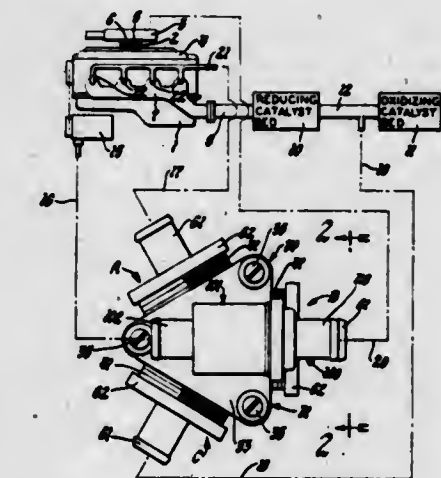
Charles A. Mendenhall, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1979, Ser. No. 60,186

Int. Cl.³ F01N 3/15, 3/10; F16K 11/02

U.S. Cl. 60—289

6 Claims



6. An electromagnetic control valve for use as an air control valve in the exhaust emission control system of an internal combustion engine wherein the system includes conduit means connected to the engine for receiving exhaust gases discharged from the exhaust ports of the engine and for delivering the exhaust gases serially through a reducing converter and an oxidizing converter, and an air supply means for providing secondary air to the conduit means; said electromagnetic control valve including a housing means having a deltoid valve chamber therein defined by first, second and third side walls and a pair of opposed end walls; an inlet in one of said end walls opening into said chamber and adapted to receive air from the air supply means; a first outlet from said chamber in said first side wall connectable to the conduit means upstream of the reducing converter; a second outlet from said chamber in said second side wall connectable to the conduit means intermediate the reducing converter and the oxidizing converter; a third outlet from said chamber in said third side wall for the bypass of air to the atmosphere; a first, second and third electromagnetic coil means associated with each of said first, second and third side walls, respectively, and operatively connectable to a source of electrical power for selective energization thereof; and, a delta-shaped armature valve means movably positioned in said valve chamber; said armature valve means including a delta-shaped valve carrier and three armature valve members operatively carried on said valve carrier and positioned whereby when any two of said electromagnetic coil means are energized said valve means will move into abutment against the side walls associated with the energized said electromagnetic coil means so as to block flow of fluid from said valve chamber out through the said outlets associated with the associated said side walls while permitting flow

from said chamber out through said outlet in the said side wall containing the non-energized said electromagnetic coil means.

4,245,467

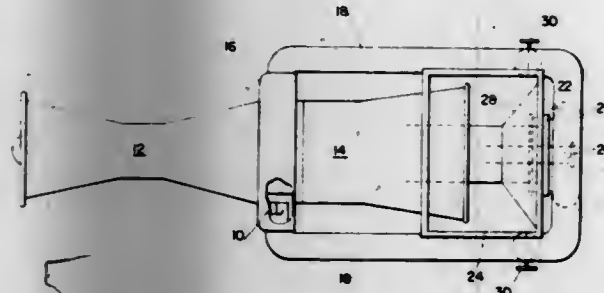
ISOLATED REVERSE TURBINE SYSTEM FOR GAS TURBINE ENGINES

Samuel R. Shank, Jr., 1106 Peanypacker La., Bowie, Md. 20716, and Thomas L. Bowen, Box 111, Dares Beach, Prince Frederick, Md. 20678

Filed Dec. 28, 1978, Ser. No. 973,986
Int. Cl.³ F02C 6/00

U.S. Cl. 60—39.15

6 Claims



1. A reversible gas turbine engine, in combination: a gas generator for discharging working fluid into an annular flow channel; a power turbine affixed to an output shaft which is rotatably mounted downstream of said gas generator, for rotating said output shaft in one direction; means coupled to the inlet of said power turbine and to the exhaust of said gas generator for diverting said working fluid away from the inlet of said power turbine; said means being annular and mounted coaxially with said turbine, and, said means further comprising: a plurality of radially movable diverter blocks, each of said blocks comprising a segment of an annular ring and having an upstream face of streamlined cross-section, each of said diverter blocks further being shaped in a manner such that when fully inserted radially inward into said annular flow channel, said diverter blocks form a closed annular ring that completely blocks said flow channel; an anchor post, having a flared end, perpendicularly affixed to the downstream face of each of said diverter blocks with said flared end facing downstream; a pair of parallel alignment faces formed onto the sides of each of said diverter blocks, said alignment faces running a portion of the length of said diverter blocks in a radial direction; a plurality of fixedly mounted radial slide-ways, each of said slide-ways configured for slidable insertion of a corresponding diverter block, whereby said diverter blocks are constrained to move only in a radial direction by said alignment faces and said anchor posts; a first drive means coupled to said diverter blocks for radially moving said diverter blocks into or out of said annular flow channel; a plurality of circumferentially spaced flaps hingedly mounted on the outer wall of said annular flow channel, one of said flaps being provided for each of said diverter blocks, and each of said flaps being movable only in a radially outward direction and configured to permit said diverter blocks to move into and out of said annular flow channel when said flaps are opened; and a second drive means for opening and closing said flaps in unison; a reverse turbine, having at least one stage, affixed to said output shaft downstream of said power turbine for rotating said output shaft in an opposite direction, said reverse turbine being oriented in such a manner that its exhaust end faces the exhaust end of said power turbine; means coupled to said diverting means and the inlet of said

reverse turbine for transferring said working fluid therebetween; a shut-off valve mounted within the downstream portion of said transferring means, for restricting the working fluid flow therethrough; exhaust blocking means slidably mounted between the exhaust of said power and said reverse turbines and configured so that said exhaust blocking means can selectively block the exhaust end of one or the other of said turbines, or can be positioned at some point therebetween; and exhaust means coupled to said exhaust blocking means for collecting the working fluid from the exhaust of either or both of said turbines and discharging it therefrom.

4,245,468

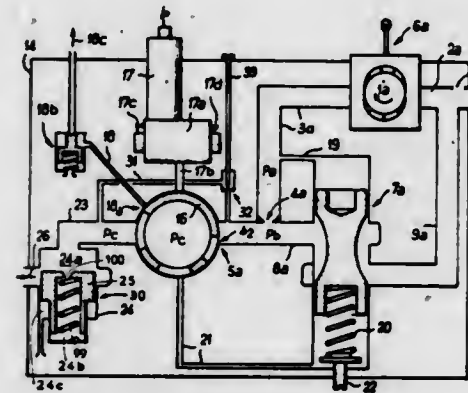
CONTROL DEVICE FOR A GAS TURBINE

Jean-Luc Fondacci, Montgeron, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Oct. 10, 1978, Ser. No. 950,045
Claims priority, application France, Oct. 11, 1977, 77 30486
Int. Cl.³ F02C 9/04

U.S. Cl. 60—39.28 R

6 Claims



1. A control device for a gas turbine, for use particularly as an emergency control for a turbojet engine, comprising, a fuel pump having a delivery circuit provided with means to create a pressure drop as a function of the rotating velocity of the turbojet engine, a throttle with a variable passage section mounted in series with said means, and a control valve sensitive to the sum of the pressure drop across said means and to the pressure drop across said variable section and controlling a fuel bypass form between said means and said variable cross section to maintain constant the said sum of pressure drops.

4,245,469

HEAT EXCHANGER AND METHOD OF MAKING

Anthony Fortini, Cleveland, and John M. Kazaroff, Rocky River, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

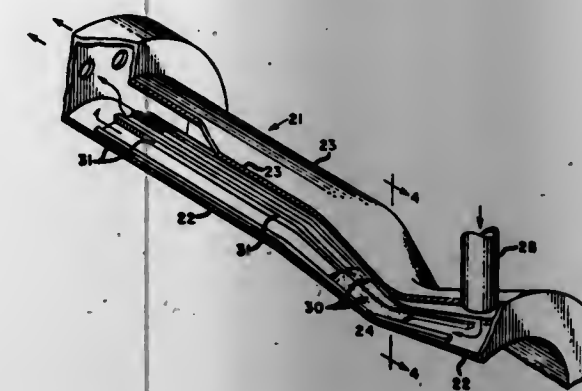
Division of Ser. No. 856,462, Nov. 30, 1977, Pat. No. 4,199,937.
This application Apr. 23, 1979, Ser. No. 32,307
Int. Cl.³ F02K 9/02

U.S. Cl. 60—204

8 Claims

1. A method of making a rocket chamber comprising the steps of: forming a first wall having the configuration of a prescribed inner wall for a rocket chamber; disposing a porous metal matrix around said first wall; applying a removable material to the outside of said first wall; depositing a layer of metal over said removable material and over said porous metal matrix, said layer of metal forming

a second wall which is bonded to said porous metal matrix; removing said removable material; and



heating said rocket chamber to a temperature sufficient to cause bonding of said porous metal matrix, said first wall and any other metal interfaces.

4,245,470

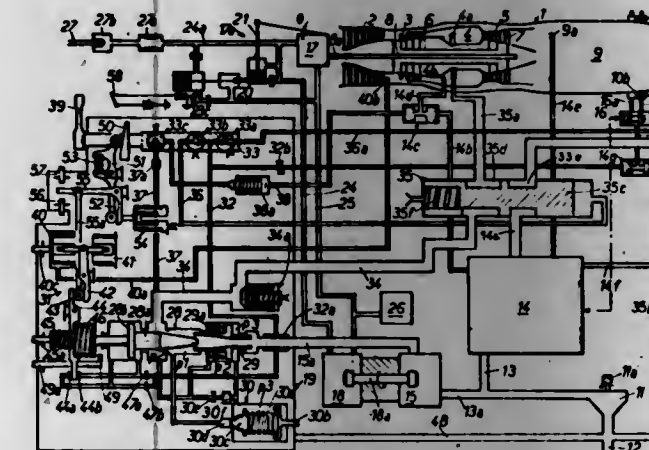
DEVICE TO CONTROL A JET ENGINE

Jean P. F. G. Briotet, Le Mee, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Sep. 18, 1978, Ser. No. 943,378
Claims priority, application France, Sep. 23, 1977, 77 29239
Int. Cl.³ F02K 3/08; F02C 9/06

U.S. Cl. 60—243

5 Claims



1. Device for the control of an aircraft jet engine having a combustion chamber and fuel injectors; a first pump rotationally driven by the jet engine and supplying a hydraulic liquid to a volumetric hydraulic motor coupled to a volumetric fuel pump, said first pump being self-regulating, having a regulator which varies the flow of said pump so as to maintain a constant charging pressure, the fuel pump supplying said fuel injectors by means of a flow regulator.

4,245,471

STOICHIOMETRIC AND ENRICHMENT MIXTURE CONTROL DURING DIFFERENT SPLIT ENGINE MODES

Fukashi Sugawara, Yokohama; Haruhiko Iizuka, and Junichiro Matsumoto, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

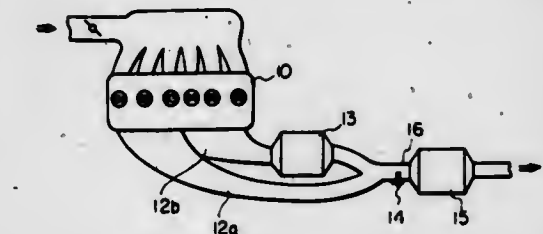
Filed Jan. 13, 1979, Ser. No. 48,156
Claims priority, application Japan, Jun. 16, 1978, 53-72850
Int. Cl.³ F01N 3/15; F02D 17/00

U.S. Cl. 60—276

6 Claims

1. A control system for an internal combustion engine having first and second cylinders, comprising: split engine control means for operating said engine on full cylinders in which said first and second cylinders are activated to give higher engine power when the magni-

tude of engine load is above a predetermined value or operating said engine on partial cylinder in which only said second cylinder is activated to give lower engine power when the engine load magnitude is below said predetermined value and said first cylinder is deactivated to allow air to be pumped therethrough; first and second upstream exhaust conduits for gases from said first and second cylinders when the engine is operated on full cylinders, respectively, to a common junction and for passing the pumped air from said first cylinder and the exhaust gases from said second cylinder to said common junction when the engine is operated on partial cylinder; a common downstream exhaust conduit connected to said common junction for passing said gases therethrough to the atmosphere; a first catalytic converter disposed in said second upstream exhaust conduit; an exhaust gas sensor and a second catalytic converter disposed in said common downstream exhaust conduit;



feedback control means responsive to a signal from said exhaust gas sensor during the full cylinder engine operation for correcting the air-fuel ratio of mixture supplied to said first and second cylinders to the stoichiometric point; and means for disabling said feedback control means during the partial cylinder engine operation and controlling the air-fuel ratio of mixture supplied to said second cylinder to a point which lies to the rich side of the stoichiometric point, whereby during said full cylinder engine operation the NO_x, HC and CO components of the gases from said first and second cylinders are purified simultaneously in said second and first catalytic converters, respectively, and during said partial cylinder engine operation the NO_x component of the gases from said second cylinder is purified in said first catalytic converter and the HC and CO components thereof are mixed with said pumped air in said common exhaust conduit and purified in said second catalytic converter.

4,245,472

SECONDARY AIR SUPPLY CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Motohisa Miura, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

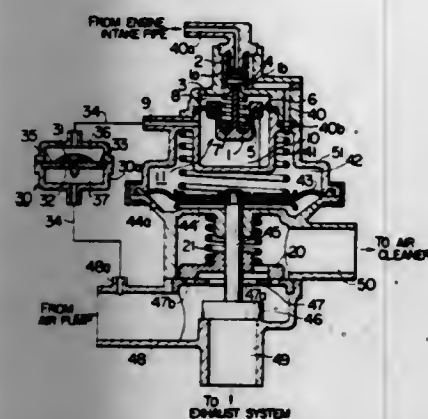
Filed May 23, 1979, Ser. No. 41,932
Claims priority, application Japan, May 26, 1978, 53-72086
Int. Cl.³ F01N 3/10

U.S. Cl. 60—290

9 Claims

1. A secondary air supply control apparatus for controlling secondary air flow supplied to an exhaust system of an internal combustion engine for purification of exhaust gas discharged therefrom comprising: an air pump for producing the secondary air flow, a secondary air supply passage leading to said exhaust system, a bypass passage leading to the atmosphere, valve means for changing over said secondary air flow to direct either to said secondary air supply passage or said bypass passage, a diaphragm to which said valve means is connected, a pressure chamber defined on one side of said diaphragm

and adapted to be supplied with a negative intake pressure prevailing in an intake system of said engine, said valve means being operable to move to a first position at which said secondary air flow is directed to said secondary air supply passage when said negative intake pressure supplied in said pressure chamber is higher than a first predetermined level, and



control means responsive to a pressure of said secondary air flow supplied to said exhaust system for applying the atmospheric pressure to said pressure chamber thereby to move said valve means to a second position at which said secondary air flow is directed to said bypass passage when said pressure of said secondary air flow supplied to said exhaust system is increased beyond a second predetermined pressure level.

4,245,473

FLUID MOTOR

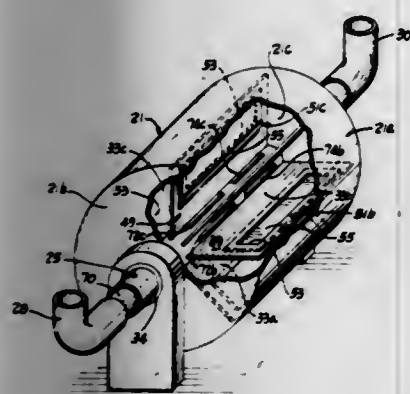
Dante J. Sandoval, 6412 Pear Ave., Cleveland, Ohio 44102

Filed Aug. 22, 1977, Ser. No. 826,734

Int. Cl.³ F03C 5/00

U.S. Cl. 60—496

18 Claims



1. A fluid operated motor, comprising:
 - (a) a rotor mounted for rotation about a generally horizontally extending axis;
 - (b) said rotor defining an internal working volume comprised of a plurality of chambers located circumferentially about and radially from said axis;
 - (c) first valve means enabling one way fluid communication between said chambers;
 - (d) a working fluid disposed in said working volume, said working fluid occupying chambers of said working volume located below said axis when said rotor is at rest;
 - (e) intake means, including second valve means, for communicating motive fluid to said working volume, said motive fluid displacing said working fluid from at least one of said chambers via said valve means to impart torque to the rotor, said working fluid having a relatively higher density than said motive fluid; and,
 - (f) exhaust means, including third valve means, communicable with said working volume for exhausting motive fluid from said rotor.

4,245,474 THERMODYNAMIC SYSTEMS FOR GENERATING MECHANICAL ENERGY

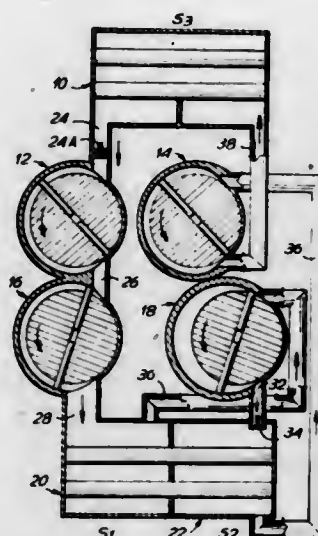
Giuliano Romano, Viale dei Mille 83; Nedo Marilli, Via F. Gianni 5, both of Florence, and Riccarda Gonfrotti, Via XXIV Maggio 61, Montevarchi, Arezzo, all of Italy

Filed Nov. 17, 1978, Ser. No. 961,543

Int. Cl.³ F01K 25/00

U.S. Cl. 60—519

5 Claims



1. A thermodynamic system for generating mechanical energy, comprising means defining a first fluid source which is continuously heated to a high-temperature and high-pressure, means defining a second fluid source in which the fluid is at low temperature and at low pressure, first and second coupled rotary elements, said first element forming a motor having an increasing-volume chamber in which high-temperature fluid expands to generate mechanical work and said second element forming a compressor in which cold fluid is compressed, and two further elements each having a variable-volume chamber, the chamber of one of said further elements being cyclically placed in communication with the high-temperature source to transfer constant-volume fluid from the compressor towards the high-temperature source, and the chambers of the other of said further elements being cyclically placed in communication with the high-temperature source to transfer fluid from the high-temperature source to the motor.

4,245,475

METHOD AND APPARATUS FOR PRODUCING ELECTRICITY FROM THERMAL SEA POWER

Barney B. Girden, 1281 NW. 43rd Ave., Lauderhill, Fla. 33313

Filed Jun. 19, 1978, Ser. No. 916,897

Int. Cl.³ F03G 7/04

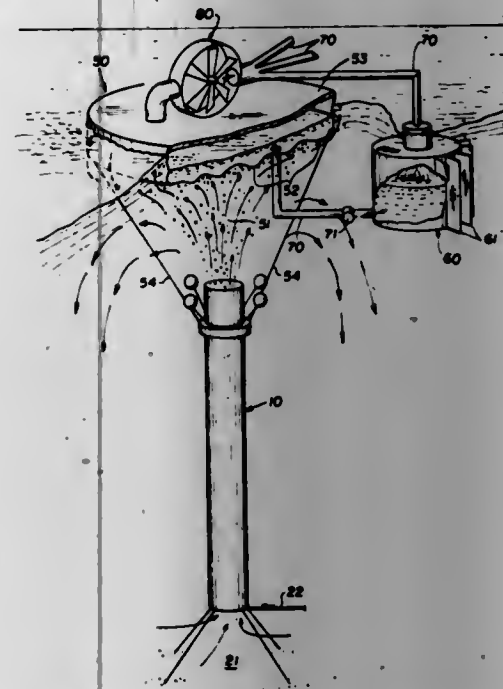
U.S. Cl. 60—641

5 Claims

1. A method of producing useful electricity from the thermal power of a large body of water having cold subsurface water and surface water which is warmer than the subsurface water, comprising the steps of:

upwelling cold subsurface water to the surface of said large body of water creating an area on the surface thereof having cold water thereon and being surrounded by the warmer surface water of said large body of water, utilizing compressed air to upwell said cold subsurface water by releasing said compressed air at a lower portion of one or more substantially vertical conduits having an opening at their upper and lower portions, the lower portion or portions thereof being located at a depth within said large body of water at which there exists subsurface water which is substantially colder than said surface water, said one or more vertical conduits having a compressed air storage tank and pressure regulating valving so as to prevent compressed air starvation because of a different depth location of the lower portion of one conduit relative to another conduit;

utilizing said area having cold subsurface water thereon and said surrounding substantially warmer surface water to generate electricity; and including the step of generating electricity by a heat engine, said heat engine including a condenser and said condenser being floatingly positioned in the area having cold subsurface



face water thereon at a location directly above the outlet of said vertical conduit, said heat engine further including boilers and said boilers being positioned within said warm water surrounding said area having cold subsurface water thereon, the output of said boilers being operatively connected to a turbine generator which produces electricity and is operatively connected to said condenser.

4,245,476

SOLAR AUGMENTED HEAT PUMP SYSTEM WITH AUTOMATIC STAGING RECIPROCATING COMPRESSOR

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Continuation of Ser. No. 806,407, Jun. 14, 1977, Pat. No. 4,148,436, which is a continuation-in-part of Ser. No. 782,675,

Mar. 30, 1977, Pat. No. 4,086,072, which is a

continuation-in-part of Ser. No. 653,568, Jan. 29, 1976, Pat. No. 4,058,988. This application Jan. 2, 1979, Ser. No. 604

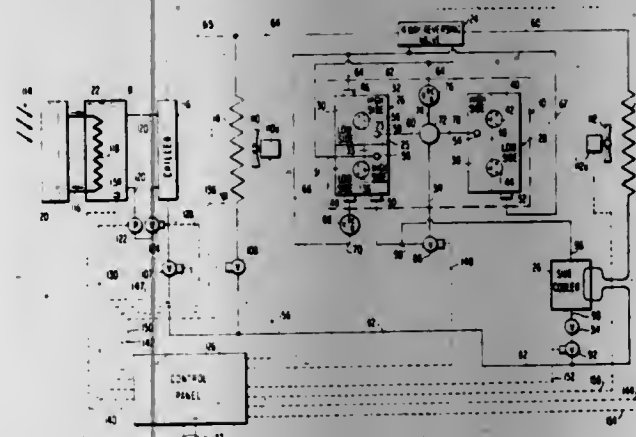
The portion of the term of this patent subsequent to Apr. 10,

1996, has been disclaimed.

Int. Cl.³ F25B 27/00

U.S. Cl. 62—2

17 Claims



1. A refrigeration system comprising: a first heat exchange coil, a second heat exchange coil, a multi-cylinder reciprocating compressor, conduit means carrying refrigerant and including reversing

valve means for connecting said coils and said compressor in a closed series refrigeration loop with said first and second coils trading functions as system condenser and system evaporator, and wherein said reversing valve means functions to direct vaporized refrigerant from said coil functioning as system evaporator to the compressor and to direct compressed refrigerant vapor from said compressor to said coil functioning as system condenser, said system further comprising subcooler means operatively connected between said first coil and said second coil for removing heat from the condenser refrigerant discharging from the coil functioning as system condenser prior to supplying that condensed refrigerant to the coil functioning as system evaporator,

a vapor return line leading from said subcooler means, the improvement wherein said reciprocating compressor comprises:

a first cylinder head and a second cylinder head, said first cylinder head comprising first and second cylinders, said second cylinder head comprising third and fourth cylinders,

said first cylinder head including first manifold means separating said first and second cylinders and defining low pressure and high pressure sides for respective cylinders,

said second cylinder head comprising second manifold means defining commonly, low and high pressure sides for both cylinders,

said conduit means including, means for connecting the coil functioning as the system evaporator to the low side of all cylinders for single stage compression of vaporized refrigerant from the coil functioning as the system evaporator,

means for connecting the high side of all cylinders to the coil functioning as the system condenser,

means for connecting the subcooler vapor return line to the low side of one of said cylinders and for cutting off that one cylinder low side to the coil functioning as the system evaporator when the refrigerant vapor within the subcooler return line is higher than the refrigerant vapor returning to the compressor from the coil functioning as the system evaporator,

means for further connecting the high side of said one cylinder to said coil functioning as the system condenser and including means for preventing discharge from said one cylinder to flow back to the high side of said other cylinders if the pressure of that discharge is in excess of the discharge pressure at the high side of said other cylinders and

means for selectively connecting the high sides of said other cylinders to the low side of said one cylinder in common with said subcooler return line such that said other cylinders function in first stage refrigerant vapor compression and said one cylinder functions as second stage compression with its discharge only going to the coil functioning as the system condenser.

4,245,477

INTERNAL HEATER MODULE FOR CRYOGENIC REFRIGERATORS AND STIRLING HEAT ENGINES

John B. Glode, Santa Monica, and George P. Lagodmos, Rancho Palos Verdes, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 18, 1979, Ser. No. 58,418

Int. Cl.³ F25B 9/00; F01B 29/10; F02G 1/04

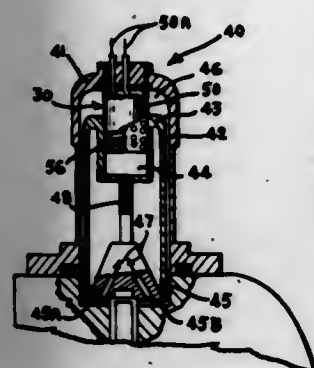
U.S. Cl. 62—6

3 Claims

1. An internal heater module, for use with a cryogenic refrigerator having a hot cylinder, a hot displacer disposed within said hot cylinder and having a top with a centrally located cavity therein and a base with flow passageways there-through, a hot volume, working fluid, and a centrally positioned working fluid passage member interconnecting said hot

displacer flow passageways and said hot displacer cavity, comprising:

- a. a tubular member having a top with a plurality of radial slots therethrough, wherein said tubular member is disposed within, and is fitted closely to, said hot displacer cavity;
- b. and, a double wound electric heater coil member having an inner coil and an outer coil separated by a metallic



screen, with said electric heater coil member disposed within said tubular member; whereby working fluid flow to and from said hot volume is accomplished through said flow passageways in said base of said hot displacer, through said centrally positioned working fluid passage member, through said hot displacer cavity, through said plurality of radial slots in said top of said tubular member of said internal heater module and, thereby, through said heater module.

4,245,478

METHOD FOR COOLING METAL TURNINGS AND OTHER METALS

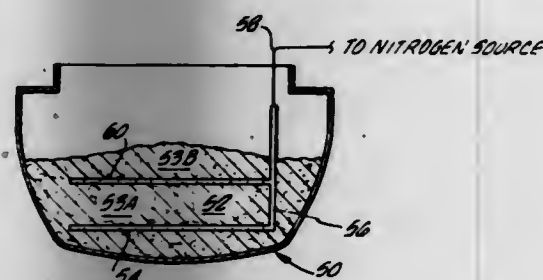
Allan P. Covy, Palos Verdes, Calif.

Continuation-in-part of Ser. No. 36,144, May 4, 1979. This application Aug. 17, 1979, Ser. No. 67,289

Int. Cl.³ F25D 25/00

U.S. Cl. 62—62

48 Claims



1. A method for reducing the temperature of a compacted pile of fragmented metal located in a ship's hold, the pile comprising at least 1,000 long tons, at least a portion of the pile being at a temperature higher than a selected temperature, the method comprising the steps of:

- (a) driving a plurality of pipes into the pile, each pipe having at least one orifice in its wall, at least a portion of the orifices being at a level below the elevation of the center of mass of the pile;
- (b) providing a source of liquid nitrogen;
- (c) introducing a sufficient quantity of the nitrogen from the source of liquid nitrogen into the pile through the pipes and orifices to reduce the temperature of substantially the entire pile to less than the selected temperature, at least a portion of the nitrogen being introduced through orifices at a level below the elevation of the center of mass of the pile and at least a portion of the nitrogen being introduced substantially laterally into the pile; and
- (d) stopping introduction of nitrogen into the pile after the temperature of substantially the entire pile is less than the selected temperature.

TEMPERATURE STABILIZATION METHOD

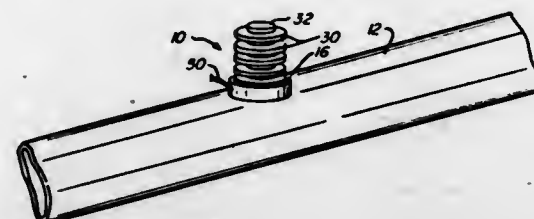
Albert P. Richter, Jr., and Harold E. Peelman, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 870,560, Jan. 19, 1978. This application Nov. 15, 1978, Ser. No. 961,080

Int. Cl.³ F25D 15/00; F25B 21/02, 19/00

U.S. Cl. 62—119

3 Claims



1. A method of stabilizing the temperature of a radiation detector assembly comprising the following steps:

- (a) providing a heat pipe for generally housing the detector assembly so that ambient heat may be absorbed therefrom in order to be effectively communicated for removal;
- (b) detecting the temperature of the heat pipe;
- (c) comparing the temperature detected during said step of detecting temperature with a reference value;
- (b) selectively removing heat from the heat pipe by thermoelectrically cooling the heat pipe whenever the detected temperature at the heat pipe exceeds the reference value; and
- (e) dissipating the heat removed during said step of removing heat from the heat pipe.

4,245,480

REFRIGERANT CHARGE ADJUSTER APPARATUS

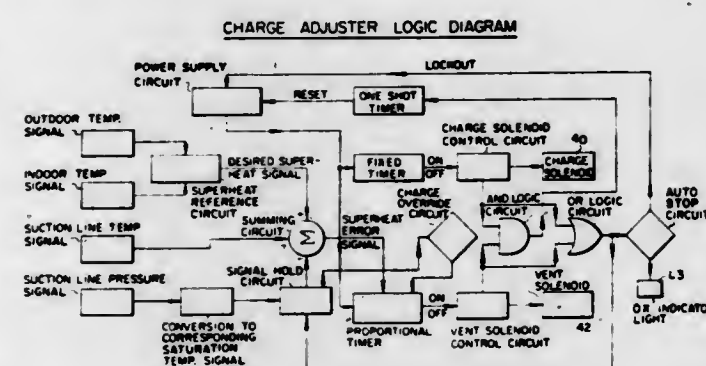
James F. Saunders, Onalaska, Wis., assignor to The Trane Company, La Crosse, Wis.

Division of Ser. No. 699,369, Jun. 24, 1976, abandoned. This application Apr. 25, 1977, Ser. No. 790,223

Int. Cl.³ F25B 45/00

U.S. Cl. 62—149

4 Claims



1. A method of charging a refrigeration system having an air-cooled refrigerant condenser comprising the steps of: connecting an external source of liquid refrigerant to the suction side of said refrigeration system through a portable heat exchanger; disposing said portable heat exchanger in heat exchange relation to the condenser of said refrigeration system; operating said refrigeration system whereby said portable heat exchanger is heated by the condenser of said refrigeration system; passing liquid refrigerant from said refrigerant source to said portable heat exchanger; throttling the flow of refrigerant passing between said refrigerant source and said portable heat exchanger; vaporizing refrigerant within said portable heat exchanger with heat from the condenser of said refrigeration system; in a series of discrete steps limited in time in response to the refrigerant charge and operating conditions of said refrigeration system passing refrigerant vaporized in said portable heat exchanger into said refrigeration system; subse-

quently disconnecting said portable heat exchanger and external source of refrigerant from said refrigeration system.

4,245,482

GLASS DOOR MERCHANDISER

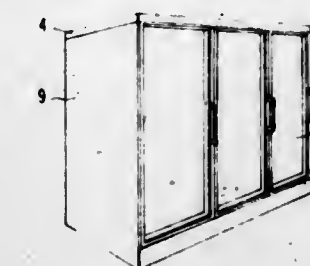
Fayez F. Abraham, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed Mar. 30, 1979, Ser. No. 25,473

Int. Cl.³ A47F 3/04; F25D 21/10

U.S. Cl. 62—256

14 Claims



SUPPLEMENTAL COLD-AIR SUPPLY SYSTEM

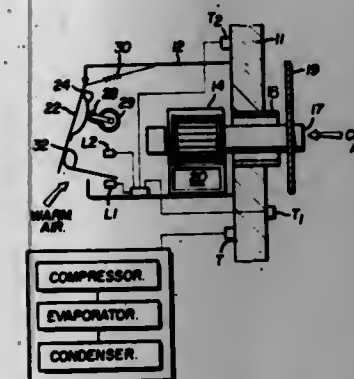
Raymond J. McDermott, 4725 Clippert, Dearborn Heights, Mich. 48125

Filed Nov. 5, 1979, Ser. No. 91,059

Int. Cl.³ F25D 17/08

U.S. Cl. 62—187

2 Claims



1. A supplemental cold air supply system for supplying outside ambient air into a refrigeration enclosure when the outside air is at a temperature equal to or below the air temperature within the enclosure and when the outside air is at a temperature suitable for refrigeration purposes, said supply system comprising:

- a housing being fastened to said refrigeration enclosure;
- a blower being mounted within said housing, means for selectively actuating said blower to discharge cold air into said enclosure when the outside ambient air temperature is equal to or lower than the air temperature inside said enclosure;
- a coaxial pipe assembly being mounted between said container and the outside of said refrigeration enclosure, said assembly including a cold air inlet pipe and a warm air exhaust pipe, said warm air exhaust pipe being concentric with said cold air inlet pipe, said cold air inlet pipe having one end connected to the inlet of said blower for providing cold air to said blower;

said housing including a first pivotable door for exhausting the cold air discharged from said blower into said enclosure; said housing including a second pivotable door for exhausting the warm air from said enclosure to the outside through said warm air exhaust, said second door being normally closed, means for automatically opening said second door when said blower is operating and discharging cold air into said enclosure through said first door; said means for selectively actuating said blower including a first temperature responsive means mounted outside the refrigeration enclosure for detecting the ambient air temperature of the outside air and a second temperature responsive means mounted inside the enclosure for detecting the air temperature in the enclosure, said first temperature responsive means and said second temperature responsive means being electrically connected in series; and said means for automatically opening said second door including a motor having a rotatable cam arm, said cam arm being engageable with a cam follower mounted on said second door, said cam arm opening said door a predetermined amount in response to said blower being actuated, a first limit means for turning said motor off when said door is closed and a second limit means for turning said motor off when said door is opened to said pre-determined amount.

1. A refrigerated display case having a display section therein comprising:

- a cabinet having top, bottom, rear and side walls and an opening at its front;
- at least one door covering said front opening, said door being movable for enabling access through said front opening to products within said display section of said display case;
- an air conduit extending along said top, bottom and rear walls and having an outlet opening and an inlet opening at opposing ends thereof, said outlet opening and said inlet opening being arranged in alignment so that air leaving said outlet opening will be directed towards and received by said inlet opening and form an air curtain across said front opening along a path inside of said door;
- an air band establishing means for establishing a flow of refrigerated air through said air conduit during a refrigeration cycle of operation, said air band establishing means including refrigeration means and means for creating a positive pressure air flow through said refrigeration means; and
- defrost means for defrosting said display case when said display case is operated in a defrost cycle of operation, said defrost means causing ambient air to pass through a substantial portion of said air conduit, including that portion of said air conduit located along said rear wall of said cabinet of said display case, said defrost means causing the ambient air to flow in a reverse direction with respect to the air flow during a refrigeration cycle of operation and passing such ambient air through said refrigeration means for defrosting said refrigeration means and said air conduit while substantially preventing any ambient air flow into said display section of said display case.

4,245,483

SYSTEM FOR PURIFYING CONTAMINATED REFRIGERANT AND REPRODUCING THE SAME FOR USE WITH FREEZING LIQUID SPRAY REFRIGERATOR

Susumu Mural, Kyoto, Japan, assignor to Kabushiki Kaisha Toyo Saisakusho, Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,886

Int. Cl.³ F25D 17/02

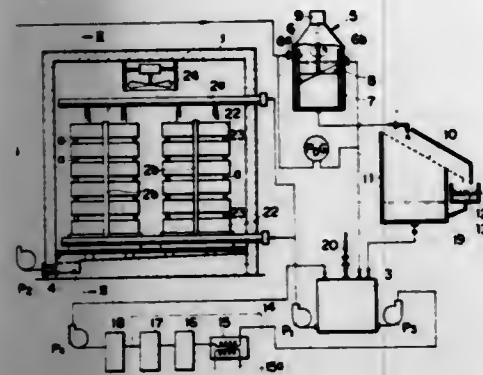
U.S. Cl. 62—376

7 Claims

1. A system for purifying contaminated refrigerant and reproducing the same for use with a freezing liquid spray refrigerator, comprising:

- (a) a pool designed to recover the freezing liquid scattered through spraying nozzles onto the foods to be frozen within a freezing chamber;
- (b) a filter having an outer cylinder and an inner cylinder with a number of small filtering holes therearound, said outer cylinder being provided with an overflow pipe and said inner cylinder being provided with an inlet port such

- that the freezing liquid may be fed from said pool into the inner cylinder;
- (c) a tank designed to store the freezing liquid overflowing from said overflow pipe of said filter and to cool such freezing liquid;
- (d) means to convey the freezing liquid in store in said tank into said spraying nozzles within said freezing chamber by means of a pump; and



- (e) a purifier comprising a heating means to coagulate thermosetting substance contained in the freezing liquid flowing out from said tank; a filtering means to separate the coagulated substance from the freezing liquid; a deodorizing means to deodorize evil-smelling of the freezing liquid filtered by said filtering means; a feeder means designed to convey the deodorized freezing liquid back into said tank.

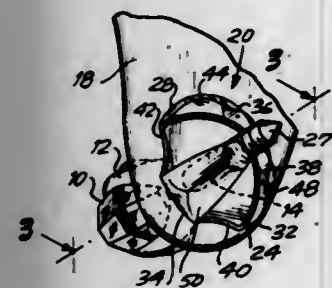
4,245,484 EARRING

Alvin Block, Bedford, N.Y., assignor to Intimate Jewels Inc., Katonah, N.Y.

Continuation-in-part of Ser. No. 908,059, May 22, 1978, Pat. No. 4,170,118, and a continuation-in-part of Ser. No. 32,652, Apr. 23, 1979. This application Sep. 10, 1979, Ser. No. 73,625 Int. Cl.³ A44C 7/00

U.S. Cl. 63—12

8 Claims



1. An earring for pierced ears which comprises an ornament in a setting, a rectilinear cylindrical post extending from said ornament setting, at least a portion of the outer surface of said post having a helical threading, and a clutch, all of the elements of said clutch having a substantially uniform and equal thickness, said clutch having a central concave base portion having a circular central opening and an outer perimeter defined by a plurality of alternate outwardly curving and inwardly curving arc portions aligned along a circumference, and a plurality of spaced-apart curved springy fingers, said curved springy fingers extending radially from rounded convex terminal tips defining a circular opening, to a curved attachment to the substantially circular outer perimeter of said base portion, each of said curved attachments being at one of said outwardly curving arc portions, so that said clutch is substantially conical, each of said fingers having a central longitudinal ridge along at least a portion of the length of the finger, so that each finger has two opposed lateral faces which are not coplanar, said clutch being engageable by said post by extending said post axially through the central opening in said base portion and then through the opening defined by the rounded terminal tips of said fingers, whereby the tips of said fingers pass over the

convolutions of the threading, and so that said clutch cannot be disengaged from said post by reverse axial movement but may be disengaged from said post only by rotating said clutch to slide the tips of said fingers along the convolutions of the helical threading of said post, whereby said clutch is unscrewed off of said post, the circular central opening and the substantially circular perimeter of the base portion of said clutch being concentric, and the circular central opening defined by the rounded terminal tips of said fingers being coaxial with the circular central opening of the base portion of said clutch.

4,245,485 FINGER RING GUARD

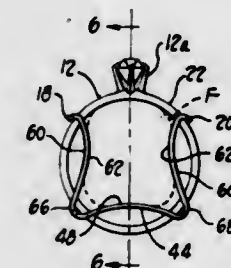
Robert N. Bushong, 506 W. O'Connor, Lima, Ohio 45801

Filed May 31, 1979, Ser. No. 44,094

Int. Cl.³ A44C 9/02

U.S. Cl. 63—15.6

12 Claims



1. A finger ring guard comprising resilient structure defining spaced apart end portions, said structure extending circumferentially about a central axis of the ring through an angle substantially greater than 180° and ring engaging elements disposed respectively at said end portions along the outer periphery of the ring and biased radially inwardly toward engagement with the ring outer periphery by said resilient structure, said ring engaging elements slidably engageable with the ring outer periphery so that said ring guard is slidable into position on the ring in a direction substantially perpendicular to the central axis, said resilient structure supporting at least a finger engaging surface disposed radially inwardly from the ring periphery.

4,245,486 RETRACTABLE CHARM DEVICE

Hajime Matsumoto, Nagareyama, and Yoichi Abe, Ohshima-Hishimachi, both of Japan, assignors to Toybox Corporation, Japan

Filed May 4, 1979, Ser. No. 35,830

Claims priority, application Japan, Dec. 21, 1978, 53-177240[U]

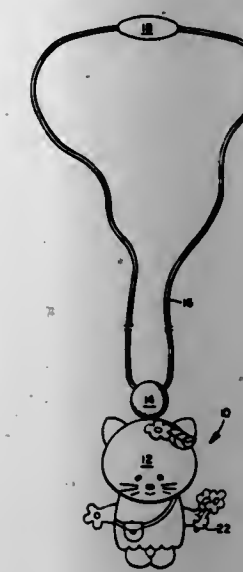
Int. Cl.³ A63H 11/04

U.S. Cl. 63—23

8 Claims

1. A retractable charm device comprising: a body, movable appendages extending from said body, mechanical mechanism contained within said body for effecting movement of said appendages, an energization cord which can be withdrawn from said body to effect operation of said mechanical mechanism, said mechanical mechanism including a spring which is wound up when the energization cord is withdrawn from said body, additional mechanism including a take up spool for effecting take up of said cord when it is released relative to the body, said mechanical mechanism including a one-way drive arrangement for permitting disengagement of parts of said mechanism from the rest thereof during energizing of the spring of the device whereby when the cord is being withdrawn from said body disengagement of the one-way drive arrangement will permit the spring to be wound up without operation of the rest of the mechanism and yet will permit driving of the rest of the mechanism when the cord is released and the spring provides the drive for the operation of the

device, and said one-way drive arrangement comprising a plurality of gears, at least one pinion and gear mounted upon



an axle, the ends of said axle supported in angular slots in each of a pair of support panels mounted in said body to function as the one-way drive arrangement.

4,245,487 METHOD AND APPARATUS FOR KNITTING SLIVER LOOP KNIT FABRIC

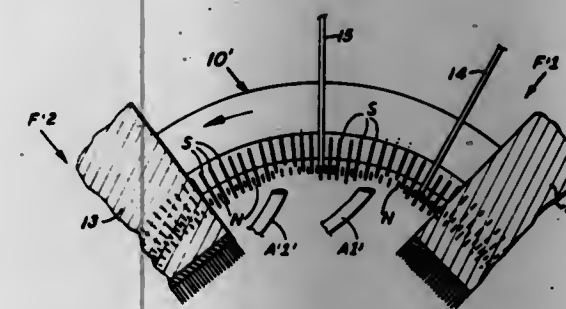
Rudolph S. Schaab, Rte. 2, Lakeview Rd., Caryville, Tenn. 37714, and John C. Harralson, 7501 S. Whispering Oak, Powell, Tenn. 37849

Division of Ser. No. 908,162, May 22, 1978, which is a continuation-in-part of Ser. No. 788,733, Apr. 19, 1977, abandoned. This application Jun. 6, 1979, Ser. No. 45,943

Int. Cl.³ D04B 9/14, 9/16

U.S. Cl. 66—9 B

21 Claims



1. In a high pile fabric knitting machine having a plurality of sliver and yarn feeding stations and a circle of alternating latch needles and sinkers for forming sliver fibers and yarn into knitted fabric having course-wise and wale-wise extending stitches, the improvement comprising fiber manipulating means for incorporating each of plural tufts of sliver fibers into plural courses and plural wales during knitting, whereby said sliver fibers extend both course-wise and wale-wise of the fabric to provide a sliver loop knit fabric, said fiber manipulating means comprising:

- the needles,
- sinkers adapted to be advanced relative to the needle circle to push sliver fibers inwardly of the needle circle and
- pneumatic means for directing compressed air in the direction of the needles to blow the sliver fibers outwardly of the needle circle and downwardly onto the tops of the sinkers,
- said pneumatic means comprising at least one air jet disposed intermediate adjacent sliver and yarn feeding stations, each said air jet being located internally of and adjacent to the needle circle at a location proximate to and

- trailing a position on the needle circle where the needles reach cast-off level,
- (e) each said air jet being disposed to blow the sliver fibers diagonally outward at an angle relative to the needle circle sufficient to cause the outwardly blown fibers to traverse at least the sinker next succeeding each needle.

4,245,488 USE OF MOTOR POWER CONTROL CIRCUIT LOSSES IN A CLOTHES WASHING MACHINE

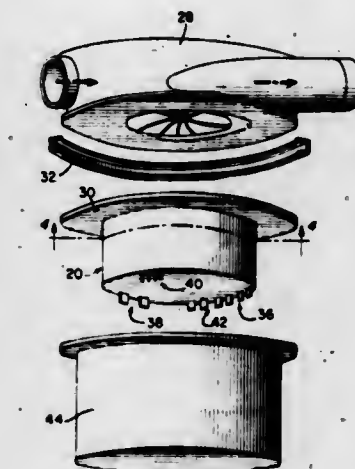
Robert P. Alley, Manlius, N.Y., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 4, 1980, Ser. No. 109,584

Int. Cl.³ D06F 39/04

U.S. Cl. 68—12 R

11 Claims



1. A laundry machine for cleaning clothes and the like using liquid, said machine comprising:
- an agitator;
- an electric motor for driving said agitator;
- motor power control circuitry including semiconductor devices for controlling energization of said motor, said circuitry generating heat as a result of circuit losses; and
- heat transfer structure for transferring heat generated by said circuitry to the washing liquid.

4,245,489 KNURLING TOOL

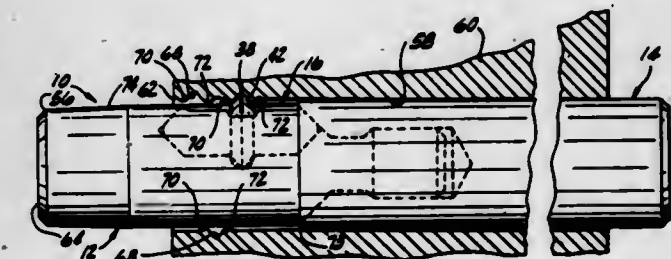
Morton B. Estes, and Charles S. Korn, both of St. Louis, Mo., assignors to Sunnen Products Company, St. Louis, Mo.

Filed Feb. 27, 1979, Ser. No. 15,706

Int. Cl.³ B21B 17/04

U.S. Cl. 72—123

10 Claims



1. A tool for knurling the surface of a bore comprising a first elongated member having opposite ends and a bore extending into said member from one end thereof, said one end including a reduced diameter male threaded portion, said bore being spaced from the axis of the member so that at least a part of the bore intersects the side of the member, said bore terminating in an annularly tapered end portion forming a socket in said first elongated member and an enlarged bore portion at a location intermediate the ends thereof, an elongated roller member having tapered opposite end portions and an annular enlarged diameter portion at an intermediate location, one of said tapered end portions being engageable with the tapered bore end

portion and being retained thereby in the bore, said enlarged diameter roller portion having an annular tapered surface on at least one side thereof, said roller being positioned in the bore with the enlarged portion thereof positioned in the enlarged bore portion, and an elongated guide member having a threaded bore extending therein from one end and an annular tapered end surface outwardly of said bore, said threaded bore being cooperatively engageable with the male threaded portion on the first elongated member and threadably movable thereon to a position where the tapered end surface thereon traps and retains the roller member in the bore, the diameter of the guide member being larger than the diameter of the first member.

4,245,490

THIN ROLLED STEEL PLATE HAVING UNEQUAL THICKNESS

Ichiro Kokubo, Kakogawa; Seiji Ban, Hyogo; Kensaburo Takisawa; Yuzji Koyama, both of Kobe; Junkiti Kobayashi, Kakogawa, and Choei Ueda, Akashi, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

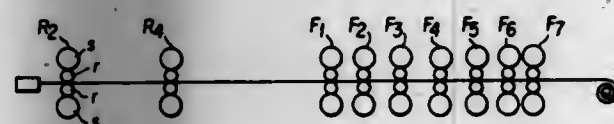
Filed Mar. 8, 1979, Ser. No. 18,764

Claims priority, application Japan, Mar. 8, 1978, 53-26805

Int. Cl.³ B21B 1/00, 1/22

U.S. Cl. 72-234

3 Claims



2. A method of producing a thin rolled steel plate having unequal thickness and a thickness ratio of a central portion to edge portions of at least 1.1 and comprising shaping a slab in a mill having concave drum-shaped roughing rolls and finishing rolls, said method including the steps of shaping said plate so as to have a thickness ratio at a central portion to edge portions of at least 1.1 during the step of roughing rolling and/or the first half of the step of hot finishing rolling, and shaping said rolled slab to have a reduced thickness of a similar figure in subsequent steps of the second half of the hot finishing rolling and cold rolling while substantially maintaining said thickness ratio.

4,245,491

METHOD AND DEVICE FOR PRODUCING HOLLOW ARTICLES HAVING FLANGES

Kazuyoshi Kondo, Okazaki, and Yoshiaki Nakamura, Tsu, both of Japan, assignors to Kabushiki Kaisha Wako, Shizuoka, Japan

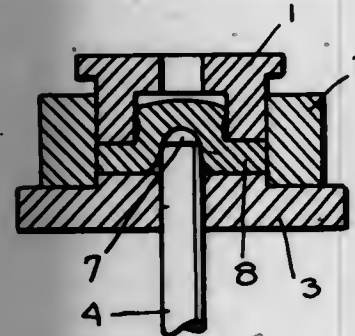
Filed Oct. 20, 1977, Ser. No. 843,886

Claims priority, application Japan, Oct. 21, 1976, 51-126553

Int. Cl.³ B21C 23/00; B21D 31/00, 53/26

U.S. Cl. 72-254

4 Claims



1. A method for producing a topless hat-shaped hollow article having a flange comprising the steps of: arranging in a mutually opposed relation a first tool member provided with a through hole having an inner contour

corresponding to the outer contour of the hollow main part of the hollow article and a second tool member carrying slidably a mandrel having an outer contour corresponding to the inner contour of the internal hole of the hollow article, thereby forming a vertically compressible space therebetween to provide an inner contour corresponding to the outer contour of the flange part of the article;

said first tool member being further provided with a die hole at the end of said through hole remote from the second tool member to operate cooperatively with the mandrel; inserting in said space a material of a planar shape and of a size equal to or slightly smaller than the inner contour of said space;

pressing the two members together so that the flange part of the article is press-formed out of the peripheral part of the material, the press-forming of the peripheral part causing a flow of material into said through hole of the first tool member thereby elevating the surface of the material in said through hole and forming a recess in said elevated part;

simultaneously projecting the mandrel into said recess so as to form the hollow main part of the article in hat shape; and

further projecting the mandrel so that the top of the hat-shaped part is punched between the mandrel and the die hole thereby forming a through hole in the article.

4,245,492

HYDRAULIC PNEUMATIC SYNCHRONIZING SYSTEM FOR COUNTER-BLOW IMPACT FORGING HAMMERS

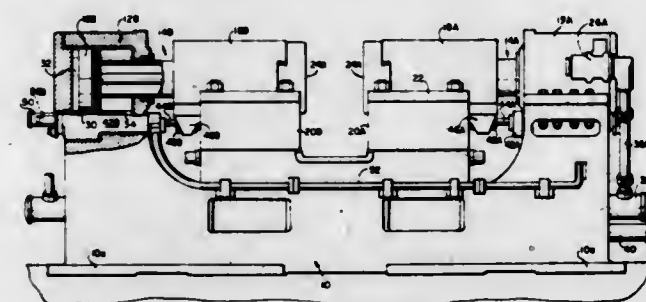
Eugene C. Clarke, Jr., and Charles W. Frame, both of Chambersburg, Pa., assignors to Chambersburg Engineering Company, Chambersburg, Pa.

Filed Jan. 22, 1979, Ser. No. 5,350

Int. Cl.³ B21J 7/34

U.S. Cl. 72-407

21 Claims



1. In a counter-blow type of impact forging hammer having a common support frame, a pair of impellers, means supporting, driving and guiding said impellers along predetermined aligned paths to impact, including a pair of drive pistons and connection means connecting each piston to one of the impellers and a pair of opposed aligned drive cylinders supported on said support frame and each having inlet and exhaust ports in the same end of each of said drive cylinders positioned to permit drive of the pistons by compressible fluid, high pressure compressible fluid supply means and conduit means connecting the compressible fluid supply to an inlet port of each of the drive cylinders,

impact force regulating valve and control means for the respective conduit means controlling the flow of the compressible fluid into the drive cylinders, additional control means regulating the exhaust fluid from each drive cylinder through the exhaust port to permit the drive piston and its associated impeller to be withdrawn from impact,

a relatively lower pressure fluid bias supply to another port in the opposite end from the inlet and exhaust ports, an improved synchronizing system comprising:

a pair of stabilizing cylinders supported on the support frame generally parallel to the drive cylinders, stabilizing piston means within the stabilizing cylinders, a connection between each stabilizing piston and some part of the moving structure attached to the impeller, fluid flow lines cross-connected between said stabilizing cylinders, including a connection between the near-impeller end of each stabilizing cylinder and the remote end of the other stabilizing cylinder, and incompressible fluid within an essentially filling the stabilizing cylinders and cross-connected lines whereby the fluid within the stabilizing cylinders will tend to resist any tendency for one piston and its connected impeller to move ahead of the other.

4,245,493

IMPACT PRESS

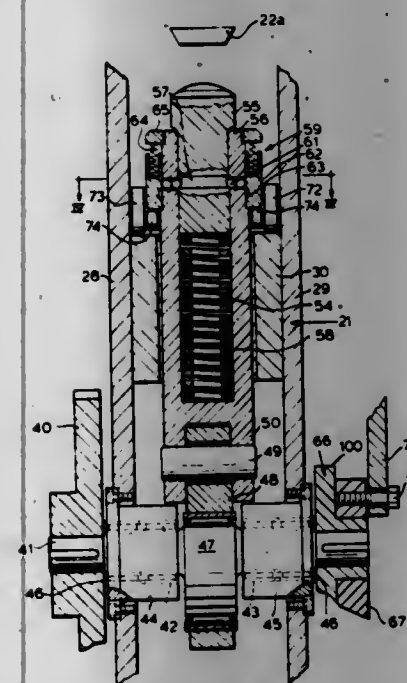
Lennart J. Lindell, 1859 Park Ave., Sycamore, Ill. 60178

Filed Feb. 22, 1979, Ser. No. 14,093

Int. Cl.³ B21J 7/20

U.S. Cl. 72-436

22 Claims



1. An impact press, comprising in combination: (a) a frame adapted to support a tooling assembly for modifying a workpiece; (b) a reciprocally driven sleeve slidably guided on said frame for movement toward and away from the tooling assembly; (c) a ram slidable in and guided only by said sleeve between a retracted position with respect to said sleeve and an extended position of impact with a portion of the tooling assembly; (d) means carried on said sleeve and extending therethrough to said ram for releasably retaining said ram in said retracted position; and (e) power driven means carried on said frame for releasing said retaining means at a predetermined point during the reciprocation of said sleeve toward the tooling assembly.

4,245,494

INLET SYSTEM FOR DIRECT GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC ANALYSIS OF FOOD VOLATILES

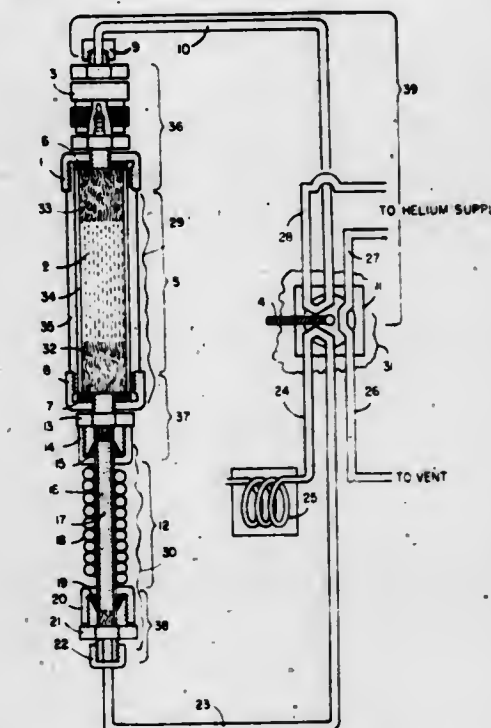
Michael G. Legendre, and Gordon S. Fisher, both of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,507

Int. Cl.³ G01N 31/08

U.S. Cl. 73-23.1

17 Claims



1. An apparatus for analyzing volatile components from raw or processed food products using either direct gas chromatography or combined direct gas chromatography and mass spectrometry comprising in combination the following:

- (a) an inlet assembly containing a sample, said assembly designed to remove volatiles from said sample, and said volatiles to subsequently be analyzed;
- (b) a helium supply assembly to supply helium carrier gas to said inlet assembly via an upper inlet connecting assembly, said carrier gas to transport the volatiles from the inlet assembly to and through a condenser assembly;
- (c) said condenser assembly affixed to the lower end of the inlet assembly by means of a lower inlet connecting assembly, said condenser assembly used to condense the absorb sample moisture from the volatiles thus rendering the volatiles moisture-free;
- (d) a means for directing sample volatiles from said condenser assembly to a gas chromatographic column, said sample volatile directing means affixed on its intake end to the lower or outlet end of said condenser assembly via a lower condenser connecting assembly and on the exhaust end to a gas chromatographic column.

4,245,495

NEEDLE-TYPE COLLOID OSMOMETER

Yoshihiro Kakiuchi, and Takashi Arai, both of Sapporo, Japan, assignors to Hokkaido University, Sapporo, Japan

Filed Sep. 15, 1978, Ser. No. 943,258

Claims priority, application Japan, Dec. 27, 1977, 52-159883

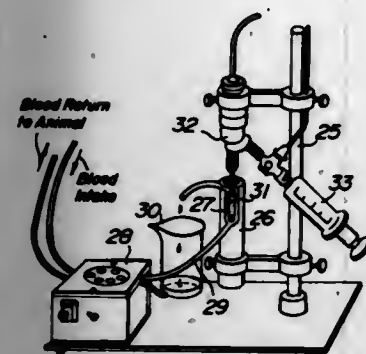
Int. Cl.² G01N 13/04

U.S. Cl. 73-643

4 Claims

1. A needle-type colloid osmometer comprising a hollow needle body constituting at least a part of a pressure sensing chamber filled with a standard solution and having at least one

hole at its outer wall, a cylindrical semipermeable membrane fitting said needle body therein so as to seal at least said hole,



and a sampling chamber receiving said needle body with said membrane and filled with a sample.

4,245,496

PORTABLE MATERIAL HARDNESS TESTER

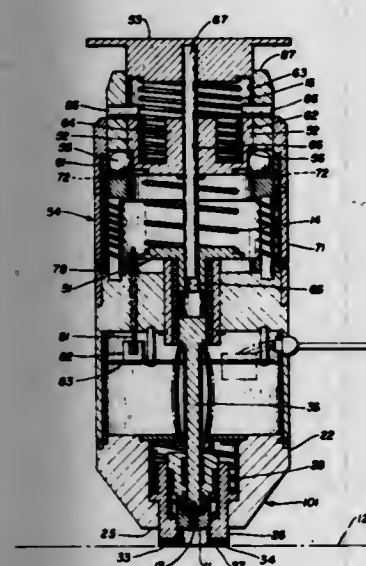
Fred Napetschnig, 120 Mariner Green Ct., Corte Madera, Calif. 94925

Filed Jul. 13, 1979, Ser. No. 57,285

Int. Cl.³ G01N 3/44

U.S. Cl. 73—83

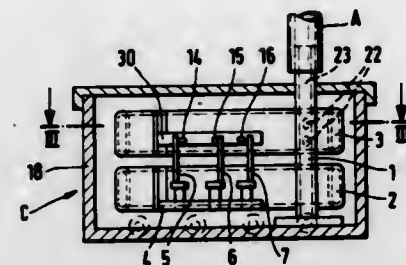
17 Claims



15. A material hardness tester comprising:

- a surface sensing member yieldably mounted for engagement with the surface of material to be tested;
- a penetrator movably mounted adjacent said member for engagement with said surface for joint contact with said surface;
- a first spring connected to said penetrator and providing a first predetermined surface penetrating force thereon;
- a second spring and means storing energy therein connected to place a second and larger predetermined surface penetrating force on said penetrator;
- means sensing with respect to said member the differential movement of said penetrator in response to said first and second forces and generating a first electric signal as a function of said differential movement;
- means sensing a variation from norm of the magnitude of said first force and generating a second electric signal; and
- means translating said first and second electric signals into a force compensated hardness indication.

4,245,497
MONITORING AND REMOTE-INDICATOR
APPARATUS FOR VACUUM-GENERATING INTERNAL
COMBUSTION ENGINES
Anton Reissmüller, Failenschmidstrasse 28, 7320 Göppingen-Jebenhausen, Fed. Rep. of Germany
Filed Apr. 13, 1979, Ser. No. 29,783
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816394
Int. Cl.³ G01M 15/00; G01L 7/04
U.S. Cl. 73—115 12 Claims



1. Apparatus for the continuous monitoring and remote indication of the prevailing operating condition of an internal combustion engine, serving preferably as a drive for motor vehicles, on the basis of the vacuum pressure occurring in the intake manifold, comprising in combination a common carrier, two Bourdon tubes constituting pressure measuring members, said Bourdon tubes being fastened each with one end thereof fixedly on said common carrier, one of said two Bourdon tubes is completely closed and is adapted thereby to be influenced only by outside air pressure, the other of said two Bourdon tubes communicating with the intake manifold of the internal combustion engine, a first carrier body mounted at the free end of said one Bourdon tube which is influenced by the outside air pressure, a plurality of contact elements mounted on said first carrier body, indicator means, electrical lines connecting said contact elements with said indicator means, a second carrier body mounted on the free end of said other Bourdon tube which communicates with said intake manifold of the internal combustion engine, a plurality of counter contact elements mounted on said second carrier body, said counter contact elements being engageable with said first-mentioned contact elements and equal in number to that of said first mentioned contact elements, said counter contact elements including two outer of said counter contact elements being connected comparatively rigidly with said free end of said other Bourdon tube via said second carrier body, and at least one middle of said counter contact elements is slightly elastically resiliently formed.

4,245,498

WELL SURVEYING INSTRUMENT SENSOR

Raymond S. Poquette, Jr., Glen Ridge, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Dec. 6, 1978, Ser. No. 966,922

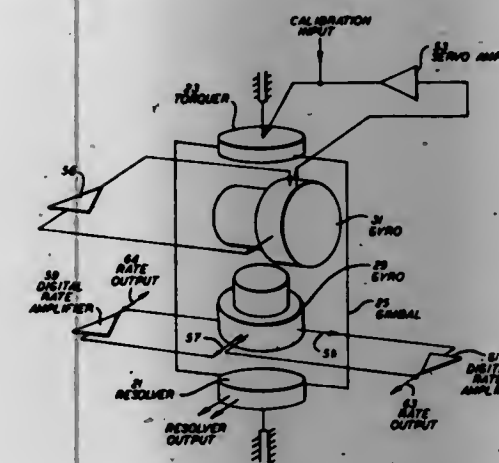
Int. Cl.³ E21B 47/022

U.S. Cl. 73—151

9 Claims

1. A surveying instrument sensor comprising:
 - (a) a sealed casing comprising first and second sections of pipe of a size permitting it to be lowered into a well pipe or the like containing within said first section:
 - (i) a gimbal supported for rotation within said casing;
 - (ii) a torquer coupled to rotate said gimbal;
 - (iii) a first two-axis flexure suspended gyro supported on said gimbal with its spin axis perpendicular to the axis of

- said gimbal and one of its sensitive axes aligned with the axis of said gimbal;
- (iv) a second two-axis flexure suspended gyro supported on said gimbal with its spin axis perpendicular to the axis of said gimbal and one of its sensitive axes aligned with the axis of said gimbal;
- (v) means for coupling the output of said first gyro to said torquer to form a gimbal stabilized loop;
- (vi) means for coupling the outputs and torquing inputs of said second gyro into rate capture loops;



- (vii) means for obtaining from said rate captured loops rate output signals; and said second section of pipe having therein electronic circuit boards;
- (b) a slip ring/brush block mounted respectively to said gimbal and said casing for coupling signals to and from said torquer and said gyros and said circuit boards; and
- (c) means for connecting a cable to an end of said casing to remotely supply power thereto and receive signals therefrom as said casing is lowered into a well pipe or the like.

4,245,499

APPARATUS FOR THE CONTROLLED SAMPLING OF RAIN WATER

Van Dy Nguyen, Jülich, and Pavel Valenta, Aachen, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

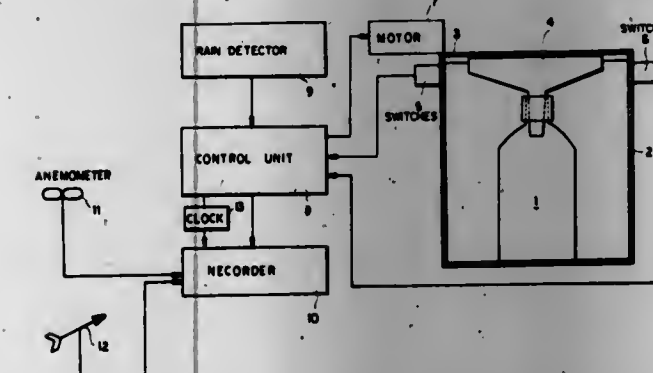
Filed Jul. 19, 1979, Ser. No. 59,122

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831840

Int. Cl.³ G01W 1/02, 1/14; G01D 9/20

U.S. Cl. 73—171

1 Claim



1. An apparatus for the controlled sampling of rain comprising:
 - a sampling vessel having an upwardly open mouth adapted to receive rain drops;
 - a cover disposed so as to be shiftable between a first position closing said vessel and a second position wherein said vessel is open to receive rain;

- first and second signalling means on said vessel to signal when each of said positions is reached;
- a motor connected to said cover and electrically energizable by signal receiving means responsive to said signalling means so as to displace said cover between said first and second positions;
- a rain detector responsive to the onset and termination of a rain phase and exposed to the atmosphere for producing at least one signal upon the onset of rain and upon the termination of a rain phase;
- circuitry between said detector and said motor responsive to said signal for energizing said motor at the onset of a rain phase and closing said cover at the conclusion of a rain phase;
- a recorder connected to said circuitry and placed in operation upon the onset of said rain phase;
- clock means for registering the time of onset of said rain phase and of termination thereof, said clock means being connected to said circuitry;
- a wind-direction sensor connected to said recorder for recording thereon the wind direction upon the onset of said rain phase; and
- a wind-speed sensor connected to said recorder for recording thereon the wind speed upon the onset of said rain phase, said recorder being two-channel recorder recording the wind speed and wind direction as a function of time of collection of rain by said vessel.

4,245,500

SENSOR FOR DETERMINING HEAT FLUX THROUGH A SOLID MEDIUM

Siegfried Malang, Linkeheim, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich GmbH, Karlsruhe, Fed. Rep. of Germany

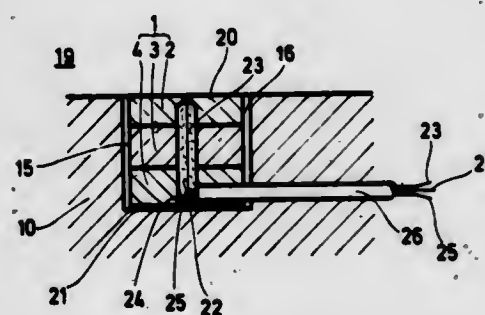
Filed Dec. 29, 1978, Ser. No. 974,498

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758994

Int. Cl.³ G01K 17/00

U.S. Cl. 73—190 H

9 Claims



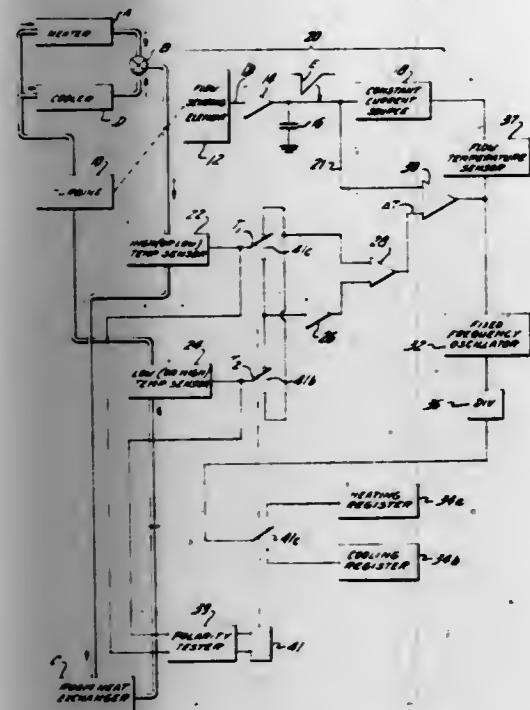
1. A measuring sensor for use in determination of the heat flux through a solid medium according to the method in which two thermoelements are arranged at a defined distance and a temperature gradient of the medium is measured from which the heat flux is determined, said sensor comprising: a body shaped to be fitted into an opening provided in the medium to be penetrated by the heat flux through the medium and composed of materials so selected that the integrated coefficient of thermal conductivity of said body is substantially equal to the coefficient of thermal conductivity of a volume of said medium having dimensions corresponding to those of said opening, said body including components of two different thermoelectric materials identical to said selected materials of said body and defining at least two spaced thermoelectrically effective contact points; and signal leads associated with said contact points and spaced apart in the direction of the heat flux; and wherein the exterior lateral surface of said body is insulated from the medium.

4,245,501

SELECTIVE HEATING AND COOLING ENERGY METER
Murray F. Feller, Dunnellon, Fla., assignor to Wilgood Corporation, Jacksonville, Fla.Filed Nov. 8, 1978, Ser. No. 958,701
Int. Cl.³ G01K 17/16

U.S. Cl. 73-193 R

7 Claims



1. Apparatus for metering the heating energy and the cooling energy in fluid supplied by heating and cooling equipment from time to time to a heat exchanger, including a heating register and a cooling register, common monitoring means including (a) a first fluid temperature sensor for providing output that represents the temperature of the fluid supplied to the heating and cooling equipment; (b) a second fluid temperature sensor for providing output that represents the temperature of the fluid supplied to the heat exchanger; (c) flow-metering means for providing output that represents the quantity of fluid supplied to the heat exchanger; and (d) means for deriving the product of the output of said flow-metering means and the difference between the outputs of said fluid temperature sensors, and output switching means for delivering the output of said common monitoring means selectively to said heating register and said cooling register.

4,245,502

APPARATUS FOR MEASURING THE VELOCITY OF GASES

Kurt Eiermann, Pfungstadt, Fed. Rep. of Germany, and Franz Kolb, deceased, late of Hanau, Fed. Rep. of Germany (by Elizabeth Kolb, executrix), assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,572

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1978, 2804850

Int. Cl.³ G01F 1/68

U.S. Cl. 73-204

13 Claims

1. In an apparatus for the measurement of the velocity of flow of a gas in a gas stream, in which:
a hot wire anemometer is provided, which includes:
two temperature-dependent electrical resistance members and two temperature-independent resistance members, the two temperature-independent resistance members being adapted to be disposed in said gas stream, means electrically connecting the four resistance members in a measuring bridge, the electrical resistances characteristic of the four resistance members being such that when a bridge supply

current is provided to the measuring bridge, a majority flows over the two temperature-dependent resistance members and a smaller remainder flows over the two temperature-independent resistance members, which are provided with substantially higher ohmic resistances than the two temperature-dependent resistance members and together function in the measuring bridge as a voltage divider, and

the two temperature-dependent resistance members being characterized by having large temperature coefficients, the improvement wherein:



each temperature-dependent resistance member comprises:
an electrically insulating carrier having a flow-facing side and an opposite flow-diverted side;
a thin layer of electrically conductive metal positioned at least for the most part on only the flow-diverted side of said electrically insulating carrier; and
connector means for electrically connecting the thin layer of electrically conductive metal into said measuring bridge.

4,245,503

THERMAL FLOWMETER

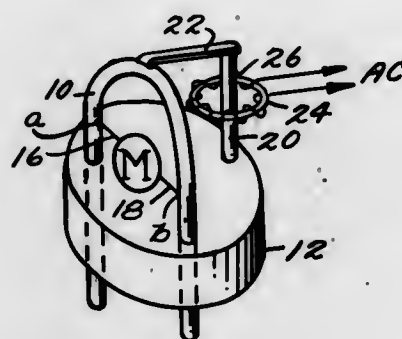
Charles E. Hawk, Newport News, and Danny K. Livingston, Hampton, both of Va., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Aug. 23, 1979, Ser. No. 69,267

Int. Cl.³ G01F 1/68

U.S. Cl. 73-204

5 Claims



1. A fluid flowmeter comprising:
a segment of electrically and thermally conductive conduit adapted to permit a flow of fluid therethrough, said conduit having ends coupled to a heat sink;
a pair of thermoelectric sensors operatively associated with said conduit at spaced points along the segment;
a length of thermally and electrically conductive material extending between said heat sink and a location on said conduit substantially midway between said spaced points, a portion of said conductive material which engages the conduit having a higher electrical resistance than the remainder of said material and said conduit; and
means for generating heating current passing through said conductive material and the conduit whereby heat is concentrated at said conduit location.

4,245,504

ONE-WAY INDEX FOR GAS METERS

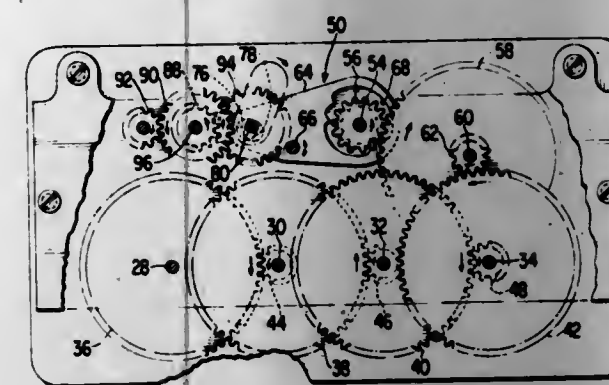
Charles W. Albrecht, Warminster, Pa., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 16, 1979, Ser. No. 30,504

Int. Cl.³ G01F 15/00

U.S. Cl. 73-275

1 Claim



1. In a metering device having an inlet and an outlet, an output shaft, measuring means for rotating said output shaft at a rate and in a direction corresponding to the flow rate and direction, respectively, of a medium flowing between said inlet and said outlet, and means for indicating the total quantity of said medium flowing between said inlet and said outlet, a one-way indexing arrangement connected to drive said indicating means from said measuring means comprising:

a ratchet wheel drivingly coupled to said indicating means;
a member having pawls thereon for engaging said ratchet wheel, said member being pivotally mounted in said metering device for oscillatory motion about a pivot point, said member imparting rotation to said ratchet wheel in a first direction when said member is oscillating and arresting movement of said wheel in a second direction opposite to said first direction when said member is not oscillating; and

drive means coupled to said output shaft for oscillating said member in response to rotation of said output shaft, said drive means comprising a cam affixed to said output shaft and said member being formed with an elongate aperture therein for embracing said cam whereby rotation of said cam in either direction, corresponding to the direction of flow of said medium between said inlet and said outlet, imparts oscillatory motion to said member causing said ratchet wheel to rotate only in said first direction thereof.

4,245,505

INDICATOR OF AMOUNT OF LIQUEFIED GAS IN BOTTLE

William R. Baynes, DuQuoin, Ill., assignor to Turco Manufacturing Co., DuQuoin, Ill.

Filed Jul. 30, 1979, Ser. No. 61,750

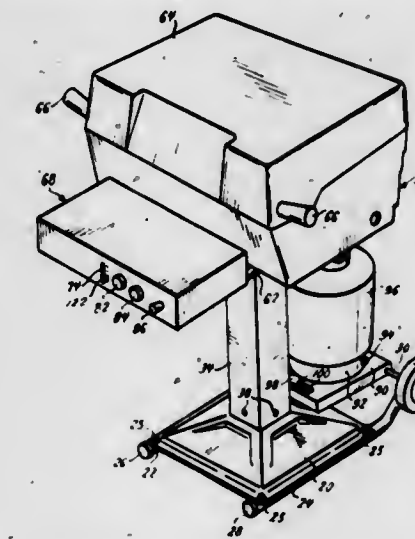
Int. Cl.³ A47J 37/08; G01F 23/20

U.S. Cl. 73-296

12 Claims

1. An indicator which can indicate when the supply of gas in a standard removable bottle of liquefied petroleum gas needs to be replenished and which comprises a movable support on which said bottle of gas can be releasably supported, holding means holding said support for rotation about an axis, said axis being generally horizontal whereby said bottle can move, at least in part, vertically, positioning means which can releasably hold said bottle in position for movement with said support as said support rotates about said axis, said positioning means being adapted to permit ready movement of said bottle into and out of register with said support, said positioning means holding the center of gravity of said bottle a predetermined distance from said axis, said holding means and said support and said positioning means coacting to displace all parts of said bottle far enough away from all nearby objects to permit unobstructed rotation of said bottle with said support as said support rotates about said axis, indicating means that has at least a portion thereof which is displaced from said axis and which is

movable when said support rotates about said axis and which is movable toward and away from an "empty" position that represents an "empty" condition of said bottle, and spring means coacting with, and providing a spring force for, said support to urge said support for rotation in a predetermined direction about said axis, and hence to urge said indicating means for movement toward said "empty" position, said spring means responding to the weight of said bottle and of the gas therein to yield and thereby permit said support to rotate in the opposite direction about said axis and thereby permit said indicating means to move away from said "empty" position, said spring means having an "empty" position indicating stress therein whenever said bottle is held by said positioning means and is "empty" and having a "full" position indicating stress therein whenever said bottle is held by said positioning means and is "full", said spring means applying said spring force at a second predetermined distance from said axis, said spring



means being dimensioned so the product of the horizontal projection of said second predetermined distance and of said spring force, whenever said spring means has said "empty" position indicating stress therein, essentially equals the product of the horizontal projection of the first said predetermined distance and of the "empty" weight of said bottle to displace said indicating means adjacent said "empty" position, said spring means also being dimensioned so the product of said horizontal projection of said second predetermined distance and of said spring force, whenever said spring has said "full" position indicating stress therein, essentially equals the product of said horizontal projection of said first said predetermined distance and of the "full" weight of said bottle to displace said indicating means away from said "empty" position, said holding means preventing accidental separation of said support from said holding means as said bottle is moved into and out of engagement with said positioning means and hence into and out of register with said support.

4,245,506

POROUS MEMBRANE HUMIDITY SENSOR

William H. Meiklejohn, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 19, 1979, Ser. No. 77,115

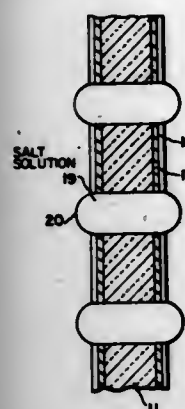
Int. Cl.³ G01R 27/00; G01W 1/11; H01L 49/02

U.S. Cl. 73-336

7 Claims

1. An improved humidity sensor having an impedance which varies with relative humidity comprising:
an insulating porous membrane having a large number of pores extending from one major surface of said membrane to the other;
porous conductive coatings on both major surfaces of said membrane;
hydrophobic films on both conductive coatings; and
a hygroscopic salt solution in said pores which exhibits electrolytic conduction upon applying an alternating voltage between

said conductive coatings;
the radius of said pores being sufficiently small and less than



the radius of the curved said solution surface bulging out beyond said hydrophobic films at 100% relative humidity, that said salt solution does not spill out.

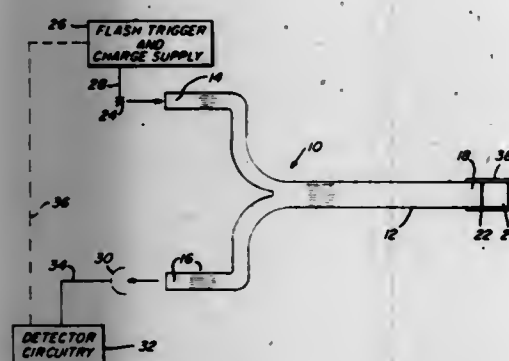
4,245,507

TEMPERATURE PROBE

Thaddeus V. Samulski, 4013 Stilwell St., Pittsburgh, Pa. 15214
Filed Sep. 10, 1979, Ser. No. 73,841
Int. Cl.³ G01K 11/20

U.S. Cl. 73—356

24 Claims



1. A temperature probe adapted to be implanted in a material whose temperature is to be measured, said temperature probe comprising:

- an optical fiber bundle having at least one distinct group of optic fibers for optically conducting light between one end thereof and the other;
- a temperature sensitive element located at one end of said optical fiber bundle, said temperature sensitive element having temperature sensitive luminescent properties and being adapted to be implanted in such material whose temperature is to be measured;
- means located at one of said optical fiber bundle for exciting said temperature sensitive element; and
- light responsive detection means located at the other end of said optical fiber bundle from said temperature sensitive element for detecting light directed from said temperature sensitive element and passed through said optical fiber bundle.

4,245,508

PRESSURE INDICATOR

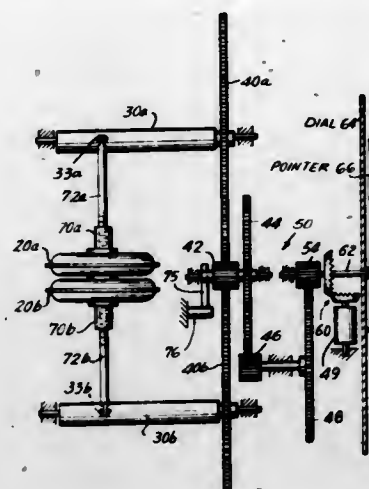
John H. Androsen, Jr., Georgetown, Cayman Islands, assignor to Intercontinental Dynamics Corporation, Englewood, N.J.
Filed Aug. 22, 1979, Ser. No. 68,642
Int. Cl.³ G01L 7/12

U.S. Cl. 73—386

3 Claims

1. A pressure indicator comprising a frame, a pair of rocking shafts each mounted for rotation in said frame, indicating means, gear means coupled to both of said rocking shafts and to said indicating means for additively translating rotations of said rocking shafts into movement of said indicating means, at

least one diaphragm capsule means, two links each rigidly secured at one end to a respective side of said at least one diaphragm capsule means, the two links being capable of axial motion as said at least one diaphragm capsule means expands and contracts but being incapable of pivotal motion relative to said at least one diaphragm capsule means, and means for



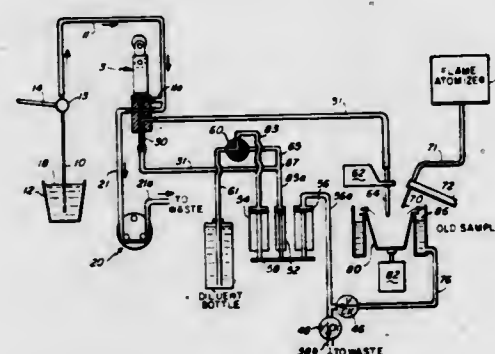
4,245,509

SAMPLING APPARATUS

Dinesh I. Mody, Bedford, Mass.; Carolyn Bergkvist, Plaistow, N.H., and Gustav H. Dreier, Acton, Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.
Filed Mar. 16, 1979, Ser. No. 21,069
Int. Cl.³ G01N 1/14

U.S. Cl. 73—423 A

20 Claims



1. Sampling apparatus comprising means for aspirating a sample serially from a plurality of samples;
- means having fluid communication with said aspirating means and including a valve having two operative positions and mounted within a housing;
- means having fluid communication with said valve and designed for taking in a predetermined amount of a diluent from a diluent source in a predetermined ratio one to the other;
- means for delivering said sample and diluent in said ratio to a mixing means;
- means for delivering a portion of said mixture from said mixing means to an instrument; and
- means for expelling the remainder of said mixture from said mixing means.

4,245,510

PORTABLE ACCELEROMETER

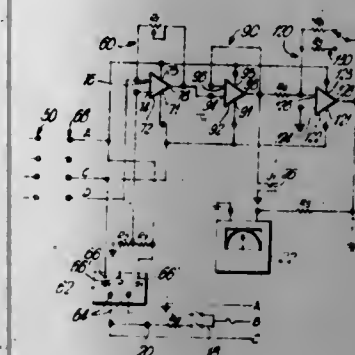
Henry O. Baker, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Apr. 11, 1979, Ser. No. 28,991

Claims priority, application Canada, Jul. 6, 1978, 306930
Int. Cl.³ G01P 15/08

U.S. Cl. 73—517 R

6 Claims



1. A portable accelerometer unit for measuring excursions from a datum due to an applied load, comprising in combination;

- an accelerometer device mounted by suspension in a housing, and operable to generate an output signal in response to displacement from said datum due to the applied load;
- an electrical circuit connectible to said accelerometer device to receive the output signal therefrom, said circuit including at least one operational amplifier stage containing an operational amplifier, the operational amplifier having input terminals and an output terminal; one of said input terminals being connected through a first variable resistance to a power supply, with the other input terminal being connected to the accelerometer to receive the output signal therefrom, the other input terminal having a feedback circuit operatively associated with it, said feedback circuit being controlled by a second variable resistance, said variable resistances being adjustable to zero the accelerometer output due to gravity; and
- an output device connected to said output terminal to provide a readout of said applied load.

4,245,511

ULTRASONIC APPLICATOR FOR ULTRASONIC SCANNING OF BODIES AND METHOD OF USING THE SAME

Richard E. Soldner, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 694,835, Jun. 10, 1976, Pat. No.

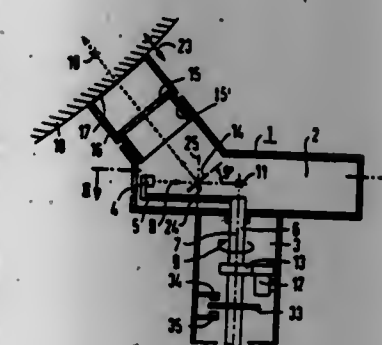
4,177,679. This application Jul. 19, 1979, Ser. No. 58,870

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1975, 2529155

Int. Cl.³ A61B 10/00

U.S. Cl. 73—625

1 Claim



1. An ultrasonic applicator for the ultrasonic scanning of

1007 O.G.—39

bodies, particularly for the purpose of obtaining ultrasonic-echo-sectional images, comprising an ultrasonic-transmitting/receiving system, whose ultrasonic beam is rotatable in one plane by means of a beam-rotating installation such that successive scanning beam paths have successively different directions as the ultrasonic beam is rotated, and a reflector for causing the ultrasonic beam to be deflected into the body to be examined, wherein the improvement comprises the beam-rotating installation being constructed such that the directions of the successive scanning beam paths are all in alignment with a target point outside the body to be scanned, and the reflector (14) being arranged in the radiation path between the ultrasonic-transmitting/receiving system (4) and the target point (11), said reflector (14) being planar and having a reflection surface inclined at an angle (ϕ) to the one plane in which the beam (8) is rotated, such angle (ϕ) deviating from 90° for deflecting the ultrasonic beam to cause the successive scanning beam paths of the deflected beam to converge at an intersection point (19) within the body, the intersection point (19) being common to all the scanning beam paths of the deflected beam, whereby the ultrasonic scan-line-field beyond the common intersection point (19) is the sector-field for the ultrasonic scanning in the body to be examined, and means for predominantly utilizing information from the ultrasonic scan-line-field beyond the common intersection point (19).

4,245,512

FABRIC STRETCH TESTING DEVICE

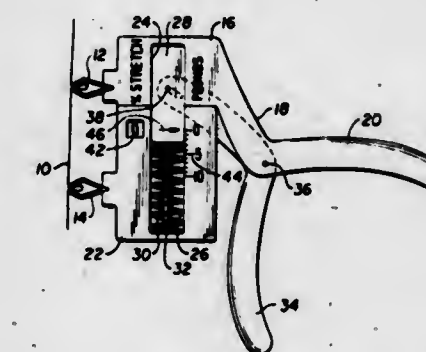
Eugene M. Saunders, Concord, Calif., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed Jun. 18, 1979, Ser. No. 49,153

Int. Cl.³ G01N 3/08

U.S. Cl. 73—789

7 Claims



1. A device for testing the stretchability of a fabric sample comprising

- a first member,
- a first gripper mounted on the first member for engaging the sample,
- a second member, slideably mounted on the first member,
- a second, sample gripper mounted on the second member for engaging the sample,
- a third member,
- a spring connected between the second and third members and,
- means for applying a separating force between the first and third members which force is transmitted through the spring to the second member to cause it to slide relative to the first member and thereby increase the spacing between the first and second grippers, the force applying means being pivoted on the first member, whereby the fabric sample between the first and second grippers is placed in tension.

4,245,513

VARIABLE AREA METER INSERT UNIT

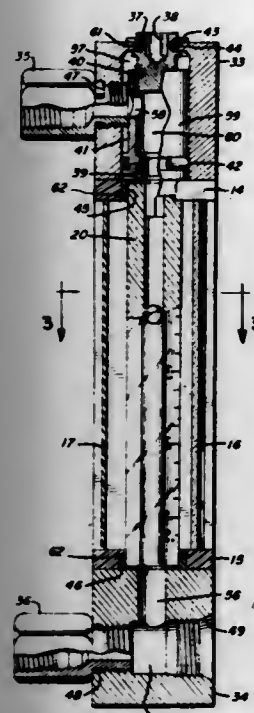
Thomas W. Clements, Ambler, and E. Craig Waters, Lansdale, both of Pa., assignors to Will Ross, Inc., Milwaukee, Wis. Continuation of Ser. No. 841,518, Oct. 12, 1977, abandoned.

This application Feb. 5, 1979, Ser. No. 9,039

Int. Cl.³ G01F 1/22

U.S. Cl. 73—861.55

16 Claims



1. A variable area meter unit comprising: a framework having a top housing and a bottom housing connected by a first pair of side panels; a tube insert unit adapted for insertion between said top and bottom housing and said first pair of side panels; said top housing having a first vertical bore extending substantially its length and a first horizontal bore communicating with said first vertical bore and adapted to connect to a fluid flow line; a sealing spindle slideably moveable with said first vertical bore, said sealing spindle having a second horizontal bore communicating with said first horizontal bore and a second vertical bore extending its entire length and communicating with said second horizontal bore, and said sealing spindle having a flat portion surrounding the opening of said second horizontal bore; means for translationally moving said sealing spindle within said first vertical bore; first sealing means between said sealing spindle and said tube insert; and second sealing means between said bottom housing and said tube insert, said bottom housing having a second vertical bore and a third horizontal bore communicating with said second vertical bore.

4,245,514

TRANSMISSION MECHANISM FOR VEHICLES

Masayoshi Miyahara, and Morimitsu Katayama, both of Sakai, Japan, assignors to Kubota, Ltd., Japan

Filed Mar. 20, 1979, Ser. No. 22,318

Claims priority, application Japan, May 29, 1978, 53-64500

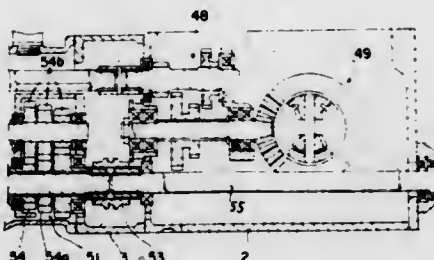
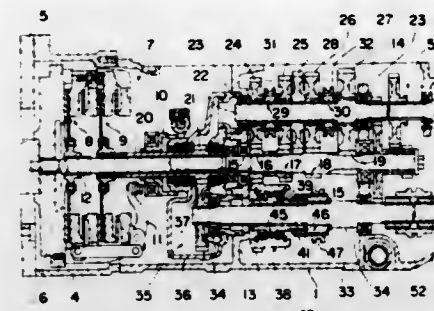
Int. Cl.³ F16H 37/00

U.S. Cl. 74—15.84

6 Claims

1. A transmission mechanism for vehicles comprising: main clutch means having a primary clutch and a secondary clutch adapted to transmit the power of an engine, a primary propeller shaft for primary transmission and a secondary propeller shaft for secondary transmission adapted to be intermittently rotated upon receipt of the engine power by the operation of said main clutch means, a first transmission system for the travelling system adapted

to transmit the transmission power of said primary propeller shaft, a second transmission system adapted to transmit the transmission power of said secondary propeller shaft, and a reduction gearing for interlocking said secondary propeller shaft with said second transmission system; and



characterized by the provision of a transmission unit disposed at the rear side with respect to said reduction gearing on the transmission shaft of said second transmission system, said transmission unit having a uni-directional clutch adapted to transmit the engine power to said primary propeller shaft from said secondary propeller shaft but not to transmit the engine power in the reverse direction.

4,245,515

DEVICE FOR SWITCHING POWER OF ACTIVE TOY

Hirokatsu Iwaya, No. 14-8, Shimane 1-chome, Adachi-ku, Tokyo, Japan

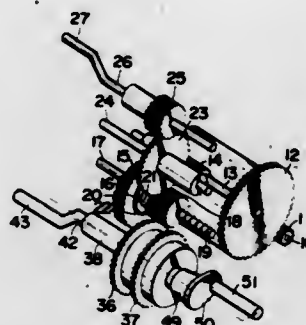
Filed Jan. 9, 1979, Ser. No. 2,241

Claims priority, application Japan, Jun. 15, 1978, 53-72384

Int. Cl.³ F16H 21/16; A63H 11/14; F16H 3/08

U.S. Cl. 74—25

3 Claims



1. A device for switching power of active toy comprising: a pair of drive gears adapted to be driven independently of each other, said drive gears having engaging lugs formed on their opposing inner surfaces for mutual engagement, and crank portions for actuating predetermined acting portions at their opposite outer surfaces; a switching mechanism; and a switching gear adapted to be brought by said switching mechanism into engagement with alternating one of said drive gears; wherein, when said switching gear engages one of said drive gears, the other drive gear is driven by the first-mentioned drive gear through their engaging lugs, at a certain time lag, so that said crank portions of said drive gears may be actuated with a phase differential.

4,245,516

CYCLOIDAL DRIVE

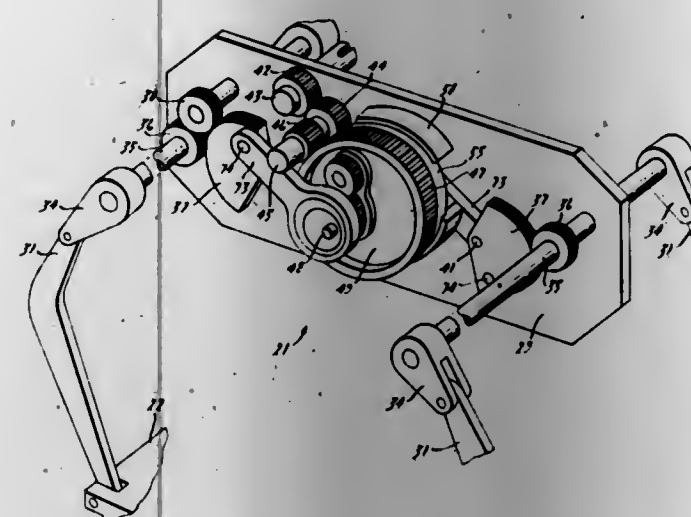
Harry E. Day, Bloomfield Hills, Mich., assignor to Delta Associated Industries Corp., Ferndale, Mich.

Filed Jan. 25, 1979, Ser. No. 51,677

Int. Cl.³ F16H 37/12

U.S. Cl. 74—52

7 Claims



1. A cycloidal drive comprising a fixed internal sun gear, a bull gear having a shaft concentric with said sun gear, an idler gear eccentrically supported for rotation on said bull gear and meshing with said sun gear, a primary eccentric secured to said bull gear, an eccentric gear rotatably supported by said primary eccentric and driven by said idler gear, a secondary eccentric secured to said eccentric gear, and means connecting said secondary eccentric with a driven member.

4,245,517

METHOD AND APPARATUS FOR MEASURING MODULUS OF A PLASTIC POLYMER

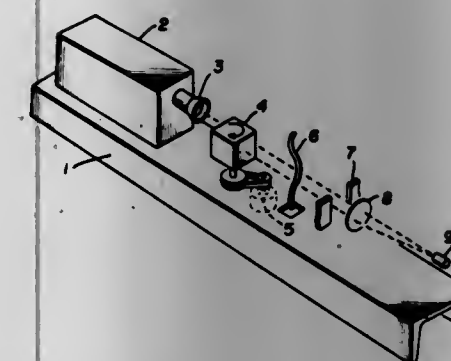
Robert I. Barker, Cuyahoga Falls, Ohio, and Patrick F. Rice, Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 5, 1979, Ser. No. 1,048

Int. Cl.³ G01B 11/04

U.S. Cl. 73—760

5 Claims



1. The method of measuring the modulus of an extrudable material by the steps of: extruding a strand of the material essentially vertically downward through an orifice, measuring the diameter of the strand at either end of a segment of the strand to give top and bottom diameter values, weighing the segment, and dividing the segment weight by the square of the difference between the bottom diameter value and the top diameter value to give a quotient which is representative of modulus.

4,245,518

DEVICE FOR TIGHTENING AN ENDLESS ELEMENT TRAINED OVER DRIVING MEMBERS

Kazuo Toyokuni, Sakai; Junji Miyata, Kyoto; Hiroshi Itatani, and Ryozo Kuroiwa, both of Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

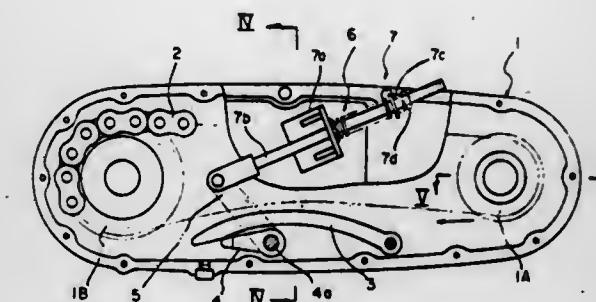
Continuation of Ser. No. 707,005, Jul. 20, 1976, abandoned. This application Sep. 21, 1978, Ser. No. 944,430

Claims priority, application Japan, Oct. 20, 1975, 50-126627

Int. Cl.³ F16H 7/08

U.S. Cl. 474—111

5 Claims



1. A tightening device for a drive transmission comprising, in combination: a housing having a pair of substantially flat side walls disposed in spaced-apart, parallel relationship to define an interior, a pair of sprockets journaled for rotation in said housing interior in a common plane, one of said sprockets comprising a primary driving member and the other sprocket a driven member, an endless sprocket chain including a plurality of chain rollers trained over said sprockets and disposed within said common plane, said sprocket chain having a width slightly less than the distance between said housing side walls and disposed in close spaced-apart relationship therewith, a freely pivotal bow-shaped member pivotally mounted at one end on said housing side walls within said housing interior in underlying relationship with the lower reach of said chain for pivotal movement within said common plane, said bow-shaped member extending from one end in the direction of movement of said chain and having a convex upper surface and a concave lower surface, said bow-shaped member having a width for sliding engagement between said convex upper surface and said chain rollers, a rotatable shaft mounted on one of said housing side walls and extending transversely into said housing interior in parallel relationship to the axis of rotation of said sprockets below said bow-shaped member, said shaft having an end portion extending outwardly from one of said housing side walls, a radially extending arm member on said shaft end portion disposed exteriorly of said housing in spaced-apart relationship with said housing one side wall, and urging means supported on the outer surface of said one housing side wall connected to the outer end of said arm member for rotating said shaft in one direction to yieldingly urge said rocker arm other end into said engagement with said bow-shaped member for tensioning engagement of said bow-shaped member with said chain.

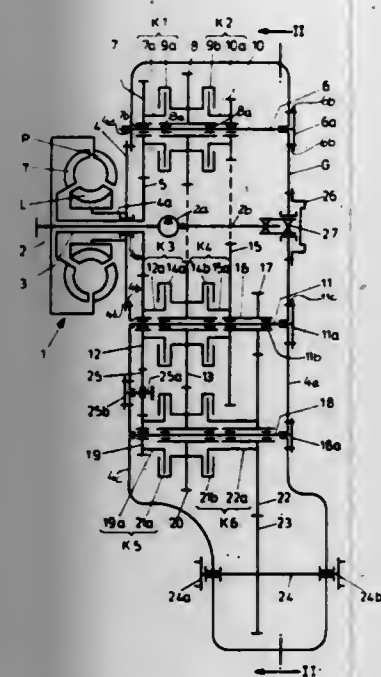
4,245,519

MULTISPEED REVERSIBLE TRANSMISSION SHIFTABLE UNDER LOAD

Werner Herlitzek, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany
Filed Aug. 22, 1977, Ser. No. 826,968
Int. Cl.³ F16H 3/08

U.S. Cl. 74—331

7 Claims



1. A multispeed reversible transmission shiftable under load, comprising:
 - a one-piece transmission housing formed with a window;
 - a plurality of fixed shafts received in said housing and spaced apart therein;
 - respective gear and clutch assemblies rotatably mounted on each of said shafts and having individually actuatable clutches but mutually and continuously meshing gears, said window being dimensioned to permit introduction of the gears and clutches of said assembly into said housing through said window;
 - a cover for said window detachably mountable on said housing;
 - an input shaft journaled on said cover and formed within said housing with a gear meshing with at least one gear of one of said assemblies; and
 - an output shaft journaled in said housing and operatively connected to another gear of one of said assemblies, (.) each of said fixed shafts comprising a flange at one end thereof secured to a wall of said housing; wherein said gears and clutches include:
 - a first gear connected to said input shaft;
 - second and third gears continuously meshing with said first gear and respectively journaled on first and second ones of said fixed shafts;
 - fourth and fifth gears respectively journaled on said first and second fixed shafts;
 - first and second direction-determining clutches disposed between said second and fourth gears and between said third and fifth gears on said first and second fixed shaft and a seventh gear on said second fixed shaft;
 - first and second speed-determining clutches interposed between said fourth and sixth gears and between said fifth and seventh gear on said first and second shafts, respectively and;
 - an eighth gear on said second fixed shaft connected to said seventh gear,
 - said fourth gear meshing with said fifth gear and said sixth gear meshing with said seventh gear.
 - said eighth gear being operatively connected to the output shaft,
 - said second gear, said first direction-determining clutch, said fourth gear, said first speed-determining clutch and said

sixth gear constituting a unitary first assembly adapted to be introduced as a unit through said window, said third gear, said second direction-determining clutch said fifth gear, said second speed-determining clutch and said seventh and eighth gears constituting a second unitary assembly adapted to pass through said window as a unit.

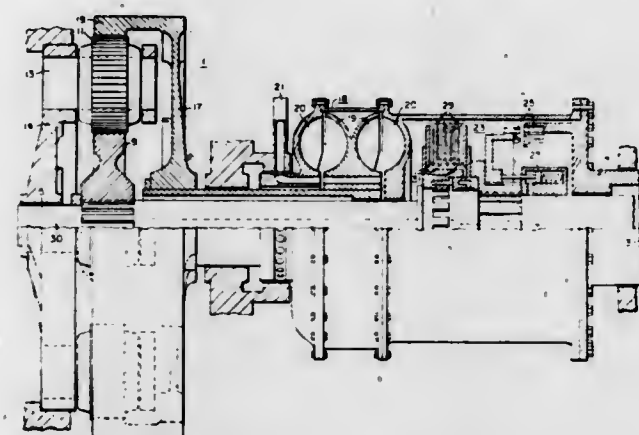
4,245,520

REVERSING APPARATUS

Harold W. Semar, Los Altos, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 21, 1977, Ser. No. 853,369
Int. Cl.³ F16H 3/14

U.S. Cl. 74—377

3 Claims



1. A reversing apparatus for transmitting power from a prime mover to a propeller of a ship, said reversing apparatus comprising
 - a first shaft connected to said prime mover,
 - a second shaft connected to said propeller,
 - a drive gear affixed to said first shaft,
 - at least one idler gear meshing with said drive gear,
 - an internal gear meshing with said idler gear,
 - a forced synchronizing clutch connecting said first shaft and said second shaft in positive engagement,
 - a fluid coupling connecting said internal gear to said second shaft, and
 - a fluid supply for the fluid coupling connecting the internal gear and the second shaft, the fluid supply having a large reservoir which serves as a heat sink for large energy absorption by the fluid coupling,
 - said forced synchronizing clutch and fluid coupling cooperating to drive said propeller in an ahead mode when said forced synchronizing clutch is engaged and in an astern mode when said fluid coupling is engaged.

4,245,521

MANUAL TRANSMISSION SHIFTER FOR OPERATING A TRANSMISSION WITH FLEXIBLE CABLES

Charles Osborn, Spring Lake, Mich., assignor to Grand Haven Stamped Products Company, Grand Haven, Mich.
Filed May 12, 1978, Ser. No. 905,123
Int. Cl.³ G05G 9/16; F16H 57/06

U.S. Cl. 74—476

50 Claims

1. In a shifter for operating a manual transmission with a pair of flexible cables comprising:
 - a gear selecting shift lever;
 - a pivotable shift lever carrier;
 - first and second generally orthogonal axes;
 - a stationary base for mounting the transmission shifter to an automotive vehicle;
 - said shift lever being pivotable relative to said carrier about said first axis;
 - said carrier being pivotable relative to said base about said second axis;
 - means for translating rotation of said shift lever about said first axis to a cable displacement of one of said cables; and

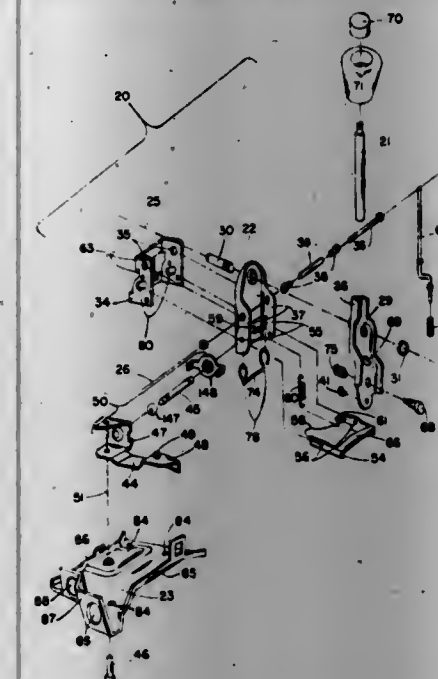
4,245,523

ROCKER ARM

Joseph L. Wherry, Perrysburg, Ohio, assignor to Toledo Stamping & Manufacturing Company, Toledo, Ohio
Continuation-in-part of Ser. No. 775,955, Mar. 9, 1977, Pat. No. 4,132,196, which is a continuation-in-part of Ser. No. 618,951, Oct. 2, 1975, abandoned. This application Aug. 18, 1977, Ser. No. 825,676
Int. Cl.³ G05G 1/00; F16F 1/00

U.S. Cl. 74—579 E

3 Claims



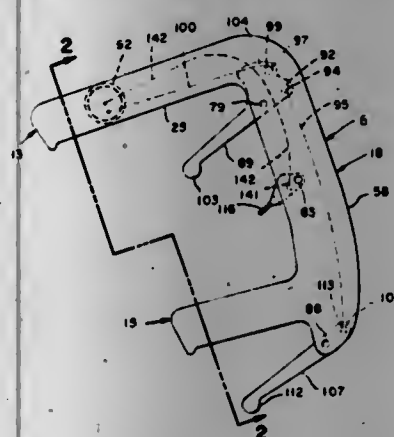
1. A rocker arm comprising a main body having two substantially symmetrical body halves joined by a narrow web symmetrically located between the body halves, said body having a central opening with a bearing surface to be rotatably supported on a rocker arm shaft having an oil supply opening through which oil is supplied under positive pressure, said body terminating in ends on opposite sides of said openings, one of which ends has the web, said one end being formed to provide a structurally-integral socket to receive an end of a push rod, said socket being continuous and seamless at the outer end where the web exists, and having a seam at the inner end formed by the two body halves, the other end of said body being formed with outwardly-extending lower flanges to provide a surface to engage a valve stem, said bearing surface having two peripherally-spaced oil openings therein, said rocker arm body having first enclosed passage means connecting said socket with one of said oil openings, said first passage means comprising a central passage communicating with a central portion of said socket and formed by said body halves and said web, said first passage means further comprising an additional passage communicating with said central passage and with said one oil opening, said body having second passage means which is separate from said first passage means connecting the other of said oil openings with the other end of said body, and said bearing surface having an inwardly-facing arcuate groove extending substantially between said oil openings.

4,245,522

BICYCLE STEERING AND CONTROL MEMBER

Merritt A. Robinson, 475 Fawn Dr., San Anselmo, Calif. 94960
Filed Jan. 13, 1979, Ser. No. 48,271
Int. Cl.³ G05G 11/00; B62K 23/06, 21/12
U.S. Cl. 74—480 R

11 Claims



1. A steering and control member for a bicycle comprising:
 - a. a cross member (2) adapted for connection to a stem member (3); and
 - b. a pair of hand-grip-control members (4) and (5) each formed from at least two molded inside members (7) and (8) and two outside members (9) and (10) joined to one another and said hand-grip-control member including:
 - (1) upper hand grip members (12) and (13) connected to said cross member,
 - (2) lower hand grip members (14) and (15) spaced below said upper hand grip members, and
 - (3) control housing members (17) and (18) connected to said upper and lower hand grip members.

4,245,524

STEERING DIFFERENTIAL

James R. Dammon, West Lafayette, Ind., assignor to Fairfield Manufacturing Company, Lafayette, Ind.
Filed Nov. 8, 1978, Ser. No. 958,907
Int. Cl.³ F16H 1/44

U.S. Cl. 74—710.5

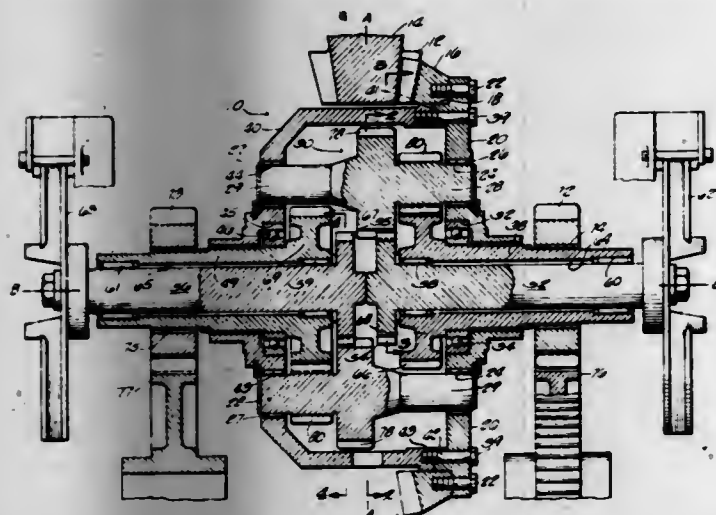
5 Claims

1. A steering differential for a vehicle driven by first and second tracks comprising in combination:
 - a housing located between said tracks and having means thereon permitting said housing to be driven in rotation by a prime mover of said vehicle,
 - first and second control gears coaxially aligned and rotatably mounted within said housing on respective first and second control gear shafts which extend outwardly from said housing in opposite directions to respective locations outwardly of said first and second tracks, said control gears capable of having their rotational speeds controlled independently,
 - first and second drive gears for transmitting drive respectively and independently to said first and second tracks,

said drive gears rotatably mounted within said housing on respective first and second hollow drive gear shafts which respectively ensleeve said first and second control gear shafts and have means associated therewith to respectively drive said first and second tracks,

a first set of cluster gears rotatably mounted within said housing in meshing engagement with said first control gear and said first drive gear, said first cluster gears equally spaced around the pitch diameter of said first control gear on respective first cluster gear shafts,

a second set of cluster gears rotatably mounted within said housing in meshing engagement with said second control gear and said second drive gear, said second cluster gears equally spaced around the pitch diameter of said second control gear on respective second cluster gear shafts,



each of said first and second cluster gears respectively located between and in meshing engagement with two adjacent cluster gears of said second and first sets; and first and second brake means respectively located outwardly of said first and second tracks at the respective outer ends of said first and second tracks at the respective outer ends of said first and second control gear shafts for individually controlling the rotational speeds of said control gears, whereby a variation of the rotational speed of either said control gear or drive gear in engagement with one set of said cluster gears produces rotation of each gear of said first and second set of cluster gears, which results in an opposite variation of the rotation speed of the other said drive gear.

4,245,525

LIMITED SLIP DIFFERENTIAL

Maurice K. LeBegue, Argillite, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Feb. 1, 1978, Ser. No. 874,259

Int. Cl.³ F16H 1/45

U.S. Cl. 74—711

8 Claims

1. A limited slip differential for connecting a driving shaft with a pair of driven shafts comprising,

a rotatable case drivingly connected to the driving shaft, said case having a sidewall forming a chamber with aligned portions extending through said sidewall for receiving the adjacent end portions of the driven shafts,

first and second differential side gears nonrotatably connected to said driven shafts respectively within said case chamber,

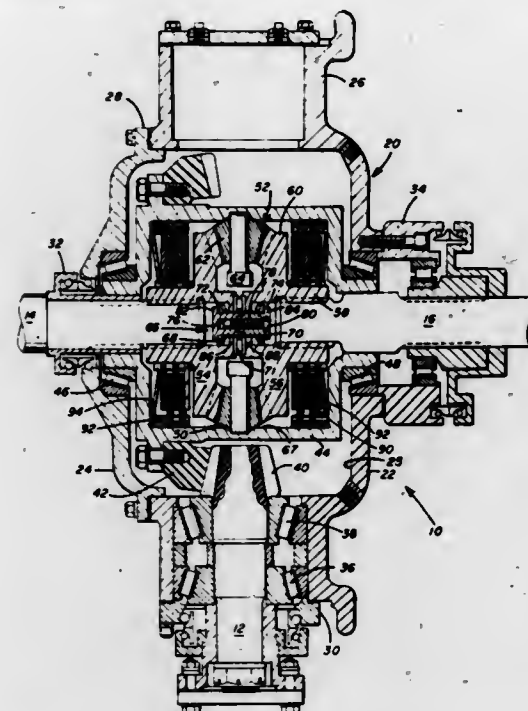
a plurality of spider gears secured to said case for rotation relative thereto and positioned in meshing relation with said first and second differential side gears,

said spider gears being operable to apply equal gear separating forces upon said first and second differential side gears when the torque distribution between said driven shafts is equal,

friction means positioned between said case sidewall and said respective differential side gear for frictionally engaging one of said differential side gears to said case in re-

sponse to an unequal torque distribution between the driven shafts,

rotatable thrust means positioned between said first and second differential side gears for transmitting a thrust force from one of said differential side gears to the other of said differential side gears in response to an imbalance of the gear separating forces applied by said spider gears to compress said friction means, and



said rotatable thrust means being operable in response to an unequal torque distribution and the accompanying axial movement toward said spider gears of one of said differential side gears of the driven shaft having reduced reaction torque to transmit an axial force to the other of said first and second differential side gears and move said respective differential side gear axially and compress said friction means so that the torque of said case is transmitted through said friction means to the differential side gear of the driven shaft having increased reaction torque.

4,245,526

MINING MACHINE HAULAGE TRANSMISSION

Harry J. Fruin, Barnsley, and Paul Greenhough, Cleckheaton, both of England, assignors to Dresser Europe S.A., Brussels, Belgium

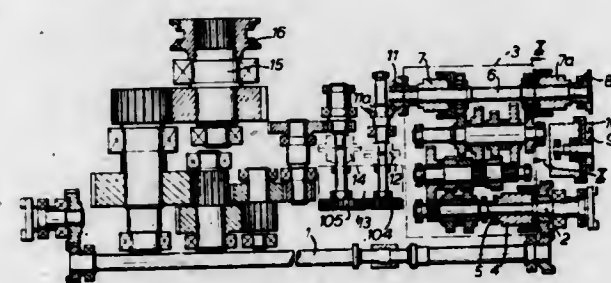
Filed Jun. 2, 1978, Ser. No. 911,878

Claims priority, application United Kingdom, Jun. 2, 1977, 23521/77

Int. Cl.³ B60K 41/18; F16D 71/00

U.S. Cl. 74—856

16 Claims



1. A mining machine haulage transmission including an overload protection arrangement comprising a torque sensing device which is arranged to monitor the torque transmitted, in use, by the transmission by producing electrical signals dependent upon the torque transmitted, decoupling means between the input and output of the transmission, and means responsive to the said electrical signals to decouple the decoupling means when the monitored torque reaches a predetermined threshold.

4,245,527

CONTROL PEDAL ASSEMBLY

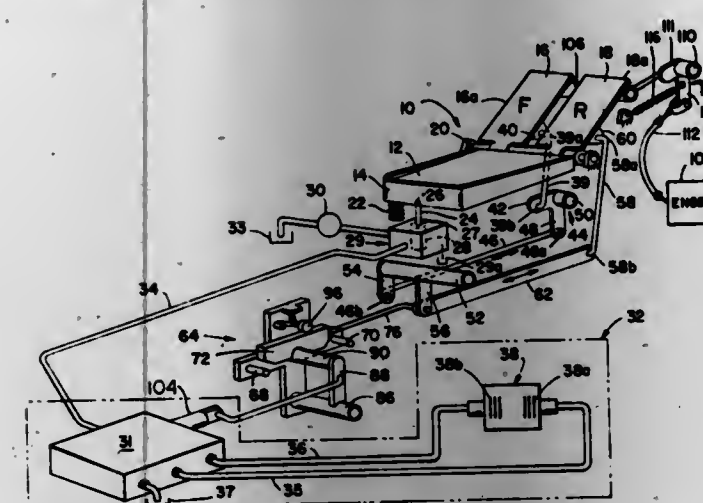
Harold V. Hildebrecht, Cleveland, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Oct. 18, 1978, Ser. No. 952,363

Int. Cl.³ B60K 41/00; G05G 1/14, 9/08

U.S. Cl. 74—874

14 Claims



1. A control pedal assembly (10), comprising:

first (16), second (18) and third (12) pedal portions, each of said pedal portions (16, 18, 12) having an edge portion positioned about a common axis (20), said first (16) and second (18) pedal portions each being pivotally movable relative to said third (12) pedal portion and extending in a common direction outwardly from said edge portion of said third (12) pedal portion, said third (12) pedal portion being movable relative to said first (16) and second (18) pedal portions, each one (12, 16, 18) of said pedal portions being separately movable and simultaneously movable with another (12, 16, 18) of said pedal portions.

4,245,528

PUSH BUTTON SOCKET RELEASE MECHANISM

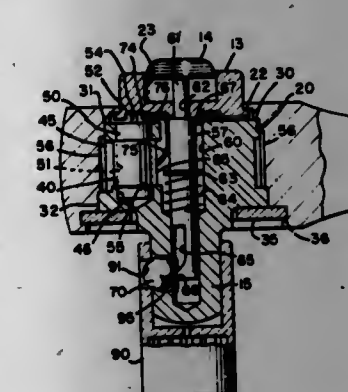
Melvin D. Hugh, Wilmington, Calif., and Walter C. Vilet, Landing, N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 29, 1979, Ser. No. 43,102

Int. Cl.³ B25B 13/00

U.S. Cl. 81—177 G

5 Claims



1. A push button socket release mechanism for a ratchet wrench having an output drive comprising:

a displaceable means in the output drive for retaining a socket on the output drive;

said displaceable means being moveable along a path from a position in register with a socket disposed on said output drive whereby said socket is retained on said output drive to a position out of register with said socket whereby said socket is released from said output drive;

a cam means in said output drive moveable along an axis substantially perpendicular to the path of said displaceable means for displacing said displaceable means; and

said cam means having a first contacted cam portion of

relatively steep slope for effecting substantial outward movement of said displaceable means in response to an increment of movement of said cam means and a second contacted cam portion of relatively shallow slope for effecting appreciable but relatively less outward movement of said displaceable means in response to a like increment of movement of said cam means.

4,245,529

ELBOW MANDREL ARRANGEMENT

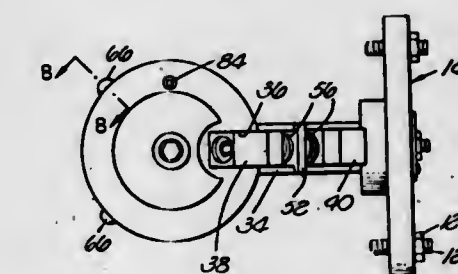
William H. Astle, Rancho Cordova, Calif., assignor to Tri Tool, Inc., Placerville, Calif.

Continuation-in-part of Ser. No. 883,178, Mar. 3, 1978, Pat. No. 4,169,396. This application Apr. 23, 1979, Ser. No. 32,500

Int. Cl.³ B23B 41/00, 3/22

U.S. Cl. 82—4 C

21 Claims



1. A mandrel for mounting a pipe machining tool for rotation relative to at least one end of a pipe bend to be machined, which comprises:

a frame means having a main portion and first and second flange portions fixed to opposite ends of said main portion, an outer surface of said first flange portion in a first plane, an outer surface of said second flange portion in a second plane intersecting said first plane at a predetermined angle and each of said first and second flange portions having peripheral edges, said frame positionable within said pipe bend with said outer surface of said first flange portion adjacent to a first end of said pipe bend and said outer surface of said second flange portion adjacent to a second end of said pipe bend;

projection means detachably coupled to said peripheral edges of said first and second flanges and extending a first predetermined radial distance outwardly therefrom;

locking means connected to said frame, and said locking means comprising clamping element means movably and detachably connected to said frame and having an engaging surface for selectively engaging the interior of said pipe bend, and said clamping element means adjustable between a first radially retracted condition in which said engaging surface is free of engagement with the interior surface of said pipe bend and said frame is free for movement relative to said pipe bend, and a second radially extended condition extending a second predetermined radial distance in which said engaging surface of said clamping element means engages the interior surface of said pipe bend and moves said projection means into engagement with the interior surface of said pipe bend to frictionally retain said frame against movement relative thereto;

mandrel shaft means adapted to receive said pipe machining tool for rotation about the axis of said mandrel shaft means; and

means for adjustably mounting said mandrel shaft means to at least one of said first and second flange portions of said frame means to provide said mandrel shaft means extending substantially perpendicularly outward from said outer surface of said at least one of said first and second flange portions;

whereby said mandrel shaft means may be adjusted to prede-

terminated positions on said frame means to receive said pipe machining tool for rotation thereabout.

4,245,530

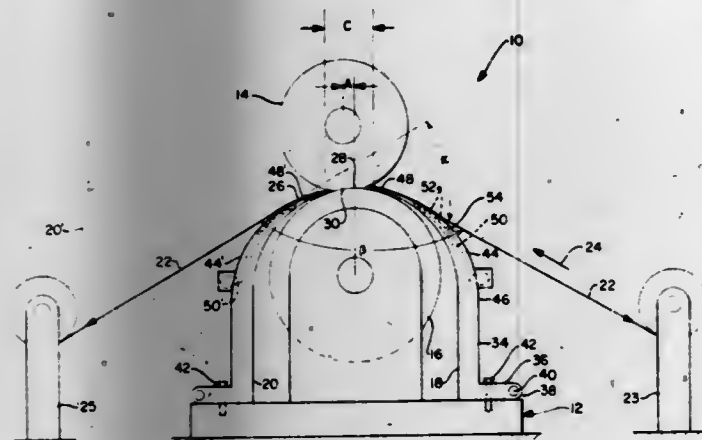
WEB SUPPORT MECHANISM

Kenneth G. Frye, Lee, Mass., and Donald C. Fitzpatrick, Chatham, N.Y., assignors to Lenox Machine Company, Inc., Lenox, Mass.

Filed Jan. 10, 1979, Ser. No. 2,294
Int. Cl.³ B23D 19/04

U.S. Cl. 83—99

12 Claims



1. In a web slitting apparatus of the type having a slitting station including a pair of rotary cutting elements in overlapping relation to provide a cut point, means for supplying a web of paper and the like to said slitting station and means for receiving the slit web from said slitting station; the improvement comprising:

arcuate support board means extending transversely of said slitting station and curving about one of said cutting elements to adjacent the overlapping area of said cutting elements to provide a continuous arcuate configuration to said web as said web passes said cut point, said support board means being continuous for the width of said station to form a narrow continuous gap for the width of said slitting station.

4,245,531

DEVICE FOR TRANSFERRING TOBACCO LEAVES AND FOR CUTTING OUT WRAPPERS

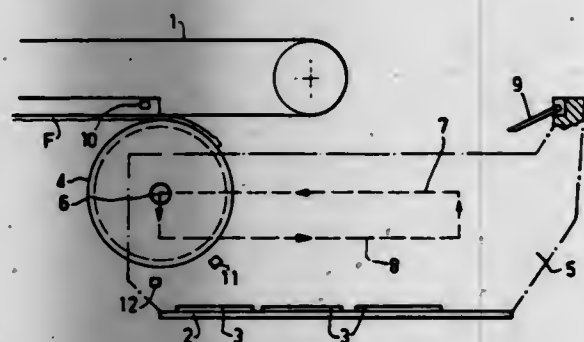
Claude Boutron, Olivet; Robert Caffoz, Checy, and Claude Juston, Saint-Jean-de-Braye, all of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Sep. 11, 1979, Ser. No. 74,534

Claims priority, application France, Sep. 15, 1978, 78 26493
Int. Cl.³ B26D 7/08, 7/06, 1/02

U.S. Cl. 83—169

5 Claims



1. A device for transferring a leaf-like material, such as tobacco leaves, and for cutting out pieces, such as wrappers for cigars, from said material, comprising a leaf feed conveyor, a cutting device and means for transferring leaves from said conveyor to said cutting device, said means comprising a drum, wherein the cutting device comprises a support having

cutting members secured thereto and the drum and the support are moved relative to each other during the cutting step in such manner that the drum presses the leaves into contact with the cutting members.

4,245,532

SHEAR MACHINE WITH REPLACEABLE SHEAR ASSEMBLY

Michael Astill, Lower Whitley Village; Alec Sunderland, Weymouth, and Maurice G. Waine, Sale, all of England, assignors to British Nuclear Fuels Limited, Risley, England

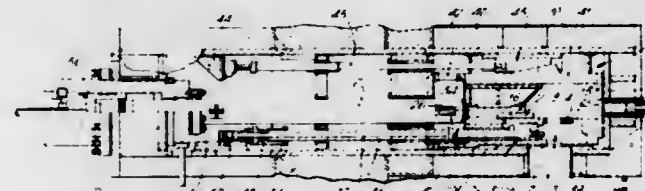
Filed Oct. 18, 1978, Ser. No. 952,294

Claims priority, application France, Oct. 20, 1977, 77 31625

Int. Cl.³ B23D 33/08, 35/00

U.S. Cl. 83—390

1 Claim



1. A shear machine for irradiated nuclear fuel elements and of the kind comprising, a frame, a reciprocating shear blade carried in the frame, a support block for the fuel element, the support block being complementary to the shear blade for shearing the fuel element, a ram for driving the shear blade, a pair of side-by-side clamp members movable towards and away from the support block to hold the fuel element in a shearable position against the support block, a pair of co-axial rams each for actuating one of the clamp members, a readily replaceable shear assembly unit housing said shear blade, said support block and said clamp members, means, comprising an aperture in the driving ram and a hook shaped projection on the shear blade which is received in the aperture in the driving ram, for releasably connecting the blade and ram such that the connection between the ram and blade is releasable by relative lateral motion, and means, comprising radial projections on each clamp member and the actuating ram therefor which are reversibly interengageable by a combination of relative linear and rotational motions in the manner of bayonet couplings, for releasably connecting each said clamp member and the actuating ram therefor.

4,245,533

MOTORIZED CIRCULAR MITER CHOP SAW

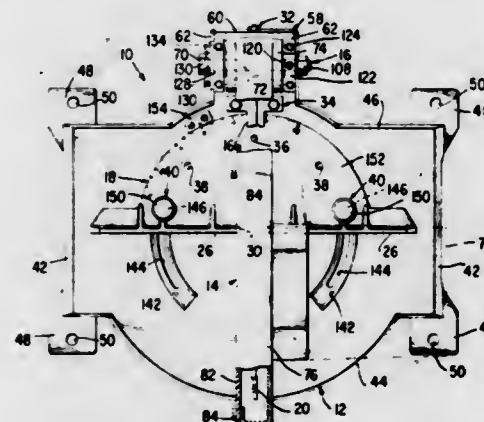
William A. Batson, Pickens, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 26, 1979, Ser. No. 61,163

Int. Cl.³ B26D 1/16

U.S. Cl. 83—471.3

8 Claims



1. Miter saw comprising a cast base structure having a generally planar work support surface to which a motor powered circular chop saw is pivotally mounted for rotation about an

axis generally parallel said work support surface, together with mounting means utilized for mounting the motor powered circular chop saw to the base support structure wherein the axis of rotation is adjustable in a first direction rotationally in a plane generally parallel said work support surface and in a second direction rotationally in a plane generally perpendicular said work support surface so as to enable accurate orientation of the motor powered chop saw relative to the base support structure without requiring excessive accuracy in the initial fabrication of the cast base support structure and a work piece positioning fence rotatably carried by said base support structure.

4,245,534

SLITTER FOR SHEET METAL OR THE LIKE

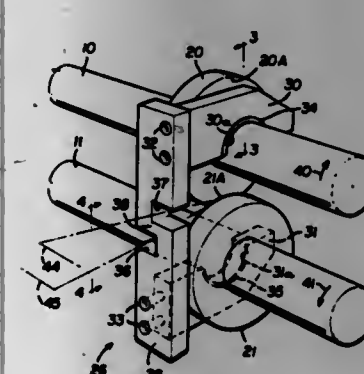
Eugene H. Van Cleave, Orchard Lake, Mich., assignor to Van Mark Products Corporation, Farmington Hills, Mich.

Filed Aug. 2, 1979, Ser. No. 62,955

Int. Cl.³ B23D 19/04

U.S. Cl. 83—500

20 Claims



1. A cutter for cutting a workpiece of sheet metal or the like comprising:

a pair of shafts having parallel axes, and each being journaled at spaced axial points,

a pair of cutter wheels having circular abutting cutting edges in a common radial plane and mounted respectively on said shafts between said journals for cutting the workpiece as the workpiece passes from one side to the other of, and between, said shafts,

a support element on said other side of said wheels, a pair of bearings for said shafts cantilevered to said element and each applied to its respective shaft axially adjacent the cutter wheel on its respective shaft and radially opposite the cutter wheel on the other shaft, to resist forces of separation of the shafts,

said element having a pair of slots each open respectively from opposite axial sides of the element, and each extending in the axial direction at least to the common radial plane of the cutting edges, and so related that when the axes of said wheels lie in a vertical plane, the upper slot is on the same side of the element in the axial direction relative to said common plane as the lower wheel, and the lower slot is on the same side in the axial direction relative to said common plane as the upper wheel.

4,245,535

PORTABLE SAWMILL AND METHOD FOR CUTTING LOGS

Larry D. Lockwood, 1939 SW. Linnell, and Lawrence D. Lockwood, Rte. 4, Box 913, both of Roseburg, Ore. 97470

Filed Jul. 28, 1978, Ser. No. 929,034

Int. Cl.³ B27B 17/02, 1/00

U.S. Cl. 83—798

8 Claims

1. A portable sawmill for cutting slabs of wood from a substantially horizontal log, comprising:

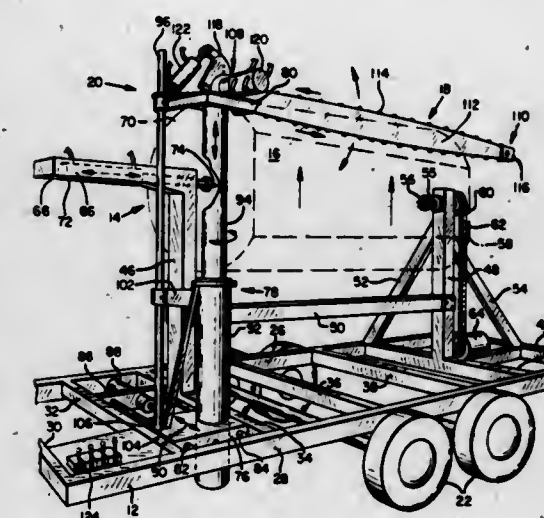
a frame;

saw mounting means carried by said frame and adapted for upward and downward movement, said saw mounting means including rigid pivot means defining a generally

horizontal saw pivot axis which is generally perpendicular to the longitudinal axis of the log;

means for moving said saw mounting means upwardly and downwardly; and

a chain saw having an effective cutting edge at least as long as the log, said chain saw being pivotally mounted at one end portion to said pivot means so as to pivot about said saw pivot axis and such that its cutting edge is substantially horizontal and positioned in a vertical plane substantially parallel to the longitudinal axis of the log so that



upward and downward movement of said saw mounting means causes corresponding upward and downward movement of the cutting edge in the vertical plane, whereby a slab from a portion of the log positioned within the vertical plane is cut by the cutting edge when said saw mounting means moves; and

saw pivoting means for pivoting said chain saw about said saw pivot axis to adjust the angle between the effective cutting edge and a generally horizontal plane containing the longitudinal axis of the log.

4,245,536

HINGED CUTTER TRACK

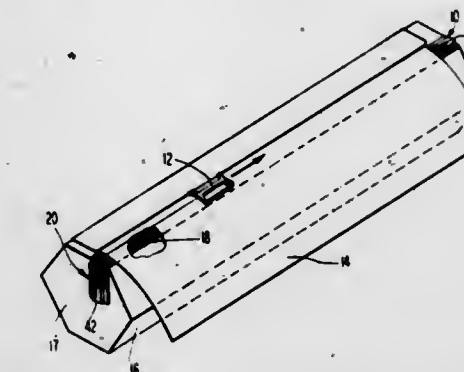
Kenard E. Urion, Woodbury, N.J., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Aug. 20, 1979, Ser. No. 68,182

Int. Cl.³ B26D 1/04, 7/00

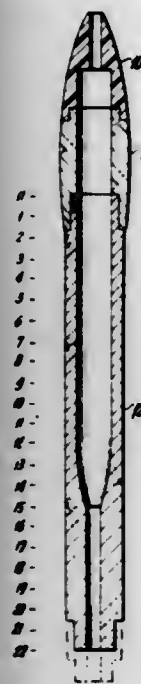
U.S. Cl. 83—821

10 Claims



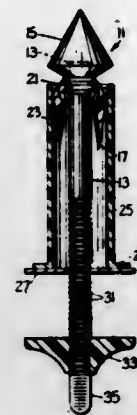
5. A track of the type for slidably retaining a cutter slide therein, said track including cutting and storage sections joined together at a hinged region; said cutting and storage sections having channel segments in which the cutter slide is adapted to be slidably retained, said channel segments continuously communicating with each other to permit movement of the cutter slide between them when said cutting and storage segments are in a first orientation with respect to each other; at least one stop for intercepting a channel segment when the storage and cutting sections of the track are in a second orientation relative to each other.

said joint consisting of sections of one centimeter in length as measured from zero at the top of said joint;
said bore being of constant diameter from the twenty-second section up to a point between the fifteenth and tenth sections;
said bore having an enlarged portion extending from said point to the zeroth section, said enlarged portion consisting of an upper region and a lower region; and



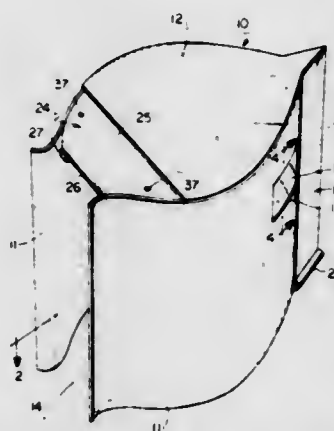
the diameter of said enlarged portion increasing monotonically from said point upwardly to said zeroth section, the rate of increase per longitudinal section of said diameter being relatively great in said lower region and steadily decreasing in said upper region, the total increase in diameter from said point to said zeroth section being between 0.25 millimeters and 0.40 millimeters.

4,245,545
BLIND-END CONNECTOR FOR FASTENING SHEET METAL TO FIBER-BOARD DUCTS
James D. Freeman, 11 W. Grand Ct., Springfield, Ill. 62704
Filed Jan. 26, 1979, Ser. No. 7,228
Int. Cl.³ F16B 13/08
U.S. Cl. 411-342
9 Claims



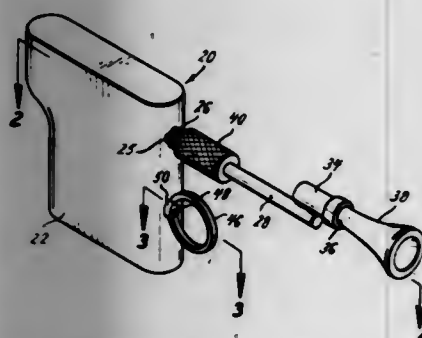
1. A hole-punching blind-end fastener for attaching pre-bored hard-material panels or the like to soft-material panels, comprising: a rigid shaft; a sharply pointed tapered head fixed to one end of said shaft, said head having a base diameter approximating that of a pre-bored hole in a hard-material panel or like structure; a spider-like expandable member co-axially fixed immovably to said shaft closely behind said head, said expandable member being collapsible against said shaft so as to be insertable through a head-punched hole in, and so as to be expandable on the hidden side of, said soft-material panel, said shaft having spaced barb-like circular threads formed in its surface; and a press-on nut formed of resilient material and having barb-like threads for mating with the threads on the free end of said shaft.

4,245,546
PORTABLE BULLETPROOF SHIELD
George O. Chaires, P.O. Box 5175, Tallahassee, Fla. 32301
Continuation-in-part of Ser. No. 895,401, Apr. 11, 1978, abandoned. This application Nov. 29, 1978, Ser. No. 964,392
Int. Cl.³ F41H 5/08
U.S. Cl. 89-36 G
5 Claims



1. A portable bulletproof shield comprising a pair of side walls which are connected together at one end and are spaced apart at the other end, a top wall fixed to a portion of the upper edge of said side walls, said side walls and said top wall being constructed of material which resists penetration by small arms fire, an auxiliary top member selectively connected to said top wall, means on said side walls for selectively supporting said auxiliary top member to form a generally horizontal support when said member is removed from said top wall, each of said side walls having a concavo-convex configuration in cross-section, means for supporting said shield, and means for moving

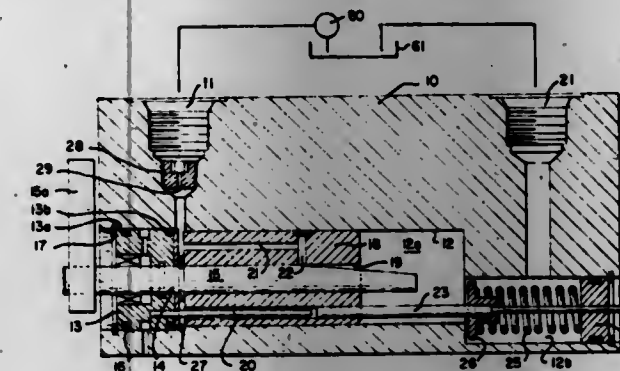
4,245,544
MOUTHPIECE PRACTICE HOLDER AND TUNING ADJUSTER
Jack O. Holland, 3314 West End Ave., Nashville, Tenn. 37203
Filed Aug. 16, 1979, Ser. No. 67,033
Int. Cl.³ G09B 15/06
U.S. Cl. 84-465
12 Claims



1. A mouthpiece practice holder to simulate a brass instrument and support its mouthpiece to permit practice playing by buzzing the mouthpiece comprising a base having an envelope approximating that portion of the instrument normally grasped by the left hand, and means to mount a mouthpiece in substantially the same orientation to said base as said mouthpiece would occupy with respect to that portion of the instrument normally grasped by the left hand.

said shield, whereby people within said shield are protected from small arms fire from the front, sides and top.

4,245,547
ROTARY TO LINEAR SERVO MECHANISMS
Ronald W. Reynolds, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio
Filed Oct. 31, 1977, Ser. No. 847,069
Int. Cl.³ F15B 13/04
U.S. Cl. 91-49
4 Claims

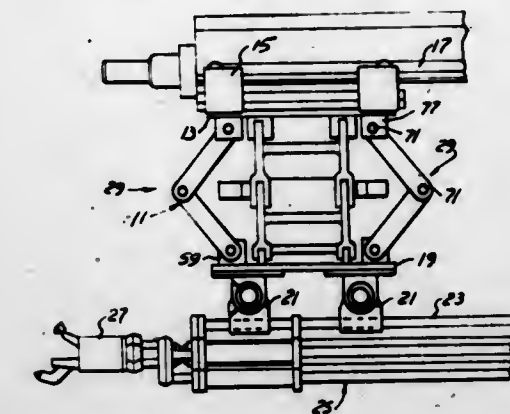


1. A rotary to linear servo mechanism for converting low force mechanical rotary motion into hydraulically assisted linear motion, comprising a source of fluid under pressure, a housing, an elongate bore in said housing, first passage means in said housing connecting said bore with the source of fluid under pressure, a fluid reservoir spaced from the housing, second passage means in said housing connecting said bore with said reservoir, a piston movable axially in one end of said bore, said piston having a hollow axial bore therethrough, rotatable valve means extending through said axial bore of the piston, said valve means having a tapered end passage means controlling the flow of fluid from said first passage means by rotation within the bore of said piston whereby in one rotated position of the valve means said bore is blocked and fluid acts on one side of the piston urging it axially of the bore in the housing in one direction to a preselected position, said valve means including by pass means in said piston communicating with said axial bore whereby fluid from the inlet passes around the end of said valve means in said axial bore to the opposite side of the piston to stop movement of said piston in said one direction and in a second rotated position of said valve means fluid is delivered through said axial bore in the piston and tapered end passage means from a point intermediate the valve end to the opposite side of the piston and resilient means in said bore normally biasing said piston in said opposite direction urging it axially of the bore in the opposite direction, wherein said valve means is a rod, said rod having handle means at one end externally of said housing for rotating said rod and the other end being cut away at an angle defining said tapered end passage means, and connection means on said piston extending externally of the bore in the housing.

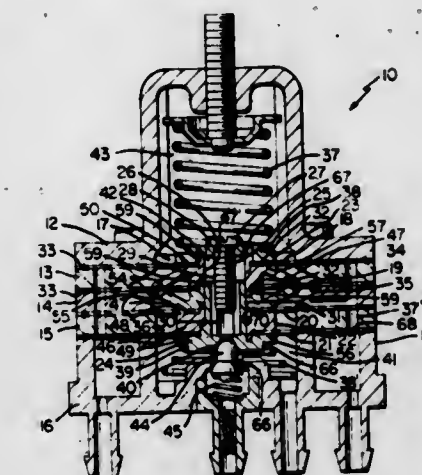
4,245,548
AUTOMATION VERTICAL LIFT UNIT
L. Douglas Blatt, 31915 Groesbeck Hwy., Fraser, Mich. 48026
Filed Feb. 14, 1979, Ser. No. 11,800
Int. Cl.³ F01B 31/12; B66F 3/24
U.S. Cl. 92-5 R
7 Claims

1. An automation vertical lift unit comprising a horizontally disposed upper plate adapted for suspension from a reciprocal shuttle feed unit;
a horizontally disposed lower plate adapted for supporting a reciprocal work piece, gripping, lifting and transport assembly;
a cylinder assembly interposed between and interconnecting said plates for effecting relative vertical movement between said plates;
a series of bi-fold linkages mounted quarter-laterally in a rectangular pattern around said cylinder assembly, inter-

posed between said plates and at their respective free ends pivotally connected thereto, for providing straight vertical lift motions to said work piece transport assembly at predetermined intervals;
said bi-fold linkages being arranged in opposed spaced pairs;



4,245,549
CONTROL DEVICE DIAPHRAGM STACK AND METHOD OF MAKING THE SAME
George T. Hardin, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Sep. 18, 1978, Ser. No. 943,667
Int. Cl.³ F01B 19/02
U.S. Cl. 92-48
16 Claims



1. In a diaphragm stack for a control device and having at least two flexible diaphragms separated by a rigid spacer means and a pair of rigid outboard members with said pair of outboard members being secured together by a fastening means passing through the center of said stack, said members and said spacer means having interlocking means interlocking together in said stack in a manner that prevents rotation of said spacer means and said members relative to each other in their assembled relation in said stack, the improvement wherein said interlocking means for each said member and said spacer means comprises a plurality of spaced tongues disposed in a circular array and a plurality of spaces respectively disposed between said tongues whereby each said member and said spacer means receives said tongues of its adjacent member or spacer means in said spaces thereof and disposes its tongues in said spaces of its respective adjacent member or spacer means.

4,245,550

ELECTRONIC AIR CLEANER FOR PASSENGER COMPARTMENT OF VEHICLE

Kazuhiko Suzuki, Yokosuka; Masazumi Sone, Yokohama; Yukitsugu Fukumori, Yokohama, and Kazuo Hayashi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

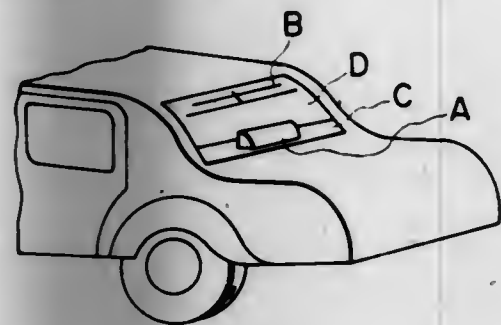
Filed Apr. 10, 1979, Ser. No. 28,866

Claims priority, application Japan, Aug. 25, 1978, 53/115803[U]

Int. Cl.³ B60H 3/06; B03C 3/38

U.S. Cl. 98—2.11

3 Claims



1. In a vehicle having an electric device sensitive to an electric noise wave and having an electric air cleaner for cleaning air in a passenger compartment, said cleaner being positioned close to the electrically sensitive device and comprising an electrostatic precipitator for removing fine dust particles suspended in the air, said precipitator including electrically insulated first and second groups of electrodes between which a high electric potential is applied: said cleaner further comprising an ultraviolet lamp for sterilizing the air:

a cover member constructed of an electrically insulating material and having an opening, said cover member being arranged to cover said lamp with the opening facing away from said electrically sensitive device; and
an electrically grounded, vacuum evaporated metal film lined to the inner surface of said cover.

4,245,551

COATING BOOTH FOR ELECTROSTATIC APPLICATION OF PULVERIZED MATERIALS

Adolf Berkman, Weissach, Fed. Rep. of Germany, assignor to Nordson Corporation, Amherst, Ohio

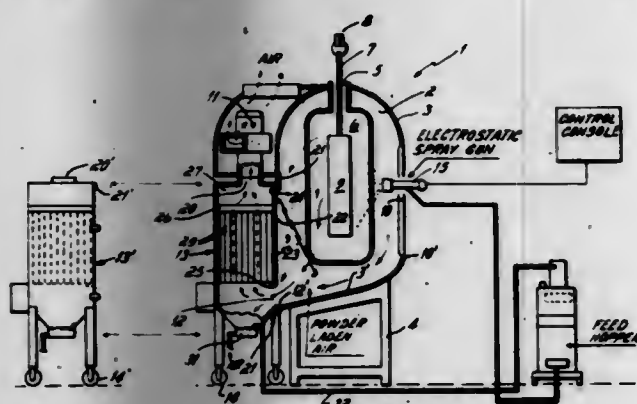
Continuation-in-part of Ser. No. 15,408, Feb. 26, 1979,

abandoned. This application Mar. 5, 1979, Ser. No. 17,879

Int. Cl.³ B05C 15/00

U.S. Cl. 98—115 SB

4 Claims



1. An integral assembly of a powder spray booth and filter unit, said powder spray booth being adapted to receive an electrostatic spray means for spraying dry particulate powder material onto workpieces contained in the booth, comprising: first and second vertical walls and a floor angled downwardly from said first vertical wall toward said second vertical wall, a ceiling extending from the top of said first vertical wall generally toward said second vertical wall,

vertical end walls extending from said first vertical wall generally toward said second vertical wall, a powder spray booth and a powder collection chamber disposed between said two vertical walls of the assembly; said booth and said powder collection chamber being separated by an imperforate third vertical wall, said imperforate third vertical wall extending downward from the ceiling so as to form a barrier to the flow of powder laden air from said booth into said powder collection chamber, an air inlet opening in first vertical wall of said booth, said third vertical wall having a lower edge spaced from said floor so as to define a booth outlet opening adjacent the lower edge thereof providing an air flow path through which powder laden air is free to pass without significant restriction from said booth into said collection chamber; means for collecting oversprayed dry particulate powder material in the bottom of said powder collection chamber, said collecting means being operable to collect said powder material in a dry condition suitable for reuse in said electrostatic spray means, a clean air chamber sealed from the booth, said clean air chamber being located adjacent to and above said powder collection chamber, said clean air chamber having a clean air chamber opening from the powder collection chamber thereto;

filter means mounted adjacent said clean air chamber opening for preventing powder from entering said clean air chamber from said booth outlet opening while permitting air flow from the powder collection chamber into said clean air chamber;

blower means connected to said clean air chamber to create a negative pressure in said clean air chamber, whereby air flows downwardly in said booth and through said booth outlet opening directly into said powder collection chamber and then upwardly through said filter means into said clean air chamber.

4,245,552

PROTEIN TEXTURIZATION

Robert E. Small, Voorhees; William M. Hildebolt, Mickleton, both of N.J., and Murray T. Hundt, Oakville, Canada, assignors to Campbell Soup Company, Camden, N.J.

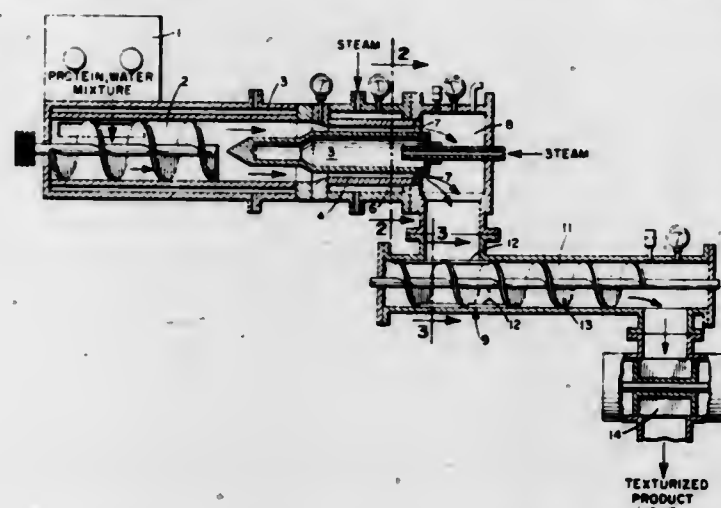
Division of Ser. No. 846,823, Oct. 31, 1977, Pat. No. 4,139,648.

This application Sep. 29, 1978, Ser. No. 946,879

Int. Cl.³ A23J 1/00, 3/00

U.S. Cl. 99—483

9 Claims



1. Apparatus for texturizing protein material comprising: (a) die means for extruding a continuous, relatively thin sheet of semi-rigid protein material having opposed external surfaces; (b) heating means adjacent to said die means for directly heating said die means to effect surface texturization of both of said surfaces of said thin sheet as it passes through said die means;

4,245,554

SCREEN PRINTING PROCESS AND MACHINE

Wilfried Kammann, Bünde, and Gerhard Tiemann, Löhne, both of Fed. Rep. of Germany, assignors to Werner Kammann Maschinenfabrik GmbH, Bünde, Fed. Rep. of Germany

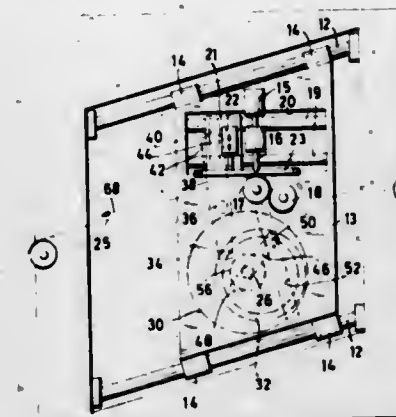
Filed Aug. 31, 1978, Ser. No. 938,642

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810690

Int. Cl.³ B41L 13/18

U.S. Cl. 101—124

28 Claims



(c) means defining a first confined treating zone communicating with said die means;
(d) means for introducing a heated gaseous stream into said first confined zone to effect additional texturization;
(e) means for cutting said extruded sheet into segments disposed at the discharge end of said first confined treating zone;
(f) means defining a second confined treating zone communicating with said first confined treating zone; and
(g) means for recovering said texturized protein material.

4,245,553

BEAN TREATING APPARATUS

Hiroshi Nakamura, Iida, Japan, assignor to Asahimatsu Koridofu Kabushiki Kaisha, Nagano, Japan

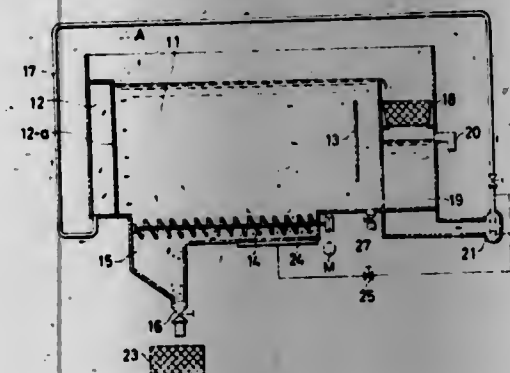
Filed Sep. 12, 1978, Ser. No. 941,586

Claims priority, application Japan, Sep. 22, 1977, 52-114060

Int. Cl.³ A23N 7/00

U.S. Cl. 99—628

7 Claims



1. Apparatus for hulling beans and for separating hulls from seeds comprising: initial hulling means receiving beans and effecting initial separation operation to remove the bean hulls from the seeds, said initial hulling means operating to exhaust therefrom the separated hulls and seeds through a joint flow path; flowing water separation means receiving said hulls and seeds from said initial hulling means and performing a further separation process, said flowing water separation means comprising a generally quadrilateral water tank; water supply means at one end of said tank introducing water into said tank at said one end and directing said water flow toward the opposite end of said tank, said tank including at said opposite end overflow wall means, said water flow being directed to overflow said overflow wall means; means for introducing into said tank at a location generally above said one end said hull and seed exhaust from said initial hulling means; seed collection means located at the bottom of said tank toward said one end thereof; hull collection means located adjacent said overflow wall means for collecting said water overflowing therefrom and hulls entrained in said overflowing water; and control plate means located within said tank in the vicinity of said opposite end thereof generally adjacent but spaced from said overflow wall means, said control plate means comprising a plurality of separable planar members each vertically aligned with each other to extend within a generally common vertical plane, said planar members being vertically movable relative to each other to effect control over said water flowing toward said overflow wall means at said opposite end of said tank.

1. In a screen printing process for the stepwise printing of a succession of images on a longitudinally moving material by means of a printing mechanism comprising a printing stencil, an associated doctor adjacent one surface of said stencil, and a counter-pressure backing roller adjacent the other surface of said stencil opposite said one surface of said stencil, wherein the material to be printed upon is passed between said stencil and said backing roller so as to extend part way around said roller, wherein said stencil is moved downwardly onto said material for printing thereon and during said printing is moved with said material from a starting position to a final position relative to said doctor, the doctor pressing print medium through said stencil onto said material during said movement and said material being rolled against said stencil by said backing roller during said movement, wherein said stencil and said doctor are lifted from said material and returned to their relative starting position after each printing operation, wherein said doctor and said backing roller are displaced synchronously with respect to said stencil and in the opposite direction to the direction of motion of said material issuing from said backing roller, and wherein said stencil is substantially horizontal;

the improvement wherein a portion of said material passing to said printing mechanism and a portion of said material issuing from said backing roller are moved parallel to each other and downwardly at an acute angle relative to said stencil, and wherein said printing mechanism is moved, at least during said printing, parallel to said portions of said material.

3. In a screen printing apparatus for the stepwise printing of a succession of images on a material, comprising: a printing mechanism comprising a stencil, a doctor adjacent one surface of said stencil, and a counter-pressure backing roller adjacent the other surface of said stencil opposite said one surface of said stencil; means for passing said material into and through said printing mechanism, between said stencil and said counter-pressure backing roller so as to extend part way around said roller; means for moving said stencil downwardly onto said material for printing on said material, and means for moving said stencil along with said material during said printing, from a starting position to a final position with respect to said doctor, the doctor pressing printing medium through said stencil onto said material, and said backing roller rolling said material against said other surface of said stencil during said printing;

means for lifting said stencil and said doctor from said material and returning them to their starting position after said printing;
 means for displacing said doctor and said backing roller synchronously with respect to said stencil and in the opposite direction to the direction of moving of said material issuing from said backing roller, said stencil being substantially horizontal;
 the improvement comprising means for guiding a portion of said material passing into said printing mechanism and a portion thereof issuing from said backing roller so that they move parallel to each other and downwardly at an acute angle relative to said stencil, said apparatus comprising means for moving said printing mechanism in a direction parallel to said portions of said material at least during said printing.

4,245,555

ELECTROSTATIC TRANSFER PROCESS FOR PRODUCING LITHOGRAPHIC PRINTING PLATES

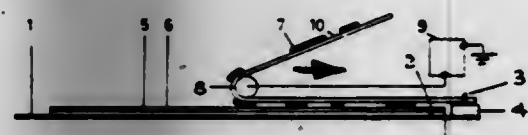
Julia M. Alston, Myrtle Bank, Australia, assignor to Research Laboratories of Australia Pty Limited, Eastwood, Australia
 Division of Ser. No. 799,512, May 23, 1977, Pat. No. 4,182,266.

This application Sep. 11, 1978, Ser. No. 940,995

Int. Cl.³ G03G 13/28, 13/22, 13/18

U.S. Cl. 101—466

4 Claims



4. The method of producing lithographic printing plates by image transfer which comprises:

- placing a receiving member into registered contact with a base;
- engaging a recording member in registered contact with said receiving member, said recording member containing a transferrable image on the face thereof away from said receiving member;
- engaging an offset member in registered contact with said base to contact the image bearing face of said recording member, said offset member being engaged on register means on said base which are apart from and not used to engage said receiving member and said recording member;
- passing a roller with at least a conductive center over said base in one direction to press the faces of the said recording member and the said offset member into intimate contact while applying an electrical field between said roller and said base with a polarity in relation to said roller which prevents electrostatic image transfer;
- returning said roller in the opposite direction while reversing the polarity of said electrical field to electrostatically transfer said image from said recording member to the said offset member to form a transferrable image thereon;
- separating the said offset member from the said recording member by holding the said offset member in contact with the said roller around part of its periphery as the said roller is returning after said electrostatic image transfer but retaining said offset member registered to said base;
- removing said recording member from contact with said receiving member and from register to said base while retaining said offset member registered to said base;
- placing said offset member on the said receiving member while retaining said offset member registered to said base, said offset member containing said transferrable image on the face thereof contacting said receiving member;
- passing said roller over said base in one direction to press the faces of the said offset member and the said receiving member into intimate contact while applying an electrical

field between said roller and said base with a polarity in relation to said roller which prevents electrostatic image transfer;

- returning said roller in the opposite direction while reversing the polarity of said electrical field to electrostatically transfer said image from the said offset member to the said receiving member;
- separating the said offset member from the said receiving member by holding the said offset member in contact with the said roller around part of its periphery as the said roller is returning after said electrostatic image transfer, and
- fixing the said image on the said receiving member to form a lithographic printing plate.

4,245,556
PROJECTILE

William F. Donovan, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

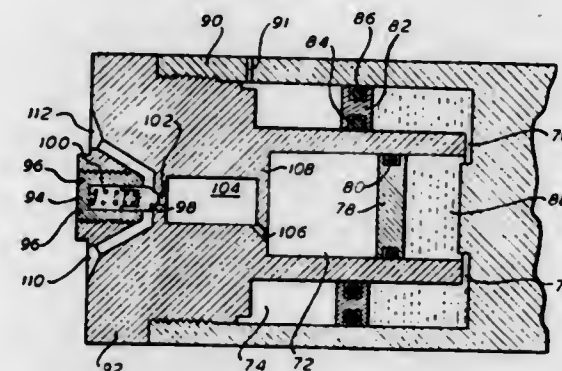
Division of Ser. No. 948,127, Oct. 3, 1978. This application Feb.

19, 1980, Ser. No. 122,559

Int. Cl.³ F42B 11/22

U.S. Cl. 102—56 R

3 Claims



1. A projectile having variable stability, said projectile being arranged to be spin stabilized and comprising:
 a casing having a cavity wherein said cavity is shaped to provide a pair of chambers, each communicating with the other a fluid of a given mass contained within said cavity;
 drive means for propelling said fluid between said pair of chambers, said pair of chambers includes:
 an inner chamber and an outer chamber encircling said inner chamber, said drive means including a source of pressurized gun gas; and
 normally closed valve means responsive to said gun gas exceeding a predetermined pressure for injecting said gun gas into said cavity to displace said fluid;
 an inner piston slidably mounted in said inner chamber;
 an outer annular piston slidably mounted in said outer chamber, said fluid being contained between said inner and outer pistons; and
 said cavity being shaped to provide a balanced flow of said fluid with respect to the axis of spin as said projectile is trajectory, said balanced flow altering the flight stability of said projectile.

4,245,557

PROJECTILE, ESPECIALLY FOR HAND FIREARMS AND AUTOMATIC PISTOLS

Jürgen Knappworst, Fürth; Heinz Gawlick, Vagen, and Helmut Brieger, Fürth, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Fed. Rep. of Germany

Filed Jul. 6, 1976, Ser. No. 702,898

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1975, 2530155

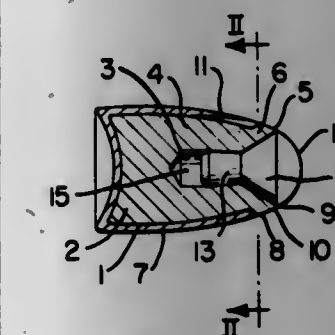
Int. Cl.³ F42B 11/10

U.S. Cl. 102—91

17 Claims

1. A projectile for hand firearms and automatic pistols com-

prising a projectile core member formed of a first material and provided with a blind bore extending in the forward direction of the projectile into an outwardly inclined truncated cone surface indentation in said core member, a projectile insert member formed of a second material which is more difficult to deform than said first material, said insert member including a portion contacting said core member along the outwardly inclined truncated cone surface thereof, and a lug portion extending from said contacting portion toward the rear of said core member into said blind bore of said core member for detachably joining said insert member and said core member, a



jacket member encompassing the rear portion of said core member and extending forwardly at least up to a zone of said core member surrounding said blind bore, said jacket member having a front edge portion terminating at a spacing from the forward edge portion of said core member so as to provide an unjacketed strip portion of said core member thereat, said jacket member having the front edge portion thereof extending forwardly into a zone of said core member surrounding said truncated cone surface indentation, said core member being formed of a lead-weighted plastically deformable synthetic resin, and said insert member being formed of an impact-resistant plastic.

4,245,558

INFRARED PROXIMITY FUZE ELECTRONIC AMPLIFIER

Michael Flaherty, Fullerton, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1963, Ser. No. 311,921

Int. Cl.³ F42C 13/02

U.S. Cl. 102—213

14 Claims



1. An electronic proximity fuze for a projectile comprising transducer means for converting infrared radiation to an electrical signal, amplifying means connected to said transducer for amplifying said signal, said amplifying means including automatic gain control means for decreasing the gain of said amplifying means upon occurrence of a slowly rising signal, electronic switch means, a source of electrical energy, a detonator, means connecting said switch means said source and said detonator in electrical series circuit, means connecting said amplifying means and said electronic switch means for closing said switch means upon occurrence of a rapidly rising signal of predetermined magnitude, said last named means operating to reduce said predetermined magnitude of the signal when said automatic gain control has decreased the gain of said amplifying means.

4,245,559

ANTITANK WEAPON SYSTEM AND ELEMENTS THEREFOR

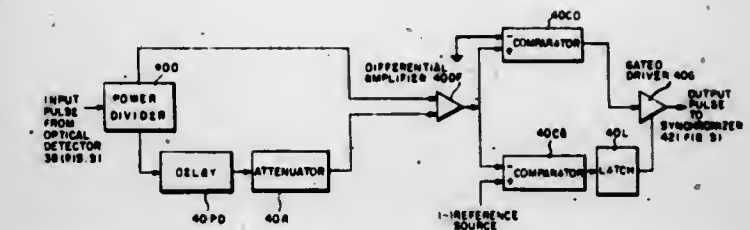
David R. Wakeman, Clearwater, Fla., and Olin C. Brown, III, Lynnfield, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 2, 1979, Ser. No. 301

Int. Cl.³ F42C 13/02; G06G 7/24

U.S. Cl. 102—213

2 Claims



1. In a receiver for pulse signals, a detector operative on the trailing edge of each one of such signals, such detector comprising:

- means for dividing each pulse signal to be detected into a first and a second path;
- means for inverting the pulse signal in the first path and for attenuating and delaying the pulse signal in the second path;
- means for combining the inverted signal in the first path and the attenuated and delayed signal in the second path to produce a composite bipolar signal having a negative initial portion and a positive second portion; and
- means, responsive to the composite bipolar signal, for sensing the change in such signal from the negative initial portion to the positive final portion and for then producing a detected signal.

4,245,560

ANTITANK WEAPON SYSTEM AND ELEMENTS THEREFOR

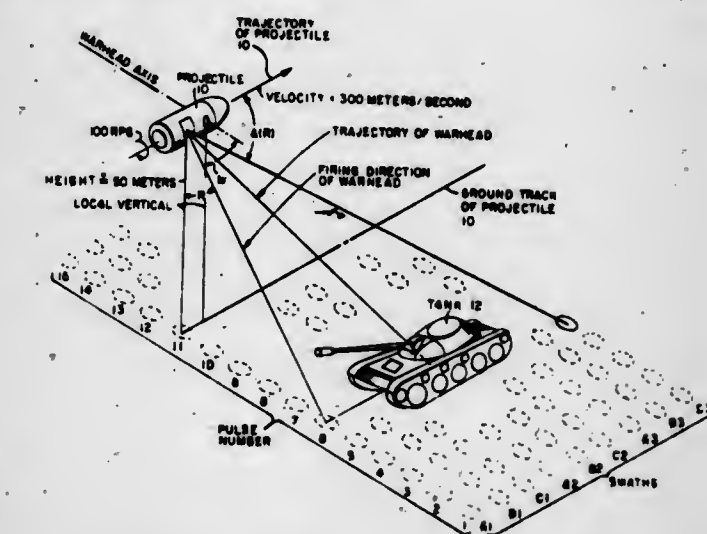
Werner R. Rambausk, Carlisle, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 2, 1979, Ser. No. 302

Int. Cl.³ F42C 13/02

U.S. Cl. 102—213

1 Claim



1. In an antitank weapon system wherein a laser radar is installed in a spinning projectile to scan the terrain underlying such projectile in flight, the arrangement comprising:

- a plurality of laser transmitters for illuminating a like plurality of swaths of the underlying terrain during each period of rotation of the spinning projectile;
- a like plurality of focusing lenses, each different one of such lenses having substantially the same field of view as a corresponding one of the laser transmitters, successively to focus return signals at focal points lying on a circle

orthogonal to the longitudinal axis of the spinning projectile and centered on such axis;

(c) an optical detector mounted on the longitudinal axis of the spinning projectile; and

(d) a plurality, corresponding in number to the plurality of focusing lenses, of mirrors having concave ellipsoidal reflecting surfaces disposed within the spinning projectile, each different one of such surfaces having a common focal point at the optical detector and a second focal point coincident with a different one of the focal points of the focusing lenses.

4,245,561

CONTROLLABLE DISTRIBUTING CONVEYING SYSTEMS

Hans J. Krug, 9a Auweg, 8046 Gaiching bei Munich, Fed. Rep. of Germany

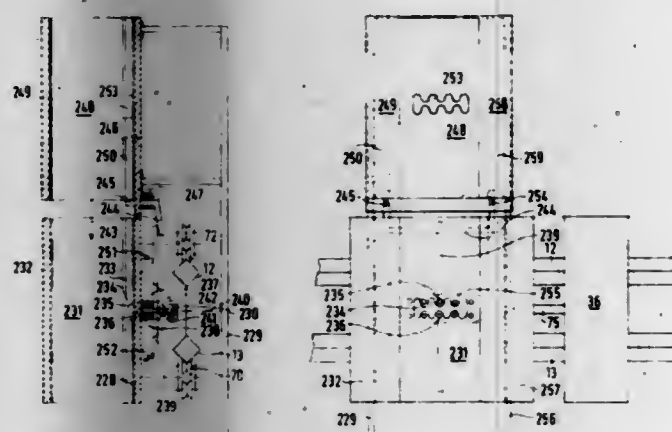
Filed Feb. 21, 1978, Ser. No. 879,563

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1977, 2707379

Int. Cl.³ B61B 1/00, 13/02

U.S. Cl. 104—27

8 Claims



2. A controllable distributing conveying system for transporting people or goods of the kind comprising rails, stations and conveying units, wherein stations are arranged on a passive rail network having main rails and secondary rails, said stations including container loading-on positions, container off-loading positions, and container depots, between which stations self-propelled controllable conveying units are movable, said units being fitted with respective pairs of running wheels for normal travel on said main rails and for travel on said secondary rails when being switched in and out also having container-carrying surfaces coupled to drive sections by universal joints, containers being loadable onto and off-loaded from said conveying units by means of loading and off-loading arrangements which have active locking members and unlocking members, said containers being held secure in all orientations of said conveying units during travel, and being conductable to their destination via the shortest path by means of passive switching-in arrangements and passive switching-out arrangements comprising said secondary rails, which said conveying units in all said orientations thereof securely hold onto;

said system further comprising an arrangement for automatically loading and unloading a container-carrying plate on the conveying unit at a station with a container, said loading and unloading arrangement including a container bottom plate having a projection in which retainer pins are engageable, said retainer pins projecting through said container-carrying plate and being pressed against a bar by means of compression springs, and wherein the projection from the container bottom plate and the container projection on the station-carrying plate (on the station side) are of comb-like form, whereby said container can be caught by said retainer pins and said station container by pins in said station-carrying plate which are connected to

said bar and are held in the region of the container foot-parts.

4,245,562

POWER AND FREE CONVEYOR SYSTEM

Kenneth F. Knudsen, St. Clair Shores, Mich., assignor to Acco Industries, Inc., Trumbull, Conn.

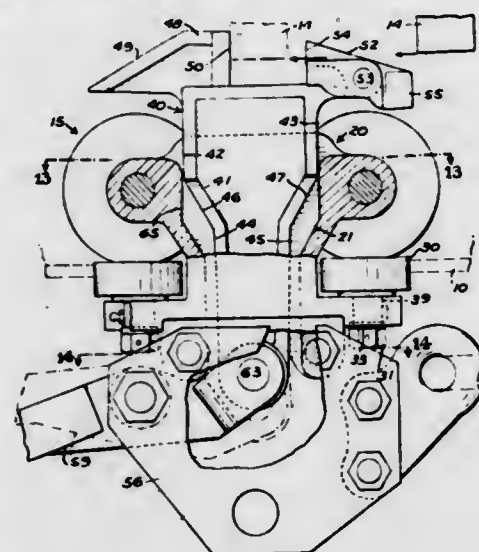
Division of Ser. No. 376,623, Jul. 5, 1973, abandoned, which is a continuation of Ser. No. 223,689, Feb. 4, 1972, abandoned. This application May 23, 1975, Ser. No. 580,370

The portion of the term of this patent subsequent to Sep. 23, 1992, has been disclaimed.

Int. Cl.³ B61B 13/00

U.S. Cl. 104—172 S

4 Claims



1. For use in a power and free conveyor system, the combination comprising

a carrier adapted to be moved along a track,

said carrier comprising a plurality of interconnected trolleys, said trolleys having substantially identical trolley bodies, each said trolley body having wheels thereon adapted to engage a track,

each said trolley body comprising a one-piece casting having longitudinally spaced transverse axle receiving openings, substantially identical axles in said openings, and substantially identical wheels on said axles such that said bodies, axles and wheels are interchangeable, and means extending between adjacent trolleys pivotally interconnecting said trolleys,

each said trolley body including forwardly and rearwardly directed cantilever portions having openended vertical slots therein extending forwardly and rearwardly respectively,

guide wheel assemblies,

each said guide wheel assembly comprising an axle having upper and lower free ends, a wheel, a roller bearing rotatably mounting said wheel on the upper end of said axle and engaging the upper surface of said respective forwardly and rearwardly directed portion, each said axle being disposed vertically in its respective slot, and a nut threaded on the lower end of said axle,

each said forwardly and rearwardly directed portion including a recessed groove therein adjacent its respective slot which is generally arcuate,

each said guide wheel assembly having a complementary portion thereof engaging said recessed groove and preventing longitudinal movement of said guide wheel assembly with respect to the trolley body when in such engagement such that the guide wheel assembly may be removed from the trolley body at substantially any point along the carrier track without removing said trolley from said carrier track by loosening said nut and moving said guide wheel assembly horizontally to move said axle of said guide wheel assembly through said slot.

4,245,563

HYDRAULICALLY DAMPED RAILWAY CAR BODY ROLL

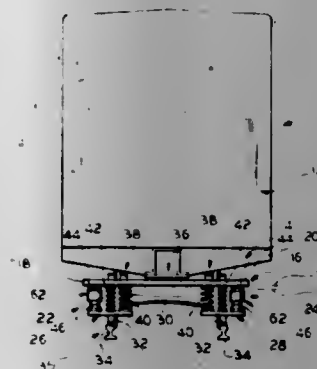
Kenneth G. Empson, 45 Briarcliff Rd., Boulder Hill, Oswego, Ill. 60543

Filed Jun. 25, 1979, Ser. No. 51,698

Int. Cl.³ B61F 5/06, 5/12, 5/24

U.S. Cl. 105—197 DH

14 Claims



1. A railroad truck roll control device for controlling railroad car body roll and adapted to be interposed in a spring group intermediate the truck bolster and a side frame of the truck,

said device comprising:

a base housing defining an upstanding outer cylinder having an upstanding piston rod structure fixed with respect thereto that includes a piston head on its upper end,

a hollow ram reciprocally mounted in said bolster cylinder on said piston rod structure for a full stroke of predetermined length and defining an inner cylinder in which said piston head is reciprocally mounted,

a tubular seal concentric with said cylinders and having one end of same fixed to said ram adjacent the upper end of said ram, and the other end inverted inside said seal and fixed to said base housing adjacent to and in invaginating relation with the upper end of said base housing, thereby forming said seal to define an annular open loop extending below said inverted end thereof,

said seal defining an annular chamber about said cylinders, a rigid shield encompassing said seal and fixedly carried by said ram,

said shield having a guide portion that is concentric with said inner cylinder with said seal bearing on said shield guide portion,

said ram being formed with conduit means for communicating fluid between said inner cylinder and annular chamber, and including normally closed relief valve means in said conduit means for releasing fluid under predetermined pressure in said inner cylinder to said annular chamber,

said ram and said base housing defining passageway means between said annular chamber and said outer cylinder for fluid flow therebetween,

check valve means positioned in said passageway means for restricting fluid flow through said passageway means when said ram moves downwardly relative to said base housing,

with said piston rod structure, below said piston head, and said ram being formed to define therebetween a fluid flow way between said cylinders, and said piston head and said inner cylinder being proportioned for defining a fluid flow way therebetween between the upper and the lower sides of said piston head,

said piston head being apertured for fluid flow therethrough between said sides of said piston head and including check valve means for precluding said fluid flow therethrough when said ram moves downwardly of said piston head, said piston rod structure being formed to define conduit means communicating between the lower end of said piston rod structure and the upper face of said piston head independently of said fluid flow ways for accommodating

compensating fluid flow between said chambers in compensation for the volume space changes of said cylinders resulting from reciprocation of said ram relative to said base cylinder,

said cylinders and the lower portion of said annular chamber being charged with hydraulic liquid,

and the upper portion of said annular chamber being charged with gas under pressure for biasing said ram for movement upwardly of said base housing.

4,245,564

CENTER BEARING SOCKET CONSTRUCTION

Karl-Heinz Eulenfeld, Berg-Gladbach, Fed. Rep. of Germany, assignor to Waggon Union GmbH, Fed. Rep. of Germany

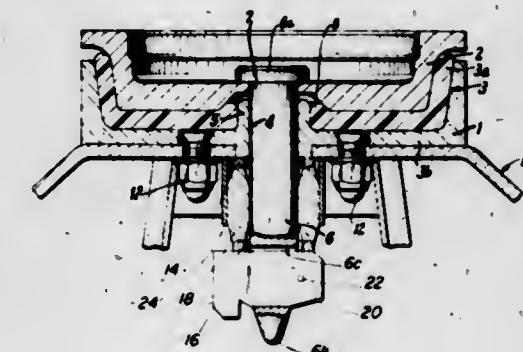
Continuation of Ser. No. 727,249, Sep. 27, 1976, abandoned. This application Apr. 25, 1978, Ser. No. 899,855

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1975, 2547605

Int. Cl.³ B61F 5/16, 5/50; F16C 17/04, 27/08

U.S. Cl. 105—199 C

5 Claims



1. A bearing socket for a pin connection of a truck to the body of rail vehicles, comprising an approximately cup-shaped lower part having a bottom wall with a central bore for the pin and a side wall diverging upwardly, an upwardly-opening cup-shaped insert of resilient material disposed within the lower part and having an annular side wall and a bottom wall which are of substantially the same thickness throughout and have outer bottom and side wall surfaces conformable to the inner bottom and side wall surfaces of said lower part, and an upwardly opening cup-shaped upper part having outer bottom and side wall surfaces conforming to the inner bottom and side wall surfaces of said insert, said insert being fixed by frictional adhesion between said upper and lower parts caused by the load of the said vehicle body so that said insert separates said surfaces of said upper and lower parts, respectively, and absorbs the rotary motion of the bearing by elastic deformation, a sleeve connecting and extending from the truck, an annular spacer positioned in said sleeve with a central opening of a diameter to receive said pin, said pin having a slot there-through at a position below said spacer, and a wedge member engaged in said slot of said pin and bearing against said spacer for retaining said pin within said spacer.

4,245,565

CAMBERED HATCH COVER SEAL ARRANGEMENT

Marvin Stark, Houston, Tex., and Clement J. Kniola, Michigan City, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Feb. 23, 1978, Ser. No. 882,022

Int. Cl.³ B61D 39/00; E04B 7/16; F16J 15/10

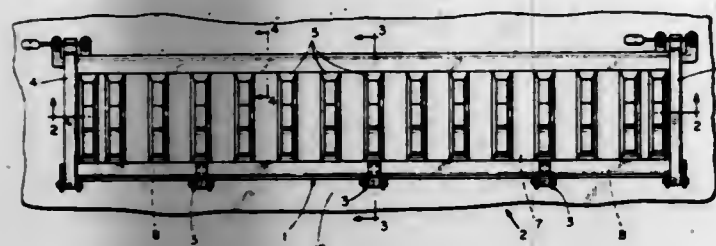
U.S. Cl. 105—377

9 Claims

1. For use with a hatch having a generally planar lip and a flexible hatch cover with a perimeter portion designed to cooperate with said lip along a seating area to close the hatch, and latching means capable of exerting positive latching force on said hatch cover, an improved sealing arrangement comprising:

an internally reinforced elastomeric seal adapted to be inter-

positioned along the seating area between said lip and a perimeter portion of said hatch cover, said seal having upper and lower surfaces adapted to mate with said hatch cover perimeter portion and said lip, respectively, and the inner and outer external surfaces of said seal accommodating lateral flow of said seal, said seal being connected to one of said hatch cover perimeter portion and said lip and having a tapered thickness, the



thickest portion of which is located between said latching means and the thickness of the seal progressively decreasing toward the latching means, and said seal being compressed into a weather-tight relationship with said hatch cover and said lip upon securing the latching means thereby obtaining deflection of said hatch cover and attendant proportional deflection and lateral flow of said seal, said hatch cover thereby substantially conforming with said seal.

4,245,566

SAFETY SHIELD FOR VACUUM/PRESSURE CHAMBER VIEWING PORT

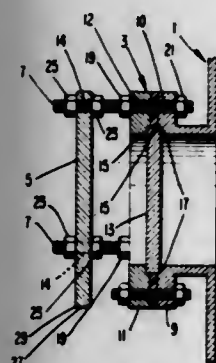
Richard A. Shimansky, Marlow Heights, and Rodney S. Spencer, College Park, both of Md., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 29, 1979, Ser. No. 53,571

Int. Cl.³ E06B 9/00

U.S. Cl. 109-49.5

6 Claims



1. A safety shield for a vacuum/pressure chamber viewing port, comprising:
an optically clear safety shield member;
a plurality of threaded rods extending through said optically clear safety shield member and said vacuum/pressure chamber so that said optically clear safety shield member is axially aligned with said viewing port;
a first pair of nuts threaded on each of said threaded rods, said nuts bearing against opposite sides of said vacuum/pressure chamber for securing said threaded rods to said vacuum/pressure chamber; and
a second pair of nuts threaded on each of said threaded rods, said second pair of nuts bearing against opposite sides of said optically clear safety shield member, and said second pair of nuts being adjustable along said threaded rods to adjustably space said optically clear safety shield member from said viewing port.

4,245,567

SAFE DOOR BOLT

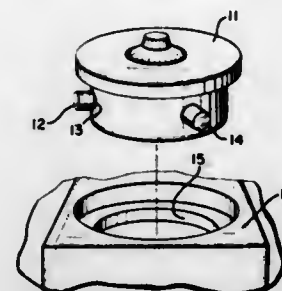
John C. Herrmann, 101 S. Fuller Ave., Los Angeles, Calif. 90036

Filed Aug. 23, 1979, Ser. No. 68,947

Int. Cl.³ E05G 1/04

U.S. Cl. 109-64

2 Claims



1. A safe door bolt for lateral movement through a guiding bore formed in a side wall portion of the door between extended and retracted positions to lock and open the door, respectively, said bolt including an internally coaxially positioned hardened plug having at one end a radially inwardly tapered portion extending over a given axial distance and pointing outwardly, a portion of said bolt including radially expandable means comprising two hardened ball bearings force-fitted into lateral openings on either side of the axis of said bolt and of diameter no greater than $\frac{1}{2}$ the diameter of said bolt so as to be flush with the outer cylindrical surface of said bolt, exterior of said bore when said bolt is in extended position, said tapered portion of said plug being positioned to pass between said ball bearings when the outer end of said bolt is subjected to an axially applied blow causing relative axial movement between said plug and ball bearings to result in driving of said ball bearings radially outwardly to engage the outer periphery of the exit opening of said guide bore and thereby block retracting movement of said bolt into said door.

4,245,568

ROOF BAFFLES FOR FLUEWORK TRANSPORTING DUST-LADEN GASES

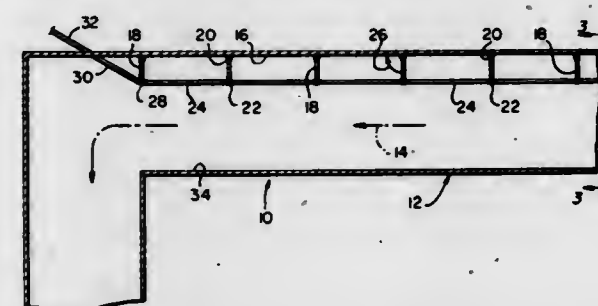
Gary J. Grieco, Somerville, N.J., assignor to Research Cottrell, Inc., Somerville, N.J.

Filed Apr. 13, 1979, Ser. No. 29,934

Int. Cl.³ F23J 11/00

U.S. Cl. 110-147

4 Claims



1. Apparatus for reducing gravitational dust dropout in horizontal run of flue gas conveying flues comprising:
a horizontally disposed gas conveying flue having roof, floor and side walls; and
a plurality of vertically depending and longitudinally spaced baffles mounted to the inner surface of the roof of the flue; wherein the spacings between baffles is from about 0.15 to about 0.90 flue hydraulic diameters, and sized to block from 5% to 50% of the cross-sectional area of the flue.

4,245,569

SCRUBBER BYPASS SYSTEM

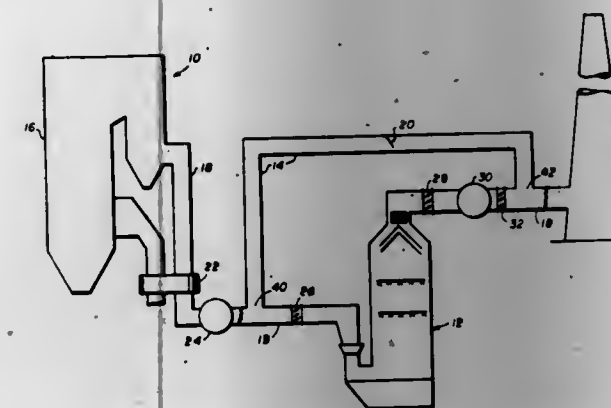
George W. Fallon, III, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 26, 1979, Ser. No. 23,872

Int. Cl.³ F23J 15/00

U.S. Cl. 110-215

6 Claims



1. In an apparatus having a furnace, a stack for venting combustion products formed in said furnace to the atmosphere, a main flue for conveying the combustion products away from the furnace to the stack, a first fan disposed in said main flue between the furnace and the stack, a scrubber for removing pollutants from the combustion products, the scrubber disposed in said main flue between said first fan and the stack, and means located in said main flue at the inlet of the scrubber for controlling the flow of the combustion products through the scrubber; a scrubber bypass system comprising:

- a second fan disposed in said main flue between the scrubber and said stack;
- means operatively associated with said second fan for modulating the pressure rise imparted to the combustion products by said second fan;
- a bypass duct having an inlet opening into said main flue at a location between said first fan and said means for controlling the flow of the combustion products through the scrubber and an outlet opening into said main flue at a location between said second fan and the stack, said bypass duct thereby providing a flow path for passing the combustion products around the scrubber; and
- means disposed in said bypass duct for controlling the flow of combustion products through said bypass duct, said means being self-actuating in response to the pressure differential between the static pressure of the combustion products in said main flue at the inlet of said bypass duct and the static pressure of the combustion products in said main flue of the outlet of said bypass duct.

4,245,570

SEWAGE SLUDGE DISPOSAL APPARATUS AND METHOD OF DISPOSAL

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Continuation-in-part of Ser. No. 921,739, Jul. 3, 1978,

abandoned. This application Apr. 26, 1979, Ser. No. 33,434

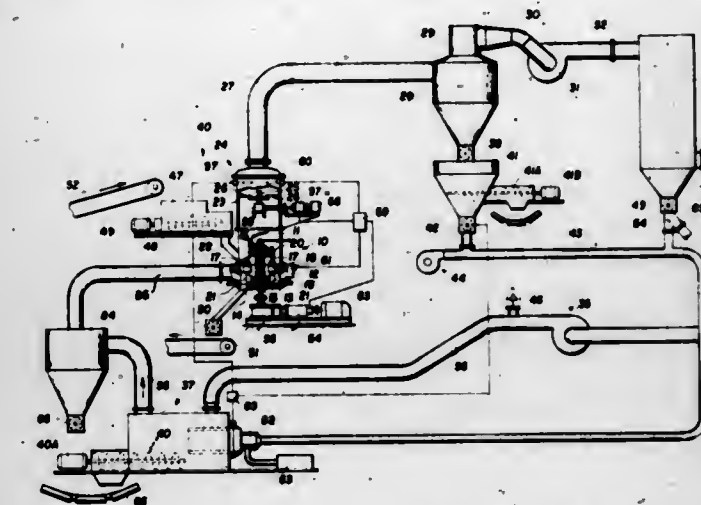
Int. Cl.³ F23G 7/04

U.S. Cl. 110-238

26 Claims

1. Sewage sludge disposal apparatus comprising: a roller mill for receiving and grinding the sewage sludge, said roller mill having a gaseous medium inlet and an outlet for ground sludge moved by the gaseous medium; a furnace for burning fine ground sewage sludge and producing heat for drying sewage sludge; classifier means having an inlet connected to said roller mill outlet and a common outlet for ground and classified sewage sludge and the gaseous medium; separator means having an inlet connected to said classifier means common outlet and spaced outlets, one of said outlets being for ground sewage sludge and another of said outlets being for gaseous medium substantially free of ground sludge; gaseous medium conduit means connected between said another of said outlets of said separator and said furnace; ground sewage sludge conduit

means connected between said one separator outlet and said furnace for delivery of the ground sewage sludge to be used as a fuel in said furnace; connecting means between said furnace and said roller mill gaseous medium inlet for delivering hot furnace gaseous medium to said roller mill; means at said sepa-



4,245,571

THERMAL REDUCTOR SYSTEM AND METHOD FOR RECOVERING VALUABLE METALS FROM WASTE

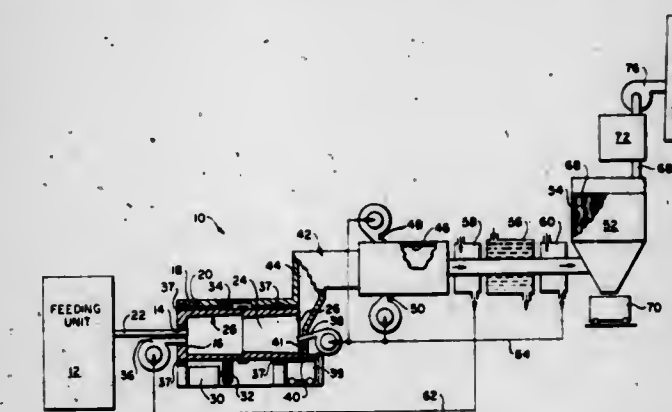
Zygmunt J. Przewalski, Windsor, Conn., assignor to T R Systems, Inc., Glastonbury, Conn.

Filed Apr. 5, 1978, Ser. No. 893,621

Int. Cl.³ F23G 5/06

U.S. Cl. 110-246

18 Claims



1. In a thermal reductor system for waste disposal, a rotary housing having a longitudinally extending ignition chamber, and means supporting the housing for rotation about a horizontal axis, the ignition chamber having an input end, a discharge end and an inside chamber wall extending between the ends of the ignition chamber, the inside chamber wall being tapered from the discharge end toward the input end for promoting natural flow of gases, smoke and ash discharge toward said discharge end, the inside chamber wall having a restriction of minimum diameter intermediate the input and discharge ends of the chamber defining a barrier to liquid flow from the input to discharge ends of the chamber while permitting normal advance movement of solids along the inside chamber wall toward the discharge end.

4,245,572

FURNACE COOLING SYSTEM

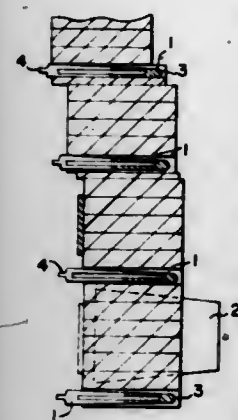
Kenneth C. Sharp, 30 Mountcombe Close, Upper Brighton Hill, Surbiton, Surrey, England

Filed May 30, 1979, Ser. No. 35,492

Int. Cl.³ F27D 1/12

U.S. Cl. 110—336

4 Claims



1. In a furnace wall construction having at least one cooling plate built into the wall, said plate being disposed transversely in the wall, at least one heat pipe enclosed in said plate extending toward the interior of the furnace, the wall of the furnace being built up in layers and said cooling plate disposed at intervals between the layers, said cooling plate being tapered toward its edge facing the interior of the furnace, said plate being at least partially hollow, an inlet adjacent the rearwardly facing edge of the plate to receive a flow of cooling water into said hollow, said rearwardly facing edge comprising a back plate welded to the plate to enclose the hollow and form a cooling chamber through which the cooling water is circulated, said back plate including an inlet and an outlet for the circulation of said cooling water connected with cooling chambers of other plates, said cooling plate including a solid portion extending from said interior edge to said hollow and having a plurality of bores extending from adjacent the interior edge to the hollow, and heat pipes in said bores extending into the cooling chamber formed by said hollow.

4,245,573

AIR HEATER CORROSION PREVENTION

Shyam N. S. Dixit; Douglas I. Bain, both of Cincinnati, Ohio, and David A. Carter, Barrington, Ill., assignors to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 969,666, Dec. 15, 1978, abandoned. This application Dec. 22, 1978, Ser. No. 972,276

Int. Cl.³ F23J 1/00

U.S. Cl. 110—343

8 Claims

1. Method of reducing corrosion of metal surfaces in an air heater in an industrial or utility fossil fuel furnace comprising injecting an additive into the furnace at a temperature in the range of 2300°–1700° F. at a rate of 0.05–10 lbs. additive/ton of fuel burned; the additive being essentially free of free alumina and consisting essentially of a combination of magnesium oxide and magnesium silicate in a weight ratio of from 2 to 1:1 of magnesia to magnesium silicate.

4,245,574

TUFTED FABRIC AND METHOD AND APPARATUS FOR MAKING SAME

Bobby L. Wilson, Ringgold, Ga., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Jan. 13, 1979, Ser. No. 48,611

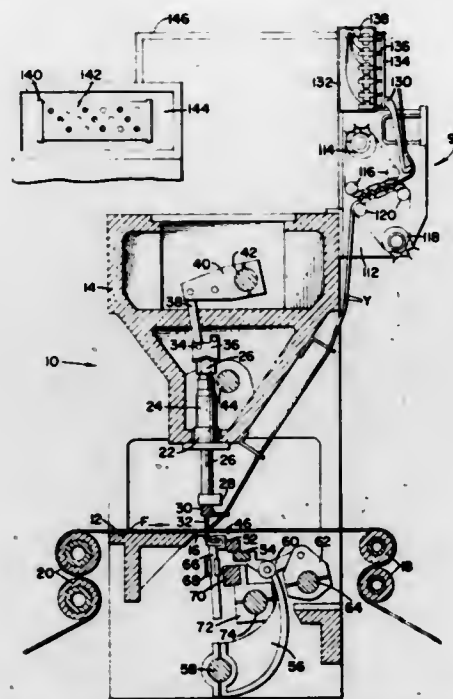
Int. Cl.³ D05C 15/00

U.S. Cl. 112—79 R

7 Claims

1. In a tufting machine, means for feeding a backing fabric in one direction, first and second yarn-carrying needles disposed on one side of said backing fabric, means for reciprocating said first needle for penetrating the backing fabric to a first level to form a first row of loops therein and for reciprocating said

second needle to a second and deeper level to form a second row of longer loops therein, means for supporting a first hook on the other side of the backing fabric having a free end pointing opposite said one direction for entering the loops of the first row in succession, means for supporting a second hook further from the backing fabric on the other side of the backing fabric having a free end pointing opposite said one direction



for entering the loops of the second row in succession, yieldable clip means for engaging the free end of each hook normally to prevent the withdrawal of loops therefrom, means for backdrawing yarn selectively from each hook to pull a selective loop with substantially the same sufficient tension to cause said selective loop to force the yieldable means away from said free end and withdraw from the hook, and means for severing the loops remaining on each hook.

4,245,575

LUBRICATION SYSTEM FOR SEWING MACHINE

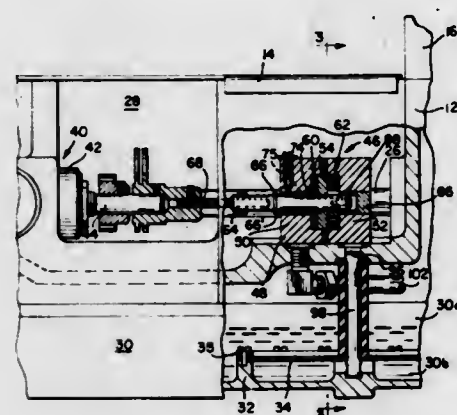
James C. Hsiao, Morton Grove, and Yoichiro Ishikawa, Villa Park, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Filed Jul. 16, 1979, Ser. No. 58,211

Int. Cl.³ D05B 71/00

U.S. Cl. 112—256

13 Claims



1. A sewing machine having a frame, a series of stitch forming instrumentalities spatially arranged in said frame including a rotary input shaft for actuating same, and a lubrication system comprising:

- a lubricant reservoir means;
- lubricant pump means including:
- pump housing means secured to said frame in an area removed from said reservoir means;
- first mechanical positive displacement pump means arranged in said housing means for transmitting filtered lubricant

4,245,577

LOCKSTITCH SEWING BY NEEDLE LOOPER

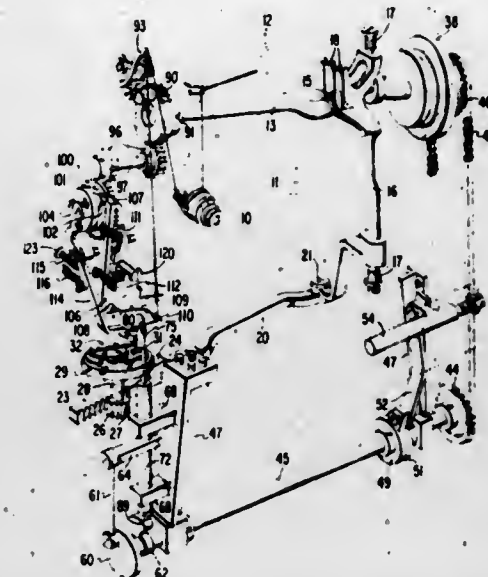
Josef Zocher, Aachen, Haaren, Fed. Rep. of Germany, assignor to The Singer Company, Stamford, Conn.

Filed Apr. 25, 1979, Ser. No. 33,297

Int. Cl.³ D05B 57/08, 85/10

U.S. Cl. 112—262.1

1 Claim



from said reservoir and delivering same, under pressure, to the instrumentalities arranged in the frame;

second mechanical positive displacement pump means coaxially arranged in said housing means relative to said first pump means for transmitting lubricant;

a pump actuating shaft operatively connected to the rotary input shaft of one of said stitch forming instrumentalities for simultaneously imparting motion to said first and second pump means;

means operative for filtering and distributing selectively controlled individual amounts of lubricant to each of said instrumentalities; and

pressure responsive valve means adapted to selectively regulate the pressurized flow of lubricant delivered to each of said instrumentalities.

4,245,576

PLEATING MACHINE

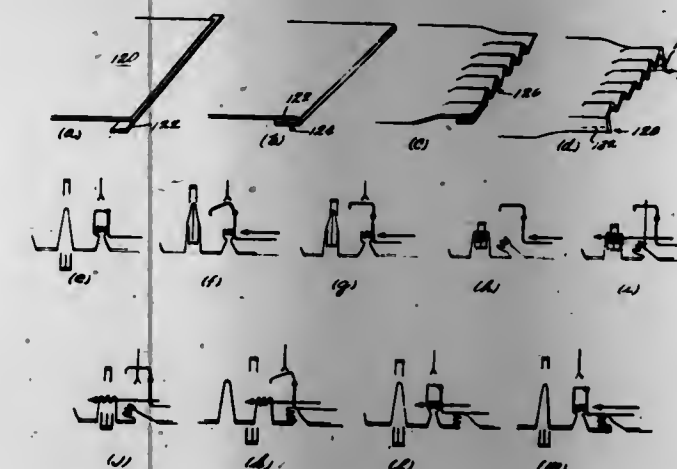
William B. Crawford, Greensboro, and Anthony T. Solomon, Reidsville, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation of Ser. No. 835,724, Sep. 22, 1977, abandoned, which is a division of Ser. No. 610,045, Sep. 3, 1975, Pat. No. 4,073,246. This application Aug. 11, 1978, Ser. No. 933,091

Int. Cl.² D05B 97/00, 35/08

U.S. Cl. 112—262.1

65 Claims



1. A method of making finished drapes from blank drapery panels in a pleating machine of a type having a loading assembly, a loop forming assembly, an overhead transfer assembly, a corner sewing station and at least one pleat forming and pleat sewing station wherein the loading assembly, loop forming assembly, overhead transfer assembly and pleating/sewing station each have clamping portions comprised of a plurality of spaced apart clamps, said method comprising the steps of:

- loading the drapery panel in the loading assembly of the pleating machine;
- forming a header portion in said drapery panel;
- sensing the width of the drapery panel to determine pleat spacing;
- transferring said drapery panel to a loop forming assembly;
- forming loops in the header portion of the drapery panel, said loops being uniformly spaced across said drapery panel according to the sensed drapery panel width;
- advancing said drapery panel to the corner sewing station and sewing the corners of the header portion;
- thereafter advancing said drapery panel to a pleating station;
- successively forming pleats in each of said loops and after each pleat is formed advancing that formed pleat and said drapery panel into a pleat sewing station and sewing that formed pleat, and
- ejecting said drapery panel after the pleat in the last loop is formed and sewn.

4,245,578

PROCESS AND APPARATUS FOR HANDLING A DIVING MACHINE

Vincent Bianco; Paul D. Grogan, both of Marseilles, and Henri Chetoni, Allauch, all of France, assignors to Compagnie Maritime d'Expertises, Marseilles, France

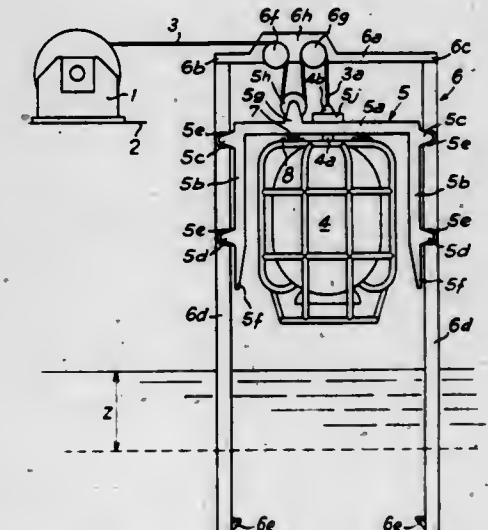
Filed Aug. 16, 1978, Ser. No. 934,034

Claims priority, application France, Sep. 2, 1977, 77 27518

Int. Cl.³ B63G 8/00

U.S. Cl. 114—312

8 Claims



1. Apparatus for handling a submersible device comprising: a control device mounted on a support structure and includ-

ing a suspension cable having a free end at which said submersible device is suspended;

a guide structure fixed to the support structure with at least a portion of said guide structure extending below the surface of a liquid body, said guide structure having at least one guidance ramp;

a traveller including guidance means for slidably cooperating with said at least one guidance ramp;

a pulley block including at least one fixed upper pulley secured to said guide structure and at least one movable lower pulley fixed to the traveller, said suspension cable passing over said at least one fixed upper pulley and said at least one movable lower pulley so as to form n number of strands; and

means for temporarily connecting the submersible device to said traveller when at least a portion of said submersible device extends out of the liquid body.

7. A method for handling a submersible device with an apparatus of the type including a control device mounted on a support structure and having a suspension cable with a free end at which said submersible device is suspended, a guide structure fixed to the support structure, traveller means, and a pulley block having said suspension cable wound thereabout so as to form n strands where n is greater than 1, wherein said pulley block and suspension cable are adapted to connect said traveller means to said guide structure, said method comprising the step of lowering said submersible device into a liquid body, said step of lowering including:

connecting said submersible device to said traveller means so as to form a first assembly when said submersible device is at least partly positioned out of said liquid body;

connecting said first assembly to said guide structure with said pulley block and suspension cable;

unwinding said suspension cable from a source thereof at a cable unwinding speed so as to lower said first assembly at a first slow speed equal to the cable unwinding speed divided by n, where n is the number of strands formed, until said submersible device is submerged in said liquid body;

detaching said submersible device from said traveller means; and

further lowering said submersible device in said liquid body at said cable unwinding speed so as to eliminate the effect of said pulley block.

4,245,579

PRESSURIZED FLUID CIRCUITS

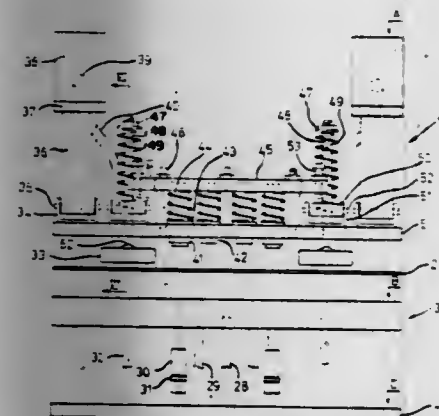
Erle W. Benemann, Christchurch, New Zealand, assignor to Benefits Systems Limited, Christchurch, New Zealand

Filed Apr. 10, 1978, Ser. No. 895,218

Int. Cl.³ G01L 19/12, 19/10

U.S. Cl. 116—70

8 Claims



1. A pressure drop detector for a pressurized fluid fire alarm system, said detector comprising a block of material having in a first surface thereof a pressurized fluid circuit in the form of grooves or channels forming fluid flow paths in said first surface, apertures provided in a second surface of said block for

connecting said fluid with tubes or pipes of the pressurized fluid fire alarm system, a flat diaphragm connected to said block over said first surface but movable relative thereto to (a) detect the pressure in said system at an appropriate portion of said fluid circuit and to operate a low system pressure indicating means when the system pressure has dropped to a predetermined level and (b) to control fluid flow along said fluid flow paths in said fluid circuit at at least one valve seat portion provided on said first surface.

4,245,580

DEVICE FOR COATING GRANULAR SOLIDS

Kahei Okawara, Shizuoka, Japan, assignor to Okawara Mfg. Co., Ltd., Haibara, Japan

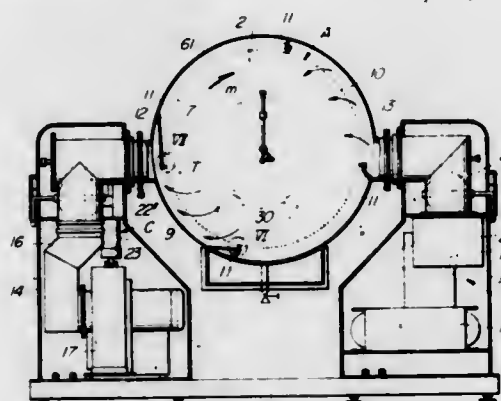
Filed Apr. 30, 1979, Ser. No. 34,677

Claims priority, application Japan, Sep. 26, 1978, 53/118972

Int. Cl.³ B05C 5/00

U.S. Cl. 118—19

2 Claims



1. A device for coating granular solids comprising a rotary drum having a central cylindrical member made of gas permeable material, two side plates connected to the ends thereof and a rotary shaft extended from one side plate defining an axis of rotation; two supporting stands for supporting said rotary drum; a driving device drivingly coupled to said rotary shaft for rotating said rotary shaft in a predetermined direction about said axis; a casing surrounding said cylindrical member of said rotary drum; a device which supplies a coating material and sprays the same so as to spray said coating material into the interior of said rotary drum; an opening formed through the other side plate; a supply passage and an exhaust passage airtightly formed in the space between said rotary drum and said casing; a gas supply duct which extends from one side of said casing, is rotatably supported by one supporting stand and is communicated with said supply passage; a gas exhaust duct which extends from the other side of said casing, is supported for rotation by the other supporting stand and is communicated with said exhaust passage; rotary drum tilting means which is drivingly connected to either said gas supply duct or said gas exhaust duct so as to cause said rotary drum to tilt about said ducts; annular insulating covers which are mounted over the outer sides of said side plates of said rotary drum, said covers being annular with respect to said axis, the interiors of said annular covers normally containing air and being open to said exhaust passage; and sealing means which airtightly seals said interiors of said annular covers from said supply passage and outside air and which includes a sealing member made of an elastic material and a holder retaining said sealing member, the free end of said sealing member being coated with an abrasion resisting material such as polytetrafluoroethylene.

4,245,581

PARSLEY APPLICATOR

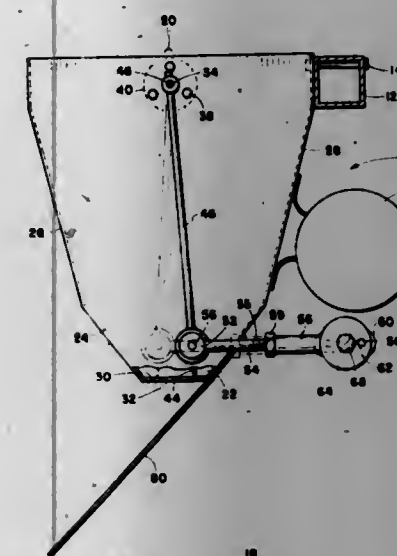
Rupert L. Spencer, Joplin, Mo., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Nov. 16, 1979, Ser. No. 95,605

Int. Cl.³ B05C 19/00

U.S. Cl. 118—24

4 Claims



1. A particulate material dispenser for use with a conveyor system wherein particulate material is applied to a plurality of substrate receiving bases carried on said conveyor system; comprising a hopper mounted over a portion of said conveyor system, said hopper having a front wall, a rear wall, a pair of spaced side walls and a reduced bottom wall, said bottom wall having a plurality of spaced and aligned openings for allowing the passage of particulate material therethrough, an agitator shaft disposed horizontally above said openings and having opposite ends extending through said side walls, means for rotatably mounting said ends of said agitator shaft on said side walls, a plurality of elongated tines mounted on said agitator shaft and extending downwardly therefrom, said tines having lower ends terminating adjacent said openings, means for providing an oscillating motion to said agitator shaft whereby said tines swing in an arc over said openings to assist in the discharge of particulate material therethrough, a distribution plate on the lower portion of said hopper and extending downwardly at an angle therefrom beneath said openings, and means for vibrating said hopper and said distribution plate whereby particles passing through said openings bounce off said distribution plate onto said bases.

4,245,582

ADJUSTABLE ROD HOLDER FOR METERING ROD COATERS

Robert J. Alheid, Beloit, and Robert O. Budd, Janesville, both of Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Feb. 2, 1979, Ser. No. 9,236

Int. Cl.³ B05C 11/02

U.S. Cl. 118—119

3 Claims

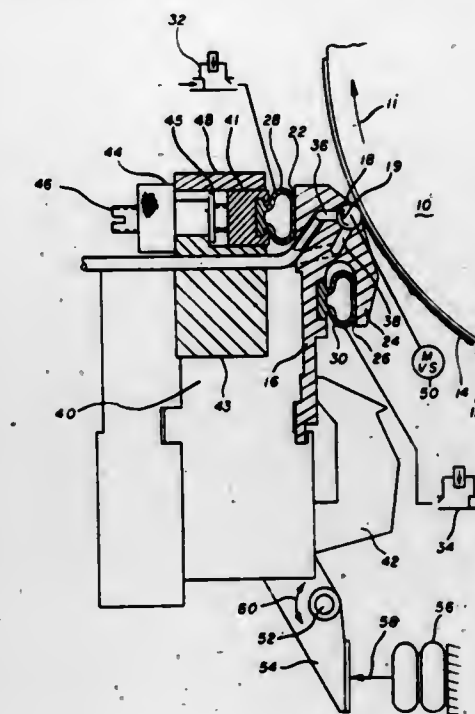
1. A rod holder for use in a web coating apparatus wherein a rod is positioned against a traveling web on a backing roll to meter coating thereon, said rod holder including:

a longitudinally extending cavity for receiving a cylindrical rod for rotating therein, said cavity having its bore wall made of a stiff, resiliently deformable material;

a first pressure surface for receiving and transmitting a correspondingly coextensive first force to the cavity for insuring a uniform nip force between the rod surface and the web on the backing roll;

a lip portion coextending with the cavity longitudinally of the rod holder along one side thereof, said lip portion having a second pressure surface for receiving a second force independent of said first force for urging the lip

portion to move its associated side of the cavity bore wall inwardly to reduce the bore of the cavity to adjust the fit



of the rod within the cavity, as desired, to compensate for wear of the cavity bore wall as the rod is rotated therein.

4,245,583

MECHANISM TO TRANSFER A VISCOUS COATING MEDIUM

Ernst Schollkopf, Walter Rimmele, Hans Skultety, all of Fribourg, and Eduard Ortner, Villars-sur-Glane, all of Switzerland, assignors to Polytype AG, Fribourg, Switzerland

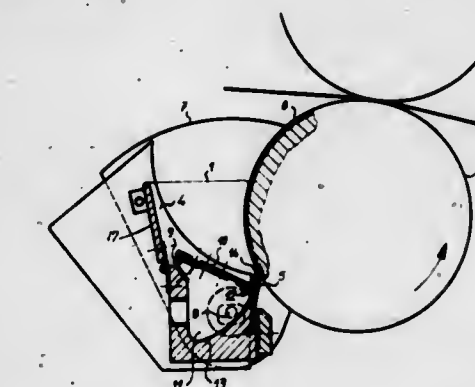
Filed Dec. 15, 1978, Ser. No. 969,789

Claims priority, application Sweden, Dec. 19, 1977, 7714432; Jul. 31, 1978, 7808278

Int. Cl.³ B05C 1/08

U.S. Cl. 118—259

9 Claims



1. Apparatus for transferring a viscous coating material to a medium conveyor, printing form, inking roller, or the like, said apparatus comprising:

a wetting container for viscous coating material; said wetting container having a plurality of walls;

a rotating transfer roll and a doctor blade for said rotating transfer roll; said doctor blade being near to said transfer roll; said transfer roll and said doctor blade together forming one of said plurality of walls of said wetting container;

a pressure chamber for containing viscous coating material therein; a regulatable opening from said pressure chamber located near to said doctor blade and upstream in the path of rotation of said transfer roll from said doctor blade; transfer means for transferring viscous coating material through said regulatable opening to said transfer roll adjacent said doctor blade; said opening being oriented so that the direction of transfer of viscous coating material through said regulatable opening is counter to the direc-

tion of rotation of said transfer roll upstream of the contact thereof with the medium conveyor, printing form, inking roller, or the like; said opening being so shaped, placed and angled and said transfer means being operative so that the force and angle of attack of viscous coating material from said pressure chamber onto said transfer roll removes excess coating material and built-up coating material from said transfer roll.

4,245,584

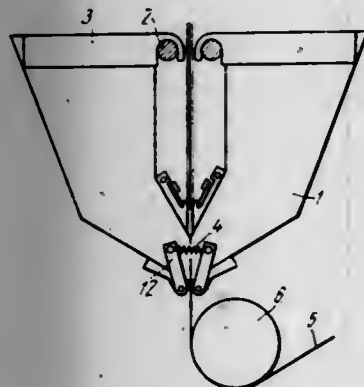
APPARATUS FOR APPLYING PASTE UPON BLANK STRIPS FOR CERMET ELECTRODES OF ALKALINE STORAGE BATTERIES

Ivan A. Kolosov, ulitsa Astrakhanskaya, 118, kv. 54., and Nikolai V. Kuryabev, ulitsa Ordzhonikidze, 6, kv. 11., both of Saratov, U.S.S.R.

Filed Feb. 9, 1979, Ser. No. 11,040
Int. Cl.³ B05C 3/00

U.S. Cl. 118—407

7 Claims



1. An apparatus for applying paste upon blank strips for cermet electrodes of alkaline storage batteries, comprising: a drive; a bin containing said paste and through which a backing strip is advanced by said drive, said bin including two independent reservoirs, one on each side of said backing strip, a port being defined in a lower portion of each reservoir, said ports being aligned on a respective side of said backing strip for paste to flow from a respective reservoir through said port onto a surface of the respective side of said backing strip; an application nozzle defined by upper edges of said ports when said reservoirs are closed against said backing strip; and combs mounted along said upper edges of respective ports and being angled with respect to a direction of advancement of said backing strip, working ends of teeth of each comb interacting with said backing strip to center said backing strip within said bin.

4,245,585

APPARATUS FOR RECOATING SURFACES OF A THERMOPLASTIC MATERIAL

Jean P. Bocquet, Bissy Chambéry, France, assignor to Societe SKID, Chambéry, France

Filed May 9, 1978, Ser. No. 904,256

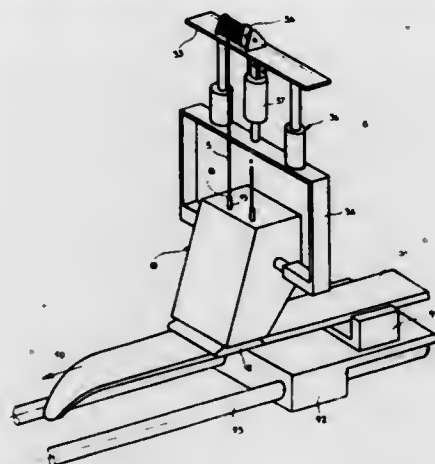
Claims priority, application France, May 17, 1977, 77 15139
Int. Cl.³ A63C 11/07

U.S. Cl. 118—410

2 Claims

1. An apparatus for recoating a thermoplastic surface with a thermoplastic material, which comprises means for continuously supplying thermoplastic material in a solid state, heating and spreading means for coating said thermoplastic material in a molten state on said thermoplastic surface to be coated, said heating and spreading means comprising a metallic heating body having heating resistor means therein and at least one transversing passageway for said thermoplastic material, said passageway having an inlet for introducing said thermoplastic material in a solid state and an opposite outlet, said heating resistor means comprising at least a heating cartridge disposed

at the vicinity of said passageway; mechanical means for forwarding the coating material through said passageway, said forwarding means being disposed upstream said passageway with respect to the forwarding direction of the coating material, said mechanical forwarding means comprise at least one cylindrical guiding bush formed with a longitudinally extending opening through which extends a peripheral toothed segment of a toothed wheel, driving means being provided for rotating said toothed wheel and including a ratchet wheel mechanism which cooperates with said toothed wheel to drive said wheel and a reducing gear driving unit; and a projection formed on said heating body forming a spreading structure for



spreading said molten thermoplastic material, said projection having a substantially flat contacting surface extending at an angle to said passageway for contacting the surface to be recoated, said contacting surface being formed with a groove into which opens said outlet of said passageway; wherein said heating body and, said forwarding means are supported on a supporting frame slidably mounted for displacement in a first direction on a stationary framework, actuation means being provided on said stationary framework for bringing said spreading structure in pressure contact with said surface to be treated supported on a supporting structure mounted on said stationary framework for displacement in a second direction substantially perpendicular to said first direction.

4,245,586

DEVELOPING DEVICE FOR XEROGRAPHIC COPYING MACHINES

Willy J. Palmans, Kessel, and William C. Waterschoot, St-Niklaas, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

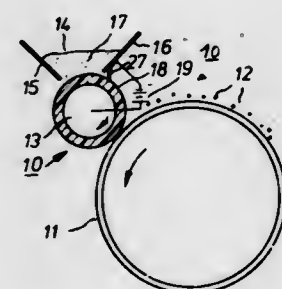
Filed Dec. 20, 1978, Ser. No. 971,410

Claims priority, application United Kingdom, Dec. 22, 1977, 53521/77

Int. Cl.³ G03G 15/08

U.S. Cl. 118—647

8 Claims



1. A device for applying a toner composition onto a moving medium carrying an electrostatic latent image, comprising: an open-bottomed tray for containing a mass of toner composition; an applicator roller disposed beneath said tray with a part of its periphery forming the bottom of said tray, said roller

being capable of rotating at a predetermined rotational speed; scraper means for conferring an initial tribo-electric charge to said toner composition and for controlling the thickness of the layer of toner composition formed on the surface of said applicator roller, said scraper means forming at least a part of one wall of said tray and being positioned with one edge at a predetermined distance from the periphery of said applicator roller; means to rotate said applicator roller in close proximity to said medium carrying said electrostatic latent image; and means for applying an electrical DC-potential of the same polarity as that of said initial tribo-electric charge between said applicator roller and said scraper means for further increasing the magnitude of the electrical charge conferred to said toner composition.

4,245,587

METHOD FOR COMMUNICATING WITH AQUATIC MAMMALS

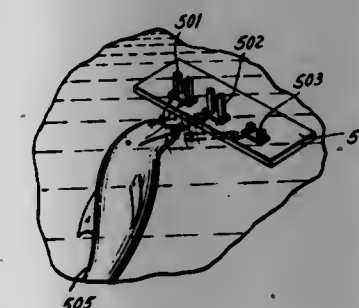
Stephen R. Cooper, 246 Sunrise Hill Ct., Norwalk, Conn. 06851, and Charles H. Cooper, 201-16 43 Ave., Bayside, N.Y. 11361

Filed Oct. 30, 1978, Ser. No. 955,621

Int. Cl.³ A01K 15/00

U.S. Cl. 119—29

57 Claims



1. A training method for communicating with an aquatic mammal comprising the steps of (a) creating a set of alphabet symbols including a plurality of symbols, each symbol comprising at least one three-dimensional object having an acoustically distinct echolocation image, (b) assigning a human language phonetic value comprised of at least one speech sound to each symbol, and (c) arranging said symbols in sequences in the proximity of said aquatic mammal such that said aquatic mammal can be trained to identify such sequences as symbolizing a plurality of different echolocation images.

4,245,588

VAPOR GENERATING SYSTEM HAVING A DIVISION WALL PENETRATING A FURNACE BOUNDARY WALL FORMED IN PART BY ANGULARLY EXTENDING FLUID FLOW TUBES

William J. Gill, New York, N.Y.; Nick Albanese, Parsippany, N.J.; Michael B. Herbacek, West Orange, N.J., and Harvey H. Nelken, River Edge, N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jan. 16, 1979, Ser. No. 3,839

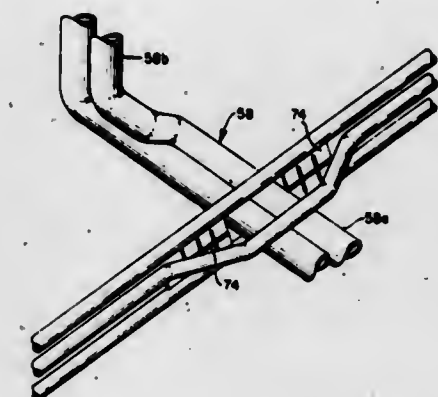
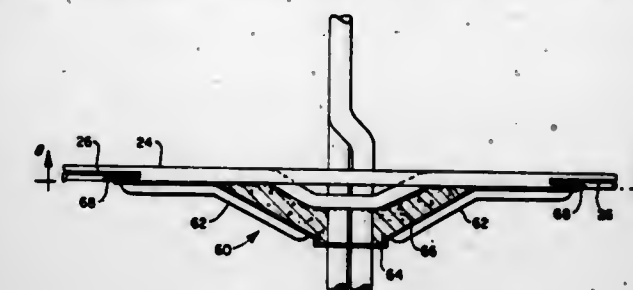
Int. Cl.³ F22B 37/20

U.S. Cl. 122—6 A

9 Claims

1. A vapor generator comprising a plurality of tubes connected together and arranged to form the boundary walls of a gas-tight enclosure, said tubes extending at an acute angle with respect to the horizontal for at least a portion of the height of said enclosure, at least one division wall associated with said enclosure, said division wall comprising a plurality of interconnected tubes and having a first portion extending within said enclosure and a second portion extending integrally with said first portion and penetrating one of said boundary walls, portions of the tubes forming said one boundary wall being bent outwardly from the plane of said boundary wall to form the area of penetration, said bent tube portions extending at an angle downwardly from the horizontal to enable said tube

portions to be drained of said fluid, seal means cooperating with said one boundary wall and said division wall portion for sealing the area of penetration of said one boundary wall by



said second division wall portion to maintain said gas-tightness, heating means associated with said enclosure, and means for passing fluid through said tubes to apply heat to said fluid.

4,245,589

EXOTHERMIC INJECTOR ADAPTER

Joseph C. Ryan, 91-045 Hallipo St., Ewa Beach, HI. 96706

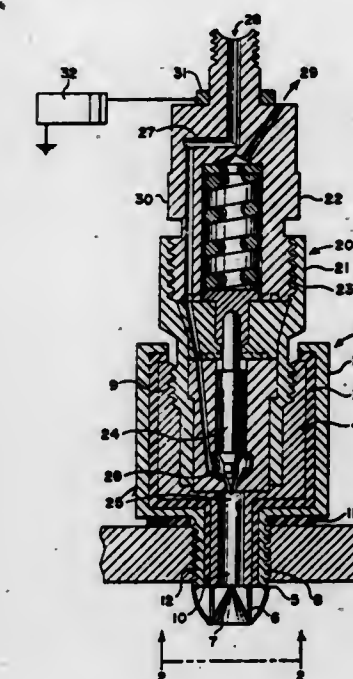
Continuation-in-part of Ser. No. 736,873, Oct. 29, 1976,

abandoned. This application Jul. 18, 1978, Ser. No. 925,836

Int. Cl.³ F02B 3/02

U.S. Cl. 123—298

5 Claims



1. A fuel injector adapter for an internal combustion engine comprising a body, an insulator sleeve, a retainer, a heater means and a deflector, said deflector being plated with a catalyst; said body having a longitudinal passage with means at one end of said body adapted for connection to an engine head, said retainer being fixedly located within said longitudinal passage of said body, and having a second longitudinal passage for fuel discharge and means at one end adapted for connection to a fuel injector; said insulator sleeve is located between said body

and said retainer; said heater means is located near the discharge end of the longitudinal passage of said retainer; said heater means includes ground wires and power supply wires, one end of said ground wires is connected to the lower edge of said deflector and the other end is connected to said body, one end of said power supply wires is connected to the lower edge of said deflector and the other end is connected to said retainer; said catalyst being exothermic or heat producing under certain conditions which include high temperature and high pressure and having the ability to fracture the heavy and complex hydrocarbon molecules found in most automotive and diesel fuels.

4,245,590

ELECTRONIC CONTROL APPARATUS FOR A FUEL INJECTION SYSTEM IN INTERNAL COMBUSTION ENGINES

Werner Grözinger, Illingen, and Friedrich Rabus, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

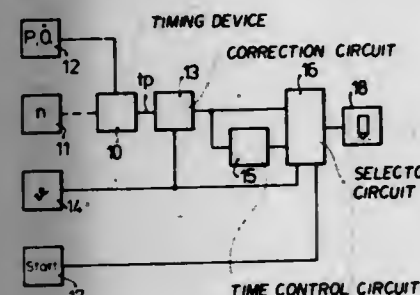
Filed Feb. 2, 1979, Ser. No. 9,011

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804444

Int. Cl.³ F02B 3/00

U.S. Cl. 123—488

8 Claims



1. An electronic control apparatus for a fuel injection system in internal combustion engines comprising a timing device for generating electrical injection pulses the duration of which is dependent on operating characteristics and which are delivered to at least one electromagnetic injection valve, a time control circuit operatively responsive to the timing device for forming a signal indicative of at least one limiting value for a subsequent injection pulse, a selector circuit responsive to said time control circuit and said timing device and means for feeding said subsequent injection pulse and said at least one limiting value signal to said selector circuit.

4,245,591

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Minoru Nishida; Tadashi Hattori, both of Okazaki; Hiroaki Yamaguchi, Anjo; Kenji Goto, Susono; Daisaku Sawada, Susono, and Takashi Shigematsu, Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

Filed Sep. 24, 1979, Ser. No. 77,917

Claims priority, application Japan, Oct. 10, 1978, 53/124402

Int. Cl.³ F02P 5/04

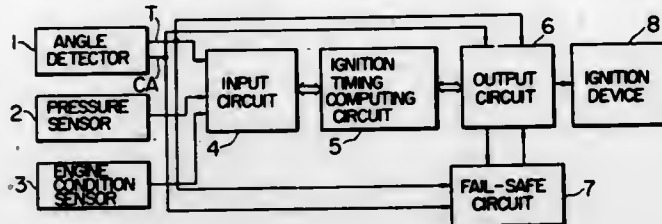
U.S. Cl. 123—416

2 Claims

1. An ignition timing control system for internal combustion engines comprising:

- means for detecting operating conditions of an internal combustion engine;
- means for calculating an instant of ignition spark supplied to said internal combustion engine;
- means for establishing an allowable uppermost and lowermost instants of ignition spark;
- means for discriminating whether the calculated instant of ignition spark is inside or outside the allowable uppermost and lowermost instants of ignition spark; and
- means for generating an ignition spark at the calculated

instant when the discrimination result indicates that the calculated instant is inside the allowable uppermost and lowermost instants and at a predetermined instant when the discrimination result indicates that the calculated



instant is outside the allowable uppermost and lowermost instants, said predetermined instant being identical with either one of the allowable uppermost and lowermost instants.

4,245,592

CONTROLLED FLOW PURGE SYSTEM AND APPARATUS

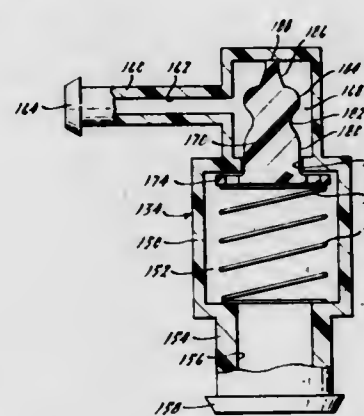
Walter J. Atkins, Sr., Wayne, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 22, 1979, Ser. No. 41,368

Int. Cl.³ F02M 7/00

U.S. Cl. 123—572

5 Claims



1. In combination with an engine having an interior crankcase space, suction producing air induction means having a movable throttle and hydrocarbon vapor storage means having an inlet to atmosphere and an outlet, a purge system and apparatus to withdraw hydrocarbon vapors from the engine interior space and the vapor storage means for passage into the air induction means comprising: first passage means communicating the air induction means with the engine interior space thereby producing a continuous evacuating action when the engine is operative, second passage means selectively communicating with engine interior space with the outlet of the vapor storage means including a pressure responsive valving control with multifunction flow capabilities to regulate air flow through the storage means, the flow through the engine interior space and storage means into the air induction means characterized by substantially zero flow under a wide open throttle engine condition, a relatively low rate of flow under idle engine conditions, a greater rate of flow under part throttle cruise conditions and a maximum rate of flow under closed throttle deceleration engine conditions.

4,245,593

LIQUID HEATING AND CIRCULATING SYSTEM

John Stein, Spokane, Wash., assignor to Kim Hotstart Manufacturing Co., Inc., Spokane, Wash.

Continuation of Ser. No. 906,993, May 18, 1978, abandoned.

This application Sep. 4, 1979, Ser. No. 71,982

Int. Cl.³ F02N 17/02

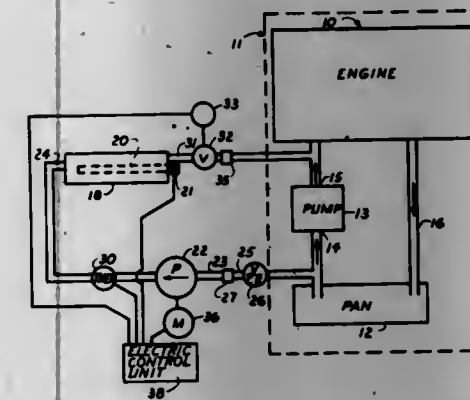
U.S. Cl. 123—142.5 R

13 Claims

1. An apparatus for maintaining an engine in readiness for

use while nonoperational, wherein the engine includes a closed liquid recirculation system having a liquid supply and a recirculating pump, the recirculating pump being adapted to direct pressurized liquid through the system while the engine is operational; said apparatus comprising:

- a supply pump having an inlet and an outlet;
- motor means operatively connected to the supply pump for driving the pump so as to impart a predetermined pressure to liquid at the pump outlet when said motor means is operating;
- a supply conduit adapted to be operatively connected be-



tween the pump inlet and the liquid supply of the closed liquid recirculation system of the engine;

- a heat exchanger having an inlet and an outlet;
- said heat exchanger including heating element means for transferring heat to liquid passing through the heat exchanger between its inlet and outlet;
- said inlet of the heat exchanger being in open communication with the outlet of the supply pump;
- and a delivery conduit adapted to be operatively connected between the outlet of the heat exchanger and the closed liquid recirculation system of the engine at a location downstream from the recirculating pump thereof.

4,245,594

IGNITION DEVICE

Seiji Morino, Aichi, and Hisasi Kawai, Toyohashi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

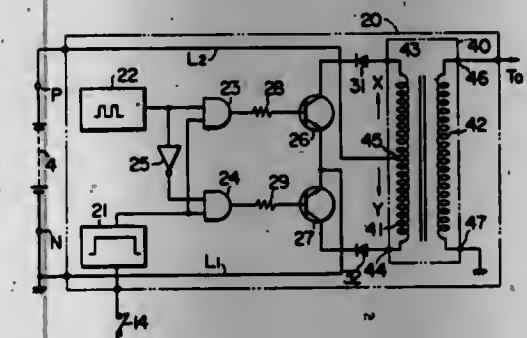
Filed Aug. 22, 1979, Ser. No. 68,735

Claims priority, application Japan, Sep. 28, 1978, 53-119699

Int. Cl.³ F02P 1/00

U.S. Cl. 123—606

6 Claims



1. An ignition device for an engine comprising:

- a magnetic core having an air gap;
- a primary coil wound around said magnetic core and having an intermediate terminal being adapted to be connected to one end of a DC power source associated with said engine;
- a secondary coil wound around said magnetic core and being adapted to be coupled at one end to a spark plug associated with said engine;
- timing signal generating means for generating signals indicating the start and end of ignition of the engine;
- means, coupled to said timing signal generating means, for

generating pulse signals having a constant predetermined frequency from the start till end of the ignition; and

- a switching circuit including first and second switching elements each having a control input, said first switching element coupled at one end thereof to one end of said primary coil and the other end thereof being adapted to be connected to the other end of said DC power source, and said second switching element being coupled at one end thereof to the other end of said primary coil and at the other end thereof being adapted to be connected to the other end of said DC power source,
- diodes being provided between each said end of said primary coil and each said switching elements for preventing an inverse current from flowing therein,
- said control inputs being coupled respectively to said pulse signal generating means for receiving therefrom said pulses signals for controlling said switching elements to turn on and off an electric current through said primary coil alternately in response thereto, to thereby induce across said secondary coil an AC pulse voltage containing a peaked high voltage, at its leading edge, sufficient to trigger a discharge of said spark plug, and a subsequent high voltage sufficient to maintain the discharge of said spark plug.

4,245,595

INTERNAL COMBUSTION ENGINE FOR MOTOR VEHICLES

Fumiyuki Abe; Yoshimasa Hayashi, both of Yokohama, and Akira Kimura, Kawasaki, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 30, 1978, Ser. No. 920,783

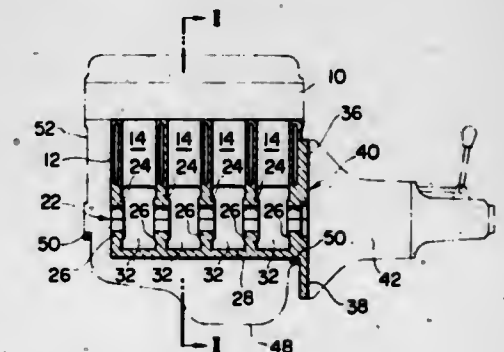
Claims priority, application Japan, Sep. 13, 1977, 52-110163;

Sep. 13, 1977, 52-110164

Int. Cl.³ F02F 7/00

U.S. Cl. 123—195 C

22 Claims



1. In an automotive vehicle, the combination of:

- an internal combustion having
- a cylinder block;
- a crankshaft;
- a plurality of bosses each defining a bearing in which said crankshaft is journaled, said bosses each being formed in first and second halves, said first halves being integrally formed with one another and connected with said cylinder block, said second halves being integrally formed to define a bearing frame detachably connected to said cylinder block;
- a first flange section formed integrally with said first halves, said first flange section extending radially with respect to said crankshaft; and
- a second flange section formed integrally with said second halves, said second flange section extending radially with respect to said crankshaft and mating with said first flange section and being connected thereto to define a transmission mounting site;
- a separate oil pan having a portion secured to an integral member comprised of said bearing frame and said second flange section;

a vibration damping member disposed between said oil pan and said integral member to reduce transfer of vibration to said oil pan; and
a speed change transmission having a case mounted to said engine through said mounting site comprised of said first and second flange sections;
the combination of said engine and said transmission being such that said cylinder block, said bearing frame and said transmission vibrate as a single unit, whereby the amplitude of the vibration thereof is reduced due to the inherent mass thereof.

4,245,596

SHIFTING MEANS FOR ACTUATING VALVE TURN-OFF IN MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Werner Bruder, Remseck, and Roland Merkle, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

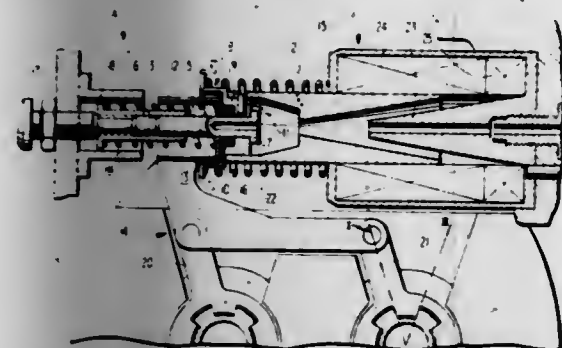
Filed Apr. 12, 1979, Ser. No. 29,346

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1978, 2815732

Int. Cl.³ F02D 13/06

U.S. Cl. 123—196 F

16 Claims



1. A switching means for effecting a shutoff of valves of a multi-cylinder internal combustion engine, characterized in that a servo means is provided, adjusting means are provided for adjusting positions of the valves between an active and a shutoff position, an energy storage means is interposed between the servo means and the adjusting means, the servo means being adapted to act upon the interposed energy storage means upon a shutting off of the valves, and in that the energy storage means includes a spring-loaded mass means adapted to entrain a member connected with the adjusting means after a displacement of a predetermined lead path.

4,245,597

SPLIT CYCLE HEAT ENGINES

Ernest M. Thill, 45 Hocking Ave., Earlwood, N.S.W. 2206, Australia

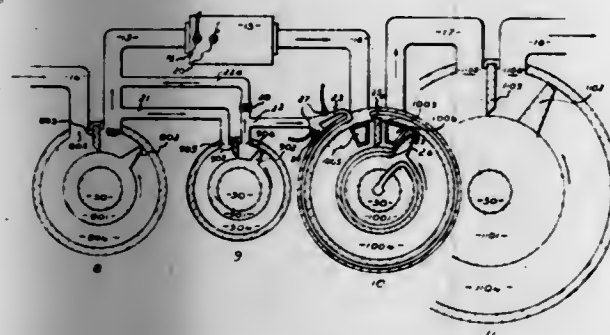
Filed Oct. 2, 1978, Ser. No. 947,645

Claims priority, application Australia, Oct. 20, 1977, 2138/77

Int. Cl.³ F02B 53/00

U.S. Cl. 123—204

7 Claims



1. A split cycle positive displacement combustion engine system including a plurality of units and a common drive

means connected to said units, each of said units being formed of a plurality of relatively movable components with clearances therebetween, said system comprising:

a combustion chamber having an inlet and an outlet, said outlet being connected to one of said units,
a feed pipe for carrying compressed gases to said combustion chamber,

a booster pump connected to said common drive means, said booster pump having an inlet which is in communication with the inlet of said combustion chamber so that any pressure changes in the combustion chamber are communicated to the booster pump inlet, said booster pump having an outlet and means for increasing the pressure of gases therein to release gases at a pressure which is higher than the pressure in said combustion chamber,

passage means leading from said booster pump outlet to and through the components which form a said unit downstream of said combustion chamber, said passage means including an outlet nozzle directed at at least one of said clearances, said nozzles being shaped to emit a sealing flow across the width of said clearance and in opposition to any potential leakage flow through the clearance.

4,245,598

SPEED CONTROL DEVICE

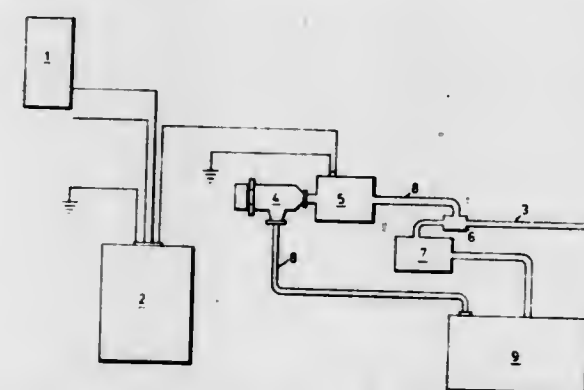
Hermann Ruhl, 30 Queen Elizabeth Blvd., Toronto, Ontario, Canada (M82 2T6)

Filed Apr. 27, 1979, Ser. No. 33,971

Int. Cl.³ F02B 77/00

U.S. Cl. 123—333

9 Claims



1. A speed control system for controlling a vehicle's speed by means of limiting fuel flow to the engine of the vehicle at a predetermined speed, said system comprising fuel line means to the engine, a fuel pump for pumping fuel through said fuel line means, a fuel bypass from the fuel line means, said fuel bypass being normally closed and only being opened at unacceptable speeds to bypass some of the fuel away from the engine whereby there is only a limited remaining fuel flow through the fuel line means to the engine and monitoring means for monitoring the speed of the vehicle and for opening the fuel bypass when the vehicle reaches said predetermined speed, said fuel bypass being provided with fuel flow regulating valve means responsive to the remaining fuel flow through the fuel line means to the engine to maintain said remaining fuel flow at a preselected rate for a desired engine idling R.P.M.

4,245,599

VEHICLE ENGINE IDLE SPEED GOVERNOR WITH UNSYMMETRIC CORRECTION RATES

Edwin D. Des Lauriers, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 953,857, Oct. 23, 1978, abandoned. This application Dec. 19, 1979, Ser. No. 105,371

Int. Cl.³ F02D 11/10

U.S. Cl. 123—353

3 Claims

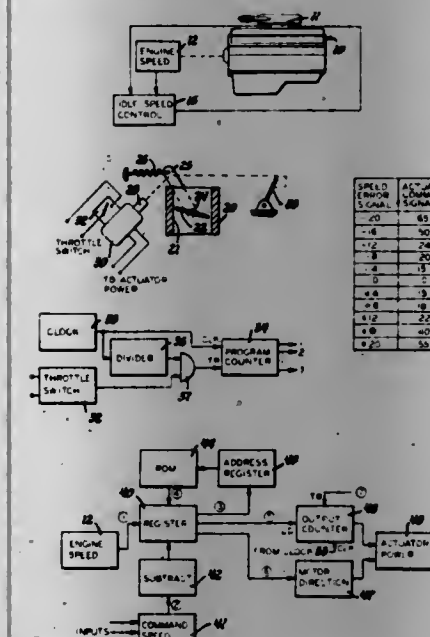
1. In a vehicle engine having fuel induction and control means including a throttle for controlling the air flow rate to

the engine and a throttle stop for determining the engine idle throttle position, engine idle speed governing apparatus comprising:

actuator means effective to position the throttle stop in response to an actuator command signal, said actuator means being capable of movement, at least in the direction of decreasing engine speed, at a faster rate than the engine itself can decrease its speed;

means effective to generate a speed error signal having an absolute value proportional to the difference between engine speed and a predetermined reference and a further characteristic indicative of high or low speed, respectively, for speeds greater than the reference or speeds less than the reference;

memory means effective to store predetermined actuator command signals corresponding to individual high and low speed error signals, the actuator command signals



corresponding to at least the largest low speed error signals having values effective to produce a greater throttle stop movement than the actuator command signals corresponding to the high speed error signals of the same absolute value;

means effective to obtain from the memory means the actuator command signal corresponding to the speed error signal and to provide the actuator command signal to the actuator means to generate a throttle stop movement to return engine idle speed toward the reference by an amount determined at least in part by the value of the actuator command signal, whereby at least large corrective throttle stop movement is smaller in the correction of high engine idle speed than in the correction of low engine idle speed to prevent excessive overshoot while decreasing engine speed with the consequent possibility of engine stall.

4,245,600

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hiroshi Katada, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Jun. 15, 1979, Ser. No. 48,909

Claims priority, application Japan, Jun. 23, 1978, 53/75349

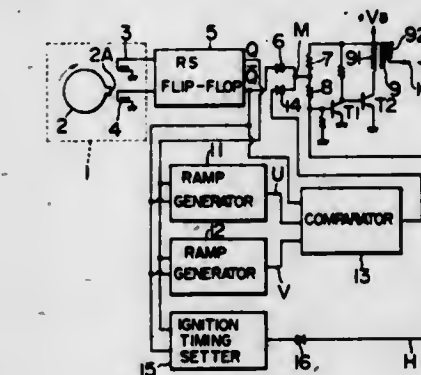
Int. Cl.³ F02P 5/04

U.S. Cl. 123—415

4 Claims

1. A contactless ignition system of current interruption type for an internal combustion engine comprising a rotor of a magnetic material rotating in synchronism with the rotation of the engine and having means for sensing the ignition angle, means for controlling the advance of the ignition timing of the engine, a semiconductor switch circuit actuated by an ignition signal appearing from said advance control means, and an ignition coil connected to said semiconductor switch circuit, said advance control means comprising means for sensing a

predetermined maximum advance position of the ignition timing, means for sensing a predetermined minimum advance position of the ignition timing, a first integrating circuit starting its integrating operation as soon as said maximum advance position sensing means senses the maximum advance position of the ignition timing and terminating its integrating operation as soon as said minimum advance position sensing means senses the minimum advance position of the ignition timing thereby generating a first ramp signal, a second integrating circuit starting its integrating operation as soon as said minimum advance position sensing means senses the minimum advance position of the ignition timing and terminating its integrating operation as soon as said maximum advance position sensing means senses the maximum advance position of the ignition timing thereby generating a second ramp signal, first summing



means for providing an output signal representing the sum of a signal of a predetermined constant level and the output signal of said second integrating circuit, a first comparing circuit applying a power supply starting signal to said semiconductor switch circuit connected to said ignition coil when the level of the output signal of said first summing means coincides with the level of the output signal of said first integrating circuit; and an ignition timing setting circuit including a second summing means for providing an output signal representing the sum of a signal of a predetermined constant level and the output signal of said first integrating circuit, and including a comparison circuit for applying a turn-off signal to said semiconductor switch circuit when the level of the output signal of said second summing means coincides with the level of the output signal of said second integrating circuit.

4,245,601

INTERNAL COMBUSTION ENGINE SPEED IGNITION SPARK ADVANCE SYSTEM

Lawrence W. Crowder, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 7, 1979, Ser. No. 36,355

Int. Cl.³ F02P 3/04

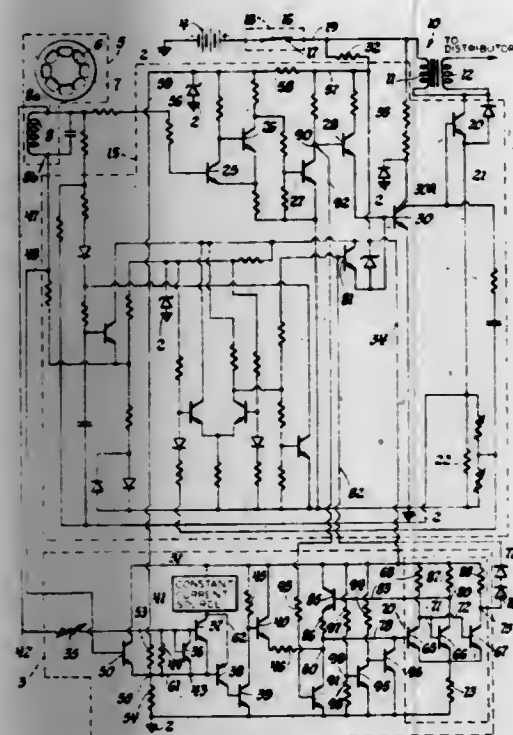
U.S. Cl. 123—418

5 Claims

1. In an internal combustion engine electronic ignition system combination including an electrical generator assembly having a rotor member rotated in timed relationship with the engine and an output coil in which is induced a series of alternating current timing signals of an amplitude directly proportional to engine speed, an ignition coil having at least a primary winding connected in an electrical energizing circuit and an electrical signal responsive electronic control unit for effecting first the completion of and later the interruption of the ignition coil primary winding energizing circuit in timed relationship with the engine in response to each cycle of the timing signals, the improvement of an electronic engine speed ignition spark advance system for providing an increasing ignition spark advance with increasing engine speed greater than a selected value by producing, while the engine is operating at a speed equal to and greater than the selected value, an output ignition spark signal that is effective to override the timing signals to effect the interruption of the ignition coil primary winding energizing circuit at an engine crankshaft angle earlier than

that at which it would be interrupted by the electronic control unit operating normally in response to the timing signals comprising:

- means responsive to said timing signals for producing a first signal when the potential level of said alternating current timing signals across said electrical generator assembly output coil reaches a predetermined magnitude; and
- means responsive to said first signal for producing a second



signal and for applying said second signal to said electronic control unit of said electronic ignition system combination in such a manner that said electronic control unit is responsive thereto to effect the interruption of said ignition coil primary winding energizing circuit whereby, while said engine is operating at a speed equal to and greater than said selected value, an increasing engine speed ignition spark advance is provided with increasing engine speed.

4,245,602

IGNITION TIMING CONTROL METHOD FOR INTERNAL COMBUSTION ENGINE

Norio Omori; Hideya Fujisawa, both of Kariya; Yutaka Kawashima, Okazaki; Masakazu Ninomiya, Kariya; Hisasi Kawai, Toyohashi, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of Japan

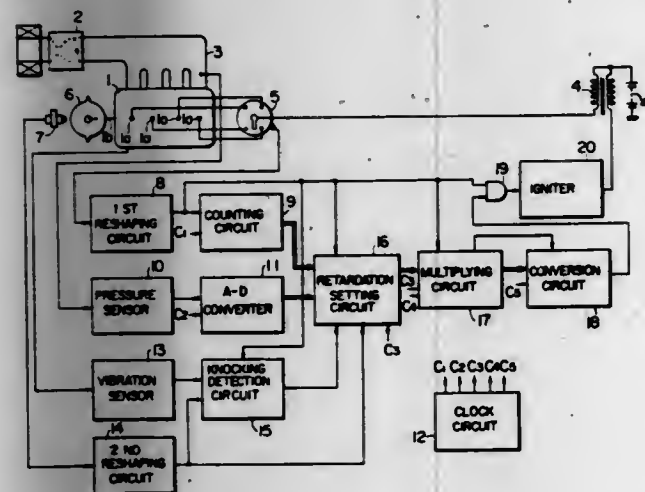
Filed Dec. 28, 1978, Ser. No. 973,952

Claims priority, application Japan, Feb. 15, 1978, 53/16311

Int. Cl.³ F02P 5/04

U.S. Cl. 123—425

6 Claims



1. A method for controlling ignition spark timing for an

internal combustion engine having an output shaft rotated by a piston, the method comprising the steps of:

- detecting operating conditions of said internal combustion engine;
- determining a desired timing of spark ignition supplied to said internal combustion engine in response to said operating conditions detected by said detecting step;
- monitoring a magnitude of vibration of said internal combustion engine by vibration responsive means coupled to said internal combustion engine;
- averaging said magnitude of vibration monitored before an arrival of the piston of said internal combustion engine at the top dead center position by said monitoring step;
- comparing said magnitude of vibration monitored after the arrival of said piston at the top dead center position by said monitoring step with an average output of said averaging step;
- determining a retard value of spark ignition in response to a comparison output of said comparing step;
- determining a maximum retard value of spark ignition in response to said operating conditions detected by said detecting step;
- comparing said retard value of spark ignition determined by said second-named determining step with said maximum retard value of spark ignition determined by said third-named determining step;
- correcting said desired timing of spark ignition determined by said first-named determining step by an amount equal to said retard value and maximum retard value determined by said second-named and third-named determining steps in response to a comparison output of said second-named comparing step indicative of said retard value being smaller and larger than said maximum retard value, respectively; and
- supplying a spark ignition voltage at a timing of spark ignition corrected by said correcting step.

4,245,603

ADAPTIVE VEHICLE ENGINE CLOSED LOOP AIR AND FUEL MIXTURE CONTROLLER

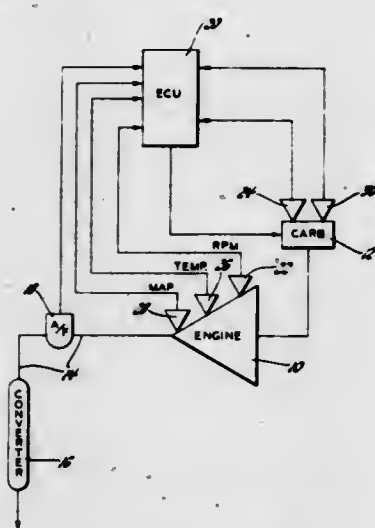
Allen J. Pomerantz, Bancroft, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1979, Ser. No. 34,852

Int. Cl.³ F02B 33/00

U.S. Cl. 123—440

2 Claims



1. An adaptive closed loop air and fuel mixture control system for an engine, comprising, in combination:
 - a carburetor effective to supply a mixture of air and fuel to the engine, said carburetor having idle and main fuel metering circuits operable to supply fuel to the engine during engine idle and off-idle operating modes, respectively;
 - a sensor effective to monitor the oxidizing/reducing conditions of the air and fuel mixture and provide a sensor

- signal indicating at least the sense of deviation of the oxidizing/reducing conditions from a desired condition;
- an air/fuel ratio controller responsive to the sensor signal effective during both engine idle and off-idle operating modes to adjust the air/fuel ratio of the mixture supplied by the carburetor, the controller providing an output signal including an integral term effective to adjust the air/fuel ratio at a predetermined rate to an amount producing substantially the desired oxidizing/reducing condition;
- means effective to sense the idle and off-idle operating modes of the engine;
- means effective to sense engine speed;
- first and second storage means effective to store values of the controller output signal, each storage means being associated with a respective one of the idle and off-idle operating modes of the engine;
- means effective to adjust the value of the controller output signal stored by the storage means associated with the sensed operating mode to the average value of the controller output signal;
- means effective to inhibit the last-mentioned means from adjusting the value of the controller output signal stored by the first and second storage means when [1] the engine idle operating mode is sensed and the sensed engine speed is greater than a predetermined value and [2] the engine off-idle operating mode is sensed and the sensed engine speed is less than the predetermined value; and
- means responsive to a shift in the engine operation from one of said engine operating modes to the other of said engine operating modes to preset the value of a controller output signal to the average value of the output signal stored by the storage means associated with said other engine operating mode to thereby preset the controller output signal substantially instantaneously to the value previously determined by the controller during operation in said other operating mode to produce the desired oxidizing/reducing condition.

4,245,604

NEUTRAL TO DRIVE TRANSIENT ENRICHMENT FOR AN ENGINE FUEL SUPPLY SYSTEM

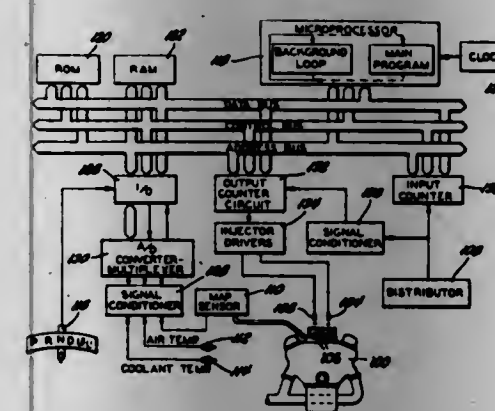
John E. Lahiff, Farmington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1979, Ser. No. 52,481

Int. Cl.³ F02B 3/00; B60K 21/00

U.S. Cl. 123—478

3 Claims



1. A fuel supply system for an internal combustion engine of a vehicle having an automatic transmission selectively operable in each of neutral and drive conditions, the fuel supply system comprising:
 - sensor means effective to measure the values of predetermined engine operating parameters, indicative of engine fuel requirements;
 - means responsive to the values of the predetermined engine operating parameters effective to generate a base fuel signal representing the steady state engine operating fuel requirements;

1002 O.G.—40

4,245,605

ACCELERATION ENRICHMENT FOR AN ENGINE FUEL SUPPLY SYSTEM

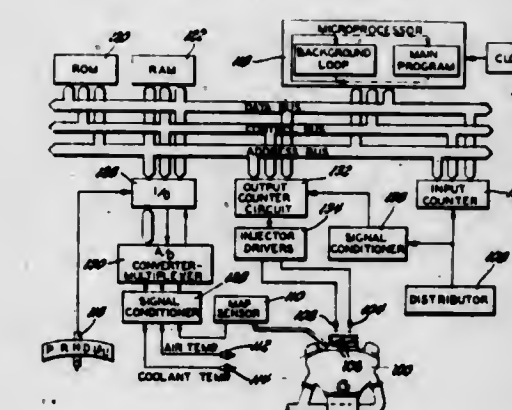
John O. Rice, Utica, and Gary P. McCarbery, Oxford, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 27, 1979, Ser. No. 52,571

Int. Cl.³ F02B 3/00

U.S. Cl. 123—492

3 Claims



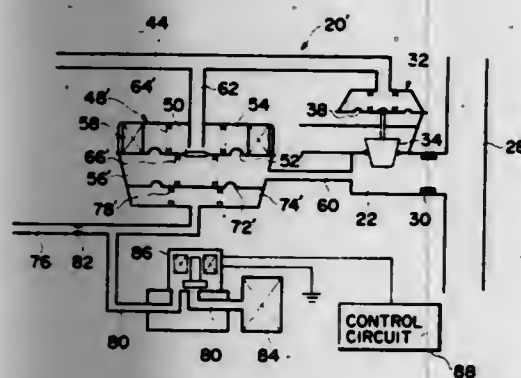
1. A fuel supply system for an internal combustion engine that is characterized in that its steady state operating fuel requirements vary from its transient operating fuel requirements, the fuel supply system comprising:
 - sensor means effective to measure the values of predetermined engine operating parameters, including engine temperature, indicative of engine fuel requirements;
 - means responsive to the values of the predetermined engine

operating parameters effective to generate a base fuel signal representing the steady state engine operating fuel requirements;
 means effective to sense transient engine operating conditions representing increasing power demand;
 means responsive to the measured value of engine temperature and a sensed transient engine operating condition effective to generate an enrichment signal that is equal to a first value determined by engine temperature and increased by a factor having an initial value that is determined by the magnitude of the sensed transient engine operating condition and that is varied toward unity at a rate determined by engine temperature; and
 means effective to supply fuel to the internal combustion engine in accord with the base fuel signal and the enrichment signal to thereby provide fuel to the engine substantially in accord with its requirements during both steady and transient engine operating conditions.

4,245,606

EGR CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Kenji Okamura, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
 Filed Dec. 13, 1978, Ser. No. 969,022
 Claims priority, application Japan, Dec. 26, 1977, 52/155720
 Int. Cl.³ F02B 47/08
 U.S. Cl. 123-568 10 Claims



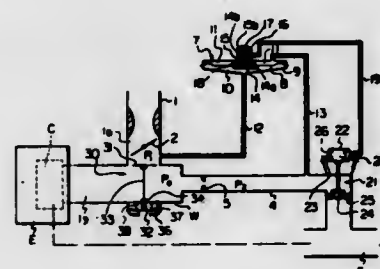
1. An EGR (exhaust gas recirculation) control system for an internal combustion engine having means for defining an intake passageway and an exhaust passageway, comprising:
 means for defining an EGR passage connecting the exhaust passageway to the intake passageway to recirculate a portion of engine exhaust gases back to the engine;
 an orifice formed in said EGR passage to generate the pressure difference between the upstream and downstream sides thereof;
 a diaphragm-operated EGR control valve operatively disposed in said EGR passage to control the pressure in the EGR passage downstream of said orifice in accordance with an operating vacuum acting on the diaphragm of said EGR control valve, said operating vacuum being variable in accordance with engine operating conditions;
 regulating means for controlling said operating vacuum acting on the diaphragm of said EGR control valve in accordance with the pressure in the EGR passage downstream of said orifice, said regulating means includes a valve member secured to a first diaphragm which is biased with a preset load and receives the pressure in the EGR passage downstream of said orifice, said valve member being movable with the diaphragm of said regulating means and controlling the degree of said operating vacuum acting on the diaphragm of said EGR control valve in accordance with the relationship between said preset load and the pressure acting on the diaphragm of said regulating means; and
 changing means for substantially changing said preset load of the diaphragm of said regulating means in accordance with the engine operating conditions, said changing means

including a second diaphragm connected to said diaphragm; a constant vacuum source whose vacuum is substantially constant regardless of the engine operating conditions; and vacuum control means for controlling the vacuum from said constant vacuum source in accordance with the engine operating conditions and applying said controlled vacuum to one side of said second diaphragm.

4,245,607

EGR CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Shunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan
 Filed May 9, 1979, Ser. No. 37,359
 Claims priority, application Japan, May 12, 1978, 53-64360[U]
 Int. Cl.³ F02B 47/08; F02M 25/06
 U.S. Cl. 123-568 14 Claims



1. An exhaust gas recirculation (EGR) control system for an internal combustion engine having a combustion chamber, comprising:
 means defining an intake passageway communicable with the combustion chamber to introduce intake air there-through into the combustion chamber, said intake passageway being provided therein with a throttle valve;
 means defining an exhaust gas passageway communicable with the combustion chamber to discharge exhaust gas therethrough into the atmosphere;
 means defining an EGR gas passageway through which said intake passageway and said exhaust gas passageway is communicable, said EGR gas passageway being provided therein with an orifice;
 and EGR control valve disposed in said EGR gas passageway upstream of said orifice to control the amount of the exhaust gases recirculated back to the combustion chamber through said EGR gas passageway;
 means for operating said EGR control valve in accordance with the relationship between the pressure in the intake passageway downstream of said throttle valve and the pressure in said EGR gas passageway between said orifice and said EGR control valve; and
 control valve means including a valve member which is disposed in said intake passageway downstream of said throttle valve and movable in the axial direction of a portion of said intake passageway to control the flow resistance of the intake air passing through said intake passageway.

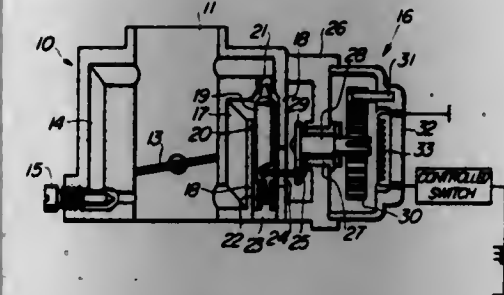
4,245,608

IDLING CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Sigeo Tamaki, Katsuta, and Tohru Nakagawa, Mito, both of Japan, assignors to Hitachi, Ltd., Japan
 Filed Jul. 2, 1979, Ser. No. 53,816
 Claims priority, application Japan, Jul. 14, 1978, 53-86459
 Int. Cl.³ F02M 23/00
 U.S. Cl. 123-588 6 Claims

1. An idling control apparatus for an internal combustion engine comprising:

a passage for air for idle running of the engine communicating a portion of a suction conduit upstream of a throttle valve mounted in said suction conduit with a portion of said suction conduit downstream of said throttle valve, said suction conduit being fitted to a throttle body;
 a valve element mounted in said passage for air for idle running of the engine for varying the quantity of air flowing through said passage for air for idle running of the engine; and
 a bimetal member in the form of a spiral operatively con-

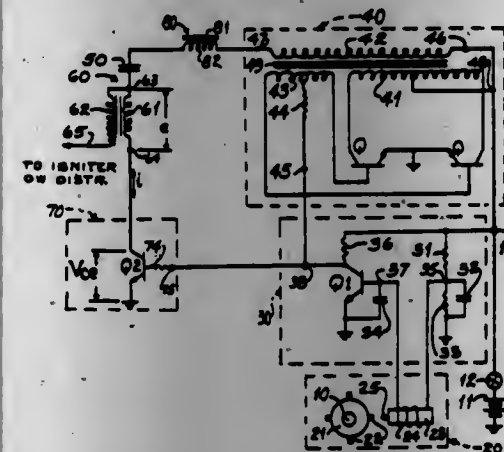


nected to said valve element for reducing the quantity of air flowing through said passage for air for idle running of the engine as the temperature of the engine increases; wherein the improvement resides in the arrangement wherein the end of an outermost convolution of said bimetal member in the form of a spiral is a fixed end and the end of an innermost convolution of said bimetal member in the form of a spiral is a movable end, and a bimetal shaft connected to the end of the innermost convolution for transmitting a displacement thereof to said valve element is journaled by a bearing means.

4,245,609

MODULATED AC IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrop St., Santa Ana, Calif. 92705
 Continuation-in-part of Ser. No. 812,919, Jul. 5, 1977, Pat. No. 4,128,811, and a continuation-in-part of Ser. No. 814,206, Jul. 11, 1977, Pat. No. 4,140,947, and a continuation-in-part of Ser. No. 814,457, Jul. 11, 1977, Pat. No. 4,139,804, and a continuation-in-part of Ser. No. 816,714, Jul. 18, 1977, Pat. No. 4,144,476, and a continuation-in-part of Ser. No. 868,118, Jan. 9, 1978, Pat. No. 4,168,692, and a continuation-in-part of Ser. No. 878,792, Feb. 17, 1978, Pat. No. 4,169,445, and a continuation-in-part of Ser. No. 913,437, Jun. 7, 1978, abandoned. This application Dec. 18, 1978, Ser. No. 970,647
 Int. Cl.³ F02P 3/02, 3/06
 U.S. Cl. 123-594 11 Claims



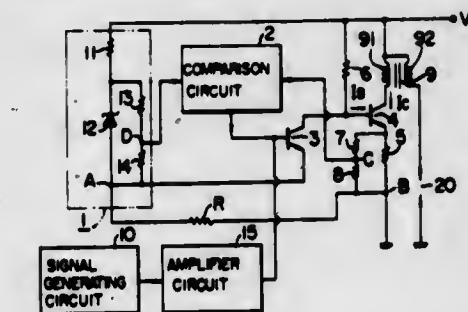
1. An ignition system for a fuel powered engine, comprising the combination of:
 an ignition transformer having a primary winding;
 an AC power source having a coupling transformer, said coupling transformer having an output winding, said output winding being electrically coupled to said primary winding;
 a capacitor, in series with said output winding and primary

winding, said capacitor, output winding and primary winding constituting a series connected passive network devoid of arcing components.
 electronic switching means, having an input circuit and an output circuit wherein said output circuit is connected in series with said passive network, for intermittently interrupting current flow in said passive network, said power source also being means for enabling current conduction through said switching means; and
 charge accumulation means, connected in series with said passive network and with the output circuit of said switching means, for accumulating charge provided by the power source and for delivering the accumulated charge to said primary winding, said charge accumulation means being an inductive component that is distinct from any one of said ignition transformer, coupling transformer and capacitor.

4,245,610

IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE

Noboru Sugiura, Katsuta, Japan, assignor to Hitachi, Ltd., Japan
 Filed May 24, 1978, Ser. No. 909,069
 Claims priority, application Japan, May 25, 1977, 52-59798
 Int. Cl.³ F02P 3/04
 U.S. Cl. 123-609 7 Claims



1. An ignition apparatus for an internal combustion engine, comprising
 an ignition coil having a primary winding and a secondary winding connected at one end with a spark gap;
 a power transistor connected in series with said primary winding to control flow of the primary current of said ignition coil;
 a drive transistor for controlling the drive current for said power transistor;
 a device for detecting a voltage proportional to the collector current of said power transistor;
 a circuit for generating a preset reference voltage; and
 a comparison circuit for comparing the voltage detected by said detecting device with said reference voltage and for producing an output signal to control the conductivity of said drive transistor, wherein the collector-emitter path of said drive transistor is provided with a feedback circuit means including said reference voltage generating circuit and said comparison circuit for changing the reference voltage in accordance with the output signal of said comparison circuit.

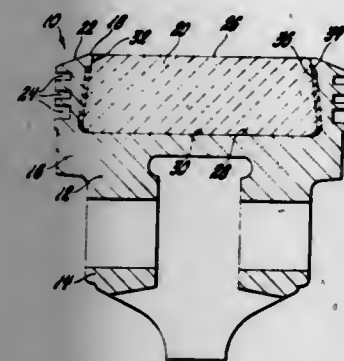
4,245,611

CERAMIC INSULATED ENGINE PISTONS

Harry R. Mitchell, Bloomfield Hills, and Hal H. Rice, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
 Filed Sep. 5, 1978, Ser. No. 939,457
 Int. Cl.³ F02B 75/08
 U.S. Cl. 123-669 3 Claims

1. A heat insulated piston for an internal combustion engine, said piston having a combustion chamber defining wall and comprising

a main body including a cast and machined aluminum head portion having a central recess opening through said combustion chamber defining wall,
 a ceramic insert of generally disc-like shape wholly contained within said recess but (and) having an exposed surface forming the central portion of said chamber defining wall, said insert being relatively hard and brittle but of high compressive strength and having substantially lower coefficients of thermal conductivity and expansion than those of the aluminum head portion, said recess and said insert having opposing outer edge portions constituting substantially their entire peripheral surfaces diverging in a



direction away from said combustion chamber defining wall (at least partially tapered upwardly and inwardly) to positively dovetail the ceramic insert within the aluminum head portion, and

a compressible cushioning layer of fibrous ceramic material disposed between substantially all of said peripheral surfaces constituting said opposed (tapered) diverging edge portions of the insert and recess and of limited thickness sufficient to permit in operation relative expansion and contraction of the aluminum and ceramic members of the piston while distributing compressive loads between the opposed edge portions without overstressing either (of said members) the main body or the insert.

4,245,612

ARCHERY BOW STABILIZER

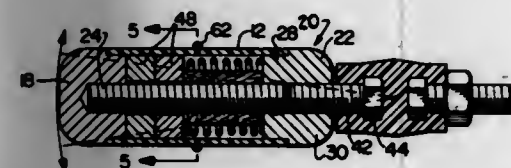
Robert L. Finlay, Emporia, Kans., assignor to BPE, Inc., Emporia, Kans.

Filed Sep. 24, 1979, Ser. No. 78,555

Int. Cl.³ F41B 5/00

U.S. Cl. 124—89

10 Claims



1. An archery bow stabilizer comprising:
 a hollow body;
 means for attaching the body to an archery bow;
 a plurality of holes circumscribing the body; and placing the interior of the hollow body in communication with the atmosphere; and
 scent emitting means carried within the body, the scent emanating therefrom passing through said holes to the atmosphere.

4,245,613

TUNNEL OVEN

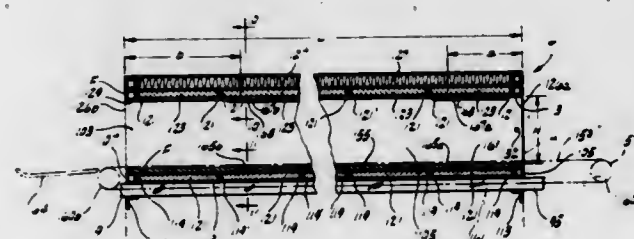
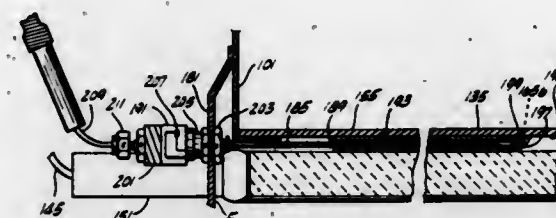
Harold D. Wells, St. Louis County; Kelly J. Wells, Ellisville, and Dennis M. Weinberg, St. Louis County, all of Mo., assignors to Black Body Corporation, Fenton, Mo.

Filed Nov. 1, 1978, Ser. No. 956,869

Int. Cl.³ A21B 1/00; F27D 11/00

U.S. Cl. 126—19 R

14 Claims



1. A tunnel oven comprising a framework said framework forming an elongated oven chamber in the form of a tunnel having an entrance at one end for ingress of products to be heated and an exit at the opposite end for egress of products heated in a heating zone in said tunnel, said entrance and said exit remaining open at all times during heating of said products, means for conveying products from said entrance through said tunnel to said exit, a hearth defining a floor of said tunnel at least along the length of said heating zone, electronically energizable infrared heater panels along the length of said hearth for providing a first source of infrared radiation for causing heating of said products by infrared radiations, said hearth being of heat conductive metal and constituting a further source of infrared radiation for causing heating of said products by infrared radiation means defining a roof of said tunnel, first and second temperature sensing elements for direct sensing of the actual temperatures of said hearth at points along the length of said zone remote from the beginning of the zone, means for maintaining said first and second temperature sensing elements in intermediate thermal relationship with said hearth, said first temperature sensing element being temperatures responsive to ingress of cool products to be heated in the tunnel, and first temperature controller means for controlling said infrared heater panels and responsive jointly to the arithmetic means of temperatures respectively sensed by said first and second temperature sensing means to provide predetermined temperatures in said tunnel without temperature overshoot or excessive temperature differential therein, said first and second temperature sensing element each comprising a temperature sensing probe comprising a relatively long, thin probe element and a temperature sensing device at one end of said probe element, said means for maintaining said first and second temperature sensing elements in intimate thermal contact with said hearth comprising a respective guide for each said probe element for guiding each temperature sensing device to a respective point of thermal contact with the hearth and means for urging each probe element in a direction for causing the respective point of thermal contact of each temperature sensing device to be maintained with pressure, each said guide is oriented with respect to the tunnel for guiding said probe element to a point on the hearth located between the sides of the tunnel.

4,245,614

FIREPLACE SCREEN

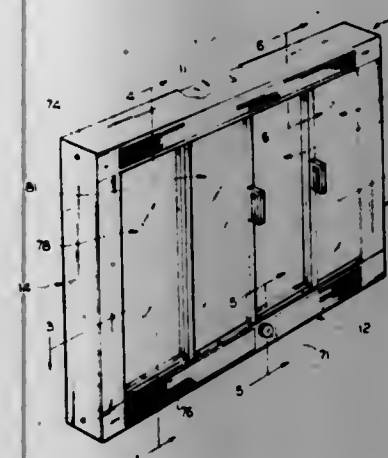
Mathew Hurwitz, 63 Oakland Ave., Auburndale, Mass. 02166, and Evelyn R. Hurwitz, Auburndale, Mass., assignors to Mathew Hurwitz, Auburndale, Calif.

Filed Sep. 12, 1978, Ser. No. 941,554

Int. Cl.³ F24C 15/36

U.S. Cl. 126—202

17 Claims



1. A substantially air-tight glass door screen assembly for a fireplace opening, comprising
 (a) a rectangular frame adapted to be positioned in front of said opening,
 (b) said frame comprising a pair of spaced vertical frame members on opposite sides thereof, a top horizontal member having dual-track channels and extending between the upper ends of said vertical frame members with guide slots therein opening downwardly, a bottom horizontal member having dual-track channels and adapted to rest on the hearth of the fireplace and extending between the lower ends of said vertical frame members with guide slots therein opening upwardly,
 (c) a first pair of glass door panels mounted in a common plane coincident with the rearward track of each of the top and bottom channels, in proximity to the fireplace opening,
 (d) a second pair of co-planar glass door panels movably mounted in the forward track of each of the top and bottom channels and adapted for relative reciprocating movement with respect to said first pair of panels, said second pair of panels when selectively disposed in overlapping relation to respective adjacent panels of the first pair providing an opening in the central portion of the frame, said second pair of panels when selectively disposed in laterally offset relation to respective panels of the first pair and with the inner edges of the panels of the second pair in abutting relation to each other providing a substantially complete closure for the inner boundaries of said frame,
 (e) metal sealing elements embracing the opposite vertical edges of each of said door panels between the top and bottom horizontal members,
 (f) a metal sealing flange on each of said vertical frame members cooperating with the outer sealing element on each of said first pair panels in the closed position of said panels over said opening,
 (g) said metal sealing elements and sealing flanges having portions offset in planes parallel to said panels to provide labyrinthine passages at the junctions of the panels and surrounding frames, to impede air leakage therebetween, and
 (h) sealing means interposed between the forward face of said fireplace and said frame to prevent air leakage from and into said fireplace opening.

4,245,615

MODULAR RANGE CONSTRUCTION

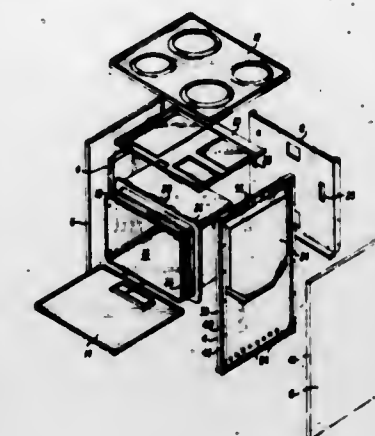
Harold J. Moss, Cleveland, Tenn., assignor to Magic Chef, Inc., Cleveland, Tenn.

Filed Apr. 30, 1979, Ser. No. 34,737

Int. Cl.³ A21B 1/00

U.S. Cl. 126—273 R

9 Claims



1. A modular range construction comprising:
 a pair of side panels comprising the main structural portions of said range;
 at least one range top member secured to said side panels adjacent the tops thereof;
 a range back secured to said side panels at their rear edge portions;
 a bottom member, spaced downwardly from said range top member, extending between and secured to said side panels;
 a separate oven front framing member positioned and secured between said side panels and extending from said range top member to said bottom member; and
 a thermally insulated oven shell having an open front and being spaced from and within the space defined by said side panels, range back, range top member and bottom member, said oven shell being secured to said oven front framing member.

4,245,616

SOLAR TRACKING DEVICE

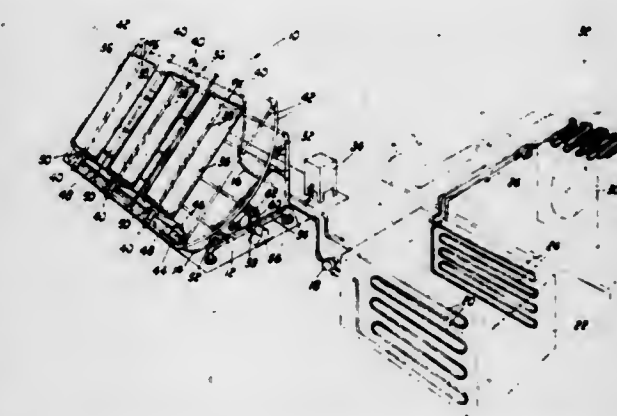
Richard R. Wyland, 3330 Bellaire, Wichita, Kans. 67218

Filed Mar. 20, 1978, Ser. No. 888,473

Int. Cl.³ F24J 3/02

U.S. Cl. 126—425

5 Claims



1. A solar tracking device mounted on a base, the device collecting heat from the sun and heating a fluid, the heated fluid circulated from the device and used as a heat transfer medium, the device comprising:
 a reflector bank rotatably mounted on a collector tube, said collector tube disposed adjacent the length of said reflector bank and centered thereon, said reflector bank reflecting

ing the sun rays onto said collector tube for heating the fluid which is circulated through said collector tube;
a reflector bank frame, the ends of said collector tube attached to said reflector bank frame, said reflector bank frame supporting said collector tube and said reflector bank thereon, said reflector bank frame being generally semi-circular in shape, the ends of said semi-circular reflector bank frame attached to the ends of said collector tube;

first drive means mounted on said reflector bank frame and connected to said reflector bank for rotating said reflector bank one revolution every twenty-four hours so that said reflector bank follows the sun as the earth rotates;

a support frame adapted for mounting on the base, said reflector bank frame rotatably mounted on said support frame; and

second drive means adapted for mounting on the base and connected to said reflector bank frame for rotating said reflector bank frame on said support frame so that said reflector bank remains perpendicular to the sun during the change is azimuth during the course of one year.

4,245,617
VALVE

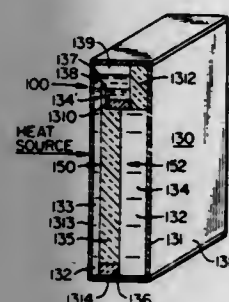
B. Shawn Buckley, Cambridge, Mass., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 465,377, Apr. 29, 1974, abandoned, and a continuation-in-part of Ser. No. 494,658, Aug. 9, 1974, abandoned, and a continuation-in-part of Ser. No. 588,093, Jun. 18, 1975, Pat. No. 4,137,964. This application Jan. 26, 1979, Ser. No. 6,767

Int. Cl.³ F24J 3/02

U.S. Cl. 126-434

18 Claims



17. A unidirectional valve for use in a thermosyphon solar heating system including a collector, a storage tank, and a liquid having a transfer portion in said collector and a storage portion in said tank, said valve comprising,

a partition having a predetermined vertical extent transversely separating said portions,

said partition being transversely spaced such that the surface area of said transfer portion is much less than the surface area of said storage portion,

whereby changes in the density of said transfer portion cause the surface thereof to travel vertically along said partition, permitting said transfer portion to flow around the end of said partition into said tank, but changes in the density of said storage portion cause only inconsequential movement of the surface thereof along said partition preventing flow of said storage portion around the end of said partition into said collector.

4,245,618

VAPOR GENERATOR

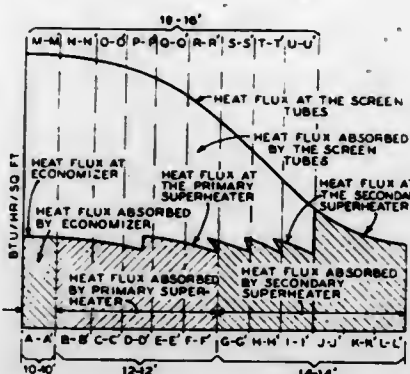
Murray Wiener, Akron, Ohio, assignor to The Babcock & Wilcox Co., New Orleans, La.

Filed Oct. 10, 1978, Ser. No. 949,729

Int. Cl.³ F24J 3/02

U.S. Cl. 126-438

7 Claims



1. In combination with a solar heat source, tubular means, mounted on a tower, the tower being located eccentrically in a heliostat field, for passing a fluid in indirect heat absorbing relation with the heat source, the tubular means including first heat exchanger means, second heat exchanger means disposed downstream fluid flow-wise of the first heat exchanger means, third heat exchanger means disposed downstream fluid flow-wise of the second heat exchanger means, wherein the second heat exchanger means is interposed between at least a portion of the first and third heat exchanger means and said heat source, wherein the tubular means of said first, second and third heat exchanger means are respectively grouped into upright panels with fluid inlet means disposed at the bottom of the tubular panels, the panels of the first and third heat exchanger means being disposed in side-by-side relation to form a nearly cylindrical tubular wall, the panels of the second heat exchanger means being disposed in a side-by-side relation and in spaced surrounding relation with at least a portion of the tubular wall and having the tubular means in the panels of the first and third heat exchanger means laterally spaced and rigidly united by metallic webs to produce a structure impermeable to light from the heliostat field, the second heat exchanger means having tubes with varying lateral spacing to provide a relatively uniform, low level, heat flux pattern to the first and third heat exchanger means and including associated means for pump assisted natural circulation.

4,245,619

SOLAR ENERGY COLLECTION PANEL

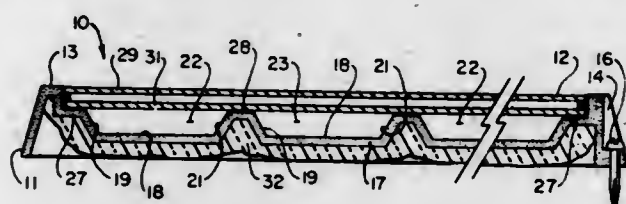
Michael B. Ogilvie, P.O. Box 357, Moss Beach, Calif. 94038

Filed Dec. 13, 1978, Ser. No. 969,211

Int. Cl.³ F24J 3/02, 3/14

U.S. Cl. 126-444

7 Claims



1. A relatively inexpensive yet effective solar panel to collect thermal energy from solar radiation comprising:

a cast, one piece body of a lightweight, non-metallic material providing a combined base and frame having an upper surface defining the bottom and side walls of a plurality of separated channels for the flow of fluid to be heated directly by solar radiation; and

a structurally rigid transparent sheet means secured to said body overlying said separated channels and forming the top walls thereof to enclose the same for fluid flow while

permitting direct impingement on said fluid of solar radiation passing through said transparent sheet means, said transparent sheet means being secured to said body at spaced locations thereon to impart its structural rigidity thereto and, hence, to said panel.

4,245,620

SOLAR HEAT COLLECTOR

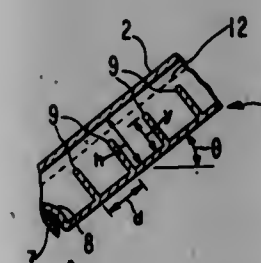
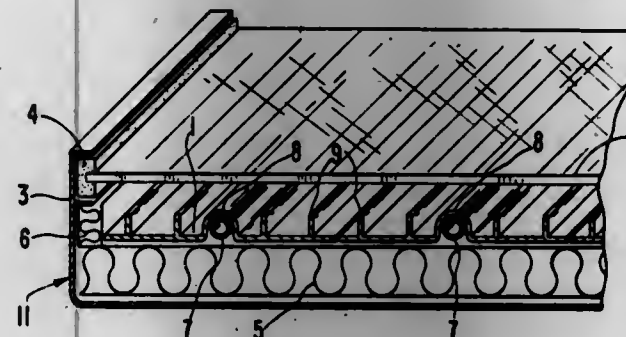
Klaus W. Heinemann, Sunnyvale, Calif., assignor to Alten Corporation, Mountain View, Calif.

Filed Sep. 1, 1977, Ser. No. 829,958

Int. Cl.³ F24J 3/02

U.S. Cl. 126-447

9 Claims



1. A solar energy collecting panel, comprising:
a two dimensional heat absorber having a substantially flat bottom, means in heat contact relationship with said absorber for providing a plurality of fluid conduits thereacross in one direction and substantially parallel to one another, an enclosure for said absorber and said fluid path means, said enclosure including a heat radiation transparent glazing positioned thereacross in a manner to keep air from escaping from above said absorber, said absorber including a plurality of fins rising from the substantially flat bottom portion and extending in said one direction along its length substantially parallel to one another, the spacing of said fins being substantially within the range of 0.5 inch to 3.0 inch, the height of each fin being substantially in the range of 0.25 inch to 1.0 inch and the distance between the flat bottom portion of said absorber and said glazing being substantially within the range of 0.5 inch to 1.5 inch, whereby undesired convection air currents within said enclosure are minimized and the efficiency of the collector increased.

4,245,621

STRUCTURAL BUILDING COMPONENT

George E. Hollobaugh, 1406 9th Ave. East, Bradenton, Fla. 33508

Filed May 22, 1978, Ser. No. 908,258

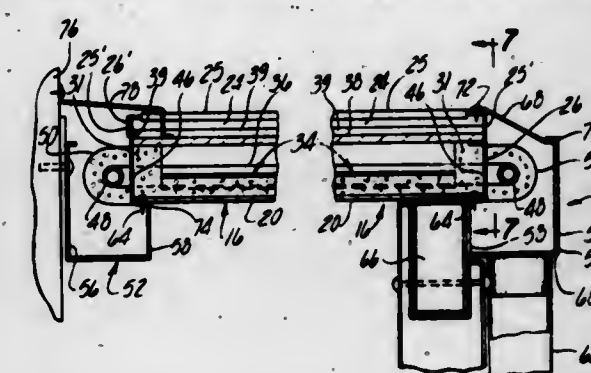
Int. Cl.³ F24J 3/02

U.S. Cl. 126-450

3 Claims

1. A building structure assembly comprising: a plurality of elongated panel assemblies disposed in abutting side by side relationship, each of said panel assemblies including an elongated shell member having parallel spaced bottom and top walls, parallel spaced side walls and end walls, said side walls extending upwardly above the plane of said top wall and having inwardly directed leg portions, an elongated clamping

element having facing channel portions engaging oppositely extending leg portions of adjacent panels to prevent relative transverse movement of said adjacent panels, said clamping element extending over the opposite ends of said panel assemblies and presenting portions engaging the ends of adjacent panels to prevent relative longitudinal movement of adjacent panels, solar energy absorbing means associated with one of said panel assemblies, said energy absorbing means comprising an energy absorbing plate member having a bottom wall and upturned side edge portions extending in parallel spaced relationship to said bottom wall and pair of side walls, respectively, of said one of said panel assemblies to form an insulating cavity therebetween, heat insulating means in said insulating



cavity, and a transparent panel forming said top wall member of said one panel assembly, heat transfer means including a fluid conducting means supported on said plate member in heat transfer relation therewith and extending longitudinally of said one panel assembly for circulating fluid in heat transfer relationship to said plate member, said fluid conducting means extending through opposite end walls to the exterior of said panel assembly for connection to fluid conveying manifolds, a pair of drainage structures disposed at opposite ends of said plurality of panel assemblies and being fastened to each of said panel assemblies, said drainage structures each having a gutter portion adapted to conceal the exposed portions of said fluid conducting means and manifolds to provide a flow path for receiving drainage of fluid leakage from said fluid conducting means.

4,245,622

INFLATABLE/DEFLATABLE DEVICE FOR A HEART-ASSIST PUMP

Thomas B. Hutchins, IV, 310 NW. Brynwood Ln., Portland, Oreg. 97220

Filed Jun. 16, 1978, Ser. No. 915,974

Int. Cl.² A61F 1/24; A61M 1/03

U.S. Cl. 128-1 D

3 Claims



1. A body-implantable pump which operates under the influence of a recurrent, cyclic supply and exhaust of external fluid

to produce pumping of body fluids, said pump comprising, in operative condition,

an elongate envelope having an inner wall which is generally rounded in cross section,

a first elongate pumping member having a generally convex, elongate outer wall portion adjacent said inner wall, and an elongate inner wall portion which is movable between generally convex and concave configurations, to increase and decrease the volume of said member, respectively,

a second elongate pumping member formed of an outer, elongate, fluid-impermeable sheet adjacent said inner wall, and having opposed elongate side margins, and an inner, elongate, fluid-impermeable sheet having opposed elongate side margins joined with coextending portions of said outer sheets opposed side margins to produce opposed, non-inflatable, fluid-impermeable planar margins disposed between said inner wall and said first member's outer wall portion, and an inner wall portion which confronts said first member's inner wall portion, and which is movable between generally concave and convex configurations to decrease and increase the volume of said second member respectively, wherein said first member's inner wall portion is in its convex and concave configurations, respectively, and

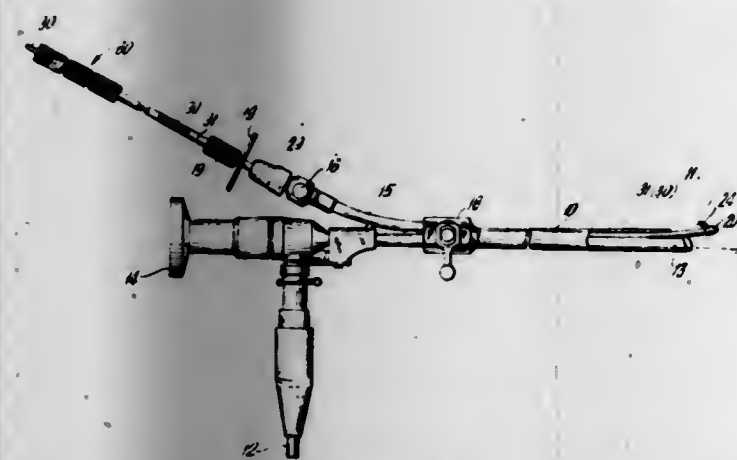
conduit means for carrying such external fluid to and from one of said pumping members, thus to produce reciprocal motion in said two members' inner wall portions to pump body fluid in said other pumping member, said non-inflatable planar margins serving to anchor said second wall member to said inner wall and to said first pumping member during such reciprocal motion.

4,245,623 METHOD AND APPARATUS FOR THE HYSTEROGRAPHIC NON-SURGICAL STERILIZATION OF FEMALES

Robert A. Erb, P.O. Box 86, Valley Forge, Pa. 19481
Filed Jun. 6, 1978, Ser. No. 913,066
Int. Cl.³ A61B 19/00

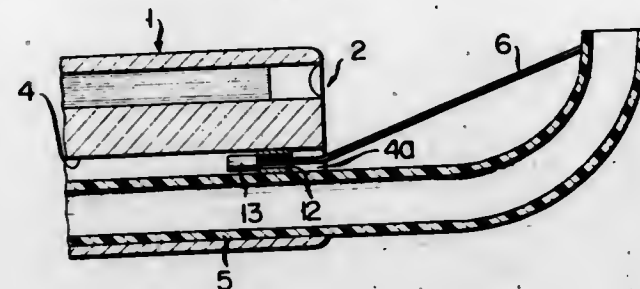
U.S. Cl. 128-1 R

26 Claims



1. An apparatus for non-surgically occluding an oviduct with formed in-place elastomeric plugs comprising in combination: a hysteroscope of the type having an operating channel, a pair of substantially co-extensive flexible plastic telescoping tubes dimensioned for insertion through said operating channel, one of said tubes being an inner tube for conveying a fluid catalyzed elastomer-precursor material and the other of said tubes being an outer tube for cooperating with said inner tube; means for dispensing fluid catalyzed elastomer-precursor material through said inner tube under pre-determined pressure; means mounted externally of said hysteroscope for releasably maintaining said inner and outer tubes in a fixed relationship one to the other whereby upon the release of said maintaining means said inner and outer tubes may be moved relative to one another thereby to effect release of said plug.

4,245,624
ENDOSCOPE WITH FLEXIBLE TIP CONTROL
Osamu Komiya, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Dec. 30, 1977, Ser. No. 865,884
Claims priority, application Japan, Jan. 20, 1977, 52-5474; Jan. 20, 1977, 52-5475; Jan. 20, 1977, 52-5476
Int. Cl.³ A61B 1/00
U.S. Cl. 128-4 6 Claims

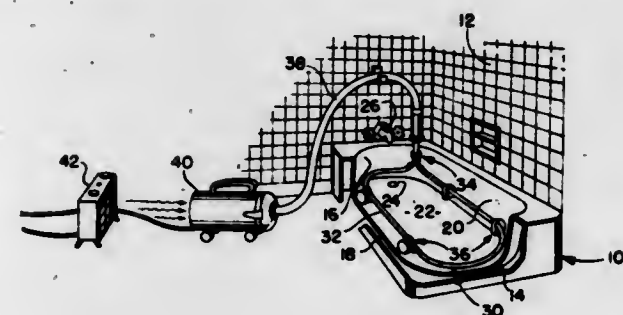


1. An endoscope comprising:
a control section;
a tube section having two ends, one end thereof being connected to said control section;
a channel extending through said tube section;
a flexible guide tube having two ends and an outer surface, for surrounding a medical instrument and reciprocatingly movable in said channel so as to allow one of said two ends of said guide tube to project from the other end of said tube section;
an engaging member formed on an inner wall of the tube section;
a wire extending in said tube section along said outer surface of said guide tube, said wire having two ends, one end thereof being inserted into the channel and the other end being fastened to said one of said two ends of said guide tube;
a stop provided in said tube section and connected to said one end of said wire, said stop being movable axially along said tube section together with said guide tube until said stop abuts against said engaging member and allowing said wire to gradually bend that portion of said guide tube which projects from said other end of said tube section, as said one of said two ends of said guide tube projects therefrom after said stop abuts against said engaging member.

4,245,625
AIR-ACTIVATED WATER AGITATOR FOR
HYDROTHERAPY TREATMENTS
William M. Murray, 306 N. Front St., Liverpool, Pa. 17045
Filed Apr. 26, 1979, Ser. No. 33,809
Int. Cl.³ A61H 9/00

U.S. Cl. 128-66

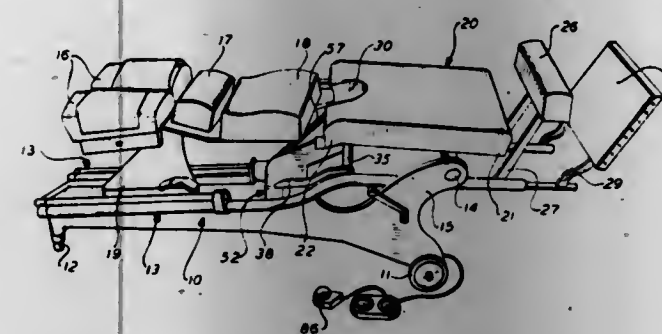
15 Claims



1. A device for air-agitation of a liquid contained in a tub for hydrotherapeutic treatment of a patient, comprising: an elongate, flexible conduit having a series of jet openings therein at intervals along its length, means for connecting said conduit with a source of pressurized air, a plurality of suction cups for

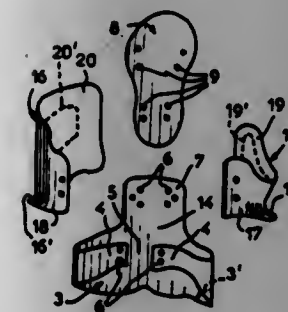
mounting said conduit in the tub, and means for adjustably connecting said conduit to said suction cups along the length of said conduit.

4,245,626
AUTOMATIC COCKING DEVICE FOR PELVIC
SUPPORT SECTION OF CHIROPRACTIC TABLE
Charles M. Paolino, 235 Forest Ave., Emerson, N.J. 07630
Filed Nov. 29, 1979, Ser. No. 98,383
Int. Cl.³ A61F 5/00
U.S. Cl. 128-70 11 Claims



1. In a chiropractic table of the type having a base, a support frame pivotally mounted on the base and a pelvic support section pivotally mounted on the frame for cocking to an elevated position by rotation of a cocking shaft through a predetermined angle of rotation and tripping to a dropped position by chiropractic pelvic thrusts, the combination comprising
motor means mounted on the support frame, said motor means having a rotary output shaft;
lever means mounted on the cocking shaft for rotation thereof;
mechanical linkage means connected between said motor means shaft and said lever means for converting the rotary motion of the motor shaft to substantially unidirectional linear motion at the lever means to rotate the cocking shaft through the predetermined angle of rotation and cock the pelvic support section; and
motor control means coupled to said motor means for starting and stopping said motor means to cock the pelvic support section.

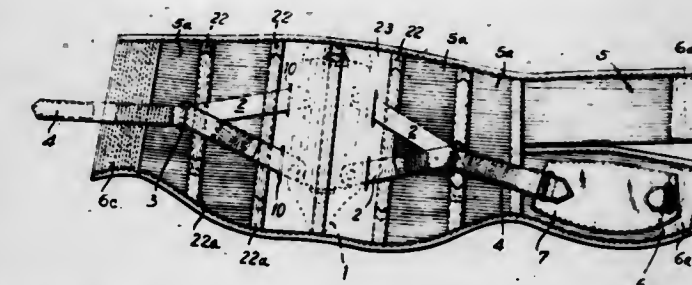
4,245,627
ORTHOPAEDIC APPARATUS FOR SPINAL
TREATMENT
Jean Mignard, 75, rue de la Plage, 62600 Berck-Plage, France
Filed May 23, 1979, Ser. No. 41,659
Claims priority, application France, Apr. 30, 1976, 76 13210; May 23, 1978, 78 15496; Mar. 23, 1979, 79 07735
Int. Cl.³ A61H 1/02
U.S. Cl. 128-78 15 Claims



1. An orthopaedic apparatus for treatment of the spinal column, distinguished by the fact that it is comprised of the following components:
a rigid pelvic girdle shaped such that it may be wrapped around the pelvis and supported by at least one of the trochanters, with a raised rear part forming the back and

with two forward extremities interspaced between them so as to form a central opening,
a rigid abdominal plate, generally V-shaped with rounded off corners, having its large base at the top and its small base at the bottom, whose lower end is affixed under the forward extremities of the pelvic girdle, and has in its upper part a concavity positioned such that when the apparatus is worn said concavity will be turned towards the patient's stomach, with the upper extremity finishing at the height of the xyphoid appendix; and
two rigid lateral shells, each generally U-shaped and notched in the middle at top and bottom to fit one side of the patient by straddling the hip bone crest, their lower part forming a rim to be supported on the hip bone crest and with the respective forward parts of almost identical height and lower than that of the abdominal plate, both being fixed on the middle or upper part of the abdominal plate, with rear parts with a height appreciably greater than that of their respective forward parts, both fixed onto the raised rear part which forms the back of the pelvic girdle.

4,245,628
BACK SUPPORT DEVICE
Joachim Eichler, Mosbacher Strasse 10, 6200 Wiesbaden, Fed. Rep. of Germany
Filed Aug. 22, 1979, Ser. No. 68,612
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1978, 2837620
Int. Cl.³ A61F 5/02
U.S. Cl. 128-78 10 Claims

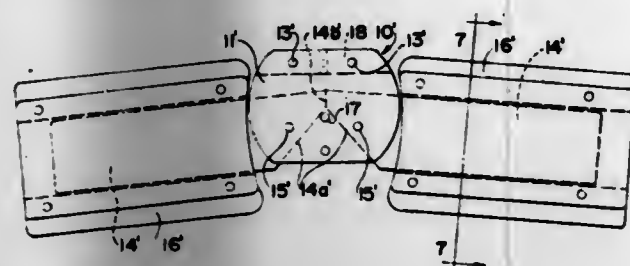


1. A back support device comprising a bandage including a support pad of a substantially rigid fastening plate and a support bandage therefor, a rib plate secured at a lower and an upper end to said fastening plate arcuately from said fastening plate, a foam cushion between said fastening plate and said rib plate, said rib plate comprised of a plurality of flexible ribs substantially parallel to each other and independently flexible from each other, said ribs consisting of a resilient material and extending between an upper and a lower end of said rib plates and an upper and lower region of said fastening plate, and means for securing said rib plate at said upper and lower regions thereof to said fastening plate.

4,245,629
KNEE AND ELBOW JOINT PROTECTOR
Alfred B. Cummins, 552 Sears Library CWRU, Cleveland, Ohio 44106
Filed Dec. 13, 1978, Ser. No. 969,212
Int. Cl.³ A61F 5/00, 1/04
U.S. Cl. 128-90 C 6 Claims

1. A knee joint protector consisting of a rocker connection member adapted for placement on one side of a human knee joint, two planar linear rigid tongues each about 1/4 inch thick and about 1.50 inches wide and each pivotally connected at one end to said rocker connection member, the other end of one of said tongues in position to extend along a limb immediately above said knee joint, the other end of the other of said tongues in position to extend along a limb immediately below said knee joint, a separate rigid unitary sleeve having two open ends and surrounding each tongue sufficiently close to permit

free longitudinal sliding movement of said tongues in said sleeves but to prevent twisting of said tongues in said sleeves about said pivotal connections, said sleeves adapted to be firmly attached to the limb in such positions at desired locations related respectively to the knee joint, and said tongues and said connections between said rocker connection member



and said tongues permitting substantially free bending of the joint normally with compensating free sliding of said tongues in said sleeves but with portions engaging between said rocker connection and said tongues preventing reverse bending of the joint when said tongues on opposite sides of said rocker connection member are substantially in alignment.

4,245,630

TEARABLE COMPOSITE STRIP OF MATERIALS

Ronald Lloyd, Sawbridgeworth, and Brian W. Walter, Bishop's Stortford, both of England, assignors to T. J. Smith & Nephew, Ltd., Great Britain

Continuation of Ser. No. 840,665, Oct. 11, 1977, abandoned.

This application Mar. 2, 1979, Ser. No. 17,062

Claims priority, application United Kingdom, Oct. 8, 1976, 42046/76; Aug. 5, 1977, 32985/77

Int. Cl.³ B32B 7/06; A61F 13/00

U.S. Cl. 128—155

33 Claims



1. A composite multi-layered strip of materials tearable into individual medical dressings of any desired length comprising: a finger-tearable outer backing strip layer having an external surface and an internal surface; a finger-tearable adhesive layer disposed on said internal surface of said outer backing strip layer; a finger-tearable absorbent strip layer adhered to said adhesive layers, said absorbent strip layer being narrower than said outer backing strip layer so as to provide exposed margins of said adhesive layer on either side of said absorbent strip layer; and a finger-tearable outer protective strip layer having an external surface and an internal surface being peelably adherent to said exposed margins of said adhesive layer, each of said outer backing strip layer and said outer protective strip layer being programmed in like predetermined transverse directions to be cleanly finger tearable from any point along the length of said multi-layered strip material, one of said outer strip layers influencing transverse tear in said predetermined transverse direction of any layer adherent thereto, said outer backing strip layer influencing transverse tear in said predetermined direction of said absorbent strip layer and at least a portion of said adhesive layer serving to adhere to said absorbent strip layer whereby a joint tear in said predetermined transverse direction extending across one of said exposed margins propagates separately and coincidentally in the said outer strip layer over an unadhered portion of said outer backing strip

layer with said outer protective strip layer to meet at the same point on the other of said exposed margins to continue the joint tear and to provide clearly defined separate units of any length of said composite multi-layered strip material while leaving the remaining portion of said composite multi-layered strip material with a clean transverse edge.

4,245,631

FRIGID AIR RESPIRATOR

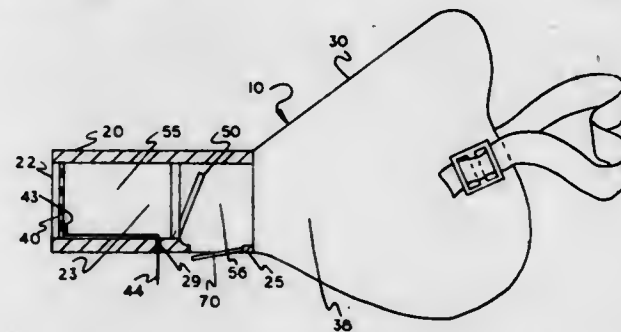
Richard A. Wilkinson, 1316 Jersey Ave., and Thomas M. Brown, R.R. 6, Box 191, Isaogle Rd., both of Muncie, Ind. 47302

Filed Jan. 1, 1979, Ser. No. 44,584

Int. Cl.³ A62B 7/00

U.S. Cl. 128—204.17

2 Claims



1. A frigid air respirator comprising: a cylindrical housing having two open ends and defining a cylindrical chamber; a heating means mounted transversely inside said housing, inset a slight distance from one of said open ends and having openings permitting the flow of air therethrough; an intake valve means disposed inside said housing so as to transect the cylindrical chamber into a receiving chamber and an internal chamber; an exhaust valve means situated on said housing disposed so as to permit expulsion of air from said internal chamber; a face mask conformed for positioning about the mouth and nose of the user attached circumferentially to said open end of said cylindrical housing opposite said heating means; and a means for securing the respirator about the head of the user.

4,245,632

UNDERWATER BREATHING APPARATUS

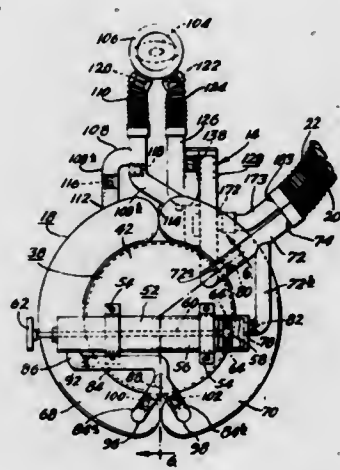
Charles E. Houston, Gulf Breeze, Fla., assignor to S.C.A.B.A., Inc., Gulf Breeze, Fla.

Filed Sep. 12, 1979, Ser. No. 74,904

Int. Cl.³ B63C 11/20

U.S. Cl. 128—205.13

16 Claims



1. Self-contained underwater breathing apparatus comprising an air-driven compressor including means driven by the

exhalation of a diver for compressing air therein, an air inlet hose open to surface air at one end and connected to said compressor at the other end for transferring surface air to said compressor to be compressed, a compressed air reservoir connected to said compressor to receive said compressed air therefrom, conduit means for delivering said compressed air from said reservoir to a diver, means in said conduit means for controlling the pressure of the air delivered therethrough, conduit means for delivering the diver's exhaled air to said compressor to drive said compressor, an exhaust air hose open to the surface at one end and connected to the compressor at the other end, and valve means for releasing the exhaled air from said compressor into said exhaust air hose upon termination of the diver's exhalation.

4,245,633

PEEP PROVIDING CIRCUIT FOR ANESTHESIA SYSTEMS

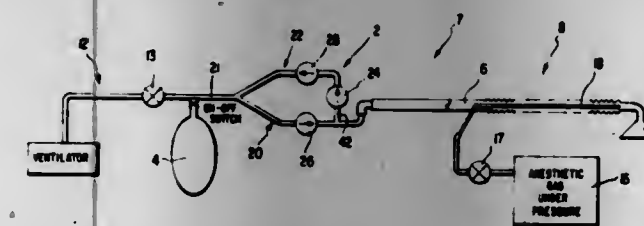
Graham W. Erceg, 4716 N. Stratford Oaks, Macon, Ga. 31204

Filed Jan. 31, 1979, Ser. No. 8,117

Int. Cl.³ A61M 16/00

U.S. Cl. 128—205.17

13 Claims



7. In a system for ventilating a medical patient including means for transferring gas to and from a patient, ventilating means for producing positive pressure for ventilating the patient, conduit means for interconnecting said gas transferring means and said ventilating means, and a reservoir bag communicating with said conduit means; an improvement to said system of a breathing circuit for providing positive end-expiratory pressure for the medical patient comprising in combination:

inspiratory conduit means having inlet and outlet end portions disposed between said ventilating means and said conduit means, said inlet end portion being interconnected with said ventilating means and said outlet end portion being interconnected with said conduit means, said inspiratory conduit means conducting gas flow from said ventilating means to said conduit means when the patient inhales; first unidirectional valve means disposed between said end portions of said inspiratory conduit means for precluding reverse gas flow through said inspiratory conduit means upstream of said first valve means when the patient exhales; unidirectional expiratory valve means disposed between said first valve means and said outlet end portion for discharging reverse gas flow through said expiratory valve means when the patient exhales; said expiratory valve means being biased for providing fixed predetermined positive pressure resistance above that of said ventilating apparatus against reverse gas flow downstream of said first unidirectional means thereby providing said positive end-expiratory pressure; and expiratory conduit means having one end thereof in communication with said expiratory valve means and the other end thereof in communication with said inlet portion thereby to conduct reverse gas flow therethrough from said expiratory valve means toward said ventilating means.

4,245,634

ARTIFICIAL BETA CELL

Anthony M. Albasser, Toronto, and Bernard S. Leibell, Newmarket, both of Canada, assignors to Hospital for Sick Children, Toronto, Canada

Continuation of Ser. No. 764,270, Jan. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 639,948, Dec. 11, 1975, abandoned. This application Feb. 12, 1979, Ser. No. 11,601

Int. Cl.³ A61J 7/00

U.S. Cl. 128—213 R

1 Claim

1. An artificial beta cell comprising: blood analysis means for determining serial values of blood glucose concentration in the blood (BG) and including signal means for providing input signals corresponding to said values; means coupled to the blood analysis means to receive said input signals and including, first means for deriving serial values of the rate of change of blood glucose concentration in the blood (BG), second means receiving said values of BG and deriving a difference factor (DF) in accordance with a function of BG which is monotonic and symmetrical in the first and third quadrants, and has a slope which is never negative and which is smaller adjacent the origin than it is remote from the origin, and third means receiving DF and adding corresponding values of DF and BG to give a projected blood glucose concentration (PBG), and fourth means for deriving a desired rate of insulin infusion (RI) using the derived value of PBG from a sigmoidal relationship between PBG and RI and providing an output signal corresponding to the desired value of RI; and pump means coupled to receive the output signal and responsive to the output signal to supply the desired rate of insulin infusion to the subject.

4,245,635

CATHETER ASSEMBLY FOR INTERMITTENT INTRAVENOUS USE

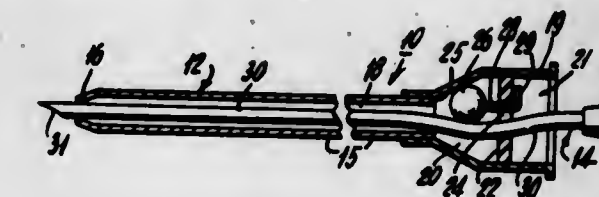
Stavros B. Kontos, Oakland, N.J., assignor to Jelco Laboratories, Raritan, N.J.

Filed Jan. 29, 1979, Ser. No. 7,136

Int. Cl.³ A61M 5/00

U.S. Cl. 128—214.4

8 Claims



1. An intravenous catheter assembly comprising: a catheter comprised of an elongated, hollow tube and a hub connected at one end of said tube, the other end of said tube being an open end, said hub having an interior cavity communicating with the lumen of said tube; a fixed insert located substantially transversely across said cavity and having an aperture therethrough generally parallel to said catheter tube the periphery of said aperture forming a valve seat; a needle slideably positioned in said aperture and the lumen of said tube, the distal, pointed end of the needle adapted to protrude slightly beyond the distal end of said catheter tube, the proximal end of said needle extending beyond the open end of said hub; valve seat closure means in said cavity and operatively associated with said valve seat and disposed between said insert and the entrance to said lumen; valve seat opening means connected to said valve seat closure means and extending through said aperture to the opposite side of said insert;

said needle displacing said valve seat closure means from said seat while said needle is positioned in said catheter; said valve seat closure means adapted to close said aperture to prevent backflow from said lumen after said needle is withdrawn; said valve seat opening means adapted to displace said valve seat closure means from said seat and provide access for the deposit of fluids into said lumen for delivery to the patient; and, said valve seat closure means and said valve seat opening means cooperatively preventing the ready reinsertion of an instrument into said lumen after said needle has been withdrawn.

4,245,636

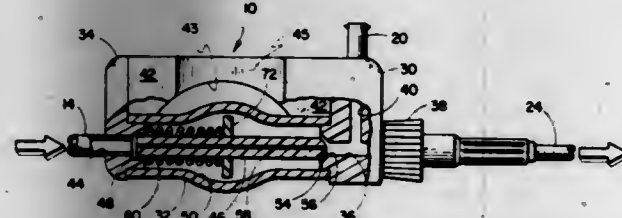
CONTINUOUS FLUSHING APPARATUS

Sam L. Sparks, Alpine, and Gordon S. Reynolds, Bountiful, both of Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Filed Jan. 24, 1979, Ser. No. 6,324
Int. Cl.³ A61M 5/00; F16K 51/00

U.S. Cl. 128-214 R

8 Claims



1. A continuous catheter flushing apparatus comprising: a block having passages therein that define a continuously open inlet-outlet path through said block; a flow resistor in the form of a capillary tube placed in said continuously open path to limit the flow therethrough of liquid under pressure to a desired minimum amount; at least a portion of said block comprising a resilient sleeve which surrounds said capillary tube, the space between said resilient sleeve and said capillary tube forming a by-pass passage around the part of said continuously open inlet-outlet path containing said flow resistor, and said by-pass passage having a size sufficient to permit a fast flow of liquid therethrough; valve means positioned in the by-pass passage of said resilient sleeve and so mounted as to forcefully seat against said sleeve, said valve means cooperating with said resilient sleeve so as to automatically and instantaneously close said by-pass passage when said resilient sleeve is released; and means for maintaining the outlet end of said capillary tube tightly seated within the outlet portion of said continuously open path whenever said by-pass passage is closed by said valve means.

4,245,637

SHUTOFF VALVE SLEEVE

Robert L. Nichols, 808 Ft. Worth St., Jacksonville, Tex. 75766
Filed Jul. 10, 1978, Ser. No. 923,346

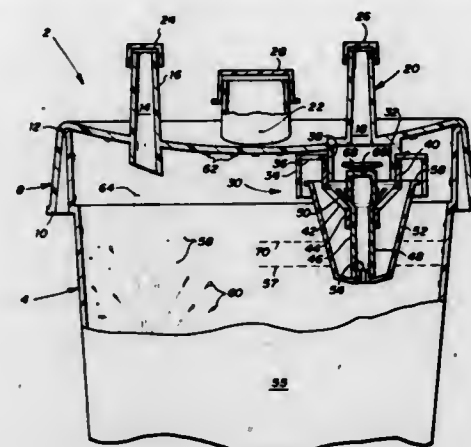
Int. Cl.³ A61M 1/00

U.S. Cl. 128-276

5 Claims

1. A medical suction apparatus comprising in combination: a canister for receiving and containing fluid; a lid sealably covering said canister; a patient port extending through said lid for receiving fluid from a patient during medical suction procedures; a vacuum port extending through said lid and adapted for attachment to a suction line to create a vacuum inside said canister; a plunger movable for selectively blocking said vacuum port;

a plunger guide directing said plunger for vertical sliding motion relative to said vacuum port; a float attached to said plunger, said plunger guide being operable to vertically support said plunger and float at a lower level when the fluid in said canister is below a first predetermined level, said float operable to cause said plunger to terminate the application of vacuum to said canister when fluid level arises to a predetermined level in said canister; and an outer sleeve downwardly depending from said lid and partially encompassing said float for providing a tortuous



path for air and fluid through said shutoff valve and vacuum port to prevent direct migration of fluid particles through said vacuum port, and comprising: an inner cylinder depending downwardly from said lid and disposed concentrically about the lower end of said vacuum port; a hub extending inwardly from the top of said outer sleeve and having a center aperture for snugly fitting about said inner cylinder; and a clamping sleeve removably clamped on said inner cylinder for supporting said hub and outer sleeve on said inner cylinder.

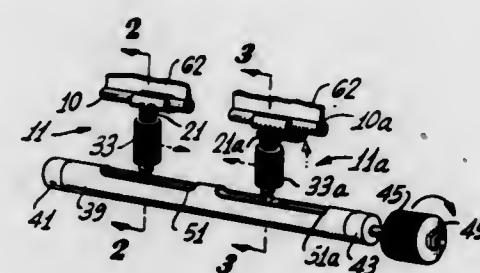
4,245,638

SURGICAL ANASTOMOSIS CLAMPING APPARATUS
Harold E. Lebeck, 520 Pine Ave., No. 55, Goleta, Calif. 93017, and Donald B. Rhodes, Santa Barbara, Calif., assignors to Harold E. Lebeck, Goleta, Calif.

Filed Nov. 8, 1978, Ser. No. 958,815
Int. Cl.³ A61B 17/11

U.S. Cl. 128-334 C

10 Claims



1. Apparatus for use in approximating the respective ends of two elongated vessels, said apparatus comprising: an elongated lead screw having a first portion threaded in a first direction and a second portion threaded in a second direction; a first nut threadably engaging the first portion of said lead screw; a second nut threadably engaging the second portion of said lead screw; first and second clamps coupled to said first and second nuts, respectively, each clamp adapted to grip a separate one of the elongated vessels with a controllable pressure, and

without causing any significant deformation thereof, said vessels being maintained in axial alignment with respect to each other; and means for preventing rotation of said first and second nuts about the axis of said lead screw, whereby rotation of said lead screw effects an axial movement of said first and second clamps toward each other, to approximate the respective ends of the elongated vessels.

4,245,639

SELF-INFLATING URINARY CATHETER

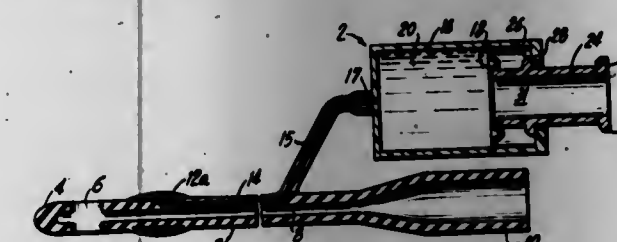
John F. La Rosa, West Kingston, R.I., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Apr. 30, 1979, Ser. No. 34,754

Int. Cl.³ A61M 25/00

U.S. Cl. 128-349 B

10 Claims



1. A self-inflating urinary catheter of the type which includes a retention balloon and an inflation lumen connected for conducting fluid to inflate the balloon, wherein the improvement comprises a fluid reservoir structure connected to the inflation lumen, said reservoir structure including a substantially rigid body part, a substantially rigid plunger part and an elastic membrane, at least one of said substantially rigid parts having at least one window opening, said elastic membrane being arranged to retain fluid in the reservoir in an initially unpressurized state, said plunger part being arranged to depress the membrane into the fluid thereby at least momentarily displacing part of the fluid and membrane through the window opening so as to stretch the membrane and pressurize the fluid, said stretched membrane thereby exerting force on the fluid to expel it out of the reservoir structure and through the inflation lumen to inflate the retention balloon, said plunger part being engagable with the body part when operated to depress the membrane so that the membrane continues to exert force on the fluid without continued application of force by the user to any portion of the apparatus.

4,245,640

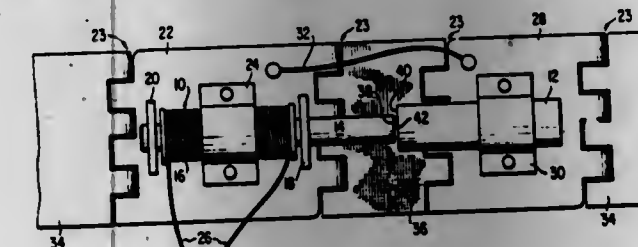
CHEST MOTION ELECTRICITY GENERATING DEVICE
Robert J. Hunt, 5009 Green Mountain Rd., Columbia, Md. 21044

Filed Oct. 7, 1977, Ser. No. 840,237

Int. Cl.³ A61N 1/00

U.S. Cl. 128-419 B

9 Claims



1. A chest motion electricity generating device comprising: magnetic flux generating means; induction coil means, said magnetic flux generating means and said induction coil means forming a magnetic circuit; an elastic separator connected to said magnetic flux generating means and said induction coil means, said elastic separator located between said magnetic flux generating means and said induction coil means; non-elastic chest harness means which includes at least one

adjustable chest strap for surrounding the circumference of the human chest, said chest strap provided with two ends, said two ends respectively attached to said magnetic flux generating means and said induction coil means; whereby normal respiratory motion causes expansion and contraction of said elastic separator, said respiratory motion thereby changing the magnetic flux linkage between said magnetic flux generating means and said induction coil means, and thereby generating an induced EMF across said induction coil means, said induced EMF being made available as useful electrical energy.

4,245,641

DISPLAY AND CONTROL SYSTEM AND METHOD FOR PROGRAMMABLE LIVING TISSUE STIMULATOR

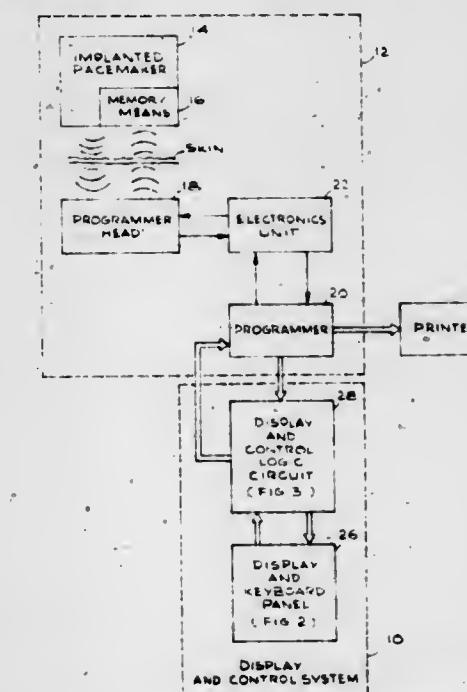
Brian M. Mann, Northridge; Jason A. Sholder, and Marc I. Hurwitz, both of Canoga Park, all of Calif., assignors to Pacesetter Systems, Inc., Sylmar, Calif.

Filed Feb. 28, 1979, Ser. No. 16,271

Int. Cl.³ A61N 1/36

U.S. Cl. 128-419 PG

18 Claims



1. In combination with a programmable living tissue stimulator system having an implanted stimulating signal generator, an implanted programmable memory means for storing control signals for said implanted signal generator, external programming means for generating control signals in accordance with predetermined input signals, means for transmitting control signals to said implanted memory means, means for generating verification signals that indicate said transmitted control signals have been received by said implanted memory means, a display and control system comprising: a plurality of visual indicators each corresponding to a control signal, said visual indicators being divided into R groups of visual indicators; first means for selecting one of said R groups of visual indicators; means for causing a first visually identifiable indication to be provided by said selected R group of visual indicators; second means for selecting a control signal corresponding to one of said visual indicators in said selected R group of visual indicators, said first and second means for selecting defining said predetermined input signals to said external programming means for generating said selected control signal; means for causing a second visually identifiable indication to be provided by said visual indicators corresponding to unselected control signals in said selected R group of visual indicators; and means for causing a third visually identifiable indication to be provided by said visual indicator corresponding to said

selected control signal when a verification signal corresponding to said selected control signal is generated.

4,245,642

LEAD CONNECTOR

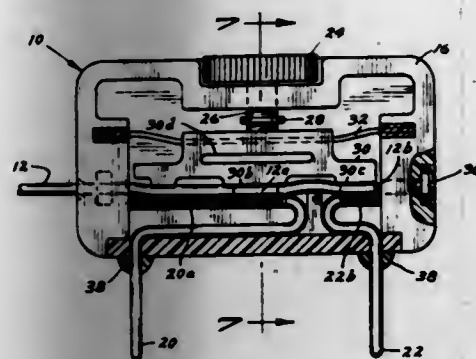
Frank Skubitz, Crystal, and Roger L. Funk, Cedar, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 28, 1979, Ser. No. 53,000

Int. Cl.³ A61N 1/00

U.S. Cl. 128—419 P

7 Claims



1. In combination, lead connector for use between a pacing lead having longitudinally spaced electrical connectors and an external pulse generator having spaced connector terminals comprising:

- enclosure means including a longitudinally extending hole whereby said pacing lead is inserted into said enclosure means and geometrically shaped connector pin means supported within said enclosure means and aligned with said longitudinal hole whereby said lead connector is plugged into said external pulse generator engaging said connector pin means in said spaced connector terminals;
- spring biased pressure plate means retained in slideable engagement within said enclosure means; and
- adjustable means urging said pressure means against said connector pin means whereby said adjustable means urges said spring biased pressure plate means against said connector pin means encompassing said electrode means therebetween thereby providing electrical communication between said connector terminals of said pulse generator to said longitudinally spaced electrical connectors of said pacing lead through said connector pin means of said lead connector.

4,245,643

METHOD AND APPARATUS FOR MEASURING THE OHMIC CONTACT RESISTANCE OF AN ELECTRODE ATTACHED TO BODY TISSUE

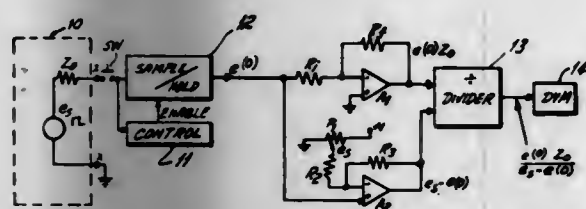
George Benzing, III, and Rumsalt Iltis, both of Cincinnati, Ohio, assignors to Children's Hospital Medical Center, Cincinnati, Ohio

Filed Aug. 15, 1979, Ser. No. 66,770

Int. Cl.³ A61N 1/36

U.S. Cl. 128—419 PT

9 Claims



1. A method for measuring the ohmic contact resistance of an electrode attached to body tissue, the method including the steps of:

- attaching the electrode to the body tissue;
- connecting a pulse generator having a given pulse amplitude and a given equivalent output impedance to the electrode,

the pulse generator, electrode, and body tissue forming an electrical circuit;

- generating a pulse by means of the pulse generator;
- determining the instantaneous voltage across the body tissue and electrode at the onset of the pulse;
- deriving the ohmic contact resistance of the electrode based on the given amplitude, the given equivalent output impedance, and the instantaneous voltage; and
- displaying the ohmic contact resistance.

4,245,644

BREAST PROSTHESIS OR AUGMENTING FORM INCLUDING SPRING-MASS SYSTEM

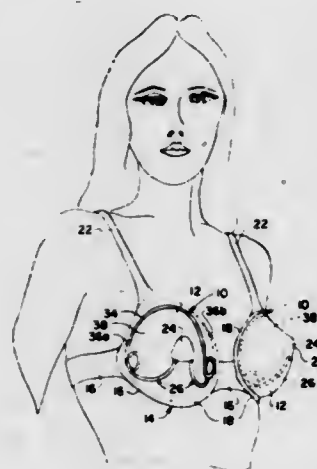
Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Aug. 28, 1978, Ser. No. 937,402

Int. Cl.³ A41C 1/14, 3/10; A61F 1/00

U.S. Cl. 128—476

15 Claims



1. In a brassiere having a supporting band and at least one breast cup attached to and extending forward from the band, an improvement comprising:

- a mass member of volumetric size less than the interior volume of the cup positioned generally spaced significantly forward from the band and chest of the wearer within the cup, said mass member being of mass density greater than the density of the material filling the remainder of the volume of the cup; and
- spring means positioned within the cup and extending from adjacent to the band and chest forward to and connecting with said mass member, said spring means effectively defining a resilient forward projecting support having cantilever energy transferring characteristics for operatively connecting the mass member forwardly spaced from the band, said spring means having characteristics of absorbing, storing and releasing kinetic energy operatively between the chest of the user and the mass member in quantities generally comparable to that energy available at the breast area due to natural body movement.

4,245,645

SELF-LOCKING CEREBRAL ELECTRICAL PROBE

Pierre-Michel Arseneault, 7936 de Janville, Charlesbourg, Quebec; Gratien Bouillon, 2571 boul. Wilfrid Laurier, Ste-Foy, Quebec; Roland Picard, 20 Parc Dion, Loretteville, Quebec, and Gilles Tremblay, 2015 Helene Boule, Ste-Foy, Quebec, all of Canada

Filed Jul. 20, 1978, Ser. No. 926,391

Claims priority, application Canada, Sep. 28, 1977, 287720

Int. Cl.³ A61B 5/04

U.S. Cl. 128—642

14 Claims

1. A probe for electroencephalographic exploration of a patient's brain after being secured to the patient's brain-pan, comprising:

- a flexible tube of small diameter for insertion to a given depth in the brain of a patient;
- at least two electrically conductive rings spaced along the

- flexible tube at relatively small distances from one another for detecting electrical activity of nerve cells in the brain;
- a terminal block located outside the tube and having a plurality of terminals;
- a plurality of insulated electrical conductors located inside the flexible tube, each conductor connecting one of the conductive rings to one of the terminals of the terminal block;
- a removable stylet inserted inside the flexible tube for giving rigidity to the flexible tube and for enabling a directional



insertion thereof into the brain whereby when the stylet is removed from the flexible tube after the tube has been inserted into the brain flexibility returns to the tube, the flexible tube and stylet each having one end for insertion into the patient's brain and a free end opposite the one end; and

- a self-locking, rigid anchor, the anchor including means for securing the anchor with respect to the brain-pan and means for quickly and firmly fixing the flexible tube to said anchor after the tube has been inserted to a given depth in the brain.

4,245,646

NUCLEAR CARDIOLOGY APPARATUS AND METHOD

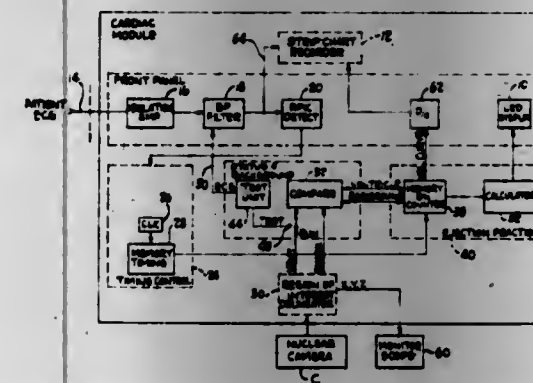
Basil N. Ionnou, North Haven; Donald S. Kearns, Farmington; Robert J. Applegate, Wallingford; Richard M. Sano, Stamford, and Edward K. Prokop, Wallingford, all of Conn., assignors to Picker Corporation, Cleveland, Ohio

Filed Jun. 19, 1978, Ser. No. 917,063

Int. Cl.³ A61B 5/02

U.S. Cl. 128—653

36 Claims



1. A cardiac function evaluating system utilizing radiation event counts from a radioisotope in the cardiovascular system of a subject, the system comprising:

- a radiation detector for producing data describing radia-

tion count location distribution of the radioisotope in the subject over a two dimensional field;

- circuitry for electrically segregating said data corresponding to radiation events occurring within a predetermined electronically defined region of interest within the field and encompassing a portion of the subject's heart to be evaluated, said electrical segregation being executed in real time relative to the production of the data;
- time gated multichannel memory circuitry for processing said segregated data for evaluating a heart function, and
- display apparatus responsive to the time gated memory circuitry for producing an indication of a characteristic of the heart function being evaluated.

4,245,647

ARRHYTHMIA REJECTION CIRCUIT FOR GATED CARDIAC IMAGE DISPLAY SYSTEMS

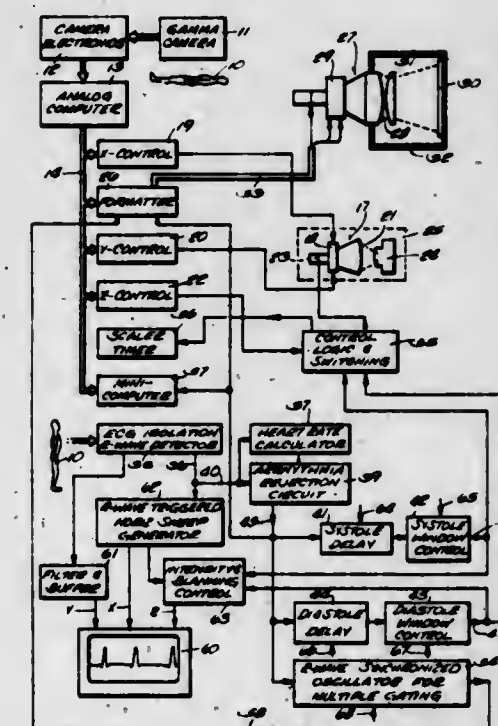
Harvey G. Randall, Oconomowoc, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 6, 1978, Ser. No. 966,986

Int. Cl.³ A61B 00/00

U.S. Cl. 128—659

5 Claims



1. A gamma camera system including a gamma camera and means for producing signals corresponding with the x and y coordinates of radiation events corresponding with radiation emitted from a plurality of points in a beating heart and for producing z signals coincident with predetermined x and y coordinate signals,

image display means including a cathode ray tube controlled by said coordinate signals to display radiation events at corresponding coordinates on the screen of said tube and including means for unblanking said tube in response to occurrence of z signals to effect display of each event as a light spot on said screen to thereby form images of the heart by integration of said light spots,

a device for distinguishing in a sequence of heart activity indicating signals those signals which are associated with heart beats occurring at regular nominally normal intervals from those signals which occur within a predetermined percentage of the time before expiration of said intervals,

gate means having input means for receiving all signals indicative of heart beats, said gate means being operative to produce a clock pulse coincident with a received signal when said gate means is enabled,

means responsive to occurrence of said signals by initiating measurements of time periods, means responsive to a measured time period exceeding a predetermined percentage of a regular time interval by

disposed within said tubular member and an advanced position wherein said blade portion is disposed forwardly of said tubular member forward end, and whereby the blade portion may be rotated by rotation of said handle means to sever tissue on the surface of the uterine cavity, and means including a liquid container operatively associated with said tubular member for permitting a liquid in the container to be selectively injected into the uterine cavity and thereafter aspirated from the cavity and collected in the container, and while the forward end of said tubular member is inserted in the cervical opening, whereby the severed tissue specimens entrained with the collected liquid may be readily obtained for examination purposes.

4,245,654

BLOOD SAMPLING SYRINGE

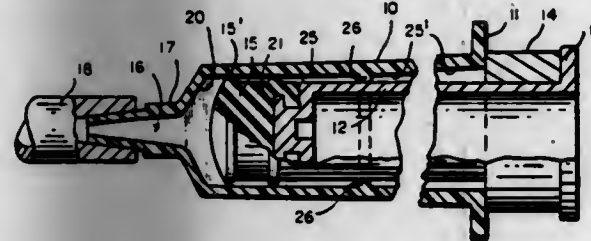
Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.

Continuation of Ser. No. 595,889, Jul. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 542,578, Jan. 24, 1975, abandoned. This application Mar. 22, 1977, Ser. No. 780,123

Int. Cl.³ A61B 5/00

U.S. Cl. 128—765

16 Claims



1. A disposable plastic syringe assembly for obtaining blood samples, comprising:

a substantially cylindrical tube having an open end, a partially closed end, an opening extending through said partially closed end, and conduit means for conveying a sample from a source, through said opening and into said tube;

a piston slidably mounted within said tube having a first end protruding from said open end of said tube and a second end disposed within said tube, and a compressible end piece mounted on the second end of said piston and adapted to form a slidable seal with the inside wall of the tube;

said substantially cylindrical tube, having a nontapered section for holding the sample, and an annularly tapered section extending from said open end to the midsection region of the tube said tube being uniform in inside diameter throughout the length of said nontapered section, and said non-tapered section being located between the partially closed end of said tube and the tapered section.

4,245,655

BLOOD COLLECTION DEVICE

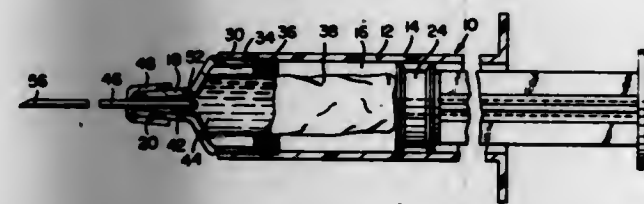
Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation of Ser. No. 829,856, Sep. 1, 1977, abandoned. This application Jul. 5, 1979, Ser. No. 55,111

Int. Cl.³ A61B 5/14

U.S. Cl. 128—765

3 Claims



1. A method of collecting blood with a collection device of

the type comprising, (a) a syringe having a barrel defining a chamber, a plunger having a distal end received in the chamber, and unimpeded opening means for permitting the passage of air including a first aperture communicating with the syringe chamber outside the collection bag and a second aperture communicating with the atmosphere which may be selectively closed by the user, (b) a collection bag of flexible material secured in a distal portion of the syringe chamber and having walls defining a collection chamber closed to the remainder of the syringe chamber, and (c) a hollow needle for connection to a distal portion of the syringe in communication with the collection chamber, said method comprising the steps of:

placing the syringe needle in a liquid solution of anti-coagulate of blood with the bag in a configuration of substantially reduced dimensions;

withdrawing the syringe plunger with the opening means closed to expand the bag into a configuration of enlarged dimensions and draw the anti-coagulate into the bag chamber;

pushing the syringe plunger into the syringe chamber with the opening means open and compressing the bag into a configuration of reduced dimensions by contact of the plunger on the bag while air passes from the syringe chamber through the opening means without obstruction by the plunger to expel the anti-coagulate from the bag chamber;

withdrawing the syringe plunger with the opening means open to position the plunger at a proximal position of the syringe chamber without expansion of the compressed bag; and

positioning the needle tip in a patient's artery with the opening means open to permit passage of blood into the bag chamber while the bag expands responsive to arterial pressure and while air passes through the opening means.

4,245,656

OBSTETRIC GLOVES

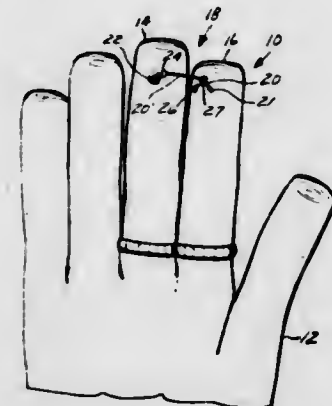
Larry D. Farr, G2010 Beckman Ct., Flint, Mich. 48504, and Anthony G. Fabaz, 2104 Painted Post Dr., Flushing, Mich. 48433

Filed Feb. 14, 1979, Ser. No. 12,207

Int. Cl.³ A61B 5/10

U.S. Cl. 128—775

10 Claims



1. A device to permit a medical practitioner to perform internal measurements on a patient, comprising:

(a) a flexible covering for enclosing each of two fingers of the practitioner, said device being deployed between two of the fingers; and

(b) a measuring tape contained behind a restricted opening associated with a first finger enclosure having a free end extending therethrough, said free end being secured to a second finger enclosure, said tape being coiled and said coil being carried on said first finger enclosure, retained behind said opening and wherein said opening comprises an eye which is smaller than the coil of tape but sufficiently larger to permit the drawn tape to pass there-through;

whereby separation by the practitioner of said two enclosed fingers causes a length of tape equal to the distance between the fingers to be drawn from behind said restricted opening to provide a measurement of an internal, anatomical part where the enclosed fingers are inserted into the patient and separated to conform to the dimensions of that internal part.

4,245,657

METHOD AND APPARATUS FOR LOADING BULK TOBACCO BARN

Bertram L. Jordan, and John D. Mitchell, both of Lewiston, N.C., assignors to Harrington Manufacturing Company, Lewiston, N.C.

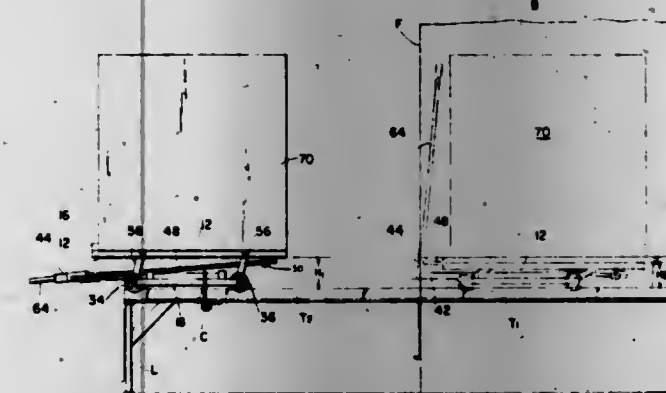
Continuation of Ser. No. 642,624, Dec. 19, 1975, abandoned.

This application Jan. 10, 1977, Ser. No. 805,487

Int. Cl.³ A24B 1/02; B60P 1/48; B62B 1/06

U.S. Cl. 131—138

2 Claims



1. In the known method of harvesting and curing tobacco leaves in a bulk curing barn which comprises:

(a) removing tobacco leaves from a tobacco stalk while the plants are in the field,

(b) depositing said removed leaves into a container that is designed to be placed into a bulk curing barn,

(c) transporting said container from the tobacco field to a position in the vicinity of a bulk curing barn by means of a vehicle,

(d) generally fixing the position of a majority of the leaves within said container before or after step (c) by forcing a plurality of elongated spike members through the mass of green tobacco leaves within said container and maintaining the position of said spike members substantially stationary with respect to said container during subsequent loading and curing steps,

(e) transferring a plurality of such loaded containers from a position outside the bulk curing barn to a stationary supported position within said bulk curing barn in a front-to-back positional relationship wherein at least the bottom side and top side of each container are provided with sufficient openings to permit the passage of heated gases through the mass of tobacco leaves contained therein, and (f) moving gas under controlled conditions of temperature humidity and pressure through the mass of leaves in the containers for a sufficient time to cure the leaves, the improvement which comprises:

(1) transferring each loaded container from a position outside said bulk curing barn to a position inside said bulk curing barn by supporting it upon a vertically adjustable platform that rolls on trackways that extend for substantially the full interior length of the floor of the bulk curing barn and for a substantial distance outside the barn,

(2) adjusting the vertical height of said platform so that as it carries a container full of leaves into the bulk curing barn the container will not engage the stationary supports in the curing barn that are designed to support the container during the curing operation,

(3) lowering said platform with a forward component of force once said container has arrived at approximately its desired position within the bulk curing barn so that not only is the weight of the container transferred to the

stationary support members within the bulk barn but the container is wedged forward tightly against either the end wall of the barn or against an adjacent container,

(4) withdrawing said platform member from said bulk curing barn back along said trackway after it has been adjusted downwardly to such an extent that it is no longer supporting said container,

(5) repeating steps (1) through (4) until the bulk curing barn is filled with loaded containers positioned in a close front-to-back relationship,

(6) curing the leaves in the containers, and

(7) subsequent to the curing operation using the vertically adjustable platform in a reverse manner to that set forth in steps (1)–(5) to thus remove all of the containers containing cured tobacco leaves.

4,245,658

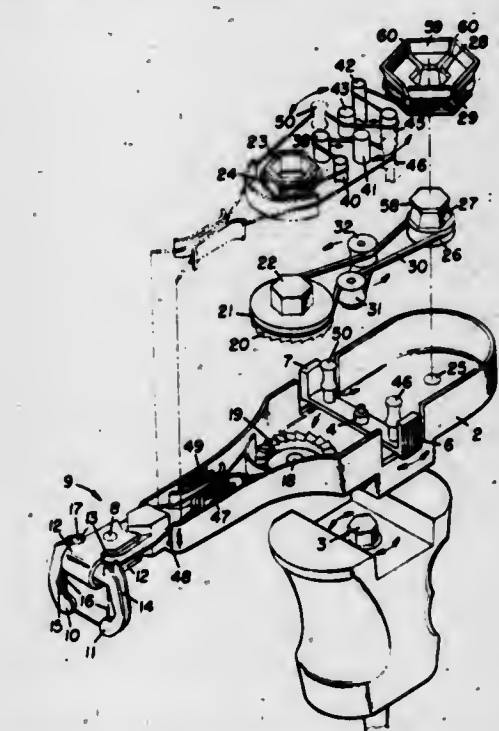
AUTOMATIC FLOSSING APPARATUS

Jacques M. Lecouturier, 350 Holly Dr., San Rafael, Calif. 94903
Filed Apr. 9, 1979, Ser. No. 28,365

Int. Cl.³ A61C 15/00

U.S. Cl. 132—92 A

13 Claims



1. An automatic flossing apparatus having an elongated body, and having two spools, one for disbursing new floss and one for rolling up the used floss, a two prong pivotable headpiece hinged at one end of said body, an oscillator for subjecting said pivotable headpiece and floss to short back and forth motions from side to side, wherein the floss follows a circuit beginning at said spool of new floss, then to said oscillator, then across said two prongs of said pivotal headpiece, back to said oscillator, then picked up by said spool for the used floss, and tension means for maintaining tension on said floss circuit, said tension means simultaneously taking up slack caused by feeding the floss across said circuit and by the short back and forth oscillations of said pivotable headpiece.

4,245,659

CRUTCH ASSEMBLY

Martin K. Shofner, 112 Audubon Rd., Shelbyville, Tenn. 37160
Filed Mar. 2, 1979, Ser. No. 16,906

Int. Cl.³ A61H 3/02

U.S. Cl. 135—68

21 Claims

1. A crutch assembly comprising:

a support arranged to engage and be secured to the chest and back of a user at a level adjacent the shoulder blades of the user; and,

a pair of spaced crutch members, each of said crutch mem-

bers depending generally downwardly from said support when said support is secured to said user and being se-



cured to said support for movement relative thereto through a solid angle.

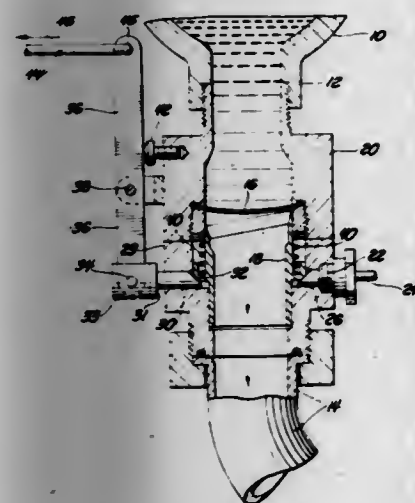
4,245,660

MANUAL OVERRIDE FOR SHORT STROKE VALVE
Edward J. Rozniecki, St. Clair Shores, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 5, 1979, Ser. No. 91,425
Int. Cl.³ F16K 13/04, 13/06

U.S. Cl. 137—68 A

3 Claims



1. In a military vehicle equipped with an interior fire extinguisher bottle for suppressing fires within the vehicle, a diaphragm disk (16) controlling outflow of fire-suppressant fluid from the bottle, an actuator (18) for piercing said diaphragm disk, a first electrically-energized pusher element (26) for operating the actuator, a second manually-operated pusher element (30) movable from a normal retracted position to also operate the actuator, a lever (36) connected to the pusher element for applying a push force thereon, a pull-type handle located on an exterior surface of the vehicle, and a cable trained between the handle and the lever for translating a pull action on the handle into a push action of the lever on the aforementioned second pusher element: the improvement wherein the cable includes first and second cable sections connected respectively to the lever and handle, and lost-motion connection means joining the cable sections, whereby a given motion of the lever requires a magnified motion of the handle in proportion to the motion loss experienced in the connection means; said lost-motion connection means comprising a cylinder connected to one of the cable sections, a piston connected to the other cable section and being slidably positioned within the cylinder, and a compression spring engaged with the piston and one end wall of the cylinder to remove slack in the cable sections when the second pusher element is in its retracted position.

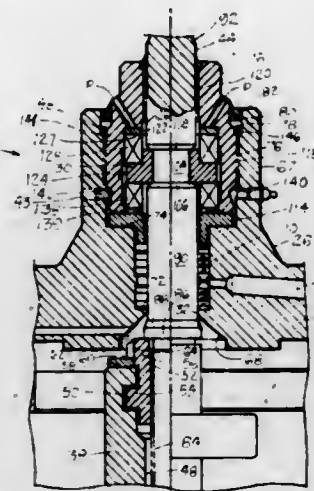
4,245,661
HEAT RESPONSIVE BACK SEAT ARRANGEMENT FOR VALVE OPERATOR

John K. McGee, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 27, 1978, Ser. No. 955,232
Int. Cl.³ F16K 17/38, 41/14

U.S. Cl. 137—72

2 Claims



1. In a non-rising stem valve in which a valve body is mounted in a valve chamber that intersects a flow passage within a valve housing, and in which a valve stem projects out through a transverse passageway in the housing from an operative relation with the valve body, and in which there are:
means defining an annular seat on said valve housing within said valve chamber peripherally of where said transverse passageway intersects said valve chamber;
means defining an annular shoulder on said valve stem spaced axially below said annular seat;
a first abrupt radial enlargement in said transverse passageway, providing a first upwardly facing shoulder therein spaced axially above said annular seat;
a second, abrupt radial enlargement in said transverse passageway, providing a second upwardly facing shoulder therein spaced axially above said first upwardly facing shoulder;
an annulus of packing surrounding said stem in said transverse passageway, said annulus of packing being bottomed on said first upwardly facing shoulder;
an annular packing gland surrounding said stem in said transverse passageway, said annular packing gland being bottomed on said second upwardly facing shoulder and having a tubular portion extending downwardly into engagement with said annulus of packing;
an annular bonnet gland surrounding said stem;
means providing a band of external threading on the bonnet gland and a band of internal threading on the housing, within said transverse passageway, above said second upwardly facing shoulder, said bands being threadably engaged to compress said packing gland axially against said annulus of packing;
bearing means axially positioning said stem in said valve chamber, said bearing means being secured between said stem and said bonnet gland;
whereby the annulus of packing may be replaced even while the valve remains open and in service, by threadably backing out the bonnet gland, axially raising the stem until said annular shoulder on the stem abuts and seals against said annular seat on the valve housing, removing the bonnet gland, packing gland and annulus of packing from the transverse passageway, installing a sound replacement for said annulus of packing, reinstalling the packing gland and bonnet gland, and threadably tightening the bonnet gland and again lowering the valve stem to disengage said annular shoulder on the stem from the annular seat on the valve housing,

the improvement wherein:

said bearing means includes, axially interposed between said bearing means and said annular bonnet gland, an annulus of heat-fusible material which is subject to melting and running away should the valve be subjected to a sufficiently hot event, such as a fire which would leave the integrity of the annulus of packing in question, so that, upon melting and running away of the annulus of heat-fusible material, the bearing means is effectively axially shortened by an amount sufficient to permit the valve stem to rise until said annular shoulder on the stem abuts and seals against said annular seat on the valve housing;
removable securement means between the housing and the bonnet gland for preventing the bonnet gland from being unintentionally backed out while the bonnet gland is in place compressing said packing gland against said packing assembly, said removable securement means comprising bonnet gland retainer wire means coaxially, removably received in means defining a coaxially annular pocket between the housing, within said transverse passageway, and said bonnet gland, the pocket being axially broader than the gage of said retainer wire means by an amount sufficient to permit the bonnet gland to be backed out enough to permit said annular shoulder on the valve stem to engage with said annular seat on the valve housing, but insufficient to permit further backing out of the bonnet gland unless said retainer wire means is removed;
means defining at least one laterally offset passageway in said bonnet gland, each said at least one passageway having an inner end in communication with said annulus of heat-fusible material and an outer end opening externally of the valve, so that at least some of said annulus of heat-fusible material, upon melting, may run away from said bearing means through said at least one opening.

4,245,662

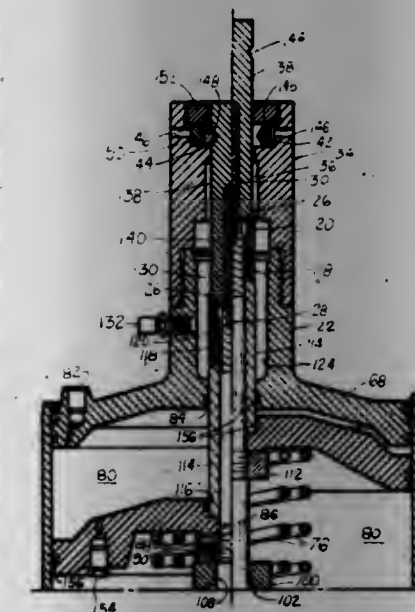
HEAT RESPONSIVE BACK SEAT ARRANGEMENT FOR VALVE OPERATOR WITH FUSIBLE LOCK-OUT CAP

John K. McGee, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 27, 1978, Ser. No. 955,231
Int. Cl.³ F16K 17/38

U.S. Cl. 137—75

11 Claims



1. A heat responsive back seat arrangement for a valve operator, comprising:
valve housing means including valve bonnet means having a bore;
a valve body which reciprocates in one sense to close and reciprocates in an opposite sense to open, said valve body having a rising valve stem connected therewith;
the valve body being enclosed within the valve housing

means, with the valve stem passing out through said valve bonnet means bore;
an annular body of axially compressively loaded valve stem packing installed to form a seal between the valve bonnet means and the valve stem, yet permit axial reciprocating movement of the valve stem relative to the valve housing means;
complementary, circumferentially extending back seat, annular sealing surface bearing shoulder means on each of said valve stem and said valve bonnet means in said bore of the latter, the two respective annular sealing surfaces being disposed on their respective parts to form an extensive, surface-to-surface circumferential seal between the valve bonnet means and the valve stem only when said valve stem is reciprocated to one resultingly-defined extreme of axial movement relative to said valve housing means;
a valve operator located relatively exteriorly of said valve housing compared to said valve body by being separable therefrom by said back seat;
said valve operator including normally-cocked force-storage means effectively interposed between said valve stem and said valve housing means to, when released, axially move said valve stem to said one extreme thus making said circumferential seal of said back seat;
lock-out means normally effectively interposed between said valve stem and said valve housing means, normally locking said valve stem in a resultingly-defined axially opposite extreme thereof, in which said annular sealing surfaces are axially spaced from one another and are not in circumferential sealing engagement, and in which said force-storage means is resultingly normally cocked;
the lock-out means including a thermally fusible element effectively interposed between said valve stem and said valve housing means which, in the absence of subjection to a preselected abnormally high temperature level remains an effective mechanical bridge therebetween, but which, when subjected to said preselected abnormally high temperature level softens and becomes ineffective as a mechanical bridge, thereby releasing said normally-cocked force-storage means, to axially move said valve stem to said one extreme thus making said circumferential seal of said back seat;
said lock-out means further including:
a radially outwardly opening notch in said valve stem;
a locking dog means normally forced partway into said notch;
force-storage means associated with said locking dog means, and tending to withdraw said locking dog means from said notch; and
said thermally fusible element being constituted by a block of heat-fusible material normally effectively interposed between said locking dog means and said valve housing means, so that when said block softens due to being heated and tends to lose interposition effectiveness, said force-storage means associated with said locking dog means releases force stored therein and said locking dog means withdraws from said notch, freeing said valve stem to axially move toward said axially opposite extreme;
said valve stem being divided into a plurality of stem segments connected end-to-end, and including an axially outermost lock-out stem which is telescopically related to the remainder of said valve stem,
said notch being provided in said lock-out stem; and
said valve housing means being divided into a plurality of housing portions including:
a main portion in which said valve body is chambered, said valve bonnet, surmounting said main portion,
an operator housing surmounting said valve bonnet and containing said normally-cocked force-storage means, and
a lock-out cap surmounting said operator housing;

said lock-out cap being generally tubular so as to have a throughbore;
 means defining a recess in the lock-out cap throughbore intermediate the ends thereof;
 said locking dog means to the extent said locking dog means is not disposed within said notch, said force-storage means associated therewith, and said block of heat-fusible material normally being disposed in said recess;
 the locking dog means and the force-storage means associated therewith being jointly constituted by a forcibly resiliently radially contracted, self-expansible split retainer ring;
 said block of heat fusible material being constituted by an annulus thereof which normally circumferentially surrounds said locking dog means;
 a plurality of drain hole openings provided through the valve housing and into communication with said annulus of heat fusible material.

4,245,663

VALVE WITH CONDENSATE RECOVERY DEVICE

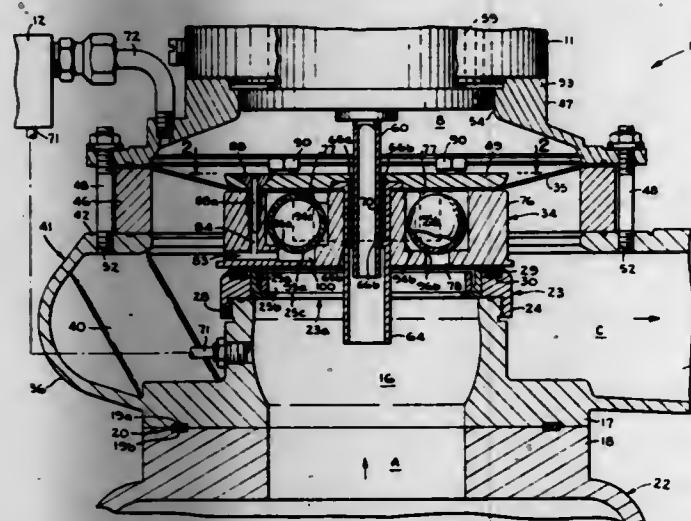
Jean Solowy, Sens, France, assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 29, 1979, Ser. No. 53,461

Int. Cl.³ F16K 17/19; F16T 1/20

U.S. Cl. 137—192

13 Claims



1. A condensate recovery device for use with apparatus having a control chamber from which the condensate is to be removed and a plurality of other chambers to which the condensate can be conducted, said device comprising:

- a diaphragm mounted to separate said control chamber from said other chambers;
- a body member having a passageway therein;
- a first valve means connected between said passageway and said control chamber;
- means for opening said first valve means in response to the presence of condensate in said control chamber to allow the flow of condensate into said passageway;
- a plurality of other valve means;
- means for connecting each of said other valve means between said passageway and a corresponding one of said other chambers; and
- means for opening one of said other valve means in response to the relative values of pressure in said other chambers to allow the flow of condensate from said passageway into one of said other chambers.

4,245,664

CONTROLLED PRESSURE SEWER SYSTEM

Johnny T. Johnson, 272 Rushing Wind Rd., Irmo, S.C. 29063

Filed Oct. 16, 1978, Ser. No. 951,398

Int. Cl.³ F17D 1/00

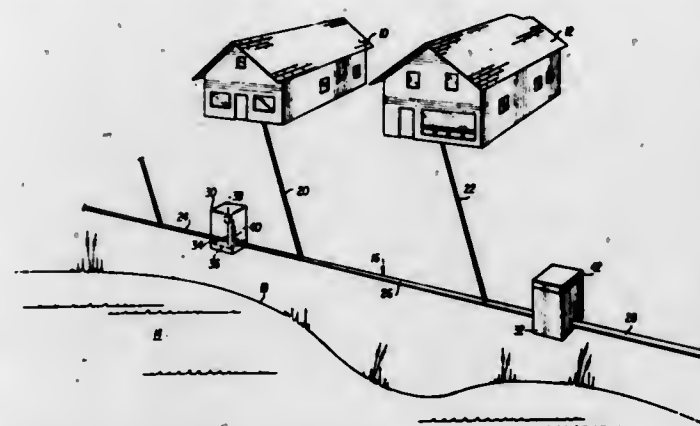
U.S. Cl. 137—236 R

13 Claims

1. In a sewer system having a generally horizontal trunk line

and a plurality of feeder lines connected thereto for conveying sewage from sources at different elevations above the elevation of the trunk line, the method of conveying sewage from the plurality of sources into the trunk line without the need for check valves to inhibit back flow from the trunk line into the feeder lines, and for conveying sewage through the trunk line despite the absence of an elevation gradient along the trunk line in the direction of desired sewage flow, comprising the steps of:

- (a) dividing the trunk line into a plurality of serially connected sections;
- (b) establishing a predetermined pressure at the upstream end of each of the plurality of sections and restricting



sewage flow at the downstream end of each of the plurality of sections to thereby provide a decreasing pressure gradient along the length of each of the plurality of sections in the direction of desired sewage flow despite the absence of an elevation gradient in the direction of desired sewage flow; and,

- (c) connecting each of the feeder lines into the trunk line at a point where the pressure at the downstream end of the feeder line as a result of the elevation of the source above the trunk line is greater than the pressure at that point in the trunk line to thereby eliminate the need for a check valve to prevent back flow from the trunk line into the feeder line.

4,245,665

FLUID HEATER FOR PNEUMATIC CONTROL MECHANISMS

Celins R. Anderson, Pekin, and Curtis E. Chadwick, II, Edlestein, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00837, § 371 Date Oct. 10, 1979, § 102(e) Date Oct. 10, 1979.

This PCT application filed Oct. 10, 1979, Ser. No. 91,676

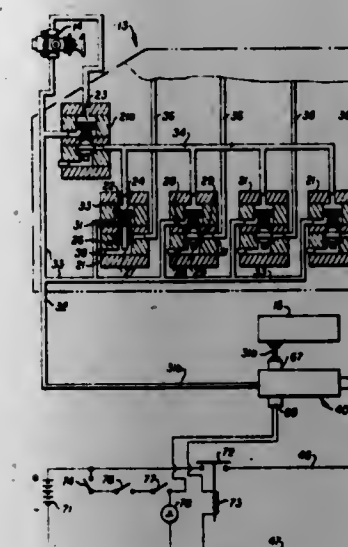
Int. Cl.³ F16K 49/00

U.S. Cl. 137—341

6 Claims

1. In a vehicle having a pneumatic control (13) responsive to pneumatic pressure for actuating a shifting mechanism (10) to selectively establish one of a plurality of ratios from an engine (11) to a driven mechanism (12), a pressurized air supply tank (15) connected to said control (13), said control (13) having at least one poppet valve (21) for selectively using pressurized air from said supply tank (15) to actuate said shifting mechanism (10) or for exhausting said air, said poppet valve (21) having an

elastomeric seal (28) for normal sealing against such exhaust, the improvement comprising:



fluid heater means (40) for heating air flowing from said air supply tank (15) to said control valve (21), downstream of said air supply tank and upstream of said control valve.

4,245,666

COLLECTING DEVICE FOR CEILING LEAKS

Sarena K. Norris, 185 Lexington Ave., New York, N.Y. 10016

Filed Mar. 26, 1979, Ser. No. 23,888

Int. Cl.³ B01D 23/28; B65B 39/00; B67C 11/00; F16M 11/38

U.S. Cl. 137—357

2 Claims



1. For use in collecting water and debris falling from a leak in the ceiling of a room, a collecting device for ceiling leaks, comprising

- a collapsible tripod member adapted to rest upon a floor surface beneath said ceiling leak and having a single extensible rod section mounted thereon and upstanding from said tripod member, said rod section comprising a tubular standard upstanding from said tripod member, a tubular extension rod telescopically slidable within said tubular standard, and a further extension rod telescopically slidable within said tubular extension rod, said rods being movable for extension toward and away from said ceiling leak,
- a collecting section mounted on the free upper end of said rod section and comprising a hollow cup member remov-

ably mounted on said rod section, and a collapsible funnel member having an open top end and a bottom end of reduced cross-sectional area communicating with said hollow cup member, said funnel member comprising a collapsible frame and a cover of water-impervious flexible material covering the sides of said frame, said collapsible frame comprising a plurality of metal strips hinged to each other and arranged to form an open rectangular frame section and to collapse to a flattened position, and a plurality of metal rods connected at one end to said metal strips and at the other end to said hollow cup member, and an elongated flexible drainage pipe communicating with said hollow cup member, the extensible rod section being of sufficient length, when extended, to position the open top end of the supported funnel member beneath and close to said ceiling leak, said drainage pipe being of sufficient length to carry the water, collected from said ceiling leak by said funnel, to a receptacle remote from said collecting device.

4,245,667

SAFETY VALVE

Bernhard W. Braukmann, Mosbach, Fed. Rep. of Germany, assignor to Braukmann Armaturen AG, Rothrist, Switzerland

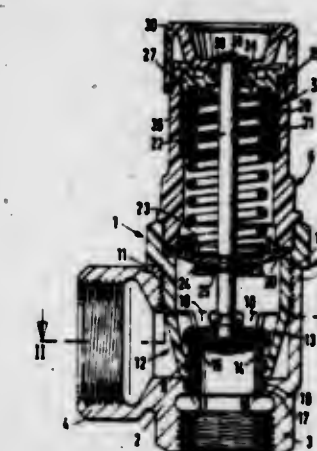
Filed Dec. 13, 1977, Ser. No. 860,063

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658721

Int. Cl.³ F16K 17/18, 15/06

U.S. Cl. 137—493

3 Claims



rounding said valve stem with one end bearing on said diaphragm to engage said valve plate with said annular valve seat, means supporting the other end of said compression spring in said walled portion, said diaphragm being responsive to a predetermined pressure exerted in said compartment by flow from said first opening to move said valve plate from said annular valve seat and said valve plate being responsive to a predetermined pressure exerted thereon by flow in the reverse direction from said second opening to lift said valve plate from said annular valve seat.

4,245,668

PRESSURE REGULATOR

Bengt A. Lindstrom, Vancouver, Canada, assignor to Chemetics International Ltd., Vancouver, Canada

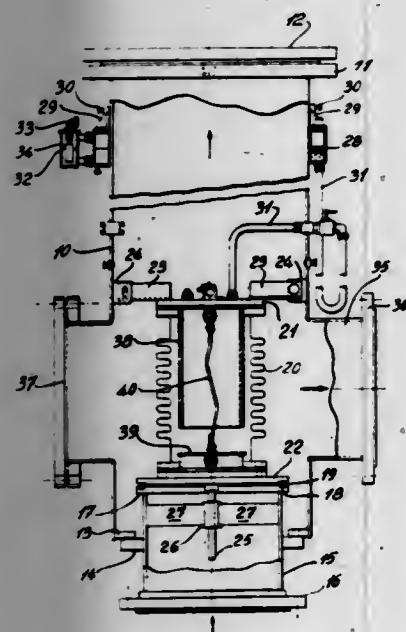
Filed Jan. 31, 1979, Ser. No. 7,970

Claims priority, application Canada, Feb. 28, 1978, 297859

Int. Cl.³ F16K 15/06

U.S. Cl. 137—534

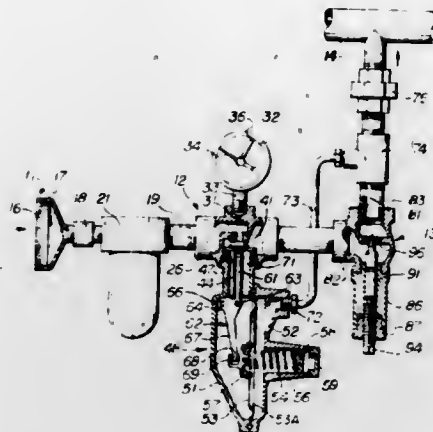
7 Claims



1. A pressure regulator comprising:

- (a) an elongated vertically disclosed housing having, a closed top and an open bottom;
- (b) an inlet conduit projecting axially into the housing through the bottom end thereof;
- (c) means connecting, and sealing the space between, the inlet conduit and the housing at or near the bottom end of the latter;
- (d) an outlet conduit;
- (e) a bellows expansion joint hermetically closed at both ends and vertically disposed into the housing, the upper end thereof being fixed to the inside of the housing and the lower end compressively resting on the top end of the inlet conduit;
- (f) sealing means between the lower end of the bellows expansion joint and the top end of the inlet conduit;
- (g) an enclosed head tank mounted outside the housing and above the bellows expansion joint;
- (h) a conduit connecting the bottom of the head tank to the top of the bellows expansion joint;
- (i) a hydraulic fluid filling the bellows, conduit (h) and part of the head tank;
- (j) a conduit connecting the unfilled part of the head tank to atmosphere, and
- (k) means closing the latter conduit upon a rise of the hydraulic fluid level in the head tank.

4,245,669
SELF-ACTUATED FLOW REGULATOR SYSTEM
Alfred C. Schmidt, P.O. Box 111, San Carlos, Calif. 94070
Division of Ser. No. 769,016, Feb. 16, 1977, Pat. No. 4,134,572.
This application Aug. 17, 1978, Ser. No. 934,464
Int. Cl.³ G05D 7/01
U.S. Cl. 137—550 24 Claims



1. A self-actuated flow regulator system comprising:

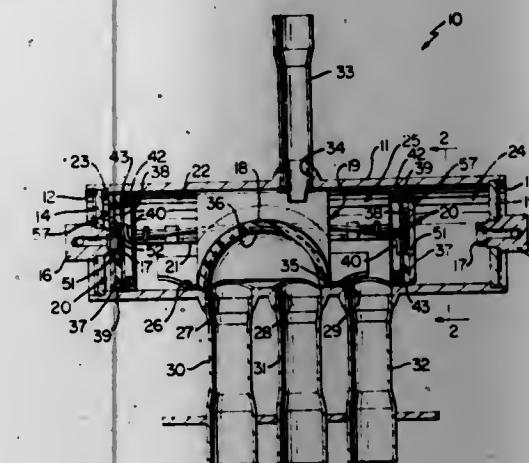
- a load through which a pre-determined constant rate of fluid flow is to be maintained,
- a differential pressure regulator,
- a first conduit between said load and said regulator,
- first means for indicating the fluid pressure in said first conduit and its relationship to the maximum pressure drop across said load for constant flow operation,
- second means for generating a pressure differential in response to the rate of fluid flow,
- a second conduit between said regulator and said second means,
- a source of constant downstream pressure less than the pressure external to said load,
- a third conduit between said second means and said source,
- said regulator maintaining a constant difference in pressure across said second means and thereby maintaining a constant flow rate through said load,
- said regulator having a hollow body formed with a partition and a valve seat in said partition, said first conduit communicating with a first side and said second conduit with a second side of said partition,
- a diaphragm casing attached to said body,
- a diaphragm sealed in said casing dividing said casing into lower and higher pressure sides,
- a fourth conduit between the higher pressure side of said diaphragm casing and the second side of said partition,
- third means for biasing said diaphragm toward said higher pressure side,
- a valve member reciprocable toward and away from said valve seat,
- forth means for moving said valve member responsive to the deflection of said diaphragm,
- a fifth conduit between said lower pressure side of said diaphragm casing and said third conduit,
- said system being characterized by flow passages in which the expansion ratio relative to length is small enough to prevent flow separation and inconsistent fluid flow patterns from occurring,
- said system further being characterized by sharp corners of approximately 90° where high velocity fluid flow detaches from said valve seat, said valve member, said partition, and said second means in order to prevent inconsistent fluid flow patterns from occurring.

4,245,670
REVERSING VALVE CONSTRUCTION AND PISTON HEAD ASSEMBLY THEREFOR AND METHODS OF MAKING THE SAME
Werner R. Bauer, and Robert A. Van Fossen, both of Richmond, Va., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 6, 1978, Ser. No. 958,029
Int. Cl.³ F16K 31/122; F16J 9/06

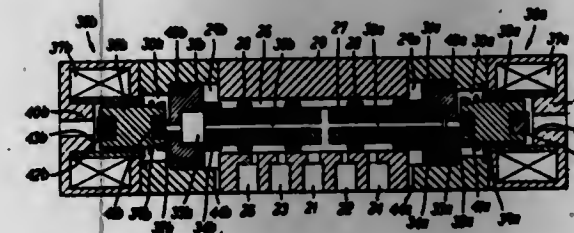
U.S. Cl. 137—625.29

28 Claims



1. In a reversing valve construction having a housing means provided with a movable valve member therein that is interconnected to a piston unit disposed in said housing means and having opposed piston heads that define a main chamber of said housing means therebetween, said housing means having opposed ends respectively cooperating with said piston heads to define a pair of opposed control chambers therebetween, said ends respectively having valve seats leading to said control chambers, each said piston head having a flexible seal member secured between a front disc member and a backing plate of the respective piston head so that an integral peripheral skirt of that seal member is urged into sliding and sealing engagement with an internal peripheral surface of said housing means by a biasing means of said respective piston head, the improvement wherein each biasing means comprises an annular resilient O-ring member carried by the respective piston head and radially engaging and urging its respective skirt radially outwardly into said sliding and sealing engagement, each said seal member of its respective piston head being adapted to close its respective valve seat when moved thereagainst by said piston unit.

4,245,671
SOLENOID PILOT OPERATED VALVE
Seiji Kougul, Soka, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 5, 1977, Ser. No. 822,244
Claims priority, application Japan, Aug. 26, 1976, 51-114189
Int. Cl.³ F15B 13/043
U.S. Cl. 137—625.64 10 Claims



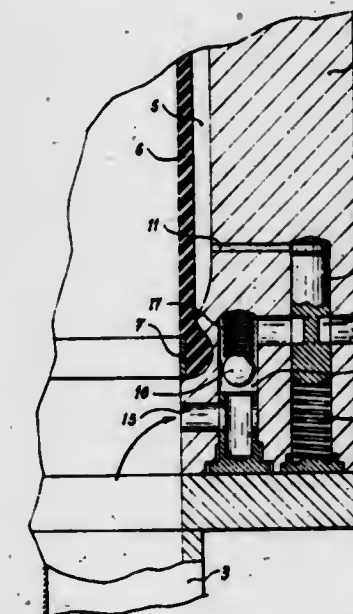
1. A solenoid pilot operated valve comprising:
a spool casing internally defining a spool chamber and having an input port and a number of output and drain ports in communication with said spool chamber;
a spool valve slidably received in said spool chamber and having a number of seal ridges to connect said output

ports selectively with either said input port or one of said drain ports;
a fluid passage formed axially through said spool valve in communication with said input port;
a piston slidably mounted on one end of said spool within a piston chamber formed contiguous to the outer end of said spool chamber and having an axial bore communicating at the inner end thereof with said axial fluid passage of said spool and terminating at the outer end in a pilot valve seat opening into a pilot chamber provided contiguously on the outer side of said piston chamber;
a plunger accommodated within said pilot chamber and movable toward and away from said pilot valve seat and a drain valve seat provided at the outer end of said pilot chamber;
plunger biasing means for constantly urging said plunger to seat on said pilot valve seat on said piston;
operating means for driving said plunger to unseat from said pilot valve seat and seat on said drain valve seat of said pilot chamber thereby bringing said pilot chamber into fluid communication with said input port through said axial fluid passage and allowing the fluid pressure to act on said piston to shift said spool to a different change-over position; and
spool shifting means provided at the other end of said spool chamber and acting to return said spool to the initial position.

4,245,672
SEALING VALVE FOR SLUDGE SCAVENGING SYSTEM
Carlos Schott Malo, and Carlos C. Schott Dubon, both of Paseo Maria Agustin, 4-6, Saragosa, Spain
Continuation-in-part of Ser. No. 888,662, Mar. 21, 1978, abandoned. This application Mar. 24, 1978, Ser. No. 889,821
Claims priority, application Spain, Mar. 21, 1977, 457,022
Int. Cl.³ F16K 7/07

U.S. Cl. 137—869

10 Claims



main valve; second means in said main valve for communicating fluid pressure to said first means;
a secondary valve connected to said second pipe section at the side of said main valve that communicates with said second pipe section; said secondary valve communicating externally of said second pipe section for permitting exit of air from said second pipe section to the exterior thereof.

4,245,673

PNEUMATIC LOGIC CIRCUIT

Daniel Bouteille, Ville d'Avray; Michel Duclos, Verneuil l'Etang; Hugues Marguet, Paris; Michel Nicolas, Plaisir, and Eric Petrimaux, Evreux, all of France, assignors to La Telematique Electrique, France

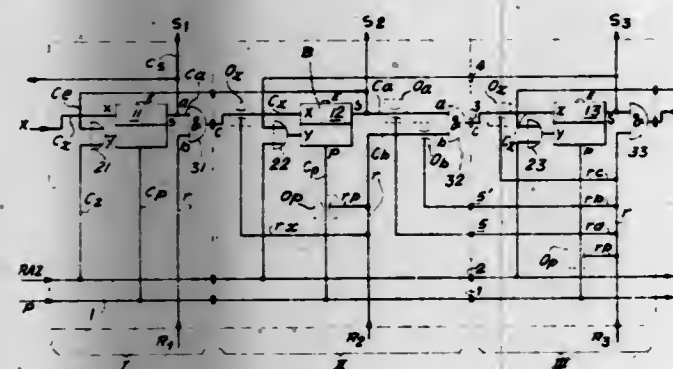
Filed Feb. 26, 1979, Ser. No. 15,071

Claims priority, application France, Mar. 1, 1978, 78 07207; Feb. 2, 1979, 79 02737

Int. Cl.³ G05D 16/04

U.S. Cl. 137-884

11 Claims



1. In a circuit for the control of pneumatic logic systems with modules each including a bistable storage relay having channels connected respectively to a pressure feed, to an actuating input for putting it into logic state "1," to a second cancelling input for placing it in logic state "0," and to a control output for feeding a user apparatus, and wherein said actuating input is fed by the output of an "AND" gate placed upstream, and the cancelling input is fed by signals derived at least from the control output of a storage relay placed downstream, said "AND" gate comprising a first input fed by the control output of a storage relay placed upstream and a second input fed by release signals delivered by a user apparatus controlled by the storage relay placed upstream, the improvement that the release signals fed to a module are transmitted through a blocking channel to a pneumatic inhibitor circuit placed in one of the channels establishing circulation of fluid towards the storage relay of said module, and adapted to interrupt the circulation of fluid thereto, said blocking channel having no fluid flow path connection with the channel which it controls, and said inhibitor circuit preventing selectively (i) the passage of the storage relay into its logic state "1" when the presence of the release signal precedes the arrival of a signal for placing in logic state "1" the storage relay situated downstream of said "AND" gate, or (ii) the appearance of the signal of the control output.

4,245,674
PROTECTIVE COVER FOR A THERMORESPONSIVE TUBE

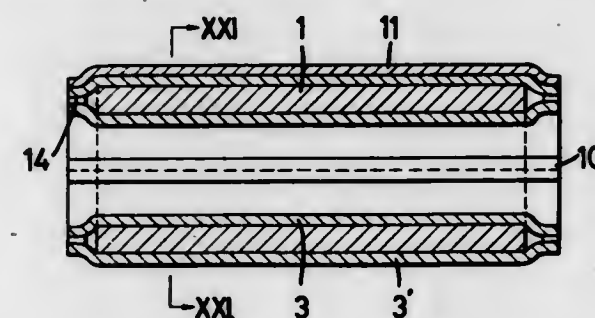
Syuichi Nakamura; Satoshi Ogawa, both of Osaka; Yasuhiro Moriyama, Ibaraki; Tomihisa Ueno, Ibaraki, and Minoru Komura, Ibaraki, all of Japan, assignors to Nitto Denki Kogyo Kabushiki Kaisha (Nitto Electric Industrial Co. Ltd.); and Osaka Gasu Kabushiki Kaisha (Osaka Gas Company Ltd.), both of, Japan

Division of Ser. No. 941,634, Sep. 12, 1978, Pat. No. 4,188,979, which is a continuation of Ser. No. 715,647, Aug. 18, 1976, abandoned. This application Oct. 19, 1979, Ser. No. 86,395
Claims priority, application Japan, Aug. 26, 1975, 50-104795; Aug. 26, 1975, 50-118875[U]; Oct. 9, 1975, 50-138596[U]; Oct. 9, 1975, 50-138597[U]; Oct. 9, 1975, 138598[U]

Int. Cl.³ F16L 9/14

U.S. Cl. 138-110

6 Claims



1. In a thermoshrinkable tube designed to be wrapped around and to heat-seal pipes to protect the pipes from corrosion, said thermoshrinkable tube having both the inner and outer walls thereof covered with two protective covers to keep them clean of any foreign matter, the improvement wherein said two protective covers have their corresponding ends put together at the opposite ends of the tube and sealed up and being removably fastened to the tube, said protective covers being made of such a material that they can be peeled off the tube before the application of heat by fastening the protective covers to a pipe near the portion of the pipe to be heat-sealed with the thermoshrinkable tube and then moving the thermoshrinkable tube away from the location towards the portion of the pipe to be sealed thereby turning the protective covers inside out, thus making it possible to peel off the protective covers from the thermoshrinkable tube just prior to the heat sealing thereof.

4,245,675
WEAVING LOOM WITH IMPROVED GUIDE MEANS FOR FABRIC

Yoshiharu Chiba, and Masahiro Masuda, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Japan

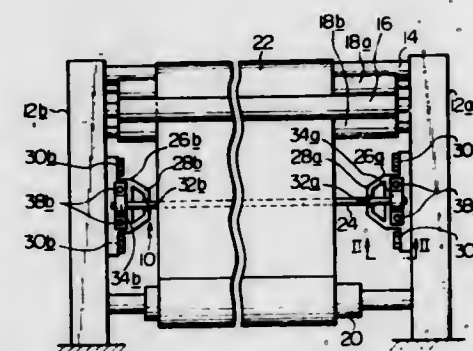
Filed Sep. 20, 1978, Ser. No. 943,929

Claims priority, application Japan, Oct. 20, 1977, 52-125083

Int. Cl.³ D03D 49/00

U.S. Cl. 139-304

5 Claims



1. A weaving loom comprising a frame with spaced first and second sections, a take-up roller spanned between said first and

second sections to wind thereon a fabric in a roll form, a resilient rod spanned between said first and second sections at a position upstream of said take-up roller with respect to the advancing direction of said fabric in a manner to cross the fabric which moves toward the take-up roller, and a rod flexing means for flexing said resilient rod to produce a camber having a summit which protrudes toward said fabric to press the same, WHICH IS CHARACTERIZED IN THAT said rod flexing means comprises:

- a roller rotatably connected to one of said first and second sections of the frame for putting thereon one end of said resilient rod;
- a threaded shaft extending between said first and second sections in a manner to be rotatable about the axis thereof;
- a roller carrying member threadedly disposed on said threaded shaft longitudinally movable along said threaded shaft upon rotation of said shaft; and
- a roller rotatably connected to said roller carrying member in a manner to run longitudinally in said resilient rod to flex the same when said roller carrying member moves along the threaded shaft.

4,245,676

START MARK PREVENTER FOR LOOMS

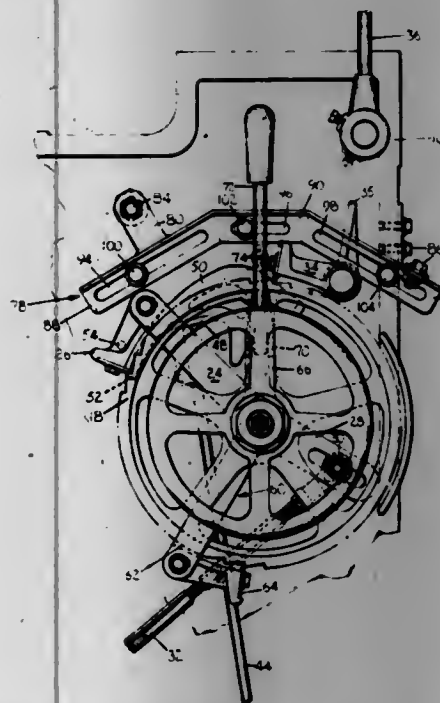
Ralph H. Brown, Kernersville, N.C., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 8, 1979, Ser. No. 92,591

Int. Cl.³ D03D 49/20

U.S. Cl. 139-316

6 Claims



1. In combination with a loom having a lay beam and reed and a take-up roll to advance fabric as it is formed with means for rotating the take-up roll including a shaft operatively connected thereto, a ratchet fixed on the shaft having an actuating lever with a feed pawl engagable with the ratchet and a hold-back pawl for maintaining the positions of the roll advanced by the feed pawl, an improved start mark preventer comprising:

- (a) control means pivotably mounted on the shaft and operatively connected to the ratchet for selective movement to a first position which moves the fell of the fabric to a location forwardly of the reed's beat-up position and to a second position to effect return of the fell to its initial position;
- (b) means operatively associated with said control means for guiding the latter during its movement between said first and second positions; and
- (c) stop means attached to said guiding means forming a neutral and said first and second positions for said control means.

4,245,677
METHOD AND APPARATUS FOR SUPPLYING TRANSPORT FLUID TO AUXILIARY JET NOZZLES IN A JET LOOM

Hajime Suzuki, Anjo, Japan, assignor to Kabushiki Kaisha Toyota Jidoshokki Seisakusho, Kariya, Japan

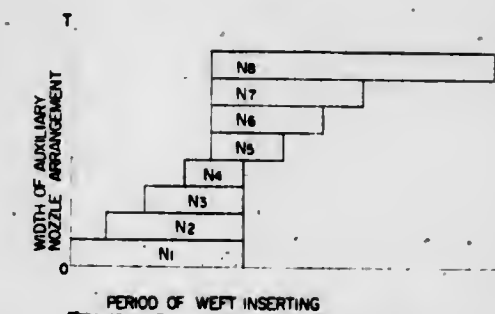
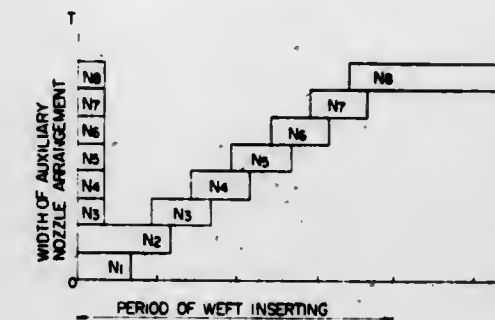
Filed Feb. 5, 1979, Ser. No. 9,734

Claims priority, application Japan, Feb. 10, 1978, 53-14447

Int. Cl.³ D03D 47/30

U.S. Cl. 139-435

8 Claims



1. A method for inserting a weft thread through a shed of a jet loom, said method comprising:
launching a weft thread by a fluid jet from a main jet nozzle, and thereby initiating insertion of said weft thread through a shed;
successively and sequentially discharging fluid jets from auxiliary jet nozzles spaced along the path of said weft thread through said shed, and thereby assisting said main jet nozzle in inserting said weft thread through said shed; and
at least once during the period of time necessary to complete a weft thread insertion operation, simultaneously discharging fluid jets from all of said auxiliary jet nozzles.

4,245,678
PACKAGE STRAPPING TOOLS

Robert D. Sansum, Harpenden, England, assignor to Gerrard Industries Limited, South Yorkshire, England

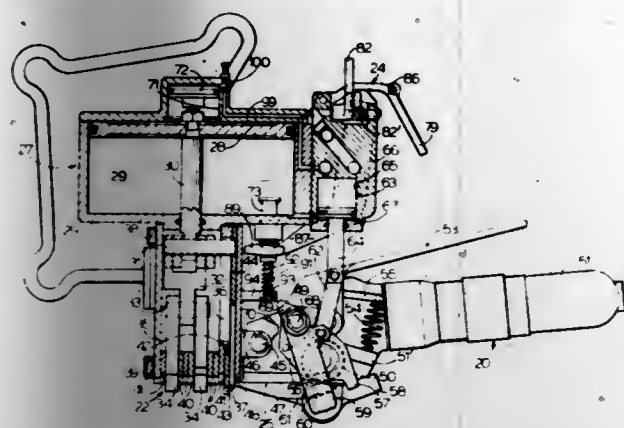
Filed May 24, 1979, Ser. No. 42,244

Claims priority, application United Kingdom, May 25, 1978, 22591/78

Int. Cl.³ B21F 21/00

1. A package strapping tool for tightening a loop of metal strapping around a package and for forming a joint between overlapping ends of said loop at a seal surrounding said overlapping ends said tool being of the pusher bar type comprising a frame, tensioning means supported by said frame, a jointing mechanism, a hinge swingably connecting said jointing mechanism to said frame, a wedge-shaped strap foot mounted on said frame, said strap foot having a toe at the thin end of said wedge-shaped, said toe being closable against said jointing mechanism and openable therefrom by hinging movement between said frame and said jointing mechanism and said strap foot being interposed, in use of said tool, between the loop of strapping close to said seal and the adjacent spare end of the loop characterised by a strap foot restrainer mounted on said frame and movable between an open position in which one side of said strap foot leaves an opening for the lateral insertion of

strapping into the tool and a closed position in which said strap foot restrainer closes the opening through which the strapping



is inserted into the tool and engages said strap foot in a manner supporting said strap foot against forces tending to move said strap foot away from said frame.

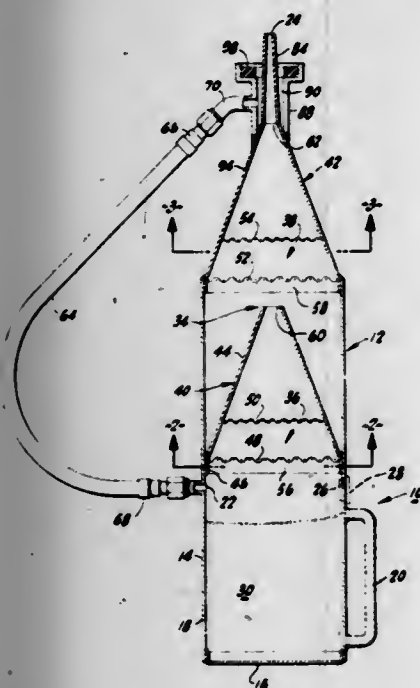
4,245,679

DRY CHEMICAL RECOVERY DEVICE FOR FIRE EXTINGUISHERS

Freddy R. Self, 933 Parkside Dr., Richmond, Calif. 94803
Continuation-in-part of Ser. No. 886,754, Mar. 15, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,445
Int. Cl.³ B65B 1/26, 31/06

U.S. Cl. 141—2

10 Claims



1. A device for recovery of powdered material for fire extinguishers comprising:

- a container having first and second openings therein, said first opening being spaced from said second opening;
- means for conveying the powdered material through said first opening of said container to the inside of said container;
- means for conveying the powdered material through said second opening of said container to the fire extinguisher;
- means for conducting air from said fire extinguisher to said container for aiding said conveyance of the powdered material through said second opening of said container;
- means for attenuating lumping of the powdered material before egress of the powdered material through said second opening of said container.

4,245,680

FOOD SERVICE BEVERAGE DISPENSER

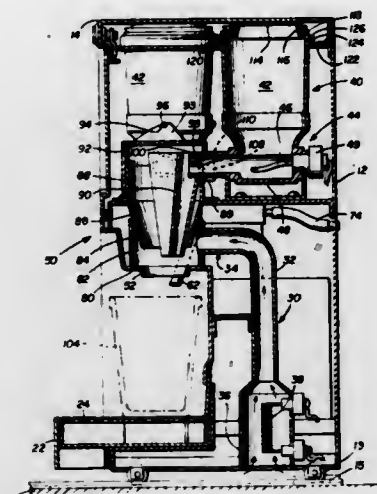
Irving E. Greenfield, Jr., 5331 SW 92nd Ave., Miami, Fla. 33156, and Ronald C. Jacobson, 14500 Kendale Lakes Blvd., Miami, Fla. 33183

Filed Jul. 10, 1979, Ser. No. 56,285

Int. Cl.³ B65B 3/04

U.S. Cl. 141—82

16 Claims



1. Apparatus for selectively dispensing one of a plurality of dry beverage base powders contained within the apparatus and a liquid reconstituting or extraction medium into a use container, comprising:

- a housing having a single dispensing station located thereon for carrying the use container;
- liquid supply means for dispensing water into the use container;
- a plurality of containers, each of the containers storing a separate dry beverage base powder;
- dry powder metering and dispensing means disposed beneath each container for dispensing a predetermined quantity of dry beverage base powder into surmounting relation to the dispensing station;
- first chamber defining means for defining a first chamber surmounting and communicating with the dispensing station;
- second chamber defining means for defining a second chamber surmounting and communicating with the first chamber, the metering and dispensing means extending into the second chamber;
- warm air flow means for directing a flow of relatively warm air into the first chamber, said flow means preventing ambient air from entering the second chamber, said flow means further warming the first chamber and the second chamber, the first chamber being warm relative to the second chamber; and,
- chute means for carrying dry powder dispensed by said metering and dispensing means through said first and second chambers and into the use container, upper end portions of the chute means being disposed in the second chamber and lower end portions of the chute means being disposed in the first chamber.

4,245,681

AUTOMATIC SHUT-OFF NOZZLE HAVING AN INDEPENDENT SENSOR ARRANGEMENT FOR SENSING THE PRESENCE OF LIQUID IN VAPOR RETURN MEANS OF THE NOZZLE

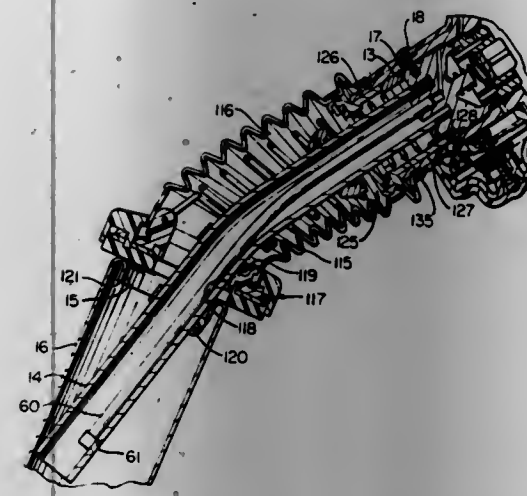
Robert W. Guertin, Cincinnati, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Feb. 2, 1979, Ser. No. 9,385

Int. Cl.³ B65B 3/26; B67C 3/26

U.S. Cl. 141—206

22 Claims



22. In an automatic shut-off nozzle comprising a body having an inlet and an outlet, a valve in said body controlling flow of liquid from said inlet to said outlet, means controlling the operation of said valve, spout means communicating with said outlet and having its free end for disposition in an opening of a fill pipe of a vehicle tank or the like, means to return vapor from the tank being filled, sealing means to form a seal between the fill pipe opening and said vapor return means when said spout means is disposed in the fill pipe, first means connected to said controlling means to cause said controlling means to be activated to move said valve to its closed position in response to at least one of two conditions existing in the tank, the conditions being build-up of vapor pressure to a predetermined vapor pressure and liquid reaching a predetermined level in the tank, the improvement comprising:

second means, independent and separate of said first means, connected to said controlling means to cause activation of said controlling means to move said valve to its closed position in response to the presence of liquid in said vapor return means.

4,245,682

ATTACHMENT FOR DISPENSING NOZZLE

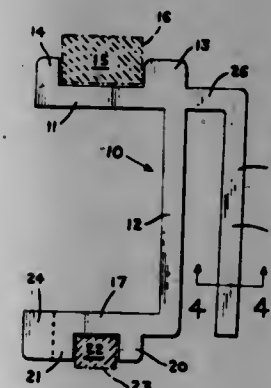
Robert A. Agnew, Sr., Chattanooga, Tenn., assignor to Agnew & Sons Company, Chattanooga, Tenn.

Filed Apr. 18, 1979, Ser. No. 31,033

Int. Cl.³ B65B 3/04; B25F 1/00

U.S. Cl. 141—392

2 Claims



1. A gasoline pump handle insert for wedging the pump handle lever in a pump open condition relative to the pump

handle lever guard comprising a shank, a pair of parallel and longitudinally spaced flat members extending in the same direction from opposite ends of the shank, a pair of transversely spaced protrusions on one of said flat members extending in the same direction as the shank and forming a bight therebetween for engaging the pump handle lever guard, a pair of transversely spaced bosses on the other of said flat members, said bosses protruding longitudinally in the same direction as the shank, said bosses forming a bight for engaging the gas pump handle lever, said shank being offset to one side of said bights a shaft generally parallel with said shank and coextensive therewith, said shaft being spaced from said shank in order to establish an open ended clip, said shaft having a bevelled side forming a sharp edge on said shaft for removing ice from an automobile windshield, and a stub joining said shaft and shank together.

4,245,683

PROTECTIVE CONTRIVANCE FOR WOOD SPLITTING MACHINE

Karl I. Cedergren, Pl. 3365, 820 94 Hede, Sweden

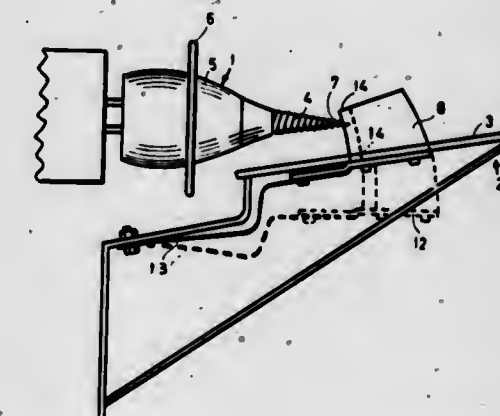
Filed Dec. 29, 1978, Ser. No. 974,564

Claims priority, application Sweden, Jan. 26, 1978, 7810006

Int. Cl.³ B27L 7/00; B27G 21/00

U.S. Cl. 144—194

5 Claims



1. A protective contrivance for a wood splitting machine having a rotatable splitting element including a threaded pointed end for penetrating said wood, and a work table including a table plate which extends towards and under said splitting element and including a groove extending through said plate, said protective contrivance comprising a swivel arm one end of which is attached to said work table under said plate, and a cover, said cover being attached to the other end of said swivel arm, said swivel arm including means associated therewith for biasing said swivel arm towards said groove such that said cover extends through said groove and covers said pointed end prior to when said wood has been penetrated by said pointed end during the splitting operation, and just prior to when said pointed end completely penetrates through said wood, said biasing means being overcome by the weight of said wood so that said cover is forced into said groove away from said pointed end at all other times during said splitting operation.

4,245,684

GOLF BAG SYSTEM

Glynn E. Street, 155 Funke Rd., Glen Burnie, Md. 21061, and Arthur R. Crandell, 7215-E Eubanks Loop, Ft. Meade, Md. 20755

Filed Dec. 3, 1979, Ser. No. 100,023

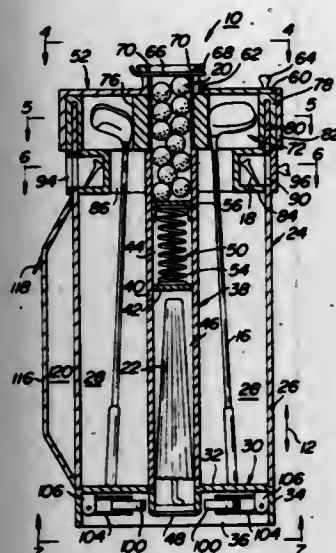
Int. Cl.³ A63B 55/02

U.S. Cl. 150—1.5 B

10 Claims

1. A golf bag system, comprising:
(a) a longitudinally extended first housing for containing a predetermined number of golf clubs; said first housing

- having at least one internal compartment adjacent a side-wall thereof;
- (b) a longitudinally extended second housing positionally located central said first housing;
- (c) housing cover means rotatably mountable on said first and second housings for providing internal access to said first and second housings;

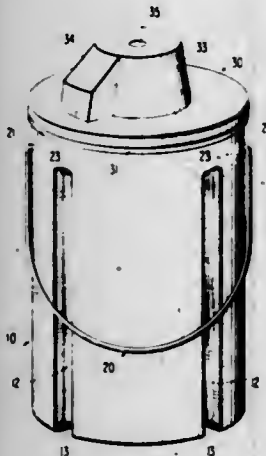


- (d) a rotatable strap member slidingly mounted on said first housing sidewall for alignment thereof with said internal compartment; and,
- (e) retractable wheel means rotationally coupled to a base wall of said first housing for providing rolling displacement of said golf bag system with respect to an external surface.

4,245,685

PROTECTIVE CARRIER

Russell H. Nemitz, and Jewel J. Shelton, both of Raleigh, N.C., assignors to Mallinckrodt, Inc., St. Louis, Mo.
Filed Aug. 15, 1978, Ser. No. 933,956
Int. Cl.³ B65D 23/08, 81/16; A47J 41/00
U.S. Cl. 150—52 R



1. A protective carrier for housing a fragile container, said carrier comprising:
- (a) a hollow body having a generally cylindrical side wall having edges defining a first end and a second end for said body;
- (b) a bottom provided integrally about the perimeter of said first end;
- (c) a plurality of inwardly extending ribs on said wall for supporting the perimeter of the container to be housed;
- (d) a plurality of inwardly projecting ribs on said bottom for supporting the bottom of the container to be housed;
- (e) a lid adapted for removable engagement with said second end of said body, said lid including a raised central portion for surrounding and protecting the neck of the container; said raised central portion extending upwardly above the

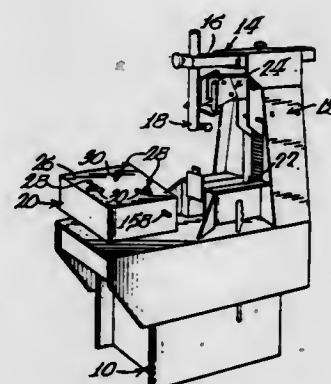
- top of the neck to provide total protection to the container; and
- (f) a handle attached to said body at two generally opposing positions near said second end of said body;
- (g) said handle including at each end thereof a first portion extending through said side wall of said body in a direction substantially perpendicular to said side wall, and a second portion extending substantially perpendicular to said first portion;
- (h) said second portions being formed so that when said handle is in its lifting position said second portions are approximately horizontal and extend in opposite directions.

4,245,686

TIRE CHANGING APPARATUS

Jimmie L. Holladay, Antioch, Tenn., assignor to Hennessy Industries, Inc., Elk Grove Village, Ill.
Continuation of Ser. No. 478,040, Jun. 10, 1974, abandoned, which is a continuation-in-part of Ser. No. 373,491, Jun. 25, 1973, abandoned. This application Nov. 6, 1978, Ser. No. 958,000
Int. Cl.² B60C 25/06
U.S. Cl. 157—1.1

6 Claims



1. Tire bead seating apparatus comprising: at least one, and no more than a relatively few, nozzle(s) having an outlet end adapted to be directed at the interface of a tire bead and wheel rim, said nozzle(s) further having a linear, internal passage terminating at said outlet end and having a straight line length extending from said outlet of at least $\frac{1}{4}$ inch; said internal passage over said straight line length having a substantially uniform cross section said nozzle(s) providing a highly directionalized fluid stream(s); means for supplying air under pressure to said internal passage; and means supporting said nozzle(s) and orienting the same in sufficiently close proximity to a tire on a wheel such that said highly directionalized stream(s) will impinge upon a tire bead and wheel surface without appreciably diverging and as a discrete stream(s).

4,245,687

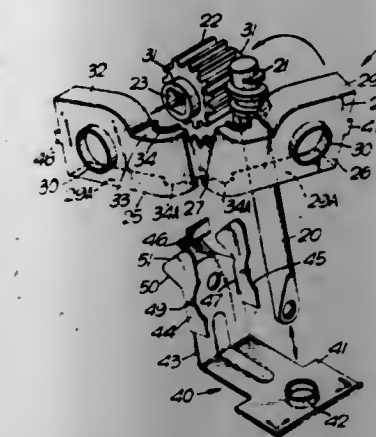
VENETIAN BLIND AND TILTING MECHANISM THEREFOR

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International N.V., Netherlands Antilles
Filed May 30, 1979, Ser. No. 43,802
Int. Cl.³ E06B 9/38

- U.S. Cl. 160—177
1. A tilting mechanism for fitting in a venetian blind headrail for tilting the slats of the venetian blind, said tilting mechanism comprising, in combination:

- (a) a rotary drive shaft;
- (b) a worm mounted on said drive shaft;
- (c) a rotary wormwheel drivably engaged by said worm;
- (d) a one-piece housing including two mirror-image housing portions;
- (e) a solid hinge, hingedly connecting said two portions to one another so that they may be moved between an open position and a closed position;

- (f) two bearing parts on each portion together forming a rotary bearing for said drive shaft and worm and a rotary bearing for said wormwheel, when said housing portion is hinged to its closed position;



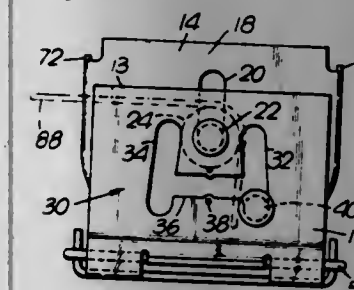
- (g) means to lock said housing portions in said closed position.

4,245,688

CORD LOCK FOR A VENETIAN BLIND LIFT CORD

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International N.V., Netherlands Antilles
Filed May 30, 1979, Ser. No. 43,695
Int. Cl.³ E06B 9/38
U.S. Cl. 160—178 C

9 Claims



1. A cord lock for a venetian blind lift cord, said cord lock comprising, in combination:

- (a) front and rear plates maintained generally parallel to one another;
- (b) a guide roller mounted between said front and rear plates, with its axis extending substantially normal to the front and rear plates;
- (c) guide slots formed in the front and rear plates in register with one another, the guide slots including:
- (i) side arms which are inclined towards one another in an upward direction, the axes of the side arms extending one on each side of the axis of the guide roller; and
- (ii) a cross arm joining the side arms and extending below the guide roller;
- (d) a rotatable locking roller having end shaft portions mounted in the corresponding side arm of each guide slot and movable in the axial direction of the side arms in which they are mounted, effective to enable a cord passing around the guide roller and between the guide roller and locking roller to be releasably locked therebetween, the dimensions of the cross arms and locking roller shaft portions being such as to allow forceable movement only of the locking roller from one side arm to the other.

4,245,689

DIMENSIONALLY STABLE CELLULOSIC BACKING WEB

Henry P. Grand, Verviers-Henay, Belgium; Daniel LaViotes, Lexington, Va., and Edmond M. Mergelsberg, Liege, Belgium, assignors to Georgia Bonded Fibers, Inc., Buena Vista, Va.
Filed May 2, 1978, Ser. No. 902,068

Int. Cl.³ D21H 5/02, 5/18; B05D 5/00; B32B 5/02

U.S. Cl. 162—134

27 Claims

1. An asbestos free backing web having a thickness from about 0.015 inch to about 0.060 inch, prepared from fibrous component's and binder components, said fibrous components being present from about 50% to about 88% of dry weight of said backing web and comprising a fibrous portion and fibrous portion additives, said binder components being present from about 50% to about 12% of dry weight of said backing web and comprising a binder portion and binder portion additives, said fibrous components including cellulosic fiber in an amount from about 40% to about 85%, glass fiber in an amount from about 3% to about 35%, polyolefin fiber having a melting point in the range of about 230° F. to about 380° F. in an amount from about 10% to about 56%, and antifungal-antimildew agent in an amount from about 0.5% to about 2.0% all with respect to the dry weight of fibrous components, said binder components including a synthetic rubber latex or combination of latices, said web having dimensional stability in the machine direction, the cross machine direction and the diagonal direction such that the web in these directions varies in dimension by not more than about 0.5% when subjected to relative humidity changes in the range of relative humidity of 0% to 100%, or when subjected to water soaking with respect to the complete range of relative humidity, said web also exhibiting no visible fungal growth after a 28 day incubation period at 83°–86° F. and not less than 85% relative humidity, the web having been placed at the start of said period on the surface of nutrient-salt agar and inoculated with a mixed spore suspension of *Aspergillus niger*, *Penicillium funiculosum*, *Chaetomium globosum*, *Trichoderma* sp. and *Pullularia pullulans*, whereby said web is characterized by resistance to stiffening, embrittlement, thermal discoloration and permanent indentation.

14. The backing web of claim 1 wherein a foam layer, a decorative print layer, and an outer wear-resistant layer are applied to one surface of said backing web, whereby said polyolefin fiber of said fibrous components fuses at the application temperature of said foam, print and outer wear-resistant layers resulting in increased bonding strength, whereby said backing web is characterized by enhanced delamination resistance.

4,245,690

HOT CHAMBER DIE CASTING MACHINE AND METHOD FOR CONTROLLING THE FLOW OF MELT DURING AND IMMEDIATELY AFTER MOLDING A PART

Otto Wälichli, Niederuzwil, Switzerland, assignor to Gebrüder Buchler AG, Switzerland.

Filed May 23, 1978, Ser. No. 908,680

Claims priority, application Sweden, May 28, 1977, 6547/77

Int. Cl.³ B22D 17/04, 17/32

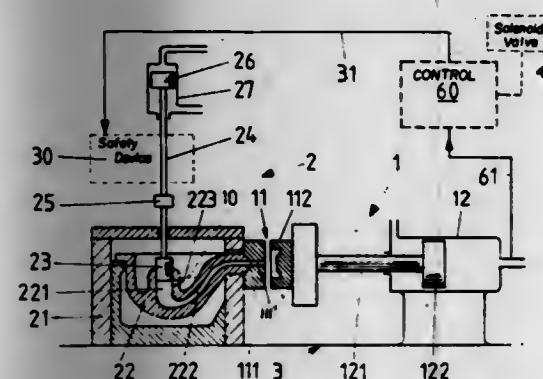
U.S. Cl. 164—4

9 Claims

1. A method for controlling the flow of molten metal of a hot chamber die casting machine from an outer surrounding metal crucible into the bore of a casting bushing which is located in the melt and has a melt inlet opening disposed below the level of the melt in the crucible and a sprue runner leading from the bore to a mold cavity defined between two mold parts and which also includes a casting piston which is movable in the bore to advance the melt and which has a side surface alignable with the inlet opening to close it, comprising, driving the casting piston in a first direction from an original casting position in which it is located above the opening and thus permits the inflow of melt into the bore so that it moves along the bore to close the opening and beyond the opening to advance the

melt into the mold cavity while the mold parts are maintained in closed relationship by applying a closing pressure thereto, moving the piston after the solidification of the casting in an opposite second direction backwardly away from the mold by an amount sufficient to relieve only a small quantity of the pressure acting on the mold cavity but not sufficient to open the opening to the melt, locking the piston against movement in said first direction, and thereafter moving the piston back to the original casting position in which it clears the opening while maintaining the locking of the piston against movement in said first direction until the closing pressure reaches a predetermined value indicating that the two mold parts are maintained in closed relationship and then releasing the locking of the piston in the first direction when the closing pressure reaches the predetermined value.

3. A casting device, comprising, a fixed mold part, a movable mold part engageable with the fixed mold part to enclose a mold cavity, mold moving means connected to said movable mold part to move it into and out of engagement with said fixed mold part and to apply pressure thereto to maintain said movable mold part in engagement with said fixed mold part, a melt crucible, a casting bushing disposed in said melt crucible and adapted to be positioned below a melt level therein, said



casting bushing having a cylindrical bore with a side inlet defining a feed opening extending below the melt level into said bore, a casting piston movable in said bore to displace the melt therein and being alignable with said inlet to close it, said bore having a sprue runner following the opening discharging into the mold cavity, drive means for driving said casting piston to first move it into said bore to displace the melt therein and then retract it from said bore to a first position with said casting piston covering said side inlet and to a second position with said casting piston further retracting said casting piston from said bore with said casting piston away from said side inlet, safety locking means engageable with said casting piston to prevent it from movement into said bore to displace the melt therein when said casting piston is in said first position and when said casting piston is in said second position until said mold moving means applies said pressure to said movable mold part to maintain said movable mold part in engagement with said fixed mold part, and control means operatively connecting the safety locking means to a measuring line of the mold moving means, the control means causing the safety locking means to release the casting piston when the measuring line indicates that the pressure applied to said movable mold part is sufficient to maintain said movable mold part in engagement with said fixed mold part.

4,245,691

IN SITU FURNACE METAL DESULFURIZATION/NODULARIZATION BY HIGH PURITY MAGNESIUM

Prem P. Mohla, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 2, 1977, Ser. No. 856,697

Int. Cl.³ B22D 27/20; C22C 33/10

U.S. Cl. 164—56

5 Claims

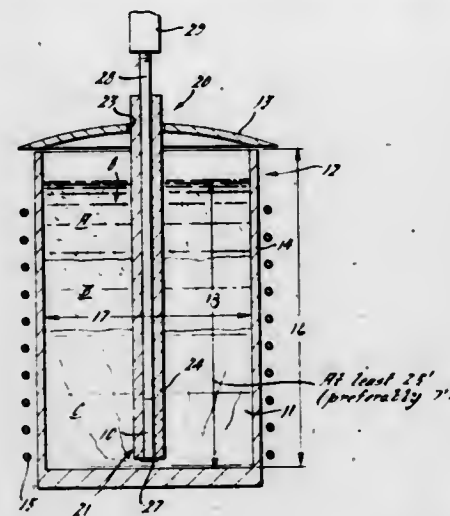
1. A method for desulfurizing iron in a melting furnace, comprising:

(a) melting a charge of iron having a chemistry consisting of

0.01–0.1% sulfur and less than 3.5% carbon, and the remainder essentially iron, said melting being carried out in a coreless induction melting furnace to form a molten iron pool having a column height of at least 2.5 feet;

(b) when said molten iron within said pool is at the temperature level of 2200°–2400° F., plunging a cartridge, containing a predetermined quantity of magnesium of a purity of at least 80%, into said molten pool in said furnace, said cartridge permitting only progressive reaction of said magnesium with said molten pool;

(c) maintaining said plunged cartridge in said molten zone for a period of 30–200 seconds allowing for said magne-



sium to react with said molten iron for purposes of desulfurization, the magnesium vapors formed as a result of the cartridge being plunged are substantially contained by the ferrostatic pressure head of said column of molten metal to limit boiling, and

(d) periodically withdrawing all or a portion of molten metal in said pool when a sulfur content is about 0.01% or less is reached and at the same time introducing a charge of metal scrap to said furnace to replace said withdrawn molten metal for purposes of maintaining a continuous operation of said furnace, each plunged cartridge affecting the newly melted iron in said pool which is mixed with the previously desulfurized melted iron.

4,245,692

CONTINUOUS CASTING MOULD SUITABLE FOR ADJUSTMENT TO VARIOUS CROSS SECTIONAL FORMATS OF A STRAND

Reinhard Hargassner, and Günter Holleis, both of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

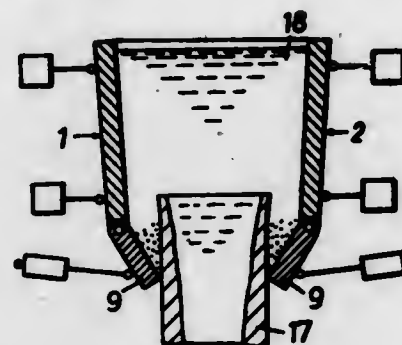
Filed Jun. 7, 1979, Ser. No. 46,502

Claims priority, application Austria, Jun. 14, 1978, 4328/78

Int. Cl.³ B22D 11/04

U.S. Cl. 164—436

2 Claims



1. A continuous casting mould suitable for adjustment to various cross sectional formats of a strand, comprising at least one transversely divided displaceable side wall including at least upper and lower parts,

an opposite side wall arranged oppositely said at least one transversely divided displaceable side wall, at least one adjustment drive means articulately connected to each of said upper and lower parts for laterally adjusting and fixing said upper and lower parts, respectively, relative to said opposite side wall, and connecting means articulately connecting said upper and lower parts and having at least one axis extending in the horizontal direction over the width of said at least one transversely divided displaceable side wall.

4,245,693

WASTE HEAT RECOVERY

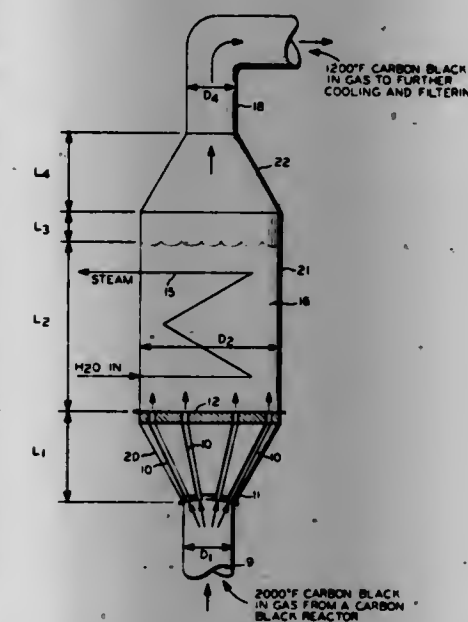
Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 11, 1978, Ser. No. 950,349

Int. Cl.³ F28D 13/00; F26B 17/00

U.S. Cl. 165—1

9 Claims



1. A process for indirect heat exchange between a gas stream containing suspended light solids and a heat exchange fluid which comprises:

(a) introducing a gas stream containing entrained solids into an inlet connected to a lower portion of an enlarged heat exchange zone containing a fluidized bed of particulate solids and a heat exchange coil extending into said fluidized bed and having a heat exchange fluid flowing through said coil,

(b) passing said gas stream from said inlet as a plurality of small streams through a plurality of small flow passages at substantially the same flow velocity as in said inlet and introducing said small streams into a lower portion of said enlarged heat exchange zone,

(c) flowing said gas stream through said fluidized bed or particulate solids at a flow rate sufficient to maintain fluidized conditions and at a rate such that said gas is heated or cooled by the heat exchange fluid in said coil, and

(d) removing said gas stream containing suspended solids at a different temperature from an upper portion of said heat exchange zone.

4,245,694

SUPPORTS FOR CLOSELY SPACED TUBES

Hosea E. Smith, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 790,167, Apr. 22, 1977, abandoned.

This application Jan. 29, 1979, Ser. No. 7,276

Int. Cl.³ F28F 9/00; F22B 37/24

U.S. Cl. 165—82

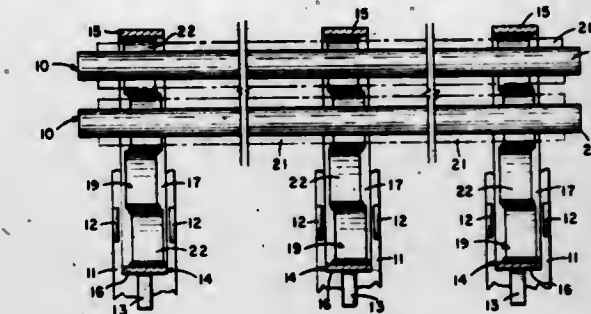
7 Claims

1. An apparatus for supporting closely-spaced, finned heat

exchange tubes in a furnace boiler or similar device which comprises:

(a) a rigid three or four-sided frame, with a single hollow, defining the outer boundaries of said apparatus;

(b) a plurality of rigid, parallel, tubular members in longitudinal, adjacent contact rigidly disposed within said frame, each of said tubular members containing an opening adapted to accommodate one of said heat exchange tubes, the cross-section of said opening being larger than the outer diameter of the fins of said tubes;



(c) each of the sides of said tubular members being attached to the sides of tubular members that adjoin it and the longitudinal axes of all of said openings in said tubular members being parallel;

(d) said tubular members adjoining said frame being attached to said frame to form a rigid structure; and

(e) finned tubes inserted into said tubular members, whereby the distance between the outer edges of said adjacent fins is about 0.5 inches or less and the inside diameter of said members is about 0.25 inches longer than the outside diameter of the outer profiles of said fins.

4,245,695

HEAT TRANSFER TUBE FOR CONDENSATION AND METHOD FOR MANUFACTURING SAME

Jun Fujikake, Yamato-Koriyama, Japan, assignor to Furukawa Metals Co., Ltd., Tokyo, Japan

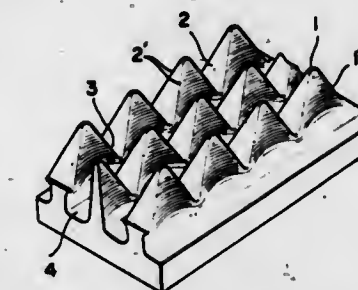
Filed May 3, 1979, Ser. No. 35,537

Claims priority, application Japan, May 15, 1978, 53-57313

Int. Cl.³ F28B 9/08; F28F 1/36

U.S. Cl. 165—133

4 Claims



1. A heat transfer tube for condensation having a toothed wheel-like part which is formed in the outer circumferential fin part of a low fin tube to have mountain parts continuously arranged alternately with valley parts, each of the mountain parts having a transverse cross sectional shape in which longer sides face grooves provided between said fins and each of the longer sides is arranged to curve into a concave shape resembling an arc, each mountain part thus being in a pyramid shape which resembles the shape of a long snare hand drum, and two slanting faces of said pyramid shape including the longer sides being arranged to smoothly slant gradually from the top thereof to the bottom thereof.

4,245,696

APPARATUS FOR COOLING HOT GAS

Adam J. Van der Lelij, Linschoten, Netherlands, assignor to Bronswerk B.V., Amersfoort, Netherlands

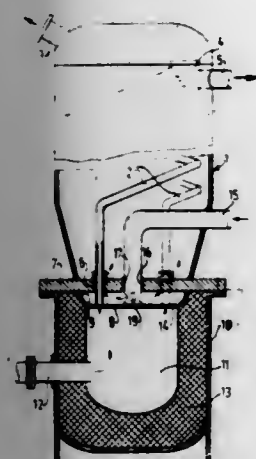
Filed Apr. 25, 1979, Ser. No. 33,192

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818892

Int. Cl.³ F28F 9/22

U.S. Cl. 165—134 R

6 Claims



1. Apparatus for cooling hot gas which consists of a vessel comprising a nest of tubes, the hot gas flowing through the tubes and cooling water or the like flowing round the tubes and the tubes being secured at least at one end in a tube plate which closes a hot gas supply chamber, characterized in that the tube plate is of light construction, that immediately behind the tube plate a heavy support plate supported by the vessel wall is provided, that the tubes project through openings in the support plate, that the tubes rest on the side remote from the tube plate on the support plate via rings which are secured to the tubes, comprise passage openings for the cooling water or the like and adjoin continuous gaps disposed round the tubes, and that the space between the tube plate and the support plate lying therebehind is provided with a supply for cooling water or the like, the supply for the cooling water or the like being formed by a conduit led through an opening in the support plate and sealingly mounted in said plate, the end of said conduit being secured to the tube plate and the portion lying between the tube plate and the support plate comprising openings.

4,245,697

TUBULAR BODY

Akira Togashi, 14-31, 6-chome, Ryoke, Urawa-shi, Saitama-ken, Japan

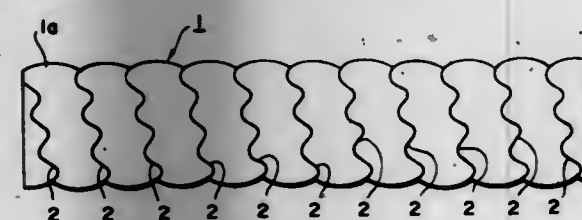
Continuation of Ser. No. 7,530, Jan. 29, 1979, abandoned, which is a division of Ser. No. 776,215, Mar. 10, 1977, abandoned. This application Nov. 14, 1979, Ser. No. 94,124

Claims priority, application Japan, May 24, 1976, 51-59863

Int. Cl.³ F28F 1/08

U.S. Cl. 165—179

23 Claims



1. A tubular body comprising:

a series of periodically wavy recessed ribs formed on the external surface of the tubular body, said recessed ribs having a specific depth and a specific angle and a specific wave form about a base line at a center of the wave form, plural base lines being formed as rings at a specific angle to

a plane perpendicular to a longitudinal axis of the tubular body; and
a corresponding series of projecting ribs having the same specific wave form about the same base line formed on the internal surface of the tubular body,
the specific wave form being selected from a group of wave forms consisting of a sinusoid wave form, a saw tooth wave form, a wave form made on continuously connected alternating opposite semicircular curves, and a rectangular wave form.

4,245,698

SUPERALLOYS HAVING IMPROVED RESISTANCE TO HYDROGEN EMBRITTLEMENT AND METHODS OF PRODUCING AND USING THE SAME

Barry J. Berkowitz, Scotch Plains, N.J., and Russell D. Kane, Houston, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 1, 1978, Ser. No. 882,394

Int. Cl.³ E21B 43/00; C22C 19/00; C22F 1/10

U.S. Cl. 166—244 C

19 Claims

16. A process for recovering oil and/or gas from subterranean surfaces under conditions of high stress and hydrogen sulfide environments which comprises using a tubular conduit for transporting said oil and/or gas from subterranean surfaces, wherein said tubular conduit comprises a cold-worked and age strengthened nickel and/or cobalt, chromium, molybdenum superalloy having less than 1 At% phosphorus in its grain boundaries, a tensile strength ranging from 150 to about 250 ksi and a resistance to hydrogen embrittlement such that when a steel anode is galvanically coupled to a test C-ring of said superalloy and said C-ring is exposed to an aqueous test solution saturated with hydrogen sulfide containing 5% NaCl and 0.5% acetic acid, by weight, at room temperature and at atmospheric pressure, the test C-ring resists hydrogen embrittlement or cracking for more than 25 days when it is stressed to 100% of the transverse 0.2% offset yield strength.

4,245,699

METHOD FOR IN-SITU RECOVERY OF METHANE FROM DEEPLY BURIED COAL SEAMS

Johannes W. M. Steeman, Geleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

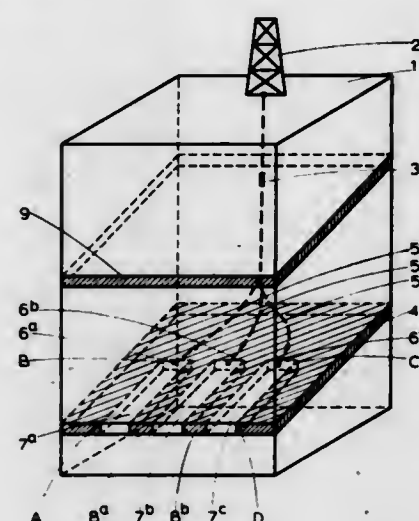
Filed Dec. 19, 1978, Ser. No. 971,064

Claims priority, application Netherlands, Jan. 2, 1978, 7800005

Int. Cl.³ E21B 43/25

U.S. Cl. 166—271

11 Claims



1. An improved method for the in situ recovery of methane from a plurality of coal seams beneath the earth's surface by forming a fissure system extending into coal bearing rock strata, the method essentially comprising the combination of steps of:

driving at least one borehole from the surface into a selected coal seam, which borehole is at least partially cased; forming, via said at least one borehole, a plurality of cavities within the plane of said coal seam, with intermediate coal walls between said cavities;
causing the sudden collapse of said coal walls, and the collapse of the strata overlying said cavities and coal walls, into said cavities thereby forming a fissure system above and below said coal seam, extending into other coal seams in said coal bearing rock strata;
causing the pressure within said collapsed cavities and fissure system to be at most about atmospheric;
causing the release and flow of methane via said fissure system into said collapsed cavities; and
withdrawing methane from said collapsed cavities via said at least one borehole.

4,245,700

ENHANCED OIL RECOVERY METHOD

Walter H. Carter, and Cedric A. Nix, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 9, 1979, Ser. No. 37,570

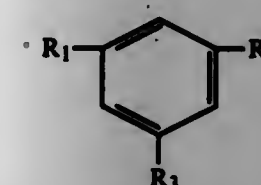
Int. Cl.³ E21B 43/22

U.S. Cl. 166—273

10 Claims

1. In a method of recovering petroleum from a subterranean, petroleum-containing formation, penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with at least a portion of the formation, comprising injecting an aqueous, surfactant-containing liquid into the formation, followed by injecting an aqueous, hydrophilic, viscosity increasing polymer-containing liquid, and thereafter injecting a drive liquid into the formation to displace petroleum and the previously-injected liquids through the formation toward a production well from which it is recovered to the surface of the earth, wherein the improvement for increasing the amount of petroleum recovered by the enhanced oil recovery process comprises:

incorporating from 10 to 500 parts per million of an aromatic treating compound in at least a portion of the polymer-containing liquid, the aromatic treating compound having the following formula:



wherein R₁, R₂, and R₃ are each hydrogen, methyl, or a C₂ to C₉ alkyl, the total number of carbon atoms in R₁, R₂ and R₃ being from 0 to 9.

4,245,701

APPARATUS AND METHOD FOR IGNITING AN IN SITU OIL SHALE RETORT

Carlton C. Chambers, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation of Ser. No. 953,477, Oct. 23, 1978, abandoned.

This application Jun. 12, 1979, Ser. No. 47,715

Int. Cl.³ E21B 43/24; F23D 15/02

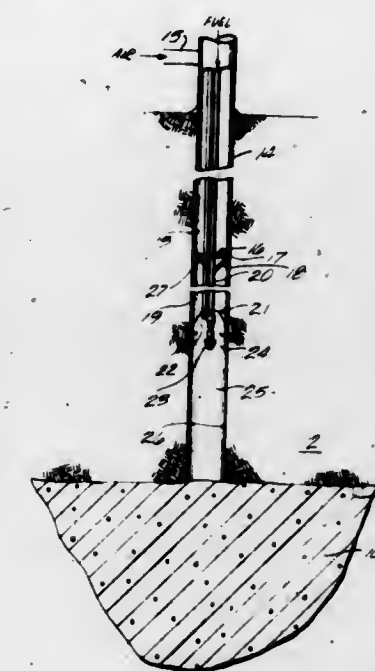
U.S. Cl. 166—303

15 Claims

1. A method for igniting a fragmented permeable mass of formation particles in an in situ oil shale retort in a subterranean formation containing oil shale comprising the steps of:
forming a hole through unfragmented formation, the lower end of the hole being above the fragmented mass;
introducing an oxygen-containing gas into the hole;
introducing a fuel into a portion of the hole spaced apart from the fragmented mass for forming a combustible mixture with the oxygen-containing gas;
igniting the combustible mixture for establishing a combustion zone in a portion of the hole above the fragmented

mass, whereby at least a portion of the wall of the hole adjacent the combustion zone is heated; and
conducting hot gas from the combustion zone in the hole from the lower end of the hole into the fragmented mass for heating a portion of the fragmented mass above an ignition temperature of oil shale.

8. An apparatus for igniting an in situ oil shale retort comprising:
fuel supply pipe means;



means connected to the outside of the pipe means a substantial distance from the end of the pipe means for imparting vortical flow to gas flowing along the length of the pipe means;

a nozzle on the end of the pipe means for spraying a liquid fuel; and

means connected to the pipe means adjacent the nozzle for axially centering the nozzle in a bore hole, the means for centering being about the same width as the means for imparting vortical flow.

4,245,702

METHOD FOR FORMING CHANNELS OF HIGH FLUID CONDUCTIVITY IN HARD ACID-SOLUBLE FORMATIONS

Rudolf Haafkens, Rafael F. Laque, and Willem De Vries, all of Rijswijk, Netherlands, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

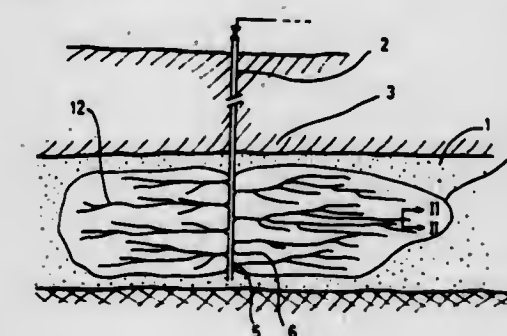
Filed May 7, 1979, Ser. No. 36,675

Claims priority, application United Kingdom, May 22, 1978, 21052/78

Int. Cl.³ E21B 43/27

U.S. Cl. 166—307

8 Claims



1. A method for forming channels of high fluid conductivity in relatively hard acid-soluble formation parts around a cased well which has its casing perforated along at least a part of the casing wall which faces such formation, said method comprising the steps of:

- (a) producing in the formation a fracture containing a viscous fluid with propping agent and maintaining a fluid pressure at which the fracture is kept open;
- (b) injecting an acid solution through the perforations into the fracture at a pressure at which the fracture remains open, the viscosity ratio between the viscous fluid and the acid solution being chosen such that the viscous fluid is displaced in the fracture in an unstable manner by the acid solution;
- (c) continuing the injection of the acid solution through the perforations until channels have been etched in areas of the fracture walls that face each other; and
- (d) lowering the fluid pressure in the fracture, thereby allowing the adjacent fracture walls to be displaced towards each other until a portion of the non-etched parts of the walls are supported by the propping agent.

4,245,703

MOBILE BALLAST CLEANING MACHINE

Josef Theurer, Vienna, and Karl Fölser, Linz-Urfahr, Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

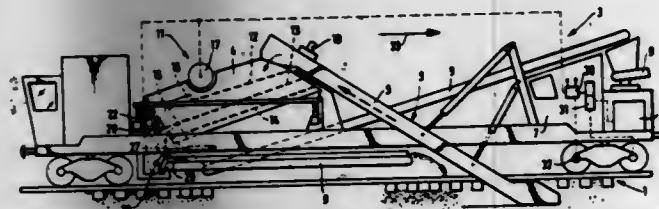
Filed Nov. 17, 1978, Ser. No. 961,566

Claims priority, application Austria, Dec. 29, 1977, 9416/77

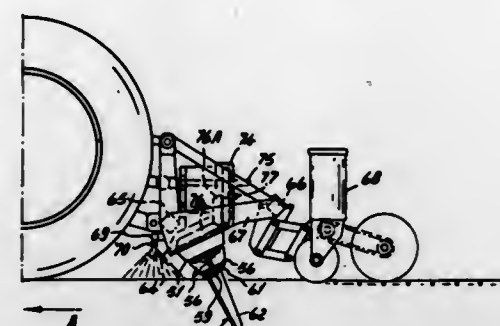
Int. Cl.³ E01B 27/00

U.S. Cl. 171-16

13 Claims



1. A mobile ballast cleaning machine comprising
- (a) means for removing ballast from a ballast bed, the ballast removing means having an output,
- (b) a screening apparatus including
- (1) screening means arranged to receive the removed ballast from the output and to clean the removed ballast, the screening means comprising at least two superposed and vertically spaced screens arranged one above the other,
- (2) a storage receptacle for the cleaned ballast housing the screening means, the storage receptacle having an end wall defining ballast outlet means and the two superposed screens extending substantially the width of the receptacle wherein they are housed, and
- (3) closure means for selectively closing the outlet means, the closure means being a cover adjustably mounted on the end wall over the outlet means and a pressure fluid operated jack means connected respectively to the end wall and the cover for adjusting the cover,
- (c) a pressure fluid source connected to the jack means,
- (d) a remote control means to generate a control signal for actuating the jack means by the pressure fluid from said source, and
- (e) means for redistributing the cleaned ballast to the ballast bed, the ballast redistributing means being arranged to receive the cleaned ballast selectively from the outlet means upon adjustment of the closure means.



4,245,704

SOIL CULTIVATING MACHINE

Cornelis van der Lely, 7, Brüschenaia, Zug, Switzerland

Filed Nov. 30, 1978, Ser. No. 964,882

Claims priority, application Netherlands, Nov. 30, 1977, 7713198; May 23, 1978, 7805544

Int. Cl.³ A01B 3/76

U.S. Cl. 172-49

10 Claims

1. A soil cultivating machine comprising a frame and a plurality of cultivating members rotatably mounted on said frame, driving means connected to rotate said members, each cultivating member comprising an upwardly extending shaft and said member being rotatable about an axis defined by said shaft, said shaft being inclined forwardly with reference to the normal direction of machine travel and said member comprising a plate-shaped tine that tapers towards a lower free end, said tine having straight side edges and an S-shaped cross-section for substantially the entire length thereof, with the center of said tine being a substantially straight part, the center parts of neighboring members being offset with respect to one another and said members being positioned to cooperate with one another and work a single broad strip of soil.

4,245,705

APPARATUS FOR TAKING OFF VIBRATORY POWER FOR TRACTOR

Shigeru Morita, and Fumiharu Horie, both of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan

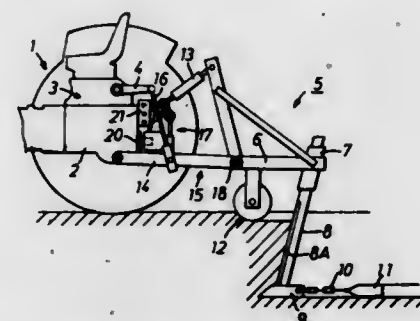
Filed Sep. 21, 1979, Ser. No. 77,727

Claims priority, application Japan, Apr. 7, 1979, 54-46125[U]; Apr. 7, 1979, 54-46127[U]

Int. Cl.³ A01B 11/00

U.S. Cl. 172-125

4 Claims



1. An apparatus for taking off a vibratory power for a tractor including a vibration producing assembly comprising a rotary transmitting shaft detachably fittable to a PTO shaft on the frame of the tractor and having a connecting portion eccentric with respect to the axis of the PTO shaft, a holding case housing the rotary transmitting shaft rotatably relative thereto having an outer peripheral portion, intermediate vibration transmitting means mountable on the tractor frame and pivotally movable up and down, and means for operatively coupling the connecting portion of the rotary transmitting shaft to the intermediate vibration transmitting means, the holding case being provided with a mounting cylinder fitting around the case and rotatable relative thereto, the mounting cylinder having support portions detachably connectable to the tractor frame, an inner peripheral portion and a portion for pivotably supporting the intermediate vibration transmitting means, the

vibration producing assembly being in the form of a unit assembly from the rotary transmitting shaft, the holding case, the mounting cylinder, the intermediate vibration transmitting means and the coupling means.

4,245,706

ONE-PASS COMPLETE TILLAGE SYSTEM

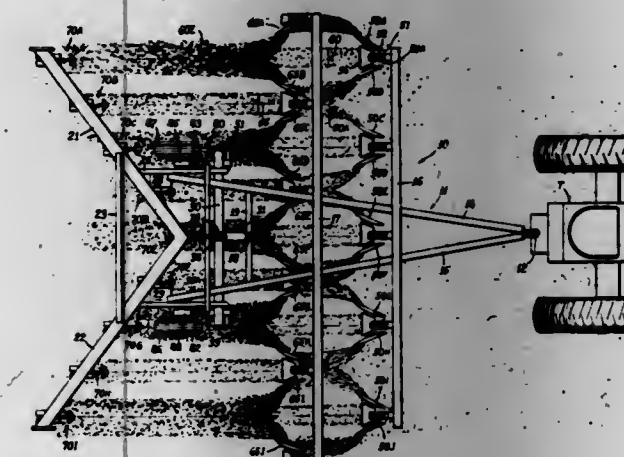
William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Filed Aug. 17, 1978, Ser. No. 934,585

Int. Cl.³ A01B 13/08

U.S. Cl. 172-180

2 Claims



1. Tillage apparatus adapted to be pulled by a vehicle, comprising: a frame; wheels for supporting said frame; a first plurality of disc blade means carried by said frame in a first line, each blade means having a concave work surface for clearing a strip of top soil and trash, mixing them and displacing the mixture laterally in a first windrow, said blade means of said first plurality being widely spaced laterally to form alternate strips of cleared land and windrowed trash and soil on previously undisturbed soil; a second plurality of disc blade means carried by said frame in a second line behind said first line, said blade means of said second plurality being located to part the windrows formed by said first plurality of blade means and to displace at least some of the accumulated mixture in said first windrows, and to clear some previously undisturbed soil for forming second windrows laterally displaced from said first windrows, said second windrows being at least partly on previously undisturbed soil; a plurality of plow tips carried by said frame behind said blade means, said plow tips being located in said second windrows and including a forward edge for breaking soil at a depth greater than the working level of said blade means, said plow tips further including wing means for twisting the broken soil, thereby mixing the broken soil with the windrowed trash and top soil, and distributing the mixture without creating a new plow sole; a shank for mounting each of said plow tips connected to said frame in depending relation, each plow tip including a nose portion defining a forward cutting edge for breaking the soil and an upper and rearwardly inclined work surface for lifting the broken soil, each tip further comprising first and second mounting plates extending beneath said nose rearwardly of said cutting edge and spaced to receive an associated shank, and fastener means for securing said mounting plates to said shank; said wing means comprising first and second wing members mounted respectively to the sides of said nose portion of said plow tips, each wing member including a leading edge extending from a point on said nose portion above and to the rear of said cutting edge thereof, downwardly and rearwardly at an angle of about 30° relative to a line transverse of the direction of travel of said vehicle.

4,245,707

GRADING AND DOZING ATTACHMENT FOR A TRACTOR

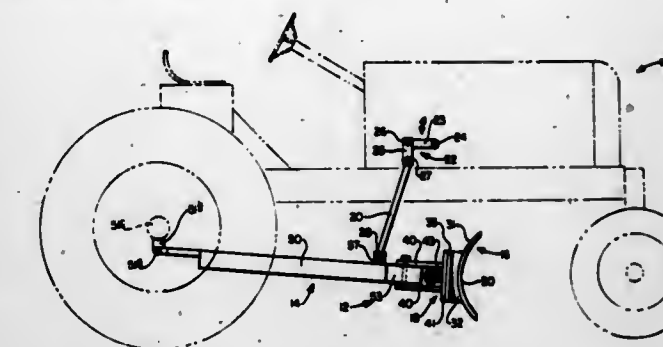
Marshall K. McClendon, P.O. Box 728, Duplessis, La. 70737

Filed Aug. 21, 1978, Ser. No. 935,559

Int. Cl.³ E02F 3/76

U.S. Cl. 172-788

1 Claim



1. A grading and dozing attachment for a tractor comprising:
- a. a blade adapted to fit between front wheels and back wheels of a tractor, the support for said blade including
- i. support legs rigidly connected to said blade
- ii. first vertical adjustment means for adjusting said blade in a vertical plane, said vertical adjustment means including
- (a) vertical plate means rigidly connected by said support legs to said blade so that said plate is in a generally vertical direction when the blade is in its working position, said plate having two arcuate slots therein,
- (b) base plate means connectable to said vertical plate means by bolt means, said base plate means having a first set of plural holes therein for receipt of bolts extendable through said holes and said arcuate slots in said vertical plate means, said base plate means having first bolt support means for connecting said base plate means to carrying frame means, said base plate means having a bolt means rigidly connected thereto, said vertical plate means having a first individual hole in the approximate center thereof for receipt of said rigidly connected bolt means,
- b. carrying frame means adapted to fit between the front wheels and rear wheels of said tractor including
- i. two symmetrically disposed legs, said legs having a second set of plural holes therein for receipt of first pin means for rotatably connecting said legs to the rear axle of said tractor, cross-member means connecting said legs, said cross-member means having second bolt support means with a third set of plural holes therein for receipt of a bolt to connect said carrying frame means to second vertical adjustment means for pivoting said carrying frame upwardly and downwardly,
- ii. second vertical adjustment means connectable to a tractor and said carrying frame means for pivoting said carrying frame means upwardly and downwardly about said rear axle, said carrying frame means having a fourth set of plural holes therein for receipt of a second pin means for connecting said carrying frame means to horizontal attachment means and tongue means rigidly connected to said carrying frame means having a second individual hole therein for connecting said tongue means by a bolt to said first bolt support means on said base plate means,
- c. horizontal adjustment means for adjusting said blade in a horizontal plane connectable to said vertical plate means and said carrying frame means, said horizontal adjustment means including two horizontal plates rigidly connected to said base plate means so that said horizontal plates are generally horizontal when said blade is in its working position, said horizontal plates having a fifth and sixth set of plural holes therein, said holes of said fifth set being aligned with said holes from said sixth set for receipt of

said second pin means for connecting said carrying frame means to said horizontal attachment means.

inner sleeve and compress said inner sleeve between said conical roots and the drill string member, with said cylindrical

4,245,708

BLADE STABILIZER PROVIDED WITH AT LEAST ONE FLUID PASSAGE HAVING A VENTURI EFFECT, IN PARTICULAR FOR USE IN COMBINATION WITH A DRILL BIT

Henri Cholet, Le Pecq, and Jean Boulet, Paris, both of France, assignors to Institut Français du Pétrole, Rueil-Malmaison, France

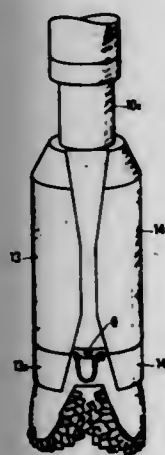
Filed Feb. 12, 1979, Ser. No. 11,620

Claims priority, application France, Feb. 13, 1978, 78 04205

Int. Cl.³ E21C 9/00

U.S. Cl. 175—325

14 Claims



1. A stabilizer for a drill bit secured at the lower end of a drill string, said stabilizer being adapted to be positioned between said drill bit and said drill string, coaxially therewith, so as to maintain selected drilling direction, said stabilizer comprising a central hollow section and at least two radially shaped blades defining between each other at least one Venturi-shaped free angular space for a flow of drilling fluid, the width of each of said at least two blades increasing over at least a first portion of the height of each of said blades from the end of each of said blades near said drill bit, the height of said at least first portion being at least equal to one half of the width of the lower end of said at least one free angular space defined by the lower edges of two adjacent blades.

4,245,709

REMOVABLE DRILL STRING STABILIZERS

Tom Manuel, Salt Lake City, Utah, assignor to Christensen, Inc., Salt Lake City, Utah

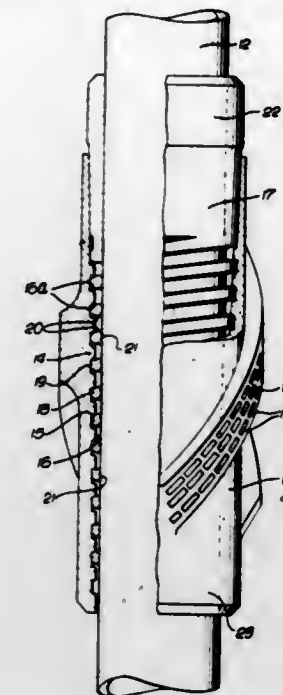
Filed Apr. 27, 1979, Ser. No. 33,988

Int. Cl.³ E21B 17/10

U.S. Cl. 175—325

10 Claims

1. Apparatus adapted to be mounted on a cylindrical exterior of a drill string member disposed in a bore hole, comprising a contractible inner sleeve having an internal cylindrical surface adapted to frictionally engage a cylindrical surface of the drill string member and an external thread having external conical crests of longitudinally extending length, an outer sleeve surrounding said inner sleeve having internal threads provided with conical roots of longitudinally extending length frictionally engaging said conical crests and having a surface of contact therewith, and means for relatively turning said inner sleeve with respect to said outer sleeve to thread said inner sleeve longitudinally along said outer sleeve with said conical crests slidably engaging said conical roots to contract said



surface of said inner sleeve frictionally engaging the cylindrical surface of the drill string member.

4,245,710

CENTRIFUGAL WATER-AIR SEPARATION IN EARTH DRILLING BITS

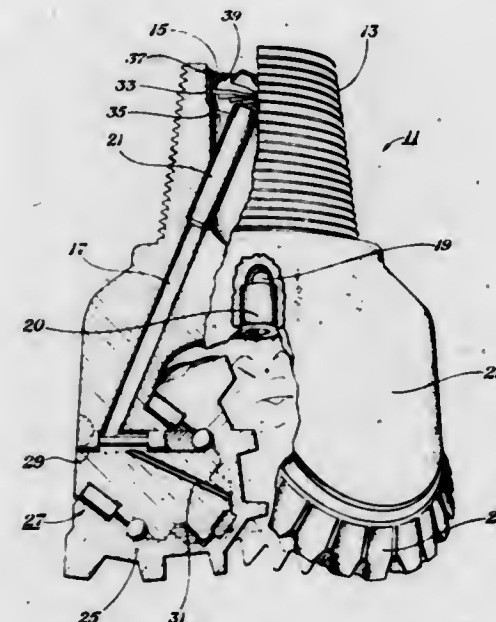
George E. Dolezal, Friendswood, and Richard T. Upton, Houston, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Jul. 3, 1978, Ser. No. 921,700

Int. Cl.³ E21B 10/18

U.S. Cl. 175—337

7 Claims



1. A rock bit for air drilling, with an improved filtering system to provide filtered air to the bit bearings, said bit comprising:

- a bit body having a drill cutter end and a hollow shank end for connection to a rotatable drill pipe;
- a rock cutter secured rotatably to the drill cutter end;
- bearing means between the cutter and bit body;
- a bearing coolant passage communicating with the hollow shank end of the bit body and the bearing means;
- a nozzle passage between the hollow shank end and the cutter end of the bit body;
- a support ring adapted to fit within the hollow shank end of the bit body above the nozzle passage;
- a plurality of radially oriented vane means extending into

engagement without use of a diffuser inwardly from the support ring, each pair of vane means separated by a space to permit maximum air flow through each space, and each vane means having a generally uniform thickness and a pitch angle to minimize pressure drop in the air flowing across the separator;

a tube extending from the bearing coolant passages to a central location beneath the vanes.

4,245,711

WEIGHING APPARATUS INCLUDING A TAPPED ELECTROMAGNETIC LOAD COMPENSATION COIL

Peter Kunz, Tann-Rütt, Switzerland, assignor to Mettler Instrument AG, Greifensee, Switzerland

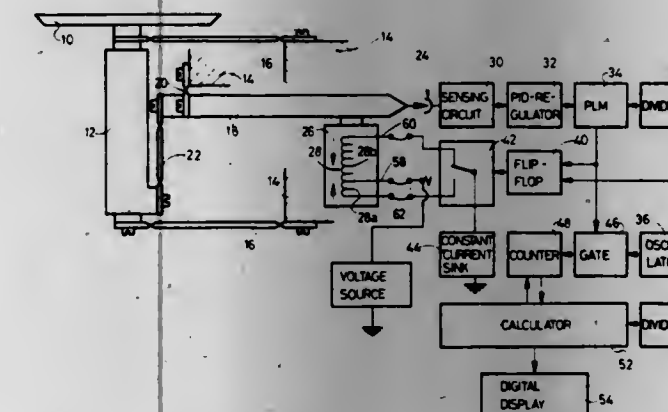
Filed Aug. 10, 1979, Ser. No. 65,570

Claims priority, application Switzerland, Oct. 20, 1978, 10874/78

Int. Cl.³ G01G 7/02

U.S. Cl. 177—212

9 Claims



1. In a weighing apparatus of the electromagnetic load compensation type including a frame (14); load support means (10, 12) connected for movement relative to the frame; lever means (18) pivotally connected with said frame, a first portion of said lever means being connected with said load support means; load compensation means including a compensation coil (28) connected with another portion of said lever means, and permanent magnet means connected with the frame adjacent said compensation coil; position-responsive means operable upon the application of load to the load support for supplying compensation current to the compensation coil to maintain the load support means in its initial no-load position; and indicating means for displaying the magnitude of the applied load as a function of the compensation current supplied to the compensation coil; the improvement wherein

- (a) said coil includes intermediate its ends a tap for defining first and second coil portions (28a, 28b);
- (b) and further wherein said compensation current supply means includes switch means (42) for supplying the compensating current alternately to said coil portions.

4,245,712

TRANSMISSION SYSTEM FOR THE DRIVE WHEELS OF VEHICLES, NOTABLY LIFT TRUCKS

Georges Itay-Bernard, Garches, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 28, 1978, Ser. No. 919,903

Claims priority, application France, Jun. 29, 1977, 77 19912

Int. Cl.³ B60K 41/00

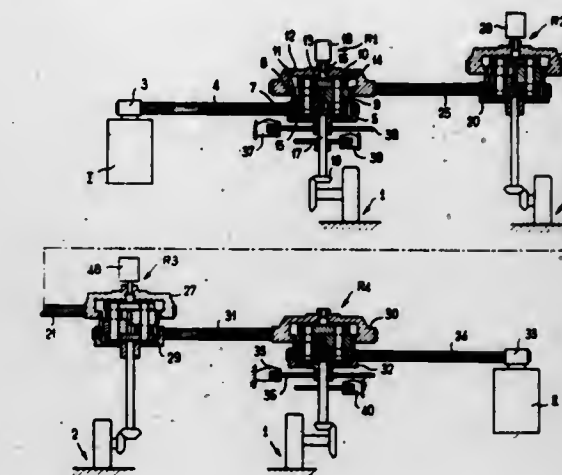
U.S. Cl. 180—70 R

7 Claims

1. In a device for transmitting motion to drive wheels of a vehicle having drive axles; the device having two motors generating driving power, speed reduction mechanisms operatively connected with each driving wheel, and means for connecting said motors with selected ones of said reduction mechanisms; the motors, reduction mechanisms, and connecting means forming a kinematic chain disposed at the outer periphery of a frame of the vehicle for transmitting torque to the

drive wheels, the improvement wherein each of said speed reduction mechanisms comprises:

- an input member formed as a pulley;
 - an output member formed as a pulley; and
 - driving means operatively associated with the input and output members for driving the drive wheel and for transmitting driving power from the input to output member of the same mechanism;
- wherein said connecting means includes separate transmission members for connecting an output member of one



reduction member with an input member of another reduction member, the pulleys of different ones of said reduction mechanisms being coupled to one another and to said motors by said connecting means; and wherein a brake acts on at least one of said driving means for decelerating said wheels, said input member and said output member of the reduction mechanism having shafts of a planet carrier disposed therebetween, one shaft of a planet carrier of one of said speed reduction mechanisms carrying a pinion driving a vehicle wheel and a brake disk of the brake associated with the wheel.

4,245,713

CARBURETOR CONTROL SYSTEM FOR MOTOR VEHICLE INCLUDING APPARATUS TO MAINTAIN THE VEHICLE IN RUNNING AT SOME DESIRED SPEED

Haruo Mochida, Yokohama, and Toyohiko Morikawa, Takarazuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

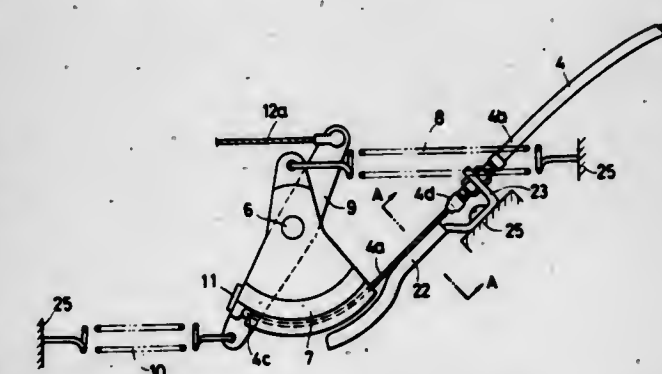
Filed Sep. 5, 1978, Ser. No. 939,484

Claims priority, application Japan, Sep. 22, 1977, 52/128620[U]

Int. Cl.³ B60K 31/00

U.S. Cl. 180—176

4 Claims



1. A carburetor control system for a motor vehicle including an apparatus to maintain the vehicle in running at some desired speed, the carburetor control system comprising:

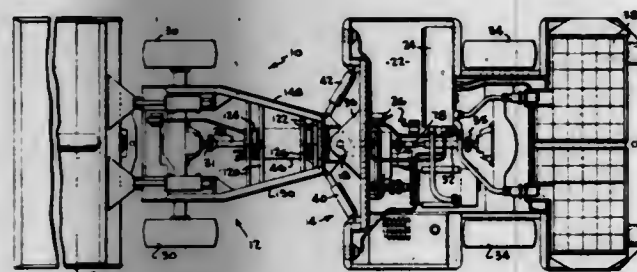
- a torsion shaft for controlling an angular position of a throttle blade of a carburetor;
- a member, fixedly mounted to said torsion shaft;

a throttle return spring for biasing said member in one rotational direction;
 an accelerator;
 an accelerator wire including an outer casing and a core extending through said outer casing, said outer casing having, at an end adjacent to said member, a switch stop spaced from said member and fixed to a fixed portion of the vehicle body by a bracket, said core having one end engaging said member and an opposite end operatively connected to said accelerator and arranged to transmit motion of said accelerator to said member against said throttle return spring; and
 means for holding said member at various angular positions thereof against the bias of said throttle return spring independently of the position of said accelerator in accordance with various running conditions of the vehicle;
 in which a stationary guide is arranged along the core of said accelerator wire which extends between said member and said switch stop.

4,245,714

MINING VEHICLE

Frank N. Kersey, 712 Mountain La., Bluefield, Va. 24605
 Filed Jan. 19, 1978, Ser. No. 917,085
 Int. Cl.³ B60K 17/34; B60D 11/00
 U.S. Cl. 180—265 5 Claims



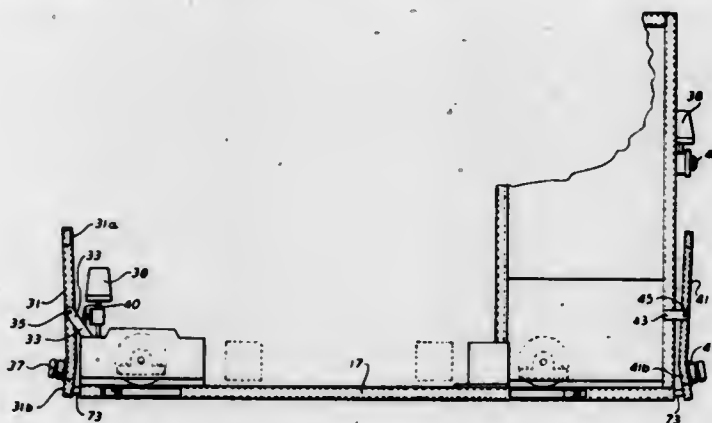
1. An articulated vehicle including:
 a first frame portion;
 a second frame portion;
 articulation means joining said first frame portion and said second frame portion, said articulation means including:
 a floating connector member;
 upper and lower spherical bearing sleeves fixedly mounted between said floating connector member and one of said frame portions;
 said floating connector member including an elongated horizontal hollow rigid linear tube member of generally square cross-section including internal divider panels defining three longitudinally extending mutually isolated compartments; and upper and lower vertically spaced horizontal bearing sleeve support plates mounted on and extending from one end of said elongated horizontal rigid linear tube member with said upper and lower spherical bearing sleeves being respectively mounted in said upper and lower horizontal bearing sleeve support plates;
 front and rear spherical bearing sleeves fixedly mounted between the other of said frame portions and said floating connector member;
 upper and lower vertically oriented aligned pivot pins;
 an upper spherical bushing mounted on said upper pivot pin and matingly positioned in said upper spherical bearing sleeve to permit limited universal pivotal movement of said upper pivot pin with respect to said upper spherical bearing sleeve;
 a lower spherical bushing mounted on said lower pivot pin and matingly positioned in said lower spherical bearing sleeve to permit limited universal pivotal movement of said lower pivot pin with respect to said lower spherical bearing sleeve;
 front and rear axially horizontally oriented and aligned pivot pins;
 a front spherical bushing mounted on said front pivot pin

and matingly positioned in said front spherical bearing sleeve to permit limited pivotal movement of said front pivot pin with respect to said front spherical bearing sleeve; and
 a rear spherical bushing mounted on said rear pivot pin and matingly positioned in said rear spherical bearing sleeve to permit limited movement of said rear pivot pin with respect to said rear spherical sleeve.

4,245,715

AUTOMATIC DRIVE PREVENTION

Weston R. Loomer, Walton, Ky., assignor to Litton Systems, Inc., Florence, Ky.
 Filed Aug. 6, 1979, Ser. No. 63,671
 Int. Cl.³ B60K 27/08
 U.S. Cl. 180—279 8 Claims

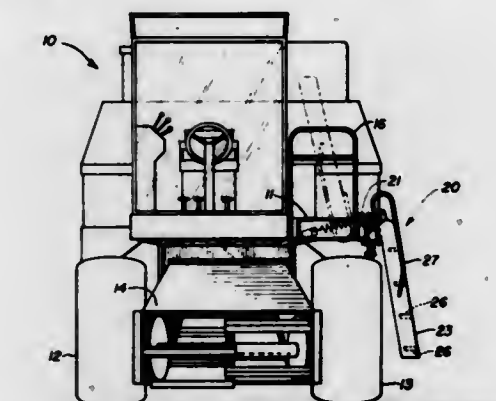


1. An automatic drive prevention mechanism for an automated vehicle comprising:
 a vehicle including motive means arranged for travel along a path;
 a switch frame pivotally mounted on said vehicle, said frame lying generally in a plane orthogonal to said path when it is in its inactive position, the periphery of said frame having a generally rectangular configuration, one linearly extending side of said frame including two linearly extending sections coupled one to the other so as to be linearly moveable relative to one another; and
 switch means coupled to said frame and arranged to be activated to interrupt motive power to said vehicle when said frame is pivoted out of said orthogonal plane.

4,245,716

VEHICLE ACCESS LADDER

James F. Rayfield, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.
 Filed Jul. 17, 1979, Ser. No. 58,392
 Int. Cl.³ B60R 3/00; E06C 5/22
 U.S. Cl. 182—86 8 Claims



1. In a vehicle having an elevated operator's platform with an elongate access ladder having a first end and an opposing

second end, and means affixing said ladder to said platform, said means affixing said ladder to said platform having:

- a first plate rigidly affixed to said ladder adjacent said first end thereof;
- a second plate pivotally affixed to said platform for movement in a first plane about a first horizontal axis; and
- connecting means pivotally affixing said first plate to said second plate for movement in a second plane about a second axis, said first and second planes being substantially perpendicular to each other.

4,245,717

FIRE ESCAPE LADDER

Donald P. Soucy, 4862 W. Braddock Rd. No. 20, Alexandria, Va. 22311
 Filed Aug. 23, 1979, Ser. No. 69,052
 Int. Cl.³ E06C 1/383
 U.S. Cl. 182—96 12 Claims



1. A collapsible ladder for providing escape from a structure, comprising an inner upright adjacent to the structure and an outer upright connected to the inner upright by a plurality of rungs, each of said rungs comprising an elongated integral member which is pivotally mounted at one end to said inner upright and is pivotally mounted at the other end to said outer upright, whereby the ladder is movable from a closed position in which the outer upright abuts the inner upright to an open position in which the outer upright is spaced from the inner upright and the rungs are horizontal, and support means for supporting the ladder in the open position, said support means including an elongated brace member and a sleeve slidably mounted on one of said rungs, said brace being pivotally mounted at one end to one of said uprights and being pivotally mounted at its other end to said sleeve.

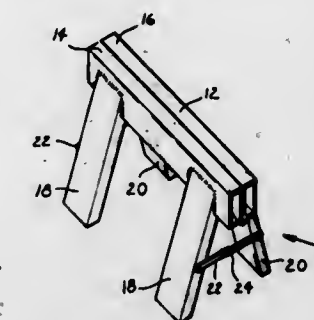
4,245,718

COLLAPSIBLE WORK SUPPORT

Daniel W. Poston, North Webster, and James R. Hestad, Osceola, both of Ind., assignors to Miller Manufacturing Corp., Nappanee, Ind.
 Filed Aug. 31, 1979, Ser. No. 71,755
 Int. Cl.³ F16M 11/00
 U.S. Cl. 182—153 1 Claim

1. A collapsible work support comprising
 a first part having an elongated cross member and two spaced substantially parallel legs extending angularly from said cross member,
 a second part having an elongated cross member and two

spaced substantially parallel legs extending angularly from said last named cross member,
 said cross members being formed of metal tubing of rectangular cross sectional shape and said legs of each part extending at an angle to and secured to two surfaces of said rectangular cross member,
 the cross member of the first part including an elongated integral extruded part-cylindrical joint-forming member projecting from a corner thereof
 the cross member of the second part including an elongated integral extruded socket-forming member projecting from a corner thereof,

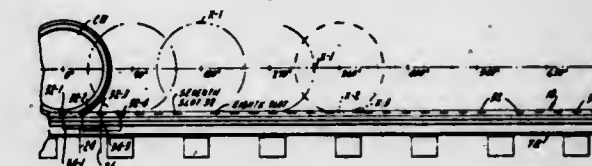


said projecting cylindrical and socket members interfitting at the lower inner corners of said cross members when assembled to accommodate limited pivotal movement of said first and second parts between a position in which adjacent faces of said tubes abut and the legs of said first and second parts diverge downwardly and a position in which the legs of opposite parts are substantially parallel, and
 a folding brace connected to legs of said first and second parts intermediate their length to limit relative longitudinal movement of said first and second parts, and accommodate pivotal movement thereof.

4,245,719

RAILROAD LUBRICATORS

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.
 Continuation-in-part of Ser. No. 807,538, Jun. 17, 1977, abandoned. This application Dec. 26, 1978, Ser. No. 972,891
 Int. Cl.³ B61K 3/00
 U.S. Cl. 184—3 A 5 Claims



1. Railroad lubricator apparatus for applying lubricant to a railroad wheel, applied from one face of an auxiliary rail, said rail having a first series of longitudinally spaced lubricant delivery slots formed in said face thereof to apply lubricant as a corresponding series of spaced segments as the wheel moves past said rail, said rail having a second series of longitudinally spaced lubricant delivery slots formed in said face thereof and so spaced downstream of the first that as the lubricated wheel rotates therepast the wheel transfers lubricant to the spaces between the second-series slots while the wheel itself receives lubricant from the second series of slots, said rail having a

series of branch passages for delivering lubricant to alternate ones of the delivery slots, a manifold for supplying grease to the branch passages, and each manifold having a divider fin to divide the supply of lubricant into substantially equal parts for delivery to the branch passages.

4,245,720

FAST FOOD RESTAURANT

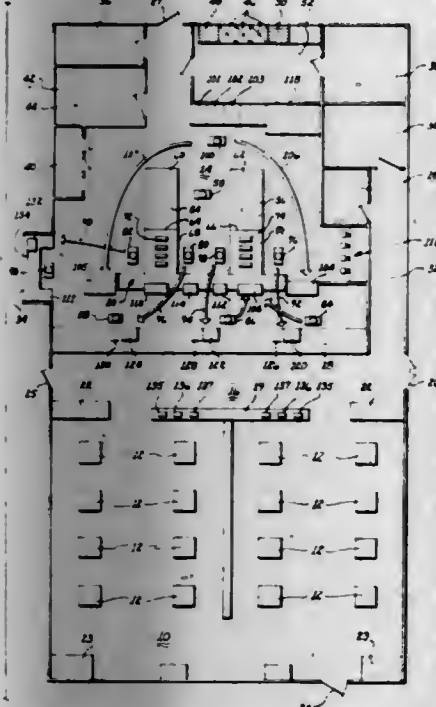
Scott E. Neill, Jr., 4275 E. Idliff #303, Denver, Colo. 80222

Filed Feb. 16, 1979, Ser. No. 12,833

Int. Cl.³ E04H 3/04

U.S. Cl. 186—38

10 Claims



1. A kitchen facility for sequentially assembling in a production line manner a food order in a fast food restaurant, said facility comprising in combination:

- a pair of grills for cooking foods, said grills being spaced apart from one another at a distance sufficient to accommodate a chef therebetween to cook simultaneously on both grills;
- a first make up table extending from one of said grills for supplying food items to be combined with the foods cooked on the adjacent one of said grills;
- a second make up table extending from another of said grills for supplying food items to be combined with the foods cooked on the adjacent one of said grills;
- a counter interconnecting each of said first and second make up tables for dispensing any ancillary food items ordered with an order for the cooked foods; and
- a serving counter extending parallel to but laterally spaced from said counter for serving the foods ordered to customers;

whereby, said facility promotes production line assembly of the foods ordered.

4,245,721

FLOOR DISTANCE SENSOR FOR AN ELEVATOR CAR
Marvin Masel, Teaneck, N.J., assignor to Otis Elevator Company, Hartford, Conn.

Filed Dec. 18, 1978, Ser. No. 970,783

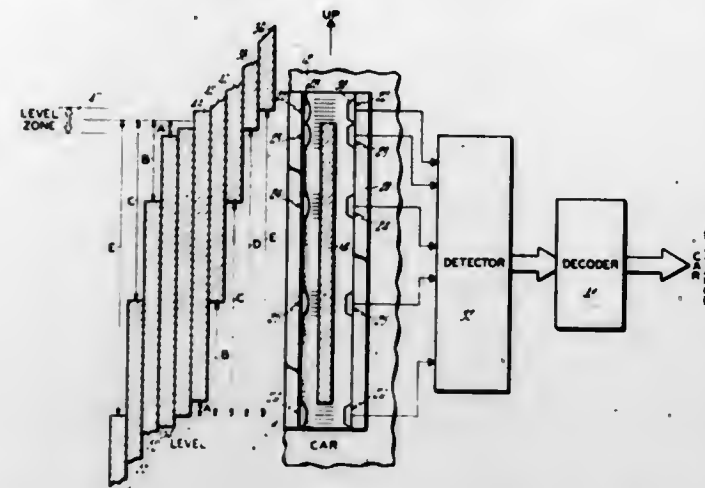
Int. Cl.³ B66B 1/40

U.S. Cl. 187—29 R

2 Claims

1. A floor level distance sensing apparatus for an elevator car suspended in a shaft, comprising:
at least five paired energy radiating transmitters and receivers, said pairs being at predetermined distances from each other in the direction of car movement in the shaft and the energy from each transmitter activating its corresponding receiver,
means for deactivating the receivers as the car reaches pre-

determined distances from the floor by blocking the energy transmission path between each said transmitter and its paired receiver and deactivating an increasing number of said receivers as the car approaches the floor level, the number and sequence of activated and deactivated receivers representing a maximum distance from the car to floor



one of said receivers being located with respect to the others and with respect to the floor so that it can be activated and deactivated, when the car is within a preset level zone at the floor, for identifying car movement within that zone regardless of said number and sequence, and two of said receivers being in an opposite state from the remaining two when the car is within said level zone.

4,245,722

VEHICLE DISK BRAKE WITH IMPROVED MEANS FOR CHANGING BRAKE PADS

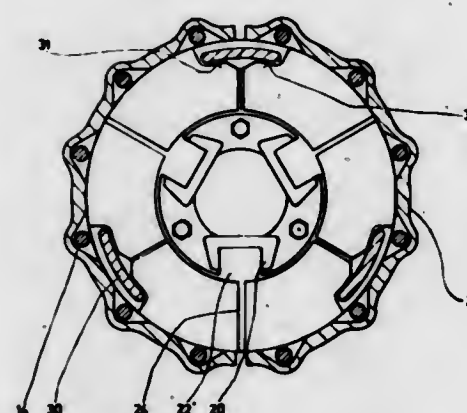
Wilhelm Schlamann, Isernhagen; Joachim Feldmann, Neustadt, and Erich Reinecke, Beinhorn, all of Fed. Rep. of Germany, assignors to Wabco Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 929,063

Int. Cl.³ F16D 55/10

U.S. Cl. 188—71.4

9 Claims



1. A disk brake device for a vehicle wheel rotatably mounted on a non-rotating axle housing, said disk brake device comprising:

- a brake housing formed by a pair of oppositely facing annular rotors with an annular spacer disposed therebetween adjacent the outer peripheries thereof for spacing the rotors in axially spaced-apart relation, each of said rotors having outer peripheral bolt flanges through which bolts extend from one to the other for securing the brake housing in assembled relation;
- a pair of annular brake-pad backing plates disposed coaxially in said brake housing and each having secured thereon an annular brake pad disposed for making frictional contact with said rotors, respectively;
- an annular support flange coaxially secured to said axle

housing and having formed and angularly spaced thereon a plurality of cross-sectionally U-shaped members extending axially therefrom so as to axially subtend said rotors, said backing plates, and said brake pads;

- each of said backing plates having formed on the inner peripheries thereof radially extending portions angularly spaced so as to coincide with and engage said U-shaped member for inhibiting rotation of the backing plates and brake pads secured thereto; and
- an annular cylinder and piston assembly disposed between said backing plates and operable, when axially extended apart responsively to fluid pressure for causing said brake pads to apply retarding friction to said rotors, respectively,
- said cylinder and piston assembly having projecting members extending axially therefrom so as to engage recesses correspondingly formed in the backing plates to inhibit angular and radial displacement thereof, said cylinder and piston being compressible relative to each other for effecting disengagement of the projecting members from the recesses and thereby removal of the backing plates and brake pads for replacement.

4,245,724

MANUAL RELEASE FOR A SPRING APPLIED BRAKE ASSEMBLY

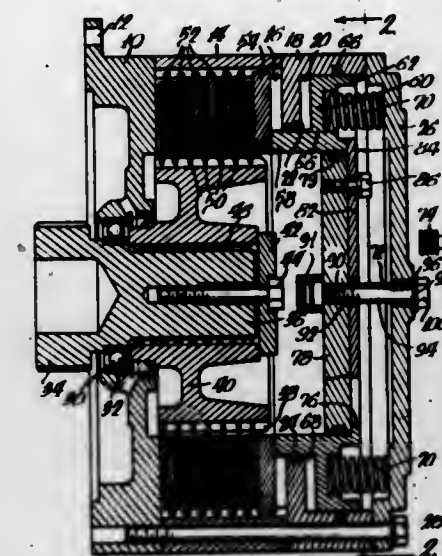
Henry E. Beck, Oswego, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 25, 1978, Ser. No. 954,722

Int. Cl.³ F16D 65/24

U.S. Cl. 188—170

5 Claims



4,245,723

DISC BRAKE APPARATUS FOR A MOTOR VEHICLE
Michio Moriya, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

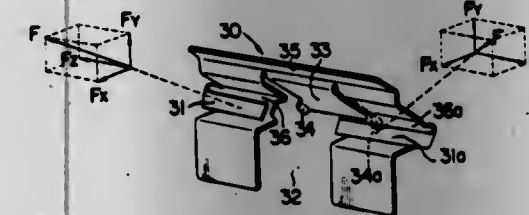
Filed Jan. 23, 1979, Ser. No. 5,893

Claims priority, application Japan, Jan. 23, 1978, 53-6991

Int. Cl.³ F16D 55/22

U.S. Cl. 188—72.3

6 Claims



1. In a brake apparatus for a motor vehicle of the type including a brake housing, a brake disc, a pair of brake pad assemblies disposed in said brake housing at both sides of said brake disc so as to be movable toward and away therefrom, each said brake pad assembly having lateral projections, and stationary guide means including guide grooves which receive slidably said lateral projections for suspending therefrom said brake pad assemblies, the improvement comprising spring means provided in at least one of said guide grooves located at a leading side of said brake apparatus as viewed in the rotating direction of said brake disc, for exerting forces for resiliently urging said brake pad assemblies to move away from said brake disc, for resiliently pressing said brake pad assemblies in the rotating direction of said brake disc, and for resiliently pressing said brake pad assemblies upwardly, said spring means comprising a substantially trapezoidal and outwardly diverging channel-like member which is snugly fitted into said one guide groove of a corresponding sectional profile, said channel-like member having a pair of spring arms for exerting resilient forces to said respective brake pad assemblies, each said spring arm having an end connected to a laterally outer end of a bottom portion of said channel-like member and extending laterally inwardly along said bottom portion with a predetermined angle relative to the plane of said bottom portion, each said spring arm being inclined upwardly outwardly relative to a vertical line as viewed in the transverse cross-section.

1. A spring engaged, pressure fluid-disengaged, brake assembly comprising: a shaft adapted to be affixed to a rotating component of a mechanism and having splines on an end thereof; a housing adapted to be affixed to the frame of a mechanism; means carried by said housing journalling said shaft such that said splines are within said housing; additional splines within said housing; at least two brake discs within said housing and about said shaft, one slidably engaged with said shaft splines and the other slidably engaging said additional splines, said discs being engageable with each other; an annular piston within said housing and movable therein toward and away from said discs; springs in said housing biasing said piston toward said discs to engage said discs; a fluid chamber within said housing and receiving said piston, the application of fluid under pressure to said chamber biasing said piston away from said discs to disengage said discs; an aperture in said housing extending axially of said shaft; a threaded bore carried by said piston and opening toward said aperture and axially aligned therewith; whereby a bolt may be introduced into said aperture to be threaded in said bore to draw said piston towards said aperture and against the bias of said springs to disengage said discs; said piston, on its radially inner surface, carrying a radially inwardly directed lip, said bore being located in a lip engaging plate engaging said lip on the side thereof remote from said aperture, and means preventing relative rotation between said piston and said lip engaging plate, said preventing means comprising recesses in said lip and tongues carried by said plate and disposed in said recesses, said tongues being defined by the opposite ends of a clamping plate secured to said lip engaging plate so that said lip engaging plate is clamped to said piston to move substantially therewith.

4,245,725

DRUM BRAKE WITH HYDRAULIC TUBE, VIBRATION DAMPENING SUPPORT STRUCTURE

Tokio Kurita, and Koji Horie, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 21, 1979, Ser. No. 40,993

Claims priority, application Japan, Jan. 31, 1979, 54-9953[U]

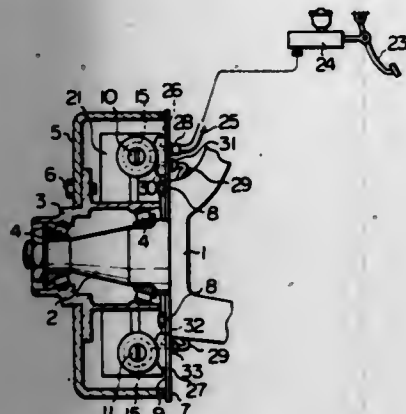
Int. Cl.³ F16D 51/00; F16F 7/00

U.S. Cl. 188—326

6 Claims

1. A brake for use in a vehicle, comprising:
a backplate having a front face and a rear face;
a pair of wheel cylinders spaced from each other and fixed onto the front face of said backplate;

a brake oil tube interconnecting said wheel cylinders to each other and having opposed ends fixed onto the rear face of said backplate, said brake oil tube extending from one of said wheel cylinders towards the other cylinder along the rear face of said backplate and being arranged to be spaced from the rear face of said backplate; and
a tube supporting means, made of an elastic nonmetallic material deformably inserted between the rear face of said



backplate and said brake oil tube, for supporting said brake oil tube and for absorbing vibrations of said backplate, said tube supporting means comprising a head portion having a hole therein, wherein said brake oil tube is positioned in said hole, and leg means non-fixedly contacting the rear face of said backplate wherein when said leg means contacts the rear face of said backplate, said leg means are deformed.

4,245,726

SUPPLY SYSTEMS FOR MOBILE APPLIANCES, PARTICULARLY MINING MACHINES

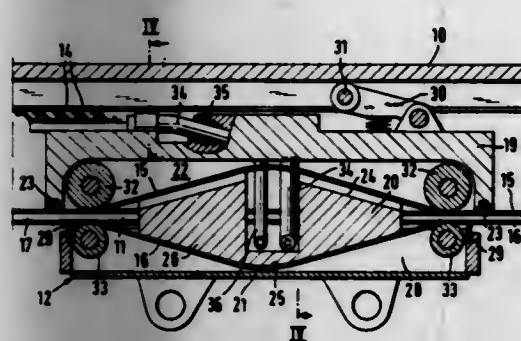
Dieter Köhler, Ahlen, Fed. Rep. of Germany, assignor to Gesellschaft Eisenhütte Westfalen, Lünen, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 13,903

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2806240

Int. Cl.³ B60M 1/34

U.S. Cl. 191—23 A



1. The combination of an elongate duct section containing a service or utility for a mobile appliance and displaceable pick-up means for picking up the service or utility from the duct section for supply to the appliance; wherein the duct section has a longitudinal slot and sealing means for sealing off the interior of the duct section from the exterior, said sealing means including two flat seals, one engaging on an interior surface of the duct section to cover the slot interiorly and the other engaging on an exterior surface of the duct section to cover the slot exteriorly and wherein the pick-up means extends at least partly through the slot and locally deflects the flat seals away from the slot while the sealing is maintained.

4,245,727
CONDUIT

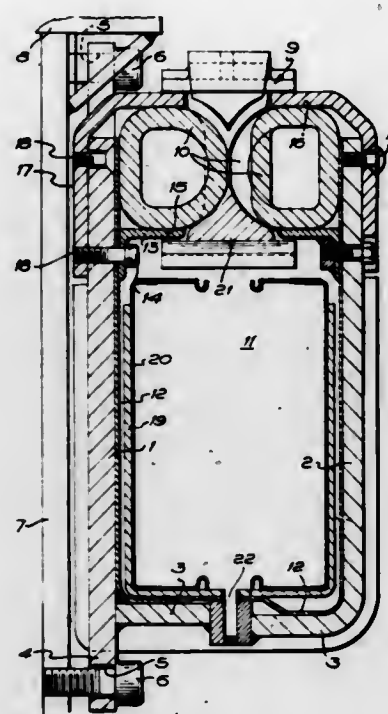
Gerald R. O. Pentith, Hoyland Nether, Nr. Barnsley, England, assignor to Pitercraft Summit Limited, Sheffield, England

Filed Mar. 14, 1979, Ser. No. 20,468

Int. Cl.³ B60M 1/34

U.S. Cl. 191—25

13 Claims



1. A conduit length generally of "U" shape cross-section and having an elongate access slot, said conduit length being internally lined with a seal of flexible material having a corresponding "U" shaped cross-section, "U" arms of said conduit having upper ends, locating means carried by each of said upper ends, and an elongate, displaceable sealing means housed in each said locating means, said two sealing means abutting one another so as to normally close said elongated aperture, upper ends of the "U" arms of the seal being trapped between portions of the sealing means and the rigid locating means.

4,245,728

DOOR MEMBER OPENING AND CLOSING APPARATUS

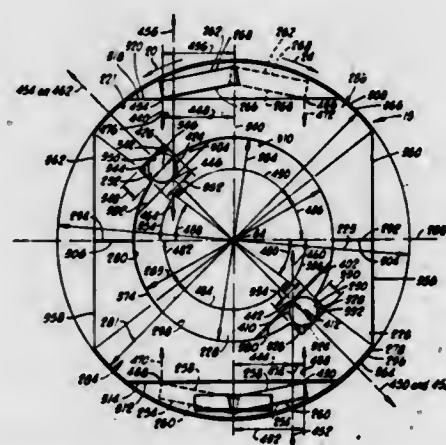
Riza E. Murteza, Oklahoma City, Okla., assignor to LSB Industries, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 572,613, Apr. 28, 1975, Pat. No. 4,091,900. This application May 8, 1978, Ser. No. 903,692

Int. Cl.³ F16D 67/00

U.S. Cl. 192—8 R

26 Claims



1. An apparatus for moving a door member in an opening direction and in a closing direction, comprising:
a housing having a brake surface formed in a portion thereof;
a brake shoe having a brake surface engageable with the

brake surface in the housing in a braking mode, the brake shoe comprising:
a first brake shoe element having a brake surface formed on a portion thereof engageable with the housing brake surface in the braking mode; and
a second brake shoe element having a brake surface formed on a portion thereof engageable with the housing brake surface in the braking mode, the brake surfaces on the first and the second brake shoe elements providing the brake surface of the brake shoe;
means engageable with the first brake shoe element and the second brake shoe element for rotatingly driving the first and the second brake shoe elements in a first direction of rotation and in a second direction of rotation about a drive axis in a driving mode;
an output shaft having a portion disposed between the first brake shoe element and the second brake shoe element;
a driven cam disposed near the first and the second brake shoe elements, the output shaft being connected to the driven cam and the output shaft being engageable with the first and the second brake shoe elements via the driven cam;
means having a portion disposed between and engageable with the first brake shoe element and the driven cam and a portion disposed between and engageable with the second brake shoe element and the driven cam, the first brake shoe element and the second brake shoe element applying a force to the driven cam via said means for rotatingly driving the driven cam in a driving mode, the rotation of the driven cam rotating the output shaft in the first direction of rotation and in the second direction of rotation, and the output shaft applying a force to the first and the second brake shoe elements via the driven cam for positioning the first and the second brake shoe elements in the braking mode in response to a force applied to the output shaft; and
a door member connected to the output shaft and being movable in an opening direction in response to the output shaft being rotated in the first direction of rotation and being movable in a closing direction in response to the output shaft being rotated in the second direction of rotation.

4,245,729

SAFETY SHAFT COUPLING

Manfred Lunke, Dortmund-Huckarde, and Jürgen Walter, Haltern-Hullern, both of Fed. Rep. of Germany, assignors to Vulkan Kupplungs- und Getriebefabrik Bernhard Hackforth GmbH & Co. KG, Herne, Fed. Rep. of Germany

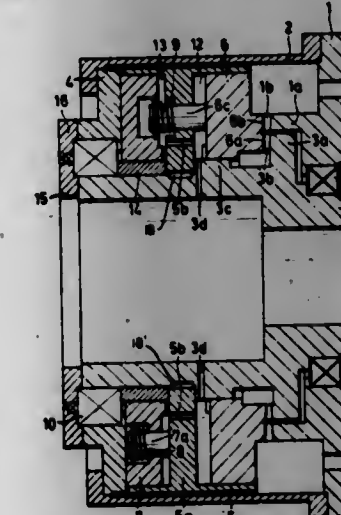
Filed Apr. 26, 1978, Ser. No. 900,099

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720679

Int. Cl.² F16D 43/21, 19/00

U.S. Cl. 192—56 F

6 Claims



1. In a safety shaft coupling member of the kind which

incorporates an overload safety device which causes complete interruption of the transmission of torque when an acceptable maximum torque is exceeded, the improvement wherein said coupling member comprises a hub sleeve, means for fixing said hub sleeve to a driven shaft, a cup-shaped assembly, means for fixing said cup-shaped assembly to a driving member, means mounting said hub sleeve in said cup-shaped assembly for free rotation and limited axial displacement therein, a first toothed end face on said hub sleeve, a second toothed end face on said cup-shaped assembly, said first and second toothed end faces being concentric and situated in a common plane extending normal to the axis of rotation of said coupling member, a first annular piston, first and second annular sets of teeth on said first piston, said first set of annular teeth being arranged to mesh with said first end face and said second annular set of teeth being arranged to mesh with said second toothed end face, a liquid pressure device, means mounting said first annular piston in said liquid pressure device, means for extending said first annular piston from said liquid pressure device, a first restoring spring means resisting extension of said first annular piston, means mounting said liquid pressure device to said hub sleeve or to said cup-shaped assembly, a second annular piston, means mounting said second annular piston in said liquid pressure device, means for extending said second annular piston from said liquid pressure device in a direction opposite to the extension of said first annular piston from said liquid pressure device, a second restoring spring means resisting extension of said second annular piston and means defining an end face on said cup-shaped assembly or said sleeve, whichever does not have said liquid pressure device mounted to it, said second annular piston being adapted to press against said end face when said second annular piston is extended from said liquid pressure device.

4,245,730

DISPLAY PANEL FOR A VENDING MACHINE

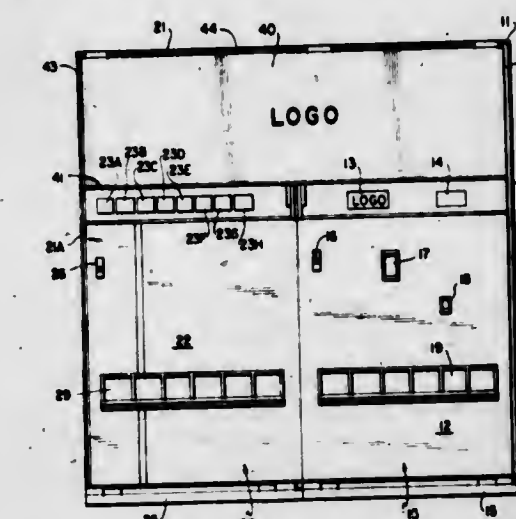
G. M. Bachmann, Stone Mountain; Homer C. Burrows, Atlanta, and Walter L. Shelton, Marietta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 12, 1979, Ser. No. 47,768

Int. Cl.³ G07F 5/18

U.S. Cl. 194—1 A

20 Claims



1. A display panel for use in combination with first and second vending machine units positioned in a side-by-side relationship comprising:

a sign panel extending across substantially the entire width dimension of said vending machine units and including a logo or product identification thereon;
an enlarged primary product selection button with said logo or same product identification positioned thereon and being disposed on said first vending machine unit directly adjacent to a coin insertion slot therein; and
a plurality of secondary product selection buttons disposed on the second vending machine unit which are displaced a

substantial distance away from the primary product selection button and said coin insertion slot of said first vending machine unit, said secondary product selection buttons being smaller relative to said enlarged primary product selection button;

said coin insertion slot of said first vending machine unit being in communication with a single coin mechanism which controls product dispensing of both the first and second vending machine units;

whereby the enlarged primary product selection button being disposed directly adjacent to said coin insertion slot and including the same logo or product identification as said sign panel attracts the attention of a potential consumer to effect a sale of the primary product.

4,245,731

APPARATUS FOR BEVERAGE CONTAINER RECOVERY AND DEPOSIT REFUND SYSTEM

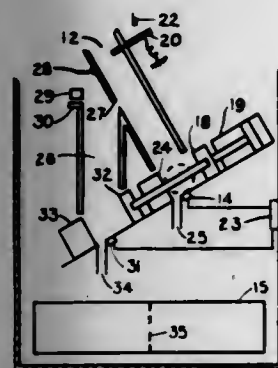
Richard J. Herbst, 2206 S. Knoll St., Arlington, Va. 22202, and Robert B. Grant, 261 Lawyers Rd., Vienna, Va. 22180

Filed Sep. 23, 1977, Ser. No. 836,096

Int. Cl.³ G07F 7/06

U.S. Cl. 194-4 C

12 Claims



1. In combination with a beverage vending machine for dispensing purchased beverages, said machine being provided with a coin return system, the improvement comprising:

means for receiving purchased beverage containers having a deposit associated therewith;

means for remitting said deposit upon appropriate identification via actuation said coin return system and means comprising at least two movable elements for contacting a returned container, said elements controlling at least two switch means in a circuit for identifying said container.

4,245,732

COMPACTLY FOLDABLE RADIAL LUFFING STACKER

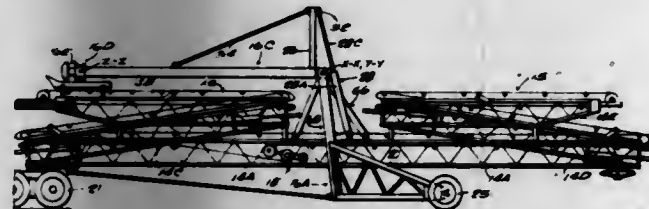
Egbert Conperus, Belleville, Canada, assignor to Allis-Chalmers Canada, Limited, Lachine, Canada

Filed Jun. 29, 1979, Ser. No. 53,433

Int. Cl.³ B65G 15/22, 21/10

U.S. Cl. 198-313

14 Claims



1. A portable elevating conveyor for use in a luffing stacker or the like, comprising an elongated conveyor supporting framework, a mast structure comprising a tower mast section mounted on a base mast section and extending above said base mast section when in operating position, said tower mast section being mounted for folding pivotal movement relative to said base mast section about a substantially horizontal first pivotal axis to move said mast structure from an operational to a transport position or vice-versa, and a telescopic mast section

mounted for telescopic movement relative to said tower mast section, means connecting the lower end of said telescopic mast section to said conveyor supporting framework on a substantially horizontal second pivotal axis, whereby vertical upward or downward movement of said telescopic mast section is imparted to said conveyor supporting framework, said telescopic mast section being movable vertically downwardly relative to said tower mast section to a retracted position in which said second pivotal axis at said lower end of said telescopic mast section coincides with said first pivotal axis between said tower mast section and said base mast section, whereby said tower mast section may be folded about said first pivotal axis relative to said base mast section simultaneously with and together with the folding of said telescopic mast section about second pivotal axis.

3. An elevating conveyor for use in a luffing stacker or the like, comprising an elongated conveyor supporting framework, a mast structure comprising a tower mast section mounted on a base mast section, and a telescopic mast section slideably mounted on said tower mast section for telescopic movement relative thereto, means connecting the lower end of said telescopic mast section to said conveyor supporting framework whereby vertical upward or downward movement of said telescopic mast section is imparted to said conveyor supporting framework, and means for imparting vertical movement to said telescopic mast section comprising a hydraulic ram assembly forming part of and movable with said telescopic mast section, said hydraulic ram assembly comprising a ram cylinder element, a piston movable in said cylinder, and a piston rod element carried by and movable with said piston and projecting beyond the end of said cylinder, slide means carried by and movable with one of said elements, said slide means slideably engaging said telescopic mast section in all positions of the latter without contact with said tower mast section, a rotatable idler rotatably mounted on said slide means, a flexible member, said flexible member being trained around said idler, said flexible member having its opposite ends connected respectively to said tower mast section and to the other of said elements.

4,245,733

FEEDER

Shigeru Kubota, Tokyo; Seiji Kano, Yokohama, and Masahiro Kubo, Machida, all of Japan, assignors to Nitto Kogyo K.K., Tokyo, Japan

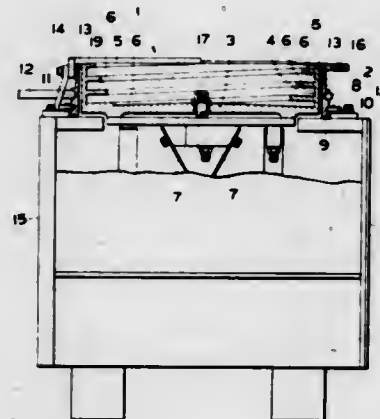
Filed Apr. 16, 1979, Ser. No. 30,633

Claims priority, application Japan, Apr. 21, 1978, 53-47485

Int. Cl.³ B65G 47/24

U.S. Cl. 198-391

5 Claims



1. A vibration or shaking feeder comprising: a container having an inner peripheral wall forming a helical ledge for transferring a plurality of articles in said container at a first rate of speed up said helical ledge around said inner peripheral wall of said container by vibratory motion of said container; means for supporting and vibrating said container;

a cylindrically-shaped outer drum mounted around an outer peripheral portion of said container for receiving said articles from an uppermost ledge of said helical ledge of said container, said outer drum having an upper peripheral surface and including an annular groove formed in said upper peripheral surface;

means for rotating said drum at a second rate of speed higher than said first rate of speed; and

conduit means having an opening positioned along the tangential direction of said annular groove of said outer drum for continuously ejecting said articles from said outer drum in a predetermined direction by centrifugal force resulting from rotation of said outer drum at said second rate of speed.

4,245,734

CONVEYOR FOR REORIENTING RECTANGULAR ITEMS

Gert Deutschländer, Neuhausen am Rheinfall, Switzerland, and Alfred Wipf, Jestetten, Fed. Rep. of Germany, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

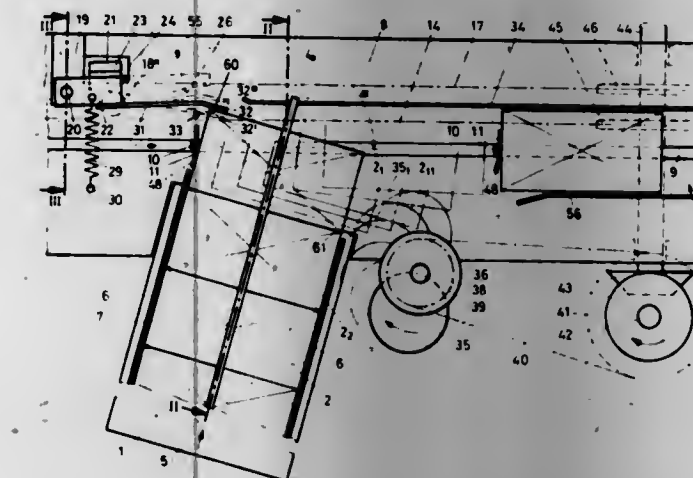
Filed Jul. 10, 1979, Ser. No. 56,289

Claims priority, application Switzerland, Jul. 12, 1978, 7590/78

Int. Cl.³ B65G 47/24

U.S. Cl. 198-412

8 Claims



1. In a conveyor apparatus for reorienting and separating at least approximately rectangular, flat items, including an input conveyor advancing the items in a first direction of advance in an orientation wherein parallel first and second sides of each article are generally perpendicular to the first direction of advance and wherein said first and second sides of consecutive items are in contact with one another; said first side of each item is a leading side and said second side of each item is a trailing side on said input conveyor; each item having a first corner which is a leading corner on the input conveyor and a second corner which is diametrically opposite the first corner; an output conveyor arranged at a discharge end of the input conveyor for receiving the items from the input conveyor; the output conveyor including pusher members for advancing the articles in a second direction of advance which forms an angle of less than 90° with the first direction of advance; a turning means for turning each item during its transfer from the input conveyor to the output conveyor, whereby said first and second sides of each item assume a position parallel to said second direction of advance and said first corner of each item assumes a trailing position on said output conveyor; said turning means including an abutment engaging said first corner during reorientation of the respective item; the improvement wherein said output conveyor has a guide arranged in an orientation parallel to said second direction of advance for engaging and guiding said first side of each item and further wherein said turning means includes a moving reorienting means for engaging solely said second side of each item while being moved by the respective said pusher member of said output conveyor for aligning

said first and second sides of each item into an orientation at least approximately parallel to said guide, whereby the second corner of each item is free from being engaged during reorientation of the item; said turning means further comprising driving means for moving said reorienting means; the improvement further comprising abutment moving means for periodically displacing said abutment in said first direction of advance, whereby said abutment executes a yielding motion with respect to the first corner of each item during engagement of said abutment with the first item corner while the item is displaced in said first direction of advance.

4,245,735

DEVICE FOR PORTIONING LOGS OR SIMILAR OBJECTS

Antti T. Valo, PL 29, 08101 Lohja 10, Finland

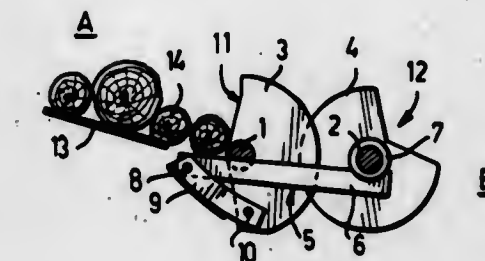
Filed Dec. 18, 1979, Ser. No. 104,933

Claims priority, application Finland, Feb. 13, 1979, 790473

Int. Cl.³ B65G 37/00, 47/04

U.S. Cl. 198-492

3 Claims



1. A device for transferring logs or similar elongated objects one by one from an inlet side (A) to an outlet side (B), comprising at least two pairs of disks, each pair comprising two disks (3,4;23,4) rotating on separate shafts (1,2) in opposite directions and provided with peripheral notches (11,12;12) which, in the extreme positions of the rotary movement of the disks, are directed substantially toward said inlet side and said outlet side, respectively, and which, in the intermediate position of the rotary movement of the disks, form a separating chute (15) between said disks, and said device further comprising a transfer means (5;25) which, in said intermediate position, displaces logs (14) located in the separating chute toward the notch (12) of the disk on the outlet side, characterized in that said transfer means (5;15) comprises a tilting lever (6;26) which extends between both disks (3,4;23,4) of each pair of disks and is operated by the rotary movement of the disks so that said tilting lever rises into said separating chute (15) between the disks when the disks are positioned in said intermediate position.

4,245,736

DEVICES FOR ATTACHMENT TO SCRAPER-CHAIN CONVEYORS USED IN MINERAL MINING

Alois Hauschopp, Werne; Bernd Stalckuhl, Lünen, and Horst Schlusener, Werne, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalen, Lünen, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 912,159

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 7718445[U]

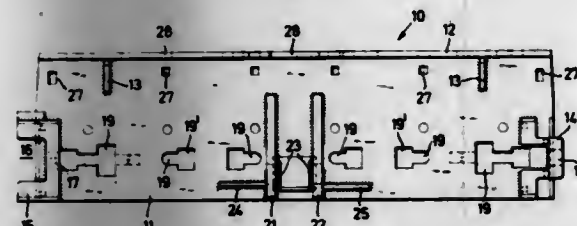
Int. Cl.³ B65G 21/10

U.S. Cl. 198-735

5 Claims

1. An attachment for direct mounting to an outer side wall of a channel-section of a scraper-chain conveyor, which outer side wall has a V-shaped groove extending along its length; said attachment being generally of inverted L-shaped cross-section and comprising a main upstanding plate directly engageable with the outer side wall of the conveyor channel-section, an upper flange extending perpendicularly to the main plate and outwardly from the conveyor channel-section, a row of non-circular apertures in the main plate for receiving connection bolts used for securing the attachment to the outer side

wall of the conveyor channel-section, connectors located at the end regions of the main plate beneath the flange to project outwardly from the ends of said main plate, the connectors being aligned with the row of apertures and being complementary with one connector having a recess and the other connector having a projection, the recess and projection of the connectors serving to mate with a similar projection and recess, respectively, of further connectors at the ends of adjacent similar attachments, holes in the connectors extending longitudinally of the main plate for receiving bolts used to secure the mating connectors of adjacent attachments together, a pair of



upstanding spaced-apart ribs fixed to the central region of the main plate beneath the flange and projecting outwardly from the conveyor channel section, concentric holes in said ribs for receiving a mounting pin serving to connect a shifting ram to the attachment, and blocks fixed to the main plate on the side opposite to the ribs and connectors, said blocks being aligned with said row of apertures and serving to engage within the V-shaped groove of the channel section side wall to additionally lock the attachment thereto, and wherein at least one web is attached to said main plate and one of said spaced apart ribs to restrain movement of the mounting pin located in the holes of said ribs.

4,245,737

APPARATUS FOR TRANSFERRING MATERIALS SUBMERGED IN A LIQUID ABOVE THE FREE SURFACE OF SAID LIQUID

Achille Pellerin, Bagnols sur Ceze, and Jacques Penen, Avignon, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

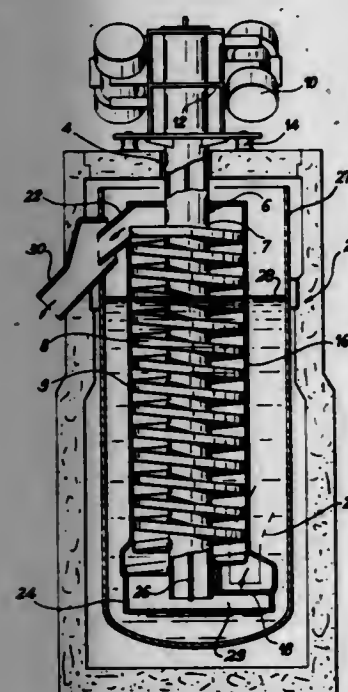
Filed Jun. 20, 1979, Ser. No. 50,290

Claims priority, application France, Jun. 30, 1978, 78 19623

Int. Cl.³ B65G 27/02, 27/16

U.S. Cl. 198—756

4 Claims



1. An apparatus for transferring materials submerged in a liquid above the free surface of said liquid, wherein the apparatus comprise:

a vertical shaft which has its outer wall fixed to the inner edge of a helical fin and which is maintained partly sub-

merged in the liquid, whilst the upper end of the fin is located above the free surface of the liquid;
means for transmitting a helical reciprocating movement to the shaft, said means being positioned above the free surface of the liquid;
a vertical tube of the same axis as, and surrounding, the shaft and fixed by its inner wall to the free outer edge of the fin and by its upper end to the shaft;
a ferrule extending the open lower end of the tube beyond the lower end of the shaft;
means for supplying the materials into the lower part of the tube which is filled with liquid;
means for discharging said materials at the upper part of the tube; and
means for supplying compressed air to the space within the ferrule below the fin to create and maintain an air cushion in the form of a bubble.

4,245,738

BELT CONVEYORS AND BELT SUPPORTING STOOLS THEREFOR

Michael J. A. Butcher, and Stewart D. Jelfs, both of Worcester, England, assignors to Dowty Meco Limited, Worcester, England

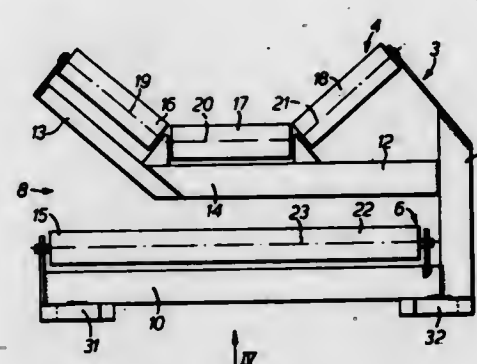
Filed Apr. 5, 1979, Ser. No. 27,474

Claims priority, application United Kingdom, Apr. 15, 1978, 14898/78

Int. Cl.³ B65G 21/14, 15/08

U.S. Cl. 198—812

18 Claims



1. A belt conveyor, which is extendible in length, including an endless belt, a plurality of stools arranged to be spaced apart one from another lengthwise of the conveyor, a plurality of upper elements over which the upper run of the belt will pass in use, and a plurality of lower elements over which the lower run of the belt will pass in use, one or more of said stools being of inherently rigid basic construction, including respective said upper and lower elements and being provided with a gap at one side thereof and between said elements to enable it to be inserted, during operation of the conveyor, into the run of the conveyor in a direction substantially at right-angles thereto, in an upright attitude and wholly from one side or alternatively wholly from the other side thereof as a complete unit for support of the belt at that end portion of the conveyor at which extension is to be effected, and said stool when so inserted being disposed with its said upper element above the lower run of the belt and with its said lower element below the lower run of the belt.

4,245,739

APPARATUS FOR CONTROLLING A CONVEYOR DRIVE UPON CONVEYOR CHAIN BREAKAGE

Dennis Hartley, Burton-on-Trent, and Peter Phillips, Ashby-de-la-Zouch, both of England, assignors to Coal Industry (Patents) Limited, London, England

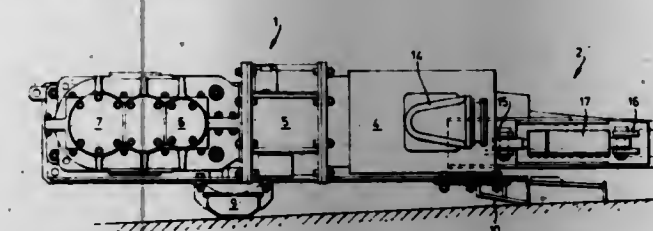
Filed Aug. 28, 1978, Ser. No. 937,478

Claims priority, application United Kingdom, Sep. 9, 1977, 37710/77

Int. Cl.³ B65G 43/00

U.S. Cl. 198—856

7 Claims



1. A conveyor arrangement comprising a drive motor, at least one tensioned endless component driven by said drive motor, two conveyor parts which, in use, are urged towards each other under the action of the tensioned endless component, hydraulic ram means operable to urge said two conveyor parts apart to maintain said endless component tensioned, sensing means for sensing the hydraulic pressure in the hydraulic ram means and for deriving signals indicative of the sensed hydraulic pressure, and control means responsive to said derived signals for controlling operation of said drive motor, said control means comprising a computer means including a monitor for monitoring the signals derived by the sensing means.

4,245,740

CONTAINER FOR MAGNETIC TAPE CASSETTE

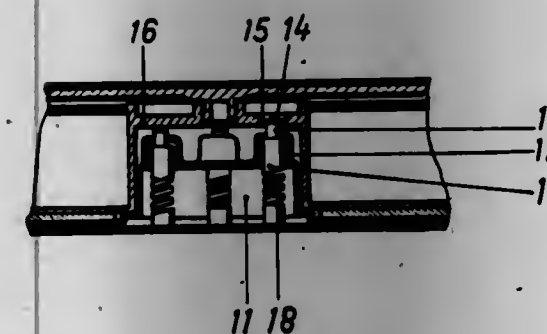
Hartmut Thiele, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,383

Int. Cl.³ B65D 85/67

U.S. Cl. 206—387

11 Claims



1. Container for receiving and storing a magnetic tape cassette with two tape winding hubs, each hub having a circular recess and a partition containing three drive holes arranged in a circle, the container comprising two hollow cylindrical bodies located inside the container each of which is provided for positively engaging in one of the recesses and at least four spring mounted arresting means located in and projecting from raised or countersunk guide elements arranged at equidistant intervals in a circle at the upper surface of each of the two cylindrical bodies such that when a cassette is inserted into the container, one of the arresting means of each of the two hollow cylindrical bodies engages one of the drive holes of each partition, the end portion of the arresting means which projects form the guide elements being rounded.

4,245,741

ANTI-THEFT PACKAGING DEVICE

Howard P. Holkestad, Minnetonka, Minn.

Filed Aug. 29, 1979, Ser. No. 70,572

Int. Cl.³ B65D 1/36, 6/04, 85/67

U.S. Cl. 206—387

15 Claims



1. Anti-theft device for packaging a cassette recording tape having a leading edge, a trailing edge, a first side edge, a second side edge, a top surface, and a bottom surface defining its dimensions, comprising, in combination: means for enclosing the cassette recording tape including a first generally closed side, a second generally closed side, a first generally closed end, a second generally closed end, a generally closed bottom, and a generally open top defining the dimensions of the enclosing means, with the dimensions of the cassette tape being approximately equal to the dimensions of the enclosing means; means attached to the enclosing means for extending the enclosing means to enlarge the enclosing means beyond the dimensions of the cassette tape for preventing easy concealment of the anti-theft packaging device by a perspective thief, with the enclosing means including a first closed end formed by the continuation of the first end of the enclosing means past the second side of the enclosing means, a second closed end formed by the continuation of the second end of the enclosing means past the second side of the enclosing means, and a border extending between the first and second closed ends of the extending means and attached to the second side of the enclosure; a gap formed in the bottom of the enclosing means at the junction of the bottom and the first side and extending between the first and second ends of the enclosing means for receiving the lower corner of the leading edge of the cassette tape inserted within the enclosing means through the top of the enclosing means; a rib formed in the top of the enclosing means at the junction of the top and the first side and extending between the first and second ends of the enclosing means for abutting with the leading edge of the cassette tape located within the enclosing means; a first retention member located on the first end of the enclosing means adjacent the second side of the enclosing means; a second retention member located on the second end of the enclosing means adjacent the second side of the enclosing means; a third retention member located on the second side of the enclosing means, with the first, second, and third retention members being hooked shaped and including a head portion allowing unidirectional insertion of the cassette tape into the enclosing means through the open top of the enclosing means by nondestructibly distorting the enclosing means and for retaining the cassette tape within the enclosing means preventing removal of the cassette tape from the enclosing means without destruction of the anti-theft packaging device, with the head portion including an abutting surface spaced from the bottom of the enclosing means a distance substantially equal to the height of the cassette tape for abutting with the trailing edge of the cassette tape and further including an inclined camming surface for nondestructibly distorting the enclosing means when the trailing edge of the cassette tape is forced down on the camming surface, with the third retention member further including a lever arm for pivoting the third retention member and further distorting the enclosing means comprising a body portion having the shape of a parallelogram and including a first end located outside the enclosing means and attached to the border of the extending means and further including a second end located inside the

enclosing means and attached to the head portion, and with the bottom, first and second sides, and first and second ends of the enclosing means being generally closed against removal of the cassette tape from the enclosing means and formed of material which allows insertion of the cassette tape into the enclosing means by placing the leading edge of the cassette tape below the rib of the top of the enclosing means and by nondestructively distorting the enclosing means by forcing the cassette tape down on the inclined camming surfaces of the retention members and by pivoting the third retention member by the lever arm to allow the cassette tape to pass beyond the retention members and which does not allow removal of the cassette tape except by destruction of the anti-theft packaging device.

4,245,742

MEDICATION DISPENSER

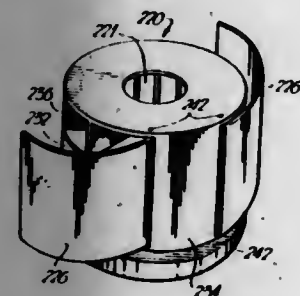
William Rossmo, 158 Mount Allison Crescent, Saskatoon, Saskatchewan, Canada

Filed Apr. 12, 1979, Ser. No. 29,428

Claims priority, application Canada, Sep. 19, 1978, 311617

Int. Cl.³ B65D 83/04

U.S. Cl. 206—534



1. A medication dispenser comprising a plurality of members coaxially mounted with respect to one another and including a container having at least three circular rows of compartments adapted to contain medication;

a first indexing member coaxially positioned with respect to the container and which, in response to movement between the container and the first indexing member, is capable of indexing positions that are representative of a series of time periods, an elongated opening in the first indexing member for communication with a plurality of aligned compartments in said circular rows of the container and which contain medication to be dispensed within one of such time periods.

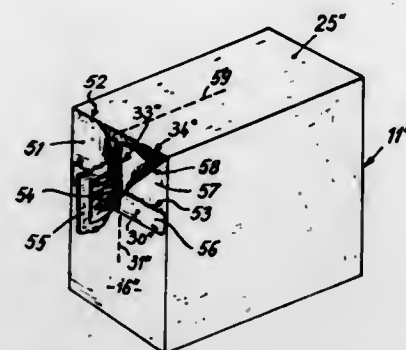
and a second movable indexing member coaxially mounted with respect to the first indexing member and adapted to be indexed to positions representing subsidiary time periods with the first-mentioned time periods and apertures in the second indexing member which, by rotation of the second indexing member, can be placed into registry with part of the elongated aperture in the first indexing member to give access to one of the compartments in the container; there being sufficient apertures in the second indexing members to communicate with the compartments in each of the rows;

said container comprising a circular member having a plurality of coaxially arranged circular walls spaced from one another by radially extending partitions to define a plurality of compartments, and a central longitudinally extending tubular opening in the container, the compartments having inner ends communicating with said tubular opening and doors hingedly secured over the front of said compartments for loading the same with medication.

4,245,743
TEAR-OPEN PACKING MEANS, PARTICULARLY FOR LIQUIDS SUCH AS OIL OR SIMILAR
Erich Heuberger, Heidenheim, Fed. Rep. of Germany, assignor to Carl Edelmann GmbH, Heidenheim, Fed. Rep. of Germany
Division of Ser. No. 843,313, Oct. 18, 1977, Pat. No. 4,154,346.
This application Mar. 12, 1979, Ser. No. 19,735
Int. Cl.³ B65D 5/72

U.S. Cl. 206—611

4 Claims



1. Tear-open packing means, particularly for liquids such as oil or the like, said packing means comprising a liquid-imperious inner bag with a cross-seam at its upper end and a tubular folding-box casing which is closed at the bottom and in which a plurality of closure flaps are hinged on the upper edges of three side walls, the closure flaps being, like the cross-seamed end of the inner bag, folded down to form a substantially flat upper box end, the end of the inner bag having the sealed cross-seam being provided with a tearing notch, said cross-seamed end lying under one of said closure flaps, characterized in that a flap member having a first line of perforations is formed on said one closure flap, said flap member being folded toward one side wall of the casing and attached thereto by a glue flap, said flap member including a tear piece which is bounded by said first line of perforations and a second line of perforations, said tear-piece being glued to the subjacent part of the cross-seamed inner bag end, said tearing notch in the inner bag end being positioned underneath said first line of perforations, said second line of perforations separating said tear piece from said glue flap.

4,245,744
POLYVINYL ACETATE LATEX IMPREGNATED TOWELETTE

Wiley E. Daniels, Easton, Pa.; George Davidowich, Dunellen, and Gerald D. Miller, Belle Mead, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 18, 1978, Ser. No. 870,551

Int. Cl.³ B65D 81/24

U.S. Cl. 206—812

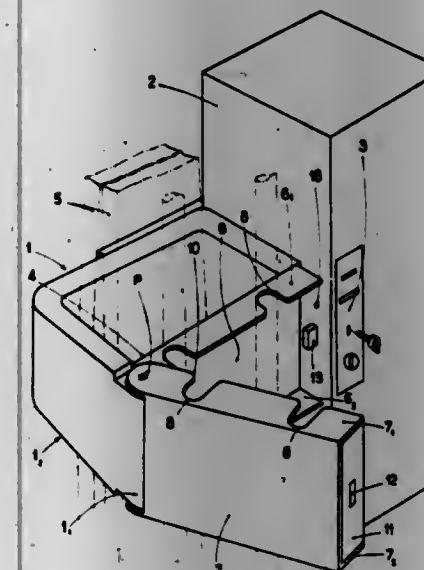
5 Claims

1. A packaged towelette composed of a sheet of non-woven fibers impregnated with an emulsion binder of polyvinyl acetate containing polyvinyl alcohol as a protective colloid, wherein said binder is formed by emulsion polymerization of vinyl acetate in the presence of 1-10 parts by weight polyvinyl alcohol per 100 parts vinyl acetate, said binder being maintained insolubilized in wet condition within said package by contact with a non-alkaline aqueous solution of boric acid, wherein said insolubilized binder is dissolvable by flushing in water.

4,245,745
THEFTPROOF RACK FOR THE ACCOMMODATING AND STORING OF SKIS AND POLES
Philippe M. Verelle, 1 rue du General Leclerc, 88000 Epinal, France, and Jean-Claude Kilbert, Epinal, France, assignors to Philippe Marie-Barthelemy Verelles, Epinal, France
Filed Jan. 11, 1979, Ser. No. 2,788
Claims priority, application France, Jan. 11, 1978, 78 00643
Int. Cl.³ A47F 7/00

U.S. Cl. 211—8

7 Claims



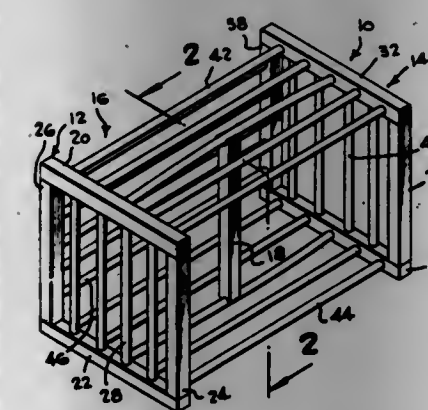
1. A theftproof rack for the stowing away and storing of skis and poles comprising:

- (a) a support;
- (b) at least one yoke, in a shape of a U, permanently affixed to said support;
- (c) a door comprising two shutters hingedly mounted to a single pivot for closing the opened portion of said U to form a bracelet imprisoning the skis, at least one said shutters having cut-outs for receiving and retaining ski poles, said two shutters cooperating to grip and imprison said ski poles when said door is closed to imprison the skis in a storage position; and
- (d) a locking device, for simultaneously and positively locking said skis and poles in said storage position.

4,245,746
PHONOGRAPH RECORD STORAGE RACK
Eugene W. Aylor, Brightwood, Va. 22715
Filed Feb. 9, 1979, Ser. No. 12,218
Int. Cl.³ A47F 7/00

U.S. Cl. 211—40

3 Claims



1. A record storage rack comprising a first rectangular loop end frame section, a second rectangular loop end frame section, a plurality of parallel upper elongated dowel members interconnecting said first end frame section and said second

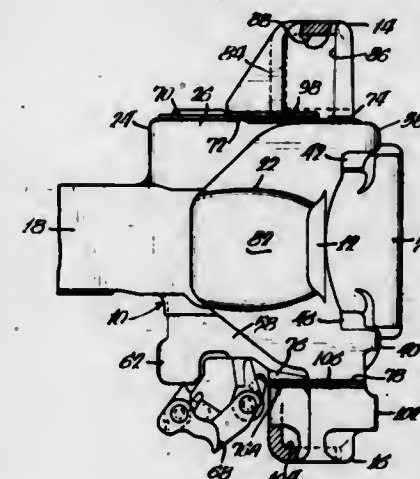
end frame section, a plurality of lower elongated dowel members interconnecting said first and second end frame sections in opposed relation and parallel to said upper elongated dowel members, and a spacer bar having an upper engaging surface positionable to contact an inner surface of one of said upper elongated dowel members and a lower engaging surface spaced apart a distance greater than the distance between said upper and lower elongated dowel members and positionable to contact an inner surface of a corresponding one of said lower elongated dowel members confronting said inner surface of said upper elongated dowel member thereby causing a deflection of said upper and lower elongated dowel members when said spacer bar is inserted therebetween to retain the spacer bar in a desired position to provide a positionable separator for said storage rack.

4,245,747
COUPLER

Leslie N. Roberts, Columbus, Ohio, assignor to Buckeye International, Inc., Columbus, Ohio
Continuation of Ser. No. 595,766, Jul. 14, 1975, abandoned. This application Oct. 27, 1977, Ser. No. 845,803
Int. Cl.³ B61G 5/04, 7/14

U.S. Cl. 213—153

4 Claims

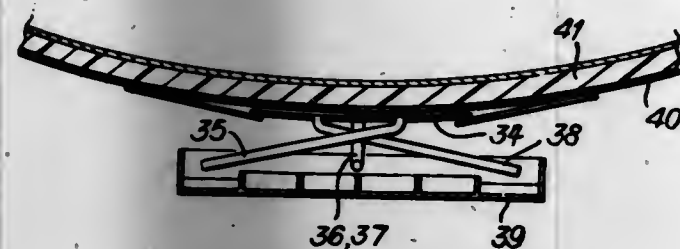


1. A railway coupler assembly including a top hooded shelf member for limiting vertical movement of a second coupler in engagement therewith, the improvement comprising, in combination, a Type E coupler having an irregularly contoured upper surface including a horizontal flat rearward upper surface and an irregular sloping forward upper surface, said Type E coupler being modified by having front upper rib means added to the top of the coupler to modify the irregular contour thereof at the location of the top shelf, said upper rib means defining a horizontal planar coupler top surface which is coplanar with said flat rearward upper surface, a hooded top shelf formed with a plurality of downwardly projecting top shelf pads formed on the underside thereof, said top shelf pads having flat coplanar bottom surfaces, said top shelf being positioned with certain of said pads seated against said horizontal planar coupler top surface defined by said upper rib means and at least one other of said pads being seated against said flat rearward upper surface of said coupler, and said top shelf being welded to said coupler top surface.

4,245,748
LEAK PROTECTION SYSTEM ON A TANK FOR STORING OR TRANSPORTING LIQUEFIED GAS
Rolf Kvamadal, Moss, Norway, assignor to Moss Rosenberg Verft A/S, Moss, Norway
Filed Sep. 27, 1978, Ser. No. 946,379
Int. Cl.³ B65D 1/24; B63B 25/16; B65D 90/24, 90/06
U.S. Cl. 220—1 C

1. A leak protection system for a tank for storing or transporting liquified gas which comprises, the combination of,

means for collecting the liquified gas which leaks from the tank, a catch basin positioned beneath the tank and of sufficiently large dimensions to permit gradual evaporation of the leaked material, said catch basin comprising an upper section and a lower section and positioned whereby said collection means discharges the liquified gas into said upper section, a plurality of ducts extending from the bottom of said upper section to above said lower section and providing flow paths



for the liquified gas from said upper section to said lower section, each of said ducts extending between locations at said upper and lower sections which are diametrically opposite with respect to the vertical center axis of said catch basin, said upper section being in the shape of a cross and subdivided by means of partitions which are lower than said outer walls and form a central cell and a cell in each arm of the cross, and wherein a duct extends downwardly from each arm of the cross and opens out above said lower section of the basin.

4,245,749

SAFETY DEVICE

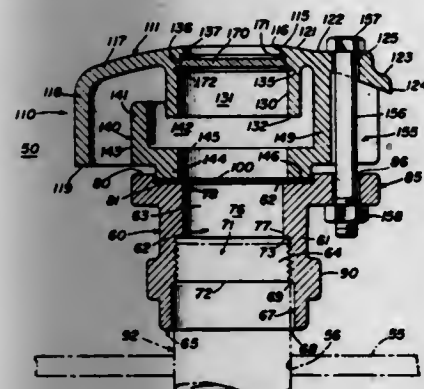
Charles T. Graves, Brookfield, Ohio, assignor to General American Transportation Corporation, Chicago, Ill.

Filed Jan. 10, 1979, Ser. No. 2,357

Int. Cl.³ B65D 25/54; F16K 17/40

U.S. Cl. 220-82 A

6 Claims



1. A safety device for a pressure vessel having an opening therein with an upstanding base secured around the opening defining a passageway and a frangible diaphragm covering the passageway, said safety device comprising an annular retaining member in registry with the base adapted to clamp the frangible diaphragm therebetween, a protective cap over said annular retaining member having an aperture in registry with the frangible diaphragm, said annular retaining member defining a first aperture slightly larger in diameter than the base passageway and in registry therewith and a second aperture larger than said first aperture defined by an upstanding cylindrical wall integral with said cap, said cap having a dome-shaped outer surface with a downwardly extending peripheral flange terminating near the end of said retaining member bearing against the frangible diaphragm and a downwardly extending annular flange inwardly of said peripheral flange terminating inside said upstanding cylindrical wall, a transparent material covering said cap aperture providing continuous visibility through said cap to the frangible diaphragm between said retaining member and the base, the wall of said cap defining said cap aperture having a portion thereof smaller in diameter than said cap aperture defining a flange and an annular groove

spaced from said flange, a resilient gasket positioned against said flange bearing against the surface of said transparent material closest to the frangible diaphragm, a retaining ring in said groove bearing against the other surface of said transparent material maintaining said material in place, and means detachably retaining said cap and said retaining member over the base, whereby the frangible diaphragm is continuously visible and protected.

4,245,750

NON-REMOVABLE DRUM SIDE HANDLE

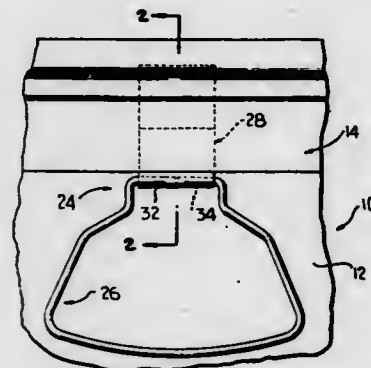
Michael J. Stemen, Van Wert, Ohio, assignor to The Continental Group, Inc., New York, N.Y.

Filed May 15, 1978, Ser. No. 905,923

Int. Cl.³ A47B 95/02; B65D 5/46, 25/22

U.S. Cl. 220-94 R

7 Claims



1. In combination with a drum having a body with an upper end portion thereof having a metal chime extending around said upper end portion, a handle assembly, said handle assembly comprising a separately formed strap formed of a rigid material and having an upper portion interlocked between said chime and said drum, said strap having a lower portion disposed below said chime, and a separately formed rigid handle hingedly carried by said strap lower portion.

4,245,751

ANTI-THEFT FILLER CAP

Michel Neiman, Paris, France, assignor to Societe de Diffusion Neiman, Courbevoie, France

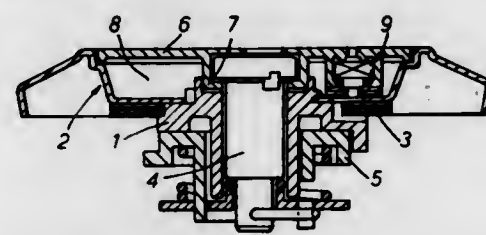
Filed Jul. 24, 1979, Ser. No. 60,087

Claims priority, application France, Jul. 28, 1978, 78 22344

Int. Cl.³ B65D 51/16

U.S. Cl. 220-204

3 Claims



1. An anti-theft cap for closing a filler pipe of a vehicle fuel tank, comprising:
(a) a body for location on the filler pipe,
(b) a cover portion on said body for extending over the end of the filler pipe to effect closure,
(c) a cylinder lock mounted in a bore formed within said body and serving for locking and unlocking the cap,
(d) a carrier member connected to said cylinder lock so as to rotate therewith between a locked position and an unlocked position,
(e) a conduit formed in said body having one end thereof at an upper surface adjacent said carrier member and the other end at another surface which other end communicates with the interior of the filler pipe when the cap is in position thereon, and

(f) a valve device carried by said carrier member communicating at one end thereof with the atmosphere and at the other end thereof with said one end of the conduit when said carrier is in said locked position said valve device being moved away from said one end of said conduit when said carrier member is rotated toward said unlocked position.

4,245,752

LID FOR DRINKING CONTAINER

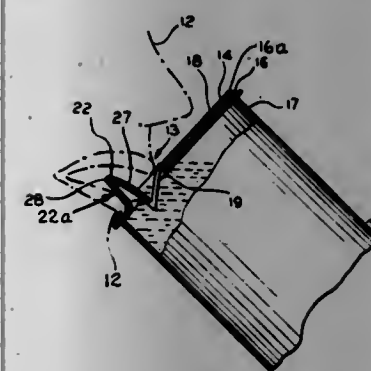
Andrew B. Procher, 1016 N. Sheridan, Highland Park, Ill. 60035

Continuation-in-part of Ser. No. 947,063, Sep. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 882,670, Mar. 2, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 60,904

Int. Cl.³ A47G 19/22; B65D 47/08, 47/10

U.S. Cl. 220-266

13 Claims



1. An improved lid for drinking containers, said lid comprising:
a substantially disc-like main body portion for covering the open end of a drinking container having a beverage contained therein;
means for attaching said disc-like main body portion to said open end of the drinking container;
integrated double-walled mouthpiece means emanating upwardly from said disc-like main body portion at one side thereof;
a portion of said mouthpiece means shaped to fit between the lips of a user;
said double-walled mouthpiece means having a cavity portion therein into which said beverage may flow formed of a relatively thin material to allow the sampling of the beverage temperature by said user's lips;
valve means located in said disc-like main body portion proximate to the base of said mouthpiece means for alternative release and containment of the beverage located within the container,
said valve means having a closed position and an open position to accommodate said alternative containment and release of said beverage respectively whereby said beverage in said container is kept from spilling while enabling the user to alternatively release liquid from the container for said user's consumption.

4,245,753

CONTAINER FOR PAINT

Henry D. Ellis, 1003 Whetstone Way, Louisville, Ky. 40223

Filed Oct. 4, 1979, Ser. No. 82,000

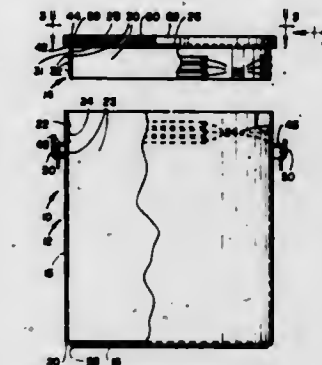
Int. Cl.³ B65D 41/04

U.S. Cl. 220-288

12 Claims

1. A container comprising: a unitary receptacle and a unitary cover each of which is molded from resilient plastic; said receptacle including a generally cylindrical side wall and a bottom wall; the side wall including an upper end that defines an open end of the receptacle; the side wall also including a lower end that is closed by the bottom wall to define a closed end of the receptacle; the upper end of the side wall having a round inner surface including circumferentially spaced buttress retainers of curved shapes; each buttress retainer on the

upper end of the side wall including a generally horizontal retaining flank that faces downwardly and an inclined flank that extends downwardly and inwardly in a radial direction to the associated retaining flank; said cover including an upper wall and an annular lip that extends downwardly from the upper wall and has a smaller size than the receptacle side wall so as to be capable of insertion into the upper end thereof upon downward movement of the cover over the receptacle; the annular lip of the cover having a round outer surface including circumferentially spaced buttress retainers; each buttress retainer on the cover lip including a generally horizontal retaining flank that faces upwardly and an inclined flank that extends upwardly and outwardly in a radial direction to the associated



retaining flank; the cover being movable downwardly to insert the lip thereof into the open end of the receptacle and thereby slidably engage the inclined flanks on the buttress retainers of the cover with the inclined flanks on the buttress retainers of the receptacle so as to ultimately provide a snap action that engages the retaining flanks on the buttress retainers of the cover with the retaining flanks on the buttress retainers of the receptacle in order to secure the cover on the receptacle; and the buttress retainers on the cover lip having curved lengths that are shorter than the circumferential spacing between the buttress retainers on the receptacle side wall such that the secured cover can be rotated to disengage the buttress retainers thereof from the buttress retainers of the receptacle and thereby permit upward opening movement of the cover.

4,245,754

CONTAINER INCLUDING PLASTIC MOLDED RECEPTACLE AND COVER WITH BUTTRESS RETAINERS

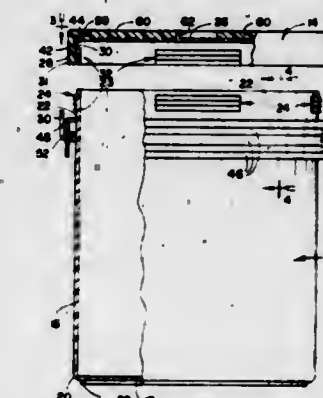
Henry D. Ellis, 1003 Whetstone Way, Louisville, Ky. 40223

Filed Oct. 4, 1979, Ser. No. 81,961

Int. Cl.³ B65P 53/00

U.S. Cl. 220-304

11 Claims



1. A container comprising: a unitary receptacle and a unitary cover each of which is molded from resilient plastic; said receptacle including a generally cylindrical side wall and a bottom wall; the side wall including an upper end that defines an open end of the receptacle; the side wall also including a lower end that is closed by the bottom wall to define a closed end of the receptacle; the upper end of the side wall having

round inner and outer surfaces one of which includes a plurality of circumferentially spaced buttress retainers of curved shapes; each buttress retainer on the upper end of the side wall including a generally horizontal retaining flank that faces downwardly and an inclined flank that extends downwardly and radially to the associated retaining flank; said cover including an upper wall and an annular lip that extends downwardly from the upper wall; said annular lip of the cover having round inner and outer surfaces one of which includes circumferentially spaced buttress retainers; each buttress retainer on the cover lip including a generally horizontal retaining flank that faces upwardly and an inclined flank that extends upwardly and radially to the associated retaining flank; the cover being movable downwardly over the receptacle such that the inclined flanks of the buttress retainers on the cover lip slidably engage the inclined flanks of the buttress retainers on the receptacle so as to ultimately provide a snap action that engages the retaining flanks on the buttress retainers of the cover with the retaining flanks on the buttress retainers of the receptacle in order to secure the cover on the receptacle; and the buttress retainers on the cover lip having curved lengths that are shorter than the circumferential spacing between the buttress retainers on the receptacle side wall such that the secured cover can be rotated to disengage the buttress retainers thereof from the buttress retainers of the receptacle and thereby permit upward opening movement of the cover.

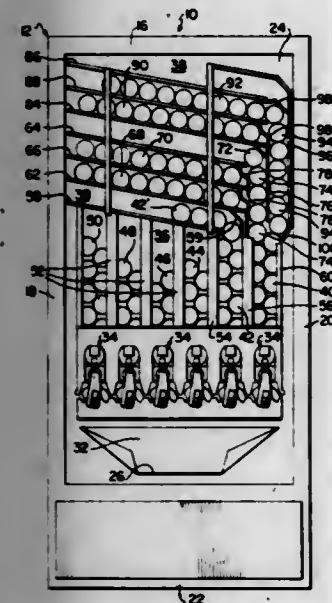
4,245,755

PRODUCT STORAGE SPACE APPORTIONING APPARATUS FOR PRODUCT DISPENSING MACHINES
Herman R. Craven, Prairie Village, Kans., and Leonard Bieri, Jr., Lee's Summit, Mo., assignors to The Vendo Company, Overland Park, Kans.

Filed Nov. 16, 1979, Ser. No. 95,524
Int. Cl.³ B65G 59/00

U.S. Cl. 221-109

10 Claims



1. In apparatus for storing, gravity-feeding and selectively dispensing generally cylindrical products of a plurality of differing kinds including products of at least one kind to be accommodated in quantities greater than for products of a number of remaining kinds:

- cabinet means presenting an internal product storage space of limited available volume within which said products are to be stored and from which said products are to be selectively dispensed, said space having upper and lower zones;
- means presenting a delivery station below said space to which said products are to be selectively dispensed and from which dispensed products are to be made accessible to a user;
- means presenting a plurality of side-by-side staggered stack type product receiving chambers in the lower zone of said space, there being a chamber for each of said kinds of

products respectively for receiving and storing a first quantity of the latter in a staggered stack arrangement, the lower extremity of said chambers being open;

means presenting a staggered stack type product supporting and releasing mechanism for each of said chambers respectively, said mechanisms each being disposed adjacent the open lower extremity of the corresponding chamber and adapted for normally supporting the lowermost product in the corresponding staggered stack and thereby the other products above said lowermost product in said stack and for releasing said lowermost product and dispensing the same to said delivery station when said mechanism is actuated;

means presenting inclined shelf means including at least one inclined shelf in the upper zone of said space for receiving and storing an additional quantity of products of said one kind in a side-by-side rollable row arrangement upon said one shelf;

means including a product-clearing opening adjacent the upper extremity of the chamber for said one kind of products and product guiding structure presenting passageway means for guided movement of said additional quantity of products of said one kind by gravity from the lower extremity of said one shelf to said product-clearing opening and into the upper portion of said chamber for said one kind of products to replenish the staggered stack of the latter therein as the same are dispensed; and

means for selectively actuating any of said mechanisms.

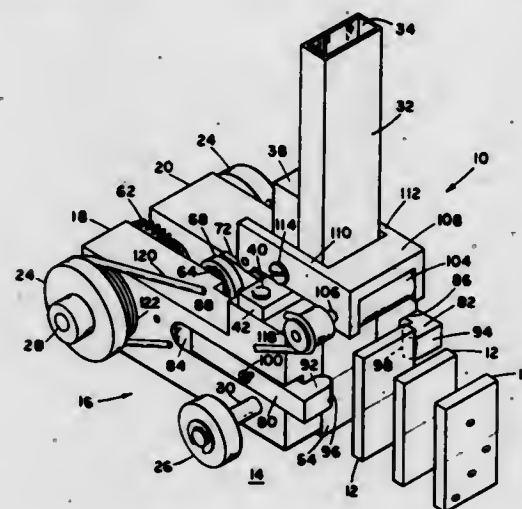
4,245,756

ARTICLE DISPENSING AND POSITIONING DEVICE
LeRoy H. Byrne, 45 Horseshoe Dr., Waterbury, Conn. 06706; Arnold Fassman, 40 Oak St., Westport, Conn. 06880, and Thomas L. Simmel, 44 Booras, Milford, Conn. 06460

Filed Mar. 1, 1979, Ser. No. 16,501
Int. Cl.³ B65G 59/06

U.S. Cl. 221-185

14 Claims



1. A device for dispensing and positioning a plurality of rectangular objects such as dominos or the like on a flat surface in evenly spaced relationship, said device comprising:

- A. a body member,
- B. means supporting said body member for movement along a surface on which the objects are to be placed,
- C. a supply hopper mounted on said body member for holding a plurality of objects therein to be dispensed,
- D. a discharge chamber in said body member having an upper portion thereof in communication with said supply hopper such that objects can move successively from said supply hopper to said discharge chamber and a lower portion disposed in close adjacent relationship with the surface along which said body member moves, said discharge chamber having a rearwardly facing opening large enough for an object being dispensed to pass through in

the same orientation in which it is received in said discharge chamber.

E. ejector means mounted in said body member for reciprocatory movement through said discharge chamber such that said ejector means discharges an object in said discharge chamber through said rearwardly facing opening, said ejector means being shaped with respect to said discharge chamber so as to obstruct the passage of an object into said discharge chamber while said ejector means is moving through said discharge chamber, and

F. means responsive to movement of said body member along said surface for actuating said ejector means in said reciprocatory movement whereby objects are successively dispensed and positioned on said surface in the same orientation in which they are received into and discharged from said discharge chamber.

4,245,757

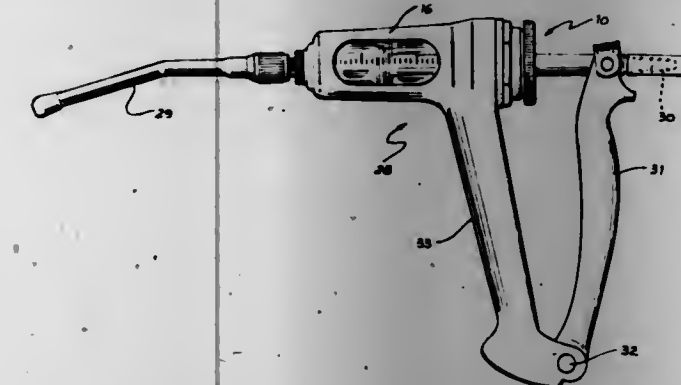
DOSE ADJUSTMENT MECHANISM FOR A DRENCH GUN

Ian R. Phillips, Killara, and Mervyn F. Reynolds, Balgowlah, both of Australia, assignors to N. J. Phillips Pty. Limited, New South Wales, Australia

Filed Jul. 13, 1979, Ser. No. 57,533
Int. Cl.³ B67D 5/18

U.S. Cl. 222-43

6 Claims



1. A dose adjustment mechanism for a drench gun or syringe having a body with at least one interacting bore and piston defining a variable volume working space, which piston is moved by a connecting rod extending outwardly from within the bore, said adjustment mechanism comprising a body plug to be fixed to the body of the gun at a location adjacent a free end of the bore, a passage extending longitudinally through said plug with respect to said bore and having a longitudinal slot extending along said passage, an adjustment sleeve located in said passage and movable therealong, said sleeve having a projecting tongue slidably located within the slot so as to be restricted thereby to move longitudinally along said passage and to prevent rotation of the sleeve about the longitudinal axis of the passage, said sleeve being internally threaded, a dose adjuster extending longitudinally through said sleeve and being externally threaded so as to be threadably engaged within said sleeve so that rotation of said adjuster causes longitudinal movement of said sleeve.

4,245,758

METHOD AND APPARATUS FOR MEASURING MOLTEN METAL STREAM FLOW

Roger A. McCabe, Cecil, Ohio, assignor to Quantum Concepts Corporation, Inc., Cecil, Ohio

Filed Jun. 13, 1979, Ser. No. 47,981
Int. Cl.³ B67D 5/08

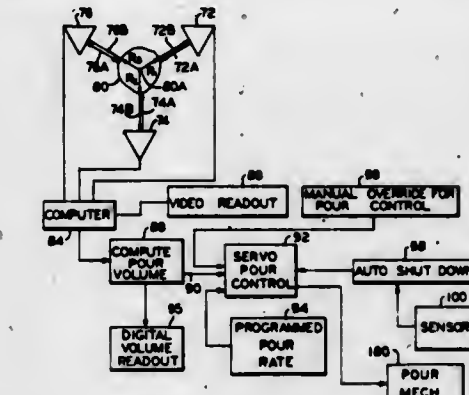
U.S. Cl. 222-52

11 Claims

1. Apparatus for measuring liquid flow in a stream comprising: radiation means for emitting a plurality of arcuately spaced

radiation waves in a plane transverse to said stream, said waves being reflected from the stream walls in said plane; receiving means being positioned in said transverse plane for receiving the radiated waves reflected from said stream walls;

measuring means coupled to each of said radiation means and reflection means for measuring the time elapsed between the instant of emission of each radiation wave and the instant of reception of the respective reflection of said each radiated wave;



first computing means coupled to said measuring means for computing the area of said stream in said transverse plane; second computing means coupled to said first computing means for computing the rate of change of the area in said transverse plane;

third computing means coupled to said second computing means for computing the velocity of said stream;

fourth computing means coupled to said first and third computing means for computing the volume of said stream.

4,245,759

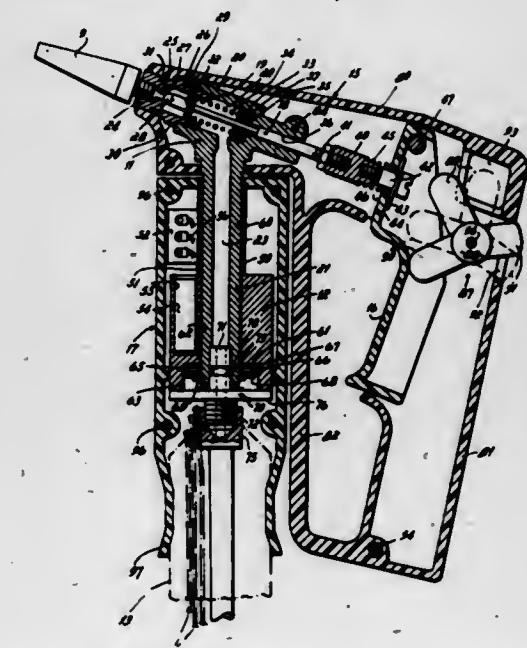
ADHESIVE HAND GUN WITH SWIVEL CONNECTOR AND SAFETY MECHANISM

Robert G. Baker, Avon; Paul S. Frates, Brunswick, and Jeffrey E. Morgan, Elyria, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed May 2, 1979, Ser. No. 35,311
Int. Cl.³ B67D 5/62

U.S. Cl. 222-146 HE

14 Claims



1. A hot melt hand gun for receiving molten adhesive under pressure from an adhesive source via a heated flexible hose and for dispensing that molten adhesive, said hand gun comprising a gun body defining a pair of intersecting tubular sections, a nozzle secured to one end of a first of said pair of gun body

tubular sections for directing adhesive forwardly from the gun, valve means contained within said first body section for controlling flow from the nozzle, a housing including a handle and a trigger accessible to a hand grasping the handle for selectively opening the valve means, a second of said pair of tubular sections of said gun body being located in a common plane with the handle of said housing and being spaced forwardly of said handle, a heat transmitting pivot sleeve surrounding and extending for approximately the full length of said second tubular section of said gun body, said pivot sleeve being adapted to be fixedly secured to the heated flexible hose through which molten adhesive is supplied to said gun, an electrical heater mounted within said pivot sleeve, said heater being adapted to be electrically connected to an electrical lead in said flexible hose, and thrust bearing means operable between said pivot sleeve and said second tubular section of said gun body for enabling said gun body to be rotated about the axis of said pivot sleeve while said pivot sleeve and heater remain fixed relative to said flexible hose.

4,245,760

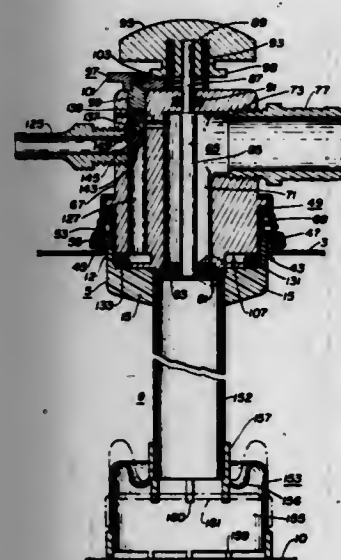
CONTAINER WITH BUILT-IN PROBE ASSEMBLY AND COUPLING HEAD ASSEMBLY THEREFOR

James S. Stevenson, Oakland, and John J. Rodriguez, Orinda, both of Calif., assignors to Terminator Products, Inc., Oakland, Calif.

Filed May 8, 1978, Ser. No. 903,864
Int. Cl.³ B67D 1/08

U.S. Cl. 222-148

13 Claims



7. A container for holding and from which may be dispensed, a liquid such as a pesticide or other chemicals, said container having a wall including a recessed area inwardly of said container and having an opening, a probe installed concentrically with said opening and extending into said container to substantially the bottom thereof, said recessed area having spaced ports therein about said opening and facing inwardly of said container, said spaced ports comprising pour openings for hand pouring of the contents of said container, and means for sealing said recessed area to preclude loss of contents of said container during shipment, said container having an upper wall with an opening therein bounded by an upstanding flange, and said recessed area including a side wall terminating in a peripheral flange adapted to extend over and rest on said opening flange to support said recessed area, and a pouring spout resting on said recessed area flange and having a flange overhanging said recessed area flange and upper wall opening flange, said flanges being crimped together to fixedly install said recessed area and pouring spout as component parts of said container.

8. A coupling head assembly for coupling to a container in a closed system, said coupling head assembly including a cou-

pling head having an end portion adapted for insertion into an opening in such container, said end portion having a peripheral groove, and a rinse flow passageway in said coupling head and extending from an external exposed wall of said coupling head to said peripheral groove, and a differential pressure valve assembly on an exposed wall of said coupling head, said valve assembly being exposed at one end to atmospheric pressure and at its other end to prevailing pressure in said rinse flow passageway, said coupling head also having another flow passageway terminating at one end of said end portion, said latter flow passageway being independent of said rinse flow passageway, whereby such container may be coupled in a closed system to a hose line for withdrawing chemical from such container and then rinsed upon emptying of such container, by directing rinse liquid into such container via said rinse flow passageway while withdrawing said rinse liquid from such container via said other passageway.

4,245,761

CONTINUOUS CASTING

Ian J. Hazlehurst, and David C. Willard, both of Guelph, Canada, assignors to Fosco Trading, A.G., Chur, Switzerland
Continuation of Ser. No. 312,274, Dec. 5, 1972, abandoned. This application Apr. 22, 1977, Ser. No. 789,943

Claims priority, application United Kingdom, Dec. 7, 1971, 56878/71; Oct. 19, 1972, 48249/72

Int. Cl.³ B22D 41/02

U.S. Cl. 222-590

57 Claims



1. A lined tundish for intermediate pouring of molten metal including an open topped apertured metallic vessel, a nozzle in said aperture, in which the liner comprises a protective expendable material covering the inner walls of said vessel and apertured for registry with said nozzle, said liner formed of a plurality of shaped inserts of combustible material having a known rate of consumability which is sufficiently long to complete a pour of molten metal.

4,245,762

SPARE WHEEL CARRIER

Lars-Olof Nilsson, Transjö Toragård, S-342 00 Alvesta, Sweden
Filed Aug. 31, 1978, Ser. No. 938,448

Claims priority, application Sweden, Sep. 8, 1977, 7710071

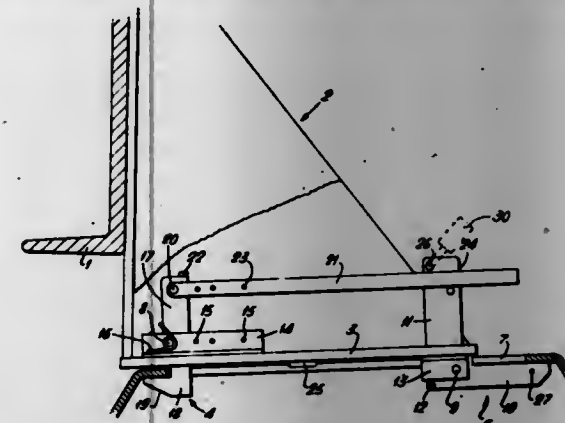
Int. Cl.³ B62D 43/00

U.S. Cl. 224-42.24

6 Claims

1. In a spare wheel carrier for a vehicle and including a frame, means for fastening said frame to said vehicle, first and second hook members respectively pivotally mounted on said frame in spaced relation, said hook members respectively having oppositely extending hook portions depending from said frame and adapted to engage diametrically opposite points on the edge of the center opening of a spare wheel rim: the improvement wherein said hook members respectively have ends opposite said hook portions and are pivoted intermediate said ends and said hook portions, each of said hook members being pivotally movable independently of the other hook member from a first disengaged position to a second position adapted to engage said rim and to press the same against said

frame; and further comprising spring means for biasing said first hook member toward said second position thereof; and an elongated tension bar having opposite ends, one end of said opposite ends of said tension bar being pivotally connected to said end of said first hook member, the other end of said opposite ends of said tension bar being selectively pivotally movable



from a first disengaged position to a second position in engagement with said end of said second hook member, said other end of said tension bar and said second hook member end having means for pulling said end of said second hook member toward said end of said first hook member in response to said engagement thereby pivotally to move said second hook member toward said second position thereof.

4,245,763

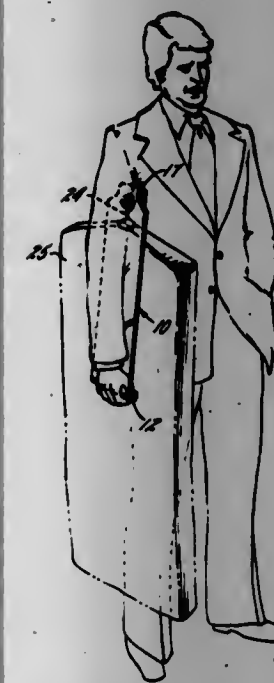
DEVICE FOR CARRYING GARMENT BAG

Judd A. Weinberg, 165 W. Lake St., Northlake, Ill. 60164
Filed Aug. 13, 1979, Ser. No. 65,944

Int. Cl.³ A45F 3/00

U.S. Cl. 224-45 P

5 Claims



1. A garment bag holder for supporting and transporting in vertical position a garment bag having a hook at its upper end comprising, in combination, a substantially flat structural support member dimensioned to extend vertically from the palm to the armpit of the user with the user's arm in substantially straight condition, the support member having an integral hand grip at its lower end in the plane of the member rounded to provide a comfortable fit in the closed palm and having a width dimension of approximately palm width, the upper end of the supporting member presenting an upper edge formed to provide a comfortable fit in the armpit, a hook receiver member at the upper end of the supporting member laterally centered therein and spaced slightly downwardly from its upper edge for receiving the hook of the garment bag and facing inwardly so that the garment bag when suspended on the

supporting member is effectively clamped between the supporting member and the body of the user with the resulting friction against the garment bag tending to inhibit any tendency for the supporting member to topple either forwardly or rearwardly under the arm of the user.

4,245,764

ARTICLE CARRIER HAVING VARIABLY POSITIONABLE CROSS-RAIL BRACKET

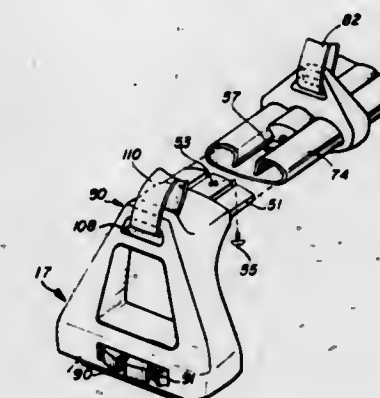
Daniel J. Kowalski, Ortonville, and Douglas J. Ferguson, Davisburg, both of Mich., assignors to Four Star Corporation, Troy, Mich.

Filed Mar. 29, 1979, Ser. No. 24,994

Int. Cl.³ B60R 9/04

U.S. Cl. 224-321

1 Claim



1. An article carrier for an automotive vehicle of the type including an elongated slat fixed to the vehicle exterior and extending longitudinally thereof, said slat having an upwardly opening guideway, a bracket having a base portion slidably retained in said guideway, means for adjustably clamping the bracket to the slat, the bracket having an upper portion which includes a cross-rail supporting section extending normally of the slat, and a cross-rail mounted upon the cross-rail supporting section, the improvement comprising:

- (a) the cross-rail being of a generally oval cross section and having a continuous bottom surface, an upper surface including an upwardly opening channel formed by a pair of inwardly extending side walls, said channel extending throughout the length of the cross-rail;
- (b) an elastomeric seal member enclosing said cross-rail channel;
- (c) the cross-rail supporting section of said bracket being generally of the same oval cross section as the cross-rail and including a pair of slots adapted to receive the inwardly extending side walls of the cross-rail;
- (d) a bracket mounted on and slidably adjustable throughout the length of said cross-rail, said bracket including a lower portion having a first transverse opening corresponding generally to the oval cross section of the cross-rail and surrounding said rail, an upper portion having a second transverse opening adapted to receive an article retaining strap, and means coacting with the continuous bottom surface of said cross-rail to releasably clamp said bracket to the cross-rail.

4,245,765

DISPENSER FOR ABRASIVE DISCS

Edward H. Gregg, Woodstock, Conn., assignor to Norton Company, Worcester, Mass.

Filed Sep. 10, 1979, Ser. No. 73,947

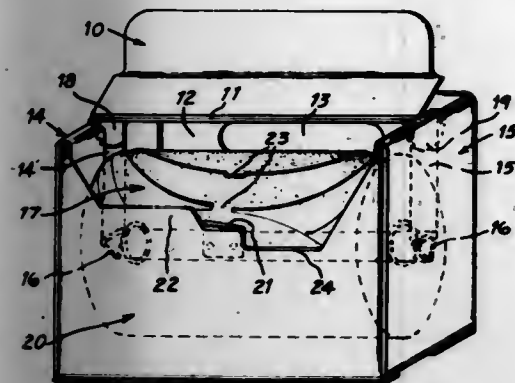
Int. Cl.³ B26F 3/02

U.S. Cl. 225-13

3 Claims

1. A dispensing package for coated abrasive disc joined edge to edge in a roll, said container having side walls, a cover, and a front wall, said front wall supporting a cutter bar, means on

said front wall projecting above the cutter bar at one end thereof to engage in the space between two discs adjacent their join to thereby align the join with the cutter bar, and a recess



extending below the cutter bar at the other end thereof for manual access to the next to be dispensed adjacent disc on the roll, said side walls providing means for rotatably supporting said roll.

4,245,766

FLYING STITCHER

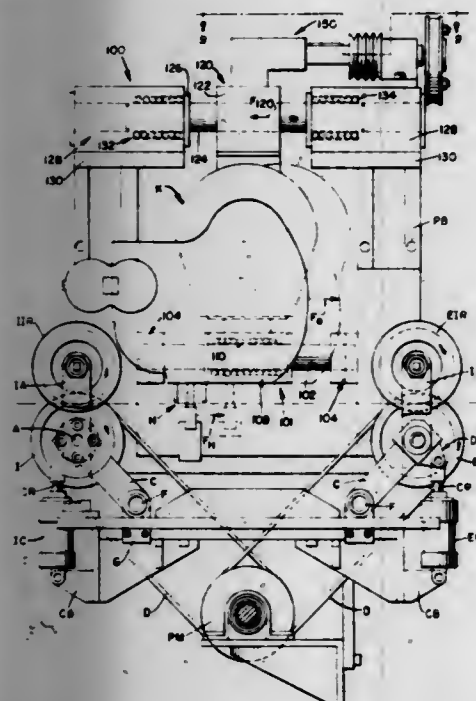
Claris E. Johnson, Alexis, and Hubert C. Crump, Galesburg, both of Ill., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Sep. 25, 1978, Ser. No. 945,551

Int. Cl.³ B27F 7/17

U.S. Cl. 227-7

44 Claims



1. A flying stitcher for stitching panels comprising:
 - a support means having a forward end and a rear end;
 - panel moving means on said support means for moving a panel to be stitched from said forward end to said rear end;
 - stitcher head support means movably mounted on said support means for movement between a forward position and a rear position;
 - a stitcher head mounted on said stitcher head support means for movement therewith for placing stitches in a panel as such panel moves from said support forward end to said support rear end;
 - said stitcher head support means including a first horizontally disposed precision shaft immovably mounted on said support means, a first lineal ball bearing bushing movably mounted on said first precision shaft, second and third lineal ball bearing bushings securely mounted on said support means above said first precision shaft to form with said first ball bearing bushing apices of an upright triangle,

and a second horizontally disposed precision shaft movably mounted in said second and third ball bearing bushings, said stitcher head being attached to said first lineal ball bearing bushing and to said second precision shaft with said triangular configuration of said bearing bushings providing stability to maintain said stitching head precisely positioned while permitting said head to reciprocate between said support means forward and rear ends; and a motor mounted on said support means and connected to said stitcher head to move said stitcher head.

4,245,767

APPARATUS FOR EFFECTING MULTI-BEAD WELDING OF TWO WORKPIECES

Erik Hansen, Gentofte, Denmark, assignor to Burmeister & Wain A/S, Copenhagen, Denmark

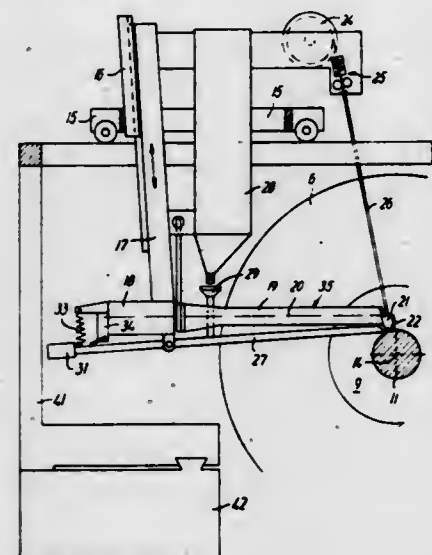
Filed Apr. 16, 1979, Ser. No. 30,437

Claims priority, application Denmark, Dec. 19, 1978, 5700/78

Int. Cl.³ B23K 9/12

U.S. Cl. 228-27

4 Claims



1. Apparatus for effecting a multi-bead welding of two workpieces in a gap between opposed, substantially parallel end faces of the workpieces, comprising:
 - means for supporting said workpieces for a rotation about a common center line,
 - means for rotating said workpieces in unison about said center line,
 - a filler wire supply outside said gap and wire feed means for mechanically advancing a filler wire from said supply towards a welding position within said gap,
 - a filler wire holder shaped as a thin arm extending into into said gap and supported at its rear end outside said gap in a bearing for pivoting about an axis perpendicular to said common center line, said pivot axis being located within the contour of the cross-section of said arm,
 - wire gripping means on the forward end of said arm adjacent said welding position,
 - means for displacing said bearing and the filler wire holder supported therein towards and away from said common center line, and
 - a filler wire guide tube extending from said wire feed means toward said wire gripping means, said guide tube being stationary relative to said bearing and extending at an angle to said pivot axis at its forward end adjacent said wire gripping means.

4,245,768

METHOD OF COLD WELDING USING ION BEAM TECHNOLOGY

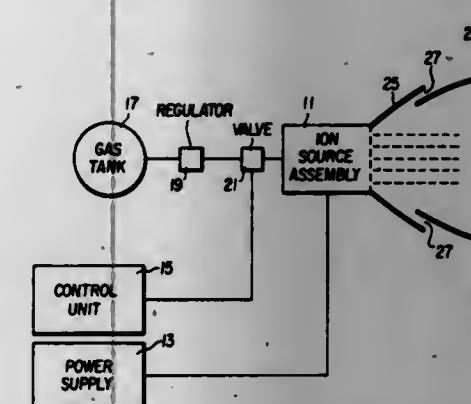
Bernard L. Sater, Olmsted Falls, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 28, 1978, Ser. No. 929,084

Int. Cl.³ B23K 20/14, 20/24

U.S. Cl. 228-116

14 Claims



1. A method of cold welding using ion beam technology to prepare surfaces to be joined comprising the steps of:
 - providing two metal surfaces to be joined, each surface having asperities and covered with a contamination oxide layer;
 - disposing the two surfaces in a vacuum environment at a pressure between 10^{-4} and 10^{-6} torr;
 - directing a unidirectional ion beam of gas molecules having uniform energies onto each surface in said vacuum environment to sputter away the contamination oxide layer and expose clean underlying metal; and
 - pressing together the two surfaces while in said vacuum prior to their being recontaminated with pressure sufficient that their asperities are brought into intimate contact but sufficiently low as not to produce gross deformation and cold work hardening to form a cold welded joint.

4,245,769

LAMINATE BONDING METHOD

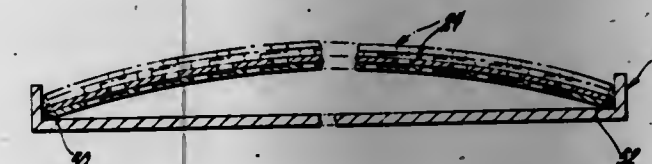
George B. Meglani, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1979, Ser. No. 53,075

Int. Cl.³ B23K 31/02

U.S. Cl. 228-173 B

3 Claims



1. A method for fabricating a porous laminated structure comprising the steps of: forming a first sheet with a first determined array of openings therein, forming a second sheet with a second array of openings therein offset with respect to said first array of openings, stacking said first and second sheets together to form a joint line therebetween and to align end edges thereon as well as to align said first and second array of openings to form a coolant flow path through said stacked sheets having a portion thereof parallel to the joint line and a portion thereof perpendicular thereto, connecting said end edges to fixedly secure said first and second sheets together, stretch forming the stacked sheets under tension to cause the first and second sheets to exceed their elastic limit to effect an intimate fit along the mating surfaces at a joint line therebetween, and thereafter bowing the sheets and restraining the ends of the previously stretched material to produce a bond

pressure between mating surfaces of the first and second sheets to hold such surfaces together at the joint line therebetween without imposition of direct mechanically imposed loads on the outer surfaces of the joint sheets and subjecting the restrained and pressure loaded surfaces to an elevated bonding temperature for a predetermined period of time without excessive dissipation of energy into the fixture while restraining the joined sheets as a diffusion bond occurs therebetween.

4,245,770

EGG CONTAINERS

Ian S. Donaldson, Holywood, and Dennis Legge, Bangor, both of Northern Ireland, assignors to The Queen's University of Belfast, Belfast, Northern Ireland

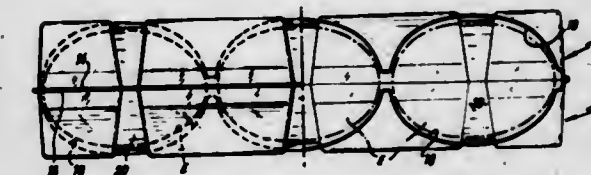
Filed May 8, 1978, Ser. No. 903,736

Claims priority, application United Kingdom, May 7, 1977, 19229/77

Int. Cl.³ B65D 81/16, 85/32

U.S. Cl. 229-2.5 EC

9 Claims



1. A pre-pack for a plurality of axially aligned egg cells, comprising two halves securable together in such manner that the halves are readily and repeatedly separable from each other, each half having external support surfaces and a plurality of internal egg contacting formations within each cell and spaced inwardly from the external surfaces, the formations on closure of the pre-pack defining a plurality of single-egg accommodating locations supporting eggs with their major axes in alignment and preventing eggs therein from coming into contact with each other, each said single-egg accommodating location being defined by a circumferentially extending formation shaped to contact the egg only at its waist region thereof which waist region comprises the circumference of the egg at its minor axis, and a longitudinally-extending formation intersecting said circumferentially extending formation and shaped to contact the egg only at the extremities of the egg at its major axis.

4,245,771

CONTAINER HAVING TRAPEZOIDAL CROSS-SECTION

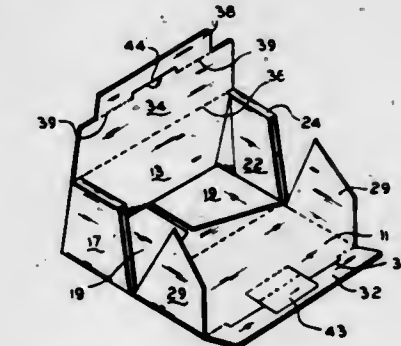
William G. Christian, Ravenna, Ohio, assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 3, 1980, Ser. No. 165,696

Int. Cl.³ B65D 5/10

U.S. Cl. 229-22

5 Claims



1. A container having a trapezoidal cross-section and formed from a unitary blank of paperboard or the like, comprising:
 - (a) front, bottom and back panels connected along parallel score lines;

- (b) opposed trapezoidally shaped outer end panels foldably secured to opposite edges of said back panel;
- (c) bottom panel reinforcing flaps foldably joined to said outer end panels along the first edges thereof and overlying said bottom panel;
- (d) each of said bottom panel reinforcing flaps having a slot formed therein;
- (e) inner end panels foldably joined to the second edges of said outer end panels and extending into said slots for locking engagement therewith;
- (f) said inner and outer end panels defining recesses therebetween;
- (g) tuck flaps foldably attached to the ends of said front panel and movably received in said recesses;
- (h) a first top locking flap hinged to said front panel and folded with respect thereto into substantially parallel relationship with said bottom panel thereby forming a portion of a top closure of said container;
- (i) a second top locking flap hinged to said back panel and folded with respect thereto to overlie said first top locking flap thereby closing the top of said container.

4,245,772

CARTON HAVING RECLOSABLE OR REMOVABLE TOP AND BLANK FOR FORMING SAME

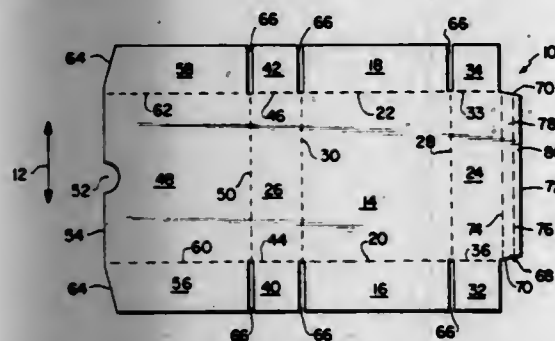
Ronald V. Johnson, Port Washington, Wis., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 13, 1979, Ser. No. 57,165

Int. Cl.³ B65D 5/22, 5/54

U.S. Cl. 229—33

1 Claim



1. A planar, unitary blank formed of paperboard and adapted to be folded into a carton comprising:
- a bottom panel having first and second side panels hingedly attached at opposite side edges of said bottom panel along fold lines;
- front and back panels attached to said bottom panel on opposite front and back edges thereof, respectively, along fold lines;
- flap means for securing said side panels to said front and back panels;
- a top panel hingedly attached to said back panel at an edge thereof remote from said bottom panel along a scored fold line to facilitate separation thereof, said top panel having first and second top flaps hingedly attached to opposite side edges thereof along fold lines, with the edges of said top flaps remote from said back panel being chamfered, and said top panel having a notch formed in an edge thereof remote from said back panel; and
- a glue lap hingedly attached to said front panel along a fold line, the side edges of said glue lap being tapered from the attachment of said glue lap to said front panel to the free edge of said glue lap, said glue lap having a reverse fold line therein extending parallel to the fold line between said glue lap and said front panel.

4,245,773

CONTAINER WITH STACKING ALIGNMENT AND LATCHING STRUCTURE

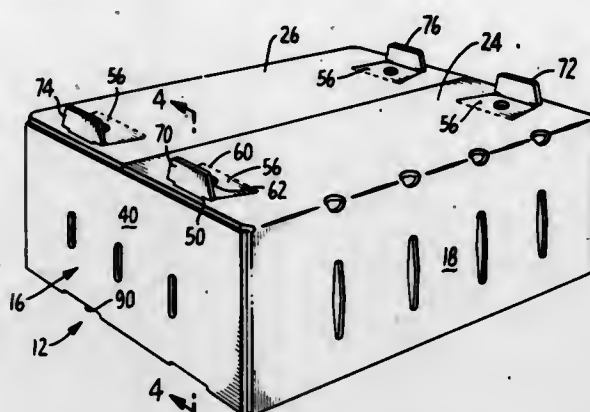
Ray H. Stollberg, Gilroy, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Aug. 22, 1979, Ser. No. 68,781

Int. Cl.³ B65D 13/00, 5/32

U.S. Cl. 229—33

7 Claims



1. A container comprising the combination of:
- a box body having a bottom wall and interconnecting side walls defining a box interior;
- a cover for said box body having at least one aperture formed therein,
- latch means attached to at least one of said side walls, each said latch means positionable in an aperture with a portion thereof extending above said cover in latching position when said cover is positioned over said box interior; and
- auxiliary lock means on said cover for maintaining said latch means in latching position with respect to said cover, said cover aperture including a first aperture segment accommodating said lock means and a second aperture segment in communication with said first aperture segment, said latch means assuming a latching position in said second aperture segment when said cover is positioned over said box interior, and said lock means being connected to the rest of said cover along a fold line and selectively manually movable about the fold line from an open position wherein said first aperture segment is unobstructed to a closed position wherein said first aperture segment is closed, and said lock means bearing against said latch means when said lock means is in said closed position.

4,245,774

CONTAINER SECURITY CLIP

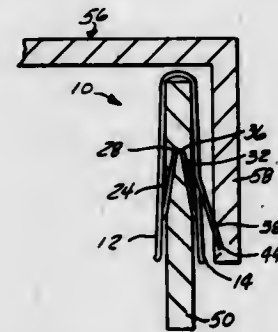
Walter F. Heinz, Jr., New Haven, Mich.

Filed Sep. 28, 1979, Ser. No. 79,789

Int. Cl.³ B65D 45/06, 45/16

U.S. Cl. 229—47

10 Claims



1. A security clip adapted to be slid over the edge of the side wall of an open-ended container comprising:
- a U-shaped member having first and second spaced legs;
- each of said first and second spaced legs including at least one integral projection disposed between said first and second legs and extending vertically upward from the depending end of said first and second legs; and

- one of said first and second legs including at least one second integral projection depending downward towards the end of said one leg and extending outward from said one leg.

4,245,775

TWO-WAY POSTAL CARD AND ENVELOPE

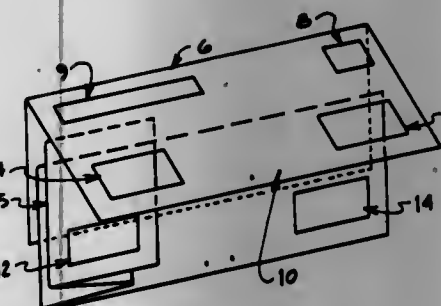
John L. Conn, P.O. Box 4501 Sta. B, Spartanburg, S.C. 29303

Filed Oct. 10, 1979, Ser. No. 83,257

Int. Cl.³ B65D 27/04, 27/06

U.S. Cl. 229—71

2 Claims



1. In combination, the construction of a two-way postal message card and envelope wherein the envelope is constructed from a flat sheet of paper or the like wherein said sheet is folded or creased along a centrally located line so as to form upper and lower areas which are substantially rectangular in shape and substantially equal in length and width, said areas being approximately the size of a common postal card, at least one of said areas including cut-outs which form a mailing address window and a return address window which are generally horizontally aligned with one another, said message card being constructed from a flat sheet of paper or the like having a length which is approximately twice the length of each of said areas and a width which is approximately the same as the width of each of said areas, said message card being divided into approximately equal FIRST and SECOND PORTIONS by means of a first substantially vertical fold line, said message card further including FIRST and SECOND SURFACES on opposite sides thereof, SAID FIRST PORTION including an initial mailing address and an initial return address generally horizontally aligned and positioned ON SAID FIRST SURFACE so as to be aligned with said mailing and return address windows in said envelope when said message card is folded about said vertical fold line and inserted into said envelope, said first portion including a second approximately vertical fold line located between said initial and return addresses and dividing said first portion into substantially equal left and right parts, said initial mailing address being located in said right part and said initial return address being located in said left part, said left part including a third substantially vertical fold line dividing it substantially in half, said second portion including a remailing address on the second surface thereof, said remailing address being located in aligned, underlying relationship with said initial mailing address when said message card is folded in half and the second surface of said first portion is in substantially complete contacting relationship with the second surface of said second portion, said first portion being additionally foldable about said second and third substantially vertical fold lines so as to cover up said initial return address with said initial mailing address and expose said remailing address, said initial mailing address and said remailing address being in substantially horizontal alignment.

4,245,776

PASS-THROUGH DRAWER ASSEMBLY

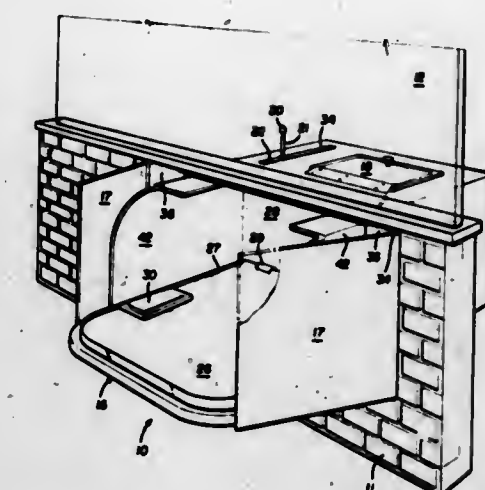
John E. Miner, Warren, Mich., assignor to Security Corporation of Michigan, Royal Oak, Mich.

Filed Jun. 26, 1979, Ser. No. 52,156

Int. Cl.³ E06B 7/32; E05G 7/00

U.S. Cl. 232—43.3

10 Claims



1. A pass-through drawer assembly for transferring food and other commodities from an operator inside an enclosure to a customer outside the enclosure, said drawer assembly comprising:

- (a) a stationary box-like frame housing having an open end, exterior doors being pivotally connected to mounting portions on the open end of said stationary housing;
- (b) a drawer frame mounted within said stationary frame housing on glide means and said drawer frame being movable horizontally from a retracted position inside said stationary housing to an extended position partially outside said housing, said drawer frame having upstanding spaced apart side walls, a rear wall, and a bottom cam plate joining the bottom edges of the side walls and rear wall, said cam plate having a pair of opposed cam slots for controlling the opening and closing of the exterior doors;
- (c) cam follower means mounted to each of said exterior doors and movable within a respective cam slot of said drawer frame cam plate;
- (d) a handle device for extending and retracting said drawer frame, said handle device secured at one end to said drawer frame and said handle device being movable within a slot in said stationary frame housing; said handle device being used by an operator for extending said drawer frame to open said exterior doors so that the drawer frame passes between said doors to its extended position and for retracting said drawer frame to close said exterior doors and return said drawer frame to its retracted position; and
- (e) said cam slots being configured to only permit said exterior doors to open less than 90° and said doors and drawer frame automatically moving to a closed position if the doors are struck in their less than 90° open position, said opposed cam slots in said drawer frame cam plate are curved for controlling the opening and closing of said exterior doors, a first portion of one cam slot being generally colinear with a first portion of the other cam slot and said cam slots having second portions that are generally parallel to each other, each said exterior door is mechanically joined to a respective cam slot by a roller bearing cam-follower device mounted on an angle bracket secured to said door, said cam followers moving within said cam slots as said drawer frame is extended outwardly such that the exterior doors are progressively opened, and as said drawer frame is retracted, the cam slots and cam followers progressively closing said exterior doors.

4,245,777

CENTRIFUGE APPARATUS

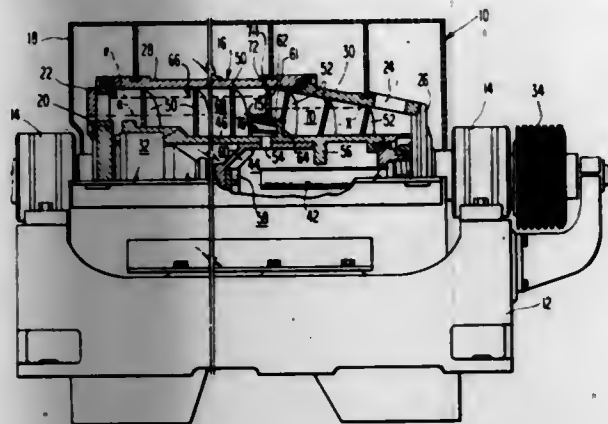
Andre C. Lavanchy, Devon, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 30, 1979, Ser. No. 70,946

Int. Cl.³ B04B 1/20

U.S. Cl. 233—7

10 Claims



1. Decanter centrifuge for separately discharging light and heavy phase materials from a mixture thereof, comprising a rotating, imperforate, cylindrical centrifuge bowl having one end thereof conically tapered, discharge ports for light phase material at the end wall of said cylindrical portion, and discharge ports for heavy phase material at the conical portion, the weir surfaces of the discharge ports for the light phase material having a shorter radial distance from the rotational axis of said bowl than the weir surfaces of the discharge ports for said heavy phase material, further comprising a screw conveyor coaxially mounted within the bowl for rotation relative thereto, the helical flights of the screw conveyor mounted coaxially with a feed cone and an annular baffle on a hub, with said feed cone being disposed radially outward of an outlet in the hub for the mixture, said helical flights being adapted to the contour of said bowl, with cylindrical and conical portions of the flights extending to the inner surface of corresponding cylindrical and conical portions of the bowl, thereby forming a chamber for said mixture helically wound around the rotational axis within the bowl, said chamber including a cylindrical separating zone and a conical discharge zone on opposite sides of said baffle, the outer edge of said baffle being spaced from the inner surface of said bowl to provide a restricted passageway between the separating zone and the discharge zone, characterized in, that said annular baffle is rigidly mounted on the outer surface of said feed cone in a position normal to said axis, and that the radial distance from said axis to the larger end of said feed cone is about equal to the radial distance from said axis to the weir surface of the discharge ports for the light phase material.

4,245,778

VENT CONTROL ARRANGEMENT FOR COMBUSTION APPARATUS

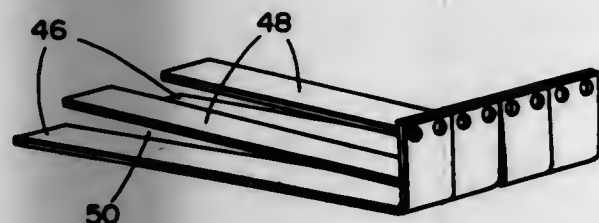
Werner Diermayer, 1275 Panorama Dr., Lafayette, Calif. 94549

Filed Jan. 12, 1979, Ser. No. 2,897

Int. Cl.³ F23L 3/00; G05D 23/08

U.S. Cl. 236—1 G

3 Claims



1. A vent control arrangement for use with a gas-fired heating apparatus, including the combination of a draft hood for

receiving gases from the apparatus, a relief opening, and an outlet for directing a discharge flow of gases to a vent, a damper frame mounted within the draft hood, means forming a closure passage in the damper frame at a position upstream of the draft hood outlet and with the passage having a cross-sectional area greater than the cross-sectional area of said outlet, and temperature-responsive means shaped to project across the closure passage and to change shape responsive to temperature change for opening and closing the passage, said temperature-responsive means including a plurality of bimetal strips disposed across the closure passage, with at least one of said strips being formed of a bimetal having a given flexivity and which is disposed in side-by-side relationship with one or more other of said strips which is formed of a bimetal having a flexivity which differs from said given flexivity whereby the rate of change of shape for a given temperature change differs for the strips of different flexivity to provide additional openings between the strips and thereby achieve a disproportionately large opening of the closure passage during an initial phase of temperature change.

4,245,779

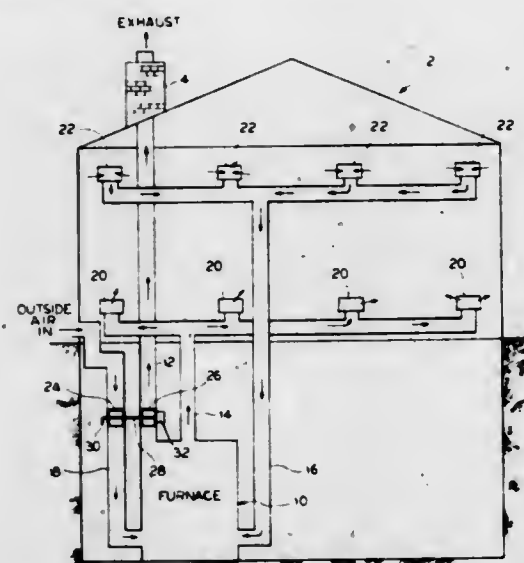
SYSTEM FOR INCREASING HEATING EFFICIENCY

Nestor P. Ardiente, 15314 Bunker Dr., Orland Park, Ill. 60462

Filed Feb. 28, 1979, Ser. No. 16,100

Int. Cl.³ F23N 3/00; G05D 23/00; F23J 13/00
U.S. Cl. 236—1 G

3 Claims



1. A system for increasing the efficiency of a thermostat controlled forced-air type of furnace having an exhaust duct, a hot air duct, and a cool air return duct, comprising: means for providing the furnace with outside air for combustion; movable dampers for regulating the air flow from the outside and through said exhaust duct; a rotatable shaft fixed to said dampers; a solenoid connected to said shaft and capable of rotating it when the solenoid is energized; a first electrical power circuit activated directly by the thermostat for energizing the solenoid; a second electrical power circuit activated when the furnace blower operates for energizing the solenoid if the first power circuit fails to do so; and means for manually rotating said shaft independently of the first and second power circuits, whereby said dampers are positioned by said shaft to obstruct air flow when the furnace is not operating and positioned to permit air flow when the furnace is operating.

4,245,780

TEMPERATURE REGULATOR ASSEMBLY AND SIGNAL MODULATOR THEREFOR

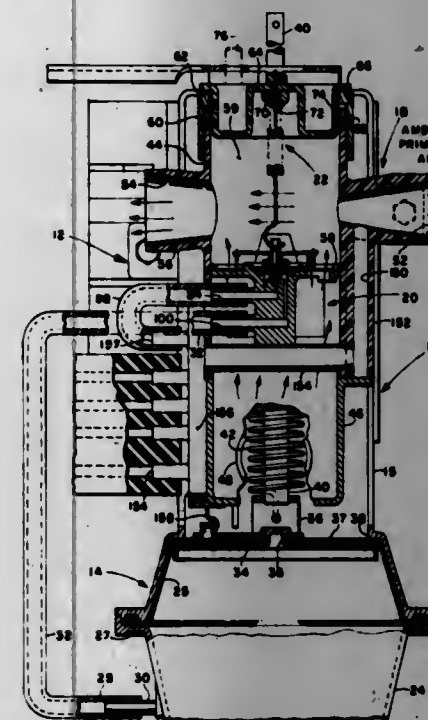
Rudolph J. Franz, Schaumburg, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 18, 1978, Ser. No. 897,604

Int. Cl.³ F24F 7/06

U.S. Cl. 236—13

18 Claims



1. A temperature responsive fluid pressure signal controller usable with vehicular passenger compartment temperature regulators, said controller comprising:

- housing means defining an ambient flow passage for receiving therethrough ambient air external to the vehicle passenger compartment, said housing means further defining an inlet flow passage communicating with said ambient passage, said inlet passage being operable upon flow of ambient air through said ambient flow passage to entrain through said inlet passage in-car air from the vehicle passenger compartment for mixing of ambient and in-car air;
- means defining a fluid pressure chamber;
- means movable in response to changes in pressure within said chamber and including means movable therewith defining a vent port in said chamber;
- means defining a supply port communicating with said chamber and adapted for connection to a source of fluid pressure;
- means defining a signal output port communicating with said chamber and adapted for connection to a fluid pressure actuator;
- signal valve means including means defining a valve seat and a valve member movable with respect to said valve seat and having portions thereof operable to control flow of fluid between said supply port and said chamber, said valve member also being movable with respect to said vent port for controlling venting therethrough;
- temperature responsive means including a bimetal element disposed in said inlet passage in direct contact with said vent defining means and biasing said pressure responsive means in a direction tending to prevent fluid communication between said supply port and said chamber and tending to permit fluid communication through said vent port;
- force bias means including preload means operably connected to said vent port defining means for biasing said vent port defining means in a direction opposing said temperature responsive movement thereof;
- rotary cam means operably connected to said preload means, said cam means including means adapted for attachment thereto, said cam means being rotatable upon

connection of said attachment means to a selectively actuable control for varying the preload of said force bias means; and

(j) wherein said rotary cam means, said bimetal element, said preload means, and said inlet passage are axially aligned in the direction of movement of said valve member, and wherein, upon rotation of said cam means for any selected setting of said force bias means, said pressure responsive means moves to a position causing said valve member to permit fluid flow between said fluid source and said chamber thereby changing the pressure in said chamber and causing said pressure responsive means to move to a position causing said valve member to block flow through said supply port and wherein the force bias of said bimetal element in response to sensed temperature in said in-flow passage, increases with increasing temperature to overcome the pressure-balanced force of said force bias means and move said vent port and pressure responsive means with respect to said valve member to thereby vent said chamber causing pressure responsive means to yield to the force of said force bias means and thereby moving said vent port with respect to said valve member to block flow through said vent port thereby bringing said pressure responsive means and said bias means in force equilibrium.

4,245,781

ENGINE COOLING SYSTEM THERMOSTAT AND METHOD OF MAKING THE SAME

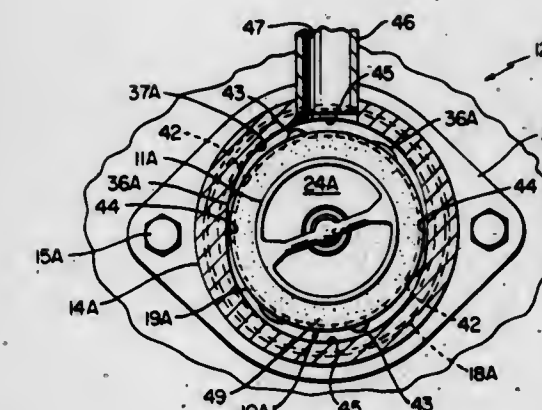
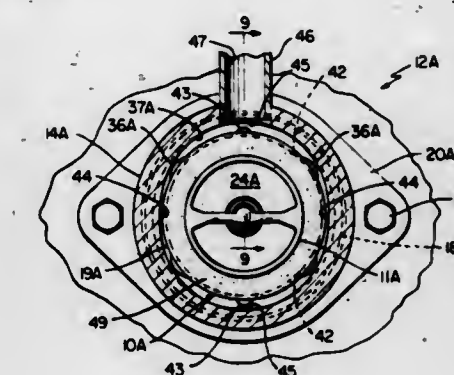
Boyd P. Silger, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 886,536, Mar. 14, 1978, Pat. No. 4,171,767, which is a division of Ser. No. 688,751, May 21, 1976, Pat. No. 4,091,991. This application Mar. 28, 1979, Ser. No. 24,576

Int. Cl.³ F01P 7/02

U.S. Cl. 236—34.5

26 Claims



1. In a vehicle type thermostat having a housing means provided with a valve seat that is controlled by a movable valve member which is interconnected to a temperature responsive device that is carried by said housing means, the improvement wherein said housing means has interference fit positioning means thereon for rotationally orienting said housing means in a vehicle engine cooling system whereby said

thermostat can be disposed in the desired rotational position in said cooling system, said interference fit positioning means comprising a plurality of abutments on said housing means, said housing means including a substantially cylindrical section, said abutments being integral with said section, said cylindrical section having a plurality of opening means passing therethrough, said cylindrical section having a plurality of tab means extending outwardly therefrom respectively adjacent said opening means.

10. In a vehicle engine cooling system having an outlet housing provided with an opening receiving a vehicle type thermostat having a housing means provided with a valve seat that is controlled by a movable valve member which is interconnected to a temperature responsive device that is carried by said housing means, the improvement wherein said opening of said outlet housing has a substantially oval cross-sectional configuration defined by opposed pairs of surface means of said outlet housing that respectively define a major diameter and a minor diameter of said oval opening therebetween, said housing means having interference fit positioning means thereon engaging said pair of opposed surface means of said outlet housing that define said minor diameter of said oval opening thereof for rotationally orienting said housing means in said opening of said outlet housing whereby said thermostat can be disposed in the desired rotational position in said cooling system, said interference fit positioning means of said thermostat comprising a plurality of abutments on said housing means, said housing means including a substantially cylindrical section, said abutments being integral with said section, said cylindrical section having a pair of diametrically disposed opening means passing therethrough, said outlet housing having an exit means intersecting with said opening thereof, said desired rotational position of said thermostat orienting one of said opening means with said exit means, said cylindrical section having a pair of diametrically disposed tab means extending outwardly therefrom respectively adjacent said pair of opening means, said pair of tab means defining a diameter therebetween that is larger than said minor diameter of said oval opening of said housing means.

4,245,782

FUSIBLE LINKAGE AQUATIC DEVICE THAT WILL OVERRIDE THE FAILURE OF A DEFECTIVE THERMOSTAT OR THE LIKE WITHIN A MOTOR

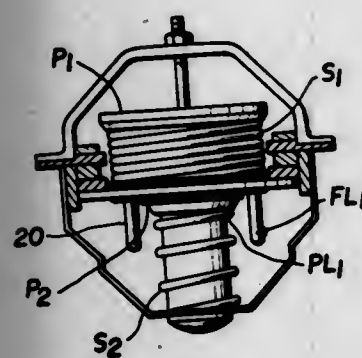
George Brown, 317 S. Harbor Dr., Venice, Fla. 33595

Filed Jan. 6, 1979, Ser. No. 46,060

Int. Cl.³ F01P 7/02

U.S. Cl. 236—34.5

3 Claims



1. A device for opening an inoperative thermostat or the like in a liquid cooling system, the thermostat having a plunger, said device comprising:

spring means for urging the plunger to an open position, and means for restraining the opening force of said spring means, said restraining means comprising a first member in engagement with one end of said spring means and a second member in engagement with the other end of said spring means, and fusible means connecting said first and second members to maintain said spring in a compressed condition, said fusible connecting means serving to release said spring means when exposed to a predetermined tempera-

ture of the cooling liquid to enable said spring means to move said plunger to said open position.

4,245,783

CONDENSATION STEAM TRAP COMPRISING A PLATE-LIKE BIMETAL BODY HAVING A CURVED STAPE

Hans Richter, Reinthalerstrasse 6, 2800 Bremen 1, Fed. Rep. of Germany

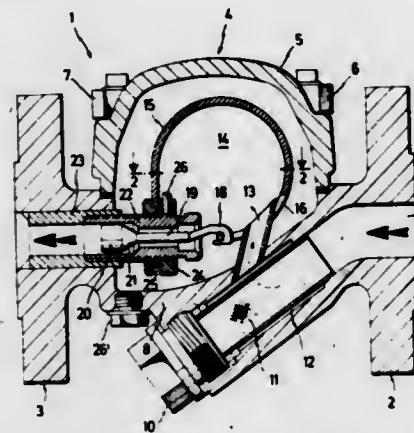
Filed May 7, 1979, Ser. No. 36,298

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822351

Int. Cl.³ F16T 1/08

U.S. Cl. 236—59

8 Claims



1. For use in a condensation steam trap having a housing, a passage through the wall of the housing, a valve movably disposed within said passage and engageable with a valve seat therein for controlling the opening and closing of said passage; a temperature-sensitive, valve-activating device disposed within said housing, said device being in the form of a curved bimetallic band having inner and outer extended area circumferential surfaces, one end of said band being rigidly secured within said housing, the other end being movable relative to said housing, the other end portion of said band having a clearance opening therein, means for moving said valve toward said valve seat in response to movement of said other band end including a lost motion connection and a condensate inlet pipe passing through the wall of and extending into said housing and having its inner end directed through said clearance opening and tangentially toward the inner circumferential surface of said band.

4,245,784

METHOD AND APPARATUS FOR PROVIDING ELECTROSTATICALLY CHARGED AIRLESS, ROUND SPRAY WITH AUXILIARY GAS VORTEX

Felix Garcia, Grenoble, France, assignor to Air Industrie, Courbevoie, France

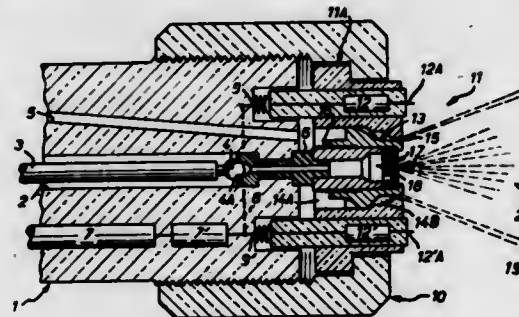
Filed Mar. 6, 1979, Ser. No. 18,022

Claims priority, application France, Mar. 8, 1978, 78 06610; Feb. 15, 1979, 79 03875

Int. Cl.³ B05B 5/02

U.S. Cl. 239—3

10 Claims



1. A method of spraying electrostatically charged liquid for

coating an article, comprising airlessly atomizing liquid to be sprayed under hydrostatic pressure into a round spray imparted with both an axial component of velocity and whirling motion, charging the atomized spray in an axially symmetrical electrostatic field, the improvement comprising the steps of forming around the round spray a coaxial annular auxiliary gas vortex imparted with whirling motion, and maintaining the gas flow rate for supplying the auxiliary gas vortex at or above a value at which spray pattern irregularities disappear.

4,245,785

SYSTEM FOR SPRAYING LIQUID EMULSION AND SOLVENT THEREFOR

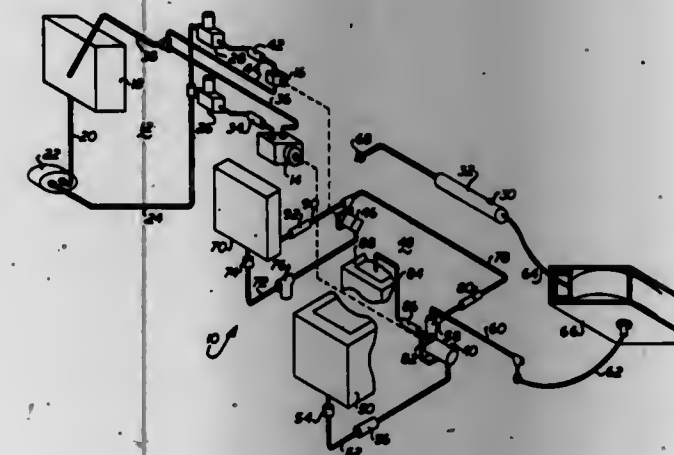
Paul G. Johansing, Jr., 14069 Bayside Dr., Norwalk, Calif. 90650

Filed Feb. 22, 1979, Ser. No. 13,973

Int. Cl.³ B05B 15/02

U.S. Cl. 239—112

10 Claims



1. A system for spraying liquid asphalt emulsion and a solvent comprising the combination of a source of liquid asphalt emulsion, means for dispensing a spray, check valve means coupling the source of liquid asphalt emulsion to the means for dispensing and operative in response to the presence of a pressure differential thereat to pass liquid asphalt emulsion from the source of liquid asphalt emulsion to the means for dispensing, a source of solvent coupled to the check valve means, means coupled between the source of solvent and the check valve means for preventing flow of liquid asphalt emulsion from the check valve means to the source of solvent, the check valve means further being operative in response to the presence of a pressure differential thereat to pass solvent from the source of solvent to the means for dispensing while normally blocking the flow of solvent to the source of liquid asphalt emulsion, and means coupled between the source of liquid asphalt emulsion and the check valve means for preventing flow of solvent from the check valve means to the source of liquid asphalt emulsion.

4,245,786

OSCILLATING LAWN SPRAY WITH VARIABLE WIDTH AND LENGTH

Johan E. Abrahamsen, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Apr. 16, 1979, Ser. No. 30,326

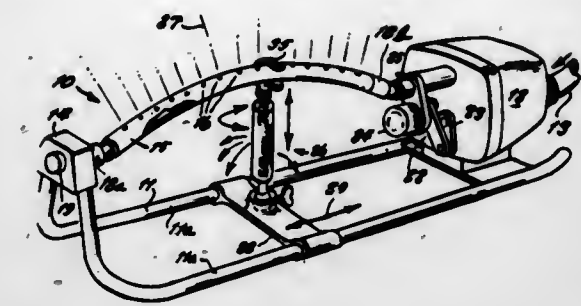
Int. Cl.³ B05B 3/16

U.S. Cl. 239—242

6 Claims

1. An oscillating lawn spray device with variable width and length of spray area, comprising a frame having a water driven oscillating mechanism at one end and a bearing block at the opposite end spaced from said mechanism, said mechanism including an inlet adapted for connection to a water supply and rotatable outlet fitting oscillated by said mechanism in combination with a flexible spray hose having spaced perforations, said hose being secured at one end to said fitting and at its other end to an adapter mounted on said block providing for hose rotation relative to said block, in further combination with

means on said device for varying the curvature of said spray hose causing thereby variations in the length of the spray pattern due to the angular change in the direction of emission



of each spray stream from said holes, said means including an adjustable member contacting said hose at various longitudinal positions thus causing varying hose contours.

4,245,787

VARIABLE AREA NOZZLE SYSTEM

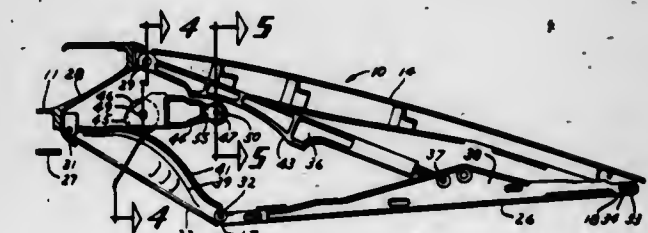
Wilbert B. Freid, Swampscott, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Dec. 1, 1978, Ser. No. 965,643

Int. Cl.³ B64C 15/06

U.S. Cl. 239—265.41

4 Claims



1. A variable area nozzle system for a gas turbine engine comprising in combination:

- a convergent flap pivotally connected to said engine;
- a divergent flap pivotally connected to said convergent flap;
- a rotatable compression link pivotally connected to said engine and to said divergent flap;
- an outer flap pivotally attached at its upstream end to said engine and at its downstream end to said divergent flap; and
- an actuator adapted to selectively modulate said variable area nozzle between a fully closed position and a fully open position, said actuator adapted to operatively engage said convergent flap for rotating said convergent flap in a first direction of rotation, said actuator further adapted to operatively engage said compression link for rotating said compression link in a second direction of rotation.

4,245,788

DISPENSING DEVICE FOR FLUID MATERIAL

Hershel E. Wright, P.O. Box 51, Decatur, Ill. 62525

Filed Mar. 20, 1978, Ser. No. 888,371

Int. Cl.³ B05B 11/04

U.S. Cl. 239—327

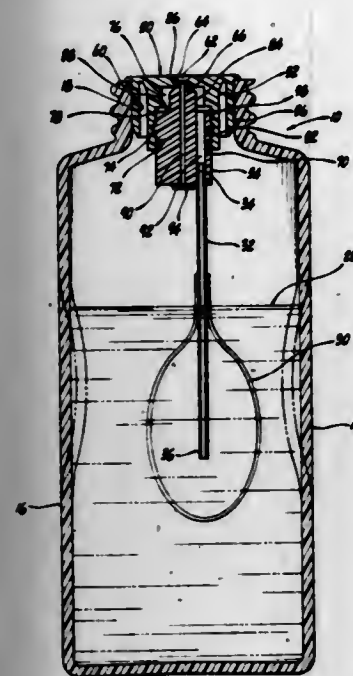
7 Claims

1. A dispensing device for a fluid material comprising:

- (a) a flexible container for holding the fluid material, said container having an end opening,
- (b) an air bag means disposed within the container,
- (c) a closure means disposed in said end opening and including:

- 1. a discharge port defined by substantially fixed inner and outer margins,
- 2. a first passage means operatively communicating between the air bag means and the discharge port, said discharge port providing a reduced cross sectional area between said first passage means and ambience, and

3. a second passage means communicating between the interior of the container and the discharge port between



the inner and outer margins of the discharge port to deliver fluid material into the airstream issuing from the air bag means when the container is pressurized.

4,245,789

ELECTROMAGNETIC FUEL INJECTOR

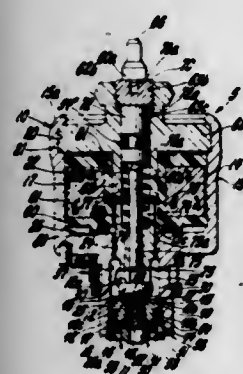
Leo A. Gray, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 3, 1979, Ser. No. 35,523

Int. Cl.³ F16K 31/06

U.S. Cl. 239—585

4 Claims

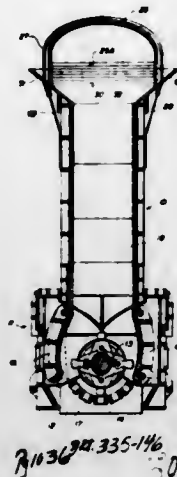


1. In an electromagnetic fuel injector of the type having a hollow tubular body with a stepped bore therethrough providing a fuel chamber therein intermediate its ends adapted to receive fuel, a fuel nozzle positioned in the stepped bore at one end of the body to define a spray tip at the one end and an annular valve seat encircling a discharge passage upstream of the spray tip in communication with the fuel chamber, a valve positioned in the stepped bore for movement into and out of engagement with the valve seat and a solenoid means including stationary pole means and an armature means operatively associated with the valve for controlling movement thereof, the armature means being movable axially in the bore and positioned so as to move into and out of engagement relative to one end of the pole means; the improvement wherein at least one of the opposed end surfaces of the pole means and of the armature means has a roughened surface texture with an average surface roughness rating value of the order of 16 to 32 microinches whereby, during operation, the wear caused by impact or fluid cavitation at said surfaces will be substantially reduced so as to permit for the extended usage of the injector without effecting the original calibration of the injector.

4,245,790
PRESSURE RELIEF FOR MATERIAL SHREDDERS
Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124
Filed May 21, 1979, Ser. No. 40,676
Int. Cl.³ B02C 13/31

U.S. Cl. 241—31

9 Claims



1. In a material reducing shredder providing an open top material feed stack having a known cross-sectional area with material feeding conveyor means connected into the feed stack above the bottom and material shredding rotor means adjacent the bottom of the feed stack, the improvement therein which comprises: vent means surrounding said open top of said feed stack, a cover for said open top feed stack, said cover having a bottom edge presented toward said vent means, support means between said cover and stack spacing said cover from said vent means and over said feed stack open top for providing an opening to the exterior between said cover bottom edge and the top of said stack having an area equal to or greater than said known cross-sectional area of the feed stack; and rupturable closure means normally in position to close the opening between said cover bottom edge and said vent means surrounding the top of the stack.

4,245,791
DEVICE FOR MOUNTING THE BREAKING CONE OF AN INERTIA CRUSHER

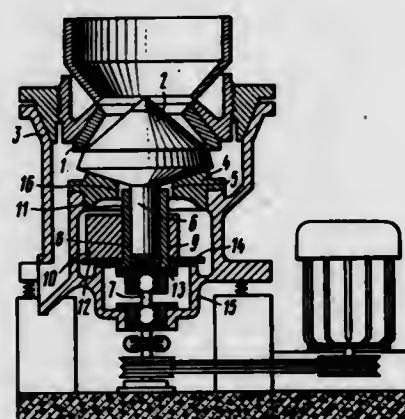
Nikolai A. Ivanov, Novoizmailovsky prospekt, 19, kv. 96; Boris G. Ivanov, Basseinaya ulitsa, 5, kv. 8; Leonid P. Zarogatsky, Uglovoi pereulok, 5, kv. 21; Evgeny S. Mitrofanov, ulitsa Kibachicha, 4, korpus 1, kv. 17, and Vladimir A. Cherkasny, ulitsa Rudneva, 3, korpus 1, kv. 38, all of Leningrad, U.S.S.R.

Filed May 29, 1979, Ser. No. 42,875

Int. Cl.³ B02C 2/04

U.S. Cl. 241—207

4 Claims



1. An inertia cone crusher having a crushing bowl and a breaking cone provided with a shaft and fitted within the crushing bowl to provide a cavity therebetween for crushing a material, comprising:
a shell;
a spherical support having a central cylindrical hole receives said shaft of said breaking cone and is mounted in the top portion of said shell;
a ball spindle mounted in the bottom portion of said shell;

a bush having a bore is interconnected with said ball spindle and said bore is intended to receive said shaft of said breaking cone, the bush is of such a length that its upper end is sufficiently disposed within the central cylindrical hole of said spherical support so that said bush rests, when tilted during removal of said breaking cone, upon the inner wall of the central cylindrical hole of said spherical support;
an out-of-balance weight mounted on the outer surfaces of said bush; and
an annular projection in the bottom portion of said shell serving as a support for said out-of-balance weight when said bush rests upon the wall of the central cylindrical hole of said spherical support.

4,245,792

DEVICE FOR FASTENING AN ARMOUR TO THE CRUSHING CONE OF A CRUSHER

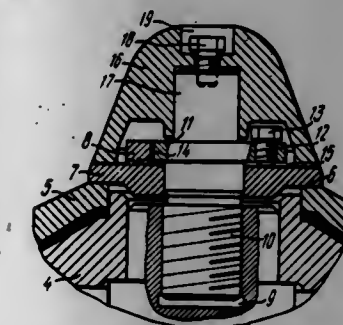
Nikolai A. Ivanov, Novoizmailovsky prospekt, 19, kv. 196; Boris G. Ivanov, Basseinaya ulitsa, 5, kv. 8; Leonid P. Zarogatsky, Uglovoi pereulok, 5, kv. 21; Evgeny S. Mitrofanov, ulitsa Kibachicha, 4, korpus 1, kv. 17, and Vladimir A. Cherkasny, ulitsa Rudneva, 3, korpus 1, kv. 38, all of Leningrad, U.S.S.R.

Filed May 29, 1979, Ser. No. 42,876

Int. Cl.³ B02C 2/04

U.S. Cl. 241—207

1 Claim



1. A device for fastening an armour to the crushing cone of a crusher having an armour-clad outside cone and an armour-clad crushing cone, having a central area, mounted therein on a spherical support, comprising a threaded bore in the central area of said crushing cone, a screw in said threaded bore, a flange rigidly attached to said screw having threaded bores and slots, a pressure bush having projections engaging said slots of said flange and arranged under said flange with a clearance therebetween, and threaded fasteners in said threaded bores of said flange bearing against said pressure bush to fix the clearance between said pressure bush and said flange and generate an interference between the thread of said screw and said threaded bore of said crushing cone.

4,245,793

DRAW OFF CONTROL SYSTEM FOR A ROLL OF MATERIAL

John Stewart, West Horsley, England, assignor to Twiflex Couplings Limited, Middlesex, England

Filed Jul. 24, 1979, Ser. No. 60,122

Claims priority, application United Kingdom, Jul. 27, 1978, 31288/78

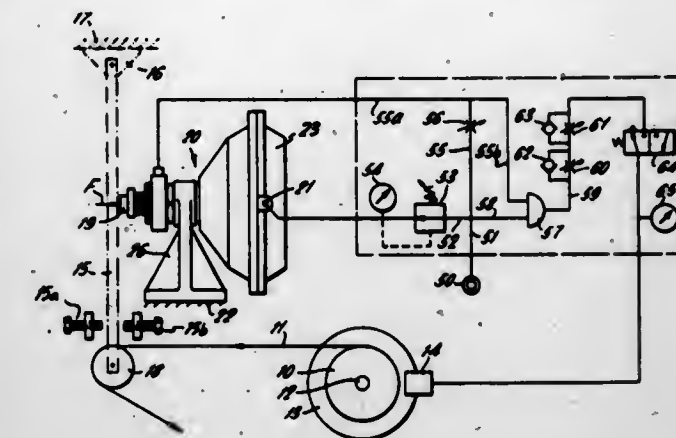
Int. Cl.³ B65H 25/22

U.S. Cl. 242—75.43

12 Claims

1. A draw-off control system for a roll of material, the system comprising a force generating device having a movable force applying member and being capable of generating and applying a force through the member which diminishes with movement of the member in one direction and increases with movement of the member in the opposite direction, means responsive to tension in the material drawn off from a roll of material to apply a force in accordance with the tension to said member counter to the force generated by the device, means for increasing and decreasing tension in the material drawn off from the roll, a control for that device operable to increase the

tension with movement of the member beyond a certain position in said one direction and operable to reduce tension on movement of the member beyond said certain position in the opposite direction and means to adjust the force applied by the



force generating device to the force applying member so that the member is in equilibrium between the force generated and the force applied by the tension responsive means when the member is in said certain position and the material is at the required tension.

4,245,794

YARN WINDING APPARATUS

Katsumi Hasegawa, Kusatsu, and Michio Ohno, Ibaraki, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

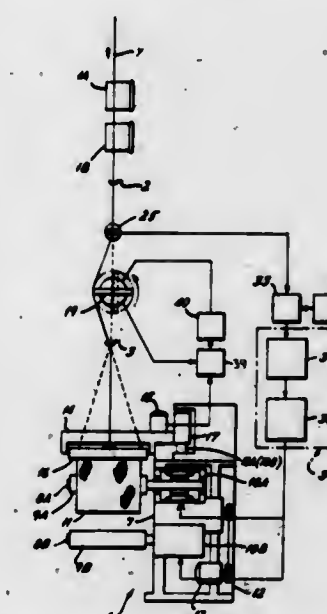
Filed Feb. 6, 1979, Ser. No. 9,958

Claims priority, application Japan, Feb. 16, 1978, 53-16701

Int. Cl.³ B65H 59/38

U.S. Cl. 242—45

14 Claims



1. In a yarn winding apparatus wherein means are provided for supplying yarn at substantially constant speed, and wherein means are provided for winding the yarn into a yarn package and for imparting a traverse motion to the yarn back and forth along the yarn package, the combination which comprises:

- (a) spaced-apart yarn guides disposed upstream of said means for the traverse motion for providing a straight yarn path for said yarn,
- (b) yarn tension sensing means fixed adjacent said path between said spaced-apart yarn guides and having capacity to sense yarn tension and generate a tension signal corresponding thereto,
- (c) yarn deflecting means adjacent said path between said spaced-apart yarn guides and spaced apart from said tension sensing means for deflecting said yarn from its straight-line path to make intermittent contact with said tension sensing means,

- (d) a setting device for generating a signal corresponding to the desired yarn tension,
 (e) means for comparing the aforesaid signals to generate an error signal indicative of the difference between the two signals, and
 (f) means for changing the winder speed in response to the error signal, and which include a further yarn winding apparatus, wherein the said regulator means is also connected to regulate the speed of said further winding apparatus.

4,245,795

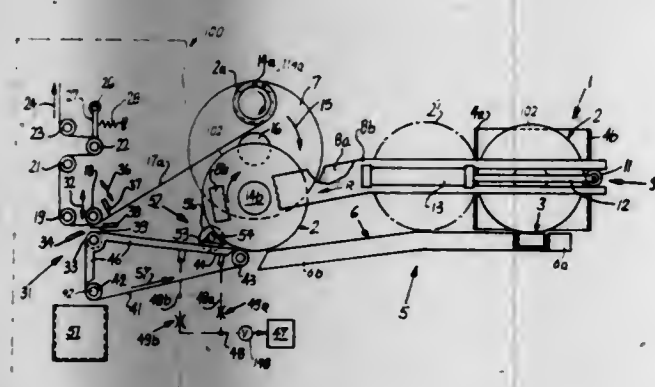
SUPPLYING BOBBINS TO WEB SPLICING DEVICES
 Dieter Ladszeweit, and Karl-Heinz Schlüter, both of Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. Kg., Hamburg, Fed. Rep. of Germany
 Filed Nov. 21, 1979, Ser. No. 96,418

Claims priority, application Luxembourg, Nov. 28, 1978, 80589

Int. Cl.³ B65H 19/20

U.S. Cl. 242—56 R

11 Claims



1. In an apparatus for manipulating bobbins having convoluted webs of cigarette paper or other flexible material, the combination of a magazine for a supply of fresh bobbins; a plurality of holders movable serially to a bobbin receiving station; a transfer unit including means for delivering fresh bobbins serially from said magazine to said station; a severing device at said station; means for moving said severing device relative to the fresh bobbin at said station so that said device severs at least one outermost layer of flexible material on such bobbin; and means for gathering and removing the severed layer or layers of flexible material from said station.

4,245,796

SYSTEM FOR HANDLING FLEXIBLE SHEET ROLLS
 Robert B. Eglinton, Huntington Beach, Calif., assignor to Chromalloy American Corporation, St. Louis, Mo.
 Filed Jan. 15, 1979, Ser. No. 48,981

Int. Cl.³ B65H 17/12

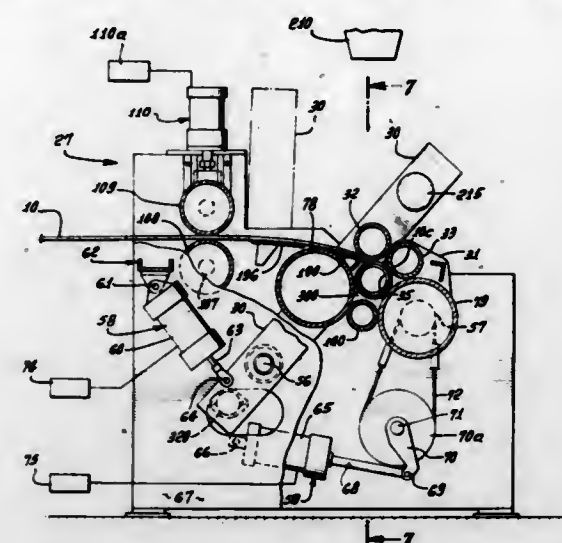
U.S. Cl. 242—66

18 Claims

1. In rollable sheet handling apparatus, and wherein a sheet is subject to advancement in a longitudinally forward direction,

- (a) means to receive the advancing sheet and to roll same,
 (b) said means including support means over which the sheet travels, and auxiliary means including first and second swingable arm means and hold-down and dump rollers carried by the respective first and second arm means to be movable between primary positions in which the hold-down and dump rollers are relatively collapsed toward one another for initiating sheet coiling, and a series of extended positions, in which roll-up of the sheet is guided toward completion into a built-up roll and said hold-down and dump rollers are increasingly spaced apart,
 (c) the dump roll having successively forward and lower positions as the sheet roll builds-up, the hold-down roll having successively rearward and elevated positions as the sheet roll builds-up,
 (d) said support means including multiple transversely elon-

gated drive rolls to support the sheet as it is initially coiled between the drive rolls and the hold-down and dump rollers, said drive rolls and said hold-down and dump



4,245,797

FISHING REELS

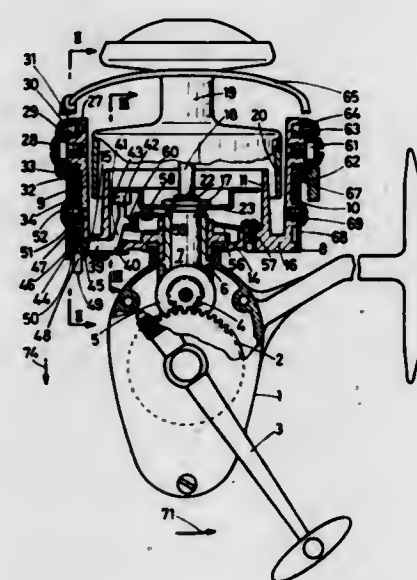
Guy Tissot, Annecy, France, assignor to Mitchell S.A., France
 Filed Jan. 8, 1979, Ser. No. 1,424

Claims priority, application France, Jan. 20, 1978, 78 02811

Int. Cl.³ A01K 89/01

U.S. Cl. 242—84.2 G

8 Claims



1. A fishing reel of the type comprising a spool which is not able to rotate and a drum mounted to rotate about the axis of the spool, a securing arm extending outwardly from a rear part of the periphery of said drum and a support arm extending forwardly from an outer end of said securing arm and spaced from the periphery of said drum, said spool having a rearwardly extending skirt that surrounds the periphery of said drum and passes between said drum and said support arm, a pick-up arm pivotally mounted on said support arm and angularly movable between a first "closed" angular position and a second "open" angular position, means elastically yieldably biasing said pick-up arm to its first "closed" position, and elastically yieldable locking and releasing means for releasably locking said pick-up arm in said second "open" position, said locking and releasing means comprising a plunger slidable longitudinally in said support arm and having a detent portion engageable in a notch in the periphery of said pick-up arm when said pick-up arm is in said second "open" position, means elastically yieldably biasing said plunger to said notch engag-

ing position, an angularly movable shaft in said securing arm and arranged transversely of the axis of rotation of said drum, a transverse arm on the inner end of said shaft, a fixed stop engageable by said shaft arm upon rotation of said drum to move said shaft angularly, and means operatively connecting an outer end portion of said shaft with said plunger to withdraw said plunger from said notch and thereby free said pick-up arm for movement by its bias from said second "open" position to said first "closed" position upon angular movement of said shaft by engagement of said shaft arm with said fixed stop.

4,245,798

LOCKBAR RELEASE AND ANTI-REWIND FEATURE FOR SEAT BELT RETRACTOR

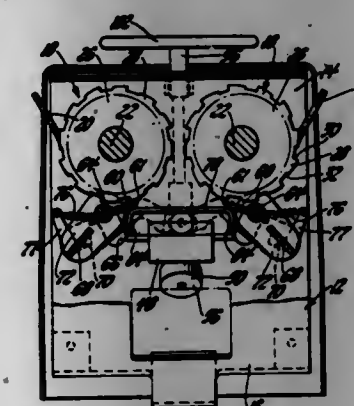
Charles B. Steger, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,510

Int. Cl.³ A62B 35/02; B65H 75/48

U.S. Cl. 242—107.4 A

3 Claims



3. A seat belt retractor comprising a housing, a belt reel journaled on the housing for belt winding and unwinding rotation about an axis of reel rotation, a first set of ratchet teeth on the reel facing in the belt unwinding direction, a second set of ratchet teeth on the reel facing the belt winding direction, a lockbar adapted for selective alternate engagement with the first and second sets of ratchet teeth, means normally establishing the lockbar for engagement with only the first set of ratchet teeth facing in the unwinding direction and adapted to selectively effect such engagement so that the belt is locked against belt unwinding, means selectively operable to reverse the lockbar for engagement with only the second set of ratchet teeth facing in the belt winding direction so that the reel is free to rotate in the belt unwinding direction but prevented from rotating in the belt winding direction, and means adapted to restore the lockbar to the normal condition for subsequent selective engagement with the first set of teeth facing the belt unwinding direction.

4,245,799

TEXTILE BOBBIN

Frank L. Allen, Jr., Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

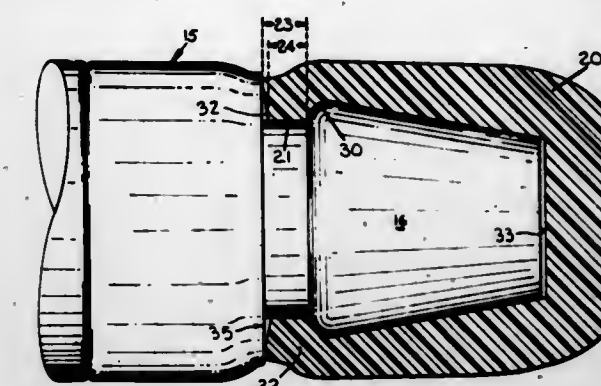
Filed May 18, 1979, Ser. No. 40,367

Int. Cl.³ B65H 75/10

U.S. Cl. 242—118.3

2 Claims

1. In a textile bobbin of the type having a butt portion for reception into the clamping spring of a weaving shuttle, an elongated barrel extending outwardly from the butt portion, the barrel portion terminating in an outer end of reduced size, and a resilient cup-like tip mounted over the reduced outer end to protect it from excessive wear and damage, the improvement comprising an annular recess in the bobbin barrel at the base of the reduced end defined by a rounded shoulder on the bobbin's outer end of reduced size and an annular shoulder having a surface whose plane is normal to the axis of the bobbin, and a resilient cup-like tip having an enlarged inwardly directed flange received within said annular recess to hold said



tip on the outer end portion of the bobbin, said flange being shaped for reception into said annular recess and being of a width on its exposed outer portion which is greater than the width of its inner portion and being of a height which is less than the height of said recess' inner shoulder.

4,245,800

SPATIAL CODING OF LASER BEAMS BY OPTICALLY BIASING ELECTRO-OPTIC MODULATORS

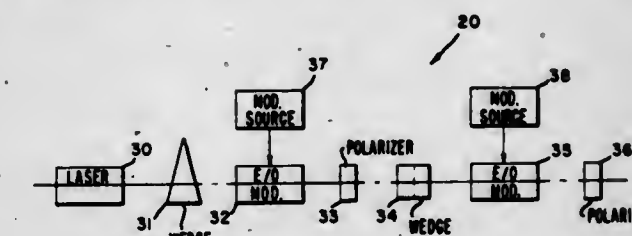
David M. Henderson, Playa Del Rey, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 22, 1978, Ser. No. 917,818

Int. Cl.² F41G 7/00

U.S. Cl. 244—3.13

13 Claims



1. An apparatus for spatially encoding a laser beam such that modulation components at a second harmonic of a predetermined frequency are indicative of position across at least one dimension of said beam, said apparatus comprising:
 polarization encoding means for providing a laser beam encoded such that the polarization varies across at least one dimension of said beam;
 a modulation source for providing a modulating signal at said predetermined frequency; and
 an electro-optic modulator, responsive to said modulating signal and disposed to receive the encoded output beam from said polarization encoding means;
 whereby the laser beam at the output of said electro-optic modulator has modulation components induced thereon at said predetermined frequency and at the second harmonic thereof such that the relative amplitude and phase of said second harmonic modulation component is indicative of position across at least one dimension of said beam.

4,245,801

TAIL ROTOR CONTROL CABLE-PYLON FOLD ACCOMMODATION

William J. Mulvey, North Haven, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 15, 1979, Ser. No. 12,548

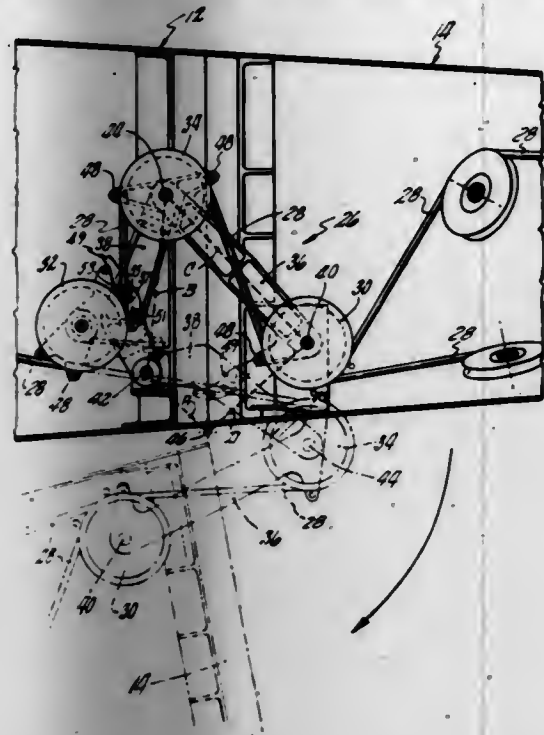
Int. Cl.² B64C 27/04, 27/50

U.S. Cl. 244—17.11

11 Claims

1. A helicopter having a fuselage terminating in an aft tail cone and a tail rotor pylon mounted on a generally vertical hinge pin at one side of said tail cone for folding the pylon from a flight position in which it forms an axial extension of said tail cone into a folded position in which it lies alongside said tail

cone, a tail rotor on said pylon having variable pitch blades, a cable extended through said tail cone and pylon for controlling the pitch of said blades, a pulley and link system for maintaining said cable continuous and substantially constant tension on said cable during folding and unfolding movements of said tail rotor pylon, said pulley and link system including a first link pivoted at its first end on said tail cone at a point spaced forward



ward from said hinge pin, a second link pivoted at its first end on said pylon at a point spaced aft of said hinge pin, said first and second links having their other ends connected by a common pivot, a first cable pulley mounted at the first pivoted end of said second link, a second cable pulley mounted on said common pivot, and a third cable pulley mounted on said tail cone on a pivot spaced forward from the first pivoted end of said first link.

4,245,802

STEERING AND STABILIZATION APPARATUS FOR ROTARY WING AIRCRAFT

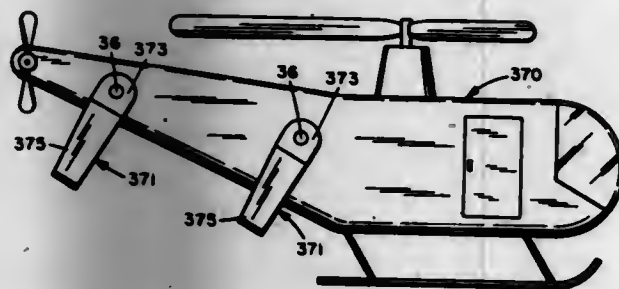
Allen Jones, Jr., 5028 Landerdale Ave., Virginia Beach, Va. 23455

Division of Ser. No. 822,227, Aug. 5, 1977, Pat. No. 4,135,687, which is a continuation-in-part of Ser. No. 661,626, Feb. 26, 1976, Pat. No. 4,040,373, which is a continuation-in-part of Ser. No. 579,896, May 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 566,353, Apr. 9, 1975, Pat. No. 3,995,575, which is a continuation-in-part of Ser. No. 279,714, Aug. 10, 1972, Pat. No. 3,881,438. This application Jan. 19, 1979, Ser. No. 4,720

Int. Cl.³ B64C 9/02, 9/32

U.S. Cl. 244-17.19

2 Claims



1. A rotary wing aircraft, comprising:
an elongated body;
a pair of elongated vane members having substantially planar flared sections with inboard ends projecting outwardly and downwardly from opposite sides of said body and having mounting sections nearer said body than said flared sections thereof; and,
mounting means interconnecting said mounting sections

with said body for rotary movement about a substantially horizontal common axis substantially perpendicularly disposed with respect to the plane of symmetry of said body;

said flared section of each of said vane members extending in a plane which obliquely intersects said common axis inwardly of said mounting section, each of said vane members being rotatable about said common axis in the same or opposite directions and thereby rotatably movable into and out of alignment with the airstream passing rearwardly alongside said body when said aircraft is moving forwardly to concurrently serve steering and banking functions.

4,245,803

TWO-DIMENSIONAL INLET FOR A HIGH SPEED WINGED FLIGHT VEHICLE

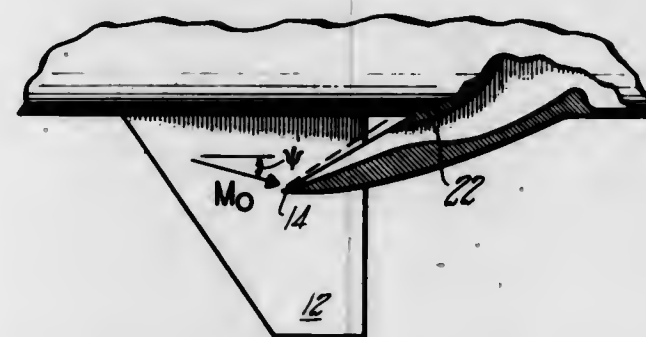
Raymond L. DeBlois, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 2, 1978, Ser. No. 930,468

Int. Cl.² B64D 33/02

U.S. Cl. 244-53 B

3 Claims



1. For a high speed missile powered by an airbreathing engine, said missile comprising a body and wings having a longitudinal axis and providing lift, a pair of two-dimensional air inlets, one of said inlets mounted on each side of the missile under and proximate the aft end of an associated one of said wings for leading air to said engine, each of said two-dimensional air inlets having a compression ramp oriented in a vertical plane with respect to the wing axis so as to produce an inward turning of the air with respect to a missile center line and each of said inlets aligned with an outwash angle produced by the missile body and undersurface of said associated one of said wings to be at substantially zero yaw condition.

4,245,804

MINIMUM DRAG WING CONFIGURATION FOR AIRCRAFT OPERATING AT TRANSONIC SPEEDS

Kichio K. Ishimitsu, Mercer Island, and Neal R. Van Devender, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 19, 1977, Ser. No. 862,286

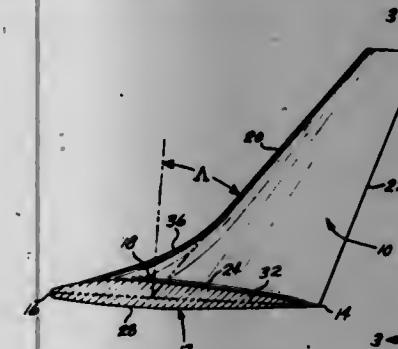
Int. Cl.² B64C 5/08

U.S. Cl. 244-91

15 Claims

1. A tip fin mountable to the outboard end of an aircraft wing to form a nonplanar wing configuration for reducing induced drag relative to that exhibited by the wing alone, said tip fin having first and second boundary surfaces contoured to define an airfoil section including a leading edge, a trailing edge, a root chord and a tip chord, said tip fin leading edge extending between said tip fin root chord and said tip fin chord at a first predetermined angle, said tip fin trailing edge extending between said tip fin root chord and said tip fin tip chord at a second predetermined angle, said tip fin tip chord having a length dimension less than that of said tip fin root chord, said tip fin being mountable to said aircraft wing with said leading edge of said tip fin being positioned outboard of said tip fin trailing edge to define a predetermined angle of incidence

between the freestream flow direction of said aircraft wing and said tip fin root chord, said tip fin being twisted over at least the lower portion of the distance between said tip fin root chord and said tip fin tip chord to gradually decrease the angle of incidence between said tip fin leading edge and said freestream flow direction within said lower portion of said distance between said tip fin root chord and said tip fin tip chord, said tip fin extending upwardly and outwardly at a predetermined cant angle from said outboard end of said aircraft wing when said tip fin is mounted thereto with said tip root chord extending streamwise relative to said end of said wing, said first boundary surface of said tip fin being contoured along said tip fin root chord to form a smoothly radiused transition between the upper surface of said wing and said tip fin first boundary surface, said second boundary surface of said tip fin being contoured along said tip fin root chord to form a smoothly radiused transition between the lower surface of said wing and



said tip fin second boundary surface, said tip fin including a strake having an aerodynamically contoured leading edge extending at a third predetermined angle between said tip fin root chord and a point along said tip fin leading edge that is intermediate said tip fin root chord and said tip fin tip chord, said third predetermined angle being selected to establish airflow vortices for maintaining boundary layer attachment along said radiused transition between said upper surface of wing and said tip fin second boundary surface during flight of said aircraft, said strake having first and second boundary surfaces extending from said leading edge of said strake with said first and second boundary surfaces of said strake respectively terminating at and being contoured to form a smooth transition with said first and second boundary surfaces of said tip fin, said strake being dimensioned and arranged for extending streamwise along the upper surface of said wing when said tip fin is mounted to said aircraft wing.

4,245,805

TURBULENCE COMPENSATED THROTTLE CONTROL SYSTEM FOR AIRCRAFT HAVING THROTTLE COMMAND SIGNAL PATH CONTROL MEANS RESPONSIVE TO ENGINE RATING CONTROL AND FLARE INITIATION

Leonard P. Stephan, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 25, 1977, Ser. No. 854,567

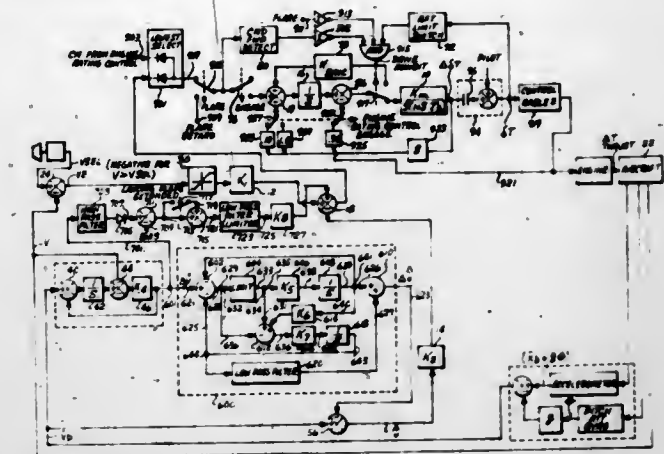
Int. Cl.² G05D 1/12

U.S. Cl. 244-188

3 Claims

1. In combination in an aircraft throttle control system having a throttle command path for an engine:
an integrator circuit, a throttle servo motor, throttle means including clutch means, and control cables coupled in series in said throttle command path to said engine; the improvement comprising,
a multiple feedback path including first and second feedback paths for minimizing the impact of control cable hysteresis on the performance of said throttle control system including,
a first feedback path including tachometer means coupled between said throttle servo motor and said throttle means

to said throttle command path upstream from said integrator circuit; and,



a second feedback path containing power lever angle information coupled between said control cables and said engine to said throttle command path downstream from said integrator circuit.

4,245,806

MULTI-LEVEL MULTI-PIPE HANGER

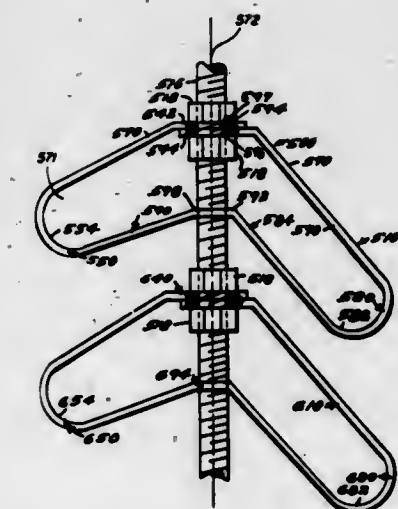
Charles F. Vangreen, 411 W. 29th Ave., Bellevue, Nebr. 68005

Continuation of Ser. No. 760,229, Jan. 17, 1977, abandoned. This application Aug. 3, 1978, Ser. No. 930,508

Int. Cl.³ F16L 3/14, 3/22

U.S. Cl. 248-59

6 Claims



1. A multi-pipe multi-level hanger assembly comprising a multi-pipe hanger comprising a support assembly extending generally horizontally, first and second downwardly depending sections attached to respective ends of said support assembly, a first pipe-receiving module which is concave on its upper side, connecting means connecting ends of said first pipe-receiving module to lower ends of said downwardly depending sections respectively, at least one other pipe-receiving module also having an upwardly facing concave pipe-receiving surface and forming part of said connecting means, said other module having its concave upwardly facing surface disposed horizontally and vertically spaced from the concave upper surface of said first module, said support assembly comprising a pair of attachment sections disposed one above another and having aligned vertical openings therethrough for receiving a rod ceiling anchor therethrough, said attachment sections defining first and second attachment sections connected respectively to said first and second downwardly depending portions, said attachment sections and said modules, said connecting means and said downwardly depending sections all being substantially formed from a single piece of material, said connecting means having a hole extending vertically therethrough disposed between said pipe-receiving mod-

ules and directly beneath and on a same straight vertical line with said support assembly openings.

4,245,807

BUCKET BRACKET

Daniel York, 951 E. 52nd, Tacoma, Wash. 98404

Filed Feb. 9, 1979, Ser. No. 10,752

Int. Cl.³ A47F 5/00; A47K 1/08

U.S. Cl. 248—310

5 Claims



1. A bucket bracket comprising:
 - a mounting support;
 - a curved bracket;
 - a means of securing the curved bracket to the mounting support wherein an open channel is formed between the curved bracket and the mounting support;
 - a curved flange;
 - a means of securing the curved flange to the mounting support at a position on the mounting support opposite the means of securing the curved bracket wherein an open channel is formed between the curved flange and the mounting support.

4,245,808

COMPACT INTERLOCKING JACK STAND

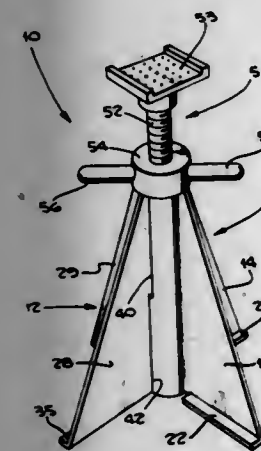
Julius F. John, Gardena, Calif., assignor to Norco Industries, Inc., Gardena, Calif.

Filed May 21, 1979, Ser. No. 40,511

Int. Cl.³ E04G 25/00

U.S. Cl. 248—352

5 Claims



1. An interlocking jack stand comprising side members each providing a central hollow column section, each side member comprising leg means of sheet metal of substantially uniform thickness and having a width tapering from a relatively narrow top to a relatively wide base, said side members being in interlocked engagement at inside vertical edges of legs of said members and said column sections, horizontal edges at the bases of said legs being at an angle with respect to each other and forming a supporting base, horizontal edges at the tops of said legs being at a corresponding angle with respect to each other and forming a supporting platform, there being two legs for each side member comprising flat plates in right angular relationship and forming a vertically extending junction there-

between, means forming slots in the one side member extending inwardly from one end of the column and means forming slots in the other side member extending inwardly from the opposite end of the column, the slots being separated enabling formation of a vertical chamber when the side members are interlocked, each said vertically extending junction having an arcuate form and said vertical chamber having a substantially circular cross-sectional shape.

4,245,809

FRAME-FORMING METHOD AND APPARATUS

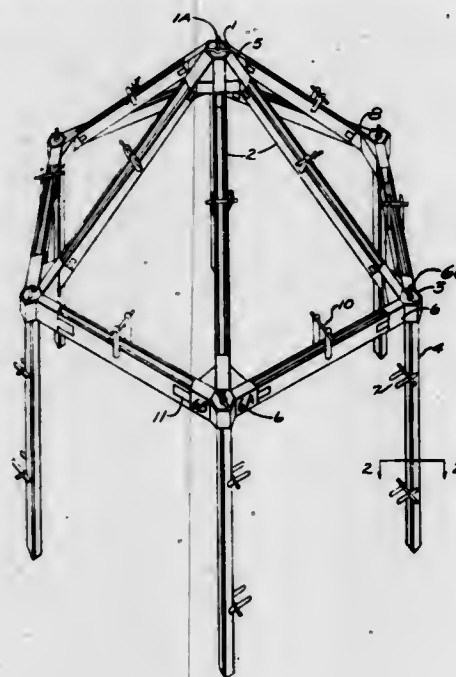
Andrew G. Jackson, 4507 Sunset Ave., Louisville, Ky. 40211

Filed Aug. 30, 1978, Ser. No. 937,943

Int. Cl.³ E04B 1/32, 7/10; E04G 11/04, 17/04

U.S. Cl. 249—15

17 Claims



1. A form arrangement for use in a structural framing system to cast a structural frame work of a selected castable material where the form arrangement includes:

- (a) a generally hollow hub form defined by generally continuous shell means of selected geometric configuration and having at least one first aperture therein and defining a hub chamber therein where said aperture communicates with said hub chamber;
- (b) at least one elongate frame member form of channel shape cross section extending outwardly from said hub and having at least one open end where said open end is received in communicative relation by one of said first apertures so said castable material can flow between said hub chamber and said frame member form; and
- (c) reinforcing rod receiving means located within said hub chamber to receive an end of a reinforcing rod means and direct said reinforcing rod means outwardly through said aperture of said frame member.
- (d) frame securing rod means to be received within said hub form by the said reinforcing rod receiving means and to extend outwardly substantially beyond the structural framework to be cast and adapted to receive selected structural members and to secure same.

4,245,810

APPARATUS FOR CONSTRUCTING CONCRETE CANTILEVERED DECKING AROUND SWIMMING POOLS

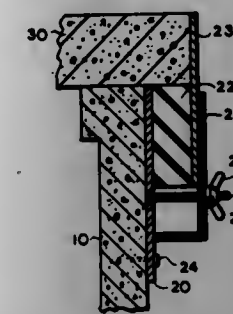
Melvin P. Green, 694 W. Worthington Rd., Imperial, Calif. 92251

Filed Jan. 12, 1979, Ser. No. 2,849

Int. Cl.³ B28B 1/14

U.S. Cl. 249—19

7 Claims



1. A flexible reusable form for constructing cantilevered decking around a swimming pool of any shape comprised of:
 - anchoring means for making rigid connections to the top portion of the walls of said pool;
 - a plurality of adjustable brackets connected to said anchoring means;
 - a first long flexible member aligned between said anchoring means and said brackets, and having a width substantially equal to the desired overhang of said cantilevered decking;
 - a second long flexible member aligned between said first flexible member and said bracket and extending in height above said first flexible member; and
 - said bracket being connectable to said anchoring means below the nominal position of said first long flexible member.

4,245,811

PRESS MOULD HALF, MORE ESPECIALLY FOR PRODUCING RECORDS

Winfried Brunner, Unterhaching, and Helmut Dederra, Otto-brunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

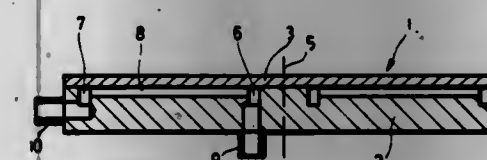
Filed May 31, 1979, Ser. No. 44,065

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824751; May 16, 1979, 2919683

Int. Cl.³ B29D 17/00; B29C 17/00

U.S. Cl. 249—80

16 Claims



1. A press mould half for producing records comprising a mould half having a pressing surface thereon and a channel system formed beneath said surface for conducting heating and cooling fluids in substantially uniform heat transfer relationship with said surface, said system including an inflow collecting chamber for collecting fluid flowing into said system and an outflow collecting chamber spaced apart from said inflow collecting chamber for collecting fluid flowing out of said system, and a plurality of channels each extending over given paths from said inflow collecting chamber to a region adjacent said outflow collecting chamber and in fluid communication with said chambers, the overall transverse cross section of said channels in said region adjacent said outflow collecting cham-

ber being less than the smallest overall transverse cross section of said channels over said given paths.

4,245,812

DISPENSER FOR PRESSURIZED FLUID

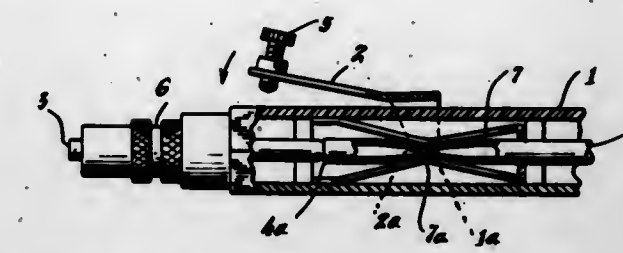
Robert Burger, Wellesley Hills, Mass., assignor to Loctite Corporation, Newington, Conn.

Filed Aug. 4, 1978, Ser. No. 930,955

Int. Cl.³ F16K 7/06

U.S. Cl. 251—10

1 Claim



1. A device for dispensing fluid on demand, which comprises:
 - (a) an elongated housing for containing an end portion of a flexible fluid-conveying tube, and having a first opening at one end for receiving the tube, and a second opening at the opposite end for discharging the fluid;
 - (b) a flexible pinch clamp fitted within the housing through which a flexible tube may pass and be clamped shut thereby, wherein said pinch clamp possesses clamping edges biased toward a closed position upon each other;
 - (c) lever means outside of the housing, pivotally mounted through the sides thereof;
 - (d) at least one tab between the clamping edges of the pinch clamp, said tab connected to, or part of, said lever means; said device adapted such that application of pressure on the lever means causing movement of same toward the housing pivots the tab and forces the clamping edges apart, and upon release of the pressure, the clamping edges close back upon each other.

4,245,813

FLUSH VALVE

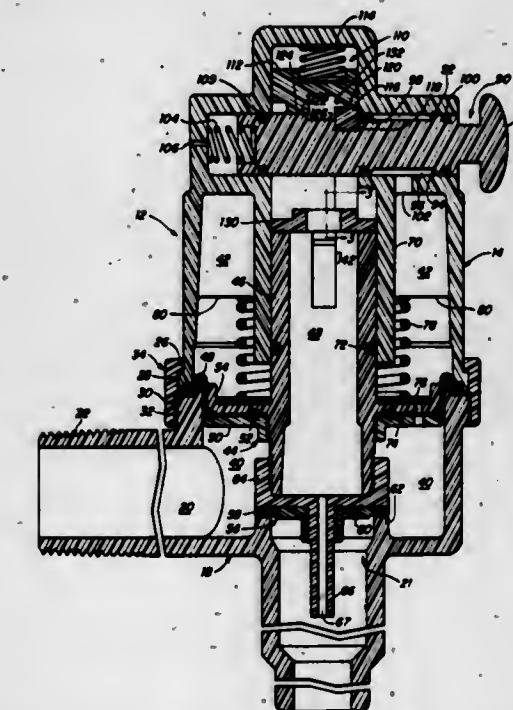
Wilfred J. Grenier, Rutland, Mass., assignor to General Industries, Inc., Rutland, Mass.

Filed Aug. 9, 1978, Ser. No. 932,300

Int. Cl.³ F16K 31/385, 21/16

U.S. Cl. 251—32

10 Claims



1. A flush valve comprising: a housing; a moveable partition

sealingly engaging said housing and defining a primary chamber and a control chamber; said housing including an inlet port in said primary chamber for connection with a source of flushing fluid, and an outlet port in said primary chamber for dispensing said fluid; a valve element connected with said partition for closing said outlet port; first biasing means for producing a force on said partition to urge said valve element to close said outlet port; a passage interconnecting said primary and control chambers for enabling equalization of pressure therebetween; an auxiliary chamber in communication with said control chamber through said actuator valve and a flow regulating outlet communicating with said outlet port and said auxiliary chamber for discharging the fluid vented through said actuator valve; an actuator mechanism including an actuator valve connected with said control chamber and an actuator member for setting said actuator valve to the open position to vent said control chamber and enable said valve element to move away from said outlet port and open said flush valve; and an actuator control mechanism driven by said partition as said valve element moves away from said outlet port, for enabling said actuator mechanism to reset said actuator valve to the closed position and cease venting said control chamber.

4,245,814

FLUID SHUT-OFF DEVICE

Kunio Shimizu, 33-2, Asagaya-Minami 1-chome, Suganami-ku, Tokyo, Japan

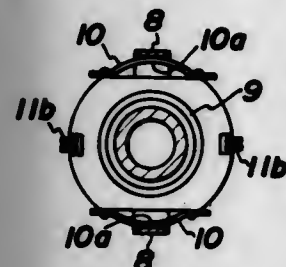
Filed Mar. 6, 1979, Ser. No. 18,050

Claims priority, application Japan, Mar. 6, 1978, 53-28328; Jan. 29, 1979, 54-8227

Int. Cl.³ F16K 31/08

U.S. Cl. 251-65

6 Claims



1. A fluid shut-off device comprising:
 - a casing made of non-magnetic material, said casing having therethrough a passage which is adapted to be connected with a fluid supply line, and said casing having therein a valve chamber at a mid-portion of said passage;
 - a valve body positioned in said valve chamber for movement between a first position to close said passage and a second position to open said passage;
 - a slide member provided outside said casing;
 - at least one of said valve body and said slide member being made of permanent magnet material and the other of said slide member and said valve body being made of magnetic material, whereby said valve body and said slide member are magnetically attracted to each other;
 - elastic spring means for urging said slide member toward an operative position whereat said valve body is at said first position thereof and closes said passage;
 - locking means for holding said slide member against the force of said spring means at an inoperative position whereat said valve body is at said second position thereof and opens said passage, said locking means comprising a metal strap having a free end bendable from a first locking position to a second unlocking position; and
 - means for releasing said metal strap from said first locking position thereof, said releasing means comprising a bimetallic strap deformable by supply thereto of an electric current, said bimetallic strap being provided adjacent to said metal strap to allow said free end to bend into said second unlocking position when said electric current is supplied to said bimetallic strap.

4,245,815
PROPORTIONAL SOLENOID VALVE AND CONNECTOR

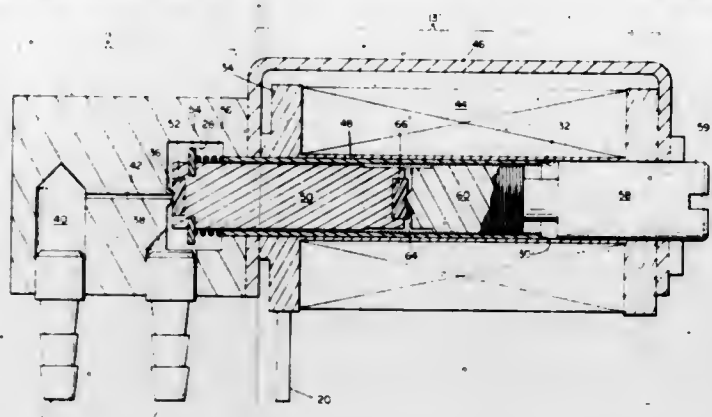
John G. Willis, Chelmsford, Mass., assignor to Linear Dynamics, Inc., East Pepperell, Mass.

Filed Feb. 23, 1979, Ser. No. 14,650

Int. Cl.³ F16K 31/06

U.S. Cl. 251-129

4 Claims



1. A solenoid controlled proportional flow valve, comprising
 - an operating solenoid having an axially extending coil, a valve body having an axially extending cavity with a fluid inlet passage, a fluid outlet passage and a valve seat surrounding one of said passages on one end wall of said cavity,
 - a valve plunger axially movable within said cavity for movement of one end wall thereof toward and away from said valve seat,
 - biasing means interposed between the opposite ends of said cavity and plunger, said biasing means including an abutment preloaded in contact with a resilient deformable elastomeric spring having a dimension at all times greater than the portion of said abutment in contact therewith, said biasing means normally maintaining said valve plunger in contact with said valve seat and said solenoid moving said plunger away from said valve seat in proportion to the flow of current therethrough.

4,245,816

FLOW FORCE BALANCED SPOOL VALVE

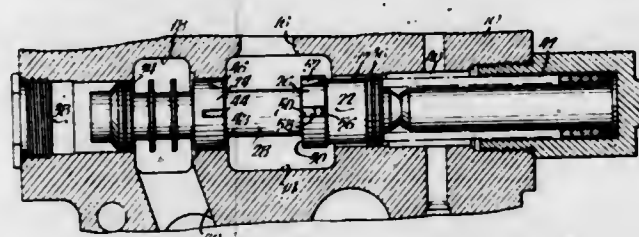
Howard L. Johnson, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1978, Ser. No. 897,894

Int. Cl.³ F16K 39/04

U.S. Cl. 251-282

4 Claims



1. A spool valve comprising:
 - a valve body having a bore intercepted by at least two axially spaced ports;
 - a spool reciprocally received within said bore and having two axially spaced lands separated by a groove, one side wall of said groove being adjacent one of said lands and defining a shoulder;
 - at least one shallow metering slot in the other of said lands and opening directly into and above the base of said groove through another side wall thereof opposite said one side wall, said slot having an increasing depth in the direction toward said groove and a cross sectional area taken transversely to the axis of said spool at any point

along said slot less than the area of the top of the slot from said any point to the end of the slot remote from said groove to cause high velocity fluid metered by said metering slot to flow substantially parallel to the axis of the spool as it is being metered; and an additional slot in said one land and said shoulder opening to said groove in alignment with said metering slot, having a ramp-like bottom extending from said groove one side wall to the top of said one land, and having a width greater than that of said metering slot.

4,245,817

PNEUMATIC STAPLE REMOVER

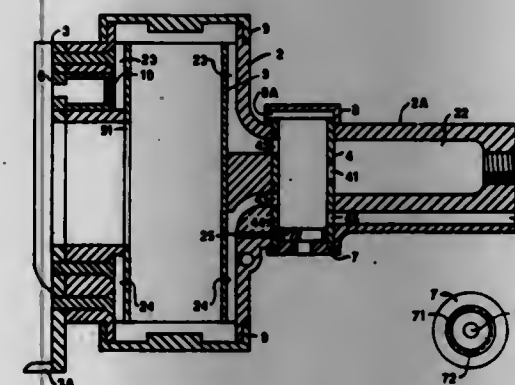
Herman R. Peoples, Rte. 5, Box 510, Prattville, Ala. 36067

Filed Aug. 27, 1979, Ser. No. 69,847

Int. Cl.³ B25C 11/00

U.S. Cl. 254-28

4 Claims



1. A pneumatic device for removing staples comprising, in combination: a staple-puller assembly consisting of a vertically-oriented elongated puller-bar terminating at its lower end in a jaw, a substantially parallel-positioned elongated grabber-bar terminating at its lower end in a jaw complementary to said puller-bar jaw, and spring means for holding said grabber-jaw separated from said puller-jaw; a piston-cylinder which is open at both its lower and its upper ends; a piston having closed bottom and top ends slidably mounted in said piston-cylinder and being firmly attached on one side to said staple-puller assembly; a compressed-air reservoir; an air passage between the lower open end of said piston-cylinder and said compressed-air reservoir; an air passage between the upper open end of said piston-cylinder and said reservoir; a slidable reversing-valve interposed between said lower and upper air passages and said reservoir; means for causing said reversing valve to alternately open and close said lower and upper air passages to said reservoir; means for causing said grabber-jaw to close with said puller jaw under the head of a staple; and trigger means for activating said device.

4,245,818

APPARATUS FOR HEAT TREATMENT OF MATERIAL TO BE WORKED ON, ESPECIALLY OF ALUMINUM OR MAGNESIUM ALLOYS

Friedrich W. Elhaus, Wuppertal, Fed. Rep. of Germany, and Bernhard Hilde, Adliswil, Switzerland, assignors to Prolizenz Aktiengesellschaft, Chur, Switzerland

Continuation-in-part of Ser. No. 669,347, Mar. 22, 1976, Pat. No. 4,135,704. This application Mar. 16, 1978, Ser. No. 887,316

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.

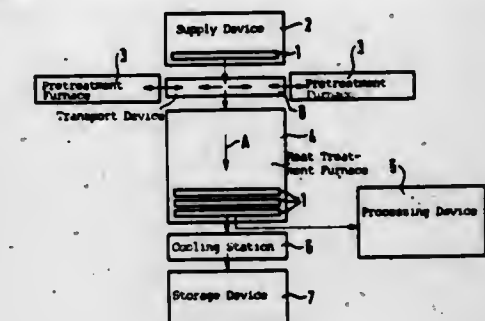
Int. Cl.³ C21D 11/00

U.S. Cl. 266-87

25 Claims

1. Apparatus for heat treatment of a metal piece or metal pieces to be subsequently worked on, such as ingots, billets, rods, tubes, cast strips and cast billets, especially of aluminum or magnesium alloys, wherein the pieces are preheated and thereafter held at a

predetermined heat treatment temperature for a predetermined time, comprising, in combination: a pretreatment furnace including a heating device being operable to heat the pieces using hot gas impingement, the hot gas having a temperature essentially higher than the heat treatment temperature; a heat treatment furnace including heating means for providing hot gases and forced circulation of the hot gases, said heating means having a temperature control device for adjusting and maintaining the temperature of the hot gases; and



- a transport means comprising a pretreatment transport device and a treatment transport device, said pretreatment transport device being operable to move the pieces at a pre-treatment speed through said pretreatment furnace, said treatment transport device being operable to move the pieces at a treatment speed through said heat treatment furnace, said treatment speed and said pretreatment speed being independently variable, said transport means including means for stop-and-go motion, means for stepwise motion, and means for continuous motion.

4,245,819

APPARATUS FOR STABILIZING SPRINGS

John K. Bache, Blakeshall; Albert M. Sanderson, Peakridge, and Arthur Pearson, Halesowen, all of England, assignors to George Salter & Company, Ltd., West Midlands, England

Division of Ser. No. 852,332, Nov. 17, 1977, Pat. No. 4,124,827.

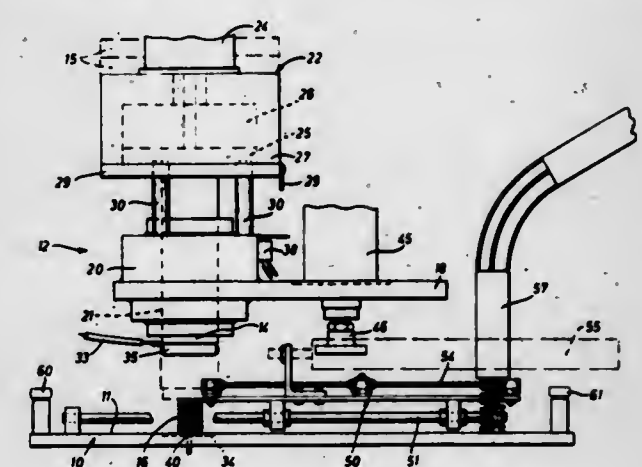
This application Apr. 27, 1979, Ser. No. 34,056

Claims priority, application United Kingdom, Jan. 13, 1976, 1150/76

Int. Cl.³ C21D 11/00, 9/02, 1/40

U.S. Cl. 266-90

9 Claims



1. Apparatus for treating a coil compression spring for improving its performance or reliability when operating at an elevated temperature, said apparatus comprising:
 - (a) means for supporting the spring to be treated so that it is free to change in dimensional characteristics,
 - (b) means for applying a constant load of preselected magnitude to the spring while it is supported,
 - (c) means for heating said spring while it is under said load,

(d) limit switch means operable automatically to terminate the heating when dimensional characteristics of the loaded spring have changed, under the influence of said heating, and reached a limit which can be correlated with a predetermined value of relaxation or collapse,

(e) means for quenching said loaded spring with a cooling medium immediately upon termination of the heating, and

(f) separate means is effective to apply a compressive load to substantially fully compress and pre-stress each spring in a preliminary operation prior to its heat treatment.

5. Apparatus for treating a coil compression spring for improving its performance or reliability when operating at an elevated temperature, said apparatus comprising:

- (a) means for supporting the spring to be treated so that it is free to change in dimensional characteristics,
- (b) means for applying a constant load of preselected magnitude to the spring while it is supported,
- (c) means for heating said spring while it is under said load,
- (d) limit switch means operable automatically to terminate the heating when dimensional characteristics of the loaded spring have changed, under the influence of said heating, and reached a limit which can be correlated with a predetermined value of relaxation or collapse,
- (e) means for quenching said loaded spring with a cooling medium immediately upon termination of the heating, and
- (f) conveyor feed means is effective to successively handle a plurality of springs and move them between different locations or work stations of the apparatus.

4,245,820

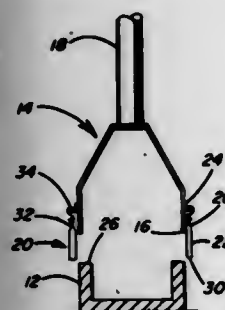
PIPE CURTAIN FOR POLLUTION CONTROL HOOD
Stephen Muryn, Wheeling, W. Va., assignor to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.

Filed Jul. 20, 1979; Ser. No. 59,245

Int. Cl.³ C21B 7/22; C21C 5/40

U.S. Cl. 266-158

12 Claims



1. Apparatus for controlling the flow of air and pollutants drawn into a pollution control hood comprising, a plurality of pipe-like members arranged individually to extend downwardly from the pollution control hood, said pipe-like members being positioned independently in side-by-side relation to form a curtain around the pollution control hood and thereby adapted to enclose the opening into the hood,

said pipe-like members each having a first end portion individually connected to the pollution control hood and a second end portion movably positioned in close proximity to the periphery of a vessel from which the pollutants are emitted to permit movement of said pipe-like members individually relative to each other to allow access into the area beneath the hood, and

said curtain formed by said pipe-like members being operable to reduce the volume of air drawn into the hood and combined with the emitted pollutants.

4,245,821
REFINING FURNACE FOR NONFERROUS METAL
Gerhard Kappell, Jesteburg, and Klaus P. Hagk, Hamburg, both of Fed. Rep. of Germany, assignors to Norddeutsche Affinerie, Hamburg, Fed. Rep. of Germany

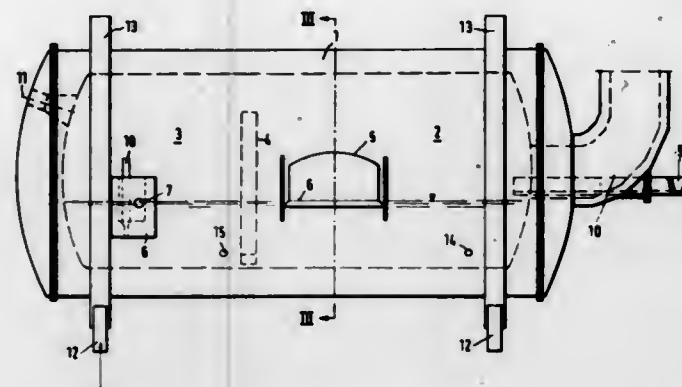
Filed Aug. 9, 1979; Ser. No. 65,107

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837160

Int. Cl.³ C21B 13/08; F27B 7/02

U.S. Cl. 266-163

8 Claims



1. A furnace for the refining of a liquid nonferrous metal, comprising:

- a furnace drum having a generally recumbent axis and a pair of axially spaced ends;
- a partition in said drum subdividing the interior thereof into an oxidizing chamber at an upstream one of said ends, said partition forming a siphon for communicating between molten metal baths in said chamber, said drum having an angular wall between said ends;
- means for rotating said drum about its axis;
- means for introducing liquid metal into said oxidizing chamber through said upstream one of said ends;
- means for introducing an oxidizing medium into the melt in said oxidizing chamber and a reducing medium into the melt in said reducing chamber;
- slag-removing means formed in said wall in the region of said oxidizing chamber for discharging slag from atop the melt therein;
- melt-tapping means formed in said wall at the same side of said drum as said slag-removal means with respect to said axis and communicating with the reducing chamber at a location below said slag-removal means; and
- means for discharging a gas from said drum.

4,245,822

PROCESS FOR THE PRODUCTION OF ALUMINIUM
Ernest W. Dewing, Kingston, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada

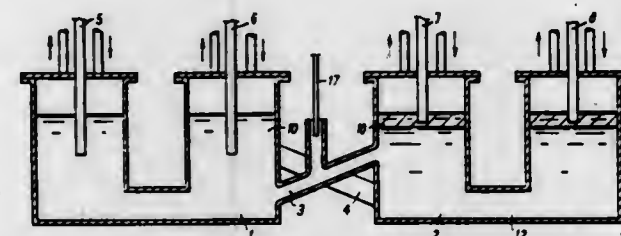
Filed Nov. 21, 1978; Ser. No. 962,630

Claims priority, application United Kingdom, Nov. 28, 1977, 49447/77

Int. Cl.³ F27B 14/14

U.S. Cl. 266-171

4 Claims



1. Apparatus for the production of aluminium metal by the direct reduction of alumina by carbon comprising one or more materials addition chambers where reaction of alumina with carbon to form aluminium carbide (reaction (ii)) occurs at a relatively low temperature and one or more high temperature

chambers for removal of product aluminium and gas evolved in reaction of aluminium carbide with alumina to release Al metal (reaction (iii)), each materials addition chamber being connected to the succeeding high temperature chamber by a forward connecting conduit which leads into the high temperature chamber through an upwardly directed portion, and each high temperature chamber leading into a succeeding materials addition chamber by a return conduit, wherein there is provided an independent heating system in each of the high temperature chambers to provide a part, preferably a major part, of the heat energy for driving reaction (iii) and a separate, independently controllable resistance heating system for heating the slag flowing through one or more of the forward and/or return conduits for driving reaction (iii) with consequential release of gas in such conduit for promoting circulation of slag.

4,245,823

APPARATUS FOR PRODUCING MECHANICALLY-WORKED VAPOR-DEPOSITED BULK ALLOYS

Robert L. Bickerdike, Alton; Garyth Hughes, and William N. Mair, both of Farnham, all of England, assignors to The Secretary of State in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

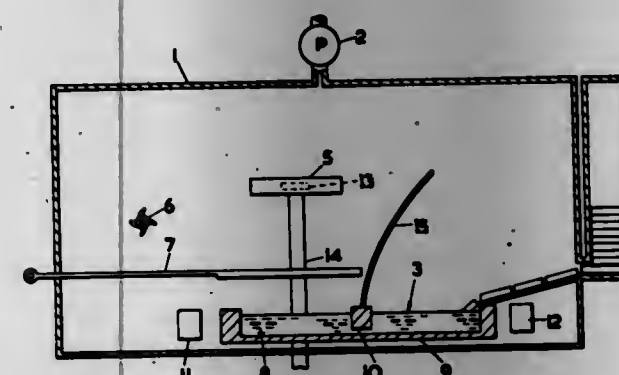
Division of Ser. No. 663,359, Mar. 3, 1976, abandoned. This application Aug. 30, 1978, Ser. No. 938,236

Claims priority, application United Kingdom, Mar. 6, 1975, 9440/75

Int. Cl.³ C21D 1/74

U.S. Cl. 266-211

4 Claims



1. An apparatus for the production of a bulk alloy by evaporation deposition comprising an evacuable chamber, means for forming in vacuo in said chamber an evaporated stream of metal, a collector locatable in said stream to collect an evaporated metal to form an alloy deposit, working means in said evacuable chamber with said evaporated stream for applying a peening action to said alloy deposit on said collector to flatten asperities in the surface of said alloy deposit and thereby inhibit formation of voids in said alloy deposit comprising (1) a row of rotatable hammers arranged when rotated to strike said alloy deposit sufficiently lightly so as not to produce steps or asperities in the surface of said alloy deposit and (2) means for rotating said hammers so they strike said alloy deposit once per rotation, said working means including

- a rotating means and
- a plurality of mountings attached to said rotating means and rotatable therewith, said rotatable hammers attached to said mountings and being free to rotate relative to said rotating means, and
- means for moving said collector into a position where it is in said stream and a position which is in a path of the heads of said hammers when rotated, the movement of said collector being in a direction into the rotating path of said hammers.

4,245,824

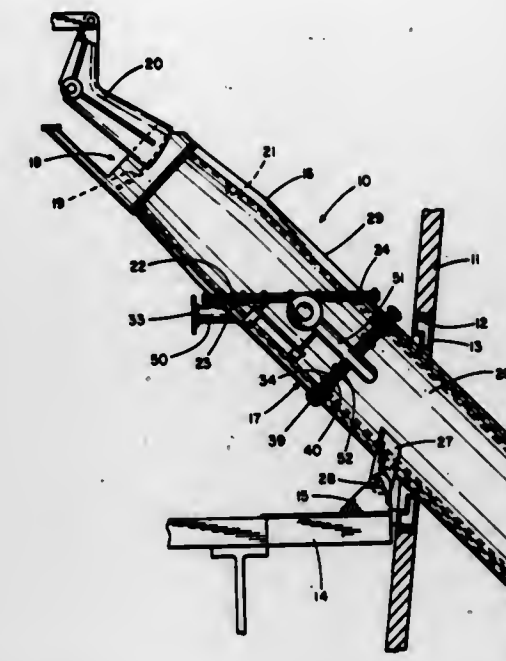
CHUTE FOR CHARGING VESSELS
Nicholas M. Rymarchyk, Wexford, Pa., assignor to Pullman Berry, Harmony, Pa.

Filed Dec. 28, 1978; Ser. No. 973,829

Int. Cl.³ C21C 7/00

U.S. Cl. 266-287

14 Claims



1. A chute for conveying materials into a vessel containing a molten bath including a first tubular chute portion having a material receiving opening, a liquid cooled second chute communicating with said first chute, said liquid cooled second chute having a first upper pipe assembly including a first upper pipe, a second upper pipe positioned within said first upper pipe in radially spaced relation providing an annular first water inlet chamber, a water inlet connection for said first inlet chamber, a second lower pipe assembly including a first lower pipe, a second lower pipe positioned within said first lower pipe in radially spaced relation, an intermediate third pipe positioned between said first and second lower pipes, said third pipe providing with said first and second lower pipes a second water inlet chamber communicating with said first water inlet chamber, and a water outlet chamber isolated at its upper ends from said first water inlet chamber, an annular tip portion connected to the lower ends of said first and second lower pipes, said intermediate pipe having a lower portion thereof spaced from said tip providing communication between said second water inlet chamber and said water outlet chamber, a water outlet connection to said water outlet chamber, and coupling means releasably connecting said first and second pipe assemblies.

4,245,825

SHOCK ABSORBER FOR WHEELED VEHICLE
Masaru Ohtomo, Minokomo; Samio Hiroi; Hisao Inoue, both of Kagamihara, and Sinito Higuti, Kani, all of Japan, assignors to Kayaba Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1979; Ser. No. 47,149

Int. Cl.³ F16F 9/06

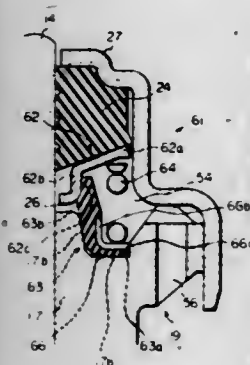
U.S. Cl. 267-64 R

8 Claims

1. A shock absorber including an inner cylinder having a closed lower end, a piston sealably slidable in the inner cylinder, a piston rod extending upwardly from the piston, a piston rod guide constituting a closed upper end of the inner cylinder,

the piston rod slidably extending through the piston rod guide, an outer cylinder coaxially surrounding the inner cylinder and having a closed lower end, passageway means connecting lower end portions of the inner and outer cylinders, a seal constituting a closed upper end of the outer cylinder and being disposed above the piston rod guide, the piston rod sealingly extending through the seal, and a passageway connecting an upper end portion of the outer cylinder with a space between the piston rod guide and the seal, the inner cylinder being filled with liquid, a lower portion of an annular space between the inner and outer cylinders being filled with the liquid and an upper portion of the annular space being filled with pressurized gas, characterized by comprising:

a generally annular valve member having a base portion and an upwardly extending resilient edge portion, the piston rod guide being formed with an annular groove in an



upper end thereof, the base portion of the valve member being fittingly retained in the groove;
a spring seat engaging with a lower surface of the seal; and
a compression spring compressively disposed between the spring seat and the base portion of the valve member, the resilient edge portion of the valve member resiliently engaging with the spring seat so as to allow flow of the liquid through the passageway only from the space between the piston rod guide and the seal to the upper end portion of the outer cylinder;
a radially inner portion of the resilient edge portion of the valve member resiliently engaging with the spring seat; the spring seat being formed with a valve seat portion which extends downwardly and radially inwardly of and engages with the radially inner portion of the resilient edge portion of the valve member.

4,245,826

RESILIENT COLUMN OF ADJUSTABLE LENGTH

Winfried Wirges, Koblenz-Moselweiss, Fed. Rep. of Germany, assignor to Stabius GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Continuation of Ser. No. 814,553, Jul. 11, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,530

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1976, 7623283[U]

Int. Cl. F16F 3/07, 3/08

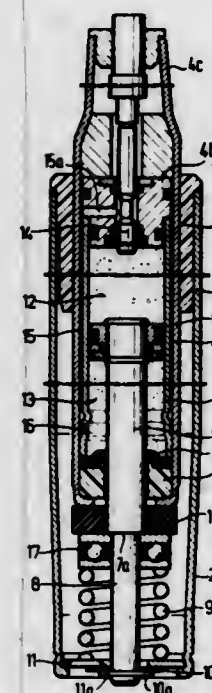
U.S. Cl. 267-131

13 Claims

1. A column of adjustable length comprising:
 - (a) an elongated guide tube having a longitudinal axis and formed with a longitudinal bore,
 - (1) said tube having an apertured end wall transverse to said axis,
 - (2) said end wall having an axially inner face and an axially outer face directed in axially opposite directions;
 - (b) a pneumatic spring at least partly received in said bore for axial movement therein and including
 - (1) a cylinder member defining a sealed cavity therein,
 - (2) a piston axially movable in said cavity and normally sealing two compartments of said cavity from each other,
 - (3) a piston rod member fastened to said piston and projecting axially outward of said cavity, and
 - (4) fluid in said cavity under a pressure higher than atmo-

spheric pressure for elastically supporting said piston rod member within said cylinder member so as to resist a load transmitted to the end of the pneumatic spring remote from said apertured end wall;

- (c) a bar member axially elongated and fixedly fastened to one of said members of the pneumatic spring, said bar member axially extending from said one member through said bore and through the aperture in said end wall for movement inward and outward of said bore;
- (d) spring seat means on said one member in said bore;
- (e) yieldably resilient means located entirely within said bore between said spring seat means and the axially inner face of said end wall for biasing said bar member inward of said bore in the direction of said remote end and for resiliently



permitting substantial axial displacement of said bar member outward of said bore in response to a load applied to the remote end of said pneumatic spring, thereby to afford additional resilience in the column in series with the resilience afforded by the pneumatic spring; said resilient means surrounding said bar member and being axially prestressed between said seat means and said inner face in all positions of said one member within said bore; and

- (f) an abutment member carried by said bar member outside said bore and dimensioned for abutting engagement with said outer face of said end wall to limit movement of said bar member inward of said bore, said abutment member being urged into abutting engagement with said outer face in the absence of an external load on said pneumatic spring compressing said resilient means.

4,245,827

HOLD-DOWN CLAMP

Otis W. Goff, 5221 Woodmont Dr., Kalamazoo, Mich. 49001, and Melvin J. Goff, 2454 52nd, SW., Wyoming, Mich. 49509

Filed Aug. 17, 1979, Ser. No. 67,622

Int. Cl. B23Q 3/02

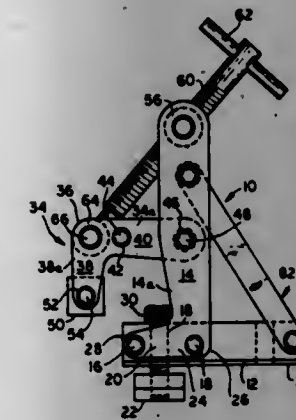
U.S. Cl. 269-94

1 Claim

1. A hold-down clamp for clamping a workpiece to a machine tool bed which comprises:
 - a base member having a horizontal component comprising an elongate block having parallel sides, a vertical component comprising two parallel, thin, narrow plates with an integral foot portion which is rigidly affixed to the sides of said block with the toe portion thereof adjacent the front end of said block, and a reinforcing component comprising two parallel, thin, narrow plates which, at one end, are fastened to the sides of said block adjacent the rear end thereof and, at the other end, to the plates of said vertical component near the upper end thereof by means of a

common rivet which functions also as a spacer to maintain them and the plates of said vertical component in spaced relationship, said elongate block, said vertical component and said reinforcing component forming a rigid, reinforcing triangle;

- adjustable means adjacent the front end of said block for adjustably affixing said block to said bed;
- a clamping arm comprising two parallel, thin, narrow plates spaced apart by spacers a distance such that the free ends of one leg fit in between the plates of said vertical component in juxtaposition thereto and is pivoted thereto in the mid-portion thereof;
- a clamping face pivoted at the other end of said clamping



arm, said clamping arm extending beyond said base member so that said clamping face is in position to engage a work piece resting on the bed of said machine tool, and clamping means, comprising a first block member having trunnions journaled in the free ends of the plates of the vertical component, a second block member having trunnions journaled in the plates of said clamping arm in the mid-portion thereof, and an elongate threaded bolt threaded through said first block and journaled in said second block with a thrust bearing, which clamping means is operative to move said clamping arm to and from clamping position and to clamp said clamping face to the work piece after the clamping face has been brought in contact therewith.

4,245,828

APPARATUS FOR FABRICATION OF METAL BUILDINGS

John Aldeg, Chicago, Ill., and Willis L. Wells, Clayton, Mo., assignors to Blackhawk Systems, Inc., Chicago, Ill.

Filed May 8, 1978, Ser. No. 903,753

Int. Cl. B23Q 3/00

U.S. Cl. 269-228

5 Claims



1. An assembly jig for setting up a plurality of truss components, including two main truss beams and a plurality of struts and cross-braces, in a standardized configuration for welding to form a complete truss unit, the jig comprising:
 - a jig frame having first and second longitudinal members and first and second end members joining the extremities of the longitudinal members to form an open quadrilateral frame wherein the main truss beams, when placed in the

jig, are contiguous with the first and second longitudinal members;
mounting means for supporting the jig frame at a height suitable for welding;
a plurality of beam locator means mounted at the corners of the jig frame, each locator means being adjustable to engage one end of one main truss beam so that the locators conjointly releasably locate and clamp the beams along the longitudinal members of the jig frame;
and a plurality of alignment means, mounted at spaced locations along the jig frame, for releasably locating and anchoring the truss and cross-braces of the truss at the proper positions and angles for the particular truss unit configuration, each alignment means including a lever; a rigid strap fixedly connected to the lever such that together they form a linkage, the linkage being pivotally mounted on the frame for movement between a clamp position and a release position; a clamp member, rigidly attached to the linkage, having a configuration which, upon rotation of the linkage into a clamp position, engages one end of a strut or cross-brace member to locate and anchor that member for welding after which, upon rotation of the linkage into a release position, the clamp member disengages the completed truss; and an overcenter spring assembly, attached to the linkage, having a center which is between the linkage release and clamp positions so that the overcenter action retains the linkage in whichever position it has been set.

4,245,829

BAG FOLDING MACHINE

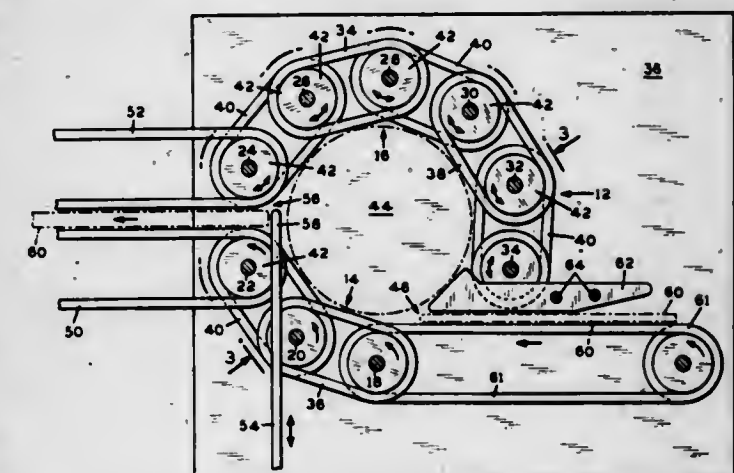
John B. Coast, Baton Rouge, La., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,438

Int. Cl. B65H 45/14

U.S. Cl. 493-439

10 Claims



1. In a machine for rolling and flatten-folding flexible sheet material, having rolling means for rolling the material into a roll, discharge means for removing the rolled material from said rolling means, inlet means for introducing the material into said rolling means, and folding means for folding the rolled material as desired after removal from said rolling means, the improvement which comprises: Rolling means comprising a rolling cage having an inner surface arranged in an arc circumscribing a minimum of 270° of a circle for defining said rolling cage, said rolling cage being divided into a circumferentially disposed first roller section and a circumferentially disposed second roller section, said first roller section having a first movable curved surface on its inward side and said second roller section having a second movable curved surface on its inward side, said first and second movable curved surfaces defining a portion of said 270° arc and being adapted for driving said material into a roll, and said first and second roller sections being divided by an intake passage for introducing said material into said rolling cage and an outlet passage for

discharging said material from said rolling cage; means for moving said first and second movable curved surfaces in undirectional movement during rolling of said material in said rolling cage; and means for reversing movement of said second movable curved surface for discharge of rolled material from said roller section.

4,245,830

CORRECTION OF TRANSVERSE OFFSET OF SHEETS IN SHEET FEEDING UNIT

Frank Fichte, Tanaka, and Wolfgang Paul, Leipzig, both of German Democratic Rep., assignors to VEB Polygraph Leipzig Kombinat fuer Polygraphische Maschinen und Ausruestungen, Leipzig, German Democratic Rep.

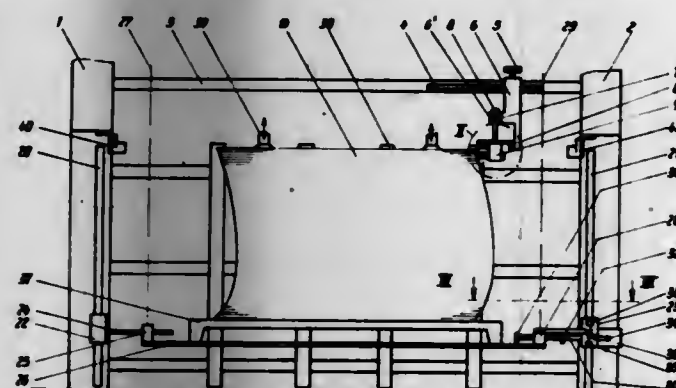
Continuation-in-part of Ser. No. 884,631, Mar. 6, 1978. This application Mar. 16, 1978, Ser. No. 888,152

Claims priority, application German Democratic Rep., Mar. 4, 1977, 197667

Int. Cl.³ B65H 1/22

U.S. Cl. 271-164

12 Claims



1. In a sheet feeding unit of the type including a stack elevator which raises the top of a stack of sheets to feed height, in combination, sensing means located at only one side of a stack supported by the stack elevator and operative for detecting when the sheets at the top of the stack are properly positioned, are transversely offset too far to the left, and are transversely offset too far to the right, the sensing means including two proximity detector switches which are independently operable and which generate signals indicative of proper positioning, excessive rightward transverse offset and excessive leftward transverse offset, the sensing means further including movable feeler means physically engageable with top sheets in the stack at only one side of the stack and movable to respond to position of such top sheets to operate the proximity detector switches in accordance with such position, and the sensing means still further including means mounting the switch means and feeler means so as to enable the feeler means to be physically engageable with top sheets in the stack at only one side of the stack; and control means operative in response to said signals for automatically performing corrective transverse shifting of the stack elevator.

4,245,831

ADJUSTABLE TRAY

Stephen F. Michatek, LeRoy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1979, Ser. No. 6,719

Int. Cl.³ B65H 1/00

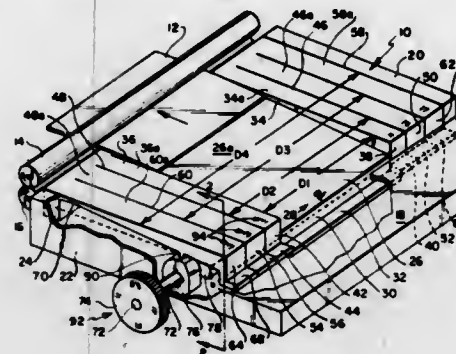
U.S. Cl. 271-171

6 Claims

1. A paper input tray for a document copier or the like adapted to receive sheets of a plurality of sizes having different dimensions, the tray comprising:

means defining a first guide surface having first and second side edges along opposite sides thereof;
adjustable means comprising a plurality of elongate flexible tray segments positioned beside the first and second side edges of said first guide surface, each tray segment being movable between a first position and a second position, each tray segment having a second guide surface that is

spaced above the first guide surface when the tray segment is in the first position and forms a continuation of the first guide surface when the tray segment is in its second position so that sheets having a dimension equal to or less than the dimension between the side edges of the first guide surface can be guided properly along the tray when the tray segments are in their respective first positions and larger sheets having a dimension equal to or less than the sum of the guide surfaces can be guided properly along



the tray when the tray segments are in their respective second positions; and
movable cam means engageable with each of said segments for moving said segments between their respective second positions and their respective first positions, said segments when in the first position being in a flexed condition and being biased toward the second position so that the segments can flex to the second position in response to movement of said cam means.

4,245,832

APPARATUS FOR THE STACKING OF SHEETS

Emil Klenk, and Karl-Fritz Heina, both of Murrhardt, Fed. Rep. of Germany, assignors to Maschinenbau Oppenweiler GmbH, Oppenweiler, Fed. Rep. of Germany

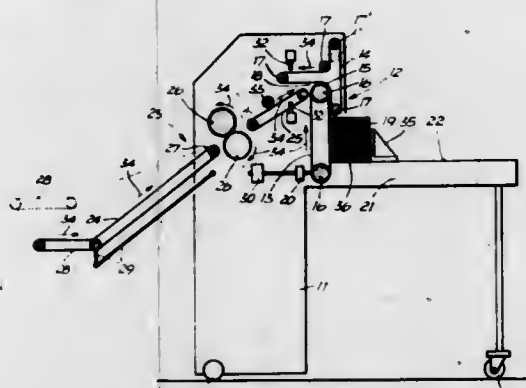
Filed May 3, 1978, Ser. No. 902,485

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721441

Int. Cl.³ B65H 29/14, 29/66

U.S. Cl. 271-185

2 Claims



1. An apparatus for successively feeding sheets to a rear end of a stack of sheets standing upright on their edges, comprising a first conveyor means,
a second conveyor means downstream of the first conveyor means,
support means for supporting the stack of sheets leaving said second conveyor means,
said first conveyor means being adapted for a first conveying speed and having an exit and first engaging means for engaging the sheets, said first engaging means forming an upwardly inclined first conveying path, said first engaging means has an end portion including an uppermost end adjacent to said exit, said first engaging means including a bottom engaging conveyor for engaging only lower sides

of said sheets at least within said end portion, said end portion constituting means thereby for only engaging the lower sides of said sheets, said first conveyor means for conveying the sheets to said exit in an upwardly inclined first feeding direction,

said second conveyor means being adapted for a second conveying speed and having second engaging means for engaging both sides of the sheets and having an entrance to said second engaging means laterally downstream closely adjacent to but slightly higher than said exit of said first conveyor means,

said first engaging means includes an upper engaging means for engaging upper sides of said sheets in a portion of said first conveying path upstream of said end portion, said upper engaging means is displaceably adjustably positioned along said first conveyor means such that the distance between said upper engaging means and said second engaging means is substantially equal to the length of each of the sheets being fed, respectively, whereby said second engaging means engages a sheet when said sheet leaves said upper engaging means, thereby enabling the apparatus to be adapted to different lengths of sheets to be fed from time to time,

said second engaging means forming a perpendicularly bending second conveying path leading horizontally from said entrance of said second conveyor means vertically to said support means for feeding the sheets to the rear end of the stack of sheets, said second conveying path being bent from a horizontal direction vertically downwardly immediately downstream of said entrance leading vertically to the rear end of the stack of sheets, said second conveying path defining a horizontal second feeding direction of the sheets at said entrance and a vertical third feeding direction of the sheets vertically adjacent and at the rear end of the stack of sheets so that the sheets are fed from the horizontal second feeding direction at said entrance into the vertical third feeding direction at the rear end of the stack,

said second conveyor means has a horizontally extending portion which extends substantially in an upstream direction beyond both said entrance of the second conveyor means and said exit of said first conveyor means and is spaced above said end portion of said first engaging means, said first feeding direction being directed toward a lower side of said horizontally extending portion of said second conveyor means at said entrance and forming an acute angle with said horizontal second feeding direction so that at said end portion of said first engaging means a trailing edge of each sheet which is engaged at a leading edge by said second engaging means is released from said first engaging means and lifts from said end portion of said first engaging means toward said horizontally extending portion spaced thereabove,

said second engaging means comprises a first conveyor belt fully vertically disposed and having a vertical surface abutting the entire rear end of the stack of sheets and extending therebelow, and a second conveyor belt having a course in the shape of a T with the T oriented sideways and disposed over and against an uppermost portion of said first conveyor belt,

means for driving said first conveyor belt with a second conveying speed slower than that of said first conveyor means,

an electrically switchable coupling operatively disposed between said driving means and said first conveyor belt, said first conveyor belt including only two guide pulleys comprising a lowermost guide pulley disposed lower than the stack of sheets and a first guide pulley vertically above said lowermost guide pulley, said first guide pulley defining said uppermost portion of said first conveyor belt, said uppermost portion of said first conveyor belt is disposed between and pressing against a horizontal leg of the T and a vertically downwardly extending side of a top of the

T cooperatively defining said second engaging means for engaging both sides of the sheets thereat,

three second guide pulleys disposed inside said second conveyor belt at three extremities of the T, respectively, an uppermost of said second guide pulleys is vertically displaceable, the vertically downwardly extending side of the top of the T being parallel and adjacent to a substantial portion of the length of an upper portion of said vertical surface of said first conveyor belt and cooperatively defining said vertical third feeding direction directly above the rear end of the stack of sheets, said horizontal leg of the T constitutes said horizontally extending portion of said second conveyor means,

said first guide pulley and said uppermost portion of said first conveyor belt press against a substantially small portion of the total length of said second conveyor belt between said other two of said second guide pulleys, said first guide pulley defining an immediate sharp bend of said second engaging means from said horizontal second feeding direction to said vertical third feeding direction,

said uppermost portion of said first conveyor belt and a center of said first guide pulley are disposed above an imaginary line drawn between said other two of said second guide pulleys yet substantially linearly therebetween,

another guide pulley is disposed outside said second conveyor belt spaced substantially vertically above said uppermost portion of said first conveyor belt pressing against said second conveyor belt between said horizontal leg of the T and an upwardly extending side of the top of the T,

said uppermost portion of said first conveyor belt is spaced slightly apart laterally from but closely adjacent to and slightly above said uppermost end of said end portion of said first engaging means of said first conveyor means,

the first conveying speed of said first conveyor means being so much faster than the second conveying speed of said second conveyor means that the lifted said trailing edge of a preceeding sheet engaged only by said second engaging means is run under by a leading edge of a following sheet while the latter sheet is engaged by said first engaging means, thereby causing successive of said sheets to overlap sequentially within said second conveyor means,

sensor means for sensing a space behind a trailing edge of a sheet engaged by said second engaging means of said second conveyor means, said sensor means is disposed adjacent said end portion of said first engaging means of said first conveyor means directly upstream of said entrance and exit, said sensor means for switching off said switchable coupling and said second conveyor means as long as the leading edge of a following sheet is not under the trailing edge of the preceeding sheet engaged by said second engaging means,

a movable machine support, said first and second conveyor means, said driving means, said switchable coupling, said sensor means and said support means are operatively mounted on said machine support,

a band conveyor operatively disposed upstream of said first conveyor means is pivotal at a downstream end thereof to said machine support about a horizontal axis, said band conveyor includes an input charging table which is adjustable in height and extends beyond said movable machine support, and

a pressing roller pair is arranged on said machine support between said downstream end of said band conveyor and said first conveyor means.

4,245,833

DEVICE FOR FEEDING AND STACKING FORMS IN A BOX

Bengt Akerström, Lidingö, Sweden, assignor to Hugin Kassaregister AB, Stockholm, Sweden

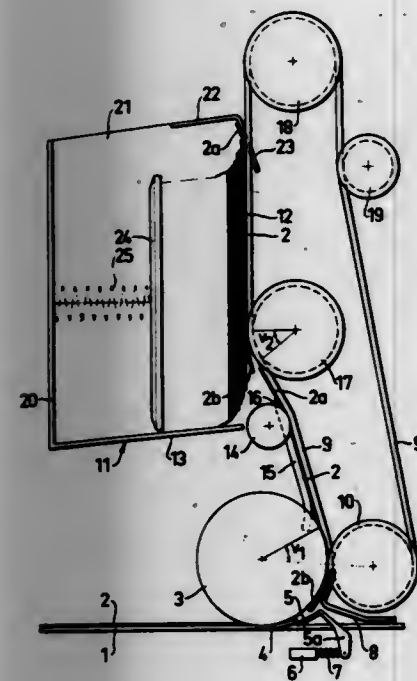
Filed Mar. 27, 1979, Ser. No. 24,438

Claims priority, application Sweden, Apr. 3, 1978, 7803718

Int. Cl.³ B65H 29/18, 31/06

U.S. Cl. 271-196

4 Claims



1. A device for feeding and stacking forms in an upright position in a box having a substantially vertically oriented inlet opening with stop means near its top, comprising:

belt means forming an endless loop, a portion of which is operative adjacent said opening to bring subsequent forms from below up into the box;

lower and upper roller means for guiding said belt means toward said opening at an acute angle therewith, said lower roller means being located adjacent the bottom of said opening intermediate said opening and said belt means and extending well above and below the lowermost extent of said opening, said upper roller means being located above said lower roller means and on the opposite side of said belt means, said upper and lower roller means engaging said belt means at engaging points spaced closer together than the length of one of said forms;

a drive roller positioned below said lower roller and drivingly engaging said belt means;

a stationary guide sheet for the forms extending in opposed relationship with said belt from the region of said drive roller to a point above the uppermost extent of said lower roller means, said guide sheet having an upper edge defining a release edge which serves a dual function of overcoming adhesion forces between the uppermost end of the form and said lower roller, as well as serving to snap out the lower end of each form into the plane of said opening when said form passes said release edge; and

a retarding surface provided on said stop means near the top of said opening, and forming a downwardly directed acute angle with respect to the plane of said opening, for frictionally retarding the leading edge of a form thrust upwards, whereby bouncing effects are minimized.

4,245,834

PRINT RECEIVING TRAY

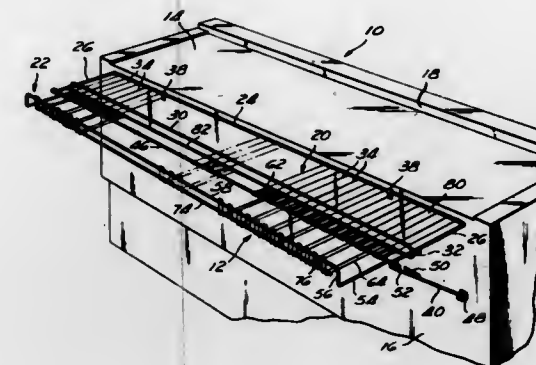
Larry A. Songer, Schaumburg, and C. Ray Cooper, Barrington, both of Ill., assignors to AM International, Inc., Los Angeles, Calif.

Filed Jan. 2, 1979, Ser. No. 252

Int. Cl.³ B65H 31/20

U.S. Cl. 271-213

8 Claims



1. A print receiving tray for receiving and stacking prints of various predetermined lengths issuing from a copying machine, comprising:

a fixed support mounted on the machine;

a movable support pivotally mounted on the fixed support for movement to a position selected from a plurality of predetermined positions comprising a first, an intermediate and an extended position, each said position conditioning the print receiving tray for receiving prints of a different but uniform predetermined length;

a lip means provided on the movable support; and releasable retaining means actuable between an operative position in coacting relation with the lip means for holding the movable support in one of the predetermined positions and an inoperative position out of coacting relation with the lip means for releasing the movable support for movement to any of the other predetermined positions.

4,245,835

SHEET STORING APPARATUS

George F. A. M. Turner, Blackmore, England, assignor to Ciba-Geigy AG, Basel, Switzerland

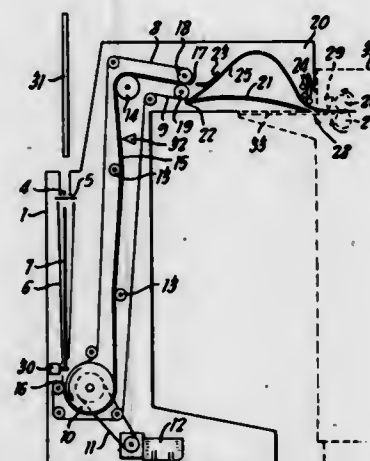
Filed Mar. 8, 1979, Ser. No. 18,398

Claims priority, application United Kingdom, Mar. 14, 1978, 9941/78

Int. Cl.³ B65H 9/00

U.S. Cl. 271-226

12 Claims



1. An apparatus for receiving a plurality of sheet films from film cassettes and presenting them in seriatim to an associated film processor, the apparatus comprising a light-tight enclosure having a film cassette introduction port and a film exit port located in light-tight operational contact with an associated film processor, the film cassette introduction port being

adapted to receive a film sheet from a cassette which is opened when its openable end is introduced therein, a film sheet transference means comprising a pair of endless driven belt systems, the path of the pair of belts running substantially parallel for sufficient length to hold therebetween in the parallel section of the path at least one film sheet, the said transference means having a film sheet entrance port located below the said introduction port and a film sheet discharging port for discharging film sheets held between the pair of belt systems, the said film sheet discharging port comprising a pair of rollers so located to present a film sheet being discharged therebetween to the associated film processor through the film exit port, and a space in the enclosure located between the film sheet discharging port and the entrance to the processor for accumulating film sheets therein in bowed configuration, said film sheets accumulating in said space by being fed from said discharging port to the film processor at a rate faster than that at which the film is delivered into the film processor.

4,245,836

APPARATUS FOR POSITIONING SHEET LIKE ORIGINALS

Joannes J. W. M. Joosten, Baarlo, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands

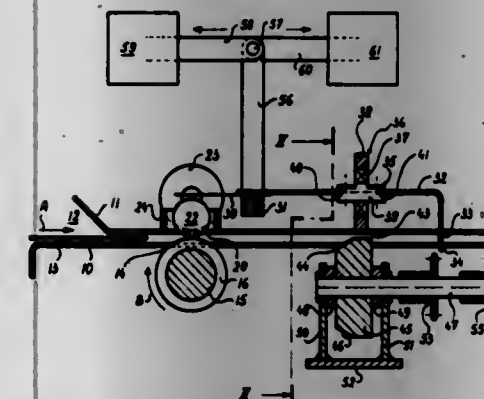
Filed Mar. 20, 1979, Ser. No. 22,323

Claims priority, application Netherlands, Mar. 23, 1978, 7803129

Int. Cl.³ B65H 9/20

U.S. Cl. 271-228

4 Claims



1. In an apparatus for positioning a sheet-like original on the feed table of a copying machine that is provided with at least two image receiving materials having different widths and includes means for feeding said original in a feed direction past an exposure station to be copied onto one of said receiving materials, the improvement comprising:

a plurality of sensors mounted on said feed table, each of which is enabled in a response state corresponding to the presence of an original at the sensor, and is disabled in a non-response state corresponding to the absence of an original at the sensor, said plurality comprising at least one pair of sensors which are spaced apart by a distance corresponding to the width of one of said receiving materials; means for transporting in a direction transverse to said feed direction an original lying ready to be copied; and means for inactivating said transporting means when one of the following first and second respective conditions occurs:

A. both sensors of each pair of sensors simultaneously have the same state; or

B. in any one pair of sensors one sensor has been enabled in the response state corresponding to the presence of an original and subsequently been disabled in the non-response state corresponding to the absence of the original and the other sensor of the pair has thereafter been enabled in the response state corresponding to the presence of an original.

4,245,837

OCCUPANT PROPELLED ROTARY CONVEYOR

Johannes Menschel, Postfach 1529, D-4190 Kleve, Fed. Rep. of Germany

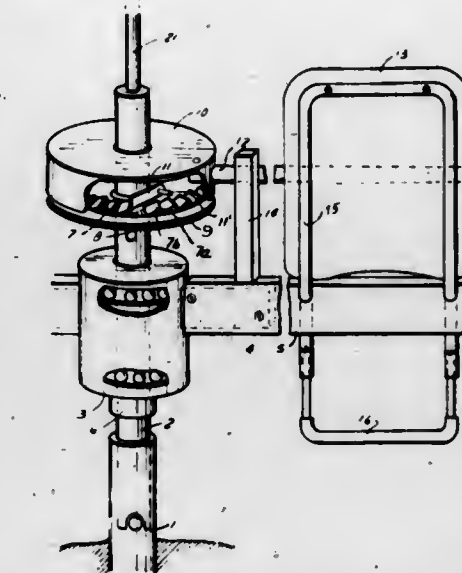
Filed Jun. 8, 1978, Ser. No. 913,863

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1977, 2726703

Int. Cl.³ A63G 1/18

U.S. Cl. 272-33 R

16 Claims



1. A rotary conveyor, particularly a merry-go-round, comprising a base having an upright axis; rotary means having bearing means rotatably mounted on said base for rotation about said axis, and an arm fixedly connected with said bearing means for joint rotation therewith;

support means having a support member which carries a seat for supporting a user and is detachably connectable with said arm of said rotary means for joint rotation about said axis; and

rotating means for rotating said rotary means together with said support member and having a ratchet mechanism which includes a gear fixedly connected with said base and having a radially outwardly extending marginal portion, and a pawl engageable with and disengageable from said gear, said rotating means further including a lever having one end portion operatively connected with said ratchet mechanism, and another end portion which is subject to force applied thereto by a user, so that in engaged condition of said pawl said rotary means together with said support means can be rotated about said axis under the action of the force applied by the user to said lever, said rotating means also including a cup-shaped holding member which has a downwardly open end portion abutting against said marginal portion of said gear, and which holds said pawl so that the latter freely falls into engagement with said gear.

4,245,838

POLE VAULTING LANDING PIT

Donald W. Gordon, Yorba Linda, Calif., assignor to Nissen Corporation, Cedar Rapids, Iowa

Filed Mar. 28, 1979, Ser. No. 24,555

Int. Cl.³ A63B 5/00

U.S. Cl. 272-104

4 Claims

1. A landing pit for preventing injury to an athlete, comprising:

a pair of vertical posts;

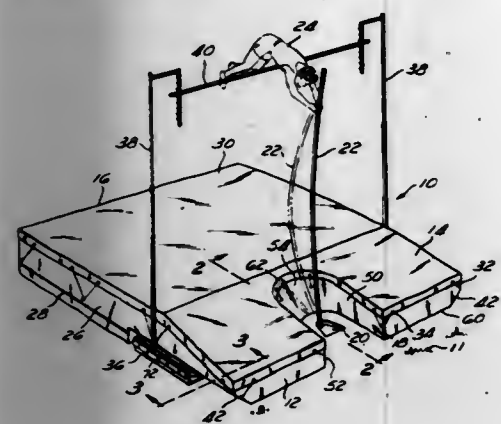
a horizontal jump clearance bar supported on said vertical posts;

a pair of standards supporting said pair of posts;

a cushion positioned between said pair of vertical posts and safely absorbing the vertical fall of an athlete;

said cushion having a pair of opposite sidewalls each including a recess formed adjacent their lower edge, said recess

forming a portion of each sidewall which extends over each of said standards; and
at least one of said pair of standards comprising:
an L-shaped plate member having a first portion extending laterally beneath said cushion and a second portion extending substantially normal to said first portion positioned adjacent a respective one of said opposite sidewalls of said cushion;



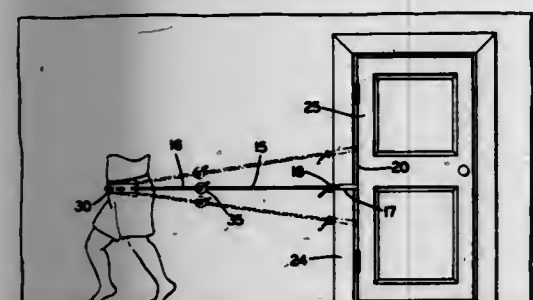
rail means mounted on one side of said second portion of said plate member;
a mounting member slidably mounted on said rail means including means for supporting one of said pair of vertical posts thereon; and
said rail means permitting said one of said pair of vertical posts to be selectively positioned along the length of said second portion of said plate member.

4,245,839

EXERCISE DEVICE FOR RUNNING IN PLACE
Stanley G. Trent, 334 E. Park Ave., Barberton, Ohio 44203
Filed Aug. 3, 1978, Ser. No. 930,497
Int. Cl.³ A63B 21/00

U.S. Cl. 272-116

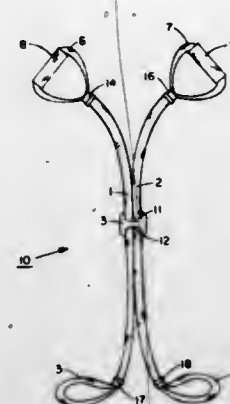
1 Claim



1. A device for running in place exercises comprising:
a flexible and essentially inextensible unitary tension rope of which one end is formed into a loop within which a person can exert a forward thrust on the loop, the tension rope having at its one end a holding device for removably affixing it to a fixed object for resisting tension, the free end of the loop portion of the rope being immovably but adjustably fastened to the standing part of the rope at the other end of the loop,
the standing part of the rope extending beyond and away from the loop for a length sufficient to pass around a fixed object for resisting tension,
the end of the rope having an enlargement, and a portion of the rope close to the enlargement lying in parallel contact with the standing portion of the rope,
and a rigid helix of at least one and one half turns having a pitch resulting in a spacing between turns slightly greater than the rope diameter and an internal diameter slightly greater than twice the rope diameter,
said helix surrounds the two adjacent portions of the loop portion of the rope and holds the rope against separation from a fixed object.

4,245,840
RESISTIVE EXERCISE DEVICE
Jay W. Van Housen, 617 Gerecke, Norfolk, Nebr. 68701
Filed Dec. 9, 1977, Ser. No. 859,070
Int. Cl.³ A63B 21/02
U.S. Cl. 272-137

6 Claims



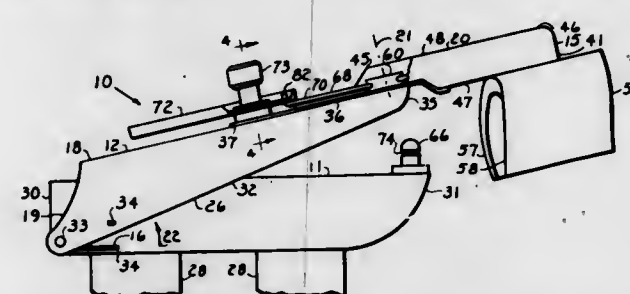
1. A resistive exercise device comprising:
(a) a first resilient elongate member having a first free end and a second free end;
(b) a second resilient elongate member having a first free end and a second free end;
(c) handhold means affixed to said first end of said first member and handhold means affixed to said first end of said second member;
(d) foothold means affixed to said second end of said first member and foothold means affixed to said second end of said second member;
(e) adjustable friction type connector means receiving said elongate members in adjuxta position relationship and said connector means is slidably attached between said first end and said second end of said second member and said first end and said second end of said first member whereby the distance between said first ends and said connector means may be selectively varied in length so that various exercises may be performed when the handhold means and the foothold means are operated on simultaneously and wherein said adjustable connector means is operable independent of and also not connected to any external structure.

4,245,841

GOLF TRAINING DEVICE
Fred L. Owens, Jr., 116 Bennett St., Auburndale, Fla. 33823
Filed Aug. 27, 1979, Ser. No. 70,000
Int. Cl.³ A63B 69/36

U.S. Cl. 273-183 B

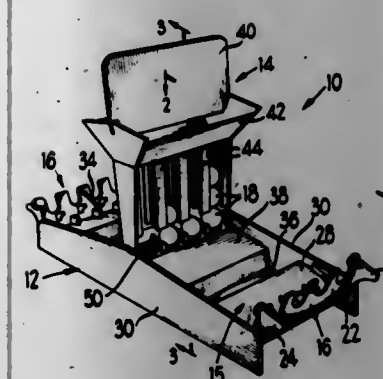
8 Claims



1. A golfer's training device comprising a base plate, means for fastening the base plate to the golfer's forearm, a pivot arm pivotally connected to the base plate for pivotal movement between a base plate overlying position and a pivotally offset position, said pivot arm having a distal end portion which is arranged to engage the back of the golfer's hand at its plate overlying position, and means retaining said pivot arm at its plate overlying position and responding at a predetermined hand pressure exerted against said distal end portion to release said pivot arm for movement to its offset position.

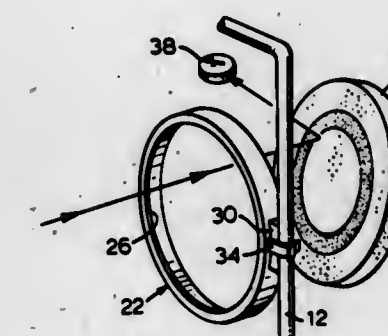
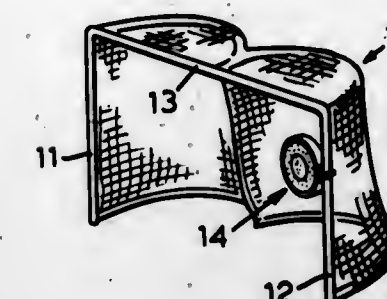
4,245,842
PROJECTILE LAUNCHING GAME
Wayne A. Kuna, Elmhurst, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 6, 1978, Ser. No. 958,181
Int. Cl.³ A63F 9/02
U.S. Cl. 273-357

14 Claims



1. A skill-type game, comprising:
a game board;
a target area disposed transversely across the center of said game board;
two opposing launching areas, one at each end of the game board, each launching area including means for manually launching an aerial projectile along a path through the air toward the target area, said projectile launching means including a launcher pivotally connected to the end of said game board and biasing means for urging said launcher toward the target area; and
a projectile receiver at the target area, including a plurality of generally vertical projectile receiving channels, each adapted to receive a plurality of projectiles in a stacked relation therein and formed from a plurality of substantially parallel I-shaped support members spaced a distance greater than a diameter of said projectiles.

means for attaching the framework to a hockey goal post or crossbar so that the target surface of the target element



mounted in said framework is presented forwardly of the goal mouth.

4,245,844

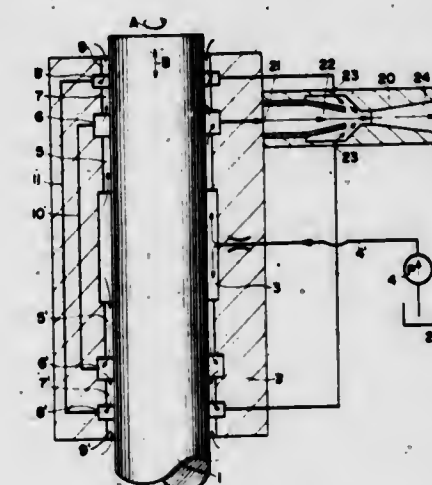
APPARATUS FOR REMOVING LEAKAGE FLOW OF A PRESSURIZED MEDIUM FROM GAP TYPE SEALS
Andreas Pohl, Pfungstadt; Gerhard Hintz, Ober-Ramstadt, and Guenter Keller, Modautal, all of Fed. Rep. of Germany, assignors to Firma Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,969
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909878

Int. Cl.³ F16J 40/00

U.S. Cl. 277-3

11 Claims



1. An apparatus for removing the leakage flow of a pressurized medium from a gap type seal, comprising suction means operatively connected to said gap type seal, said suction means comprising jet pump means including a working medium connecting inlet and a suction connecting inlet, and means coupling said suction connecting inlet of said jet pump means to said gap type seal and wherein said jet pump means is driven by a flowing medium supplied to said working medium connecting inlet.

4,245,843

HOCKEY TARGET
Denis O. Griggs, 102 Spire Hillway, Willowdale, Ontario, Canada (M2H 3A6)
Filed Aug. 13, 1979, Ser. No. 66,274
Claims priority, application Canada, Aug. 15, 1978, 309431
Int. Cl.³ A63B 69/00

U.S. Cl. 273-393

7 Claims

1. A hockey shooting target assembly comprising:
a flexible compressible impact resistant target element having a front target surface and an opposed rear surface;
an impact resistant framework defining an aperture for reception therein of the target element;
the target element being a releasable interference fit in the aperture of the framework and removable therefrom by impacts administered to the target surface of the target element;

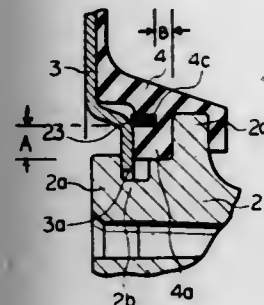
4,245,845

VACUUM BOOSTER DEVICE

Hiromi Ando, Tokyo, and Tomizo Azuma, Yamato, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan
Continuation-in-part of Ser. No. 752,663, Dec. 20, 1976, abandoned. This application Dec. 14, 1977, Ser. No. 860,322
Claims priority, application Japan, Dec. 29, 1975, 50-178794
Int. Cl.² F16J 15/12

U.S. Cl. 277-189

2 Claims



1. In combination, a diaphragm for a vacuum booster having an annular inner peripheral portion, a valve body and a piston plate connected to each other with said annular inner peripheral portion of the diaphragm clamped therebetween, said diaphragm being of resilient material, and a ring of rigid material disposed within said annular inner peripheral portion and being radially spaced from the inner periphery of the annular peripheral portion and extending axially into the diaphragm from one of the axial end surfaces of said portion a distance less than the dimension of the inner peripheral portion in the diaphragm in the axial direction of the diaphragm, the difference between the axial dimension of the inner peripheral portion of the diaphragm and the axial dimension of the ring being less than the radial distance of said ring from the inner periphery of said annular inner peripheral portion, whereby when the inner peripheral portion of the diaphragm is clamped between the piston plate and the valve body, flow of material of the inner peripheral portion of the diaphragm in the radially outward direction due to the compression of the inner peripheral portion of the diaphragm is substantially prevented.

4,245,846

ONE-PIECE COLLET

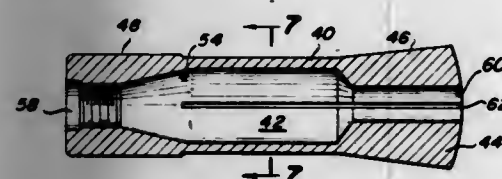
Earl C. Andrews, Elgin, S.C., assignor to Hardinge Brothers, Inc., Elgin, N.Y.

Continuation-in-part of Ser. No. 675,688, Apr. 9, 1976, abandoned. This application May 2, 1978, Ser. No. 902,246

Int. Cl.³ B23B 31/20

U.S. Cl. 279-46 R

9 Claims



1. A one-piece collet comprising:

- (a) an elongated body having rear, central and front portions of solid metallic construction, said front portion having a frusto-conical camming surface,
- (b) said rear, central and front portions having a longitudinal bore extending therethrough, the diameter of the longitudinal bore extending through said central portion being substantially greater than the diameter of the rear portion bore, and the wall thickness of the rear portion being substantially greater than the wall thickness of the central portion,
- (c) the front and central portions of said body being provided with a plurality of spaced, longitudinal slots forming resilient leaves,

(d) the bore of said rear portion being threaded for engagement with a draw bar,

(e) the wall thickness of said elongated body in the transitional area between the rear and central portions being progressively and gradually thickened from a point just aft of the longitudinal slots of the central portion to the inner end of the threaded bore of said rear portion,

(f) the rear portion of said body being cold worked, whereby the transitional area between said rear and central portions is characterized by smooth uniform grain flow lines, thereby providing a collet of increased tensile strength at the rear portion.

4,245,847

WHEELCHAIR

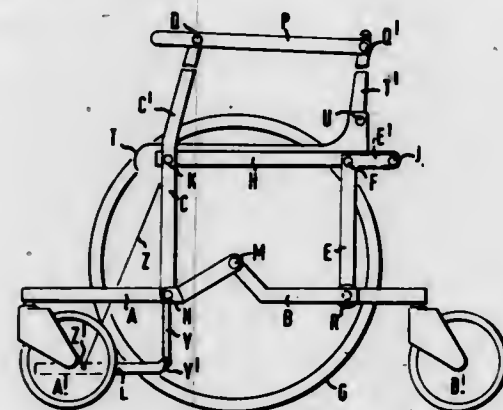
Christopher Knott, "Monza", New Hill, Walesby, Near Newark, Nottinghamshire, England

Continuation-in-part of Ser. No. 847,344, Oct. 31, 1977, abandoned. This application May 24, 1979, Ser. No. 41,854

Int. Cl.³ B62M 1/00; B62B 9/02

U.S. Cl. 280-5.2

7 Claims



1. A wheelchair comprising a forward castor frame, an independent rearward castor frame pivotally connected to said forward castor frame at a transverse axis of pivotal connection which interconnects said frames to form a castor frame assembly, each of said castor frames carrying at least one ground engaging castor, a pair of independently rotatable ground engaging wheels mounted one on each side of said castor frame assembly between the castors of said forward and rearward castor frames respectively, said wheel chair including a chair seat which, in said collapsed condition being mounted on said forward castor frame rearwardly of the castor on said forward castor frame, and rear chair legs mounted on said rearward castor frame forwardly of the castor on said rearward castor frame, said rear chair legs being pivotable relative to said rearward castor frame.

4,245,848

VEHICLE EQUIPPED WITH TWO ARTICULATED TRUCKS

Jean-Paul Dudouyt, Residence "Les Gouttettes", Rte. du Lac, Coppet, Vaud, Switzerland

Filed Dec. 28, 1978, Ser. No. 973,971

Claims priority, application Switzerland, Dec. 29, 1977, 16174/74; Jun. 14, 1978, 6462/78; Sep. 8, 1978, 9452/78

Int. Cl.³ A63C 1/24

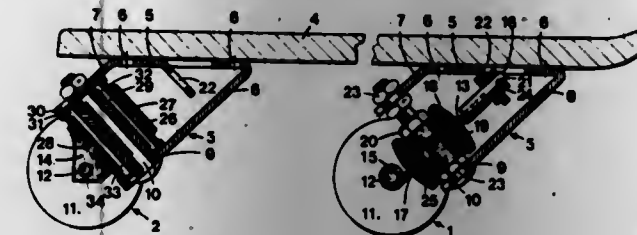
U.S. Cl. 280-11.28

14 Claims

1. A surface vehicle comprising:

- a chassis;
- at least two pivotable steering and support trucks attached to said chassis, said trucks being variably pivoted by the relative inclination of said chassis with respect to said trucks, the pivotal axes of said trucks being inclined with respect to the surface on which said vehicle moves and said pivotal axes converging toward one another below

said chassis, each of said trucks including an articulated member, each of said articulated members fixedly supported by said trucks, a shaft supported by said articulated member, a pair of freely rotatable wheels supported by each of said shafts, each of said shafts lying rearward of



the pivotable axis of said articulated member by which it is supported wherein the point of application of frictional forces from said surfaces to said trucks lies rearward of said pivotal axes on the axis of rotation of the wheels as defined by the forward motion of said vehicle.

4,245,849

COLLAPSIBLE SUPPORT DEVICES AND STRUCTURE

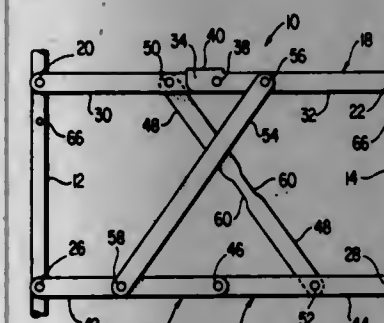
Robert Thiboutot, Quebec, Canada, assignor to Les Entreprises Rotot Ltee, Comte de Bellechasse, Canada

Filed Nov. 13, 1978, Ser. No. 960,444

Int. Cl.³ A47C 4/00; B62B 13/16

U.S. Cl. 280-20

22 Claims



1. A collapsible support structure having first and second substantially parallel members interconnected by a collapsible support mechanism, the support mechanism being movable between a collapsed position in which said parallel members are closely spaced from each other and an erected position in which said parallel members are spaced a greater distance apart from each other and held in an upright position, the support mechanism, in the erected position, comprising:

- a member substantially perpendicular to the parallel members having ends pivotally connected to portions of said parallel members, said perpendicular member being formed of two component members having distal ends pivotally connected to the parallel members and proximal ends pivotally connected to each other;
- two diagonal members for transferring forces exerted on one of the parallel members to the other parallel member, one of said diagonal members extending from a lower portion of said second parallel member to an upper portion of said first parallel member, the other of said diagonal members extending from a lower portion of said first parallel member to an upper portion of said second parallel member, each of said diagonal members having a longer component member pivotally connected to a shorter component member, distal ends of said shorter and longer component members being pivotally connected to said parallel members, with the distal end of the longer component members being pivotally connected to a respective one of said parallel members at or near the connection of the said perpendicular member to the said parallel member; and
- support members for interconnecting said perpendicular member and said diagonal members, one of said support members having a first end pivotally connected to said longer component member of said one of said diagonal members and a second end pivotally connected to the

perpendicular component member connected to said first parallel member, another of said support members having a first end pivotally connected to said longer component member of said other diagonal members and a second end pivotally connected to the perpendicular component member connected to said second parallel member, at least one of said component members including means for holding said component members in a predetermined position when the support mechanism is in an erected position.

4,245,850

SCISSOR FRAME LOCK

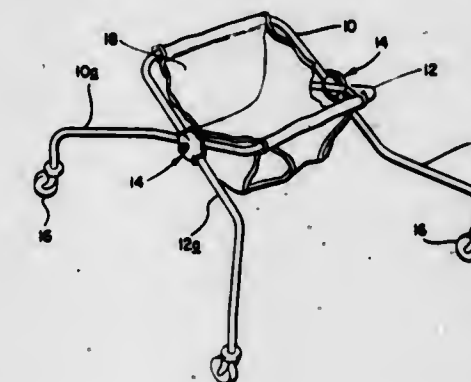
Robert J. Boudreau, Bedford, Pa., assignor to Hedstrom Co., Bedford, Pa.

Filed Jul. 27, 1979, Ser. No. 61,500

Int. Cl.³ B62B 7/10

U.S. Cl. 280-87.02 W

1 Claim



1. A scissor frame lock for use particularly on a walker or other furniture item comprising a rigid plate sandwiched between corresponding juxtaposed tubular legs of the scissor frame at the location where the legs intersect, means for rotatively fixing the plate to one of said legs, means defining a series of aligned openings through the opposite walls of the two legs and the plate, a pivot pin slidably received in said aligned series of openings, one end segment of the pivot pin being turned back on itself forming a laterally extending bight whose length is greater than the radius of the frame leg adjacent that segment so as to extend past that segment and project through an opening formed in the plate spaced laterally from said leg, means defining another opening in the segment projects through said other plate opening and a second position wherein said pivot pin segment does not project through said other plate opening, a knob affixed to the opposite end of said pivot pin, a cover engaged over said other frame leg and said plate, said cover being formed with an opening for receiving the pivot pin so that said opposite end of the pivot pin projects beyond the cover, and a coil spring compressed between said knob and said cover for biasing said pivot pin to its said first position.

4,245,851

SKI BRAKE

Erwin Krob, Vienna, and Josef Svoboda, Schwechat, both of Austria, assignors to TMC Corporation, Bear, Switzerland

Filed Jan. 5, 1979, Ser. No. 1,368

Claims priority, application Austria, Jan. 5, 1978, 74/78

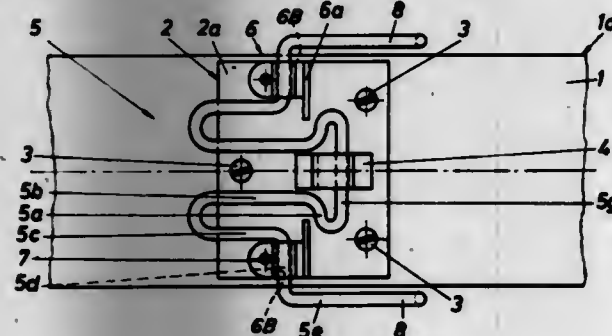
Int. Cl.³ A63C 7/10

U.S. Cl. 280-605

6 Claims

1. In a ski brake device for a ski having a spring wire bar with braking mandrels supported on a base plate adapted to be secured to an upper surface of said ski, said bar being movable automatically under spring action from a retracted position wherein said braking mandrels extend above said ski into a braking position wherein said braking mandrels project downwardly from said ski on opposite sides thereof, said bar having

a pair of axle segments extending substantially at a right angle with respect to the central longitudinal axis of said ski when said bar is in said braking position and a central portion integral with said axle segments and extending therebetween, said central portion having a shape that is symmetrical about said central longitudinal axis and consisting of a pair of laterally spaced first segments integral with and extending at a first angle from an end of said axle segments remote from said braking mandrels, a pair of transversely extending second segments integral with and extending at a second angle from an end of said first segments remote from said axle segments, a pair of laterally spaced third segments integral with and extending at a third angle from an end of said second segments remote from said second segments and a fourth segment integral with and connecting said pair of third segments together, said base plate having first and second longitudinally spaced bearing means thereon for pivotally supporting said axle segments and said fourth segment, the improvement comprising wherein said first segments are shorter in length than said third segments, wherein said fourth segment extends perpendicularly to said longitudinal axis of said ski with the end portions thereof extending coextensively with at least a portion of each of said axle segments but spaced longitudinally therefrom, wherein one of said first and second bearing means includes first means for supporting each of said axle segments for angular movement about an upright axis perpendicular to said upper surface of said ski, wherein the other of said first and second bearing means includes means for supporting said fourth segment for movement toward said axle segments in response to a pivoting of said bar from said braking position to



said retracted position, said end portions directly engaging at least one of said first and second bearing means and said portions of said axle segments at a location spaced laterally inwardly of said first means which supports said axle segments for angular movement whereby a continued movement of said fourth segment will cause said axle segments to be urged to a position, while being maintained in a plane parallel to said upper surface of said ski, wherein the longitudinal axes of each of said axle segments become oriented at an acute angle to said longitudinal axis of said ski and said braking mandrels extend over said upper surface of said ski.

6. In a ski brake device for a ski having a spring wire bar with braking mandrels supported on a base plate adapted to be secured to an upper surface of said ski, said bar being movable automatically under spring action from a retracted position wherein said braking mandrels extend above said ski into a braking position wherein said braking mandrels project downwardly from said ski on opposite sides thereof, said bar having a pair of axle segments extending substantially at a right angle with respect to the central longitudinal axis of said ski when said bar is in said braking position and a central portion integral with said axle segments and extending therebetween, said central portion having a shape that is symmetrical about said central longitudinal axis and consisting of a pair of laterally spaced first segments integral with and extending at a first angle from an end of said axle segments remote from said braking mandrels, a pair of transversely extending second segments integral with and extending at a second angle from an end of said first segments remote from said axle segments, a pair of laterally spaced third segments integral with and extending at a third angle from an end of said second segments remote from said second segments and a fourth segment inte-

gral with and connecting said pair of third segments together, said base plate having first and second longitudinally spaced bearing means thereon for pivotally supporting said axle segments and said fourth segment, the improvement comprising wherein said first segments are shorter in length than said third segments, wherein a pair of bearing plates are provided which are pivotally secured to said base plate for movement about said upright axis, each of said bearing plates including a hollow cylindrical housing means for rotatably supporting one of said axle segments therein, and wherein said upright axis for each of said bearing plates is oriented closer to said central longitudinal axis of said ski than said hollow cylindrical housing means.

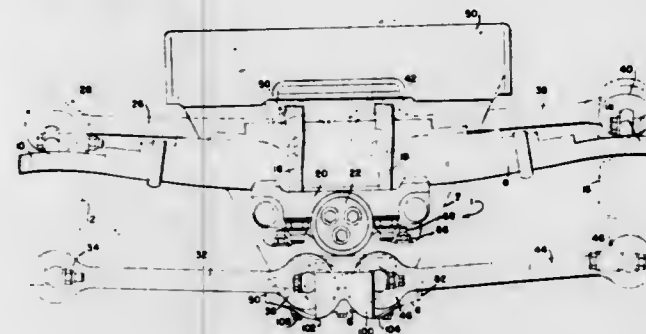
4,245,852

TANDEM AXLE SUSPENSION BRACKET ASSEMBLY
Tjong T. Lie, Canton, and Charles G. Wright, Detroit, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1979, Ser. No. 5,276
Int. Cl.³ B60G 5/00

U.S. Cl. 280—680

13 Claims



1. In a tandem axle suspension for heavy-duty vehicles having tandem axles and spring and stabilizing devices connected to the axles, frame supporting means for supporting a vehicle frame, and connecting means for connecting the spring and stabilizing devices to the frame supporting means, the connecting means including separable means for attaching said stabilizing devices to the frame supporting means and for attaching transversely spaced frame supporting means together, the improvement comprising a projection having spaced sidewalls integrally formed on one of the frame supporting means and the separable means and interfitting with complementary recess means on the other of said frame supporting means and the separable means for withstanding shear forces which tend to slide the separable means with respect to the frame supporting means.

4,245,853

INDEPENDENT WHEEL SUSPENSION FOR MOTOR VEHICLES

Hitoichi Inoue, Kenichi Watanabe, and Takashi Sumimoto, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed May 17, 1979, Ser. No. 40,082
Claims priority, application Japan, Sep. 14, 1978, 53-126796[U]

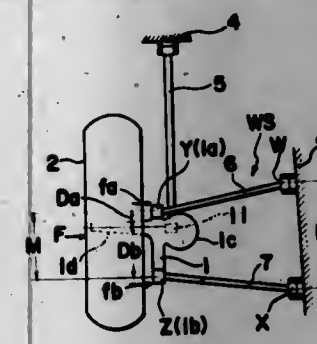
Int. Cl.³ B60G 3/00

U.S. Cl. 280—701

3 Claims

1. In a wheel suspension for a vehicle having a vehicle chassis, which comprises a wheel support including a wheel carrier, said wheel carrier having a wheel journal for the support of a wheel for rotation independently of the wheel carrier, front and rear arm members extending between the wheel carrier and the vehicle chassis in spaced relation to each other in a direction generally laterally of the vehicle chassis, the front arm member having a first end hingedly and yieldingly connected to a front portion of the wheel carrier and a second end hingedly and yieldingly connected to a front lateral portion of

the vehicle chassis and the rear arm member has a first end hingedly and yieldingly connected to a rear portion of the wheel carrier and a second end hingedly and yieldingly connected to a rear lateral portion of the vehicle chassis, a connecting member for elastically connecting the wheel support to the vehicle chassis for displacement in a direction generally perpendicular to the widthwise direction of the vehicle chassis, and a shock absorber means for absorbing vibrations of the



wheel carrier which take place in a direction at right angles to the road surface during the running of the vehicle, the improvement wherein said journal extends outwardly from the wheel carrier in a direction opposite to any one of the front and rear arm members at a position spaced a smaller distance from the joint of the first end of the front arm member to the front portion of the wheel carrier than the distance from the joint of the first end of the rear arm member to the rear portion of the wheel carrier.

4,245,854

HIGH PRESSURE AIR SUSPENSION SYSTEM

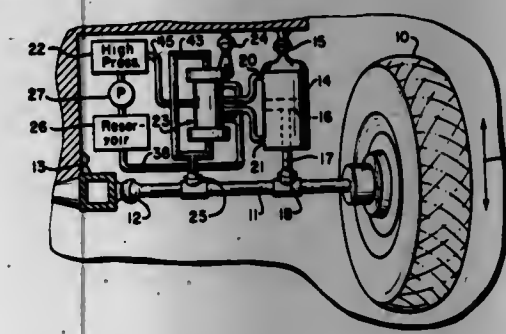
Charles R. Curatt, 75972 Baseline, 29 Palms, Calif. 92277

Filed Apr. 17, 1978, Ser. No. 896,808

Int. Cl.³ B60G 11/26

U.S. Cl. 280—711

10 Claims



1. A high pressure air suspension system for each wheel of a vehicle having an axle articulated to the vehicle frame, including, in combination:

- (a) an air cylinder coupled to said frame at one end;
- (b) a piston head normally centrally positioned in said cylinder having a piston rod extending from the end of said cylinder opposite said one end, coupled to said axle so that said piston will move back and forth in said cylinder with up and down movements of said wheel relative to said frame, said cylinder having a first air port at said one end and a second air port at its opposite end;
- (c) a high pressure air source;
- (d) a control valve means connected between said high pressure air source and said first and second air ports and having a slide spool for passing high pressure air to one or the other of said ports and simultaneously exhausting air through the other or one of said ports respectively, depending upon the position of said spool; and
- (e) means on said control valve means responsive to said up and down movements of said wheel relative to said frame to move the position of said slide spool to connect said high pressure air source to the end port towards which said piston head is moved to thereby increase the air pressure in said cylinder exerted on said piston head in a

manner opposing the direction of movement of said piston head.

4,245,855

VEHICLE STABILIZER

Thomas M. Larson, Hixson, Tenn., assignor to Dover Corporation, Chattanooga, Tenn.

Filed Mar. 23, 1979, Ser. No. 23,257

Int. Cl.³ B60S 9/12

U.S. Cl. 280—765

9 Claims



1. A stabilizer assembly for increasing the lateral stability of a vehicle having a frame supported above a roadway on spaced wheels having a fixed tread, said assembly comprising a power unit having a longitudinal axis and an output member linearly moveable substantially along said axis from a retracted position within said unit to a fully extended position substantially outside said unit, said output member having a free end extending from said unit at all times, journal means having an axis of rotation spaced from said longitudinal axis for mounting said power unit on the frame for pivotal movement about said axis of rotation from an inactive stored position wherein said longitudinal axis is spaced substantially from the roadway to an active position wherein said longitudinal axis extends toward the roadway, tension means of finite length having one end connected to said output member adjacent said free end and a second end connected to said frame at a location between said free end and said roadway when the power unit is in said inactive stored position, said tension means having a relaxed state when the output member is in the retracted position and a tensed state after the output member is partly extended, said ends of said tension means being spaced one from the other less than said finite length when in the relaxed state and equal to said finite length when in said tensed state, whereby upon further movement of said member beyond said partly extended position said power unit will pivot toward the roadway until the member is fully extended.

4,245,856

EMERGENCY RELEASE FOR PASSIVE SEAT BELT SYSTEMS

Avraham Ziv, Sepulveda, Calif., assignor to American Safety Equipment Corporation, San Fernando, Calif.

Filed May 24, 1979, Ser. No. 42,022

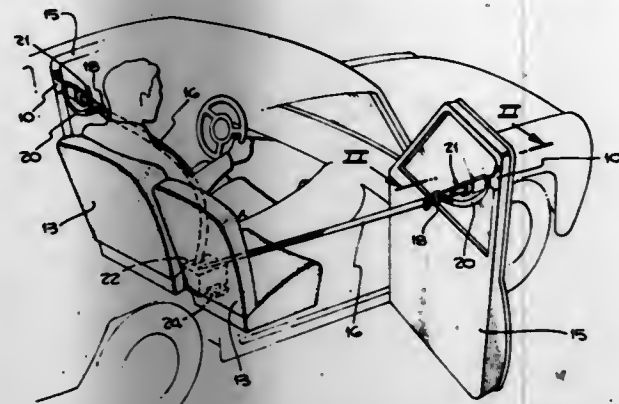
Int. Cl.³ B60R 21/10

U.S. Cl. 280—802

26 Claims

1. In a vehicle passive seat belt system having a seat belt attached between the vehicle floor and a door disposed adjacent to an occupant and hingedly mounted for rotatable opening about a vertical axis disposed forward of the occupant's seat, with said belt passing over the torso of the occupant and being retractably mounted at one end to said vehicle and being permanently mounted at the other end to an anchor bracket within said vehicle, an emergency release for said seat belt system comprising means for releasably attaching an intermediate portion of said belt to said anchor bracket, whereby an open loop of belting material is defined by said end permanently attached to said bracket and said intermediate portion releasably attached to said bracket, said loop elongating when

said intermediate portion is released from said bracket, said elongation slackening said seat belt and facilitating the exit of



said occupant from said vehicle under conditions in which said exit would be difficult without such slackening.

4,245,857

RECORDING ELEMENT

Masato Satomura, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Dec. 19, 1978, Ser. No. 971,149

Claims priority, application Japan, Dec. 27, 1977, 52-159548 Int. Cl.³ B41M 5/22

U.S. Cl. 282—27.5 10 Claims

1. A recording element comprising a support having provided thereon microcapsules the contents of which consist essentially of: (a) a color former capable of forming a color on contact with a color developer; (b) a solvent for the color former other than an alcohol or ketone, each having at least six carbon atoms and a solubility in water of less than about 2; and (c) an alcohol or ketone each having at least six carbon atoms and a solubility in water of less than about 2.

4,245,858

CONDUIT STRUCTURE

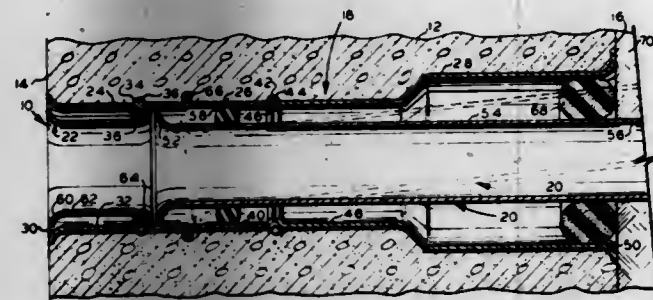
Russell C. Cox, Dallas, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 20, 1978, Ser. No. 926,477

Int. Cl.³ F16L 5/02

U.S. Cl. 285—158

25 Claims



1. A conduit joint comprising:
a tubular outer housing having first and second ends and inner and outer surfaces;
a first projection extending inwardly from the inner surface of said housing;
a second projection extending inwardly from the inner surface of said housing and spaced longitudinally from said first projection;
a first tubular inner member having first and second end portions and inner and outer surfaces; said first inner member being positioned at least partially within said outer housing with a portion of said first inner member positioned intermediate said first and second projections; means on said first inner member positioned intermediate said first and second projections and engagable with at least one of said projections for retaining said first inner member within said outer housing and permitting limited

relative longitudinal movement between said outer housing and said first inner member;
resilient seal means positioned intermediate said first and second projections and in continuous sealing engagement with the inner surface of said outer housing and the outer surface of said inner member for providing a seal therebetween; and

wherein said tubular outer housing includes:

- a tubular intermediate portion formed of a material capable of being fusion welded and having first and second ends;
- a tubular first end portion formed of a material capable of being fusion welded and having first and second ends, said tubular first end portion being coaxially aligned with said tubular intermediate portion with the first end of said tubular intermediate portion secured to the second end of said tubular first end portion by means of a first butt-fusion-weld forming a first upset joint and said first projection being formed by said first upset joint; and
- a tubular second end portion formed of a material capable of being fusion welded and having first and second ends, said tubular second end portion being coaxially aligned with said tubular intermediate portion with the second end of said tubular intermediate portion secured to the first end of said tubular second end portion by means of a second butt-fusion-weld forming a second upset joint and said second projection being formed by said second upset joint.

4,245,859

TWEezer DEVICE FOR MANIPULATION OF SOFT CONTACT LENSES

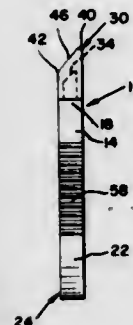
Edgar A. Rainin, 20 Shawn Ct., Danville, Calif. 94526

Filed Sep. 24, 1979, Ser. No. 78,310

Int. Cl.³ A61F 9/00

U.S. Cl. 294—1 CA

4 Claims



1. A tweezer device for manipulation of soft contact lenses comprising:
a. a pair of relatively rigid legs, each leg having a first end portion and a second end portion, said first end portion including an end surface;
b. means for connecting said second end portion of each of said pair of legs;
c. a cap covering said end surface of each of said pairs of relatively rigid legs, each cap including a first tip, a second tip, and an end surface, said first tip extending further from said first end portion of each of said legs than said second tip, said cap end surface spanning said first and second tips and obtaining support from said end surface of said first end portion of each leg, said cap being constructed of soft material having an elastic memory.

4,245,860

MISSILE HOISTING SLING

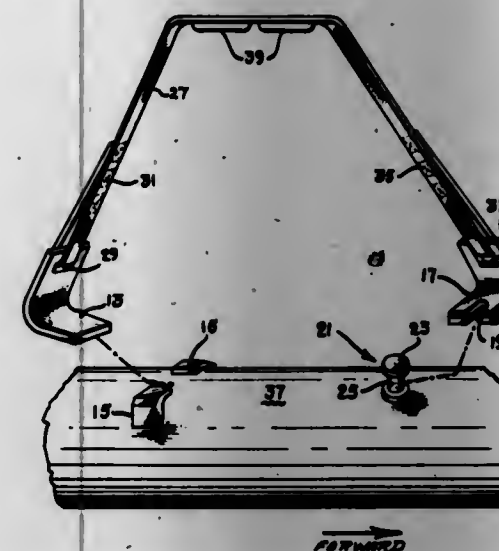
Farley T. Hinds, Fort Walton Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 3, 1979, Ser. No. 35,580

Int. Cl.³ B64C 1/22

U.S. Cl. 294—74

1 Claim



1. A hoisting sling for removing and replacing a missile having forward and rearward lugs thereon from an all up around container, said sling comprising a rearward grip for engagement with the rearward lugs on the missile, said rearward grip being an angled member for sliding under and between spaced apart rearward lugs on the missile, a forward grip for engagement with the forward lug on the missile, said forward grip being an angled metal member having a slot therein for sliding under the head of and around the upright pin portion of the forward lug on the missile, and a nylon strap fixedly attached between the upper portions of said rearward and forward grips for engaging a hoist means, thereby allowing the missile to be safely and easily lifted from its container and replaced therein.

4,245,861

CORE GRIPPER

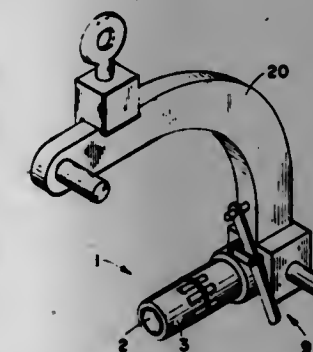
Edward G. Harry, P.O. Box 13A, Gresham, Wis. 54128, and Stephen L. Hirschboeck, 1402 Oakhosh St., New London, Wis. 54961

Filed Jul. 30, 1979, Ser. No. 61,591

Int. Cl.³ B66C 1/54

U.S. Cl. 294—94

5 Claims



1. A core gripper for roll lifting, transporting, are handling equipment comprising:
(1) an elongate central cam having a regular polygonal cross section,
(2) a cylindrical sleeve which is co-axial with the cam and which surrounds the cam and the sleeve has at least one ring of regularly spaced longitudinal slots passing through the walls of the sleeve and the number of slots equals the number of sides of the polygonal cam and the sleeve is

provided with at least one circumferential groove passing around the sleeve at the location of the slots,

- (3) a multiplicity of gripping cylinders equal in number to the number of slots in the sleeve and the cylinders are slightly smaller in diameter than the width of the slots and the cylinders have at least one circumferential groove therein and the number of grooves in the cylinders is at least equal to the number of grooves in the sleeve and the grooves in the cylinders are alignable with the grooves in the sleeve,
- (4) a resilient retainer ring which seats in the grooves in the sleeve and in the mating grooves in the cylinders and thereby retains the cylinders in the slots in the sleeve and resiliently maintains the cylinders in contact with the cam,
- (5) a means for providing relative rotational movement between the cam and the sleeve around their common longitudinal axis and the sleeve and cam, and a mechanical means for providing relative rotational movement between the cam and the sleeve are operably mounted to an apparatus for handling, lifting and transporting rolls.

4,245,862

DRAG REDUCER FOR LAND VEHICLES

Frank T. Buckley, Jr., 17841 Pond Rd., Ashton, Md. 20702

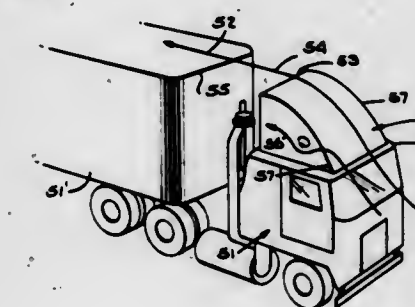
Continuation-in-part of Ser. No. 763,796, Feb. 1, 1977,

abandoned, which is a continuation-in-part of Ser. No. 659,517, Feb. 19, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,061

Int. Cl.³ B62D 35/00

U.S. Cl. 296—1 S

15 Claims



1. A streamlined fairing adapted to be mounted on a roof of a cab portion of a load carrying vehicle for reducing aerodynamic drag, said vehicle including a van portion having front and side walls, said front wall of said van portion extending above said cab portion, said fairing having a longitudinal axis and comprising,

- a bottom portion,
- a rear portion, and
- a continuous contoured surface extending widthwise and upwards from said bottom portion at the front of said fairing to said rear portion, said surface having a top portion and side portions on either side of the longitudinal axis of said fairing which abut at their respective boundaries,
- said top portion having at least a substantially horizontal segment a tangential plane of which is inclined with respect to the horizontal at an angle which is [at least zero] less than or equal to approximately $\tan^{-1} [2(H-h)/x]$ and greater than or equal to zero, where H represents the

vertical distance from the roof of the cab portion to the top of the front wall of a van portion for which the drag reduction performance of said fairing is optimized, h represents the height of said fairing, x represents the distance between the rear portion of said fairing and the front of said van portion, and h has a value which is greater than or equal to about $0.9H$ and less than or equal to about H , and greater than or equal to about $0.8H_H$ and less than or equal to about $1.4H_L$, where H_H and H_L represent the vertical distances from the roof of said cab portion to the tops of the front walls of van portions which are higher and lower, respectively, than the top of said front wall of said van portion for which performance of said fairing is optimized.

said side portions diverging with respect to each other toward said rear portion and having substantially vertical segments which diverge with respect to the longitudinal axis of said fairing at an angle which is less than or equal to approximately $\tan^{-1} [(W-w)/x]$ and greater than or equal to zero, where W represents the width of said van portion, w represents the width of said fairing between said substantially vertical segments of said side portions, and x represents the distance between the rear portion of said fairing and the front of said van portion, and w has a value which is greater than or equal to $0.5W$ and less than or equal to W , and

said substantially horizontal segment of said top portion being located uppermost with respect to said bottom portion and said substantially vertical segments of said side portions being located furthest from said longitudinal axis of said fairing, the length of said fairing being less than or equal to the length of said roof of said cab portion and greater than or equal to $0.2W$.

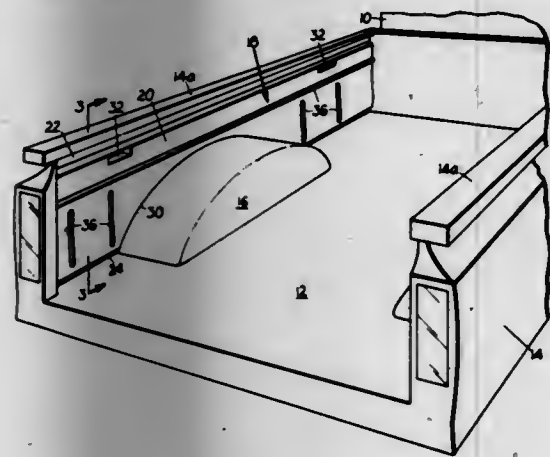
4,245,863

PROTECTIVE INSERT FOR THE SIDES OF LOAD CARRYING VEHICLES

David T. Carter, 3303 SE. 167th Ave., Portland, Oreg. 97236
Filed Feb. 2, 1979, Ser. No. 9,221
Int. Cl.³ B62D 33/02

U.S. Cl. 296-39 R

5 Claims



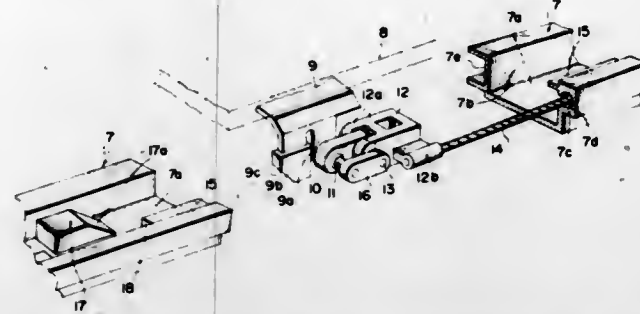
1. A protective insert for the vertical inner sides of a vehicular load carrying area of the type having metallic side panels, a floor panel, and wheel wells projecting up from the floor panel, said insert comprising

- (a) an outer substantially rigid cup-shaped body portion arranged to stand on edge on a floor panel of a vehicle with the cupped portion thereof facing a side panel of the vehicle,
- (b) said body portion having an inner face arranged to face the load carrying area,
- (c) a core of compressible, shock-absorbing material mounted in the cupped area of said body portion,
- (d) said core having an outer face with a contour substantially similar to the contour of a side panel of a vehicle,
- (e) and securing means arranged to secure said body portion to a vertical panel of a vehicular load carrying area.

4,245,864
LIFTING DEVICE IN VEHICLE SLIDING ROOF DEVICE
Kazuaki Shitanoki, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 5, 1979, Ser. No. 72,576
Claims priority, application Japan, Sep. 6, 1978, 53/122604[U]; Sep. 8, 1978, 53/123255[U]
Int. Cl.³ B60J 7/10

U.S. Cl. 296-222

9 Claims



1. A lifting device in a sliding roof device for a vehicle, comprising:

- a slide roof member provided with at least one stay;
- a lift-up link;
- a guide rail having a slider slidably disposed thereon;
- said stay being coupled through said lift-up link to said slider slidably disposed on said guide rail;
- said lift-up link being provided with a lifting regulating member;
- said guide rail being provided with a lifting constraining member operatively associated with said regulating member;
- said lifting constraining member of said guide rail being provided therein at the slide roof member lifting position thereof with a cut-away portion for permitting substantially vertical movement of said regulating member; and
- a first lift guide member provided on said guide rail in the vicinity of said cut-away portion of said lifting constraining member.

4,245,865

EXPLOSIVE EXPANSION TO A LIMITED VOID WITH UNIFORM SCALED DEPTH OF BURIAL

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.
Filed Sep. 28, 1979, Ser. No. 79,877
Int. Cl.³ E21B 43/247, 43/263

U.S. Cl. 299-2

23 Claims

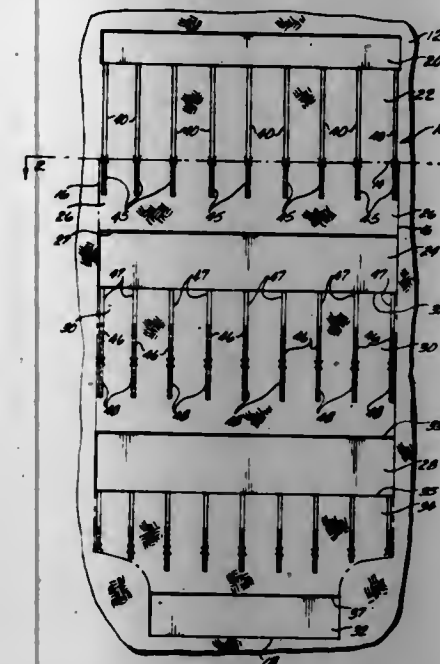
1. A method for recovering shale oil from a subterranean formation containing oil shale which comprises the steps of: excavating formation to form at least one limited void in the subterranean formation, leaving zones of unfragmented formation above and below such a void, such a zone of unfragmented formation having a substantially horizontal free face adjoining the void;

forming substantially vertical blastholes in at least one of such zones of unfragmented formation for forming an array of spaced apart blastholes in such a zone; placing a sufficient amount of explosive into each blasthole for forming a substantially horizontal array of explosive charges wherein the scaled point charge depth of burial of the explosive charge in each blasthole is substantially equal to the equivalent scaled point charge depth of burial of the array of explosive charges;

detonating the explosive charges in a single round for explosively expanding such a zone of unfragmented formation toward the void to form a fragmented permeable mass of formation particles containing oil shale in the subterranean formation for forming an in situ oil shale retort; introducing gas into the fragmented permeable mass in the in

situ oil shale retort for establishing a retorting zone in the fragmented permeable mass wherein oil shale is retorted

to bias the pins on said latches away from each other and release said link for movement relative to said frame.



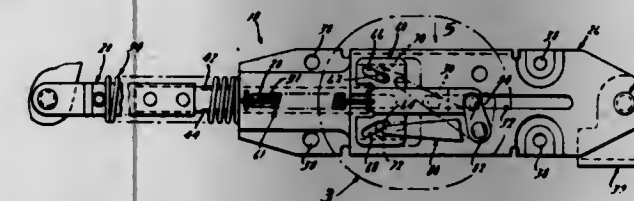
to produce gaseous and liquid products, and for advancing the retorting zone through the fragmented mass; and withdrawing gaseous and liquid products from the retort.

4,245,866

LINEAR CONTROL FOR RECLINING SEAT
Robert L. Bell, Oxford, and Alfred J. Fisher III, Grosse Pointe, both of Mich., assignors to Fisher Corporation, Troy, Mich.
Filed Oct. 4, 1979, Ser. No. 81,676
Int. Cl.³ A47C 1/025

U.S. Cl. 297-365

3 Claims



1. A latch mechanism for controlling rotation of a vehicle seat back to a reclining position relative to a vehicle seat comprising

- a link having teeth on opposite faces thereof connectable to said seat back at a point spaced from the axis of rotation thereof relative to said seat,
- a latch mechanism frame supporting said link for reciprocal movement, said frame having a pair of spaced aligned slots extending at right angles to the axis of reciprocation of said link,
- a pair of spaced latches having teeth complementary to the teeth on said link, and engageable therewith, respectively, said latches having laterally extending pins thereon slidably acceptable in the slots in said frame, respectively, whereby said latches are guided for movement toward and away from said link to effect engagement and release thereof,
- a latch carrier supported by said frame and movable relative thereto, said latch carrier having slots therein angularly oriented to the direction of movement thereof for accepting the pins on said latches, respectively,
- resilient means normally biasing said carrier in a latching direction so as to move said pins toward one another and thereby bias said latches into engagement with said link, and
- a manual operator supported by said frame and connected to said carrier for moving said carrier in an unlatching direction opposite to said latching direction so as to produce gaseous and liquid products, and for advancing the retorting zone through the fragmented mass; and withdrawing gaseous and liquid products from the retort.

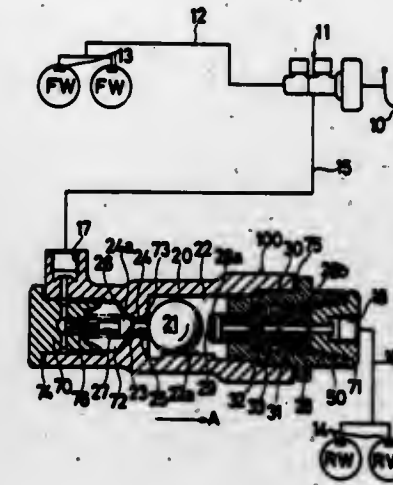
4,245,867

FLUID BRAKE PRESSURE CONTROL SYSTEM
Hiroyuki Kondo, Anjo, and Hiroshi Takeshita, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 10, 1978, Ser. No. 950,058
Int. Cl.³ B60T 13/06

U.S. Cl. 303-6 C

15 Claims



1. A fluid brake pressure control system for a vehicle having a hydraulic pressure control valve device controlling the hydraulic pressure of wheel cylinders of the vehicle by means of inertia in response to the vehicle deceleration, said device being located in a circuit between a master cylinder and said wheel cylinders, said device comprising:

- a housing member provided thereon with an inlet port connected with said master cylinder and an outlet port connected with said wheel cylinders, said housing member being provided therein with a first chamber directly connected with said inlet port and a second chamber directly connected with said outlet port;
- an inertia member located in said second chamber, said inertia member operating by inertia in response to the vehicle deceleration;
- cut off valve means located in said first chamber, said cut off valve means cutting off the hydraulic brake pressure communicated between said first and said second chambers by means of said inertia member at a first predetermined value of hydraulic brake pressure from said master cylinder under a first vehicle load value; and
- a piston means disposed in said housing including a small diameter portion opposing said inertia member, a large diameter portion receiving said master cylinder brake pressure and a passage formed therein connected with said master cylinder and said wheel cylinders, said piston means contacting said inertia member by means of differential effective pressure between said small diameter portion and said large diameter portion so as to keep open said cut off valve means when the hydraulic brake pressure from said master cylinder exceeds a second predetermined value greater than said first predetermined value under a second vehicle load value greater than said first value.

4,245,868

CONTROL VALVE ASSEMBLY

Glyn P. R. Farr, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed Nov. 22, 1978, Ser. No. 963,159

Claims priority, application United Kingdom, Nov. 25, 1977, 49051/77

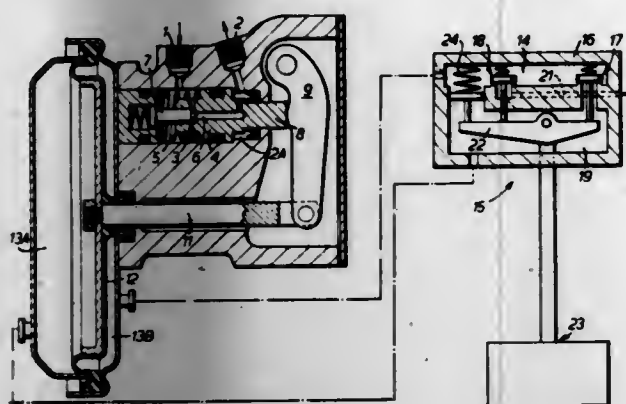
Int. Cl.³ B60T 13/06

U.S. Cl. 303-6 C

10 Claims

1. A control valve assembly for a vehicle braking system,

comprising an inlet, and outle, a proportioning valve having a control valve member movable to open and close said valve to control communication between said inlet and said outlet, and inertia-responsive means responsive to deceleration of the vehicle and operable to reduce the pressure at said outlet after said valve has closed, wherein said control valve member is a



piston, and wherein said inertia-responsive means is operable to apply a force to said piston in the same direction as the force of pressure at the outlet of said valve acting on said piston and in opposition to the force of pressure at the inlet of said valve acting on said piston, the force in said direction urging said piston in a sense to expand said outlet and thereby reduce the outlet pressure.

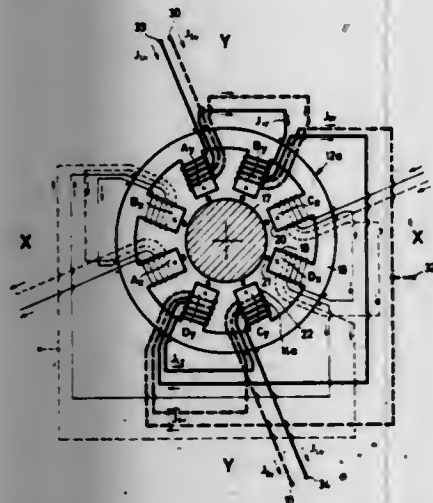
4,245,869

MAGNETIC BEARINGS

Dietrich Scheffer, and Rolf Guse, both of Rütlingen, Fed. Rep. of Germany, assignors to Padana AG, Zug, Switzerland
Continuation of Ser. No. 714,385, Aug. 16, 1976, abandoned.
This application Aug. 7, 1978, Ser. No. 931,484
Int. Cl.³ F16C 35/06

U.S. Cl. 308—10

17 Claims



1. In an electro-magnetic bearing system for supporting a movable member relative to a stationary member; at least one bearing element which includes at least a one core, and electro-magnetic coil means wound on said one core, means for passing high frequency sensor currents through at least part of said coil means on said one core, said sensor currents being influenced by movements of said movable member relative to said stationary member in the region of said bearing element, and means including at least one regulating device for producing bearing currents through said electro-magnetic coil means on said one core responsive to said variations in said sensor currents and for applying said bearing currents to at least part of said coil means on said one core, said bearing currents being direct currents which are variable in response to said sensor currents to produce a magnetic flux extending through at least the portion of said core encircled by said coil means and into said movable member to support the latter and whereby said

electro-magnetic coil means acts both as a sensor and as a means for producing bearing forces.

4,245,870

ELECTRIC MOTOR BEARING ASSEMBLY

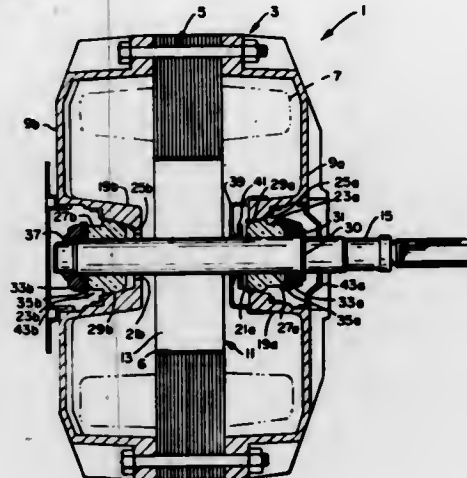
William D. Punshon, Bridgeton, and C. Theodore Peachee, Maryland Heights, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 6, 1979, Ser. No. 27,728

Int. Cl.³ F16C 17/10; H02K 5/16

U.S. Cl. 308—36

11 Claims



1. An electric motor having a stator assembly including a core with a bore therethrough, a rotor assembly including a rotor adapted to be rotatably mounted within said bore and a shaft extending endwise from the rotor in both directions, and a pair of end shields adapted to fit on said stator assembly and to journal said rotor assembly, said motor including a pair of self-aligning thrust bearings for rotatably journaling said rotor assembly, for accommodating a limited range of misalignment between said rotor assembly and said stator assembly, and for transferring axial thrust loads in either direction from said rotor assembly to said stator assembly, each of said self-aligning thrust bearings comprising a ball member received on said shaft and a tapered socket race in a respective end shield, each of said socket races surrounding said shaft and facing outwardly away from said motor, means for holding one of said ball members in a fixed axial position with respect to said shaft, the other of said ball members being movable axially along said shaft, and means for adjustably holding said other ball member in a desired axial position on said shaft in which said one ball member engages its race so that it journals said shaft and so that axial thrust may be transferred in one direction from said shaft to its respective end shield and in which said other ball member engages its race so that it journals said shaft and so that axial thrust may be transferred in the other direction from the shaft to its respective end shield.

4,245,871

CENTRALIZED VIDEO OR AUDIO CENTER DISPLAY DEVICE

Roger Rex, Hales Corners, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed Jun. 25, 1979, Ser. No. 51,845

Int. Cl.³ A47B 87/00, 95/18

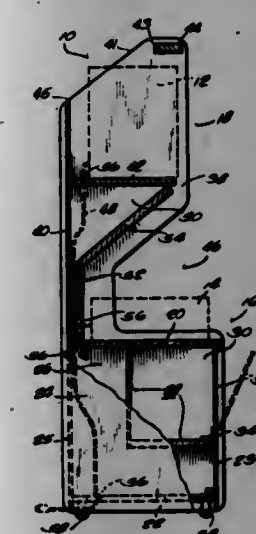
U.S. Cl. 312—223

5 Claims

1. A display device for commonly supporting a television set and a cassette video tape machine in operative association one with the other comprising:

a lower frame unit including a generally planar top, a bottom wall, spaced side panels joined to said top and said bottom wall, a front panel and a rear panel together generally defining a cabinet having an interior storage area and adapted to support the video tape machine upon said top, said front panel having a pivotally attached portion providing an access door movable between an open position

permitting access into said interior storage area and a closed position blocking access, and an upper frame unit supported on and above said lower frame unit and including a pair of oppositely spaced side walls joined to said side panels, each of said side walls having an inwardly notched section formed therein generally adjacent to said top of said lower frame unit to facilitate access to and the circulation of air about the video tape machine, a generally planar, horizontal shelf supported between said side walls above said inwardly notched section and in a spaced relationship generally over and above said top of said lower frame unit, a top



panel supported between said side walls in a spaced relationship from and above the forward portion of said shelf, said top panel being narrower than said shelf, a vertical back panel supported between said side walls and joined to said rear panel and terminating at a point which is generally intermediate said shelf and said top panel, each of said side walls further including a generally obliquely slanted upper portion extending between the termination of said back panel and said top panel and together with said top panel and said shelf forming a generally open, truncated area at the rear top of said upper frame unit in which the television set is accommodated to facilitate the circulation of air about the television set.

4,245,872

CASING FOR ELECTRONIC APPLIANCES

Yasuji Kakigi, Chofu, Japan, assignor to Cybernet Electronics Corporation, Kawasaki, Japan

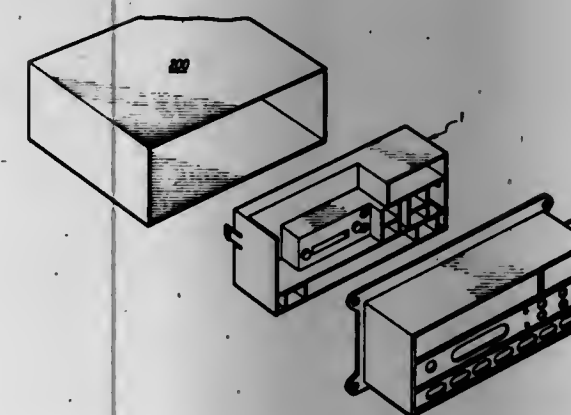
Filed Apr. 25, 1979, Ser. No. 33,249

Claims priority, application Japan, Apr. 29, 1978, 53/58889[U]

Int. Cl.³ A47B 67/02, 81/06

U.S. Cl. 312—242

2 Claims



1. A casing for electronic appliances comprising: a molded inner case having at least one major surface in which are located manipulation members, said inner case having a space for receiving tape cassette means, said

space being defined by partition walls, and said inner case including means for fixing its back side surface to an opened area on the front panel of a chassis; and a molded outer case provided in its front panel with apertures corresponding to said manipulation members, said apertures being formed at portions of said front panel of said outer case aligning with corresponding manipulation members and having shapes similar to the shapes of exposed parts of corresponding manipulation members, said outer case being further provided with flanges formed around the back side opening thereof, and being adapted to be fixed to said front panel of said chassis at said flanges, wherein said outer case encloses said inner case when said outer case is fixed to said chassis.

4,245,873

ADJUSTABLY POSITIONABLE ELECTRICAL OUTLET

Israel J. Markowitz, 7105 NW. 84th St., Tamarac, Fla. 33313

Continuation of Ser. No. 838,002, Sep. 29, 1977, Pat. No.

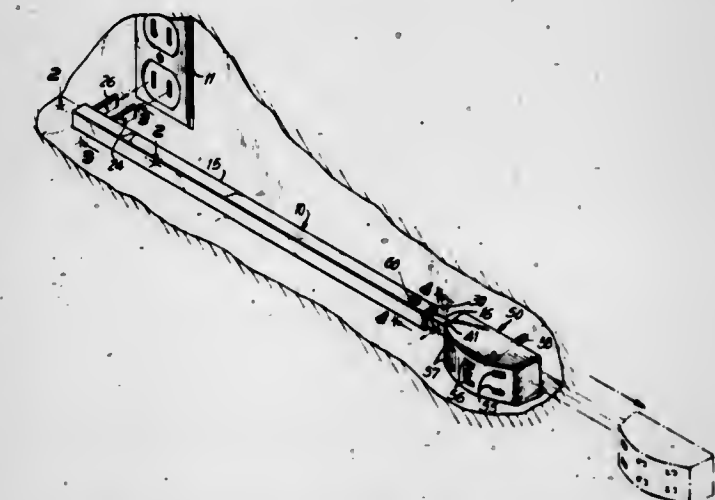
4,148,544. This application Mar. 8, 1979, Ser. No. 18,590

The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.

Int. Cl.³ H01R 27/00

U.S. Cl. 339—9 R

6 Claims



1. A telescoping electrical socket outlet for use along a wall surface having a wall outlet box for electrical power and adapted to receive an electrical plug of a workpiece, said telescoping electrical outlet comprising a pair of telescopically extensible and retractile elongate members, one of which being at least partially receivable within the other of said elongate members so as to move from a closed retractile position to a complete extensible position, said elongate members having proximate engaging end portions in overlapping engagement and distal non-engaging end portions remote from each other with prong members at the distal end of said other elongate member, a first pair of longitudinally extending conductors carried by either one of said elongate members, a second pair of elongate members each having a resilient wiping portion and carried by the remainder of said elongate members, said wiping portions being respectively resiliently urged into constant electrical contact with said first pair of conductors for wiping and maintaining a sliding electrical engagement with said first pair of conductors for the full telescopic movement of said elongate members relative to each other, additional conductors, carried by said elongate member having said second pair of conductors, electrically engaging said second pair of conductors and shaped for receiving a plurality of electrical workpiece plugs in said electrical socket outlet, said prong members extending oppositely of said socket outlet, and adapted for engagement with an electrical power socket of a wall outlet box and being carried by said one elongate member and integrally formed with different ones of said first pair of connectors, whereby when prong members are connected to a

socket of an electrical wall outlet, the location at which one or more workpiece plugs may be electrically connected therewith is adjustably positionable within a predetermined distance from said wall outlet by the selective telescopic movement of said one elongate member parallel to the surface of said wall.

4,245,874

FLEXIBLE CONNECTOR ASSEMBLY FOR TRACK LIGHTING SYSTEM

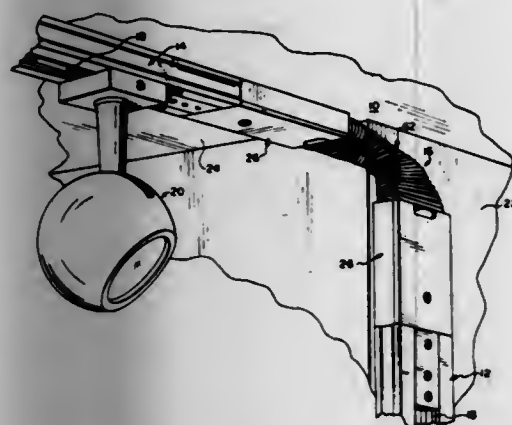
Walter F. Bishop, Bloomington, Ill., assignor to McGraw-Edison, Rolling Meadows, Ill.

Filed Mar. 5, 1979, Ser. No. 17,177

Int. Cl.³ H01R 4/66

U.S. Cl. 339—14 R

12 Claims



1. In a flexible connector assembly for electrically and mechanically coupling first and second track sections of a power distribution track for a track lighting system, comprising:

first and second rigid connector segments, each having first and second ends with means at said first ends thereof for connecting said segments, both electrically and mechanically to one of said first and second track sections and a central flexible member for joining said connector segments at said second ends for positioning said track sections at a variety of angles with respect to each other and providing a passageway for electrical conductor means coupling said connector elements electrically, the improvement wherein said central flexible member includes electrically conductive wire means wound helically to form said tubular passageway through which said electrical conductor means pass between said connector segments, said wire means being attached at opposite ends thereof at said second ends, respectively, of said connector segments, to couple said connector segments mechanically and to connect said connector segments electrically at ground potential.

4,245,875

HEAVY DUTY PLUG AND SOCKET

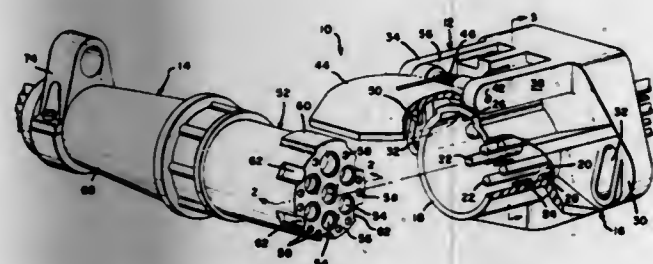
Howard R. Shaffer, Millersburg, and Thomas H. Wycheck, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 18, 1979, Ser. No. 49,251

Int. Cl.³ H01R 13/642

U.S. Cl. 339—32 R

5 Claims



1. A heavy duty electrical connector comprising: a receptacle member having a housing with a cylindrical

hood defining a plug receiving recess terminating in a receptacle mating face, a first plurality of primary terminal pins mounted in a first array in said receptacle mating face and extending into said hood a first distance, a second plurality of secondary terminal pins mounted in a second array in said receptacle mating face and extending into said hood a second distance less than that of said first distance, a plurality of abutments spaced about and extending into said plug receiving recess adjacent said receptacle mating face, each said abutment having a height greater than said second distance and less than said first distance, and a cover means mounted on and adapted to close the free end of said cylindrical hood; and a plug member having a housing adapted to be received in said plug receiving recess of said receptacle member, said plug member having a plug mating face, a plurality of first bores in a first array opening into said plug mating face and a plurality of second bores in a second array opening into said plug mating face, said first and second arrays of said bores being aligned with respective terminal pins of said first and second arrays of said receptacle member, a like plurality of primary receptacle terminals each received in a respective first bore and adapted to mate with a respective primary terminal pin, a plurality of secondary receptacle terminals each received in a respective second bore and adapted to mate with a respective secondary terminal pin, and a plurality of notches in the periphery of said plug mating face extending longitudinally of said plug housing a distance greater than the length of said abutments, whereby said plug member is able to fully mate within the plug receiving recess of said receptacle member with said primary and said secondary pin terminals of said receptacle member in engagement with respective primary and secondary receptacle terminals of said plug member, and a standard plug having only primary receptacle terminals is able to only partially mate with said receptacle member to a sufficient depth to make electrical and mechanical interconnection between the primary terminal pins of said receptacle member and primary receptacle terminals of said standard plug without damaging the secondary terminal pins of said receptacle member, and said plug member is able to fully mate with a standard receptacle having only primary terminal pins.

4,245,876

LAMINATED CONNECTOR

Leon T. Ritchie, and Robert G. Harwood, both of Mechanicsburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 504,579, Sep. 9, 1974,

abandoned, which is a continuation-in-part of Ser. No. 432,121, Jan. 9, 1974, abandoned. This application Feb. 6, 1976, Ser. No. 655,803

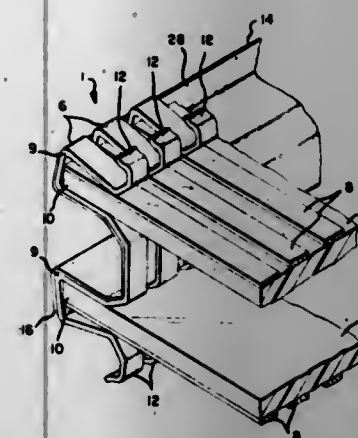
Int. Cl.² H01R 13/12

U.S. Cl. 339—59 M

25 Claims

1. A laminated connector, comprising: a plurality of identical elongated metal contacts; at least one continuous web of insulative sheet material of a width less than the length of said contacts, the entire width of said web being bonded to at least one portion of each of said metal contacts an end portion of which projects outwardly from at least one side edge of said web of insulative sheet material, said web being sufficiently rigid to prevent relative flexure between adjacent contacts while allowing individual outward flexing of the free ends of the contacts; said contacts bonded to said web of insulative material being permanently bent to generally curvilinear shapes to define at least one substantially U-shaped end portion adapted to

receive therein a mating member, with like end portions of adjacent ones of said contacts being substantially in alignment to form a row of terminals;



said metal contacts being sufficiently thick to serve as resilient leaf springs for applying contact pressure at such end portions; and said web of insulative sheet material separating said contacts from one another with fixed spacing.

4,245,877

CIRCUIT PACKAGE RECEPTACLE WITH MOVABLE BASE SEPARATION MEANS

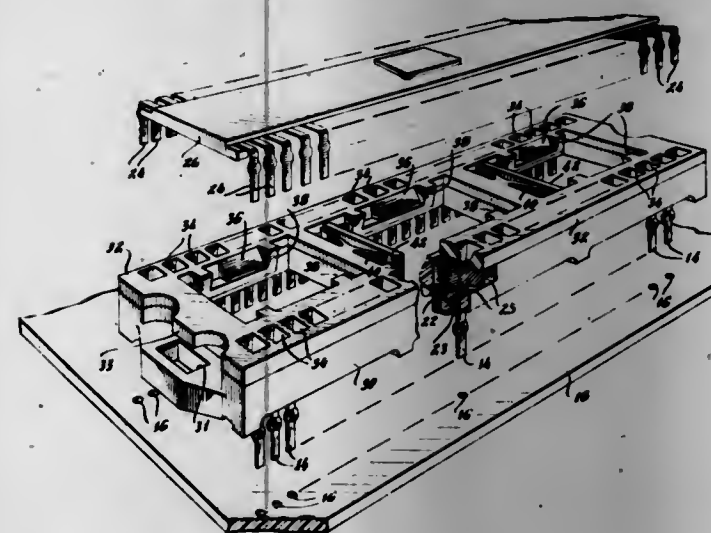
Mark Auriana, Stamford, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Dec. 30, 1976, Ser. No. 755,759

Int. Cl.³ H01R 13/62

U.S. Cl. 339—74 R

11 Claims



1. A receptacle for effecting electrical interconnection with a plurality of connector prongs extending in substantially parallel, spaced-apart relationship from a circuit component package, comprising:

a main body made from electrically insulating material and having at least one array of spaced-apart contact elements and having prong backer surfaces juxtaposed to said contact elements; said prong backer surfaces and said contact elements forming therebetween slots for receiving a plurality of substantially parallel, spaced-apart connector prongs from a given insertion direction, so that each such prong may be contacted on one side by a contact element and on the other side by a backer surface, and a guide member having a plurality of guide means for guiding connector prongs into said slots,

one or more among the group consisting of said member, said backer surfaces collectively, and said contact elements collectively, being movable along a motion path which is substantially normal to said insertion direction to cause prongs positioned in said slots to become disengaged from concurrent contact by both a contact element and a backer surface by slideably separating said prongs

from contact with one or more among the group consisting of said contact elements collectively and said backer surfaces collectively with such relative sliding movement being in the direction of said motion path, said slots being arrayed in a spaced-apart relationship along said motion path with respect to each other.

4,245,878

ELECTRICAL WALLPLATE FITTINGS

Stephen Hall, London, England, assignor to Rotaflex (Great Britain) Limited, London, England

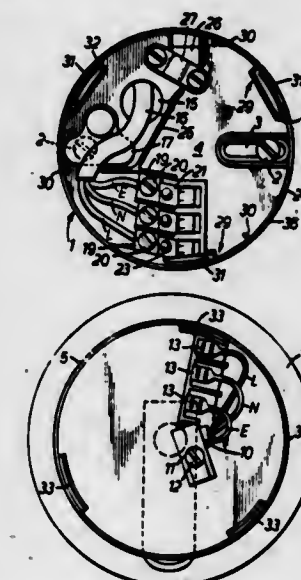
Filed May 4, 1979, Ser. No. 36,137

Claims priority, application United Kingdom, May 10, 1978, 18771/78

Int. Cl.³ H01R 13/625

U.S. Cl. 339—88 R

3 Claims



1. An electrical wall plate fitting comprising a base part having a center axis, said base part having an axially outwardly projecting peripheral skirt portion terminating in a planar lip, a series of first electrical contacts mounted on said base part at varying distances from said center axis, each of said contacts including conductive finger portions shiftable in the direction of said center axis, a cover part of generally planar configuration, said cover part having a central axis and being formed of resilient material, said cover part having a side marginal edge portion congruent to said lip of said skirt, a series of second contacts formed on said cover part and spaced from the central axis thereof in accordance with the spacing of said first electrical contacts from the center axis of said base part, cam means on one said part and follower means on the other said part, said cam and follower means being adapted to shift said cover part toward said base part responsive to relative rotation of said parts in the engaged position of said cam and follower means, thereby to urge said contacts of said first and second series into mutual engagement; and complementary locking means formed on said edge portion of said cover part and said skirt portion of said base part, said locking means including a recess on one said part and a latch on the other said part, said latch, in the locked position of said locking means, being disposed within said recess, said latch being adapted to be cleared from said recess responsive to outward flexure of said cover part away from said base part in the direction of said central axis of said cover part.

4,245,879

LATCH ASSEMBLY

Josef J. Buck, Minneapolis, Minn., assignor to Magnetic Controls Company, Minneapolis, Minn.

Filed Jun. 12, 1978, Ser. No. 914,529

Int. Cl.³ H01R 13/62

U.S. Cl. 339—91 R

16 Claims

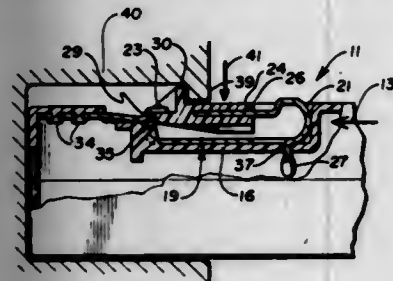
1. A latch assembly for providing latching engagement

between a first element and a second element in a latching direction comprising:

a first latch member connected with said first element and adapted for latching engagement with a second latch member of said second element, said first latch member adapted for limited movement relative to said first element in a direction generally parallel to the latching direction between first and second positions and for limited movement in a direction generally perpendicular to the latching direction between an engaged position in which said first and second latch members are engaged and a disengaged position in which said first and second latch members are disengaged;

means for manually disengaging said first and second latch members;

bias means including a leaf spring for biasing said first latch member toward its engaged position said leaf spring being



securely mounted to said first element and includes an elongated portion lying in an engaging a seat portion of said first element, an end upon which said first latch member is mounted for limited sliding movement, a curved portion connecting said elongated portion and said end and a tab member extending over a portion of said first latch member for retaining said first latch member in sliding relationship with respect to said end and for limiting the movement of said first latch member in a direction toward its engaged position;

a stop member connected with said first element for engagement by said first latch member for limiting the movement thereof in a latching direction and defining the first position of said first latch member; and
guide means for causing movement of and guiding said first latch member toward said second position during movement of said first latch member toward its disengaged position.

4,245,880

CONVENIENCE OUTLET

John A. Zimmerman, Jr., Hershey, and William B. Long, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 5, 1979, Ser. No. 17,629

Int. Cl.³ H01R 11/01, 21/02

U.S. Cl. 339—97 R

7 Claims

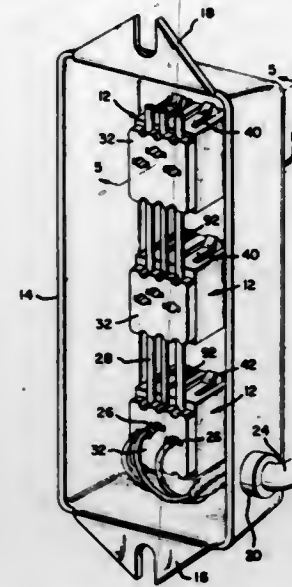
1. A convenience outlet adapted to be mounted in an aperture of a panel or the like comprising:

a housing of rigid insulative material having a forwardly directed mating face and a rearwardly opening termination cavity, at least two apertures in a patterned array opening in said mating face and leading to said cavity, a rearwardly directed shoulder spaced from said mating face, and mounting means including at least one forwardly directed, cantilevered mounting leg resiliently mounted on said housing, each said leg having a profiled free end directed towards said shoulder and adapted to engage one side of a panel, the opposite side of which engages said shoulder to hold the outlet therein;

a rear cover member adapted to close said rear cavity and having means to detachably secure said rear cover member to said housing and a patterned array of apertures therein;

a plurality of terminals mounted in said cavity each with a

mating portion directed towards a respective aperture in said mating face and a conductor engaging portion di-



4,245,881

ELECTRICAL CONNECTOR

Leonard H. Michaels, Warrenville, Ill., assignor to Brad Harrison Co., LaGrange, Ill.

Filed Dec. 22, 1978, Ser. No. 972,343

Int. Cl.³ H01R 11/22

U.S. Cl. 339—256 R

14 Claims



1. An electrical connector comprising
 - a. a male member having an elongated electrically conductive proximal end portion,
 - b. a receptacle formed of conductive material and having an elongated cavity opening outwardly through one side thereof for receiving said end portion,
 - c. said cavity having a transverse cross sectional size that is larger than the transverse cross sectional size of said end portion,
 - d. annular conductive means mounted in said cavity,
 - e. said annular means having
 - (1) a polygonal outside peripheral surface,
 - (2) a polygonal inside peripheral surface, and
 - (3) a normal position in said cavity wherein the inner cross sectional size of said annular means is less than the transverse cross sectional size of said male member, and
 - f. said end portion of said male member being longitudinally movable into and out of said annular means to thereby expand said annular means outwardly from said normal position into firm engagement and electrical contact with said receptacle and to thereby permit said annular means to move back into said normal position, respectively.

4,245,882

DOUBLY MODULATED ON-AXIS THICK HOLOGRAM OPTICAL ELEMENT

Byung J. Chang, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Nov. 4, 1977, Ser. No. 848,611

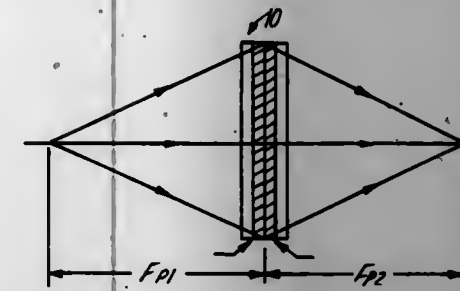
Int. Cl.³ G02B 5/32; G03H 1/28

U.S. Cl. 350—3.72

6 Claims

1. A holographic optical element comprising a planar element incorporating thick phase holograms of two point

sources disposed on opposite sides of the element, the holograms being formed incoherently with respect to each other



using off-axis reference beams having complementary curvatures and making equal and opposite angles with respect to the optical axis of the element.

4,245,883

ELECTROCHROMIC OPTICAL DEVICE

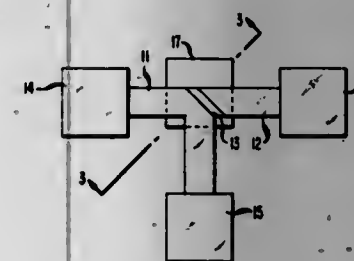
Leo F. Johnson, Bedminster; Shobha Singh, Summit, and LeGrand G. Van Uiter, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1978, Ser. No. 973,162

Int. Cl.³ G02B 5/14; G09F 9/00; G02F 1/01

U.S. Cl. 350—96.14

25 Claims



1. Electro-optical switch comprising (1) a first and a second optical waveguide, said first waveguide forming a light path which changes direction from a first direction to a second direction, said second waveguide being aligned with said first waveguide in said first direction (2) a body of an electrochromic medium in contact with said first and said second waveguide, the interface between said first waveguide and said body being essentially planar and bisecting the angle between said first direction and said second direction, (3) a source of ions in contact with at least portion of the surface of said body, and (4) means for producing an electric field across said body.

4,245,884

OPTICAL COUPLER FOR INTERCONNECTING TWO OR MORE OPTICAL TRANSMISSION LINES

Paul Magura, Boca Raton, and Gerald U. Merkel, Delray Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,403

Int. Cl.³ G02B 5/14

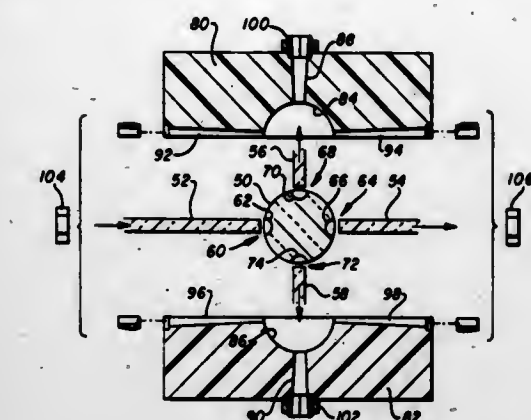
U.S. Cl. 350—96.16

10 Claims

1. A plural port optical coupler for coupling light from an input optical transmission line into output optical transmission lines in an optical communication system, comprising:

a reflective curvilinear surface defining a bounded volume for reflecting light coupled into said volume, the interior of said volume being a light transmitting medium;
a plurality of optical ports formed through the surface and into said volume, one of said ports defining an input window and others of said ports defining output windows, each of said windows receiving one of the optical transmission lines;
said port defining an input window including a lens in contact with the transmission line received within the

window, said lens having a geometrical configuration to produce a predetermined light pattern within said volume; and



said ports defining output windows each including a lens in contact with the transmission line received within the respective output window, said lens having a geometrical configuration to enhance the amount of light transferred through said output window into a transmission line.

4,245,885

FIBER OPTIC RELAY SWITCH FOR PRECISE FIBER ALIGNMENT AND METHOD OF MAKING THE SAME

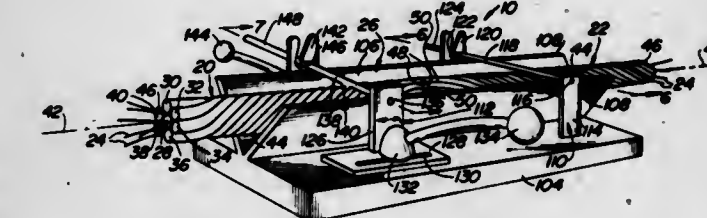
Malcolm H. Hodge, Claymont, Del., assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 30, 1978, Ser. No. 955,690

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.20

44 Claims



1. A fiber optic relay switch for switching optical signals between a first fiber and a second and a third fiber; said switch comprising a first section for housing a first optic fiber and a second section for housing at least a second and a third optic fiber; said first and second sections each comprising a central cylindrical member having a longitudinal central axis and a plurality of peripheral cylindrical members surrounding said central member to form a plurality of interstitial channels therebetween; said peripheral members spiralling helically about said axis for at least a portion of said section so that the channels in said portion are helical; each of said sections terminating in a coupling face, each of said channels including at least three cusp-shaped interstices; one of said interstices being located furthest from said axis and the other interstices being located laterally of said one interstice and closer to said axis; said first fiber being located within a preselected interstice of a channel in said first section and with the end of the first fiber being aligned with the coupling face of the first section; said second fiber being located within a preselected interstice of a channel in said second section and with the end of the second fiber being aligned with the coupling face of the second section; said coupling faces of said first and second sections being slidably disposed with respect to each other so that in a first position the end of said first fiber is aligned with and optically coupled with the end of said second fiber and in a second position the end of said first fiber is aligned with and optically coupled with the end of said third fiber, whereby

movement of said sections relative to each other between said first and second positions switches the optical signals from a first path to a second path.

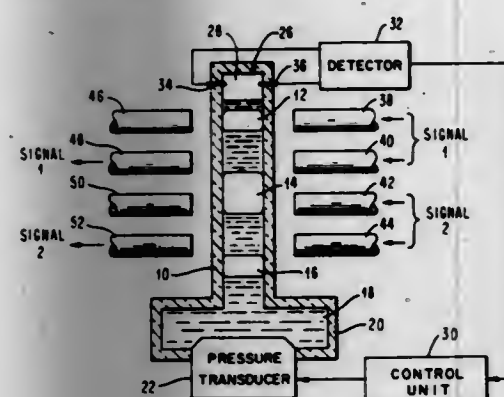
4,245,886

FIBER OPTICS LIGHT SWITCH

James S. Kolodzey, Ossining, N.Y.; George R. Stilwell, Jr., and Edward C. Uberbacher, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 10, 1979, Ser. No. 73,771
Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.20

13 Claims



1. A fiber optics light switch for selectively diverting optical energy normally transmitted from a first optical fiber to a second, axially-aligned optical fiber, said switch including:
a hollow, light transmitting tube extending transversely through a space between adjacent ends of the first and second fibers;
a mass of light diverting material contained within said hollow tube in a matrix of light transmitting fluid; and
means for altering the pressure within said hollow tube to move said light diverting mass to desired positions relative to the first and second optical fibers.

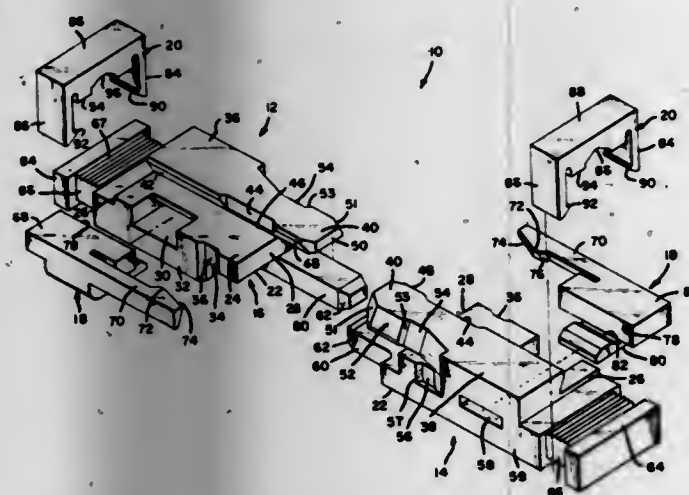
4,245,887

OPTICAL WAVEGUIDE CONNECTOR

Tore R. Johnson, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 26, 1979, Ser. No. 15,265
Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.21

12 Claims



1. In a pair of connector bodies each having a corresponding optical waveguide secured thereto, said connector bodies being mateably engaged for colinearly aligning the axes of said waveguides, the improvement comprising:
each connector body including first and second alignment surfaces which converge to define an interstitial space receiving a corresponding waveguide,
each said first alignment surface extending beyond the end of a said corresponding waveguide to engage and laterally

urge a corresponding waveguide of the other connector body into lateral engagement with the corresponding first and second converging surfaces of said other connector body when said connector bodies are matingly engaged; and
each said first alignment surface cooperating with and converging toward the first alignment surface of the other connector body so that each said waveguide laterally engages both said first alignment surfaces.

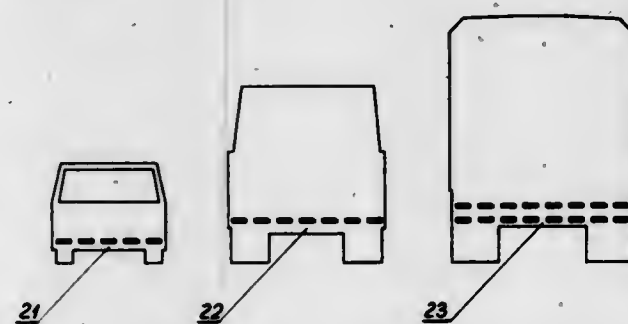
4,245,888

UNIVERSAL WARNING STRIP

Andrzej Wardecki, Warsaw, Poland, assignor to Ministerstwo Komunikacji Department Komunikacji Drogowej of Ul. Chalubinskiego, Warsaw, Poland
Filed Apr. 18, 1979, Ser. No. 31,100
Claims priority, application Poland, Apr. 24, 1978, 206358
Int. Cl.³ G02B 5/12

U.S. Cl. 350—97

1 Claim



1. A universal warning strip comprising: elements of selectively passive and active visual signalling including reflecting light and active and reflecting devices and being provided with an optical signal field comprising selectively passive and active light elements /1/ placed on a background which is essentially dark for emitting and reflecting light in a way different than that of the said elements,
the elements being arranged in groups wherein the spacings between the said elements are essentially the same, said groups being arranged in sets of groups wherein the spacing between groups are essentially the same but larger than the spacing between the elements,
the said sets being arranged in assemblages of sets wherein the spacings between sets are essentially the same but larger than the spacings between the groups, and any further enlargement of the signal field being obtained in a progressively analogical way, that is the spacings between the succeeding types of classes of light elements are essentially larger and larger, both the light elements and the particular types of classes of the said elements disposed and arranged for forming geometrical figures of different selected shapes.

4,245,889

HIGH BEAM WARNING APPARATUS

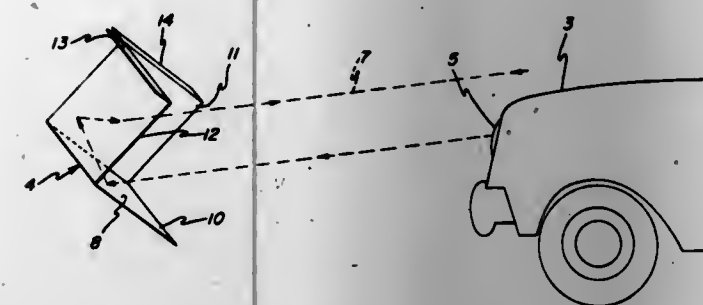
Robert O. Hoffman, P.O. Box 833, New Paltz, N.Y. 12561
Continuation of Ser. No. 836,307, Sep. 26, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,484
Int. Cl.³ G02B 5/122

U.S. Cl. 350—102

12 Claims

1. Signaling apparatus for automotive vehicles comprising:
a reflective surface configured to concentrately reflect light incident thereon;
scattering means for dispersing a portion of light energy concentrately reflected by said reflective surface; and
means for attaching said reflective surface to said vehicle at a location at which a first quantity of light energy is incident upon said reflective surface when a second vehicle

traveling behind said vehicle is operated with high-beam headlamps illuminated, and a second, substantially smaller



quantity of light energy is incident upon said reflective surface at all other times.

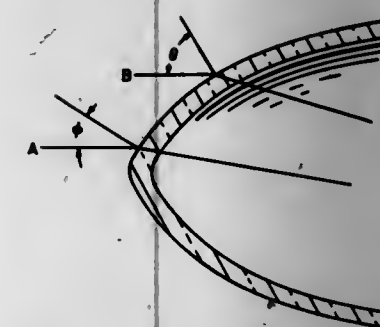
4,245,890

GRADIENT INDEX OF REFRACTION FOR MISSILE SEEKERS

Richard L. Hartman, and Bob D. Guenther, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jan. 2, 1979, Ser. No. 327
Int. Cl.³ F42B 15/02; G02B 1/12, 3/04

U.S. Cl. 350—175 GN

5 Claims



1. A missile having an electromagnetic radiation sensor element in the forward portion thereof for receiving radiation and homing thereon comprising, an ogive shaped nose enclosing said sensor, said ogive shape providing an aerodynamic surface of minimum drag during flight of said missile, said nose being a transparent window and having a non-uniform index of refraction that varies at different positions on said window to simulate a hemispherical window.

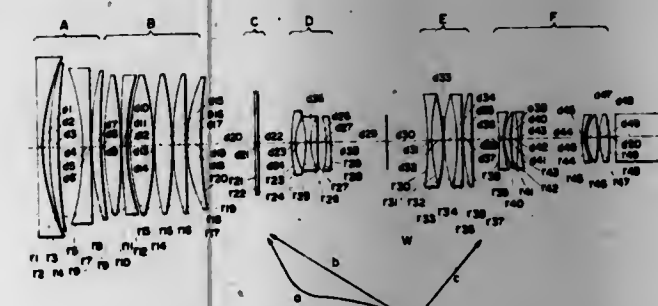
4,245,891

ZOOM LENS SYSTEM WITH A MOVABLE DISTORTION-CORRECTING ELEMENT

Yoshikazu Doi, and Kenzo Sado, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan
Filed May 31, 1978, Ser. No. 911,173
Claims priority, application Japan, May 31, 1977, 52/63594
Int. Cl.³ G02B 15/18

U.S. Cl. 350—184

4 Claims



1. A zoom lens system comprising a focusing lens system, a zooming lens system and a relay lens system wherein the im-

provement comprises a compensating lens provided between a lens group which moves for zooming operation and a lens group which does not move in the zooming operation, said compensating lens being located at a position in a space between said lens groups where a light flux advancing along the optical axis of the zoom lens system converges to the image side, said compensating lens comprising a group of spherical lenses having a small refractive power as a whole, said compensating lens being moved in association with the zooming operation.

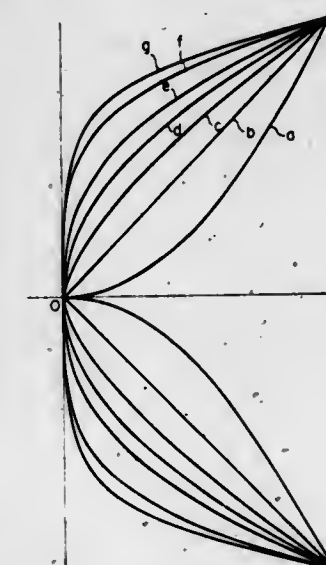
4,245,892

OPTICAL SYSTEM HAVING AN OPTICAL SURFACE CONTAINING ASPHERICAL TERMS WITH REAL NUMBER POWERS

Naoki Izumiya, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Oct. 23, 1978, Ser. No. 953,347
Claims priority, application Japan, Oct. 29, 1977, 52-129243
Int. Cl.³ G02B 3/04

U.S. Cl. 350—189

1 Claim



1. An optical system having an optical surface containing aspherical terms with real number powers characterized in that the configuration of an optical surface having a symmetry of revolution with respect to its optical axis is defined by the length of a horizontal perpendicular from an arbitrary point on said optical surface to a plane tangent to the vertex of said optical surface, which is represented as a function of an absolute value for the height of said arbitrary point from said optical axis, and the function contains aspherical terms with real number powers which are greater than 2 for said absolute value but not an integer.

4,245,893

EXTERNAL REAR VIEW MIRROR CONTROLLABLE FROM INSIDE A VEHICLE

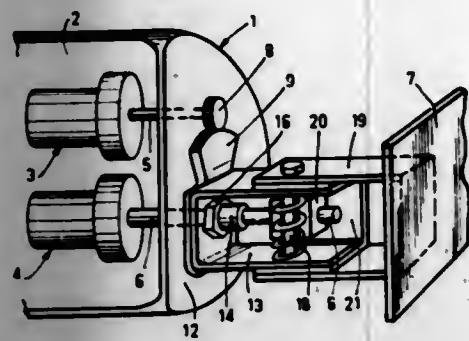
Raymond Lafont, Paris, and Patrick J. J. Desforges, Evry, both of France, assignors to Britax (GECO) S.A., Vulaines sur Seine, France
Filed Jan. 8, 1979, Ser. No. 1,477
Claims priority, application France, Jan. 25, 1978, 78 02083
Int. Cl.³ G02B 5/08

U.S. Cl. 350—289

11 Claims

1. An external rear view mirror having a mirror-box assembly whose orientations are variable from the inside of a vehicle by electrical control in two directions at right angles, forward-backward and up-down, comprising a mirror-box, two parallel drive shafts rotatably mounted within said mirror-box and projecting outwardly therefrom, drive means within said mirror-box operatively connected to said drive shafts to selectively drive said shafts, a fixed arm for mounting said mirror-box to a vehicle, and adjustable means external of said mirror-

box pivotally interconnecting said mirror-box and said fixed arm for controlling the orientation of said mirror-box relative to said fixed arm, the outwardly projecting ends of said drive shafts being operatively connected to said adjustable means.



4,245,894

ANGLE-REFLECTING MIRROR

Curt Lichtenberg, Solingen-Wald, Fed. Rep. of Germany, assignor to Hagus C. Lichtenberg GmbH & Co. KG, Solingen-Wald, Fed. Rep. of Germany

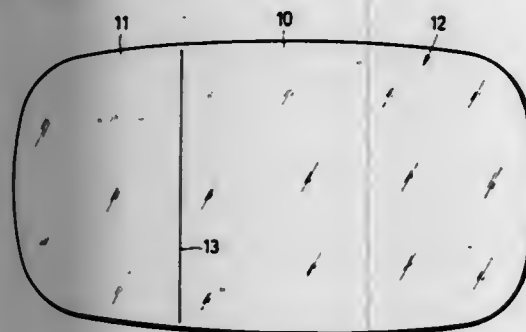
Filed May 9, 1979, Ser. No. 37,468

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 7815094[U]

Int. Cl.³ G02B 5/08

U.S. Cl. 350—303

4 Claims



1. A mirror comprising:

a single unitary mirror with a reflective coating on its rear surface, the mirror being partitioned into two mirror sections which are angled with respect to one another along a kink line formed where the mirror bends between the sections;

the face of the mirror being uncovered at the kink line; and wherein the reflective coating behind the kink line has been removed.

4,245,895

SUPPORTING STRUCTURE FOR REFLECTORS, SOLAR CELLS OR SOLAR CELL CARRIERS

Karl Wildenrotter, Munich, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 18, 1979, Ser. No. 4,367

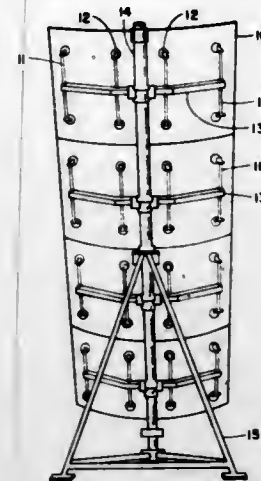
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1978, 2802914

Int. Cl.³ G02B 5/08

U.S. Cl. 350—310

7 Claims

1. In a supporting structure for reflectors including interconnected supporting bars, said reflectors being arranged and fastened adjacent each other in one plane on said bars, the improvement comprising: said supporting structure being equipped with said supporting bars in spaced, parallel arrangement for carrying said reflectors, said bars extending in length over a distance shorter than the width of a reflector; cross-members interconnecting at least two of said bars at a time; and a central upright having said cross-members attached thereto



the rear side of said reflectors to allow freedom of movement of the reflectors.

4,245,896

SPECTACLES

Michael A. Kaplan, 2659 Karen St., Bellmore, N.Y. 11710

Filed Oct. 24, 1978, Ser. No. 954,223

Int. Cl.² G02C 5/00

U.S. Cl. 351—41

11 Claims



1. Spectacles comprising, in combination, at least one eyeglass element; at least one discrete component; and means for affixing said component to said eyeglass element, including a circular through hole in said eyeglass element having a cross-sectionally enlarged end portion at the inner side of said eyeglass element, and cooperating means on said component and the outer surface of said eyeglass element for orienting said component with respect to the axis of said through hole; a connecting member, a first thread section on said component and a compatible second thread section of said connecting member, one of said thread sections being received in said hole and threadedly engaging the other thread section, and an actuating section on said connecting member operative for turning said connecting member upon actuation and having a cross-sectional diameter at most equal to that of said end portion of said hole to be at least partially received in the latter upon tightening of said connecting member.

4,245,897

MOVING PICTURE CAMERA WITH INTERCHANGEABLE FILM MAGAZINE

Jean-Pierre Beauviala, Grenoble, and Jean-Pierre Charras, Bas Bernin, both of France, assignors to Societe AATON, Grenoble, France

Filed Dec. 15, 1978, Ser. No. 969,961

Claims priority, application France, Dec. 27, 1977, 77 39318

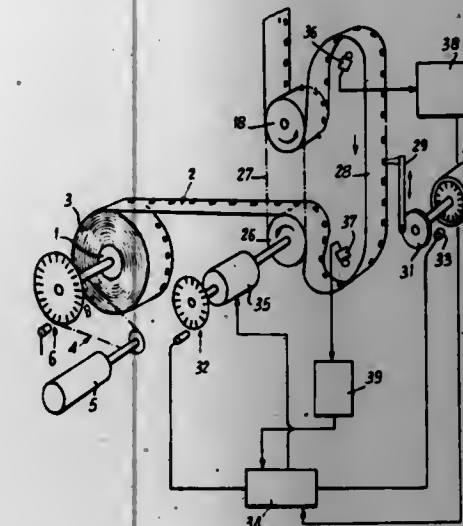
Int. Cl.³ G03B 1/22; G11B 15/34

U.S. Cl. 352—180

2 Claims

1. A moving picture camera with interchangeable film magazine comprising, in the actual body of the camera, a claw for advancing the film, and a main motor driving this claw in a reciprocating movement; and, in each magazine, a take-up roll on which the exposed film is wound, an auxiliary electric motor rotating this take-up roll and at least one sprocket wheel

for regularly advancing the film, the film being formed into a loop near the claw having two short end parts under control of the sprocket wheel, a friction coupler or an electromagnetic brake acting on the drive of the sprocket wheel, first means for measuring the speed of the sprocket wheel; second means for measuring the speed of the main motor of the camera and a



speed comparator with two inputs respectively connected to the first and second measuring means and of which the output is connected to the friction coupler or electromagnetic brake so as to vary the speed of the sprocket wheel and to maintain the linear speed equal to the average speed of advance of the film driven along by the claw.

4,245,898

MICROFICHE READER

Peter J. Hall, Barrie, Canada, assignor to Microvue Products, Inc., Barrie, Canada

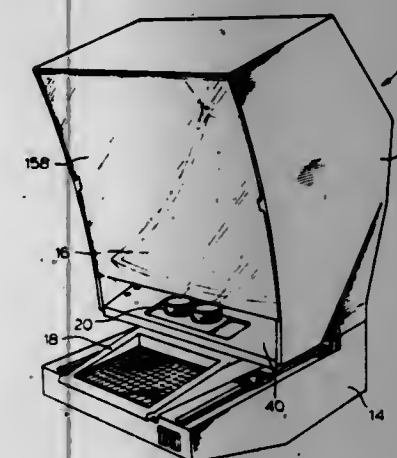
Division of Ser. No. 777,772, Mar. 15, 1977, Pat. No. 4,140,376.

This application Sep. 23, 1977, Ser. No. 835,956

Int. Cl.² G03B 23/08

U.S. Cl. 353—27 R

1 Claim



1. In a microfiche reader of the type having a housing, an image projection system in said housing and including projector means and a screen for receiving a projected image and an illuminating path extending from the projector means to the screen, the improvement of:

- (a) a combined microfiche carriage and index holder comprising:
- (i) a frame;
 - (ii) a first window opening through said frame;
 - (iii) means for locating a microfiche in a predetermined position with respect to said first window for the projection of light therethrough;
 - (iv) a second window opening through said frame;
 - (v) a transparent index grid mounted in said second window in a predetermined position with respect to said

second window for the projection of light there-through;

(b) index illuminating means supported by the housing and underlying said second window and located in a fixed relationship with respect to a portion of the illuminating path which projects from the housing through said first window opening;

(c) first and second guide rail means carried by said housing and said frame and supporting said frame for planar movement with respect to said housing to locate any required area of the grid in the beam of light emanating from the index illuminating means and thereby to locate the corresponding areas of the microfiche in the illuminating path of the projector for projection onto the screen,

(d) said housing including a base portion having a generally horizontally extending support surface, said platform having a front end and a back end, said index illuminating means being located adjacent said front end of said platform and said illuminating path extending through said platform at a location spaced rearwardly from said index illuminating means with respect to said front end whereby said second window opening of said microfiche carriage is located forwardly of said first window with respect to the front end of said platform to be readily visible,

(e) said first guide rail means being located on said platform and extending longitudinally from said front end of said platform, an undercarriage having first wheel means mounted thereon and engaging said first guide rail means for movement therealong, said second guide rail means being located on said undercarriage and extending normal to said first guide rail means, second wheel means on said frame engaging said second guide rail means for movement therealong, said first and second guide rail means having a V-shaped support surface and said first and second wheel means having a V-shaped surface adapted to outwardly overlie said V-shaped support surface of said first and second guide rail means, said first and second wheel means being mounted to rotate about horizontally oriented axes whereby both faces of the V-shaped support surfaces support the weight of the carriage in use, said first guide rail means being recessed below the platform and the platform being provided with slot means through which the first wheel means of the undercarriage extend to engage the first guide rail means, the slot means being widened above the position of the first wheel means when the undercarriage is pulled all the way forward with respect to the platform in which position the undercarriage can be lifted from the first guide rail means, and the slot means being narrowed along the remainder of its length to partially overlie the first wheel means to retain them engaged with the first guide rail means.

4,245,899

SLIDE MAGAZINE FOR SLIDE PROJECTORS

Jan A. Lundberg, Torshälla, Sweden, assignor to Victor Hasselblad AB, Göteborg, Sweden

Filed Feb. 26, 1979, Ser. No. 15,044

Int. Cl.³ G03B 23/06; B65D 85/48

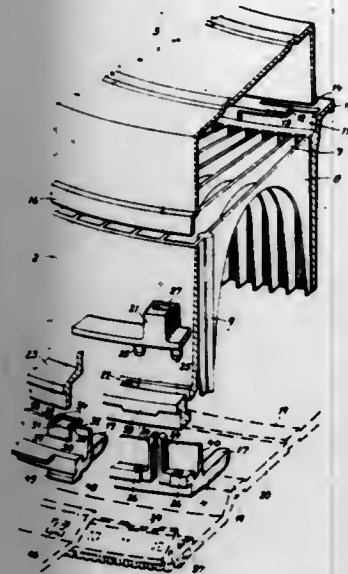
U.S. Cl. 353—117

13 Claims

1. A circular slide magazine for slide projectors with vertical slide exchange having mutually equally spaced radial slide compartments for slides mounted in slide frames, and adapted to alternately mount onto a driver ring on the projector or a support disc, said magazine comprising:

- (a) a magazine body (2), said body comprising open slide compartments (7) defined by a plurality of partition walls (8);
- (b) a locking ring (4) rotatably supported in the magazine body rotatable between locked and unlocked positions, said locking ring having retaining means for retaining a slide in each of the compartments when the locking ring (4) is in said locked position and the retaining means allowing movement of the slides into and out of the com-

partments when the locking ring (4) is in said unlocked position; and
(c) a safety catch (29) for selectively prohibiting rotation



between said body and said locking ring, said locking ring (4) including means for alternately latching onto either the driver ring (6) or the support disc (5) only when the locking ring (4) is in said locked position.

4,245,900

ELECTRONIC EXPOSURE CONTROL APPARATUS

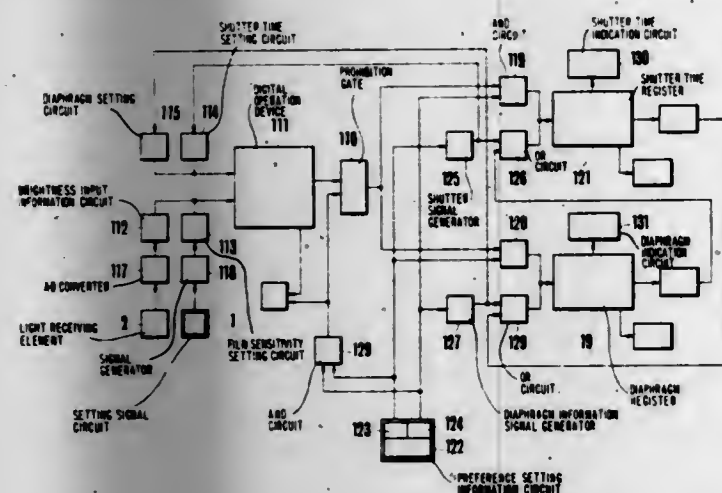
Soichi Nakamoto, Miachida; Fumio Ito, Yokohama; Yasuo Isobe, Kawasaki, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 668,720, Mar. 19, 1976, abandoned.

This application Dec. 27, 1977, Ser. No. 864,479
Claims priority, application Japan, Mar. 7, 1973, 48-26695;
Apr. 26, 1973, 48-47902; Apr. 26, 1973, 48-47904

Int. Cl.³ G03B 7/097

U.S. Cl. 354—23 D

3 Claims



1. An exposure data control apparatus for a camera usable both for a shutter time preference mode and a diaphragm preference mode by selective change-over therebetween, comprising:

- (a) shutter time register means for storing a digital signal corresponding to the shutter time value;
- (b) diaphragm register means for storing a digital signal corresponding to the diaphragm value;
- (c) first logic gate means for transferring a preferentially set shutter time value to said shutter time register means when the shutter time preference mode is selected, and which is connected to the input of said shutter time register means so as to transfer a shutter time value to be obtained as a result of an exposure operation when the diaphragm preference mode is selected; and
- (d) second logic gate means for transferring a preferentially set diaphragm value to said diaphragm register means

when the diaphragm preference mode is selected, and which is connected to the input of said diaphragm to transfer a diaphragm value to be obtained as a result of the exposure operation when the shutter time preference mode is selected.

4,245,901

INTERCHANGEABLE-LENS TYPE TTL AUTOMATIC EXPOSURE CAMERA

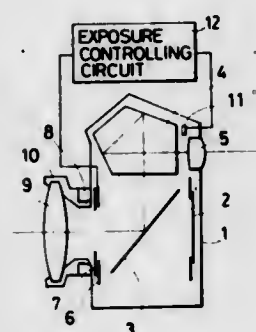
Tohru Karikawa, Tokyo, and Kunio Mita, Fukuoka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,685

Claims priority, application Japan, Jun. 15, 1977, 52/70772
Int. Cl.³ G03B 7/08, 9/02

U.S. Cl. 354—43

2 Claims



1. In an interchangeable lens type automatic exposure camera of the type having an objective lens, an adjustable diaphragm having a maximum aperture position, a light receiving element for receiving light which actually passes through said objective lens for measuring the quantity of light passing through said lens and said adjustable diaphragm when said adjustable diaphragm is in its maximum aperture position and an exposure controlling circuit for automatically controlling an exposure time and diaphragm aperture according to the quantity of light detected by said light receiving element, the improvement comprising:

- a fixed diaphragm member adjacent said adjustable diaphragm and having an aperture which limits to a constant value the quantity of light passing through said adjustable diaphragm when in its maximum aperture position.

4,245,902

BANK DEPOSIT IDENTIFICATION DEVICE

Joseph W. Cataldo, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 18, 1978, Ser. No. 952,480

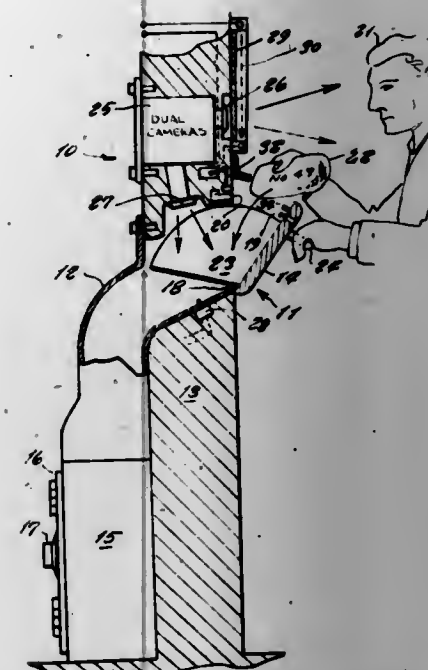
Int. Cl.³ G03B 29/00

U.S. Cl. 354—76

2 Claims

1. An apparatus incorporated with a bank night depository comprising in combination, an inclined chute through a bank wall, a door on an outer end of said chute, an inner end of said chute leading to a vault, a hopper mounted on an inner side of said door for receiving and retaining a deposit when said door is open said hopper permitting said deposit to slide down the chute after said door is closed in combination with means for

photographing the depositor and deposit simultaneously as soon as the door is closed in further combination with second



means responsive to closing of said door for actuating the first said means.

4,245,903

PHOTOGRAPHIC CAMERA

Kiyosaki Hazama, and Koichi Katsumoto, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

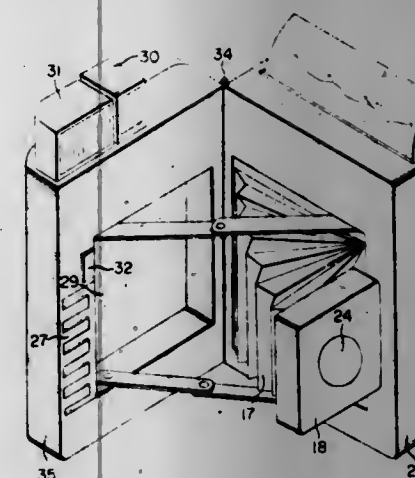
Filed Oct. 16, 1979, Ser. No. 85,274

Claims priority, application Japan, Oct. 17, 1978, 53/126922

Int. Cl.³ G03B 17/04, 17/52

U.S. Cl. 354—86

3 Claims



1. A camera of a self-developing type having an objective lens system adapted to be accommodated within a camera body in an inoperative state of the camera and to project therefrom in an operative state for photographing operation, and a film holding assembly, said camera comprising:
a cover member adapted to be closed against and opened with respect to the camera body, said cover member including a cavity for accommodating therein at least a part of the objective lens system;
a view-finder and a strobe lamp unit on said cover member at locations above the cavity;
a light-tight means for forming a bent optical path in said operative state for photographing operation; and
means for removing a photographed film upwardly from the camera body.

SLR MIRROR AND SHUTTER REBOUND PREVENTION MECHANISM

Mitsuo Satoh, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

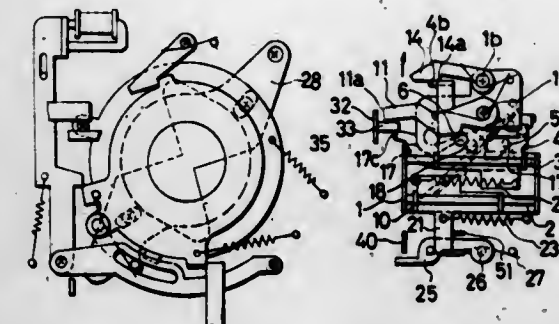
Filed Jul. 24, 1979, Ser. No. 60,105

Claims priority, application Japan, Aug. 25, 1978, 53/117218[U]

Int. Cl.³ G03B 19/12, 9/10

U.S. Cl. 354—153

8 Claims



1. A mirror and shutter rebound preventing mechanism in a lens shutter type single-lens reflex camera comprising:
a shutter blade release ring having a release ring pin following said shutter release lever; a shutter rebound preventing lever following said release ring pin; a mirror lifting plate having pins for driving said shutter release lever and for driving said shutter rebound preventing lever, said mirror lifting plate driving said shutter release lever and shutter rebound preventing lever before a mirror is lifted, and said mirror lifting plate having a protrusion holding said mirror when said mirror is lowered.

4,245,905

BLADE ACTUATING DEVICE FOR FOCAL PLANE SHUTTERS

Masao Takayama, Shirai, Japan, assignor to Copal Company Limited, Tokyo, Japan

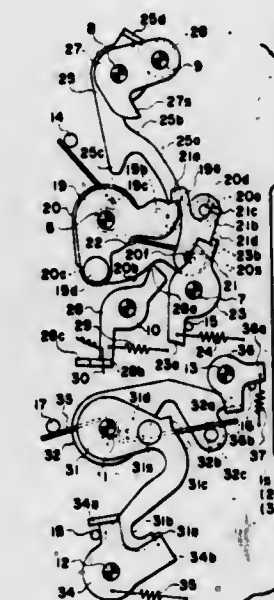
Filed Dec. 19, 1979, Ser. No. 105,300

Claims priority, application Japan, Dec. 27, 1978, 53/163317;
Jun. 29, 1979, 54/89220[U]

Int. Cl.³ G03B 9/40

U.S. Cl. 354—246

6 Claims



1. A focal plane shutter comprising an exposure aperture, a front blade group and rear blade group each of which consists of a plurality of opaque laminae and can move in the vertical direction between an exposure aperture covering position and an exposure aperture opening position, a front blade operating member which is operatively connected with said front blade group and can move said front blade group to said exposure

aperture opening position and closing position, a front blade driving member which is engageable with said front blade operating member and can move said front blade group to said exposure aperture opening position through said front blade operating member, and a spring which is connected between said front blade operating member and front blade driving member to give independent driving forces to said front blade operating member and front blade driving member, said front blade group being returned to a position covering at least a part of said exposure aperture by said front blade operating member after the exposing operation.

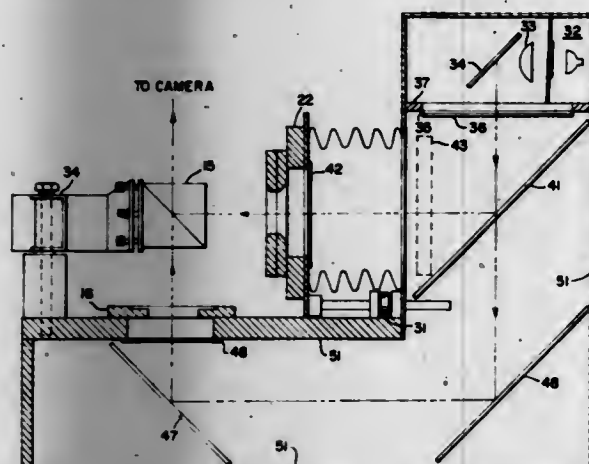
4,245,906

SYSTEM AND METHOD FOR COMBINING FILM IMAGES

Robert J. Froehlich, 210 S. Louis St., Mt. Prospect, Ill. 60056
Filed Nov. 13, 1979, Ser. No. 93,803
Int. Cl.³ G03B 27/52, 27/70

U.S. Cl. 355—43

2 Claims



1. An apparatus for producing a composite image from a transparent film having an image thereon and a photographic slide having a second image thereon, comprising in combination:

- a light enclosing body;
- a single source of light mounted in said enclosing body;
- means for directing light from said source along a vertical axis;
- a first beam splitter for directing a first portion of the light from said source along a horizontal axis, and for passing a second portion of said light along said vertical axis;
- first mirror means for reflecting said second portion light along a second horizontal axis;
- third mirror means for directing said second portion of light along a second vertical axis;
- means for positioning a transparent film containing a first image along a first plane to receive said first portion of light;
- means for positioning a photographic slide containing the second image in a second plane transverse to said first plane;
- said third mirror means directing said second portion of light through said photographic slide;
- light beam splitting means for combining the images from said film and said slide, and directing the combined image along a selected axis; and,
- camera means mounted to photograph said combined images along said selected axis for producing a composite image in desired registry.

4,245,907

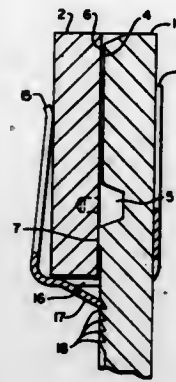
DISPOSABLE BLOOD CHAMBER

Julius S. Rosen, Buffalo, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 29, 1979, Ser. No. 43,571
Int. Cl.³ G01N 21/03

U.S. Cl. 356—244

4 Claims



1. A disposable blood chamber which comprises complementary molded chamber halves for forming a chamber therebetween when assembled in engagement with each other, registration means for restricting sliding motion between assembled chamber halves, clip means for retaining said chamber halves in assembled engagement and lock means for preventing removal of said slip means.

4,245,908

APPARATUS FOR CONTROLLING AND MONITORING THE DISPERSIVE ELEMENT AND RECORDING INSTRUMENT IN SPECTROMETRIC APPARATUS

Horst-Gerhard Gawlick, Überlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer Co., Überlingen, Fed. Rep. of Germany

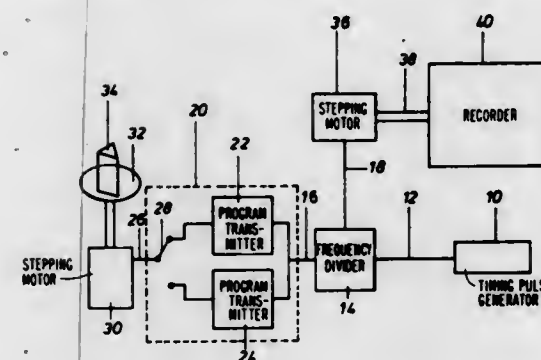
Filed Nov. 29, 1978, Ser. No. 964,752

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754444

Int. Cl.³ G01J 3/18

U.S. Cl. 356—328

4 Claims



1. A spectrometer including a rotatable dispersive element, a stepping motor for varying the angular position of said dispersive element, a program transmitter for controlling said stepping motor, a timing pulse generator, and a recording instrument,

- said program transmitter comprising a register, in the positions of which are stored the values of a function representing the non-linear relationship of the angular position of the dispersive element to the wavelength or wavenumber, respectively;
- said timing pulse generator being connected to said register for addressing each one of the positions thereof;
- adjusting means for adjusting the stepping motor corresponding to the contents of the addressed register positions, respectively; and
- said timing pulse generator also being connected to a

recording instrument for controlling the advance thereof in the abscissa direction.

4,245,909

OPTICAL INSTRUMENT FOR MEASUREMENT OF PARTICLE SIZE DISTRIBUTIONS

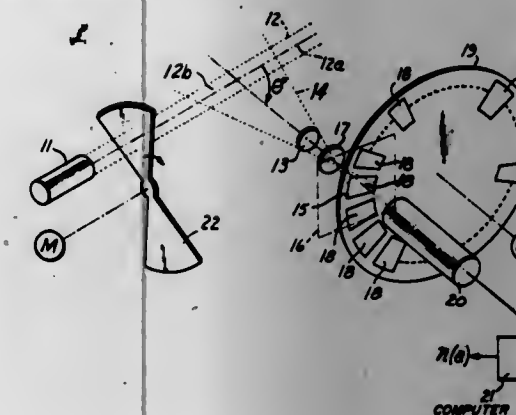
Hendricus G. Loo, 3019 Cresta Way, Laguna Beach, Calif. 92651

Filed Jun. 26, 1978, Ser. No. 919,281

Int. Cl.³ G01N 15/02

U.S. Cl. 356—336

47 Claims



1. A method for measurement of the size distribution of particles suspended in a gas or a liquid, comprising: passing a substantially collimated beam of substantially monochromatic light into the particle suspension, said beam having a beam axis; with a lens collecting part of the light scattered by the particles, the optical axis of said lens making a non-zero angle with the axis of the illuminating beam; sequentially placing the members of a set of spatial filters in an image window located in the focal plane of said lens; collecting the light transmitted by each of said spatial filters sequentially by a photodetector to produce a signal substantially proportional to light transmitted by respective filters; acting on the resulting photodetector signal sequence by a linear transformation; and using the resulting data sequence as coefficients in a linear combination of basis functions to yield the particle size distribution.

4,245,910

APPARATUS FOR DETECTING PARTICLES SUSPENDED IN A GAS

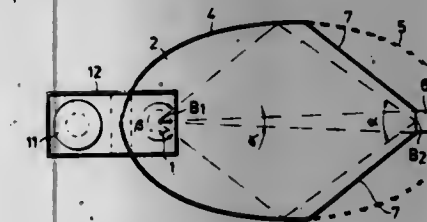
Stefan Källander, Lidingö, Sweden, assignor to Svenska Utvecklings Aktiebolaget, Stockholm, Sweden

Filed Feb. 27, 1980, Ser. No. 125,025

Claims priority, application Sweden, Mar. 7, 1979, 7902054
Int. Cl.³ G01N 15/06, 21/51

U.S. Cl. 356—338

5 Claims



1. An apparatus for detecting the presence of solid or liquid particles suspended in a gas, comprising a measuring chamber for receiving the gas to be examined; means for generating a concentrated, substantially parallel beam of optical radiation having a center axis and for directing said beam through said measuring chamber; a reflector having a reflector surface

consisting of at least a part of an internally reflecting, elliptical cylindrical surface, so arranged that the centre axis of said beam substantially coincides with one focal axis of said elliptical cylindrical reflector surface; and a radiation detector arranged with its active surface located substantially tangent to the other focal axis of said elliptical cylindrical surface and with the centre axis of its field of view directed onto said beam and located substantially in the same plane as the major axis of the elliptical cross-section of said elliptical cylindrical surface.

4,245,911

ECONOMICAL FAST SCAN SPECTROMETER

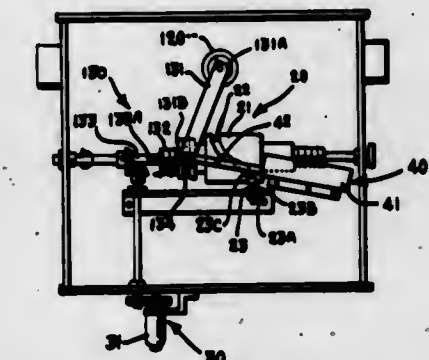
Ernest W. Steinbrenner, Lancaster, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 23, 1979, Ser. No. 14,519

Int. Cl.³ G01J 3/06, 3/18

U.S. Cl. 356—328

9 Claims



1. In a slow scan, frequency limited spectrometer having a rotatable diffraction grating and a screw mechanism for driving said rotatable grating, wherein said screw mechanism includes a grating drive arm with a first end and a second end, and wherein said first end of said grating drive arm is linked to said rotatable grating, the improvements comprising:

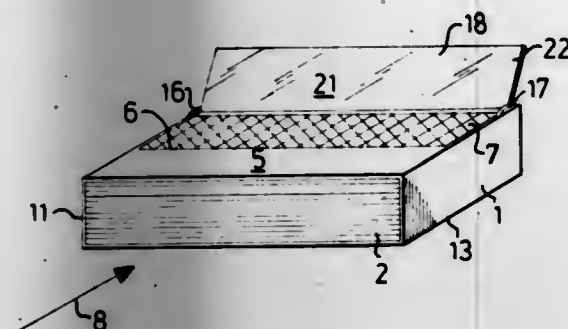
- means, linked to said second end of said grating drive arm, for rapidly scanning a preselected wavelength range with said rotatable grating that is linked to said first end of said grating drive arm, wherein said means for rapidly scanning a preselected wavelength range with said rotatable grating includes:
 - a rotatable hollow cylindrical cam member operatively connected to said screw mechanism for driving said rotatable grating, with said cylindrical cam member having a groove positioned, shaped, and dimensioned to attain a predetermined pitch, whereby rapid scanning of said preselected wavelength range with said rotatable grating is achieved;
 - and, a constraining element having a fixedly positioned first end and a ball bearing guide second end, with said ball bearing guide second end disposed in, and in contact with, said groove in said cylindrical cam member, whereby said second end functions to constrain said cylindrical cam member;
- means, linked to said grating drive arm, for varying in speed said rapid scanning with said rotatable grating;
- and, means linked to said second end of said grating drive arm, for providing a remote wavelength readout resulting from said variable rapid scanning with said rotatable grating; whereby said spectrometer is now useable as a variable fast scan, and frequency selective, spectrometer.

4,245,912

DEVICE SUCH AS AN INSTRUMENT FOR OPTICALLY, PREFERABLY VISUALLY, DETERMINING A DEFINITE PLANELars A. Bergkvist, Gottne, 890 42 Mellansel, Sweden
Filed Sep. 27, 1978, Ser. No. 946,388Claims priority, application Sweden, Oct. 12, 1977, 7711444
Int. Cl.³ G01B 11/00, 11/14

U.S. Cl. 356—374

4 Claims



1. A device for optically determining a definite plane defined by said device, comprising:

- a parallelepiped box having opposed front and rear walls and opposed top and bottom walls;
- a forward screen of opaque lines separated by transparent interspaces provided in the front wall of the box;
- a first rearward screen of opaque lines separated by transparent interspaces provided between the forward screen and the rear wall of the box, the opaque lines of the forward and first rearward screens being parallel with one another and the first rearward screen being arranged at an angle with the forward screen with the angle being in a plane formed by said parallel opaque lines;
- a second rearward screen of opaque lines separated by transparent interspaces provided between said forward screen and said rear wall and parallel with said forward screen, the opaque lines of said forward, first rearward and second rearward screens being parallel with one another and forming said definite plane;
- a mirror located between said screens and said rear wall with a portion of the lower edge of the mirror adjacent the lower edge of the second rearward screen and the mirror extending upward and rearward of the box at an angle of substantially 45° to the plane of the forward screen;
- said box being provided with an opening in the top wall adjacent said mirror which is at least as large as the projection of said mirror on and perpendicular to said top wall; and
- a plate of prism-pressed, plastic, transparent, material covering said opening, so that moire patterns formed by light passing through the plate and the three screens may be observed, and from which information is obtained concerning whether the observation is being made above, below or in said definite plane defined by said device.

4,245,913

SCANNING AND DETECTING DEVICE

Seppo E. Sarlos, Kontio, 1, Esbo 21, Finland

Filed Mar. 15, 1978, Ser. No. 886,829

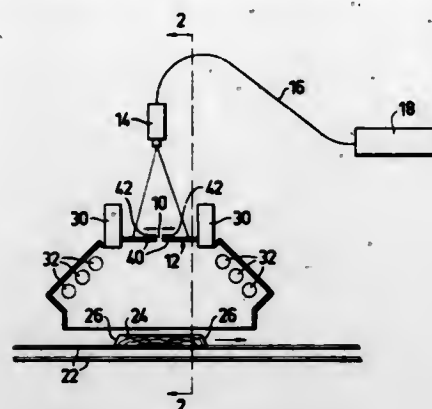
Claims priority, application Sweden, Mar. 22, 1977, 7703294
Int. Cl.³ G01N 21/89

U.S. Cl. 356—431

14 Claims

1. A device for detecting radiation from an object for detecting irregularities or faults on one face thereof comprising: scanning and detecting means for receiving radiation; and adjustable slit means disposed in a screen for continuously passing radiation to said scanning and detecting means through the whole of said slit means, wherein said adjustable slit means includes, adjustable band means for controlling the amount of radiation passing through said slit means to said stationary scanning and detecting means,

eccentric cam means for applying a force to the edges of said adjustable band means to adjust the opening between said adjustable band means to control the size of said slit, and



clamp means to positively lock said adjustable band means flat against the screen to hold the size of said slit constant after adjustment thereof.

4,245,914

SAMPLE CELL WINDOW CLEANING DEVICE

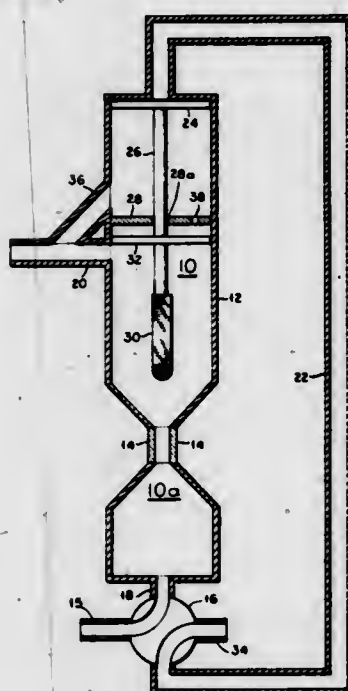
Peter J. Clack, Doylestown, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Apr. 7, 1980, Ser. No. 138,012

Int. Cl.³ G01N 35/00

U.S. Cl. 356—440

5 Claims



1. A window cleaning arrangement for a radiation sensitive analysis device comprising:

- an elongated chamber,
- a pair of windows located in opposite walls of said chamber, means for introducing a fluid to be analyzed into either end portion of said chamber,
- a plunger mounted within said chamber in sealing relation with said walls for movement axially of said chamber,
- window cleaning means located in a central portion of said chamber and connected to said plunger for movement past said windows with axial movement of said plunger,
- fluid valving means to alternately apply said fluid to be analyzed to one end portion of said chamber to move said window cleaning means into wiping engagement with said windows and to apply said fluid to the other end portion of said chamber to move said window cleaning means away from said windows, and
- fluid outlet means located in said wall of said chamber be-

tween said one end portion of said chamber and said windows.

4,245,915

APPARATUS FOR MAKING ASPHALT CONCRETE

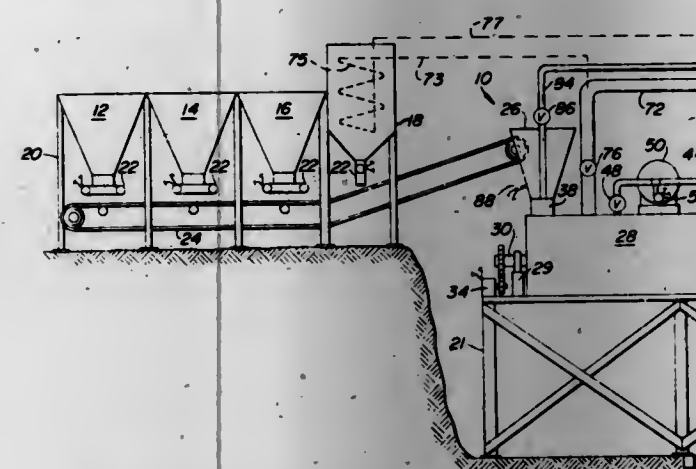
Paul E. Bracegirdle, c/o Mix Design Methods, Inc. P.O. Box 113, Penndel, Pa. 19047

Filed Feb. 22, 1979, Ser. No. 13,931

Int. Cl.³ E01C 19/10

U.S. Cl. 366—12

21 Claims



1. Apparatus for making asphalt concrete comprising:

- (a) a mixing chamber having inlet means and outlet means, and means within said chamber for indirectly heating a mixture of starting materials including aggregate and binder material while moving said mixture through said chamber, said inlet means and said outlet means being capable of selectively sealing the interior of said mixing chamber from communication with the atmosphere, and
- (b) means for controlling the moisture content of said mixture to a predetermined amount including means for adding or removing water to or from said mixture in said chamber until said moisture content equals said predetermined amount, condensing means for condensing water from gas produced by heating said mixture in said chamber, a valved first conduit means connecting said mixing chamber to said condensing means, a valved second conduit means connecting said condensing means to said mixing chamber for returning gas to said chamber, a tank connected by a valved third conduit to said condensing means for storing water condensed by said condensing means, and conduit means connecting said tank to said mixing chamber for introducing water into said chamber.

4,245,916

DAISY WHEEL PRINT ELEMENT STRUCTURED FOR USE IN A CARTRIDGE

Adolph B. Habich, and Ronald E. Hunt, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,322

Int. Cl.³ B41J 1/30

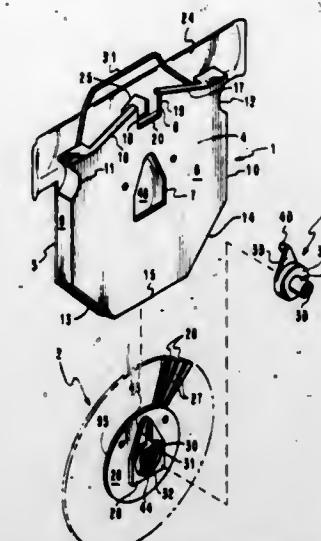
U.S. Cl. 400—144.2

11 Claims

1. In a daisy wheel printer print element rotatable for printing and having an impact side, a printing side, and a number of radially extending petals carrying a type on said printing side, wherein the improvement comprises:

- (a) a dish shaped central hub having (1) a dish side and a protruding side, (2) said petals connected to the outer periphery of said central hub, and (3) said protruding side on said impact side; and
- (b) an orientation protrusion engulfing the axis of rotation of said element and carried on said protruding side of said central hub for insuring only one rotational orientation of said print element during printing non-use when said print

element is housed in a cartridge having an orientation opening matching said orientation protrusion and said



orientation protrusion is in engagement with said orientation opening.

4,245,917

LINEAR ACTUATOR DRIVEN PRINTER

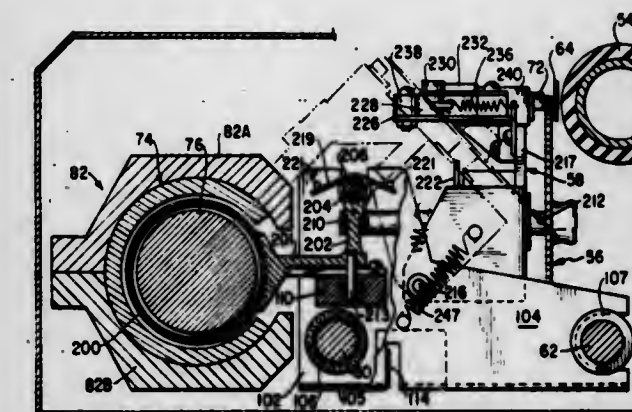
Roger Mosclatti, 6 Wycomb Pl., Coram, N.Y. 11727; Thomas P. Foley, 12 Janes La., Lloyd Harbor, N.Y. 11743, and Frederick G. Moritz, 20 Aberdeen Rd., Hauppauge, N.Y. 11787

Filed Feb. 28, 1979, Ser. No. 16,205

Int. Cl.³ B41J 1/08

U.S. Cl. 400—144.2

7 Claims



1. A printer, comprising
- a linearly movable carriage having a printing element mounted thereon,
 - paper advance means for advancing a writing surface relative to said printing element,
 - second advance means for advancing an ink bearing member relative to said printing element and
 - a linear actuator for moving said carriage and actuating said paper advance means and said second advance means, said linear actuator comprising
 - an elongated C-shaped magnet defining a cylindrical interior space,
 - a cylindrical ferrous core extending axially through said space to form an air gap between said core and the magnet,
 - ferrous end pieces at the end of said magnet,
 - at least three independently controlled axially movable armatures, each of said armatures comprising coils of wire wrapped around said cylindrical core and being movable axially within said air gap when an electrical current is caused to flow through the coils of said armature,
 - first, second and third connecting members attached, respectively, to said three armatures and extending radially through the open portion of said magnet, said first connecting means being connected to said carriage, said sec-

and connecting means adapted to actuate said paper advance means and said third connecting means adapted to actuate said second advance means.

4,245,918

ERASE THROUGH TAB

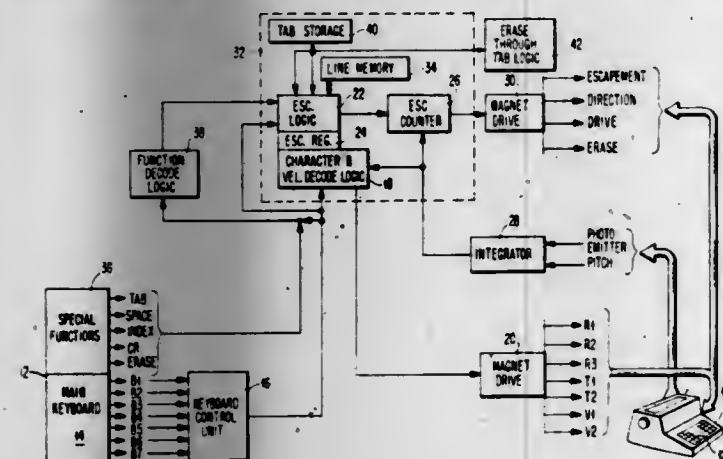
David J. Bowles, Winchester, Ky.; Douglas E. Clancy, Austin, Tex.; Carl F. Johnson, Lexington, Ky., and Danny M. Neal, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1978, Ser. No. 908,315

Int. Cl.³ B41J 33/14, 25/18

U.S. Cl. 400—697.1

5 Claims



1. An erase control for a typewriter capable of typing on an image page comprising:

a keyboard,
a print means,
a print point defining means for defining a print point,
backspace means,
electronic control means for receiving keyboard data and controlling said print means to print keyboard characters;
memory means for storing data corresponding to data keyed into said typewriter keyboard;
tabulation means capable of forward and reverse tabulation;
print point position control means including means for indicating the relative position said print point occupies on a printing line;

electronic means for receiving tabulation control signals from said keyboard, storing a value in said memory means corresponding to said print point position at the time of the receipt of said tabulation control signal;

error correction means associated with said memory means and said backspace means and said electronic control means to effect backspacing of said print point, reading said memory means to determine data recorded therein in reverse order of entry, and correction of an error by eradicating said error from said page;

means associated with said error correction means for detecting said value in said memory means and comparing said value with the indication generated by said print point position control means; and

a second control means to prevent said error correction means from determining said data and operation of said error correction means to eradicate said error, until said print point is relocated over the point said stored value represents.

4,245,919 BIAS CONTAINER/APPLICATOR TRIM PACKAGE FOR DIMENSIONALLY STABLE SOLID PAINTS AND RELATED MATERIALS

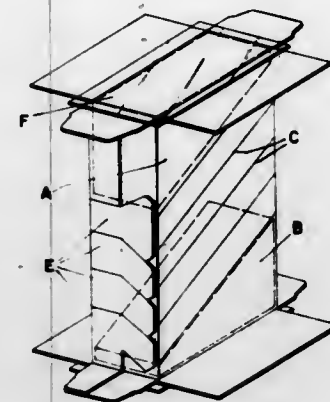
William D. Kinsell, Jr., Westlake, Ohio, assignor to SCM (Canada) Ltd., Don Mills, Canada

Filed Feb. 8, 1979, Ser. No. 10,381

Int. Cl.³ B43K 19/14

U.S. Cl. 401—97

11 Claims



1. A container/applicator bias trim package for storing and applying a dimensionally stable gel deformable on contact with a surface on which said material may be deposited as a coating or treatment which comprises:

(a) an assembled outer shell having one or more individually removable tear strips whereby the dimensionally stable and deformable gel may be exposed for application to a substrate; wherein the tear strips are formed by die-cutting the external and internal surfaces of the outer shell at a bias angle from the horizontal, said resulting die-cuts being substantially parallel to, but slightly displaced from, one another;

(b) an inner lining which functions as a barrier to contain the deformable gel;

(c) a false bottom which functions to anchor the dimensionally stable gel within said container, to support the entire package on shipment and storage, and to allow said package to be conveniently grasped in the hand for manual application of said gel to a substrate;

(d) a removable false top insert positioned at the top of the package, the bottom surface of which is formed at a bias angle of about 20° to 45° and serves to mold the gel at a bias angle when the inverted package is filled while the gel is still in a fluid state; said insert being removable on opening of the container, the bottom surface of said top insert lying in a plane substantially parallel to the bias angle formed by the tear strips.

4,245,920

INTERCONNECTABLE MOLECULAR MODELS AND A FASTENER FOR CONNECTING SAME

Edward J. Barrett, 1725 York Ave., New York, N.Y. 10028

Filed Aug. 26, 1977, Ser. No. 828,158

Int. Cl.³ F16D 1/12

U.S. Cl. 403—305

10 Claims

1. A fastener for joining two plugs in coaxial alignment and in a plurality of relative orientations about the axis of alignment, each plug having:

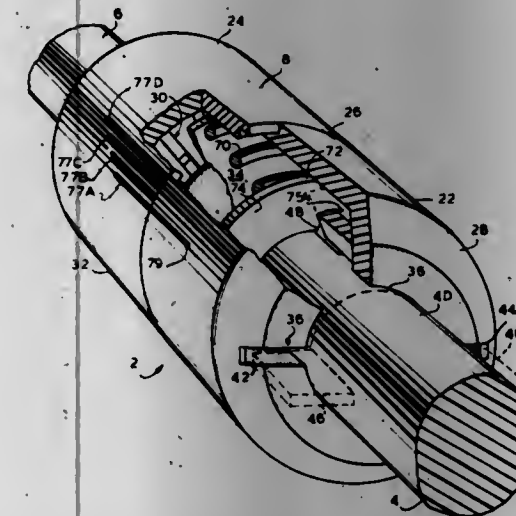
(i) a generally cylindrical shank, and
(ii) at least one tab projecting outward from the surface of the shank;

the fastener comprising:

(a) a hollow housing including:

(a.1) a first end wall;
(a.2) a second end wall opposing the first end wall; and
(a.3) a side wall extending between the two end walls; the end walls and the side wall defining a cavity within the housing; each end wall having a plug-receptacle opening therein, the plug-receptacle opening including a generally

circular opening and at least one slot extending radially outwardly from the circumference of the circular opening, the circular opening being dimensioned and the slot being dimensioned and positioned to receive respectively the shank and the tab of the plug, the plug-receptacle opening thereby permitting an end portion of the plug including the tab to be inserted through the end wall into the cavity, the plug-receptacle openings in the first and second end walls being positioned and oriented to guide plugs inserted through them such that the directions of insertion are substantially collinear; a surface facing the cavity of each end wall having a plurality of grooves therein, one of the surfaces having at least ten grooves therein, the grooves extending radially outwardly from the circumference of the circular opening and being spaced apart azimuthally around the circumference to define a series of plug-orientation angles, the grooves being configured to accommodate the tab; and



(b) seating means located within the cavity for exerting a force on a plug inserted in the plug-receptacle opening in either end wall in opposition to the direction of insertion to urge the plug towards the end wall, the seating means including:

(b.1) a compression element;
(b.2) a first contact surface, and
(b.3) a second contact surface,
the first and second contact surfaces positioned to intercept plugs inserted respectively through the plug-receptacle openings in the first and the second end walls, the compression element being located between the first and second contact surfaces so that the force on a plug is transmitted from the compression element to the plug by a contact surface, each contact surface being configured to permit a plug in contact therewith and passing through the plug-receptacle opening to be rotated to position the tab adjacent a groove in the end wall, the seating means thereby being adapted to urge the tab into the groove seating the plug in the fastener.

4,245,921

CONTINUOUSLY CURVED COUNTERSINK USED WITH DEFORMABLE RIVET

Joseph G. Falcioni, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 755,834, Dec. 30, 1976, Pat. No. 4,111,580. This application Dec. 30, 1977, Ser. No. 865,933

Int. Cl.³ F16B 19/06; B25G 3/00; F16D 1/00; F16G 11/00

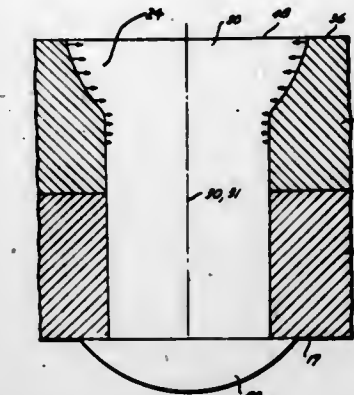
U.S. Cl. 403—408

8 Claims

1. A fastening system for joining workpieces with a rivet fastener comprising:

a relatively nondeformable workpiece, said workpiece having an aperture formed therethrough, said aperture including a bore and having a countersink adjacent a first surface of said workpiece, said countersink comprising a continuously curved surface extending from said bore to said first

surface, said countersink having a first and second portion, said first portion being adjacent said bore and diverging from said bore as it extends toward said first surface to provide resistance to pull-through of said rivet fastener, said second portion having decreasing divergency from said bore as it extends from said first portion to said first



surface to provide a surface adapted for an interference fit with said rivet fastener; and
a relatively deformable rivet fastener forcibly inserted into said aperture so as to deform said rivet fastener into intimate contact with said countersink thereby providing a structural, fluid-tight joint.

4,245,922

TRAFFIC DELINEATOR POST

Robert S. Auriemma, Rte. #1, Box 104, Bethel, Pa. 19507

Filed Apr. 2, 1979, Ser. No. 26,014

Int. Cl.³ E01F 9/00

U.S. Cl. 404—10

9 Claims



1. A delineator post comprising a body made from a section of long thin flexible stock having a uniform transverse cross section, the body including a strip of essentially uniform thickness and lips at the edges of the strip projecting outwardly of one side of the strip to increase the thickness of the body; a light reflective member; a connection securing such member to the top end of the body on said one side of the strip, the lower end of the body being adapted to be buried below grade so that the post extends vertically upwardly and the light reflecting member is in position to reflect light directed thereon; and a first flex section of the post located above the lower end, such first flex section including notches extending through all portions of the body, including said lips, increasing the thickness of the body greater than the thickness of the strip so that the thickness of the post at the first flex section is essentially uni-

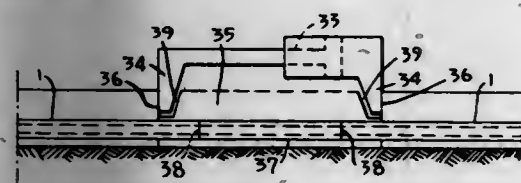
form across the width thereof, whereby a vehicle impacting the post above the flex section non-destructively bends the post down about such section, passes over the post and thereafter the post elastically returns to its upright position, the inner edges of the lips overlying said one side of the strip to define a pair of edge recesses extending along the length of the body, a lip on the top end of the body overlying said one side of the strip, such lip extending between the lips at the edges of the strip to define a recess extending across the top end of the body; the top recess and the edge recesses cooperating to define a generally U-shaped recess extending around the top end of the post; said light reflecting member comprising a flexible sheet of light reflective material lying flush on said side of the strip and having side edges and a top edge, such edges and said U-shaped recess forming said connection with the edges extending into the U-shaped recess to secure the light reflective member to the body; and a second flex section of the post located between the light reflective material and the first flex section, such second flex section including notches extending through all portions of the body, including said lips, increasing the thickness of the body greater than the thickness of the strip so that the thickness of the post at the second flex section is essentially uniform across the width thereof, whereby the upper end of the post may be bent back to open the notches of the second flex section to permit movement of the flexible sheet of light reflective material out of and into the U-shaped recess through the notches of the second flex section.

4,245,923 PRESTRESSING AND PRESTRESSED ROAD PAVEMENTS

Johann J. Rieve, No. 21 Hallbergstrasse, 4000 Düsseldorf, Fed. Rep. of Germany
Continuation of Ser. No. 792,140, Apr. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 712,469, Aug. 9, 1976, abandoned. This application Sep. 13, 1978, Ser. No. 942,042
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1975, 2537616

Int. Cl.² E01C 5/10
U.S. Cl. 404—70

14 Claims



9. A prestressed concrete pavement comprising in combination:

- a plurality of prestressed concrete intermediate slabs and two prestressed concrete end slabs, at least one gap being defined between adjoining slabs, concrete being disposed and prestressed in said gap;
- each of said slabs having at least one peripheral member, the peripheral member of each slab defining an enclosure structure, and being aligned with, and connected to, a corresponding peripheral member of a neighboring slab,
- each peripheral member of said intermediate slabs being grout-filled, the peripheral member of at least one of said end slabs includes at least one tensionable core member, whereby said end slab may be post-tensioned by said core member.

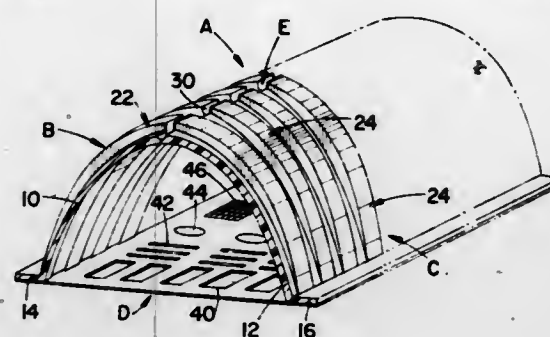
4,245,924 ARCH CONDUIT

James L. Fouss; John J. Parker; James L. Child, Jr., and Donald W. Sting, all of Findlay, Ohio, assignors to Hancor, Inc., Findlay, Ohio

Filed Dec. 7, 1978, Ser. No. 967,514
Int. Cl.³ E02B 11/00; F16L 11/11

U.S. Cl. 405—45

31 Claims



1. A foldable conduit comprising:
 - an imperforate first wall which is elongated in one direction having a first wall apex side edge area and an opposed first wall terminal side edge area, said first wall being relatively stiff to resist compressive loading;
 - an imperforate second wall which is elongated in said one direction having a second wall apex side edge area and an opposed second wall terminal side edge area, said second wall being relatively stiff to resist compressive loading;
 - means for connecting said first and second walls along said one direction at generally said first and second wall apex side edge areas, said connecting means allowing said first and second walls to be arcuately moved toward and away from each other, whereby said first and second walls are moveable between a folded position in which said first and second wall terminal side edge areas are substantially adjacent and an unfolded fluid conveying position in which said first and second wall terminal side edge areas are displaced from each other; and
 - a non-corrugated flexible base connected in both the folded and unfolded positions adjacent said first wall terminal side edge area and connected in both the folded and unfolded positions adjacent said second wall terminal side edge area, said base being elongated in said one direction and having a width disposed between the first and second wall terminal side edge areas, the width of said base limiting the amount by which said first wall terminal edge area and said second wall terminal side edge area can be displaced in the unfolded position and the base being sufficiently flexible across its width that in the folded position said base is adapted to be disposed in a generally folded configuration between said first wall and said second wall.

4,245,925 EXPANSION JOINT SEALING APPARATUS AND METHOD FOR SEALING SAME

Lawrence F. Pyle, Deerfield, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

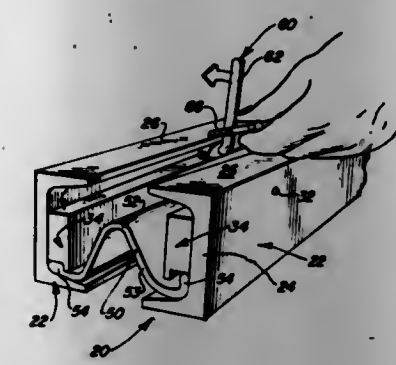
Filed Dec. 26, 1978, Ser. No. 972,909
Int. Cl.³ E01C 11/04

U.S. Cl. 404—72

15 Claims

1. A method of sealing an expansion joint comprising the steps of providing spaced elongate retaining assemblies extending lengthwise of the joint, one at each side of the joint, each retaining assembly comprising a form and a retainer bar slidably mounted on said form for slidable movement vertically from a first position to a second clamping position, positioning a seal member with a seal portion disposed between said retainer bar and a portion of said form at each side of the joint, forcing said retainer bar in the direction of and beyond said second position toward said form portion to compress said seal portion therebetween, positioning a keeper means to overlie said retainer bar, then releasing said retainer bar so that it

moves back towards said first position to bear against said keeper means, thereby to clampingly compress said seal portion to a predetermined extent, and repeating said forcing and



positioning steps at each side of said joint until said retainer bar clampingly engages said seal portion along the entire length of said retaining assembly.

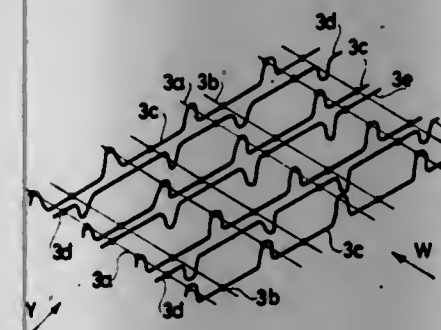
4,245,926 WELDED GRID, PRIMARILY FOR SECURING UNDERGROUND CAVITIES, CAVITY SYSTEMS, AS WELL AS PROCESS FOR MAKING THE GRID

Csaba Asszonyi, Budapest; Istvan Klauz, Sarisap; Istvan Kmety, Dorog; Nandor Meltzen, and Rezső Pazstör, both of Budapest, all of Hungary, assignors to Magyar Szenbanyaszati Trüszti, Tatabanya, Hungary

Filed May 17, 1978, Ser. No. 906,779
Claims priority, application Hungary, May 17, 1977, MA 2875

Int. Cl.³ E21D 11/00
U.S. Cl. 405—150

4 Claims



1. A welded grid for securing cavity walls such as in mine roads or the like, comprising: a first grid system comprising two sets of substantially straight spaced apart parallel first bars, wherein each set lies in a single plane parallel to that of the other set with the bars of the two sets alternately disposed with respect to each other; and a second grid system welded to the first grid system and comprising second bars, each having cyclically alternating straight portions disposed substantially perpendicularly to the first bars and bent portions projecting from the straight portions and lying in a single plane parallel to that of the other second bars and configured to span the distance between the two planes of the first grid system from the straight portions to the ends of the projecting bent portions and wherein the second bars are alternately inverted with the straight portions alternately adjacent to one set of first bars and then the other and with the bent portions of every other second bar aligned with each other and with a straight portion of the adjacent second bars.

4,245,927 LAYING OF PIPES OR CABLES IN A BED OF MATERIAL

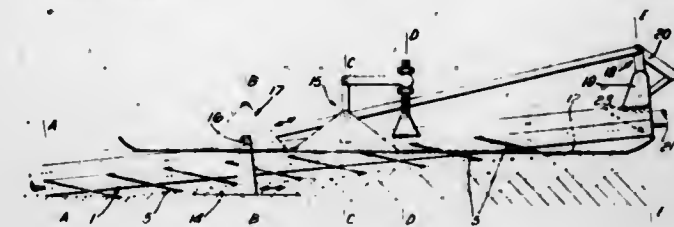
William Wharton, Near Hemel Hempstead, England, assignor to Wharton Engineers (Elstree) Limited, Hertfordshire, England

Filed Nov. 7, 1978, Ser. No. 958,584

U.S. Cl. 405—163

Int. Cl.³ F16L 1/04

11 Claims



1. A method of laying an elongate member in a bed of material, which method comprises moving an elongated generally straight tube along the bed of material so that a plurality of cutter means mounted in generally parallel spaced relationship with one another along the outer surface of the tube shaves material from the bed of material to form a trench therein, a leading end portion of the tube being disposed above the surface of the bed of material and a portion of the other end of the tube being disposed below the surface of the bed of material, the depth of dig being controllable by virtue of adjustable skid means mounted on the tube, and supplying the member to be laid, during movement of the tube, through the tube from the leading end thereof to the other end thereof and into the base of the trench formed.

4,245,928 JOINING PROCESS OF PANEL POINTS FOR MEMBERS IN A MARINE STRUCTURE AND METHOD FOR THE CONSTRUCTION OF STRUCTURES IN ACCORDANCE WITH THE PROCESS

Motoo Nei; Eisaku Uchikawa; Ikuro Jo, and Minoru Sato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sep. 8, 1978, Ser. No. 940,662
Claims priority, application Japan, Mar. 28, 1978, 53-35848
Int. Cl.³ E02D 17/00

U.S. Cl. 405—195

6 Claims



1. A process for connecting a brace to a pile member driven into the water characterized by providing a brace member having relatively short pipe elements at both ends of a beam member, oppositely driving a plurality of pile members in pairs into the water, placing one of said pipe elements over a first pile member placing the other of said pipe elements over a second pile member, said pipe elements having a diameter larger than the pile members, locating said pipe elements on the pile members at predetermined locations thereon with a predetermined gap between each pipe element and associated pile, filling said gap with a filler joining material to integrally join together the brace member and said piles, said brace member being free of connections with other structural members

prior to joining to a pile, whereby said first and second pile members are connected to each other.

4,245,929

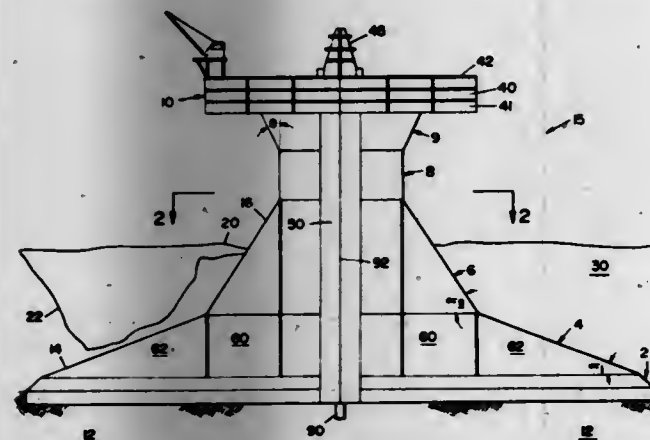
ARCTIC MULTI-ANGLE CONICAL STRUCTURE

James C. Pearce, Claremont; Paul M. Aagaard, Fullerton, and Gordon E. Strickland, Yorba Linda, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 891,421, Mar. 29, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 34,085 Int. Cl.³ E02B 17/00

U.S. Cl. 405—211

32 Claims



1. An offshore structure for use in a body of water that contains ice masses, comprising
 - a lower portion having a first circumferential wall substantially in the shape of a first truncated cone so that the wall of said lower portion is inclined at an angle to the horizontal, said first circumferential wall providing a ramp-like surface means for receiving ice masses moving relative to and in contact with said structure so as to elevate said ice above its natural level to cause said ice to fail in flexure adjacent said structure;
 - means for affixing said lower portion to the bottom of a body of water; and
 - an upper portion coaxially positionable above said lower portion, said upper portion having a second circumferential wall substantially in the shape of a second truncated cone so that the wall of said upper portion is inclined at an angle to the horizontal, said second circumferential wall providing a ramp-like surface means for receiving ice masses moving relative to and in contact with said structure so as to elevate said ice above its natural level to cause said ice to fail in flexure adjacent said structure, the angle of inclination from the horizontal of the wall of said upper portion being greater than the angle of inclination from the horizontal of the wall of said lower portion and the cross-sectional diameter of the wall of said upper portion being no greater than the cross-sectional diameter at the top of the wall of said lower portion.

4,245,930

OFFSHORE DRILLING AND PRODUCTION

Leland V. Gefvert, Anchorage, Ak., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 6, 1979, Ser. No. 45,817

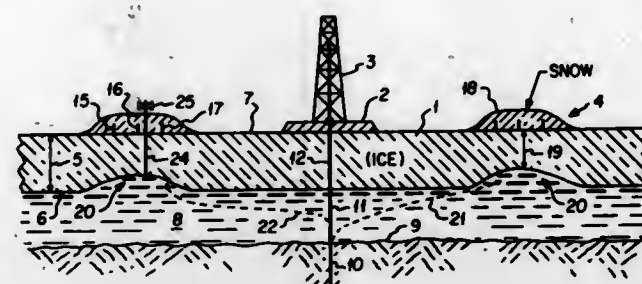
Int. Cl.³ E02B 3/00; F25C 1/02

U.S. Cl. 405—217

6 Claims

1. In a method for carrying out an offshore well drilling and/or production operation which is carried out on top of an existing layer of ice over unfrozen water, the improvement comprising forming a ring of thermal insulating material on top of said existing ice around the area of said operation, said ring being of sufficient height and width so that the ice thickness under said ring becomes thinner than the ice thickness adjacent said ring but without downwardly deforming said existing ice, thereby forming an annular depression in the underside of said

ice around the area in which said operation is carried out, whereby any fugitive fluid that is lighter than water that may



escape under said ice in said unfrozen water will essentially collect in said depression.

4,245,931

POST ASSEMBLY AND METHOD

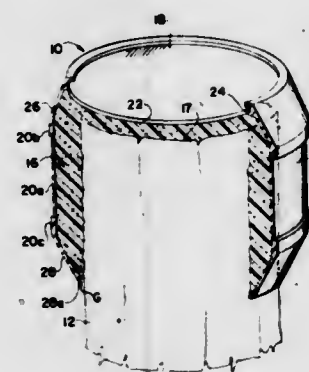
Ridley Watts, Jr., 34000 Cedar Rd., Gates Mills, Ohio 44040

Continuation-in-part of Ser. No. 874,875, Feb. 3, 1978, Pat. No. 4,161,090. This application Jul. 10, 1979, Ser. No. 56,284

Int. Cl.³ E04H 12/00

U.S. Cl. 52—301

9 Claims



1. In a post assembly including a post with a solid or closed end, a cover extending across said end and about side portions of the post adjacent said end, said cover being spaced from said end, and a foamed, semi-rigid, energy-absorptive, adhesive completely filling the space between said cover and said end and adhering the cover to the post, the improvement wherein said cover is comprised of a plate adjacent said end and a tubular skirt that extends about side portions of the post, the skirt having an inwardly opening circumferential groove in which the periphery of the plate is located.

4,245,932

SUCTION DREDGER AND METHOD OF LOADING THE SAME

Gerrit H. van Zeggelaar, Utrecht, Netherlands, assignor to Ingenieursbureau voor Systemen en Octroolen "Spanstaal" B. V.; Ballast-Nedam Groep N.V.; Amsterdamse Ballast Bagger en Grond (Amsterdam Ballast Dredging) B. V. and Scheepswerf en Machinefabriek "De Liesbosch" B.V., all of Nieuwegein & Amstelveen, Netherlands

Filed Jul. 11, 1978, Ser. No. 923,566

Claims priority, application Netherlands, Jul. 12, 1977, 7707770

Int. Cl.³ B65G 53/66

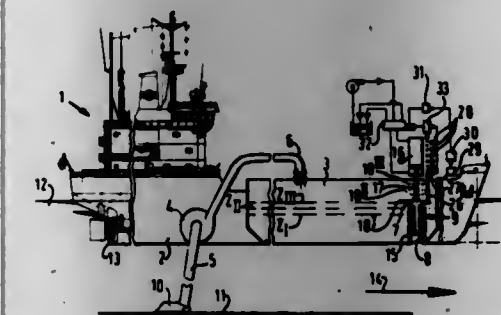
U.S. Cl. 406—33

2 Claims

1. The method of loading a dredger vessel having a hold whose volume greatly exceeds that maximum volume of settled sand which constitutes a maximum permissible weight carrying capacity of said vessel, said method comprising the steps of:

- (a) continuously pumping a suspension of sand in water into said hold to attain a maximum height within the hold and draining off liquid at such maximum height to allow weight build-up due to accumulation of settled sand;

- (b) determining when the hold has been filled to said maximum permissible weight carrying capacity of the vessel and, in response thereto, draining off liquid from the hold at a first reduced height, which is in spaced relation below said maximum height, such that the volume of material within said hold is rapidly reduced to a new value which, initially, corresponds to less than said maximum permissible weight carrying capacity of the vessel;
- (c) continuing the pumping of step (a) while the draining off of step (b) remains at said first reduced height so that sand



settles from the suspension in the hold under relatively quiescent conditions;

- (d) determining when the maximum permissible weight carrying capacity of the vessel is again reached and, in response thereto, draining off liquid as in step (b) at a second reduced height to attain a second new value of volume of material in the hold; and then
- (e) repeating steps (c) and (d) sequentially and repeatedly as necessary until the volume of settled sand has attained that value substantially corresponding to said maximum weight carrying capacity of the vessel.

4,245,933

SILO INSTALLATION AND APPARATUS FOR LOADING AND UNLOADING A SILO

Johann Wolf, Scharnstein, Austria, assignor to Johann Wolf Gesellschaft m.b.H. KG., Scharnstein, Austria

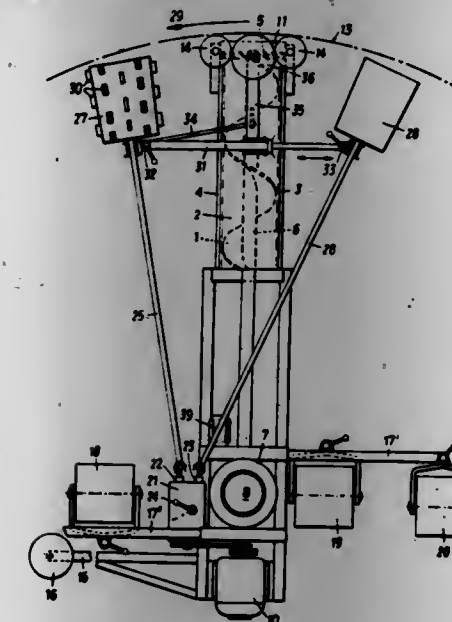
Filed Feb. 9, 1979, Ser. No. 11,163

Claims priority, application Austria, Feb. 21, 1978, 1235/78

Int. Cl.³ B65G 53/08

U.S. Cl. 406—56

23 Claims



1. Apparatus for use in loading and unloading a circular silo, comprising

- a conveyor duct,
- a material-handling blower associated with said duct,
- a horizontal conveyor screw which has an inner end associated with the lower end of said duct and is angularly movable about a main vertical axis extending near said inner end,
- at least two backing rollers which are rotatable on vertical axes and movable in unison with said conveyor screw

about said main vertical axis and are engageable with the inside peripheral surface of a silo to back said conveyor screw,

horizontal carrying arms connected to said conveyor screw to move in unison therewith about said main vertical axis and extending from said conveyor screw on opposite sides thereof substantially at right angles to the axis of said screw,

supporting rollers which are carried by and pivotally connected to said carrying arms and individually adjustable in height relative to said carrying arms and are disposed on opposite sides of said duct at different radial distances from said main vertical axis and rotatable on horizontal axes which are substantially at right angles to the axis of said conveyor screw,

propelling roller means comprising at least one propelling roller which is rotatable on a horizontal axis to move said conveyor screw about said main vertical axis,

the radial distances and the radial extents of said supporting rollers and said propelling roller means being such that the circular ring-shaped orbits described by said rollers and roller means during the rotation of the apparatus adjoin so that they cover substantially the entire surface of the silage in the silo,

a throwing blade detachably connected to said conveyor screw for rotation therewith at said inner end thereof and associated with said lower end of said duct,

propelling drive means for operating said propelling roller means to move said conveyor screw about said main vertical axis in a predetermined sense, and

reversible drive means for rotating said conveyor screw about its axis selectively in one sense and the other.

4,245,934

CONVEYING ROD-LIKE ARTICLES

Dennis Hinchcliffe, and George R. Bennett, both of London, England, assignors to Molins Limited, Great Britain

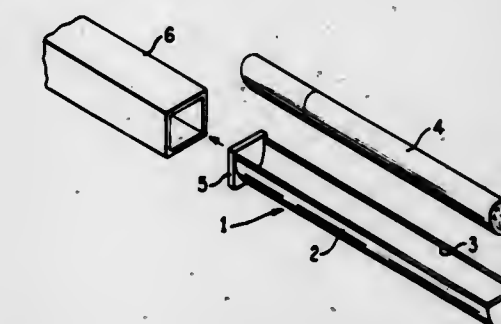
Filed Apr. 10, 1979, Ser. No. 28,888

Claims priority, application United Kingdom, Apr. 14, 1978, 14720/78

Int. Cl.³ B65G 51/04

U.S. Cl. 406—62

26 Claims



5. A conveying system for rod-like articles, comprising a delivery station, a receiving station, a carrier tube extending from the delivery station to the receiving station, a capsule adapted to receive at least one rod-like article at the delivery station, means for pneumatically transferring an article into the capsule at the delivery station, and means for pneumatically conveying the capsule from the delivery station to the receiving station along the carrier tube.

4,245,935

APPARATUS FOR CONTROLLING VEHICLES MOVING THROUGH A CONDUIT BY AIR

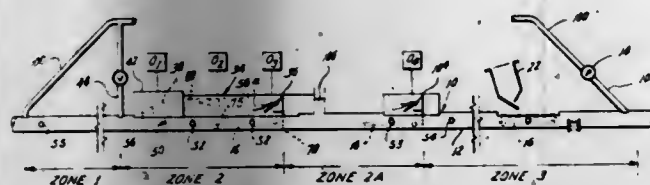
Marion R. Carstens, Atlanta, Ga., assignor to Georgia Tech. Research Institute, Atlanta, Ga.

Filed Jan. 12, 1979, Ser. No. 47,794

Int. Cl.³ B65G 53/28

U.S. Cl. 406—105

4 Claims



1. In an apparatus for controlling a plurality of individual vehicles which are moved through a conduit by air wherein the conduit includes zones one, two and three in sequence from an upstream position towards a downstream portion of the conduit and are inclined downwardly towards downstream, an air blocking vehicle stop is movable into and out of the conduit at the downstream end of zone two for stopping a vehicle in zone two and releasing the vehicle to zone three, a vehicle holding arm is positioned upstream of the vehicle stop and is movable into and out of the conduit in zone two and alternates with the vehicle stop for holding additional vehicles in zones one and two when the stop releases a vehicle to zone three and feeding a vehicle towards the vehicle stop, the improvement comprising,

- an air pump in parallel with zones one, two and three having a suction connected to zone one and a discharge connected to zone three,
- valve means positioned between the second and third zones for reducing the tendency of vehicles in zones one and two to move upstream including,
- a second air blocking vehicle stop movable into and out of the conduit, and
- a valve connected between the conduit and the atmosphere upstream of the second air blocking vehicle stop, said valve being opened and closed in synchronism with the second air blocking vehicle stop.

4,245,936

WATER ACCUMULATOR FLUME

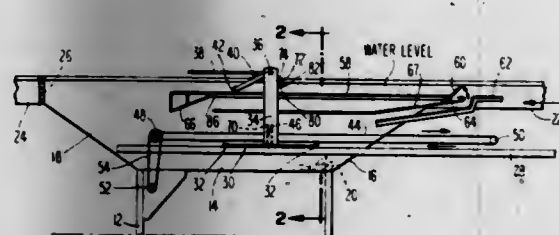
Aaron J. Warkentin, Orange Cove, Calif., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 11, 1979, Ser. No. 47,230

Int. Cl.³ B65C 53/02

U.S. Cl. 406—137

4 Claims



1. Apparatus for water transport of fruit and the like comprising
a tank adapted to permit water to flow therethrough and to receive fruit introduced therein,
flow restricting means adapted to be disposed in said tank for restricting the flow of water therethrough and directing said restricted water flow toward the bottom of said tank, and
means for causing said flow restricting means to traverse the

length of said tank in the same direction as the water flow therethrough to urge fruit through and out of said tank.

4,245,937

CLAMPING MECHANISM FOR CUTTING INSERT

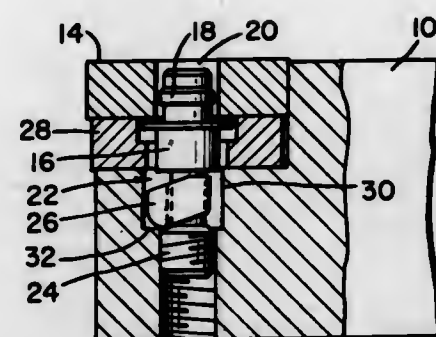
Robert A. Erickson, Ligonier, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Sep. 28, 1978, Ser. No. 946,814

Int. Cl.³ B26D 1/00; B25G 3/20

U.S. Cl. 407—105

9 Claims



1. A cutting tool for holding a cutting insert having an axial hole therein, which comprises: a cutter body; an insert seat on said cutter body having at least a bottom wall and a side wall, the insert seat having a transverse pin receiving hole located for at least partial registration with the axial hole in the insert; abutment means in said pin receiving hole beneath said insert seat; a pin having a head for engaging the axial hole of the insert and another end for moving engagement with said cutter body in said pin receiving hole; an abutment shoe pivotally mounted in relation to and between said abutment means and said pin so that when said pin is moved in a first direction in the hole said shoe pivots forcing the head of the pin to tilt toward said side wall and clamp the insert in said insert seat, said pivotal shoe allowing said pin to straighten when said pin is moved in a second direction in said hole.

4,245,938

DEVICE FOR POSITIONING A TOOL CARRIAGE

Max Kriegl, and Georg Riedmayr, both of Munich, Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 823,426, Aug. 10, 1977, abandoned.

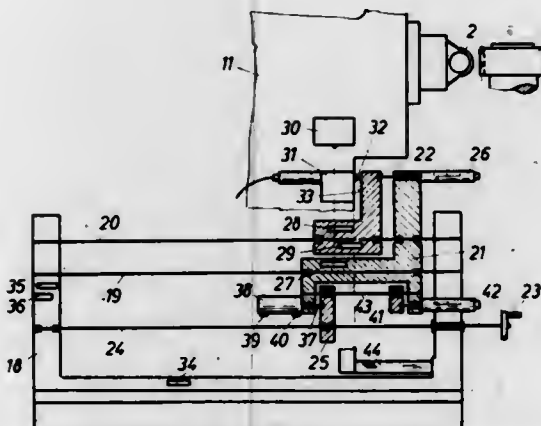
This application Jan. 22, 1979, Ser. No. 5,664

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637462; Jan. 18, 1977, 2701733; Jan. 27, 1977, 2703214

Int. Cl.³ B23F 5/20; B23B 21/00; B23Q 5/52

U.S. Cl. 409—15

12 Claims



1. A control device for use in a tool machine for controlling and positioning a feed carriage having a tool thereon and relative to a machine frame, comprising:
first and second carriages supported for movement with

respect to each other and with respect to said machine frame;

- first means for effecting a coarse adjustment of said first carriage relative to said machine frame;
- second means for effecting a fine adjustment of said second carriage relative to said first carriage, said second carriage having a stop surface thereon; and
- third means on said feed carriage responsive to the location of said stop surface for generating an output signal indicative of the relative position between said feed carriage and said stop surface.

4,245,939

METHOD AND APPARATUS FOR MACHINING SPHERICAL COMBUSTION CHAMBERS

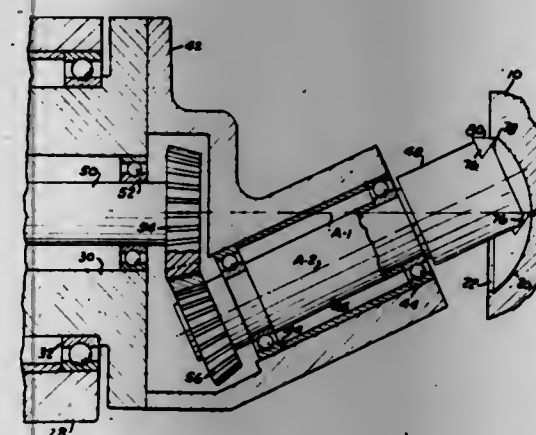
Leonard Sear, Lake Orion, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Filed Dec. 13, 1978, Ser. No. 969,164

Int. Cl.³ B23C 3/34

U.S. Cl. 409—191

1 Claim



1. Apparatus for machining spherically shaped combustion chambers in a cylinder head for an internal combustion engine comprising, a rotatable shaft journaled on said support, a fixture for supporting a cylinder head with the central axis of the combustion chamber to be machined therein aligned coaxially with the axis of rotation of said shaft, a head on said shaft rotatable therewith, a cutter body projecting from said head and journaled thereon for rotation about an axis inclined to and intersecting the axis of rotation of said shaft, at least one cutting tool mounted on said body in a position offset radially from the axis of said body and having a corner cutting edge at the axially outermost end thereof which passes through the axis of rotation of the shaft when the cutter body is rotated, means for independently rotating said cutter body and said shaft simultaneously about their respective axis, and means for relatively moving said support and fixture toward and away from each other along a path parallel to the axis of said shaft while the cutter body is rotating and the shaft is not rotating, said cutting tool also having a straight cutting edge thereon extending axially inwardly from said cutting corner on the radially outer side thereof and positioned on said body so that it extends parallel to the axis of the shaft when it rotates with said body to its radially outermost position relative to the axis of said shaft, whereby the rotating cutting body is fed into a cylinder head to a depth where the corner cutting edge of the cutting tool penetrates into the work throughout its path of revolution and said shaft is thereafter rotated simultaneously with the cutting body, the cutting cuts a spherically shaped combustion chamber having a circular cylindrical bore at the outer end thereof.

4,245,940

METHOD AND APPARATUS FOR SORTING AND STACKING CONDUCTOR PLATES TESTED IN A CONDUCTOR PLATE TESTER AND AN APPARATUS FOR CARRYING OUT THE SAME

Erich Luther, Ronnenberg, and Martin Maelzer, Wunstorf, both of Fed. Rep. of Germany, assignors to Luther & Maelzer GmbH, Wunstorf, Fed. Rep. of Germany

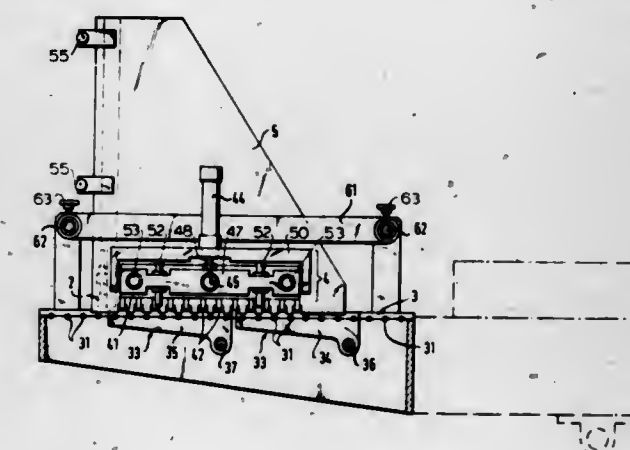
Filed Dec. 18, 1978, Ser. No. 970,248

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1978, 2814955

Int. Cl.³ B65G 57/30; 414 32:37; 51:92; 95:96; 900

U.S. Cl. 414—95

3 Claims



1. Apparatus for sorting and stacking tested conductor plates comprising:
stacking means for forming from the bottom up a stack of conductor plates which have passed the tests, said stacking means including a pair of side walls and a pair of gripping means disposed opposite each other for gripping and for lifting and lowering the stacked conductor plates relative to a support plane,
each said gripping means having an angle member which is laterally movable and moving means secured to said angle member for moving it vertically toward and away from the support plane and for moving it laterally parallel to the support plane,
lifting means for raising from the bottom the entire stack each time a tested conductor plate approaches the bottom of said stack,
plate feeding means for feeding each tested conductor plate beneath said raised stack,
temporary support means to which the latest tested plate is fed by said plate feeding means, comprising a series of parallel spaced-apart rods and said angle members comprise a comb-like horizontal member with tines aligned to the spaces between the rods of the temporary support means,
ejecting means for actuating said temporary support means to eject a failed said plate,
lowering means for lowering said stack after an ejection opportunity has passed, and
stack unifying means for lowering said lifting means below a latest-tested plate that has passed the test, so that such a plate is incorporated into the stack before said lifting means is next activated.

4,245,941

DEVICE FOR STORING AN ANGLE AND THE APPLICATION THEREOF TO THE HANDLING OF LOADS

Henri Charonnat, Reze, France, assignor to Brissonneau & Lotz Marine S.A., Carquefou, France

Filed Aug. 31, 1978, Ser. No. 938,495

Claims priority, application France, Sep. 9, 1977, 77 27295

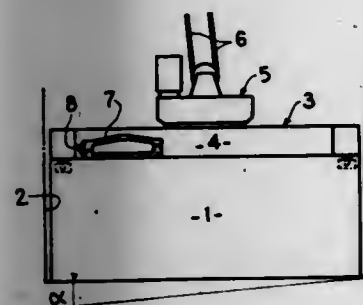
Int. Cl.³ B66C 13/04

U.S. Cl. 294—86 LS

10 Claims

1. A seizing device of the type comprising a frame, movable

means for suspending the frame at a point from a handling machine and for bringing the frame onto a load, for example a container, means for locking the frame to the load, means for displacing said point of suspension in a reference direction of the frame, a device for storing on the load an angle of inclination relative to the horizontal of said reference direction in a given position of the load, said storing device comprising said frame, a level detector pivotally mounted on the frame, means for locking the frame to the load in a position in which position the level detector is disposed substantially in a vertical plane which extends in the same direction as said direction, the detector comprising means for delivering an output signal when there occurs a defect of horizontality of the level detector and means responsive to said output signal for displacing, in the course of the hoisting of the load, said point of suspension relative to the frame to a position where it cancels out the



defect of horizontality of the level detector, regulating means for regulating the angular position of the level detector in said plane so as to bring the level detector, in said given position of the load, to a horizontal position in which it stores said angle of inclination and maintains the level detector in the relative position relative to the load, the regulating means comprising pivoting means for pivoting the detector, control means for controlling said pivoting means by the output signal of the detector in such manner as to automatically pivot, in the position in which the frame is placed on the load, the level detector to the horizontal position of the level detector prior to the hoisting of the load by said seizing device, and means for inhibiting the control means so as to maintain, in the course of the hoisting of the load, the level detector in said relative position with respect to the load in which it stores the angular position of the load.

4,245,942

BULK CARGO SHIP HOLD ARRANGEMENT

Nils K. A. Sandwall, Lidingö, Sweden, assignor to AB Nordstroms Linbanor, Esköping, Sweden

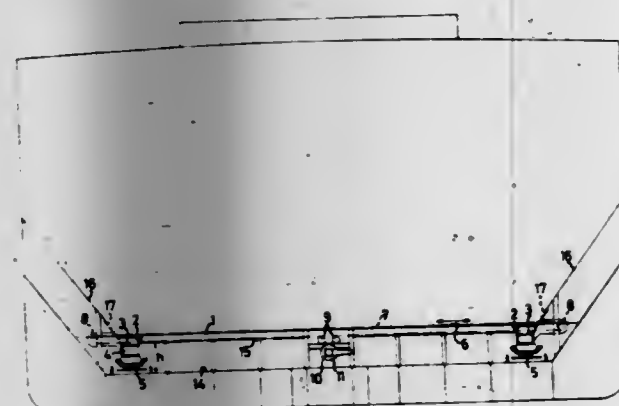
Filed Sep. 26, 1978, Ser. No. 946,074

Claims priority, application Sweden, Oct. 5, 1977, 77111474, Mar. 28, 1978, 78034691

Int. Cl.³ B60P 1/38

U.S. Cl. 414—144

12 Claims



1. An arrangement in ship holds for bulk cargo, for example, coal, at least one bulk cargo discharge conveyor being arranged beneath the bottom of the hold, the bottom being provided with a row of discharge openings for said conveyor, said

row of openings being situated above the conveyor, characterized in that the hold bottom is substantially flat on at least one side of the row of discharge openings, in that a plurality of rod-shaped driver elements are arranged in succession on the flat hold bottom along the row of discharge openings and in that the driver elements are connected to drive means comprising individual resilient pulling means connected to each driver element, said pulling means extending in a direction transverse to the row of discharge openings over at least a substantial portion of the hold bottom and being arranged to achieve controlled displacement of the drivers by means of pulling so that the driver elements move in a direction transverse to the row of discharge openings so as to feed the cargo to the openings.

4,245,943

UNLOADING APPARATUS FOR VACUUM ELECTRIC FURNACES

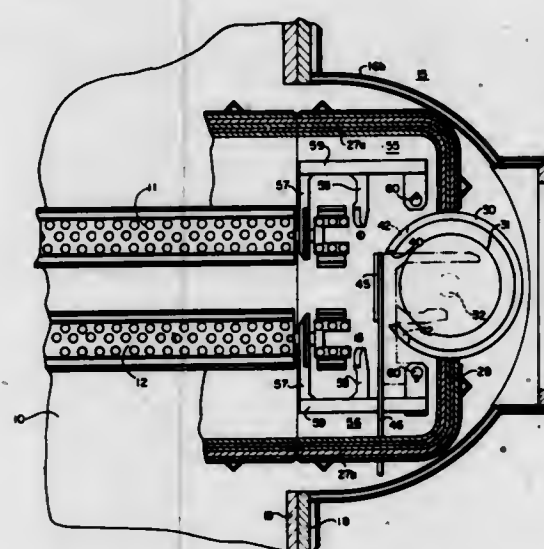
William J. Metalsky, Warminster, Pa., assignor to Abar Corporation, Feasterville, Pa.

Filed Apr. 2, 1979, Ser. No. 25,781

Int. Cl.³ H05B 6/26

U.S. Cl. 414—152

8 Claims



1. Unloading apparatus for vacuum electric furnaces having a conveyor for advance of work pieces therein, a housing in communication with the interior of the furnace, an elevator housing within said first mentioned housing and having an opening therein for transfer therinto of a work piece, a movable shielding means for shielding said opening and having one position for shielding and another position for work piece transfer, said elevator housing having an elevator platform therein, means for raising and lowering said elevator platform for delivery of a work piece, and means for transferring a work piece from said conveyor to said elevator platform with said shielding means in its work transfer position.

4,245,944

DEVICE AND METHOD FOR SEIZING A BAG

Mannes van Ginkel, and Jan Plug, both of Barneveld, Netherlands, assignors to Moba Holding Barneveld B.V., Barneveld, Netherlands

Filed Oct. 6, 1978, Ser. No. 949,159

Claims priority, application Netherlands, Oct. 17, 1977, 7711355

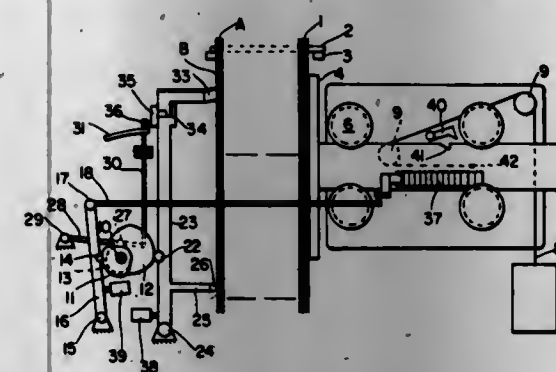
Int. Cl.³ B65B 43/16, 43/26

U.S. Cl. 414—330

8 Claims

1. Device for seizing, opening and/or taking along of a bag, provided with a storage station for containing a pack of bags with the main planes of the bags laying next to each other, a gripping device containing two jaws, said jaws being movable toward each other in the main plane of the outermost bag of

the pack and together away from said pack of bags, a pushing means for causing the jaws to exert a pushing force on said outermost bag, an inhibiting device which can inhibit the



pushing means to exert said pushing force, and a coupling means between the inhibiting device and the jaws to cause the inhibiting device to inhibit the pushing force when the jaws are moving away from the pack of bags.

4,245,945

PIPELINE SCRAPER HANDLING APPARATUS

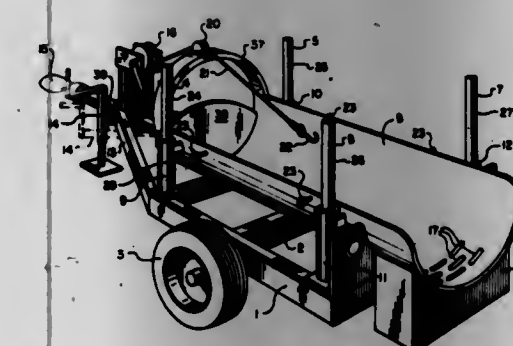
Luke J. Rizzo, White Oak, Tex., assignor to Sun Pipe Line Company, Tulsa, Okla.

Filed Jun. 6, 1979, Ser. No. 46,397

Int. Cl.³ B65G 67/12

U.S. Cl. 414—349

3 Claims



1. A scraper handling vehicle for receiving, transporting, and launching a pipeline scraper comprising:
(A) a frame having first, second, third, and fourth corners, said frame including means forwardly extending from said first and second corners for coupling to a self-propelled vehicle to effect towing;
(B) axle means supporting said frame;
(C) at least one pair of wheels carried by said axle means and oriented for rolling contact with the terrain;
(D) first, second, third, and fourth vertical support members upstanding, respectively, from said first, second, third, and fourth frame corners;
(E) a cradle assembly including an elongated cradle with a forward end and a rearward, scraper-receiving end, said cradle having an arcuate cross-section with a dimension at least one-half the nominal diameter of a scraper to be handled, an end baffle disposed across said forward end of said cradle to limit the forward position of a scraper carried therein, said cradle assembly further including first, second, third, and fourth vertically oriented sleeve means affixed to said cradle and distributed and configured to fit over and slideably engage, respectively, said first, second, third, and fourth support members;
(F) means for selectively fixing said cradle assembly in scraper-receiving and scraper-launching alternative vertical positions, said fixing means comprising alignable apertures provided, respectively, in predetermined vertical positions of said first, second, third, and fourth vertical support members and said first, second, third, and fourth sleeve members, said fixing means further comprising first,

second, third, and fourth pin means for insertion into said alignable apertures to fix said cradle assembly in a vertical position;

(G) means adapted for removably coupling external vertical hoist means to said cradle assembly to facilitate adjusting the vertical position of said cradle assembly with respect to said frame; and

(H) reel means fixed to said forwardly-extending means and a cable wound on said reel means for payoff and take-up, said cable being terminated at its free end with connecting means adapted for attachment to the nose of a scraper in an incoming scraper trap such that the scraper can be pulled into said cradle by taking up said cable onto said reel means.

4,245,946

APPARATUS FOR REMOVING BAGS FROM STACKED CAN ENDS

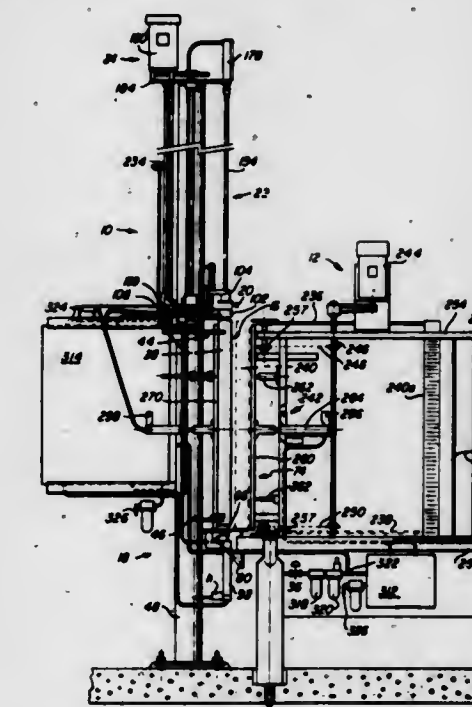
Davey L. McCullough, Golden, and R. Wayne Rouse, Conifer, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Sep. 5, 1978, Ser. No. 939,882

Int. Cl.³ B65B 21/02

U.S. Cl. 414—412

12 Claims



1. An apparatus for separating a wrapper from wrapped articles, said wrapped articles forming a package having a longitudinal dimension, comprising:
receiving means for laterally supportively receiving the wrapped articles and for permitting movement along said longitudinal dimension of received wrapped articles while being so laterally supported;
positioning means at a first end of said wrapper for positioning along said longitudinal dimension a second end of the wrapper at a clamping means;
said clamping means at the second end of said wrapper for holding said wrapper;
rod means for passing through the wrapper and abutting the articles therein; and
transporting means for transporting along said longitudinal dimension said clamping means and said wrapper relative to said rod means whereby said wrapper is separated from the articles in the receiving means.

4,245,947

SELF-LOADING CAR-TOP CARRIER

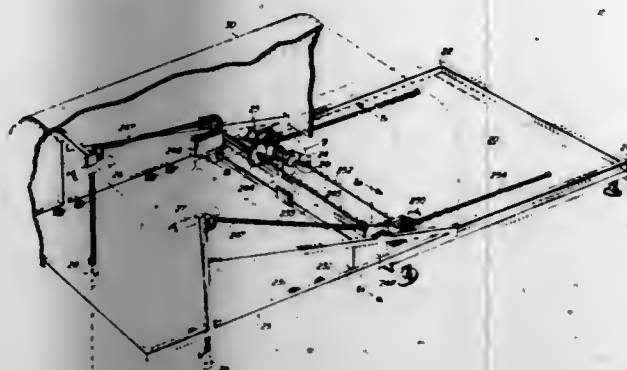
Clyde H. Clement, 8439 N. 13th Pl., Phoenix, Ariz. 85020

Filed Aug. 24, 1978, Ser. No. 936,234

Int. Cl.³ B60R 9/00

U.S. Cl. 414—462

1 Claim



1. An improved vehicle top loader for raising an object off of the ground along side a vehicle to the vehicle top for storage thereon, said carrier comprising,

- (a) frame means adapted to be mounted on the top of said vehicle,
- (b) a carriage assembly carried by said frame means and moveable between at least two operative positions,
 - (i) a stowed position with said carriage assembly positioned over the top of said vehicle, and
 - (ii) a loading position with a portion of said carriage assembly extended outwardly from said frame means and over the ground along side said vehicle,
- (b') means for extending said carriage assembly,
- (c) means for engaging said object,
- (d) hoist means mounted on said carriage assembly for
 - (i) suspending said engaging means from said carriage assembly so that said engaging means may receive said object, and
 - (ii) raising said engaging means and said object to a storage position, such that during displacement of said object to said storage position rotation and tilting of said object is prevented, and
- (e) a cradle-stop assembly mounted on a horizontally outward portion of said carriage assembly located above said ground when said carriage assembly is extended in said loading position; said cradle-stop assembly for, in cooperation with said hoist means, securing said object in a fixed position on said carriage assembly when said object has been vertically displaced to said storage position, said cradle-stop assembly being fixedly positioned above the level of said frame means such that when said object is in said storage position said object is vertically positioned between said cradle stop assembly and a lower portion of said carriage assembly.

4,245,948

CORN SHELLING ATTACHMENT FOR COMBINES

Bernard Kersten, Rte. #1, Roberts, Wis. 54023

Filed Jan. 12, 1979, Ser. No. 2,943

Int. Cl.³ A01D 61/04; B65G 67/08

U.S. Cl. 414—523

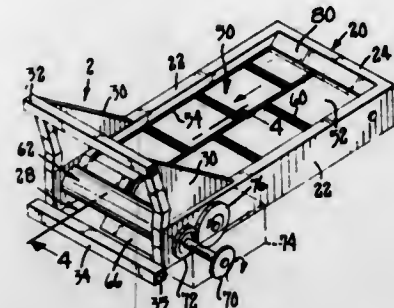
8 Claims

1. An auxiliary attachment for a combine, which combine has an inlet opening which operatively connects to a corn shelling apparatus located in the combine, which attachment comprises:

- (a) a frame;
- (b) means for detachably mounting the frame on the combine adjacent the inlet opening in a substantially horizontal orientation, wherein the detachable mounting means comprises:
 - (i) a substantially horizontal and upwardly facing L-

shaped ledge on the front of the combine above and adjacent to the inlet opening;

- (ii) a transversely arranged beam located on the frame which is sufficiently wide to rest on the ledge in a mating face-to-face relationship; and
- (iii) a plurality of upwardly extending flanges on the front of the ledge which flanges extend vertically upwardly a sufficient distance such that they are located in front of



the beam to retain the beam on the ledge, whereby the beam is dropped onto the ledge in back of the flanges to couple the frame to the combine;

- (c) means carried on the frame for conveying corn towards the inlet opening; and
- (d) means carried on the frame adjacent the conveying means for positively feeding the corn through the inlet opening and into the corn shelling apparatus on the combine.

4,245,949

ARCHIMEDEAN SCREW PUMPS

Nigel D. Q. Candler, Hungerford, England, assignor to Sigmund Pulsometer Pumps Limited, Reading, England

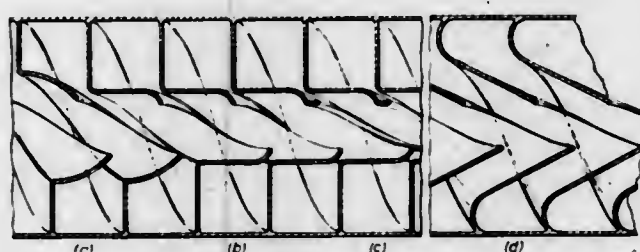
Filed Nov. 15, 1978, Ser. No. 961,017

Claims priority, application United Kingdom, Nov. 18, 1977, 48137/77

Int. Cl.³ F04D 3/02

U.S. Cl. 415—73

12 Claims



2. An archimedean screw pump comprising a pump cylinder having an internal helicoidal vane portion affixed to the said pump cylinder by its circumferential helical edge and a partial core portion affixed to and extending from the said vane portion, the length of a section of said partial core portion on a plane through the axis of the pump cylinder, being greater than or equal to the longitudinal distance, in the said plane, between adjacent longitudinally spaced vane portions.

4,245,950

TURBINE ROTORCONSTRUCTIONS

Koki Shiohata; Masaharu Ohno, both of Hitachi; Fumio Fujisawa, Mito; Kazuo Sato, Kitaibaraki; Sho Kusumoto, and Katsukuni Hisano, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 21, 1978, Ser. No. 879,737

Claims priority, application Japan, Feb. 21, 1977, 52/17138

Int. Cl.³ F01C 3/02

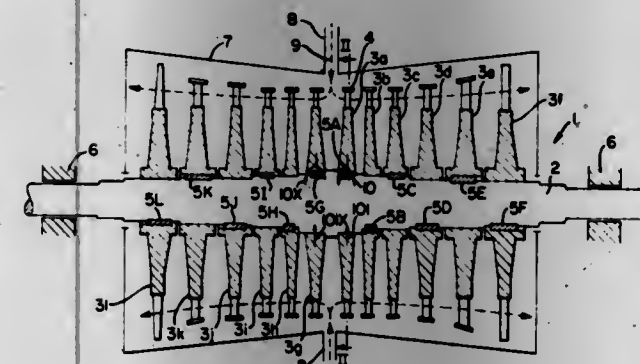
U.S. Cl. 415—103

1 Claim

1. A rotor for a double flow type of a steam turbine in which steam introduced into a turbine casing from a steam inlet is

longitudinally divided and each divided steam portion flows in respective first stages disposed on the shaft adjacent to each other, comprising:

- a shaft;
- a first rotor disk attached to said shaft to form a first of said first stages of said steam turbine;
- a second rotor disk attached to said shaft adjacent said first disk to form a second of said first stages of said turbine;
- first key means disposed between said shaft and said first disk;
- and thermal balancing means for counteracting thermal distortions of said shaft caused by said first key means, wherein the thermal balancing means includes a second key means disposed between said shaft and said second disk at a position so as to induce a thermal distortion in said shaft which counteracts said thermal distortions caused by said first key means under steam turbine operating temperature conditions, further comprising:



additional disks attached to said shaft at respective positions downstream of said first stages which form additional stages of said turbine;

additional key means arranged between said shaft and respective ones of said additional disks, wherein said additional key means are arranged within adjacent ones of said additional disks at positions offset by 180° about the circumference of the shaft for inducing thermal distortions in said shaft which counteract thermal distortions caused by said additional key means under steam turbine operating temperature conditions, wherein said thermal balancing means includes thermal resistance means for changing the thermal resistance between the shaft and the first and second disks, wherein the thermal resistance means includes a groove formed on the inner circumferential surface of the disk, and further comprising a dummy key packed in the groove.

4,245,951

POWER TURBINE SUPPORT

John B. Minnich, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

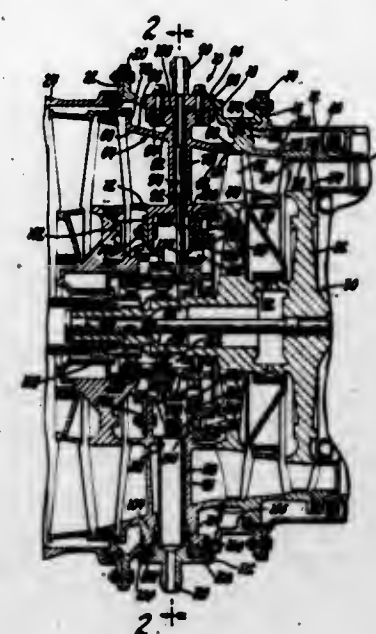
Filed Apr. 26, 1978, Ser. No. 900,112

Int. Cl.³ F01D 25/24

U.S. Cl. 415—139

4 Claims

1. A power turbine support and structural nozzle assembly comprising a rotor, a turbine nozzle ring with an annular outer shroud and an inboard annular blade platform, a plurality of nozzle vanes connected between said shroud and said platform at circumferentially spaced points therearound for flow of motive fluid, a turbine bearing cage located radially inwardly of said platform including means thereon to rotatably support the rotor, an outer annular engine case having mounting holes therein, a plurality of circumferentially spaced, radially directed trunnion bosses on said outer shroud radially inwardly spaced from said case and aligned with said holes, and connection means to couple said trunnion bosses to said case for accurately cross-key locating said nozzle ring within said engine case while permitting free radial expansion of said nozzle ring with respect to said engine case, and an index flange on said platform directed radially inwardly thereof, and means on



bearing cage accurately centered with respect to said case during thermal expansion of said nozzle ring with respect thereto.

4,245,952
PUMP

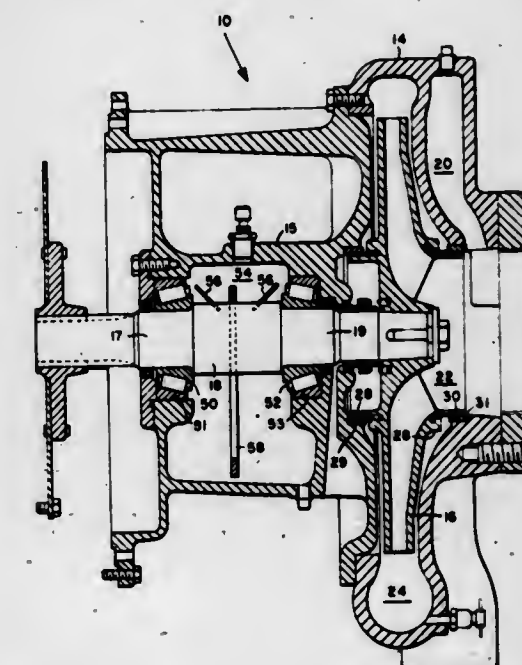
H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Company, Conshohocken, Pa.

Filed May 10, 1979, Ser. No. 37,668

Int. Cl.³ F04B 29/08

U.S. Cl. 415—170 A

13 Claims



2. A pump comprising:

- a pump body,
- an impeller made of first material,
- means mounting said impeller for rotation within said pump body,
- said impeller having a hub portion, and
- means providing a clearance space between said impeller hub portion and a portion of said pump body including a clearance ring mounted within said portion of said pump body and providing an internal cylindrical surface, and a tubular insert member integrally cast into said hub portion of said impeller,
- said tubular insert member providing an external cylindrical

surface in opposed relation to said internal cylindrical surface of said clearance ring to cooperate therewith to define a minimal clearance space therebetween as said impeller is rotated within said pump body, said tubular insert member being made of a second material having high corrosion resistance properties substantially greater than said first material.

4,245,953

ENGINE TURBOCHARGER WITH CARTRIDGE WASTEGATE VALVE

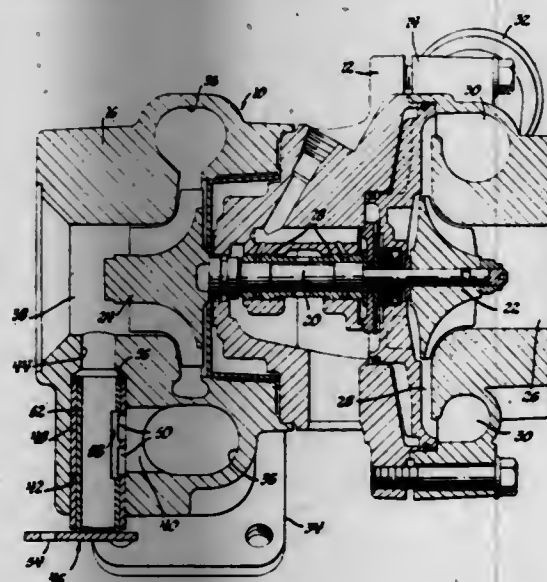
Thomas J. Milton, Essexville, and Dennis J. Jones, Saginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 18, 1979, Ser. No. 4,355

Int. Cl.³ F01D 17/00

U.S. Cl. 415-144

4 Claims



1. The combination in an engine turbocharger of a turbine housing having an internal bypass and a wastegate valve controlling said bypass, said combination comprising a straight bore in the housing forming a portion of the bypass and opening outwardly of the housing to receive the wastegate valve, said valve including a hollow cylindrical valve element open at one end and closed at the other with an intermediate port and received in the bore with the open end connecting with the bypass on one side of the valve, the element being oscillatable about its axis between an open position wherein the port is aligned with the bypass on the other side of the valve from said one side to permit flow through the bypass and valve element and a closed position wherein the port is out of alignment with the bypass and flow therethrough is blocked, and actuating means on the valve element outward of the housing for moving the element between its open and closed positions, said movement being unopposed by pressure in the bypass and said valve being self-cleaning upon movement of the oscillatable valve element.

4,245,954

CERAMIC TURBINE STATOR VANE AND SHROUD SUPPORT

Robert G. Glenn, Lower Moreland Township, Montgomery County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,556

Int. Cl.² F01D 9/04

U.S. Cl. 415-200

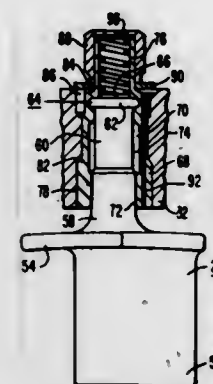
9 Claims

2. In a gas turbine engine having ceramic stationarily mounted vane components and ceramic stationarily mounted shroud components, means for mounting said ceramic components comprising:

a plurality of arcuate segments mounted to the turbine casing

and forming an annular ring and wherein said segments contain at least one radially extending opening there-through having a stepped configuration provided by two different internal diameters and providing a shoulder at the juncture thereof;

a two piece axially-split collet member having, in assembled form, an external stepped surface providing a shoulder, said surface generally conforming to the configuration of said opening and a portion projecting radially outwardly from said segment and wherein said assembled collet defines an internal cavity open at the radially inner surface



and defining an initial throat section and terminating at the opposite end of an enlarged cavity; a stem member integral with and extending generally radially from each said ceramic component and having a configuration generally conforming to said cavity for engaging receipt therein; and, means engaging said projecting portion of said collet member and urging said collet member generally outwardly with respect to said segment and forcing said engaging shoulders of said segment and said collet member into abutment.

4,245,955

PHASE AND SPEED CONTROL SYSTEM

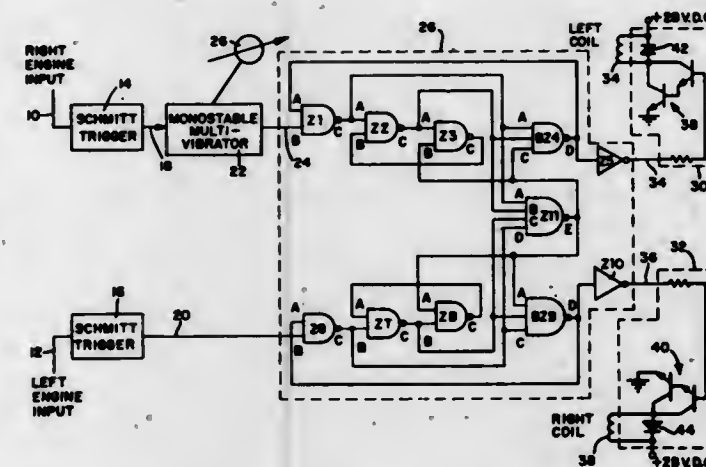
Carmon D. Lambertson, Dayton, Ohio, assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Dec. 14, 1978, Ser. No. 969,394

Int. Cl.³ B64C 11/50; F02D 25/02

U.S. Cl. 416-34

10 Claims



5. A phase and speed control system for synchronizing the speed and controlling the phase relationship between a pair of aircraft engines, each of said pair of aircraft engines having associated therewith a tachometer providing tachometer output pulses and a centrifugal governor, including a governor coil, for controlling the pitch of an aircraft propeller driven by the engine associated therewith in response to the current through the coil, comprising:

first tachometer input means, responsive to tachometer pulses from the tachometer associated with the first of said

pair of engines, for providing a first synchronization pulse train signal, second tachometer input means, responsive to tachometer pulses from the tachometer associated with the second of said pair of engines, for providing a second synchronization pulse train signal, adjustable delay means responsive to said first synchronization pulse train signal from said first tachometer input means, for providing a delayed synchronization pulse train signal, phase comparator means, responsive to said delayed synchronization pulse train signal and said second synchronization pulse train signal for providing a pulse width modulated governor control signal output, and governor coil driver means, responsive to said control signal output for providing a pulse width modulated signal only to the governor coil of the slower of said pair of engines, whereby said engines are brought into speed synchronization by adjustment of the pitch of the propeller driven by the slower of said pair of engines and the relative phase between said pair of engines may be adjusted by means of said adjustable delay means.

4,245,956

COMPENSATING LINKAGE FOR MAIN ROTOR CONTROL

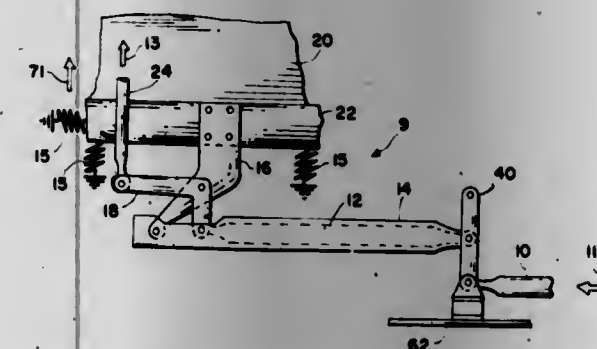
Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Philip A. E. Jeffery, Trumbull, and Rudolf F. Huber, Shelton, both of Conn.

Filed Dec. 15, 1978, Ser. No. 969,755

Int. Cl.³ B64C 27/72

U.S. Cl. 416-114

9 Claims



1. A rotor control compensating means comprising: rotor and transmission means; airframe means; vibration absorbing means connecting said above mentioned means allowing relative motion therebetween; linkage means for maintaining a rotor control actuator rod means in a fixed position, relative to said rotor and transmission means, during relative movement in all degrees of motion between said airframe and the rotor and transmission means.

4,245,957

BLADED FAN ASSEMBLY AND COMPRESSION LOADED CONNECTOR

Jack W. Savage, Centerville, and Ned L. Kikly, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1978, Ser. No. 961,610

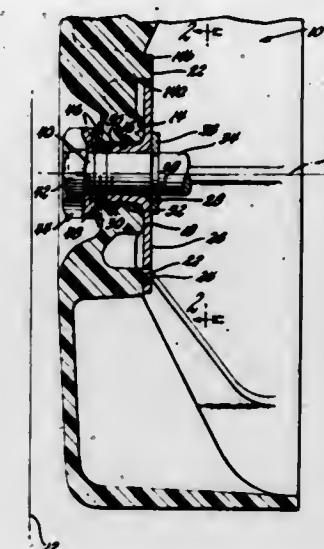
Int. Cl.³ F04D 29/20

U.S. Cl. 416-135

3 Claims

1. A bladed fan assembly mounted on a cylindrical shaft rotatable about a longitudinal axis comprising a bladed fan having a hub with a central opening therein, a stop member secured in axial position on the shaft, a metallic fan mount having a cylindrical hub portion operatively mounted on said shaft and having a base plate extending from one end of said hub portion substantially perpendicular to the axis of said shaft,

said base plate having a plurality of openings therein disposed in a pattern about one end of said hub portion, said hub portion of said mount projecting freely into said central opening of said fan hub with a discrete annular clearance therebetween, said fan having a plurality of projections which are selectively engaged in said openings of said base plate, said hub portion of



said fan having a radially extending wall which contacts the inner surface of said base plate to establish the transverse position of said fan relative to said longitudinal axis of said shaft and the plane of fan rotation thereby minimizing wobble or run out of the fan when rotating about said axis, and compression spring means for compressively loading said fan hub against said base plate and securing said fan for rotating in a plane substantially perpendicular to the axis of said shaft.

4,245,958

VERTICAL AXIS WIND TURBINE

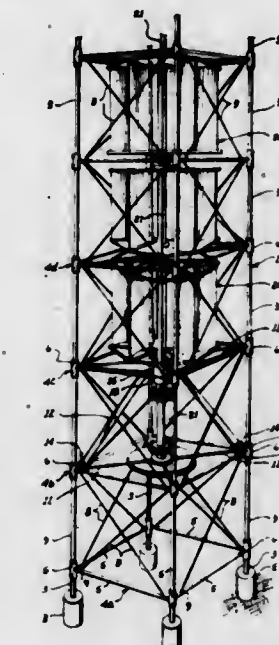
Marion H. Ewers, P.O. Box 526, La Veta, Colo. 81055

Filed Nov. 22, 1978, Ser. No. 962,859

Int. Cl.³ F03D 11/04

U.S. Cl. 416-197 A

10 Claims



1. A vertical axis wind turbine apparatus comprising: (a) a vertically rising exoskeletal frame comprising at least three vertical standards, a plurality of sets of at least three horizontal stretchers including radial ribs peripherally integrating said standards, and means for bracing said frame elements; (b) drive shaft guide means; (c) drive shaft support means comprising at least three upwardly and radially-inward extending arms attached at their first ends to and supported by said frame, at the

junctures of said stretchers and standards at one level and a thrust bearing axially disposed about said drive shaft and supportably attached to the second ends of said arms at a second level, said second ends of second arms being attached to the radial ribs at said second level;

(d) a drive shaft axially supported and guided by said support and guide means respectively; and

(e) at least one turbine carried by said drive shaft within the perimeter of said frame.

4,245,959

WINDAGE NUT

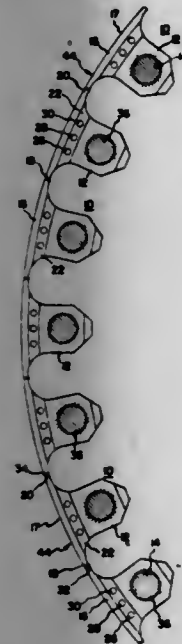
Diether E. Carreno, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,508

Int. Cl.³ B21K 3/04

U.S. Cl. 416—198 A

5 Claims



1. An improved windage nut for fastening components of a gas turbine rotor assembly, said nut comprising a body provided with an inner portion having a threaded hole which is capable of receiving a bolt, and an outer portion having two lateral extensions shaped for meeting the other similarly shaped nuts located adjacent to said nut on either side thereof, whereby the lateral extensions of said nut and the adjacent nuts prevent rotation of said nuts, and said outer portion having a smooth curved contoured surface to form, in combination with a plurality of similarly shaped nuts, a ring-shaped member whereby friction during rotation of said rotor is reduced.

4,245,960

CONNECTING STRUCTURE FOR A HUB AND FAN BLADE

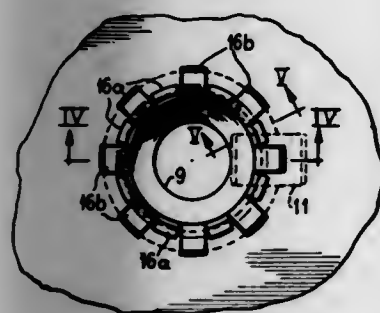
David G. Matthews, Libertyville, Ill., assignor to Air Drive, Inc., Libertyville, Ill.

Filed Sep. 5, 1978, Ser. No. 939,331

Int. Cl.³ F04D 29/20

U.S. Cl. 416—244 R

6 Claims



1. A structure for connecting two members at a line of

connection, a first of said two members being in the form of a relatively thin sheet-like formation at the line of connection and having an abutting edge, the second of said two members being relatively heavier in the direction transverse to the sheet-like formation of the first member, said second member having a groove therein extending along the line of connection, said groove having a width approximately equal to the thickness of said sheet-like formation of the first member and forming two spaced upstanding shoulders, one of said two shoulders extending beyond the other shoulder by a dimension greater than the thickness of said first member, said one shoulder being divided into a plurality of segments with alternate segments being in one group and the intermediate segments being in a second group, said first member being seated on an upper edge of the other shoulder with said abutting edge in contact against the segments of the one shoulder, each of the intermediate segments having a free end extending beyond the abutting edge and being deformed toward and into engagement with the first member, said first member at each point of engagement with the intermediate segments having a portion extending into said groove to prevent relative movement along the line of connection.

4,245,961

EJECTOR UTILIZING A VORTEX FLOW

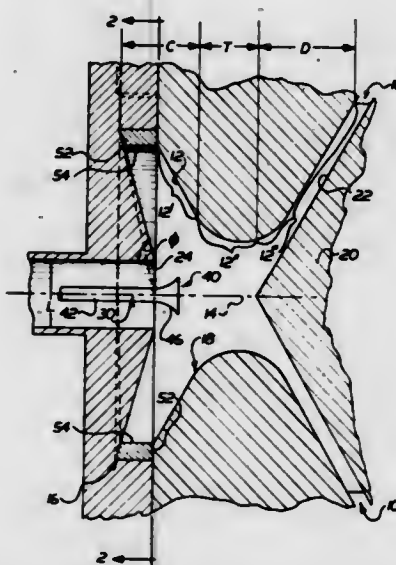
Jackie O. Bunting, Littleton, and Wayne E. Simon, Evergreen, both of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Sep. 8, 1978, Ser. No. 940,588

Int. Cl.³ F04F 5/42

U.S. Cl. 417—171

5 Claims



1. An apparatus for pumping fluid, said apparatus comprising a funnel-shaped fluid chamber converging from a wide end to a narrow end, a venturi-like throat having a throat inlet disposed in fluid communication with said narrow end of said funnel-shaped fluid chamber, diametrically opposed first and second fluid inlets for directing a driver fluid tangentially into the wide end of said funnel-shaped chamber, said chamber and said venturi-like throat configured to form the driver fluid into a swirling flow which advances towards a venturi-like throat at an increasing speed in the form of a vortex flow having a low pressure region at the eye thereof, a secondary fluid inlet for communicating the fluid with the low pressure region of the vortex flow formed by said driver fluid so that the fluid is drawn into the chamber by the low pressure at the eye of the vortex flow, for guiding the fluid drawn in said chamber outwardly toward the swirling drive of fluid, whereby the fluid is mixed with the driver fluid to form a swirling flow of mixed fluid which advances through the venturi-like throat, and diffuser configured to guide a swirling flow of fluid from the throat along the path of increasing radius to compress the mixed fluids to the pressure at the diffuser outlet and blocking

flow of fluid from the diffuser outler to the throat, said funnel-

shaped chamber comprising a funnel-shaped first surface circumscribing a longitudinal axis, said venturi-like throat comprising a second surface contiguous with the first surface and forming a venturi-like passage circumscribing said longitudinal axis, said deflector member including a first diverging surface which circumscribes said longitudinal axis and diverges away from said longitudinal axis, said diverging surface of said deflector terminating in an outer periphery which is closer to said longitudinal axis than the second surface forming the venturi-like throat, said diffuser comprising a second diverging surface contiguous with said second surface and a diffuser member disposed on said longitudinal axis in the path of the swirling flow and including a third diverging surface facing and spaced apart from said second diverging surface and forming therewith a conical section for guiding the swirling flow of fluid from the outlet of the throat along a path of increasing radius to compress the mixed fluids and blocking flow of fluid from the outlet of the diffuser to the throat.

4,245,962

DISPLACEMENT CONTROL SYSTEM FOR VARIABLE DISPLACEMENT PUMP

Kazuo Uehara, Tokyo; Hildeaki Toma, Yokohama, and Yoshito Sato, Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

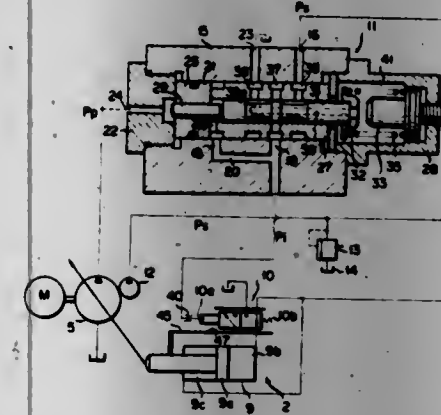
Filed Jun. 26, 1979, Ser. No. 52,099

Claims priority, application Japan, Jun. 26, 1978, 53/86674[U]

Int. Cl.³ F04B 49/00

U.S. Cl. 417—218

5 Claims



1. A displacement control system for a variable displacement pump comprising: charge pump means; cut-off control valve means connected to said charge pump means, said cut-off control valve means comprising a valve body having first and second pump ports and first and second outlet ports formed therein, the first pump port being connected to said charge pump means and the second pump port being connected to said variable displacement pump, sleeve means mounted within said valve body, a pin slidably mounted within said sleeve means, a spool slidably mounted within said sleeve means, the cross-sectional area of which is larger than that of said pin, said second outlet port communicated with a chamber formed by said sleeve means, said pin, and one end of said spool, a passage formed in said valve body communicating said first outlet port with said second outlet port, a cylindrical cap member fixedly secured to said valve body defining a spring chamber therein, and spring means disposed within said spring chamber for urging said spool toward connecting said first pump port with said first outlet port; and servo booster means connected to said first outlet port for controlling the displacement of said variable displacement pump.

4,245,963

PUMP

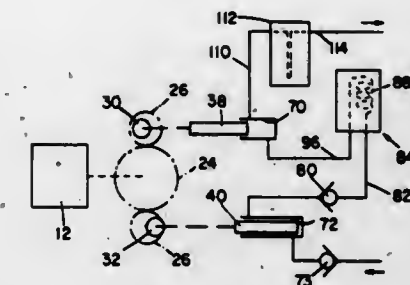
Burleigh M. Hutchins, North Attleboro, and Louis Abrahams, Worcester, both of Mass., assignors to Waters Associates, Inc., Milford, Mass.

Filed Feb. 9, 1979, Ser. No. 10,686

Int. Cl.³ F04B 3/00, 11/00

U.S. Cl. 417—265

2 Claims



1. A pump for delivering liquid, comprising a first liquid displacement element mounted for reciprocating movement into a first chamber, a second liquid displacement element mounted for reciprocating movement into a second chamber, said first and second chambers each including inlet and outlet passages and said second displacement element being sized to displace during one cycle less liquid than displaced by said first element, a conduit for connecting the outlet of said first chamber to the inlet of said second chamber, an inlet valve at the inlet to said first chamber, said inlet valve allowing flow only into said first chamber, an outlet valve between said outlet of said first chamber and said inlet to said second chamber, said outlet valve allowing flow only out of said first chamber, drive means for reciprocating said first and second displacement elements in a fixed phase relation such that, when said first element is moving into and displacing liquid in said first chamber, said second element is moving out of and accepting liquid into said second chamber, and fluid storage means in the flow path downstream of said first chamber, whereby fluid stored during a high flow period is released during a low flow period to smooth flow delivery, said fluid storage means including a length of flattened tubing, whereby fluid is stored by the expansion of the tubing cross section when pressure rises, thereby providing fluid storage without flow mixing, whereby when said first element displaces liquid, some of the liquid accumulates in said second chamber and the remainder is delivered from the outlet of said second chamber and, when said first chamber accepts incoming fluid, said second element displaces said accumulated fluid, thereby providing a continuous flow delivery.

4,245,964

EFFICIENCY FLUID PUMPING SYSTEM INCLUDING SEQUENTIAL UNLOADING OF A PLURALITY OF PUMPS BY A SINGLE PRESSURE RESPONSIVE CONTROL VALVE

George C. Rannenbergh, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 8, 1978, Ser. No. 959,036

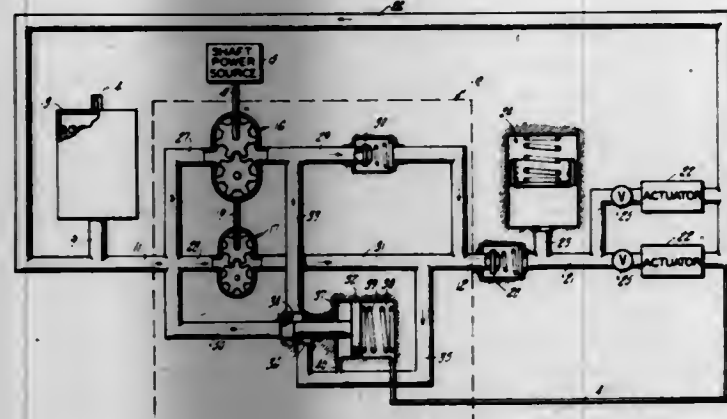
Int. Cl.³ F04B 49/08

U.S. Cl. 417—287

15 Claims

1. In a fluid pumping system receiving fluid from a low pressure source and delivering said fluid to a load at a higher pressure; first and second positive displacement, fixed displacement pumps;

means for powering said pumps;
 means for ducting fluid from said source to both pumps simultaneously said pumps passing the delivered flow therefrom through separate outlet ducts to a common delivered junction;
 a first bypass means including a first bypass duct connected to the pump outlet of said first pump and including a first valve means therein, said first valve means being responsive to a reduction in the delivered flow requirements of said load and opening to permit excess flow from said first pump to pass through said first bypass duct to said fluid source;



and second bypass means including a second bypass duct connected to the pump outlet of said second pump and including a second valve means therein, said second valve means being responsive to a further reduction in the delivered flow requirements of said load and opening to permit excess flow from said second pump to pass through said second bypass duct to said fluid source;
 said first and second valve means comprising a single actuator element responsive to a signal indicative of a predetermined outlet fluid pressure whereby actuation of said actuator element initially opens said first valve means, and whereby further actuation thereof opens said second valve means.

4,245,965

GAS-HANDLING APPARATUS

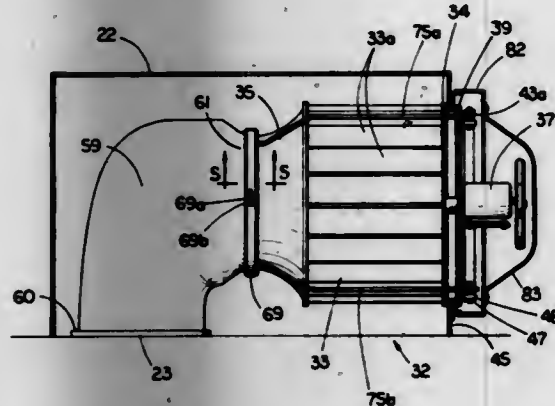
Lester H. Brown, Indianapolis, Ind., assignor to Master Air Inc., Indianapolis, Ind.

Filed Jan. 25, 1979, Ser. No. 6,537

Int. Cl.³ F04B 39/14; F04D 29/08; F24F 7/10

U.S. Cl. 417-360

17 Claims



6. A gas-handling apparatus for transferring a gaseous substance from one location to another location, said gas-handling apparatus comprising:

a support structure including an inlet port;
 a generally cylindrical arrangement of fan blades associated with said support structure;
 drive means coupled to said fan blade arrangement for rotation thereof to provide a blower;
 blower mounting means attached to said support structure and to said drive means and arranged to accommodate

oscillation of said drive means and fan blade arrangement relative to said support structure; and
 inlet duct means comprising:

(a) coupling means attached to said support structure for providing a portion of an air flow path from said inlet port to said blower; and

(b) a generally tapered shroud member having a larger diameter end attached to said arrangement of fan blades and a smaller diameter end positioned within said coupling means and closely spaced therefrom to substantially preclude air flow loops around said shroud,

said coupling means including a first ring member attached to said blower mounting means, a second ring member attached to said support structure, and seal means, said first and second ring members being aligned with each other and sealed to each other by said seal means.

4,245,966

RECIPROCATING PISTON DEVICE WITH CHANGEABLE STROKE LENGTH

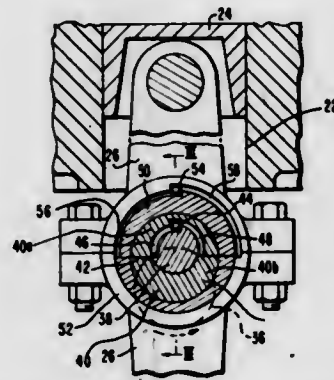
Delmar R. Riffe, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 30, 1978, Ser. No. 873,295

Int. Cl.³ F04B 49/00, 39/00; F01B 31/00

U.S. Cl. 417-539

8 Claims



1. In a reciprocating piston device in which stroke length of the piston in a cylinder is changed from one value to another in accordance with the direction of rotation of the crankshaft driving a connecting rod, an arrangement for obtaining top deadcenter positions of predetermined relation irrespective of the changes in stroke length when the crankshaft rotates in one direction and the other, comprising:

means responsive to crankshaft rotation to establish the effective eccentricity of crankpin means of the crankshaft at a lesser and at a greater value in accordance with rotation of the crankshaft in one direction and the other direction, respectively; and

means responsive to crankshaft rotation to establish an effective length of the connecting rod, generally concurrently with the establishment in effective eccentricity of the crankpin means, at a greater value and at a lesser value in accordance with rotation of the crankshaft in said one direction and said other direction, respectively.

4,245,967

PUMP FOR A HAND ACTUATED DEVICE FOR PRODUCING AN ATOMIZED SPRAY

Jean-Claude G. Busselet, Le Neubourg, France, assignor to Etablissements Valois, Neubourg, France

Filed Aug. 22, 1978, Ser. No. 935,778

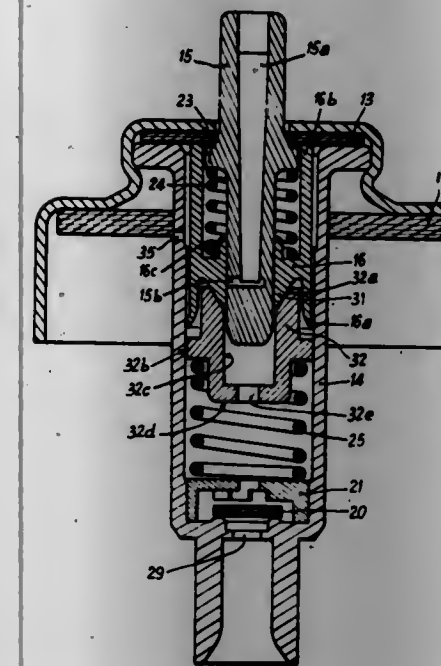
Claims priority, application France, Sep. 16, 1977, 77 27967
Int. Cl.³ F04B 7/00, 7/04

U.S. Cl. 417-510

1 Claim

1. A pump for a hand actuated device for producing an atomized spray, the pump comprising:
 a cylinder having an end wall with a valve therein;
 a piston slidable in the cylinder;
 a hollow stem with a lateral opening at one end, being slid-

able in and extending through the piston for a lost movement connection and extending outside the cylinder at the opposite end thereof to the valve and having actuating means thereon, the piston being formed near the stem with a sealing member of a substantially triangular section with a thin edge placed towards an inner end of said stem for covering and uncovering the lateral opening in the stem as the stem moves relative to the piston;
 an annular compression filler being provided around the piston triangular portion, having a conical inner surface adapted to the outer surface of the piston;



means for biasing the piston in opposite directions comprising first and second spring means, the first spring being disposed between the filler and the cylinder end wall with the valve and the second spring being positioned between the piston and a step on the hollow stem and being in a relaxed state when the pump is not in use, the second spring being weaker than the first spring means, the filler further comprising an outer surface in sliding engagement with an inner surface of said cylinder and an inner surface in sliding engagement with the inner end of said stem, so as to provide sliding guiding of said stem in said cylinder.

4,245,968

LUBRICATING SYSTEM FOR PUMP AND CONTROL VALVE THEREFOR

Floyd E. Buschbom, Long Lake, Minn., and James L. Wirsbinkski, Marshfield, Wis., assignors to Veda, Inc., Long Lake, Minn.

Continuation of Ser. No. 900,190, Apr. 26, 1978, abandoned.

This application Dec. 6, 1979, Ser. No. 100,709

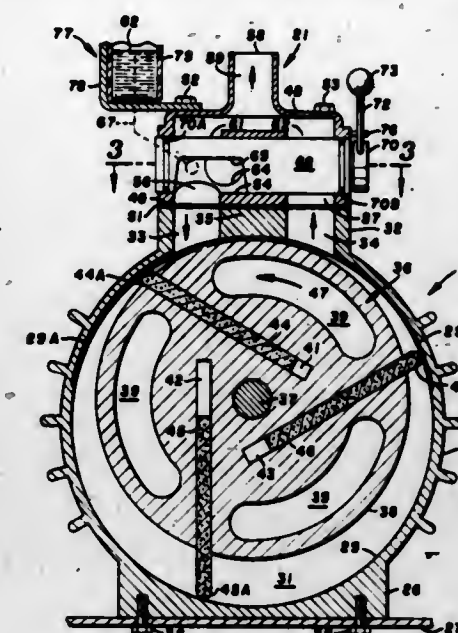
Int. Cl.³ F04C 29/02, 29/08; F16K 5/22

U.S. Cl. 418-87

20 Claims

1. A lubricating apparatus for a pump having a gas inlet passage, a gas outlet passage, and means operable to move gas from the inlet passage to the outlet passage, and a manually operable gas control valve having a housing containing a cylindrical bore, an inlet port in communication with the bore and inlet passage of the pump for carrying gas under vacuum pressure, an outlet means in communication with the bore and outlet passage of the pump for carrying gas under pressure, and valving means located in the bore, said valving means having a surface in snug engagement with the housing walls defining said bore operable to control the flow of gas through the housing comprising: a container mounted on the housing for storing lubricant, said container having an upper portion located above the stored liquid in the container; first means connected to the upper portion of the container and extended down into said lubricant for carrying lubricant from the container, and second means connecting the first means to the housing to carry lubricant to the bore adjacent the inlet port to

lubricate the valve means located in the bore for manual operation thereof, said lubricant being withdrawn by the vacuum pressure in the bore from the container and carried by the first



means and second means to the bore whereby gas moving through the bore and into the inlet port carries lubricant to the pump to lubricate the pump.

4,245,969
PUMP

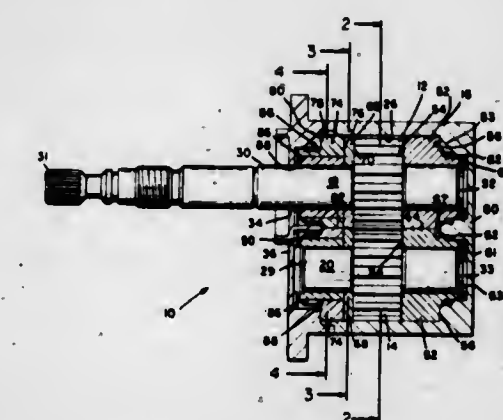
Joseph H. Caslow, Deerfield Beach, and Lyston C. Jennings, Lighthouse Point, both of Fla., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 26, 1979, Ser. No. 6,623

Int. Cl.³ F04C 2/18, 15/00

U.S. Cl. 418-132

7 Claims



1. A pump for pumping fluid having poor lubricating qualities comprising a pump housing having inlet and outlet ports; a driving shaft and a driven shaft each having front and rear ends within said housing, said driving shaft having its front end coupled to means for rotatably driving said driving shaft; a pair of pumping gears carried within said housing respectively on said shafts in meshing relation to move fluid between said inlet and outlet ports upon shaft rotation; a pair of substantially identical one-piece rear bushings received respectively over the rear ends of said shafts between said housing and gears, and including means for preventing rotation of said rear bushings within said housing; a pair of substantially identical bushing assemblies received respectively over the front ends of said shafts between said housing and gears, said assemblies each including a thrust bushing received over the associated shaft in running alignment with the adjacent gear, a retainer bushing received over the associated shaft between the thrust bushing and housing, and an axially and rotationally floating sleeve bushing received concentrically between the retainer bushing

and the associated shaft, said retainer and thrust bushings each including means for preventing rotation thereof within said housing; and means reacting solely between said housing and said rear bushings for axially pressure-loading said rear bushings, gears, thrust bushings, and retainer bushings in the same axial direction into running alignment with respect to each other and said housing.

4,245,970

APPARATUS HAVING A TUBULAR INFLATABLE BLADDER AND A GROUT DISPENSING NOZZLE FOR CONNECTING LATERAL BRANCHES TO A RELINED MAIN

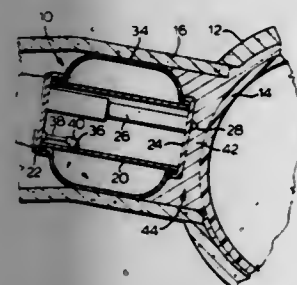
Henri S. St. Onge, Unit 2, 1600 Brimley Rd., Scarborough, Ontario, Canada

Division of Ser. No. 575,624, May 8, 1975, abandoned. This application Oct. 4, 1978, Ser. No. 948,383

Int. Cl.³ B29D 27/04; B32B 5/20; F16L 55/12

U.S. Cl. 425—13

3 Claims



1. An apparatus for dispensing a grout material under pressure between a main sewer line and a plastic pipe liner positioned within a main sewer line comprising a spray device having a nozzle for dispensing the grout material under pressure; a hollow cylindrical body portion having first and second end caps at the ends of the cylindrical body portion for housing said spray device; said spray device nozzle mounted in said first end cap to dispense the grout material outwardly and immediately forward of said first end cap; a bladder having an expandable tubular body portion and being mounted in surrounding relationship on said cylindrical body portion, each end of the tubular body portion being sealably connected to the respective end of the cylindrical body portion; means for conveying compressed air to and for conveying compressed air from said inflatable bladder, said inflatable bladder being adapted to expand within a lateral sewer line which is connected to a main sewer line when compressed air is introduced into said inflatable bladder; and means for conveying grout material under pressure to said spray device for dispensing grout from said nozzle.

4,245,971

MOLDING MACHINE WITH EXPANDABLE CHAMBER AND LOCKING MEANS

Kenneth T. MacMillan, Macon, Ga., assignor to Donald MacMillan & Son, Inc., Macon, Ga.

Division of Ser. No. 32,401, Apr. 23, 1979, Pat. No. 4,212,605. This application Oct. 18, 1979, Ser. No. 85,977

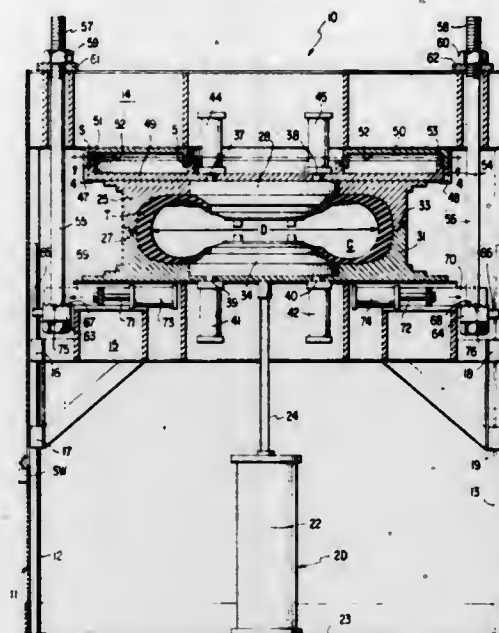
Int. Cl.³ B29H 5/04

U.S. Cl. 425—47

6 Claims

1. A molding machine comprising in combination first and second opposed and relatively movable mold bodies; means for moving said first and second mold bodies relative to each other along a predetermined path of travel between the first remote open position and a second adjacent closed position, said mold bodies in the closed position defining a chamber adapted to receive therein an article to be molded, said first and second mold bodies being carried by respective first and second supports, means for locking said first and second mold bodies in the closed position thereof, said locking means including at least one locking post carried by said first support and projecting toward said second support in the open position, said locking post having an axis disposed in generally parallel relation-

ship to said predetermined path of travel, said locking means further including cooperative first and second locking elements carried respectively by said locking post and said second support and being interlockable with each other, means carried by said second support for moving said second locking element transversely relative to said locking post axis to move said second locking element out of and into alignment with said first locking element when said mold bodies are in the respec-



4,245,972

GRANULATING APPARATUS

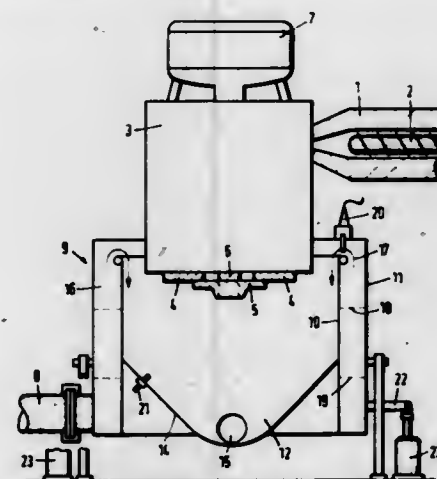
Dietmar Anders, Hannover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover Kleefeld, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,761

Int. Cl.³ B29D 7/02; B28B 3/20

U.S. Cl. 425—67

5 Claims



1. Apparatus for granulating plastics melt and similar materials, comprising:
(a) an extruder head through which material to be extruded is passed,
(b) a rotating cutter disposed in front of said extruder head for cutting said plastics material into granules,
(c) a housing surrounding said cutter and including an outer shell and a spaced, cylindrical inner shell which forms a

granulating chamber, said inner shell being smaller in diameter than said outer shell thereby to form an annular chamber open at its upper end between said shells, and being smaller in height than said outer shell thereby to form a weir extending around said granulating chamber at the upper end thereof;

(d) cooling liquid supply means communicating with said annular chamber for supplying cooling liquid thereto, and (e) outlet means in said granulating chamber for removing therefrom the cooled granules and cooling liquid, whereby cooling liquid admitted to said annular chamber between said outer and inner shells can be directed into said granulating chamber over said weir to form a film over the inner surface of said inner shell, said granules thus formed contacting said film of cooling liquid to cool said granules and prevent said granules from sticking together, said film constituting the sole means of coolant contact for said granules.

4,245,973

ARTICLE AND MEANS OF SHAPING ICE CREAM

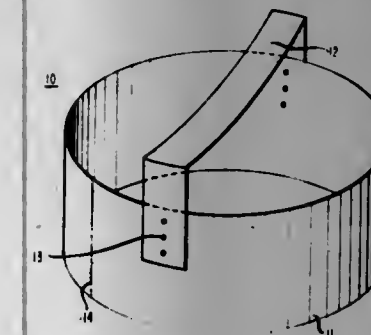
Edward J. Greaney, 43 Abbotsford Ave., Newark, N.J. 07106

Filed Mar. 7, 1978, Ser. No. 884,710

Int. Cl.³ A23G 9/00; B65D 85/78

U.S. Cl. 425—276

8 Claims



1. An article of manufacture for making shaped slabs of ice cream having a given shape in a cross-sectional plane and walls substantially perpendicular to the cross-sectional plane, said wall consisting of flat stainless steel sheet metal between 0.0001 and 0.2 inches thick, said wall forming an enclosed area in the cross-sectional plane in which a handle is attached to the wall said shape in cross-sectional plane being substantially rectangular and said handle comprising a strip of stainless steel sheet metal one to two inches wide and 0.0001 to 0.2 inches thick, said strip bent at substantially right angles at each end and each end attached to opposite walls.

4,245,974

BRICK HANDLING APPARATUS

William F. Milholen, Siler City, N.C., and Hall Gilliland, Owosso, Mich., assignors to Michigan Brick, Inc., Corunna, Mich.

Filed Apr. 2, 1979, Ser. No. 26,538

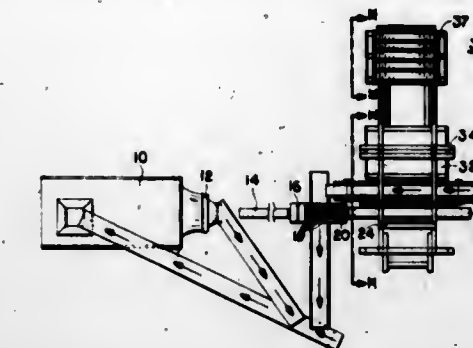
Int. Cl.³ B28B 11/14

U.S. Cl. 425—308

7 Claims

1. Material handling apparatus for use in making bricks said apparatus comprising:
a stacker plate for supporting a plurality of bricks and laterally moving them in a controlled manner;
a pusher assembly having a hinged extension that is in a first position when the stacker plate moves in one lateral direction, and that is in a second position when the stacker plate moves in the opposite lateral direction, said pusher assembly cooperating with said stacker plate to remove bricks from the stacker plate as it moves in the opposite direction; and

an elevator that is vertically indexed in response to the movement of the stacker plate such that the bricks re-



moved from the stacker plate are arranged in a vertical, columnar arrangement.

4,245,975

MEDIUM RETAINING DEVICE IN SINGLE FACED CORRUGATED CARDBOARD MANUFACTURING MACHINE

Fukutaro Hattori, Kasugai, Japan, assignor to Isowa Industry Co., Ltd., Japan

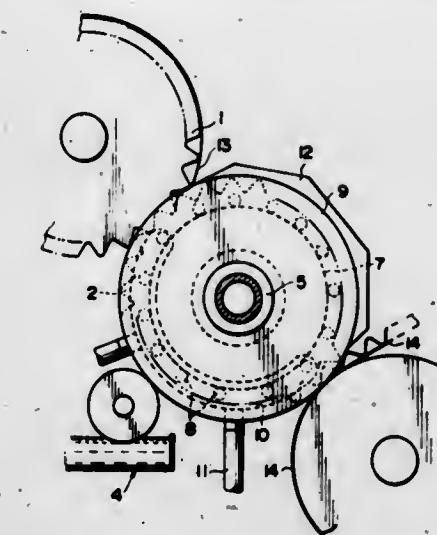
Filed Dec. 12, 1979, Ser. No. 102,845

Claims priority, application Japan, Dec. 22, 1978, 53-158932

Int. Cl.³ B30B 3/00; B29D 7/14

U.S. Cl. 425—363

2 Claims



1. A medium retaining device in single faced corrugated cardboard manufacturing machines comprising: a pair of upper and lower corrugating rolls engaging with each other between which a medium is passed to form corrugations therein; a plurality of longitudinally spaced annular suction grooves formed in the lower corrugating roll along its peripheral surfaces; a plurality of suction manifolds formed in the lower corrugating roll extending longitudinally of the roll to intersect the annular suction grooves; sealing members arranged at both ends of the lower corrugating roll; a suction chamber formed in each sealing member and communicating with the suction manifolds to develop subatmospheric pressure in the annular suction grooves, thereby sucking the corrugated medium onto the roll; and a cover which covers that portion of the peripheral surface of the lower corrugating roll which is opposite to the portion of the roll surface on which the medium is carried.

4,245,976

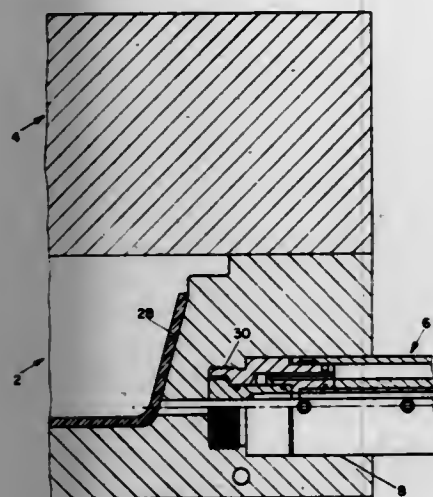
NOZZLE VALVE FOR IN-THE-MOLD COATING APPARATUS

Sigurdur I. Arnason, Ionia, Mich., assignor to The General Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 814,502, Jul. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 897,980, Apr. 20, 1978, abandoned. This application Sep. 20, 1978, Ser. No. 944,093

Int. Cl. B29F 1/03, 1/08

U.S. Cl. 425-549

1 Claim



1. In an apparatus for molding an article and subsequently coating one surface of such molded article, said apparatus comprising a pair of relatively movable die members which, when closed, form a cavity wherein an article is molded in a desired configuration, means operatively associated with said die members for moving said die members towards and away from each other into open and closed positions respectively, an inlet port formed in said one of said die members, an injector device for supplying a metered amount of liquid coating material under pressure, said injector device having a head portion provided with connected concentric outer and inner sleeve members which form a cooling water chamber, the inner and outer sleeve members each having inner and outer ends, the inner end of the inner sleeve member being attached to a nozzle so as to permit said injector device to supply a metered amount of liquid coating material a feeder tube formed by the inner surface of said inner sleeve member for said liquid coating material an end cap member secured to said outer end of said outer sleeve member and having an annular bore formed therein, a piston member slidable within the end cap, and two individual ports feeding either side of the piston in said end cap member adapted to direct pressurized fluid to one side or the other of said piston member so as to open and close the nozzle so when the nozzle is open the liquid coating material will flow through said feeder tube, wherein the improvement comprises a means for permanently attaching the nozzle of the injector device to a die member, a means for controlling the temperature of the nozzle consisting essentially of a cooling chamber in the nozzle, a pin connected to the piston for moving said pin between a first position wherein said pin seals the nozzle and forms part of the inner wall of a die and a second position wherein the pin is retracted by said piston through the nozzle opening to allow coating material to be injected into the mold.

4,245,977

METHOD AND APPARATUS FOR HYDROCARBON FLAME IGNITION AND DETECTION

Francesco A. Morese, 28 Lareridge La., Ashland, Mass. 01721
Filed Apr. 25, 1977, Ser. No. 790,327

Int. Cl. F23Q 3/00

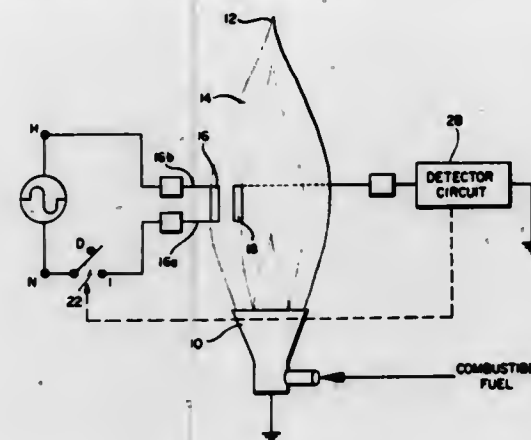
U.S. Cl. 431-6

19 Claims

1. For use in a hydrocarbon fuel burner assembly of the type including a burner for developing a flame in an adjacent flame

zone and means conducting combustible hydrocarbon fuel to the burner, a flame ignition and detection system comprising: a pair of electrically conductive opposing face members positioned in the flame zone in a spaced-apart, gap-defining relationship to contact a flame occupying the flame zone, one of the face members being sufficiently electrically resistive to self-heat in response to current flow therethrough;

means adapted to coupling a power source across the electrically resistive face member and including switch means for selectively decoupling one end of the electrically resistive face member from one side of the power source; impedance means for coupling the second face member to said one side of the power source;



the switch means being operable to initially couple said one end of the resistive face member to the power supply to thermally ignite the combustible gas;

the switch means being subsequently operable to decouple said one end of the resistive face member from the power source to impress a substantial portion of the power source voltage across the gap and the impedance means, an electrical circuit path being completed by the presence of the flame, a signal in said circuit path indicative of the presence of the flame being thereby produced; and switch operating means responsive to the absence of the flame indicative signal to operate the switch means and couple said one end of the face member to the power supply to thermally ignite the combustible fuel.

4,245,978

GAS BURNER CONTROL SYSTEM

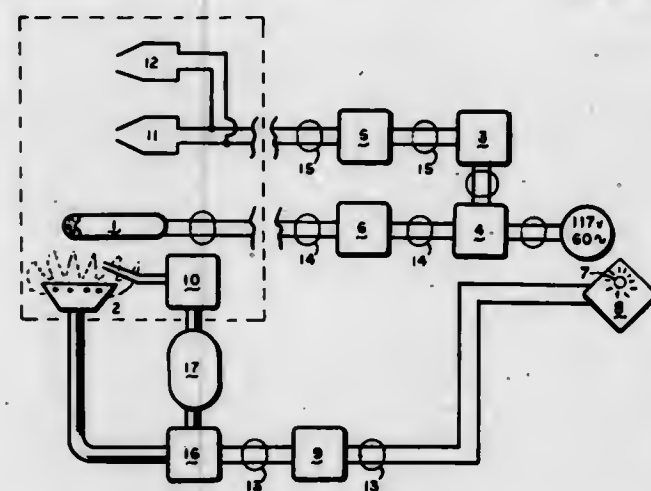
Leon del Valle, 10924 Aletta Ave., Culver City, Calif. 90213

Filed Nov. 2, 1978, Ser. No. 957,110

Int. Cl. F23N 5/00

U.S. Cl. 431-72

3 Claims



1. An improved gas burner control system which eliminates the need for a pilot light for operation of a gas burner, comprising:

(a) A source of gas;

- (b) A gas burner;
- (c) Electrically operable valve means operably interconnected between the source of gas and the gas burner for controlling the flow of gas therebetween;
- (d) Temperature sensing and valve control means for detecting temperature of the operatively associated with the valve, environment, and for controlling the valve relative to the temperature detected;
- (e) A pair of gapped electrical conductors forming a set of ignition points disposed adjacent to the gas burner;
- (f) A gas sensor for detecting the presence of gas emanating from the gas burner to be burned disposed adjacent to the gas burner, the gas sensor controlling an electrical signal characteristically indicative of the presence or absence of gas therefrom;
- (g) Means for electrically coupling the sensor means to a first relay, the first relay being complementarily responsive to the electrical signal from the gas sensor;
- (h) Means for electrically powering the first relay;
- (i) A source of electrical energy operatively associated with the first relay, whereby the first relay controls the transfer of the electrical energy;
- (j) A second relay operatively associated with the first relay for receiving the transfer of electrical energy therefrom and for controlling the delivery thereof, in alternative fashion, to the pair of ignition points; and
- (k) Means for operatively coupling the output of the second relay to the pair of points.

4,245,979

APPARATUS FOR DISPOSING OF WASTE GAS BY BURNING

Takusen Ito, Osaka, Japan, assignor to Hitachi Shipbuilding & Engineering Company Limited, Osaka, Japan

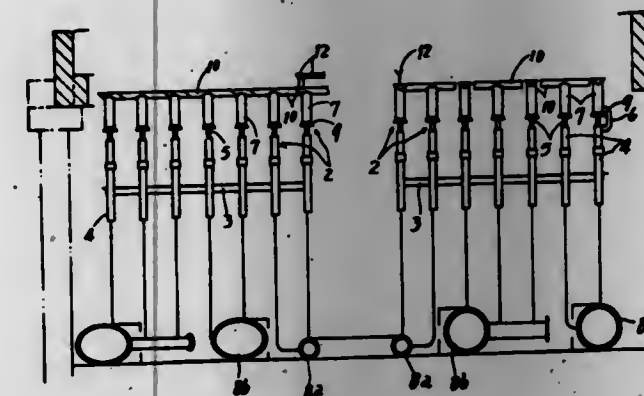
Filed Sep. 27, 1978, Ser. No. 946,149

Claims priority, application Japan, Oct. 7, 1977, 52-135398[U]; Oct. 7, 1977, 52-135399[U]

Int. Cl. F23D 13/20

U.S. Cl. 431-202

7 Claims



1. An apparatus for disposing of waste gas by burning comprising:

- a furnace body in the form of a tubular wall having a vertical axis and having a bottom open over the substantially entire bottom area,
- a multiplicity of burners arranged at the opening of the bottom of the furnace body and each comprising a gas nozzle and a gas mixing tube having an open lower end with the upper end of the gas nozzle positioned therein and a substantially cylindrical inner surface, said gas mixing tubes being provided with flame transfer plates interconnecting the upper ends of tubes adjacent to one another,
- a pilot burner disposed beside at least one of the burners, and
- means for feeding the waste gas to the nozzles.

4,245,980

BURNER FOR REDUCED NOX EMISSION AND CONTROL OF FLAME SPREAD AND LENGTH

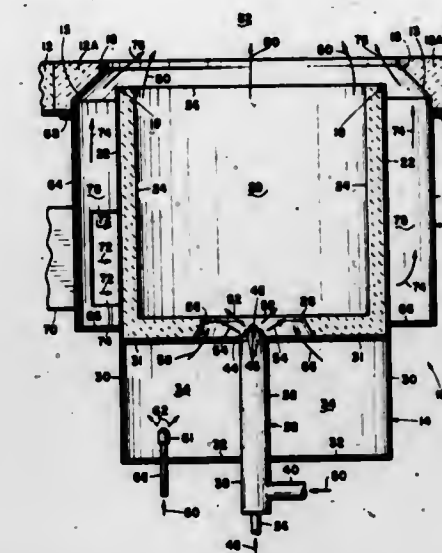
Robert D. Reed, Hershel E. Goodnight, and Richard R. Martin, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Jun. 19, 1978, Ser. No. 916,581

Int. Cl. F23M 9/00

U.S. Cl. 431-182

5 Claims



1. A burner system for use of either or both liquid and gaseous fuel for flame control and reduced NOx formation, comprising:

- (a) a refractory-lined first combustion zone for burning said fuel with a selected fraction of stoichiometric air;
- (b) a first air plenum including an inlet duct for supplying said selected fraction of stoichiometric combustion air upstream of said first combustion zone; including means for imparting a helical motion to said air in a first selected direction of rotation;
- (c) means for injecting said fuel axially into the upstream end of said first zone;
- (d) a second air plenum surrounding said first combustion zone including an inlet duct for supplying the remaining stoichiometric combustion air downstream of said first combustion zone, and including means for imparting a helical motion to said air in a second selected direction of rotation;
- (e) means for passing the hot products of partial combustion in said first combustion zone downstream to a second combustion zone;
- (f) means for mixing said air from said second air plenum with said hot products of partial combustion in said second combustion zone;
- (g) means in each of said inlet ducts to control the air flow through each in a fixed ratio; and
- (h) interconnecting means to simultaneously control said air flow to each of said inlets.

4,245,981

SHAFT TYPE COUNTERCURRENT HEAT EXCHANGER

Gert Tegtmeyer, Oelde; Wolf Goldmann, Beckum, and Wolfgang Triebel, Oelde, all of Fed. Rep. of Germany, assignors to Polysius AG, Beckum, Fed. Rep. of Germany

Filed May 16, 1979, Ser. No. 39,276

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822215

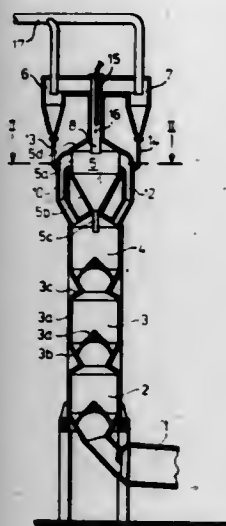
Int. Cl. F27B 7/32, 7/02

U.S. Cl. 432-58

7 Claims

1. In a heat exchanger of the kind having a shaft composed of a plurality of vertically spaced, communicating countercurrent chambers to which fine grained raw material to be heat treated is delivered from a plurality of overhead cyclones to flow downwardly countercurrent to hot gases flowing con-

stantly upwardly through each of the chambers of said shaft, each of said chambers having at its lower end a funnel-like reduction in cross-section, the improvement comprising means forming a turbulence chamber between said cyclones and the uppermost countercurrent chamber, said turbulence chamber having a material outlet in communication with said uppermost countercurrent chamber; a plurality of gas pipes extending between said uppermost countercurrent chamber and said



turbulence chamber and opening tangentially into the latter for delivering hot gas to said turbulence chamber from said uppermost countercurrent chamber; and means communicating between said cyclones and said gas pipes for delivering raw material to be heat treated from said cyclones to said gas pipes, whereby raw material delivered to said gas pipes is entrained by gases flowing therethrough and is discharged into said turbulence chamber via said material outlet.

4,245,982

COOLING BOX FOR SHAFT FURNACES

Henri Radoux, Luxembourg; Carlo Heinz, Niederaulen, both of Luxembourg; Herbert Ensch, Ghent, and Guido Monteyne, Lembeke, both of Belgium, assignors to Paul Wurth S.A., Luxembourg

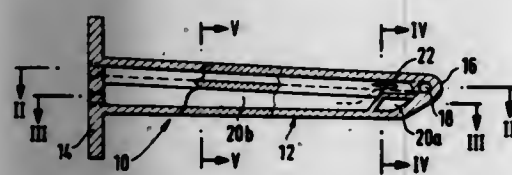
Filed Jan. 4, 1979, Ser. No. 45,171

Claims priority, application Luxembourg, Jun. 12, 1978, 79798

Int. Cl.³ F27D 1/12; F22B 37/00; C21B 7/10

U.S. Cl. 432-233

10 Claims



1. In a cooling box for a shaft furnace, the cooling box being in the form of a housing having a nose portion, the cooling box having fluidically isolated primary and secondary coolant flow circuits disposed therein, the primary coolant circuit being juxtapositioned to a pair of oppositely disposed side walls of the cooling box and extending into the nose portion thereof, the improvement comprising:

a first part of the secondary cooling circuit being positioned along and in direct heat transfer relationship with each of the side walls of the cooling box, said first part of the said secondary cooling circuit also being adjacent to at least partly extending parallelly with a portion of the primary cooling circuit, a second part of the secondary cooling circuit being positioned inwardly toward the central region of the cooling box with respect to both the primary circuit and the said first part of the secondary circuit, said

first and second part of the secondary circuit being connected in series.

4,245,983

SCREW CONVEYOR FOR FEEDING LIME SLUDGE OR CEMENT TO A LIME AND CEMENT KILN, RESPECTIVELY

Runar I. Lindroos, 22 Granstigen, Frövi, Sweden

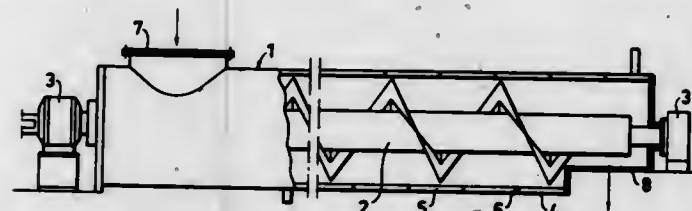
Filed Sep. 6, 1979, Ser. No. 73,131

Claims priority, application Sweden, Sep. 11, 1978, 7809537

Int. Cl.³ F27D 3/00; F27B 7/38, 7/32

U.S. Cl. 432-235

8 Claims



6. A screw conveyor adapted for use with a kiln to feed material to an inlet thereof, said screw conveyor comprising a helical screw enclosed by a cylindrical housing such that the material travels along an inner surface of said housing, a cylindrical shell enclosing said housing and spaced outwardly from an outer cylindrical surface thereof to form a space therebetween, and means for introducing a cooling liquid into said space in contact with said outer surface of said housing to directly cool said housing and form a film of condensate on said inside surface of said housing and resist sintering of the material thereon.

4,245,984

ORTHODONTIC FACE BOW INNER WIRE HAVING AN INTEGRAL SAFETY EXTENSION

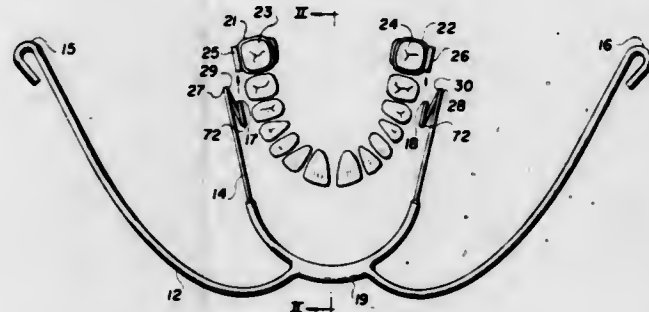
Maurice R. Hamill, Jr., 1127 Norwood St., Radford, Va. 24141

Filed Apr. 24, 1979, Ser. No. 32,869

Int. Cl.³ A61C 7/00

U.S. Cl. 433-5

17 Claims



1. In an orthodontic safety face bow including a generally U-shaped inner wire and an outer wire, said inner and outer wires being coupled together at central portions thereof, said outer wire having first and second portions adapted for coupling to a head cap and/or a neck pad, and said inner wire having first and second ends adapted for insertion into patient-mounted buccal tubes, wherein the improvement comprises first and second safety extensions in the form of first and second arcuate loops, respectively, formed integral with said inner wire intermediate said first and second ends and said central portion, respectively, said safety extensions projecting beyond said first and second ends for preventing accidental contact therewith.

4,245,985

DENTAL HANDPIECE

Eugen Elbhofer, Biberach, and Ernst Strohmaier, Bad Schussenried, both of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach, Fed. Rep. of Germany

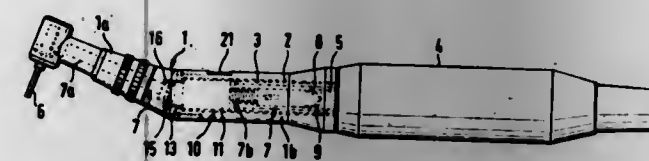
Filed Feb. 21, 1979, Ser. No. 13,564

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2810044

Int. Cl.³ A61C 1/10

U.S. Cl. 433-114

12 Claims



1. A dental handpiece comprising:
a holding sleeve constructed and adapted to mount a dental instrument at one end thereof;
a first drive shaft rotatably mounted in said sleeve and adapted to drive the dental instrument;
a driving device releasably connected to the other end of said holding sleeve and having a second drive shaft therein; and
a drive-transmission unit insertable in said holding sleeve when said holding sleeve is disconnected from said driving device, said unit including a bearing sleeve and drive means housed therein for transmitting driving movement between said second drive shaft and said first drive shaft; said drive-transmission unit being insertable in said holding sleeve through the end thereof which is remote from the instrument end of the handpiece, said bearing sleeve also being securable in said holding sleeve against axial and rotational movement relative thereto, and said drive-transmission unit having an input shaft end and an output shaft end engageable respectively to said second drive shaft and to said first drive shaft by insertion of said drive-transmission unit into said holding sleeve and by connecting said holding sleeve to said driving device.

4,245,986

ORTHODONTIC FACE BOW

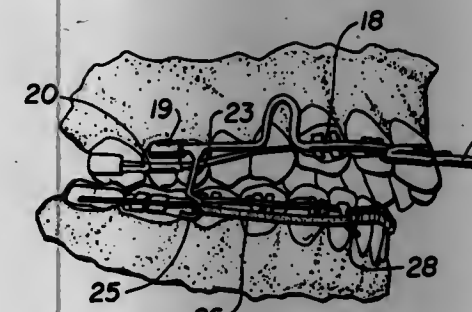
Lawrence F. Andrews, San Diego, Calif., assignor to "A"-Company, Inc., San Diego, Calif.

Filed Apr. 18, 1979, Ser. No. 31,276

Int. Cl.³ A61C 7/00

U.S. Cl. 433-5

6 Claims



1. In an orthodontic face bow that includes an arch member adapted to fit inside a wearer's mouth and engage the posterior teeth of a first level thereof on each side of the mouth, frame means attached to said arch member, and means for biasing said frame means to apply a rearwardly directed force on the posterior teeth of said first level and induce an orthodontic correction, the improvement comprising armature means extending from a position on said arch member approximate the posterior teeth of said first level to a distal end, the distal end having means defining a first engaging surface and adapted to be approximate the exterior surface of the posterior teeth of a second level of teeth, a second engaging surface means at-

tached to anterior teeth of said second level so that when a tension member is engaged between said first and second engaging surface means, there will be provided a rearwardly directed force on said anterior teeth of said second level generally parallel to said second level of teeth, to accomplish a further orthodontic correction.

4,245,987

DENTAL ARTICULATOR

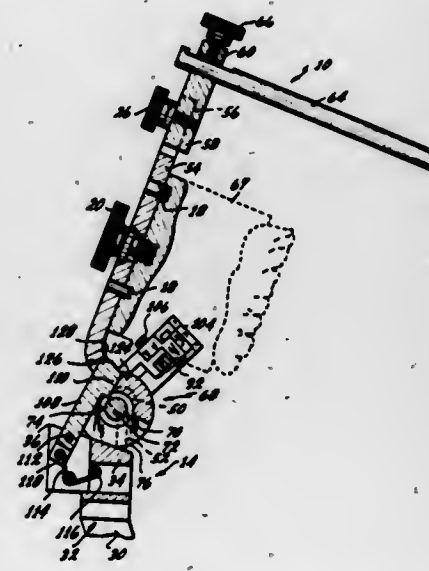
John J. Bertoldi, La Mirada, Calif., assignor to Denar Corporation, Anaheim, Calif.

Filed Jan. 23, 1979, Ser. No. 5,772

Int. Cl.³ A61C 11/00

U.S. Cl. 433-61

5 Claims



1. A dental articulator having a lower assembly and an upper assembly, said lower assembly including a lower mandibular bow and a connected lower cross-member, said upper assembly including an upper maxillary bow and a connected upper cross-member, one of said cross-members carrying two simulated condyle means, the other of said cross-members carrying two simulated fossa means, said fossa means engaging said condyle means so as to permit movement of said maxillary bow relative to said mandibular bow simulating movement of the maxillary teeth relative to mandibular teeth, one of said cross-members carrying a latch means engaging the other of said cross-members for holding said upper and lower assemblies relative to one another with said condyle means and said fossa means in engagement with one another in such a manner as to permit such movement in which the improvement comprises: said latch means comprising a latch member pivotally mounted on said lower cross-member, said latch member having an extremity extending generally toward said maxillary bow,

said upper cross-member including a shaft located adjacent to said extremity of said latch member and an opening extending through said upper cross-member adjacent to said shaft, said opening including two opposed walls, said extremity of said latch member engaging said shaft when said maxillary bow is in a position substantially parallel to said mandibular bow, one of said walls of said opening being capable of abutting against said latch member as said maxillary bow is rotated from said substantially parallel position to said mandibular bow to a position in which said maxillary bow extends substantially vertically with respect to said mandibular bow so as to pivot said extremity of said latch member within said opening in engagement with said walls of said opening in a position in which such engagement will hold said maxillary bow against movement caused by gravity, said condyle means are capable of movement away from said fossa means in order to permit movement of said maxillary bow from said substantially vertical position to a position in which said maxillary bow faces upwardly on the side of

said lower member remote from said mandibular bow, said latch member being capable of moving through said opening as said maxillary bow is moved from said substantially vertical position to said upwardly facing position and being capable of engaging said upper cross-member so as to hold said maxillary bow in said upwardly facing position.

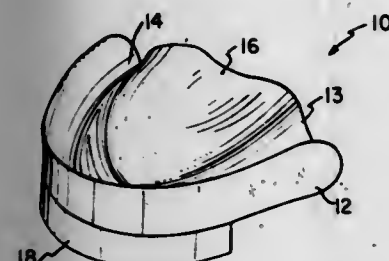
4,245,988

APPARATUS AND METHOD FOR FITTING FALSE TEETH

William Cinotti, 3285 Kennedy Blvd., Jersey City, N.J. 07028; Harold Gelb, 435 E. 57th St., New York, N.Y. 10022, and Arthur Grieder, 203 Godwin Ave., Ridgewood, N.J. 07450
Filed Dec. 15, 1978, Ser. No. 969,940
Int. Cl.³ A61C 19/04

U.S. Cl. 433—68

47 Claims



1. An apparatus for making denture models used in fabricating dentures customized for a given patient, said apparatus being a moldable impression member adapted to conform to a portion of the mouth of said patient and to receive an impression of said portion, said impression member comprising an alterable block member representative of teeth and generally corresponding to the dimensions and positioning of said teeth, such that said apparatus upon being placed in the mouth of a patient and suitably formed and fitted thereto can be customized to provide a denture model, whereby the alterable block member is modified in accordance with customized measurements for determining the proper natural registration of the upper teeth relative to the lower teeth.

4,245,989 WATER ECONOMIZING SYSTEM FOR DENTAL EQUIPMENT

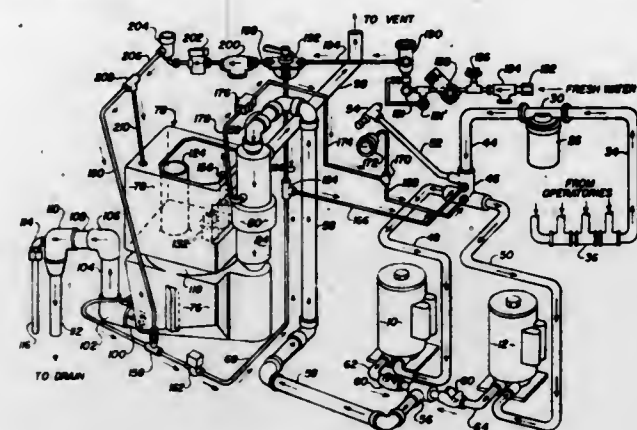
Richard P. Folkenroth, Dover, and Richard E. Plowman, York, both of Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Jul. 9, 1979, Ser. No. 55,938

Int. Cl.³ A61C 17/04

U.S. Cl. 433—92

4 Claims



1. For use with dental evacuating equipment, including a water seal vacuum pump normally requiring substantial quantities of water to operate the same and discharged to waste after passing through said pump, the improvement comprising a water economizing system, including in combination, a storage tank adapted to receive wastewater pumped by said pump from said evacuating equipment, conduit means connectable to and extending from said evacuating equipment to said tank and connectable to and from said vacuum pump to recycle said water to and from said tank, vented means operable to permit air to separate from wastewater pumped from said dental evacuating equipment and means to discharge said wastewater into said tank, additional control means for said discharge means operable to maintain adequate water residue in said pump to serve as priming water therefor, timer mechanism adapted to operate said discharge means automatically after said pump has been idle for a period for which said timer has been set to function and timer control means operable to effect such operation and deactivate said timer when said pump is operating and reactivate said timer each time said pump is stopped at the completion of each evacuation operation by said pump, fresh water supply means and control means therefor operable automatically to introduce fresh water to the system at start-up and as otherwise required for makeup, and means to discharge said wastewater from said tank to a waste line or the like after a substantial period of recycling of said water by and through said vacuum pump has occurred.

CHEMICAL

4,245,990

PROCESS FOR PRODUCING SOLUTIONS OF SALTS OF WATER-SOLUBLE CARBOXYLIC ACIDS OF CATIONIC DYES OR OPTICAL BRIGHTENERS

Peter Loew, Manchenstein, and Walter Lang, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,764

Claims priority, application Switzerland, Dec. 28, 1977, 16110/77

Int. Cl.³ C09B 67/00

U.S. Cl. 8—582

27 Claims

1. A process for producing solutions of salts of water-soluble carboxylic acids of cationic dyes or of cationic optical brighteners, which process comprises reacting the halide of a cationic dye or brightener, in an aqueous or anhydrous medium, with at least one water-soluble carboxylic acid in the presence of an epoxide compound having a minimum of 13 carbon atoms.

4,245,991

DIP DYEING OF PLASTIC ARTICLES AND THE DYE BATH COMPOSITION THEREOF

Theodore A. Haddad; Walter Koadig, both of Leominster, and Richard A. Phillips, Acton, all of Mass., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Dec. 12, 1979, Ser. No. 102,695

Int. Cl.³ D06P 3/00; C09B 67/00

U.S. Cl. 8—506

15 Claims

1. A dye bath composition comprising a disperse dye and a mixed solvent, said mixed solvent comprising about 70 to about 100 weight percent of glycerol and ethylene glycol in a relative weight ratio in the range of from about 95:5 to about 20:80.

4,245,992

DISCHARGE PRINTING PROCESS FOR CELLULOSIC FABRICS USING A QUATERNARY AMINE POLYMER

Yasuo Yamashita, Kyoto; Masami Ikeyama, Yokohama, and Takao Nishikawa, Takatsuki, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 29, 1979, Ser. No. 98,525

Claims priority, application Japan, Dec. 1, 1978, 53-147829

Int. Cl.³ D06P 3/82; D06M 13/34

U.S. Cl. 8—461

9 Claims



1. A process for discharge printing a fabric of natural cellulosic fibers, comprising subjecting the fabric of natural cellulosic fibers having a polymer of a monomer containing a quaternary amine group dispersed therein with no phase separation to discharge printing.

4,245,993

HIGHLY CONCENTRATED, STABLE, FREE-FLOWING AQUEOUS DISPERSIONS OF DIAZOTIZABLE AROMATIC AMINES BEARING ELECTROPHILIC SUBSTITUENTS

Hans D. Kirner, Pratteln, and Jacques Wegmann, Bettingen, both of Switzerland, assignors to Rohner AG Pratteln, Pratteln, Switzerland

Filed Oct. 31, 1978, Ser. No. 956,232

Claims priority, application Switzerland, Nov. 2, 1977, 13372/77

Int. Cl.³ C09B 29/033, 67/46; D06P 1/52, 1/90

U.S. Cl. 8—664

13 Claims

1. Highly concentrated, stable, free-flowing aqueous dispersions of diazotizable aromatic amines bearing electrophilic substituents, comprising

- (a) 30 to 60% by weight of a diazotizable aromatic amine bearing electrophilic substituents and having an average particle size below 10 μ m (microns),
- (b) 0.1 to 5% by weight of a water-soluble poly-N-vinyl lactam or a water-soluble copolymer of at least two different N-vinyl lactams or a water-soluble copolymer of at least one N-vinyl lactam with at least one other compound which can be copolymerized with the N-vinyl-lactam,
- (c) 0.1 to 5% by weight of an anionic dispersing agent,
- (d) 0 to 30% by weight of at least one hydrotropic compound and/or at least one compound which lowers the freezing point and
- (e) water.

4,245,994

WATER SOLUBLE POLYMERIC TEXTILE TREATING AGENT

Stanley A. Lipowski, Livingston, N.J., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jul. 29, 1977, Ser. No. 820,120

Int. Cl.³ D06P 5/02

U.S. Cl. 8—74

9 Claims

1. In a process for dyeing nylon textile material selected from the group consisting of nylon and cotton blends thereof, the improvement comprising treating the textile material after dyeing with a water soluble polymeric textile treating agent in an amount sufficient to improve washfastness, the textile treating agent comprising a reaction product of one mole of dihydroxy diphenyl sulfone, formaldehyde and naphthalenesulfonic acid wherein a 30% by weight acetone solution of the textile treating agent has a reduced viscosity of from about 0.225 to about 2.275 at 21° C.

4,245,995

STABILIZATION OF ANIONIC INDOLE DYESTUFFS

Herbert Hugi; Hans-Günter Otten; Hans W. Petroll, and Karlheinz Wolf, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 9, 1978, Ser. No. 876,514

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708188

Int. Cl.³ D06P 1/645, 1/647

U.S. Cl. 8—574

12 Claims

1. A process for preventing irreversible changes in the color shade of azo dyestuffs which occur in solutions which have been rendered acid which dyestuffs contain, as the coupling component, an indole of the formula

impart centrifugal force to the light fraction particles and to cause the grit, glass and metal reject particles to pass radially outwardly through a first classifier screen at said first level;

spinning the remaining light fraction municipal solid waste particles at a second lower level within a controlled horizontal airstream to impart centrifugal force to the remaining light fraction particles and to cause substantially plastic-free chopped paper accept particles to pass radially outwardly through a second classifier screen; and

subjecting the particles as they vertically descend within said vertical enclosure to a high-velocity horizontal air-flow across the lower end of said vertical enclosure below the second spinning level to remove light plastic particles from at least the second spinning level and to thereby insure the absence of plastics from said accept particles emanating from said second spin level.

4,246,000

FUEL COMPOSITIONS COMPRISING COAL-LIQUID FUEL MIXTURE

Toshiaki Kobayashi, Kyoto; Tomio Nobe, Jyoyo; Hiroshi Niimi, Kamakura, and Tetsuo Wada, Oomuta, all of Japan, assignors to New Japan Chemical Co., Ltd.; Mitsui Coke Co., Ltd.; Mitsui Milke Machinery Co., Ltd. and Toko Kasei Ltd., all of Kyoto, Japan

Filed Sep. 25, 1979, Ser. No. 78,811
Int. Cl.³ C10L 1/32

U.S. Cl. 44—51

7 Claims

1. A fuel composition comprising 100 parts by weight of a coal-liquid fuel mixture and 0.02 to 1.0 part by weight of at least one additive selected from the group consisting of dibenzylidene sorbitol, ditoluyldiene sorbitol, tribenzylidene sorbitol, tritoluyldiene sorbitol and hydrogenated castor oil.

4,246,001

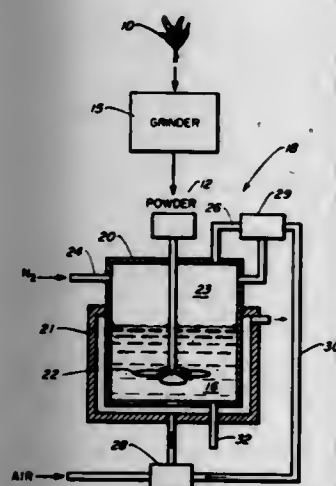
MOLTEN SALT PYROLYSIS OF LATEX

Albert J. Bauman, Sierra Madre, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 27, 1978, Ser. No. 900,659
Int. Cl.² C10L 1/16; C10B 53/08, 17/00, 51/00

U.S. Cl. 44—62

12 Claims



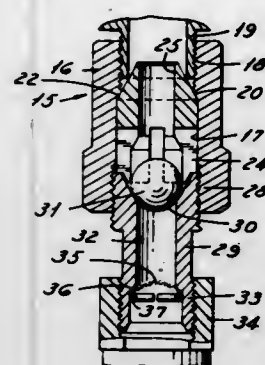
1. A method of preparing a hydrocarbon liquid fuel comprising the steps of:
pyrolyzing a high polyisoprene content latex plant in a molten inorganic salt at a temperature of at least 300° C.; and
recovering a hydrocarbon oil pyrolysis product.

4,246,002
FLASH ARRESTER

Theodore F. Bell, 400 Fentress Blvd., Daytona Beach, Fla. 32015
Continuation of Ser. No. 874,807, Feb. 3, 1978, abandoned, which is a continuation of Ser. No. 710,861, Aug. 2, 1976, abandoned. This application May 24, 1979, Ser. No. 42,132
Int. Cl.³ F17D 3/00

U.S. Cl. 48—192

3 Claims



1. For use in a system where combustible gases are utilized as in welding and the like, a flash arrester comprising an assembly of (1) a main body, (2) a ball cage body, (3) a ball seat member and (4) a ceramic ball,

said main body having an opening extending axially therethrough and including an uninterrupted frusto-conical seat intermediate first and second opposite axial ends of said opening, said main body having said opposite axial ends of said opening threaded, said ball cage body having an axial opening therein, said ball cage body being inserted into said through opening of said main body via said second end thereof with a close fit and having an uninterrupted frusto-conical surface at one end complementary to and engaging the first-mentioned frusto-conical seat of said main body, the other end of said ball cage body having axially extending slots to provide spaced axially extending fingers, each said finger having a frusto-conical surface adjacent the base thereof defining a first ball seat interrupted by spaces formed by said slots, said ball seat member having external threads on a first end thereof threaded into the threaded opening in said second end of said main body, an uninterrupted frusto-conical surface adjacent said first end of said ball seat member defining a second ball seat, said ball seat member having an opening extending axially therethrough between said first end thereof and a second end thereof axially opposite said first end of said ball seat member, said main body, ball cage body, and ball seat member being made of a material capable of withstanding welding flame temperatures, each said finger of said ball cage member having a shoulder spaced from the free ends thereof extending radially to the periphery thereof, said first end of said ball seat member engaging said shoulder when threaded into said second end of said body for forcing said uninterrupted frusto-conical surface of said ball cage body into tight engagement with said first-mentioned frusto-conical seat of said main body, said ceramic ball having substantially the same diameter as the diameter of the opening adjacent said fingers, the interior space between said first and second ball seats being empty except for said ceramic ball such that said ceramic ball is freely movable axially between said second and first ball seats to thereby function as a lightweight, wear and flame resistance flash arresting back check valve without the use of a valve biasing spring, said opening through said ball seat member including a counterbore having an enlarge diameter adjacent said second end of said ball seat member, said assembly further including a screen interposed in said counterbore, and a retaining ring holding said screen in position in said counterbore, said screen and ring being made of a material capable of withstanding welding temperatures.

4,246,003

LAP CUTTING ABRASIVE

Dieter Regier, and Alfred Moritz, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker Chemitronic Gesellschaft für Elektronik-Grundstoffe MbH, Burghausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 903,643, May 1, 1978, abandoned. This application Aug. 3, 1979, Ser. No. 63,653
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722780

Int. Cl.³ B24D 17/00

U.S. Cl. 51—293

6 Claims

1. A lap cutting abrasive for use with lap cutting blades to saw semiconductor workpieces, consisting essentially of: one part by weight of a low viscosity carrier liquid having a viscosity of approximately 1 to 10 cP; and one to three parts by weight of cutting particles having an average size of from 10 to 50 μ m suspended in said carrier liquid.

4,246,004

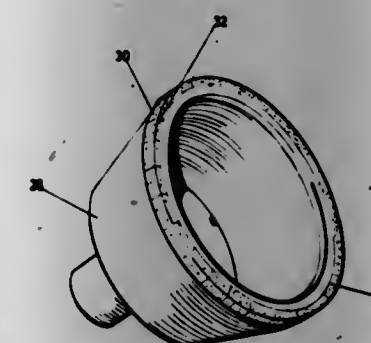
METHOD OF MAKING A SEGMENTED CUP GRINDING WHEEL

Dieter M. Busch, 35 Hans Strydom Ave., Robindale Ext. 1., Randburg, and Christopher G. McAlonan, Artima Farm, District Schoongezicht, Transvaal, both of South Africa
Continuation-in-part of Ser. No. 579,576, May 21, 1975, abandoned. This application Aug. 4, 1975, Ser. No. 601,955
Claims priority, application South Africa, Aug. 15, 1974, 74/5242; Dec. 4, 1974, 74/7723

Int. Cl.³ B24D 5/06

U.S. Cl. 51—295

3 Claims



1. A method of making an abrasive cup grinding wheel tool having a working portion bonded to a support, the working portion comprising a plurality of segments positioned adjacent one another and bonded to said support, and having abrasive particles held therein in a bonding matrix, the method comprising the steps of mixing a plurality of needle-shaped abrasive particles taken from the group consisting of diamonds and cubic boron nitride, each having a long axis and a short transverse axis wherein the ratio of the long axis to the short axis thereof is at least about 3:1 with a resin bonding matrix, aligning a substantial portion of said particles with their longitudinal axes substantially normal to the face of said segment, partially

curing said bonding matrix, positioning a plurality of said segments in said support, and causing the bonding matrix to be completely cured to thereby bond adjacent segments to each other and to the support.

4,246,005

DIAMOND AGGREGATE ABRASIVE MATERIALS FOR RESIN-BONDED APPLICATIONS

Hiroshi Ishizuka, No. 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Mar. 8, 1979, Ser. No. 18,521

Claims priority, application Japan, Apr. 1, 1978, 53-37456; May 15, 1978, 53-56653

Int. Cl.³ C09K 3/14; B24D 3/06

U.S. Cl. 51—298

7 Claims

1. A process for producing diamond aggregate abrasive grits for resin bonded applications, which process comprises: combining with a non-diamond carbon nutrient a plurality of seed diamond microcrystallites of a particle size ranging from 5 to 30 minutes; subjecting such combination, in the presence of at least one metal functionable as catalyst for conversion from non-diamond carbon to diamond, to a pressure-temperature condition within the diamond thermodynamical stability region of carbon phase diagram; causing growth of such diamond microcrystallites under such condition until the diamonds exhibit a radial dimension not in excess of five times the starting particle size thereof, thus interjoining seed crystallites together; recovering aggregates thus formed; and crushing the aggregates into grits of desired particle size.

4,246,006

METHOD OF MAKING SINTERED METAL-DIAMOND AGGREGATES

Cornelius Phaal, 14 Robant La., Rivoniz, Sandton, Transvaal, South Africa

Filed Sep. 12, 1978, Ser. No. 941,575

Claims priority, application South Africa, Sep. 12, 1977, 77/5458; Dec. 12, 1977, 77/7154; Dec. 12, 1977, 77/7156

Int. Cl.³ B24D 3/06

U.S. Cl. 51—309

30 Claims

1. A method of making aggregated diamond abrasive particles comprising forming a mixture of diamond abrasive particles and a powdered metal, heating the mixture to sinter the metal followed by cooling to produce a mass and crushing the mass to obtain the aggregated particles, characterized in that the particles comprise particles of size 74 to 88 microns and the particles are selected from Types A, B and C, as hereinafter defined, and mixtures thereof:

Particles of Type A have the following characteristics:

1. A Friatest Index of about 70 to 90, for those particles of size 74 to 88 microns;
2. A metal content of about 1.0 to 1.5 percent by weight;
3. Predominantly translucent colour with the occasional transparent white, grey and yellow particle;
4. Predominantly blocky shape tending towards elongate particles;

5. Predominantly rough and undulating surface;
 Particles of Type B have the following characteristics:
1. Weak, having a Friatest Index of about 65 to 88, for those particles of size 74 to 88 microns;
 2. A metal content of greater than 2 percent by weight;
 3. Predominantly dark in colour;
 4. A blocky and irregular shape;
 5. Rough with surface irregularities, re-entrant angles and etch pits;
- Particles of Type C have the following characteristics:
1. Medium strength, having a Friatest Index in the range about 100 to 121 for those particles of size 74 to 88 microns;
 2. A metal content of less than 0.8 percent by weight;
 3. Predominantly yellow in colour;
 4. An angular to blocky shape with sharp edges;
 5. A predominantly smooth surface.

4,246,007

SEPARATING GASEOUS OR VAPOROUS SUBSTANCES ACCORDING TO THE SEPARATING NOZZLE PRINCIPLE

Erwin-Willy Becker, Karlsruhe; Peter Bley, Eggenstein; Ursula Ehrfeld; Wolfgang Ehrfeld, both of Ettlingen, and Ulrich Knapp, Eggenstein, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

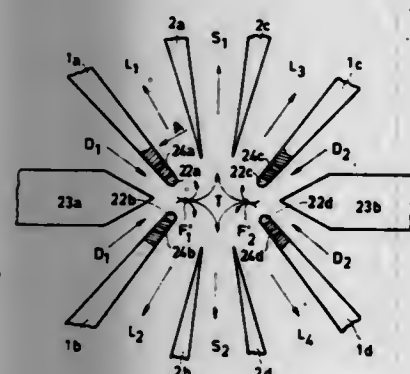
Filed Dec. 6, 1978, Ser. No. 967,711

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754276

Int. Cl.³ B01D 57/00, 51/08

U.S. Cl. 55—17

10 Claims



1. In a method for separating gaseous or vaporous substances having different molecular weights and/or different gas kinetically effective cross sections, which includes conducting the mixture to be separated together with a lighter additive gas into a separating chamber through two slit-shaped nozzles to form, in the chamber, two jets which are coaxial with, directed toward, and deflect, one another, the flow lines of each jet converging in the flow direction, dividing the thus deflected jets by means of separating baffles into partial streams of respectively different compositions, and discharging the partial streams separately from the chamber, the improvement wherein said step of conducting comprises causing the flow lines of each jet to converge, at least in the region of the outlet opening of each nozzle, at a limiting angle of more than 30°.

4,246,008

Patent Not Issued For This Number

4,246,009

SMOKE FILTER MATERIAL AND USE THEREOF

Hideo Sawada, Osaka; Motoharu Kotani; Koji Sato, both of Sakai; Toichiro Izawa, Chiba; Ken-ichiro Sagimori, Tokyo, and Akisato Katanosaka, Toyonaka, all of Japan, assignors to Daicel Ltd. and Goseikagaku Institute Ltd., both of Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 925,294

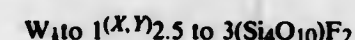
Claims priority, application Japan, Jul. 19, 1977, 52-85569

Int. Cl.³ B01D 53/02

U.S. Cl. 53—74

18 Claims

1. A method of removing injurious components from smoke containing said components comprising passing said smoke through a filter material comprising a fiber matrix in combination with a water-swellaible synthetic mica, wherein said synthetic mica is a product obtained from a synthetic mica of the formula



wherein W represents interlayer ions and is Na- or Li-cations and X and Y represent 6 coordinate ions; by substitution of the interlayer ions.

4,246,010

ELECTRODE SUPPORTING BASE FOR ELECTROSTATIC PRECIPITATORS

Horst Honacker, Paradise Valley, Ariz., assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 588,224, Jun. 19, 1975, abandoned. This application May 3, 1976, Ser. No. 682,217

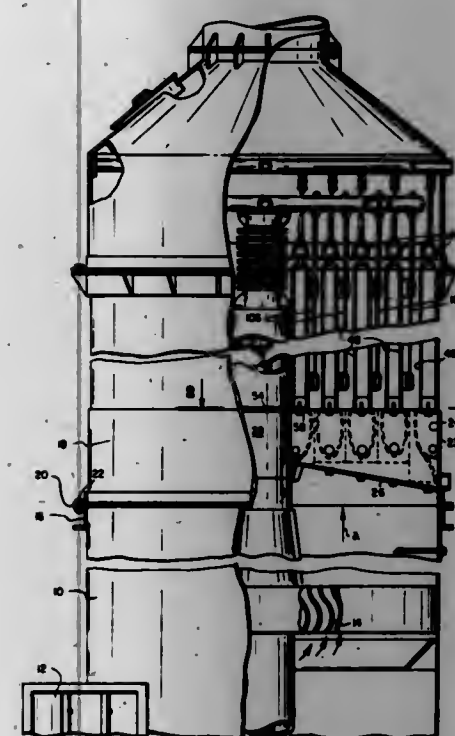
Int. Cl.³ B03C 3/36, 3/49, 3/78

U.S. Cl. 55—119

2 Claims

2. An electrostatic precipitator including: a plurality of vertical concentrically spaced substantially cylindrical wet wall collector electrodes having normally lower ends, said lower ends all being supported in a horizontal plane; converging diverging venturi structures disposed at said normally lower ends of said collector electrodes; said venturi structures being substantially U-shaped in cross section; means for delivering liquid to upper portions of said collector electrodes; said U-shaped in cross section venturi structures having opposed spaced apart walls; each wall having an outer convex surface and an inner surface; each venturi structure having a bottom portion; said walls each being connected together by said bottom portion; said bottom portion being aerodynamically curved for directing upwardly flowing gas along the outer surfaces of said walls of said venturi structure; each of said opposed spaced apart walls of said venturi structures having an upper edge spaced from said curved bottom portion; said upper edges of each venturi structure being spaced apart from each other a distance greater than the thickness of the respective collector electrode disposed thereabove; said venturi structures thus being disposed to receive liquid which drains from respective collector electrodes; said venturi structures

thus being liquid collector troughs as well as providing laminar flow of gas upward against said collector electrodes; a base supporting said collector electrodes and said venturi structures; said base being provided with radially disposed drain trough structures which are spaced apart relative to each other; said venturi structures and said collector electrodes being supported on said radially disposed drain trough struc-



tures; said collector electrodes being circular in horizontal cross section; said venturi structures being composed of arcuate sections disposed between and abutted to said radially disposed drain trough structures; said venturi structures communicating with the interior of said radially disposed drain trough structures whereby liquid collected in said venturi structures drains into said radially disposed drain trough structures.

4,246,011

VACUUM CLEANING APPARATUS

Guido Oberdorfer, Werkstrasse 22, 7919 Bellenberg, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 957,459

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749480

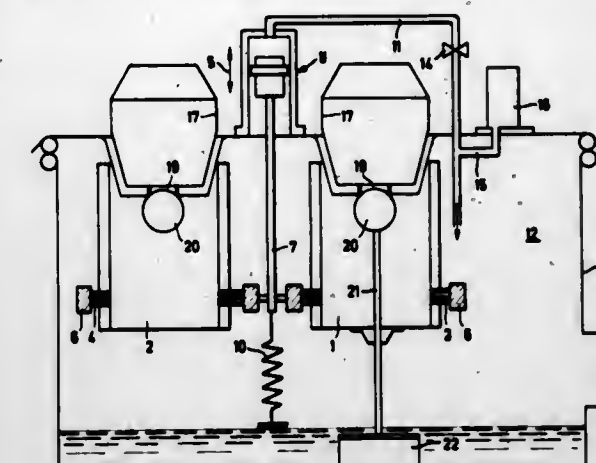
Int. Cl.³ B01D 46/04

U.S. Cl. 55—274

3 Claims

1. A vacuum cleaner including a dust collecting housing, an air inlet and an air outlet in the housing, a motor fan unit for producing a flow of air therethrough, filter means in the housing situated between the air inlet and outlet for filtering dust-laden air, said filter means comprising a pair of cylindrical filter cartridges (1, 2) arranged closely adjacent each other, each filter cartridge having walls of filter material of longitudinally corrugated configuration, and filter cleaning means for removing the dust adhering to the upstream exterior surfaces of the filter cartridges, said filter cleaning means comprising a pair of annular brushes (3, 4) fitted closely around the pair of filter

cartridges respectively in a self-centering manner, said brushes being supported by a guide frame 6, and a brush actuation rod



(7) interposed between the filter cartridges and joined to the guide frame for reciprocating the brushes back and forth along the filter cartridges.

4,246,012

APPARATUS FOR ISOLATING TITANIUM TETRACHLORIDE

Leonid P. Khlopov, ulitsa let Sovetskoi Ukrainy, 24, kv. 11; Stanislav I. Gasheenko, ulitsa Gorkogo, 159, kv. 76; Alexandr A. Rogatkin, ulitsa 40 let Sovetskoi Ukrainy, 76, kv. 3, all of Zaporozhie; Dmitry V. Drobot, ulitsa Krasnoarmeiskaya, 27, kv. 13, Moscow; Grigory I. Silakov, ulitsa Yatsenko, 4a, kv. 59, Zaporozhie; Anatoly P. Danilevsky, ulitsa 40 let Sovetskoi Ukrainy, 78, kv. 38, Zaporozhie; Nikolai V. Galitsky, prospekt Mayakovskogo, 3a, kv. 13, Zaporozhie; Vladimir N. Kalmykov, ulitsa Lermontova, 2, kv. 19, Zaporozhie; Vitaly A. Musilko, ulitsa Lermontova, 19, kv. 55, Zaporozhie; Vladimir I. Garmash, ulitsa Juzhno-Ukrainskaya, 19, kv. 50, Zaporozhie; Vladimir A. Tkachenko, ulitsa Yatsenko, 10, kv. 15, Zaporozhie, all of U.S.S.R.; Viktor F. Shipilov, deceased, late of Zaporozhie, U.S.S.R.; Elena S. Skibina, administrator, prospekt Lenina, 200, kv. 7, Zaporozhie, U.S.S.R.; Gennady V. Shipilov, administrator by, prospekt Lenina, 200, kv. 7, Zaporozhie, U.S.S.R., and Fedor D. Shipilov, administrator by, prospekt Lenina, 200, kv. 7, Zaporozhie, U.S.S.R.

Filed Sep. 19, 1979, Ser. No. 76,922

Int. Cl.³ B01D 50/00

U.S. Cl. 55—315

4 Claims



1. An apparatus for isolating titanium tetrachloride from a vapour and gas mixture, comprising:
 a casing having two chambers;
 a first, inlet chamber designed for taking heat off the vapour and gas mixture, and separating fine solid particles of titanium slag and reducing coke;
 a second, filtering chamber designed for subsequent cleaning of titanium tetrachloride from solid chlorides;
 a conical receptacle for collecting said solid chlorides arranged under each chamber;

guide webs arranged in each chamber and designed for settling solid chlorides in the inlet chamber and for accommodation of a filtering material in the filtering chamber, respectively;

a partition wall comprising a gas duct establishing a communication between the lower portions of both chambers in such a manner that the inlet end of said gas duct is arranged under said guide webs of the inlet chamber and the outlet end is arranged under said guide webs of the filtering chamber;

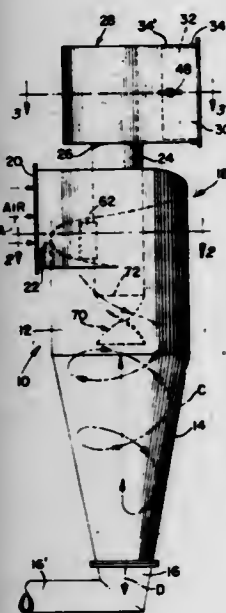
inlet pipes of the filtering chamber for admission of pulps; one of said pipes being designed for admission of chloride pulp and arranged above said guide webs at a distance of from one to two times the diameter of the filtering chamber, and the other pipe being designed for admission of oxychloride pulp and arranged below said guide webs which are permanently covered with a filtering material.

4,246,013 CYCLONE TYPE AIR/PARTICULATE CONCENTRATOR AND COLLECTOR

Andrew Truhan, P.O. Box 467, Granite Falls, N.C. 28630, and William R. Haynes, Rte. 1, Box 127, Taylorsville, N.C. 28681
Filed Nov. 21, 1979, Ser. No. 96,488
Int. Cl.³ B01D 45/12

U.S. Cl. 55—340

4 Claims



1. A cyclone-type particulate collector and concentrator comprising:

- a cylindrical body portion having a conical lower particulate material outlet tube;
- a dirty gas inlet volute at the upper end of the cylindrical body portion;
- a gas outlet tube, said gas outlet tube having a lower end projecting through the inlet volute and terminating in the cylindrical body portion and an open upper end;
- an outlet volute communicating with the upper end of the gas outlet tube;
- an adjustable passage between the gas outlet tube and the dirty gas inlet volute; and
- an adjustable skimmer plate pivotally mounted in the gas outlet volute and so positioned to separate the outlet gas stream into two streams differing in suspended particle concentration.

4,246,014 BAG FILTER THIMBLE

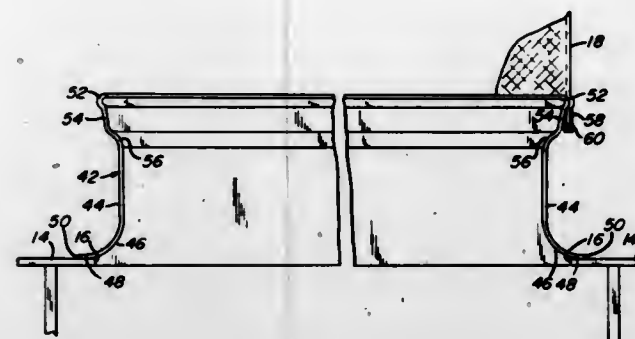
David W. Wright, Redondo Beach, and Harley G. Peterson, La Crescenta, both of Calif., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed May 21, 1979, Ser. No. 41,131

Int. Cl.³ B01D 46/02

U.S. Cl. 55—378

5 Claims



1. In apparatus for filtering particulate matter from a gaseous stream which includes a plenum having a wall which divides the plenum into a raw gas chamber and a clean gas chamber, a circular aperture in said wall, a thimble secured to said wall and surrounding said aperture, and a vertically-extending tubular filter bag in said clean gas chamber secured to said thimble and in flow-through communication with said raw gas chamber, the improvement in said thimble comprising an annular element having a vertically-extending annular wall of radius less than that of said circular aperture and at the bottom of said wall a radially-outwardly bent annular flange secured to the periphery of said aperture in sealing engagement therewith, and a curved portion interconnecting said annular wall and said flange, whereby gas flowing along said plenum wall will enter said aperture under essentially laminar flow conditions along said curved portion without materially separating from the wall of the thimble.

4. In apparatus for filtering particulate matter from a gaseous stream which includes a plenum having a wall which divides the plenum into a raw gas chamber and a clean gas chamber, a circular aperture in said wall, a thimble secured to said wall and surrounding said aperture, said thimble having a vertically-extending annular wall, and a vertically-extending tubular filter bag in said clean gas chamber secured to said thimble and in flow-through communication with said raw gas chamber, the improvement in said thimble comprising an annular outwardly-curved portion at the upper periphery of said thimble, a first inwardly-tapered portion of reduced diameter with respect to said curved portion connected to said curved portion, and an inwardly-tapered second portion interconnecting said first portion with said vertically-extending annular wall of the thimble and the lower edge of said filter bag is pressed into engagement with said first tapered portion in a wedging action against the inner surface of the bag's circumference.

4,246,015 FREEZE-WASH METHOD FOR SEPARATING CARBON DIOXIDE AND ETHANE

Ralph E. Styring, Jr., Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 31, 1979, Ser. No. 109,012

Int. Cl.³ F25J 3/02

U.S. Cl. 62—12

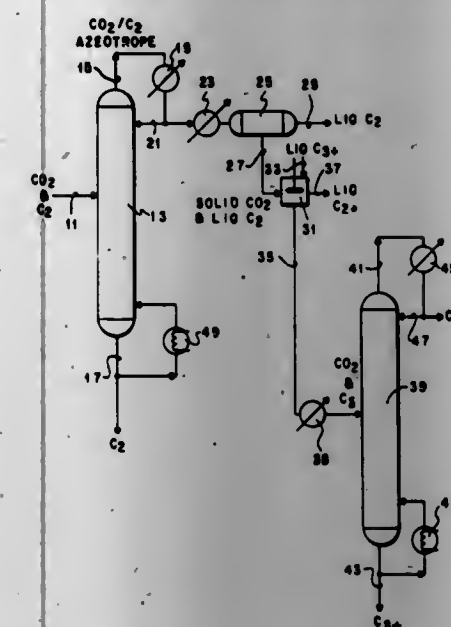
10 Claims

1. A method for separating a mixture of carbon dioxide and ethane derived from a prior separation stage, said method comprising:

- (a) cooling an azeotrope of carbon dioxide and ethane to form a first slurry of ethane and solid carbon dioxide, said azeotrope having been derived from a prior carbon dioxide separation stage;
- (b) mixing at least a portion of said first slurry with a first

liquid hydrocarbon comprised of at least one hydrocarbon having at least three carbon atoms in a manner and quantity such that said liquid hydrocarbon washes a substantial portion of said ethane from said first slurry;

said extraction of ions and removing said applied pressure; and
leaching said cladding away from said element, said element constituting said graded refractive index rod or fiber.



- (c) recovering a second slurry of solid carbon dioxide and hydrocarbon, said second slurry having less concentration of ethane than said first slurry, and
- (d) recovering a second liquid hydrocarbon, said second liquid hydrocarbon being comprised of said hydrocarbon liquid and ethane extracted from said first slurry.

4,246,016 METHOD OF MAKING GRADED REFRACTIVE INDEX FIBERS AND RODS

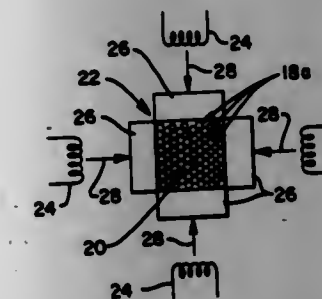
Walter P. Slegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 7, 1979, Ser. No. 17,986

Int. Cl.³ C03B 37/025, 37/075; C03C 25/00

U.S. Cl. 65—3 A

10 Claims



1. The method of producing a graded refractive index rod or fiber article comprising the steps of:

- applying to a glass preform containing a substantial proportion of a modifying oxide a leachable glass cladding having an affinity to ions of the modifying oxide;
- heating and drawing the clad preform into an element of a reduced cross-sectional size corresponding to that desired of said article;
- supporting said clad element against the deformation with applied high isostatic pressure;
- reheating said clad element while supported against deformation to a temperature above its deformation temperature and for a period of time sufficient to effect extraction of ions of the modifying oxide into said cladding through the contact surface between said drawn preform and cladding, the rate of extraction of ions being a function of temperature and said isostatic supporting pressure permitting application of higher than deformation temperatures for rapid diffusion of ions of said modifying oxide into said cladding;
- cooling and annealing said modified clad element following

4,246,017 METHOD AND APPARATUS FOR FORMING MINERAL FIBERS

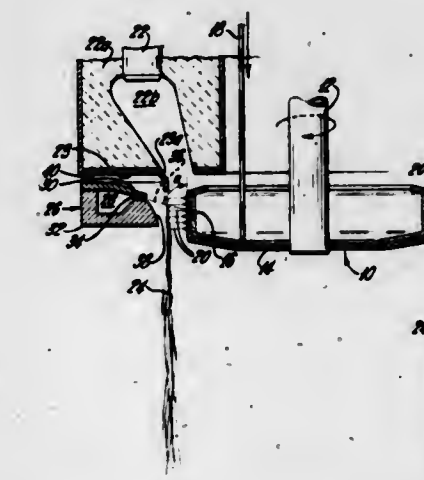
John D. Phillips, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Nov. 16, 1979, Ser. No. 95,011

Int. Cl.³ C03B 37/04

U.S. Cl. 65—8

15 Claims



12. In a method for forming fibers from molten mineral material in which molten mineral material is flowed through orifices in the peripheral wall of a rotating spinner to form primary fibers and the primary fibers are further attenuated into a veil of secondary fibers by discharging a flow of gases from a blower, wherein the improvement comprises discharging said flow of gases along a line forming an angle with said spinner peripheral wall within the range of from about 60 degrees to about 90 degrees, and positioning a curved surface so that said flow of gases follows the contour of said curved surface according to the Coanda effect.

4,246,018 PROCESS FOR THE PRODUCTION OF A FERTILIZER FROM BARK

Arvo O. Wahlberg, Turku, Finland, assignor to Arex Oy, Helsinki, Finland

Filed Apr. 4, 1979, Ser. No. 27,096

Claims priority, application Finland, Apr. 11, 1978, 781101

Int. Cl.³ C05F 11/00

U.S. Cl. 71—23

4 Claims

1. In a process for the production of a fertilizer from tree bark, wherein a mixture of comminuted waste bark and waste molasses are subjected to heating under an elevated pressure and at a temperature of from about 75° to 140° C. for a period of from about 10 minutes to 2 hours, the improvement comprising pretreating the waste molasses by adding yeast thereto and heating the same at a temperature of from about 30° to 40° C. for a period sufficient to lower the pH to from about 3 to 4, and thereafter mixing the so pretreated molasses with said waste bark.

4,246,019

METHOD OF PRODUCING A COMPLEX MINERAL FERTILIZER

Igor D. Sokolov, Zanevsky prospekt, 32, kv. 200; Jury S. Safrygin, ulitsa Dekabristov, 29, kv. 36; Alexandr V. Muraviev, prospekt Kima, 4, kv. 210; Nina K. Andreeva, 2 Komsomolskaya ulitsa, 57, korpus 1, kv. 22, all of Leningrad, and Valery A. Zykov, Fortunatovskaya ulitsa, 34/44, kv. 133, Moscow, all of U.S.S.R.

Filed Feb. 21, 1979, Ser. No. 13,150
Int. Cl.³ C05C 5/02

U.S. Cl. 71-59

3 Claims

1. In a method of producing a complex mineral fertilizer from polyhalite, comprising the steps of removing sodium chloride from said polyhalite decomposing polyhalite with a mineral acid to form a suspension, neutralizing said suspension, and separating

the improvement in the neutralizing and decomposing steps which comprises employing nitric acid as said mineral acid and decomposing said polyhalite by heating to a temperature not exceeding 110° C., in the presence of dilute nitric acid, having a concentration varying from 5-25 weight percent acid, and neutralizing the suspension thereby formed with a substance selected from the group consisting of calcium carbonate, calcium hydroxide and calcium oxide.

4,246,020

IMIDAZOLE AND TRIAZOLE COMPOUNDS, FUNGICIDAL AND PLANT GROWTH REGULATING COMPOSITIONS, METHOD OF COMBATING FUNGAL INFECTIONS IN PLANTS AND METHOD OF REGULATING PLANT GROWTH

Margaret C. Shephard; Paul A. Worthington, and Keith P. Parry, all of Maidenhead, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 29, 1978, Ser. No. 964,728

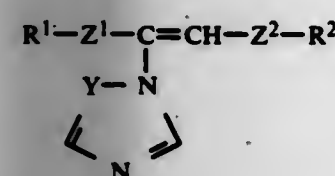
Claims priority, application United Kingdom, Dec. 7, 1977, 50936/77; Nov. 3, 1978, 43153/78

Int. Cl.³ A01N 43/50, 43/64; C07D 233/60, 249/08

U.S. Cl. 71-76

7 Claims

1. A compound of formula (I):



wherein Y is =N— or =CH—, each of R¹ and R², which may be the same or different, is C₃₋₆ cycloalkyl optionally substituted with one C₁₋₄ alkyl, C₁₋₄ alkyl optionally substituted with up to three halogens or phenyl optionally substituted with up to three substituents selected from the class consisting of halogen, nitro, phenyl, C₁₋₄ alkyl and C₁₋₄ alkoxy, and each of Z¹ and Z², which may be the same or different, is C=O or an acid addition salt or copper, zinc, manganese or iron complex thereof.

6. A fungicidal or plant growth regulating composition consisting essentially of, as active ingredient, a fungicidally or plant growth regulating effective amount of a compound, salt or complex as claimed in claim 1, and a carrier for the active ingredient.

4,246,021

IMIDAZOLE DERIVATIVES

James Gilmour, Dagenham; Leslie R. Hatton, Harold Wood; Edgar W. Parnell, Emerson Park; Dennis Warburton, Brentwood, and William G. Leeds, London, all of England, assignors to May & Baker Limited, Essex, England

Filed Aug. 22, 1979, Ser. No. 68,681

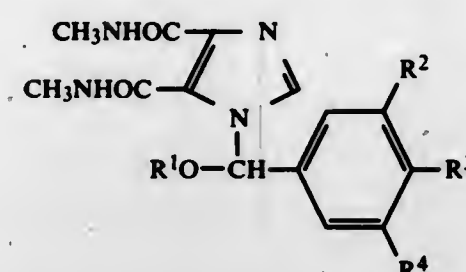
Claims priority, application United Kingdom, Aug. 25, 1978, 34671/78

Int. Cl.³ A01N 43/50; C07D 233/60

U.S. Cl. 71-92

30 Claims

1. An imidazole derivative of the formula:



wherein R¹ represents a methyl or ethyl group, R², R³ and R⁴, which may be the same or different, each represent hydrogen or halogen or an alkyl or alkoxy group which may optionally be substituted by one or more fluorine atoms, and R², R³ and R⁴ do not all represent hydrogen.

16. A herbicidal composition which comprises at least one imidazole derivative as claimed in claim 1 in association with one or more compatible herbicidally acceptable diluents or carriers, the amount of imidazole derivative in the composition being 0.05 to 90% by weight.

4,246,022

PROCESSING METAL CHLORIDES

Michael Robinson, Wootton, England, assignor to Laporte Industries Limited, London, England

Filed Apr. 16, 1979, Ser. No. 30,112

Claims priority, application United Kingdom, May 5, 1978, 17932/78

Int. Cl.³ C22B 55/00

U.S. Cl. 75-11

9 Claims

1. A process for treating a mixture of metal chlorides comprising iron chloride and a compound selected from the group consisting of vanadium chloride, niobium chloride and mixtures thereof to recover the corresponding metals therefrom, which comprises:

establishing a mixture of the metal chlorides and a chlorine scavenger which comprises a combination of carbon and a metal oxide capable of forming a corresponding volatile metal chloride at the temperature to which the mixture of metal chlorides and the chlorine scavenger are heated as hereinafter described;

causing the metal chlorides to react with the chlorine scavenger by heating their mixture to a temperature of at least 1,500° C.; and

separating said corresponding metals from the resulting chlorine-loaded scavenger.

4,246,023

METHOD AND APPARATUS FOR THE REFINING OF IRON-BASED MELTS

Peter H. Savov; Vassil G. Peev; Alexander Y. Valchev, and Nikola A. Lingoraki, all of Sofia, Bulgaria, assignors to DSO "Charna Metalurgia", Sofia, Bulgaria

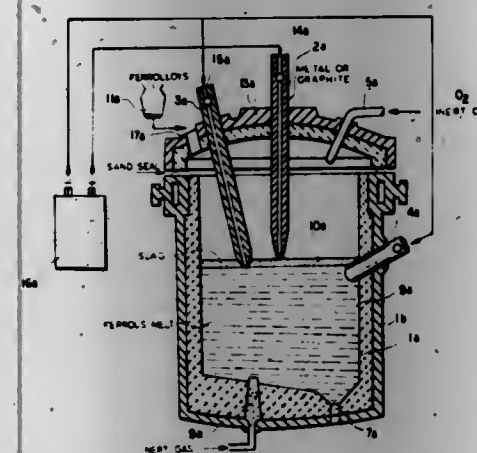
Continuation-in-part of Ser. No. 920,273, Jun. 29, 1978. This application Jul. 23, 1979, Ser. No. 59,582

Claims priority, application Bulgaria, Jul. 1, 1977, 36772

Int. Cl.³ C21C 5/52; H05B 7/18

U.S. Cl. 75-12

14 Claims



1. A method of operating a ladle reactor for the refining of an iron-base melt which comprises the steps of:

- introducing the iron-base melt into an upwardly open, closed-bottom ladle reactor to form a bath of the melt therein overlain by a layer of slag;
- covering and sealing said reactor with a cover removably placed thereon, said layer of slag containing calcium, aluminum and silicon;
- injecting an inert gas into said bath through a porous plug at the bottom of said reactor, thereby forming an inert atmosphere over the layer of slag and evacuating products emitted from the bath through an opening in the cover during the refining of the bath;
- disposing three spaced apart electrodes in electrical conducting relationship with the bath and said layer, including at least one electrode mounted in said cover, and connecting the positive terminal of a direct current source to at least one of the electrodes and the negative terminal of said direct current source to another of said electrodes, with all of said electrodes being connected to a terminal of said source whereby said bath and slag are heated electrically by said source and said bath and said slag undergo electrochemical desulfurization and decarbonization electrolytically as part of the refining of said bath, at least one of said electrodes penetrating into said layer of slag and at least one other of said electrodes being spaced above said layer of slag for producing an arc between the latter electrode and said layer; and
- introducing oxygen into said melt through said cover.

4,246,024

METHOD FOR THE GASEOUS REDUCTION OF METAL ORES USING REDUCING GAS PRODUCED BY GASIFICATION OF SOLID OR LIQUID FOSSIL FUELS

Juan F. Price-Falcon, Garza Garcia, and Enrique R. Martinez-Vera, Monterrey, both of Mexico, assignors to Grupo Industrial Alfa, S.A., Monterrey, Mexico

Filed Oct. 31, 1979, Ser. No. 89,902

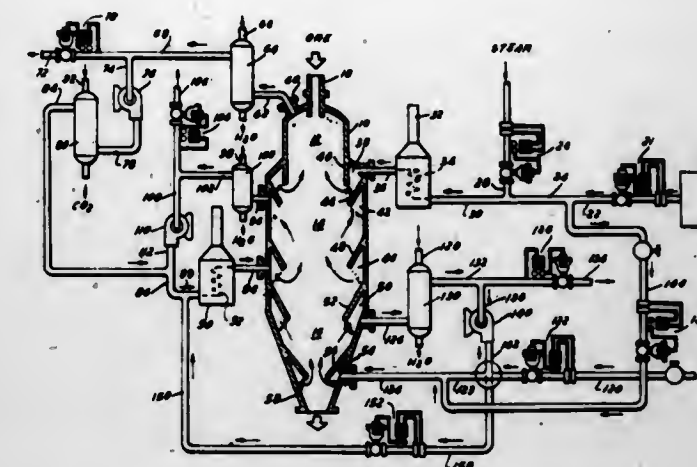
Int. Cl.³ C21B 13/00

U.S. Cl. 75-35

8 Claims

1. A method for reducing a particulate iron ore to sponge iron in a vertical shaft, moving bed reactor having a reforming zone in the upper portion thereof to which the iron ore is fed, a cooling zone in the lower portion thereof for cooling the sponge iron, and a reducing zone between the reforming and cooling zones for reducing the iron ore to sponge iron which

comprises preparing a reducing gas by the gasification of solid or liquid fossil fuels with oxygen and water vapor, mixing the reducing gas with steam, heating the resulting mixture to a temperature in the range of 300° to 600° C., passing the heated mixture through the reforming zone in contact with iron-bearing



ing material therein to reform the gaseous mixture to increase the hydrogen to carbon monoxide ratio thereof, removing the reformed gas from the reforming zone and removing a portion of the carbon dioxide content and using the reformed gas to reduce iron ore in the reduction zone of said reactor.

4,246,025

BENEFICIATION PROCESS FOR OXIDIZED IRON ORE

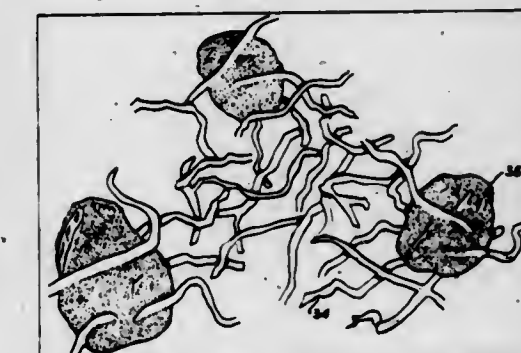
Edward F. Bertram; Phillip Harris, and Darrell W. Myroniuk, all of Edmonton, Canada, assignors to Alberta Research Council, Edmonton, Canada

Filed Oct. 30, 1978, Ser. No. 955,973

Int. Cl.³ C21B 13/04

U.S. Cl. 75-37

3 Claims



1. A method for beneficiating ground oxidized iron ore containing silica comprising:

introducing the ore, a chlorine source and a particulate carbonaceous reductant into a reaction vessel; the amount of the chlorine source being less than 15 wt. % of the ore, the amount of reductant being greater than that required to effect the reduction of the total iron content of the ore;

indirectly heating the mixture in the vessel without exceeding 950° C., while retaining the reaction gases in intimate contact with the ore without significant dilution of said gases to thereby provide a reducing atmosphere, for a sufficient period of time so as to cause the greatest part of the iron in the ore to be transported out of the ore particles to reduction sites adjacent the reductant where the iron is metallized thereby forming an agglomerate of iron-depleted ore particles and carbonaceous reductant held together by a matrix of interwoven fine strands of substantially metallic iron.

4,246,026

MANUFACTURING PROCESS OF VERMICULAR GRAPHIC CAST-IRONS THROUGH DOUBLE MODIFICATION

Doru M. Stefanescu; Lucian Dinescu; Stefan Craciun, and Ioan Cristea, all of Bucharest, Romania, assignors to Institutul de Cercetari Stiintifice, Inginerie Tehnologica si Proiectari Pentru Sectoare Calde, Bucharest, Romania

Filed Sep. 12, 1979, Ser. No. 74,772

Claims priority, application Romania, Feb. 16, 1979, 96624 Int. Cl.³ C22C 33/08

U.S. Cl. 75—130 R

8 Claims

1. A process for the preparation of vermicular graphite-containing cast-iron having a minimum graphite content of at least 85% vermicular graphite which comprises the steps of:

- forming a melt of cast-iron at a temperature of about 1350° to 1520° C. and having sulfur content ranging between 0.01 and 0.04%;
- contacting the melt of castiron formed during step (a) with a modifying alloy comprising Fe, Si, Mg, Ti, Al and Ce to form a modified melt;
- subsequent to step (b) taking a sample of the melt and subjecting the sample to differential thermal analysis to obtain a differentiated cooling curve and determine the content of the graphite present therein that is vermicular, the content of the graphite present therein that is nodular and the content of the graphite present therein that is flaked;
- when a nodular graphite content is so high that the vermicular graphite content is less than 85%, treating the melt analyzed in step (c) with a sufficient amount of an anticompacting modifier containing silicon, titanium and iron to adjust the content of vermicular graphite to at least 85% of the total graphite present and when the graphite content in flaked form is so high that the vermicular graphite content is less than 85%, treating the melt analyzed in step (c) with a sufficient amount of a compacting modifier to adjust the content of the vermicular graphite to at least 85% of the total graphite present; and
- pouring the castiron subsequent to step (d).

4,246,027

HIGH-DENSITY SINTERED BODIES WITH HIGH MECHANICAL STRENGTHS

Tadahiko Watanabe, Saga; Katsushige Nakazono, Jofima, and Yunosuke Tokuhito, Saga, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 23, 1979, Ser. No. 973,957

Int. Cl.³ C22C 29/00, 1/05; B22F 3/14

U.S. Cl. 75—244

10 Claims

1. A sintered body of a powdery mixture composed essentially of:

- 100 parts by weight of titanium diboride,
- from 0.5 to 15 parts by weight of an alloy of nickel and phosphorus containing from 3 to 25% by weight of phosphorus based on nickel, and
- from 1 to 95 parts by weight of at least one metal selected from the group consisting of chromium, molybdenum, niobium, tantalum, hafnium, rhenium and aluminum or at least one metal diboride selected from the group consisting of chromium diboride, molybdenum diboride, niobium diboride, tantalum diboride, hafnium diboride, rhenium diboride and aluminum diboride.

6. A method for the preparation of a sintered body which comprises

- intimately admixing
 - 100 parts by weight of titanium diboride,
 - from 0.5 to 15 parts by weight of an alloy of nickel and phosphorus containing from 3 to 25% by weight of phosphorus based on nickel, and
 - from 1 to 95 parts by weight of at least one metal selected from the group consisting of chromium, molybdenum, niobium, tantalum, hafnium, rhenium and

aluminum or at least one metal diboride selected from the group consisting of chromium diboride, molybdenum diboride, niobium diboride, tantalum diboride, hafnium diboride, rhenium diboride and aluminum diboride

into a powdery mixture,

- molding the powdery mixture into a shaped body, and
- subjecting the shaped body to sintering by heating at a temperature in the range from 1500° to 2000° C. for 10 to 60 minutes.

4,246,028

POWDER MIXTURE OF IRON ALLOY SILICON-CARBON

Jean C. Lynn, Elmhurst, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Mar. 12, 1979, Ser. No. 19,502

Int. Cl.³ B22F 1/00

U.S. Cl. 75—252

2 Claims

1. A pre-alloyed iron-base powder consisting essentially of, by weight, up to about 0.2% carbon, about 17% chromium, up to about 2.0% manganese, and about 3.5% silicon balance essentially iron, to which about 0.5 to 3.0% by weight carbon and about 0.5 to 4.5% by weight silicon powder is added.

2. A pre-alloyed iron-base powder for the production of sintered heat, wear, corrosion and oxidation resistant components, consisting essentially of, by weight, up to about 0.2% carbon, 12–19% chromium, and 0.5 to 3.5% silicon to which 0.5 to 3.0% by weight carbon and sufficient silicon containing powder are added to provide a final silicon content of 4 to 8% by weight.

4,246,029

DETERGENT RESISTANT VINYL COATINGS

Albert J. Sanders, Jr., Toledo, Ohio, assignor to SWS Silicones Corporation, Adrian, Mich.

Filed Feb. 27, 1979, Ser. No. 15,693

Int. Cl.³ C09G 1/14

U.S. Cl. 106—3

16 Claims

1. A detergent resistant vinyl coating composition consisting essentially of (1) from 1 to 50 percent by weight based on the weight of the composition of silicone fluids consisting essentially of (a) from 1 to 99 percent by weight based on the weight of the mixture of silicone fluids of an aminofunctional silicone fluid and (b) an organopolysiloxane fluid, (2) from 2 to 10 percent by weight based on the weight of the composition of nonionic surface-active agents consisting essentially of a mixture of (a) from 10 to 90 percent by weight based on the weight of the mixture of surface-active agents of octylphenoxy polyethoxy ethanol compound containing from 1 to 13 mols of ethylene oxide and (b) the product obtained from the reaction of ethylene oxide and nonyl phenol in a molar ratio of from 6:1 to 40:1 and the balance of the composition being (3) water.

4,246,030

CORROSION INHIBITING COMPOSITIONS AND THE PROCESS FOR USING SAME

Richard J. Lipinski, Aurora, Ohio, assignor to The Mogul Corporation, Chagrin Falls, Ohio

Continuation-in-part of Ser. No. 783,646, Apr. 1, 1977, Pat. No. 4,138,353. This application Dec. 8, 1978, Ser. No. 967,584

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.³ C23F 11/08

U.S. Cl. 106—14.12

34 Claims

1. A composition for inhibiting mineral scale and corrosion of metal in the presence of water which comprises, parts based on a million parts by weight of water from about:

- 0.1 to 30 parts by weight of an azole,
- up to 100 parts by weight of water-soluble carboxylic

4,246,032

PROCESS FOR CONTROLLING THE POSITION OF FIBROUS WEBS

Eeuwoud van den Heuvel, Helmond, Netherlands, assignor to Vliaco B.V., Helmond, Netherlands

Continuation of Ser. No. 780,091, Mar. 22, 1977, abandoned, and a continuation-in-part of Ser. No. 563,450, Mar. 31, 1975, abandoned. This application Oct. 16, 1979, Ser. No. 85,400

Claims priority, application Netherlands, May 3, 1974, 7405989

Int. Cl.³ C09D 5/23, 11/08, 11/10, 11/14

U.S. Cl. 106—19

8 Claims

1. A process for controlling the position of fibrous webs to be printed by applying a ferromagnetic printing paste through a narrow opening in a dispenser, said paste comprising in addition to a finely divided ferromagnetic material a cellulose ester as binder and a solvent, characterized by applying in very small dots, which are neither visible nor palpable, a printing paste having a content of ferromagnetic material of at least 85% by weight, based on the total solid content, and as a solvent a solvent or a mixture of solvents having a boiling point of at least 130° C. in a sufficient amount to obtain a viscosity such that the paste does not flow from its dispenser by gravity and that it can be pressed through the narrow opening under a slight overpressure in accurate small doses without drawing strings.

4,246,033

ARRANGEMENT FOR APPLYING WRITTEN OR DRAWN INFORMATION ONTO IMAGE CARRIERS FOR OVERHEAD PROJECTION

Rene von Wartburg, Rhine, Switzerland, assignor to Pelikan A.G., Switzerland

Filed Oct. 31, 1977, Ser. No. 847,114

Claims priority, application Switzerland, Nov. 23, 1976, 14716/76

Int. Cl.³ C09D 11/00, 11/04

U.S. Cl. 106—23

7 Claims

1. A combination for transmitting information with overhead projectors, said combination comprising:

- a carrier including at least one color producing material which provides a first color to said carrier, and
- marking means containing a colorless material which transfers to the carrier upon contact of the marking means with the carrier,
- said colorless material being effective to react with said color producing material to change said first color to another color.

4,246,034

DEVITRIFYING SOLDER SEALING GLASSES

Howard E. Kellberg, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 14, 1980, Ser. No. 112,080

Int. Cl.³ C03C 3/10

U.S. Cl. 106—53

2 Claims

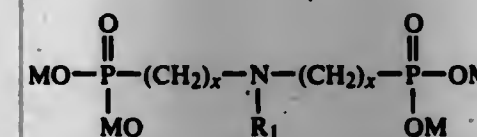
1. A thermally devitrifiable sealing composition consisting of about 4–10 parts by weight of particulate cordierite passing a No. 200 United States Standard Sieve for each 100 parts by weight of a devitrifiable glass consisting essentially, expressed in parts by weight on the oxide basis as calculated from the batch, of about

PbO	77.4 ± 2.0
ZnO	10.2 ± 1.0
B ₂ O ₃	8.9 ± 1.0
SiO ₂	2.6 ± 0.25
MgO	0.17 ± 0.10
BaO	0.22 ± 0.10
F	0.35 ± 0.10

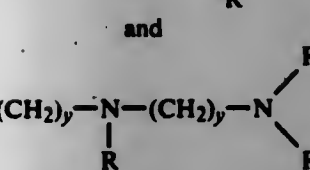
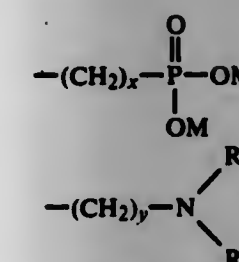
said sealing composition exhibiting a sealing temperature

acids having at least one hydroxyl group per molecule and/or the alkali metal salts of said carboxylic acids, and (c) 0 to 100 parts by weight of a metal molybdate, wherein the carboxylic acids, the alkali metal salts of said carboxylic acids, or combinations of the carboxylic acids and the alkali metal salts thereof, either alone or with the molybdates are present in an amount of at least about 3.0 parts per million, and

(d) a corrosion inhibiting amount of at least one amino methylene phosphonic acid and the derivatives thereof having the formula:

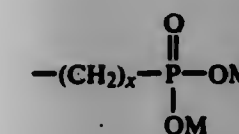


wherein R₁ is a monovalent radical selected from the class consisting of the formulae:



and

wherein R is



and Y has a value of 1 to 8, X has a value of 1 to 4 and M is a radical selected from the class consisting of hydrogen, an alkali or alkaline earth metal, ammonium, an amino radical, and an alkyl or substituted alkyl radical having 1 to 4 carbon atoms.

4,246,031

PREPOLYMER PREPARATION AND POLYMERIZATION OF FLAME RETARDANT CHEMICALS FROM THP-SALTS

Galoust M. Elgal, Metairie, La.; Rita M. Perkins, Gaithersburg, Md., and Nestor B. Knoepfler, New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 11, 1978, Ser. No. 950,493

Int. Cl.³ C09D 5/18

U.S. Cl. 106—18.14

8 Claims

1. A process for preparing prepolymer chemical compositions which are useful for imparting flame retardance to cellulosic material comprising:

- preparing aqueous solution of a tetrakis(hydroxymethyl)-phosphonium salt, said solution having a pH of less than 4;
- bubbling ammonia gas through said aqueous solution until an exothermic reaction between said THP salt and said ammonia gas increases the temperature of said aqueous solution to a constant boiling point;
- cooling the reaction mixture resulting from step (b) to below said boiling point; and
- repeating steps (b) and (c) a plurality of times sufficient to form a water soluble precipitate when the pH of the produce of step (c) is raised to a pH of at least 8.

below about 420° C. and providing a devitrified seal having a thermal expansion mismatch value against a glass having a coefficient of thermal expansion (0°-300° C.) of about $83 \times 10^{-7}/^{\circ}\text{C.}$ ranging between about -200 to +100 ppm at room temperature and does not change more than about 50 ppm over the 350°-200° C. temperature range.

4,246,035

HIGH PURITY MORTAR SUITABLE FOR BONDING REFRACTORY BRICK

George Maczura, Pittsburgh; Raymond P. Heilich, New Kensington, and Frank J. Rohr, Greensburg, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 26, 1979, Ser. No. 106,379

Int. Cl.³ C04B 35/02

U.S. Cl. 106-64

7 Claims

1. A high purity mortar suitable for binding refractory brick, the mortar being resistant to attack by molten aluminum and comprising:

- (a) 43 to 89 wt.% alumina;
- (b) 10 to 45 wt.% calcium aluminate cement;
- (c) 0.5 to 10 wt.% zinc borosilicate; and
- (d) 0.1 to 1.5 wt.% boric acid.

4,246,036

COLOR COMPOSITE MATERIAL OF THE ASBESTOS-CEMENT OR SIMILAR TYPE AND ITS MANUFACTURE

Octavian Anton; Alain Gosseye, both of Brussels, and Georges Poncellet, Beauvechain, all of Belgium, assignors to S.A. Redco, Kapelle Op Den Bos, Belgium

Filed May 14, 1979, Ser. No. 39,082

Int. Cl.³ C04B 7/02

U.S. Cl. 106-99

12 Claims

1. Composition for the manufacture of a colored composite material, of the asbestos-cement type or the like, with good efflorescence resistance, comprising at least one hydraulic cement, a reinforcing filler, and baked clay, the relative proportions of the constituents of the cement and of the clay conforming to the proportions by weight: $(\text{CaO}/\text{SiO}_2 + \text{Al}_2\text{O}_3)$ comprised between 0.4 and 1.0, $\text{Al}_2\text{O}_3/(\text{SiO}_2 + \text{Al}_2\text{O}_3)$ comprised between 0.07 and 0.30, the baked clay being sufficient in proportion to color the material obtained by hardening the composition.

4,246,037

NOVEL TAMARIND/XANTHAN GUM BLEND

Ian W. Cottrell, Solana Beach, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 11, 1979, Ser. No. 47,395

Int. Cl.³ C08L 5/00

U.S. Cl. 106-208

13 Claims

1. A blend of xanthan gum and TKP.

4,246,038

SILICONE ABRASION RESISTANT COATINGS FOR PLASTICS

Howard A. Vaughn, Jr., and Fred F. Holub, both of Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 745,151, Nov. 26, 1976, abandoned. This application May 1, 1978, Ser. No. 901,543

Int. Cl.³ C09K 3/00

U.S. Cl. 106-287.16

3 Claims

1. A silicone primer composition for plastics, metals, glass and ceramic comprising: (a) from 0 to 40% by weight of hydroxypropyltriethoxysilane; (b) 1 to 40% by weight of the reaction product of the foregoing silane and an anhydride selected from the class consisting of cyclic anhydrides and cyclic dianhydrides; and (c) 20 to 99% by weight of an aliphatic solvent having 1 to 8 carbon atoms.

4,246,039

KAOLIN CLAY PROCESSING

Robert B. Mixon, Jr., McIntyre, Ga., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, Edison, N.J.

Filed Jan. 8, 1979, Ser. No. 1,898

Int. Cl.³ C09C 1/42

U.S. Cl. 106-288 B

12 Claims

1. In a process for producing white fine-particle size calcined kaolin pigment particles which comprises subjecting impure crude hydrated kaolin to wet processing in a manner such as to provide a dilute deflocculated fluid suspension in water of a fine particle size fraction of kaolin clay, dewatering said suspension by spray drying or by filtration followed by spray drying and provide dry pulverulent hydrated kaolin clay in the form of beads, pulverizing said beads and calcining the pulverized beads to remove water of hydration from the pulverized beads, thereby providing the desired calcined kaolin clay pigment particles; the improvement to improve the energy efficiency of said process which comprises: removing a part of the water from said dilute fluid deflocculated suspension of fine particle size hydrated clay by charging said dilute deflocculated fluid suspension at a pH in the range of 6 to 9.5 to an electrofilter operated to remove sufficient water and to produce a deflocculated partially dewatered suspension at a predetermined controlled solids content suitable for spray drying and thereafter spray drying said deflocculated partially dewatered suspension to remove the remainder of the water and form spray dried beads before pulverizing and calcining the clay, said deflocculated suspension having been charged to said electrofilter without addition of a flocculating agent thereto and without prior partial dewatering by conventional filtration, said electrofilter being an electrically augmented vacuum filter operated with alkaline bath overflow and producing an acidic filter cake as an anodic deposit which is mixed with bath overflow and additional deflocculating agent, if necessary, to produce said deflocculated partially dewatered suspension.

4,246,040

SURFACE TREATMENT METHOD

Jungoro Okumura, Tokyo, and Satoshi Noma, Yokohama, both of Japan, assignors to Nihonshikizai Kogyo Co., Ltd., Tokyo and Takeda Chemical Industries, Ltd., Osaka, both of Japan

Filed May 18, 1979, Ser. No. 40,211

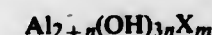
Claims priority, application Japan, Jun. 5, 1978, 53-68174

Int. Cl.³ C09C 3/00

U.S. Cl. 106-308 B

23 Claims

1. A method of surface treating a powdery or granular solid substance which comprises reacting a basic polyaluminum salt with an acid or its salt in the presence of a powdery or granular solid substance, said basic polyaluminum salt having the composition formula



wherein m is a number produced by dividing 6 by the valence of X, n is a positive integer of not less than 4, and X is an anion.

4,246,041

METHOD AND APPARATUS FOR CLEANING A ROTARY AGITATOR IN A REACTOR

Jean-Pierre Lillo, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 689,975, May 26, 1976, abandoned.

This application Nov. 3, 1977, Ser. No. 848,246

Claims priority, application France, May 28, 1975, 75 16662

Int. Cl.³ B08B 3/02, 9/08

U.S. Cl. 134-23

10 Claims

1. In a method of cleaning a rotary agitator extending along the axis of a reactor and having a surface of revolution parallel with the axis of the reactor passing in close proximity to the walls of the reactor, comprising introducing an unconfined jet stream of pressurized liquid from a nozzle through an opening

in the reactor wall from near the outside of the surface of revolution over which the agitator sweeps during its rotation into contact with the agitator, the cross-section of the surface of revolution perpendicular to the axis of the reactor being a

4,246,043

YTTRIUM OXIDE ANTIREFLECTIVE COATING FOR SOLAR CELLS

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

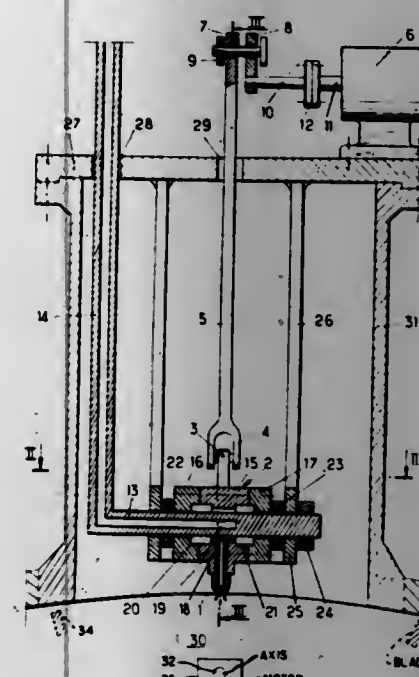
Filed Dec. 3, 1979, Ser. No. 99,821

Int. Cl.³ H01L 31/04

U.S. Cl. 136-256

10 Claims

1. A photovoltaic cell comprising a body of host material having a major surface adapted for the reception of light energy impinging thereon and conversion of such energy into electrical energy, and an antireflective coating on said surface, said coating containing yttrium oxide.



maximum at every point along the axis, and oscillating the nozzle so that the jet of pressurized liquid introduced through the opening in the reactor wall oscillates in a plane passing substantially through the axis of the reactor while rotating the agitator.

4,246,042

FIXED SOLAR ENERGY CONCENTRATOR

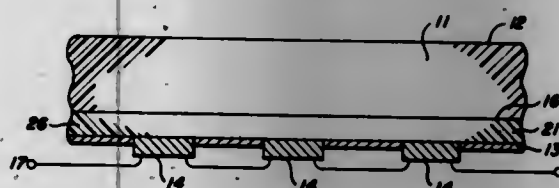
Thomas M. Knael, McLean, and Alexander J. Houghton, Anandale, both of Va., assignors to Science Applications, Inc., La Jolla, Calif.

Division of Ser. No. 947,656, Oct. 2, 1978. This application Feb. 13, 1980, Ser. No. 121,291

Int. Cl.³ H01L 31/00

U.S. Cl. 136-246

9 Claims



1. An apparatus for collecting low level concentrations of radiant energy, said apparatus not limiting the angular acceptance for said energy, whereby said energy is enhanced to a higher level concentration and converted into electrical energy; said apparatus comprising:

- (a) an array of photovoltaic cells;
- (b) a transparent material having a transparent surface and an opposite surface to which is secured said photovoltaic cell array, said transparent material comprising two or more sheets or films having transparent upper and lower surfaces, each sheet or film possessing an index of refraction different from the index refraction of a sheet or film to which said sheet or film is attached; and
- (c) a diffusing coating applied to the area of the opposite surface of the transparent material not in contact with the photovoltaic cells.

4,246,044

METHOD FOR FABRICATING SEMI-CONDUCTOR DEVICES

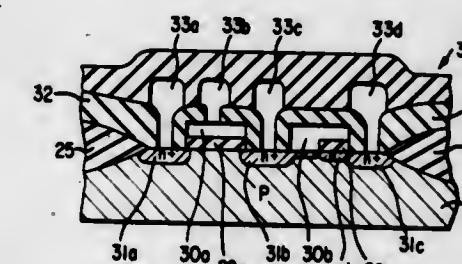
Toshinobu Yanase, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 5, 1979, Ser. No. 54,946

Int. Cl.³ H01L 21/26

U.S. Cl. 148-1.5

5 Claims



1. A method for fabricating semiconductor devices, comprising the steps of:

- forming a first oxide layer on a semiconductor substrate of one conductivity type;
- forming a silicon nitride layer pattern on the first oxide layer;
- thermally oxidizing the substrate to form a field oxide layer by using said silicon nitride layer as a mask;
- removing said silicon nitride layer and said first oxide layer underneath said silicon nitride layer to reveal a portion of said substrate;
- forming a second oxide layer in the revealed portion by thermal oxidation;
- etching off a part of the second oxide layer to form a window for impurities doping;
- doping selected impurities through the window by using ion implantation to form a channel region;
- removing the second oxide layer and newly forming a third oxide layer on the revealed portion of said substrate by thermal oxidation;
- forming a gate electrode on the third oxide layer; and forming a source region and a drain region of opposite conductivity type adjoining the channel region in the substrate; wherein the third oxide layer which serves as a gate oxide layer, the gate electrode, the source region and the drain region constitute a depletion mode MOS transistor.

4,246,045

MULTIPLE MEMBER CLAD METAL PRODUCTS AND METHODS OF MAKING THE SAME

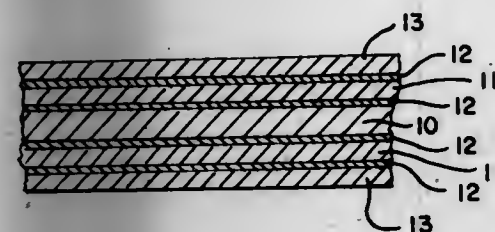
John B. Ulam, McMurray, Pa., assignor to Clad Metals, Inc., Canonsburg, Pa.

Division of Ser. No. 867,576, Jan. 6, 1978, Pat. No. 4,167,606, which is a continuation-in-part of Ser. No. 744,043, Nov. 22, 1976, Pat. No. 4,103,076, which is a continuation-in-part of Ser. No. 572,732, Apr. 29, 1975, Pat. No. 4,004,892, which is a division of Ser. No. 423,253, Dec. 10, 1973, Pat. No. 3,952,938. This application Apr. 24, 1979, Ser. No. 33,016

Int. Cl.³ B32B 15/18, 15/20

U.S. Cl. 148—11.5 Q

42 Claims



1. The method of making a composite clad metal product comprising the steps of first joining together a copper sheet and at least one aluminum alloy sheet coated with substantially pure aluminum on the surfaces to be joined under pressure sufficient to provide a reduction up to 80%, post-heat treating the same, mechanically cleaning the aluminum surface, placing said mechanically cleaned pre-bonded aluminum-copper composite on at least one sheet of stainless steel with the aluminum adjacent to the stainless steel, heating the stacked metals to a temperature between 300° F. to 800° F. and subjecting the stacked metals to sufficient pressure to a first reduction of about 2% followed by a reduction of about 5 to 25%.

4,246,046

STAINLESS STEEL CONTAINER FOR FLUID AND METHOD

Michael Lameyer, P.O. Box 2643, Palm Beach, Fla. 33480

Continuation of Ser. No. 915,282, Jun. 13, 1978, abandoned.

This application Mar. 9, 1979, Ser. No. 19,172

Int. Cl.³ C22C 38/40

U.S. Cl. 148—12 E

3 Claims

1. A method of forming a tank for holding fluids under high pressure comprising:

forming a unitary integral tank with one end being self supporting and the other end adapted to receive an output means by shaping the tank from an alloy consisting of the following percentages materials by weight of:

Cr	16.50-18.00
Ni	7.20-8.00
Ti	0.75-0.85
Al	0.25-0.35
Si	0.25-0.40
Mn	0.75-0.90
S	0.030-0.045
P	0.030-0.045
C	up to - 0.045
Balance Iron; and,	

heat treating the formed tank at about 900° F. to 950° for less than 3 hours, to provide a yield stress in excess of 110,000 p.s.i. and which upon failure splits and does not fragment.

4,246,047

NON-MAGNETIC STAINLESS STEEL

Susumu Yamamoto, and Kazuyoshi Sato, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

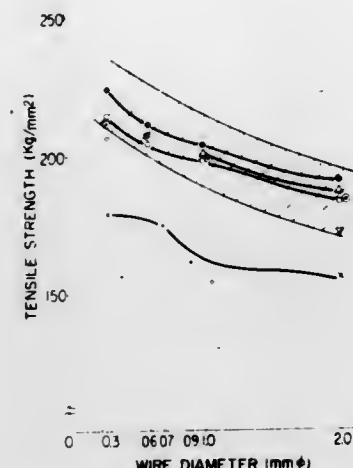
Filed Dec. 19, 1978, Ser. No. 971,836

Claims priority, application Japan, Dec. 27, 1977, 52-156565

Int. Cl.³ C22C 39/54

U.S. Cl. 148—38

2 Claims



1. A high strength non-magnetic stainless steel for a spring, which consists essentially of 0.01 to 0.20% of carbon, 0.50 to 3.0% of manganese, 0.001 to 0.045% of phosphorous, 0.001 to 0.030% of sulfur, 0.10 to 1.00% of silicon, up to 2% of molybdenum, up to 1% of copper, 18.00 to 20.00% of chromium, 8.00 to 12.00% of nickel, 0.08 to 0.25% of nitrogen and the balance iron, and which is produced by subjecting the composition to a heat treatment and a cold or warm working treatment to obtain a strength sufficient for use as a spring.

4,246,048

FORGED ATOMIC POWER PLANT PARTS

Mitsuo Kawai, Yokohama; Kanji Kawaguchi, Shizuoka; Hisato Kamohara, and Matsuo Miyazaki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 804,799, Jun. 8, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,226

Claims priority, application Japan, Jul. 28, 1976, 51-89029

Int. Cl.³ C22C 19/05

U.S. Cl. 148—32

6 Claims

1. Forged atomic power plant parts, subjected to severe wear and cavitation erosion which give rise to wear and cavitation erosion products rendered radioactive by neutron bombardment but having a very short radioactive half life, which are prepared from an alloy consisting essentially of 30 to 40% by weight of chromium; 1.5 to 4% by weight of at least one metal component selected from the group consisting of aluminium and titanium; 0 to 10% by weight of molybdenum; and nickel.

4,246,049

PROCESS FOR THE THERMAL TREATMENT OF FE-CO-CR ALLOYS FOR PERMANENT MAGNETS

Claude Bronner, Uriage, and Daniel Jullien, St. Martin-d'Heres, both of France, assignors to Aimants Ugimac S.A., Saint-Pierre-d'Allevard, France

Filed Jan. 12, 1979, Ser. No. 3,025

Claims priority, application France, Jan. 19, 1978, 78 02104

Int. Cl.³ H01F 1/02

U.S. Cl. 148—103

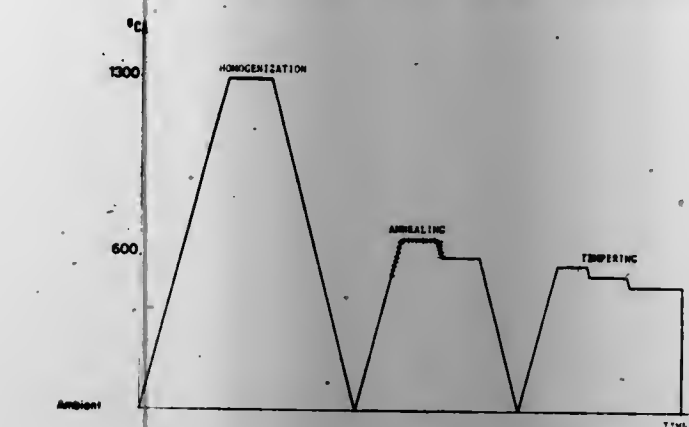
3 Claims

1. A process for the thermal treatment of a Fe-Co-Cr alloy for a permanent magnet composed of by weight Co, 10 to 40%, Cr, 10 to 40%, one or more of the following elements Al, Nb, Ta, W, Mo, V, Ti, Si; and Cu, 0 to 10%; Fe, remainder, comprising the steps sequentially of:

(a) homogenization at between 1200° and 1400° C. for at least 10 minutes;

(b) rapid quenching;

(c) annealing in two stages wherein the first stage is at a temperature of between 630 and 670° C. for a period of between 5 and 30 minutes and wherein the second stage follows immediately after the first stage without reduction



to ambient and occurs at a temperature of from 40° to 70° C. below the first stage and for at least 10 minutes;

(d) applying a magnetic field to the alloy at least during the first annealing stage; and,

(e) at least one tempering treatment at temperatures between 500° and 600° C.

4,246,050

LATTICE CONSTANT GRADING IN THE $Al_xGa_{1-x}As_{1-x}Sb_x$ ALLOY SYSTEM

Ronald L. Moon, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

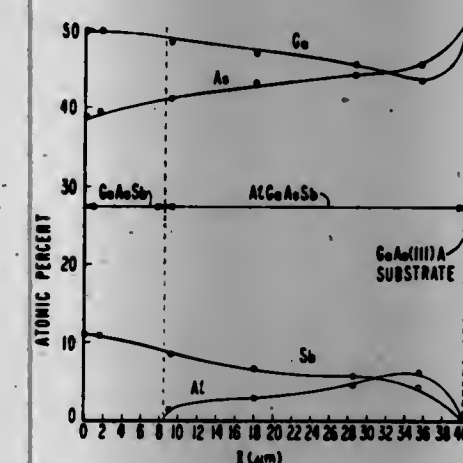
Division of Ser. No. 945,653, Sep. 25, 1978, Pat. No. 4,195,305.

This application Jul. 23, 1979, Ser. No. 59,705

Int. Cl.³ H01L 21/208

U.S. Cl. 148—171

3 Claims



1. The method of lattice grading GaAsSb to GaAs by liquid phase epitaxy comprising the steps of forming a melt of Al, Ga, As, and Sb, the proportion of Sb to Ga being in the range greater than 0 to 4, the melt saturated with GaAs and the proportion of Al being in the range from 1 to 5×10^{-3} atomic percent, heating said melt to the temperature of at least 830° C., contacting said GaAs with said melt, cooling the melt at a desired rate to a temperature lower than 770° C.

4,246,051

PYROTECHNIC COATING COMPOSITION

Eugene F. Garner, Canyon Country, and Alvin A. Seldner, Sausalito, both of Calif., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 15, 1978, Ser. No. 942,587

Int. Cl.³ C06B 45/34, 45/10

U.S. Cl. 149—7

10 Claims

1. An ignition enhancer composition for pyrotechnic propellants which comprises:

(a) about 60 to 95 weight percent of an inorganic oxidizer selected from the group consisting of sodium chlorate, potassium chlorate, sodium perchlorate and potassium chlorate;

(b) about 5 to 20 weight percent of a combustible oxygen-containing polymeric compound selected from the group consisting of polyacetal resins and polyvinyl acetate resins;

(c) about 3 to 7 weight percent of a transition metal oxide;

(d) about 1 to 5 weight percent of a polyethylene resin having a particle size equal to or less than 150 microns; and

(e) from 0 to 5 weight percent of carbon black, wherein all weight percents are based on the total weight of the composition.

4,246,052

MONO- AND DINITRODIHYDROXYDIAZOBENZENES

Rainer Hagel, Lichtenfels, and Klaus Redeker, Nuremberg, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,466

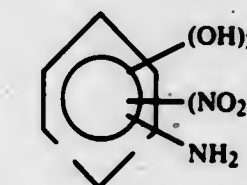
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806599

Int. Cl.³ C06B 41/00, 41/10, 25/04; C07C 113/00

U.S. Cl. 149—23

14 Claims

1. A metallic or ammonium salt of a diazotized mono- or dinitrodi-hydroxyamino benzene which mono- or dinitrodi-hydroxyamino benzene has the formula



wherein n equals 1 or 2.

4,246,053

WEB ROLLING METHOD AND APPARATUS

Louis Platt, and Thomas S. Poteet, both of Seneca, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 964,328, Nov. 29, 1978, Pat. No. 4,201,620.

This application Nov. 29, 1979, Ser. No. 98,445

Int. Cl.³ B31F 5/04; B65H 19/08

U.S. Cl. 156—159

3 Claims

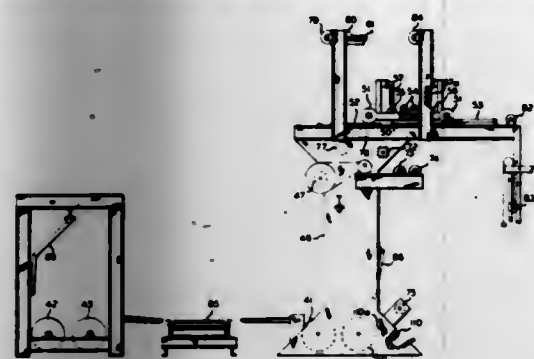
1. In the forming of rolls of a thermoplastic web a method of quickly shifting the roll upon which the web will be rolled comprising,

providing for a first thermoplastic web from a source of supply to be connected to a first roll means in such a manner that said first thermoplastic web lies outside a pair of spaced apart clamping means,

providing for a second thermoplastic web which passes from a second roll to a securement means in such a manner that said second thermoplastic web passes between said spaced apart clamping means,

directing a portion of said first thermoplastic web between said clamping means with a web shifting means in such a manner that said first thermoplastic web overlaps said second thermoplastic web.

clamping the thus overlapped webs between one of said clamping means and said web shifting means, passing a melting means through the clamped overlapped webs in such a manner as to sever each web and bond the severed ends of said second web to the adjacent ends of said first web to form first and second seams,



allowing the seams to cool until they have sufficient strength to withstand the rolling process, and then releasing the clamping force between the clamping means and said web shifting means.

4,246,054

POLYMER MEMBRANES FOR X-RAY MASKS

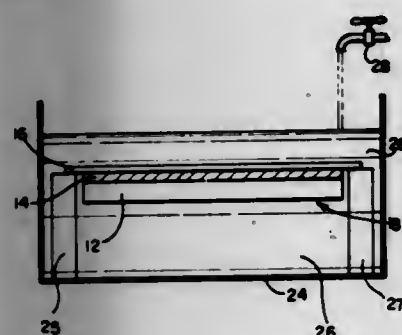
James F. Nester, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 13, 1979, Ser. No. 93,331

Int. Cl.³ B29D 7/02, 7/20

U.S. Cl. 156—74

6 Claims



1. A method of forming a free standing membrane for use in the fabrication of a lithography mask comprising the steps of:
 - a. forming a plastic membrane on a substrate member;
 - b. adhering a ring element to said membrane to provide an assembly;
 - c. immersing edges of said assembly in a chemical solution to loosen a portion of the bonding between said membrane and said substrate member, and
 - d. immersing said assembly in water to cause said substrate member to fall away from said plastic membrane secured to said ring element.

4,246,055

METHOD OF MAKING AN ENDLESS POWER TRANSMISSION BELT

Dewey D. Henderson, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 974,452, Dec. 29, 1978, Pat. No. 4,188,832.

This application Sep. 4, 1979, Ser. No. 71,892

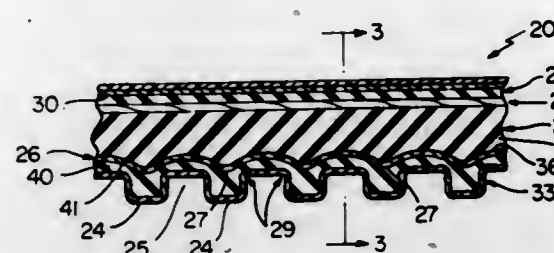
Int. Cl.³ B29H 7/22

U.S. Cl. 156—138

3 Claims

1. A method for making a wrapped, molded, toothed endless power transmission belt which comprises the steps of:
 - (a) providing an uncured belt body having a tension section, a load-carrying section and a compression section portion;
 - (b) wrapping an inside cover completely around said uncured belt body;
 - (c) placing a strip of polymeric material against the portion

of said inside cover, which lies adjacent said compression section portion, thereby providing the remaining portion of said compression section, said remaining portion being of sufficient thickness to allow molding of tooth defining projections and recesses therein;



- (d) wrapping an outside cover completely around said inside cover-wrapped belt body and said strip, thereby providing an uncured belt structure;
- (e) molding a plurality of tooth-defining projections and recesses in the compression section of said uncured belt structure; and
- (f) curing the resulting molded belt structure.

4,246,056

Patent Not Issued For This Number

4,246,057

HEAT TRANSFER SURFACE AND METHOD FOR PRODUCING SUCH SURFACE

Kenneth R. Janowski, Wheaton; Ming S. Shum, Des Plaines, and Steven A. Bradley, Northbrook, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 769,623, Feb. 16, 1977, Pat. No. 4,129,181.

This application Dec. 27, 1977, Ser. No. 864,901

Int. Cl.³ B29C 27/28; B32B 33/00; C25D 5/54; F28F 13/18

U.S. Cl. 156—150

6 Claims



1. A method of providing a metal heat transfer tube with a porous nucleate boiling surface comprising the steps of apply-

ing a layer of reticulated open cell organic foam material to the external surface of the metal tube and then plating the exposed surfaces of the reticulated foam material with a metal so as to form a reticulated metal surface which overlies the surface of the metal tube and is firmly adhered thereto, said tube being heated after it is plated to pyrolyze the organic foam material and cause the reticulated metal surface which had been plated around the organic foam material to become a hollow metal skeleton capable of trapping vapor when the tube is placed in a liquid boiling medium and releasing some of said vapor through a multiplicity of openings or pores in said skeleton which comprise vapor phase nucleation sites.

material adapted to flat folding comprising the steps of wrapping a predecorated and sized rectangular blank on a cylindrical mandrel, said mandrel having a pair of relatively-sharp axial projections located in diametrically-opposite positions on its cylindrical surface, applying pressure from an exterior source to the said blank at each of said axial projections progressively during such wrapping on said mandrel to form precisely-located axial internal score lines in said blank to facilitate its flat folding, overlapping the ends of said blank on said mandrel, and heat sealing the overlapped ends of said blank while retained on said mandrel to form a fusion seal, the said tubular preform being precisely sized and readily adapted to flat folding.

4,246,058

LABEL MATRIX STRIPPING

Charles F. Reed, Painesville, Ohio, assignor to Avery International Corporation, San Marino, Calif.

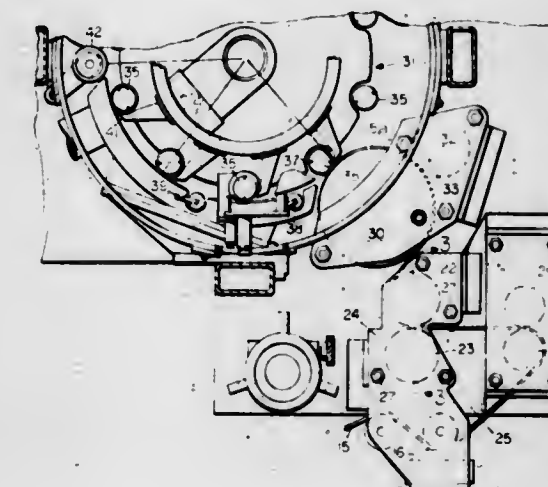
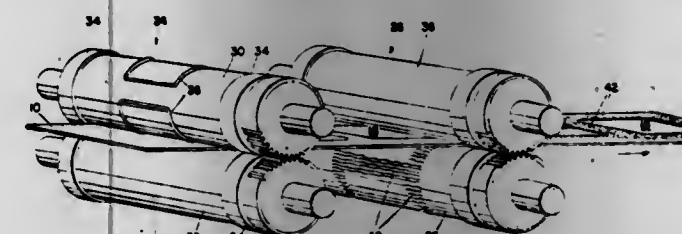
Division of Ser. No. 850,236, Nov. 10, 1977, Pat. No. 4,150,183.

This application Jan. 19, 1979, Ser. No. 4,926

Int. Cl.³ B31F 1/00; B32B 31/18, 31/22

U.S. Cl. 156—183

18 Claims



1. In a method of making a construction of a series of liner-supported labels by adhering a web of label material onto a web of liner material to provide a laminate of label material and liner material, then die-cutting the label material to divide it into a series of labels surrounded by a matrix of excess label material, and then separating the matrix from the laminate to leave a series of labels supported on the liner material, the improvement which comprises mechanically disturbing without severing, as by embossing, existing or to-be-formed matrix areas of the laminate preferentially to existing or to-be-formed label areas of the laminate, such mechanical disturbing being done prior to separation of the matrix from the laminate.

14. In a method of making a construction of a series of liner-supported labels by adhering a web of label material onto a web of liner material to provide a laminate of label material and liner material, then die-cutting the label material to divide it into a series of labels supported on the liner material, the improvement which comprises mechanically disturbing without severing, as by embossing, areas of the laminate corresponding to existing or to-be-formed leading ends of the labels preferentially to areas corresponding to existing or to-be-formed remaining portions of the labels.

9. Apparatus for forming a presized tubular preform article from a thin sheet blank of semi-rigid foamed thermoplastic material comprising a rotary cylindrical mandrel, means for rotating said mandrel, a pair of blade-like projections extending axially in diametrically-opposite locations on the cylindrical surface of said mandrel, a series of axially-extending apertures in the cylindrical surface of said mandrel intermediate said projections, vacuum means connected to said axial series of apertures to retain the leading edge of said blank on said mandrel by vacuum to facilitate wrapping, at least one cylindrical resilient roller mounted in tangential relation to said mandrel adapted to applying compressive force to said blank positioned intermediate said blade-like axial projections on said mandrel to form a pair of precisely-located internal score lines in said blank to permit precise flat-folding, and heat-sealing means to join overlapped heat-softened ends of said blank on said mandrel to form an axial fusion seal intermediate said score lines.

4,246,059

METHOD AND APPARATUS FOR FORMING TUBULAR PLASTIC SLEEVES FOR FLAT FOLDING

Clyde F. Hadl, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 4, 1979, Ser. No. 27,114

Int. Cl.³ B29D 23/00; B32B 1/08; B65C 3/20

U.S. Cl. 156—218

16 Claims

1. The method of forming a tubular preform article of prescribed axial and circumferential dimensions of thermoplastic

4,246,060

PLASMA DEVELOPMENT PROCESS CONTROLLER

Jed V. Keller, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 2, 1979, Ser. No. 472

Int. Cl.³ G01N 21/00; B44C 1/22; C03C 15/00, 25/06

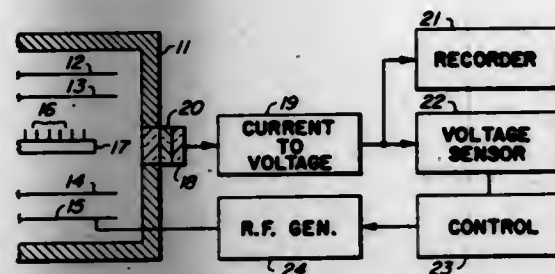
U.S. Cl. 156—345

6 Claims

1. In apparatus for plasma etching having an evacuable chamber, for containing a gas etchant and the material to be etched, and a source of radio frequency energy coupled to the

interior of said chamber for sustaining a plasma, the improvement comprising:

photodetector means optically coupled to the interior of said chamber for producing a variable level output signal representative of the luminosity of said plasma; and



means for detecting a temporary uniformity in the level of said output signal as indicative of the end of a first phase of said plasma etch.

4,246,061

METHOD AND MACHINE FOR MANUFACTURING MULTI-TUBE FILTERS

Klas-Göran Feldt, Halmstad, Sweden, assignor to Nordifa Industrietextill AB, Halmstad, Sweden

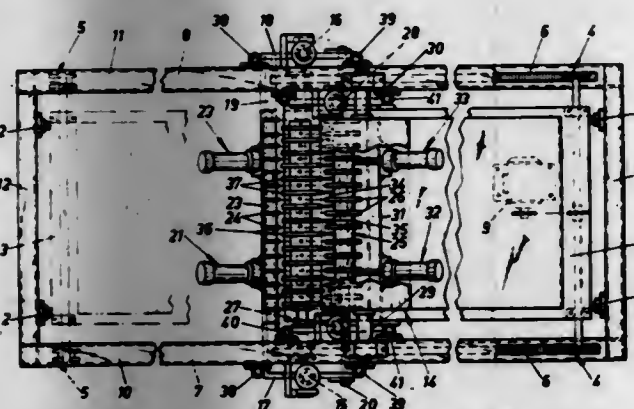
Filed Sep. 27, 1978, Ser. No. 946,131

Claims priority, application Sweden, Oct. 4, 1977, 7701108

Int. Cl.³ B31F 1/34; B32B 31/00

U.S. Cl. 156-474

13 Claims



1. A machine for making multi-tube filter units with interconnected rows of filter tubes, comprising a table capable of displacement in opposite directions during folding of a continuous web of filter material upon itself to form a stack of parts of said material web, first presser means associated with first interconnecting members and means for activating them together during displacement of said table in one direction for pressing on said parts of said material web, while said first interconnecting members being positioned below the part being pressed by said first presser means for providing the interconnection of said parts along spaced first lines, second presser means associated with second interconnecting members and means for activating them together during displacement of said table in the opposite direction for pressing on said parts of material web, while said second interconnecting members being positioned below the part being pressed by said second presser means for providing the interconnection of said parts along spaced second lines, and means for controlling said displacement of said table.

4,246,062 APPARATUS FOR ATTACHING A FITMENT TO A POUCH

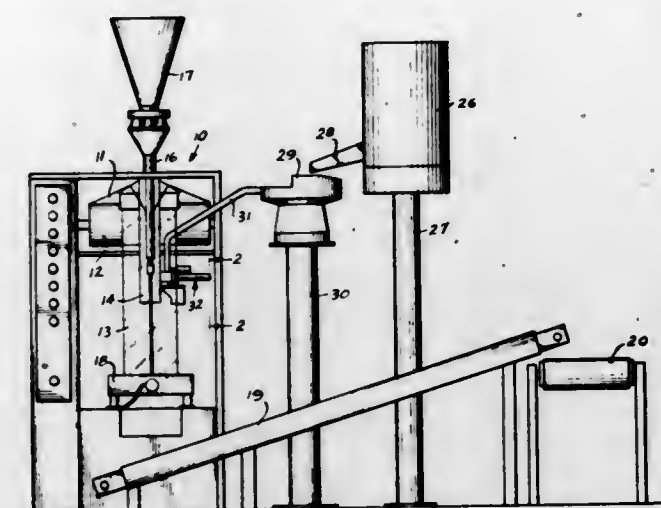
William C. Christine, 341 St. John St., Catasauqua, Pa. 18032

Filed Mar. 26, 1979, Ser. No. 23,946

Int. Cl.³ B65B 61/18

U.S. Cl. 156-498

8 Claims



1. An apparatus for attaching a fitment to a sleeve of thermoplastic material comprising a body, at least one fitment carried by said body, means for moving said body and said fitment to a position adjacent to said sleeve, means for removing said fitment from said body at said position, means for pressing portions of said fitment against said sleeve, heating means located within said sleeve and in alignment with said pressing means, and means for energizing said heating means to attach said fitment to the outside of said sleeve, said body including a spring retainer for holding said fitment in a predetermined location in said body.

4,246,063 MACHINE FOR ASSEMBLING VENEER STRIPS

Theo Grünebaum, Rietberg, Fed. Rep. of Germany, assignor to Firma Heinrich Kuper, Rietberg, Fed. Rep. of Germany

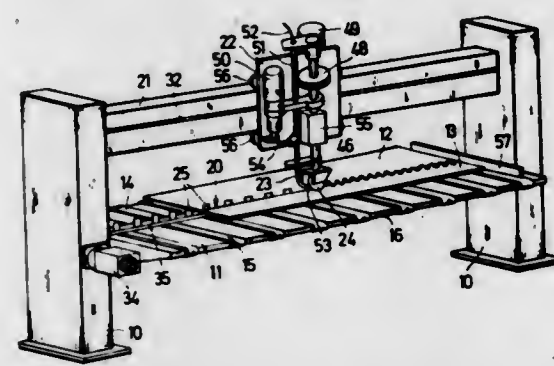
Filed May 16, 1978, Ser. No. 906,622

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722224

Int. Cl.³ B32B 31/04

U.S. Cl. 156-558

20 Claims



1. Machine for assembling veneer strips, said machine comprising a supporting table, a thread guide reciprocating in a horizontal plane provided above said supporting table, a pressure roller, a paper strip pasting device or veneer strip pasting device arranged in front of said pressure roller, said pressure roller rolling on said veneer strips along the connecting joint thereof, and including a device for conveying said veneer strips in opposite directions to a separating bar serving as a stop so that leading edges of a succeeding strip abut trailing edges of a preceding strip, said separating bar extending vertically upwardly out of said supporting table along said connecting joint, and further including a device for sealing the joints of said

veneer strips by compression, the device including a common carriage on which said thread guide and said pressure roller are arranged above said veneer strips, a horizontal cross bar, and an upper conveyor chain, said carriage being displaceable parallel to the connecting joint of said veneer strips, said separating bar being divided into individual separating elements which are arranged in a row at spaced intervals from each other and are lowerable in succession into said supporting table synchronously with the movement of said carriage, said carriage being displaceable by the upper conveyor chain along the horizontal cross bar, a switch shoe controlling the downward movements of said separating elements, a lower conveyor chain positioned under said carriage below said table for displacing said switch shoe, and a common drive connected to said upper conveyor chain and said lower conveyor chain for producing synchronous movement of said upper and said lower chains.

4,246,064

DOUBLE CRUCIBLE CRYSTAL GROWING PROCESS

Thomas J. Dewees, Falls Township, Bucks County, Pa.; John S. Fangman, and Wen Lin, both of Ewing Township, Mercer County, N.J., assignors to Western Electric Company, Inc., New York, N.Y.

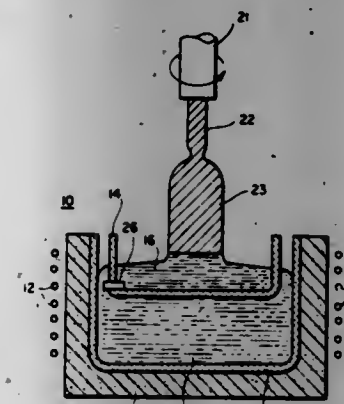
Division of Ser. No. 944,454, Sep. 21, 1978, Pat. No. 4,190,631.

This application Jul. 2, 1979, Ser. No. 54,124

Int. Cl.³ C30B 15/12

U.S. Cl. 156-608

3 Claims



1. A method of growing a single crystal semiconductor billet from a melt in a first crucible, which melt is replenished by a melt in a second crucible via an elongated communicating channel of such a length as to inhibit back diffusion of the melt therethrough, the method is characterized by:

permitting any gas in the channel to pass through at least one small aperture in the channel wall into the first and/or second crucibles; while substantially precluding the flow of the melt through said aperture.

4,246,065

RADIOACTIVE WASTE CONCENTRATION

Anthony N. Chirico, Short Hills, N.J., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Dec. 26, 1978, Ser. No. 973,503

Int. Cl.² B01D 1/30

U.S. Cl. 159-22

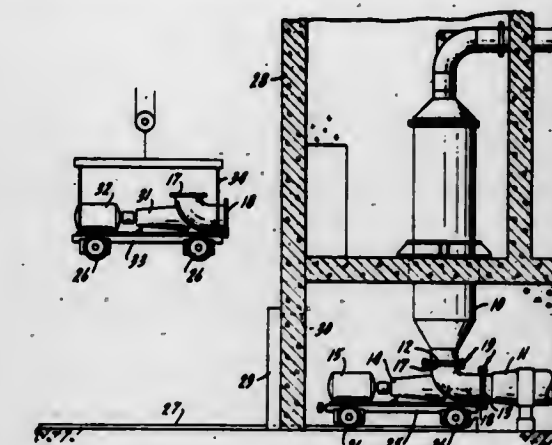
9 Claims

1. Apparatus for concentrating aqueous radioactive waste, comprising:

- a vessel in which said waste is concentrated, and conduit means through which said waste is fed into said vessel, said vessel and said conduit means each having external flanges;
- a first high volume pump and its motor for feeding said waste through said conduit means into said vessel, said first pump having a pair of flanges mating with those of said vessel and said conduit means, releasable means con-

necting said flanges on said first pump, conduit means and vessel;

- a first movable wheeled vehicle upon which said first pump and motor are secured, and a pair of horizontal tracks upon which said wheeled vehicle is mounted said tracks being below said vessel and said conduit means;
- a radioactivity containment shield enclosing said vessel, conduit means, and first wheeled vehicle and its pump and motor; a door in said shield, said tracks passing beneath said door and extending beyond the outside of said shield;
- a second high volume pump and its motor mounted on a



second wheeled vehicle located near said door outside of said shield adjacent said tracks, said second pump and second wheeled vehicle being substantially identical to said first pump and wheeled vehicle;

- whereby, upon failure of said first pump, said first wheeled vehicle and pump is rolled from said shield through said door on said tracks beyond said second wheeled vehicle and pump, said second wheeled vehicle and pump are placed on said tracks and rolled through said door into said shield where the flanges on said second pump are connected to the mating flanges on said vessel and conduit means.

4,246,066

METHOD FOR PRODUCING FIBROUS SHEET

Masahiro Amano, and Takashi Kolke, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Continuation of Ser. No. 779,589, Mar. 21, 1977, abandoned, which is a continuation of Ser. No. 656,592, Feb. 9, 1976, abandoned. This application Apr. 16, 1979, Ser. No. 30,371

Claims priority, application Japan, Feb. 12, 1975, 50/16815

Int. Cl.³ D21H 5/12, 3/42

U.S. Cl. 162-141

11 Claims

1. A method for producing a fibrous sheet which comprises the successive steps of:

- heating chlorinated polymer latex having a minimum film-forming temperature of at least 50° C. and comprising an anionic polyvinyl chloride latex, or an anionic polyvinylidene chloride latex selected from the group consisting of homopolymer of vinyl chloride, homopolymer of vinylidene chloride, vinyl chloride-vinylidene chloride copolymer, vinyl chloride-vinyl acetate copolymer and vinylidene chloride-vinyl acetate copolymer, the latex being emulsified with an anionic surfactant;
- to a temperature of at least the minimum film-forming temperature of said latex;
- adding a water soluble cationic polymer or a polyvalent metal salt to said latex with stirring producing a flocculate having a particle size of 100 microns to 500 microns;
- adding the resultant flocculate to a separately prepared fiber slurry;
- forming a sheet from said slurry by a wet paper making process, and thereafter
- drying the thus formed sheet.

6. A method according to claim 1, wherein the fibers are

natural fibers, regenerated fibers, synthetic fibers, inorganic fibers, metallic fibers, collagen fibers or mixtures thereof.

4,246,067

THERMONUCLEAR FUSION SYSTEM

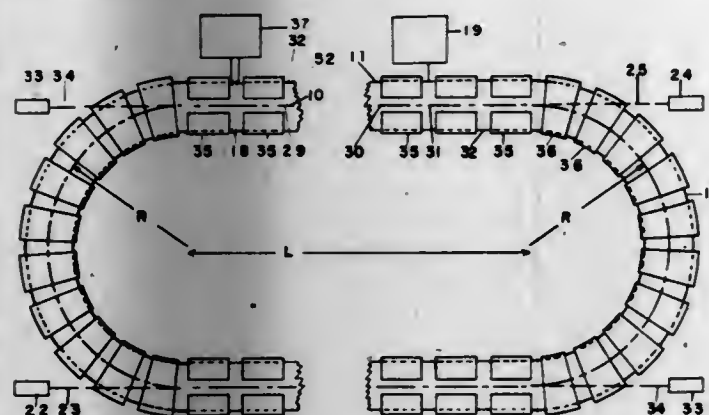
William I. Linlor, 1010 Madison Dr., Mountain View, Calif. 94040

Filed Aug. 30, 1978, Ser. No. 938,321

Int. Cl.³ G21B 1/02

U.S. Cl. 176—3

12 Claims



1. In an apparatus for nuclear fusion of the type having:
 - a. elongated vacuum chamber means with connecting end portions so as to provide an evacuable containment volume; said chamber having an axis of symmetry;
 - b. vacuum pump means communicating with said vacuum chamber so as to maintain a gas pressure less than 10^{-3} torr within the vacuum chamber;
 - c. means for producing magnetic fields so that said magnetic fields are present substantially throughout said vacuum chamber and are re-entrant on themselves; an improved particle-injection apparatus comprising:
 - d. means for injecting fusible energetic particles having a kinetic energy greater than 104 electron volts so as to enter said magnetic fields in the direction approximately parallel to the axis of said vacuum chamber so that said particles will follow a closed path;
 - e. means for changing the charge state of said fusible particles while within said magnetic fields so that the resulting ions are produced within said magnetic fields to form ion beams;
 - f. said injection and change-in-charge-state being accomplished for a period of time so that said ion beams attain a density greater than 10^{12} particles per cubic centimeter;
 - g. said ion beams consisting of fusible species such as deuterons and tritons whose velocities are approximately in the same direction and whose speeds differ so as to cause fusion reactions in overtaking collisions between said ion beams, this being stated mathematically:

$$V_D = V_T + V_{rel}$$

where V_D represents the velocity of one species of fusible ions, such as deuterons, V_T represents the velocity of another species of fusible ions, such as tritons, and V_{rel} represents the difference in velocity of said fusible species, such as deuterons and tritons;

- h. said ion beams such as deuterons and tritons having approximately equal momentum per unit charge this being stated mathematically:

$$Q_D \text{ electric charge of species D}$$

$$Q_T \text{ electric charge of species T}$$

$$Q_T M_D V_D = M_T V_T Q_D$$

where M_D and V_D represent, respectively, the mass and the velocity of one species of fusible ions, such as deuterons, and M_T and V_T represent, respectively, the mass and

the velocity of another species of fusible ions, such as tritons;

- i. means for producing electrons within and in the vicinity of said ion beams so as to substantially neutralize the charge of said ion beams, thereby producing an essentially neutral plasma.

4,246,068

BOILING REACTOR WITH DIRECT FEED WATER INPUT TO THE FUEL BOXES

Johann Lindner, and Olov Nylund, both of Västerås, Sweden, assignors to Aktiebolaget ASEA-ATOM, Sweden

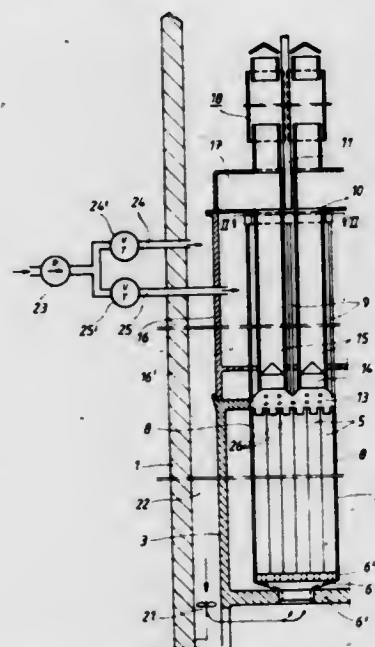
Filed May 16, 1978, Ser. No. 906,507

Claims priority, application Sweden, May 16, 1977, 7705666

Int. Cl.³ G21C 19/28

U.S. Cl. 176—61

7 Claims



1. Boiling reactor comprising a reactor vessel and a moderator tank arranged therein which surrounds a reactor core with a plurality of closely spaced, vertically extending fuel boxes, a moderator tank space located below the reactor core being provided with inlet openings for cooling water streaming through the reactor core and being in direct hydraulic connection with the lower ends of said fuel boxes, the wall of the reactor vessel being provided with an opening for the supply of a first feed water flow to the cooling water flowing into the lower end of the reactor core, the upper ends of the fuel boxes being arranged in hydraulic connection with a plurality of riser tubes by the aid of which a steam-water mixture flowing out from the fuel boxes is conducted to a plurality of steam separators, wherein the improvement comprises: a plurality of vertically extending channels spaced from and substantially isolated from one another and arranged between the confronting end wall portions of the fuel boxes, with upper ends of said vertically extending channels hydraulically connected to a distributing chamber provided with an inlet conduit extending through the wall of the reactor vessel to provide a second feed water flow passageway.

4,246,069

HEAT-GENERATING NUCLEAR REACTOR

Gerard Dupuy, Paris; Maurice Fajean, Pertuis; Michel Labrousse, Bourg-la-Reine; Bernard Lerouge, Jouy-en-Josas, and Jean-Luc Minguet, Velizy, all of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Jun. 30, 1978, Ser. No. 920,695

Claims priority, application France, Jul. 5, 1977, 77 20588

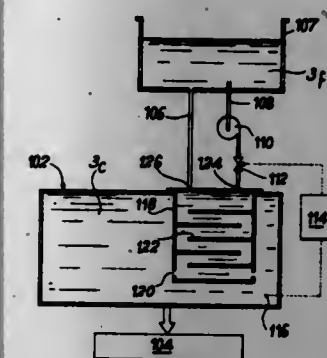
Int. Cl.² G21C 19/28

U.S. Cl. 176—65

10 Claims

1. A heat-generating nuclear reactor comprising a vessel filled with coolant fluid; a horizontal wall dividing said vessel

into an upper region and a lower region, a reactor core in said lower region, at least one heat exchanger in said lower region, at least one primary pump in said lower region for circulating a part of the coolant fluid between an outlet and an inlet of said reactor core through said heat exchanger, and means for establishing an over-pressure in said lower region, wherein said means comprise at least two pipes which open at one end into said lower region and at another end into said upper region,



one of said pipes having at least one pump for injecting a part of the fluid of said upper region into said lower region thereby establishing said overpressure in said lower region whatever the state of said primary pump, said one pipe also having means for regulating the rate of injection of fluid into said lower region, control means activating said regulating means and said control means being responsive to a signal generated by means for detecting the pressure of the fluid in said lower region.

4,246,070

FRACTIONAL DISTILLATION COLUMN PUMP-AROUND HEAT REMOVAL CONTROL

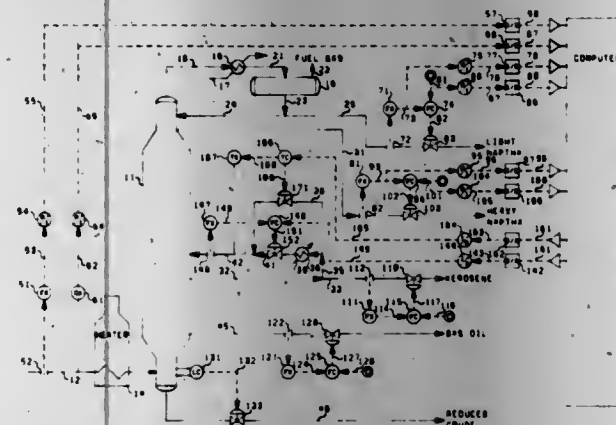
James A. Hofferber, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 25, 1979, Ser. No. 60,570

Int. Cl.³ B01D 3/42

U.S. Cl. 196—132

10 Claims



1. Apparatus comprising:
 - a fractional distillation column means;
 - means for supplying a feed to said fractional distillation column means;
 - means for supplying heat to said fractional distillation column means;
 - means for withdrawing a sidestream from an intermediate portion of said fractional distillation column means;
 - means for recycling at least a portion of said sidestream to an intermediate portion of said fractional distillation column means as intermediate external reflux for said fractional distillation column means;
 - means for calculating a first signal representative of a prediction of the flow rate of said intermediate external reflux required to maintain a desired internal reflux flow rate in said fractional distillation column means;
 - means for measuring the actual flow rate of said intermediate external reflux and for establishing a second signal repre-

sentative of the actual flow rate of said intermediate external reflux;

means for comparing said first signal and said second signal and for establishing a third signal responsive to the difference between said first signal and said second signal; and

means for manipulating the flow rate of said intermediate external reflux in response to said third signal.

4,246,071

PROCESS FOR THE RECOVERY OF COKE OVEN WASTE HEAT

Dietrich Wagener; Claus Flockenhaus, both of Essen, and Joachim F. Meckel, Heiligenhaus, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

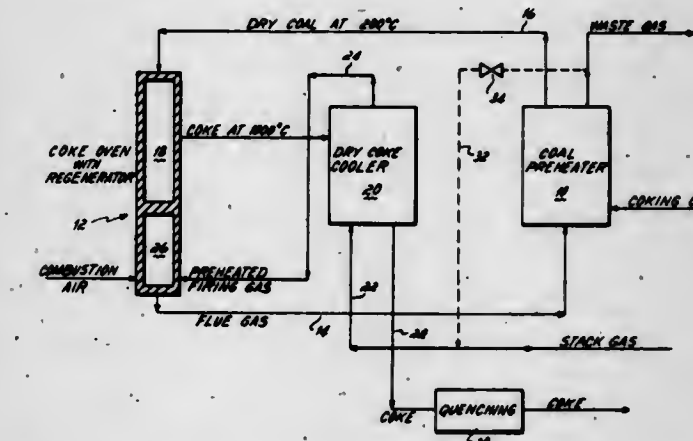
Filed Apr. 16, 1979, Ser. No. 30,358

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816476

Int. Cl.³ C10B 39/02, 21/02, 57/10

U.S. Cl. 201—39

10 Claims



1. A process for the recovery of waste heat from a coking oven comprising the step of passing the firing gas for the coking oven into direct contact with the hot coke from the coking oven to extract sensible heat from the hot coke to thereby cool the hot coke and to heat the firing gas prior to its introduction into the coking oven, said firing gas being inert with respect to the hot coke.

4,246,072

PROCESS AND APPARATUS FOR QUENCHING HOT COKE

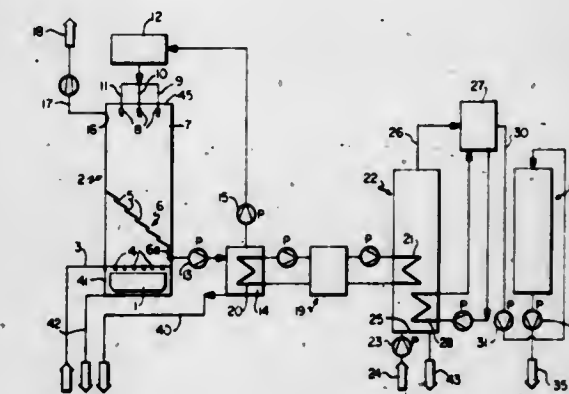
Walter Brömmel, Mülheim, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Oct. 17, 1978, Ser. No. 952,135

Int. Cl.³ C10B 39/08

U.S. Cl. 201—39

11 Claims



1. A process for quenching hot coke produced in a coke plant, said process comprising:
 - introducing a charge of hot coke from a coke plant into the lower portion of the interior of a quenching tower;

completely sealing the entire interior of said quenching tower from the exterior surrounding environment; supplying quenching water to said charge of hot coke, thereby cooling said hot coke and generating steam and quenching gases; passing said steam and quenching gases to the upper portion of the interior of said quenching tower; supplying condensing water into said upper portion of the interior of said quenching tower, and thereby condensing said steam to form quenching water condensate; collecting a water mixture of said condensing water and said quenching water condensate at a midportion of the interior of said quenching tower, while preventing said water mixture from passing to said lower portion of the interior of said quenching tower; discharging the thus collected water mixture from the interior of said quenching tower; removing heat from the thus discharged water mixture to form a cooled water mixture; returning said cooled water mixture to said upper portion of the interior of said quenching tower as said condensing water; and removing said quenching gases remaining in said upper portion of the interior of said quenching tower, after said condensing of said steam, from the interior of said quenching tower without directly discharging said quenching gases into the exterior surrounding environment.

4,246,073

PROCESS OF DISTILLATION OF A MULTICOMPONENT HYDROCARBON MIXTURE

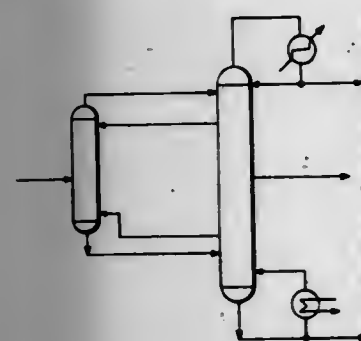
Tomio Umeda, Ichikawa; Katsuo Shiroko, Tokyo; Kazuo Niida, and Johtaro Itoh, both of Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed Dec. 20, 1978, Ser. No. 971,428

Claims priority, application Japan, Dec. 27, 1977, 52-156524

Int. Cl.³ B01D 3/14

U.S. Cl. 203—25



1. An energy saving process for distilling a multicomponent hydrocarbon mixture in which the multicomponent hydrocarbon mixture is separated into products by means of distillation columns and which comprises:

feeding a hydrocarbon mixture, as a raw material, to a series of at least two distillation columns, said hydrocarbon mixture being a mixture of products in which the relative volatility between the dominant component in the lightest product and the dominant component in the heaviest product is between 1.10 and 7; said raw material being fed to the first of said series of at least two distillation columns, all of the products of said hydrocarbon mixture being recovered separately and at one time from the last of said series of at least two distillation columns, and all of the products of said first column and columns intermediate said first and last columns being fed separately to the next adjacent column; each of said series of at least two distillation columns having an overhead condenser and a bottom reboiler, the operating pressure in the first column being 0-6 kg/cm²G, the pressure difference between the first and last columns being 2-10 kg/cm²G, and the oper-

ating pressure of the distillation columns increasing successively from the first column to the last column; and indirectly contacting (1) as heat source streams, the products of said hydrocarbon mixture recovered from the last column and overhead vapors from each of said at least two distillation columns, and (2) as heat sink streams, the raw material, product streams from the first column and from columns intermediate the first and last columns, and streams to be reboiled, to recover heat energy from the heat source streams by passing the heat sink streams and heat source streams successively through a plurality of groups of heat exchangers, each group of heat exchangers being at a different temperature level, the heat sink streams and heat source streams contacted indirectly in each group of heat exchangers being chosen so that the outlet temperatures of the heat sink streams from each heat exchanger in the group are almost the same and so that the outlet temperatures of the heat source streams from each exchanger in the group are almost the same, and wherein heat is recovered from at least one of the overhead vapors of the distillation columns by said groups of heat exchangers.

4,246,074

PROCESS FOR THE SEPARATION OF A MIXTURE OF CHLOROACETYL CHLORIDE AND DICHLOROACETYL CHLORIDE

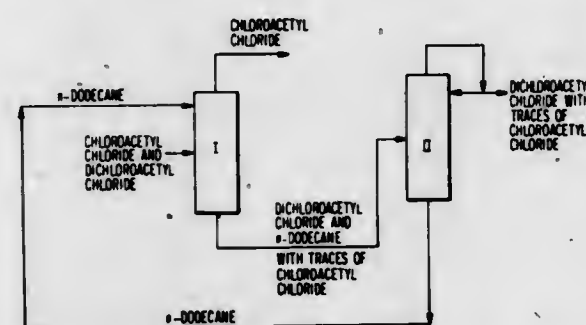
Eric Fumaux; Christoph Zinsstag, and Roland Delseth, all of Visp, Switzerland, assignors to Lonza Ltd., Gampel, Valais, Switzerland

Continuation-in-part of Ser. No. 868,739, Jan. 12, 1978, abandoned. This application Jan. 10, 1979, Ser. No. 2,385 Claims priority, application Switzerland, Jan. 13, 1977, 391/77

Int. Cl.³ C07C 53/48; B01D 3/40

U.S. Cl. 203—70

11 Claims



1. Process for the separation of a mixture of chloroacetyl chloride and dichloroacetyl chloride by extractive distillation in a distillation column, characterized in that the mixture of chloroacetyl chloride and dichloroacetyl chloride is extractively distilled in the presence of n-dodecane, the extraction agent, the extraction agent being introduced into the upper end of the distillation column, the mixture of chloroacetyl chloride and dichloroacetyl chloride being introduced into the lower half of the distillation column, part of the chloroacetyl chloride, the distillate, being recovered out of the top of the distillation column, and the dichloroacetyl chloride, the n-dodecane and the residue chloroacetyl chloride being obtained at the bottom of the distillation column.

4,246,075

MINERAL ACCRETION OF LARGE SURFACE STRUCTURES, BUILDING COMPONENTS AND ELEMENTS

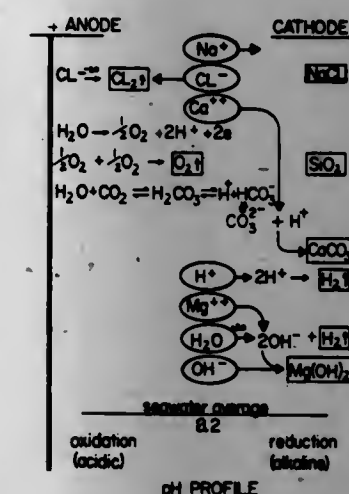
Wolf H. Hilbertz, Austin, Tex., assignor to Marine Resources Company, Austin, Tex.

Filed Mar. 19, 1979, Ser. No. 21,844

Int. Cl.³ C25B 1/00; C25D 9/08

U.S. Cl. 204—1 R

15 Claims



1. A method for constructing a large surface area building component, comprising the steps of: disposing a large surface area preshaped substrate form having inner and outer surfaces in a volume of electrolyte, said form serving as a cathode; disposing an anode in the electrolyte in proximity to the preshaped form; and establishing a direct electrical current between the cathode and the anode for a time sufficient for accreting a solid mass of high strength electrodeposited mineral material surrounding the form and covering the inner and outer surfaces to a desired thickness, such that the form becomes embedded within the accreted material.

4,246,076

METHOD FOR PRODUCING NOZZLES FOR INK JET PRINTERS

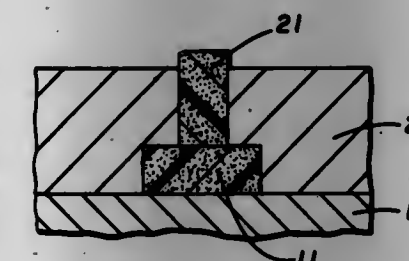
William R. Gardner, Wilton, Conn., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1979, Ser. No. 101,044

Int. Cl.³ C25D 1/08

U.S. Cl. 204—11

2 Claims



1. The method for producing nozzle arrays for ink jet printers comprising the steps of:

- coating a first layer of a photopolymerizable material on a substrate;
- exposing said first layer of a photopolymerizable material to a pattern of radiation to which said photopolymerized material is sensitive until at least a portion of said first layer of photopolymerizable material polymerizes;
- coating the free surface of said first layer of a photopolymerizable material with a second layer of a photopolymerizable material;
- exposing said second layer of a photopolymerizable material to a pattern of radiation to which said second

layer of a photopolymerizable material is sensitive until at least a portion of said second layer of a photopolymerizable material polymerizes, such polymerized portions of the second layer being approximately coaxial with and smaller in size than the polymerized regions in the first layer,

- developing both said layers of photopolymerizable material to remove non-polymerized material from said substrate;
- electroplating a layer of a metallic material onto said substrate; and
- stripping said layer of metallic material from said substrate.

4,246,077

NON-CYANIDE BRIGHT SILVER ELECTROPLATING BATH THEREFOR, SILVER COMPOUNDS AND METHOD OF MAKING SILVER COMPOUNDS

Edward Hradil; Hana Hradil, both of Warwick, and Alfred M. Weisberg, Providence, all of R.I., assignors to Technic, Inc., Cranston, R.I.

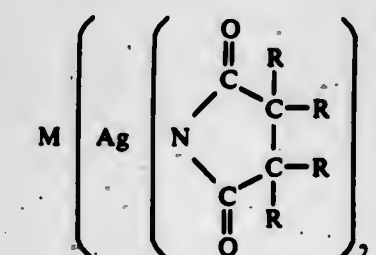
Continuation-in-part of Ser. No. 662,511, Mar. 1, 1976, Pat. No. 4,126,524, which is a continuation-in-part of Ser. No. 557,768, Mar. 12, 1975, abandoned. This application Sep. 26, 1978, Ser. No. 945,894

Int. Cl.³ C07D 207/06, 207/12; C25D 3/46, 3/64

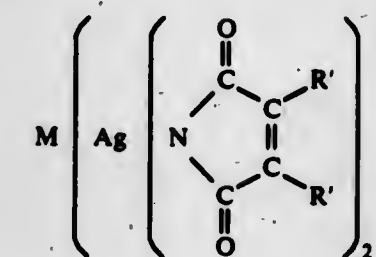
U.S. Cl. 204—43 R

30 Claims

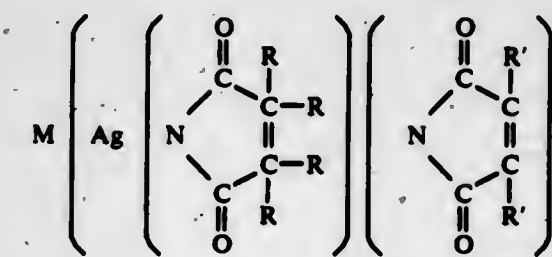
1. A water-soluble silver complex of the formulae:



wherein M is an alkali metal cation or ammonium, R is, in its instances of occurrence, the same or different, and is hydrogen or an alkyl or alkoxy moiety;

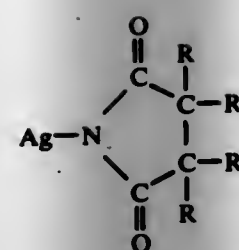


wherein R' is, in its instances of occurrence, the same or different, and is hydrogen or an alkyl moiety; or

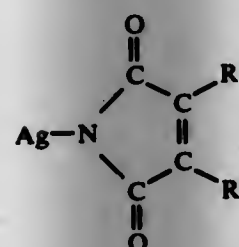


wherein each of M, R and R' is as characterized hereinabove.

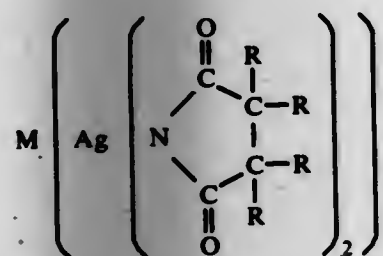
10. The process that comprises reacting 2 moles of a water-insoluble silver pyrrolidine-2,5-dione complex of the general formula:



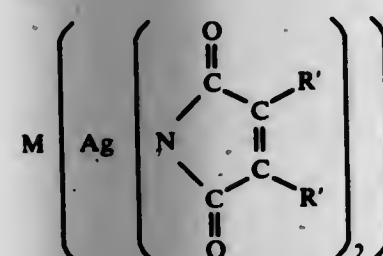
or a water-insoluble silver 3-pyrroline-2,5-dione complex of the general formula:



wherein R is, in its instances of occurrence, the same or different, and is hydrogen, or an alkyl or alkoxy moiety; and R' is, in its instances of occurrence, the same or different, and is hydrogen or an alkyl moiety with one mole equivalent of a reactant cation comprising an alkali metal cation or ammonium, to form respectively a water-soluble silver complex of the general formula:

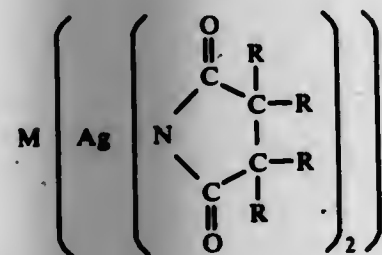


or

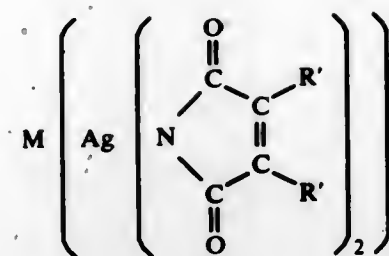


wherein M is an alkali metal cation or ammonium corresponding to the reactant cation incorporated in the reaction and each of R and R' have the value assigned hereinabove.

17. An aqueous, cyanide-free, electroplating bath for the electrodeposition of silver and silver alloys comprising an aqueous solution having a pH of 6 to 14 and incorporating a water-soluble silver complex of the general formula:



or the general formula:



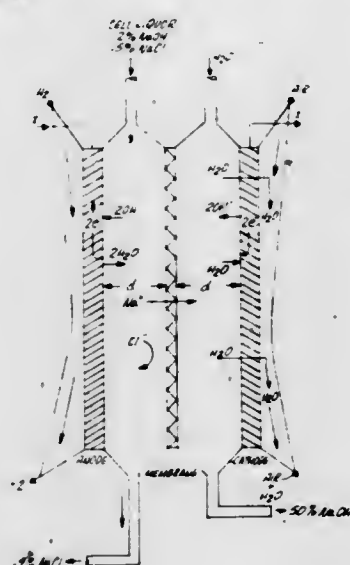
or mixtures thereof; and where, in the foregoing formulae, M is an alkali-metal cation or ammonium, R is, in its instances of occurrence, the same or different, and is hydrogen or an alkyl or alkoxy moiety, and R' is, in its instances of occurrence, the same or different, and is hydrogen or an alkyl moiety.

4,246,078 METHOD OF CONCENTRATING ALKALI METAL HYDROXIDE IN HYBRID CELLS HAVING CATION SELECTIVE MEMBRANES

Bogdan M. Broniewski, Newport Beach, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 32,466, Apr. 23, 1979, abandoned. This application Oct. 22, 1979, Ser. No. 86,941

Int. Cl.³ C25B 1/16, 1/02, 5/00
U.S. Cl. 204-98 24 Claims



1. A process for the production of alkali metal hydroxide and electrical energy which comprises:

- introducing flow of an aqueous solution of at least one alkali metal hydroxide as anolyte through an anode compartment of at least one hybrid cell, the hybrid cell comprising a gas diffusion type anode having first and second surfaces, a membrane selectively permeable to cations and having first and second surfaces, and a gas diffusion type cathode having first and second surfaces, the first surface of said anode and the first surface of said membrane forming said anode compartment, the first surface of said cathode forming with said second surface of said membrane a cathode compartment; the formed anode compartment having an inlet and an outlet, and the formed cathode compartment having an inlet and an outlet, said anolyte flowing from the inlet to the outlet of said anode compartment
- introducing flow of an aqueous fluid medium receptive to alkali metal ions as catholyte through said cathode compartment from the inlet to the outlet;
- causing, by a flow of current through an external load between said cathode and said anode generated by oxidation of hydrogen supplied to the second surface of said gas diffusion type anode and generation of hydroxide ions by reduction of an oxygen-containing gas supplied to the second surface of the gas diffusion type cathode, alkali metal ions to selectively pass from the anolyte through

- said membrane to the catholyte in said cathode compartment to form, with cathode generated hydroxide ions, an aqueous solution of alkali metal hydroxide;
- withdrawing from said cathode compartment the catholyte which is more concentrated in respect to alkali metal hydroxide than the aqueous media introduced to said cathode compartment; and
- withdrawing from said anode compartment an aqueous solution depleted in alkali metal hydroxide.

4,246,079 ELECTROLYTIC REDUCTION OF SULFIDIC SPENT ALKALI METAL WASTES

Robert R. Goodrich, Randolph, N.J.; Robert G. Kunz, Wescosville, Pa.; Sydney Lipton, Madison, N.J., and Keith Owen, Wallingford, England, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1979, Ser. No. 106,096
Int. Cl.³ C25B 1/20

U.S. Cl. 204-98 11 Claims

1. In a process for at least partially removing a sulfur compound from a fluid including the sulfur compound by contacting the fluid with an aqueous alkali metal hydroxide solution to thereby reduce the sulfur concentration in the fluid and form a liquid effluent including an alkali metal-sulfur compound, the improvement which comprises:

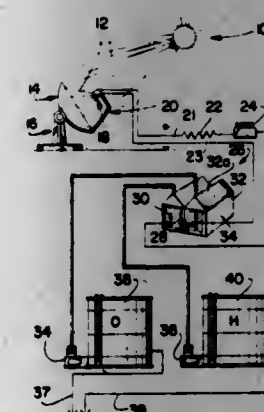
- contacting the liquid effluent with carbon dioxide to form an aqueous alkali metal carbonate salt solution and a volatile sulfur compound; and
- passing the aqueous alkali metal carbonate salt solution into an electrolytic cell wherein at least a portion of the alkali metal salt is converted to alkali metal hydroxide.

4,246,080 SOLAR-ENERGY-PROCESS-CONVERTER SYSTEM

William A. Shinn, 26511 Palisades Dr., Capistrano Beach, Calif. 92624

Filed Jul. 25, 1979, Ser. No. 60,296
Int. Cl.³ C25B 1/04, 9/00

U.S. Cl. 204-129 1 Claim



1. A method of converting the rays of energy from the sun into a continuous supply of hydrogen and oxygen gases, comprising the steps of:

- providing a parabolic reflector arranged to follow the movement of the sun in order to receive the rays of energy directly from the sun;
- providing said parabolic reflector with means for tracking the movement of the sun;
- projecting said rays from said parabolic reflector to impinge upon a cluster of thermocouples, thereby creating electrical energy;
- angularly adjusting said cluster of thermocouples provided by an adjusting means to synchronize the movement of said thermocouples with the movement of said reflector as said reflector turns with the movement of the sun;

1002 O.G.—45

causing said cluster of thermocouples to generate positive and negative current flow;

providing an electrolysis unit having water as an electrolyte; activating said electrolysis unit by connecting said cluster of thermocouples thereto, so as to generate hydrogen and oxygen gases therein;

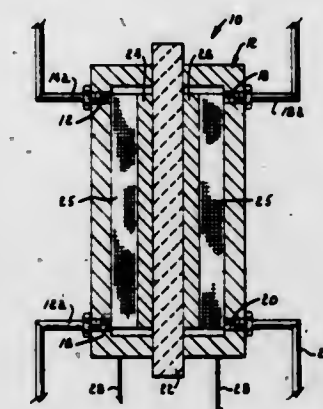
providing a voltage booster and a voltage regulator within the positive current flow, whereby voltage received by said electrolysis unit is between one and ten volts; and pumping said gases to separate storage tanks.

4,246,081 ELECTROCHEMICAL SEPARATION AND CONCENTRATION OF SULFUR CONTAINING GASES FROM GAS MIXTURES

Jack Winnick, 3805 Woodrill-on-the-Green, Columbia, Mo. 65201

Filed Mar. 2, 1979, Ser. No. 17,064
Int. Cl.³ B01D 57/00; G01N 27/26

U.S. Cl. 204-130 19 Claims



1. A method of removing sulfur gases from a gas mixture at a temperature of about 150° C. or above, said method comprising the steps of:

- providing an electrochemical cell having an inert cathode and an inert anode;
- providing said cell with an electrolyte which is molten at temperatures above about 150° C. selected from the group comprising alkali metal sulfates, alkali metal bisulfates, and alkali metal pyrosulfates;
- raising the temperature of said cell to at least 150° C. whereby said electrolyte is in its molten state;
- effecting current flow between said cathode and said anode; directing said gas mixture past said cathode where oxidation of sulfur occurs and sulfur containing anions are formed which migrate toward said anode and are converted to gaseous species, whereby concentrated sulfur gases are evolved at said anode.

4,246,082 METHOD FOR PRODUCING VAPORIZED FUEL FOR INTERNAL COMBUSTION ENGINE

Arnold I. Feuerman, 5179 Corners Dr., West Bloomfield, Mich. 48033

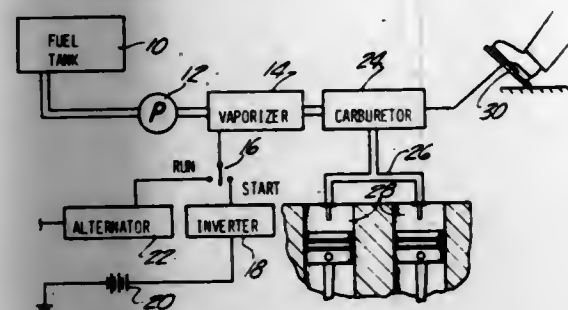
Division of Ser. No. 553,566, Feb. 27, 1975, Pat. No. 4,011,843. This application Sep. 24, 1976, Ser. No. 726,177

Int. Cl.³ C25B 3/00

U.S. Cl. 204-136 6 Claims

1. The method of providing fuel for an internal combustion

engine, comprising passing an electric current through an electrolytically conductive emulsion of water and liquid hy-



drocarbon to generate a vapor, and mixing the vapor with air to form a fuel charge.

4,246,083

REMOVAL OF SURFACE MATERIAL

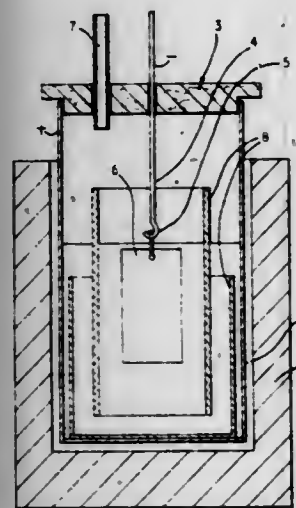
John H. F. Notton, Reading, England, assignor to Johnson, Matthey & Co., Limited, London, England
Filed Aug. 24, 1979, Ser. No. 70,320

Claims priority, application United Kingdom, Aug. 31, 1978, 35189/78

Int. Cl.³ C25F 5/00

U.S. Cl. 204—146

3 Claims



1. A process for stripping platinum from a platinum-coated superalloy body which comprises making the body cathodic in a sodium hydroxide melt whereby sodium is formed electrolytically and forms a readily removable alloy with the platinum without affecting the superalloy body.

4,246,084

ELECTROPHORETIC TECHNIQUE FOR ASSAYING THE RELATIVE DISTRIBUTION OF LACTATE DEHYDROGENASE ISOENZYMES AND BUFFERS FOR USE THEREIN

William A. Gurske, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 29, 1979, Ser. No. 42,845

Int. Cl.³ G01N 33/16, 27/26

U.S. Cl. 204—180 G

15 Claims

1. A buffer comprising a first and second moiety wherein said first moiety is selected from a group consisting of alkali metal 5,5-diethylbarbiturate, ammonium 5,5-diethylbarbiturate, and mixtures thereof, and wherein said second moiety is selected from a group consisting of bicine, tricine, and glycylglycine, said buffer having a pH of from about 7 to about 9 at 25° C.

4,246,085
FRACTIONATION OF PROTEINS

Patrick Mattock, Botley, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 14, 1980, Ser. No. 112,109

Claims priority, application United Kingdom, Feb. 16, 1979, 05600/79

Int. Cl.³ G01N 27/26; A61K 35/14, 35/16

U.S. Cl. 204—180 R

4 Claims

1. A method of fractionating an immunoglobulin-containing aqueous solution which comprises the steps of

(i) adjusting the pH of the aqueous solution to between 7 and 8.4 and the electrical conductivity thereof to between 1 and 2 mScm⁻¹ as measured at 20° C.;

(ii) subjecting the product of step (i) to continuous flow electrophoresis by injecting it as a migrant solution into a second aqueous solution, laminarily flowing in an annular separation chamber as a carrier solution for the migrant solution and stabilized by means of an angular velocity gradient, said carrier solution having a pH of between 7 and 8.4, and by applying a constant electric field across the resulting mixture to produce differential movement of the components of the immunoglobulin relative to themselves and to any other major components of the solution perpendicular to the direction of flow of the carrier solution; and

(iii) collecting resulting particular fractions containing one or more components of the immunoglobulin.

4,246,086

METHOD AND APPARATUS FOR COATING DENTAL CROWNS AND BRIDGES

Hans W. Hennicke, Clausthal-Zellerfeld, and Joachim Weiss, Bremen-Oberneuland, both of Fed. Rep. of Germany, assignors to Bego Bremer Goldschlagerei Wilh. Herbst, Bremen, Fed. Rep. of Germany

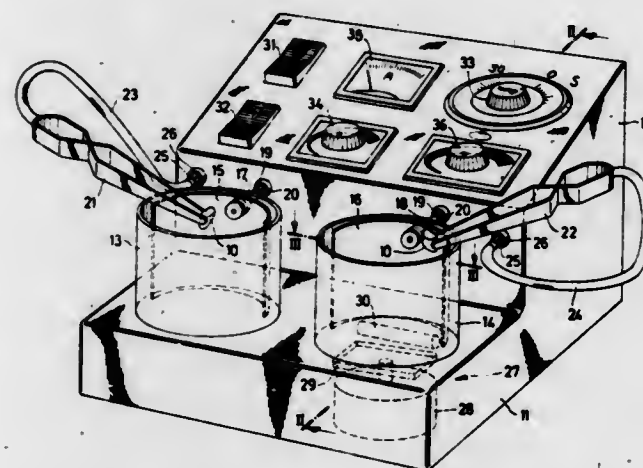
Filed Feb. 13, 1978, Ser. No. 877,525

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705770

Int. Cl.³ C25D 1/14, 13/02, 17/02

U.S. Cl. 204—181 N

20 Claims



1. A process for producing metal-ceramic dental crowns and bridges by applying layers on a base blank comprising the steps of:

(a) applying an opaque layer of base mass to a base blank consisting of a precious metal or nickel alloy by electrophoretic precipitation, and

(b) subsequently applying a dentine layer and an outer lustrous layer to the opaque layer of base mass.

4,246,087

PROCESS FOR CATIONIC ELECTRODEPOSITION

Ivan H. Tsou, Bloomfield Hills, and Marc L. Smith, Warren, both of Mich., assignors to Grow Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 859,295, Dec. 12, 1977, Pat. No. 4,155,824. This application Nov. 22, 1978, Ser. No. 963,032

Int. Cl.³ C25D 13/08

U.S. Cl. 204—181 C

33 Claims

1. The method of electrodepositing a film forming substance onto a substrate by employing an anode, a cathode and an electrolyte therebetween comprising the steps:

a. providing an aqueous electrolyte containing a coating composition comprising a dispersion, solution or suspension of a coating composition containing a nitrogen heterocyclic organic material which contains no NCO groups;

b. closing the circuit between the anode and the cathode;

c. depositing the film forming composition on the cathodic substrate; and

d. curing the composition by subjecting the coated substrate to heat and removing the amine value such that at least 75% less amine value is present in the nitrogen containing organic material than present in the material prior to curing.

4,246,088

METHOD AND APPARATUS FOR ELECTROLYTIC TREATMENT OF CONTAINERS

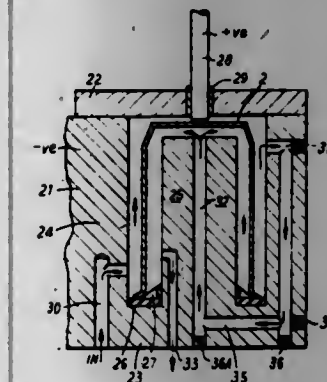
Thomas P. Murphy, Wantage; George Bell, Radlett, and Fred Fidler, Cuffley, all of England, assignors to Metal Box Limited, Reading, England

Filed Jan. 24, 1979, Ser. No. 6,206

Int. Cl.³ C25D 7/04, 13/14; C25F 1/00

U.S. Cl. 204—181 R

18 Claims



1. A method of electrolytically treating a surface of a container comprising the steps of

placing a container internally of a cavity in external surrounding relationship to a mandrel,

introducing an electrolyte through a port into the cavity and selectively

(a) conducting the electrolyte through said cavity such that only the outside surface of the container can be electrolytically treated and

(b) for conducting electrolyte through said cavity such that only the inside surface of the container can be electrolytically treated and

(c) conducting electrolyte through the cavity such that both the inside and outside surfaces of the container can be simultaneously electrolytically treated,

applying a potential difference between the cell assembly and the container during any one of steps (a) through (c), draining the electrolyte from the cavity, opening the cavity, and removing the container relative to the cavity.

4,246,089

GRAFT COPOLYMER USEFUL IN ELECTRODEPOSITION

Isidor Hazan, Clementon, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1979, Ser. No. 98,971

Int. Cl.³ C25D 13/06; C08F 261/02

U.S. Cl. 204—181 C

13 Claims

1. As a new composition of matter, a graft copolymer comprising a mono-epoxide portion grafted onto an acrylic-amine backbone portion, which portions consist essentially of, by weight based on the graft copolymer, about:

(a) 25–60% of an acrylic-amine backbone copolymer contributing:

14.7–35% of secondary amine acrylate or methacrylate, giving 0.08 to 0.2 equivalent of tertiary amine per 100 grams of graft copolymer,

7–17% of hydroxy-functional acrylate or methacrylate, 3–7.3% ethyl acrylate or methyl methacrylate, and

0.3–0.7% mercaptoethanol, giving primary terminal hydroxy functionality,

graft polymerized with (b) and (c):

(b) 33–60% of an epoxy copolymer of a condensation polymer of equimolar proportions of epichlorohydrin and bisphenol-A and reacted with an entity selected from the group consisting of alkyl phenols, alkyl alcohols and alkyl hydroxy ethers, with 1–20 carbon atoms in the alkyl groups, hydroxyamines, fatty amines and mercaptans, in a mole ratio of epoxy resin to said entity in the range of 1/1.1–1.9, and

(c) 7–15% of a glycidyl ester of a tertiary carboxylic acid containing 9 to 11 carbon atoms.

4,246,090

NOVEL CATIONIC MEMBRANES

Oronzio de Nora; Luigi Gluffre, and Giovanni Modica, all of Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Feb. 22, 1979, Ser. No. 13,829

Claims priority, application Italy, Jan. 17, 1979, 19354 A/79

Int. Cl.³ C25B 13/08, 1/34

U.S. Cl. 204—296

9 Claims

1. A fluid impermeable cation exchange membrane comprising a partly sulfonated terpolymer of styrene, divinylbenzene and at least one member of the group consisting of 2-vinylpyridine and 4-vinylpyridine, the degree of sulfonation varying through the membrane cross-section from a maximum on the surface adapted to face the anode to a minimum at the surface adapted to face the cathode.

4,246,091

PROCESS FOR THE ELECTROLYTIC TREATMENT OF ALKALI HALIDE

Naohiro Murayama; Makoto Fukuda; Sirou Sujuki, and Teruo Sakagami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,675

Claims priority, application Japan, Mar. 4, 1977, 52/23355; Sep. 14, 1977, 52/110802

Int. Cl.³ C25B 13/08

U.S. Cl. 204—296

9 Claims

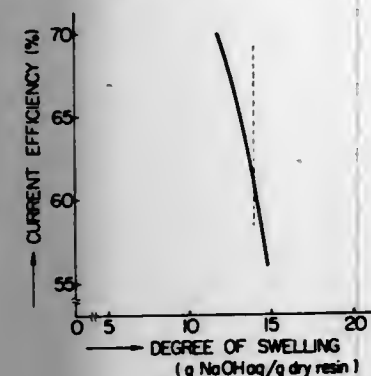
1. A process for the manufacture of cationic exchange membranes which employ sulfonic acid moieties as ion exchange radicals, comprising:

(a) treating a fluorocarbon resin membrane with an ammonium salt of the formula



wherein R₁ is alkyl, aryl, aralkyl, or a halogen derivative of any one thereof; R₂, R₃, and R₄ are the same or different and are hydrogen, or alkyl, aryl, aralkyl, or a halogen derivative of

any one thereof; and X is F, Cl, Br, I, OH, NO₂, a carboxylic acid radical, or an inorganic acid radical; and



(b) heating the treated membrane to a temperature of from about 150° to about 200° C.

4,246,092

METHOD AND APPARATUS FOR THE PERFORMANCE OF SELECTIVE ELECTRODIALYSIS

Mordechai Perry, Petach Tikvah; Charles Linder, and Ora Kedem, both of Rehovot, all of Israel, assignors to Research Products Rehovot Ltd., Rehovot, Israel

Filed Dec. 28, 1978, Ser. No. 973,963

Claims priority, application Israel, Jan. 8, 1978, 53764

Int. Cl.³ B01D 13/02

U.S. Cl. 204—301

7 Claims

1. A selective electrodialysis unit for the performance of selective electrodialytic separation of a first group of charged ions from a solution containing other charged ions having the same sign as said first group comprising at least one thin, dense non-porous charged electrodialysis membrane made of water-insoluble hydrophobic polymeric material containing covalently bound ionizable groups, wherein said membrane separates at least one diluting compartment from at least one concentrating compartment in said unit and wherein said membrane is in the form of a polymeric matrix optionally supported on a porous support and having a dielectric constant and composition preselected to induce selective ion dissociation of said first group of charged ions upon the passage of current there-through, and thereby to effect a substantial ion migration of said selected ion group from at least one diluting compartment to at least one concentrating compartment in said unit and its preferential transference across said membrane at a fraction larger than its relative concentration in solution.

4,246,093

HANDLING OF SOLIDS-LADEN HYDROCARBONACEOUS BOTTOMS IN A RETORT USING SOLID HEAT-CARRIERS

Herbert B. Wolcott, Jr., Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 963,237, Nov. 24, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 61,155.

Int. Cl.³ C10B 49/16, 53/06

U.S. Cl. 208—8 R

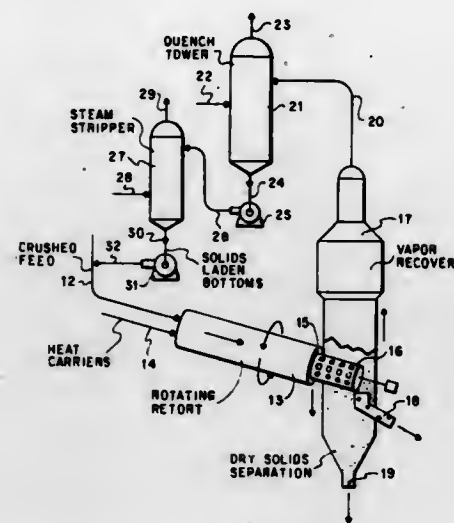
4 Claims

1. In a retorting facility for a mined solid carbonaceous material to produce a hydrocarbon product, a method for handling a bottoms fraction containing organic carbon compounds and particulate inorganic matter derived from said solid carbonaceous material comprising:

- feeding crushed mined carbonaceous material to a retort;
- feeding hot heat carrying solids to said retort at a retort inlet temperature of between 1000° F. and 1400° F. and in a quantity such that the ratio of said heat carrying solids to said carbonaceous material on a weight basis is such that the sensible heat in said hot heat carrying solids is sufficient to provide at least fifty percent of the heat required to heat said carbonaceous material from its retort feed

temperature to a retort zone outlet temperature of between 700° F. and 1050° F.;

- operating said retort at a temperature above 700° F. in a way that said carbonaceous material and said hot heat carrying solids mix, thereby producing a carbonaceous oil, said oil containing particulate matter derived from retorting said carbonaceous material, and thereby producing particulate solid waste matter derived from retorting said carbonaceous material;



- processing said oil in a way that produces a bottoms fraction, said bottoms fraction being comprised of organic carbon compounds having a boiling point above 950° F. and particulate inorganic matter derived from said carbonaceous material, and

- passing said bottoms fraction to a point in said retort after the point where said carbonaceous material and said heat carrying solids have first mixed.

4,246,094

PROCESS FOR UPGRADING NAPHTHA HYDROCARBONS

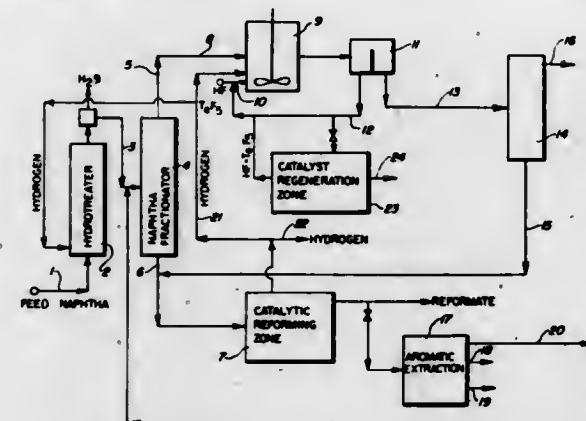
David A. McCaulay, Homewood, and Thomas D. Nevitt, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 11, 1979, Ser. No. 47,059

Int. Cl.³ C10G 59/00

U.S. Cl. 208—57

9 Claims



1. A process for upgrading a wide-boiling range naphtha hydrocarbon feedstock which process comprises:

- separating a wide-boiling range naphtha feedstock into a low-boiling, first fraction having an end boiling point within the range of about 190° to about 220° F. (88° to 104° C.), and a high-boiling, second fraction having an initial boiling point within a range of about 190° to about 220° F. (88° to 104° C.);
- isomerizing said first fraction in an isomerization zone by treating with hydrogen and a catalyst comprising tantalum pentafluoride and hydrogen halide;

- separating a naphthene-rich fraction from the effluent of step (b); and
- blending said naphthene-rich fraction with said second fraction from step (a).

4,246,095

HYDROCARBON CONVERSION WITH A SULFIDED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Jun. 4, 1979, Ser. No. 45,024

The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.

Int. Cl.³ C10G 35/08

U.S. Cl. 208—139

22 Claims

1. A process for converting a hydrocarbon which comprises contacting said hydrocarbon at hydrocarbon conversion conditions with a catalytic composite comprising a sulfided combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component which is maintained in the elemental metallic state during the incorporation and pyrolysis of the rhenium carbonyl component.

4,246,096

FLOTATION PROCESS

Srdjan Bulatovic, Peterborough, Canada, assignor to Falconbridge Copper Limited, Toronto, Canada

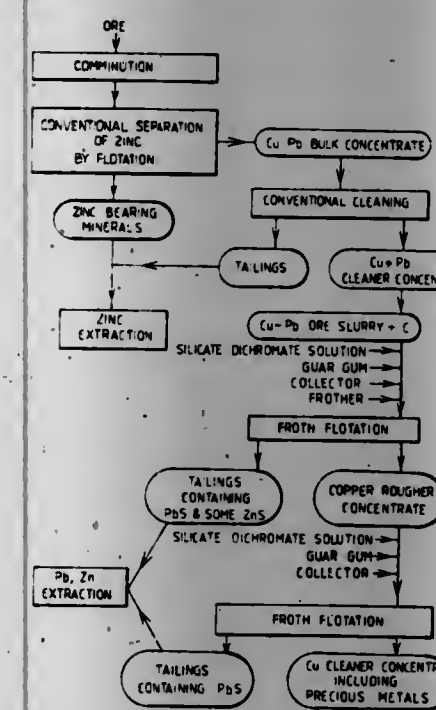
Filed Mar. 5, 1979, Ser. No. 17,320

Claims priority, application United Kingdom, Mar. 11, 1978, 970378

Int. Cl.³ B03D 1/06

U.S. Cl. 201—167

7 Claims



1. A method for separating copper sulphides from lead sulphides contained in a particulate copper-lead sulphide concentrate derived from a complex copper-lead-zinc sulphide ore from which at least a substantial portion of the zinc has been removed as tailings by froth flotation, which comprises forming an agitated aqueous slurry of the concentrate, adding thereto (a) an aqueous reagent solution comprising an alkali metal silicate and an alkali metal dichromate to thereby depress said lead sulphides and any remaining zinc sulphide and (b) a collector for collecting said copper sulphides, and separating the copper sulphides from the lead sulphides and said remaining zinc sulphides by froth flotation.

4,246,097

METHOD AND DEVICE FOR SEPARATING PARTICLES SUSPENDED IN A LIQUID BY GUIDING THESE PARTICLES THROUGH A MAGNETIC FIELD

Emile R. J. Pouillon, Laane, Belgium, assignor to Société Anonyme Cribla, Brussels, Belgium

Filed Jan. 29, 1979, Ser. No. 7,575

Int. Cl.³ B03C 1/12

U.S. Cl. 209—214

15 Claims



1. Method for separating magnetizable and non-magnetic particles suspended in a liquid by discharging the liquid containing these particles downwardly into a magnetic field which extends transversely of the flow of liquid so introduced, supplying a first washing liquid during the passage of the particles through the magnetic field for washing off the non-magnetic particles, supplying a second washing liquid outside the magnetic field for washing off the magnetizable particles, the particles to be separated being guided through a bed of balls of ferromagnetic material, said bed being maintained by and passing transversely through said magnetic field and the balls and the magnetizable particles after leaving the magnetic field being subjected to free fall over some distance.

4,246,098

METHOD AND APPARATUS FOR DETECTING BLEMISHES ON THE SURFACE OF AN ARTICLE

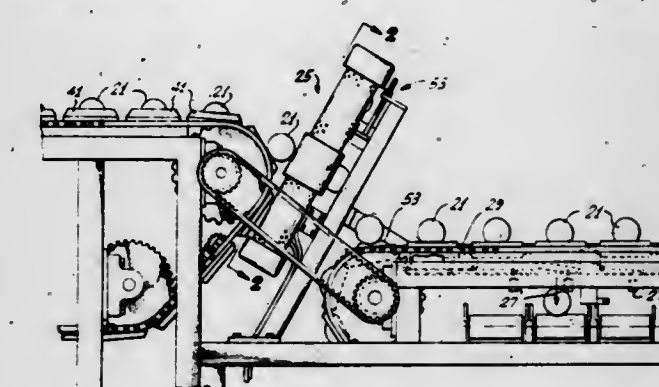
Tim D. Conway, El Cerrito, and Paul F. Paddock, Riverside, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Jun. 21, 1978, Ser. No. 917,724

Int. Cl.³ B07C 5/342

U.S. Cl. 209—558

26 Claims



1. Apparatus for detecting and measuring blemishes on the surface of an article, said apparatus comprising: means for illuminating the surface, whereby light is reflected from blemished and unblemished portions of the surface to different degrees; means for sensing light received from the surface and producing a plurality of light intensity measurements, each of said measurements being made over a substantially continuous range and corresponding to the intensity of light reflected from a discrete segmental area of the surface; means for comparing each of the light intensity measure-

ments with a prescribed light intensity measurement corresponding to a neighboring segmental area, to produce a plurality of comparison signals that are substantially unaffected by any non-uniformities in said illuminating means or said sensing means, each of the comparison signals being a measure of the amount of change in surface reflectivity for the corresponding segmental areas; and means for combining the plurality of comparison signals in a prescribed fashion, to detect and measure blemishes on the surface of the article.

4,246,099

AEROBIC/ANAEROBIC SLUDGE DIGESTION PROCESS
Michael S. Gould, Dakar, Senegal, and Ladistas C. Motsch, Amherst, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 928,099, Jul. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 841,902, Oct. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 766,770, Feb. 8, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,801

Int. Cl.³ C02C 1/14

U.S. Cl. 210—603

30 Claims

1. A process for digestion of sludge comprising the steps of:
 - (a) introducing said sludge and aeration feed gas comprising at least 20 percent oxygen (by volume) to a first digestion zone and mixing same therein in sufficient quantity and rate for aerobic digestion of the sludge while maintaining total suspended solids content (MLSS) of the sludge at least at 20,000 mg/l and temperature of the sludge in the range of from 35° to 75° C. in said first digestion zone;
 - (b) continuing the aerobic digestion of step (a) for sludge retention time (duration) of from 4 to 48 hours to partially reduce the biodegradable volatile suspended solids content of the sludge introduced to said first digestion zone and thereby form partially stabilized sludge, and discharging said partially stabilized sludge from said first digestion zone;
 - (c) anaerobically digesting the partially stabilized sludge discharged from said first digestion zone in a covered second digestion zone while maintaining temperature of the sludge therein in the range of from 25° to 60° C. for sufficient solids retention time (duration) to further reduce the biodegradable volatile suspended solids content of the sludge to less than about 40 percent of the biodegradable volatile suspended solids content of the sludge introduced to the first digestion zone in step (a), and form methane gas; and
 - (d) separately discharging further stabilized sludge and said methane gas from said second digestion zone.

4,246,100

COMPOSITION AND METHOD FOR THE TREATMENT OF SEWAGE
Jerry Starr, Holtville, Calif., assignor to Bio-Humus, Inc., Holtville, Calif.

Filed Oct. 22, 1979, Ser. No. 86,934

Int. Cl.³ C02F 3/00

U.S. Cl. 210—610

8 Claims

5. A method for the treatment of sewage containing excrement to accelerate reduction of sludge to soluble or finely dispersed state and to minimize generation of hydrogen sulfide comprising mixing with said sewage a treatment agent comprising triacontanol and the liquid product of a first digestion of milch cow excrement under mild acid conditions and further digestion of liquid portions from the first digestion by the action of algae and solar radiation.

4,246,101

WATER RECYCLING SYSTEM

Howard W. Selby, III, Boulder, Colo., assignor to Pure Cycle Corporation, Boulder, Colo.

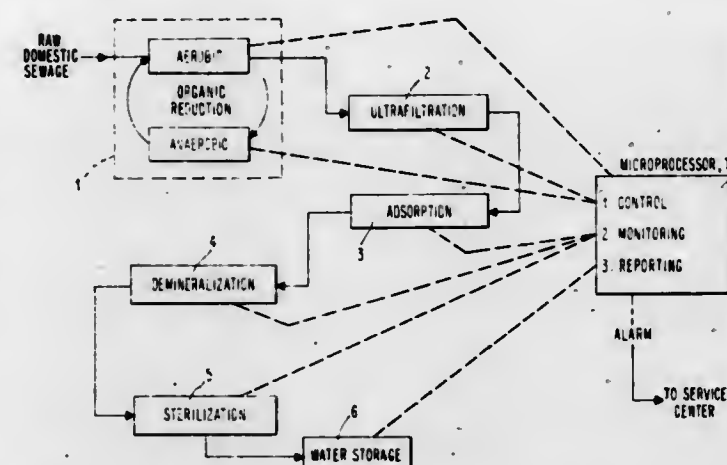
Continuation-in-part of Ser. No. 762,103, Jan. 24, 1977, Pat. No. 4,145,279. This application Dec. 28, 1978, Ser. No. 974,043

The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.³ C02F 9/00

U.S. Cl. 210—615

25 Claims



13. A closed water recycling system producing potable water from waste-water comprising:
 - a biological digester for decomposing substantially all the organic portion of said waste-water,
 - a filtration unit including an ultra-filter membrane for removing virus, bacteria and organic molecules from said waste-water,
 - a demineralizer containing multiple ion exchange resins removing certain organic molecules, color and inorganic salts,
 - means for moving water between said digester, said filtration unit, and said demineralizer which are connected in a closed recycling system,
 - monitoring means for monitoring the operation of said system, and
 - a microprocessor responsive to the output of said monitoring means for controlling said means for intermittently moving water.

4,246,102

METHOD FOR SEPARATING POLLUTANTS FROM LIQUID

Ulf R. Hjelmner, Nynäshamn, and Hans F. Larsson, Vasterhaninge, both of Sweden, assignors to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Nov. 28, 1977, Ser. No. 855,323

Claims priority, application Sweden, Nov. 29, 1976, 76133677

The portion of the term of this patent subsequent to Nov. 20, 1995, has been disclaimed.

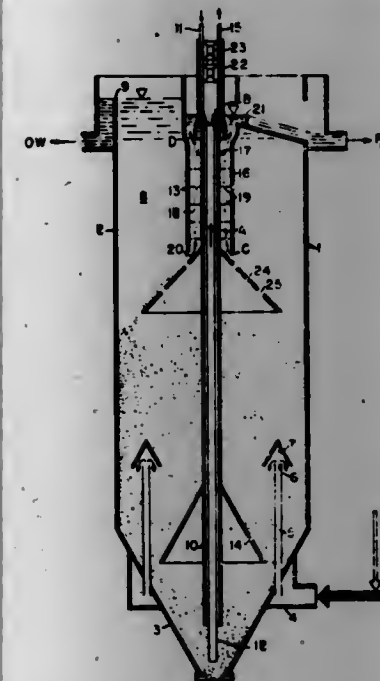
Int. Cl.³ B01D 23/24

U.S. Cl. 210—704

13 Claims

1. In a method for filtering wherein liquid comprising a suspension or emulsion to be filtered is supplied to a zone of particle filter medium forming a filter bed, the liquid being filtered flows, during the filtration thereof, in an upward direction through the filter bed and is discharged from the filter bed as filtrated liquid phase, and wherein the filter medium during the filtration flows in a downward direction through the filter bed in counter-current to the liquid being filtered, past the inflow of the liquid and thereafter is transported separated from the filter bed to a wash path for washing the dirty filter medium during flow along the wash path in counter-current to a wash liquid, whereupon the washed filter medium is returned to the filter bed zone to its top surface, at least a part of the filtrated liquid phase which is discharged from the filter bed

zone is maintained above this zone as a zone of filtrated liquid phase in direct contact with the filter bed zone, and said counter-current washing of the dirty filter medium along the wash path takes place during flow of the dirty filter medium in counter-current to a portion of said filtrated liquid phase utilized as wash liquid, said portion of said filtrated liquid phase being supplied to the wash path from said zone of filtrated liquid phase, the improvement comprising adding to the liquid to be filtered chemicals facilitating at least one of the processes



of precipitation and flocculation, continuously directing the liquid containing the chemicals from the chemical addition location directly to a zone of moving particulate filter material forming the filter bed, absent intermediate passage through any flocculation tank and absent intermediate passage through any sedimentation basin, passing the liquid containing the chemicals through the filter bed to provide at least one of the precipitation and flocculation processes within the moving particulate material of the bed.

4,246,103

PROPANE-1,3-DIPHOSPHONIC ACIDS FOR CONDITIONING WATER

Hans-Dieter Block, Herbert Kallfass, and Roland Kleinstück, all of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 790,353, Apr. 25, 1977, abandoned.

This application Feb. 28, 1979, Ser. No. 15,999

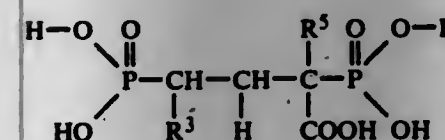
Claims priority, application Fed. Rep. of Germany, May 14, 1976, 2621606

Int. Cl.³ C02F 5/14

U.S. Cl. 210—699

3 Claims

1. In the conditioning of water by adding thereto an amount of a phosphorus containing acid or salt thereof effective to inhibit precipitation of hard water ions contained therein, the improvement which comprises employing as said acid or salt thereof a 1-substituted propane-1,3-diphosphonic acid of the formula



in which

R³ represents hydrogen, or a carboxy group, and
R⁵ represents hydrogen, a carboxymethyl or carboxyethyl group,
or a salt thereof.

4,246,104

PRESSURE-HYDROLYTIC TREATMENT OF EFFLUENT
Friedrich Schmidt, Kurt Mack, and Hans-Rolf Furtwängler, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 914,815, Jun. 12, 1978, abandoned, which is a continuation of Ser. No. 742,314, Nov. 29, 1975, abandoned. This application Apr. 30, 1979, Ser. No. 34,713

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1975, 2553840

Int. Cl.³ C02F 1/72

1. A process for the chemical treatment of an effluent containing organic phosphoric ester acids, comprising treating the effluent hydrolytically for about 20 to 200 minutes at a temperature above about 100° C. under a pressure above about 2 bars and at a pH of about 1 to 14, and thereafter treating the effluent with hydrochloric acid or H₂O₂.

4,246,105

METHOD FOR THE REDUCTION OF THE CHEMICAL OXYGEN DEMAND OF WATER AND WASTE WATER BY CATALYTIC OXIDATION AND USE OF SUCH METHOD
Ernst Rohrer, Boden, Buchs, Switzerland

Continuation of Ser. No. 895,390, Apr. 11, 1978, abandoned.

This application Aug. 7, 1979, Ser. No. 64,494

Claims priority, application Switzerland, Apr. 14, 1977, 4659/77

Int. Cl.³ C02F 1/74

U.S. Cl. 210—763

13 Claims

1. A method for reducing the chemical oxygen demand of water loaded with oxidizable substances by continuous oxidation in the presence of a catalyst, without the use of ozone, comprising:
 - (1) producing excited, dissociated, or at least partially ionized atmospheric air, without producing ozone,
 - (2) mixing the water with a sufficient amount of the thus excited, dissociated, or at least partially ionized air whereby a sufficient number of free radicals are formed to initiate the oxidation of the oxidizable substances in the presence of the catalyst and to continuously regenerate or reactivate the catalyst.

4,246,106

METHOD FOR REFINING MELTS FROM SOLID IMPURITIES

Anatoly V. Dolgov, Morakol prospekt, 36, kv. 30; Leonid V. Konovalov, ulitsa Permskaya, 1; Leib B. Perkis, ulitsa Geodezicheskaya, 23, kv. 53; Stanislav L. Deev, ulitsa Kirova, 80, kv. 44; Vitaly E. Dyakov, ulitsa Petukhova, 132, kv. 65; Alexandr E. Semenov, ulitsa Zorge, 133, kv. 33, all of Novosibirsk; Evgeny T. Bauer, ulitsa Shirotnaya, 21/4, kv. 23, Fergana, poselok Kirligi; and Serafim N. Sutorin, ulitsa Savvy Kozhevnikova 2, kv. 22, Novosibirsk, all of U.S.S.R.

Continuation of Ser. No. 584,927, Jun. 9, 1975, abandoned, which is a continuation of Ser. No. 469,903, May 14, 1974, abandoned, which is a division of Ser. No. 358,613, May 9, 1973, abandoned, which is a division of Ser. No. 220,847, Jan. 26, 1972, Pat. No. 3,780,864. This application Jun. 28, 1976, Ser. No. 700,133

Claims priority, application U.S.S.R., Nov. 20, 1967, 1197564; Nov. 4, 1969, 1374168; Mar. 2, 1971, 1629152; Mar. 31, 1971, 1636140

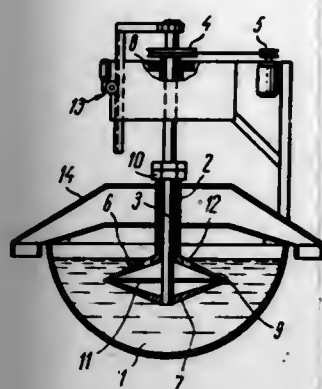
Int. Cl.³ B01D 35/02, 35/18

U.S. Cl. 210—774

8 Claims

1. A method for refining a melt from solid impurities by centrifugal force filtration comprising the steps of: immersing a filter having a cavity, at least one aperture and at least one filtering slit into a bath of a melt containing solid impurities; rotating the immersed filter to continuously admit the melt containing the solid impurities through the aperture into the cavity of the rotating filter, to discharge the melt from the

filter cavity through the filtering slit and to accumulate the solid impurities in the filter cavity at the filtering slit; removing



the rotating filter from the bath; and discharging the accumulated solid impurities from the rotating filter.

4,246,107

SEPARATION OF LYMPHOCYTES FROM LYMPHOCYTE-CONTAINING SUSPENSION BY FILTRATION

Yoshinori Takenaka, Nobuaki Tsuda, and Toru Kuroda, all of Fuji, Japan, assigns to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

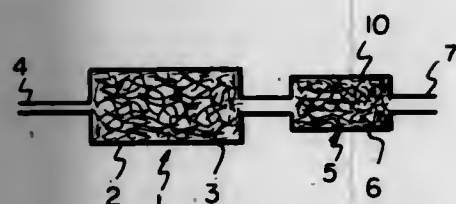
Filed Mar. 1, 1979, Ser. No. 16,600

Claims priority, application Japan, Mar. 6, 1978, 53-24476; Mar. 6, 1978, 53-24477; Jul. 21, 1978, 53-88339; Nov. 10, 1978, 53-137849

Int. Cl.³ B01D 25/06

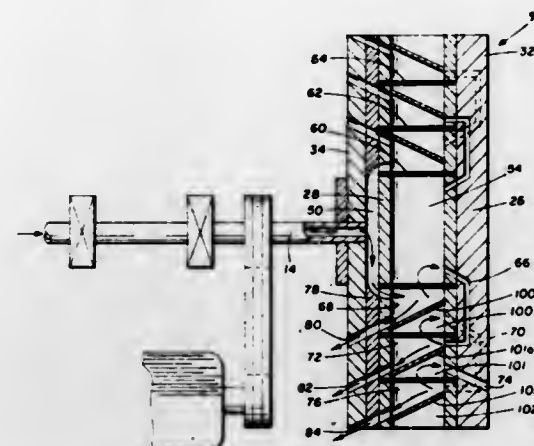
U.S. Cl. 210—806

12 Claims



12. A method of separating lymphocytes from a lymphocyte-containing suspension comprising the steps of: causing said lymphocyte-containing suspension to flow through a first filter comprising a container having packed therein a mass of fibers exhibiting a bulk density of from 0.04 to 0.40 gram/cubic centimeter and an average fiber diameter of from 5 to 20 microns, thereby to entrap a substantial part of leukocyte components in said mass of fibers, collecting said leukocyte components entrapped in said mass of fibers of said first filter, to obtain a leukocyte component-rich suspension, and then causing said leukocyte component-rich suspension to flow through a second filter comprising a container having packed therein a mass of fibers exhibiting an average fiber diameter of greater than 10 microns but not greater than 60 microns, the average fiber diameter of said second filter being greater than that of said first filter, thereby to entrap a substantial part of granulocytes and monocytes in said mass of fibers of said second filter and to obtain a lymphocyte-rich suspension.

4,246,108
MICROSTRAINER APPARATUS AND METHOD
Gerald A. Croopnick, Trabuco Canyon, and Irwin W. Sauer, Santa Ana, both of Calif., assigns to Dresser Industries, Inc., Dallas, Tex.
Continuation of Ser. No. 904,057, May 8, 1979, abandoned. This application Oct. 22, 1979, Ser. No. 86,908
Int. Cl.³ B01D 33/06
U.S. Cl. 209—291
4 Claims



1. Apparatus for fractionally separating finely divided solids from liquid comprising:
(a) a closed rotatable vessel of generally cylindrical shape having a central axis;
(b) at least two screens of generally cylindrical shape fixed within said vessel concentrically of each other for rotation along with the vessel, wall means outboard of each screen so that said screens and said wall means define annular separation chambers outboard of each screen, the screens having progressively smaller meshes extending away from axis;
(c) a hollow shaft co-axial with said vessel for introducing a mixture of liquid and finely divided solids to be processed into said vessel under pressure inboard of said screens;
(d) first passage means within said vessel connecting said hollow shaft and the separation chamber outboard of the innermost screen;
(e) second passage means connecting the inboard side of the innermost screen with the separator chamber of the next succeeding screen;
(f) means for rotating said vessel and screens about said axis; and
(g) separate discharge means in the vessel for each separation chamber and the inboard side of the outermost screen.

4,246,109

OIL FILTER APPARATUS

Logan J. Manders, P.O. Box 284, Delmar, Del. 19940

Filed Sep. 21, 1979, Ser. No. 77,832

Int. Cl.³ B01D 27/10

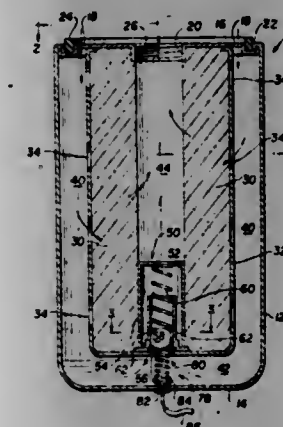
U.S. Cl. 210—90

4 Claims

1. In an oil filter system of the type including a generally cylindrical oil filter means mounted concentrically within said canister, oil inlet means fashioned into said canister for permitting oil to enter said canister on one side of said oil filter means and oil outlet means fashioned into said canister for permitting oil to flow out of said canister on the other side of said oil filter means wherein oil from a lubrication system may be pumped into said oil canister through said oil filter means and out of the oil canister in a filtered condition wherein the improvement comprises:

a normally closed oil bypass means positioned within said oil canister and in fluid communication between said inlet means and said outlet means for permitting oil to bypass said filter means within said oil canister and flow directly from said inlet means to said outlet means in the event said filter means becomes clogged with filtered matter, said oil bypass means including,

check valve means mounted within said oil canister and having an upstream side thereof in fluid communication with said oil inlet means and a downstream side thereof in fluid communication with said oil outlet means wherein a buildup of oil pressure on the inlet side of said oil filter means in excess of a predetermined value will open said check valve means and permit oil to bypass said filter means within said oil canister, said check valve means including,
a hollow cylindrical valve guide,
a valve seat positioned at one end of said valve guide, a valve body dimensioned to intimately slide within said valve guide,
spring means for biasing said valve body against said valve seat, and
radial port means extending through said valve guide downstream of said valve seat for permitting oil to flow through said check valve means when said valve body moves away from said valve seat and axially downstream of said port means; and
electrical circuit means connected to said oil bypass means for signaling the existence of a clogged filter within said oil canister and flow of oil through said oil bypass means, said electrical circuit means comprising,



a transistor switch operably connected to a source of electrical potential, said switch including a common ground transistor wherein the base of said transistor is connected to a ground potential through said check valve means and said oil canister,
signal means connected to said transistor switch, and
contact means connected to said check valve means for actuating said transistor switch and said signal means in response to opening of said check valve means, said contact means including,
compression spring means extending between a dielectric isolation bushing on said oil canister and in full electrical contact with the upstream side of said valve body, said spring means being dimensioned to be in partial compression when said valve body is positioned upon said valve seat and said spring means having a free extension to a position adjacent to but short of the axial position at which the valve body begins to permit oil to pass through said radial port means wherein electrical contact between said valve body and said spring means will be broken approximately when oil begins to flow through said radial port means.

4,246,110

COMPENSATING DEVICE FOR FILTER CONTAMINANT INDICATING SYSTEM

Ronald T. Jarrett, West Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Nov. 9, 1979, Ser. No. 92,822

Int. Cl.³ B01D 35/02

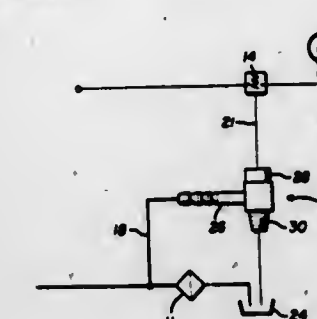
U.S. Cl. 210—90

3 Claims

1. In a filter contaminant indicator system, a filter element

hydraulically connected at its inlet end to a pressure responsive indicator switch, said switch being electrically connected to a warning lamp for actuating said lamp and thereby indicating that the flow of hydraulic fluid through said filter element is restricted, the improvement comprising:

a compensating device hydraulically connected between said filter inlet and said indicator switch;
said compensating device including a capillary, a switch port, and an orifice, said capillary being connected to said inlet end of said filter, said switch port being connected to said indicator switch, and said orifice being connected to a reservoir; and



pressurized fluid from said filter entering said capillary and being discharged through said switch port and said orifice, a substantial fluid pressure drop occurring in said compensating device when said fluid is highly viscous or cold thereby reducing the pressure at the indicator switch to prevent said switch from switching on said warning lamp when a filter restriction does not exist, and a small pressure drop occurring in said compensating device when said fluid is less viscous or heated whereby the pressure at the indicator switch for heated fluid is greater than the pressure at the indicator switch for cold fluid.

4,246,111

APPARATUS FOR BIOLOGICAL TREATMENT OF WASTE WATER

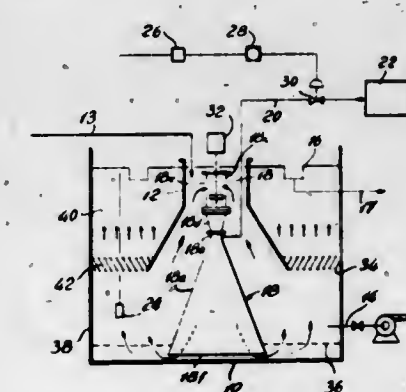
Guy Savard, Westmount; Robert G. H. Lee, Montreal, and Derek Hornsey, Roxboro, all of Canada, assigns to Canadian Liquid Air Ltd./Air Liquide Canada LTEE, Montreal, Canada

Division of Ser. No. 905,008, May 11, 1978, Pat. No. 4,192,740, which is a continuation-in-part of Ser. No. 730,478, Oct. 7, 1976, abandoned. This application Nov. 7, 1979, Ser. No. 92,176

Int. Cl.³ C02F 3/26

U.S. Cl. 210—96.1

9 Claims



1. An apparatus for treating waste water containing biodegradable waste to provide a clarified liquid effluent and a disposable sludge including a single treating enclosure open to the atmosphere for containing waste-degrading microorganisms and through which waste water is continuously passed, and to which oxygen is added to sustain the microorganisms and from which the clarified effluent is continuously overflowed and from which excess sludge and gases are removed, in which a lower part of the enclosure defines a biological

reaction zone for containing mixed liquor containing said microorganisms and in which a biological reaction to degrade the waste is conducted, an upper part of the enclosure defines a clarification zone in which clarified liquid rises and overflows, and there is between the reaction and clarification zones a transition zone to effect rising of the liquid of the mixed liquor and settling of the solids,

an oxygen-dissolving device,

means for continuously withdrawing a recycle stream of mixed liquor from the reaction zone and conducting the stream through said oxygen-dissolving device,

means for continuously adding influent waste water to said stream,

means including a source of oxygen for continuously adding oxygen to the oxygen-dissolving device to dissolve oxygen in the stream, and means for passing the thusly supplemented recycled stream into a lower part of the reaction zone of the enclosure remote from the vicinity of withdrawal,

means for continuously conducting the waste water into the recycle stream at a variable rate within a range related to the depth and surface area of the enclosure to provide a residence time within the reaction zone effective for the biodegradation of the waste and for the formation and settling of biological floc,

means for continuously adding oxygen to said recycle stream at a rate to provide an oxygen concentration within a controlled range below the saturation level of oxygen in the liquid effective to meet the oxygen demand of the organisms and to maintain it in contact with the liquid in a contact zone of said stream for a time and under a pressure such that the oxygen is dissolved in the liquid,

means for continuously controlling the overall flow rate of said recycle stream to a substantially constant rate several times that of the influent waste water effective to provide for dissolving the oxygen which is added to the recycle stream, and an amount of dilution of the recycle stream entering the reaction zone effective to prevent the oxygen coming out of solution at an upper part of the reaction zone,

means for continuously distributing the flow of said recycle stream entering the reaction zone to reach a substantial area of a lower part thereof to provide a wide spread direct flow through the reaction zone, from the vicinity of injection to the vicinity of withdrawal, whereby there is controlled agitation effective to keep the solids dispersed, and good access of the organisms to the biodegradable waste, and to provide at an intermediate level of the enclosure, an upward velocity of the mixed liquor less than the settling rate of the solids, whereby there is maintained in the enclosure separate reaction and clarification zones intervened by said transition zone,

means for continuously monitoring the concentration of dissolved oxygen in the reaction zone to determine variations thereof resulting from variations in the flow rate and concentration therein of waste including a probe located within said reaction zone,

means including a dissolved oxygen analyzer and controller responsive to the probe, for periodically adjusting the rate of addition of the oxygen to the recycle stream in response to variations in the oxygen concentration in the reaction zone to maintain said concentration within said controlled range and at a level where there is substantially avoided effervescence that would lead to gas bubbles rising into the clarification zone,

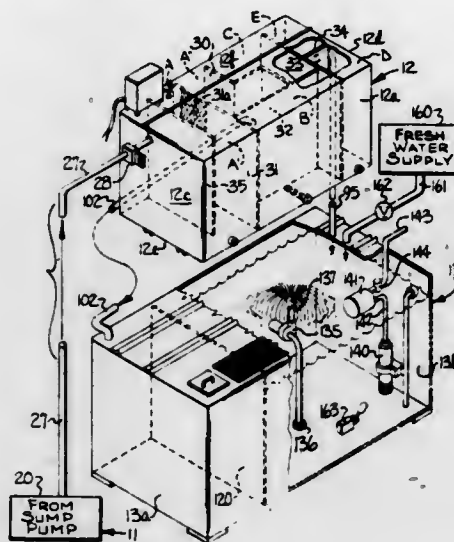
means for continuously withdrawing said effluent from the clarification zone to keep pace with the influent waste water, and

means for continually removing excess sludge from the reaction zone and carbon dioxide from the mixed liquor.

4,246,112
OIL-WATER SEPARATOR HAVING MEANS FOR CONDITIONING THE WATER FOR REUSE
 Robert H. Mausgrover, Harrisburg, N.C., assignor to Ultracapt, Inc., Charlotte, N.C.
 Continuation-in-part of Ser. No. 60,655, Jul. 25, 1979. This application Oct. 31, 1979, Ser. No. 89,966
 Int. Cl.³ B03D 3/00

U.S. Cl. 210-104

11 Claims



1. In an oil-water separator for removing oil and other similar contaminants from waste water, wherein there is provided means defining sequentially arranged first and second oil-water separation compartments for receiving waste water containing oil and other similar lighter-than-water contaminants,

conduit means communicatively connecting a lower region of said first oil-water separation compartment to said second oil-water separation compartment and restricting the flow of water from said first to said second oil-water separation compartment so as to increase the residence time of the water within said first separation compartment,

means including a drain associated with each oil-water separation compartment for removing separated oil from the surface of the water, said drain associated with said first separation compartment having its mouth located so as to be adjacent but above the surface of the water when said first separation compartment is substantially filled with water and said drain associated with said second separation compartment having its mouth located below the level of the mouth of the drain associated with said first separation compartment,

water discharge means, including an inlet end within said second oil-water separation compartment, for discontinuously removing water therefrom at a location below the level of the drain therein, and

water level sensing means operably associated with said water discharge means for periodically actuating the same in response to sensing the height of water in said second oil-water separation compartment being at the mouth of the drain therein and for in turn causing the water discharge means to draw the water down to a predetermined lower level below the mouth of the drain,

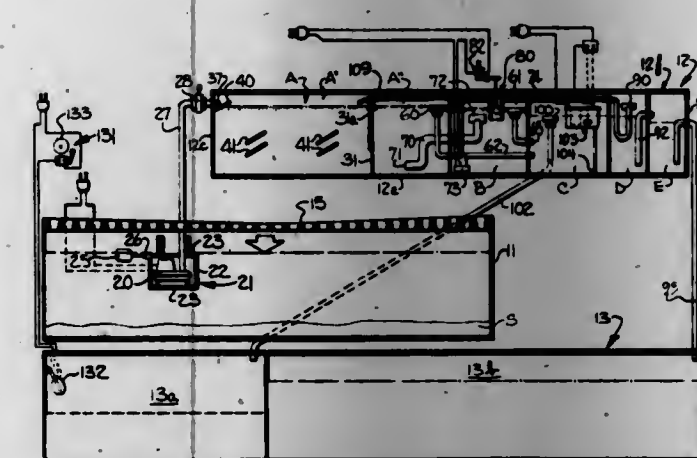
the combination therewith of water collection means connected to said water discharge means for receiving the water therefrom and including a water storage compartment, and

means associated with said water storage compartment for directing the water therefrom for reusing the same and comprising a submergible pump positioned in said water storage compartment and being located so as to be submerged in the water therein, means associated with said submergible pump for obtaining a pressurized flow of water, and conduit means associated with said submerg-

ible pump for directing the pressurized water to a desired location for reuse.

4,246,113
APPARATUS AND METHOD FOR REMOVING OIL CONTAMINANTS FROM WASTE WATER
 Robert H. Mausgrover, Harrisburg, N.C., assignor to Ultracapt, Inc., Charlotte, N.C.
 Filed Jul. 25, 1979, Ser. No. 60,655
 Int. Cl.³ B03D 3/00

U.S. Cl. 210-115



1. An oil-water separator for removing oil and other similar contaminants from waste water and comprising:

means defining a first oil-water separation compartment adapted to receive waste water containing oil and other similar lighter than water contaminants,

means associated with said first compartment for removing separated oil from the surface of the water in said compartment and including a drain having its mouth located so as to be adjacent but above the surface of the water when said compartment is substantially filled with water for removing separated oil floating on the surface of the water therein,

means defining a second oil-water separation compartment, conduit means communicatively connecting said first oil-water separation compartment to said second oil-water separation compartment and restricting the flow of water from said first to said second oil-water separation compartment so as to increase the residence time of the water in the first oil-water separation compartment to thereby increase the separation of oil therein,

said conduit means having an inlet end positioned in a lower region of said first oil-water separation compartment and an outlet end positioned in said second oil-water separation compartment,

means associated with said second oil-water separation compartment for removing the separated oil from the water therein and including a drain having its mouth located below the level of the mouth of the drain associated with said first oil-water separation compartment,

water discharge means, including an inlet end within said second oil-water separation compartment, for discontinuously removing water therefrom at a location below the level of the drain therein, said inlet end of said water discharge means being distally positioned relative to said outlet end of said conduit means, and

water level sensing means operably associated with said water discharge means for periodically actuating the same in response to sensing the height of the water in said second compartment being at the mouth of said drain therein and for in turn causing the water discharge means to draw the water down to predetermined lower level below the mouth of the drain,

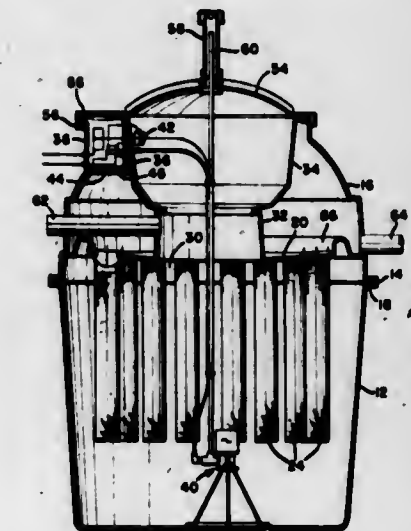
whereby the restricted flow of water from the first to the second compartment, the higher location of the mouth of the drain associated with the first compartment, as compared to the lower location of the drain associated with

the second compartment, and the discontinuous removal of water from the second compartment result in obtaining a greater accumulation of oil in the first compartment and the removal of a greater amount of oil at that location, as well as an overall increase in residence time of the water in the compartments so as to thereby enhance overall removal of oil with minimal intermixed residual water.

4,246,114
AEROBIC WASTE TREATMENT PACKAGE
 J. Robert Krebs, Dayton, Ohio, and Awtar S. Khera, Erlanger, Ky., assignors to Multi-Fló, Inc., Dayton, Ohio
 Filed Nov. 15, 1978, Ser. No. 960,875
 Int. Cl.³ B01F 3/06

U.S. Cl. 210-151

5 Claims



1. In an aerobic waste treatment package, including an open mouth holding tank, a hanger plate extending across the open mouth of said holding tank, a plurality of porous bags suspended from said hanger plate through openings therein into said holding tank, means defining a medial opening through said hanger plate, a vertically extending wall disposed about said medial opening, means defining an effluent outlet from said package above said hanger plate, means defining an inlet through said vertically extending wall, an outer shell extending upwardly from an upper edge of said holding tank, an access opening in an upper portion of said outer shell and an access cover covering said access opening in said shell, the improvement comprising:

a surge bowl received within said outer shell,

said surge bowl having a lower edge adapted to be received by and rest upon an upper edge of said vertically extending wall,

said surge bowl increasing in diameter from said lower edge thereof to a maximum diameter above said lower edge substantially in excess of the maximum diameter of said vertically extending wall,

said surge bowl having an upper edge received by and in engagement with an upper edge of said outer shell, and said maximum diameter of said surge bowl relative to the diameter of said access opening is such that said surge bowl can be removed from within said outer shell through said access opening.

4,246,115
MULTI-VALVE INTERLOCK APPARATUS
 Bryan W. Swank, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.
 Filed Aug. 28, 1978, Ser. No. 937,166
 Int. Cl.³ F16K 35/14; B01D 27/00

U.S. Cl. 210-168

35 Claims

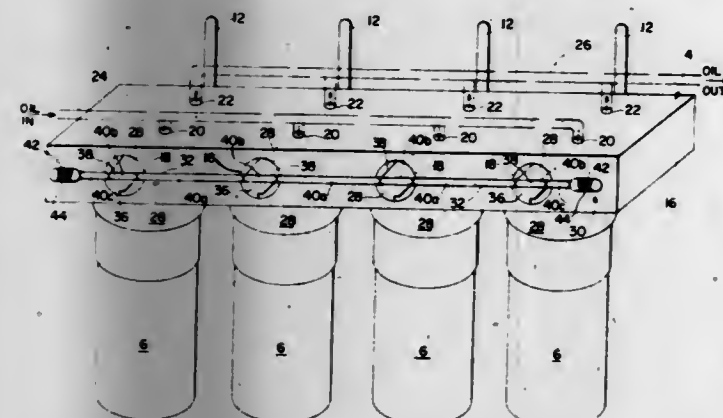
13. A recirculating lubrication system for removing impurities from lubrication fluid in an internal combustion engine, said recirculating lubrication system comprising:

(a) a multi-valve header containing plural valve cavities,

each said valve cavity including an inlet port for receiving lubricating from a first lubrication conduit and an outlet port for returning fluid to a second lubrication conduit, said multi-valve header also having a least one outer surface with a header channel disposed therein to intersect each of said valve cavities;

(b) a filtering means for removing impurities from the lubrication fluid, said filtering means including a plurality of detachable filter units respectively connected to receive lubrication fluid from said inlet ports in said valve cavities and to return lubrication fluid to said outlet ports in said valve cavities;

(c) plural valve elements respectively mounted within said valve cavities, each said valve element being movable



between a first position in which a flow path is formed through the inlet port, filter unit and outlet port associated with each said valve element and a second position in which flow is shut off through the inlet port, filter unit and outlet port associated with each said valve element, each said valve element having a valve face with a valve channel disposed therein to align with said header channel such that said valve and header channels together form a continuous elongated channel across said outer surface when said plural valve elements are all moved to said first position; and

(d) interlocking means interposed within said header channel and said valve channels for locking all remaining said valve elements in said first position whenever any of said plural valve elements is moved to said second position.

4,246,116

DEGREASER FREEBOARD CONTROL

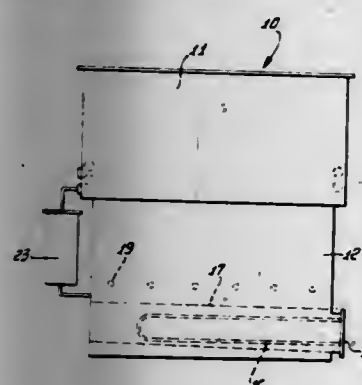
Robert G. Cormack, 8137 Allport Ave., Santa Fe Springs, Calif. 90677

Filed Oct. 22, 1979, Ser. No. 86,702

Int. Cl.³ B01D 3/02, 11/00

U.S. Cl. 210—170

6 Claims



1. In a vapor degreaser having a rectangular tank for a solvent, condensing means at the wall of said tank defining a vapor level with a freeboard between the vapor level and the open top of the tank of depth D and width W, having a fixed design freeboard ratio defined as the ratio of the depth of said tank between said open top and a predetermined vapor level within said tank, to said width W, condensate collecting means

for returning condensed solvent vapor to the lower portion of the tank, and means for heating the liquid solvent, the improvement for increasing the tank freeboard depth-to-width ratio D/W and comprising:

means to be inserted into said degreaser, dimensioned for increasing said design freeboard ratio sufficient to satisfy predetermined air pollution control requirements, including,

a tank insert mounted within said tank and having a substantially vertical wall extending from adjacent said tank top to said vapor level,

spacer means for positioning said insert wall inward from the tank wall reducing the freeboard width W, and

stop means positioned between said insert wall and tank wall blocking vapor flow upward between said walls.

4,246,117

PLURAL DRIVES EACH DRIVING PLURAL FILTER PRESS PLATE ENGAGING HOOKS

Stephen F. Timmins, Knutsford, and Alan Kettle, Disley, both of England, assignors to The Clayton Aniline Company Limited, Manchester, England

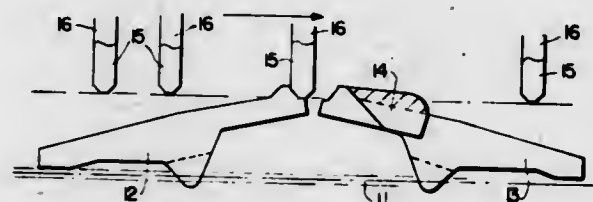
Filed Mar. 1, 1979, Ser. No. 16,614

Claims priority, application United Kingdom, Mar. 1, 1978, 8062/78

Int. Cl.³ B01D 25/12

U.S. Cl. 210—230

5 Claims



1. A filter press comprising:

first and second parallel horizontal support rails;

a plurality of filter material carrying plates, each said plate having on first and second opposite sides thereof respective first and second lugs resting on said first and second support rails, respectively, said plates being aligned in a row extending along said support rails, each said plate being movable independently and without connection to adjacent said plates in a first direction toward first ends of said support rails and in a second direction toward second ends of said support rails;

first and second first hook means, mounted adjacent said first and second support rails, respectively, for movement therealong in said first and second directions, for engagement with said first and second lugs, respectively, of a selected said plate to move said selected plate in said first direction;

first and second second hook means, mounted adjacent said first and second support rails, respectively, for movement therealong in said first and second directions, for engagement with said first and second lugs, respectively, of a selected said plate to move said selected plate in said second direction;

first moving means supporting said first first hook means and said first second hook means adjacent said first support rail for movement therealong in said first and second directions;

second moving means supporting said second first hook means and said second second hook means adjacent said second support rail for movement therealong in said first and second directions;

first stall motor means operatively connected to said first moving means for driving said first moving means in said first and second directions;

second stall motor means, separate from said first stall motor means, operatively connected to said second moving

means for driving said second moving means in said first and second directions;

whereby, when said plates are to be moved in said first direction, said first and second stall motor means operate to drive said first and second moving means in said first direction, and said first and second first hook means engage first and second lugs of a first plate and move said first plate in said first direction to a predetermined location whereat such movement is arrested and said first and second first hook means cause said first and second stall motor means to stall and reverse movement, to thereby drive said first and second moving means in said second direction until said first and second hook means abut first and second lugs of a second plate and cause said first and second stall motor means to stall and again reverse movement, to thereby again drive said first and second moving means in said first direction and cause said first and second first hook means to engage said first and second lugs of said second plate and move said second plate in said first direction, said operations being repeated until all of said plurality of plates are separately and independently moved in said first direction; and

whereby, when said plates are to be moved in said second direction, said first and second stall motor means operate to drive said first and second moving means in said second direction, and said first and second second hook means engage first and second lugs of a first plate and move said first plate in said second direction to a predetermined location whereat such movement is arrested and said first and second second hook means cause said first and second stall motor means to stall and reverse movement, to thereby drive said first and second moving means in said first direction until said first and second first hook means abut first and second lugs of a second plate and cause said first and second stall motor means to stall and again reverse movement, to thereby again drive said first and second moving means in said second direction and cause said first and second second hook means to engage said first and second lugs of said second plate and move said second plate in said second direction, said operations being repeated until all of said plurality of plates are separately and independently moved in said second direction.

4,246,118

APPARATUS FOR SEPARATING SOLID AND LIQUID

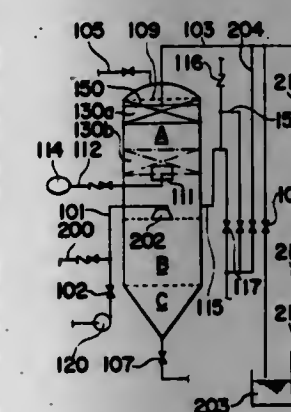
Masahisa Tada, Yokohama; Masahiko Kato, Machida; Tsuneo Ukita, Kawasaki; Hiroshi Segawa, Osaka; Masao Domoto, Izumi; Kiyoteru Mori, Nara; Kazuhiko Ishii, Suita; Shinobu Horinouchi, Yokohama; Masami Tsuzaki, Sakai, and Eiichi Uemura, Suita, all of Japan, assignors to Nippon Paint Co., Ltd. and Mizuho Kogyo Kabushiki Kaisha, both of Osaka, Japan

Continuation-in-part of Ser. No. 624,884, Oct. 22, 1975, abandoned. This application Jun. 6, 1977, Ser. No. 804,166

Int. Cl.³ B01D 23/24

U.S. Cl. 210—275

34 Claims



1. An apparatus for treating a liquid having solids suspended

therein by separating said solids from said liquid, said apparatus comprising:

a tank;

feed means for introducing a liquid having solids suspended therein into the interior of said tank and for causing said liquid to move upwardly through said tank;

filter means for filtering said solids from said liquid during upward movement thereof through said tank, said filter means comprising a bed of buoyant granular filter material positioned within said tank and adapted to be floated by said liquid therein at an upper location above said feed means and whereat said liquid passes through said bed, thereby separating said solids from said liquid to form a liquid filtrate and retaining said solids within said bed;

perforated support plate means, positioned at a level within an upper portion of said tank, for allowing said liquid filtrate to pass therethrough and for preventing said filter material from passing therethrough and for rising above said level;

filtrate discharge means, at a top portion of said tank and above said bed and said plate means, for discharging said liquid filtrate from said tank;

air vent means, at said top portion of said tank, for venting air from the interior of said tank;

means for periodically backwashing said bed by removing from said bed said solids retained therein during the separation of said solids from said liquid, said removing means comprising:

an air supply source positioned outside said tank;

air delivery means, connected to said air supply source, for supplying air from said source into said tank, said air delivery means including at least one air discharge end located within said tank;

at least one hollow member positioned within said tank at a location surrounding and spaced around said air discharge end of said air delivery means, said hollow member being at a position below said bed when said bed is in said upper location thereof;

means, connected to said tank at a position below said hollow member, for adjusting the level of said liquid within said tank and for thereby causing said bed to be lowered from said upper location thereof to a lower location whereat the lowermost surface of said bed is at a level between a position substantially level with the upper end of said hollow member and a position below the lower end of said hollow member; and

said hollow member having a diameter greater than said air delivery means, and upper and lower ends of said hollow member being open and unobstructed, whereby when said bed is in said lower location thereof and when air is discharged from said air discharge end of said air delivery means, said air is blown through said hollow member into said bed, thereby causing turbulence in said bed and circulation by convection of said liquid, with resultant disruption of said bed and removal therefrom of said retained solids; and

solids discharge means at the bottom of said tank for removing said solids therefrom.

4,246,119

LIQUID SAND FILTER

Robert L. Alldredge, 130 Pearl, Apt. 1108, Denver, Colo. 80210

Filed Feb. 12, 1979, Ser. No. 11,444

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

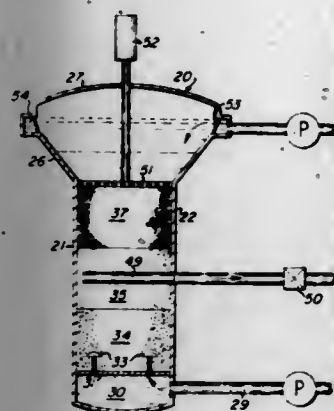
Int. Cl.³ B01D 23/24

U.S. Cl. 210—279

10 Claims

1. An improved upwash, self-graded sand filter of the kind having a column of granular filter media held in a stationary position during filter stage and graded from coarse to fine in the direction of filtration, and a filter housing containing the filter media within the bottom and sides of the housing, wherein the improvement comprises:

- (a) wash liquid inlet means near the bottom of said granular filter media in the housing for supplying wash liquid to lift the granular filter media;
- (b) wash liquid outlet means in said housing above said stationary position of the filter media during filter stage for removing dirty wash liquid;
- (c) reusable diaphragm means moveable between an applied position against the top of said filter media column during



filter stage for compressing and holding the filter media in place, and a release position during wash stage above the stationary position of the filter media in filter stage for allowing the media to be lifted by the upflow of liquid from said inlet means; and

(d) actuator means for holding the diaphragm in applied position during filter stage and releasing the diaphragm from the column of filter media during wash stage.

4,246,120

FLUID TREATMENT APPARATUS

Jacques Bandet, Roussillon; Michel Salmon, Mions, and Andre Sausse, Sceaux, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 475,277, May 31, 1974, Pat. No. 3,963,622. This application Jan. 15, 1976, Ser. No. 649,520

Claims priority, application France, Jun. 1, 1973, 73 20040; Apr. 2, 1974, 74 11674

The portion of the term of this patent subsequent to Jun. 15, 1993, has been disclaimed.

Int. Cl.³ B01D 31/00; A61M 1/03

U.S. Cl. 210—321.3

5 Claims

1. An artificial kidney device comprising in combination:
- (a) a multiplicity of cords placed parallel to and in contact with one another inside a jacket to form a bundle, each cord consisting of at least two and at most six hollow fibres of macromolecular selectively fluid permeable materials twisted together, wherein the degree of twist of each individual fibre on itself is substantially 1 revolution per turn of twisting of the fibres of the said cord, wherein the degree of twisting of the fibres to form each cord is between 5 and 50 turns per meter, wherein the external diameter of the fibres is less than 1 mm, wherein the fibres are open at each extremity of the bundle and are at the most in simple contact at least at intervals;
- (b) means separating the interior of the hollow fibres from the exterior of the hollow fibres within the jacket, said means comprising a hard mass at each extremity of the bundle;
- (c) pipes in communication with the interior of the hollow fibres and with the exterior of the jacket;
- (d) pipes in communication with the exterior of the jacket and with the exterior of the fibres and enabling the fluid outside the fibres to flow from one hardened mass to the other hardened mass along said fibres.

4,246,121
FLUID FLOW TRANSFER DEVICE WITH
FORMED-IN-PLACE MANIFOLD GASKET AND
METHOD OF MAKING SAME

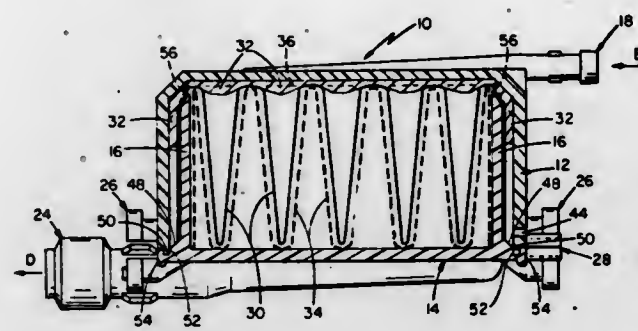
Frank Corbin, III, Denver, and Dennis J. Hlavinka, Lakewood, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 784,363, Apr. 4, 1977, abandoned. This application Nov. 17, 1978, Ser. No. 961,618

Int. Cl.³ B01D 31/00

U.S. Cl. 210—321.3

9 Claims



6. In a fluid flow transfer apparatus having a pleated membrane stack and a housing, wherein said membrane is folded and the fold edges form tips that are bonded to an interior surface of said housing by a potting material that is introduced in a flowable state, and wherein said housing has a channel portion formed along said interior surface, said channel communicating through a fluid port to the exterior of said housing, and said channel forming a manifold with said membrane stack, the improvement comprising

a formed-in-place gasket adjacent said channel portion, said gasket being formed of a material different from said potting material, said gasket conforming to said interior surface and to said membrane tips, and said gasket protruding far enough into the spaces formed between adjacent tips to prevent capillary flow of potting material through said spaces into the manifold area and resulting blockage of the area.

4,246,122

PREFILT DIRECTING IMPERMEABLE MEMBRANE OF
VARYING FORCE EXERTION

Gordon S. Keat, Par, England, assignor to English Clays Lovering Pochin & Co. Ltd., St. Austell, England

Filed Nov. 15, 1978, Ser. No. 960,927

Claims priority, application United Kingdom, Nov. 15, 1977, 47536/77

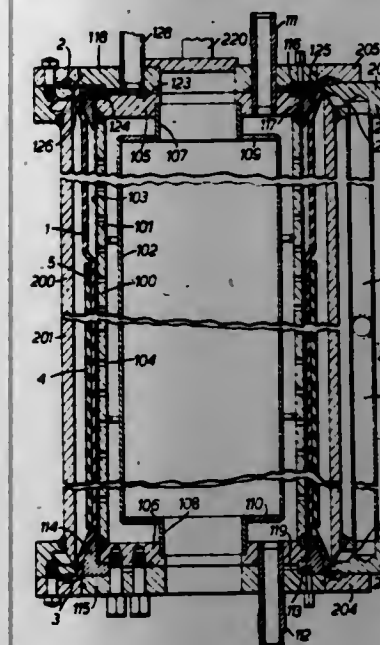
Int. Cl.³ B01D 29/42

U.S. Cl. 210—350

6 Claims

1. In a membrane pressure filter which comprises a pressure chamber divided into non-intercommunicating first and second compartments by a substantially upright impermeable membrane, said first compartment being provided with an inlet for a feed mixture to be pressure filtered and containing a filtering surface, and said second compartment being provided with an inlet for a hydraulic fluid; said hydraulic fluid having a lower density than said feed mixture, whereby when said feed mixture and said hydraulic fluid are provided to said compartments the lower portion of said membrane tends by virtue of the consequent pressure difference acting at said lower portion of said membrane to expand into said second compartment; the improvement comprising: means selectively acting upon said lower portion of said membrane during use thereof for generating counteracting forces of magnitude increasing from the top to bottom of said portion, for opposing said expansion of said membrane into said second compartment, and said means

acting over at least half the effective length of said membrane, whereby said membrane is constrained to adopt a shape such separated and the sealant provides a partition between the separated phases and with the standpipe inlet adjacent the lower end of the container.



that the surface of the membrane opposite the filtering surface is substantially parallel to the filtering surface.

4,246,123

FLUID COLLECTION DEVICE WITH PHASE
PARTITIONING MEANS

William D. Cornell, Ballwin, and Victor H. Wetzel, Bridgeton, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Apr. 20, 1979, Ser. No. 31,818

Int. Cl.³ D01D 21/26

U.S. Cl. 210—782

29 Claims



23. A method of separating whole blood into its lower density and higher density phases and providing a partition between the separated phases comprising the steps of providing in the lower end portion of a container a thixotropic gel-like sealant having a specific gravity between those of the lower and higher density phases, a piston above the sealant having a specific gravity greater than that of the higher density phase, and an elongate standpipe having an inlet adjacent the lower end of the container connected in communication with the sealant and having an outlet in the upper portion thereof, introducing whole blood into the container, centrifuging the blood-filled container so that the higher density phase separates to the lower portion of the container and the piston moves downwardly to force sealant upwardly within the standpipe and from the outlet into the container exteriorly of the standpipe, and continuing centrifugation of the blood-filled container at least until the piston moves downwardly to the lower end of the container and the phases are completely

4,246,124

GELLED COMPOSITIONS AND WELL TREATING
Billy L. Swanson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 17, 1978, Ser. No. 925,357

The portion of the term of this patent subsequent to Oct. 25, 1994, has been disclaimed.

Int. Cl.³ E21B 43/26, 43/22

U.S. Cl. 252—8.55 R

9 Claims

1. Gelled compositions suitable as fracture fluids and water diversion agents consisting essentially of:

- (a) water,
- (b) a water-thickening amount of a water-dispersible polymer selected from the group consisting of cellulose ethers, polyacrylamides, and biopolysaccharides or heteropolysaccharides produced by the action of bacteria of the genus Xanthomonas upon carbohydrates,
- (c) a small, but effective amount in the range of 0.02 to 2 weight percent, of at least one aldehyde component selected from the group consisting of aliphatic monoaldehydes having from one to about 10 carbon atoms per molecule, glyoxal, glutaraldehyde, and terephthaldehyde, and
- (d) a small, but effective amount in the range of 0.005 to 2 weight percent of at least one phenolic compound selected from the group consisting of phenol, catechol, resorcinol, phloroglucinol, pyrogallol, 4,4'-diphenyl, 1,3-dihydroxynaphthalene, 1,4-benzoquinone, hydroquinone, quinhydrone, and quebracho which amounts of aldehyde (c) and phenolic compound (d) are sufficient to cause gelation of an aqueous dispersion of polymer (b) and form said gelled composition.

4,246,125

LUBRICATING OIL AND FUEL COMPOSITION

Andrew G. Papay, Manchester, and Joseph P. O'Brien, Kirkwood, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

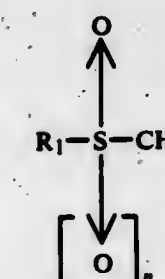
Filed May 4, 1979, Ser. No. 36,075

Int. Cl.³ C10M 1/48

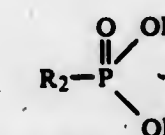
U.S. Cl. 252—46.6

12 Claims

1. A lubricating oil composition containing a major amount of lubricating oil and (1) a minor friction-reducing amount of an additive, said additive having the structure



wherein R₁ is an aliphatic hydrocarbon group containing about 12-36 carbon atoms and n is 0 or 1, and (2) a promoter amount of a phosphonate coadditive, said phosphonate coadditive having the formula



wherein R₂ is a C₁₂₋₃₆ aliphatic hydrocarbon group and R₃ and R₄ are independently selected from alkyl groups containing 1-4 carbon atoms.

4,246,133

STABILIZED DIAZOTIZED SULFANILIC ACID SOLUTIONS

E. Melvin Gindler, Rockford, Ill., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Continuation of Ser. No. 765,961, Feb. 7, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 51,228

Int. Cl.³ C09K 3/00

U.S. Cl. 252—408

1 Claim

1. In a solution containing diazotized sulfanilic acid, the improvement wherein the solution also contains nitrilotris (methylene)-triphosphonic acid and 1,3,6-naphthalenetrisulfonic acid in an amount which serves to stabilize said solution.

4,246,134

CATALYST FOR DI-, OLIGO-, CO- AND POLY-MERIZATION OF VINYL MONOMERS

Boris A. Uvarov, Ryazansky prospekt, 31, kv. 22; Valentina I. Tsvetkova, Leninsky prospekt, 3, kv. 23; Fridrikh S. Dyachkovsky, Vorobievskoe shosse, 2-b, kv. 9; Oleg M. Zvyagin, Kapotnya, III kvartal, 10, kv. 10, all of Moscow; Vladimir P. Kononov, ulitsa Komsomolskaya, 15, kv. 62, Ljubertsy Moskovskoi oblasti; Elvira A. Uvarova, Ryazansky prospekt, 31, kv. 22, Moscow; Elena I. Ljuzgarten, pereulok A. Gaidara, 7, kv. 6, Moscow; Ljudmila A. Novokoshonova, ulitsa 26 Bakinskikh Komissarov 7, korpus 4, kv. 38, Moscow; Olga I. Kudinova, ulitsa Malakhovskaya, 15, Kratovo Moskovskoi oblasti, and Tatyana A. Makhakova, Leningradskoe shosse, 8/2, kv. 57, Moscow, all of U.S.S.R.

Filed Nov. 27, 1978, Ser. No. 963,842

Int. Cl.³ C08F 4/02

U.S. Cl. 252—429 B

12 Claims

1. In a catalyst for di-, oligo-, co- and poly-merization of the vinyl monomers comprising an active phase, which consists of a transition metal compound selected from Groups IV-V of the periodic system and a co-catalyst consisting of an organo-aluminum compound, the improvement of which comprises depositing said catalyst onto a polymeric carrier comprising a macroporous copolymer of vinyl and divinyl monomers with a specific surface area of from 30 to 700 m²/g.

9. A catalyst as claimed in claim 1, wherein the active phase is made of a compound of a metal selected from the group consisting of vanadium and titanium.

11. A catalyst as claimed in claim 9, wherein the active phase is titanium chloride.

4,246,135

OLEFIN POLYMERIZATION CATALYST

Akinobu Shiga, Yoshiharu Fukui, both of Niihama; Kazuhiro Matsumura, Ashiga; Toshio Sasaki, and Masahisa Okawa, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 920,888, Jun. 30, 1978, abandoned. This application May 23, 1979, Ser. No. 41,972

Claims priority, application Japan, Jun. 30, 1977, 52/78655

Int. Cl.³ C08F 4/64

U.S. Cl. 252—429 B

15 Claims

1. A solid titanium trichloride catalyst produced by the steps of

(a) at a temperature of -40° C. to 40° C., over a period of 5 minutes to 6 hours, mixing titanium tetrachloride with from 0.2 to 1.1 moles per mole of said titanium tetrachloride of an organo-aluminum compound of the formula (I):



wherein R has up to 10 carbon atoms and is an aliphatic hydrocarbon group which may be straight chain, branched chain or cyclic, or an aromatic hydrocarbon group; X is a halogen atom or a hydrogen atom; and n is a number satisfying the relation, $1.5 \leq n \leq 3$; in the presence of from 0.1 to about 3 moles per mole of said titanium tetrachloride of an ether compound of the formula (II):

R²OR³

(II)

wherein R² and R³, which may be the same or different, each is an alkyl group, an aralkyl group or an alkenyl group, each having up to 10 carbon atoms, to reduce the titanium tetrachloride;

(b) maintaining the mixed solution at a temperature of 10° C. to 50° C. for 1.5 to 6 hours thereby performing the reduction;

(c) at the time when the reduction proceeds at least 90%, adding iodine in an amount of 0.01 to about 1 mole of said titanium tetrachloride to the resulting liquid titanium trichloride product;

(d) maintaining the resulting mixture at about 30° C. to about 150° C. thereby precipitating solid titanium trichloride; and

(e) then separating the solid titanium trichloride catalyst.

4,246,136

CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF α -OLEFINS AND A METHOD OF USING THE SAME

Hiroshi Ueno, Namekawa; Masafumi Imai; Naomi Inaba, both of Ooi; Makoto Yoda, Kawagoi, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,082

Claims priority, application Japan, Apr. 12, 1978, 53/42149

Int. Cl.³ C08F 4/64

U.S. Cl. 252—429 B

24 Claims

1. A supported titanium catalyst adaptable for use in stereoregular polymerization of α -olefins, produced by a process comprising:

cogrounding, in combination, a magnesium halide, a tetravalent titanium halide, an ester of a saturated or unsaturated aliphatic, alicyclic and aromatic mono- or polycarboxylic acid and an aliphatic, alicyclic and araliphatic mono- or polyols and a halogen compound selected from halogen-substituted hydrocarbons, halo-substituted oxygen-containing organocarbon compounds and halogen-containing compounds of Group IVA elements selected from the group consisting of Si_qX_{2q+2}, GeX_m, SnX_m and PbX_m wherein X is a halogen, alkyl, aryl, alkylaryl, vinyl, alkoxy and acyl, at least one X being halogen, q is an integer of 1 to 10 and m is an integer of 2 or 4, to obtain a titanium-containing solid product, wherein the intensity of the X-ray diffraction peak at 14.8° is dull and the intensity of the 30.2° is reduced compared to the characteristic X-ray diffraction lines of normal magnesium halide;

treating said titanium-containing solid product by contacting under activating conditions with an activating amount of a compound selected from a hydrocarbon, halogen-substituted hydrocarbons, halo-substituted oxygen-containing organocarbon compounds and halogen-containing compounds of Group IVA elements selected from the group consisting of Si_qX_{2q+2}, GeX_m, SnX_m and PbX_m and mixtures thereof; and

recovering the resulting treated solid product as said supported titanium catalyst.

4,246,137

METHOD OF PREPARING ZIRCONIA-SILICA XEROGELS, THE XEROGELS, AND XEROGEL CATALYSTS

(1) Robert A. Dombro, and William Kirch, both of Clinton, Iowa, assignors to Chemplex Company, Rolling Meadows, Ill.

Filed May 31, 1979, Ser. No. 44,004

Int. Cl.³ B01J 27/02, 27/24, 29/00

U.S. Cl. 252—436

12 Claims

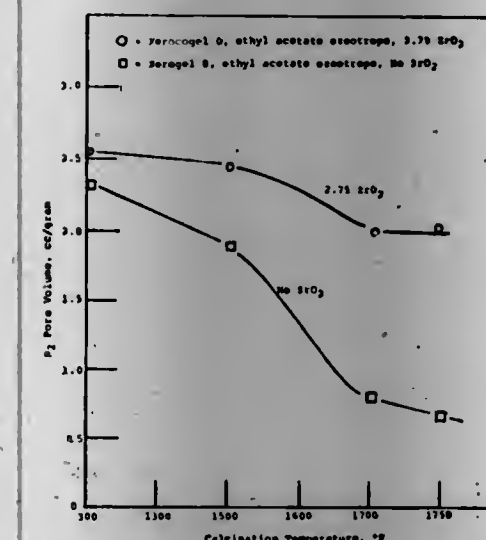
1. The method of preparing large pore volume zirconia-silica useful as a catalyst support for a catalyst for polymerizing and copolymerizing olefins, comprising:

a. reacting a zirconium compound of the formula

M₄Zr(C₂O₄)₄·nH₂O, where M is an alkali metal or ammonium ion and n equals 0 to 10, with a silicon compound of the type A₂SiO₃, where A is an alkali metal, in an aqueous solution at a pH of at least 11 and then adding an acidic material to a pH of about 5-9, to produce a hydrocogel;

b. aging said hydrocogel at a temperature between about ambient to 90° C. for at least one hour;

c. washing said hydrocogel of b first with water, then with aqueous ammonium nitrate and again with water;



d. removing water from the resulting washed hydrocogel of c to produce a xerocogel by azeotropic distillation by mixing with a compound capable of forming an azeotrope with water or by washing the hydrocogel with a water miscible solvent to produce a substantially water-free, large pore volume zirconia-silica catalyst support; and

e. calcining the resulting xerocogel at a temperature of about 1000°-1800° F. preparatory to its use as an olefin polymerization catalyst support.

4,246,138

CRYSTALLINE ALUMINO SILICATE-SILICA-ALUMINA GEL CATALYSTS AND PROCESSES FOR PRODUCING SAME

Hamid Alafandi, Woodland Hills, and Dennis Stamires, Newport Beach, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 935,628, Aug. 21, 1978, Ser. No. 769,118, Feb. 16, 1977, Pat. No. 4,142,995, Ser. No. 874,755, Feb. 3, 1978, Pat. No. 4,198,319, and Ser. No. 874,754, Feb. 3, 1978. This application Jan. 16, 1979, Ser. No. 3,793

Int. Cl.³ B01J 27/24, 27/02, 29/06

U.S. Cl. 252—438

12 Claims

1. A process for producing an active cracking catalyst which comprises exchanging an ammoniated silica-alumina gel containing NH₄ ions associated with the gel in an amount substantially in excess of about 0.3 equivalents per mole of alumina (Al₂O₃), and having an SiO₂/Al₂O₃ molar ratio in the range of less than 3 with a solution of a salt of a monovalent cation other than alkali metal cation, or a polyvalent cation or both said cations and reducing the NH₄ associated with the gel to substantially less than 0.3 equivalents per mole of Al₂O₃ in the gel and combining said treated gel with a crystalline aluminosilicate zeolite.

4,246,139

SILICA PRODUCTION

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 349,244, Apr. 9, 1973, abandoned. This application Sep. 15, 1975, Ser. No. 613,666

Int. Cl.³ B01J 21/08

U.S. Cl. 252—451

3 Claims

1. A method of preparing a silica-containing composition comprising:

(a) forming a silica-titanium hydrogel by adding a solution of sodium silicate to a solution of sulfuric acid containing titanil sulfate;

(b) aging the hydrogel;

(c) removing substantially all of the sodium ions from said hydrogel to produce a purified hydrogel;

(d) contacting said purified hydrogel with a plurality of contacts with methanol and then with a plurality of contacts with ethanol to displace a major portion of the water in the hydrogel thereby resulting in an organogel;

(e) separating the organogel from the liquid not contained therein;

(f) then contacting the thus separated organogel with a plurality of contacts with diethyl ether;

(g) then removing the liquid remaining in the organogel by heating said organogel in a confined zone in such a manner that no substantial vaporization occurs until the critical temperature of the diethyl ether is reached; and

(h) then venting the vapors from said confined zone at such a rate that the reduction in the porosity of the organogel is minimized to produce a dried gel.

4,246,140

Patent Not Issued For This Number

4,246,141

CATALYST FOR INCINERATING H₂S TO SO₂

Robert H. Hass, Fullerton, and Rowland C. Hansford, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 787,904, Apr. 15, 1977, which is a continuation-in-part of Ser. No. 605,639, Aug. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 602,416, Aug. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 528,845, Dec. 2, 1974, abandoned. This application May 7, 1979, Ser. No. 36,801

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.

Int. Cl.³ B01J 29/26

U.S. Cl. 252—455 Z

17 Claims

1. A catalyst composition consisting essentially of between about 1 and 30 weight percent V₂O₅ as the essential active component supported on a non-alkaline, porous refractory oxide comprising hydrogen mordenite having a silica-to-alumina ratio between about 10:1 and 100:1.

4. A catalyst composition consisting essentially of one or more essential active components selected from the class consisting of vanadium oxides and sulfides, said one or more essential active components being supported on a non-alkaline, porous refractory oxide comprising crystalline hydrogen mordenite, said hydrogen mordenite having a silica-to-alumina ratio between about 10:1 and 100:1.

4,246,142

VULCANIZABLE SEMI-CONDUCTIVE COMPOSITIONS

Lucio Ongchin, Warren, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 4, 1976, Ser. No. 729,096

Int. Cl.³ C08K 3/04

U.S. Cl. 252—511

5 Claims

1. A vulcanizable semi-conductive insulation shielding composition consisting essentially of (A) an ethylene copolymer

selected from the group consisting of an ethylene-alkyl acrylate copolymer containing from about 15 to 45 weight percent of alkyl acrylate based on the total weight of said copolymer, said alkyl acrylate being selected from the group consisting of the C₁ to C₆ alkyl esters of acrylic acid and methacrylic acid, and an ethylene-vinyl acetate copolymer containing from about 15 to 45 weight percent of vinyl acetate based on the total weight of said copolymer, (B) a butadiene-acrylonitrile copolymer containing from about 10 to about 50 percent by weight of acrylonitrile based on the total weight of said copolymer, (C) conductive carbon black, and (D) a peroxide crosslinking agent, wherein the weight ratio of (A) to (B) in said composition is 1:9 to 9:1, wherein the weight ratio of (C) to the sum weight of (A)+(B) in said composition is 0.1 to 1.5 and wherein (D) is present in an amount of from about 0.2 to about 5 percent by weight based on the total weight of the composition.

4,246,143

PROCESS OF PREPARING CONDUCTIVE TIN DIOXIDE POWDER

Nobuo Sonoda, Wataru Shimotsuma, and Shigeru Tsubusaki, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 11, 1979, Ser. No. 56,807

Claims priority, application Japan, Jul. 12, 1978, 53/85590; Jul. 31, 1978, 53/94058; Aug. 28, 1978, 53/105273

Int. Cl.³ H01B 1/08; C01G 19/02

U.S. Cl. 252-518

11 Claims

1. A process of preparing a conductive tin dioxide powder, comprising the steps of:

- (a) preparing a mixture of stannous oxalate and an antimony compound; and
- (b) heating said mixture in an oxidizing atmosphere to form tin dioxide through thermal decomposition of said stannous oxalate by maintaining the heating temperature within the range from about 400° C. to about 550° C. during an initial stage until completion of thermal decomposition of said stannous oxalate and thereafter raising the heating temperature to a temperature within the range from about 700° C. to 1300° C. to accomplish firing of an intermediate mixture obtained by the initial stage heating; the proportion of said antimony compound to said stannous oxalate in the step (a) being made such that a tin dioxide powder obtained through the step (b) is doped with 0.001-2.0 mole% of Sb₂O₅.

4. A process of preparing a conductive tin dioxide powder, comprising the steps of:

- (a) preparing a mixture of stannous oxalate and an antimony compound; and
- (b) heating said mixture in an oxidizing atmosphere to form tin dioxide through thermal decomposition of said stannous oxalate by maintaining the heating temperature within the range from about 400° C. to about 550° C. during an initial stage until completion of thermal decomposition of said stannous oxalate, then raising the heating temperature and maintaining the heating temperature within the range from about 450° C. to about 700° C. to calcine an intermediate mixture obtained by the initial stage heating and finally further raising the heating temperature to a temperature within the range from about 700° C. to 1300° C. to accomplish firing of the calcined intermediate; the proportion of said antimony compound to said stannous oxalate in the step (a) being made such that a tin dioxide powder obtained through the step (b) is doped with 0.001-2.0 mole % of Sb₂O₅.

4,246,144

MODIFIED PHENOLIC ALDEHYDE RESIN TO PRODUCE AN IMPROVED ADHESIVE COATING AND METHOD OF MAKING SAME

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 31, 1978, Ser. No. 956,455

Int. Cl.³ C08L 7/02, 9/10, 61/14

U.S. Cl. 260-5

14 Claims

1. An adhesive coating composition for binding glass fibers to rubber giving an improved adhesion and decreasing the blowhole phenomenon, comprising:

about 4 to about 20 weight percent of a phenolic aldehyde resin modified with about 1 to about 10 weight percent of the resin of urea with two NH₂ groups or thiourea or thionamide having 1 to 6 carbon atoms, or mixture thereof, and about 80 to about 90 weight percent of an elastomeric latex or mixture of latices wherein the adhesive coating composition is prepared by:

- a. reacting a phenolic compound with an aldehyde selected from the group consisting of formaldehyde, paraformaldehyde, acetaldehyde, and mixture of one or more of these with hexamethoxymethylmelamine or hexamethylene tetramine with said area or thiourea or thionamide having 1 to 6 carbon atoms or mixture of said urea, thiourea and thionamide in an amount so that the ratio of said phenolic compound to aldehyde is in the range of about 0.2 to about 2.0 and the ratio of said phenolic compound to urea or thiourea or thionamide having 1 to 6 carbon atoms, or mixture thereof is in the range of about 0.2 to about 2.0 and the ratio of said urea, the thiourea or thionamide or mixture thereof to the aldehyde is in the range of 0.5 to about 5.0 in an acid or a basic pH environment produce a water soluble, thermoplastic urea, thiourea or thionamide, or mixture thereof randomly modified phenolic aldehyde resin,
- b. combining the urea, or thiourea or thionamide modified phenolic aldehyde resin of step "a" with an elastomeric latex or mixture of elastomeric latices to produce the adhesive coating composition.

4,246,145

AQUEOUS SIZE FOR GLASS FIBERS

Jacques Molinier, La Motte Servolex; Jacques Mahler, Chambéry; Gilbert Bocquet, Challes les Eaux, and Bernard de Massey, Chambéry, all of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jan. 18, 1978, Ser. No. 870,508

Claims priority, application France, Jan. 19, 1977, 77 01386

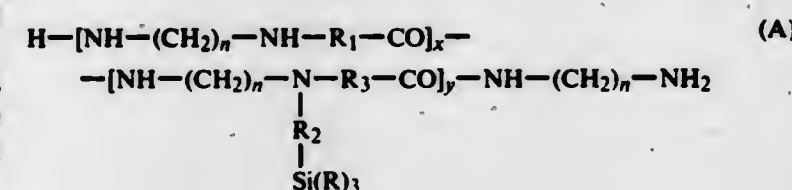
Int. Cl.³ C08L 89/04, 83/08, 63/10, 33/26

U.S. Cl. 260-7.5

7 Claims

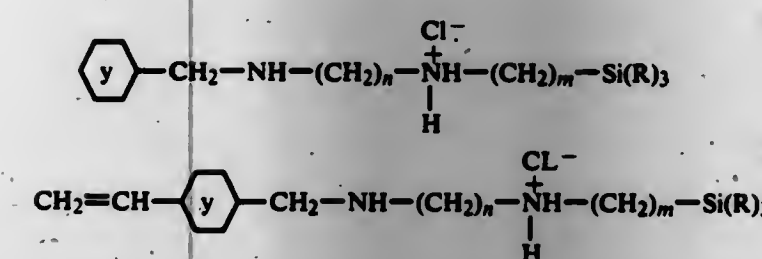
1. Aqueous sizing for coating glass fibers to be used for reinforcing thermoplastic and/or thermoset resins, characterized in that it comprises:

- 0.5 to 15% by weight of at least one adhesive agent,
- 0.1 to 2% by weight of at least one organo-silane of the formulas,



in which

x/y is 0.5 to 15; n is 2 to 6; R is methoxy, ethoxy, propoxy, n-butoxy or β-methoxyethoxy radical, R₁ and R₃ are divalent alkylene radicals containing 1 to 3 carbon atoms, and R₂ represents a substituted or non-substituted divalent cycloaliphatic, aromatic or aliphatic radical,



in which n is 2 to 6; m is 1 to 10

R is a methoxy, ethoxy, propoxy, n-butoxy or β-methoxyethoxy radical, 0 to 7% by weight of lubricant(s), and 0 to 2% by weight of an organic glass-resin binding agent.

4,246,146

FIRE RETARDANT COATING SYSTEM UTILIZING POLYURETHANE HYDROGEL

Louis L. Wood, Rockville, and Glenn E. Fulmer, Clarksville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 18,974

Int. Cl.³ C08L 1/02, 75/08

U.S. Cl. 260-9

36 Claims

1. A fire-retardant, elastomeric cross-linked polyurethane gel composition comprising the reaction product of

- (a) a water-soluble prepolymer of a polyether polyol capped with polyisocyanates having a number average molecular weight of about at least 2,000, and
- (b) an aqueous fire-retardant or intumescent slurry, said prepolymer being present in the reaction mixture in an amount of about 1 to 100 parts by weight per 100 parts of water.

4,246,147

SCREENABLE AND STRIPPABLE SOLDER MASK AND USE THEREOF

Peter Bakos, Endicott; Russell E. Darrow, Newark Valley; Dennis L. Rivenburgh, Endicott, and William F. Williams, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 4, 1979, Ser. No. 45,524

Int. Cl.³ B05D 1/32; C08J 3/18; C08K 5/54; C08L 91/00

U.S. Cl. 260-18 EP

33 Claims

1. A screenable, strippable solder mask composition containing:

- A. a film-forming polymer portion in the form of a liquid composition wherein the film-forming polymer is a polyimide/amide or a liquid polyepoxide;
- B. a detachifier compatible with the polymer being selected from the group of
 - (1) liquid silicone oil
 - (2) terpene
 - (3) terpineol
 - (4) drying oil, and
 - (5) mixtures thereof;
- C. a solid high temperature resistant filler in an amount sufficient to render the composition removable from the substrate after solder application;

wherein the ratio of A:B is about 2:1 to about 1:3, and provided that when A is a polyepoxide liquid, B includes said silicone oil; and wherein said composition is at least substantially free of hardener for said film-forming polymer.

4,246,148

TWO COMPONENT AQUEOUS COATING COMPOSITION BASED ON AN EPOXY-POLYAMINE ADDUCT AND A POLYEPOXIDE

David A. Shimp, Prospect; Darrell D. Hicks, Jeffersontown, and Richard B. Graver, Louisville, all of Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,194

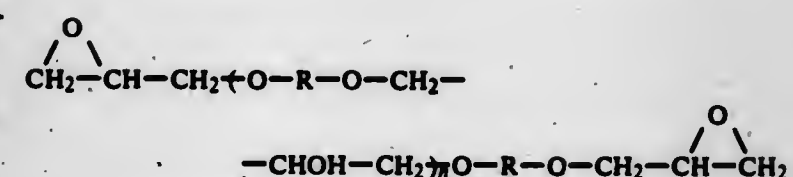
Int. Cl.³ C08L 63/02

(B) U.S. Cl. 260-18 EP

13 Claims

1. A two component resin coating system wherein when the components are mixed forms a curable coating composition which comprises:

- (I) a first component comprising
 - (A) an end capped polyamine terminated polyepoxide resin adduct which is the reaction product of
 - (i) a polyepoxide resin represented by the structural formula:



wherein R is a divalent hydrocarbon radical of a dihydric phenol and the average value of n is not greater than 5; and

- (2) a polyamine having at least two amine nitrogen atoms per molecule, at least three reactive amine hydrogen atoms per molecule and no other groups reactive with epoxide groups to form a polyamine terminated epoxy adduct; and
- (3) an end capping agent which is a monoepoxide having between about 9 and about 16 carbon atoms, one 1,2-epoxide group per molecule and no other groups reactive with amine groups; and wherein
 - (a) at least 25 mole percent of the monoepoxide constituting the end capping agent is an aliphatic monoepoxide;
 - (b) at least a portion of the end capping agent additionally is a crosslinker-compatible amount of an aromatic monoepoxide when the average value of n of the polyepoxide resin of I-A-1 is not greater than about 2;
 - (c) about 1 mole of the polyamine of I-A-2 is reacted per epoxide equivalent of the polyepoxide resin of I-A-1; and
 - (d) said end capping agent is reacted with said polyamine terminated polyepoxide resin adduct in an amount sufficient to eliminate the presence of primary amines on said adduct and to achieve at least a molar ratio of 2:1 respectively of end capping agent to adduct and not greater than the amount which would theoretically eventually lead to a reduction in the amine hydrogen functionality per mole of said end capped polyamine terminated epoxy adduct to below about 3 by reaction with monoepoxide; and

(II) a second component comprising

- (A) a polyepoxide resin crosslinker which is a glycidyl polyether of a polyhydric phenol having an epoxide equivalent weight of not greater than about 600, the amount of said crosslinker in the second component being sufficient to achieve an epoxy to reactive end capped adduct amine hydrogen equivalent weight ratio of from about 0.5:1 to about 1.5:1; and wherein said first and second components are suitable for mixing when the amine groups of the end capped polyamine terminated epoxy adduct are salted to a degree of from about 15 to about 85% by reaction with a volatile acid and the first component is diluted with water in an amount sufficient to achieve a solids content

in the first component of from about 15 to about 45%, by weight, based on the weight of the end capped polyamine terminated epoxy adduct and water.

4,246,149

COLD-CROSS LINKING DISPERSION ADHESIVES

Gundolf Fuchs, Hemmingstedt; Heiko Humbert, Hamburg, and Dietrich Pirck, Seevetal, all of Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 824,634, Aug. 15, 1977, abandoned. This application Jan. 17, 1979, Ser. No. 4,140

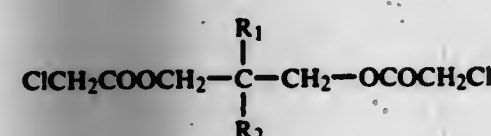
Int. Cl.³ C08J 3/24; C08K 5/10

U.S. Cl. 260—27 R

4 Claims

1. Polyacrylic acid ester-based adhesive comprising an aqueous dispersion containing:

- a copolymer prepared from, 85–65% by weight, of 2-ethyl-hexylacrylate, 0–20 percent of n-butyl-acrylate, 8–12 percent of acrylonitrile, 2–6 percent of acrylic acid, 0.5–2 percent of acrylamide, and/or 0.5–2 percent of hydroxyalkylmethacrylate,
- 1–2% by weight, based on the copolymer of an external cross-linking agent defined by the formula:



wherein R₁ is a ClCH₂COOCH₂ group or an alkyl group having 1 to 4 carbon atoms and R₂ is an alkyl group having 1 to 4 carbon atoms and optionally,

- colophonium, fillers and other adhesive additives, said dispersion having a solids content from about 40 to 60% by weight and a viscosity in the range of from 800 to 1000 cPs.

4,246,150

LUBRICANT FOR HEAT PROCESSING OF VINYL CHLORIDE RESINS

J. David Bower, Somerville, N.J., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Sep. 17, 1979, Ser. No. 76,524

Int. Cl.³ C08L 91/00

U.S. Cl. 260—28.5 D

11 Claims

- A lubricant composition comprising a mixture of:
 - 5 to 95% by weight of a waxy ethylene polymer having an average molecular weight in the range of about 1,000 to 10,000;
 - 5 to 20% by weight of a waxy oxygen-containing ethylene polymer having an acid number in the range of about 10 to 150 and an average molecular weight in the range of about 1,000 to 10,000; and
 - 0 to 90% by weight of paraffin wax.

4,246,151

CATAPHORETICALLY DEPOSITABLE AQUEOUS COATING COMPOSITION, A METHOD FOR THE PREPARATION THEREOF AND A METHOD OF DEPOSITING THE COMPOSITION

Gilles Dohy, Chantilly, France; Hilde Kersten, Erlenbach; Gerhard Meyer, Obernburg, both of Fed. Rep. of Germany; Anton Toth, Crell, and Jean P. Vollmer, Chantilly, both of France, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jul. 21, 1978, Ser. No. 926,617

Claims priority, application Netherlands, Aug. 3, 1977, 7708567

Int. Cl.³ C08L 63/08; C25D 13/06

U.S. Cl. 260—29.2 TN

28 Claims

1. A cataphoretically depositable aqueous coating composition based on

- 100 parts by weight of an at least partially neutralized

reaction product of an epoxy groups-containing compound and an amine and

- 5–50 parts by weight of an at least partially blocked polyisocyanate,

in which composition the constituents A and B may be chemically combined, characterized in that the aminated epoxy compound is the reaction product of

- 40–90 parts by weight of an epoxidized (co)polymer having an epoxy number of 50–400 of a (cyclo)alkadiene containing 4–12 carbon atoms, which (co)polymer has a number average molecular weight of 400–12,000, and
- 60–10 parts by weight of a compound having 1–30 carbon atoms and having at least one primary or secondary amino group.

4,246,152

UREA/FORMALDEHYDE ADHESIVES

Ramon Bruguera, Cervello, Spain, assignor to Patentes Y Novedades, S.A., Madrid, Spain

Filed Apr. 4, 1979, Ser. No. 26,918

Claims priority, application France, Apr. 7, 1978, 78 10389

Int. Cl.³ C08G 12/12; C08L 61/24

U.S. Cl. 260—29.4 R

12 Claims

1. A process for the production of a urea/formaldehyde adhesive comprising the step of mixing an inorganic salt with a formaldehyde source, heating the resulting mixture and reacting the resulting mixture with urea to initiate polymerisation in an acid medium at a pH between 5 and 6.5, the polymerisation reaction being stopped by rendering the mixture alkaline when the mixture has reached a required viscosity and urea being added to the mixture during cooling to give adhesive after cooling.

4,246,153

PROCESS FOR PRODUCING AQUEOUS SOLUTION OF POLYUREAPOLYAMIDE THERMOSETTING RESIN

Hisao Takagishi, Toyonaka, and Haruo Tanaka, Hirakata, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 3, 1979, Ser. No. 54,441

Claims priority, application Japan, Aug. 25, 1978, 53-104128

Int. Cl.³ C08L 61/24

U.S. Cl. 260—29.4 R

9 Claims

1. A process for producing an aqueous solution of a thermosetting resin comprising the steps of,

- reacting urea with a polyalkylenepolyamine at a temperature of 100° to 200° C., while the ammonia generated is taken out of the reaction system, the polyalkylenepolyamine being used in an amount of about 2 moles per mole of urea,
- dehydrating-condensing the resulting reaction product with a dibasic carboxylic acid of the formula, HOOC—R₂—COOH, wherein R₂ is a divalent C₂ to C₈ aliphatic or aromatic hydrocarbon, at a temperature of 120° to 250° C., while the water produced is taken out of the reaction system, the dibasic carboxylic acid being used in an amount of about 0.8 to 1.2 moles per mole of the polyalkylenepolyamine,
- reacting the resulting reaction product with urea to produce a polyureapolyamide at a temperature of 100° to 180° C., while the ammonia produced is taken out of the reaction system, the urea being used in an amount of 0.5 to 1.5 moles per equivalent of the secondary amino group present in the polyalkylenepolyamine, and
- reacting the polyureapolyamide with formaldehyde in an aqueous medium under acidic condition, or under alkaline condition and then under acidic condition, the formaldehyde being used in an amount of 0.2 to 1.0 mole per mole of total urea used in the steps (1) and (3).

4,246,154

INK COMPOSITION FOR INK JET RECORDING

Yasunori Yao, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 18, 1978, Ser. No. 952,880

Claims priority, application Japan, Oct. 18, 1977, 52-124016

Int. Cl.³ C08L 33/00, 41/00, 43/02; C09D 3/74

U.S. Cl. 260—29.6 TA

9 Claims

1. An ink composition for ink jet recording which consists essentially of finely divided particles of vinyl polymer impregnated with a hydrophobic dye and dispersed in an aqueous medium.

4,246,155

BLEND OF ASBESTOS FIBERS, CARBOXYLATED COPOLYMER LATEX AND SYNTHETIC RUBBER LATEX

Kenneth R. Meath; Kent B. McReynolds, both of Midland, and Donald M. Blake, Sanford, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 18, 1979, Ser. No. 4,419

Int. Cl.³ C08L 25/10, 31/02

U.S. Cl. 260—29.7 W

5 Claims

1. Composition consisting essentially of asbestos fibers and a blend having a pH of 7 or less of at least two latexes wherein the solids in the blended latexes consist essentially of (A) from 10 to 30 parts by weight of a carboxylated copolymer consisting essentially of 10 to 25 parts by weight of methacrylic acid and correspondingly 90 to 75 parts by weight of at least one unsaturated carboxylic acid ester of the formula CH₂=C(R₂)COOR₁, wherein R₁ is an alkyl group containing 1 to 8 carbon atoms and R₂ is hydrogen or methyl and (B) 90 to 70 parts by weight of at least one synthetic rubber.

4,246,156

PROCESS FOR THE PRODUCTION OF EMULSIFIER-FREE, SELF-CROSSLINKABLE RUBBER LATICES

Ferdinand Heins, Erkrath, and Martin Matner, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 6, 1979, Ser. No. 55,184

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1978, 2830455

Int. Cl.³ C08F 2/22

U.S. Cl. 260—29.7 H

7 Claims

1. A process for the production of an emulsifier-free self-crosslinkable rubber latex from 1 to 6 parts by weight of (meth)acrylic acid, 0.5 to 6 parts by weight of N-alkoxymethyl (meth)acrylamide and 88 to 98.5 parts by weight of a mixture of 10 to 90 parts by weight of one or more acyclic conjugated dienes containing from 4 to 9 carbon atoms and 10 to 90 parts by weight of one or more arylvinyl monomers containing from 8 to 12 carbon atoms and/or (meth)acrylonitrile, the quantity of (meth)acrylonitrile amounting to at most 50 parts by weight, characterised in that

- an aqueous emulsion is prepared by adding at least part of the (meth)acrylic acid, part of the diene and further monomers to water,
- the polymerisation reaction is initiated by the addition of an aqueous solution of a peroxodisulphate,
- polymerisation is carried out in a first stage at a pH-value of from 3.5 to 7 and at a temperature above 70° C. until at least 50% of the monomers have been polymerised,
- the rest of the monomers and more aqueous peroxodisulphate solution are added in one or more further stages,
- the polymerisation reaction is continued at a pH-value of from 3.5 to 7 and at a temperature above 70° C. until at least 50% of the monomers have been polymerised and, in the last stage, until from 85 to 100% of the monomers have been polymerised.

4,246,157

BINDER COMPOSITIONS CONTAINING PHENOLIC RESINS AND ORGANIC PHOSPHATE AND/OR CARBONATE SOLVENTS

Robert A. Laitar, Woodridge, Ill., assignor to Acme Resin Corporation, Forest Park, Ill.

Continuation of Ser. No. 879,770, Feb. 21, 1978, abandoned.

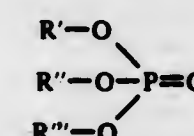
This application Mar. 7, 1979, Ser. No. 19,980

Int. Cl.³ C08K 5/32

U.S. Cl. 260—30.6 R

56 Claims

1. A binder composition comprising (A) a phenolic resin component including at least one phenolic resin selected from the group consisting of phenolic resole resins and phenolic novolak resins, sufficient solvent to reduce the viscosity of said phenolic resin component to below about 1000 centipoises comprising a mixture of (1) hydrocarbon solvent and (2) polar organic solvent containing at least sufficient organic ester selected from the group consisting of organic phosphate and organic carbonate esters and mixtures thereof to increase curing speed and solubility of said phenolic resin component, the organic phosphate esters having the formula:



wherein R', R'' and R''' may be any combination of alkyl, aryl, aryloxyalkyl, alkoxyalkyl, and substituted aryl groups wherein the radicals contain from 1 to 20 carbon atoms and the substituents on the aryl groups are selected from alkyl, alkoxy and aryl, (B) an isocyanate component having a functionality of two or more and (C) sufficient catalyst to catalyze substantially completely the reaction between components (A) and (B).

4,246,158

FIRE RETARDANT PLASTICIZED POLYVINYL CHLORIDE COMPOSITIONS CONTAINING TRIPHOSPHATE PLASTICIZER, ALUMINUM HYDROXIDE AND ANTIMONY TRIOXIDE FILLER

Walter Popp, and Johannes Sedivy, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 33,996

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2905011

Int. Cl.³ C08K 5/49

U.S. Cl. 260—30.6 R

5 Claims

1. A plasticized polyvinyl chloride composition consisting essentially of

- 100 parts by weight of polyvinyl chloride,
- 1 to 7 parts by weight of conventional stabilizers against decomposition,
- 30 to 80 parts by weight of a plasticizer phosphoric acid ester with an alcohol moiety selected from the group consisting of alkyl having 2 to 10 carbon atoms, chlorine substituted alkyl having 2 to 10 carbon atoms, phenyl and lower alkyl substituted phenyl,
- 50 to 90 parts by weight of aluminum hydroxide filler, and
- 2 to 10 parts by weight of a flame-retarding substance selected from the group consisting of antimony trioxide and complex antimony compounds.

4,246,159

LUBRICANT FILLERS IN A DISCRETE PHASE

John H. Chen, Wyomissing, Pa., assignor to The Polymer Corporation, Reading, Pa.

Filed Aug. 17, 1979, Ser. No. 67,377

Int. Cl.³ C08K 5/07

U.S. Cl. 260—32.8 N

9 Claims

1. A method for reducing friction and wear of a polymeric bearing by mixing a lubricant filler with a monomer while the filler and monomer are above their melting points and polymerizing the mixture, the improvement comprising mixing the filler and monomer under non-intensive conditions whereby the discrete phase of the filler is preserved in the polymerized product.

4,246,160

PROCESS FOR THE PRODUCTION OF AMINOPLAST DISPERSIONS

Kuno Wagner, Leverkusen; Jürgen Ick, and Gerhard Balle, both of Cologne; all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 5, 1976, Ser. No. 664,324

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1975, 2512385

Int. Cl.³ C08K 5/05

U.S. Cl. 260—33.4 R

9 Claims

1. In a process for the production of dispersions of aminoplast condensates in organic polyhydroxyl compounds by the oligo-condensation or polycondensation of substances capable of aminoplast formation, in said organic polyhydroxyl compounds, the improvement wherein said dispersions are reacted at from about -5° C. to about 180° C. with an amine compound selected from the group consisting of:

- (a) aliphatic or cycloaliphatic mono- or polyamine containing at least one primary or secondary amine group, and which are gaseous or liquid at room temperature; and
- (b) alkyl hydrazines containing at least one primary or secondary amine group and which are gaseous or liquid at room temperature.

4,246,161

CARBONYL LATENT ACCELERATORS FOR CURING EPOXY RESINS

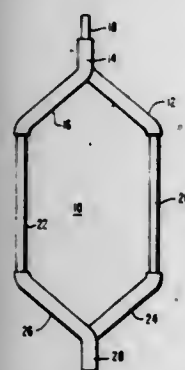
James D. B. Smith, Wilkins Township, Allegheny County, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 8, 1979, Ser. No. 64,934

Int. Cl.² C08G 59/68

U.S. Cl. 260—37 EP

10 Claims



1. A highly fluid, solventless, resinous epoxy composition comprising: (1) an epoxy resin, (2) an anhydride reactive with the epoxy resin and (3) from about 0.002 part to 1.00 part per 100 parts by weight of epoxy resin of a metal carbonyl selected from the group consisting of chromium hexacarbonyl, dicobalt octacarbonyl and mixtures thereof, acting as a latent catalyst.

4,246,162

EPOXY RESIN MOULDING COMPOSITIONS

Bruno Schreiber, Aesch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 17, 1979, Ser. No. 86,007

Claims priority, application Switzerland, Oct. 30, 1978, 11174/78

U.S. Cl. 260—37 EP

13 Claims

1. An epoxy resin moulding composition consisting of (a) a solid epoxy resin which is an adduct of a low molecular diglycidyl ether of bisphenols and an aromatic diamine and which has a melting point of at least 50° C. and contains at least 2.0 epoxy equivalents per kg of resin, (b) a hardener, (c) at least one accelerator, and (d) at least one filler, said epoxy resin composition containing, as hardener (b), at least one aromatic polyol containing more than 5 phenolic hydroxyl equivalents per kg of polyol and having a melting point of at least 50° C., and in an amount such that the content of phenolic hydroxyl groups per epoxy group is 0.5 to 1.5.

4,246,163

LOW SMOKE DENSITY FIRE-RETARDANT RESINS

Joseph M. Makhlof, Mars, and Earl E. Parker, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

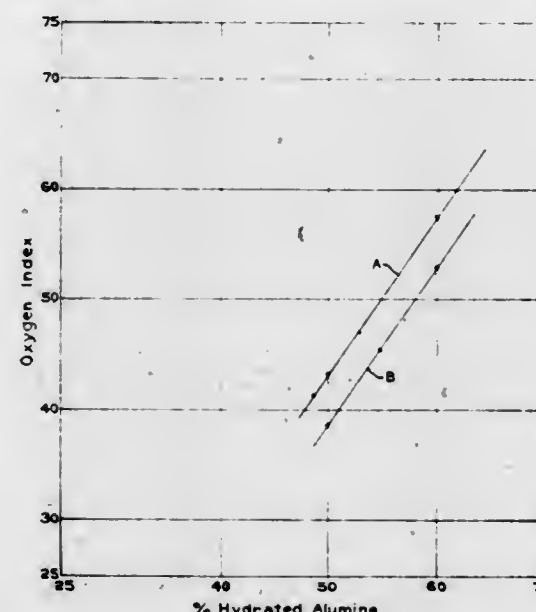
Continuation-in-part of Ser. No. 576,915, May 12, 1975, Pat. No. 4,041,008. This application Jan. 31, 1977, Ser. No. 764,247

The portion of the term of this patent subsequent to Aug. 9, 1994, has been disclaimed.

Int. Cl.³ C08K 3/22

U.S. Cl. 260—40 R

17 Claims



1. A curable aliphatic polyester resin suitable for molding and laminating, being essentially free of aromatic constituents comprising a mixture of:

- (A) an unsaturated aliphatic polyester derived from polycondensing:
 - (1) organic polyols having a functionality of at least 2,
 - (2) organic polycarboxylic acids having a functionality of at least 2 in which the unsaturated component of the unsaturated polyester is an alpha, beta-ethylenically unsaturated polycarboxylic acid and the equivalent ratio of alpha, beta-ethylenically unsaturated polycarboxylic acid to all other polycarboxylic acid components in the polyester is at least 1 to 1; and
- (B) an aliphatic vinyl monomer which is an ester of an organic acid copolymerizable with said polyester,
- (C) at least 50 percent by weight hydrated alumina, the percentage by weight being based on total weight of (A), (B) and (C); said composition capable of being completely cured to produce strong thermoset articles which, when burned, produce little smoke.

4,246,164

PROCESS FOR THE RESOLUTION OF (+)- AND (-)-6-METHOXY- α -METHYL-2-NAPHTHALENEACETIC ACID

Ernst Felder, Riva San Vitale, Switzerland; Davide Pitre, Milan, Italy, and Hans Zutter, Schaffhausen, Switzerland, assignors to Syntex Corporation, Panama

Filed Jul. 6, 1979, Ser. No. 55,427

Claims priority, application Switzerland, Jul. 19, 1978, 7777/78

Int. Cl.³ C07C 91/10, 65/24; C07B 19/00

U.S. Cl. 260—501.17

19 Claims

1. Process for resolving mixtures of (+)- and (-)-6-methoxy- α -methyl-2-naphthaleneacetic acid or salts thereof into the enantiomers thereof characterized in that N-methyl-D-glucamine [= 1-deoxy-1-(methylamino)-D-glucitol] or a salt thereof is used as the resolving agent.

4,246,165

PREPARATION OF COATED CASTING SAND USING UNSATURATED POLYESTER RESIN AS BINDER

Shin Fujii, Zama; Koue Oikawa, Yokohama, and Takashi Sano, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 7, 1978, Ser. No. 967,541

Claims priority, application Japan, Dec. 9, 1977, 52-147213

Int. Cl.³ C08L 67/06

U.S. Cl. 260—40 R

33 Claims

1. A process of preparing a resin coated sand for the fabrication of molds and cores for use in sand mold casting, the process comprising the step of:

mixing a major amount of a foundry sand with a minor amount of a binder composition, which comprises a crystalline unsaturated polyester as a principal component thereof, at an elevated temperature at which said binder composition is in a fluid state in the presence of an organic peroxide which serves as a polymerization catalyst for said crystalline unsaturated polyester, said crystalline unsaturated polyester having an average molecular weight of about 1000 to about 2000, said binder composition being a scarcely tacky solid at room temperature and, the viscosity of said binder composition at a temperature about 30° C. above the softening temperature thereof being below about 500 poises.

4,246,166

Patent Not Issued For This Number

4,246,167

FOUNDRY BINDER COMPOSITION

Robert A. Grimm; Helmo J. Langer, and John F. Plummer, all of Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

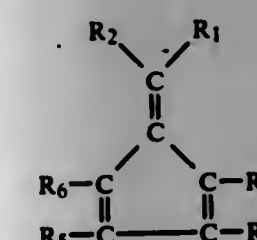
Filed May 25, 1979, Ser. No. 42,464

Int. Cl.³ C08K 3/00

U.S. Cl. 260—42.47

13 Claims

1. A foundry composition comprising: a. a major amount of foundry aggregate; and b. an effective bonding amount up to about 10 percent by weight based upon the weight of the aggregate of a binder composition which comprises a fulvene of the formula:



wherein each R₁ and R₂ individually is hydrogen or a hydrocarbon containing 1 to 10 carbon atoms or a furyl group; or are interconnected and together with the carbon atom to which they are connected form a cycloaliphatic hydrocarbon group; and wherein each R₃, R₄, R₅, and R₆ individually is hydrogen or methyl, provided that a maximum of only one such R₃, R₄, R₅ and R₆ is methyl; prepolymers of said fulvenes; and mixtures thereof; and acid catalyst having a pK_a of about 7 or less.

4,246,168

ANTI-STATIC VINYL CHLORIDE POLYMERS

Wayne R. Sorenson, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Continuation of Ser. No. 891,861, Mar. 30, 1978, abandoned.

This application Feb. 12, 1979, Ser. No. 11,260

Int. Cl.³ C08K 5/58

U.S. Cl. 260—45.75 J

6 Claims

1. A vinyl chloride polymer in particulate form containing an organotin stabilizer and having an external application of an anti-static amount of an anti-static agent consisting of 1,4-butanediol; 2,2-dimethyl propanediol-1,3; or mixtures thereof.

4,246,169

FLAMMABLE PLASTICS CONTAINING A FLAME RETARDANT AMOUNT OF POLYARYLPHOSPHATES AND THE POLYARYLPHOSPHATES

Robert D. Norris; E. Robert Fretz, Jr., both of Cranbury, N.J., and Harry H. Beacham, Langhorne, Pa., assignors to FMC Corporation, Philadelphia, Pa.

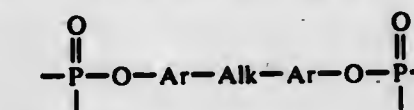
Filed Apr. 19, 1978, Ser. No. 897,614

Int. Cl.³ C08K 5/13; C07F 9/09

U.S. Cl. 260—45.95 D

37 Claims

1. A phosphate ester which imparts improved flame resistance to organic plastics, said ester having



groups wherein Ar is a divalent aromatic radical having a single ring to which its valences are directly attached and Alk is an alkylene radical having a chain having a length of 2 carbon atoms between its attached Ar groups, said ester having a molecular weight such that it does not boil at a temperature of about 240° C. at a pressure of 0.2 mm Hg.

20. A blend of flammable organic plastic and a flame retarding proportion of a phosphate ester as in claim 1.

4,246,170

PHENOL PHOSPHORUS COMPOUNDS AS POLYOLEFIN STABILIZERS

Samuel Evans, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 786,177, Apr. 11, 1977, Pat. No. 4,148,820.

This application Jan. 18, 1979, Ser. No. 4,612

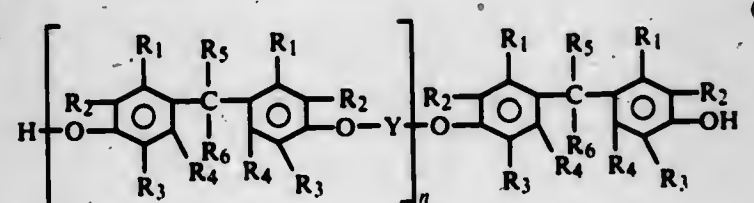
Claims priority, application Switzerland, Apr. 17, 1976, 4750/76

Int. Cl.³ C08K 5/13; C07F 9/12, 9/145

U.S. Cl. 260—45.95 C

6 Claims

1. A phenol of the formula I



wherein
n is 1 to 4,
R₁ is hydrogen or methyl,
R₂ is hydrogen, methyl, ethyl or tert.-butyl.

R₃ is hydrogen, methyl, ethyl or tert-butyl, R₄ and R₅ are each hydrogen, Y is -P(OR₇)-, -P(=O)(OR₇)-, -P(=O)(R₇)- or -P(R₇)-, wherein R₇ is hydrogen, C₁-C₁₈-alkyl or phenyl, and R₆ is a radical -CHR₈-CHR₉-S-CR₁₀R₁₁R₁₂, wherein R₈ is hydrogen, R₉ is hydrogen or methyl, R₁₀ is C₄-C₁₉-n-alkyl, and R₁₁ and R₁₂ are each hydrogen.

6. A polyolefin which contains a compound according to claim 1 in an amount sufficient to stabilize the polyolefin against oxidation.

4,246,171

CONTINUOUS DIAZOTIZATION PROCESS, WHEREIN THE RATE OF ADDITION OF INORGANIC NITRITE IS AUTOMATICALLY CONTROLLED BY POLAROVOLTRIC MEANS

Alexander Hamilton, Giffnock, and Colin Nelson, Barrhead, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 875,364, Feb. 6, 1978, abandoned, which is a continuation of Ser. No. 711,891, Aug. 5, 1976, abandoned. This application Sep. 7, 1978, Ser. No. 940,414 Int. Cl.³ C07C 113/04

U.S. Cl. 260-141

10 Claims

1. In a process for the diazotization of aromatic primary monoamines or diamines which comprises adding regularly and continuously to a reactor (1) an aqueous slurry or solution of the amine containing sufficient acid for the diazotization process and (2) a solution of an inorganic nitrite at a rate which is automatically regulated to ensure that a preselected concentration of unreacted nitrous acid is maintained in the reactor throughout the whole period of the reaction wherein the improvement comprises employing a polarovoltic controller to regulate the rate of addition of the inorganic nitrite so that the concentration of nitrous acid present in the reaction mixture can be controlled to any desired value within certain limits by variation of the polarizing current during the whole period of the reaction.

4,246,172

CATIONIC DYESTUFFS ORGANOPHOSPHONIC ACID SALTS OF QUATERNARY AMMONIUM ALKYLENE AMINO AZO DYES

Günther Boehmke, Leverkusen, and Udo-Winfried Hendricks, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany Filed Jul. 22, 1976, Ser. No. 707,497

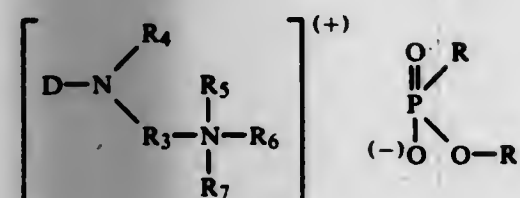
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1975, 2533428

Int. Cl.³ C09B 29/08, 29/26, 29/36; D06P 1/41

U.S. Cl. 260-205

7 Claims

1. Cationic dyestuff of the formula



wherein

D denotes the radical of an azo dyestuff which is free from sulphononic acid groups;
R denotes hydrogen; or alkyl with 1-4 carbon atoms unsubstituted or substituted by hydroxyl, cyano, or alkylcarbonyloxy or alkoxy carbonyl with, in each case, 1-4 carbon atoms in the alkyl chain;
R₁ denotes alkyl with 1-4 carbon atoms;
R₃ is C₂-C₅-alkylene;
R₄ is hydrogen, C₁-C₆-alkyl, or substituted C₁-C₆-alkyl where the substituents are halogen, cyano, hydroxyl,

C₁-C₄-alkoxy, C₁-C₄-alkoxycarbonyl, or C₁-C₄-alkylcarbonyloxy;
R₅ and R₆ are C₁-C₆-alkyl, halo-C₁-C₆-alkyl, cyano-C₁-C₆-alkyl, hydroxy-C₁-C₆-alkyl, C₁-C₄-alkoxy-C₁-C₆-alkyl, C₁-C₄-alkoxycarbonyl-C₁-C₆-alkyl, C₁-C₄-alkylcarbonyloxy-C₁-C₆-alkyl, C₂-C₄-alkenyl, benzyl, 2-phenethyl, halobenzyl, nitrobenzyl, C₁-C₄-alkylbenzyl, C₁-C₄-alkoxybenzyl, halo-2-phenethyl, nitro-2-phenethyl, C₁-C₄-alkyl-2-phenethyl, or C₁-C₄-alkoxy-2-phenethyl;
R₅ and R₆, additionally, when joined together are piperidino, morpholino, C₁-C₄-alkyl-piperidino, or C₁-C₄-alkylmorpholino;
R₄ and R₅, additionally, when joined together are piperazine unsubstituted or substituted with C₁-C₄-alkyl; and R₇ denotes alkyl with 1-4 carbon atoms.

4,246,173

PROCESS FOR PREPARING TETRASELENOFULVALENES, AND CONDUCTIVE SALTS OBTAINED THEREFROM

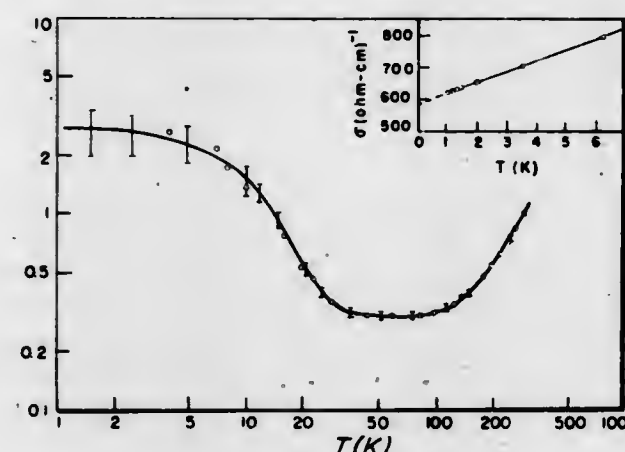
Dwaine O. Cowan, Aaron N. Bloch, both of Baltimore, Md., and Klaus Bechgaard, Lindenbergvej, Denmark, assignors to The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 629,903, Nov. 7, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 899,465

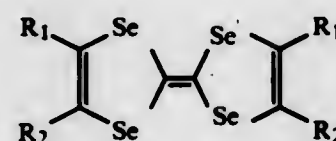
Int. Cl.³ C07D 421/02; C07C 163/00

U.S. Cl. 260-239 R

5 Claims

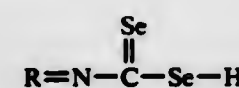


1. An electrically conductive organic salt selected from the group consisting of:
 - (1) tetramethyltetraselenofulvalene 7,7,8,8-tetracyano-p-quinodimethane
 - (2) hexamethylenetetraselenofulvalene 7,7,8,8-tetracyano-p-quinodimethane
 - (3) tetramethyltetraselenofulvalene 11,11,12,12-tetracyano-2,6-naphthoquinodimethane
 - (4) hexamethylenetetraselenofulvalene 11,11,12,12-tetracyano-2,6-naphthoquinodimethane.
4. A method of preparing a tetrasubstituted tetraselenofulvalene of the formula

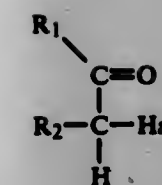


which consists essentially of:

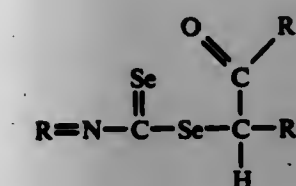
- (1) contacting in dry inert organic solvent, a diselenocarbamate of the formula



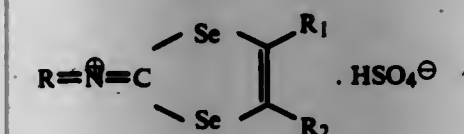
with an α -haloketone of the formula:



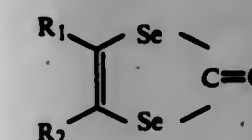
to effect nucleophilic substitution of the halogen atom in said ketone and form a diseleno keto ester of the formula



wherein Hal is chlorine or bromine, R represents polymethylene which with the adjacent -N- atom completes a 5- or 6-membered N-heterocyclic ring, one of R₁ and R₂ is hydrogen, methyl or phenyl and the other is methyl or phenyl, or R₁ and R₂ together form the alkylene bridging group -CH₂CH₂CH₂-.
(2) ring-closing said keto ester by adding the same to concentrated sulfuric acid to form the hydrosulfate salt of the formula:



- (3) converting the hydrosulfate salt of step (2) to the perchlorate or perfluoroborate by treating the reaction mixture of step (2) with excess perchloric or fluoroboric acid;
- (4) converting the perchlorate or perfluoroborate to a selenone or thione of the formula:



where Q is Se or S by mixing said perchlorate or fluoroborate with excess H₂Se or H₂S in methanol or methanol-water mixture at -10° C.; and

- (5) converting said selenone or thione to said tetraselenofulvalene by treating the same with an excess of a dechalcogenizing agent selected from the group consisting of triphenyl phosphite, trimethyl phosphite or triethyl phosphite, the products obtained in reaction steps (1), (3) and (4) being separated before the next reaction step.

4,246,174

PROCESS FOR THE PREPARATION OF PHTHALOCYANINE REACTIVE DYESTUFFS

Manfred Groll, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany Filed Nov. 26, 1979, Ser. No. 97,576

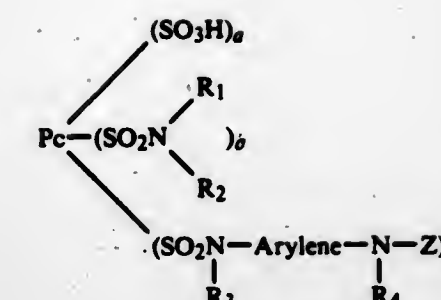
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853823

Int. Cl.³ C09B 47/04

U.S. Cl. 260-242.2

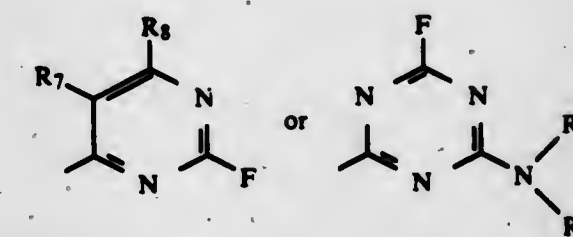
8 Claims

1. Process for the preparation of phthalocyanine reactive dyestuffs of the formula



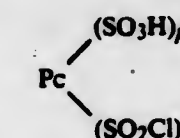
wherein

Pc denotes the radical of a copper phthalocyanine or nickel phthalocyanine,
R₁ and R₂ denote hydrogen or optionally substituted alkyl,
R₃ and R₄ denote hydrogen or optionally substituted alkyl,
Arylene denotes a single-membered or multi-membered, optionally halogen or C₁ to C₄-alkyl group substituted arylene radical which can optionally be interrupted by an oxygen atom or an imino, carbonyl, carboxamide, urea, sulphonyl or sulphonamide group,
Z denotes



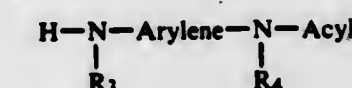
wherein

R₅ and R₆ denote hydrogen, optionally substituted alkyl, optionally substituted aralkyl or optionally substituted aryl,
R₇ denotes H or Cl and
R₈ denotes H, F or CH₃ and
a denotes a number from 1 to 3,
b denotes a number from 0 to 2,
c denotes a number from 1 to 2 and
a+b+c \leq 4,
characterised in that phthalocyanine-(sulphonic acid chloride)-sulphonic acids of the formula



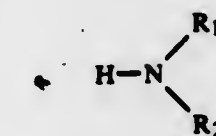
wherein

p denotes a number from 0.5 to 1.8,
q denotes a number from 1.2 to 3.5 and
p+q=2 to 4,
are reacted with c mols of a monoacylated arylendiamine of the formula

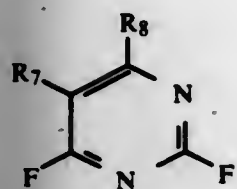


wherein

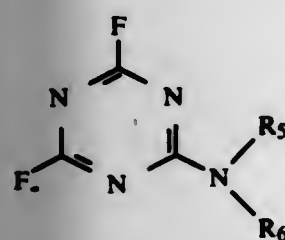
R₃, R₄ and arylene have the abovementioned meaning and acyl represents an acyl group,
and, if appropriate, b mols of an amine of the formula



wherein R_1 and R_2 have the abovementioned meaning, the acylamino group is saponified and the resulting aminophthalocyanine dyestuffs are reacted with c mols of a compound of the formula



or with c mols of a compound of the formula



wherein R_5 - R_8 have the abovementioned meaning.

4,246,175

SYNTHESIS OF

5-CYANO-1-HYDROCARBYLPYRROLE-2-ACETIC ACID
Michael J. Degani, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 29, 1979, Ser. No. 43,140
Int. Cl.³ C07D 207/34

U.S. Cl. 260—326.2

11 Claims

1. In a process for preparing 5-cyano-1-hydrocarbylpyrrole-2-acetic acid by reacting 2,2,2-trichloro-1-(N-hydrocarbylpyrrol-2-yl)-2-ethanol in solution with a cyanating reagent under basic conditions, the improvement characterized in that the reaction is performed in an aqueous reaction medium containing at least 3 equivalents of calcium hydroxide per mole of 2,2,2-trichloro-1-(N-hydrocarbylpyrrol-2-yl)-2-ethanol used in the reaction.

4,246,176

SYNTHESIS OF

5-AROYL-1-HYDROCARBYLPYRROLE-2-ACETIC ACID
Edward J. Zaiko, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jul. 5, 1979, Ser. No. 55,039
Int. Cl.³ C07D 207/337

U.S. Cl. 260—326.47

22 Claims

1. In a process for preparing 5-aryl-1-hydrocarbylpyrrole-2-acetic acids characterized by reacting a 5-cyano-1-hydrocarbylpyrrole-2-acetic acid with an aryl Grignard compound and then hydrolyzing the resultant reaction product, the improvement pursuant to which the reaction between the 5-cyano-1-hydrocarbylpyrrole-2-acetic acid and the aryl Grignard compound is performed at a temperature above about 100° C. in a liquid ether reaction medium consisting essentially of an aromatic ether and, optionally, tetrahydrofuran or methyl tetrahydrofuran, or both.

4,246,177

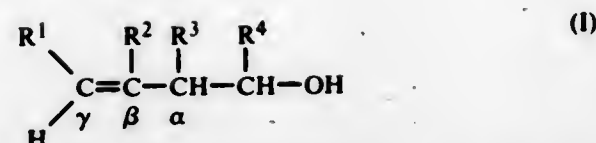
PREPARATION OF DIHYDROPYRANS

Yulin Wu, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 21, 1979, Ser. No. 50,854
Int. Cl.³ C07D 309/18

U.S. Cl. 260—345.1

22 Claims

1. A process for the preparation of dihydropyrans from a β , γ -monoolefinically unsaturated alcohol wherein said unsaturated alcohol is represented by



wherein each of R^1 , R^2 , R^3 , and R^4 is individually selected from hydrogen and alkyl radicals of 1 to 6 carbon atoms per radical which process comprises reacting a β , γ -monoolefinically unsaturated alcohol under reaction conditions with effective amounts of hydrogen and carbon monoxide in the presence of a catalyst selected from the group consisting of the metals and carbonyl compounds of Group VIII and VIB elements, optionally on a solid support.

4,246,178

TETRAHYDROPYRAN-5-ONE COMPOUNDS

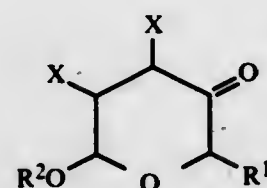
Akira Yamamoto; Kenichi Taguchi; Akira Hayashida, all of Joetsu, and Toshinobu Ishihara, Niigata, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan
Filed Oct. 18, 1978, Ser. No. 952,457

Claims priority, application Japan, Dec. 12, 1977, 52-149605
Int. Cl.³ C07D 309/06

U.S. Cl. 260—345.8 R

4 Claims

1. A tetrahydropyran-5-one compound represented by the general formula



wherein R^1 is a hydrogen atom or a monovalent hydrocarbon group having 1 to 7 carbon atoms, R^2 is a monovalent hydrocarbon group having 1 to 7 carbon atoms or an acetyl group and X is a halogen atom.

4,246,179

CERTAIN BENZOFURAN BENZENE ACETIC ACID TYPE COMPOUNDS

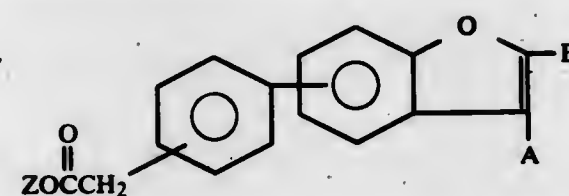
Walton J. Hammar, and Mark A. Rustad, both of St. Paul, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 13,543, Feb. 21, 1979, Pat. No. 4,208,337, which is a division of Ser. No. 862,014, Dec. 19, 1977, Pat. No. 4,153,721. This application Jan. 21, 1980, Ser. No. 113,531
Int. Cl.³ C07D 307/79, 307/85

U.S. Cl. 260—346.22

4 Claims

1. A compound of the formula



wherein Z is hydrogen or alkyl of one to four carbon atoms, A is methyl or ethyl and B is hydrogen or ethyl carboxylate.

4,246,180
PROCESS FOR SEPARATING OFF 1-AMINO-4-BROMOANTHRAQUINONE-2-SULPHONIC ACID

Heinrich Leister; Helmut Dittmer, both of Leverkusen, and Hubert Schönhagen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 31, 1978, Ser. No. 938,724

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740888

Int. Cl.³ C07C 143/665

U.S. Cl. 260—371

8 Claims

1. A process for separating off 1-amino-4-bromoanthraquinone-2-sulphonic acid from the reaction mixture formed by the bromination of 1-aminoanthraquinone-2-sulphonic acid in sulphuric acid, which comprises adjusting the sulphuric acid concentration under the prevailing conditions of temperature and pressure to 60 to 85% by weight of the liquid phase whereby to effect precipitation of 1-amino-4-bromoanthraquinone-2-sulphonic acid as the sulphate and thereafter separating the resultant sulphate precipitate from the reaction mixture.

4,246,181

QUINONEDIIMINE INTERMEDIATES FOR INDOANILINES

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Françoise Estradler, Paris, all of France, assignors to L'Oréal, Paris, France

Continuation of Ser. No. 598,874, Jul. 24, 1975, abandoned, which is a division of Ser. No. 336,802, Feb. 28, 1973, Pat. No. 3,929,403, said Ser. No. 336,802, is a continuation-in-part of Ser. No. 97,395, Dec. 11, 1970, abandoned, which is a

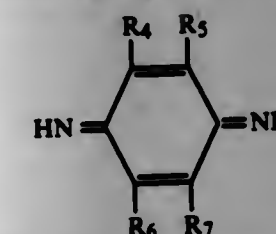
continuation-in-part of Ser. No. 45,564, Jun. 11, 1970, abandoned. This application May 30, 1978, Ser. No. 910,901
Claims priority, application Luxembourg, Jun. 11, 1969, 58848

Int. Cl.³ C07C 119/12

U.S. Cl. 260—396 N

6 Claims

1. A quinone diimine having the formula



wherein R_4 , R_5 , R_6 and R_7 each independently represent a member selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy with the proviso that at least two of R_4 - R_7 are not hydrogen and R_4 - R_7 are not simultaneously lower alkyl and at least one of R_4 - R_7 is lower alkoxy.

4,246,182

PROCESS FOR THE PREPARATION OF OMEGA-HYDROXY FATTY ACIDS FROM OMEGA-HYDROXY (OR ACYLOXY)-ALKYL- γ -BUTYROLACTONES

Kiyonori Suzuki; Takeaki Eto, both of Noda; Takeyasu Otsuka, Nagareyama; Shozo Abe, Kashiwa, and Sadao Yoshikawa, Tokyo, all of Japan, assignors to Soda Koryo Kabushiki Kaisha, Japan

Division of Ser. No. 897,641, Apr. 18, 1978, abandoned. This application Mar. 21, 1979, Ser. No. 22,600

Claims priority, application Japan, Apr. 26, 1977, 52-47346
Int. Cl.³ C07C 51/09, 67/08

U.S. Cl. 260—405

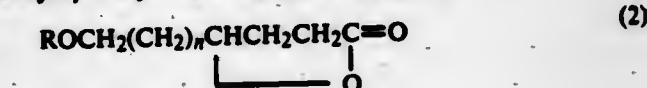
7 Claims

1. A process for preparing an omega-hydroxy fatty acid of the formula



wherein R represents a hydrogen atom or an acyl group, and n represents an integer of 0 to 18,

which comprises catalytically reacting an omega-hydroxy (or acyloxy)-alkyl- γ -butyrolactone of the formula



wherein R and n are as defined above, in the presence of a hydrogenolysis catalyst selected from the group consisting of palladium and platinum, and a promoter selected from the group consisting of cation exchange resins, zeolites, phosphoric acid polyphosphoric acid and p-toluene sulfonic acid at a temperature of about 50° C. to about 250° C. and under atmospheric pressure to about 150 kg/cm².

4,246,183

PROCESS FOR PREPARING UNSATURATED ALIPHATIC ESTERS FROM ALIPHATIC DIENES
John F. Knifton, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,747
Int. Cl.³ C09F 5/08; C11C 3/02, 1/00

U.S. Cl. 260—408

9 Claims

1. The process of providing unsaturated carboxylic fatty acids and their ester derivatives from aliphatic conjugated diene substrates containing from 4 to 8 carbon atoms which comprises the steps of:

- admixing each two moles of said aliphatic conjugated diene with a three component mixture consisting of:
 - at least a catalytic quantity of a palladium catalyst consisting of one or more palladium salts in combination with one or more tertiary phosphorus-containing donor ligands;
 - at least a mole equivalent of hydroxylated coreactant selected from the group consisting of water or an aliphatic alcohol containing 1 to 12 carbon atoms; and
 - A-S-heterocyclic solvent to form a reaction mixture;
- Pressurizing said reaction mixture with sufficient carbon monoxide to satisfy the stoichiometry of the carbonylation reaction;
- Heating said pressurized reaction mixture to temperatures of from 30° to 150° C. until substantial formation of desired unsaturated aliphatic carboxylic acid derivatives is achieved.

4,246,184

EXTRACTION OF OIL FROM VEGETABLE MATERIALS
John C. Pressick, Clarendon Hills, and Robert A. Reiners, Hinsdale, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 945,264, Sep. 25, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,741
Int. Cl.³ C09F 5/02; C11B 1/10

U.S. Cl. 260—412.4

8 Claims

1. A process for the extraction of oil from oil-bearing vegetable material comprising the steps of:

- providing moistened comminuted vegetable material containing between about 25% and about 55% water by weight;
- forming agglomerates of said moistened comminuted vegetable material by pushing it through a screen;
- drying said agglomerates to a moisture content of less than about 15% by weight; and
- extracting the dried agglomerates with an oil solvent.

4,246,185

CATALYST METAL SEPARATION FROM SATURATED ALIPHATIC MONOCARBOXYLIC ACIDS
Frank Wood, Jr., Houston, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 9, 1979, Ser. No. 65,240
Int. Cl.³ C07C 51/235, 55/07

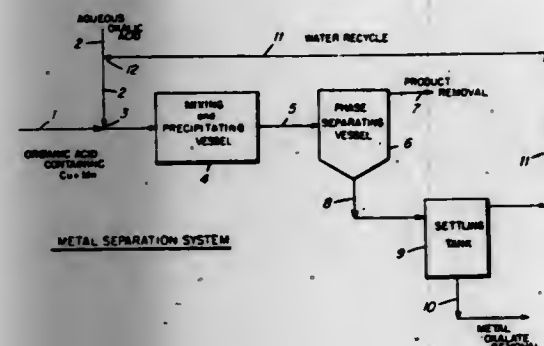
U.S. Cl. 260—413

12 Claims

1. A process for separating manganese and copper from

organic saturated aliphatic monocarboxylic acids having 6 to 9 carbon atoms which comprises treating said manganese- and copper-containing organic acids with an aqueous solution of oxalic acid in an amount sufficient to precipitate substantially all of the copper and manganese present as the oxalates from the organic acid phase into the aqueous phase, and decanting said organic acid phase from said aqueous phase.

9. In a process for producing organic saturated aliphatic monocarboxylic acids having 6 to 9 carbon atoms from their



corresponding aldehydes by oxidizing said aldehydes in the presence of soluble manganese and copper compounds as catalysts, the improvement which comprises separating manganese and copper from said organic saturated aliphatic monocarboxylic acids by treating said organic acids with an aqueous solution of oxalic acid, the volume ratio of said organic acid to water being in the range from 0.5 to 1 to 5 to 1 and the amount of oxalic acid present being sufficient to precipitate substantially all of the copper and manganese as cupric oxalate and manganese oxalate, respectively, to precipitate said oxalates from said organic acids into the aqueous phase, and decanting said organic acids from said aqueous phase.

4,246,186

PROCESS FOR PRODUCING ACETIC ACID, ETHANOL, AND ACETALDEHYDE FROM SYNTHESIS GAS

Madan M. Bhasin, and George L. O'Connor, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 541,661, Jan. 16, 1975, abandoned. Continuation-in-part of Ser. No. 437,141, Jan. 28, 1974, abandoned. This application Jan. 20, 1976, Ser. No. 650,799

Int. Cl.³ C07C 27/06

U.S. Cl. 260-449 R

6 Claims

1. In a process for the reaction of a synthesis gas containing carbon monoxide and hydrogen in the presence of a hydrogenation catalyst, the improvement whereby oxygenated hydrocarbon products of two carbon atoms are selectively produced, which comprises continuously contacting said synthesis gas with a heterogeneous catalyst comprising rhodium metal and at reaction conditions correlated to achieve such product in efficiencies, based on carbon consumption, in excess of 10% and obtain the formation of acetic acid, ethanol, and/or acetaldehyde in an amount which is at least about 50 weight percent of the two or more carbon atom compounds obtained by the reaction, which reaction conditions include a temperature within the range of about 150°-450° C., a pressure within the range of about 15-10,000 psig, a space velocity of the synthesis gas in excess of about 10³ GHSV and a mole ratio of hydrogen to carbon monoxide within the range of 20:1 to 1:20.

4,246,187

SEPARATION OF 2,4-TOLYLENE DIISOCYANATE FROM MIXTURES OF 2,4- AND 2,6-TOLYLENE DIISOCYANATE

Ronald M. Yabroff, Prospect, Ky., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 17, 1979, Ser. No. 58,154
Int. Cl.³ C07C 119/048

U.S. Cl. 260-453 SP

6 Claims

1. A process for the separation of 2,4-tolylene diisocyanate

from a mixture of 2,4- and 2,6-tolylene diisocyanate containing at least about 60% by weight 2,4-tolylene diisocyanate which comprises continuously cooling said mixture of isocyanate by passing the mixture through a scraped-surface heat exchanger to crystallize a portion of the 2,4-tolylene diisocyanate contained in the mixture to form a slurry containing no more than about 25% by weight of crystals of 2,4-tolylene diisocyanate suspended in mother liquor, maintaining the resulting slurry for a nominal residence time of at least about 2 hours at about a constant temperature to permit crystal growth to occur, and centrifuging slurry to separate 2,4-tolylene diisocyanate crystals from the mother liquor.

4,246,188

ARYLSULFONIC ACID BROMOPHENYL ESTERS, THEIR PREPARATION, AND THEIR USE AS FLAMEPROOFING AGENTS

Egon N. Peterson, Neunkirchen-Seelscheid, and Hermann Rich-tzenhain, Much-Schwellenbach, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 660,953, Feb. 24, 1976, abandoned.

This application Oct. 2, 1978, Ser. No. 947,902

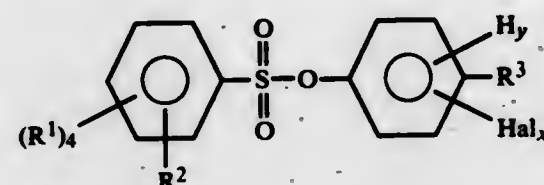
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1975, 2506993

Int. Cl.³ C07C 143/68

U.S. Cl. 260-456 P

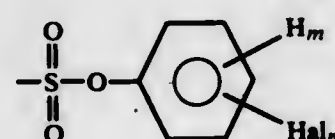
10 Claims

1. Aryl disulfonic acid esters of polybrominated phenols of the general formula

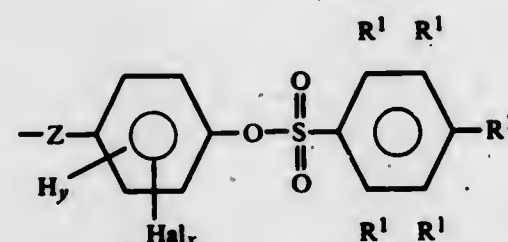


wherein

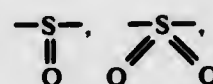
R¹ represents hydrogen, alkyl groups of 1 to 8 carbon atoms, bromine or chlorine,
R² represents R¹ or the group



Hal represents bromine or chlorine,
x the number 2 to 4,
n the numbers 3 to 5,
y the numbers 4-x,
m=5-n,
R³ represents the group



and Z represents -O-, -S-,



alkylene with 1 to 4 carbon atoms, or alkylidene.

4,246,189

PROCESS FOR THE PRODUCTION OF HYDROXYNITRILES FROM EPOXIDES AND KETONE CYANOHYDRINS

Axel Kleemann, Hanau, and Werner Schwarze, Frankfurt, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Aug. 29, 1979, Ser. No. 71,025

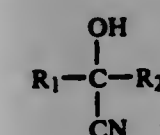
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1978, 2838536

Int. Cl.³ C07C 121/34, 121/75

U.S. Cl. 260-465 F

26 Claims

1. Process for the production of a hydroxynitrile comprising reacting an aliphatic, cycloaliphatic or aromatic epoxide with a ketone cyanohydrin of the formula



where R₁ and R₂ are 1 to 4 carbon atom alkyl groups in an alkaline medium at 20° to 150° C., the structure of the hydroxynitrile being derived from the epoxide except that the nitrile group is derived from the ketone cyanohydrin.

4,246,190

AMMOXIDATION WITH TELLURIUM CATALYSTS

Robert K. Grasselli, Chagrin Falls; Arthur F. Miller, Cleveland, and Dev D. Suresh, Warrensville Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 293,795, Oct. 2, 1972, abandoned. This application Feb. 14, 1977, Ser. No. 768,252

Int. Cl.³ C07C 120/14

U.S. Cl. 260-465.3

7 Claims

1. In the process for the preparation of acrylonitrile, methacrylonitrile or mixtures thereof by reacting propylene, isobutylene or mixture thereof with ammonia and molecular oxygen at a temperature between about 300° and about 600° C. in the presence of a catalyst, the improvement comprising: using as the catalyst an oxide catalyst having the formula:



wherein

A is an alkali metal, Tl, In, Cu, Ag or mixture thereof,
B is Ni, Co, Mg or mixtures thereof,
C is W, Cr, Ce, Zn, Cd, Mn, Cu, Ba or mixtures thereof,
D is P, As, Sb, B or mixture thereof,

and wherein

a and g are independently 0 to about 3,
b is about 6 to 8,
c is 0 to about 4,
d is about 0.1 to about 8,
f is about 0.04 to about 4,
h is 12,
x is the number of oxygens sufficient to satisfy the valence requirements of the other elements present,

and wherein b>d.

4,246,191

AMMOXIDATION PROCESS

Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 13, 1979, Ser. No. 65,827

Int. Cl.³ C07C 120/14

U.S. Cl. 260-465.3

6 Claims

1. In a process for the ammoxidation of C₃ to C₈ acyclic olefinic hydrocarbons wherein the olefinic hydrocarbons, an oxygen-containing gas and ammonia are passed into a reaction zone maintained at ammoxidation conditions including a temperature between 200° C. and 600° C. and are contacted with

a dense fluidized bed of ammoxidation catalyst and a gaseous effluent stream is received by a particle separation zone located at the top of the reaction zone; the improvement which comprises maintaining within said reaction zone said dense fluidized bed of said ammoxidation catalyst which possesses an upper surface interface proximate to said particle separation zone wherein said upper level of said dense fluidized bed of ammoxidation catalyst within said reaction zone possesses a surface interface near to said inlet of said particle separation zone located at the top of the reaction zone and maintaining a temperature profile from the midpoint of the reaction zone to the inlet of the particle

4,246,192

AMMOXIDATION PROCESS WITH ISOLATED CATALYST REGENERATION ZONE

Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 29, 1979, Ser. No. 88,987

Int. Cl.³ C07C 120/14

U.S. Cl. 260-465.3

11 Claims

1. A process for the ammoxidation of olefinic hydrocarbons which comprises the steps of:

- passing a feed stream which comprises an acyclic C₃-C₈ olefinic hydrocarbon into the lower one-half of a reaction zone which is maintained at ammoxidation conditions including a temperature between 350° C. and 550° C. and which contains a fluidized bed of catalyst;
- passing a first oxygen-containing stream and ammonia into the lower one-half of said reaction zone;
- removing from said reaction zone an effluent comprising an unsaturated nitrile and recovering said unsaturated nitrile;
- passing a stream of used catalyst from said reaction zone into an isolated regeneration zone which is maintained at catalyst oxidation conditions including a temperature between 350° C. and 550° C., but higher than said ammoxidation condition temperature within said reaction zone, and which contains a fluidized bed of catalyst;
- heating a second oxygen-containing stream consisting essentially of air to a temperature above 350° C. and passing said second air stream into said isolated regeneration zone;
- removing from said isolated regeneration zone a regeneration zone effluent stream which comprises at least 10 mole percent oxygen and passing said regeneration zone effluent stream into said reaction zone as a third oxygen-containing vapor stream to supply at least 8 mole percent of the total oxygen consumed within said reaction zone; and
- passing a stream of regenerated catalyst from said isolated regeneration zone to said reaction zone.

4,246,193

PROCESS FOR THE RESOLUTION OF D,L 2-(6-METHOXY-2-NAPHTHYL)PROPIONIC ACID

Percy G. Holton, Menlo Park, Calif., assignor to Syntex Corporation, Panama

Continuation-in-part of Ser. No. 55,258, Jul. 6, 1979, abandoned.

This application Nov. 26, 1979, Ser. No. 97,118

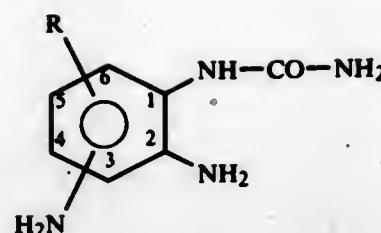
Int. Cl.³ C07C 91/10; A61K 31/205; C07B 19/00; C07C 65/24

U.S. Cl. 260-501.17

21 Claims

1. A process for separating d and l 2-(6-methoxy-2-naphthyl)propionic acid from a mixture of d and l 2-(6-methoxy-2-naphthyl)propionic acid or salts thereof comprising: preparing a mixture of d and l 2-(6-methoxy-2-naphthyl)propionic acid or soluble salts thereof and N-R-D-glucamine or a salt thereof, where R is alkyl having 2 to 36 carbon atoms or cycloalkyl having 3 to 8 carbon atoms, in an inert solvent to form the salts of d and l 2-(6-methoxy-2-naphthyl)propionic acid with N-R-D-glucamine, the salt of d 2-(6-methoxy-2-naphthyl)propionic acid with the N-R-

D-glucamine being significantly less soluble in the inert solvent than is the salt of 1 2-(6-methoxy-2-naphthyl)propionic acid with the N-R-D-glucamine at the temperature of crystallization, and crystallizing the salt of d 2-(methoxy-2-naphthyl)propionic acid with N-R-D-glucamine from said mixture to yield a salt product enriched in the salt of d 2-(6-methoxy-2-naphthyl)propionic acid with N-R-D-glucamine.



in which R is hydrogen, halogen, lower alkyl, lower alkoxy, phenyl, phenoxy or a fused benzene ring.

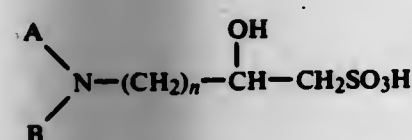
4,246,194 AMINO-HYDROXY-ALKYL SULFONIC ACID-ZWITTERIONS

Wilfred J. Ferguson, University Heights, Ohio, assignor to Research Organics, Inc., Ohio
Continuation of Ser. No. 927,125, Jul. 24, 1978, abandoned, which is a division of Ser. No. 858,616, Dec. 8, 1977, Pat. No. 4,189,950. This application Aug. 27, 1979, Ser. No. 69,880
Int. Cl.³ C07C 143/02; A61K 31/185

U.S. Cl. 260—513 N

4 Claims

1. Amino sulfonic acid compounds having the general formula



(Formula I)

wherein A and B are each independently a hydrogen atom or hydroxy aliphatic group containing up to four carbon atoms, and n is 1 or 2.

4,246,195 PURIFICATION OF CARBONYLATION PRODUCTS

Peter L. Szecsi, Lake Hiawatha, N.J., assignor to Halcon Research and Development Corporation, New York, N.Y.
Filed Oct. 6, 1978, Ser. No. 949,345

Int. Cl.³ C07C 51/56

U.S. Cl. 260—549

4 Claims

1. A process for the purification of methyl acetate carbonylation products produced by the reaction of carbon monoxide upon methyl acetate in the presence of a Group VIII noble metal and an iodine moiety, optionally also in the presence of hydrogen, to remove organic iodine contaminants including methyl iodide therefrom which comprises treating said products with a small but effective amount of a treating agent which is cesium acetate, potassium acetate or sodium acetate to form inorganic salts from the iodine in said organic contaminants, and separating said carbonylation products from said salts.

4,246,196 DIAMINOPHENYL UREAS

Otto Arndt, Hofheim am Taunus; Theodor Papenfuhs, Frankfurt am Main; Peter Böhme, Kelkheim; Wolfgang Tronich, Hofheim am Taunus, and Bernhard Mees, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst AG., Frankfurt am Main, Fed. Rep. of Germany
Filed Dec. 20, 1979, Ser. No. 105,500

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855883

Int. Cl.³ C07C 127/19

U.S. Cl. 564—50

10 Claims

1. A compound of the formula

4,246,197 6-KETO-PGE₁ AMIDES

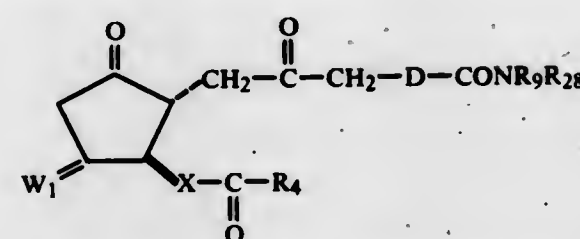
Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 829,679, Sep. 2, 1977, Pat. No. 4,205,178, and a continuation-in-part of Ser. No. 755,675, Dec. 30, 1976, abandoned. This application Aug. 27, 1979, Ser. No. 70,225

abandoned. This application Aug. 27, 1979, Ser. No. 70,225
Int. Cl.³ C07C 103/19

U.S. Cl. 564—169

37 Claims

1. A compound of the formula



wherein W₁ is α-OH:β-H, α-H:β-OH, α-H:β-H, methylene, or α-CH₂OH:β-H;

wherein Q is oxo, α-H:β-H, α-R₈:β, -OH, or α-OH:β-R₈ wherein R₈ is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein R₄ is

- (1) —C(R₅)(R₆)—C₂H₅—CH₃
- (2) —C(R₅)(R₆)—Z—(Ph) or
- (3) cis—CH₂—CH=CH—CH₂CH₃,

wherein C₂H₅ is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR₅R₆— and terminal methyl, wherein R₅ and R₆ are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R₅ and R₆ is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R₅ nor R₆ is fluoro when Z is oxo (—O—); wherein Z represents an oxo atom (—O—) or C₂H₅, wherein C₂H₅ is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR₅R₆— and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s,

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR₇— wherein R₇ is alkyl of one to 4 carbon atoms, inclusive; and wherein s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different.

wherein D is

- (1) —(CH₂)_d—C(R₂)₂—
- (2) —(CH₂)_d—O—CH₂—Y—
- (3) —CH₂—CH=CH—

wherein d is zero to 5, R₂ is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R₂ is not methyl when the other is fluoro, and Y is a valence bond, —CH₂— or —(CH₂)₂—,

wherein R₉ is hydrogen, methyl or ethyl and R₂₈ is hydrogen, alkyl of one to 4 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with alkyl of one to 4 carbon atoms, inclusive; and

and wherein X is

- (1) trans—CH=CH—
- (2) cis—CH=CH—
- (3) —C=C—
- (4) —CH₂CH₂—

4,246,198 HINDERED PHENOLIC AMIDES

Siegfried Rosenberger, Riehen, and Andreas Schmidt, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 922,164, Jul. 5, 1978, abandoned, which is a continuation of Ser. No. 795,684, May 11, 1977, abandoned.

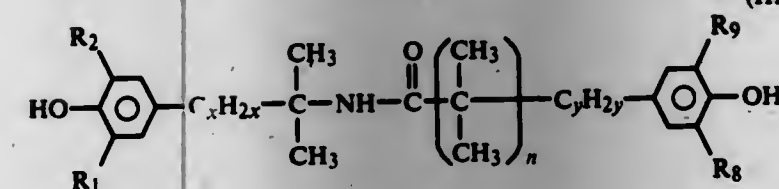
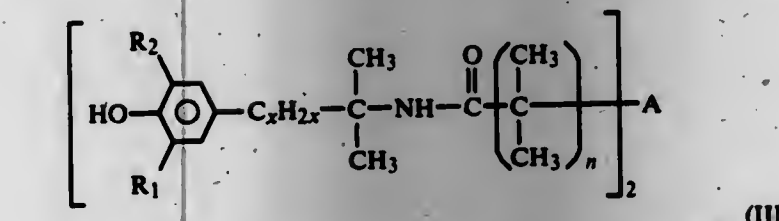
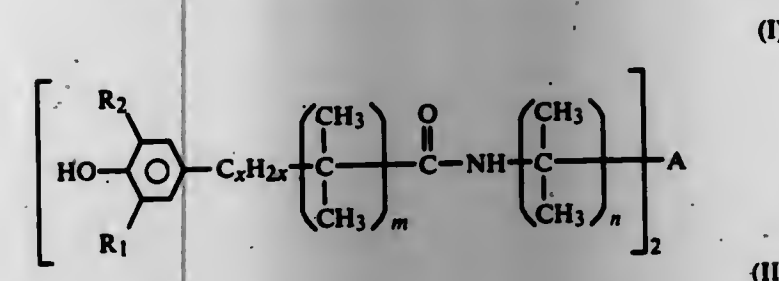
This application May 10, 1979, Ser. No. 37,854
Claims priority, application Switzerland, May 19, 1976, 6254/76

Int. Cl.³ C07C 103/38, 103/78

U.S. Cl. 564—158

4 Claims

1. A phenol of the formulae I, II or III



wherein R₁, R₂, R₈ and R₉, independently of one another, are methyl or tert-butyl, x and y, independently of one another, are 1 or 2, one of m and n is 1 and the other is 0 or 1 and A is C₂—C₈ alkylene.

4,246,199 PROCESS FOR THE PREPARATION OF N-ALKYL-SUBSTITUTED CARBOXYLIC ACID AMIDES

Dieter Arlt, Cologne, and Franz-Gerhard Behlau, Duesseldorf, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed May 30, 1978, Ser. No. 911,009

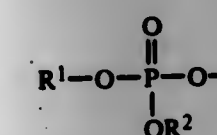
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2725889

Int. Cl.³ C07C 102/08

U.S. Cl. 564—124

17 Claims

1. In a process for the preparation of N-alkyl-substituted carboxylic acid amides by contacting a component which forms a carbonium ion with nitrile in the presence of an unneutralized acid, the improvement which comprises employing as the acid an acid of the formula HY wherein Y represents



wherein:

1002 O.G.—46

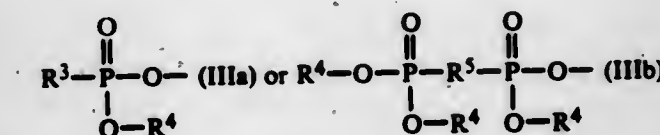
R¹ and R² are identical or different and represent hydrogen or an alkyl radical with 1 to 12 carbon atoms; or



wherein:

R¹ represents an alkyl radical with 1 to 12 carbon atoms or,

Y represents



wherein

R³ represents a straight-chain or branched alkyl or alkenyl radical, aryl, or aralkyl, R⁴ represents hydrogen or a straight or branched alkyl radical, and

R⁵ represents an alkylene radical, which is optionally substituted by C₁ to C₄ alkyl, or an arylene radical; or Y represents R₆—SO₃— wherein

R₆ represents an alkyl radical or aralkyl radical, which is optionally substituted by fluorine or chlorine, or an aryl radical, which is optionally substituted by fluorine, chlorine, C₁—C₄ alkyl or a sulphonic acid group, and separating the resultant reaction mixture by distillation.

4,246,200 PERFLUORO INTERMEDIATES AND PROCESSES FOR THEIR PREPARATION

Claude Wakselman, Villebon, and Marc Tordeux, Fontenay-aux-Roses, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

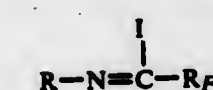
Filed May 29, 1979, Ser. No. 43,042

Claims priority, application France, Jun. 8, 1978, 78 17163
Int. Cl.³ C07C 119/00

U.S. Cl. 564—248

7 Claims

1. A compound having the formula:



in which R_F is a perfluoro group C_nF_{2n+1} with n=1-20, and R is selected from C₁₋₂₀ alkyl, C₄₋₁₅ cycloalkyl, C₅₋₂₀ cycloalkyl-alkyl, benzyl and 2,6-dimethyl phenyl.

4,246,201 SUBSTITUTED N-(3-PHENYLTHIOPROPYL)-3,3-DIPHENYL-PROPYLA- MINES POSSESSING PHARMACOLOGICAL ACTIVITY

Valerio Borzatta, Bologna, Italy, assignor to Alfa Farmaceutici, S.p.A., Bologna, Italy

Filed Jun. 11, 1979, Ser. No. 47,226

Int. Cl.³ A01N 33/02, 43/08; C07C 87/28, 143/00

U.S. Cl. 564—317

1 Claim

1. N-(3'-p-hydroxyphenylthiopropyl)-3,3-diphenylpropylamine and its pharmaceutically acceptable salts.

4,246,202

PRODUCTION OF CYCLIC HYDROCARBONS FROM NORMAL OCTENES

John L. Chonski, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed May 23, 1979, Ser. No. 41,681

Int. Cl.³ C07C 85/11, 15/42, 12/46, 5/31

U.S. Cl. 564-423

5 Claims

1. A process for the production of cyclic hydrocarbons from light acyclic hydrocarbons which comprises contacting n-octene feed with an oxidized palladium metal catalyst in the presence of molecular oxygen at a temperature between about 130° C. and 500° C. and a pressure between about 1 and 200 psi to convert n-octene to vinylcyclohexene and ethylbenzene.

4,246,203

PROCESS FOR THE PRODUCTION OF A PHENOL AND A CARBONYL COMPOUND BY THE CATALYZED DECOMPOSITION OF AN AROMATIC HYDROPEROXIDE

Max M. Wirth, Culross, Scotland, assignor to BP Chemicals Limited, London, England

Filed Aug. 9, 1979, Ser. No. 65,074

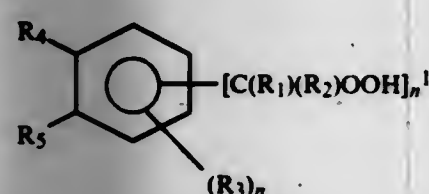
Claims priority, application United Kingdom, Aug. 18, 1978, 33857/78

Int. Cl.³ C07C 37/08, 45/53

U.S. Cl. 568-385

19 Claims

1. A process in which a hydroperoxide of an aromatic compound of formula:



wherein independently R₁ is methyl or ethyl, R₂ hydrogen, methyl or ethyl, or where R₁ and R₂ together form an alicyclic ring of 5 or 6 carbon atoms, R₃ is hydrogen or alkyl and R₄ and R₅ are hydrogen, alkyl or together form an aromatic ring, n is 0, 1 or 2 and n¹ is 1 or 2, is converted to a volatile phenol and a carbonyl compound in a cleavage decomposition reaction which process comprises continuously feeding said hydroperoxide to a reactor in which it is contacted with a cleavage decomposition catalyst at an elevated temperature and at a pressure such that cleavage decomposition of the hydroperoxide occurs, said reactor being capable of separating the vapourised relatively low-boiling components from higher-boiling liquid products and catalyst and continuously removing from said reactor a mixture in the vapour phase containing said phenol and said carbonyl compound cleavage decomposition products and in the liquid phase higher-boiling residues.

4,246,204

PROCESS FOR MANUFACTURING TRIPHENYLPHOSPHINE

Emil A. Broger, Magden, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 21, 1979, Ser. No. 41,216

Claims priority, application Switzerland, Jun. 2, 1978, 6072/78

Int. Cl.³ C07F 9/50

U.S. Cl. 568-17

18 Claims

1. A process for producing triphenylphosphine comprising hydrogenating triphenylphosphine dichloride in an inert solvent in the presence of a catalyst selected from the group consisting of platinum, palladium, rhodium, ruthenium and iridium.

4,246,205

PROCESS FOR PREPARING HEXACHLOROCYCLOPENTADIENE

Kalidas Paul, Bolingbrook, and Glendon D. Kyker, Glen Ellyn, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Sep. 20, 1979, Ser. No. 77,463

Int. Cl.³ C07C 17/00

U.S. Cl. 570-220

1 Claim

1. A process for the production of hexachlorocyclopentadiene comprising the steps of:

- reacting liquid cyclopentadiene and chlorine at a temperature of from about 0° to about 100° C. until a minimum of 4 chlorine atoms has been added per mole of cyclopentadiene to form a first-stage product;
- heating the resultant liquid reaction product of step (a) in a second stage at a temperature of from about 140° C. to below about 200° C. with chlorine in the presence of from about 0.0001% to about 5.0% (by weight) of dipicolinic acid until the reaction products of step (a) contain an average of about 6 chlorine atoms per molecule, based on cyclopentadiene starting material;
- vaporizing and heating the resulting reaction products of step (b) in a third stage in the presence of chlorine to a temperature of about 450° C. until at least a major portion of said products are converted to hexachlorocyclopentadiene; and
- recovering therefrom hexachlorocyclopentadiene.

4,246,206

PROCESS FOR THE PREPARATION OF N,N-BIS-(2-HYDROXYALKYL)-AMINOMETHANE PHOSPHONIC ACID DIMETHYL ESTER

Karl-Heinz Mitschke, Odenthal, and Manfred Kapps, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 23, 1978, Ser. No. 954,047

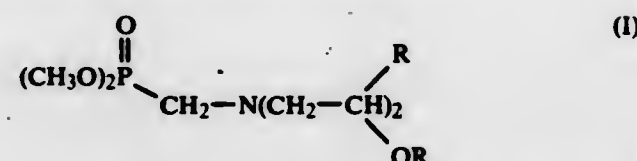
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750555

Int. Cl.³ C07F 9/40; C08G 18/28

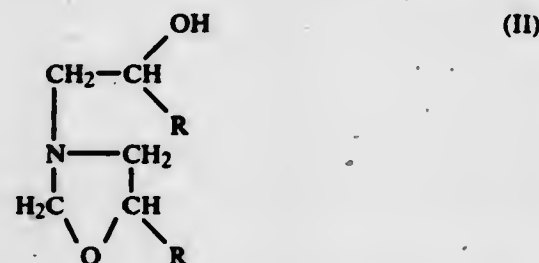
U.S. Cl. 260-970

4 Claims

1. A process for the preparation of N,N-bis-(2-hydroxyalkyl)-aminomethane phosphonic acid dimethyl esters corresponding to the following general formula:



wherein each R may be the same or different and represents hydrogen or a linear or branched alkyl or halogen-substituted alkyl radical containing from 1 to 6 carbon atoms, comprising reacting oxazolidines corresponding to the following general formula:



with dimethyl phosphite in the presence of H-acid compounds, said H-acid compounds being used in a quantity of from 2 to 25 mol percent based on the end product.

4,246,207

METHOD FOR CASTING GLASS-PLASTIC LENSES COMPRISING ALLYL DIGLYCOL CARBONATE PLASTIC

Anton A. Spycher, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 839,494, Oct. 5, 1977,

abandoned. This application May 14, 1979, Ser. No. 38,864

Int. Cl.³ B29D 11/00

U.S. Cl. 264-1

3 Claims

1. A direct casting process for making a glass-plastic laminated lens comprising at least one glass layer and at least one plastic layer consisting of a cured allyl diglycol carbonate resin bonded to the glass layer, the process comprising the steps of positioning a glass sheet for the glass layer in a mold, injecting liquid allyl diglycol carbonate resin for the plastic layer into the mold and against the glass sheet, and heat curing the resin while in contact with the glass and mold to provide the glass-plastic laminated lens, wherein:

- the portion of the mold contacted by the plastic resin upon casting and during heat curing is fabricated from a glass-ceramic material having a surface roughness not exceeding one micron, a abraded modulus of rupture strength of at least about 10,000 psi, a thermal conductivity of at least about 0.0040 cal/sec.cm.°C., and an average linear coefficient of thermal expansion not exceeding about 60×10⁻⁷/°C. over the temperature range of 0°-300° C., and p1 (b) the glass-plastic laminated lens is cooled in the mold, following heat curing, for a cooling interval at least sufficient to reduce the temperature of the lens to about 40° C.

4,246,208

DUST-FREE PLASMA SPHEROIDIZATION

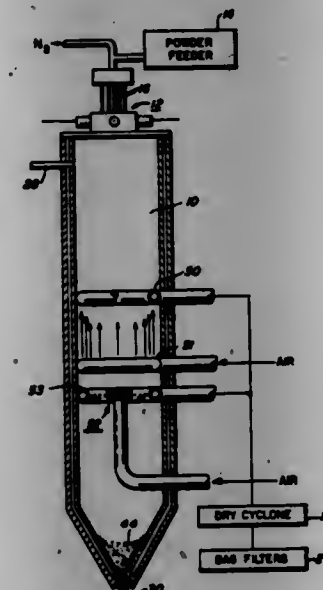
Peter H. Dudas, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 22, 1979, Ser. No. 22,748

Int. Cl.³ B01J 2/16

U.S. Cl. 264-14

2 Claims



1. In a method for manufacturing spheroidized beads in which ore particles are fed to the top of a spheroidization chamber, the ore particles being melted as a result of falling through a carbon arc plasma flame, the molten ore particles continuing to fall and by cooling being solidified forming beads, the beads being collected in the bottom of the spheroidization chamber and wherein dust particles are also formed in the spheroidization chamber inherently as a by-product of the ore melting and solidifying process, the improvement comprising providing, through a gas distributor, a horizontal flow of gas in the spheroidization chamber, the horizontal flow of gas being in the path of the falling solidified beads and dust particles, the flow of gas being of a quantity sufficient to entrain at least a portion of the dust particles and also of sufficient quantity to remove the thus entrained dust particles from the spheroidization chamber through an outlet gas toroid located in the spheroidization chamber in a position substantially horizontal to the position of the gas distributor.

4,246,209

FREEZING INORGANIC PARTICULATE SLURRIES

Robert Smith-Johannsen, Incline Village, Nev., assignor to Ramo International, Incline Village, Nev.

Filed Mar. 2, 1979, Ser. No. 16,871

Int. Cl.³ B01J 13/00

U.S. Cl. 264-28

23 Claims

1. A process of freezing an inorganic particulate aqueous slurry or suspension containing a freeze-sensitive colloidal ceramic sol which comprises supercooling the slurry in a freezing media and then freezing the slurry.

4,246,210

LOW TEMPERATURE MATURATION OF SHEET MOLDING COMPOSITIONS

Edward L. Wilson, Newark; Walter D. Cottrell, Granville, and Robert J. Gella, Newark, all of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Aug. 4, 1978, Ser. No. 931,043

Int. Cl.³ B05B 3/00

U.S. Cl. 264-28

10 Claims

1. A method for thickening a sheet molding composition comprising an unsaturated polyester, a monomer and a thermoplastic to a condition wherein it is handleable, said method comprising subjecting said sheet molding composition to a temperature substantially less than ambient temperature.

4,246,211

PROCESS FOR THE PRODUCTION OF FOAM MATERIALS ON POLYOLEFIN BASIS

Werner Kühnel, Neunkirchen-Seelscheid, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,722

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811642

Int. Cl.³ B29D 27/00

U.S. Cl. 264-37

12 Claims

1. A process for the production of polyolefin foam material from crosslinked polyolefin foam scraps which comprises mixing a polyolefin or a blend of a polyolefin with an elastomer and/or other synthetic resin with an organic peroxide as a crosslinking agent and a blowing agent, the decomposition temperature of the crosslinking agent being below the decomposition temperature of the blowing agent; forming the resulting mixture at a temperature lying below the decomposition temperatures of the crosslinking agent and the blowing agent into a first shaped article; subsequently crosslinking and expanding the first shaped article by heating to above the decomposition temperatures of the crosslinking agent and the blowing agent to form the first shaped article into a crosslinked polyolefin containing foam material; obtaining scraps of said crosslinked polyolefin-containing foam material produced during the formation of the first shaped article; comminuting and compressing the crosslinked polyolefin-containing foam scraps at a temperature lying below decomposition temperature of the crosslinking agent, further comminuting the resulting compressed product insofar as the product is not obtained in comminuted form; plasticating the comminuted product at a temperature lying below the decomposition temperature of the crosslinking agent, forming a second shaped article from plasticated material; and crosslinking and expanding the second shaped article by heating to above the decomposition temperatures of the crosslinking agent and of the blowing agent.

4,246,212

METHOD AND APPARATUS FOR OPTIMIZING THE OUTPUT OF A BLOWN FILM EXTRUDER PLANT BY MEANS OF A PROCESS COMPUTER

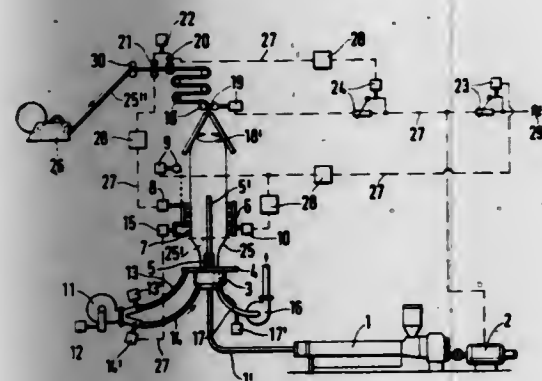
Hartmut Upmeyer; Helmut Helbig; Werner J. Zimmermann; Gerhard Winkler, all of Lengerich, and Ferdinand Löning, Weener, all of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany
Filed Apr. 13, 1979, Ser. No. 29,929

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816583

Int. Cl.³ B29D 23/04

U.S. Cl. 264—40.1

17 Claims



1. A method of optimizing the output of a film blowing plant comprising an extruder, a film blowhead for blowing a tubular bubble, film calibrating means, reversing film take-off means and a coiler for flattened tubular film, by using a process computer controlling the film width and thickness, the method comprising: determining a desired value of the height of the line of solidification of the film above the blowhead, measuring the height of the line of solidification, and, according to the departure of the measured height from the desired value, increasing or reducing extruder output.

9. A film blowing apparatus comprising:

an extruder;
film blowhead means connected to said extruder for forming a tubular bubble;
film calibrating means spaced from said film blowhead means for calibrating the tubular bubble;
take-off means for flattening the tubular bubble to form tubular film, one of said film blowhead means and said take-off means having a to and fro reversing motion;
coiler means for coiling flattened tubular film;
first measuring means for sensing and for generating signals representative of film width and thickness;
first means responsive to said measuring means for controlling film width and thickness;
means for determining a desired maximum spacing between said film calibrating means and said film blowhead means;
second measuring means for measuring and for generating signals representative of the height of the line of solidification of the tubular film above the film blowhead means; and

second means responsive to said second measuring means for comparing the measured height to the desired maximum spacing between said film calibrating means and said film blowhead means, said film calibrating means being adjustable with respect to said film blowhead means so that the spacing therebetween is adjustable and a portion of the film calibrating means is positionable in the vicinity of the line of solidification, said second means adjusting extruder output when the height of the line of solidification departs from the desired maximum spacing between said film calibrating means and said film blowhead means.

4,246,213

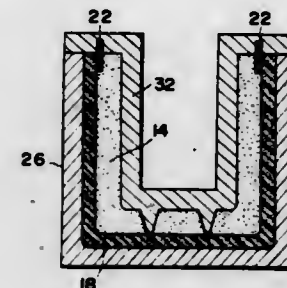
METHOD OF PRODUCING A COVER MEMBER FOR A SAFETY AIR-CUSHION

Yukio Takamatsu, Ikeda; Takashi Wakabayashi, Toyonaka; Hideyo Noda, Kyoto; Kiyoshi Ichikawa, Tokyo; Tsuneteru Kamegai, Yokosuka, and Kazuo Ikawa, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Division of Ser. No. 746,713, Dec. 2, 1976, Pat. No. 4,120,516.
This application Aug. 2, 1978, Ser. No. 930,322

Int. Cl.³ B29D 27/04; B32B 5/20

U.S. Cl. 264—46.7

5 Claims



1. A method of producing a two-layered polyurethane foam cover member for an expansible air-cushion in a dormant condition, comprising in steps:

- (a) pouring a first fluidized formable urethane material into a female mold;
- (b) preparing a first male mold which has at least one first projection on its outer surface;
- (c) inserting said first male mold into said female mold and setting said first male mold in the female mold in such a manner that a certain clearance which is to be filled with said first fluidized foamable urethane material is formed between an outer surface of said first male mold and an inner surface of said female mold and that said first projection is prevented from reaching the inner surface of said female mold;
- (d) removing said first male mold from said female mold upon completion of solidification of said first fluidized foamable urethane material, while leaving the article of the urethane foam in said female mold;
- (e) preparing a second male mold which has at least one second projection on its outer surface;
- (f) inserting said second male mold into said female mold and setting said second male mold in said female mold in such a manner that a certain clearance is defined between an inner surface of said article of the urethane foam and an outer surface of said second male mold and that the leading end of said second projection is received in a groove which has been formed, upon the step "d", at the inner surface of said article of the urethane foam;
- (g) pouring a second fluidized foamable urethane material into said clearance; and
- (h) removing said second male mold from said female mold when solidification of said second fluidized foamable urethane material is completed.

4,246,214

METHOD OF MOLDING POLYURETHANE FOAMS IN STEAM HEATED MOLDS AND ADHESION STEAM CONDENSATE IS USED TO COOL THE MOLDS

Jürgen Osswald; Heinz W. Patzelt, and Helmut Schmidt, all of Memmingen, Fed. Rep. of Germany, assignors to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany
Filed Sep. 25, 1978, Ser. No. 945,704

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820802

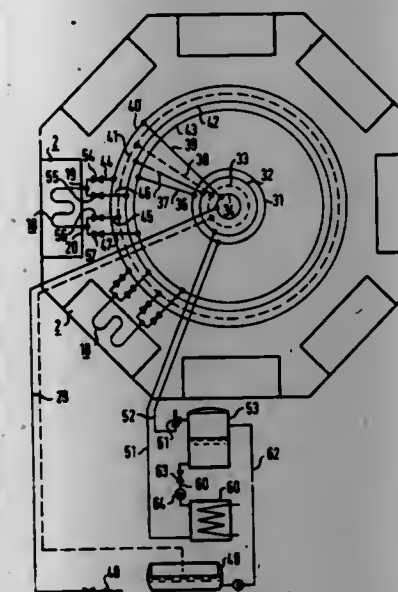
Int. Cl.³ B29D 27/04

U.S. Cl. 264—51

2 Claims

1. Method of heating and cooling molds of a foam molding apparatus for forming articles of polyurethane hot-foam

wherein molds having a plurality of tubular coils disposed at the surfaces thereof are initially filled with a flowable polyurethane foam material mixture, which comprises passing superheated steam through the tubular coils for heating the molds from a starting temperature to a temperature exceeding the temperature of water vaporization, condensing the steam and,



after removing the formed article, passing the condensate of the steam as cooling water through the very same tubular coils at elevated pressure to avoid vaporization of the cooling water due to the heated temperature of the molds which exceeds water vaporization temperature, so as to recool the molds to the starting temperature thereof.

4,246,215

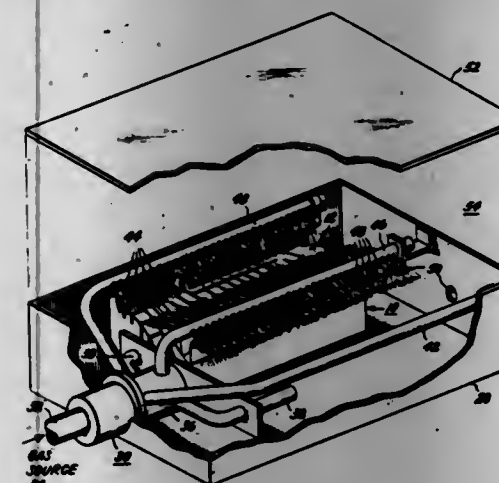
METHOD FOR FIRING LOW DENSITY GRAPHITE/ALUMINA COMPACTS AND CORES

Wayne D. Pasco, Ballston Spa; Frederic J. Klug, Amsterdam, and Marcus P. Borom, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Jun. 6, 1979, Ser. No. 46,118

Int. Cl.³ C04B 15/14

U.S. Cl. 264—64

9 Claims



1. A method for firing a ceramic compact to produce at least a substantially distortion-free ceramic consisting essentially of:

- (a) disposing a porous alumina-based compact having upper and lower surfaces and comprising a ceramic material and a reactant fugitive filler material selected from the group consisting of elemental carbon and a carbon-bearing material in a controlled gaseous atmosphere of hydrogen having a dewpoint less than -30°F ;
- (b) heating the compact to an elevated temperature to fire the compact;
- (c) directing a first portion of said gaseous atmosphere to impinge directly on the upper surface of the compact;

- (d) simultaneously passing a second portion of said gaseous atmosphere beneath the lower surface of the compact;
- (e) aspirating a part of the flow of said first portion of said gaseous atmosphere as an effect of the flow of the second portion of said gaseous atmosphere to cause a part of the flow of said first portion of gaseous atmosphere to be directed about and through the porous structure of the compact to remove sufficient reaction products therefrom to produce said substantially distortion-free ceramic.

4,246,216

METHOD FOR MANUFACTURING A GAS DELIVERY DEVICE

Gerard Bentz, Elancourt-Trappes, and Bernard Racouchot, Franconville, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude, Paris, France

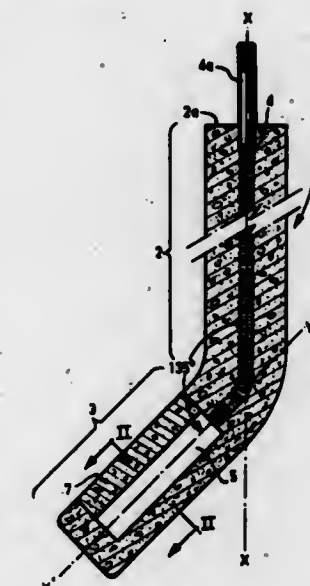
Division of Ser. No. 873,618, Jan. 30, 1978, Pat. No. 4,179,103.

This application Apr. 12, 1979, Ser. No. 29,307

Claims priority, application France, Feb. 10, 1977, 77-03701
Int. Cl.³ B28B 1/08

U.S. Cl. 264—71

9 Claims



2. A method of manufacturing a delivery device for injecting gas into a mass of molten metal, the method comprising the steps of centrally locating a gas delivery conduit in a first mold, positioning a core within the first mold adjacent one end thereof, forming an elongate body member by pouring refractory granular material and a binder into the first mold with the gas delivery conduit and the core therein, the core providing a recess adjacent one end of the body member, subjecting the first mold to mechanical vibration, separately casting a porous element in a second mold in a manner to render the element permeable to fluids, removing the porous element from the second mold and inserting the same into the recess in said body member, and thereafter subjecting the assembled body member and porous element to heat treatment at a temperature from about 400°C . to about 500°C . for a period of time of from about 8 hours to about 12 hours.

4,246,217

CONDUCTIVE RUBBER ANTENNAS HAVING IMPROVED PHYSICAL AND ELECTRICAL PROPERTIES

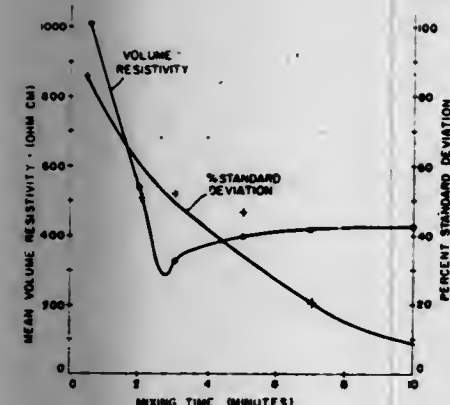
H. Clarke Hottel, Jr., Mattapoisett, Mass., and Raymond A. Berard, Portsmouth, R.I., assignors to Acushnet Company, New Bedford, Mass.

Continuation-in-part of Ser. No. 938,229, Aug. 30, 1978, abandoned, which is a continuation of Ser. No. 747,189, Dec. 3, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 956,057

Int. Cl.³ C04B 35/00

U.S. Cl. 264—105

8 Claims



1. A method of making a conductive elastomer article having a stable volume resistivity despite being subjected to stress and strain comprising:

- (a) admixing high structure carbon black with an uncured base elastomer;
- (b) milling said admixture under total shear sufficient to achieve a standard deviation of volume resistivity of said admixture after curing of less than 20 percent of the mean volume resistivity based on a minimum of five samples said mixing time being greater than that necessary to obtain the minimum mean volume resistivity for said mixture;
- (c) shaping the admixture to its desired form; and
- (d) curing said admixture.

6. A method of making an antenna comprising:

- (a) admixing high structure carbon black with an uncured base elastomer in proportions of from about 35 to about 200 parts by weight of high structure carbon black per 100 parts by weight of base elastomer;
- (b) milling said mixture under total shear sufficient to achieve a standard deviation of volume resistivity after curing of less than 20 percent of the mean volume resistivity based on five samples said mixing time being greater than that necessary to obtain the minimum mean volume resistivity for said mixture;
- (c) forming said admixture into at least two of said antennas in a connected set;
- (d) said forming including embedding at least one metallic connector in each of said antenna;
- (e) said forming further including embedding a test connector in a test mass of conductive elastomer which is connected to each of said antennas;
- (f) curing said connected set; and
- (g) severing said antennas from said test mass and each other.

4,246,218

PROCESS FOR THE MANUFACTURE OF A PIECE COMPRISING AT LEAST ONE POROUS ABRADABLE MATERIAL

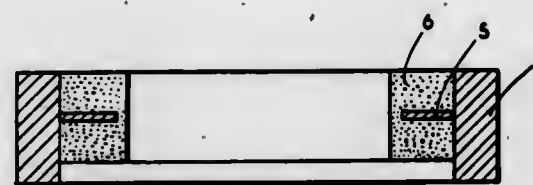
Jacques Lesgourgues, Corbeil, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Jul. 23, 1979, Ser. No. 59,751

Claims priority, application France, Jul. 25, 1978, 78 21895 Int. Cl.³ B22F 3/16

U.S. Cl. 264—111

3 Claims



1. Process for the manufacture of shaped pieces comprising a first part of a porous material subject to wear by abrasion and a second support part of a solid material, comprising the steps of: providing a mold, at least one part of which constitutes a support part, coating the internal surface of the other parts with an antiwetting agent, effecting synthesis of the porous material and its bonding to the support part by filling said mold with a homogeneous mixture of two powders, one of which, representing 80 to 99.5% by weight of the mixture, is a base material selected from the group consisting of nickel, cobalt, iron and different alloys of these metals, and the other, representing 0.5% to 20% by weight of the mixture, is a fusible material capable of diffusion and chosen from the group consisting of tin, indium, gallium, germanium, antimony, together with mixtures and alloys of said metals and by heating said mold in a controlled atmosphere, at a temperature higher than 900° C. but in all cases lower than the solidus of the base material and the material of the mold, for a sufficient period of time to permit the migration of the fusible material and the bonding, by means of diffusion brazing, of the grains of the powder to each other and to the support part.

4,246,219

MULTISEGMENTED FILAMENT SPINNING PROCESS

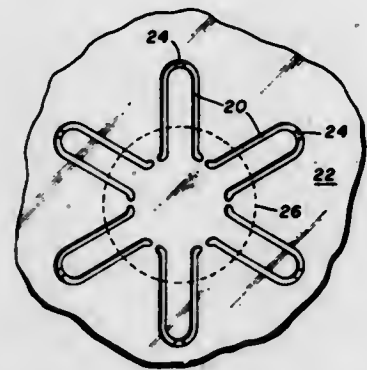
Jing-peir Yu, and James E. Bromley, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 27, 1979, Ser. No. 24,350

Int. Cl.³ B29F 3/10

U.S. Cl. 264—171

6 Claims



1. A spinning process for producing a spun stream comprising a plurality of separate spun interfaces from a given single interface between different polymers in a supply stream, said given interface extending generally parallel to the direction of said supply stream, said process comprising:

- a. passing said supply stream through a spinneret orifice, said orifice being effectively in the form of an elongated slot, the cross-sectional shape of said orifice and the cross-sectional shape of said given interface being selected and located with respect to one another such that a first por-

tion of said given interface passes through and extends transversely across the width of said slot at a first location along the length of said slot, and a second portion of said given interface passes through and extends transversely across the width of said slot at a second location along the length of said slot; and

- b. solidifying said spun stream issuing from said slot.

4,246,220

PROCESS FOR PRODUCING PELLETIZED KAOLIN CLAY

Trevor G. Lamond, and Charles R. Cuthbertson, both of Borger, Tex., assignors to J. M. Huber Corporation, Locust, N.J.

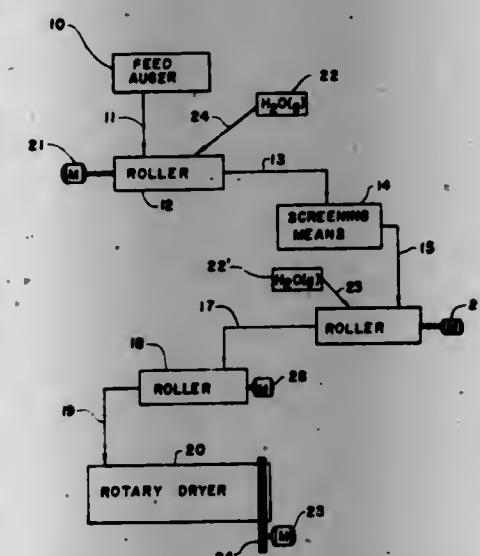
Filed Jun. 22, 1979, Ser. No. 51,093

The portion of the term of this patent subsequent to Jun. 26, 1996, has been disclaimed.

Int. Cl.³ B01J 2/12

U.S. Cl. 264—117

1 Claim



1. A process for making densified kaolin clay pellets of high bulk density, good handling and bulk flow properties, and low moisture content consisting essentially of:

- (a) providing a substantially dry, finely divided kaolin clay to be pelletized to be fed to a roller means;
- (b) feeding said substantially dry, finely divided kaolin clay to said roller means;
- (c) mixing said kaolin clay in said roller means;
- (d) adding a quantity of water in the form of a fine spray of steam to the substantially dry, finely divided kaolin clay in an amount sufficient to bring the total moisture content of the finely divided kaolin clay to from about 17% to about 26% by weight based on the weight of said dry kaolin clay during mixing in said roller means and working said moistened kaolin clay in said roller means;
- (e) passing said kaolin clay from said roller means onto screening means;
- (f) screening said kaolin clay in said screening means to establish the pellet size;
- (g) passing said kaolin clay from said screening means into a second roller means for forming densified pellets of said screened kaolin clay and forming pellets of said screened kaolin clay therein and further pelletizing and polishing said kaolin clay in said second roller means;
- (h) passing said pelletized kaolin clay from said second roller means into a rotary dryer means for drying said pellets; and
- (i) drying said pellets to a moisture content of less than about 1% by weight based on the weight of said dry kaolin clay.

4,246,221

PROCESS FOR SHAPED CELLULOSE ARTICLE PREPARED FROM A SOLUTION CONTAINING CELLULOSE DISSOLVED IN A TERTIARY AMINE N-OXIDE SOLVENT

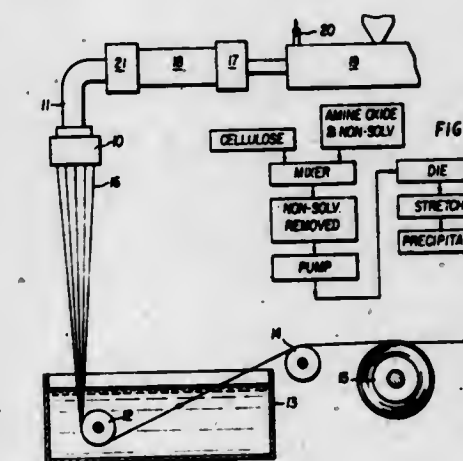
Clarence C. McCoskey, III, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 847,200, Oct. 31, 1977, abandoned, and a continuation-in-part of Ser. No. 819,082, Jul. 26, 1977, Pat. No. 4,144,080. This application Mar. 2, 1979, Ser. No. 16,789

Int. Cl.³ D01F 6/00

U.S. Cl. 264—203

6 Claims



1. A process for making a cellulose fiber or film which comprises extruding a solution containing a cellulose dissolved in a tertiary amine N-oxide solvent containing a nonsolvent for cellulose to shape the solution as a film or filament, stretching the film or filament while still a solution to orient the molecules and develop improved physical properties in said cellulose fiber or film, and precipitating the cellulose from said solution to set the properties thereof without additional drawing.

4,246,222

GEL SLAB CASTING

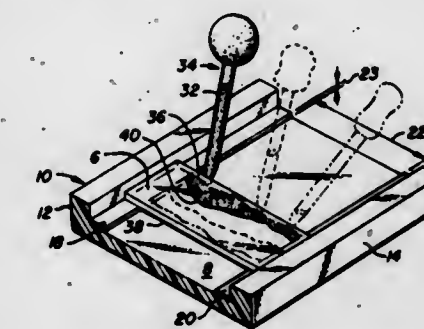
James F. Monthey, Albany, Calif., assignor to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Oct. 22, 1979, Ser. No. 87,196

Int. Cl.³ B29C 1/02

U.S. Cl. 264—219

8 Claims



1. A method of casting a gel slab useful in electrophoretic procedures, comprising the steps of

- (a) forming a space having first and second opposing open edges between the facing surfaces of parallel horizontally positioned upper and lower plates separated a predetermined capillary action-inducing distance apart;
- (b) introducing a gel forming liquid into said space at one of said open edges whereby said liquid is an amount substantially equal in volume to the volume of said space along the entirety of said first opposing edge in a manner which produces a front of said liquid, said front being drawn into said space by capillary action thereby displacing and

expelling air out said second opposing open edge and is contained therein by surface tension; and
(c) forming from said liquid a gel adhered to at least one of said surfaces.

4,246,223

METHOD AND APPARATUS OF MAKING A COMPARTMENT TRAY

Willis C. Patterson, Marion, Ohio, assignor to Peerless Machine and Tool Corporation, Marion, Ind.

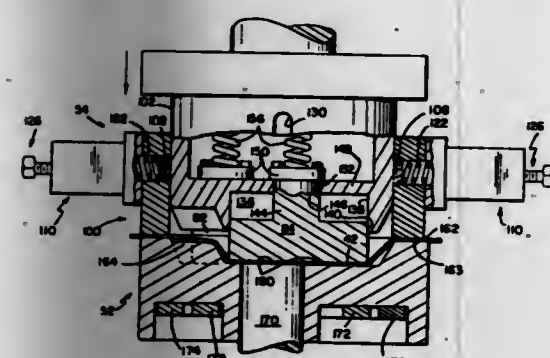
Division of Ser. No. 890,269, Mar. 27, 1978, Pat. No. 4,149,841.

This application Nov. 20, 1978, Ser. No. 962,206

Int. Cl.³ B29D 7/24

U.S. Cl. 264—292

8 Claims



1. A method of deep-drawing from sheet material a container having a plurality of compartments separated by ridges, the sheet material being formed between mating male and female dies, the forming process including the step of pre-forming the sheet material by engagement of the sheet material between surfaces of the female die corresponding to the plurality of container compartments and plungers which are movably mounted in portions of the male die corresponding to the plurality of container compartments, the plungers mounted in the male die to be yieldably urged outwardly from the male die, movement of the male die toward the female die during a forming stroke first causing the plungers to contact the sheet material to pre-form it, then causing the other parts of the male die to move into container-forming orientation with respect to the female die as the plungers are urged back into the male die.

4,246,224

PROCESS AND APPARATUS FOR MOLDING ELASTOMERS

Josef P. Lehnen, and Gerd Zingelmann, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

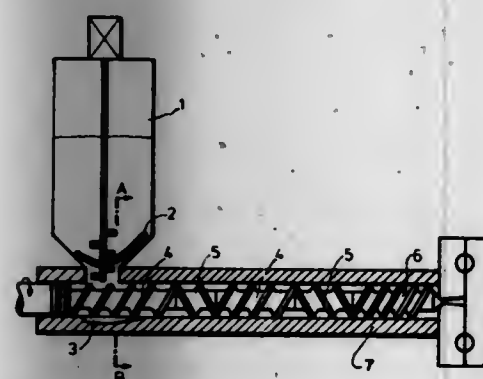
Filed Aug. 21, 1978, Ser. No. 935,478

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738308

Int. Cl.² B29F 1/02

U.S. Cl. 264—328.14

2 Claims



1. A process for the production of compact, shaped articles from vulcanisable rubber mixtures in powder form by means of

a screw plasticising unit, having a screw and a barrel, whereby the powder-form rubber mixture is first introduced by a feed unit through a delivery-active feed pocket into an inlet portion of the screw, the delivery-active feed pocket providing a short shallow concave space disposed peripherally and longitudinally between the screw and the barrel in the vicinity of the feed unit, the powder mixture being subsequently plasticised in a mixing zone, compacted by combining the plasticised rubber particles and subsequently shaped in plasticised and homogenised form.

4,246,225

METHOD FOR FORMING TUBULAR PLASTIC ARTICLES

Lawrence D. Ninneman, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

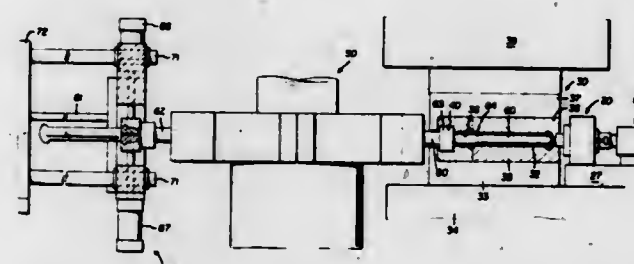
Division of Ser. No. 738,508, Nov. 3, 1976, Pat. No. 4,136,146.

This application May 25, 1978, Ser. No. 909,594

Int. Cl.³ B29C 7/00

U.S. Cl. 264—336

2 Claims



1. In a method of axially removing an essentially tubular, thermoplastic bottle parison from an interior core pin cantilevered from a support, the parison having been formed by injection molding on said core pin and having a finished neck portion formed on the open end thereof, the steps of:

- circulating a cooling fluid through the core pin to cool the internal surfaces of the parison;
- providing a pair of semi-annular gripping surfaces corresponding in internal contour to the exterior contour of the finished neck portion of the bottle parison;
- moving said gripping surfaces concurrently to opposed positions in radial alignment with the finished neck portion of the bottle parison;
- radially displacing said gripping surfaces toward the axis of the core pin to snugly surround the external contours of the finished neck portion of the bottle parison without distorting same;
- axially displacing the gripping surfaces relative to the core pin to strip the engaged bottle parison off the free end of the core pin and;
- subjecting the stripped parisons to further cooling while held by the gripping surfaces.

4,246,226

METHOD OF AND APPARATUS FOR UTILIZING DRY HEATED PULVERULENT MATERIAL TO CURE A TIRE

Kenneth T. MacMillan, 347 Hazel St., P.O. Box 557, Macon, Ga. 31202

Filed Dec. 7, 1979, Ser. No. 101,556

Int. Cl.² B29H 5/02

U.S. Cl. 264—501

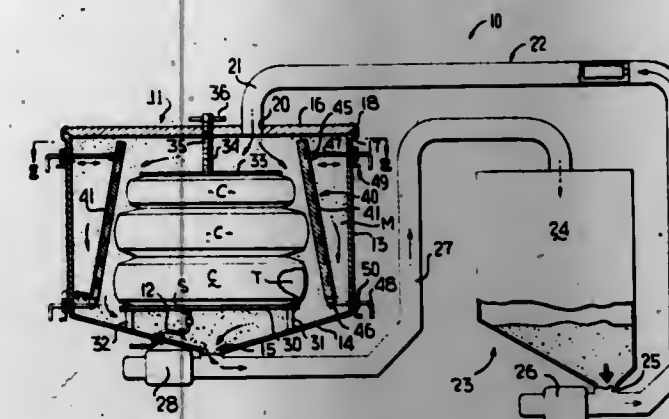
30 Claims

1. A mold for curing tires utilizing pulverulent material comprising in combination:

- means for defining an enclosed chamber adapted to have at least one tire placed therein;
- a pervious cover adapted to completely, intimately and contactingly cover a tire adapted to be housed within said chamber;
- means for filling said chamber with pulverulent material;

means for inflating a tire adapted to be positioned within the chamber to or predetermined pressure;

means for heating the pulverulent material to a predetermined temperature thereby to cure a tire adapted to be positioned within the chamber; and



means for removing the pulverulent material from said chamber thereby to allow a cured tire to be removed from the chamber.

4,246,227

METHOD OF MAKING A UNITARY BOWL, WATERWAY, AND TRAP FOR A TOILET

Samuel C. Crosby, Ann Arbor; Thomas M. Whitney, Lapeer, and William F. Price, Livonia, all of Mich., assignors to Trayco, Inc., Lapeer, Mich.

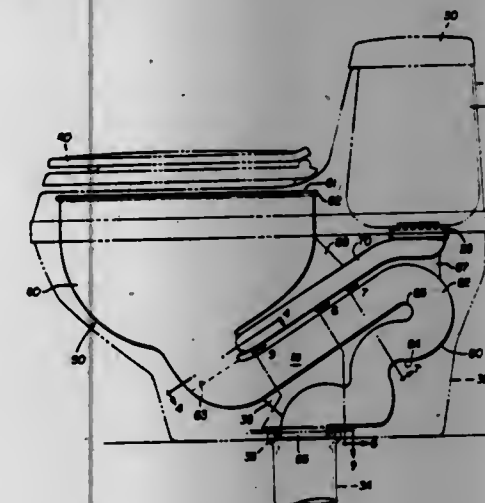
Division of Ser. No. 761,743, Jan. 24, 1977, Pat. No. 4,145,776.

This application Feb. 26, 1979, Ser. No. 15,040

Int. Cl.³ B29C 17/07, 17/10

U.S. Cl. 264—536

1 Claim



1. In a method of forming a unitary blow molded bowl, waterway and trap for a gravity-flush toilet which is free of any joints, the steps of:

- downwardly extruding a tubular parison of thermoplastic material, the parison being thinner at the top due to the weight of the parison and due to that portion of the parison being hotter as a result of its being extruded last;
- positioning said tubular parison of thermoplastic material between a pair of blow mold sections, each of said sections including a semibulbous bowl cavity portion and a trap cavity portion extending from said bowl cavity portion, said mold sections including non-identical waterway sections which extend between said trap and bowl cavity portions;
- orienting said blow mold sections such that the trap and waterway sections are near the top of said parison and said bowl cavity portions are near the bottom of said parison;
- closing the blow mold sections on the parison and forming a blowable shape comprising parison portions destined to form the bowl, trap and waterway, by simultaneously (i) enclosing the thicker bottom major part of the parison

within the bulbous major part of the blow mold cavity, including the bowl for the final article, (ii) pinching a portion of the parison shut along a tortuous path communicating with the major part of the blow mold cavity and conforming to the trap, and (iii) pinching another portion of the parison shut along a waterway communicating with the major part of the parison between the trap and the bowl parison portions; and

- introducing blow air under pressure into the interior of the parison and thereby (i) expanding the major part of the parison into a bulbous shape including the bowl and (ii) expanding the pinched-shut parison portions respectively into a tortuous-shaped trap and a waterway;
- removing the blown article from the mold cavity, and trimming excess peripheral plastic material from said blown article to leave ribs of reinforcing material between said waterway and trap and between said waterway and bowl.

4,246,228

COMBUSTIBLE GAS DETECTORS

Eric Jones, Chelmsford, and Rodney P. Townsend, London, both of England, assignors to English Electric Valve Company Limited, Chelmsford, England

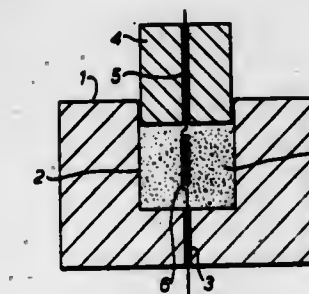
Filed Aug. 24, 1978, Ser. No. 936,637

Claims priority, application United Kingdom, Aug. 25, 1977, 35806/77

Int. Cl.³ G01N 25/30, 27/16

U.S. Cl. 422—94

12 Claims



1. A combustible-gas detector element comprising a heatable wire filament embedded in a pellet comprising a homogeneous, cohesive heat/compression-formed mixture of oxidation catalyst particles and zeolite particles, and the oxidation catalyst particles and zeolite particles being uniformly distributed throughout the element and thereby defining like uniformly distributed pores throughout the element whereby non-volatile residues tend to diffuse relatively slowly through said pores due to their relatively large molecular size, are absorbed by the zeolite particles and upon decomposition become nonlabile compounds while relatively smaller molecules of a combustible gas are absorbed less strongly by the zeolite particles and diffuse relatively quickly through the pores of the element to react with the catalyst particles.

4,246,229

STARTING DEVICE FOR A CHEMICAL OXYGEN GENERATOR

William S. McBride, Lübeck, and Gerd Pantaleon-Stemberg, Mölln, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,938

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818250

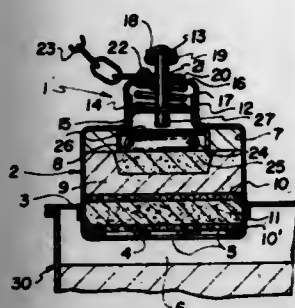
Int. Cl.³ A62B 7/08; B01J 1/00; A62B 7/04

U.S. Cl. 422—122

5 Claims

1. A starting device for a chemical oxygen generator, comprising a casing having chemical oxygen generating material therein and a first wall above the material with an opening bounded by an annular sealing face and an opposite second

wall below said oxygen generating material with at least one passage there through for oxygen which is generated, a liquid ampule disposed over said oxygen generating material, a thrust bolt mounted in the opening of said casing over said ampule and being movable when actuated from a starting position overlying and spaced from said ampule to an actuated position in which it penetrates an ampule and breaks the ampule to



release the liquid therein, spring means biasing said thrust bolt in a direction toward said ampule, locking means for locking said thrust bolt against movement by said spring means, and a sealing ring disposed around said thrust bolt above the opening and being affixed to said thrust bolt for movement therewith and being engageable with the sealing face surrounding the opening when said ring is in an actuated position so as to seal said casing.

4,246,230

SYSTEM FOR FORMING AND DISPENSING A RESINOUS FOAM

Walter J. Hasselman, Sr., Scarsdale, N.Y.

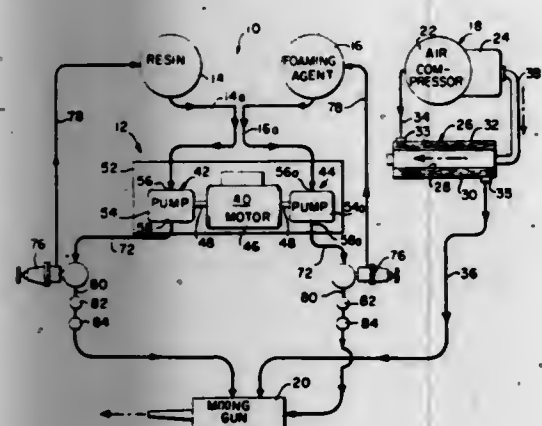
Continuation-in-part of Ser. No. 744,784, Nov. 24, 1976,

abandoned. This application Apr. 28, 1978, Ser. No. 901,184

Int. Cl.³ B01J 4/02, 19/26

U.S. Cl. 422-133

14 Claims



1. A system for providing materials at preselected pressures to a mixing apparatus for use in producing and dispensing resinous foamed materials which comprises:

- means for storing a synthetic resinous material;
- means for storing at least a foaming agent material;
- first multiple diaphragm pumping means for continuously pumping said synthetic resinous material from said synthetic resinous material storing means to the mixing apparatus at a preselected substantially constant pressure;
- second multiple diaphragm pumping means for continuously pumping the foaming agent material from said foaming agent storing means to the mixing apparatus at a preselected, substantially constant pressure; and
- means to provide a gaseous medium under pressure to said mixing apparatus simultaneously with said synthetic resinous and foaming agent materials so as to facilitate the formation of a relatively homogeneous and continuous cellular foamed material.

4,246,231 FLUIDIZED SOLIDS APPARATUS

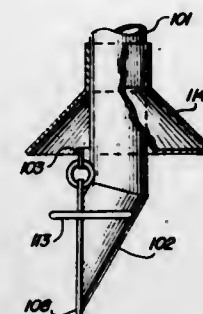
Robert G. Figler, Crown Point; William G. Ellsworth, Brookfield, and Richard J. Misiorowski, Oak Lawn, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 27, 1979, Ser. No. 24,193

Int. Cl.³ B01J 8/24; F27B 15/02

U.S. Cl. 422-147

9 Claims



1. In an apparatus for carrying out a chemical reaction in the presence of fluidized solids comprising a vessel adapted to contain a dense phase of fluidized solid particles in its lower portion and a dilute phase in the upper portion, inlet means for introducing fluidizing gas into the lower portion of said vessel, outlet means for removing product vapors from the upper portions of said vessel, at least one centrifugal gas-solids separator in association with said outlet means and adapted to remove solid particles from said product vapors, a conduit in association with said separator for returning separated solid particles downward into said vessel, and a unidirectional valve means positioned at the end of said conduit which comprises a pivotally mounted valve closure means having a pivotal mounting attached to the exterior of said conduit, the improvement which comprises a conical body surrounding and attached to the lower end of said conduit which extends laterally at its base a distance from the wall of said conduit which is further than the lateral distance between a vertical line passing through any portion of the valve closure means when in a closed position and the wall of said conduit, and wherein the base of said conical body is situated above the top of said valve closure means by a distance which is less than about the diameter of said base.

4,246,232

APPARATUS FOR MAKING CARBON BLACK

Oskar Posch, Biberist, Switzerland, assignor to Anstalt Mura, Vaduz, Liechtenstein

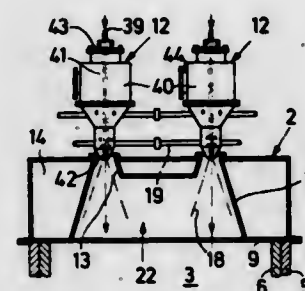
Filed Aug. 25, 1978, Ser. No. 936,764

Claims priority, application Switzerland, Sep. 2, 1977, 10759/77

Int. Cl.³ C09C 1/00; C01B 31/02

U.S. Cl. 422-156

5 Claims



1. Apparatus for production of carbon black, the apparatus being of the type having:

- a reactor including a reaction chamber for carbon black formation and a cover,
- a plurality of feed units mounted to said cover, each for

supplying air from an air supply apparatus and of hydrocarbon material from a hydrocarbon supply apparatus, a first heat exchanger provided on the discharge side of said reactor for reducing the temperature of the reactor output gases and the carbon black produced therein, and a filter unit arranged on the discharge side of said heat exchanger for separating the carbon black from the reactor output gases, and further having the improvement which consists in that: the upper end of the reaction chamber is bounded by a second heat exchanger extending across the top of the reaction chamber for leading a temperature control fluid perpendicularly to the axis of the chamber under external flow and heat control, said second heat exchanger serving also as the cover of the chamber; a plurality of mixing chambers opening out into the reaction chamber are set within said heat exchanger, and an individual feed unit is provided for feeding reagent air and hydrocarbon to each of said mixing chambers and for causing said reagent air and hydrocarbon to pass through said heat exchanger by way of said feed unit and the mixing chamber connected thereto.

4,246,233

INERT CARRIER DRYING AND COATING APPARATUS

Randall D. Sheeline, San Jose, Calif., assignor to United Technologies Corporation, East Hartford, Conn.

Division of Ser. No. 781,893, Mar. 28, 1977, Pat. No. 4,119,560.

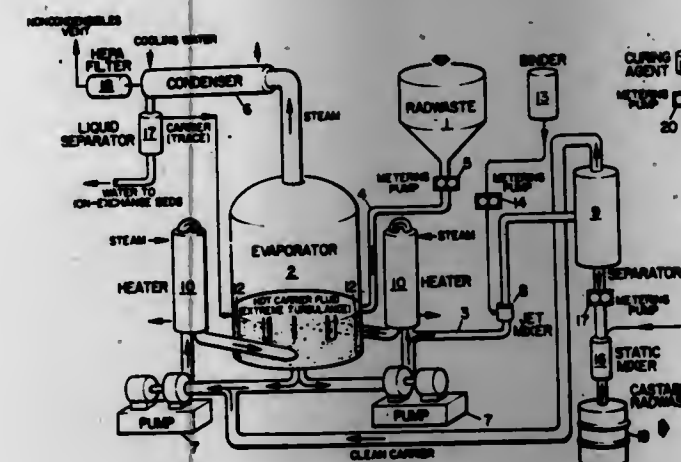
This application Aug. 23, 1978, Ser. No. 936,679

The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.

Int. Cl.³ G21F 9/08, 9/16

U.S. Cl. 422-159

6 Claims



1. A radwaste volume reduction system comprising, in combination:

- Flash evaporator means adapted to be partially filled to a predetermined level with a high-boiling carrier liquid inert to and immiscible with water;
- heater means for heating said carrier liquid;
- separator means for separating particulate material from said carrier liquid;
- pump means for circulating said inert carrier;
- fluid conveying means connecting said pump, heater, flash evaporator and separator means, such that said carrier liquid will be caused to flow from said evaporator means to said separator means and through said heater means prior to reintroduction into said evaporator means in a substantially continuous manner;
- a source of an aqueous dispersion of a radioactive solid;
- means for introducing said aqueous dispersion into said evaporator below the level of said carrier liquid therein whereby the water will flash evaporate from said aqueous dispersion leaving the radioactive solids suspended in said inert carrier;
- a source of a liquid, hardenable binder, which binder is immiscible and non-reactive with said inert carrier;

- means for introducing said binder into said fluid conveying means at a point upstream of said separator means;
- means for withdrawing the solid radioactive material coated with said binder from said separator.

4,246,234

METHOD AND APPARATUS FOR REDUCING NITRIC OXIDE

James R. Kittrell, Amherst, Mass., and Donald L. Herman, Coventry, R.I., assignors to New England Power Service Company, Westborough, Mass. and Northeast Utilities Service Company, Berlin, Conn.

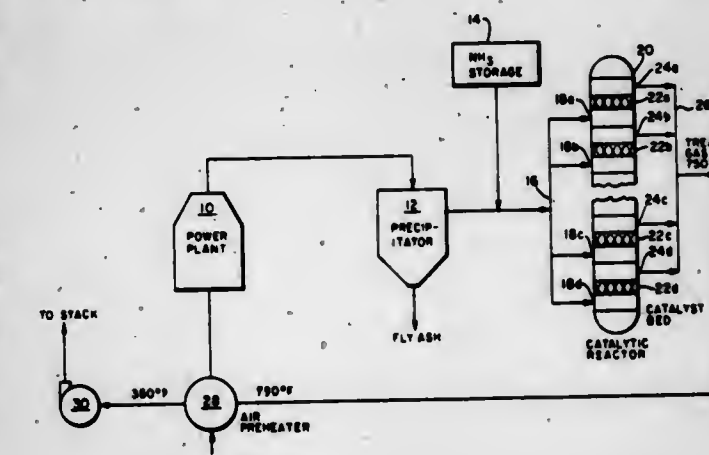
Filed May 26, 1978, Ser. No. 909,869

The portion of the term of this patent subsequent to Mar. 21, 1995, has been disclaimed.

Int. Cl.³ B01D 53/36; B01J 8/04, 8/06; F01N 3/28

U.S. Cl. 422-171

8 Claims



1. Apparatus for reducing nitric oxide by contact of a gaseous mixture containing nitric oxide and ammonia with a catalyst selected from the group consisting of copper, vanadium, iron, molybdenum and mixtures thereof, which catalyst has been pretreated with a compound selected from the group consisting of sulfur, dimethyl sulfide, hydrogen sulfide, carbon disulfide, selenium and mixtures thereof at a temperature between about 400° F.-900° F. to form a pretreated catalyst which comprises a reactor shell, a plurality of elongated solid supports within said shell coated with said pretreated catalyst, said supports being arranged within said shell and being separated from each other to provide open passages comprising a substantial portion of the cross-sectional area of said shell, and gas inlet and gas outlet means attached to said shell.

4,246,235

HORIZONTAL FLOW CATALYTIC REACTOR

William M. Rogers, Alameda, Calif., assignor to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Division of Ser. No. 731,692, Oct. 12, 1976, Pat. No. 4,119,706.

This application Mar. 13, 1978, Ser. No. 885,827

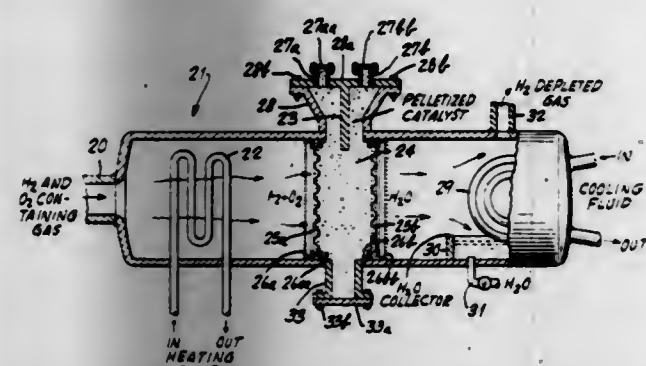
Int. Cl.³ B01J 8/02

U.S. Cl. 422-198

9 Claims

1. A catalytic reactor useful for carrying out a catalytic reaction wherein gaseous or vaporized reactants are flowed into contact with a mass of particle-form catalytic material comprising a horizontally disposed reaction zone adapted for the flow of gaseous or vaporized reactants therethrough from one end of said reaction zone to the other end of said reaction zone, foraminous retaining means disposed within said reaction zone transversely thereof and occupying the complete cross-section of said reaction zone available for the flow of said gaseous or vaporized reactants therethrough, said foraminous retaining means defining a transverse volume or space within said reaction zone along a length thereof, said volume or space being adapted to be filled with particle-form catalytic material, a chamber vertically disposed at an upper portion of and integral with said reaction zone and in open communication at the

bottom end thereof with said volume or space defined by said foraminous retaining means, closure means provided at the upper end of said chamber for closing the same, a discharge outlet positioned at a lower portion of said reaction zone adapted to discharge particle-form catalytic material from said volume or space, means for closing said discharge outlet, said chamber being adapted to be substantially filled with particle-form catalytic material to maintain said volume or space filled with particle-form catalytic material so that as said gaseous or vaporized reactants flow through said reaction zone from one end thereof to the other end thereof said gaseous or vaporized reactants come into contact with said particle form catalytic



material to effect the desired catalytic reaction, means for preventing said gaseous or vaporized reactants from bypassing the particle-form catalytic material in the region of said chamber including a baffle plate constructed and arranged to extend from the underside of said closure means into said volume or space, and means for supplying said particle-form catalytic material to said volume or space through at least two substantially independent flow paths leading into said volume or space including an inlet conduit provided through said closure means on each side of said baffle plate for the introduction of particle-form catalytic material into said chamber and closure means provided at the top of each of said inlet conduits.

4,246,236

APPARATUS FOR CARRYING OUT GASEOUS PHASE REACTIONS

Alberto Di Giocchino; Giulio Tommasi, and Mario de Manuele, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Division of Ser. No. 897,741, Apr. 17, 1978, Pat. No. 4,186,180.

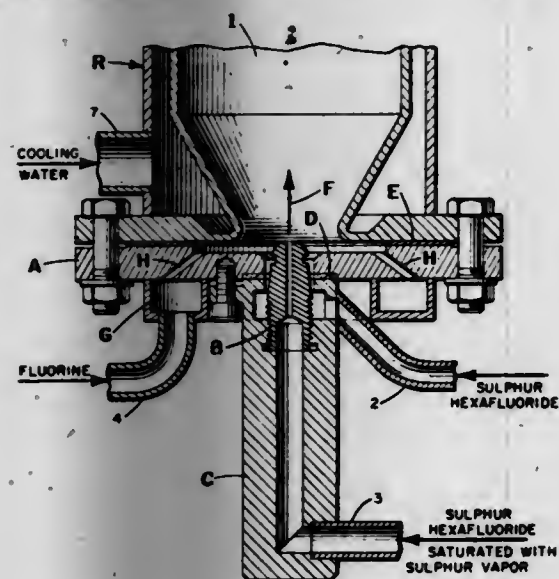
This application Jun. 12, 1979, Ser. No. 48,165

Claims priority, application Italy, Apr. 19, 1977, 22611 A/77

Int. Cl.³ B01J 19/26; B05B 7/06; C01B 17/45

U.S. Cl. 422-202

3 Claims



1. An apparatus for carrying out reactions in gaseous phase at elevated temperatures, said apparatus comprising a frusto-conical reaction chamber made of a corrosion resistant material having a bottom disposed adjacent a metal plate made of a

material having good thermal conductivity; a gasket made of a material having high thermal conductivity disposed between said plate and the bottom of said reaction chamber, said plate having holes formed therein by means of which one reactant in gaseous phase is introduced into the reaction chamber, said holes being arranged on a circumference of a circle, concentric with the inlet point of a second reactant, and the axis of each hole forming with the horizontal surface of the plate an angle between 20° and 45°; means for introducing a second reactant in gaseous phase, via a nozzle secured to a block arranged near an opening in the center of the plate; a heat-insulating gasket disposed between said plate and said block; means for introducing a separate current of inert gas between the nozzle and the plate so as to keep the flame resulting from the reaction of the reactants while in gaseous phase spaced from the nozzle itself; cooling means disposed within the reaction chamber comprising a water jacket surrounding at least the lower portion of the reaction chamber; and, within the reaction chamber and spaced from the nozzle through which the reactants in gaseous phase are introduced, a nest of heat exchange tubes within which is circulated a heat exchange fluid for cooling the hot reaction gases.

4,246,237

REACTOR APPARATUS

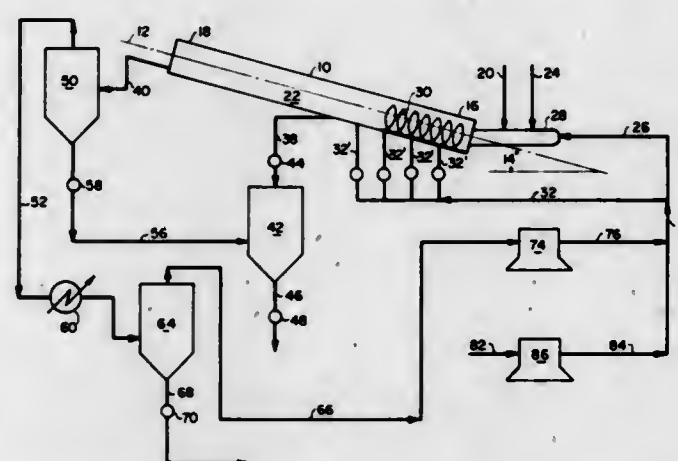
J. Paul Ehtler, Pittsburgh, Pa., assignor to Conoco, Inc., Stamford, Conn.

Filed Aug. 3, 1979, Ser. No. 63,612

Int. Cl.³ B01F 3/06

U.S. Cl. 422-224

6 Claims



1. A reactor apparatus for hydrocracking a polynuclear aromatic hydrocarbonaceous feedstock by contacting said feedstock with hydrogen in the presence of a molten metal halide catalyst to produce lighter hydrocarbon fuels said apparatus comprising

- a generally cylindrical reactor vessel having a first and a second end and a longitudinal axis, said reactor vessel being positioned so that its said longitudinal axis is at an angle from about 10° to about 60° from horizontal with said second end of said reactor vessel being higher than said first end of said reactor vessel;
- a feed inlet means for charging said feedstock to said first end of said reactor vessel;
- a metal halide inlet means for charging said molten metal halide to said first end of said reactor vessel;
- a hydrogen inlet means for charging hydrogen to said first end of said reactor vessel;
- a static mixer means positioned in said reactor vessel near its said first end for mixing said feedstock, said molten metal halide and said hydrogen;
- a settling zone positioned in said reactor vessel between said mixer means and said second end;
- a spent metal halide outlet means positioned to remove a liquid reaction product containing said hydrocarbon fuels

and said molten metal halide from a lower portion of said settling zone; and,
(h) a product outlet means positioned to remove a vaporous product stream from an upper portion of said settling zone.

4,246,238

DISSOLVER FOR REMOVING NUCLEAR FUEL MATERIALS FROM FUEL ELEMENT SEGMENTS

Hubert Goldacker, Linkenheim; Günter Koch, Karlsruhe-Grünwettersbach; Helmut Schmieder, Karlsruhe; Ernst Warnecke, Ladenburg, and Walter Comper, Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

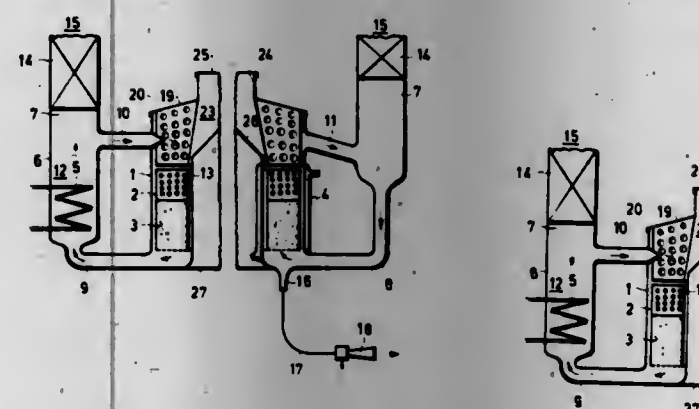
Filed Apr. 5, 1978, Ser. No. 893,777

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715367

Int. Cl.² B01D 11/02; B01F 1/00; G21F 9/30

U.S. Cl. 422-275

7 Claims



1. In a dissolver for dissolving nuclear fuel materials out of fuel element segments during reprocessing of irradiated nuclear fuels, in which the structural components of the dissolver are made of a material which is a neutron absorber, the dissolver being composed of a dissolving vessel and a dissolving basket inserted in the vessel, the basket being arranged to receive fuel element segments which are to be subjected to the dissolving process and to permit the flow through of dissolving fluid, the improvement wherein said dissolving basket has an annular cross section and said dissolver comprises partitions having a sieve-like configuration and disposed in said basket for dividing the interior of said dissolving basket substantially along radii thereof into a plurality of individual fuel element-receiving chambers, and a distributor cone disposed in the cylindrical area enclosed by said annular basket, seated on the bottom of said dissolving vessel, and having its conical tip protruding above the top of said basket.

4,246,239

ALUMINA PRODUCTION BY NITRIC ACID EXTRACTION OF CLAY

John L. Dewey; Charles E. Scott, both of Little Rock; James F. Kane; Claud L. Stratton, both of Benton; John C. Rushing, Little Rock, and Robert H. Spooner, Benton, all of Ark., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jul. 27, 1979, Ser. No. 61,295

Int. Cl.³ C01F 7/24

U.S. Cl. 423-125

12 Claims

1. A process for the extraction of alumina values from clay using nitric acid comprising the steps of:
(i) pelletizing the clay into generally spherical particles having a diameter of between about 1 and about 8 mm and a free moisture content of between about 17 and 22%;
(ii) calcining the pellets formed in step 1 at a temperature of between about 1100° and 1550° F. in a fluidized bed reactor;
(iii) extracting the calcined clay pellets obtained in step (ii) in about 30 to about 40% nitric acid for a period of between about 1 and about 4 hours at about atmospheric pressure and a temperature of between about 220° and about 270°

F. to produce basic aluminum nitrate product solution comprising between about 8 and 13 weight percent alumina and between about 5 and about 20% less nitric acid than required by stoichiometry to form aluminum nitrate;
(iv) purifying the basic aluminum nitrate product of step (iii) by
(a) precipitating iron oxide by holding the product of step (iii) for a period of at least about 2 hours and at a temperature of between about 80 and about 120° C. in the presence of a small amount (about 1 to about 3%) of iron oxide seed material; and
(b) filtering the liquor derived from step (iv)(a) to remove siliceous impurities;
(v) crystallizing aluminum nitrate nonahydrate from the product of step (iv)(b);
(vi) converting the crystallized aluminum nonahydrate produced from step (v) to an infusible basic aluminum nitrate in an at least two-step process comprising:
(a) evaporating nitric acid from the crystals in molten form to provide a solution of basic aluminum nitrate containing at least about 16.5 by weight alumina and recovering of the heat of condensation of the vapors thus produced;
(b) decomposing of the basic aluminum nitrate liquor to infusible basic aluminum nitrate solids;
(vii) further decomposing the infusible basic aluminum nitrate solids in one or two stages at a temperature of between about 600° and 1300° F. for a period of from about 2 to about 7 hours;
(viii) calcining the residual metallurgical grade alumina at a temperature of between about 1900° and 2200° F., and
(ix) reconstituting to nitric acid the NO_x gases from step (xii).

4,246,240

PROCESS FOR SEPARATING COBALT AND NICKEL FROM A SOLUTION CONTAINING COBALT AND NICKEL

Takashi Ogata; Shochiro Namihira, and Tsutomu Fujii, all of Hitachi, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1979, Ser. No. 52,736

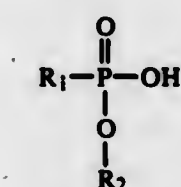
Claims priority, application Japan, Jul. 24, 1978, 53-90263; Nov. 9, 1978, 53-138114

Int. Cl.² C01G 51/00

U.S. Cl. 423-139

6 Claims

1. A process for separating cobalt and nickel from a solution containing cobalt and nickel by selective liquid-liquid extraction of cobalt into an organic phase, an acid solution containing cobalt and nickel being contacted with an organic extraction medium containing an extractant, and stripping the cobalt with an acid solution, wherein the improvement comprises:
said acid solution being contacted with the organic extraction medium in two or more stages,
a first contact stage being controlled to a pH value not exceeding 5,
a second contact stage and any further contact stages being controlled to a pH value of from 5.5 to 7.0, and
alkyl phosphonic acid monoalkyl ester represented by the formula:



wherein R₁ and R₂ denote alkyl group having 8 to 10 carbon atoms and R₁ may be the same as or different from R₂ being used as the extractant.

4,246,241

PROCESS FOR SELECTIVE REMOVAL OF SODIUM SULFATE FROM AN AQUEOUS SLURRY

Indresh Mathur, Dale M. Bristow (nee Elley), both of Sarnia, and Allan R. Knight, Petrolia, all of Canada, assignors to Dow Chemical Canada Limited, Sarnia, Canada

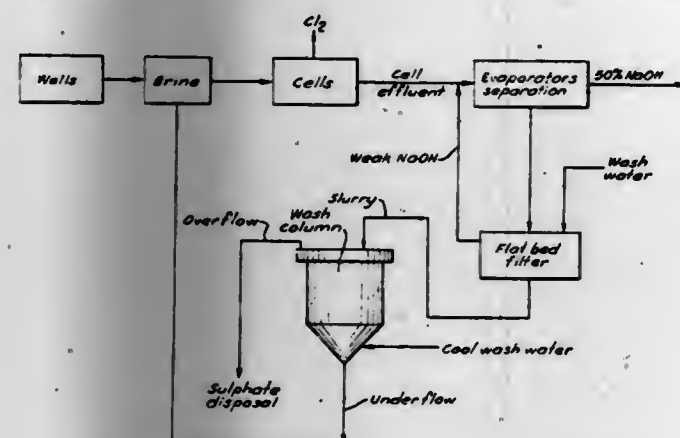
Filed Jul. 16, 1979, Ser. No. 57,916

Claims priority, application Canada, Mar. 26, 1979, 324172

Int. Cl.² C25B 1/16, 1/26; C01D 3/04

U.S. Cl. 423-179

13 Claims



1. A process for separating sodium hydroxide and sodium sulfate from a slurry containing the same in admixture with sodium chloride in particulate form, which comprises feeding the slurry into a wash column in such a manner that it moves downwardly through the wash column, introducing a stream of wash water into the wash column so that it moves upwardly through the column in countercurrent relationship with said slurry, and removing wash water from the column at a position sufficiently upward from the point of introduction of the wash water that a major portion of the sodium hydroxide and sodium sulfate from said slurry are removed therewith.

4,246,242

METHOD OF REMOVING GASEOUS POLLUTANTS FROM FLUE GAS

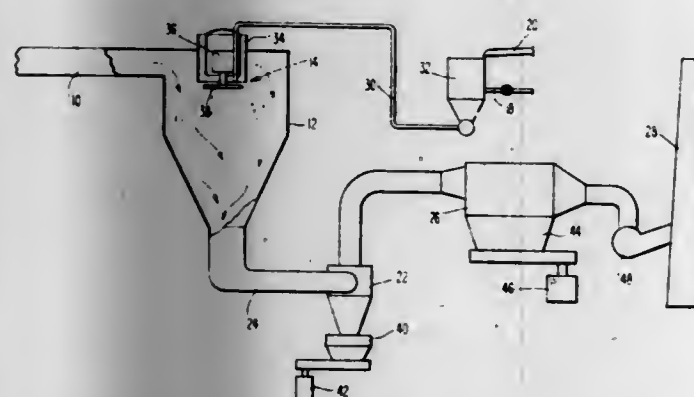
Charles H. S. Butler, Horseheads, and Patrick J. McGauley, Port Washington, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 756,840, Jan. 5, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,410

Int. Cl.³ B01D 53/34

U.S. Cl. 423-210

6 Claims



1. A method for removing gaseous or vaporous impurities from a stream of hot flue gas, comprising the steps of: directing a stream of hot flue gas containing gaseous or vaporous impurities into the upper end of a vessel having an outlet at its lower end; preparing a water solution or slurry liquor of a reagent selected to be reactive with said impurities; directing a stream of this liquor downwardly onto an atomizing disc located near the upper end of the vessel and spinning about a vertical axis, thus atomizing the liquor; directing an annular stream of relatively cold ambient air

downwardly around the region of atomization of the liquor, thus preventing the admixture of the liquor and flue gas and consequent drying of the liquor while in said region;

thereafter permitting the admixture of the liquor and the flue gas stream, thus entraining the liquor within the flue gas stream and thereby allowing the water in the liquor to evaporate and the reagent to react with the impurities, forming a downwardly minimally swirling stream of hot flue gas having dry discrete particles entrained therein; removing this stream of hot flue gas having particles entrained therein via the outlet of the vessel; and separating the discrete particles from the flue gas stream.

4,246,243

USE OF STEEL PLANT WASTE DUSTS FOR SCAVENGING HYDROGEN SULFIDE

Irwin Fox, 37 Meadowbrook Country Club Estates, Ballwin, Mo.

Continuation-in-part of Ser. No. 941,314, Sep. 11, 1978, abandoned, Ser. No. 939,441, Sep. 5, 1978, and Ser. No. 754,543, Dec. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 666,760, Mar. 16, 1976, abandoned, and Ser. No. 666,193, Mar. 12, 1976, Pat. No. 4,008,775, said Ser. No. 666,760, and Ser. No. 666,193, each is a continuation-in-part of Ser. No. 374,555, Jun. 28, 1973, abandoned, said Ser. No. 939,441, is a continuation-in-part of Ser. No. 666,760, abandoned. This application Nov. 27, 1978, Ser. No. 963,797

Int. Cl.³ B01D 53/34; C09K 7/04

U.S. Cl. 423-225

4 Claims

3. The process of scavenging unwanted hydrogen sulfide contained in hydrocarbon gas or drilling mud comprising the following steps:

- providing a water-based suspension of basic oxygen furnace dust particles from steelmaking, said particles having an iron oxide content of substantially 85% and being of somewhat spherical shape, the greater portion of which being smaller than 0.5 microns, said particles having a surface area of at least 4 square meters per gram as determined by the Absorptomat Method, in a quantity sufficient to react such hydrogen sulfide as may be encountered in such hydrocarbon gases or drilling mud,
- circulating said water-based suspension and causing said particles suspended therein to contact such hydrocarbon gases or drilling mud, and
- reacting the said hydrogen sulfide with said suspended basic oxygen furnace dust particles to form free sulfur and iron hydroxides.

4,246,244

PROCESS FOR SCAVENGING HYDROGEN SULFIDE FROM HYDROCARBON GASES

Irwin Fox, Ballwin, Mo., assignor to Gas Sweetener, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 963,797, Nov. 27, 1978, abandoned, and Ser. No. 939,441, Sep. 5, 1978, abandoned, said Ser. No. 963,797, is a continuation-in-part of Ser. No. 754,543, Dec. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 666,193, Mar. 12, 1976, Pat. No. 4,008,775, and Ser. No. 666,760, Mar. 16, 1976, abandoned, each is a

continuation-in-part of Ser. No. 374,555, Jun. 28, 1973, abandoned, said Ser. No. 939,441, is a continuation-in-part of Ser. No. 666,760, Mar. 16, 1976, abandoned. This application May 31, 1979, Ser. No. 44,026

Int. Cl.³ B01D 53/34

U.S. Cl. 423-225

10 Claims

1. The process of scavenging hydrogen sulfide from hydrocarbon gas comprising the following steps:

- forming a liquid slurry of iron oxide particles having a surface area of at least 4 m²/g comprising

(1) a crystalline phase portion selected from the group

- consisting of Fe₂O₃, Fe₃O₄, and combinations thereof, together with
- (2) an amorphous Fe₂O₃ portion
- (b) contacting with said slurry hydrocarbon gas containing hydrogen sulfide,
- (c) reacting such hydrogen sulfide with said particles to form substantially acid-stable products of reaction, and
- (d) collecting the hydrocarbon gas escaping from said slurry.

4,246,245

SO₂ REMOVAL

Jack Z. Abrams, and Robert M. Sherwin, both of San Rafael, Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Filed Jan. 2, 1979, Ser. No. 406

Int. Cl.³ C01B 17/00

U.S. Cl. 423-242

13 Claims

1. A continuous method for reducing the sulfur dioxide content of a sulfur dioxide containing gas which comprises: contacting said sulfur dioxide containing gas in a wet scrubbing zone with recycle tank slurry having an amount of magnesium sulfite at least sufficient to neutralize said sulfur dioxide to a predetermined value to provide an exhaust gas having a substantially reduced amount of sulfur dioxide and a wet scrubbing zone effluent containing magnesium primarily as its sulfite, bisulfite and sulfate; and wherein said recycle tank slurry is substantially free of calcium containing sulfur dioxide neutralizing values to inhibit scale formation.

transferring said wet scrubbing zone effluent to a recycle tank;

transferring a sidestream from said recycle tank, in an amount for continuously replenishing magnesium sulfite in said wet scrubbing zone, to an oxidizer zone; oxidizing said magnesium sulfite and bisulfite to magnesium sulfate to provide an oxidizer effluent stream;

transferring at least a portion of said oxidizer effluent stream to a reaction zone, where said magnesium sulfate is reacted with calcium hydroxide to provide magnesium hydroxide and insoluble calcium sulfate and make-up magnesium is added as Type S hydrated dolomitic lime to provide an alkaline effluent;

transferring said alkaline effluent to said recycle tank to mix with said wet scrubbing zone effluent to provide said recycle tank slurry; and transferring said recycle tank effluent to said wet scrubbing zone.

4,246,246

METHOD FOR MANUFACTURE OF HYDRATED BORATES

Sen-ichi Nakamura, Nagoya, Japan, assignor to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Continuation-in-part of Ser. No. 967,360, Dec. 7, 1978, abandoned. This application Jan. 6, 1979, Ser. No. 45,865 Claims priority, application Japan, Dec. 10, 1977, 52/148399; Dec. 10, 1977, 52/148400; Jan. 23, 1978, 53/6604

Int. Cl.³ C01B 35/10; C01F 17/00

U.S. Cl. 423-263

1 Claim

1. A method for the manufacture of a hydrated carbonate-borate of the generic formula, Ln₂(BO₂)₂(CO₃)₂·5H₂O, which comprises charging an air-tightly sealable container with such amounts of Ln(CO₃)₃·mH₂O wherein Ln is at least one member selected from the group consisting of the rare-earth elements and m is a number not greater than 15, and H₃BO₃ as to satisfy a molar ratio of 1:2, adding to the compounds water in such an amount as to correspond to 0 to 150% by weight based on the combined weight of the two compounds placed previously, keeping the contents of the container at temperatures in the range of from 30° to 100° C., giving the contents occasional agitation thereby expelling the formed CO₂ gas and maintaining the interior pressure of the container about one atmosphere

and, after termination of the generation of CO₂ gas, removing the reaction mass from the container and thereafter drying the removed reaction mass.

4,246,247

METHOD OF PREPARING A CALCIUM PHOSPHATE CATALYST

Oleg E. Batalin, ulitsa Ordzhonikidze, 45, kv. 85; Arkady S. Dykman, ulitsa Leni Gollikova, 37, korpus, 4, kv. 15, both of Leningrad; Izrail M. Belgorodsky, Molodetzny bulvar, 50, kv. 25, Tolyatti; Oleg A. Ostroukhov, ulitsa Karla Marxa, 52, kv. 31, Tolyatti; Ljudmila V. Golovko, ulitsa Matrosova, 30, kv. 180, Tolyatti; Vladimir I. Nevstruev, ulitsa Karla Marxa, 52, kv. 31, Tolyatti, and Anatoly I. Lukashov, ulitsa Palekhskaya, 9/1, kv. 65, Moscow, all of U.S.S.R.

Filed Aug. 14, 1979, Ser. No. 66,495

Int. Cl.³ B01J 11/82

U.S. Cl. 423-311

11 Claims

1. A method of preparing a calcium phosphate catalyst, comprising reacting a water-soluble calcium salt with a water-soluble phosphoric acid salt in aqueous ammonia to form a precipitate, separating said precipitate from the reaction mixture, shaping said precipitate, drying said precipitate, and subjecting said precipitate to heat treatment within a temperature range of 450° to 600° C. in the presence of steam mixed with phosphoric acid, or an organic compound, or phosphoric acid and an inert gas, or phosphoric acid and air, or an organic compound and an inert gas, said organic compound being selected from the group consisting of an aldehyde, an oxygen-containing heterocyclic compound, an alcohol, and a diene hydrocarbon.

4,246,248

SIMPLIFIED BATCH CLARIFICATION OF LIQUID AMMONIUM POLYPHOSPHATE

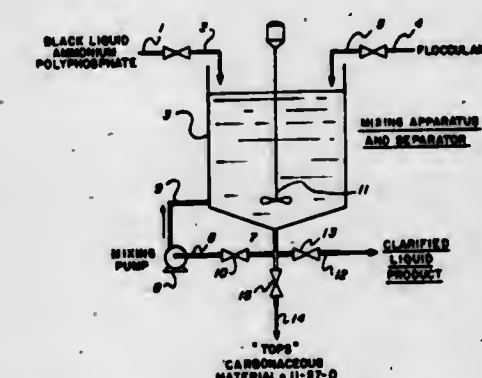
Kenneth E. McGill, Sheffield, Ala., and Eugene B. Wright, Jr., Lawrenceburg, Tenn., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation-in-part of Ser. No. 949,723, Oct. 10, 1978, now Defensive Publication No. T986,010. This application May 7, 1979, Ser. No. 36,276

Int. Cl.³ C01B 15/16, 25/26, 25/16

U.S. Cl. 423-305

16 Claims



1. In an improved multiple-step process for the removal of carbonaceous matter from ammoniated polyphosphate solutions wherein: said solutions have a pH above about 4.5; said solutions are prepared by the molecular dehydration and subsequent or concurrent ammoniation of wet-process phosphoric acid containing about 50 to 72 percent P₂O₅; said carbonaceous matter results from organic impurities in said wet-process phosphoric acid; said carbonaceous matter chars during the molecular dehydration of said wet-process orthophosphoric acid to superphosphoric acid; the improvement in combination therewith for removing substantially all of the black particulate carbonaceous matter

therein by flocculation and subsequent flotation, thereby eliminating any requirement for filtering means therein, which improvement comprises the steps of: adding to the black ammoniated polyphosphate solution from about 0.015 to about 0.075 percent by weight of a water-insoluble primary amine having a lower density than the ammoniated polyphosphate solution and essentially immiscible therewith; adding to the solution from about 0.005 to about 0.075 percent by weight of a water-insoluble quaternary ammonium chloride having a lower density than the ammoniated polyphosphate solution and essentially immiscible therewith; agitating the resulting mixture to bring said amine and said quaternary into intimate contact with said solution; holding the solution until the solids flocculate and float to the surface; and separating the resulting flocculated solids from the underflow by removing the underflow from the lower portion of the container into which said ammoniated polyphosphate solution was introduced; subsequently adding to said container an additional predetermined amount of black ammoniated polyphosphate solution; agitating the resulting mixture of black ammoniated polyphosphate solution and said flocculated solids to bring the residual amine and quaternary ammonium chloride in said flocculated solids into intimate contact with said black ammoniated polyphosphate solution; holding the resulting mixture until the solids therein flocculate and float to the surface; and separating the resulting flocculated solids from the underflow.

4,246,249

SILICON PURIFICATION PROCESS

Robert K. Dawless, Mooreville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed May 24, 1979, Ser. No. 42,016
Int. Cl.³ B01D 9/00; C01B 33/02

U.S. Cl. 423-348

6 Claims

1. A method for providing a bed of purified silicon crystals wherein silicon is crystallized from a solvent metal and the amount of solvent metal remaining in the crystal bed is reduced to a low level, the method comprising the steps of:

- providing a molten body containing silicon and at least one metal selected from the group consisting of tin, zinc, aluminum, silver and lead, the silicon being present in an amount greater than the eutectic point of the silicon-metal combination, the metal adapted to act as a solvent for the silicon;
- extracting heat from the body to provide a solid phase containing silicon in crystal form and to concentrate impurities in a molten phase;
- thereafter, removing a substantial part of the molten phase from the solid phase containing said silicon crystals,
- heating the solid phase to melt a fraction of the solid phase for purposes of removing a substantial amount of metal-silicon combination covering the crystals, the heat being developed in the solid phase by passing an electric current therethrough; and
- draining the molten phase from the solid phase to separate at least a fraction of the metal-silicon combination covering said crystals of silicon.

4,246,250

PROCESS FOR THE PREPARATION OF A HYDROXYLAMINE SALT

Cornelis G. M. van de Moezelijk, Elsaloo, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands
Filed Aug. 17, 1979, Ser. No. 67,915
Claims priority, application Netherlands, Aug. 17, 1978, 7808519

Int. Cl.³ C01B 21/14

U.S. Cl. 423-387

3 Claims

1. In a process for the preparation of a hydroxylamine salt by reaction of nitrogen monoxide with hydrogen in an acid liquid reaction medium, and in the presence of a noble-metal catalyst suspended in the reaction medium, with recirculation of part of the gaseous mixture discharged from the reactor, the improve-

ment wherein said reaction is conducted in a single reactor zone and during the said reduction a gaseous reaction mixture is maintained with from 10 to 80% by volume of inert gas, while the total pressure ranges between 1000 and 5000 kPa whereby hydroxylamine is produced and the gaseous reaction mixture is non-explosive.

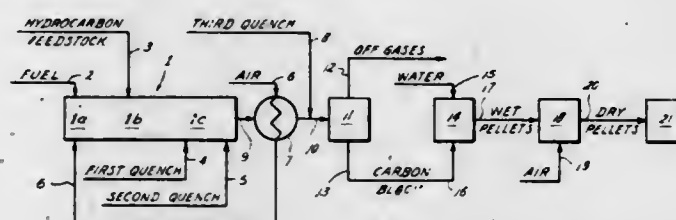
4,246,251

METHOD OF PRODUCING CARBON BLACK

Charles E. Braddock, Burleson, Tex., assignor to Sid Richardson Carbon & Gasoline Company, Fort Worth, Tex.
Filed Apr. 23, 1979, Ser. No. 32,348
Int. Cl.³ C09C 1/50, 1/56, 1/58

U.S. Cl. 423-450

6 Claims



1. The method of producing carbon black including the steps of burning a hydrocarbon fuel to produce a stream of hot gases at carbon black-forming temperature, introducing a hydrocarbon feedstock into said hot gases to produce carbon black and by-product gases therefrom, quenching the resulting hot gases and carbon black to a temperature permitting collection of the carbon black, collecting the carbon black, pelletizing the carbon black with water, drying the wet carbon black pellets in a heated rotating drum with combustion gases flowing cocurrently with the movement of the pellets through the drum, and injecting below the surface of the bed of pellets, proximate the discharge end of the dryer, a controlled quantity of oxidant gas sufficient to lower the modulus-producing properties of the carbon black but insufficient to reduce its property of imparting abrasion resistance to rubber compounds.

4,246,252

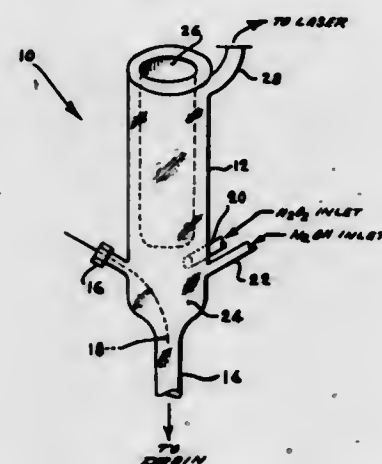
GAS GENERATING SYSTEM FOR CHEMICAL LASERS
William E. McDermott; David J. Benard; Nicholas R. Pchelkin, and Ronald R. Bousek, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 13, 1979, Ser. No. 29,955

Int. Cl.³ C01B 13/02

U.S. Cl. 423-579

2 Claims



1. A method for preparing molecular oxygen in the excited

single-delta electronic state for use as an energizing reactant for chemical lasers which consists essentially of the steps of:

- introducing a mixture consisting essentially of 200 ml of 90% hydrogen peroxide and 100 ml of sodium hydroxide into the reaction zone of a gas generator;
- admitting chlorine gas into said reaction-zone and allowing said gas to flow through said hydrogen peroxide mixture at a flow rate of about 100 standard cm³sec⁻¹ to effect a chemical reaction therebetween;
- passing the product of said chemical reaction through a low temperature zone to remove water and other high melting point reaction by products; and
- removing and storing the resulting vibrationally excited oxygen.

4,246,253

MNO₂ DERIVED FROM LIMN₂O₄

James C. Hunter, Berea, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 947,120

Int. Cl.³ C01G 45/02

U.S. Cl. 423-605

8 Claims

1. A manganese dioxide composition having the x-ray diffraction pattern:

dA	
4.64 ± 0.02	
2.42 ± 0.02	
2.31 ± 0.02	
2.01 ± 0.02	
1.84 ± 0.02	
1.55 ± 0.02	
1.42 ± 0.02	

4. A method of manufacturing a manganese dioxide composition as defined in claim 1 comprising acid-treating LiMn₂O₄ with an aqueous acid solution until the pH of the solution stabilizes below about 2.5.

4,246,254

FIBROUS MAGNESIUM HYDROXIDE AND PROCESS FOR PRODUCTION THEREOF

Shigeo Miyata, and Akira Okada, both of Takamatsu, Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1979, Ser. No. 14,155

Claims priority, application Japan, Feb. 22, 1978, 53-18602

Int. Cl.³ C01F 5/14

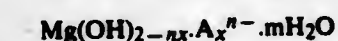
U.S. Cl. 423-635

2 Claims



- A magnesium hydroxide having a hexagonal needle-like crystal structure and having a length-to-diameter ratio, determined by an electron microscope at a magnification of 1,000X, of at least about 10.
- A process for producing a magnesium hydroxide having a

hexagonal needle-like crystal structure, which comprises drying a basic magnesium compound having a needle-like crystal structure expressed by the following formula



wherein n is 1 or 2, Aⁿ⁻ represents a monovalent or divalent anion selected from the group consisting of Cl⁻, Br⁻, NO₃⁻ and SO₄²⁻, x is 0.2 ≤ x ≤ 0.5, and m is 0 < m ≤ 2

under conditions which do not cause a loss of its needle-like crystal form so that a part of the water of crystallization is liberated from the magnesium compound; and contacting the dried magnesium compound with an alkali selected from the group consisting of alkali metal hydroxides, ammonia, calcium hydroxide and ammonium hydroxide in an inert liquid medium selected from the group consisting of water, acetone and lower alcohols.

4,246,255

DISPOSAL OF PCB

LeRoy F. Grantham, Calabasas, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 2, 1979, Ser. No. 25,814
Int. Cl.³ B01J 1/00; C01B 7/01

U.S. Cl. 423-659

7 Claims

1. A process for the decomposition of a polychlorinated biphenyl resulting in negligible environmental pollution comprising feeding the polychlorinated biphenyl and a source of oxygen into a pool of a molten salt maintained at a temperature between 700° and 1000° C., and salt comprising an alkali metal carbonate or a mixture of alkali metal carbonates to thermally decompose and at least partially oxidize said polychlorinated biphenyl to form decomposition products including a gaseous effluent and venting said gaseous effluent product consisting essentially only of gases selected from carbon dioxide, water vapor, oxygen and nitrogen to the atmosphere while retaining the remaining decomposition products of the polychlorinated biphenyl in the melt.

4,246,256

ORAL OR EDIBLE COMPOSITIONS

Andreas Lemke, Institut für Virusforschung und experimentelle Medizin, 2420 Eutin-Sielbeck, and Dietrich Gorny, Wlemerstrasse 75, 6000 Frankfurt am Main, both of Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,307

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2894138

Int. Cl.³ A61K 7/28, 37/48

U.S. Cl. 424-50

27 Claims

1. An oral or edible low moisture content composition which composition contains sugar, sugar substitutes or no sugar and lactate dehydrogenase in an amount sufficient to limit promotion of tooth decay.

4,246,257

COSMETIC DEGREASING AND MATTING COMPOSITION

Thomas J. Elliott, London, and David Ford, Isleworth, both of England, assignors to Beecham Group Limited, England
Continuation of Ser. No. 800,026, May 24, 1977, abandoned.

This application Feb. 2, 1979, Ser. No. 9,223

Claims priority, application United Kingdom, Dec. 9, 1976, 51372/76

Int. Cl.³ A61K 7/00, 7/48, 31/74

U.S. Cl. 424-78

6 Claims

- A skin degreasing and matting product comprising from 3 to 10% by weight of composition of substantially spherical particles of a polymer or copolymer selected from the group consisting of polyethylene, polystyrene and polymethylmethacrylate, said particles having an average size of from 5 to 15

microns and being dispersed in an unpigmented aqueous emulsion of a volatile, cosmetically acceptable oil in an amount of from 1 to 30% by weight of said emulsion.

6. A skin degreasing and matting product comprising from 3 to 10% by weight of the composition of non-swelling polyethylene microspheres of average particle size of 5 to 7 microns, with substantially no particles greater than 15 microns, dispersed in an aqueous emulsion of a volatile liquid silicone or silicone glycol in an amount of 1 to 30% by weight of emulsion.

4,246,258

BIOLOGICAL CONTROL SYSTEM

William A. Ayers, and Peter B. Adams, both of Beltsville, Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Feb. 26, 1979, Ser. No. 15,540
Int. Cl.³ A61K 37/00, 35/00

U.S. Cl. 424-93

1 Claim

1. A method of biologically controlling plant diseases caused by sclerotia of *Sporidesmium* susceptible plant pathogenic fungi, comprising:

- producing the mycoparasite *Sporidesmium sclerotivorum* by adding an inoculum of *Sporidesmium sclerotivorum* NRRL 11437 to an inert culture medium containing living sclerotia of a species of fungi susceptible to the *Sporidesmium* and culturing said mycoparasite at about from 15° to about 25° C. until about 100,000 to 500,000 macroconidia per gram of said inert culture medium are produced;
- adding to soil containing *Sporidesmium* susceptible plant pathogenic fungi, an inoculum of *Sporidesmium sclerotivorum* produced in step (a), said inoculum being added at the rate of about from 2000 to about 20,000 pounds per acre and said soil having a pH of about from 5.0 to about 8.0, a moisture level of about 70%, and a temperature range of from about 10° to about 30° C.;
- mixing the inoculum into the soil to at least that depth at which the aforesaid sclerotia reside; and
- allowing the *Sporidesmium* to develop in the soil until it infects, consumes and destroys at least 90% of said sclerotia.

4,246,259

HIGHER ALKYL DIARYL SULFONIUM SALTS

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

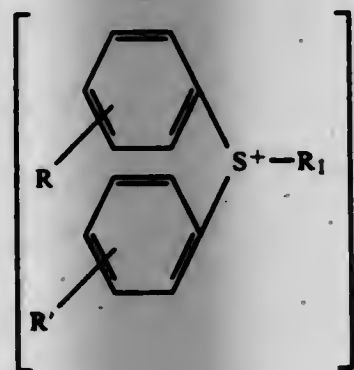
Filed Feb. 7, 1979, Ser. No. 10,015

Int. Cl.³ A61K 31/69, 31/095

U.S. Cl. 424-185

14 Claims

1. The method of treating obesity in a mammal in need of such treatment comprising administering to a mammal an obesity-inhibiting amount of a compound of the formula:



wherein

R and R' are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms,
R₁ is alkyl of 10 to 24 carbon atoms, and

Z⁻ is an anion forming a pharmaceutically acceptable non-toxic salt of the corresponding cation.

4,246,260

SUBSTITUTED OMICRON-PHENYLENEDIAMINE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THEIR USE AS MEDICAMENTS

Heinrich Kölling, Haan; Ekkehard Niemers, Wuppertal; Hartmud Wollweber, Wuppertal, and Herbert Thomas, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 845,517, Oct. 26, 1977, abandoned.
This application Mar. 19, 1979, Ser. No. 21,869

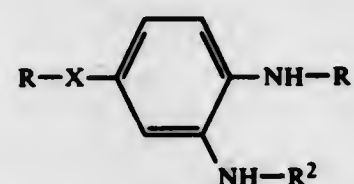
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651467

Int. Cl.³ A61K 31/325; C07C 125/06

U.S. Cl. 424-228

27 Claims

1. A substituted ophenyldiamine derivative of the formula

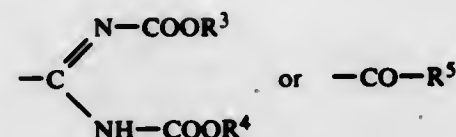


in which

X represents S, SO or SO₂.

R represents a straight chain or branched alkyl group of from 1 to 6 carbon atoms, or a straight chain or branched alkenyl or alkynyl group of from 2 to 6 carbon atoms, the alkyl, alkenyl or alkynyl group being unsubstituted or substituted by halogen, cyano, (C₁-C₄)-alkoxy or (C₁-C₄)-alkylthio;

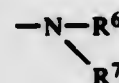
R¹ and R² are different from one another and individually represent



in which

R³ and R⁴ represent straight chain or branched alkyl groups of from 1 to 6 carbon atoms,

R⁵ represents hydrogen, or a straight chain or branched alkyl group with 1 to 6 carbon atoms or a straight-chain or branched alkoxy group of from 1 to 6 carbon atoms, the alkyl or alkoxy group being unsubstituted or substituted by halogen, cyano, (C₁-C₆)-alkoxy, (C₁-C₄)-alkylmercapto, or by a radical of the formula



in which

R⁶ and R⁷ are identical or different and each represents hydrogen, (C₁-C₄)-alkyl which is unsubstituted or substituted by (C₁-C₄)-alkoxy, trifluoromethyl or cyano, or

in which

the two radicals R⁶ and R⁷, together with the nitrogen atom to which they are attached, form a 5-, 6- or 7-membered pyrrolidinyl, piperidinyl, hexamethyleneiminyl, thiomorpholinyl, piperazinyl or N-methylaminomethyl ring or a salt thereof.

6. A pharmaceutical composition containing as an active ingredient an anthelmintically effective amount of a compound of claim 1 in admixture with a solid or liquefied gaseous diluent or in admixture with a liquid diluent other than a solvent of a

molecular weight less than 200 except in the presence of a surface-active agent.

4,246,261

ADDITIVES ENHANCING TOPICAL CORTICOSTEROID ACTION

Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046, and Rucy J. Yu, 4 Lindenwood Ave., Ambler, Pa. 19002

Filed Aug. 9, 1979, Ser. No. 65,332

Int. Cl.³ A01N 45/00; A61K 31/56

U.S. Cl. 424-240

36 Claims

1. A method for enhancing the antiinflammatory activity of a therapeutic composition including a corticosteroid compound selected from the group consisting of hydrocortisone, hydrocortisone-21-acetate, hydrocortisone 17-valerate, hydrocortisone-17-butyrate and triamcinolone acetonide in a pharmaceutically acceptable vehicle for topical application to inflamed areas of the human body comprising: admixing in said composition an effective amount of at least one member selected from the group consisting of:

Glycolic Acid,
Glucuronic Acid,
Galacturonic Acid,
Gluconic Acid,
Glucosaccharic Acid,
α-Hydroxybutyric Acid,
α-Hydroxyisobutyric Acid,

α-Hydroxyisocaproic Acid,
α-Hydroxyisovaleric Acid,
β-Hydroxybutyric Acid,
Lactic Acid,
β-Phenyllactic Acid,
Atrolactic Acid,
Mandelic Acid,
Galactonic Acid,
Pantoic Acid, and
Glyceric Acid.

28. In an antiinflammatory composition for topical application to involved areas of the human body comprising an antiinflammatory effective amount of a corticosteroid in a pharmaceutically acceptable vehicle, the improvement comprising: an effective amount of at least one member selected from the group consisting of

Gluconolactone,
Glucuronolactone,
Glucosaccharono Lactone,
Galactonolactone

Saccharic Acid Lactone,
Mucic Acid Lactone,
Pantoic Lactone, and

present in said composition to enhance the antiinflammatory activity of said corticosteroid.

4,246,262

DERIVATIVES OF AMIDINOPENICILLANIC ACID

Ib S. Vangedal, Lyngby, Denmark, assignor to Leo Pharmaceutical Products, Ltd. A/S, Ballerup, Denmark

Filed Jun. 8, 1978, Ser. No. 913,671

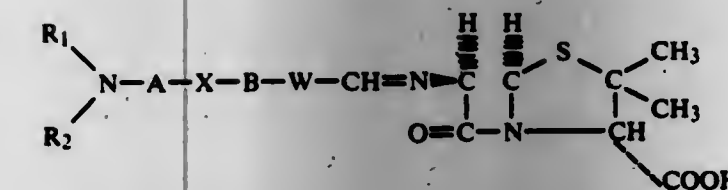
Claims priority, application United Kingdom, Jun. 21, 1977, 25992/77

Int. Cl.³ A61K 31/33, 31/425; C07D 499/02, 501/14

U.S. Cl. 424-244

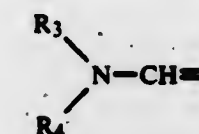
46 Claims

1. A 6β-amidinopenicillanic acid of the general formula I:



in which X stands for an oxygen or a sulphur atom, —A— stands for a straight or branched, aliphatic hydrocarbon chain, containing from 2 to 4 carbon atoms, or —A— can be a single bond, and —B— stands for a straight or branched, saturated or unsaturated aliphatic hydrocarbon radical, containing from 1 to 4 carbon atoms, or —B— can be a single bond; R₁ and R₂

stand for hydrogen, or a lower alkyl radical containing from 1 to 4 carbon atoms, a phenyl or phenyl-lower alkyl radical; and R₃ further stands for an acyl radical derived from a mono- or dibasic carboxylic acid, sulphuric acid, a sulphonic acid, a sulphonic acid, phosphoric acid, or a phosphoric acid, or R₂ can represent an unsubstituted or a lower alkyl or phenyl substituted radical selected from the group consisting of carbamoyl, guanlyl and guanlylcarbamoyl radicals; or R₁ and R₂ together with the nitrogen atom can form a monocyclic saturated ring having from 4 to 8 carbon atoms; and furthermore R₁ and R₂ together can represent a radical of the formula



in which R₃ and R₄ each stands for hydrogen, lower alkyl, phenyl, or phenyl-lower alkyl radicals, or in which R₃ and R₄ together with the nitrogen atom form a monocyclic, saturated ring having from 4 to 8 carbon atoms; and in which the radical —W— stands for the groupings:



which represent saturated, monocyclic, bicyclic or spirocyclic ring systems, respectively, containing from 4 to 11 carbon atoms in total; and salts of the compounds of the formula I with pharmaceutically acceptable, non-toxic organic and inorganic acids or bases, and easily hydrolyzable, pharmaceutically acceptable, non-toxic esters of the penicillanic acid derivatives of formula I and salts of such esters with pharmaceutically acceptable, non-toxic acids or bases.

35. An antibacterial composition in dosage unit form for enteral or parenteral treatment of patients which comprises as an active ingredient 0.01 g to 3 g of a compound as claimed in claim 1 calculated as the free acid together with an non-toxic pharmaceutically acceptable carrier.

4,246,263

ANTIINFLAMMATORY AND IMMUNOREGULATORY PYRIMIDINES, THEIR METHOD OF USE AND PHARMACEUTICAL COMPOSITIONS

Joseph G. Lombardino, and Charles A. Harbert, both of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

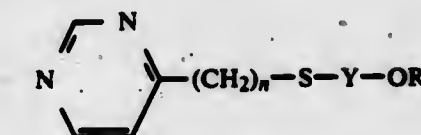
Filed Oct. 15, 1979, Ser. No. 85,011

Int. Cl.³ C07D 239/26; A61K 31/505

U.S. Cl. 424-251

15 Claims

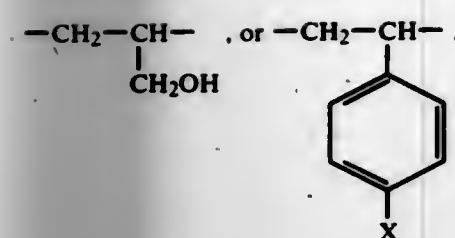
1. A compound of the formula



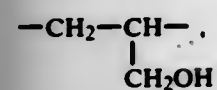
and pharmaceutically acceptable salts thereof, wherein

n is an integer of value 1 or 2;

Y is o-phenylene, propylene, ethylene (unsubstituted or substituted with up to 2 methyl groups and up to 1 phenyl group),

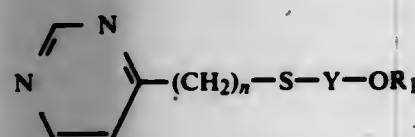


wherein X is nitro or methoxy;
R₁ is hydrogen, methyl, (C₂-C₅)alkanoyl or benzoyl;
with the proviso that when Y is

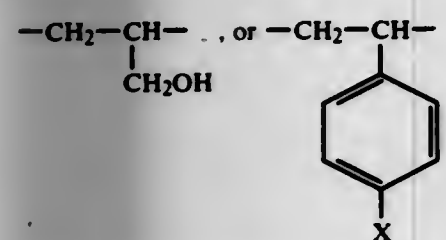


R₁ is hydrogen.

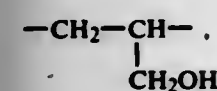
11. A method of treating rheumatoid arthritis in a mammal which comprises administering to said mammal an anti-rheumatoid arthritis amount of a compound of the formula



or a pharmaceutically acceptable salt thereof, wherein n is an integer of value 1 or 2;
Y is o-phenylene, propylene, ethylene (unsubstituted or substituted with up to 2 methyl groups and up to 1 phenyl groups),



wherein X is nitro or methoxy;
R₁ is hydrogen, methyl, (C₂-C₅)alkanoyl or benzoyl;
with the proviso that when Y is



R₁ is hydrogen.

4,246,264

TREATMENT OF HYPERURICAEMIA WITH ETOFYLLINE CLOFIBRATE

Gunter Metz, and Manfred Specker, both of Blaubeuren, Fed. Rep. of Germany, assignors to Ludwig Merckle, K.G., Chem. Pharm. Fabrik, Fed. Rep. of Germany
Filed Jan. 17, 1980, Ser. No. 112,907
Int. Cl.³ A61K 31/52

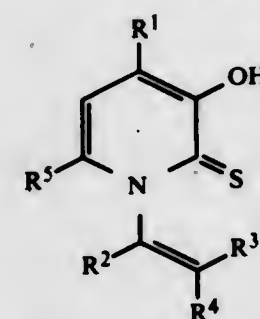
U.S. Cl. 424-253

7 Claims

1. A process for the treatment of a host animal which is afflicted with hyperuricaemia which comprises administering to said animal an amount sufficient to lower the serum uric acid level of said host animal, a drug comprising etofylline-clofibrate.

wherein R¹ and R⁵, which may be the same or different each represent a hydrogen or halogen atom and R², R³ and R⁴ which may be the same or different, each represent a hydrogen atom or a lower alkyl group in association with a carrier, excipient or diluent therefor.

30. A compound having the formula:



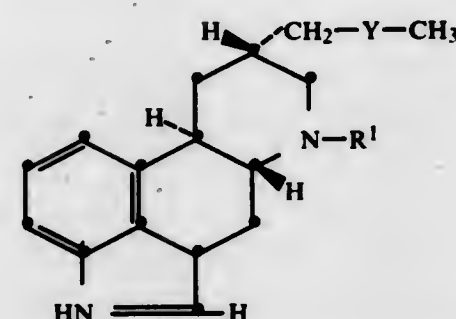
4,246,265
6-N-PROPYL-8α-METHOXYMETHYL OR METHYLMERCAPTOMETHYLERGOLINES AND RELATED COMPOUNDS
Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 1, 1979, Ser. No. 80,768
Int. Cl.³ A61V 31/48

U.S. Cl. 424-261

4 Claims

1. A process for treating a patient suffering from Parkinson's syndrome and in need of treatment which comprises administering a dose, effective to ameliorate the Parkinsonism symptoms, of a compound of the formula



wherein Y is O, or S and R¹ is n-propyl, and pharmaceutically acceptable acid addition salts thereof.

4,246,266
ANTIMICROBIAL PYRIDITHIONES
Kjell Undheim, Blommenholm, and Gunnar A. Ulsaker, Oslo, both of Norway, assignors to Nyegaard & Co. A/S, Oslo, Norway

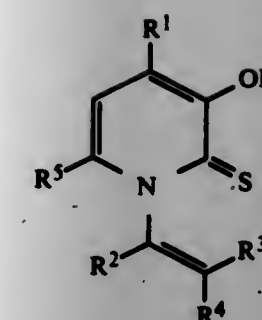
Continuation of Ser. No. 703,826, Jul. 9, 1976, abandoned. This application Mar. 6, 1978, Ser. No. 883,943
Claims priority, application United Kingdom, Jul. 10, 1975, 29105/75

Int. Cl.³ C07D 213/04; A61K 31/44

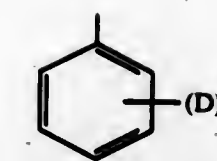
U.S. Cl. 424-263

32 Claims

1. A pharmaceutical antimicrobial composition comprising as active ingredient at least one compound of the formula



where R¹ and R⁵, which may be the same or different each represent a hydrogen or halogen atom and R², R³ and R⁴ which may be the same or different, each represent a hydrogen atom or a lower alkyl group, with the proviso that R¹, R² and R³ do not all represent hydrogen atoms when either one of R³ and R⁴ represents a hydrogen atom while the other represents a methyl group or both R³ and R⁴ represent a hydrogen atom.



wherein D is a halogen, a lower alkyl radical, a lower alkenyl radical, a lower alkoxy, a lower alkenyloxy, a lower alkynyloxy, a lower alkylthio, a hydroxy carbonyl, a lower alkoxy carbonyl, a nitro group, an amino, a lower alkyl amino, a dilower alkyl amino, a lower acylamino, a sulphonamido, a lower alkyl amino sulphonyl, a dilower alkyl amino sulphonyl, a lower alkyl sulphonyl, an amino carbonyl, a cyano, a trifluoromethyl or a lower alkylene dioxy
and m is O or an integer from 1 to 5, inclusive.

4,246,268
NEUROLEPTIC-4-(NAPHTHYLMETHYL)PIPERIDINE DERIVATIVES

Albert A. Carr, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

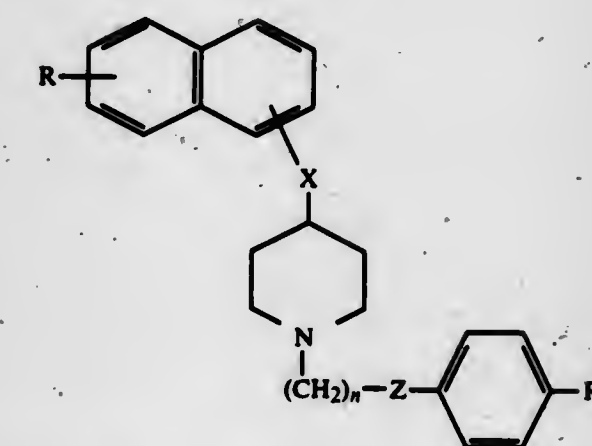
Filed Feb. 9, 1979, Ser. No. 10,555

Int. Cl.³ A01K 31/445; C07D 211/32, 211/22

U.S. Cl. 424-267

23 Claims

1. A compound of the formula



(I)

wherein n is an integer of from 2 to 5; R is selected from hydrogen, halogen, straight or branched chain alkyl of from 1 to 4 carbon atoms, straight or branched chain alkoxy of from 1 to 4 carbon atoms and trifluoromethyl; R₁ is selected from hydrogen, halogen, straight or branched alkyl of from 1 to 4 carbon atoms, and straight or branched alkoxy of from 1 to 4 carbon atoms; X is selected from carbonyl, hydroxymethylene and methylene; and Z is selected from carbonyl and hydroxymethylene; an individual diastereomer or optical isomer, or a pharmaceutically acceptable acid addition salt thereof.

15. A method of obtaining tranquilizing effects in a patient in need thereof comprising administering to said patient a tranquilizing amount of a compound of claim 1.

4,246,269
ANTIDEPRESSANT PIPERIDINONES
Romeo Paloni, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 827,274, Aug. 24, 1977, Pat. No. 4,160,837. This application Apr. 5, 1979, Ser. No. 27,337

Claims priority, application Luxembourg, Sep. 1, 1976, 75701

Int. Cl.³ A61K 31/445; C07D 211/74

U.S. Cl. 424-267

11 Claims

1. A compound of the formula

4,246,267
AMINOPIPERIDINES, THEIR PRODUCTION AND THE PHARMACEUTICAL COMPOSITIONS INCORPORATING THEM

Michel Vincent, Bagnaux; Georges Remond, Versailles, and Michel Lauble, Vaucresson, all of France, assignors to Science Union et Cie, Suresnes, France

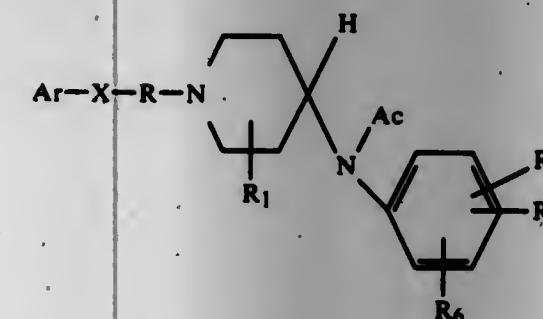
Continuation-in-part of Ser. No. 789,564, Apr. 21, 1977, abandoned. This application Oct. 4, 1978, Ser. No. 948,536
Claims priority, application France, Apr. 29, 1976, 76 12671

Int. Cl.³ A61K 31/445; C07D 211/58

U.S. Cl. 424-267

25 Claims

1. Aryl alkyl piperidines of the formula I

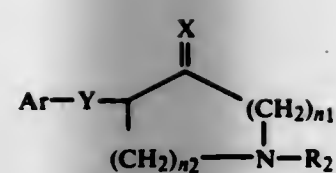


in which

R₁ is a hydrogen or a lower alkyl radical,
R is an alkylene chain having from 2 to 4 carbon atoms which may be substituted with one or more lower alkyl radicals,
X is a grouping



in which R₂ is hydrogen, a lower alkyl carbonyl residue, a lower alkenyl radical or a lower alkyl radical;
Ac is an acyl residue from an alkyl carboxylic acid having up to 10 carbon atoms;
R₄, R₅ and R₆ which are the same or different represent a hydrogen, a halogen, a lower alkyl radical, a lower alkoxy or a lower alkylene dioxy;
and Ar is an unsubstituted phenyl or substituted phenyl radical of the formula



wherein X is the oxo radical, R₂ is hydrogen, lower alkyl, lower alkenyl or lower alkynyl, Ar is phenyl, naphthyl or 5,6,7,8-tetrahydronaphthyl, which are unsubstituted or mono- or disubstituted in an aromatic ring, at most two substituents being selected from lower alkyl, lower alkoxy and halogen, and at most one substituent being selected from trifluoromethyl, carbamoyl, nitro and cyano, Y is oxygen, n₁ is one and n₂ is two and n₁ is two and n₂ is 1 or an acid addition salt thereof.

11. A method for the treatment of mental depression in a warm-blooded animal comprising enteral or parenteral administration to said animal of a therapeutically effective amount of a compound according to claim 1 having the formula 1 defined in claim 1, or of a pharmaceutically acceptable acid addition salt thereof.

4,246,270

3-FLUOROBENZODIAZEPINES AND COMPOSITIONS AND USES THEREOF

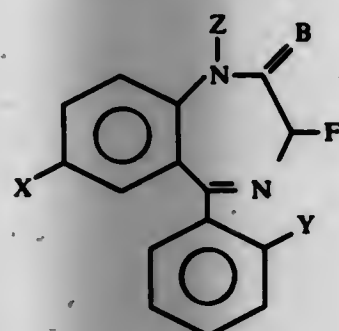
Elena M. Bingham, Wilmington, Del., and William J. Middleton, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 597,502, Jul. 21, 1975, abandoned. This application May 26, 1976, Ser. No. 687,318
Int. Cl.³ A61K 31/55; C07D 403/04, 243/34

U.S. Cl. 424-269

6 Claims

1. A compound of the formula:



wherein

X is Cl, Br, NO₂ or CF₃;

Y is H, Cl, Br or F;

Z is alkenylmethyl having 1-4 carbon atoms or —CONHR in which R is alkyl having 1-4 carbon atoms;

B is O; or

B and Z together are =N—N=C(R')—, in which R' is H or alkyl having 1-4 carbon atoms.

5. A method of tranquilizing a mammal which comprises administering to the mammal an effective tranquilizing amount of a compound of claim 1 or claim 2 or claim 3.

4,246,271

4-PHENYL-2-THIAZOLYL-OXAMATES USEFUL IN THE TREATMENT OF ASTHMA

Henri Conasse, Fourn de los Nobles Chemin de Lastinos; Gilbert Mouzin, 21, rue Sainte-Foy; Jean-Pierre Tarayre, Rue des Sports, Valduronque, all of Castres, Tara, France, and Silvano Casadio, Via Tantarini 15, Milan, Italy (20136)

Filed Jun. 14, 1979, Ser. No. 48,371

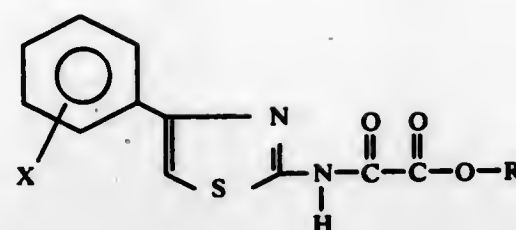
Claims priority, application France, Jun. 19, 1978, 78 18500
Int. Cl.³ C07D 277/38

U.S. Cl. 424-270

11 Claims

1. 4-phenyl-2-thiazolyl-oxamate derivatives having formula

(I)



in which:

X which is in 2, 3, or 4 position represents hydrogen, halogen, lower-alkyl, or lower-alkoxy.

R represents lower-alkyl or phenyl-lower-alkyl.

8. Pharmaceutical composition useful for its allergic inhibitive characteristics, comprising an effective amount of a compound of claim 1 or claim 2 in combination with a pharmaceutically-acceptable carrier.

4,246,272

BENZAMIDINE DERIVATIVES

Michel Noël, Houilles, France, assignor to Aron S.A., Suresnes, France

Filed Jul. 5, 1978, Ser. No. 922,232

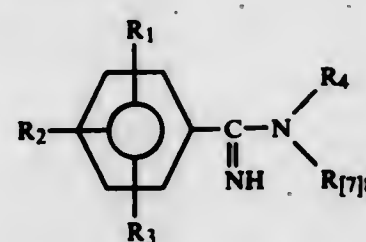
Claims priority, application United Kingdom, Jul. 20, 1977, 30523/77

Int. Cl.³ A61K 31/42; C07D 271/06, 261/08

U.S. Cl. 424-272

5 Claims

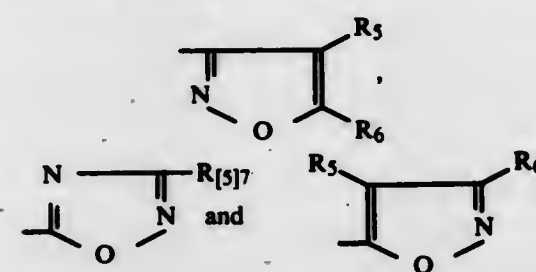
1. A compound selected from the group consisting of compounds of the formula:



(I)

in which R₁, R₂ and R₃ are independently selected from one substituent selected from hydrogen, halogen, trifluoromethyl, nitro, and two C₁₋₄ alkoxy substituents,

R₄ represents a heterocyclic group selected from

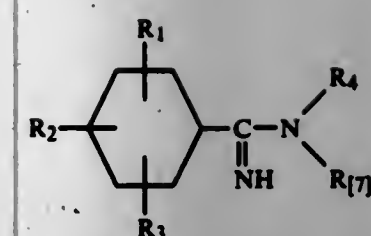


in which R₅ and R₆ are independently selected from hydrogen and methyl,

R₇ is selected from hydrogen, C₁₋₄ alkyl, phenyl and halo-phenyl, and

R₈ is selected from hydrogen and C₁₋₄ alkyl, and a pharmaceutically acceptable acid addition salt thereof.

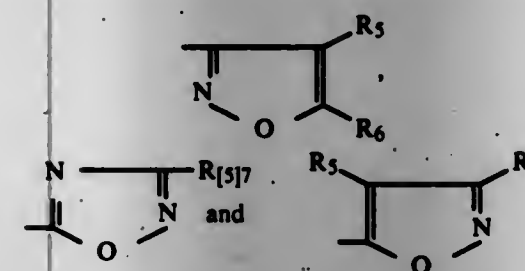
5. A therapeutic composition having an activity against the human gastric or duodenal ulcers containing an antilulcerous effective amount of a compound selected from the group consisting of compounds of the formula:



(I)

in which R₁, R₂ and R₃ are independently selected from one substituent selected from hydrogen, halogen, trifluoromethyl, nitro, and two C₁₋₄ alkoxy substituents,

R₄ represents a heterocyclic group selected from



in which R₅ and R₆ are independently selected from hydrogen and methyl,

R₇ is selected from hydrogen, C₁₋₄ alkyl, phenyl and halo-phenyl, and

R₈ is selected from hydrogen and C₁₋₄ alkyl, and a pharmaceutically acceptable acid addition salt thereof, and a pharmaceutically acceptable excipient.

4,246,273

1,5-DISUBSTITUTED IMIDAZOLID-4-ONES

Gordon Wootton, Sawbridgeworth, England, assignor to Beecham Group Limited, England

Filed Mar. 27, 1979, Ser. No. 24,190

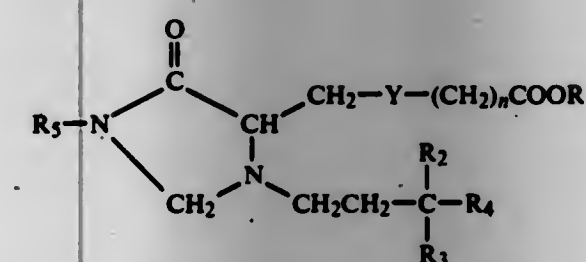
Claims priority, application United Kingdom, Mar. 30, 1978, 12367/78; Oct. 13, 1978, 40506/78

Int. Cl.³ A61K 31/415; C07D 233/22

U.S. Cl. 424-273 R

36 Claims

1. A compound of the formula:



the pharmaceutically acceptable acid addition salt thereof, and the alkali metal, alkaline earth metal, ammonium and substituted ammonium salt when R¹ is hydrogen

wherein Y is —CH₂CH₂—, —CH=CH— or —C≡C—; n is 1 to 5;

R₁ is hydrogen, alkyl of 1 to 12 carbon atoms, phenyl, benzyl, tolyl, phthalidyl, pivaloyloxymethyl, 1-ethoxy-carbonyloxyethyl or acetoxymethyl;

R₂ is hydrogen, alkyl of 1 to 4 carbon atoms, trifluoromethyl or phenyl;

R₃ is hydroxy, alkanoyloxy of 1 to 4 carbon atoms or benzyloxy;

R₄ is hydrogen, alkyl of 1 to 6 carbon atoms, phenyl or phenylalkyl wherein alkyl has 1 to 6 carbon atoms, said phenyl and phenylalkyl being unsubstituted or substituted with one or more members selected from the group consisting of halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, and nitro; and

R₅, when taken alone, is (a) hydrogen; (b) unsubstituted alkyl of up to 9 carbon atoms; (c) alkoxyalkyl of up to 9

carbon atoms; (d) cycloalkyl of 3 to 8 carbon atoms; (e) phenyl; (f) naphthyl; (g) alkyl of up to 6 carbon atoms substituted with cycloalkyl of 3 to 8 carbon atoms; (h) alkyl of up to 6 carbon atoms substituted with phenyl; (i) alkyl of up to 6 carbon atoms substituted with naphthyl; (j) —CH₂(CH₂)_m—O—(CH₂)_x—cycloalkyl wherein each m and x have a value of from 0 to 5 with the sum of m+x being no more than 5 and cycloalkyl contains from 3 to 8 carbon atoms; (k) —CH₂(CH₂)_m—O—(CH₂)_x—phenyl wherein m and x are as herein defined; or (l) —CH₂(CH₂)_m—O—(CH₂)_x—naphthyl wherein m and x are as herein defined; any of said phenyl or naphthyl being unsubstituted or substituted by one or more members selected from the group consisting of halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms and nitro; or

R₄, when taken with R₂, is alkylene of 4 to 7 carbon atoms

36. A method of effecting a prostaglandin like response in humans and domestic animals, which comprises the administration thereto of an effective amount of a compound according to claim 1.

4,246,274

ANTIMYCOTIC HYDROXYPROPYL-IMIDAZOLES

Erik Regel; Karl H. Büchel; Ingo Haller, and Manfred Plömpel, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,799

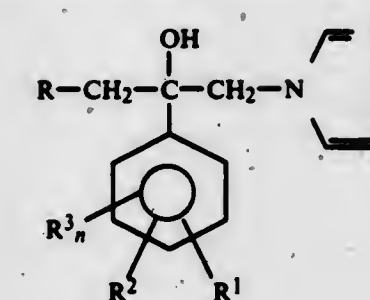
Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820489; Jul. 26, 1978, 2832677

Int. Cl.³ A61K 31/415; C07D 233/60

U.S. Cl. 424-273 R

11 Claims

1. A compound of the formula



(I)

or a salt thereof in which

R denotes a phenyl, naphthyl or 1,2,3,4-tetrahydronaphthyl radical which is unsubstituted or substituted by halogen, C₁₋₄-alkyl, C₁₋₄-alkoxy, C₁₋₄-halogenoalkyl with up to 5 halogen atoms,

R¹ denotes a phenyl or C₃₋₇-cycloalkyl radical which is unsubstituted or substituted by halogen, C₁₋₄-alkyl or C₂₋₄-alkenyl and

R² denotes a hydrogen atom, or

R¹ and R² together, in the o-position relative to one another, denote a methylene bridge having 3 to 5 methylene groups which is unsubstituted or substituted by halogen or C₁₋₄-alkyl or, together with the phenyl ring, denote a naphthyl radical,

R³ denotes a halogen atom or an C₁₋₄ alkyl, C₁₋₄ alkoxy or a C₁₋₄-halogenoalkyl group having up to 5 halogen atoms and

n is 0, 1, 2 or 3.

8. A method of combating mycoses in warm-blooded animals which comprises administering to the said animals an antimycotically effective amount of active compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

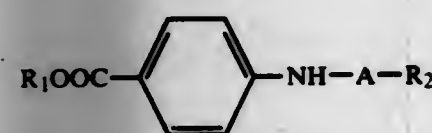
4,246,275

ANTILIPIDEMIC PARA-[THIENYL AND FURYL (ALKYL OR ALKENYL)AMINO]-BENZOIC ACID DERIVATIVES
Jay D. Albright, Nanuet; Thomas G. Miner, Chester, and Robert G. Shepherd, South Nyack, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 557,550, Mar. 12, 1975, Pat. No. 4,185,115. This application Oct. 5, 1979, Ser. No. 82,374
Int. Cl.³ A61K 31/34, 31/38; C07D 307/54, 333/24

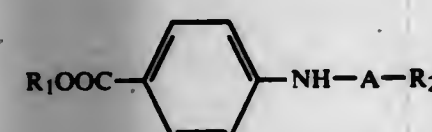
U.S. Cl. 424-275 7 Claims

1. A para-[thienyl or feryl(alkyl or alkenyl)amino]-benzoic acid derivative of the formula:



wherein R₁ is selected from the group hydrogen, lower alkyl, benzyl, diloweralkylaminoethyl and loweralkoxyethyl; R₂ is selected from the group halofuryl, dihalofuryl, alkylfuryl, dialkylfuryl, thienyl or furyl; A is selected from the group C_nH_{2n}, wherein n=1-16, with the provision that when n is 1, R₂ is not thienyl C_nH_{2n-2}, wherein n=3-16; the pharmaceutically acceptable salts thereof; and when R₁ is hydrogen, the alkali metal or organic base carboxylic acid salts thereof.

7. A method of lowering serum-lipid levels in mammals which comprises orally administering to said mammals an effective amount of a para-[thienyl and feryl(alkyl or alkenyl)amino]benzoic acid derivative of the formula:



wherein R₁ is selected from the group hydrogen, lower alkyl, benzyl, diloweralkylaminoethyl and loweralkoxyethyl; R₂ is selected from the group halofuryl, dihalofuryl, alkylfuryl, dialkylfuryl, thienyl or furyl; A is selected from the group C_nH_{2n}, wherein n=1-16, with the proviso that when n is 1, R₂ is not thienyl and C_nH_{2n-2}, wherein n=3-16; the pharmaceutically acceptable salts thereof; and when R₁ is hydrogen, the alkali metal or organic base carboxylic acid salts thereof.

4,246,276

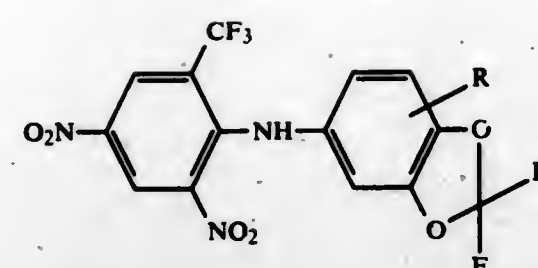
COMBATING PESTS WITH
2,2-DIFLUORO-5-(2,4-DINITRO-6-TRIFLUOROMETHYL-PHENYLAMINO)-BENZODIOXOLES

Alfons Hartmann, Beckingen; Albrecht Marhold; Reinhard Lantzsich, both of Leverkusen; Ingeborg Hamman, Cologne; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed May 16, 1979, Ser. No. 39,619

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823168

Int. Cl.³ A61K 31/36; C07D 317/44
U.S. Cl. 424-282 10 Claims

1. A 2,2-difluoro-5-(2,4-dinitro-6-trifluoromethyl-phenylamino)-benzodioxole of the formula



in which

R is hydrogen, halogen or alkyl optionally substituted by halogen.

5. An arthropodocidal or microbicidal composition containing as active ingredient on arthropodocidally or microbicidally effective amount of a compound according to claim 1 in admixture with a diluent.

8. A method of combating arthropods or microbes which comprises applying to the arthropods or microbes, or to a habitat thereof, an arthropodocidally or microbicidally effective amount of a compound according to claim 1.

4,246,277

LOWERING THE CONCENTRATION OF PLASMA TRIGLYCERIDES

Pierre Bessin, Chilly Mazarin, France, assignor to Albert Roland S.A., Paris, France

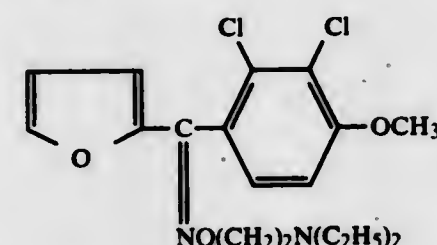
Filed Jun. 22, 1979, Ser. No. 51,241

Int. Cl.³ A61K 31/34

U.S. Cl. 424-285

2 Claims

1. A method of lowering the concentration of plasma triglycerides of a subject in need thereof, which comprises administering a therapeutically effective but non toxic amount of at least one of the two stereoisomers or a mixture thereof of a compound having the formula



or pharmaceutically acceptable addition salt of said amine formed with an acid.

4,246,278

MEDICAMENTS HAVING AN ANTIPHLOGISTIC ACTION

Wolfgang Optitz; Eugen Etschenberg, both of Cologne; Hans-Dieter Dell, Berg. Gladbach, and Haireddin Jacobi, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Nov. 24, 1978, Ser. No. 963,651

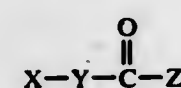
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753768; Jun. 3, 1978, 2824386

Int. Cl.³ A61K 31/265

U.S. Cl. 424-301

13 Claims

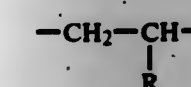
1. A pharmaceutical composition containing as an active ingredient, an antiphlogistically effective amount of a sulphur-containing carboxylic acid of the formula



or its ester, in which

X denotes a hydrogen atom, an alkyl group, an alkoxy

group, an alkylthio group, an alkylsulphinyl or alkylsulphonyl group or a hydroxyl or mercapto group,
Y denotes a grouping



in which

R denotes a hydrogen atom or an alkyl group, and Z denotes an alkylthio group, and each of said alkyl, alkoxy or alkylthio moiety containing up to 8 carbon atoms, in the form of a sterile or physiologically isotonic aqueous solution, tablets, pills, dragees, capsules, ampoules or suppositories.

10. A method of treating inflammatory processes in warm-blooded animals which comprises administering to the said animals an antiphlogistically effective amount of a compound as defined in claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,246,280

20-ALKOXY-16-ALKYL-PROSTADIENOIC ACID DERIVATIVES

Noriyoshi Inukai; Masuo Murakami, both of Tokyo; Hidenori Iwamoto, Ageo; Isao Yanagisawa; Toshinari Tamura, both of Tokyo; Yoshio Ishii, Omiya; Kenichi Tomioka, Kitamoto, all of Japan, and Tetsuya Shiozaki, deceased, late of Misato, Japan (by Hiroko Shiozaki, legal representative), assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 861,459, Dec. 16, 1977, abandoned, which is a continuation of Ser. No. 702,889, Jul. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 640,497, Dec. 15, 1975, Pat. No. 4,055,589. This application Feb. 28, 1979, Ser. No. 16,070

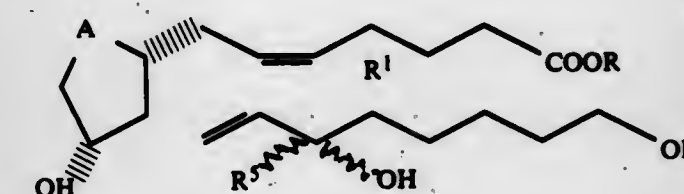
Claims priority, application Japan, Dec. 20, 1974, 49/145617; Nov. 4, 1975, 50/132295

Int. Cl.³ A61K 31/557

U.S. Cl. 424-305

4 Claims

1. A pharmaceutical composition comprising an antiasthmatic effective amount of a 20-alkoxy-16-alkylprostadienoic acid derivative shown by the formula:



wherein A represents



4,246,279
NOVEL DICHLOROMALEIC ACID DIAMIDE DERIVATIVES AND THEIR USE AS FUNGICIDES
Gerhard Bonse, Cologne; Heinz U. Blank, Odenthal; Wilhelm Brandes, Leichlingen, and Paul Volker, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Jan. 31, 1979, Ser. No. 8,145

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807662

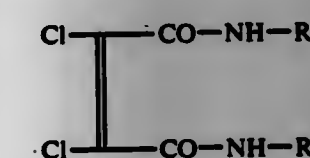
Int. Cl.³ C07C 103/58; A01N 9/20

U.S. Cl. 424-302

8 Claims

1. A dichloromaleic acid diamide selected from the group consisting of
dichloromaleic acid bis-(2-chloroethyl)-amide,
dichloromaleic acid bis-n-butylamide,
dichloromaleic acid bis-allylamide and
dichloromaleic acid bis-3-trifluoromethylamido.

7. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a dichloromaleic acid diamide of the formula



in which

R is an aliphatic radical with up to 6 carbon atoms which can optionally carry one or more substituents selected from halogen atoms, cyano, C₁-C₄ alkoxy, C₁-C₄ alkylthio, phenyl, phenoxy, amino, C₁-C₄ alkylamino or phenylamino; a cycloalkyl group with 5 or 6 carbon atoms; or phenyl carrying at least one substituent selected independently from alkyl, alkenyl, alkynyl, alkoxy and alkylthio each with up to 3 carbon atoms, phenyl, phenoxy, halogen, nitro, cyano, halogenomethyl, halogenoethyl, trifluoromethoxy, trifluoromethylthio, thiocyanato, carboxyl, alkoxycarbonyl with up to 4 carbon atoms in the alkyl part, and acetilamino.

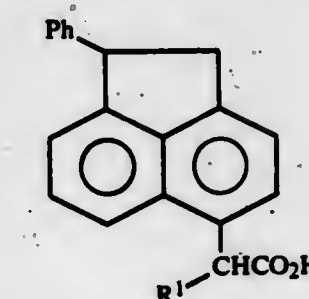
4,246,281

PHARMACOLOGICALLY ACTIVE ACENAPHTHENE DERIVATIVES

William R. N. Williamson, Slough, England, assignor to Lilly Industries Limited, London, United Kingdom
Filed Sep. 10, 1979, Ser. No. 74,220

Int. Cl.³ C07C 69/616; A61K 31/235, 31/19; C07C 57/40
U.S. Cl. 424-308 5 Claims

1. An acenaphthene derivative of formula (I):



wherein Ph represents phenyl optionally substituted by halogen and R₁ represents hydrogen or C₁-C₄ alkyl; or a pharmaceutically-acceptable salt or C₁-C₄ alkyl ester thereof.

5. A pharmaceutical composition comprising, as an active ingredient, an anti-inflammatorily effective amount of a compound of claim 1 associated with at least one pharmaceutically-acceptable carrier.

4,246,282

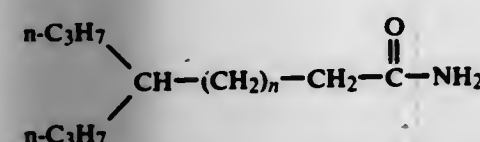
 ω -DIALKYLALKANOIC ACID DERIVATIVES USED TO INDUCE ANTIANOXIC ACTIVITY

Michel Chignac, Sisteron; Claude Grain, Volonne; Fernand Jammot, Sisteron; Charles Pigerol, Saint-Ouen; Pierre L. Eymard, Fontaine, and Madeleine Combet (epse Broll), St. Egreve, all of France, assignors to Labaz, Paris, France
Filed Jun. 7, 1979, Ser. No. 46,432
Int. Cl.³ A61K 31/16

U.S. Cl. 424—320

4 Claims

1. A method for inducing an antianoxic action in a host in need of such treatment, comprising the administration to said host of an ω -dialkylalkanoic acid derivative of general formula:



in which n represents 0, 1 or 2, at a daily dosage between 200 and 1500 milligrams of ω -dialkylalkanoic acid derivative per 60 kilograms of body weight.

4,246,283

PESTICIDALLY ACTIVE

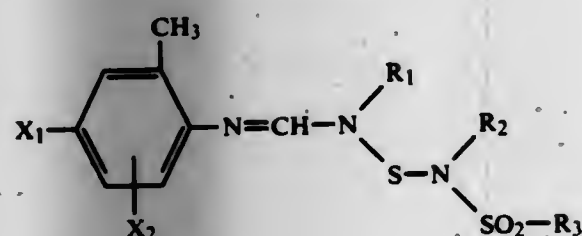
1-PHENYL-1,3,5-TRIAZA-4-SULFA-5-ALKYLSULFONYL AND -PHENYLSULFONYL-PENT-1-EN DERIVATIVES
Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Jun. 1, 1977, Ser. No. 802,226

Claims priority, application Switzerland, Jun. 4, 1976, 7112/76; Feb. 9, 1977, 1560/77; May 13, 1977, 6014/77
Int. Cl.³ C07C 143/75, 143/79; A01N 9/16

U.S. Cl. 424—321

18 Claims

1. A compound of the formula I



wherein

R₁ is methyl or ethyl,
R₂ is C₁–C₁₂-alkyl, C₃–C₆-cycloalkyl or cyclopropylmethyl,
R₃ is phenyl optionally mono-, di- or tri-substituted by halogen or methyl, and either

(i) X₁ is methyl, chlorine, bromine or hydrogen and X₂ is methyl, or

(ii) X₁ is methyl, chlorine or bromine and X₂ is hydrogen.

13. A method of controlling insects or acarid pests at a locus which method comprises applying to said locus an insecticidally or acaricidally effective amount of a compound as claimed in claim 1.

4,246,284

AMINOSULFONYL-SUBSTITUTED ARYLOXYALKYL DIKETONES

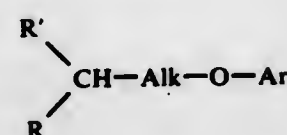
Joseph C. Collins, East Greenbush, and Guy D. Diana, East Nassau, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 913,366, Jun. 7, 1978, Pat. No. 4,182,727, which is a division of Ser. No. 725,160, Sep. 21, 1976, Pat. No. 4,133,959, which is a continuation-in-part of Ser. No. 576,311, May 12, 1975, Pat. No. 4,031,246, which is a continuation-in-part of Ser. No. 381,406, Jul. 23, 1973, Pat. No. 3,933,837. This application Nov. 5, 1979, Ser. No. 91,596
Int. Cl.³ C07C 143/78; A61K 31/18

U.S. Cl. 424—321

4 Claims

1. A compound of the formula



wherein:

Alk is alkylene of 3 to 10 carbon atoms;
R and R' are alkanoyl of 2 to 6 carbon atoms;
and Ar is aminosulfonylphenyl.

4. A method for combatting viruses which comprises contacting the locus of said viruses with a composition containing an antivirally effective amount of at least one compound according to claim 1 in admixture with a suitable carrier or diluent.

4,246,285

SKIN CONDITIONING COMPOSITIONS CONTAINING GUANIDINE INORGANIC SALTS

Barry F. Van Duzee, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 20, 1975, Ser. No. 624,202
Int. Cl.³ A61K 7/025, 7/48

U.S. Cl. 424—358

16 Claims

1. A topical skin care composition in the form of a lotion consisting essentially of:

- from 2% to 15% of a guanidine inorganic salt;
- from 1% to 25% of an emollient; and
- the balance water.

4,246,286

CHEWING GUMS OF IMPROVED SWEETNESS RETENTION

Robert E. Klose, West Nyack; Bernard J. Bahoshy, Mahopac; Ragnar E. Sjonvall, East Chester, and James A. Yeransian, Pearl River, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 12, 1979, Ser. No. 29,183
Int. Cl.³ A23G 3/30

U.S. Cl. 426—3

9 Claims

1. A storage-stable chewing gum containing L-aspartyl-L-phenylalanine methyl ester in an amount of from 0.1% to 1.5% by weight of the gum, said gum having a pH of between 5.0 and 7.0 as measured by a water extract of the gum said pH being effective to minimize the formation of diketopiperazine and to maintain the sweetness of the L-aspartyl-L-phenylalanine methyl ester during prolonged storage, and wherein said gum is free of acid saccharin, acid cyclamate or sour fruit flavors.

4,246,287

FLAVORING WITH FENCHYL ETHYL ETHER

Cynthia J. Massinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; James M. Sanders, Easton, N.J.; Bette M. Light, Highlands, N.J., and Edward J. Granda, Englishtown, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 12,798, Feb. 16, 1979, which is a division of Ser. No. 939,897, Sep. 5, 1978, Pat. No. 4,163,068, which is a division of Ser. No. 872,937, Jan. 27, 1978, Pat. No. 4,131,687.
This application Oct. 26, 1979, Ser. No. 88,617

Int. Cl.³ A23L 1/226

U.S. Cl. 426—3

1 Claim

1. A process for augmenting or enhancing the aroma or taste of a lemon flavored foodstuff, or chewing gum comprising the step of adding thereto from 0.5 ppm up to about 100 ppm of synthetically produced substantially pure fenchyl ethyl ether.

4,246,288

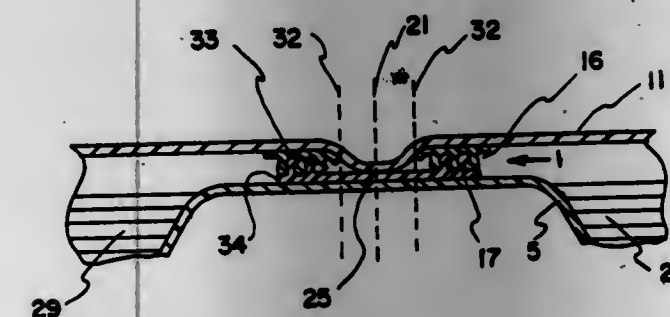
RECLOSABLE PACKAGE

Phillip A. Sanborn, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Aug. 9, 1979, Ser. No. 65,301
Int. Cl.³ B65D 5/54, 43/06

U.S. Cl. 426—122

4 Claims



1. A reclosable package comprising:

- a product;
- a semi-rigid, thermoplastic forming web having a cavity formed therein with a peripheral flange having a continuous sealing surface around the opening to said cavity, said cavity containing said product;
- a separable reclosable, flexible, thermoplastic two part interlocked closure strip with each part comprising longitudinal, interlocking rib and groove elements and each part having a sealing surface with one sealing surface thereof sealed to said sealing surface of said forming web, said strip being adjacent and parallel to but spaced apart from one edge of the forming web, said strip extending substantially the length of said edge, and a portion of the strip at each end thereof having an indentation; and,
- a flexible covering web sealed by a peripheral heat seal to the sealing surface of the peripheral flange of said forming web hermetically enclosing the product and closure strip; said covering web being sealed to the other sealing surface of said closure strip, the indentation at each end of said strip permitting each end of said closure strip to terminate in the peripheral seal in a continuous, smooth seal between said covering web, forming web, and closure strip whereby said hermetically sealed package may be opened from one side by severing or tearing the covering or forming web or both between said closure strip and adjacent peripheral seal and thereafter separating the closure strip parts to gain access to the product.

4,246,289

NOVEL AROID PRODUCTS

Joseph C. C. Tu, Kailua, HI., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 5, 1979, Ser. No. 55,116

Int. Cl.³ A23L 1/214, 1/277, 1/28

U.S. Cl. 426—254

10 Claims

1. A process for preparing edible products from the corms of plants of the family Araceae, which comprises
(a) peeling and washing uncooked corms,
(b) cutting the corms of Step a into pieces,
(c) treating the corms of Step b with 2–5% aqueous alkali, based on the weight of the corms, for a period of 10–24 hours at a temperature of about 20°–30° C.,
(d) separating the corms of Step c from the aqueous alkali,
(e) washing the corms of Step d with water,
(f) treating the corms of Step e with water containing 0.7–10% hydrogen peroxide, based on the weight of corms, for a period of about 10–30 hours, in the ratio of one part of corms per 2–4 parts of water,
(g) treating the corms of Step f with water to neutralize them, and
(h) drying the corms of Step g to a moisture content of about 5–10%.

4,246,290

PROCESS FOR MANUFACTURING WAFFLE BLOCKS

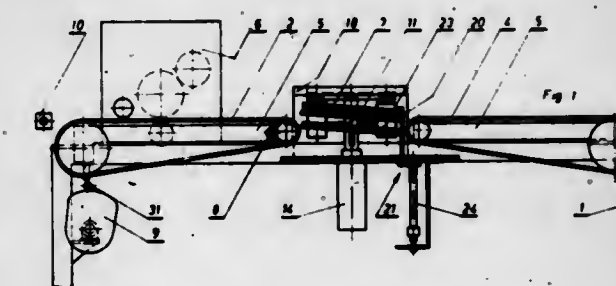
Franz Haas, Sr., Gerstgasse 25, Wien, Austria (1210); Franz Haas, Jr., Castellezgasse 32, Wien, Austria (1020), and Johann Haas, Wienerstrasse 209–215, Spillern (N8), Austria (2104)

Filed Mar. 14, 1978, Ser. No. 886,402

Claims priority, application Austria, Mar. 25, 1977, 2098/77
Int. Cl.³ A21D 13/00; A23G 3/00

U.S. Cl. 426—275

2 Claims



1. A process for making a waffle block having plural waffle sheets with a cream filling therebetween, the process comprising the steps of:

- conveying with a conveying device a first, uncoated covering waffle sheet to a lifting device, the uncoated sheet having an upper side and a lower side;
- coating an upper side of another waffle sheet with a filling to form a coated sheet;
- lifting the uncoated sheet above the conveying device, said step of lifting the uncoated sheet being carried out with the lifting device;
- conveying the coated sheet to the lifting device;
- lifting the coated sheet above the conveying device, said step of lifting the coated sheet being carried out with the lifting device, said step of lifting the uncoated sheet being performed in the same manner as said step of lifting the coated sheet, said steps of lifting said coated and uncoated sheets being performed by engaging each sheet both with a rotating helical member and also with an abutment, the rotating helical member providing an upward spiral motion, the abutment providing a stop for each sheet to prevent discharge of each sheet from the rotating helical member during lifting, whereby the upward spiral movement lifts said sheets;
- joining, by means of the lifting device, the coated sheet to the uncoated sheet solely by the raising of the coated sheet

with the lifting device to meet the lower side of the uncoated sheet and without lowering of the lifted uncoated sheet, said joining being effected by contact of the filling of the coated sheet with the uncoated sheet, said joining step providing a stack having layers of sheets with filling therebetween;

- (g) forming a completed stack of sheets by, if additional layers are desired, repeating said steps of coating a sheet, conveying the coated sheet, lifting the coated sheet, and joining the coated sheet $n-2$ times, where n is the number of sheets in the final stock, said joining step, if repeated, including joining a coated sheet to another coated sheet disposed thereabove solely by the raising of the lower of such sheets and without lowering of the stack, the completed stack being in an elevated position above the conveying device; and
- (h) thereafter removing the stack from the lifting device in the elevated position of the stack without previously lowering the stack.

4,246,291

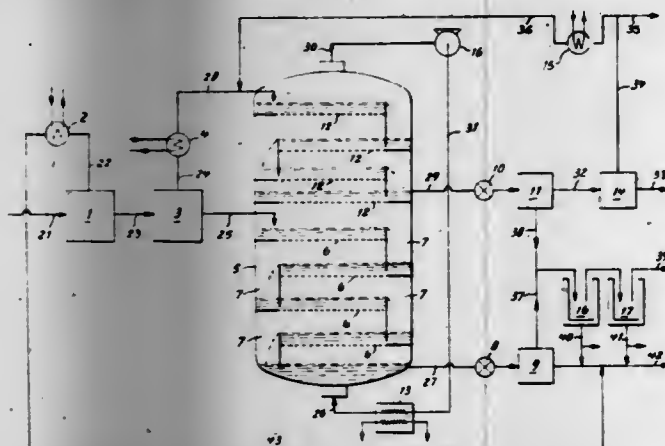
DECAFFEINATION OF AQUEOUS EXTRACTS
Ravi Prasad, Middletown, N.Y.; Martin Gottesman, Paramus, N.J., and Robert A. Scarella, Hawthorne, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,878

Int. Cl.³ A23F 5/18

U.S. Cl. 426—387

4 Claims



1. A method of decaffeinating an aqueous caffeine-containing extract of roasted coffee comprising the steps of:

- subjecting the extract to a stripping operation in order to remove volatiles and from about 5 to 15% by weight of the extract;
- condensing the extract strippings of step (a);
- evaporatively concentrating the stripped extract to a solids concentration between 30% and 50% by weight;
- condensing the aqueous evaporate of step (c);
- continuously contacting the concentrated extract in a countercurrent fashion with a decaffeinating fluid at a temperature between 10° C. and 180° C. and a pressure between 50 to 450 atmospheres, said fluid being either a liquid gas or a supercritical fluid at the conditions at which the decaffeination operation is effected;
- thereafter, contacting the caffeine-containing fluid from step (e) with an aqueous stream containing the condensed evaporate of step (d), at a temperature between 10° C. and 180° C. and a pressure between 50 to 450 atmospheres in order to decaffeinate said fluid;
- passing the decaffeinated extract of step (e) and the caffeine-containing aqueous stream from step (f) to vent tanks and condensing volatiles exiting the vent tanks;
- removing caffeine from the aqueous stream of step (f) and combining at least a portion of this decaffeinated liquid with the condensed evaporate of step (d) to form the aqueous stream of step (f);
- adding condensed strippings from step (b) and condensed

volatiles from step (g) back to the decaffeinated extract resulting from step (e).

4,246,292

SUBSTITUTED CYCLOHEXANONES AS FLAVOR MATERIALS

Wilhelmus M. B. Kunst, Naarden; Roelof ter Heide, Bussum, and Hendrik J. Wobben, Naarden, all of Netherlands, assignors to Naarden International N.V., Naarden-Bussum, Netherlands

Filed Nov. 22, 1977, Ser. No. 853,907

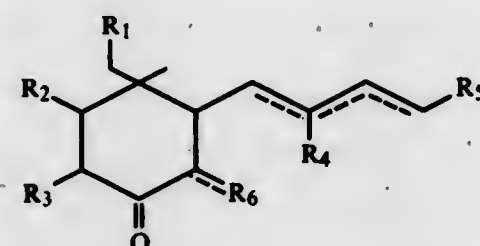
Claims priority, application United Kingdom, Nov. 23, 1976, 48762/76

Int. Cl.³ A23L 1/235

U.S. Cl. 426—538

8 Claims

7. A flavored product selected from the group consisting of foodstuffs and beverages containing an amount of at least one ketone compound effective for imparting a fruit-like flavor note to said product, said compound having the structural formula



wherein groups R_1 to R_5 are the same or different and are hydrogen or methyl, and the dotted lines are possible sites for double bonds provided that the side chain carrying said groups R_4 and R_5 contains not more than one double bond, and R_6 is hydrogen, methyl or ethyl if the bond between R_6 and the nucleus of said compound is monovalent, or methylene or ethylidene if said bond is a double bond.

4,246,293

PROCESS OF PREPARING POTATO SNACK PRODUCT

James M. Larson, Radcliffe, Iowa 50230

Filed Sep. 21, 1978, Ser. No. 944,322

Int. Cl.³ A23L 1/216

U.S. Cl. 426—637

7 Claims

1. A process of preparing a whole potato based complete meal snack item, comprising, subdividing unpeeled, raw, whole potatoes to provide pieces, blanching said subdivided unpeeled, raw, whole potatoes at a temperature of from about 140° F. to about 200° F. for from 15 seconds to about 2 minutes; and thereafter, predrying said blanched potatoes to a moisture content of from 60% to about 75% by weight; and thereafter adding on a weight basis of from 15% to 40% by weight of said potato pieces of an edible protein containing additive, intimately admixing said protein additive and said unpeeled whole potato pieces to provide a substantially homogeneous mixture, extruder cooking at elevated temperature and pressure said homogeneous mixture to provide a cooked, protein fortified snack food extrudate with predominant potato flavor.

4,246,294

METHOD FOR DEPOSITING FLOCK FIBERS

Richard A. Jordan, Lexington, Ky., assignor to Solar Suede Corporation, Lexington, Ky.

Continuation-in-part of Ser. No. 673,439, Apr. 5, 1976,

abandoned. This application Jan. 26, 1978, Ser. No. 872,671

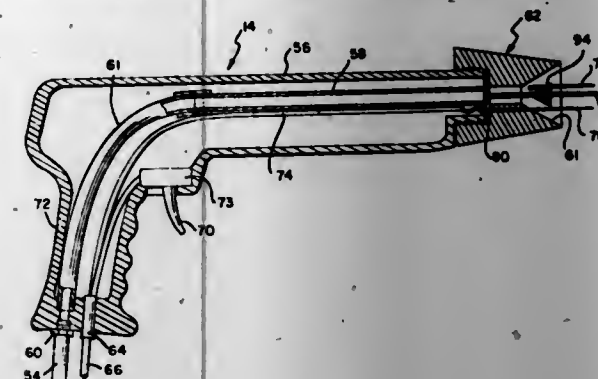
Int. Cl.³ B05D 1/14, 1/06

U.S. Cl. 427—27

8 Claims

1. A method of feeding flock fibers with compressed air for deposition, comprising providing a high velocity stream of

compressed air through an elongated tube, providing rotational stabilization of the air stream to prevent turbulence thereby maintaining a parabolic air velocity distribution in the tube, feeding flock fibers into the air stream, moving the stream



of air and fibers through said tube to its exit, and controlling the delivery rate of the compressed air and the configuration of said tube to maintain said rotational stabilization and parabolic air velocity distribution within the entire length of said tube.

4,246,295

STERILIZATION AND STRUCTURAL REINFORCEMENT OF ART OBJECTS MADE OF ORGANIC MATERIAL

Ioan G. Crihan, 417 E. 64th St., #4G, New York, N.Y. 10021

Filed Sep. 15, 1978, Ser. No. 942,664

Int. Cl.³ B05D 3/06; A61L 1/00

U.S. Cl. 427—36

6 Claims

1. In the method of sterilizing and structurally reinforcing art objects selected from the group consisting of tapestries, oil paintings on canvas, and wood carvings, the art object being made of an organic material having biological vectors present, the steps of:

- positioning said art object face down on a vacuum source and applying a vacuum,
- partially impregnating said art object by applying an unsaturated resin in an area of said art object to be reinforced while the vacuum is being applied to draw said unsaturated resin to a desired depth in said art object,
- polymerizing said resin in situ by subjecting the art object and the unsaturated resin impregnant to a dose of ionizing radiation sufficient to polymerize said resin and sufficient to kill any biological vector in said art object.

4,246,296

CONTROLLING THE PROPERTIES OF NATIVE FILMS USING SELECTIVE GROWTH CHEMISTRY

Robert P. H. Chang, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 14, 1979, Ser. No. 12,192

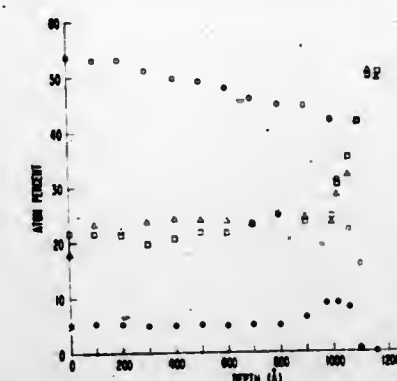
Int. Cl.³ H01L 21/30, 21/324, 21/316

U.S. Cl. 427—38

17 Claims

1. A method of growing a native film on a compound semiconductor comprising exposing a compound semiconductor to at least one first reactant which reacts preferentially with at least one of the compound semiconductor constituents to grow a native film, the invention CHARACTERIZED IN THAT the compound semiconductor is additionally exposed to at least one second reactant, which reacts preferentially with at least one compound semiconductor con-

stituent which does not react preferentially with the first reactant, and in that the reactants are introduced into a



plasma which comprises a reaction causing environment, thereby yielding a film with improved stoichiometry.

4,246,297

PROCESS AND APPARATUS FOR THE CURING OF COATINGS ON SENSITIVE SUBSTRATES BY ELECTRON IRRADIATION

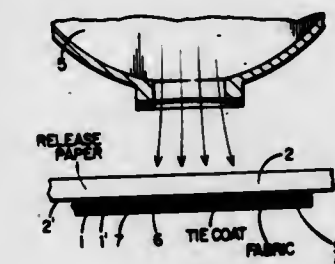
Sam V. Nablo, Lexington, and Alfred D. Fussa, Needham Heights, both of Mass., assignors to Energy Sciences Inc., Burlington, Mass.

Continuation of Ser. No. 742,134, Nov. 15, 1976, abandoned, which is a continuation of Ser. No. 530,942, Dec. 9, 1974, abandoned. This application Sep. 6, 1978, Ser. No. 940,034

Int. Cl.³ B05D 3/06

U.S. Cl. 427—44

5 Claims



1. A process for substantially uniform electron beam curing of a coating disposed within an assembly having an electron permeable release layer that carries the coating and that is in turn applied to a radiation-sensitive substrate, comprising, passing the coated release layer substrate assembly along a predetermined path; accelerating electron strip beam radiation through an electron-permeable window adjacent to a predetermined region of said path and causing the accelerated strip beam radiation to impinge upon said region over the entire elongated cross-sectional area of the beam simultaneously and substantially uniformly perpendicular to said path; maintaining substantially the entire impinging strip beam radiation at said region at a predetermined energy level selected within energy limits of from substantially 80 to 180 keV; and adjusting the dose delivered by the beam at that predetermined energy level to the coated release layer substrate assembly at said region to a predetermined value within dose limits of from substantially 0.5 to several megarads; the energy and dose being matched to the thickness and materials of the coated release layer and substrate in order to concentrate the principal amount of the electron strip beam energy substantially uniformly in said coating and to cure the coating while insuring minimal energy reaction with the release layer and substrate; and peeling the release layer from the substrate with its cured coating for subsequent use.

4,246,298

RAPID CURING OF EPOXY RESIN COATING COMPOSITIONS BY COMBINATION OF PHOTOINITIATION AND CONTROLLED HEAT APPLICATION

Joseph M. Guarneri, Libertyville, Ill., and William R. Watt, Princeton Junction, N.J., assignors to American Can Company, Greenwich, Conn.

Filed Mar. 14, 1979, Ser. No. 20,515
Int. Cl.³ B05D 3/06

U.S. Cl. 427-46

14 Claims

1. In a method for coating substrates with an epoxy coating material to develop a tack-free surface condition in relatively short periods of time, the steps comprising:

A. applying to a substrate a fluid coating of a polymerizable composition comprising at least one epoxidic prepolymer material polymerizable to a higher molecular weight at which it is tack-free and up to 5 percent by weight of said polymerizable composition of a radiation-sensitive catalyst precursor which decomposes upon exposure to electromagnetic radiation to provide a Lewis acid effective to initiate polymerization of said epoxidic prepolymer material, said catalyst precursor being ineffective to cure said epoxidic prepolymer material to a tack-free surface condition at ambient temperatures in a period of two minutes following exposure to radiation to effect decomposition thereof, said epoxidic prepolymer material containing less than about 15 percent by weight thereof of epoxidic prepolymer material having two epoxycycloalkyl groups per molecule;

B. exposing said coating to said electromagnetic radiation to effect decomposition of said catalyst precursor and thereby generate a Lewis acid; and

C. maintaining said coating at a temperature of about 50°-90° C. for a period of at least about 0.5 second and less than about 2 minutes following initiation of said exposure to radiation to effect polymerization to a substantially tack-free surface condition in a period of less than 30 seconds following the combination of said steps of radiation exposure and temperature maintenance.

4,246,299

METHOD OF COATING OPTICAL WAVEGUIDE FILAMENTS

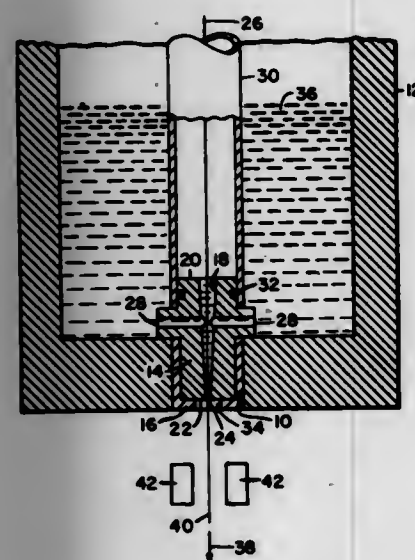
James W. Ohls, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,232

Int. Cl.³ G02B 1/10, 5/14; B05D 3/06, 3/02

U.S. Cl. 427-54.1

12 Claims



1. A method of coating an optical waveguide filament comprising the steps of providing a coating die body defining an at least partly tapered central longitudinal aperture suitable for accommodating a waveguide filament extending from the bot-

tom surface to the top surface of said body, said body also defining at least one radial entrance port communicating with said central longitudinal aperture intermediate said top and bottom surfaces of said body forming a junction with said central longitudinal aperture, the diameter at the exit end of said central longitudinal aperture being a function of the outside diameter of the desired coated optical waveguide filament,

passing said optical waveguide filament through said central longitudinal aperture,

introducing coating material into said radial port, flowing said coating material through said radial port into said central longitudinal aperture in an amount whereby said coating material fills said central longitudinal aperture surrounding said filament to a point substantially coincident with the top surface of said body or a point intermediate said top and bottom surfaces of said body, and

maintaining the level of said coating material in said central longitudinal aperture at a point intermediate said top and bottom surfaces of said coating die body but not above said top surface while said filament is passed through said central longitudinal aperture and said coating material contained therein whereby said filament is coated by said coating material.

4,246,300

CAN TRANSPORT

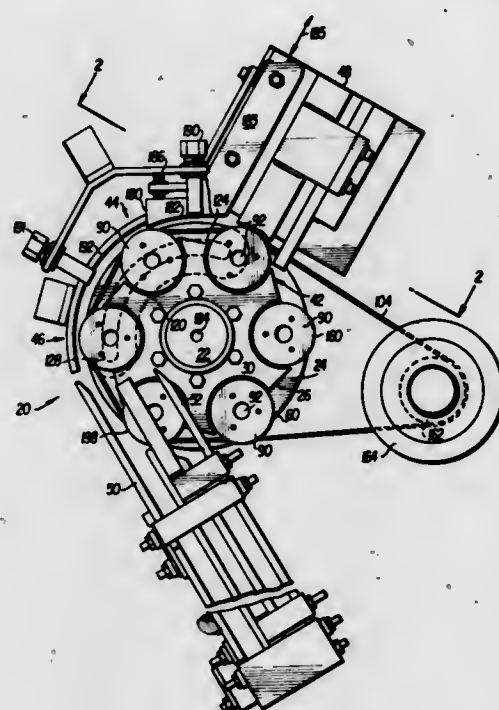
Eric L. Jensen, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 865,446, Dec. 29, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 15,957

Int. Cl.³ B05D 7/22; B05B 13/06

U.S. Cl. 427-233

26 Claims



1. An apparatus for moving can bodies past a series of work stations comprising a generally disc-shaped bottom engaging means having a bottom engaging surface upon which said can bodies may be slidably positioned for engaging the bottoms of said can bodies at the first of said work stations, guide means for slidably centering the bottoms of said can bodies on said bottom engaging surface of said bottom engaging means, means for spinning said bottom engaging means and thereby spinning said can bodies without said spinning means contacting the peripheries of said can bodies and means for indexing said bottom engaging means and thereby said can bodies past said series of work stations.

21. A method of moving can bodies past a series of work stations including the steps of engaging the bottoms of said can

bodies by a generally disc-shaped bottom engaging means having a bottom engaging surface upon which said can bodies may be slidably positioned at a first of said work stations, slidably centering said can bodies on said bottom engaging surface of said bottom engaging means, indexing said can bodies past said series of work stations and spinning said can bodies without said spinning means contacting the peripheries of said can bodies as said can bodies are indexed past said series of work stations.

4,246,301

WEB COATER

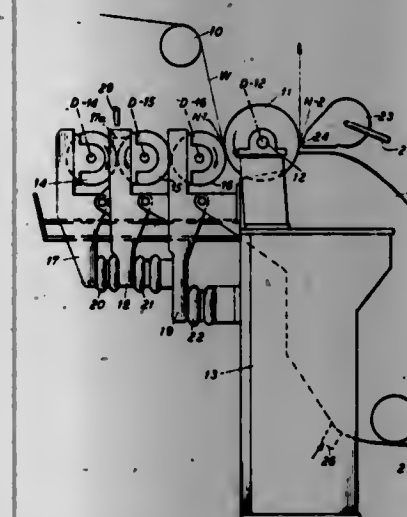
Robert J. Alheid, Beloit, Wis., and Irvin J. Phillips, South Beloit, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Jul. 2, 1979, Ser. No. 53,734

Int. Cl.³ B05D 1/28, 3/12; B05C 1/00

U.S. Cl. 427-348

10 Claims



7. The method of coating a fast moving traveling web which comprises the steps:

metering liquid coating onto the surface of the traveling web in a controlled metered layer with a series of close running gate rolls including a transfer roll for transferring the coating to the web surface with the gate rolls being pressure and speed controlled for controlling the amount of coating fed onto the web;

and smoothing the coating which has been applied by the gate rolls with an air knife with the air knife performing principally a smoothing function and removing only an incidental portion of the coating from the surface.

4,246,302

MULTI-BAND LIQUID CRYSTAL FILM LAMINATE

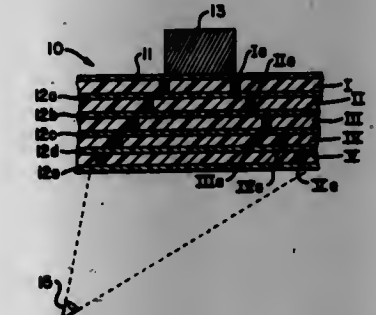
William J. Benton, 1046 Murray Hill Ave., Pittsburgh, Pa. 15217, and Joseph R. Quigley, 7425 Ben Hur St., Pittsburgh, Pa. 15208

Filed Jun. 27, 1979, Ser. No. 52,819

Int. Cl.³ B32B 31/20

U.S. Cl. 428-1

13 Claims



1. A multi-band liquid crystal laminate comprising
(a) a black base film;
(b) a first polyurethane film containing discrete aggregates

of temperature-responsive liquid crystals having a selected response;

(c) a transparent barrier applied to said first polyurethane film;

(d) a second polyurethane film containing discrete aggregates of temperature-responsive liquid crystals having a response different from that of said first polyurethane film;

(e) a transparent barrier applied to said second polyurethane film.

4,246,303

DUAL DUROMETER ELONGATE BODY SIDE MOULDING

Walter S. Townsend, Huntingdon, England, assignor to Silent Channel Products Limited, Cambridgeshire, United Kingdom

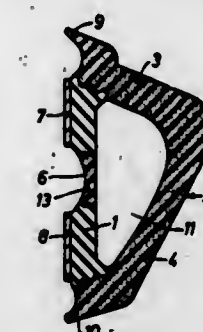
Filed May 7, 1979, Ser. No. 36,515

Claims priority, application United Kingdom, May 21, 1978, 19076/78

Int. Cl.³ B60R 13/04; B32B 7/02

U.S. Cl. 428-31

1 Claim



1. An elongated dual durometer body side moulding for application to an arcuate side portion of a vehicle body in a direction generally parallel to the axis of generation of said arcuate side portion, said moulding comprising

a pair of spaced elongated parallel generally flat base portions of relatively hard plastic material having a Shore hardness in the range from 85 to 100, said base portions being connected by an intermediate portion of relatively soft plastic material having a Shore hardness in the range of 45 to 80 and a cross-sectional area less than that of said base portions to facilitate bending of said side moulding about a longitudinal axis thereof, said base portions having laterally spaced attachment surfaces on one side thereof, respectively, for the acceptance of a pair of adhesive tapes,

an elongated generally U-shaped impact absorbing member defined by spaced leg portions connected by a bight portion, said impact absorbing member being of relatively soft plastic material having a Shore hardness in the range from 45 to 80, the leg portions of said impact absorbing member being secured to said base portions, respectively, and overlying and extending beyond opposite edges thereof for engagement with the surface of said vehicle body, the leg and bight portions of said impact absorbing member defining a laterally extending internally hollow zone on the opposite side of said base portions from the attachment surfaces thereof,

and,
a pair of adhesive tapes having faces thereof, respectively, secured to the attachment surfaces of said base portions.

4,246,304

INTERNALLY SLOTTED FIRE SEAL

Bernard Dixon, Pampisford, England, assignor to Dixon International Limited, Cambridge, England

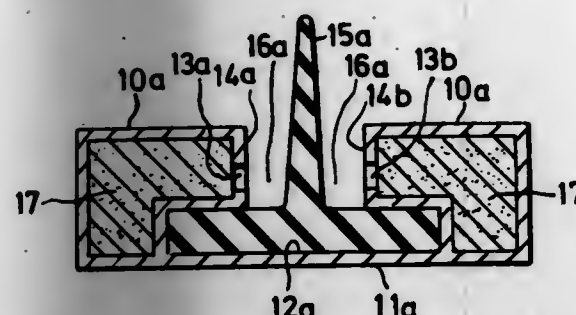
Filed Apr. 25, 1978, Ser. No. 899,845

Claims priority, application United Kingdom, Apr. 28, 1977, 17806/77

Int. Cl.³ E04C 2/00; E06B 7/16; B32B 1/06

U.S. Cl. 428—35

8 Claims



2. A fire-resistant seal for application to a structure, comprising a holder for securing to the structure, the holder comprising two tubular portions, intumescent fire-resistant barrier material being retained within each of the tubular portions, one side of each tubular portion having a respective elongate opening means extending therealong through which the barrier material swells under fire conditions, the tubular portions being connected together and laterally spaced by an intermediate portion of the holder, said sides of the tubular portions and the intermediate portion together forming a groove, the opening means of the respective tubular portions being in opposite facing sides of the groove, whereby each tubular portion constitutes a guard for the opening means of the other tubular portion.

4,246,305

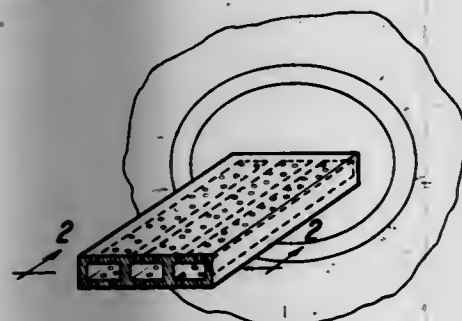
DRAINAGE STRUCTURE AND PROCESS

Henri Delattre, Vaulx, France, assignor to Solentanche-Entreprise, Nanterre, France

Filed Mar. 22, 1978, Ser. No. 888,934

Int. Cl.³ E02B 11/00; B05B 15/00; B28B 1/48; B29C 17/08
U.S. Cl. 428—36

4 Claims



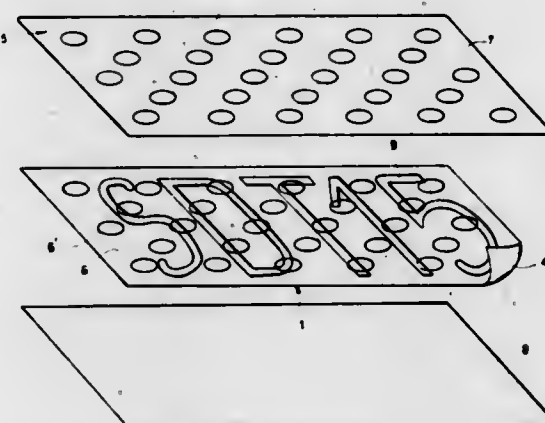
1. A durable underground drain of improved permeability for exchanging fluids between mediums in which said drain is placed, said drain comprising:

a flat, elongated, flexible, polyolefin strip, said strip having about 25 channels of cross-sectional area less than 1 cm² extending longitudinally therethrough, said strip having at least one end open;

said strip further having two opposed external walls, both of said walls having perforations of about 0.1 to 0.5 mm diameter each so as to communicate with said plurality of channels;

so that when said drain is placed in a medium, fluid will flow between said medium and said plurality of channels according to the pressure differential between said plurality of channels and said medium.

1. A laminate comprising:
a relatively fragile back sheet having a back face and a front face;
means on said back face of said fragile back sheet for securing same flatly on a substrate;
indicia on said front face of said fragile back sheet;
an at least partially transparent and relatively strong front sheet having a back face overlying said front face of said fragile back sheet; and
means forming a plurality of relatively strong bonds between said back face of said strong front sheet and said front face of said fragile back sheet at spaced-apart bonded zones separated by and defining bond-free zones where said strong and fragile sheets are not bonded together, said indicia partially overlapping said bonded zones and partially overlapping said bond-free zones, whereby an attempt to separate said strong and fragile sheets will tear said relatively fragile back sheet and destroy said indicia.



4,246,307

TAMPER-PROOF LAMINATED STICKER OR CARD

Hansjörg Trautwein, Am Stadtgarten 1, 4650 Gelesenkirchen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,419

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757718; Feb. 11, 1978, 2805834; Mar. 7, 1978, 2809692; Mar. 15, 1978, 2811217; May 3, 1978, 2819390; Jun. 28, 1978, 2828309; Jul. 20, 1978, 2831853; Dec. 6, 1978, 2852661

Int. Cl.³ B32B 7/14; B65D 65/28; G09F 3/00

U.S. Cl. 428—43

24 Claims

Int. Cl.³ F16L 55/00, 11/00

U.S. Cl. 428—36

9 Claims

1. A pipe or pipe fitting that is fire resistant and electrically conducting and that is formed of a wound fibrous reinforcement saturated with a fire resistant, electrically conducting polymeric composition that includes 2 to 8% by weight of the composition electrically conducting carbon black uniformly dispersed throughout the composition.

4,246,308

CURLED FLOCK FABRIC AND METHOD FOR MAKING SAME

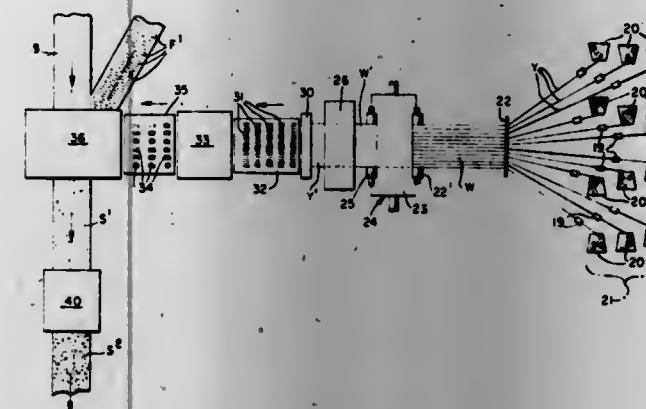
David I. Walsh, Barrington, R.I., assignor to Microfibres, Inc., Pawtucket, R.I.

Continuation of Ser. No. 845,402, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 685,173, May 11, 1976, abandoned. This application Mar. 21, 1979, Ser. No. 22,611

Int. Cl.³ B32B 3/02, 33/00

U.S. Cl. 428—88

21 Claims



1. A mixed flock fabric comprising:

a substrate;

an adhesive coating on a surface of said substrate;

a plurality of highly curled first flock fibres having a length of 0.1 to 0.4 inch adhering to said substrate, said first fibres being deposited thereon as straightened fibres having a sizing material adhering thereto for maintaining said highly curled first fibres in a straightened condition, said sizing being subsequently removed for recovery of said first fibres in a highly curled configuration; and
a plurality of second flock fibres adhering to said substrate, said second fibres being deposited on said substrate free of sizing material, said fibres being substantially equally spaced from each other.

4,246,309

TUFTED FLOOR COVERING HAVING BINDER WITH LESS THAN 0.5% WATER SOLUBLE COMPOUNDS

Jean-Claude Daniel, Fontenay-sous-Bois; Jacques Grosselle, Paris, and Robert Rouillet, Lyon, all of France, assignors to Rhone-Poulenc Industries, Paris, France

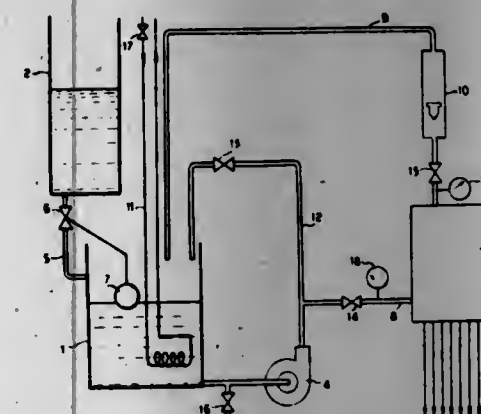
Filed Apr. 21, 1978, Ser. No. 898,955

Claims priority, application France, Apr. 22, 1977, 77 12160

Int. Cl.³ B32B 27/06

U.S. Cl. 428—95

8 Claims



1. Tufted floor coverings comprising a tufted fibrous sheet bonded with an aqueous latex base binder of a synthetic polymer in which the content in the latex of water soluble compounds dissolved in the aqueous phase is less than 0.5% by weight in relation to the polymer.

1002 O.G.—47

4,246,310

HIGH PERFORMANCE, LIGHTWEIGHT STRUCTURAL PARTICLEBOARD

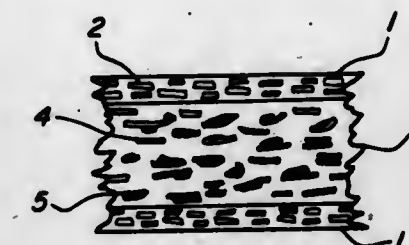
Michael O. Hunt, West Lafayette, Ind.; William F. Lehmann, Tacoma, Wash., and David A. Fergus, West Lafayette, Ind., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 934,290, Aug. 17, 1978, abandoned. This application Apr. 6, 1979, Ser. No. 27,695

Int. Cl.³ B32B 21/02, 21/08, 21/14

U.S. Cl. 428—106

5 Claims



1. In a structural board comprising at least three laminae bonded together with resin, each lamina consisting of wood flakes bonded together with said resin, the fibers of the flakes extending generally parallel to the surface of the board and to the length of the flakes, substantially all of the flakes in both outer laminae crossing at least one other flake in the same lamina at an acute angle, the average direction of the bisectors of said acute angles being substantially parallel to one edge of the board, the average face lamina flake length being 1 1/4 to 5 inches, the average core lamina flake length being 1 to 3 inches, the resin content in the panel being 4.0 to 10.0% the weight of the oven dry flakes in the panel, the improvement wherein

- (a) the wood flakes are hardwood with a specific gravity greater than 0.6;
- (b) the face layer flakes have an average thickness in a range of 0.008 to 0.055 inch and the core layer flakes have an average thickness in a range of 0.005 to 0.075 inch;
- (c) said structural board has a bending stiffness greater than 800,000 psi;
- (d) said structural board has an edgewise shear of greater than 1,800 psi;
- (e) said structural board has a specific gravity less than the specific gravity of its constituent wood species; and
- (f) said structural board has flake alignment averaging 40 percent in said outer laminae.

4,246,311

WALL COVERING COMPRISING A WEB HAVING AN IMPREGNATION AND A BACK COATING

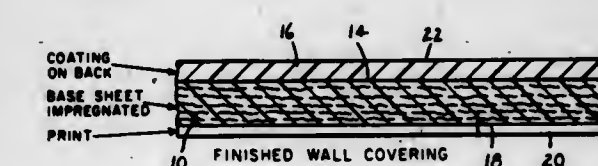
Samuel P. Hirst, Manhattan, N.Y., assignor to Chelsea Industries, Inc., New York, N.Y.

Filed Jan. 23, 1979, Ser. No. 6,119

Int. Cl.³ B05D 1/38, 5/04; B32B 27/02, 27/04

U.S. Cl. 428—195

21 Claims



1. A wall covering sheet comprising

a base layer of thin non-woven polyester material impregnated with a saturant to provide strength, fire retardancy and fungus and mildew resistance to the sheet but having a fabric feel to at least the front surface thereof,
a coating applied to the back of the sheet to provide opacity to the sheet and prevent adhesive applied to the back of the sheet from striking through it,

and a pattern printed on the front of the sheet.

8. A method of making wall covering material comprising the steps of

providing a continuous web of non-woven material, impregnating the non-woven web with a viscous liquid to increase its strength, fire retardancy and opacity, curing the impregnated web by passing it through a heating oven,

next applying a viscous coating material to the back of the continuous non-woven web, which coating is compatible with and bonds to the impregnating material to further increase the opacity and thickness of the web and provide a screen to prevent adhesive applied to the back from striking through the non-woven web,

and drying the coating material by passing the web through a second heating oven.

4,246,312

THERMAL SENSITIVE PAPER MINIMIZED IN RELEASE OF TAILINGS LIABLE TO DEPOSIT ON THERMAL HEAD

Takao Kosaka, and Yukio Tahara, both of Takasago, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Filed Mar. 17, 1978, Ser. No. 887,738
Claims priority, application Japan, Jul. 22, 1977, 52-88118
Int. Cl.³ B32B 5/16; B41M 5/18

U.S. Cl. 428—207 14 Claims

1. A thermal sensitive paper comprising a support and a heat sensitive layer containing a color-developing lactone compound and a phenol compound, characterized in that a layer formed from at least 1.0 g/m² of a member of the group consisting of light calcium carbonate, an inorganic powdery material with oil absorption of over 50 ml/100 gr. as measured according to JIS K-5101 method and a mixture of said light calcium carbonate and said inorganic powdery material is provided between said support and said heat sensitive layer for preventing deposition of tailings to the thermal head.

14. A thermal sensitive paper comprising a support and a heat sensitive layer containing a color-developing lactone compound and a phenol compound, characterized in that a layer formed from at least 1.0 g/m² of a member of the group consisting of light calcium carbonate, calcined kaolin with oil absorption of over 50 ml/100 gr. as measured according to JIS K-5101 method and a mixture of said light calcium carbonate and said calcined kaolin is provided between said support and said heat sensitive layer for preventing deposition of tailings to the thermal head.

4,246,313

HEAT-RESISTANT COMPOSITE MATERIAL AND METHOD OF MAKING SAME

Edward J. Stengle, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 12, 1979, Ser. No. 2,831
Int. Cl.³ B05D 1/36, 7/24; B32B 27/12, 33/00; C03G 35/00
U.S. Cl. 428—246 26 Claims

1. A heat-resistant flexible composite material adapted to handling hot glass articles, and the like, comprising a tightly interwoven fabric substrate formed from fibers selected from the group consisting of organic polyaramid fibers, inorganic ceramic fibers and carbon fibers, and a continuous heat-hardened coating of organic-inorganic polysiloxane resin having a finely-divided filler of heat-resistant particulate material therein extending over the glass-contacting surface of said substrate.

16. A heat-resistant generally-flexible composite material adapted to use in handling newly-formed hot glass articles comprising a woven fabric substrate of tightly interwoven thermoset polyaramid fibers, and a continuous heat-cured coating of the following composition deposited on the glass-contacting surface of said substrate:

56 wt %—Methoxy Functional Reactive Intermediate Silicone Resin
24 wt %—Organic-Inorganic Polysiloxane Glass Resin
16 wt %—Finely-divided Graphite
4 wt %—Finely-Divided Red Iron Oxide.

17. The heat-resistant composite material in accordance with claim 16, wherein said woven fabric substrate bearing said coating is adhered to a rigid metallic backing material.

19. The process of making a flexible composite material adapted to long-term use for handling hot glass articles, and the like, comprising the steps of taking a substrate of tightly woven fabric of thermoset polyaramid fibers of substantial thickness, applying a continuous coating of essentially solventless silicone resin having a heat-resistant filler therein uniformly over the glass-contacting surface of said substrate, and heating the filler-containing silicone resin coating and substrate to cure said resin and permanently affix the same to said fabric substrate.

4,246,314

ASPHALT-COATED GEASS FIBERS

Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Jan. 13, 1979, Ser. No. 48,220
Int. Cl.³ B32B 9/00, 11/00; D02G 3/00

U.S. Cl. 428—378 16 Claims

1. Glass fibers having a coating thereon, said coating comprising the reaction product of (a) a bitumen and (b) an organo metallic compound selected from the group consisting of a metallic orthoester and a metallic borate ester.

11. Natural or synthetic fibers having a coating thereon, said coating comprising the reaction product of (a) a bitumen and (b) an organo metallic compound selected from the group consisting of a metallic orthoester and a metallic borate ester.

4,246,315

CARRIER MATERIALS IMPREGNATED WITH THERMOSETTING RESINS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE

Otto Kopp; Helmut Holzer, and Charlotte Birnbaum geb. Schinko, all of Neu-Ulm, Fed. Rep. of Germany, assignors to Sud-West Chemie GmbH, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 2,963

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801396

Int. Cl.³ B05D 3/06, 3/02; B32B 35/00, 31/28

U.S. Cl. 428—315 12 Claims

1. Carrier materials having two oppositely disposed major surfaces and a core therebetween and impregnated with thermosetting resins for finishing the surfaces of materials sensitive to pressure and temperature, said carrier materials being fully impregnated in their cores, with at least one heat-cured thermosetting resin which is substantially cured to produce a resin framework containing pores and cavities and, on at least one of the two surfaces, a coating of at least one polymerization resin curable by U.V. radiation, electron radiation or the radiation of radio-cured isotopes, the pores and cavities of said resin framework being filled with said last-named coating resin.

5. Process for the production of carrier materials, impregnated with thermosetting resins for finishing the surfaces of materials sensitive to pressure and temperature, which comprises fully impregnated with at least one heat-curable resin a carrier material having two oppositely disposed major surfaces, then curing the heat-curable resins by extensive heat-curing to produce a thermoset resin framework containing pores and cavities and applying to at least one of the two surfaces at least one coating of at least one polymerization resin curable by U.V.-radiation, electron radiation or the radiation of radio-active isotopes filling the pores and cavities of said thermoset resin framework with said last-named coating resin, and thereafter curing said last-named coating resin by a radiation treatment of the group consisting of treatment with U.V.-radiation, electron radiation and the radiation of a radio-active isotope.

tion treatment of the group consisting of treatment with U.V.-radiation, electron radiation and the radiation of a radio-active isotope.

4,246,316

MAGNETIC RECORDING MEDIUM

Masashi Aonuma, and Yasuo Tamai, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 737,164, Oct. 29, 1976, abandoned.

This application Mar. 17, 1978, Ser. No. 887,766

Claims priority, application Japan, Nov. 5, 1975, 50-132124

Int. Cl.³ H01F 1/06

U.S. Cl. 428—329 11 Claims

1. A magnetic recording medium comprising a nonmagnetic support and a magnetic layer provided thereon, the magnetic layer comprising a ferromagnetic metal powder and a thermoplastic or thermosetting binder and having a multilayer structure consisting of a lower layer wherein the ferromagnetic metal powder consists of acicular grains obtained by dry process reduction and containing 75% by weight or more of metallic components, the acicular grains having a grain size of 200 to 1000 Å along the short axis, an axial ratio of 3 to 30, Hc of 400 to 1500 Oe, or of 100 to 180 emu/g, SQ of 0.4 or more and comprising at least one ferromagnetic metal selected from the group consisting of iron, cobalt, cobalt-nickel alloys, iron-cobalt alloys, iron-nickel alloys and iron-nickel-cobalt alloys; and an upper layer wherein the ferromagnetic metal powder consists of chain-like grains obtained by wet process reduction and containing 75% by weight or more of metallic components, the chain-like grains having a grain diameter of 150 to 800 Å, a mean length of 500 to 10000 Å, Hc of 600 to 2000 Oe, or of 80 to 140 emu/g, SQ of 0.45 or more and comprising at least one ferromagnetic metal selected from the group consisting of iron, cobalt, cobalt-nickel alloys, iron-cobalt alloys, iron-nickel alloys and iron-nickel-cobalt alloys; the upper layer being provided on the lower layer.

4,246,317

SILICATE COATED METAL TYING WIRE AND PROCESS FOR COATING SAID WIRE

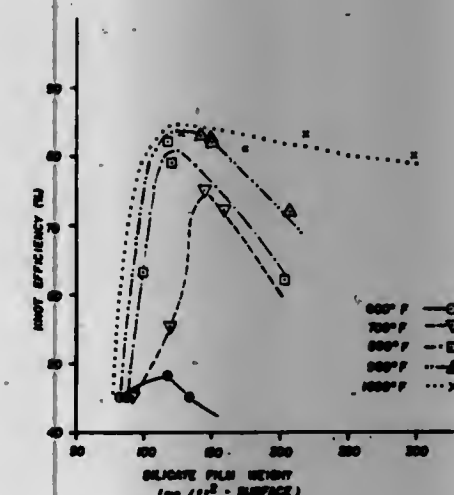
Lawrence E. Helwig, Hampton Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 904,682, May 10, 1978, abandoned.

This application Mar. 26, 1979, Ser. No. 23,859

Int. Cl.³ B05D 3/02

U.S. Cl. 428—375 14 Claims



1. A slip resistant wire product having an adherent metal-silicate coating thereon, said coated product having been produced by applying to the wire an aqueous solution consisting essentially of a metal-silicate where the metal therein is selected from the group consisting of the alkali and alkaline earth metals, in amounts sufficient to provide a coating weighing at

least 110 but not more than about 470 milligrams per square foot of wire surface after essentially all physically adsorbed water is driven off; and then baking said coating at a temperature in the range of 700° to 1200° F. until essentially all physically adsorbed water is driven off so as to achieve a knot joint efficiency of at least 70%.

4,246,318

THERMALLY-RESPONSIVE RECORD MATERIAL

Henry H. Baum, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Filed Apr. 9, 1979, Ser. No. 28,630

Int. Cl.³ B41M 5/18

U.S. Cl. 428—411 12 Claims

1. A thermally-responsive record material comprising a substrate coated with finely divided solid Pyridyl Blue and a finely divided phenolic material held in contiguous relationship by a binder present in said coating in an amount of about 1 to about 30 weight percent whereby the melting or sublimation of either finely divided material produces a mark-forming reaction upon reactive contact.

4,246,319

NEW COATINGS FOR POLYOLEFINIC PRODUCTS AND PRODUCTS COVERED BY SAID COATINGS

Donato Jacobone, Milan, Italy, assignor to Frypan S.p.A., Italy

Filed Jan. 8, 1979, Ser. No. 1,408

Claims priority, application Italy, Jan. 16, 1978, 19268 A/78

Int. Cl.³ B32B 27/32, 27/36, 27/38, 27/30

U.S. Cl. 428—413 2 Claims

1. As new industrial products, polyolefinic films coated with a composition consisting essentially of a solution of a dry polymeric system comprising:

(a) about 50 to 80 parts by weight of a first component selected from the group consisting of saturated polyesters, unsaturated polyesters and mixtures thereof;

(b) a second component selected from the group consisting of polymers and copolymers of acrylic esters; and

(c) a third component consisting of an epoxy resin; the second and third components being of about 1 to 49% parts by weight of the system and being selected so as to make up the balance of the total percentage of the dry polymeric system.

4,246,320

PLATED ACRYLATE/STYRENE/ACRYLONITRILE ARTICLE

Miguel Coll-Palagos, Rye, N.Y.; Frank O. Groch, Kelseyville, Calif.; Paul Kraft, South Spring Valley, and Ruey Y. Lin, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 15, 1979, Ser. No. 20,678

Int. Cl.³ B32B 15/08, 27/30

U.S. Cl. 428—463 5 Claims

1. A plated article which comprises:

(1) a substrate which comprises an interpolymer comprising crosslinked (meth)acrylate, crosslinked styrene-acrylonitrile, and uncrosslinked styrene-acrylonitrile components; and

(2) an adherent metallic coating thereon over substantially an entire surface of the article.

4,246,321

AG-SNO ALLOY COMPOSITE ELECTRICAL CONTACT

Akira Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Tokyo, Japan

Continuation of Ser. No. 807,046, Jun. 16, 1977, abandoned.

This application Dec. 20, 1978, Ser. No. 972,052

Int. Cl.³ B32B 15/04, 15/16, 15/20

U.S. Cl. 428—614 2 Claims

1. A heat-treated composite electrical contact consisting of a base portion and a contact portion clad to said base portion,

said base portion being made from a metal selected from the group consisting of copper, nickel, aluminum and alloys thereof,

said contact portion consisting essentially of a pre-internally oxidized alloy having metal oxides precipitated in and evenly dispersed throughout the matrix of said alloy as the result of internal oxidation effected prior to the cladding of said contact portion to said base portion, and being composed of 1.5 to 10% weight of tin, 0.5 to 6% by weight of indium and a trace amount of less than 0.5% by weight of iron family element metals, the balance being silver,

said contact and base portions being joined by an interfacial alloy layer composed solely of materials from said base and said contact portions, and comprising, respectively, silver from said contact portion, and the matrix metal of said base portion, and consisting essentially of metal oxides from the contact portion wedged into the base portion which prevent abutting surfaces of the base and contact portions from sliding; and

said contact portion, adjacent the side of said interfacial alloy layer remote from said base portion being diffused by the metal of the base portion to a depth beyond said interfacial alloy layer as the result of heat treatment of the contact for a brief period of time, and at a temperature about or higher than the eutectic temperature of silver and the matrix metal of said base portion.

4,246,322

PLATINUM ALLOY JEWELLERY WIRE

John E. Wall, Uxbridge, and Ernest E. Lloyd, London, both of England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Feb. 8, 1979, Ser. No. 10,546

Claims priority, application United Kingdom, Feb. 15, 1978, 5992/78

Int. Cl.³ B32B 15/02

U.S. Cl. 428—670

6 Claims

1. A platinum or platinum alloy wire which can be fabricated into platinum-based jewellery with reduced wear on working or cutting surfaces of jewellery fabricating apparatus, said wire consisting of a platinum or platinum alloy core or a solder-cored platinum or platinum alloy, having a thin outer coating of soft metal to protect said surfaces from the wear which would otherwise be encountered in fabricating the wire into jewellery, said coating being removable after the wire is fabricated into jewellery to leave jewellery having a platinum or platinum-based outer surface.

4,246,323

PLASMA SPRAYED MCRAIY COATING

Norman S. Bornstein, West Hartford; Francis J. Wallace, Windsor, and Michael A. De Crescente, Wethersfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 963,491, Nov. 24, 1978, abandoned, which is a division of Ser. No. 815,612, Jul. 13, 1977, Pat. No. 4,152,223. This application Sep. 11, 1979, Ser. No. 74,565

Int. Cl.³ B32B 15/00

U.S. Cl. 428—678

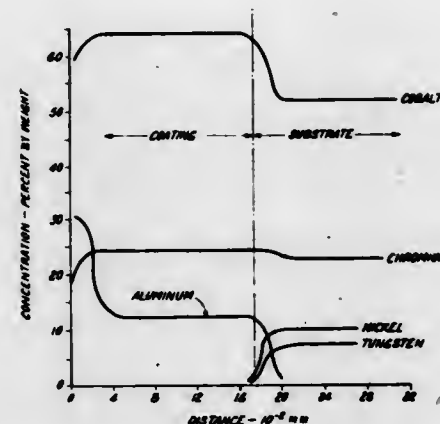
6 Claims

1. An article with improved oxidation-corrosion resistance, usable in a gas turbine engine, comprising a superalloy component having an oxidation-corrosion protective MCRAIY type coating adhered thereto, where M is selected from the group consisting of nickel, cobalt and iron and where the coating is produced by the process which includes:

- (a) plasma spraying the MCRAIY coating onto the superalloy substrate, the coating being characterized as having pores, voids and similar defects, some of which extend to the free surface of the coating, said defects reducing the protectiveness of the coating;
- (b) sealing the free surface of the MCRAIY coating by pro-

viding a metallic envelope thereover, said envelope spanning and sealing the defects which extend to the free surface of the coating; and

- (c) hot isostatically pressing the coated substrate at a sufficient pressure and temperature and for a sufficient time to



close the defects internal of the MCRAIY coating and those intersecting said free surface and to diffuse at least a portion of the metallic envelope into the MCRAIY coating, closure of said defects and diffusion of said metal envelope into the coating significantly enhancing the oxidation-corrosion protective properties of the coating.

4,246,324

CONSUMABLE REPLACEABLE ANODES FOR BATTERIES

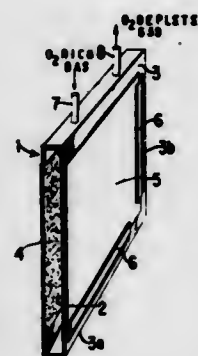
Vittorio de Nora, Nassau, The Bahamas, and Placido M. Spaziante, Lugano, Switzerland, assignors to Diamond Shamrock Technologies S.A., Geneva, Switzerland

Filed Apr. 9, 1979, Ser. No. 28,364

Int. Cl.³ H01M 12/06

U.S. Cl. 429—17

27 Claims



1. A battery comprising an inert container, housing a plurality of hollow, box-like cathode elements and consumable metal anode elements in spaced relationship, each of said box-like cathode elements having at least one gas-permeable, porous cathode in at least one wall and at least one consumable metal anode separate from and removably supported opposite said gas-permeable, porous cathode, and cathode and anode of adjacent elements being disposed in spaced facing relationship; means to maintain an electrolyte in the spaces between the cathodes and anodes; means to feed a depolarizing gas through the interior of said box-like cathode elements to the porous cathodes; means for collecting precipitated material below said anode and cathode elements, and means to electrically connect said cathode and anode elements to an external load, said

anode elements being removable and reinsertable in said container.

4,246,325

SODIUM-SULFUR BATTERY INCLUDING THERMALLY RESPONSIVE VALVE AND METHOD

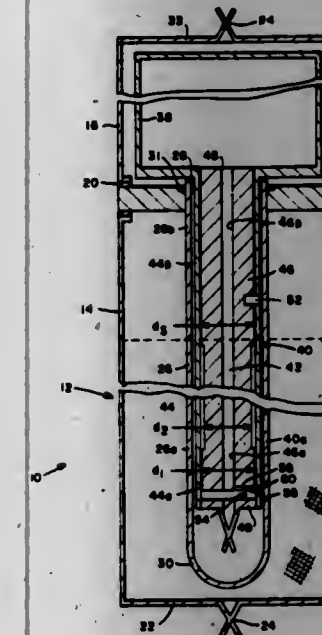
Burton D. Haich, Ballston Lake, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 3, 1979, Ser. No. 54,470

Int. Cl.³ H01M 6/20

U.S. Cl. 429—50

18 Claims



1. In a sodium-sulfur battery including sodium and sulfur separated by and in direct contact with a beta-alumina separating means, a sodium storage arrangement comprising housing means defining an inner chamber for containing a supply of sodium out of contact with said separating means, said housing means including thermally responsive sodium dispensing means for passing sodium out of said chamber and into contact with said separating means when said sodium is in a liquid state but only so long as the average temperature along at least a predetermined section of said separating means remains below a predetermined value, said dispensing means preventing the passage of liquid sodium from said chamber to said separating means if the average temperature along said section reaches said predetermined value.

4,246,326

MULTI-LAYER AUXILIARY ELECTRODE

Dietrich Sprengel, and Hilbig, Helmut, both of Kelkheim, Fed. Rep. of Germany, assignors to Varta Batterie, A.G., Hanover, Fed. Rep. of Germany

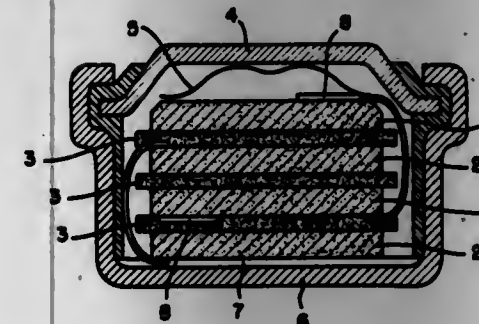
Filed May 25, 1979, Ser. No. 42,568

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826780

Int. Cl.³ H01M 10/34

U.S. Cl. 429—59

6 Claims



1. A galvanic element and particularly a gas-tight closed storage battery having positive and negative electrodes and

having an auxiliary electrode electrically connected with the latter for reduction of oxygen pressure, wherein the auxiliary electrode is a two-layer electrode, one layer being capable of catalyzing the oxygen reduction and being hydrophilic and contacting the negative electrode, and the other layer having hydrophobic characteristics.

4,246,327

HIGH ENERGY-DENSITY BATTERY SYSTEM

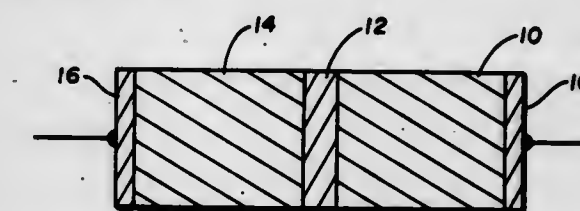
Paul M. Skarstad, Wayzata, and Thomas G. Hayes, New Brighton, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 1, 1979, Ser. No. 80,528

Int. Cl.³ H01M 4/36

U.S. Cl. 429—105

27 Claims



1. A battery system having a metallic anode and a cathode/electrolyte, means electrochemically coupling the anode and cathode/electrolyte and wherein the cathode/electrolyte comprises an electrolyte solvent selected from the group consisting of aprotic inorganic liquid oxides, liquid halides and liquid oxyhalides which are solvents for at and containing least one salt of the anode metal, an interhalogen having a discharge potential higher than that of the electrolyte solvent selected and a soluble salt of the anode metal.

4,246,328

PROCESS OF FORMING MASK IMAGES

Masamichi Sato, Ikuo Fujii, and Toshikazu Sato, all of Asahi, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation of Ser. No. 830,974, Sep. 7, 1977, abandoned. This application Nov. 5, 1979, Ser. No. 91,276

Claims priority, application Japan, Sep. 6, 1976, 51/107013 Int. Cl.³ G03C 5/00

U.S. Cl. 430—5

10 Claims

1. A process of forming mask images which comprises imagewise exposing a photographic light-sensitive material comprising a transparent support having thereon in succession a mask layer and a layer of an emulsion of silver halide in a binder followed by development without employing fixing processing to form silver images at the image areas; removing the silver images at the image areas with an aqueous solution containing ceric sulfate and sulfuric acid; reducing the silver halide remaining at the non-image areas to silver; halogenating the silver formed in the non-image areas with an aqueous solution containing bichromate ions and halogen ions; heating the photographic material to temperatures higher than about 200° C. but less than about 300° C. to thermally decompose the binder in the silver halide emulsion layer; selectively removing the thermally decomposed binder at the image areas with a solution capable of removing the thermally decomposed binder to uncover areas of the mask layer thereunder; and then removing the uncovered areas of the mask layer by etching.

4,246,329

METHOD FOR IMPROVING THE LIGHT FASTNESS OF ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

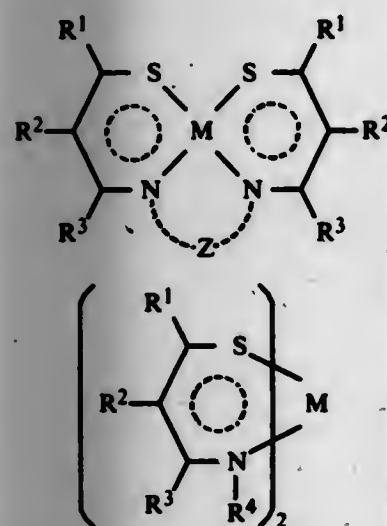
Filed Dec. 14, 1978, Ser. No. 969,520

Claims priority, application Japan, Dec. 14, 1977, 52/150345
Int. Cl.³ G03C 1/40, 1/84, 7/00, 1/10

U.S. Cl. 430—17

16 Claims

7. A color photographic material comprising at least one layer containing a non-uniform photographic dye image, said dye of said dye image having an absorption maximum in the wavelength range between about 300 nm and about 800 nm, wherein said layer or an adjacent layer thereto contains at least one of the complexes represented by the general formula (I) or (II)



wherein M represents a Cu, Co, Ni, Pd or Pt atom; R¹ and R⁴, which may be the same or different, each represents an alkyl group or an aryl group; R² and R³, which may be the same or different, each represents a hydrogen atom, an alkyl group or an aryl group; or R¹ and R², and R³ and R⁴ combine with each other and represent a non-metallic atomic group necessary for forming a 6-membered ring; and Z represents the non-metallic atomic group necessary to complete a 5-membered ring, a 6-membered ring, an 8-membered ring, or a 10-membered ring, stabilizing said dye to the action of light.

4,246,330

STABILIZATION OF ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES AGAINST THE ACTION OF LIGHT

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

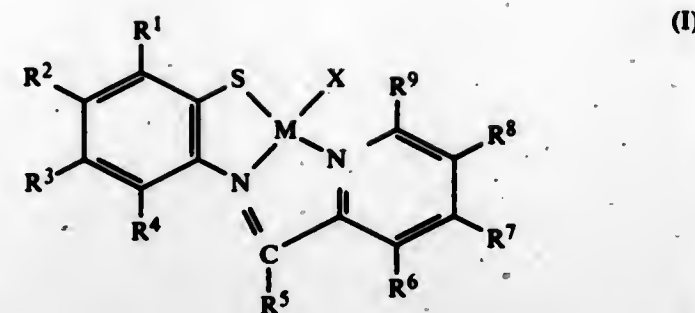
Filed Apr. 11, 1979, Ser. No. 29,085

Claims priority, application Japan, Apr. 17, 1978, 53-45063
Int. Cl.³ G03C 1/40, 1/84, 7/00, 1/10

U.S. Cl. 430—17

14 Claims

6. A color photographic material comprising at least one layer containing a photographic dye image, said dye of said dye image having an absorption maximum in the wavelength range between about 300 nm and about 800 nm, wherein said layer or an adjacent layer thereto contains at least one metal complex salt represented by the formula (I)



wherein M represents a Cu, Co, Ni, Pd or Pt atom; R¹, R², R³, R⁴, R⁶, R⁷, R⁸ and R⁹ each represents a hydrogen atom, a halogen atom, a cyano group, an alkyl group, an aryl group, a cycloalkyl group or a heterocyclic ring which may be attached to the carbon atom on its respective ring directly or indirectly via a divalent coupling group, or R¹ and R², R² and R³, R³ and R⁴, R⁶ and R⁷, R⁷ and R⁸, or R⁸ and R⁹ may combine to represent the non-metallic atoms necessary to complete a 6-membered ring; R⁵ represents a hydrogen atom, an alkyl group or an aryl group; and X represents a chlorine atom, a bromine atom or an iodine atom, stabilizing said dye to the action of light.

4,246,331

ELECTROPHOTOGRAPHIC DEVELOPERS CONTAINING SUBLAMINATE DYES

Wolfgang Mehl, and Dieter Hendriks, both of Geneva, Switzerland, assignors to Sublattice Holding SA, Glaris, Switzerland
Continuation of Ser. No. 843,085, Oct. 17, 1977, abandoned, which is a continuation of Ser. No. 524,339, Nov. 19, 1974, abandoned. This application Mar. 5, 1979, Ser. No. 17,774
Claims priority, application Switzerland, Nov. 30, 1973, 16831/73

Int. Cl.³ G03G 9/14

U.S. Cl. 430—107

15 Claims

1. An electrophotographic developer, suitable for magnetic brush development, composed solely of particles comprising magnetic cores consisting of a ferromagnetic substance and representing at least 50% of the weight of the developer particles, coated with an organic binder, devoid of wax and containing more than 10% of at least one dyestuff, which dyestuff passes into the vapour state at a temperature in the range of from 100° to 220° C. at atmospheric pressure and is a monoazo, anthraquinone, quinophthalone or styryl dyestuff, and wherein the particles are spherical or spherulike shaped and have an average diameter of from 1 to 30 microns.

4,246,332

ELECTROPHOTOGRAPHIC TONER COMPRISING LOW AND HIGH MOLECULAR WEIGHT BLEND OF BINDER RESINS

Koichi Tanaka; Kenji Kobayashi, and Shigeo Aonuma, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,840

Claims priority, application Japan, Feb. 27, 1978, 53-20897
Int. Cl.³ G03G 11/00

U.S. Cl. 430—109

11 Claims

1. An electrophotographic toner for heat roll fixation comprising a binder resin and a colorant dispersed therein wherein the binder resin comprises about 50 to 95% by weight of a low temperature melting, high fluidity resin selected from the group consisting of a polyester resin, an epoxy resin, and a vinyl polymer and having a number average molecular weight of about 1,000 to 4,000, a glass transition temperature of about 40° to 60° C. and a melt index at 110° C. of about 50 to 200 g/10 min or a mixture thereof, and about 5 to 50% by weight of a high molecular weight polymer selected from the group consisting of an acrylic-type polymer and a styrene based polymer and having a glass transition temperature of about 35° to 60° C.

and a weight average molecular weight of more than about 500,000.

4,246,333

DEVELOPMENT INHIBITOR PRECURSOR AND A PHOTOGRAPHIC ELEMENT CONTAINING THE SAME

Yoshiharu Fuseya; Yukio Karino; Yoshio Sakakibara, and Katsusuke Endo, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Apr. 3, 1979, Ser. No. 26,506

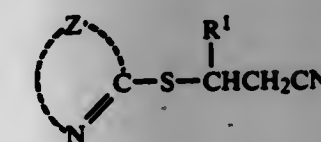
Claims priority, application Japan, Apr. 3, 1978, 53/38931

Int. Cl.³ G03C 1/40, 1/10, 5/30

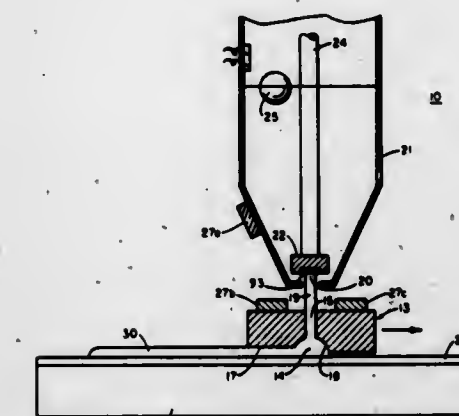
U.S. Cl. 430—219

16 Claims

1. A photographic element for the color diffusion transfer process comprising a support having thereon at least one silver halide emulsion layer associated with a development inhibitor precursor represented by the formula



wherein Z represents the non-metallic atomic group necessary to complete a 5- or 6-membered heterocyclic ring which may be substituted or condensed with another ring, said heterocyclic rings being capable of splitting together with the sulfur atom of the molecule to provide a silver halide development inhibitor and R¹ represents an alkyl group having 1 to 4 carbon atoms; a dye-image providing material associated with said silver halide emulsion layer, an image-receiving element, an alkaline processing composition, and a neutralizing mechanism for neutralizing said alkaline processing composition.



- (5) restraining the flow of the liquid from the manifold by a dam formed by an edge of the open side of the manifold,
- (6) flowing the liquid from an opening out portion of the opposite edge of the open side of the manifold when said manifold is fed through the capillary ducts until its contents are exhausted intermittently and restricting the height of the outflow to below the height of the inside of the manifold, and
- (7) leveling the liquid flowing from the opening out portion of said manifold by a doctor means and thereby providing a substantially rectangular sheet of liquid.

4,246,336

LIQUID PHOTOPOLYMERIZABLE COMPOSITION FOR MAKING PRINTING FORMS

Alfred A. Berlin, Leninsky prospekt, 57, kv. 9; Fedor I. Dubrovitsky, Vorobievskoe shosse, 2-b, kv. 12, both of Moscow; Eduard T. Lazarenko, ulitsa K. Libknekhta, 2, kv. 13, Lvov; Tamara Y. Kefeli, ulitsa Krasnoprudnaya, 22/24, kv. 103, Moscow; Khaim-Mordke A. Brikenstein, Noginsky rayon, p/o Chernogolovka, ulitsa Vtoraya, 5, kv. 1, Moskovskaya; Vladislav V. Bernatsky, ulitsa Shishkina, 20, kv. 4, Lvov; Tatyana A. Zhizhileva, ulitsa Kirovogradskaya, 16, korpus, 1, kv. 414, Moscow; Boris V. Kovalenko, ulitsa Ushakova, 11, kv. 3, Lvov; Natalya L. Marshavina, prospekt Vernadskogo, 95, korpus 2, kv. 252, Moscow; Roman I. Mervinsky, ulitsa Krivososa, 29, kv. 5a, Lvov; Anna A. Radagina, Noginsky rayon, p/o Chernogolovka, ulitsa Pervaya, 32, kv. 59, Moskovskaya; Anatoly R. Tischenko, ulitsa Furmanova, 14, kv. 10, Lvov, and Julia M. Filipovskaya, ulitsa Molodogvardeiskaya, 22, korpus 1, kv. 16, Moscow, all of U.S.S.R.
Filed Mar. 12, 1979, Ser. No. 19,749

Int. Cl.³ G03C 1/68

U.S. Cl. 430—288

9 Claims

1. A liquid photopolymerizable composition for making

4,246,334

Patent Not Issued For This Number

4,246,335

SHAPE DISPENSING OF PHOTOPOLYMER

Kevin E. Keogh, Seekonk, Mass., and John J. Zimmer, Monroeville, Pa., assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Apr. 9, 1979, Ser. No. 28,485

Int. Cl.³ G03C 1/94; B05C 5/02

U.S. Cl. 430—278

11 Claims

7. A method of sequentially dispensing and shaping a liquid to form a sequence of substantially rectangular sheets comprising

printing forms, consisting of methyl methacrylate, a compound selected from the group consisting of benzoin and benzoin ethers, and a photopolymerizable component selected from the group consisting of an oligocarbonate methacrylate, a mixture of an oligocarbonate methacrylate and an oligoester acrylate in a weight ratio of 1:1, and a mixture of an oligocarbonate methacrylate and an oligoester maleinate in a weight ratio of 1:1, the above components being taken in the following proportions (in % by weight):

methyl methacrylate: 5-10
compound selected from the group consisting of benzoin and benzoin ethers: 0.5-1.0
photopolymerizable component: the balance.

4,246,337

PHOTOSENSITIVE MEDIUM FOR OPTICAL INFORMATION STORAGE

Nicholas F. Borrelli, Elmira, and Peter L. Young, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 1, 1978, Ser. No. 901,428
Int. Cl.³ G03C 1/76, 1/02, 1/28

U.S. Cl. 430-496 19 Claims
1. A photosensitive optical information storage medium for storing optical information relating to the intensity and polarization of incident light which consists of an inorganic multi-layer film having a total thickness not exceeding 2 microns and comprising at least 3 polycrystalline photosensitive layers containing additively colored silver halide crystals, each of said layers being produced by:

- depositing a polycrystalline silver halide layer on a suitable substrate; and
- introducing one or more inorganic chemical agents into the silver halide layer in an amount effective to impart additive coloration thereto by the partial reduction of some of the silver halide in the layer to metallic silver, said inorganic chemical agents being selected from the group consisting of:
 - oxygen-deficient metal oxides;
 - metallic reducing agents;
 - immobile hole-trapping dopants; and
 - hole-trapping metal oxides.

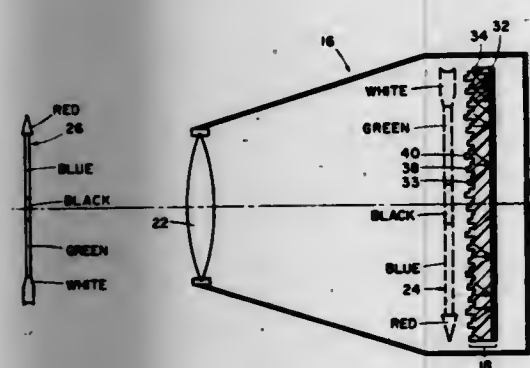
4,246,338

ADDITIVE COLOR PHOTOGRAPHIC FILM ASSEMBLY WITH DIFFRACTION GRATING

Sam H. Kaplan, 7141 N. Kedzie, Chicago, Ill. 60645
Filed Mar. 2, 1979, Ser. No. 16,903

Int. Cl.³ G03C 1/72, 1/84, 7/04, 7/00

U.S. Cl. 430-496 22 Claims



1. A low cost, film-area-sharing, high efficiency spectral separation photographic layer assembly for recording images in incident light having a known spectral bandwidth, comprising:

- a photosensitive layer actinic to light in said known bandwidth for recording intensity variations in light incident thereon; and
- a spectral separation phase structure comprising at least two interlaced sets of periodically repetitive, wavelength-sen-

sitive phase elements, both sets of elements being effective to deflect in one direction incident light of a common first predetermined color and to deflect incident light of a common second color in a markedly different direction, said sets of elements differing in the direction in which light of said first and second colors is deflected said sets deflecting light of the same color on covering paths, said phase structure being supported adjacent said photosensitive layer in plane parallel relationship therewith and spaced therefrom by a prescribed distance which is such that each element of an image formed on said assembly is analyzed into at least first and second color separation elements interleaved and segregated on said layer, and such that color separation elements of like color associated with said two sets of phase elements are recorded in substantially coincident relationship, whereby available area on said photosensitive layer is shared and the light utilization efficiency of the assembly is enhanced.

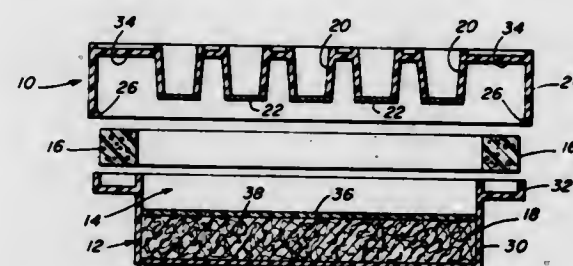
4,246,339

TEST DEVICE

Francis X. Cole, Stowe; James H. Edwards, Winchester; Clifford L. Hendrick, Boxboro, and Deborah M. VanVoorhis, Watertown, all of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Nov. 1, 1978, Ser. No. 956,702
Int. Cl.³ C12Q 1/66; C12M 1/00

U.S. Cl. 435-7 12 Claims



1. A test device for assaying a test liquid for the presence of a predetermined reactant by incubation with a coreactant therefor to form and wash a detectable reaction product, said device comprising:

- top and bottom members disposed for relative movement toward and away from each other to define an open position and a closed position,
 - means for biasing said members in the open position,
 - at least one well for test liquid in the top member, said well having an open bottom,
 - a microporous membrane having substantially uniform pores having between about 25 nanometers and 25 micrometers sealed liquid-tight to the periphery of and extending substantially horizontally across the open bottom of the well, said well or membrane containing or constituting said coreactant,
 - and solid sorbent material carried by said bottom member, the major portion of said material being wettable by said liquid, the upper surface of said sorbent material being disposed for contact with the bottom of said membrane when the members are in the closed position but being removed therefrom in said open position,
 - whereby liquid is retained in said well when the members are in the open position but flows through the membrane into the sorbent material in the closed position.
11. The method of assaying for the presence of a predetermined reactant in a test liquid which comprises:
- providing a test device according to any one of claims 1, 2, 3 or 4, the top and bottom members thereof being in the biased open position,
 - placing test liquid in said well and incubating for a time sufficient to form said reaction product,

moving said members toward each other from the open to the closed position and allowing the test liquid to flow through the membrane into the sorbent material, moving said members away from each other to the open position, adding a washing liquid to said well, moving said members toward each other from the open to the closed position and allowing the washing liquid to flow through the membrane into the sorbent material, and determining the presence or absence of said reaction product.

4,246,340

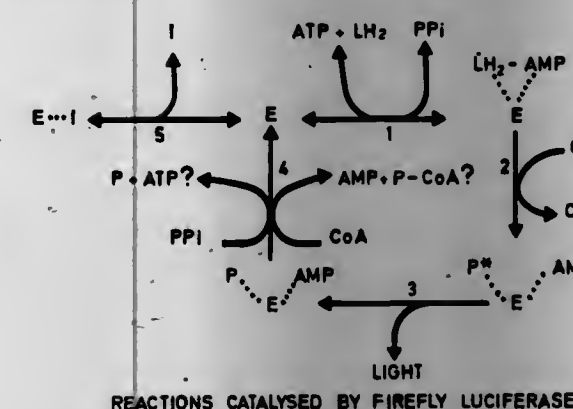
METHOD AND REAGENT FOR BIOLUMINESCENCE

Arne T. Lundin, Stockholm, and Arne Myhrman, Solna, both of Sweden, assignors to LKB-Producter AB, Bromma, Sweden

Filed May 30, 1979, Ser. No. 43,835

Claims priority, application Sweden, May 31, 1979, 7806296
Int. Cl.³ C12Q 1/66

U.S. Cl. 435-8 16 Claims



1. A process for the determination of ATP concentrations by contacting the sample to be assayed, with a bioluminescence reagent based on D-luciferin, luciferase and metal ions, a reaction being obtained wherein ATP and D-luciferin are bound to the luciferase and light is emitted, and by measuring the intensity of the emitted light, which intensity is a measure of the ATP concentration, characterized by using in the determination at least one competitive inhibitor of the reaction in the form of a D-luciferin analogue.

4,246,341

PROCESS FOR DETECTING ENZYMATICALLY ACTIVE XANTHINE OXIDASE

John P. Zikakis, Townsend, Del., assignor to University of Delaware, Newark, Del.

Division of Ser. No. 806,736, Jun. 15, 1977, Pat. No. 4,172,763.
This application Feb. 23, 1979, Ser. No. 14,337

Int. Cl.³ C12Q 1/26

U.S. Cl. 435-25 1 Claim

1. A process for detecting and visualizing enzymatically active xanthine oxidase which comprises first analyzing xanthine oxidase containing liquid by discontinuous polyacrylamide gel electrophoresis where pore sizes in the gels are based on the use of 3.5% acrylamide in the separating gel and gels are run in a basic pH of 8.3 using Tris/Glycine buffer at 2.5 to 3.0 milliamps/tube then immersing the gels containing xanthine oxidase for 1 to 10 hours in neotetrazolium chloride and xanthine solution mixture where the active xanthine oxidase reacts with the substrate xanthine-transferring its electrons first to flavin adenine dinucleotide moiety of the enzyme and then to neotetrazolium chloride forming a purple color precipitate (formazan) at the site where the active xanthine oxidase is located and visualizing the position of the enzyme in the gel.

4,246,342

PROCESS FOR THE MANUFACTURE OF PYRUVATE OXIDASE, AND ANALYTICAL METHOD AND KIT FOR THE USE OF THE SAME

Hideo Misaki; Kazuo Matsuura; Saburo Harada; Satoshi Takenaka, and Yoshifumi Horiuchi, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan
Filed Mar. 21, 1979, Ser. No. 22,442

Claims priority, application Japan, Mar. 25, 1978, 53/34687; Jul. 14, 1978, 53/86350

Int. Cl.³ C12Q 1/26; C12N 9/08

U.S. Cl. 435-25 10 Claims

1. A process for the manufacture of pyruvate oxidase, which comprises culturing a pyruvate oxidase-producing microorganism belonging to a genus selected from *Pediococcus*, *Streptococcus* and *Aerococcus*, in a nutrient culture medium, and separating the pyruvate oxidase thus produced from the culture medium.

3. A method for the analysis of pyruvic acid in a sample containing pyruvic acid or a pyruvate-liberating system, comprising contacting said sample with pyruvate oxidase and measuring a consumed component or a generated component, in which said reaction system contains at least pyruvate oxidase, FAD, thiamine pyrophosphate, phosphate and a salt which liberates ions selected from the group consisting of calcium cobalt, magnesium and manganese.

4,246,343

MICROBIAL DETECTION AND ENUMERATION METHOD AND APPARATUS

Judd R. Wilkins, Hampton, and Glenn E. Stoner, Charlottesville, both of Va., assignors to University of Virginia and National Aeronautics & Space Administration, Charlottesville, Va.

Division of Ser. No. 747,033, Dec. 2, 1976, Pat. No. 4,200,493, which is a continuation-in-part of Ser. No. 641,279, Dec. 16, 1975, Pat. No. 4,009,078, which is a continuation-in-part of Ser. No. 543,860, Jan. 24, 1975, abandoned. This application May 2, 1979, Ser. No. 35,397

The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.³ C12Q 1/18

U.S. Cl. 435-32 21 Claims

1. A method for detecting the presence of hydrogen producing bacteria in a fluid sample, which comprises: culturing a hydrogen producing bacterium in a fluid growth medium which is in contact with a measuring electrode and a reference electrode which are conductively attached to a high impedance potentiometer having an input impedance of 10^7 to 10^{10} ohms, wherein the growing bacteria gradually concentrate about said measuring electrode thus concentrating the evolved hydrogen gas about said measuring electrode and forming a charge-charge interaction between said measuring electrode and accumulated microorganisms, whereby the evolved hydrogen gives rise to a modified measuring electrode which has the nature of a hydrogen electrode; achieving a stable baseline response from said potentiometer prior to reaching the minimum detectable concentration of said bacterium; and monitoring the change in potential between said modified electrode and said reference electrode.

4,246,344

METHOD OF DETECTING ADHERENT CELLS

Spencer F. Silver, III, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 9, 1979, Ser. No. 28,349
Int. Cl.³ C12Q 1/06

U.S. Cl. 435—39

24 Claims

1. A method for the direct quantitative measurement of adherent cells in a liquid sample comprising the steps of:
 - a. contacting said liquid sample with the surface of a piezo-electric oscillator having a premeasured resonant frequency;
 - b. incubating said sample and said oscillator for a sufficient period of time to allow said cells to contact said surface;
 - c. washing and drying said oscillators; and
 - d. determining the change in frequency of said oscillator from said premeasured frequency.

4,246,345

PROCESS FOR THE PRODUCTION OF 6-AMINO-6-DEOXY-L-SORBOSE

Günther Kinast, and Michael Schedel, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,741

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834122

Int. Cl.³ C12P 19/26

U.S. Cl. 435—84

7 Claims

1. A process for the production of 6-amino-6-deoxy-L-sorbose which comprises culturing an aerobic micro-organism capable of oxidizing 1-amino-1-deoxy-D-glucitol or an enzymatic extract obtained from said aerobic micro-organism under aerobic conditions and at a suitable temperature in an aqueous nutrient medium containing 1-amino-1-deoxy-D-glucitol or a salt thereof and also containing assimilable sources of carbon, nitrogen and essential trace elements to impart said 6-amino-6-deoxy-L-sorbose to said aqueous nutrient medium.

4,246,346

ANTIBIOTIC AND STEROID TRANSFORMATION PROCESS

Per-Olof Larsson, Lund; Klaus H. Mosbach, Furulunda Station, and Sten A. Ohlsson, Lund, all of Sweden, assignors to Aktiebolaget Fermenta, Strängnäs, Sweden

Continuation of Ser. No. 812,996, Jul. 5, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,117

Int. Cl.³ C12P 33/14

U.S. Cl. 435—57

7 Claims

1. In antibiotic and steroid transformation processes, wherein an immobilized living microorganism is used as a catalyst to transform a substrate which is an antibiotic or a steroid, the method of activating said catalyst comprising adding to a reaction mixture containing said catalyst and substrate to be transformed thereby, peptone or a mixture of peptone and glucose.

4,246,347

PROCESS FOR THE PRODUCTION OF FRUCTOSE

Saul L. Neidelman, Oakland; William F. Amon, Jr., Danville, and John Geigert, Clayton, all of Calif., assignors to Cetus Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 39,337, May 16, 1979, and a continuation-in-part of Ser. No. 42,219, May 29, 1979. This application Oct. 24, 1979, Ser. No. 88,103

Int. Cl.³ C12P 19/02

U.S. Cl. 435—105

14 Claims

1. A method for making fructose from glucose, comprising, providing an aqueous solution of D-glucose, converting at least about ninety-five percent of the D-glucose in solution to D-glucosone in solution by enzymatic oxidation while remov-

ing or utilizing co-produced hydrogen peroxide, and hydrogenating the D-glucosone to D-fructose.

4,246,348

MICROBIOLOGIC CONVERSION OF L-GALACTONATE INTO 2-KETO L-GALACTONATE

Raymond P. Lanzilotta, Danbury, and Michael K. Weibel, West Redding, both of Conn., assignors to Novo Laboratories, Inc., Wilton, Conn.

Filed Oct. 23, 1978, Ser. No. 953,793

Int. Cl.³ C12P 7/58

U.S. Cl. 435—137

6 Claims

1. A metabolic method for converting L-galactonic acid to 2-keto-L-galactonic acid which comprises cultivating a micro-organism strain which converts L-galactonate into 2-keto-L-galactonate in the presence of L-galactonate until 2-keto-L-galactonate is elaborated in the culture medium then separating the 2-keto-L-galactonate containing medium from the micro-organism.

4,246,349

STABILIZATION OF IMMOBILIZED BACTERIA

Ralph A. Messing, Horseheads; Robert A. Oppermann, Painted Post; William S. Ramsey, Corning, and Milton M. Takeguchi, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 5, 1978, Ser. No. 939,176

Int. Cl.³ C12N 11/14

U.S. Cl. 435—176

8 Claims

1. A method of stabilizing immobilized bacteria which comprises the steps of:
 - A. suspending the bacteria to be immobilized in an aqueous medium containing from about 1 to about 20% weight per volume of sucrose or nonfat dry milk solids;
 - B. mixing the suspension resulting from step A with inorganic carrier having available oxide or hydroxide groups;
 - C. incubating the mixture obtained in step B whereby the bacteria are immobilized by adsorption on said inorganic carrier; and
 - D. lyophilizing the incubated mixture from step C, wherein the bacteria are selected from the group consisting of those bacteria whose viability is difficult to maintain in vitro.

4,246,350

PROTEIN IMMOBILIZATION ON CHELATING RESINS

Deborah E. Hier, Stamford, Conn., and Patrick J. Oriol, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1979, Ser. No. 16,587

Int. Cl.³ C12N 11/08

U.S. Cl. 435—180

7 Claims

3. A water-insoluble polymer-protein conjugate comprising a macroporous styrene-divinylbenzene copolymer resin support having a pore size from about 50 angstroms to about 2000 angstroms in diameter and active bis-picolyamine, imino diacetate, or hydroxyethyl picolyamine sites forming a chelate with a multivalent metal ion selected from the transition metals or rare earth metals and a protein adsorbed thereon.

4,246,351

PROTEIN ADSORBENT

Tetsuya Miyake, Tokyo; Kunihiro Takeda; Akihiko Ikeda, both of Yokohama, and Masayuki Mizuno, Noboroka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

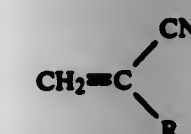
Continuation of Ser. No. 942,716, Sep. 15, 1978, abandoned, which is a division of Ser. No. 841,271, Oct. 12, 1977, abandoned. This application Oct. 29, 1979, Ser. No. 88,927
Claims priority, application Japan, Oct. 28, 1976, 51/128868; Oct. 5, 1977, 52/52585

Int. Cl.³ C08J 9/00

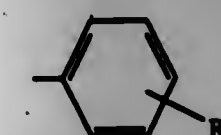
U.S. Cl. 435—182

36 Claims

1. A method for adsorbing a protein from an aqueous solution or dispersion of the protein which comprises contacting an aqueous solution or a dispersion of a protein with a porous copolymer obtained by copolymerizing a monomer mixture comprising 2 to 98% by weight of at least one cyano group-containing monomer represented by the following general formula (A):



wherein R stands for a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, a halogen atom, a cyano group, a methoxy group, an acetoxyl group, or an unsubstituted or substituted phenyl group represented by the formula



wherein R' stands for a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, a halogen atom, a cyano group, a methoxy group or an acetoxyl group, and 2 to 98% by weight of at least one cross-linkable monomer having a plurality of $\text{CH}_2=\text{C}<$ groups, said copolymer having an average pore diameter (d) of from 40 Å to 9,000 Å and a total pore volume of from 0.05 $\sqrt{\text{X}}$ ml to 1.5 $\sqrt{\text{X}}$ ml per gram of the copolymer in a dry state, in which X designates the weight proportion of said cross-linkable monomer expressed in terms of the percent by weight based on the total monomers, and being employed in an amount of 0.02 to 300 g per liter of said solution or said dispersion.

4,246,352

TEST SAMPLE CONTAINER

Edward U. Buddemeyer, 11507 Notch Cliff Rd., Glenarm, Md. 21057

Filed Dec. 18, 1978, Ser. No. 970,801

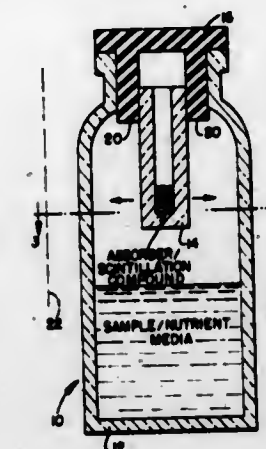
Int. Cl.³ C12M 1/34

U.S. Cl. 435—291

12 Claims

1. An apparatus for use in radiometric analysis of the biological activity of a test sample comprising:
 - (1) a first container means for containing a selected quantity of a test sample for analysis and a radionuclide-labeled nutrient media metabolizable to produce a gaseous compound that includes the radionuclide;
 - (2) a second container means, enclosed within said first container, for containing a scintillation compound and an absorbent material to absorb the metabolized gas;
 - (3) means for supporting said second container means in said first container means above the test sample and nutrient media; and
 - (4) sealing means for sealing said first container means; the interiors of said first container means and said second

container means open to one another whereby the gaseous compound that includes the radionuclide is absorbed by



the absorbent material causing the scintillation compound to emit light flashes.

4,246,353

MELT PROCESSING OF FLUORINATED POLYMERS

Hirotsugu Miyachi, Tokyo; Hiroshi Sagami, and Sakae Teshima, both of Yokohama, all of Japan, assignors to Asahi Kasei Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1979, Ser. No. 40,537

Claims priority, application Japan, May 30, 1978, 53-63867
Int. Cl.³ C25B 13/00; C08D 5/20

U.S. Cl. 521—28

8 Claims

1. A method for melt processing of a fluorinated vinyl polymer which contains at least one pendant functional moiety selected from the group consisting of sulfonic acid groups, carboxylic acid groups, sulfonamide groups and salts thereof, which comprises heating said polymer in the presence of an aqueous medium incorporated in said polymer prior to melt processing of the polymer.

4,246,354

PROCESS FOR BROMINATION OF RESINS BASED ON CROSSLINKED VINYLAROMATIC COPOLYMERS

Jean E. E. Herbin; Jean de Koker; Patrick J. B. Prele, all of Chauny; Marc S. A. Giullani, Terguier; Teddy E. A. Drode, Chauny; Jacques L. Boutier, Chauny, and Paul D. A. Grammont, Chauny, all of France, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 29, 1979, Ser. No. 42,784

Claims priority, application France, May 31, 1978, 78 16244
Int. Cl.³ C08F 8/20, 8/30, 8/36; C08J 5/20

U.S. Cl. 521—32

13 Claims

1. A process for the preparation of high density resins by bromination of particles of crosslinked copolymers of a monovinylaryl compound and at least one di- or poly-vinylaryl compound, of the gel or macroporous type, ionic or non-ionic, characterized in that the copolymer is swollen in a solvent and then is selectively mono-brominated on the aromatic rings of the copolymer using bromine or a bromine releasing agent in the presence of an oxidizing agent to add half a molecule of bromine per aromatic ring.
 7. A process according to claim 1 wherein the copolymer is sulfonated following the bromination.
 8. A process according to claim 7 wherein the sulfonation is conducted using an excess of the sulfuric acid originally introduced as an oxidizing agent.

4,246,355

ION EXCHANGE PROCESSES AND PRODUCTS

Brian A. Bolto, Mitcham; David R. Dixon, Kellor, and Robert J. Eldridge, Moorabbin, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Dec. 27, 1977, Ser. No. 864,474

Claims priority, application Australia, Jan. 7, 1977, 8692/77
Int. Cl.³ C08J 9/00

U.S. Cl. 521—38

12 Claims

1. A process for the manufacture of a copolymer which process comprises treating a reaction mixture comprising at least one functional monomer and particulate substrate material comprising ferromagnetic material located in a polymeric matrix so as to polymerize said monomer in a manner such that it forms a polymeric shell which is grafted on to and surrounds said substrate and wherein the polymerization of said monomer is initiated by first activating the said polymeric matrix component of the said substrate with an excess of aqueous hydrogen peroxide solution, washing the thus activated substrate with water to remove the excess hydrogen peroxide solution, forming an aqueous slurry of the activated substrate, and adding said monomer and a ferrous salt to the said aqueous slurry in such a manner as to cause the monomer to polymerise on to the activated polymer matrix to form the said copolymer.

4,246,356

FOAM MANUFACTURE USING TWO CATALYSTS AND A VAPORIZABLE AUXILIARY BLOWING AGENT

Graham D. Walmley, 56 Church St., Glossop, Derbyshire, England

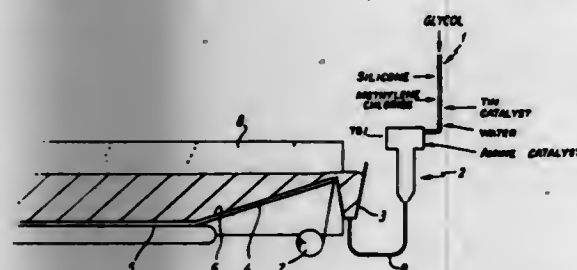
Filed May 18, 1979, Ser. No. 40,288

Claims priority, application United Kingdom, May 19, 1978, 20817/78

Int. Cl.³ C08G 18/14

U.S. Cl. 521—50

6 Claims



1. A method of manufacturing a foam material comprising the steps of:

mixing in a mixture head foam-forming components comprising: a blowing agent, polymer-forming material, first and second catalysts respectively for catalysing polymer formation with said polymer-forming material and blowing with said blowing agent, and an auxiliary blowing agent in the form of a vaporisable substance;

feeding said mixed components as a liquid from the mixing head to an open-topped reaction vessel wherein said components are maintained for a dwell time during which exothermic reaction occurs and the liquid froths; and

discharging said frothing liquid from the reaction vessel to a surface on which it is allowed to expand and form the foam material;

the proportion of said first catalyst being reduced below the level required to achieve satisfactory foam formation without said dwell time.

4,246,357

COPOLYMERS OF ETHYLENE AND THEIR USE IN THE PREPARATION OF FOAMABLE PLASTICS

John V. Hobes, Dinslaken, and Wolfgang Payer, Wesel, both of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,880

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830328

Int. Cl.³ C08J 9/02

U.S. Cl. 521—77

10 Claims

1. A foamable copolymer comprising 40 to 98 percent by weight of ethylene units, 1 to 30 percent by weight of vinyl alcohol units, 1 to 30 percent by weight of acrylic acid ester units of secondary or tertiary alcohols and up to 2 percent by weight of vinyl acetate units.

4,246,358

FIRE-RESISTANT MATERIAL AND PROCESS

James A. Ellard, Dayton, Ohio, assignor to Monsanto Research Corporation, St. Louis, Mo.

Continuation of Ser. No. 571,820, Apr. 25, 1975, abandoned, which is a division of Ser. No. 408,952, Oct. 23, 1973, abandoned, which is a continuation of Ser. No. 205,409, Dec. 6, 1971, abandoned. This application Dec. 17, 1979, Ser. No. 103,977

Int. Cl.³ C08J 9/02

U.S. Cl. 521—77

22 Claims

1. A fire-resistant material made

(a) by heating at temperatures sufficient to cause polymerization monomeric aromatic compounds capable of forming aromatic polymers substantially free of oxidizing substituents having sulfonamide linkages, and heating said aromatic polymers at temperatures greater than about 285° C., which temperatures may be reduced by small additions of benzenesulfonhydrazides which react at lower temperatures, sufficient to cause elimination of nitrogen and sulfur; or

(b) by heating aromatic polymers substantially free of oxidizing substituents having sulfonamide linkages at temperatures greater than about 285° C., which temperatures may be reduced by small additions of benzenesulfonhydrazides which react at lower temperatures sufficient to cause elimination of nitrogen and sulfur.

4,246,359

FLAME RETARDANT FOR HYDROCARBON DIENE RUBBERS

William P. Whelan, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 55,124

Int. Cl.³ C08J 9/00

U.S. Cl. 521—92

17 Claims

1. A flame retarded elastomeric composition comprising:

(a) a hydrocarbon conjugated diene elastomer wherein said diene elastomer consists of (1) at least one homopolymer of a hydrocarbon conjugated diene; (2) at least one copolymer of a hydrocarbon conjugated diene with at least one ethylenically unsaturated monomer selected from the group consisting of C₂ to C₁₂ hydrocarbon monomers, C₃ to C₈ carboxylic acids, esters of said acids with C₁ to C₈ alcohols, C₂ to C₈ halogen containing monomers and mixtures thereof; or mixtures of (1) and (2)

(b) about 5 to about 100 parts by weight per 100 parts by weight of said elastomer of a halogen containing organic compound wherein said compound consists of (1) at least one non-polymeric aliphatic, aromatic or alicyclic compound having a halogen content of about 35% to about 85% by weight based on the compound, (2) at least one polymeric compound selected from the group consisting of polychloroprene, chlorinated polyethylene, chlorosulfonated polyethylene, epichlorohydrin polymers and co-

polymers, chlorinated polyvinyl chloride and polyvinylidene chloride or (3) mixtures thereof;

(c) about 10 to about 700 parts by weight per 100 parts by weight of said elastomer of alumina trihydrate; and

(d) about 0.5 to about 100 parts by weight per 100 parts by weight of said elastomer of an iron oxide which is selected from a group consisting of anhydrous ferric oxide, hydrated ferric oxide, anhydrous ferrosulfuric oxide, hydrated ferrosulfuric oxide or mixtures thereof.

4,246,360

FIRE RETARDANT, NON-DRIPPING FLEXIBLE POLYURETHANE FOAM

Jasper H. Brown, Woodriver, and Albert W. Morgan, Collinsville, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

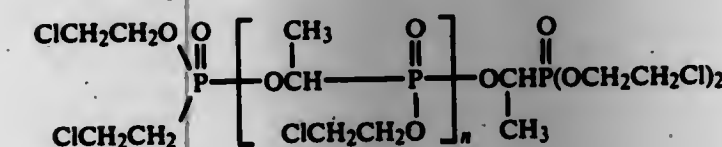
Filed Jul. 22, 1977, Ser. No. 818,047

Int. Cl.³ C08K 5/02, 5/52, 5/53; C08L 75/12

U.S. Cl. 521—102

20 Claims

1. A flexible foam comprising polyurethane, a protein present in an amount from about 10 to 100 percent based on the weight of polyol used in preparation of said foam, and a flame retarding amount of flame retardant selected from chlorinated paraffin, trialkyl phosphate, dialkyl aryl phosphate, alkyl di-aryl phosphate, triaryl phosphate, diethylene glycol bis(di-2-chloroethyl)phosphate, 2,2-bis(chloromethyl)trimethylene bis[bis(2-chloroethyl)phosphate] and polyphosphonate of the formula



wherein n has an average value of 1 to 2.

4,246,361

METHOD FOR PRODUCING FLAME- AND SMOKE-RESISTANT POLYURETHANE FOAM SHEET BY INCORPORATION OF A UREA DERIVATIVE IN REACTION MIXTURE

Toshio Yukutsu, Kodaira; Takashi Ohashi, Iruma; Minoru Kojima, Tokyo, and Masumi Saito, Tanashi, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Division of Ser. No. 778,282, Mar. 16, 1977, Pat. No. 4,180,631.

This application Jun. 26, 1979, Ser. No. 52,512

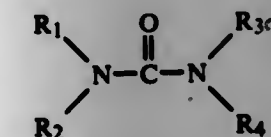
Claims priority, application Japan, Mar. 17, 1976, 51-28948
Int. Cl.³ C08G 18/32; B29D 27/00

U.S. Cl. 521—128

21 Claims

1. A method of producing a flame- and smoke-resistant flexible polyurethane foam sheet which comprises (1) reacting a system consisting essentially of a polyhydroxyl compound and a polyisocyanate with a urea derivative selected from the group consisting of

a. a compound represented by the general formula



wherein at least one of R₁, R₂, R₃, and R₄ represents a member selected from the class consisting of a hydroxyalkyl group, an alkoxyalkyl group, an alkyl group and an aryl group and wherein any of R₁, R₂, R₃ and R₄ which does not represent a member from said class represents a hydrogen atom; and

b. a urea-formaldehyde condensation product prepared by reacting 1 mole of urea with 1 to 4 moles of formaldehyde in the presence of an alkali catalyst, said reacting with a. or b. being in the presence of a catalyst for the production

of the polyurethane foam, a surfactant and a blowing agent, wherein the polyisocyanate is used in an amount corresponding to an isocyanate index of 80-130 and the urea derivative is used in an amount of 2-5 parts by weight based on 100 parts by weight of the polyhydroxyl compound; and

c. compressing the polyurethane foam obtained in step (1) for 2-10 minutes at a temperature of 80°-120° C. and a pressure of 5-200 kg/cm² to obtain said flexible polyurethane foam sheet.

4,246,362

HYDROPHILIC SEPARATING CARRIER AND PREPARATION THEREOF

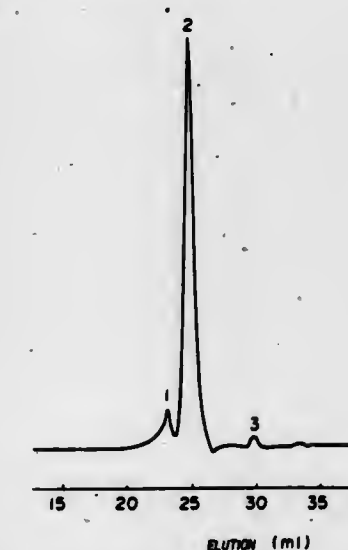
Hiroo Sasaki; Katsuo Komiya, and Yoshio Kato, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,663

Claims priority, application Japan, Jun. 8, 1978, 53-68361
Int. Cl.³ C08J 9/00

U.S. Cl. 521—149

2 Claims



1. A hydrophilic separating carrier of a porous spherical gel having primary hydroxyl group of the gel obtained by an aqueous suspension homopolymerization of pentaerythritol dimethacrylate or an aqueous suspension copolymerization of pentaerythritol dimethacrylate and a methacrylate monomer having hydrophilic group and/or hydrophilic convertible group.

4,246,363

REACTION INJECTION MOLDED POLYURETHANES HAVING PARTICULAR FLEXURAL MODULUS FACTORS AND AT LEAST TWO THERMAL TRANSITION TEMPERATURES IN A PARTICULAR RANGE

Robert B. Turner, Lake Jackson, and Roy E. Morgan, Jr., Richwood, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 922,148, Jul. 5, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,766

Int. Cl.³ C08G 18/14

U.S. Cl. 521—163

39 Claims

1. A polyurethane having a flexural modulus factor (—20° F./158° F.) of not greater than about 3.4 and at least three thermal transition temperatures measured between —100° C. and the decomposition temperature of the polyurethane as determined by thermomechanical analysis.

4,246,364

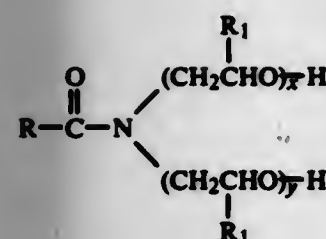
PROCESS FOR POLYISOCYANURATE FOAMS BASED ON AN AMIDE-DIOL BLEND

Charles E. Koshler, Baytown; Thomas R. McClellan, Seabrook, and Pat L. Murray, Houston, all of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 47,030, Jan. 11, 1979, abandoned. This application Feb. 19, 1980, Ser. No. 122,029

Int. Cl.³ C08G 18/14, 18/38, 18/76; C09K 3/00
U.S. Cl. 521—167 20 Claims

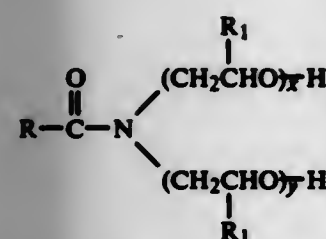
1. A polyol blend comprising (i) from about 20 percent by weight to about 85 percent by weight of said blend of an amide diol, or mixture of amide diols having the formula



wherein R is an aliphatic radical having from 7 to 17 carbon atoms, inclusive, each R₁ is independently selected from the group consisting of hydrogen and methyl, x and y each independently have an average value between about 1 and about 3 inclusive; and (ii) from about 15 percent to about 80 percent by weight of a primary hydroxyl polyol characterized by a molecular weight of from about 60 to about 1000.

13. In a process for the preparation of a cellular polymer in which the major recurring polymer unit is an isocyanurate moiety said process comprising the trimerization of an organic polyisocyanate in the presence of a minor amount of a polyol, a blowing agent, and a trimerization catalyst, the improvement which comprises preparing said cellular polymer by bringing together:

- A. an organic polyisocyanate; and
- B. from about 10 to about 120 parts by weight per equivalent of said polyisocyanate of a blend comprising:
 - (a) about 2 to about 20 percent by weight of a polyisocyanate trimerization catalyst, and
 - (b) about 80 to about 98 percent by weight of a mixture comprising:
 1. about 20 to about 80 percent by weight of a fluorocarbon blowing agent, and
 2. about 20 to about 80 percent by weight of a polyol component comprising an amide diol or mixture of amide diols having the formula



wherein R is an aliphatic radical having from 7 to 17 carbon atoms, inclusive, each R₁ is independently selected from the group consisting of hydrogen and methyl, x and y each independently have an average value from about 1 to about 3 inclusive; and provided the total hydroxyl equivalents present in said blend (B) are within a range of from about 0.05 to about 0.5 equivalent per equivalent of said polyisocyanate.

4,246,365

PROCESS FOR THE PRODUCTION OF PLASTICS CONTAINING ISOCYANURATE GROUPS AND URETHANE GROUPS

Rolf Wiedermann, Bergisch-Gladbach; Rudolf Merten, Leverkusen; Werner Dietrich, Cologne, and Wolfgang Schmitz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 820,672, Aug. 1, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 861
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637170Int. Cl.³ C12N 15/00

U.S. Cl. 521—172 4 Claims

1. A method for the production of plastics, including foams, containing urethane groups and predominantly isocyanurate groups by reacting polyesters having a molecular weight of from 350 to 10,000, and containing at least two hydroxyl groups and containing phthalic acid residues and, optionally, other polyhydroxyl compounds having a molecular weight of from 400 to 10,000 and/or chain extenders having a molecular weight of from 32 to 400 with an excess of polyisocyanates in the presence of isocyanate-trimerization catalysts and optionally blowing agents, foam stabilizers and other additives, the improvement characterized in that polyesters are used whose acid components comprise at least 50%, by weight, phthalic acid residues and whose polyhydroxyl component has a hydroxyl equivalent weight of 53 or less, and wherein 10 to 49%, by weight, of the isocyanate groups react to form urethane groups and 51 to 90%, by weight, of the isocyanate groups react to form isocyanurate groups.

4,246,366

MIXTURES OF GLYCIDYLATED HYDANTOINS AND POLYHYDRIC PHENOLS AND THE USE THEREOF FOR THE PREPARATION OF PLASTICS

Rolf Schmid, Gelterkinden, Switzerland; Andre Schmitter, Hegenheim, France; Ferdinand Gutekunst, Riehen, and Friedrich Lohse, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 11, 1979, Ser. No. 47,954
Claims priority, application Switzerland, Jun. 22, 1978, 6820/78Int. Cl.³ C08G 59/26, 59/62

U.S. Cl. 521—178 16 Claims

1. A mixture of a curable epoxide resin, a curing agent for the resin and a curing accelerator, which comprises

- (a) as the resin, a N-glycidyl compound of a mononuclear or binuclear hydantoin, which has two glycidyl groups in the molecule or a binuclear hydantoin, which has three glycidyl groups in the molecule and is free from ester groups, and
- (b) as the curing agent, a mononuclear phenol with two or three phenolic hydroxyl groups,

at least one of the components (a) or (b) being tri-functional and there being 0.5 to 1.1 equivalents of (b) per 1 equivalent of (a).

4,246,367

DICYCLOPENTADIENE POLYESTER RESINS

Omer E. Curtis, Jr., Morristown, N.J., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 967,328, Dec. 7, 1978, which is a division of Ser. No. 824,898, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 709,085, Jul. 27, 1976, abandoned.

This application Sep. 24, 1979, Ser. No. 78,342
Int. Cl.³ C08G 63/76; C08L 67/04
U.S. Cl. 525—49 8 Claims

1. Method for preparing an unsaturated polyester comprising the steps of:

- (a) reacting about 100 moles of a polycarboxylic acid component containing at least about 25 moles maleic acid with

about 50 to about 200 moles of dicyclopentadiene at a temperature of about 90° C. to about 150° C. for a sufficient period of time to provide a reaction product comprising at least 25 mole % half maleic ester of dicyclopentyl alcohol;

- (b) further reacting the reaction product of step (a) with about 25 to about 100 moles of a polyol or mixture of polyols per 100 moles of polycarboxylic acid in step (a), at a temperature of at least about 180° C. until the acid number of the resultant unsaturated polyester is less than about 55, and
- (c) blending about 80 to about 40 parts by weight of the reaction product of step (b) with about 20 to about 60 parts by weight of a monomeric copolymerizable component.

4,246,368

POWDER COATING COMPOSITIONS FOR FORMING MULTI LAYER COATINGS

Heihachi Murase, Hiratsuka, Japan, assignor to Kansai Paint Company, Limited, Amagasaki, Japan

Filed May 5, 1978, Ser. No. 903,260
Claims priority, application Japan, May 13, 1977, 52-55043; Feb. 7, 1978, 53-12601Int. Cl.³ C08L 63/00, 67/00, 33/06, 33/14
U.S. Cl. 525—117 9 Claims

1. A multi-layer forming powder coating composition comprising:

- (1) at least one of finely divided thermosetting addition copolymers having a glass transition of 35° to 75° C. and comprising as comonomers a wt. % of a hardness imparting monomer which, when singly polymerized, will have a glass transition temperature of higher than 80° C. and b wt. % of a softness imparting monomer which, when singly polymerized, will have a glass transition temperature of up to 10° C. based on the copolymer wherein a + b ≤ 60, b ≤ a and b ≤ 20, said hardness imparting monomer being at least one species selected from the group consisting of styrene, methyl methacrylate, acrylonitrile, methacrylic acid, acrylic acid, indene, isobornyl acrylate, 2-chlorostyrene, 2-methylstyrene, t-butyl vinyl ether, vinyl chloride and acrylamide, and said softness monomer being at least one species selected from the group consisting of 2-ethylhexyl acrylate, methyl acrylate, ethyl acrylate, 2-ethylhexyl methacrylate, isobutyl acrylate, n-butyl acrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, lauryl methacrylate, t-butyl acrylate, p-nonylstyrene, n-butyl vinyl ether, vinyl fluoride and isopropyl acrylate, and
- (2) at least one of finely divided thermosetting resinous materials selected from the group consisting of epoxy resin, acrylic resin and polyester having incompatibility or low compatibility with the copolymer and a substantially greater surface tension than the copolymer when melted at the same temperature and substantially differing from the copolymer in composite parameter ht, the ratio of the composite parameter of said resinous material to said copolymer being at least 1.3, wherein the affinity parameter P between said copolymer and resinous material, calculated by the following equation

$$|P| = \frac{\Delta D}{A + B + C + \Delta D} \times K$$

A and B: the weights (g) of the two resins in the solvent mixture;
C: the weight (g) of the solvent in the mixture before the addition of the good or poor solvent;
ΔD: the weight (g) of the good or poor solvent added;
K: modification factor which is 1 when P is negative, or 100/45 when P is positive;
is positive, zero or negative number of less than 0.1, the composite parameter ht is calculated by the following equation

ht = Ht × ρ
Ht: the height (cm) of creeping of the resin in a molten state,
ρ: density (g/cm³) of the molten resin,
and the proportion of each finely divided resinous material is at least 10 wt. % based on the composition.

4,246,369

COMPOSITIONS CONTAINING CARBAMOTHIOATE CURING AGENTS AND THEIR USES

Vincent D. McGinniss, Valley City, and Donald R. Stevenson, Dover, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 812,801, Jul. 5, 1977, Pat. No. 4,133,916. This application Sep. 18, 1978, Ser. No. 942,931

Int. Cl.³ C08G 18/80; B05D 3/02; C08G 18/32, 18/62
U.S. Cl. 525—126 7 Claims

1. A heat curable powder coating composition comprising a dry powder blend of:

- (A) a reactive compound of an oligomer or polymer containing a plurality of isocyanate reactive groups each characterized by a labile hydrogen atom;
- (B) a separate reactive compound of an oligomer or polymer containing a plurality of mercaptan reactive groups selected from unsaturated carbon to carbon groups and epoxy groups;
- (C) a carbamothioate curing agent adapted to generate a plurality of curing units upon being subjected to heating to a temperature of from about 100° C. to about 250° C., said generated plurality of curing units containing isocyanate groups which are reactive with said groups containing a labile hydrogen atom, and mercaptan groups which are reactive with said unsaturated groups and said epoxy groups, at least one of said curing units containing at least two of said isocyanate and/or mercaptan groups; there being about the same number of said groups containing a labile hydrogen atom from compound (A) as there are of isocyanate groups of said curing units from compound (C), and about the same number of said unsaturated or epoxy groups from compound (B) as there are of said mercaptan groups of said curing units from compound (C); the weight ratio of (A) to (B) being in the range of from about 0.58:1 to 50:1.

4,246,370

USE OF NOVEL POLYMERS OF ALKYL ACRYLATES

Sheldon N. Lewis, LePlan de Grasse, France, and Richard A. Haggard, Fort Washington, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 629,186, Nov. 5, 1975, Pat. No. 4,158,736, which is a continuation-in-part of Ser. No. 241,177, Apr. 5, 1972, abandoned. This application Mar. 5, 1979, Ser. No. 17,507

Int. Cl.³ C08F 8/12 7 Claims

1. A process for preparing a carboxyl polymer comprising acrylic acid mer units, the process comprising preparing an alkoxide-polymerized addition polymer of an ester of acrylic acid, said polymer being a homopolymer or a copolymer with one or more other anionically copolymerizable ethylenically-unsaturated monomers wherein the average chain length of the addition polymer, \bar{n} , is about 6 to about 30 mers and hydrolyzing the addition polymer by heating with aqueous caustic.

4,246,371

POLYAMIDE BLENDS

Rolf V. Meyer, and Peter Tacke, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 855,372, Nov. 28, 1977, abandoned.

This application Jan. 12, 1979, Ser. No. 3,010

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1976, 2654168; Mar. 26, 1977, 2713537

Int. Cl.³ C08L 77/00

U.S. Cl. 525—183

7 Claims

1. A thermoplastic moulding composition with high notched impact strength consisting essentially of

(1) 80 to 92% by weight of a polyamide-6 having a relative viscosity of at least 3.5 as measured in a 1% solution in m-cresol at 25° C.; and

(2) 8 to 20% by weight of an at least one ternary copolymer consisting of

(a) 80 to 95% by weight of ethylene;

(b) 1 to 10% by weight of acrylic or methacrylic acid; and

(c) 1 to 20% by weight of at least one ester of acrylic or methacrylic acid with a C₂-C₆ alcohol

and having a melt index of 2 to 15 g/10 min.

4,246,372

CONVERSION OF ALPHA-METHYLSTYRENE-TYPE MONOMERS IN THE FORMATION OF COPOLYMERS WITH CONJUGATED DIENE MONOMERS

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1979, Ser. No. 36,267

Int. Cl.³ C08F 4/48

U.S. Cl. 525—271

46 Claims

1. A process for the preparation of a copolymer of at least one alpha-methylstyrene-type monomer and at least one conjugated diene monomer employing a ratio of charged monomers of about 95:5 to 5:95 weight ratio of conjugated diene:alpha-methylstyrene-monomer which comprises the steps of:

(a) polymerizing under solution polymerization conditions at a first relatively low polymerization temperature in the range of about 0° C. to 40° C., employing a hydrocarbyl monolithium initiator and a first ratio of monomer:polymerization diluent at least one alpha-methylstyrene-type monomer in the further presence of an effective amount of a first polar activator selected from organic polar compounds which have a dielectric constant of between 2 and 9 and which do not contain an active hydrogen atom, thereby producing a polymerization admixture comprising living poly(alpha-methylstyrene-type monomer) homopolymer and residual alpha-methylstyrene-type monomer;

(b) adding to the resulting polymerization admixture a small capping amount of a conjugated diene monomer of at least about 1 per mole of living poly(alpha-methylstyrene-type monomer), optionally with a second amount of diluent, while maintaining solution polymerization conditions at said relatively low first polymerization temperature, and polymerizing said added conjugated diene monomer, thereby producing a polydiene capped homopolymer of alpha-methylstyrene-type monomer;

(c) adding a further amount of conjugated diene monomer and a further amount of polymerization diluent, increasing the polymerization temperature to a higher second polymerization temperature substantially above said first lower polymerization temperature and in the range of about 0° C. to 140° C., and polymerizing said further amount of conjugated diene monomer in the presence of a second organic polar activator selected from alkali metal alkoxides other than of lithium and in the ratio of about 10:1 to 1:10 molar ratio of M:Li wherein M represents the alkali metal,

thereby substantially polymerizing said conjugated diene monomer and at least a portion of said residual alpha-methylstyrene-type monomer as a random copolymer

of (conjugated diene/alpha-methylstyrene-type monomer) onto said capped poly(alpha-methylstyrene-type monomer), and

(d) terminating the polymerization thereby preparing a copolymer of said alpha-methylstyrene-type monomer and said conjugated diene.

4,246,373

SYNTHESIS OF SUBSTITUTED CYCLOPENTADIENES AND CYCLOPENTADIENE-FUNCTIONALIZED POLYMERS

Joseph P. Kennedy, 952 Genesee Rd., Akron, Ohio 44303, and Kenneth F. Castner, 2365 Cooledge Ave., Akron, Ohio 44305

Division of Ser. No. 962,048, Nov. 20, 1978, Pat. No. 4,138,441.

This application Feb. 14, 1980, Ser. No. 121,413

Int. Cl.³ C08F 8/18, 8/20, 8/26, 8/42

U.S. Cl. 525—274

7 Claims

1. The method of preparing polymers containing pendant cyclopentadiene groups which comprises reacting a polymer containing pendant active-halogens selected from the group consisting of chlorine, bromine and iodine with an aluminum cyclopentadienyl compound of the formula R₂Al(CPD)_y, wherein CPD represents the cyclopentadiene group, R' represents an alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkaryl or aryl group, y equals 1 to 2 and x equals 2 to 1 and the sum of x plus y is equal to 3.

4,246,374

IMIDIZED ACRYLIC POLYMERS

Richard M. Kopchik, Southampton, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 633,302, Nov. 19, 1975, abandoned.

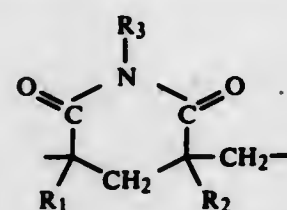
This application Apr. 23, 1979, Ser. No. 32,195

Int. Cl.³ C08F 8/30, 8/32

U.S. Cl. 525—329

40 Claims

24. Compositions comprising a thermoplastic polymer having good thermal stability and melt flow properties containing at least 10% imide units of the structural formula



wherein R¹, R², and R³ independently represent hydrogen or C₁ to C₂₀ unsubstituted or substituted alkyl, aryl, or mixtures thereof, said polymer being non-crosslinked and soluble in dimethyl formamide, and having a degree of thermal stability as measured by TGA in an air atmosphere wherein the temperature at which said polymer has a 1% decomposition of at least 285° C.

4,246,375

VULCANIZATION PROCESS AND COMPOSITIONS FOR USE THEREIN

Peter Hill, Rochdale, and Jack Thompson, Oldham, both of England, assignors to Vulnax International Limited, London, England

Filed Dec. 26, 1979, Ser. No. 106,510

Claims priority, application United Kingdom, Mar. 1, 1979, 07360/79

Int. Cl.³ C08L 91/00

U.S. Cl. 525—341

5 Claims

1. A process for the vulcanisation of polychloroprene rubbers by heating in the presence of magnesium oxide, zinc oxide and thiophosphoric-N,N,N'-trimethyltriamide, wherein as processing aid, there is added a small amount of a C₁₀-C₁₄ alkanolic acid to the unvulcanised polychloroprene rubber.

4,246,376

CURING AGENTS

Edward Didomenico, Jr., Anoka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Sep. 10, 1979, Ser. No. 74,369

Int. Cl.³ C08G 6/00; C08L 61/02

U.S. Cl. 525—398

10 Claims

1. A composition of matter which is the product of a methylolamino compound and a member selected from the group consisting of:

(a) H(CH₂)_nCH(CH₂OH)(CH₂)_kCH₂OH

and

(b) CH₃(CH₂)_m[C(CH₂OH)₂]_n(CH₂)_t[C(CH₂OH)₂]_q(CH₂)_h[C(CH₂OH)₂]_kCH₂OH

and mixtures thereof

wherein n plus q plus s are integers the sum of which is from 1 to 3; k and t are 3 or greater; n, q, and s are 0 or 1; m through t are integers the sum of which is from 12 to 20; and, h plus k are non-zero integers the sum of which is from 12 to 20.

4,246,377

PROCESS FOR INCREASING MOLECULAR WEIGHT OF POLYBUTYLENE TEREPHTHALATE

John J. Charles, Bloomington, and Robert C. Gasman, West Milford, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 946,745, Sep. 29, 1978, abandoned. This application Oct. 19, 1979, Ser. No. 86,337

Int. Cl.³ C08G 63/76

U.S. Cl. 525—437

6 Claims

1. Process for increasing the molecular weight of polybutylene terephthalate which comprises melt processing polybutylene terephthalate having an intrinsic viscosity and between about 0.1 and about 1.4 dl/g with a chain-branching agent selected from the group consisting of bis azido formyl ethylenedioxy phthalate, bis azido formyl propylenedioxy phthalate and mixtures thereof.

4,246,378

THERMOPLASTIC POLYESTER RESINOUS COMPOSITION

Kiichi Kometani, Nagoya, and Hotsuma Okasaka, Mishima, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 91,160

Claims priority, application Japan, Nov. 6, 1978, 53-135733

Int. Cl.³ C08F 283/00, 283/02; C08G 63/76

U.S. Cl. 525—438

10 Claims

1. A thermoplastic polyester resinous composition which comprises, per 100 parts by weight of the thermoplastic polyester,

(a) from about 0.1 to 40 parts by weight of an epoxy compound, and

(b) from about 0.001 to 10 parts by weight of at least one member selected from the group consisting of organic sulfonates and organic sulfate salts.

4,246,379

RADIATION CURABLE COATING COMPOSITIONS

Deanis D. Howard, Girard, Pa., assignor to Lord Corporation, Erie, Pa.

Continuation of Ser. No. 710,775, Aug. 2, 1976, abandoned,

which is a continuation-in-part of Ser. No. 708,155, Jul. 23, 1976, abandoned. This application May 1, 1978, Ser. No. 901,541

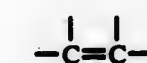
The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.³ C08L 75/06, 75/08

U.S. Cl. 525—440

33 Claims

1. Unsaturated addition-polymerizable urethane resins characterized by the presence of at least one ethylenically unsaturated group having the structure



said unsaturated urethane resins consisting essentially of the reaction product of

(i) at least one organic isocyanate compound having at least two isocyanate groups;

(ii) from about 30 to 100 mol percent of at least one polymeric polyol characterized by the presence of at least two hydroxyl groups;

(iii) from about 70 to zero mol percent of at least one monomeric polyol characterized by the presence of at least two hydroxyl groups; and

(iv) at least one unsaturated addition-polymerizable monomeric compound having a single isocyanate-reactive active hydrogen group; wherein

said isocyanate compound being present in an amount sufficient to provide an NCO:OH ratio of at least 2.5:1, with respect to such polymeric and monomeric polyol hydroxyl groups;

said mol percents being based on total mols of such polymeric and monomeric polyol hydroxyl groups;

the average hydroxyl functionality, with respect to such polymeric and monomeric polyols, is at least 2.1, and the amount of said unsaturated addition-polymerizable monomeric compound having a single isocyanate-reactive active hydrogen group is sufficient to provide at least one molar equivalent of active hydrogen group with respect to isocyanate reactivity.

4,246,380

POWDERY POLYURETHANE LACQUERS BASED ON POLYESTER RESINS AND BLOCKED ISOCYANATES

Rainer Gras, Herne; Felix Schmitt, Herten, and Elmar Wolf, Herne, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,561

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735497

Int. Cl.³ C08G 18/80, 18/42

U.S. Cl. 525—440

10 Claims

1. A powdery polyurethane lacquer which comprises: (A) a hydroxy-group containing polyester resin with an OH number of 40-240 and;

(B) an ε-caprolactam-blocked polyisocyanate which is a mixture of the triisocyanatoisocyanurate of 3-isocyanatomethyl-3,5,5-trimethyl-cyclohexylisocyanate with monomeric or oligomeric 3-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate; wherein said ε-caprolactam-blocked triisocyanatoisocyanurate has at least two blocked isocyanate groups, and wherein said ε-caprolactam-polyisocyanate is present in an amount sufficient to cause hardening of said mixture of (A) and (B), at temperatures higher than about 150° C.

4,246,381

POLYARYLATE BLENDS WITH COPOLYESTERS

Lloyd M. Robeson, Whitehouse Station, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,134

Int. Cl.³ C08L 67/02

U.S. Cl. 525—444

10 Claims

1. A thermoplastic molding composition comprising in admixture:

(a) from about 2 to about 85 weight percent of a polyarylate derived from a dihydric phenol and an aromatic dicarboxylic acid; and

(b) from about 15 to about 98 weight percent of a copolyester

ter derived from a cyclohexanedimethanol, an alkylene glycol and an aromatic dicarboxylic acid, said copolyester having an intrinsic viscosity of at least about 0.4 to about 2.0 dl/g.

4,246,382

SOLVENT RESISTENT ACRYLIC RESIN AND PROCESS FOR PRODUCING THE SAME

Makoto Honda, Tokyo; Kobe Ozawa, Fujisawa; Kazuhiro Hosoya, Tokyo, and Jiro Kurita, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 6, 1978, Ser. No. 957,887

Claims priority, application Japan, Nov. 11, 1977, 52-134728; Feb. 22, 1978, 53-19514; May 17, 1978, 53-58476; Jul. 6, 1978, 53-81438

Int. Cl.³ C08F 2/38, 20/14

U.S. Cl. 526—79

9 Claims

1. A process for producing an acrylic resin having an intrinsic viscosity of about 0.028 to about 0.117 l/g and a weight-average molecular weight to number-average molecular weight ratio, measured by gel permeation chromatography, of about 2.3 to about 6.0, which process comprises polymerizing at a temperature range of from 40° C. to 170° C., using a polymerization initiator:

- A. about 50 to 100 wt. % of methyl methacrylate, and
- B. 0 to about 50 wt. % of at least one monomer selected from the group consisting of acrylic ester monomer and methacrylic ester monomer, said acrylic ester monomer comprising the reaction product of an alkyl alcohol having 1 to 8 carbon atoms and acrylic acid and said methacrylic ester comprising the reaction product of an alkyl alcohol having 2 to 12 carbon atoms and methacrylic acid; and adding, after initiation of polymerization, about 0.01 to about 5 wt. %, based on the weight of monomer, of a chain transfer agent comprising at least one compound selected from the group consisting of alkylmercaptans containing 4 to 18 carbon atoms; esters of thioglycolic acid and an alkyl alcohol having 1 to 12 carbon atoms; said chain transfer agent being added at a stage where the degree of conversion to the polymer is about 10 to about 60%.

4,246,383

PROCESS FOR POLYMERIZING OLEFINS IN THE PRESENCE OF A CATALYST PREPARED FROM AN ORGANOMAGNESIUM COMPONENT WHICH DOES NOT REDUCE TiCl₄

Donald E. Gessell, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 25, 1979, Ser. No. 51,589

Int. Cl.³ C08F 4/50, 4/54

U.S. Cl. 526—92

10 Claims

1. A process for the polymerization of an α-olefin or mixtures thereof under conditions characteristic of Ziegler polymerization wherein the polymerization is conducted in the presence of

- (A) a supported catalyst which is the solid, hydrocarbon insoluble reaction product formed by reacting in an inert diluent (1) the reaction product of

- (a) a magnesium component or mixture of such components represented by the formula $MgR_2 \cdot xMeR' \cdot x$ wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, each R' is independently a hydrocarbyl or a hydrocarbyloxy group having from 1 to about 20 carbon atoms, Me is aluminum, zinc or boron, x has a value of from zero to about 10, and x' has a value equal to the valence of Me; with

- (b) a sufficient amount of at least one of water, carbon dioxide or an organic, oxygen-containing compound, free of halogen and nitrogen atoms, so as to react with the hydrocarbyl groups present in component (1-a)

to produce a product which will not substantially reduce $TiCl_4$ at a temperature of about 25° C.; with

- (2) a halide-containing transition metal compound or mixture of such compounds represented by the formula TmY_nX_{2-n} wherein Tm is a metal selected from groups IV-B, V-B and VI-B of the Periodic Table of Elements, Y is oxygen or OR', each X is a halogen, each R' is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, z has a value equal to the valence of said transition metal, n has a value of from zero to 6 with the value of z-n being from at least 1 up to a value equal to the valence of the transition metal; said halide-containing transition metal compound being present in a quantity so as to convert substantially all of the substituent groups attached to a magnesium atom in component (1) to a halide group.

- (B) an activating agent for said supported catalyst which activating agent is represented by the formulas AlR^3_3 , mX_m , MgR^3_2 , MgR^3X , ZnR^3X or ZnR^3_2 wherein each R^3 is a hydrocarbyl group having from 1 to about 20 carbon atoms, X is a halogen, or a hydrocarbyloxy group having from 1 to about 20 carbon atoms, m has a value from zero to 2; said activating agent being present in a quantity sufficient to provide an Al, Mg and/or Zn:Tm atomic ratio of from about 1:1 to about 5000:1.

4,246,384

MAGNESIUM REDUCING AGENT FOR PRODUCING TITANIUM TRIHALIDE CATALYST COMPONENT

Charles M. Selman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 686,608, May 14, 1976,

abandoned. This application Nov. 8, 1978, Ser. No. 958,870

Int. Cl.³ C08F 4/02, 10/00

U.S. Cl. 526—142

13 Claims

1. A process comprising contacting magnesium metal, a primary alkyl halide or alkyl dihalide, said halide or dihalide being selected from chloride and bromide, said alkyl radical containing from 1 to 12 carbon atoms in the case of the halide and 2 to 12 in the case of the dihalide, and titanium tetrachloride essentially simultaneously and subjecting same to intensive milling by means of ball milling, rod milling, pebble milling, or vibratory ball milling in the absence of any extraneous diluent; thereafter activating the thus produced titanium catalyst component by contacting same with an activator comprising a trialkylaluminum compound, a dialkylaluminum chloride, and a polar organic adjuvant which is an electron donor, said adjuvant further being characterized as a 1 to 4 carbon atom alkyl ester of a substituted or unsubstituted benzoic acid, a mole ratio of said aluminum compound to said adjuvant being within the range 1:1 to 350:1; an atom ratio of aluminum to titanium being within the range of 40:1 to 150:1, said magnesium metal and organic halide being introduced in a ratio within the range of 0.75:1 to 1:1 gram atoms of Mg:moles of organic halide, and wherein an atom ratio of the titanium to magnesium used is within the range of 0.75:1 to 1.25:1.

4,246,385

PROCESS FOR REDUCING CONTENT OF UNREACTED VINYL HALIDE IN VINYL HALIDE POLYMERS

Lester Weintraub, Livingston, N.J., assignor to The Pantasote Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 534,420, Dec. 19, 1974,

abandoned. This application Dec. 10, 1975, Ser. No. 639,369

Int. Cl.³ C08F 6/24, 2/20, 14/06

U.S. Cl. 526—207

21 Claims

1. In the suspension, solution or bulk polymerization of a monomer system selected from the group consisting of a vinyl halide and a mixture of a vinyl halide and up to 100%, by weight of the vinyl halide, of at least one copolymerizable monomer under elevated pressure in a pressure reactor vessel to form a slurry of a polymer thereof in solid form, the im-

provement which comprises effecting the polymerization in the presence of an alkane in an amount at least sufficient to reduce the content of unreacted vinyl halide in said polymer, reducing the pressure in said reactor vessel to atmospheric pressure at the termination of the polymerization, and thereafter stripping unreacted vinyl halide from said polymer by heating the slurry of polymer obtained from the polymerization to a temperature of at least about 160° F. and at a pressure of about 50 mm Hg to about 200 mm Hg.

4,246,386

ION EXCHANGE RESINS

Thomas J. Howell, Langhorne, Pa.; William G. Paterson, and Ian Pattison, both of Tyne and Wear, England, assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 797,716, May 17, 1977,

abandoned. This application May 8, 1978, Ser. No. 904,178

Int. Cl.³ C08F 2/38

U.S. Cl. 526—207

10 Claims

1. In the process of preparing hard, crosslinked, discrete copolymer beads by the free-radical polymerization in an aqueous dispersion of a monomer mixture comprised of a major proportion of (a) monovinyl monomer, and a minor proportion of (b) crosslinking monomer having at least two active vinyl groups, the improvement which comprises conducting the polymerization reaction with a modifier in admixture with the monomer mixture in a concentration of from about 0.01 to about 10 millimoles per mole of monomers, in the monomer mixture (a) and (b), said modifier being an organic compound containing acetylenic unsaturation, said compound being capable of moderating rate of polymerization.

6. In the process of preparing hard, cross-linked, discrete copolymer beads by the free-radical polymerization in an aqueous dispersion of a monomer mixture comprised of a major proportion of (a) monovinyl monomer and a minor proportion of (b) crosslinking monomer having at least two active vinyl groups, the improvement which comprises conducting the polymerization reaction with a modifier in admixture with the monomer mixture in a concentration of about 0.01 to about 10 millimole per mole of monomers in the monomer mixture (a) and (b), said modifier being an organic compound containing allylic unsaturation and being selected from the group consisting of terpinolene and the dimer of methylcyclopentadiene, said compound being capable of moderating rate of polymerization.

4,246,387

EMULSION POLYMERIZATION WITH SULFONATED ALKOXYLATED ALKYL ARYL MALEATES

Julius H. Deutsch, Chicago, Ill., assignor to Stepan Chemical Company, Northfield, Ill.

Continuation-in-part of Ser. No. 831,176, Sep. 7, 1977,

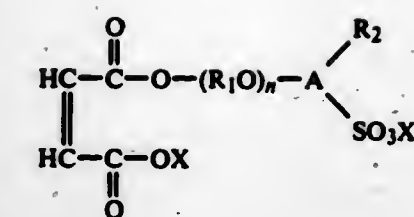
abandoned. This application Nov. 13, 1978, Ser. No. 959,418

Int. Cl.³ C08F 2/26, 20/18, 27/00

U.S. Cl. 526—209

7 Claims

1. In an improved emulsion polymerization process employing a liquid two-phase system wherein water comprises the continuous phase, and a liquid, free radical generating, ethylenically unsaturated monomer composition comprising the dispersed phase at the initiation of polymerization, and wherein said water phase has dissolved therein a quantity of an emulsifier which is at least sufficient to make said dispersed phase stable, and in the form of small particle sizes, and wherein at least a sufficient quantity of a polymerization initiator is present to initiate and cause polymerization of said monomer composition at the particular process temperature employed, the improvement which comprises maintaining in said liquid two phase system from about 0.1 to 10 weight percent, based on total monomer material content, of at least one reactive surfactant of the formula:



wherein

R_1 is selected from the group consisting of ethylene, propylene, and mixtures thereof,
 R_2 is an alkyl group of from 6 through 8 carbon atoms each,
 A is selected from the group consisting of phenylene and naphthylene,
 X is selected from the group consisting of hydrogen, alkali metals, ammonium, lower monoalkyl amines, monoalkanol amines, lower dialkanol amines, lower trialkanol amines, heterocyclic amines, phosphates, and mixtures thereof, and
 n is a positive number of from about 2 through 50, inclusive.

4,246,388

INITIATION OF ANIONIC POLYMERIZATION OF VINYL MONOMERS BY REDUCED GRAPHITE

Manuel M. Balzer, and Thomas E. Rogers, both of Santa Monica, Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 23, 1979, Ser. No. 97,071

Int. Cl.³ C08F 4/00

U.S. Cl. 526—217

6 Claims

1. A process for anionically polymerizing vinyl monomers comprising contacting a vinyl monomer with an electrolytically reduced graphite having formed therein a π -Graphite R_4N^+ intercalation compound wherein Graphite- π is graphite anion radical and each R is alkyl to form vinyl polymer.

4,246,389

CONTACT LENS COMPOSITION HAVING INCREASED OXYGEN PERMEABILITY

Albert R. LeBoeuf, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jun. 25, 1979, Ser. No. 51,935

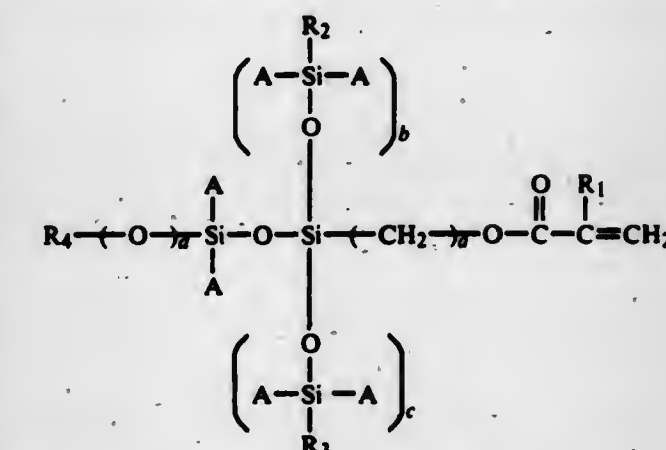
Int. Cl.³ C08F 230/08; G03B 21/46

U.S. Cl. 526—279

8 Claims

1. A contact lens material capable of being shaped and hydrated to a soft contact lens having a water content of 35 to 50 wt. % which consists essentially of the polymerization product of

- (a) 20 to 45 wt. % HEMA,
- (b) 35 to 50 wt. % VP, and
- (c) 25 to 45 wt. % of a compound having the formula



wherein R_1 is selected from the class of hydrogen or methyl groups, "a" is an integer from one to five, "b" is an integer from zero to seven, "c" is an integer from zero to two, "d" is an integer from zero to one, A is selected

from the class of methyl or phenyl groups, R₂ is selected from the class of methyl or phenyl groups, R₃ and R₄ represent either no group (cyclic ring from "c" to "d") or methyl or phenyl groups.

4,246,390

MOLDING POWDER OF ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE AND PROCESS FOR ITS PREPARATION

Alton L. Seaver, Loomister, Mass., assignor to American Hoechst Corporation, Somerville, N.J.

Continuation of Ser. No. 973,412, Dec. 26, 1978, abandoned.

This application Apr. 21, 1980, Ser. No. 142,543

Int. Cl.³ C08F 6/00, 110/02

U.S. Cl. 526—352

15 Claims

1. A process of heat treating a powder of ultra-high molecular weight polyethylene having a molecular weight of above about 1×10^6 as determined from its intrinsic viscosity in decalin solution at 135° C. by the formula, $MW = 5.37 \times 10^4$ (intrinsic viscosity)^{1.49} and a substantial amount of fine structures comprising nodules of less than about 1 micron size, crevices and fibrous structures as viewed under scanning electron microscope at $\times 5000$ magnification, said heat treating being conducted at a temperature in the range from about the crystalline melting point of said polyethylene but at least about 140° C. to about 275° C. for an effective period of time to produce a polyethylene powder which is substantially free of fine structures and which has a substantially smooth surface appearance when observed by SEM at $\times 5000$.

12. A molding powder of ultra-high molecular weight polyethylene having a molecular weight of above about 1×10^6 , a crystalline melting point of about 140° C., and a substantially smooth surface appearance free of fine structures comprising nodules of less than about 1 micron size, crevices and fibrous structures as viewed under scanning electron microscope at $\times 5000$ magnification.

4,246,391

PROCEDURE FOR PRODUCTION OF LOWER VISCOSITY RADIATION-CURABLE ACRYLATED URETHANES

Stuart L. Watson, Jr., South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 26, 1979, Ser. No. 52,192

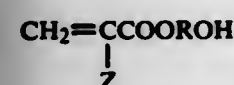
Int. Cl.³ C08G 18/34

U.S. Cl. 528—49

8 Claims

1. A process for the production of low viscosity acrylated urethanes comprising of steps of:

(a) initially reacting a hydroxyalkyl acrylate of the formula



wherein Z is hydrogen or methyl and R is divalent alkylene having from 2 to 6 carbon atoms with a polyisocyanate from the group consisting of toluene diisocyanate, 1,1-bis(4-isocyanatocyclohexyl) methane and isophorone diisocyanate, to produce a prepolymer having free isocyanate groups,

(b) subsequently reacting the prepolymer reaction product of step (a) with a polyol having an average molecular weight of from 60 to 6000 and from 2 to 6 hydroxyl groups, and

(c) recovering the acrylated urethane reaction product mixture produced.

4,246,392

METHOD FOR THE PREPARATION OF POLYURETHANE ELASTOMERS BASED ON POLYETHYLENEGLYCOL-BIS(4-AMINO BENZOATES)

Wataro Kotke, Shizuoka; Masami Takayama, Shimizu; Hideaki Ohashi, Fujieda, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1978, Ser. No. 950,385

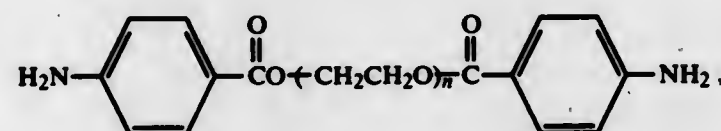
Claims priority, application Japan, Dec. 9, 1977, 52/147876

Int. Cl.³ C08G 18/32, 18/10; C07C 101/62

U.S. Cl. 528—64

4 Claims

1. A method for the preparation of a polyurethane elastomer which comprises admixing a polyethylene glycol-bis(4-aminobenzoate) represented by the general formula



wherein n is 2, 3 or 4, with a polyisocyanate and a polyol or with a prepolymer having isocyanate groups at the chain ends.

4,246,393

PROCESS FOR THE PREPARATION OF POLY(THIO)HYDANTOINS

Wilfried Zecher, Leverkusen; Jürgen Lewalter, Odenthal; Rudolf Merten, and Willi Dünwald, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 8, 1978, Ser. No. 958,941

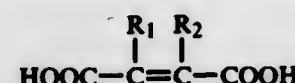
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758569

Int. Cl.³ C08G 73/06; C07D 233/78; C09D 3/49; C09J 3/16

U.S. Cl. 528—75

6 Claims

1. A process for the preparation of a poly(thio)hydantoin, which comprises reacting an organic isocyanate or isothiocyanate having two or more isocyanate or isothiocyanate moieties with an unsaturated dicarboxylic acid of the formula:



at a temperature of from -20° C. to +500° C., wherein R₁ and R₂ are hydrogen, halogen, substituted or unsubstituted aliphatic, aliphatic-aromatic, aromatic or heterocyclic.

4,246,394

PROCESS OF HARDENING EPOXY COATING COMPOSITION WITH DICYANDIAMIDE/IMIDAZOLINE DERIVATIVE

Felix Schilde, Wulfen, and Johann Obendorf, Dorsten, both of Fed. Rep. of Germany, assignors to Veba-Chemie Aktiengesellschaft, Herne, Fed. Rep. of Germany

Continuation of Ser. No. 723,843, Sep. 16, 1976, abandoned. This application May 3, 1978, Ser. No. 902,466

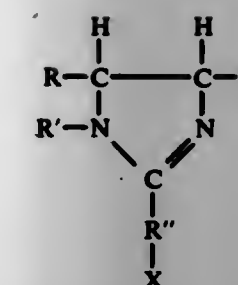
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1975, 2542105

Int. Cl.³ C08G 59/56

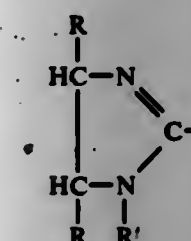
U.S. Cl. 528—117

9 Claims

1. In a process for producing a coating of a powder lacquer composition wherein a powder lacquer composition is applied to a substrate, the powder lacquer composition comprising a finely particulate mixture of a 1,2-epoxide compound, which epoxide compound contains at least one 1,2-epoxide group in the molecule and has a lower melting point greater than 40° C., and dicyandiamide the improvement which comprises including in the composition at least one imidazoline derivative of the general structure



wherein R is hydrogen, an alkyl or aryl, R' is a cycloalkyl, heterocyclo alkyl or R, R'' is an alkyl or aryl substituted or unsubstituted alkylene or arylene, X is hydrogen or a radical having the following structure



the dicyandiamide being present in excess relative to said imidazoline.

4,246,395

6T/6I TERPOLYAMIDE

George A. Mortimer, Lake Charles, La., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 25, 1979, Ser. No. 60,311

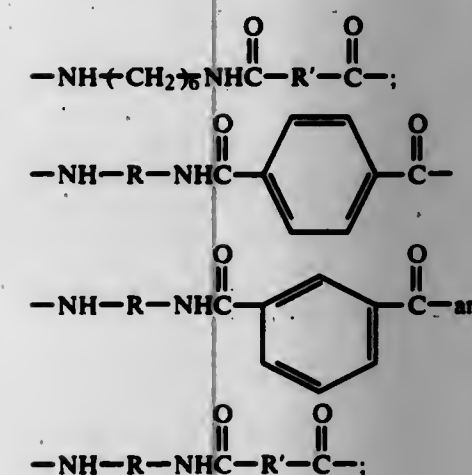
Int. Cl.³ C08G 69/26

U.S. Cl. 528—208

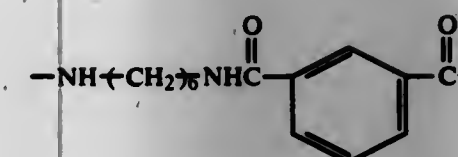
11 Claims

1. A fiber-forming polyamide consisting essentially of recurring units of which:

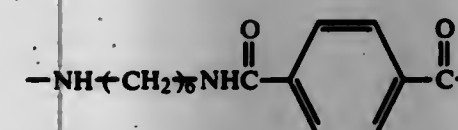
(i) 5 to 20% are selected from the group consisting of:



(ii) 20 to 40% are



and
(iii) the remainder thereof are



wherein R is a divalent cycloaliphatic radical or a C₁₂ to

C₂₀ divalent alkenyl radical and R' is an R radical or a divalent aromatic radical other than a phenyl radical, said polyamide being characterized in having a melting point below 320° C., a glass transition temperature above 115° C. and a thermal stability corresponding to an f(b) value less than 1.40, wherein f(b) is measured using a capillary rheometer and is defined by the equation

$$f(b) = 100 \left(\frac{1}{\eta_{0T}} - \frac{1}{\eta_{0\infty}} \right)$$

where η_{0T} is the Newtonian limiting, zero shear melt viscosity value of a sample of the polyamide after it has been loaded and held in the rheometer for 6 minutes at a temperature of 325° C. and $\eta_{0\infty}$ is the Newtonian limiting, zero shear melt viscosity value of the same polyamide sample after it has been held in the rheometer for an additional 30 minutes.

4,246,396

PROCESS FOR PRODUCING POLYOXYMETHYLENE

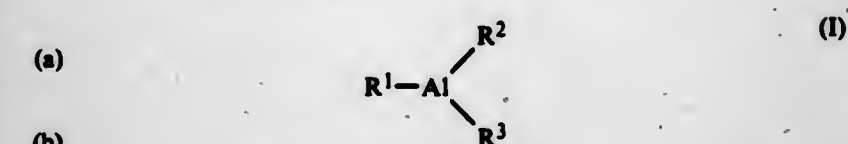
Ikuo Sukegawa, Yokohama; Seichi Nozawa, Yamato; Seichi Mukai, and Masaharu Shikama, both of Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Nov. 1, 1979, Ser. No. 90,472

Claims priority, application Japan, Nov. 13, 1978, 53-139636

Int. Cl.³ C08G 2/08

1. A process for producing polyoxymethylene which comprises (1) polymerizing formaldehyde in the presence of a catalyst produced by contacting a phosphorus containing compound or an amine (c) with a reaction product obtained by reacting salicylic acid component (b) with an organoaluminum compound (a) having the formula



wherein R¹ represents an alkyl or alkoxy group and R² and R³ respectively represent alkyl or alkoxy group or a halogen atom and then (2) heating the resulting polyoxymethylene.

4,246,397

POLYMERS COMPRISING HETEROCYCLIC SYSTEM

Nam S. Choi, Seoul, D.P.R. of Korea, assignor to Alza Corporation, Palo Alto, Calif.

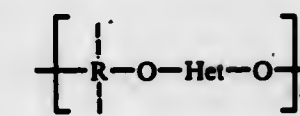
Filed Feb. 2, 1979, Ser. No. 8,479

Int. Cl.³ C08G 75/12, 75/28

U.S. Cl. 528—380

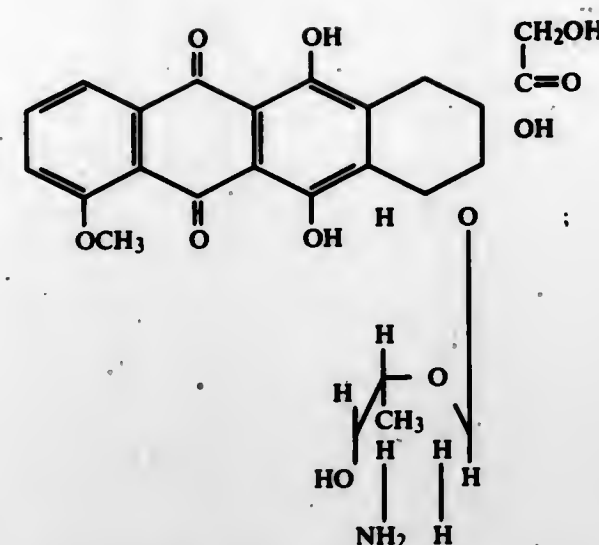
8 Claims

1. A polymer of the general formula:



wherein R is a member selected from the group of divalent, trivalent and tetravalent radicals consisting of alkylene of 1 to 10 carbons; alkenylene of 2 to 10 carbons; cycloalkylene of 3 to 7 carbons; cycloalkylene of 3 to 7 carbons substituted with an alkyl of 1 to 7 carbons, alkenyl of 2 to 7 carbons, alkoxy of 1 to 7 carbons, alkylene of 1 to 10 carbons and alkenylene of 2 to 10 carbons; cycloalkenylene of 4 to 7 carbons, cycloalkenylene of 4 to 7 carbons substituted with an alkyl of 1 to 7 carbons, alkenylene of 1 to 10 carbons and alkenylene of 2 to 10 carbons; arylene of 6 to 16 carbons; arylene of 6 to 16 carbons substituted

tuted with an alkyl of 1 to 7 carbons, alkenyl of 2 to 7 carbons, alkoxy of 1 to 7 carbons, alkylene of 1 to 10 carbons and alkylene of 2 to 10 carbons; and Het is a heterocyclic five to eight membered ring, said ring comprising: (1) a carbon atom bivalently bonded to the oxygen atoms of the polymer chain; (2) a hetero ring atom adjacent to the carbon atom in the polymer chain, said hetero atom selected from the group consisting of nitrogen, oxygen and sulfur; and (3) with the remainder of the ring independently selected from (a) and (b); wherein (a) is an alkylene bridge of 2 to 5 carbons substituted with a hetero ring atom selected from the group consisting of nitrogen and sulfur; and (b) is an alkylene bridge of 3 to 6 carbons when said hetero atom adjacent to the carbon atom in the polymer chain is a hetero ring atom selected from the group consisting of nitrogen and sulfur; and n is greater than 10.



wherein X represents Ca^{++} , Mg^{++} , Zn^{++} or Ni^{++} ; and wherein n represents one or two.

4,246,400

TALLYSOMYCIN COMPOUNDS

Takeo Miyaki, Osamu Tenmyo, Masataka Konishi, all of Yokohama, and Hiroshi Kawaguchi, Tokyo, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

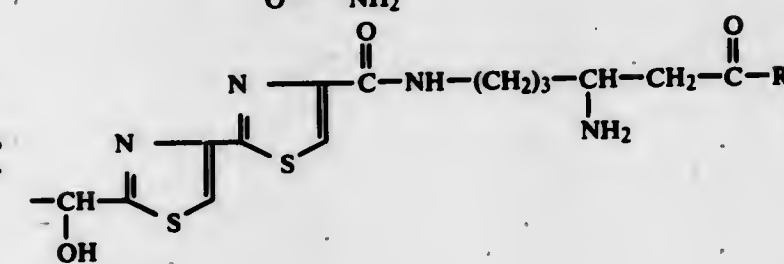
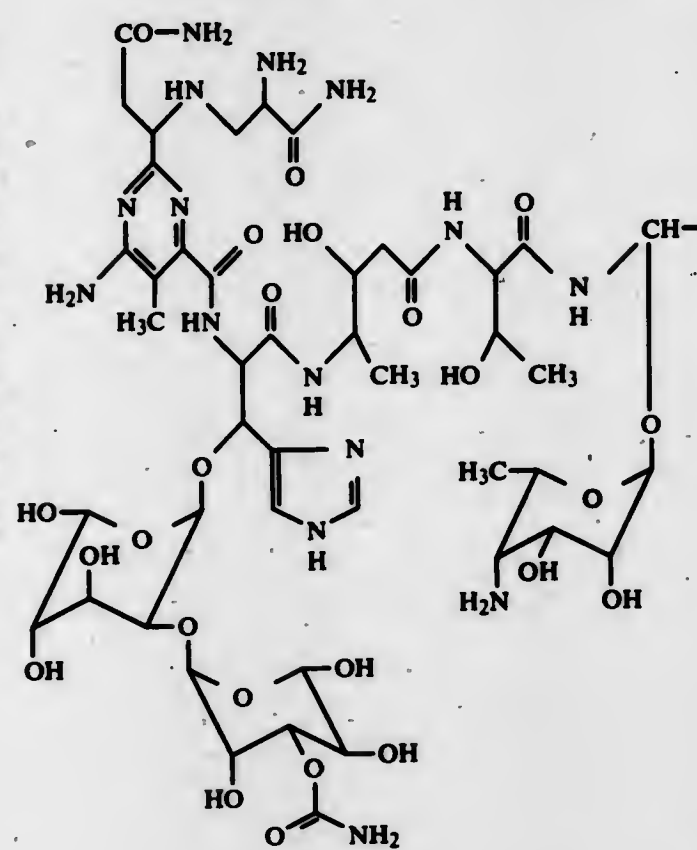
Filed Jul. 13, 1979, Ser. No. 57,528

Int. Cl.³ A61K 31/71; C07H 15/22

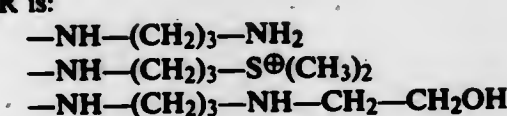
U.S. Cl. 536—17 R

23 Claims

1. A tallsomycin A derivatives having the formula



wherein R is:



4,246,398 METHOD FOR RECOVERING POLYPHENYLENE OXIDES

Akitoichi Sugio, Ohmiya; Atsuo Kuramoto, Kanamachi; Takao Kawaki; Hiroyuki Urabe, both of Tokyo; Tatsuhiko Kurihara, Matsudo; Isamu Masamoto, Yokkaichi, and Akio Hasebe, Kanamachi, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 2, 1979, Ser. No. 35,503

Claims priority, application Japan, May 10, 1978, 53-55324
Int. Cl.³ C06G 65/44, 65/46

U.S. Cl. 528—496

9 Claims

1. A method for recovering polyphenylene oxide having a high bulk density and a reduced content of fine particles from a solution of a polyphenylene oxide, which comprises adding a non-solvent composed of a lower alkyl alcohol and water to an aromatic solvent solution of a polyphenylene oxide substantially free from impurities to precipitate the polyphenylene oxide, the weight ratio of the aromatic solvent to the lower alkyl alcohol being from 1:1 to 1:2 and the weight ratio of the lower alkyl alcohol to water being from 1:0.005 to 1:0.1 in the precipitation system, and the addition of the non-solvent being controlled such that a liquid composition of the aromatic solvent, the lower alkyl alcohol and water forms a single phase; and recovering the precipitated polyphenylene oxide.

4,246,399

COMPLEXES OF DOXORUBICIN EXHIBITING ENHANCED STABILITY

Takera Higuchi, and Pramod M. Kotwal, both of Lawrence, Kans., assignors to INTERX Research Corporation, Lawrence, Kans.

Filed Mar. 21, 1977, Ser. No. 779,847

Int. Cl.³ C07H 15/24; A61K 31/71

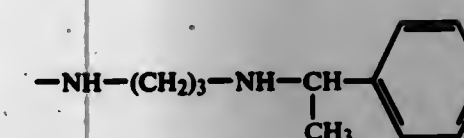
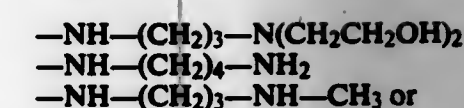
U.S. Cl. 536—17 A

5 Claims

1. A complex of doxorubicin having the formula:

A.X_n

wherein A represents doxorubicin having the structural formula:



or a pharmaceutically acceptable acid addition salt thereof.

4,246,401

AXOMETHINE PIGMENTS

Rutger Neeff, Meinhard Rolf, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 19, 1979, Ser. No. 21,676

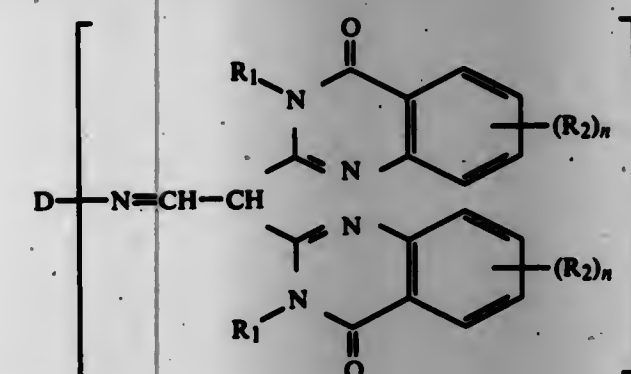
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812255

Int. Cl.³ C07D 403/02

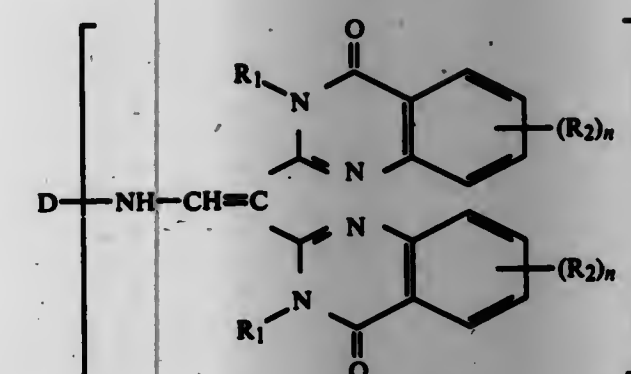
U.S. Cl. 542—415

7 Claims

1. Azomethine pigments of the formula

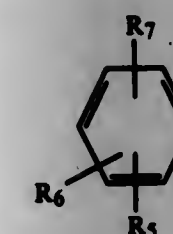


or of the tautomeric formula



in which

D denotes a substituent of the formula



R₁ denotes hydrogen or C₁-C₄ alkyl, or both R₁, at the same time, denote CO,

R₂ denotes hydrogen, halogen, C₁-C₄ alkyl, C₁-C₄ alkoxy, nitro, trifluoromethyl, cyano, optionally substituted carboxamide, optionally substituted sulphonamide, acylamino or arylamino,

R₃ denotes hydrogen, halogen, C₁-C₄ alkyl, C₁-C₄ alkoxy, nitro, cyano, C₁-C₄ alkylsulphonyl, trifluoromethyl, C₁-C₄ alkylcarbonylamino, benzoylamino which is op-

tionally substituted by C₁-C₄ alkyl, C₁-C₄ alkoxy, fluorine, chlorine, bromine or nitro, C₁-C₄ alkoxy carbonyl or carboxamide or sulphonamide which is optionally monosubstituted or disubstituted by C₁-C₄ alkyl, phenyl or benzyl, it being possible for phenyl and benzyl to be further substituted by C₁-C₄ alkyl, C₁-C₄ alkoxy, fluorine, chlorine, bromine and nitro,

R₆ denotes hydrogen, halogen, C₁-C₄ alkyl, cyano, C₁-C₄ alkoxy, nitro or trifluoromethyl,

R₇ denotes hydrogen, chlorine, C₁-C₄ alkyl or C₁-C₄ alkoxy and

m denotes an integer and

n denotes 0, 1, 2, 3 or 4.

4,246,402

11-SUBSTITUTED PROSTAGLANDINS

George W. Holland, Cedar Grove; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

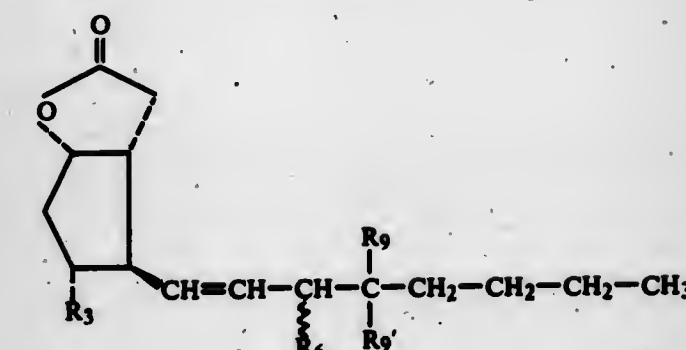
Division of Ser. No. 780,878, Mar. 24, 1977, abandoned, which is a division of Ser. No. 614,044, Sep. 17, 1975, Pat. No. 4,036,871, which is a division of Ser. No. 480,458, Jul. 18, 1974, Pat. No. 4,052,446, Continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Apr. 2, 1979, Ser. No. 26,124

Int. Cl.³ C07D 307/935, 309/12

U.S. Cl. 542—426

5 Claims

1. A compound of the formula:



wherein R₃ is —CH₂R₄, lower alkyl, or hydrogen; R₄ is hydroxy, or hydroxy protected with a hydrolyzable ether or ester group or OR₅; R₅ is hydroxy or hydroxy protected with a hydrolyzable ether or ester group; R₆ is lower alkyl; R₇ is lower alkyl or fluoro; and R₉ is hydrogen or lower alkyl; with the proviso that when R₉ is lower alkyl, R₉ is lower alkyl; or enantiomers or racemates thereof.

4,246,403

1,3,4-OXADIAZOLONE(2) COMPOUNDS AND PROCESS FOR THEIR MANUFACTURE

Günter Prosser, Burgkirchen; Erich Schinzel, Hofheim am Taunus; Norbert Schönerberger, Kelkheim; Thomas Martini, and Günter Rüsch, both of Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,823

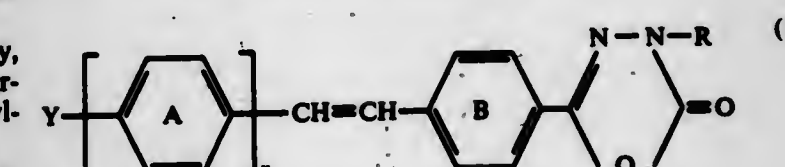
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833470

Int. Cl.³ C07D 271/10, 413/10, 413/14

U.S. Cl. 542—432

2 Claims

1. 1,3,4-Oxadiazolone(2) compounds of the formula (I)



wherein

Y is phenyl, p-cyanophenyl, p-carbalkoxyphenyl, p-carboxyphenyl, cyano, carboalkoxy, carbonamide, 5-aryl-1,3,4-oxadiazolyl-(2), 3-aryl-1,3,4-oxadiazol-2-on-yl-(5), 1,2,4-triazolyl-(1), 1,2,3-triazolyl-(2), benzofuranyl-(2), benzoxazolyl-(2), benzimidazolyl-(2), 1,2,4-triazolium, benzimidazolium, N-methyl-benzimidazolium or N-methyl-benzimidazolyl.

R is hydrogen or alkyl which may be substituted by hydroxy, cyano, carboalkoxy, alkoxy, halogen, dialkylamino, trialkylammonium or R is phenyl which may be substituted by 1 to 3 alkyl, alkoxy, halogen or carboalkoxy.

4,246,404

BASIC INDOLINE DYESTUFFS

Berthold Gertner, Münchenstein, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

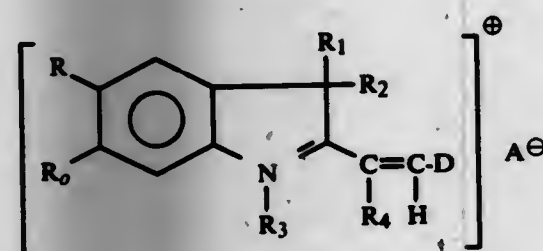
Filed May 11, 1979, Ser. No. 38,353

Claims priority, application Switzerland, May 12, 1978, 5206/78

Int. Cl.³ C09B 19/00, 23/10

U.S. Cl. 542—466

1. A compound of formula I,



in which

R is —hydrogen; halogen; cyano; nitro; C₁₋₄alkyl which is unsubstituted or mono-substituted by phenyl, mono-chlorophenyl or mono (C₁₋₄alkyl) phenyl; C₁₋₄alkoxy which is unsubstituted or mono-substituted by phenyl; phenoxy; acetyl or di-(C₁₋₄alkyl) sulphonylamino,

R₁ is hydrogen, C₁₋₄alkyl or C₁₋₄ alkoxy, or,

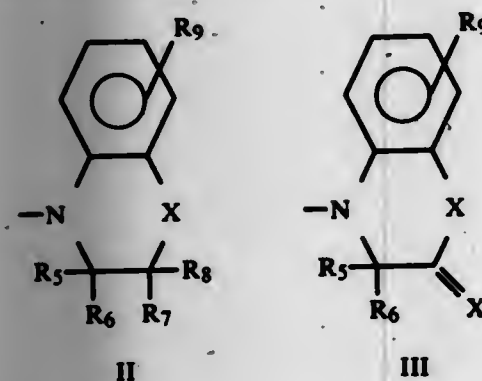
R₂ and R₃ together form a group of formula —O—CH₂—O—, —O—CH₂—CH₂—O—, —O—CH₂—CH₂—CH₂—O—, —CH₂—CH₂—CH₂—, in which the asymmetric —O—CH₂—O—CH₂— group may be connected in either of both possible ways,

R₁ and R₂ are independently linear C₁₋₄alkyl,

R₃ is allyl, unsubstituted C₁₋₄alkyl or C₁₋₄alkyl monosubstituted by hydroxy, phenyl, carbonamido, cyano or C₁₋₄alkoxy,

R₄ is hydrogen, cyano, carboxyl, C₁₋₄alkyl, carbonamido or —COO—(C₁₋₄alkyl),

D is a group of formula II or III



in which

R₅ is hydrogen, C₁₋₄alkyl, phenyl unsubstituted or substituted by one or two groups selected from methoxy, chloro, methyl or dimethylamino, or —COO—(C₁₋₄alkyl),

R₆ and R₈ are independently hydrogen or C₁₋₄alkyl,

R₇ is hydrogen, C₁₋₄alkyl, phenyl or —COO—(C₁₋₄alkyl), or,

R₇ and R₈ together with the carbon atoms to which they are attached form an unsubstituted cyclopentyl or cyclohexyl ring,

R₉ is hydrogen, halogen, C₁₋₄alkyl, C₁₋₄alkoxy, amino, di(C₁₋₄alkyl) amino, C₂₋₆acylamino, —NH—SO₂—(C₁₋₄alkyl), —NH—SO₂—phenyl or a benzoylamino group unsubstituted or substituted by one or two chlorine atoms or one or two C₁₋₄alkyl groups,

X is oxygen or sulphur, and,

A is an anion.

4,246,405

METHOD FOR PREPARATION OF β-LACTAM COMPOUND

Takao Takaya, Kawanishi; Hiromu Kōchi, Sakai, and Takashi Masugi, Kitamachi, all of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

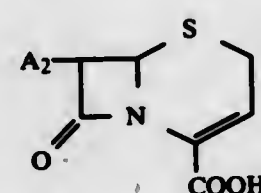
Filed Jun. 1, 1978, Ser. No. 911,540

Claims priority, application Japan, Jun. 3, 1977, 52-65990

Int. Cl.³ C07D 501/02

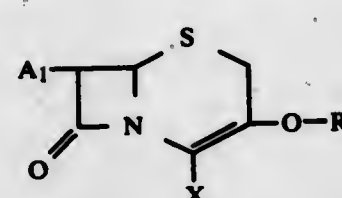
U.S. Cl. 544—16

1. A process for preparing a 7-substituted-3-cephem-4-carboxylic acid of the formula:



(II)

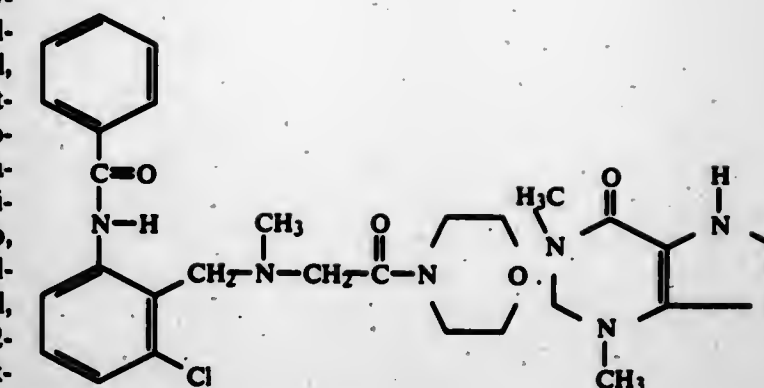
or pharmaceutically acceptable salt thereof, which comprises: subjecting a solution of a corresponding 7-substituted-3-organic sulfonyloxy-3-cephem-4-carboxylic acid ester of the formula:



(I)

wherein R is an organic sulfonyl moiety which is a residue of an organic sulfonic acid which is unsubstituted or halo or nitro substituted alkanesulfonyl or arenesulfonyl, X is an esterified carboxy which is convertible to carboxy by hydrogenolysis and is alkoxycarbonyl, haloalkoxycarbonyl, aralkoxycarbonyl, benzhydryloxycarbonyl, trityloxycarbonyl, 4-nitrobenzyloxycarbonyl, 4-methoxybenzyloxycarbonyl, 3,4-dimethoxybenzyloxycarbonyl, 4-hydroxy-3,5-di(tert)butylbenzyloxycarbonyl, or a pharmaceutically acceptable salt of compound I, to hydrogenolysis of the —OR moiety and of the esterified carboxy X by means of a reducing reagent which is iron, zinc or tin in admixture with formic acid, wherein each of A₁ and A₂ is a substituent in the 7-cephem position selected from the group consisting of amine, an acylamino, or a protected amino in which the protecting group is an easily removable protecting group other than an acyl group, and wherein the acyl moiety of said acylamino is selected from alkanoyl, cycloalkanecarbonyl, alkenoyl, aroyl, alkoxy-carbonyl, adamaotyloxycarbonyl, aryloxycarbonyl, alkanesulfonyl, arenesulfonyl, 8-quinolyloxycarbonyl, pyridyloxycarbonyl, thenoyl, furoyl, nicotinoyl, isonicotinoyl, arylcarbamoyl, alkylcarbamoyl, alkylthiocarbamoyl, phenylthiocarbamoyl, tritylthiocarbamoyl, succinyl, fumaroyl, phthaloyl, aroylalkanoyl, haloalkanoyl, cyanoalkanoyl, cycloalkylalkanoyl, alkoxyalkanoyl, alkylthioalkanoyl, alkoxycarbonylalkanoyl, aralkanoyl, ar-

(amino)alkanoyl, ar(hydroxy)alkanoyl, aryl(alkanoyloxy)alkanoyl, aryloxyalkanoyl, ((alkoxy, nitro, or halo)aryloxy)alkanoyl, 2-nitro-4-chlorophenoxyacetyl, arylthioalkanoyl, nitroarylthioalkanoyl, chloroarylthioalkanoyl, thienylacetyl, thiadiazolylacetyl, thiazolylacetyl, tetrazolylacetyl, pyridylacetyl, thienylpropionyl, benzothiazol-3-ylacetyl, oxadiazolylacetyl, methylthiazolylacetyl, aminothiazolylacetyl, pyridylacetyl, pyridylthioacetyl, thiadiazolylthioacetyl, aralkenoyl, (nitro, halo, alkanesulfonyl, hydroxy, alkanesulfonamido, alkanoylamino, alkoxy, alkoxycarbonyl or cyano) aroyl, 2-hydroxy-5-chlorobenzoyl, haloalkoxycarbonyl, 2-pyridylmethoxycarbonyl, cycloalkyloxycarbonyl, aralkoxycarbonyl, (halo, nitro, alkoxy or phenylazo) aralkoxycarbonyl, haloaryloxyacetyl, or haloalkylcarbamoyl.



comprising the steps of reflux-heating a solution of Fominoben hydrochloride and theophylline sodium salt in equimolar proportion in a liquid alcoholic solvent, at the same time dehydrating the reflux stream on its return path to the reaction mass, and recovering the said complex.

4,246,408

IMIDAZO[1,2-a]-S-TRIAZINE

Roland K. Robins, and Ganapathi R. Revankar, both of Provo, Utah, assignors to ICN Pharmaceuticals, Covina, Calif.

Filed Mar. 8, 1979, Ser. No. 18,797

Int. Cl.³ C07D 403/00, 251/18

U.S. Cl. 544—209

1. 2-aminoimidazo[1,2-a]-s-triazin-4-one.

1 Claim

4,246,409

TRIAZINONES

George H. Douglas, Malvern; William L. Studd, Harleysville; Chong M. Won, Warrington; Stuart A. Dodson, Lansdale, and Jerome J. Zalipsky, Melrose Park, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

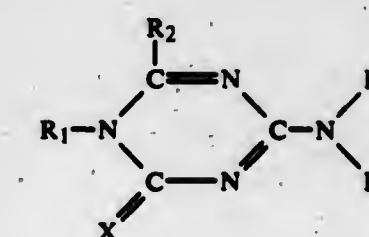
Filed Nov. 13, 1978, Ser. No. 959,611

Int. Cl.³ C07D 251/42, 417/04, 413/04, 413/14

U.S. Cl. 544—211

1. A compound of the formula

29 Claims



wherein:

X is oxygen or sulfur;

R₁ is aryl, aryl lower alkyl, a 5 or 6 membered heterocycle or a lower alkyl substituted 5 or 6 membered heterocycle; R₂ is hydrogen or lower alkyl;

and R₃ and R₄ are each independently selected from the group consisting of hydrogen, hydroxyl, lower alkanoyl, lower alkyl, cyclo-lower alkyl, lower alkenyl, lower alkynyl, halo-lower alkyl, lower alkoxy-lower alkyl, hydroxy-lower alkyl, phenoxy-lower alkyl, diloweralkyl amino, aryl or aryl-lower alkyl, lower alkoxy, phenoxy, a 5 or 6 membered heterocycle or a lower alkyl substituted 5 or 6 membered heterocycle or R₃ and R₄ together with the nitrogen to which they are attached form a 3 to 7 membered heterocyclic ring, selected from the group consisting of oxazolidinyl, thiazolidinyl, pyrazolidinyl, imidazolidinyl, piperidyl, piperazinyl, thiamorpholinyl, trimethylenetriaminyl, ethyleneiminyl, and morpholinyl;

and, wherein:

aryl means phenyl or phenyl in which one or more of the phenyl hydrogens has been replaced by the same or different substituents selected from the group consisting of halo,

4,246,407

METHOD OF MAKING A FOMINOEN/THEOPHYLLINE COMPLEX

Giancarlo Scapini, Bologna; Armando Raimondi, Anagni, and Placido Poidomani, Rome, all of Italy, assignors to Farmaceutici Geymonat Sud S.p.A., Anagni, Italy

Division of Ser. No. 19,022, Mar. 8, 1979, Pat. No. 4,197,300.

This application Aug. 8, 1979, Ser. No. 64,709

Claims priority, application Italy, Mar. 13, 1978, 67542 A/78

Int. Cl.³ C07D 413/02

U.S. Cl. 544—118

1. Process for preparing a Fominoben/theophylline complex having the formula:

7 Claims

lower alkyl, halo-lower alkyl, nitro, amino, lower alkylacylamino, hydroxy, lower alkoxy, phenyl-lower alkoxy, lower alkyl acyloxy, cyano, halo-lower alkoxy or lower alkyl sulfonyl; and, 5 or 6 membered heterocycle means a heterocyclic substituent selected from the group consisting of pyridyl, pyrimidyl, pyrazolyl, imidazolyl, furyl, thienyl, oxazolyl, thiazolyl, piperidyl, and morpholinyl; and the non-toxic pharmaceutically acceptable salts thereof.

4,246,410

NAPHTHOLACTAM DYESTUFFS

Hansrudolf Schwander, Riehen, and Christian Zickendraht, Birmingen, both of Switzerland, assignors to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

Filed May 10, 1977, Ser. No. 795,459

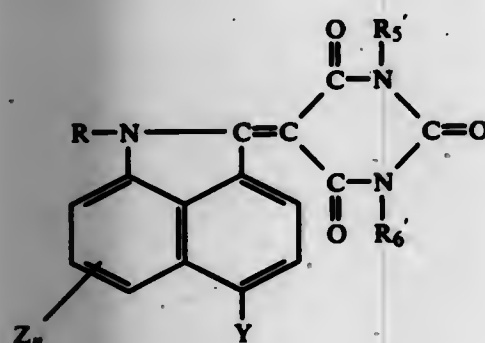
Claims priority, application Switzerland, Jun. 1, 1976, 6860/76

Int. Cl.³ C09B 57/06

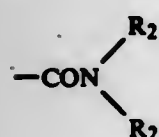
U.S. Cl. 544-300

6 Claims

1. A naphtholactam dyestuff of the general formula (I)



in which R represents C₁-C₄-alkyl, C₂-C₅-alkenyl, C₆-C₉-cycloalkyl, benzyl, phenethyl, phenyl-propyl, phenyl or hydrogen, and R₅ denotes C₁-C₄-alkyl, benzyl, phenethyl, phenyl or chlorophenyl and R₆ denotes C₁-C₄-alkyl, M represents hydrogen or a cation, Y represents -CN, -COOR₁, in which R₁ is C₂-C₈-alkenyl, benzyl, phenethyl, phenyl-propyl, phenyl or C₁-C₁₆-alkyl or



wherein each R₂ is C₁-C₁₈-alkyl, Z is C₁-C₄-alkoxy, Cl, Br, NO₂, cyano, CONH₂, COHN-C₁-C₄-alkyl, or CON(C₁-C₄-alkyl)₂, n represents 0, 1 or 2.

4,246,411

5,5-DIFLUOROURACIL

Paul D. Schuman, Hawthorne; Geraldine Westmoreland, and Roy Anderson, both of Gainesville, all of Fla., assignors to PCR Incorporated, Gainesville, Fla.

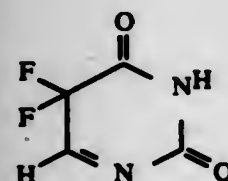
Division of Ser. No. 271,489, Jul. 13, 1972, Pat. No. 4,029,661, which is a continuation-in-part of Ser. No. 186,443, Oct. 4, 1971, abandoned. This application Mar. 14, 1977, Ser. No. 777,560

Int. Cl.² C07D 239/54

U.S. Cl. 544-313

1 Claim

1. A compound of the formula



4,246,412 SYNTHESIS OF 2-KETO-1,4-DIAZACYCLOALKANES WITH A SOFT ION CATALYST

John T. Lai, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 27, 1979, Ser. No. 69,679

Int. Cl.³ C07D 241/08, 243/08

U.S. Cl. 544-384

8 Claims

1. A method for preparing a polysubstituted 2-keto-1,4-diazacycloalkane compound comprising reacting in liquid phase (A) an acyclic 1,2-diamine with (B) a compound having a carbonyl bond selected from the group consisting of monoketones and monoaldehydes, in the presence of (i) a soft ion selected from the group consisting of cyanide, iodide and thiocyanate, (ii) a haloform, (iii) alkali, and (iv) a phase transfer catalyst selected from the group consisting of tertiary and quaternary compounds of Group VA and Group VIA elements, and salts thereof, said soft ion together with said phase transfer catalyst being present in an amount sufficient to form said polysubstituted 2-keto-1,4-diazacycloalkane; forming said polysubstituted 2-keto-1,4-diazacycloalkane compound; and recovering said polysubstituted compound.

4,246,413

6-OXAMORPHINANS

Thomas A. Montzka, Manlius; John D. Matlakella, and Richard A. Partyka, both of Liverpool, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

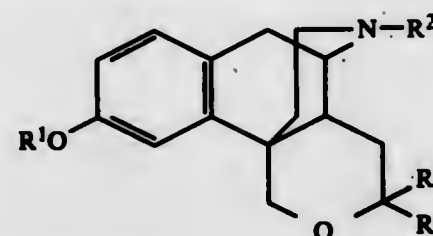
Filed May 14, 1979, Ser. No. 38,995

Int. Cl.³ C07D 491/08, 491/107; A61K 31/445

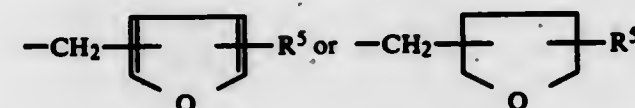
U.S. Cl. 546-63

13 Claims

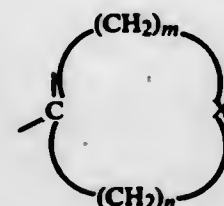
1. A compound of the formula



wherein R¹ is hydrogen, (lower)alkyl, (lower)alkanoyl or nicotinoyl; R² is hydrogen, (lower)alkyl, propargyl allyl, 3,3-dimethylallyl, cyclopropylmethyl, cyclobutylmethyl,



in which R⁵ is hydrogen or (lower)alkyl, and R³ and R⁴ are the same or different and are (lower)alkyl, or R³ and R⁴, when taken together with the carbon atom to which they are attached, represent a spiroalkyl group of from 4 to 6 carbon atoms or a spiro moiety of the formula



in which X is oxygen or sulfur, m is 2 or 3 and n is 1 or 2; or a pharmaceutically acceptable salt thereof.

4,246,414

2-ALKOXYALKOXY-5-NITROBENZENESULFONIC ACID AND SALT THEREOF

Shinsaku Fujita; Shigetoshi Ono, and Hidetoshi Hayashi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 917,759, Jun. 21, 1978, abandoned.

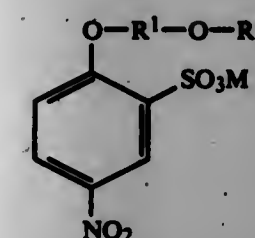
This application Aug. 27, 1979, Ser. No. 69,647

Claims priority, application Japan, Jun. 21, 1977, 52-74601
Int. Cl.³ C07D 215/10, 213/04; C07C 143/55

U.S. Cl. 546-182

8 Claims

1. A compound suitable for use as an intermediate in the preparation of dye releasing redox compounds of improved transferability and light fastness for use in color diffusion transfer processes said compound being a 2-alkoxyalkoxy-5-nitrobenzenesulfonic acid or a salt thereof represented by the following general formula



Wherein R¹ represents an alkylene group having 2 to 15 carbon atoms, with the proviso that when R¹ represents a branched chain alkylene group an acetal linkage is not formed; R² represents an alkyl group having up to 8 carbon atoms; and M represents a hydrogen atom or another cation capable of forming a salt with sulfonic acid.

4,246,416

CHEMICAL AGENTS

Harold Z. Sommer, Havre de Grace; George E. Wicks, Jr., Baltimore, and Omer O. Owens, Abingdon, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

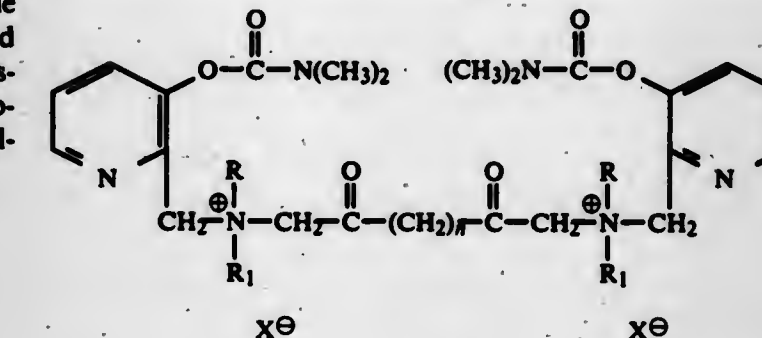
Filed Dec. 1, 1967, Ser. No. 687,398

Int. Cl.³ C07D 213/62

U.S. Cl. 546-261

2 Claims

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from the group consisting of monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylborate, wherein R and R₁ are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tertiary butyl, pentyl, and hexyl radicals, and wherein n is selected from 2-12.

4,246,417

TREATMENT OF WASTE WATER FROM NITRILE PRODUCTION

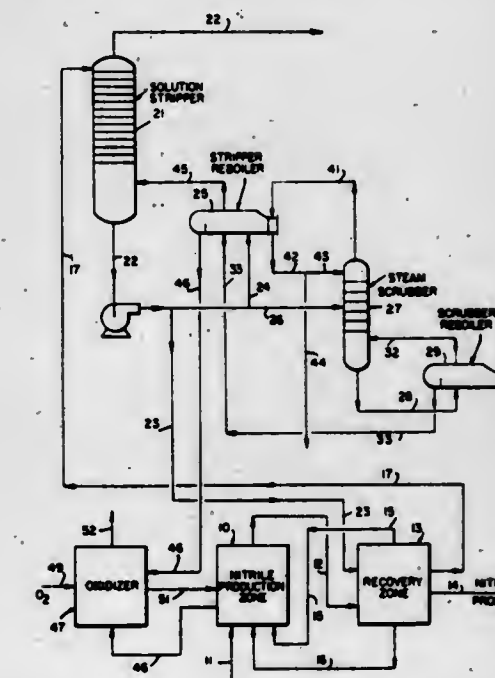
Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed May 15, 1978, Ser. No. 905,958

Int. Cl.³ C07D 213/57; C07C 121/54, 121/56, 121/30

U.S. Cl. 546-286

7 Claims



1. In a process for producing nitriles wherein there is recovered an aqueous stream containing non-strippable water soluble polymers and steam strippable volatile components, the improvement comprising:

- steam stripping the strippable volatile components from the aqueous stream to provide an aqueous stream containing non-strippable water soluble polymer;
- generating steam from at least a portion of the aqueous stream from step (a) to provide a remaining aqueous portion containing water soluble polymer;

4,246,415 PICOLYL UNSYMMETRICAL BIS-QUATERNARY CARBAMATES

Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

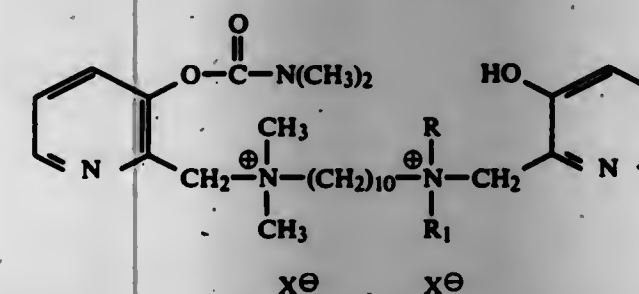
Filed Dec. 1, 1967, Ser. No. 687,395

Int. Cl.³ C07D 213/62

U.S. Cl. 546-261

2 Claims

1. New chemical compounds having the generic formula:



wherein X is one equivalent of an anion selected from the group consisting of monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylborate, and wherein R and R₁ are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, pentyl, and hexyl.

- (c) generating steam from remaining aqueous portion produced in (b) to provide a remaining aqueous concentrate of non-strippable water soluble polymer, at least a portion of the heat requirements therefor being provided by indirect heat transfer with steam generated in (b) to condense steam from (b) to a steam condensate essentially free of polymers; and
- (d) employing steam generated in step (c) for steam stripping in step (a).

4,246,418

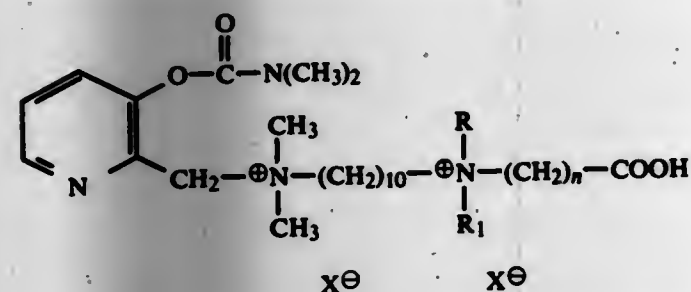
UNSYMMETRICAL BIS-QUATERNARY AMINO ACIDS
Harold Z. Sommer, Havre de Grace, and George E. Wicks, Jr., Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 5, 1968, Ser. No. 696,975
Int. Cl.³ C07D 213/63

U.S. Cl. 546—291

2 Claims

1. New chemical compounds having the generic formula:



wherein R and R₁ are aliphatic radicals selected from the group consisting of methyl, ethyl, propyl, isopropyl, and butyl, wherein n is selected from 1-9, and wherein X is one equivalent of an anion selected from monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, nitrate, and tetraphenylboronate.

4,246,419

HERBICIDAL COMPOUNDS

David Cartwright, Reading, and Roger Salmon, Bracknell, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 5, 1979, Ser. No. 9,361

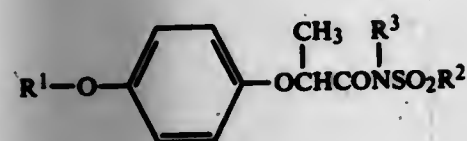
Claims priority, application United Kingdom, Feb. 15, 1978, 6043/78

Int. Cl.³ C07D 213/64

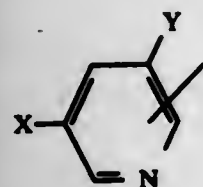
U.S. Cl. 546—291

4 Claims

1. A herbicidal sulphonamide compound of the formula (I):



and salts thereof, wherein R¹ is a pyridyl group of the formula:



wherein the group X of the pyridyl group represents a fluorine, chlorine, bromine, or iodine atom, or an alkyl radical of 1 to 4 carbon atoms optionally substituted by one or more fluorine or chlorine atoms, and the group Y represents hydrogen, fluorine

chlorine, bromine, or iodine or an alkyl radical of 1 to 4 carbon atoms optionally substituted by one or more fluorine or chlorine atoms; R² represents an alkyl radical of 1 to 6 carbon atoms optionally substituted by one or more fluorine atoms; and R³ is hydrogen or an alkyl radical of 1 to 4 carbon atoms.

4,246,420

PROCESS FOR PREPARING**3-(4-PYRIDINYL)-2-CYCLOHEXENE-1-OXIME**

Rudolf Oesterlin, East Greenbush, and Peter A. Pareene, Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,020
Int. Cl.³ C07D 213/33

U.S. Cl. 546—338

4 Claims

1. An improvement in the process for preparing 3-(4-pyridinyl)-2-cyclohexene-1-one oxime by heating ethyl 5-oxo-2-[(4-pyridinyl)carbonyl]hexanoate under aqueous acidic conditions to produce 1-(4-pyridinyl)-hexan-1,5-dione, heating said hexan-1,5-dione with a basic condensing agent to produce 3-(4-pyridinyl)-2-cyclohexene-1-one, and converting said cyclohexene-1-one to its oxime, said improvement being a one pot sequence consisting of first heating ethyl 5-oxo-2-[(4-pyridinyl)carbonyl]hexanoate with excess aqueous sulfuric acid, neutralizing the excess acid, shaking the resulting warm mixture well with isopropyl alcohol to extract the 3-(4-pyridinyl)-2-cyclohexene-1-one, draining off the heavier warm aqueous layer, adding hydroxylamine hydrochloride to the isopropyl alcohol solution of 3-(4-pyridinyl)-2-cyclohexene-1-one, stirring the mixture at reflux, basifying the mixture and evaporating the reaction mixture to dryness, and isolating the 3-(4-pyridinyl)-2-cyclohexene-1-one oxime from the residue.

4,246,421

OXYDEHYDROGENATION PROCESS FOR ALKYLAROMATICS

Joseph P. Bartek, University Heights, and Robert K. Grasselli, Chagrin Falls, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 792,637, May 2, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,576

Int. Cl.³ C07C 5/333, 15/46; C07D 213/06, 215/04

U.S. Cl. 546—352

31 Claims

1. A process for the dehydrogenation of an alkyl aromatic compound to the corresponding alkenyl aromatic wherein said alkyl aromatic contains at least one alkyl group of from 2 to 6 carbon atoms which is attached to a single aromatic ring, and wherein the aromatic group is selected from the group consisting of mononuclear aromatics, condensed-ring dinuclear aromatics, pyridine, quinoline and isoquinoline, the process comprising passing a gaseous mixture of the alkyl aromatic, molecular oxygen and optionally a diluent gas over a catalyst at a temperature of from about 300° to 650° C., said catalyst having the composition represented by the following empirical formula:



wherein

A is an alkali metal and/or thallium;

M is one or more of the elements of nickel, cobalt, copper, manganese, magnesium, zinc, calcium, niobium, tantalum, strontium, or barium;

M¹ is one or more of the elements of iron, chromium, uranium, thorium, vanadium, titanium, lanthanum or the other rare earths;M¹¹ is one or more of the elements of tin, boron, lead, germanium, aluminum, tungsten or molybdenum;

B is bismuth, tellurium, arsenic, antimony, cadmium or combinations thereof;

P is phosphorus; and

wherein

a through y have the following values:

a=0 to 20;

b=0 to 20;

c=0 to 20;

d=0 to 4;

e=0.1 to 20;

y=8 to 16;

x=the number of oxygens required to satisfy the valence requirements of the other elements present; and wherein the sum of b+c+e is greater than 1.

4,246,422

NAPHTHOLACTAM DYESTUFFS

Hansrudolf Schwander, Riehen, and Christian Zickendraht, Binningen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 797,275, May 16, 1977, abandoned.

This application Aug. 1, 1979, Ser. No. 62,849

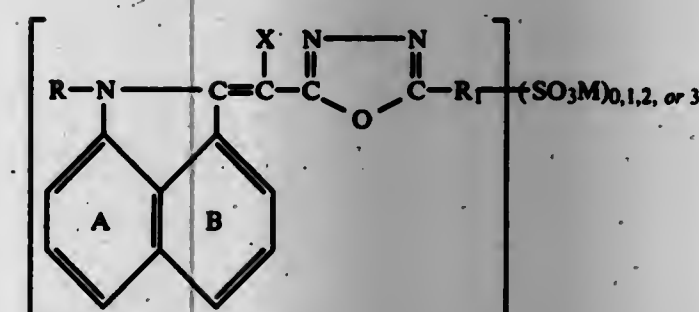
Claims priority, application Switzerland, Jan. 1, 1977, 6862/76

Int. Cl.³ C07D 413/06; C09B 57/00; C07D 413/14

U.S. Cl. 548—143

9 Claims

1. A dyestuff of the formula



wherein

R₁ is C₁-C₅ alkyl, phenyl, tolyl, methoxyphenyl, ethoxyphenyl, chlorophenyl, nitrophenyl, 4-pyridyl or carboxyl-C₁-C₃-alkylphenyl;

X is —COOH, —COO[−] cation⁺, —COOR₁¹,

—COQ or —CN;

Q is —NHR₂¹ or —NR₂¹R₃¹;

R₁¹, R₂¹ and R₃¹ independently represent C₁-C₁₈ alkyl which is unsubstituted or monosubstituted by C₁-C₄ alkoxy, hydroxy, chloro, bromo, cyano, carboxyl, carb-C₁-C₄-alkoxy, sulfo, carboxamido or acetoxy; cyclopentyl; methylcyclohexyl; trimethylcyclohexyl; cyclohexyl; or phenyl, benzyl or phenethyl which are unsubstituted or monosubstituted by C₁-C₄ alkyl, C₁-C₄ alkoxy or halo;

R is hydrogen; alkyl of 1-8 carbon atoms, hydroxyalkyl of 2-3 carbon atoms; alkoxyalkyl of 3-8 carbon atoms; β-chloroethyl; 62-cyanoethyl; alkoxy-carbonyl-ethyl where the alkoxy group thereof has 1-4 carbon atoms; carbamoyl-ethyl; N-monoalkyl or N,N-dialkyl carbamoyl-ethyl where alkyl has 1-4 carbon atoms; cyclohexyl; benzyl; phenethyl; phenyl or allyl;

The ring A and B are unsubstituted or monosubstituted by (a) C₁-C₄-alkyl; (b) C₁-C₄-alkoxy; (c) halo; (d) C₁-C₄-alkylmercapto; (e) C₁-C₄-alkylsulfonyl; (f) phenylsulfonyl; (g) benzylsulfonyl; (h) C₁-C₄-alkylcarbonylamino; (i) C₁-C₄-alkylsulfonylamino; (j) N-alkyl or (k) N,N-dialkyl sulfonamido wherein alkyl has 1-4 carbon atoms; (l) nitro; (m) cyano; (n) —COOH; (o) —COCl; (p) —COQ or (q) —COOR₁¹; with the proviso that when ring A is substituted by (a) C₁-C₄-alkyl; (b) C₁-C₄-alkylmercapto; (c) C₁-C₄-alkyl-sulfonyl; (f) phenylsulfonyl; (g) benzylsulfonyl; (h) C₁-C₄-alkylcarbonylamino; (i) C₁-C₄-alkylsulfonylamino or (j) N-alkyl or (k) N,N-dialkylsulfonamido where alkyl has 1-4 carbon atoms, ring B is unsubstituted; and when ring B is substituted by (m) cyano; (n) —COOH; (o) —COCl; (p) —COQ or (q) —COOR₁¹, ring A is un-

substituted or substituted by (b) C₁-C₄-alkoxy, (c) halo or (l) nitro

M is hydrogen or a cation; and said cation is an alkali metal, ammonium, pyridinium, C₁-C₄-alkylammonium or a C₁-C₄ dialkylammonium cation.

4,246,423

SILICONE POLYETHER COPOLYMERS

Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

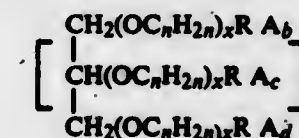
Filed Oct. 22, 1979, Ser. No. 86,906

Int. Cl.³ C07F 7/10

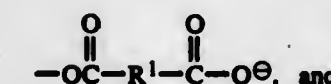
U.S. Cl. 556—423

17 Claims

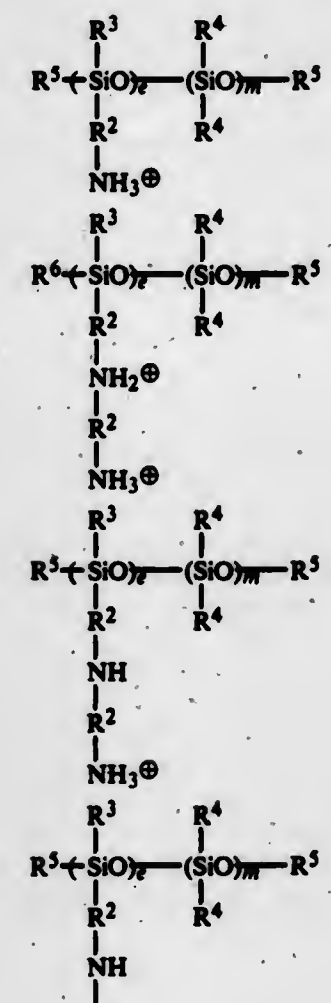
1. Silicone polyether copolymers of the general formula

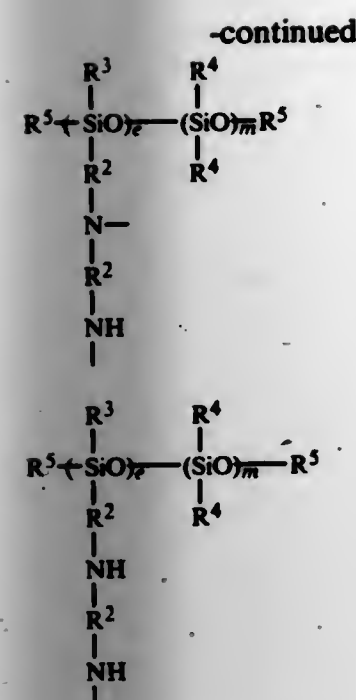


where R is a radical selected from the group consisting of



in which the radical R is linked to the polyether through an ester linkage, R¹ is a divalent hydrocarbon radical selected from the group consisting of (—CH₂)_n, —CH=CH— and a cyclic radical selected from the group consisting of C₆H₄, C₆H₅, and C₁₀H₆; A is a silicone containing monovalent or divalent radical selected from the group consisting of





R^2 is selected from the group consisting of saturated divalent hydrocarbon radicals, hydrocarbonoxy radicals in which the hydrocarbon group is linked to the silicon by a carbon bond and the oxygen is in the form of an ether linkage, and unsaturated divalent hydrocarbon radicals, R^3 is selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 18 carbon atoms, alkoxy radicals having from 1 to 18 carbon atoms and $OSi(R^4)_3$ radicals, R^4 is a monovalent hydrocarbon radical having from 1 to 18 carbon atoms, R^5 is a monovalent radical selected from the group consisting of O_0 , $Si(R^4)_3$ and O_0 , R^4 is the same as above, and when R is cationic, then A must be anionic and when R is nonionic then A must be nonionic, a is a number of from 0 to 4, b , c and d are each numbers of from 0 to 1, the sum of b , c and d must be at least 1 when A is a monovalent radical and when A is a divalent radical b , c and d must be at least 0.5 and up to 3, with the proviso that when c is greater than 0, then a must be at least 1, e is a number of from 1 to 200, m is a number of from 1 to 20,000, n is 2, 3 or 4, x is a number of from 1 and up to 400, and y is a number of from 0 to 8.

4,246,424

METHOD FOR RACEMIZATION OF OPTICALLY ACTIVE AMINES

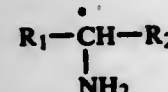
Tsuneaki Nagase, Takatsuki; Gohji Suzukamo, Ibaraki, and Yoshio Suzuki, Itami, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Division of Ser. No. 500,927, Aug. 27, 1974, abandoned. This application May 14, 1976, Ser. No. 686,575
Claims priority, application Japan, Aug. 31, 1973, 48/98575; Sep. 1, 1973, 48/98558

Int. Cl.³ C07C 87/28, 101/02, 101/32

U.S. Cl. 560-38

7 Claims

1. A method for the racemization of optically active amines which comprises contacting an optically active amine of the formula:



wherein C^* is an asymmetric carbon atom, R_1 is alkyl, aralkyl or aryl and R_2 is alkoxycarbonyl, the aryl or aralkyl moiety being unsubstituted or being substituted with one or more alkyl or alkoxy groups on the aromatic ring, with about 1/1000 to 1/5 mole per 1 mole of the optically active amine of an alkali metal polycyclic aromatic hydrocarbon catalyst at a temperature of from about -10° to 150° C.

4,246,425
4-CHLORO-3,5-DIAMINOPHENYL ACETATES AND CURING AGENT

Wataro Koike, Shizuoka; Masami Takayama, Shimizu; Hideaki Ohashi, Fujieda, and Chihito Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Limited, Tokyo, Japan

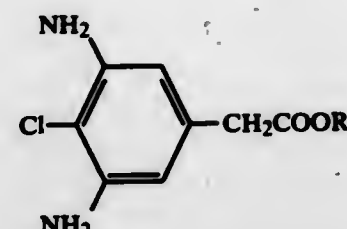
Filed Mar. 8, 1979, Ser. No. 18,613

Claims priority, application Japan, Mar. 23, 1978, 53-33518
Int. Cl.³ C07C 101/44; C08G 18/32

U.S. Cl. 560-47

1 Claim

1. 4-Chloro-3,5-diaminophenyl acetates having the formula



wherein R represents a C_1 to C_8 alkyl group.

4,246,426

11-SUBSTITUTED PROSTAGLANDINS

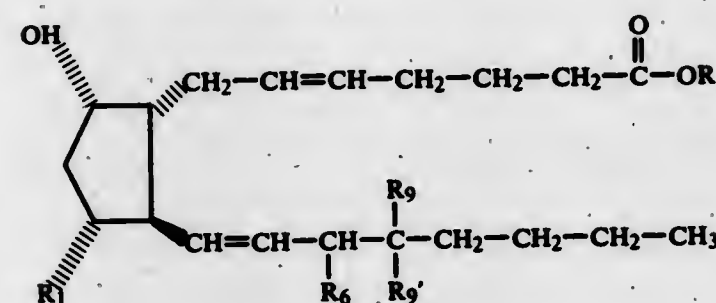
George W. Holland, Cedar Grove; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 780,878, Mar. 24, 1977, Pat. No. 4,036,871, which is a division of Ser. No. 614,044, Sep. 17, 1975, abandoned, which is a division of Ser. No. 480,458, Jun. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Apr. 2, 1979, Ser. No. 25,972

Int. Cl.³ C07C 177/00

U.S. Cl. 560-231

4 Claims

1. A compound of the formula:



where R is hydrogen or lower alkyl, R_1 is lower alkyl; R_9 is fluoro; R_9' is hydrogen or lower alkyl; R_6 is hydroxy, tetrahydropyranyloxy, lower alkanoyloxy, benzyloxy, benzoyloxy, benzhydryloxy, trityloxy, or triloweralkylsilyloxy; or enantiomers or racemates thereof.

4,246,427

PROCESS FOR PRODUCING METHACRYLIC ACID

Naoki Andoh; Ituo Nishiwaki; Akira Ito, and Masatoshi Arakawa, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 728,678, Oct. 1, 1976, abandoned. This application Dec. 6, 1978, Ser. No. 966,999

Claims priority, application Japan, Oct. 8, 1975, 50-120668
Int. Cl.³ C07C 51/25, 57/055

U.S. Cl. 562-535

9 Claims

1. A process for producing methacrylic acid from methacrolein by gas-phase oxidation, which comprises subjecting to reaction methacrolein, a molecular oxygen-containing gas and steam in a molar ratio of methacrolein:molecular oxygen:steam of 1:1-3:0-50 at a temperature in the range of 250° to 400° C. at a space velocity of 250 to 3,000 hr^{-1} (at 0° C. and 1 atm.) with

a catalyst having the following composition formula in atomic ratio:



wherein X represents at least one member selected from the group consisting of potassium, rubidium, cesium, and thallium, and a , b , c , d , e , f or g represents the number of atoms of Mo , P , Zr , V , Mn , X or O , respectively, and a is 12, b is 0.5 to 5, c is 0.1 to 5, d is 0.05 to 3, e is 0.05 to 1.5, f is 0.1 to 3 and g is 40 to 60, and g is a number sufficient enough to satisfy the valencies of the respective catalyst component elements.

4,246,428
METHOD FOR SEPARATION OF DIASTEREOISOMERIC 3-(3,4-DIBENZYLOXYPHENYL)SERINE

Naohito Ohashi; Yoshinori Takashima, both of Nishinomiya, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 7, 1978, Ser. No. 922,665

Claims priority, application Japan, Jul. 11, 1977, 52-83128

Int. Cl.³ C07C 51/43

U.S. Cl. 562-401

4 Claims

1. A method for the separation of diastereoisomeric 3-(3,4-dibenzoyloxyphenyl)serine, which comprises the steps of: reacting a mixture of the three isomer and the erythro isomer of 3-(3,4-dibenzoyloxyphenyl)serine with a mineral acid selected from the group consisting of hydrochloric acid, hydrobromic acid, hydroiodic acid, and nitric acid, thereby forming the mineral acid salts of the three and erythro isomers, respectively, and selectively crystallizing the three isomer salt from a diastereoisomeric solution of the mineral acid salts in a solvent selected from the group consisting of water, ethanol, isopropanol, acetone, ethyl acetate and mixtures thereof.

4,246,429

NOVEL α -AMINO-PHENYLACETIC ACID DERIVATIVES

Georges Van Daele, Turnhout, Belgium, assignor to Janssen Pharmaceutica, N.V., Beerse, Belgium

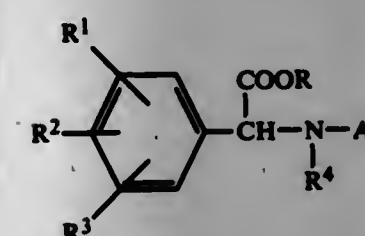
Continuation-in-part of Ser. No. 918,530, Jun. 23, 1978, abandoned. This application Apr. 9, 1979, Ser. No. 28,416

Int. Cl.³ C07C 101/447, 101/453, 101/72; A01N 37/44

U.S. Cl. 562-486

7 Claims

1. A chemical compound selected from the group consisting of an α -amino-phenylacetic acid derivative having the formula:



and the phytopharmaceutically acceptable salts and stereochemically isomeric forms thereof, wherein:

R is selected from the group consisting of hydrogen, and (C_1-C_{20}) -alkyl;

Ar is selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkoxy, trifluoromethyl, carboxy, and carboxy(lower alkyl);

R^1 is selected from the group consisting of halo, lower alkyl and lower alkoxy, and trifluoromethyl;

R^2 and R^3 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, lower alkoxy, nitro, cyano and amino; and

R^4 is a member selected from the group consisting of hydrogen, and lower alkyl.

4,246,430

METHOD FOR PRODUCING CRYSTALS OF SORBIC ACID

Masaaki Takano, and Masahiro Nakashima, both of Minamata-shi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 6, 1978, Ser. No. 967,143

Claims priority, application Japan, Dec. 22, 1977, 52/154827
Int. Cl.³ C07C 51/43, 57/10

U.S. Cl. 562-600

4 Claims

1. In the method for producing crystals of sorbic acid by recrystallization with an aqueous solution of a lower aliphatic monovalent alcohol, the improvement which comprises employing 0.001 to 0.1 mol of an alkali metal ion as a crystal-modifying ion based on 1000 g of said aqueous solution of a lower aliphatic monovalent alcohol.

4,246,431

PROCESS FOR RECOVERING XYLITOL FROM END SYRUPS OF THE XYLITOL CRYSTALLIZATION

Mohammad Munir, Obrigheim, and Hubert Schiweck, Worms, both of Fed. Rep. of Germany, assignors to Sueddeutsche Zucker-Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

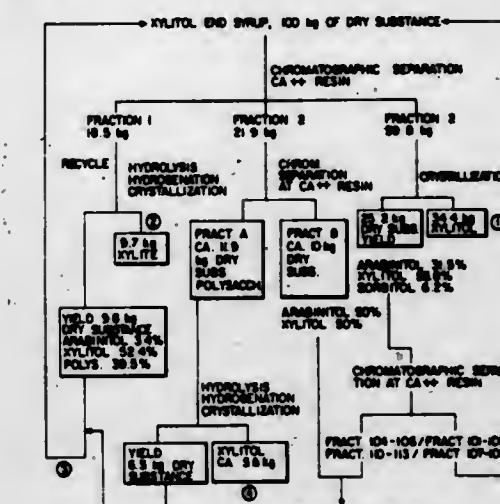
Filed Jun. 12, 1979, Ser. No. 47,719

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826120

Int. Cl.³ C07C 31/26

U.S. Cl. 568-872

4 Claims



XYLITOL YIELD FROM 100 kg OF END SYRUP	
(1) FROM FRACTION 1 BY CRYSTALLIZATION	34.4 kg
(2) FROM FRACTION 2	8.7 kg
(3) FROM RECYCLE FRACTION (34.4% OF 9.8 kg)	3.4 kg
(4) FROM FRACTION 2	8.8 kg
<hr/>	

ELECTRICAL

4,246,432 METHOD AND APPARATUS FOR MELTING FRITS FOR INORGANIC OXIDIC SURFACE COATINGS BY ELECTRIC RESISTANCE HEATING

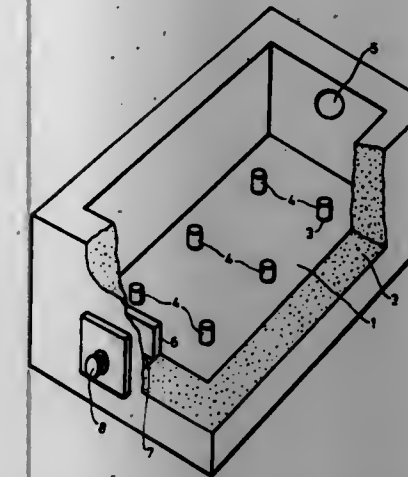
Hans Rinker, and Werner Joseph, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,335

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753351

Int. Cl.³ C03B 5/02

U.S. Cl. 13—6



1. An electric furnace for the continuous melting of frits for inorganic oxidic surface coatings, comprising a substantially rectangular melting chamber, a working chamber separated from the melting chamber by an immersion dam, the ratio of the horizontal cross-sectional area of the molten bath in the melting chamber to the working chamber being greater than about 50, means for the introduction of raw materials to the melting chamber positioned at least 50 cm above the level of the melt, electrodes within the melting chamber for the transmission of electrical energy to the melt, the ratio of the effective electrode surface area to the area of the bottom of the melting chamber being less than about 0.1, and an outlet opening for the melt from the working chamber positioned to provide a molten bath from about 5 to 20 cm in height.

4,246,433 SQUARE GLASS FURNACE WITH SIDEWALL ELECTRODES

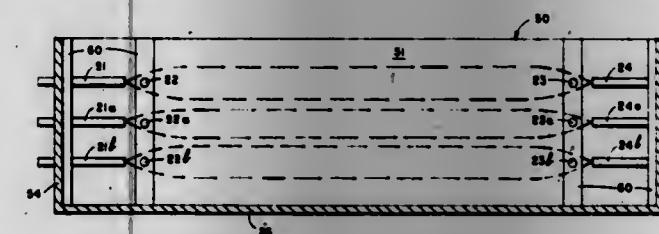
George B. Seifried, and William R. Steitz, both of Toledo, Ohio, assignors to Toledo Engineering Co., Inc., Toledo, Ohio

Filed Jun. 27, 1979, Ser. No. 52,395

Int. Cl.³ C03B 5/02

U.S. Cl. 13—6

6 Claims



1. A square electric furnace for melting a thermoplastic material such as glass, said furnace comprising:

(A) four vertical equal length and height sidewalls and a bottom,

(B) at least two vertically spaced similar rod electrodes projecting horizontally inwardly near and at the same distance from each end of each wall, which electrodes are in at least two parallel horizontal planes spaced more from the top and bottom of said furnace than they are apart,

(C) a two-phase electric current, one phase being 90° out of phase with the other phase, said one phase being connected to all the electrodes at one pair of diagonally opposite corners, and the other phase being connected to all the electrodes at the other pair of diagonally opposite corners of said furnace, and

(D) vertically extending refractory blocks projecting inwardly from the inside surface of said sidewalls throughout the height of said furnace at each vertically spaced group of electrodes, and said electrodes projecting through said blocks.

4,246,434 WORK SUPPORT FOR VACUUM ELECTRIC FURNACES

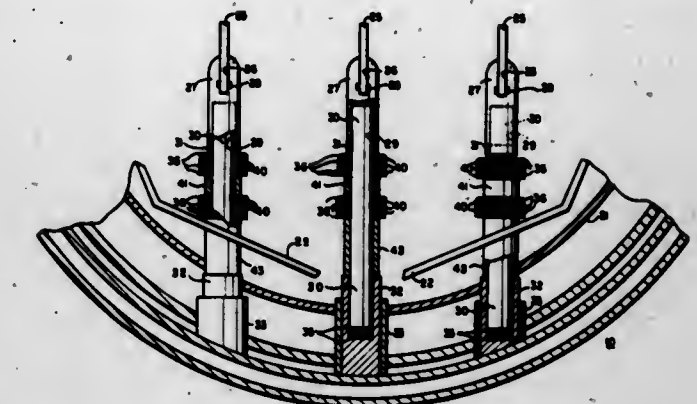
Rush B. Gunther, Abington, and Prem C. Jindal, Feasterville, both of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed Dec. 20, 1978, Ser. No. 971,483

Int. Cl.³ F27D 3/02

U.S. Cl. 13—20

6 Claims



1. A work support for vacuum electric furnaces having a hostile environment therein and containing electrically conductive ions capable of deposition on objects within the furnace comprising

electrically conductive rail members for supporting an article,

socket members for mounting on the furnace wall,

supporting means for a work piece interposed between the rail members and the socket members and comprising tubular members of electrical non-conducting material,

said supporting means comprising rail holders in supporting engagement with said rail members,

said rail holders and said rail members being of electrically conductive material,

said supporting means comprising vertical supporting rods of electrically non-conducting material within said tubular members, and

shielding members mounted on said vertical supporting rods for shielding lower portions of said supporting means from deposition thereon of electrically conductive materials,

said shielding members comprising a plurality of closely spaced separable discs of electrical non-conducting material and of different diameters alternately mounted on and retained in position by said rods.

4,246,435 FILLED COMMUNICATION CABLE EMPLOYING A PARAFFINIC OIL-BASE FILLING COMPOUND

Paul F. Thompson, Millington, N.J., assignor to General Cable Corporation, Greenwich, Conn.

Filed Jul. 20, 1979, Ser. No. 59,221

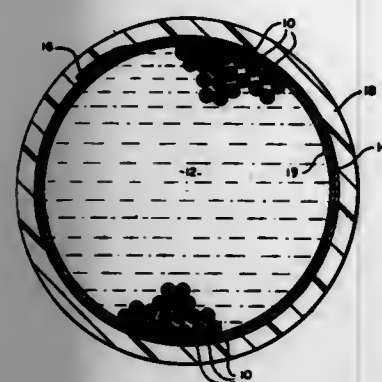
Int. Cl.³ H01B 7/28, 3/30

U.S. Cl. 174—23 C

10 Claims

1. A filled communication cable for telephone communication and the like including a plurality of insulated conductors secured together in a core of the cable, a plastic tape binder, a metal shield, and a plastic jacket surrounding the metal shield, an improved filling compound in the core in contact with the insulation on said conductors, the improved filling compound

comprising a paraffinic type oil mixed with amorphous polypropylene, characterized by the oil comprising 100 parts and the amorphous polypropylene comprising from approximately



30 to 50 parts of the filling compound, and further characterized by the compound also containing up to about 10 parts of low molecular weight polyethylene.

4,246,436

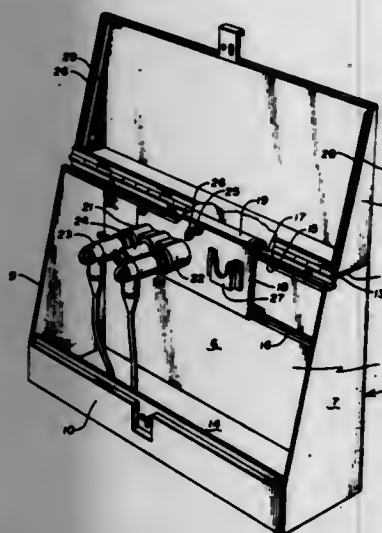
JUNCTION ENCLOSURE ASSEMBLY

Harry W. Hoffman, and Kerwin A. Posthuma, both of Anoka, Minn., assignors to Federal Cartridge Corporation, Minneapolis, Minn.

Filed Sep. 20, 1978, Ser. No. 943,922

Int. Cl.³ H05K 5/04

U.S. Cl. 174—52 R



1. A junction enclosure assembly comprising
 - (a) a housing member having a back panel with an inner surface, opposed side walls, a top wall, and a front wall having an opening therein of substantial size;
 - (b) a hinged cover member hingedly mounted on said top wall and, when in closed position, closing said opening;
 - (c) a pair of parallel vertically spaced horizontally extending rails mounted on the inner surface of said back panel and extending generally parallel thereto in forwardly spaced relation thereto;
 - (d) a junction mounting panel mounted on said rails and supported thereby, said junction mounting panel including rearwardly and downwardly extending vertically spaced rail-engaging members constructed and arranged to be inserted from above downwardly behind said rails into panel supporting relation and to thereby cooperatively engage the same to removably secure said mounting panel to said back panel within said housing member;
 - (e) said junction mounting panel including hot-stick inter-engaging means by which said panel may be safely detached, lifted and moved with a hot-stick while remaining connected to high voltage feed wires; and
 - (f) said rails and said rail-engaging members having inter-engaging surfaces, each of which is flat and smooth to

facilitate quick and simple inter-engagement and detachment relative to each other.

4,246,437

SEALING APERTURES THROUGH WHICH ELECTRICAL TERMINALS PROTRUDE

Werner U. Frey, Thalwil, Switzerland; Ronald W. Lomax; Herbert W. Clark, both of Harlow, England, and David W. Smith, Bishop's Stortford, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,724

Claims priority, application Switzerland, Dec. 2, 1977, 14748/77

Int. Cl.³ B29D 1/00; B29C 6/00

U.S. Cl. 174—52 PE

4 Claims



1. An electrical component housing a part of which is formed by a wall having apertures therein through which electrical terminals protrude, wherein the outwardly facing surface of said wall is provided with a recess forming a reservoir for a quantity of a curable resin in liquid form, wherein said apertures are connected with the reservoir by channels formed in said surface, and wherein the housing material, the dimensions of the terminals, the apertures, the channels and the reservoir are such that by filling the reservoir with the liquid resin to a depth insufficient to overflow the reservoir walls, the resin is caused to flow along the channels solely by capillary action and to reach said apertures and seal them solely by capillary action.

4,246,438

SPACERS

Gilles R. Gozian, Chaumont en Vexin, France, assignor to Raychem Corporation, Menlo Park, Calif.

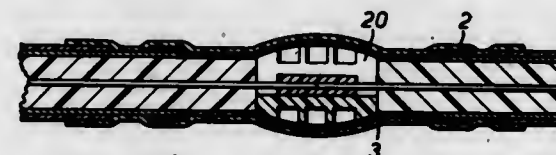
Filed Sep. 18, 1978, Ser. No. 943,396

Claims priority, application United Kingdom, Sep. 21, 1977, 39290/77

Int. Cl.³ H02G 15/18

U.S. Cl. 174—88 C

36 Claims



8. A connector suitable for electrically connecting two electrically conductive bodies each of which comprises an inner conductor and an outer conductor separated by a dielectric which connector comprises means for making an electrical connection between the inner conductors, means for making an electrical connection between the outer conductors, the means for making an electrical connection between the outer conductors comprising a hollow dimensionally-recoverable member having two open ends, a quantity of solder positioned in the direction of recovery of the dimensionally-recoverable member and an electrically conductive deformable member positioned in the direction of recovery of said member, the deformable member being infusible at the temperature to

which, in use, the connector is heated to cause the dimensionally-recoverable member to recover and the solder to fuse, being such that, at that temperature, it can be deformed by the force exerted by the dimensionally-recoverable member; and being so positioned that at least part thereof is deformed by the recovery of said member, and an electrically insulating spacer for receiving and at least partially surrounding the electrical connection between the inner conductors and for spacing the electrical connection between the outer conductors from the electrical connection between the inner conductors, the spacer being infusible at the temperature to which, in use, the means for connecting the outer conductors is heated to cause the dimensionally-recoverable member to recover and the solder to fuse and being substantially undeformable by the force exerted by the dimensionally-recoverable member when the means for connecting the outer conductors is heated to cause said member to recover and the solder to fuse, the spacer being such as to limit the deformation of the deformable member by the dimensionally-recoverable member, whereby the electrical connection between the outer conductors has predetermined inner dimensions, and such as to control the impedance of the electrical connection between the electrically conductive bodies.

4,246,439

ACOUSTIC WRITING COMBINATION, COMPRISING A STYLUS WITH AN ASSOCIATED WRITING TABLET

Jacob J. Romein, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

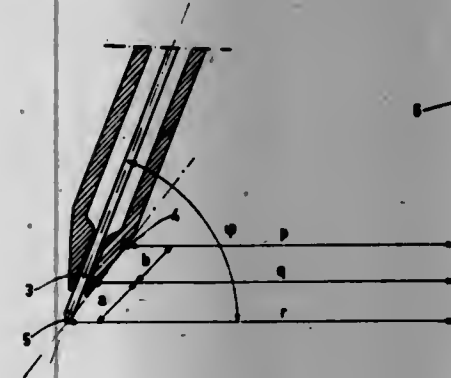
Filed Apr. 6, 1979, Ser. No. 27,579

Claims priority, application Netherlands, Apr. 10, 1978, 7803764

Int. Cl.³ G06C 21/00

U.S. Cl. 178—18

12 Claims



6. An acoustic position indicator for determining the coordinate positions of a writing stylus over the surface of a writing tablet comprising, a writing tablet having first and second orthogonally extending edges and a surface data area, a stylus having a tip at one end adapted for movement adjacent to said surface of the tablet and provided with first and second ultrasonic sound sources each situated on the stylus spaced from and at a different distance from the stylus tip, first and second microphones located along said first and second edges of the tablet for receiving sound signals emitted by said first and second sound sources, and means for operating the sound sources to alternately emit pulsatory ultrasonic sound signals whereby the position of the stylus tip over the tablet data surface can be determined independent of the angle of tilt of the stylus.

4,246,440

RADIO BROADCASTING SYSTEM WITH CODE SIGNALLING

Henri J. Van Der Heide, Hilversum, and Johan M. Schmidt, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

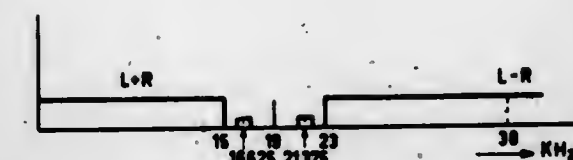
Filed Aug. 17, 1978, Ser. No. 934,516

Claims priority, application Netherlands, Sep. 1, 1977, 7709619

Int. Cl.³ H04H 5/00

U.S. Cl. 179—1 GD

9 Claims



1. A transmitter for a radio broadcasting system with code signalling said transmitter, comprising means for generating an audio frequency information signal, a modulator for modulating a stereo information signal on a suppressed stereo subcarrier wave, an oscillator for generating a stereo pilot having a frequency situated in the frequency range between the upper limit of the frequency spectrum of said audio frequency information signal and the lower limit of the frequency spectrum of said modulated stereo information signal, a source of binary code signals, and a modulating signal generator, connected to said source of binary code signals and to said oscillator, for generating a further subcarrier wave which is binary phase-modulated with the code signals, said further subcarrier wave being a harmonic of a subharmonic of the stereo pilot and being situated in at least one of the two halves of said frequency range, said two halves being defined by said stereo pilot.

4,246,441

FM RECEIVER EQUIPPED WITH NOISE PULSE SUPPRESSION DEVICE

Yoshiro Sugai, and Eizi Ueno, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

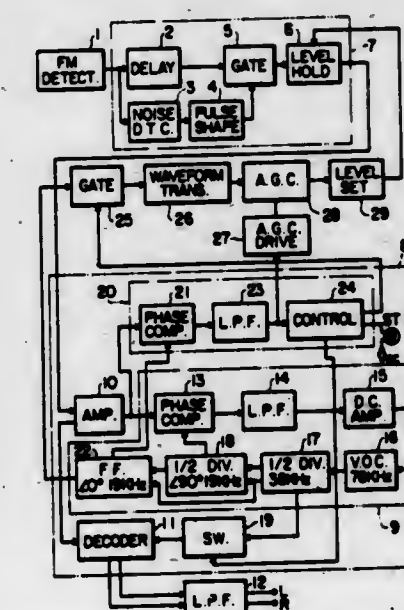
Filed Mar. 15, 1979, Ser. No. 20,685

Claims priority, application Japan, Mar. 15, 1978, 53/30325

Int. Cl.³ H04H 5/00

U.S. Cl. 179—1 GD

5 Claims



1. In an FM receiver including noise pulse detection means receiving an FM detected signal containing a pilot signal and producing a control signal when a noise pulse is detected, a gate means operable to interrupt the transmission of the FM detected signal to an output thereof for the duration of the

presence of the noise pulse and responsive to the control signal, holding means for holding the FM detected signal of the level immediately before the interrupting operation by said gate means, and multiplex demodulator means receiving outputs of said gate means and said holding means for demodulating an applied FM detected signal, the improvement comprising: signal generating means provided in said multiplex demodulator means for generating a signal whose frequency and phase are same as the pilot signal and, superimposing means for superimposing a signal obtained from said signal generating means onto the output of said holding means for the duration of the presence of the noise pulse; said signal generating means including a voltage controlled oscillator, means for frequency dividing an output of said voltage controlled oscillator into a predetermined frequency, a phase comparator for comparing an output of said frequency divider means with a phase of the pilot signal and a phase locked loop for controlling said voltage controlled oscillator responsive to an output of said phase comparator and wherein a signal derived from said phase locked loop is superimposed on the output of said holding means.

4,246,442

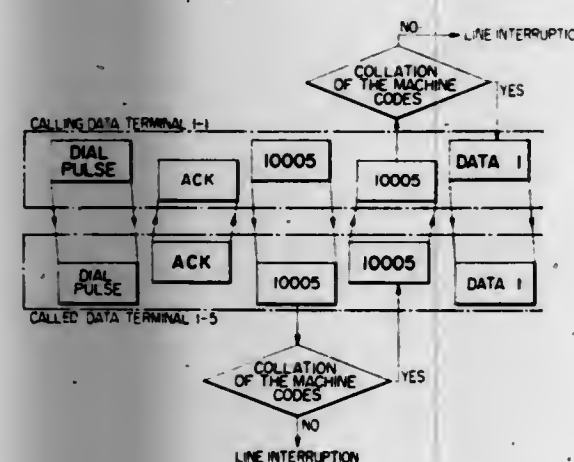
METHOD AND DEVICE FOR CONFIRMING CORRECT CONNECTION BETWEEN DATA TERMINALS IN DATA COMMUNICATION SYSTEM USING TELEPHONE NETWORK

Takemi Hashimoto, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 521,135, Nov. 5, 1974, abandoned. This application Apr. 25, 1977, Ser. No. 790,550 Claims priority, application Japan, Nov. 7, 1973, 48-125114 Int. Cl.³ H04M 1/56; H04B 3/50

U.S. Cl. 179-2 DP

4 Claims



1. A method of operating a data transmission system having a plurality of data terminals interconnected through a telephone network, each data terminal having an own identification code stored therein, comprising the steps of:

- establishing a telephone connection from a calling data terminal to a called data terminal over said telephone network, and sending an acknowledgement signal from the called to the calling data terminal in response to the establishment of said connection;
- transmitting from the calling to the called data terminal, in response to receipt of said acknowledgement signal by the calling data terminal, a code identifying the called data terminal;
- comparing at the called data terminal the code transmitted thereto from the calling data terminal with the own code of the called data terminal stored in the called data terminal, and transmitting from the called to the calling data terminal, only in the case of a favorable comparison, the own code of the called data terminal stored in the called data terminal; and
- comparing at the calling data terminal the code of the called terminal transmitted thereto from the called data terminal

with the code of the called terminal previously transmitted from the calling to the called data terminal, and initiating transmission of data between the calling and the called data terminal only in the case of a favorable comparison of said codes at the calling data terminal.

4,246,443

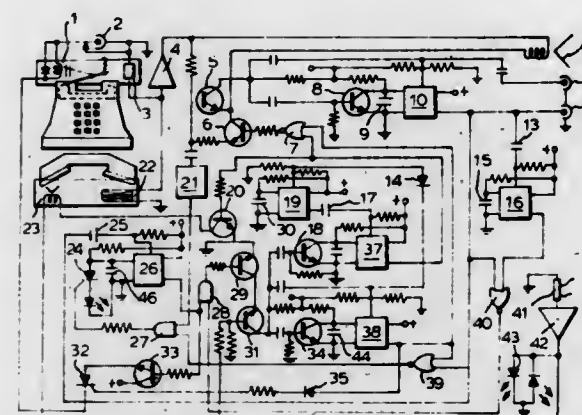
TELEPHONE INTERFACE CONTROLLER FOR UNATTENDED OPERATION

Edward D. Smith, 2200 S. Ocean Blvd. Apt. PH-7, Delray Beach, Fla. 33444

Filed Sep. 25, 1978, Ser. No. 945,313 Int. Cl.³ H04M 11/00

U.S. Cl. 179-2 R

5 Claims



1. An audio actuated communication interface system to provide for two-way audio communication between a conventional telephone set connected to a telephone line and a station remotely located from the telephone set, said system eliminating manual actuation of said telephone set, comprising:

- first channel circuit means coupled to said telephone line for transmitting an audio signal from said telephone line to said remote station;
- second channel circuit means coupled to said telephone line for transmitting an audio signal from said remote station to said telephone line;
- a main system timing means connected to said first and second channel circuit means for deactivating said first and second channel circuit means after a predetermined time in the absence of audio signals on said first and second channel circuit means;
- a ring sensing means connected to said first and second channel circuit means for activating said main signal timing means and for deactivating said second channel circuit means during each ring;
- means for activating said second channel circuit means between rings connected to said first channel circuit means and said second channel circuit means;
- audio signal responsive means connected to said second channel circuit means and said telephone line for placing said telephone set in an off-hook condition when an audio response is received on said second channel circuit means between rings;
- means for deactivating said first channel circuit means whenever an audio signal is present on said second channel circuit means;
- means for deactivating said second channel circuit means whenever an audio signal is present on said first channel circuit means;
- means for placing said telephone set in an on-hook condition whenever an audio signal is not present on either said first or second channel circuit means for a predetermined period of time, said means for placing said telephone set in an on-hook condition being connected to said main system timing means;
- first channel circuit controller means for generating a first control signal connected to said first channel circuit

4,246,445

SYSTEM FOR CONTROLLING THE TRANSMISSION OF SPECIFIC DIAL NUMBERS

Toshiaki Hayasaka, Tokyo; Yoshio Shinoda, and Masatoshi Terasawa, both of Yokohama, all of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Continuation of Ser. No. 861,867, Dec. 19, 1977. This application Feb. 27, 1979, Ser. No. 15,790

Claims priority, application Japan, Dec. 28, 1976, 51/159782 Int. Cl.³ H04M 1/66

U.S. Cl. 179-18 DA

9 Claims

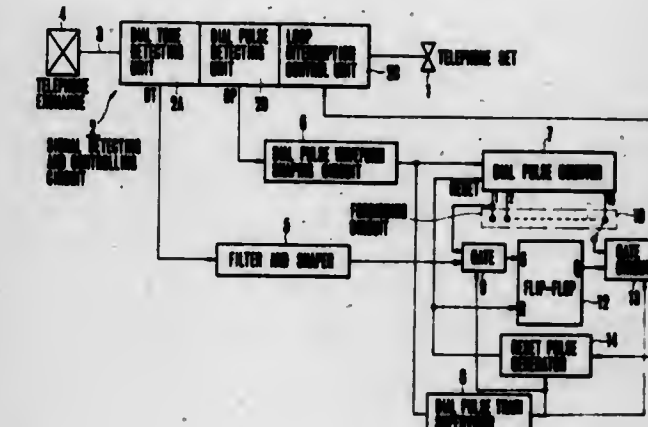
means activated by an audio signal on said first channel circuit means;

second channel controller means for generating a second control signal connected to said second channel circuit means activated by an audio signal on said second channel circuit means;

means for deactivating said first channel circuit means for a short interval of time prior to the activation of the output of the second channel circuit means connected to said second channel circuit means and said first channel circuit means;

means for extending the first control signal from said first channel circuit controller means for a predetermined short period after the termination of an audio signal on said first channel circuit means; and

means for extending said second control signal from said second channel circuit controller means for a predetermined short period after the termination of an audio signal on said second channel circuit means.



4,246,444

TELEPHONE HANDSET ACOUSTIC COUPLING CUP

Roy G. Mason, Sunnyvale, Calif., assignor to Anderson Jacobson, Inc., San Jose, Calif.

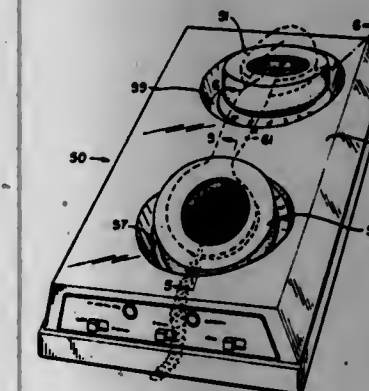
Continuation-in-part of Ser. No. 857,090, Dec. 5, 1977, Pat. No. 4,158,106. This application Jan. 26, 1979, Ser. No. 6,731

Claims priority, application Japan, Nov. 30, 1978, 53-147299 The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.³ H04M 11/00

U.S. Cl. 179-2 C

4 Claims



2. An acoustical data coupler, comprising: a case,

- two spaced-apart acoustic cups carried by said case, at least one of said acoustic cups being formed of a unitary molded structure, comprising:
 - a base portion adapted to be held by said case and having a circular opening therein,
 - means adapted to freely move within said base portion for carrying a telephone transducer,
 - a thin, flexible resilient fold joining said transducer carrying means with the bottom of said base portion in a manner to resiliently urge said transducer carrying means upward within said base and
- said at least one of said cups being mounted on a plate, said plate being adjustable with respect to said case in a direction toward and away from the other of said two acoustic coupling cups.

1. A system for controlling the transmission of a specific dial number from a telephone set provided with a dial to a telephone exchange, the system comprising: means for detecting a dial tone sent from said telephone exchange to said telephone set through an office line in response to an originating operation of said telephone set; dial pulse detecting means connected to said office line for detecting dial pulses which are applied to said office line when the dial of said telephone set is operated and for producing output signals representative thereof; a talking loop interruption control unit for interrupting the telephone talking loop in response to a control signal; a dial pulse counter, responsive to the dial pulse means output signals, for counting the number of dial pulses detected by said pulse detecting means and for providing output signals representative thereof; memory means, responsive to the output of said dial tone detecting means and an output signal from said dial pulse counter representative of the first dial pulse generated by a firstly turned digit of said dial, for providing an output signal only when said firstly turned digit is dialed after a dial tone has been sent from said telephone exchange; selection means which produces an output only when the output of said dial pulse counter corresponds to a forbidden dial digit; logic circuit means, responsive to outputs from said selection means and from said memory means, for producing said control signal for operating said talking loop interruption control unit to interrupt said talking loop when said firstly turned digit corresponds to the forbidden digit or when said firstly dialed digit is dialed before the dial tone is sent from said telephone exchange; a dial pulse train supervisor responsive to the output of said dial pulse detecting means for supervising a dial pulse train; means to supply the output of said dial pulse train supervisor to said logic circuit means; and a reset pulse generator, responsive to the control signal from said logic circuit means, for producing a reset pulse to reset said dial pulse counter and said memory means a predetermined time after the production of said control signal by said logic circuit means.

4,246,446

MOVING COIL PICK-UP WITH COILS PRINTED ON OPPOSITE SIDES OF WAFER

Satoshi Yoshida; Masaru Chijiwa, and Shinji Yasuda, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan.

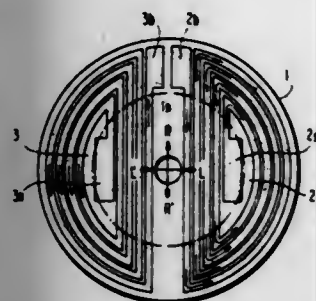
Filed Dec. 19, 1978, Ser. No. 971,131

Claims priority, application Japan, Dec. 23, 1977, 52-154319

Int. Cl.³ H04R 9/16, 9/04

U.S. Cl. 369—136

8 Claims



1. A moving coil pick-up for converting a first signal into a second signal and having spiral coils printed on an insulating wafer, each coil having respective inner and outer terminals, wherein the improvement comprises:

- first and second semi-circular D-shaped coils printed on one surface of the wafer, said coils being oriented such that their respective straight lines of the D-shape are spaced apart and parallel to each other, said coils being spiraled in opposite directions;
- third and fourth semi-circular D-shaped coils printed on the other surface of the wafer, said coils being oriented such that their respective straight lines of the D-shape are spaced apart and parallel to each other, said coils being spiraled in opposite directions; and
- the pair of first and second coils being angularly displaced by 90° with respect to the third and fourth coils such that the straight lines of said first and second coils are at an angle of 90° relative to the straight lines of said third and fourth coils.

4,246,447

PIEZOELECTRIC TRANSDUCER DRIVE

Gilbert C. Vorie, Newark, N.Y., assignor to IEC Electronics Corporation, Newark, N.Y.

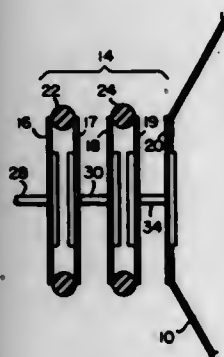
Continuation-in-part of Ser. No. 923,080, Jul. 7, 1978,

abandoned. This application May 29, 1979, Ser. No. 43,505

Int. Cl.³ H04R 17/00

U.S. Cl. 179—110 A

6 Claims



1. An electro-acoustical transducer comprising a pair of piezoelectric discs each of which in operation flexes in a cup-like mode, an O-ring slightly greater in over-all diameter than said discs, said discs being connected to each other by engagement of said O-ring on radially outer portions of their planar faces, means mounting one of said two discs to a reference support, a mechanically drivable acoustical member, and means mechanically connecting the other one of said two discs to said acoustical member for driving it.

5. An electro-acoustical transducer comprising a first piezo-

electric disc which in operation flexes in a cup-like mode and is characterized by a nodal circle spaced inwardly from its rim, a rigid reference support, an O-ring having a mid diameter equal to the nodal circle of said disc and cemented between the disc and the support in close alignment with the nodal circle, and an acoustical diaphragm to be driven connected to the rim of said disc.

4,246,448

ELECTROMECHANICAL TRANSDUCER

Man C. Tam, and Loh-Yi Chang, both of Guelph, Canada, assignors to Uniroyal Ltd., Guelph, Canada

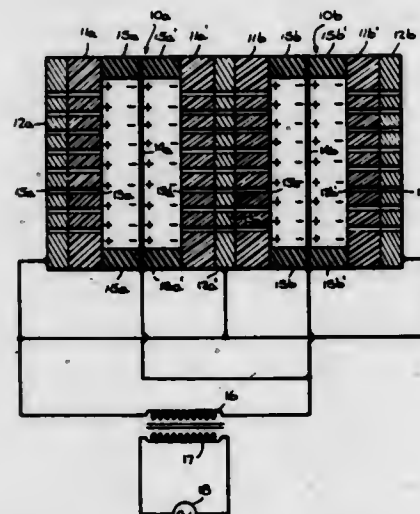
Continuation of Ser. No. 615,669, Sep. 22, 1975, abandoned. This application Aug. 3, 1977, Ser. No. 821,384

Claims priority, application Canada, Jul. 8, 1975, 231048

Int. Cl.³ H04R 19/00; B61F 17/00

U.S. Cl. 179—111 E

7 Claims



1. An electromechanical push-pull transducer comprising a first pair of electrostatically polarized stator electrets, conductive means adjacent each of said electrets, said electrets and said conductive means each having apertures therethrough, a first thin vibratory internally non-polarized diaphragm comprising a layer of conductive material, means for supporting said diaphragm between said electrets in spaced relation thereto throughout the dynamic operation of said diaphragm, said electrets being polarized to develop electrical charges of opposite polarity on the surfaces of said electrets facing said diaphragm, a second pair of electrostatically polarized stator electrets, one of said second pair of electrets being adjacent one of said conductive means, conductive means adjacent the other electret of said second pair, said second pair of electrets and said conductive means adjacent thereto each having apertures therethrough, a second thin vibratory internally non-polarized diaphragm comprising a layer of conductive material, means for supporting said second diaphragm between said second pair of electrets in spaced relation thereto throughout the dynamic operation of said second diaphragm, said second pair of electrets being polarized to develop electrical charges of opposite polarity on the surfaces of said second pair of electrets facing said second diaphragm, said second pair of electrets also being polarized to develop electrical charges of the same polarity as corresponding electrets of said first pair develop on said surfaces thereof facing said first diaphragm, said first and second diaphragms being so acoustically coupled as to vibrate in unison throughout the dynamic operation of the transducer, and circuit means for applying an alternating current signal between said diaphragms and said conductive means, said diaphragms being electrically connected and said conductive means being electrically connected.

4,246,449

ELECTROSTATIC TRANSDUCER HAVING OPTIMUM SENSITIVITY AND DAMPING

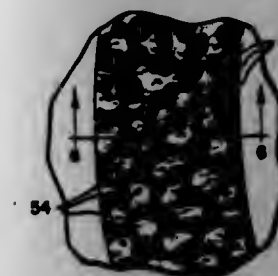
Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1979, Ser. No. 32,951

Int. Cl.³ H04R 19/00

U.S. Cl. 179—111 R

4 Claims



1. An electrostatic transducer comprising a relatively inflexible backplate having at least one major surface thereof formed of conductive material, a layer of insulative material disposed across said major surface of said backplate, and a relatively flexible layer of conductive material in tight contact with said layer of insulative material and disposed across the surface thereof remote from said backplate, said major surface being defined by a series of projections spaced apart by intervening grooves, the crest of said projections defining a substantially continuous imaginary curved or planar surface but comprising a multiplicity of lands and indents with said lands having a mean diameter on the order of between 0.0002 and 0.001 inch and the area of said imaginary surface displaced by said indents being on the order of between 50 to 70% of the total of said imaginary surface.

4,246,450

TELEPHONE TRANSDUCER ASSEMBLY AND METHOD OF MAKING SAME

Eugene Barber, Glen, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

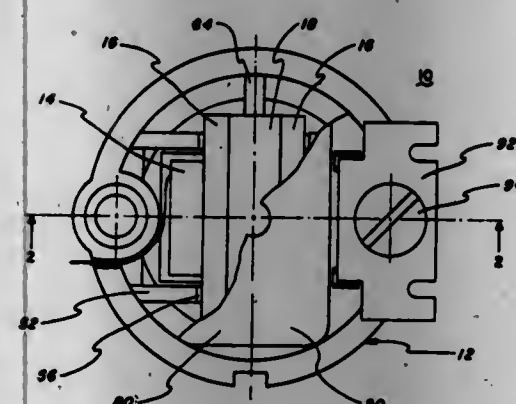
Continuation of Ser. No. 890,052, Mar. 27, 1978, abandoned.

This application May 25, 1979, Ser. No. 42,725

Int. Cl.³ G01G 13/24

U.S. Cl. 179—115.5 R

10 Claims



1. A method of assembling a transducer comprising the steps of (a) positioning a plurality of magnet pole pieces loosely within a first cup structure, (b) completing a magnetic path through the pole pieces to align the pole faces of the pole pieces in a plane parallel to the base of the cup structure, (c) holding said magnetic path to maintain the position of the pole faces in the plane while applying a material to said cup structure for permanently fixing the position of said pole faces relative to said plane, thereafter, (d) joining said cup structure to a second cup structure bearing an armature in confronting relationship to said pole faces, (e) adjusting the air gap between said pole faces and said armature, and (f) securing the joiner of said cup structures with said adjusted gap, and (g) in which

the step of positioning the placing of the pole pieces is accomplished by inserting the pole pieces into the cavity of said first cup structure so that the pole faces pass through openings in the base of the first cup structure and are located relative to the base of the first cup structure housing.

4,246,451

SECURITY MOUNTING SYSTEM FOR COIN TELEPHONE

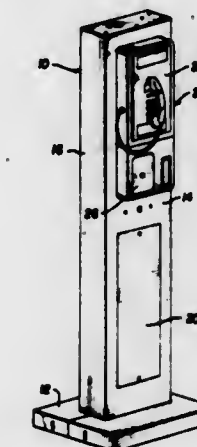
Walter E. Nix, Gainesville, Ga., assignor to Gladwin, Inc., Oakwood, Ga.

Filed Apr. 17, 1979, Ser. No. 30,909

Int. Cl.³ H04M 1/04

U.S. Cl. 179—146 R

10 Claims



1. A vandal resistant mounting for a coin telephone having a generally rectangular housing including a substantially vertical back wall panel, the mounting comprising, a hollow upright support having spaced front and back walls and an internal mounting wall disposed between and in generally parallel spaced relation to the front and back walls, an opening in the front wall dimensioned to receive a coin telephone housing with the opening closely conforming to the periphery of the telephone housing, a plurality of threaded openings in the mounting wall and located in a predetermined pattern corresponding to a standard fastener hole pattern in a coin telephone housing back wall panel for receiving threaded screw fasteners extending through the openings in the telephone housing back wall panel, a plurality of security studs each having a shank portion and an enlarged head located on and projecting rearwardly from the telephone housing back wall panel, a plurality of stud receiving openings in the mounting wall, said stud receiving openings being located and dimensioned to permit the security studs on the rear panel to pass therethrough when the coin telephone is positioned in the opening in the front wall, a latch plate having a plurality of keyhole-shaped openings formed therein, the keyhole-shaped openings each including an enlarged lower portion dimensioned to permit said security stud heads to pass therethrough and a smaller upper portion dimensioned to closely engage said security stud shanks while preventing the passage of said stud heads therethrough, mounting means supporting said latch plate on the back surface of said mounting wall for limited sliding movement therealong, said mounting means being integrally formed with said mounting wall and projecting rearwardly therefrom and defining guide means engaging said latch plate and confining movement thereof to vertical sliding movement; said latch plate including stop means for engaging at least selected ones of said guide members for limiting the vertical sliding movement of the latch plate between a raised and a lowered position, and aligned openings in said telephone housing back panel and

said mounting plate permitting access to said latch plate from within the telephone housing to permit manual movement of the latch plate between said raised and lowered positions, whereby, when said telephone housing is positioned within the opening in the front wall of the hollow upright support, said latch plate may be manually moved to the raised position at which the heads of said security studs can pass through the enlarged lower opening portions of said keyhole-shaped openings, after which the latch plate may be manually moved or permitted to move by gravity to the lowered position to engage said smaller upper portion of said keyhole-shaped openings with said stud shanks to releasably retain the coin telephone housing within the opening in the front wall with the threaded openings in the internal wall and the corresponding pattern of openings in the telephone housing rear wall panel being aligned for installation of screw fasteners to rigidly mount the telephone housing to the mounting plate and with said latch plate engaging said mounting studs reinforcing the screw fasteners to provide additional security against vandalism.

4,246,452 SWITCH APPARATUS

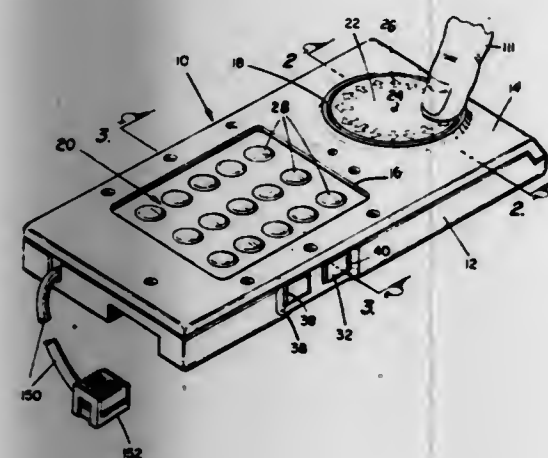
David P. Chandler, Downey, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 5, 1979, Ser. No. 1,237

Int. Cl.³ H01H 13/70, 25/00

U.S. Cl. 200—5 A

23 Claims



1. In a switch apparatus, the combination comprising: a first substrate having a generally planar surface with a ring pattern thereon, said ring pattern including a plurality of generally identical fully conductive arcuate segments with intervening arcuate segments interposed therebetween, said intervening arcuate segments being formed from interleaved non-contacting pairs of conductors, the arc of said intervening segments being approximately one-half the arc of the fully conductive segments; a second substrate of a flexible material having a second generally identical ring pattern thereon; means for maintaining said second substrate in spaced proximate relation to said first substrate with said ring patterns in facing relation with one of said ring patterns offset circumferentially relative to the other by an angle generally equal to the arc of one of said intervening segments; and means for selectively urging any portion of said second ring pattern into conductive relation with the adjacent portion of the first ring pattern for providing a signal indicative of the portion so contacted.

4,246,453 SWITCH

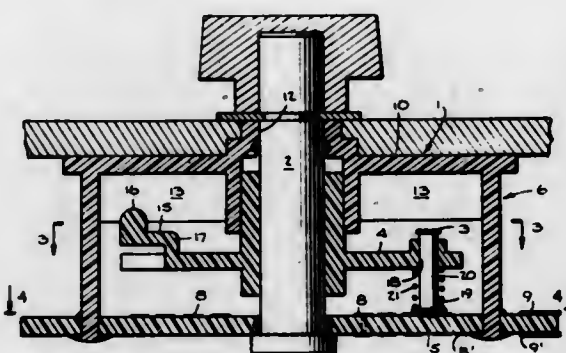
Justin W. Marchese, Belleville, N.J., and Daniel R. von Recklinghausen, Arlington, Mass., assignors to Electro Audio Dynamics, Inc., Great Neck, N.Y.

Continuation of Ser. No. 838,132, Sep. 30, 1977, abandoned. This application Jul. 12, 1979, Ser. No. 56,920

Int. Cl.³ H01H 19/54

U.S. Cl. 200—11 R

5 Claims



1. A switch comprising the combination of a hollow switch body, a contact plate attached to said hollow switch body, a movable contact mounting member including a shaft movably mounted on said hollow switch body, a printed circuit formed on a surface of said contact plate having a plurality of fixed contacts, said movable contact mounting member having a plurality of apertures for movable contacts therein, a movable contact mounted in each of said apertures and positioned for being moved by said contact mounting member into bridging relationship with pairs of fixed contacts of said printed circuit, said movable contacts comprising metal members each having a pair of spaced projections and being slidably positioned in said apertures between said spaced projections, springs positioned around said movable contacts between said contact mounting member and one of said projections for urging said movable contacts against said fixed contacts, said hollow switch body having a plurality of integral detents, and the contact mounting member having an integral detent engaging arm positioned for engaging said detents for positioning said movable contacts with respect to said fixed contacts.

4,246,454 TIMING MECHANISM HAVING A SHORT PULSE PRIOR TO ITS OVERALL PROGRAM

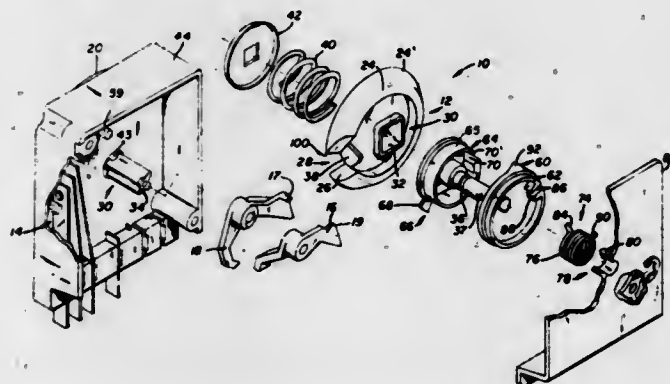
Donald L. Ray, Oaklandon, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Dec. 11, 1978, Ser. No. 967,917

Int. Cl.³ H01H 7/08

U.S. Cl. 200—38 R

11 Claims



11. In a timing mechanism wherein at least one pulse cycle is provided prior to another pulse cycle, a single cam rotatably driven on a shaft means, at least two cam followers engaging an outer periphery of said single cam, means axially displacing

said single cam along said shaft means whereby said cam followers sequentially drop from said periphery to cause actuation of said cam followers, switch means responsive to said actuation, and release means permitting said single cam to axially displace and return to its original position past said cam followers.

4,246,455 CHAIN PULL SOCKETS

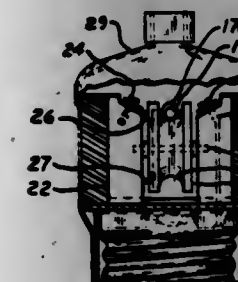
Richard L. Pillsbury, 14270 Ardel Dr., Lake Park, Fla. 33403

Filed Jun. 21, 1979, Ser. No. 50,875

Int. Cl.³ H01H 17/16

U.S. Cl. 200—51.15

3 Claims



1. In a pull switch for lamp sockets, the combination of an insulator body formed of two parts, a rotatable pulley wheel mounted between said two parts of said insulator body, said pulley wheel having a central portion and two side flanges, ratchet teeth provided on the central portion of said rotatable pulley wheel, a pull chain having an enlarged bead adapted to engage said ratchet teeth to rotate said pulley wheel, a return spring for retracting said chain, a contact plate mounted on one of said flanges of said rotatable pulley wheel, alternating insulator portions and contact portions on said contact plate, removable conductor points mounted to one of the two parts of said insulator body and positioned to contact the conductor plate and alternatively make and break the electric circuit upon the conductor points being to contact with said central portions and said insulator portions respectively.

4,246,456 MONITORING DEVICES

Haydn A. Leonard, Norwich, England, assignor to The Marconi Company Limited, Chelmsford, England

Continuation of Ser. No. 788,034, Apr. 15, 1977, abandoned.

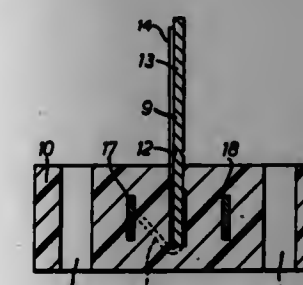
This application May 7, 1979, Ser. No. 36,370

Claims priority, application United Kingdom, Aug. 1, 1975, 32319/75

Int. Cl.³ H01H 35/00

U.S. Cl. 200—61.08

7 Claims



1. A safety device for providing electrical indication of machine malfunction, which comprises an elongate bar of fractureable material, means for anchoring one end of said bar upon a first machine portion to project said bar in cantilever fashion therefrom and position the free end of said bar to be struck with fracturing force by a second machine portion in response to machine malfunction, said first and second machine portions being relatively movable along a path generally normal to the longitudinal axis of said elongated bar, said bar presenting an outer surface between the ends thereof, electrical

path means on said surface for providing electrical indication when said bar is fractured, said path means comprising a loop of electrically conductive material presenting spaced leg portions extending lengthwise of said bar and a bight portion joining said leg portions adjacent said free end of the bar and remote from terminal ends of said leg portions, said loop of conductive material being in the form of a thin film layer formed on and joined to said surface so as to be exposed for visual inspection while assuring rupture thereof in response to fracture of said bar, means transversely spanning said bar for weakening the same such that fracture of said bar will occur at and transversely across said weakening means, and said weakening means being further located between said bight portion and said terminal ends thereby assuring that fracture of said bar results in the rupture of said conductive material.

4,246,457 ELECTRICAL SWITCH CONSTRUCTION, PARTS THEREFOR AND METHODS OF MAKING THE SAME

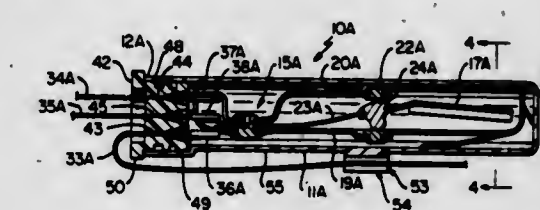
Allen L. Telchert, Placentia; Richard W. McKloney, Lakewood, both of Calif., and Edgar E. Marquis, Newtown, Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 16, 1979, Ser. No. 3,995

Int. Cl.³ H01H 9/02

U.S. Cl. 200—303

4 Claims



1. In an electrical switch construction having an electrical switch assembly disposed in a protective envelope and having lead means extending from said assembly and projecting externally from said envelope out through opening means in one end of said envelope, the improvement comprising a removable end closure carried by said envelope and closing said opening means of said one end thereof, said end closure having aperture means therethrough and removably receiving said lead means therethrough whereby said switch assembly is adapted to be carried by said end closure away from said protective envelope when said end closure is removed from said one end of said protective envelope and said switch assembly is adapted to be removed from said end closure by pulling said lead means out of said aperture means thereof, said protective envelope comprising a one-piece member, said protective envelope having integral clip means thereon holding said lead means adjacent to said protective envelope.

4,246,458 VACUUM INTERRUPTER

Satoru Yanabu, Yokohama; Tohru Tamagawa, Chigasaki; Shigeo Souma, Tokyo; Takumi Funahashi, Yokohama; Hiroyuki Okumura, Chigasaki, and Nobuyuki Takahashi, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 4, 1978, Ser. No. 893,401

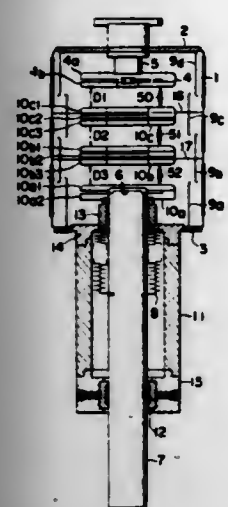
Int. Cl.³ H01H 33/66

U.S. Cl. 200—144 B

2 Claims

1. In a vacuum interrupter of the type comprising a vacuum vessel and a pair of separable main electrodes located in said vacuum vessel, at least one of said main electrodes being provided with a coil electrode for generating an axial magnetic field, the improvement which comprises a flat annular intermediate electrode which is positioned between said main electrodes when said main electrodes are open and provided with an opening at its center through which one of said main electrodes passes, said intermediate electrode comprising two contact electrodes each having an arc sustaining surface and a

current path between said contact electrodes for passing current from one of said contact electrodes to the other thereof,



said current path being disposed along the peripheries of said contact electrodes and comprising a plurality of equally divided coil electrodes.

4,246,459

GAS CIRCUIT BREAKER

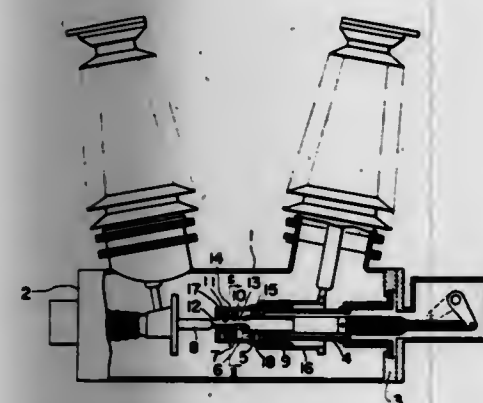
Eiichi Haginomi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 17, 1977, Ser. No. 797,635

Int. Cl.³ H01H 33/88

U.S. Cl. 200-148 A

1 Claim



1. In a gas circuit breaker for high voltage use of the type comprising an arc extinguishing chamber, a stationary contact mounted on the inside wall of said chamber, an operating rod located in said chamber, and a movable contact disposed to oppose said stationary contact and be moved by said operating rod, and in which compressed gas is blasted about an arc generated by the separation of said stationary and movable contacts, the improvement which comprises means for creating a blast of compressed gas when said contacts are separated, and a plurality of partition plates spaced from one another in the direction of movement of said movable contact and provided within said chamber to surround said arc established between said separated contacts, said means for creating a blast of compressed gas comprising a puffer cylinder-piston assembly including a puffer cylinder integrally formed and moved together with said movable contact and a stationary puffer piston connected to one end of said arc extinguishing chamber, said plurality of plates being provided with passages extending between said plates and directed in the direction of the movement of said movable contact for channeling gas flow from said blast creating means to spaces between adjacent plates, and means for directing a part of the gas flow from said blast creating means to said arc for directly blasting said gas flow part about said arc and for directing another part of said gas flow through said passages to said arc for blasting said another part of said gas flow about said arc at a plurality of nozzle portions formed by

said plates, the blasted gas flows not being remixed after arc interruption.

4,246,460

X-RAY DIAGNOSTIC GENERATOR WITH CONTROL MEANS FOR THE ADJUSTMENT OF THE X-RAY TUBE VOLTAGE VIA THE X-RAY TUBE CURRENT

Kurt Franke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

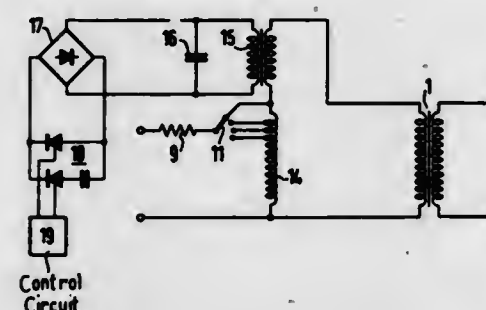
Filed Mar. 2, 1979, Ser. No. 17,022

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2828036

Int. Cl.³ H05G 1/30

U.S. Cl. 250-409

2 Claims



1. An x-ray diagnostic generator comprising an x-ray tube, a supply circuit for supplying the x-ray tube including a high voltage transformer, and control means for the x-ray tube current and the x-ray tube voltage wherein for the adjustment of the x-ray tube voltage, said control means controls the x-ray tube current in such manner that the desired x-ray tube voltage adjusts itself on the basis of the voltage drop in the supply circuit of the x-ray tube, characterized in that, for the adjustment of the x-ray tube voltage, in addition to the control means (8) for the x-ray tube current, means (14 through 19) are provided in the primary circuit of the high voltage transformer (1) for changing the primary voltage of the high voltage transformer, said last-mentioned means comprising a pre-transformer (14, 15) preconnected to the high voltage transformer (1), which pre-transformer exhibits a winding part (15), and a pulse circuit (16 through 19) connected with said winding part (15) and operable to periodically switch said winding part (15) on and off to provide the desired primary voltage of the high voltage transformer (1).

4,246,461

INDUCTION WELDING APPARATUS FOR PLASTIC CONTAINERS

Jan-Bertil Jeppson, Lomma, Sweden, assignor to AB Akerlund & Rausing, Sweden

Filed Oct. 25, 1978, Ser. No. 954,624

Claims priority, application Sweden, Oct. 25, 1977, 7711972; Apr. 10, 1978, 7803976

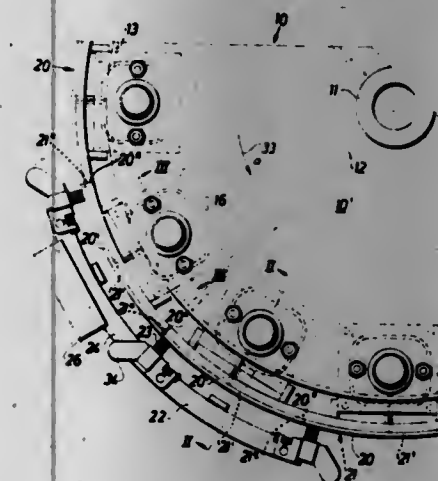
Int. Cl.³ B23K 13/02; H05B 6/10

U.S. Cl. 219-10.53

9 Claims

1. Apparatus for the induction welding of containers which are each made from a plurality of substantially plastic components, comprising a plurality of pairs of support members, each pair of support members supporting a corresponding pair of components in positions they are to assume in a completed container and including a first support member movable along a feed path for supporting one of the components in a predetermined position and a second support member movable along said feed path for supporting another of the components substantially independently of said one component and said first support member but in a second predetermined position, which is fixed relative to said first predetermined position, said first and second predetermined positions corresponding to fixed positions said components are to assume in a completed con-

tainer; a multiplicity of welding tools, each of which is included in one of said first and second support members of a corresponding pair of support members for welding together components supported by said corresponding pair of support members to form a corresponding container; moving means for continuously moving said plurality of pairs of support members along said feed path, said moving means including a generally round table rotatable about a fixed axis of rotation extending generally perpendicular to a plane containing a diameter of said table, said plurality of pairs of support members being mounted on said table in a circular pattern in which said welding tools are spaced apart equidistantly; and energizing means for simultaneously energizing at least a pair of adjacent welding tools which are moving over a predetermined portion of said feed path at one time, whereby a multiplicity of containers may be welded simultaneously, said energizing means includ-



ing a high-frequency electrical generator, a stationary manifold electrically connected to said generator and arranged radially adjacent to a circumferential outer edge of said table so as to delimit said predetermined portion of said feed path, and a plurality of pairs of spaced-apart rails attached to said circumferential edge of said table, each pair of rails being engageable with said manifold and electrically connected to a corresponding one of said welding tools, said first and second support members of each pair of support members maintaining a corresponding pair of components in said fixed positions during the welding of said corresponding pair of components and thereafter, until the welded area of said corresponding pair of components reaches a predetermined low temperature which is less than the temperature that said welded area normally reaches during welding and sufficiently low to inhibit shrinkage deformation of a container formed from said corresponding pair of component.

4,246,462

MICROWAVE TUNNEL OVEN FOR THE CONTINUOUS PROCESSING OF FOOD PRODUCTS

Nicolas Meisel, Rue du Pavé, 78680 Epone, France

Filed Oct. 4, 1976, Ser. No. 729,845

Claims priority, application France, Oct. 9, 1975, 75 31023

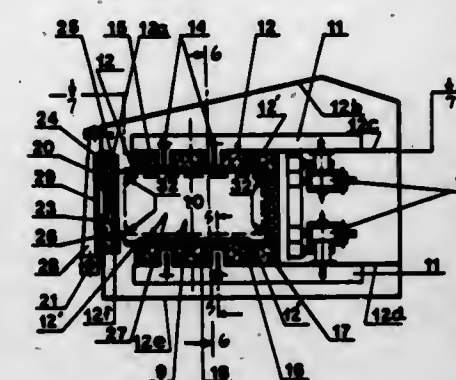
Int. Cl.³ H05B 6/78

U.S. Cl. 219-10.55 A

10 Claims

1. A microwave oven comprising,
(a) a microwave cavity of extended length having a top conductive wall, a bottom conductive wall, and side conductive walls,
(b) said cavity walls being so connected that the fields of said microwave energy launched into the cavity are bounded by said walls,
(c) the cross section of said cavity transverse to said extended length being of overall width W and height H and having a cruciform shape which is substantially uniform along said extended length and defines a central cavity axis,
(d) an entrance shield at one end of said cavity that prevents

the escape of microwave radiation energy from the cavity at said one end,
(e) an exit shield at the other end of said cavity that prevents the escape of microwave radiation energy from the cavity at said other end, and
(f) means for launching microwave energy into said cavity at places along the top wall or bottom wall such that the cruciform shape blocks some direct radiation from the



launching places toward the intersections of side walls with the top or bottom wall, but does not block direct radiation toward the central portion of the cavity about the cavity axis,

(g) whereby the intensity of the fields of said microwave energy within said cavity tends to be greater along said axis than along the intersection of said side walls with said top and bottom walls.

4,246,463

METHOD AND APPARATUS FOR ARC WELDING OF METAL PLATES FROM ONE SIDE ONLY

Robert C. Shutt, Gates Mills; Thomas J. Black, Middleburg Heights, and Victor Y. Matthews, University Heights, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

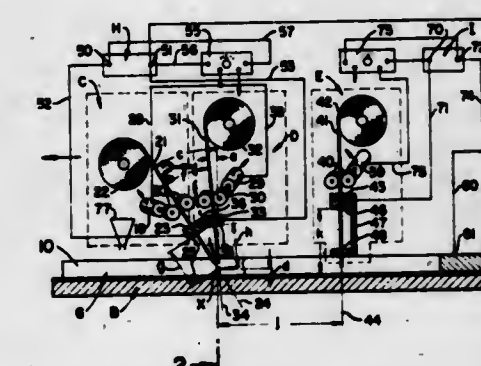
Continuation of Ser. No. 801,624, May 31, 1977, abandoned.

This application Feb. 13, 1979, Ser. No. 11,946

Int. Cl.³ B23K 9/18

U.S. Cl. 219-73.2

20 Claims



10. In a method of electric arc welding together the spaced parallel edges of a pair of metal plates wherein: the gap below the edges is bridged by a backup plate having an upwardly facing surface; first and second consumable welding electrodes, in electrical series with the output terminals of a power source, are advanced longitudinally toward the gap between said edges on converging lines of movement and moved in tandem parallel to said gap with said first electrode leading said second electrode; the improvement which comprises: one of said electrodes being electrically connected to said plates by substantially zero impedance means and thus being at substantially workpiece potential, said lines of movement intersecting at a point vertically aligned with said gap and spaced above said backup plate surface and at least $\frac{1}{8}$ inch above the lower surfaces of said plates whereby an arc is formed both between

the ends of said electrodes and between the other electrode and said edges and weld metal is deposited in said gap.

4,246,464

DEVICE FOR WELDING METALLIC HOLLOW BODIES WITH A MAGNETICALLY MOVED ELECTRIC ARC
Manfred Altstetter, Wulfertshausen; Norbert Pache, and Karel Mazac, both of Augsburg, all of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Fed. Rep. of Germany

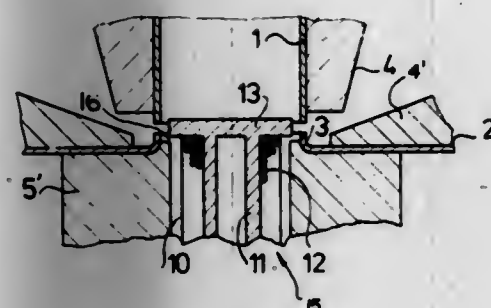
Filed Feb. 5, 1979, Ser. No. 9,600

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805562

Int. Cl.³ B23K 9/08

U.S. Cl. 219—123

3 Claims



1. A device for welding the tubular ends of two workpieces together in end-to-end connection by means of an electric arc which circulates under the effect of an electromagnetic field along a closed welding path in a gap between the two workpieces, comprising magnetic coil means for producing the electromagnetic field of the type having an elongated central member supporting a pole shoe extending across one end of the central member and a winding around said central member, said magnetic coil means being adapted so that the periphery of said pole shoe is disposed adjacent to the gap, a centering member having a tubular bore adapted to receive said magnetic coil means, said tubular bore of said centering member terminating in a rim portion for centering and seating the tubular end of one of the workpieces to be welded, said elongated central member being disposed within said tubular bore in spaced relationship with said centering member and means for clamping said workpieces relative to said centering member to form a consistent magnetic circuit.

4,246,465

PULSED-ARC D.C. TIG WELDING APPARATUS
Rolf Ericsson, Laxa, Sweden, assignor to ESAB Aktiebolag, Sweden

Filed Feb. 21, 1978, Ser. No. 879,481

Claims priority, application Sweden, Feb. 28, 1977, 7702147

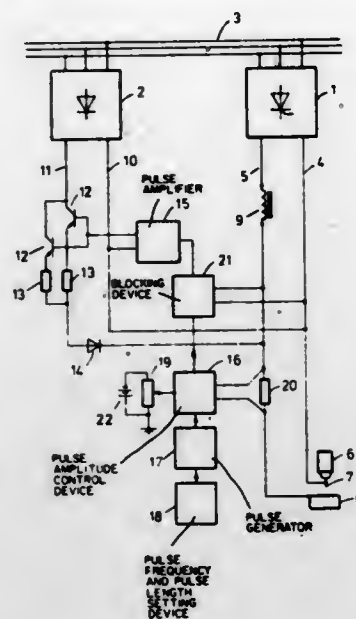
Int. Cl.³ B23K 9/09

U.S. Cl. 219—130.51

2 Claims

1. Arc welding apparatus comprising:
silicon controlled rectifier means for receiving power from an A.C. supply and providing D.C. power to a non-consumable electrode and workpiece, said silicon controlled rectifier means being connected by first and second current conductor means to said non-consumable electrode and workpiece, respectively, to maintain an arc between said electrode and said workpiece, one of said first and second current conductor means connecting an inductor in series with the electrode for smoothing the welding current delivered from said silicon controlled rectifier means;
third and fourth current conductor means for connecting a D.C. power supply to said non-consumable electrode and said workpiece, respectively, one of said third and fourth current conductor means having transistor means connected in series therewith;
means for producing an adjustable control signal for control-

ling the flow of current through said transistor means to provide periodically recurring welding current pulses of predetermined length and amplitude to the arc in addition to the welding current delivered by the silicon controlled rectifier means; and



means for switching the transistor means to a non-conducting state independent of said adjustable control signal when the voltage between the electrode and the workpiece is below a predetermined level.

4,246,466

ELECTRIC HEAT STORAGE APPARATUS
Richard E. Rice, Arlington; Barry M. Cohen, Newton, and George W. Webb, Revere, all of Mass., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

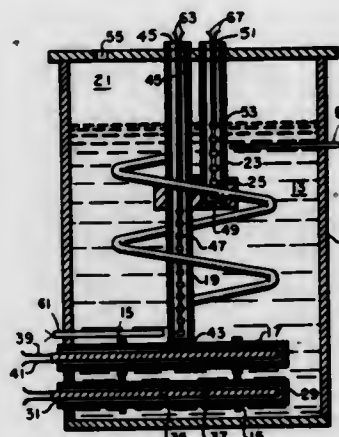
Continuation-in-part of Ser. No. 871,729, Jan. 23, 1978;

abandoned. This application Aug. 20, 1979, Ser. No. 67,997

Int. Cl.³ H05B 1/02; F24H 7/02

U.S. Cl. 219—325

8 Claims



1. An apparatus for storing heat comprising:
a container having a bed of fusible heat storage medium therein;
a main heating unit located in the bottom portion of said container for heating said bed of fusible medium above its melting point;
a first vertical heater located in said bed of fusible heat storage material and in thermal contact with the main heating unit, the active portion of said first vertical heater extending upwardly from said main heating unit substantially only to the height of the heat storage medium in solid phase, and
a second vertical heater located in said container and in thermal contact with said first vertical heater, the active portion of said second heater extending substantially only from the height of said heat storage medium in solid phase

to the height of said heat storage medium in liquid phase, said first and second vertical heaters being independently energizable.

4,246,467

ELECTRIC TERMINAL FOR CONNECTING A HEATING GRID ON A THERMAL WINDOW

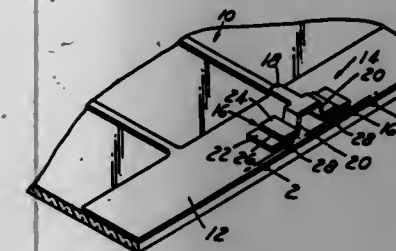
Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 20, 1979, Ser. No. 59,350

Int. Cl.³ H05B 3/06

U.S. Cl. 219—522

10 Claims



1. In an electrical terminal for connecting a heating grid on a thermal window to a source of electric power in which the electrical terminal has at least one bonding foot and a lead area to which an electrical connection can be made, the lead area being integral with the bonding foot, the improvement comprising:

a bonding foot formed so as to have at least a first planar portion and a second planar portion and an interconnecting portion interconnecting said first and said second planar portions, said first and said second planar portions extending in spaced but substantially parallel planes so that when the terminal is solder bonded to a heating grid on a thermal window, said first planar portion of the bonding foot is in close proximity to the heating grid and said second planar portion of the bonding foot is spaced from but is interconnected by electrically conductive solder with the heating grid.

4,246,468

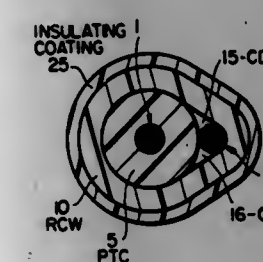
ELECTRICAL DEVICES CONTAINING PTC ELEMENTS
David A. Horvath, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 30, 1978, Ser. No. 873,676

Int. Cl.³ H05B 3/10

U.S. Cl. 219—553

30 Claims



1. An electrical device which comprises
(a) at least two electrodes which are connectable to a source of electrical power;
(b) at least one PTC element;
(c) at least one relatively constant wattage (RCW) element in physical contact with a PTC element; and
(d) at least one current-directing (CD) element between the electrodes; wherein when the electrodes are connected to a source of electrical power while the whole device is below its operating temperature or substantially immediately after such connection, the current path passes through at least one PTC element and at least one RCW

element in contact therewith, with the resistance of that current path being greater than the resistance of the current path that would be adopted if the CD element between the electrodes was replaced by an element of the same shape but composed of the same composition as that RCW element; subject to the proviso that, if each CD element is composed of a relatively insulating composition, all cross-sections through at least one of the electrodes show at least a part of the surface of the electrode in contact with a PTC element or an RCW element.

4,246,469

MICROWAVE SEED SENSOR

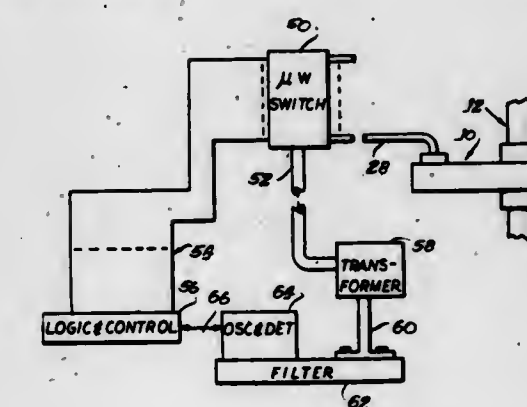
Angelo Merlo, Sterling Heights, Mich., assignor to Dickey-John Corporation, Auburn, Ill.

Filed Nov. 8, 1978, Ser. No. 958,730

Int. Cl.³ B65G 51/36

U.S. Cl. 235—92 PK

14 Claims



1. A microwave seed sensor for providing an output signal in response to passage of a seed through tubular conduit means forming a path of travel for seeds, comprising: a rectangular waveguide of predetermined interior width, height, and length, respectively, said predetermined width being a width at least as great as the cross-sectional dimension of said tubular conduit and which supports propagation of a standing wave pattern of predetermined order at a predetermined microwave frequency, tubular mounting means for mounting the waveguide in association with the tubular conduit means to define an intersection between the conduit means and the waveguide, said waveguide height being on the order of the dimension of a seed and defining a seed viewing area in said intersection in registry with a limited, predetermined portion of the path of travel formed by the conduit means, said seed viewing area being oriented so that said predetermined height dimension is in alignment with the direction of the path of travel of seeds through the conduit means for substantially achieving resolution of individual seeds as they pass along the portion of the path of travel in registry with the seed viewing area.

4,246,470

DIGITAL DEVICE FOR CHECKING STEADY-STATE VALUE OF ANALOGUE SIGNAL

Vladimir I. Skurikhin, ulitsa Chkalova, 41-a, kv. 18; Leonid S. Fainzilberg, ulitsa Saratovskaya, 18/16, kv. 8, and Leonid S. Zhitetsky, prospekt Vernadskogo, 61, kv. 8/4, all of Kiev, U.S.S.R.

Filed Nov. 27, 1978, Ser. No. 964,070

Int. Cl.³ G06M 3/14; G01N 25/04

U.S. Cl. 235—92 PB

1 Claim

1. A digital device for checking a steady-state value of the analogue signal, comprising
an analogue-to-digital converter for converting the analogue signal into a sequence of code pulses the number of which corresponds to an increment of the analogue signal, provided with a first output of code pulses corresponding to a positive increment of the analogue signal and with a

second output of code pulses corresponding to a negative increment of the analogue signal;

a clock pulse generator having an output;

a synchronization unit for distribution in time of code and clock pulses, having a first, a second and a third input, an output of synchronized clock pulses, a first output of synchronized code pulses corresponding to a positive increment of the analogue signal and a second output of synchronized code pulses corresponding to a negative increment of the analogue signal;

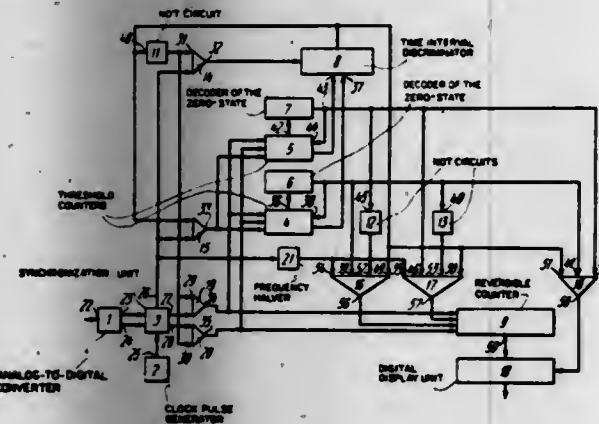
a time interval discriminator for selecting intervals between two sequence instants of time when a local increment of the analogue signal assumes a predetermined value, having a count input, a first and a second input of initial setting and an information output;

a first and a second threshold counter designed for determining local increments of the analogue signal, each having an add input, a subtract input, an additional subtract input, an input of subtract counting blocking, an overflow output and digit outputs;

a first and a second decoder designed for determining a zero state of the first and the second threshold counters, respectively, each said decoder being provided with inputs and output;

a frequency halver having an input and an output;

a reversible counter for generating a parallel code of calculation result, having an add input, a subtract input, an additional add input, an additional subtract input and digit outputs;



a digital display unit for displaying the calculated result and having an information input and a control input;

a first AND circuit having a first and a second input and an output;

a second and a third AND circuit, each having a first, a second, a third, a fourth inputs and an output;

a fourth AND circuit having a first, a second and a third input and an output;

a fifth, a sixth and a seventh AND circuit, each having a first and a second input and an output;

first, second, and third NOT circuits, each having an input and an output;

said first input of said synchronization unit connected to said first output of said converter of the analogue signal into a numerical pulse code;

said second input of said synchronization unit connected to said second output of said converter of the analogue signal into a numerical pulse code;

said third input of said synchronization unit connected to said output of said clock pulse generator;

said first inputs of said first, second, third and fourth AND circuits and said input of the first NOT circuit connected to said information output of said time interval discriminator;

said second inputs of said first and fifth AND circuits and said input of said frequency halver connected to said output of synchronized clock pulses of said synchronization unit;

said first inputs of said sixth and seventh AND circuits

connected to said first and second outputs of said synchronization unit, respectively;

said first input of said fifth AND circuit combined with said second inputs of said sixth and seventh AND circuits and connected to said output of said first NOT circuit;

said add input of said first threshold counter, said subtract input of said second threshold counter and said add input of the reversible counter connected to said output of said sixth AND circuit;

said subtract input of said first threshold counter, said add input of said second threshold counter and said subtract input of said reversible counter connected to said output of said seventh AND circuit;

said additional subtract inputs of said threshold counters, connected to said output of said first AND circuit;

said inputs of a subtract count blocking of said first and second threshold counters, connected to said outputs of the first and the second decoders, respectively;

said inputs of said first and second decoders, connected to said digit outputs of said first and second threshold counters, respectively;

said count input of said time interval discriminator, connected to said output of said fifth AND circuit;

said first and second inputs of initial setting of said time interval discriminator connected to said overflow outputs of said first and second threshold counters respectively;

said second inputs of said second and third AND circuits, connected to said output of said frequency halver;

said third input of said second AND circuit, connected to said output of the second NOT circuit;

said fourth input of said third AND circuit, connected to said output of said third NOT circuit;

said input of said second NOT circuit, said third input of said third AND circuit and said second input of said fourth AND circuit connected to said output of said first decoder;

said fourth input of said second AND circuit, said input of said third NOT circuit, said third input of said fourth AND circuit connected to said output of said second decoder;

said output of said second AND circuit connected to said additional subtract input of said reversible counter;

said output of said third AND circuit, connected to said additional add input of said reversible counter;

said digit outputs of said reversible counter, connected to said information input of said digital display unit;

said output of said fourth AND circuit, connected to said control input of said digital display unit.

4,246,471

DISTANCE MARKER

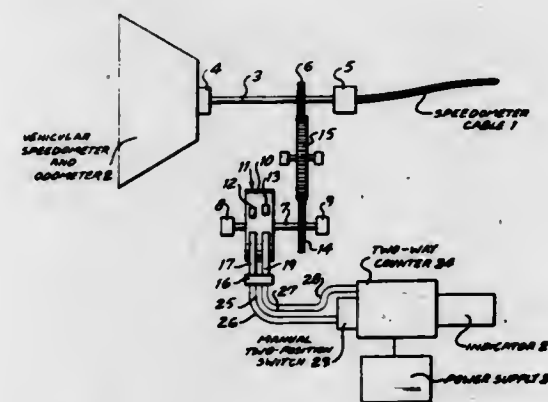
Merle F. Solberg, 183 South Ave., Hampshire, Ill. 60140

Filed Jan. 8, 1979, Ser. No. 1,441

Int. Cl.³ G06M 3/14; G06F 15/20

U.S. Cl. 235-92 DN

2 Claims



1. A distance marker for an automotive vehicle having a speedometer cable and a speedometer and an odometer cou-

pled to the speedometer cable for indicating the velocity of the vehicle and the distance travelled by the vehicle in unit distances, said distance marker comprising

a drive shaft interposed between the speedometer and odometer and the speedometer cable and coupled to and rotatable therewith in a manner whereby said drive shaft rotates at the same speed as said cable;

drive gear means affixed to and rotatable with said drive shaft;

a cam shaft rotatably mounted in operative proximity with said drive gear means;

a cam wheel affixed to and rotatable with said cam shaft, said cam wheel having a cylindrical rim and a cam mounted on said rim and extending therefrom;

coupling gear means affixed to said cam shaft and interposed between said cam and drive shafts for rotating said cam wheel one revolution per unit distance;

electrical contact means in operative proximity with said cam, said electrical contact means being in spaced open relation out of electrical contact when spaced from said cam and said cam causes said electrical contact means to move into electrical contact once per revolution of said cam wheel thereby closing said electrical contact means once per unit distance represented by a revolution of said cam wheel, said electrical contact means including first and second electrically conductive resilient leaves mounted in spaced operative proximity with each other, a first electrical contact mounted on the first leaf facing the second and a second electrical contact mounted on the second leaf facing the first, said first leaf being longer than said second leaf and being moved, once per revolution of said cam wheel, by said cam to space the first and second electrical contacts a greater distance apart than they are normally spaced whereby upon release of said first leaf by said cam, said first leaf is moved by its resiliency toward said second leaf to an extent whereby said first and second electrical contacts are instantaneously in electrical contact, said first leaf then being moved back by its resiliency to its normal position in which said first and second electrical contacts are spaced from each other;

a manually-operated two-position switch;

a two-way counter electrically connected to said electrical contact means via said switch for counting one count up when said switch is in one of its positions and each time said electrical contact means is closed and for counting one count down when said switch is in the other of its positions and each time said electrical contact means is closed; and

an indicator coupled to said counter for indicating the count of said counter and thereby a desired distance.

4,246,472

CONTROLLED STORE SEPARATION SYSTEM

John San; John C. Fartro, both of Fredericksburg, and Richard A. Ramey, Spotsylvania County, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 685,224, May 11, 1976, abandoned. This application Dec. 18, 1978, Ser. No. 970,423

Int. Cl.³ G06F 15/58; F41F 3/06

U.S. Cl. 235-401

6 Claims

1. A controlled store separation system for air launched weapons comprising:

a dual-piston store ejector for carrying the weapon;

a means for generating fluid pressure for actuating said pistons to eject the weapon;

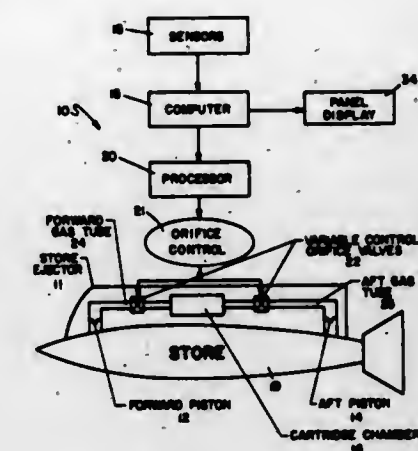
a pair of tubes interconnecting said fluid pressure generating means and said pistons;

a pair of variable control orifice valves, each of which is disposed in a tube between said cartridge and one of said pistons;

a plurality of sensors for detecting and signaling flight parameters;

computer means responsive to the signals from said sensors

for calculating the orifice size required in each valve to ensure safe store separation and accurate ballistic trajectory of said store; and



means driven by said computer for adjusting each valve to the computed size whereby the ejection force of each piston may be controlled.

4,246,473

CHARACTER READING SYSTEM

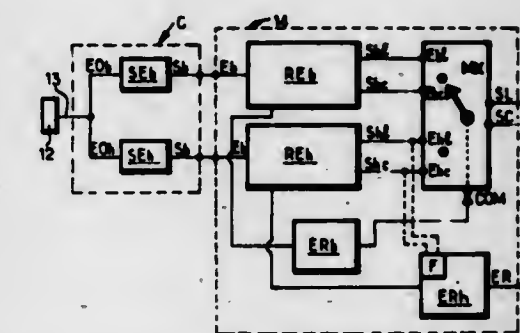
Daniel Manasson, Angers, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France

Filed Sep. 27, 1979, Ser. No. 79,363

Claims priority, application France, Oct. 19, 1978, 78 29048 Int. Cl.³ G06K 7/08, 7/14

U.S. Cl. 235-449

11 Claims



1. A system for reading coded characters formed on a document by a succession of groups of segments of constant width, which are aligned along a reading path and which, to define a given character, are separated from one another by intervals whose length are selected from a set of n predetermined lengths and which can be recognizable electronically by the detection of a physical, and in particular magnetic, phenomenon by a suitable type of sensor, of the kind comprising at least one reading head incorporating at least one such sensor arranged facing the said reading path for reading the characters upon relative movement of the document with respect to the reading head which has at least one analog signal output representing the said intervals read by the said sensor, comprising an output for signal pulses for each predetermined length, an analog/digital converter circuit connected to receive the said analog signal output, and a logic circuit for recognizing the said intervals and being connected between the output of said converter circuit and the said output for said signal pulses, said converter circuit comprising m threshold switching circuits having thresholds of different respective values, and said logic circuit for recognizing the said intervals:

having m separate recognition channels, m being a whole number greater than 1, each connected to the output of one of the said threshold switching circuits and each having a group of n outputs corresponding to the said n interval of length, and m positions selecting circuit having n outputs connected to respective ones of the pulse signal outputs for each said predetermined length, and m groups

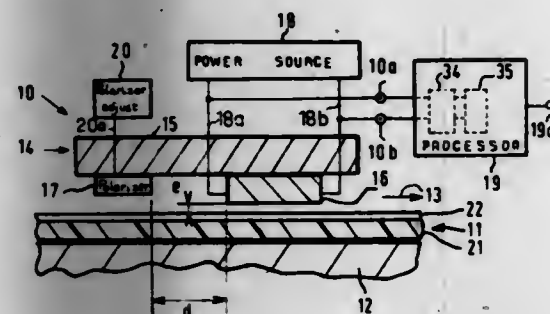
of n inputs each connected to a respective group of n outputs of the m recognition channels and also comprising control means for enabling the n inputs of one of the m groups to be brought selectively into correspondence with the n outputs of the said selecting circuits in a predetermined order progressing from the group connected to the recognition channel associated with the lowest threshold to the group connected to the recognition channel associated with the highest threshold, the groups being arranged in ascending order of the said thresholds, and means for detecting identification errors which are operatively coupled to the said control means to actuate the latter to produce and continue with the said predetermined order of succession for as long as an error is detected in the signals transmitted by a recognition channel whose outputs are currently coupled to the outputs of the said selecting circuits.

4,246,474

METHOD AND APPARATUS FOR READING MAGNETICALLY CODED DATA

Jean-Pierre Lazzari, Montfort l'Amaury, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France
Filed May 3, 1979, Ser. No. 35,482

Claims priority, application France, Jun. 16, 1978, 78 18039
Int. Cl.³ G06K 7/08; H04N 5/33; G11C 11/00
U.S. Cl. 235—430 7 Claims



3. Apparatus for reading data defined by a plurality of magnetic elements carried by a data carrier which emits respective predetermined external magnetic fields corresponding to the said data, comprising a source of substantially constant electrical current, at least one anisotropic magnetoresistive reading device which is coupled to the said source to react to magnetic exciting fields each determined by the vector sum of one of the said external fields which is received by the said magnetoresistive device and the demagnetizing magnetic field which is set up by the device in response to the said external magnetic field, and whose resistance normally varies, as a function of the said exciting fields, in accordance with a bell curve which is symmetrical with reference to the sign of the said exciting fields, a polarizing means adapted to emit a magnetic polarizing field and disposed to apply this field to the said magnetoresistive device in such a way as to shift the said curve in translation along the axis carrying the values of the said exciting fields by a value of magnetic field corresponding substantially to the maximum value of the modulus of the said exciting fields to which the magnetoresistive device is capable of reacting.

4,246,475

FAIL-SAFE OPTICAL REPEATER-AMPLIFIER ASSEMBLY FOR FIBER OPTIC SYSTEMS

Daniel E. Altman, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1978, Ser. No. 902,314
Int. Cl.³ H04B 9/00

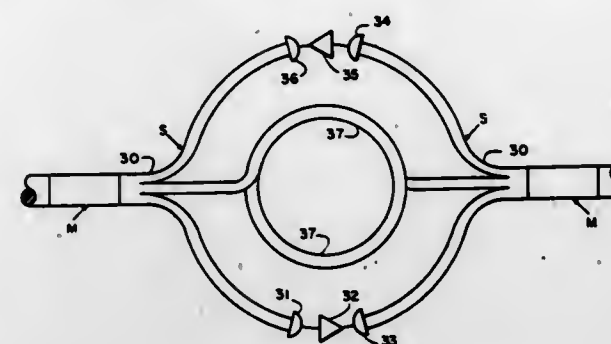
U.S. Cl. 455—612

5 Claims

1. In an optical data bus system an optical tee coupler comprising:
light energy amplifying means connected with said data bus

for developing a predeterminable gain of signal strength for light signals transmitted along said data bus in a known direction;

a passive, non-amplifying light path connected in parallel with said light energy amplifying means,
said light path having an optical length for impressing a delay on light signals passing therethrough which is sub-



stantially equal to the optical delay imposed by transmission through said light energy amplifying means;
an optical path disposed proximate to said passive, non-amplifying light path; and
means included in said passive, non-amplifying light path for deflecting partial signal strength of light signals transmitted therethrough from transmission through said optical path.

4,246,476

AUTOMATIC FOCUSING APPARATUS FOR USE WITH A PLURALITY OF LENSES

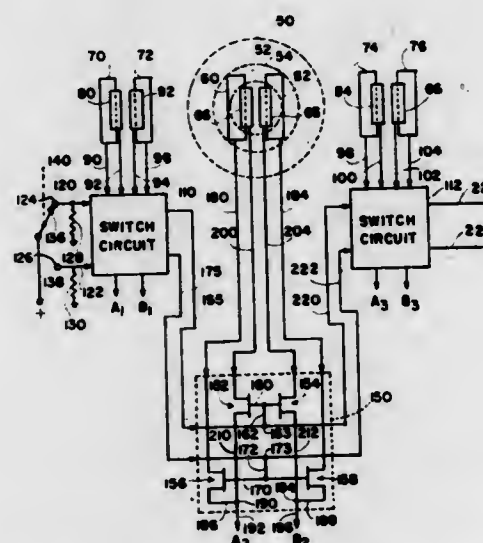
Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 12, 1979, Ser. No. 29,498

Int. Cl.³ H01J 40/14; G03B 3/10

U.S. Cl. 250—201

19 Claims



1. A detector arrangement for use with an optical system including;

an objective lens for producing an image of a remote scene at a first image plane;

a plurality of lenslets mounted proximate the first image plane for producing a plurality of images of the exit pupil of the objective lens at a second image plane, the image of the exit pupil having a first size when the objective lens is of a first f number and a second size when the objective lens is of a second f number; and

a first and second plurality of pairs of detectors mounted proximate the second image plane, the size of the first plurality of pairs of detectors being chosen so that the radiation sensing portion of each pair may closely fit entirely within a different one of the images of the exit

pupil of the first size and the size of the second plurality of pairs of detectors being chosen so that the radiation sensing portion of each pair may closely fit entirely within a different one of the images of the exit pupil of the second size.

4,246,477

ARTIFICIAL AND SOLAR LIGHTING SYSTEM

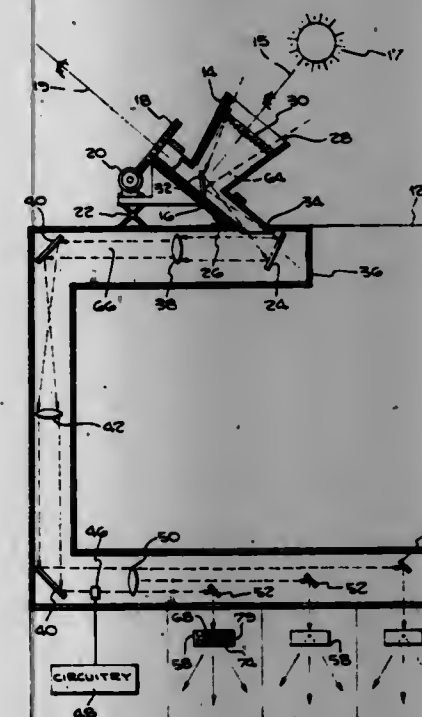
Albert L. Latter, Marina del Rey, Calif., assignor to R & D Associates, Marina del Rey, Calif.

Filed Sep. 18, 1978, Ser. No. 943,048

Int. Cl.³ F21V 33/00

U.S. Cl. 250—214 AL

24 Claims



17. A system for lighting the interior of a building through the use of sunlight and artificial light, comprising:
receiving means for collecting and concentrating sunlight;
tracking means for orienting said receiving means to follow the movement of the sun;
beam guiding means for directing concentrated sunlight from said receiving means to a plurality of locations in said buildings where distribution of said sunlight is to occur;
illumination source means for generating artificial light;
switching means for turning off electric power supplied to illuminate the interior of said building;
rigid frame means, including electrical sockets for supporting said illumination source means, and for receiving said concentrated sunlight from said beam guiding means, said frame means being mounted directly over the areas in said building to be illuminated;
dispersing means associated with said frame for scattering said received sunlight;
means included in the path from said sunlight receiving means to said dispersing means for establishing the intensity of the sunlight supplied to said dispersing means; and
diffusing means having surface areas receiving artificial light and sunlight and providing reasonably uniform illumination from both said artificial light and said dispersed sunlight.

4,246,478

POSITION DETECTOR WITH TWO TIMING DISKS ROTATING AT DIFFERENT SPEEDS

Yutaka Nishiyama, Higashiyama; Nagao Mizutani, Hachioji, and Tohio Kurihara, Tokorozawa, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

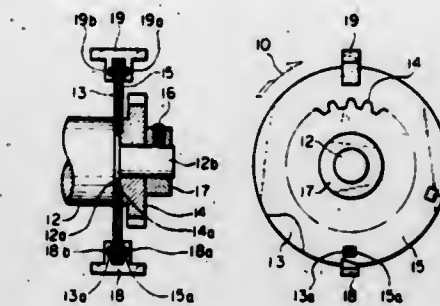
Filed Jan. 23, 1979, Ser. No. 5,746

Claims priority, application Japan, Jan. 30, 1978, 53-9020

Int. Cl.³ G01D 5/34

U.S. Cl. 250—231 SE

2 Claims



1. A position detector having a rotating member, comprising:
a first timing disk interconnected with said rotating member and having at least one light-transmissive portion;
a second timing disk mounted on the same axis as said first timing disk in close proximity thereto and rotatable at a predetermined speed ratio with respect to said first timing disk, said second timing disk having at least one light-transmissive portion; and
a timing sensor disposed in close proximity to the outer circumference of said first and second timing disks and having a light emitting element and light receiving element arranged to oppose each other with said first and second timing disks interposed therebetween;
the angular position of the rotating member being detected by means of an electric signal which the light-receiving element generates when the light-transmissive portions of said first and second timing disks simultaneously pass between the opposing light emitting element and light receiving element of said timing sensor.

4,246,479

ELECTROSTATIC ENERGY ANALYSIS

Kannampuzha G. Gopinathan, Bangor, Wales, assignor to National Research Development Corporation, London, England

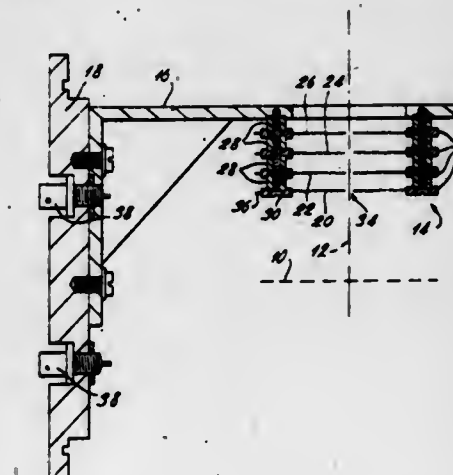
Filed Jan. 30, 1979, Ser. No. 8,691

Claims priority, application United Kingdom, Feb. 20, 1978, 06663/78

Int. Cl.³ H01J 40/00; G01N 23/00

U.S. Cl. 250—305

7 Claims



1. Apparatus for electrostatic energy analysis in an electron-beam probe instrument having means for mounting a specimen in a predetermined plane, the apparatus comprising:

a retarding-field analyzer element having at least three similar plane grids superimposed in parallel planes, each grid being pierced to enable an electron beam to pass unobstructed through the element on a common axis perpendicular to the plane of each grid and having independent means for external electrical connection; means for maintaining equal the capacitance between adjacent grids including means for maintaining the spacings between adjacent grids substantially similar; and means enabling the element to be rigidly mounted at a predetermined position spaced apart from the specimen mounting plane of the instrument such that the common axis is coincident with the beam axis of the instrument.

4,246,480

SURVEILLANCE ARRANGEMENT USING ARRAYS OF INFRARED

William J. R. Clark, Essex, England, assignor to Elliott Brothers, Chelmsford, England

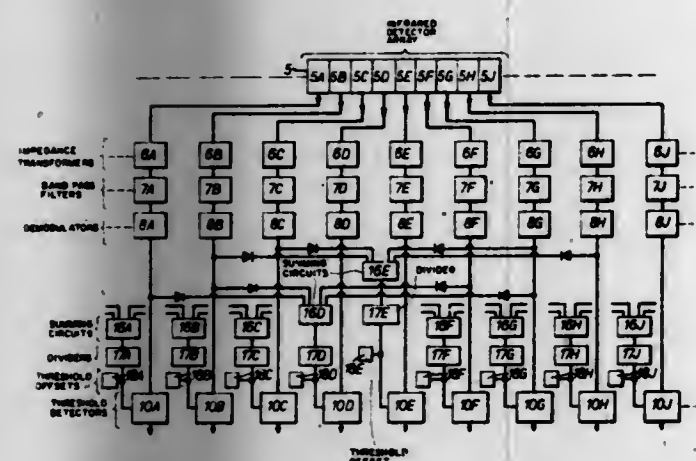
Continuation of Ser. No. 671,450, Mar. 30, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 881,359

Claims priority, application United Kingdom, Apr. 1, 1975, 13260/75

Int. Cl.³ G01J 1/00; H01J 31/49, 40/14

U.S. Cl. 250-349

17 Claims



1. A surveillance system comprising a number of infra-red detectors in an array with each detector being arranged to view a different portion of a field of view and a threshold detector provided in the output path of each infra-red detector, each threshold detector being arranged to have a threshold level which is dependent upon the output signal levels of adjacent infra-red detectors in said array and being operative to pass output from the infra-red detector with which it is associated, for surveillance utilization, if the output signal level of the infra-red detector last mentioned is relatively high compared to the output signal levels of said adjacent infra-red detectors.

4,246,481

CONTACT IONIZATION APPARATUS

Heinrich Liebl, Echting, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Förderung der Wissenschaften E.V., Göttingen, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,409

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1978, 2805273

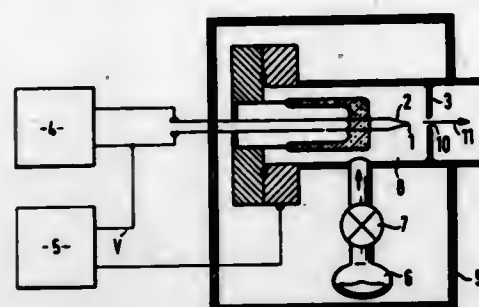
Int. Cl.³ H01J 27/00

U.S. Cl. 250-423 R

18 Claims

1. In an arrangement for producing a beam of accelerated ions comprising a heated ionizing surface at which atoms are ionized by contact therewith and an acceleration electrode towards which the ions produced at the heated surface are accelerated along an acceleration path, the improvement that

the heated surface is constituted by the domed end of a heater wire which is convexly curved towards the acceleration elec-



trode with a radius of curvature which is small compared with the length of the acceleration path.

4,246,482

COMPUTED TOMOGRAPHY METHOD AND APPARATUS

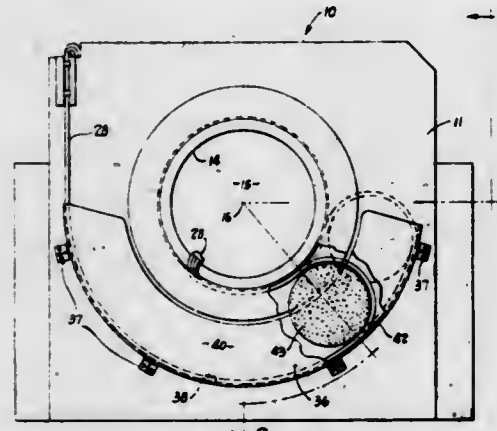
Anton Z. Zupancic, Kirtland, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Jan. 19, 1978, Ser. No. 917,068

Int. Cl.³ A61B 6/00; B60M 1/00; B65D 63/00

U.S. Cl. 250-445 T

20 Claims



1. A method of taking up a plurality of cables in a computed tomographic scanner comprising:

- (a) repetitively winding the cables from a slack portion onto and off of a rotatable cylindrical drum;
- (b) confining the slack in a cable supply space having a cable support surface concentric with the drum to form an arcuate bend in the cable; and,
- (c) maintaining the bend with a spongy disc positioned in the bend and engaging the cable.

4,246,483

X-RAY APPARATUS FOR TOMOSYNTHESIS

Hermann Weiss, Hamburg; Rolf Linde, Haseldorf; Ulf Tiemens, Prisdorf, and Erhard Klotz, Halstenbek, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,687

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801329; Jan. 18, 1978, 2801940

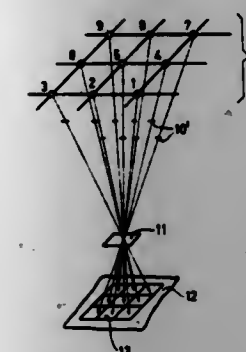
Int. Cl.³ A61B 6/00; G03B 41/16

U.S. Cl. 250-445 T

4 Claims

1. Apparatus for examining objects comprising: a multiplicity of X-ray sources, each having a comparatively small X-ray focus; a first housing for a flat X-ray registration medium; and a second housing surrounding the X-ray sources, the X-ray sources being fixed within the second housing in a geo-

metrical arrangement which permits mutually separable sub-images to be formed on the registration medium, the



X-ray foci of all of the sources being situated in a single plane.

4,246,485

X-RAY INTENSIFYING SCREENS

Terence R. J. Boesmaier, Brentwood, and Peter C. Sangway, Croydon, both of England, assignors to Ciba-Geigy Aktiengesellschaft, Basel, Switzerland

Filed Mar. 8, 1979, Ser. No. 18,703

Claims priority, application United Kingdom, Mar. 22, 1978, 11296/78

Int. Cl.³ G01J 1/58; G01N 21/52; C09K 11/46

U.S. Cl. 250-486

17 Claims

1. An X-ray intensifying screen which comprises in a fluorescent layer a phosphor selected from the group consisting of (1) a lanthanum-oxy-halide phosphor of the general formula

La OX:RE,

(2) a gadolinium-oxy-halide of the general formula

Gd OX:RE,

(3) a mixed lanthanum-gadolinium-oxy-halide of the general formula

Gd La OX : RE,

and (4) a combination of at least two of said phosphors (1), (2) and (3), where X is a halide and RE is a rare earth activator, a binder for the phosphor or phosphors and as a stabiliser for the phosphor or a compound which comprises at least one free epoxy group.

4,246,484

MEDICAL RADIOGRAPHIC APPARATUS

Richard W. Fetter, Warrenville, Ill., assignor to EMI Limited, Hayes, England

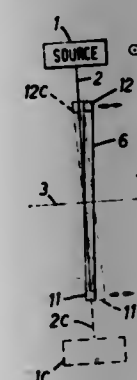
Division of Ser. No. 811,279, Jun. 29, 1977, Pat. No. 4,137,455. This application Jan. 8, 1979, Ser. No. 1,472

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.³ A61B 6/02

U.S. Cl. 250-445 T

13 Claims



1. Medical radiographic apparatus, for investigating a cross-sectional slice of a patient's body, including at least one x-ray tube and means for supplying electrical energy to the at least one x-ray tube, locating means for locating the at least one x-ray tube in relation to the patient's body so that a fan-shaped distribution of x-radiation is directed towards said slice, scanning means for rotating said at least one x-ray tube around the patient's body to direct the radiation towards said slice from a plurality of different directions, detector means comprising a plurality of detector devices, sensitive to said radiation, disposed along an arcuate path surrounding, or partly surrounding, the patient's body, the detector devices being substantially immobile in the direction of rotation of said at least one x-ray tube, means locating said detector devices such that said arcuate path is closer to the patient's body than the at least one x-ray tube, and means for moving detector devices for the time being disposed at the same side of the patient's body as the at least one x-ray tube so that they do not interrupt the detection of said radiation by detector devices for the time being disposed at the opposite side of the patient's body to said at least one x-ray tube.

4,246,486

X-RAY PHOTOGRAPHY DEVICE

Knud Madsen, Jaerfaella, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

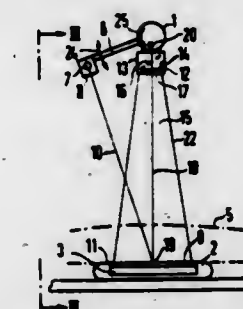
Filed Mar. 12, 1979, Ser. No. 19,452

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817391

Int. Cl.³ G01N 21/00, 23/00

U.S. Cl. 250-491

17 Claims



1. In an X-ray photographic device having an X-ray tube received in a housing emitting an X-ray beam through a limiting primary diaphragm received in a diaphragm housing and an independent moveable film holder, a light projecting source fixedly positioned relative to the X-ray beam and adopted to be projected onto markings on the holder for positioning of the holder relative to the housing, the improvement of at least two light beam sources, a first beam source projecting a light beam aligned with the X-ray beam, a second beam source carried in spaced relation to the X-ray source and projecting a light beam at an adjustable angle to the light beam projected by the first light source, the light beams intersecting at a given point spaced from the X-ray source and aligned with the X-ray beam, and markings on the holder being alignable with the point of intersection of the light beams.

4,246,487

METHOD AND DEVICE FOR DETERMINING THE FOCAL LENGTH OF A LONG FOCAL LENGTH ELECTRON OPTICAL LENS

Klaus Anger, Jürgen Frosien, and Burkhard Lischke, all of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

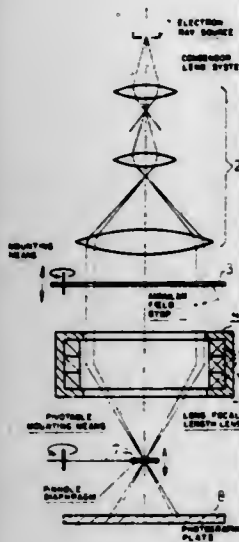
Filed Jan. 14, 1979, Ser. No. 48,627

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2827085

Int. Cl.³ A61K 27/02

U.S. Cl. 250-492 R

10 Claims



1. A method for determining the focal length of long focal length lenses comprising the steps of projecting a bundle of parallel rays on the long focal length lenses, said bundle of parallel rays having a ring-shaped cross section with a radius R; providing a pinhole diaphragm having a diameter which corresponds approximately to the diameter of the circle of least confusion of the lenses for the ring-shaped bundle of parallel rays in an approximate position of the focal plane; changing the axial distance of the diaphragm relative to the focal point of the lens to obtain the least influence by the diaphragm on the bundle of rays passing therethrough; detecting the image of the rays passing through the diaphragm on a plane at a distance z_2 from the diaphragm; measuring the radius r of the image of the ring-shaped bundle of rays on the plane, and then determining the focal length f from the magnitude of R , r , z_2 according to a formula $f = (R/r) \cdot z_2$.

4,246,488

RADIATION COLLIMATOR

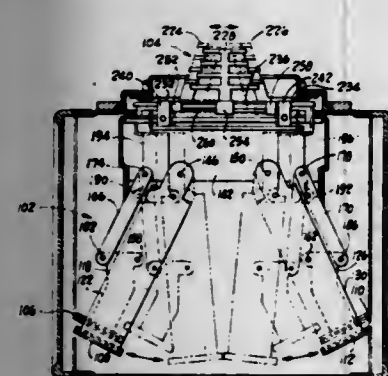
Michael Hura, Wickliffe, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Mar. 9, 1979, Ser. No. 19,083

Int. Cl.³ G21F 5/04; G21K 1/04

U.S. Cl. 250-513

16 Claims



1. An X-radiation collimator including a frame and having a beam axis comprising:
(a) a plurality of pivotally mounted shutters arranged in paired relationship to delineate the perimeter of an X-ray

beam of generally rectangular cross-sectional configuration;

- (b) certain pairs of said shutter members being positioned to delineate two parallel and spaced sides of the beam;
- (c) the shutters of each of said certain pairs being connected together by a plurality of links;
- (d) the links being pivotally interconnected in a parallelogram relationship and being pivotally mounted on the collimator frame; and
- (e) each of the shutters of said certain pair having an open position wherein one of the shutters is in a nested relationship above the other when the axis is vertical to delineate a full open position and each shutter of said certain pairs having a full closed position wherein a first of the shutters of each certain pair is in touching relationship with the other first shutter and the remaining shutters of the certain pairs are outward relative to the first shutters and each remaining shutter is in overlapping relationship with its first shutter whereby to fully block the exit of an X-ray beam from the collimator.

4,246,489

LIQUID LEVEL DETECTOR FOR DETECTING A LIQUID LEVEL WHEN REACHING A PRESCRIBED HEIGHT

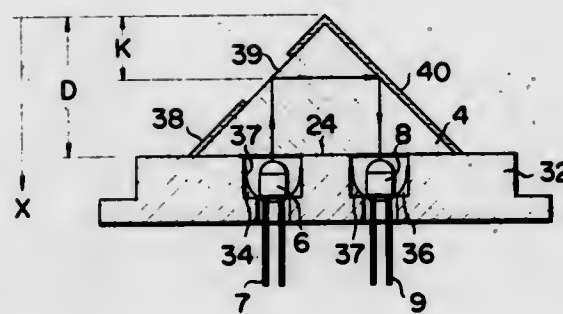
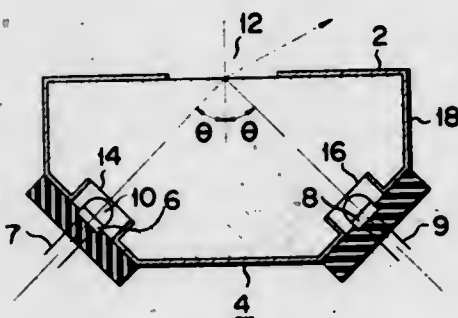
Mitsuo Yoshida, Yamato; Toshihiko Kihara, Yokohama, and Hiroshi Nagasawa, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 790,745, Apr. 25, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,373

Int. Cl.³ G01N 15/06

U.S. Cl. 250-577

32 Claims



1. A liquid level detector for detecting whether a boundary surface between a liquid and a medium rises beyond a prescribed level, comprising:

- a refractor body having a refractor index larger than the refractive index of the medium and formed of a material which only allows the transmission of light having wavelengths within a selected wavelength band and absorbs light having wavelengths not within the selected wavelength band, said refractor body having at least one flat surface for contacting one of the liquid and medium;
- a light-emitting element for projecting a beam of light having the wavelengths within the selected wavelength band transmittable through the refractor body to the flat surface thereof at a pre-determined angle of incidence larger than the critical angle of the refractor body to the medium; and

a photoelectric conversion element for converting the light totally reflected from the flat surface of the refractor body to an electric signal while the flat surface is in contact with the medium.

4,246,490

ROTATING NOZZLE GENERATOR

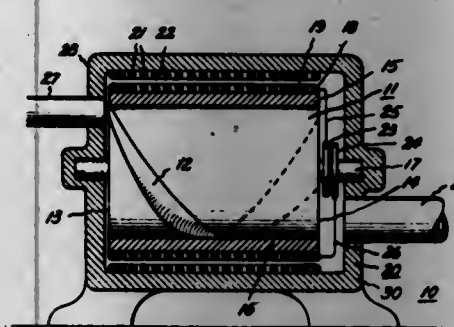
Bahram Keramati, and Vedanth Kadambi, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,896

Int. Cl.³ H02K 7/18

U.S. Cl. 290-1 A

9 Claims



1. A rotating nozzle generator comprising a housing, a rotor mounted within the housing, the rotor having a groove along its length, the rotor groove size changing from one end of the groove to the other end, a sleeve encasing the rotor thereby defining a liquid fluid flow passage, an electrical generator within the housing, the rotating component of the electrical generator associated with the rotor and sleeve, the stationary component of the electrical generator mounted within the housing and spaced from the rotating component, fluid inlet means for the housing, fluid outlet means for the housing, the rotor groove inlet in communication with the fluid inlet means, and the rotor groove outlet in communication with the fluid outlet means.

4,246,491

SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH DIGITAL COMPUTER CONTROL HAVING SETPOINT AND VALVE POSITION LIMITING

Gerald E. Waldron, Pittsburgh, Pa., and Andrew Braytenbah, Pennsauken, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

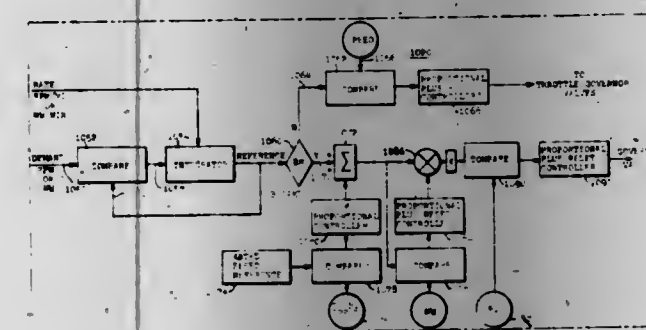
Continuation of Ser. No. 247,848, Apr. 26, 1972, abandoned.

This application Aug. 3, 1973, Ser. No. 385,612

Int. Cl.³ H02P 9/04

U.S. Cl. 290-40 R

6 Claims



1. An electric power generating system comprising:
a steam turbine, adapted to drive an electric generator;
means for controllably valving steam through said turbine, including at least one valve and means for controlling the position of said at least one valve;
means for limiting the position of said at least one valve, including means for controlling the rate of change of said valve position limit;
means for generating a reference control signal representative of desired turbine operation, and means for opera-

tively connecting said reference control signal to said steam valve means; and
means for limiting said reference means so that said reference control signal does not exceed a value corresponding to said valve position limit.

4,246,492

METHOD OF AND APPARATUS FOR LOAD AND/OR LOAD CONTROL SIGNALING TO CUSTOMERS IN A POWER SYSTEM

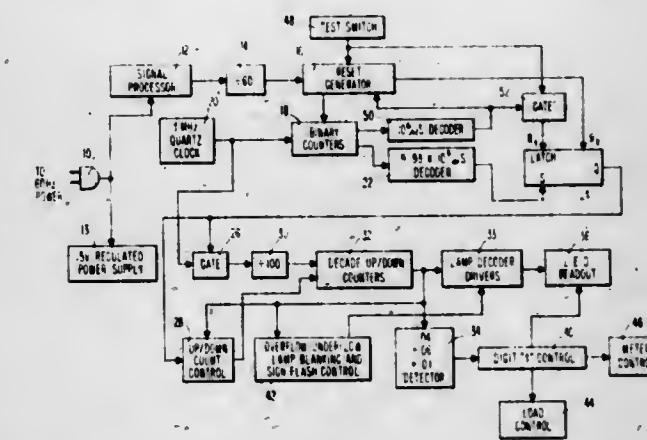
John M. Vandling, Hoanjojo La., Pleasantville, N.Y. 10570

Filed Dec. 2, 1977, Ser. No. 856,757

Int. Cl.³ H02J 13/00

U.S. Cl. 307-40

10 Claims



10. A method of operating a power system comprising power generating means and a load including a plurality of power consuming locations, said method comprising the following steps:

- generating power for the system at a nominal standard frequency;
- controllably varying in a predetermined manner the frequency of the power from said nominal standard frequency to signal load and/or load control information;
- varying the frequency of the power from said nominal standard without signaling load and/or load control information;
- detecting at least one of said power consuming locations one variation in the frequency signaling load and/or load control information;
- ignoring variations in the frequency not signaling load and/or load control information at said locations; and
- generating a load indicating signal at said locations in response to the detected variation signaling load and/or load control information.

4,246,493

ANNUNCIATOR

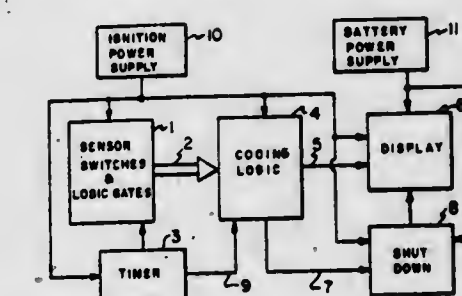
Bruce R. Beeghly, Youngstown, Ohio, assignor to The Economy Engine Company, Youngstown, Ohio

Continuation-in-part of Ser. No. 826,389, Aug. 22, 1977, abandoned. This application Jul. 12, 1978, Ser. No. 923,591

Int. Cl.³ H02J 9/06

U.S. Cl. 307-66

14 Claims



1. A shut-down and first-out annunciator device for an internal combustion engine or the like comprising:

- a plurality of parallel connected sensor switches which change condition when a fault condition occurs,
- a logic circuit which converts the change in condition on one of the plurality of sensor switches into a binary digital output indicative of the sensor switch which has changed condition and for creating a temporary shut-down signal,
- a digital display means for converting the binary digital signal produced by the logic circuit into a digital readout,
- shut-down means responsive to the temporary shut-down signal for creating a continuous signal for latching the digital display and triggering a shut-down switch having a control element by application of the signal to said control element,
- a first power supply circuit outputting energy only during normal operation to power the sensor switches, logic means, display means and shut-down means during normal operation,
- a second power supply circuit comprising a battery for powering during and after shut-down a portion of the device including the display means and shut-down means but excluding the sensor switches, and
- a delay circuit which shortly after shut-down interrupts the continuous signal as applied to the said control element whereby the current drain through the control element of the triggerable switch is terminated.

4,246,494

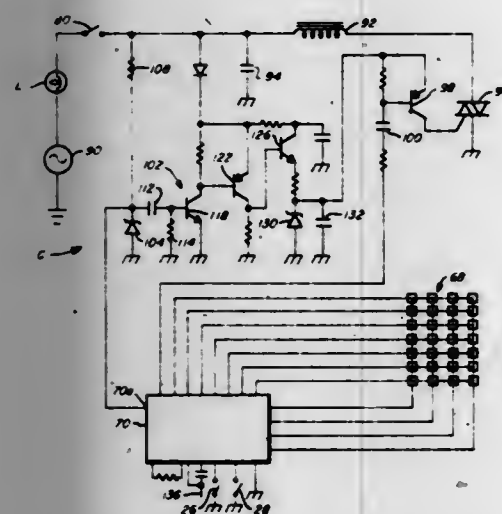
DIGITAL TOUCH CONTROLLED DIMMER SWITCH
Luther M. Foreman, and William S. Hightower, both of San Antonio, Tex., assignors to National Electric Corporation, Houston, Tex.

Filed Dec. 12, 1978, Ser. No. 968,862

Int. Cl.³ H05B 39/00

U.S. Cl. 307—116

7 Claims



1. A touch controlled dimmer switch apparatus for controlling the illumination output of a light source or lamp comprising:

- a touch pad for receiving contact from a user's touch;
- a plurality of conductive strip members disposed behind said touch pad for responding to the user's touch and indicating a desired illumination output;
- microprocessor circuit means comprising:
 - multiplexer means for scanning sequentially said plurality of conductive strip members in a time division multiplex fashion;
 - means to detect which, if any, of said conductive strips has been contacted from a user's touch through said touch pad; and
 - means to provide an output signal that controls the illumination output intensity responsive to which of said conductive strips has been contacted; and
- control circuit means responsive to an indication from said conductive strip means to control the amount of

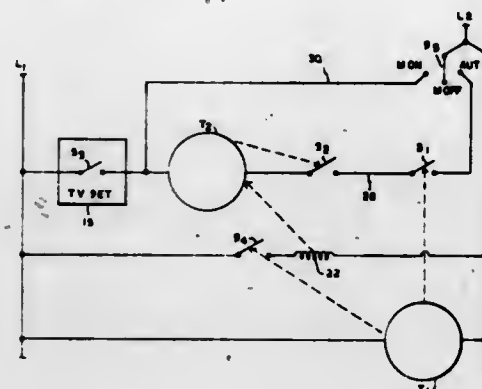
electrical power to the light and thereby the illumination output of the light.

4,246,495

TELEVISION MONITOR AND CONTROL
Jerome Pressman, 4 Fessenden Way, Lexington, Mass. 02173
Filed Oct. 5, 1978, Ser. No. 948,964
Int. Cl.³ H01H 43/06, 43/10

U.S. Cl. 307—141

11 Claims



1. Apparatus for controlling the operating time of a utilization means having a switch for controlling the supply of power thereto, said apparatus comprising:
 - a first timer coupled with the control switch of the utilization means to accumulate the operating time of the utilization means over a predetermined interval,
 - means for setting a desired accumulation time in the first timer,
 - reset means for resetting the first timer to zero accumulated time at the end of the predetermined interval,
 - a second timer associated with the first timer for enabling operation of the utilization means only during a selection period of said predetermined interval,
 - and means for setting the desired selection period, which represents a portion of the predetermined interval, of the second timer,
 - said second timer including means for enabling operation of the first timer only during the said selection period, whereby the utilization means is permitted operation during the selection period but only up to a time limit defined by the set accumulation time.

4,246,496

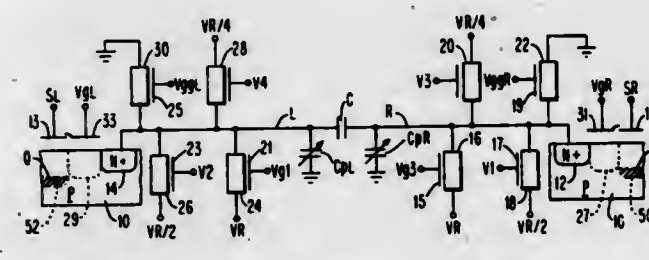
VOLTAGE-TO-CHARGE TRANSDUCER
Lawrence G. Heller, Essex, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,150

Int. Cl.³ G11C 19/28; H01L 29/78

U.S. Cl. 307—221 D

10 Claims



1. A voltage-to-charge transducer comprising:
 - first and second spaced apart utilization means for receiving charge,
 - capacitive circuit having first and second conducting plates interconnecting said first and second charge utilization means, said first plate being coupled to said first charge utilization means and said second plate being coupled to said second charge utilization means,
 - first means including a first charge transfer device for selec-

- tively charging a first given point between said first charge utilization means and the first plate of said capacitive circuit through said first charge transfer device to a predetermined voltage magnitude,
- second means including a second charge transfer device for selectively charging a second given point between said second charge utilization means and the second plate of said capacitive circuit through said second charge transfer device to a predetermined voltage magnitude,
- first means for varying the voltage at said second given point between first and second voltage magnitudes when said first given point is charged to its predetermined voltage magnitude, and
- second means for varying the voltage at said first given point to first and second voltage magnitudes when said second given point is charged to its predetermined voltage magnitude, each of said first and second voltage varying means varying said voltage from said first magnitude to said second magnitude having a value more negative than that of said first magnitude and each of said first and second voltage varying means including a first transistor for applying said voltage of first magnitude and a second transistor for providing said voltage of second magnitude.

4,246,497

PHASE MEASURING CIRCUIT

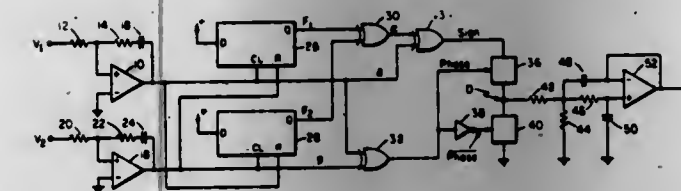
Kenneth D. Lawson, Cataumet, and Neil L. Brown, Falmouth, both of Mass., assignors to Neil Brown Instruments Systems, Inc., Falmouth, Mass.

Filed Sep. 29, 1978, Ser. No. 947,255

Int. Cl.³ H03K 5/22

U.S. Cl. 307—232

16 Claims



1. A circuit for measuring a phase difference between two periodic digital input signals and for providing an output representation of the phase difference therebetween without errors caused by asymmetrical timing offset errors in the digital waveforms, comprising:

phase means for exclusive-oring the input signals to provide a pulse-width-modulated output signal representative of the magnitude of the phase difference;
sign means responsive to transitions in the input signals for providing an output signal representative of the sign of the phase difference;
output means responsive to the phase means output signal and to the sign means output signal for providing an output representation of the phase difference such that error caused by offset of the input signals is eliminated.

4,246,498

SEMICONDUCTOR INTEGRATED DRIVING CIRCUIT INCLUDING C-MOS AND JUNCTION FET'S

Kazuhiro Asano, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Sekioka, Tokyo, Japan

Filed May 4, 1978, Ser. No. 903,017

Claims priority, application Japan, May 4, 1977, 52/51463

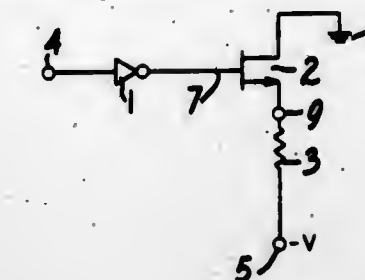
Int. Cl.³ H03K 3/353, 7/687; G04C 9/08

U.S. Cl. 307—270

6 Claims

1. A driving circuit for an electronic timepiece, comprising:
 - a high current load element; a semiconductor integrated circuit including a junction FET and a plurality of C-MOS elements fabricated on a common semiconductor substrate; means comprised of at least one of said C-MOS elements for controlling the conductivity of said junction FET; and means electrically

connecting said junction FET to said high current load element for supplying a high driving current flowing through said



junction FET to said high current load element according to the conductivity of said junction FET.

4,246,499

PULSE GENERATING CIRCUIT

Takahiko Iida, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

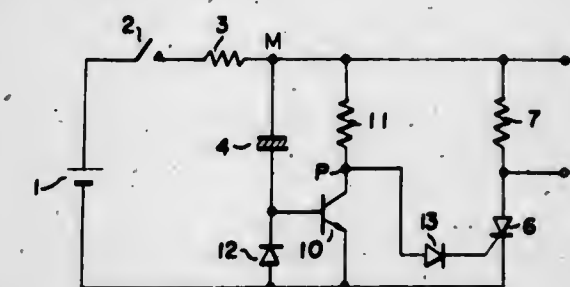
Continuation-in-part of Ser. No. 779,771, Mar. 21, 1977, abandoned. This application Jan. 3, 1979, Ser. No. 794

Claims priority, application Japan, Mar. 26, 1976, 51/36443; Mar. 26, 1976, 51/36444; Apr. 15, 1976, 51/47382; Jun. 22, 1976, 51/82581

Int. Cl.³ H03K 17/00

U.S. Cl. 307—293

17 Claims



1. In a pulse generating circuit for generating a pulse output and applying said pulse output to a load by charging a capacitor from a D.C. power source through a charging resistor and discharging the charge of the capacitor through a switching element that is comprised of a thyristor, an improvement comprising:

a first transistor connected to said capacitor and to said charging resistor such that said transistor is switched to a saturated conducting state by the charging current of said capacitor, said transistor non-conducting upon completion of charging of said capacitor; and
trigger means for turning on said switching element when said transistor switches to the non-conducting state, and for preventing triggering of said switching element when said transistor is in the saturated state, such that said capacitor discharges through said switching element when said trigger means turns on said switching element.

4,246,500

CURRENT MIRROR CIRCUIT

Yutaka Okada, Kokubunji; Tohru Nakamura, Houya, and Takahiro Okabe, Hinodemachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 29, 1979, Ser. No. 7,654

Claims priority, application Japan, Feb. 3, 1978, 53/11527[U]

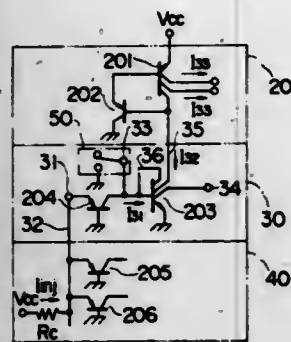
Int. Cl.³ H03K 19/08, 19/20

U.S. Cl. 307—299 B

5 Claims

1. A current mirror circuit comprising:
 - a first transistor which has a plurality of collectors, in which the output of a first one of said collectors is fed back to the base of said first transistor, in which an output current is

derived from a second one of said collectors, and the emitter of which is connected to a power supply;
 a second transistor which has a plurality of collectors, in which the output of a first one of said collectors is fed back to the base of said second transistor, in which a second one of said collectors is connected to the first collector of said first transistor, and the emitter of which is grounded;



a third transistor the base of which is grounded, the collector of which is connected to the base of said second transistor, and the emitter of which serves as a current supplying terminal; and wherein said first collector output of said first transistor is fed back to the base thereof through a fourth transistor, the collector of which is grounded, the base of which is connected to said first collector of said first transistor, and the emitter of which is connected to the base of said first transistor.

4,246,501

GATED BACK-CLAMPED TRANSISTOR SWITCHING CIRCUIT

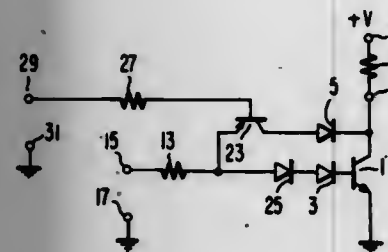
Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 21, 1978, Ser. No. 944,562

Int. Cl.³ H03K 3/33, 19/08, 17/60, 23/30

U.S. Cl. 307—300

19 Claims



1. A transistor switching circuit, comprising:
 a power terminal for receiving an operating voltage;
 a reference terminal for connection to a point of reference potential;
 first and second input terminals for receiving first and second control signal, respectively;
 an output terminal in combination with said power terminal providing for connection of a load impedance therebetween;
 an output transistor having collector, emitter, and base electrodes, said collector and emitter electrodes being connected between said output and reference terminals, respectively;
 impedance means connected between said first input terminal and the base electrode of said output transistor;
 unidirectional current means having first and second electrodes, the latter being connected to the collector electrode of said output transistor; and
 switching means having a main current conduction path connected between the first input terminal and the first electrode of said unidirectional current means, and a con-

trol terminal connected to said second input terminal, whereby whenever said first and second control signals are concurrently at individual and not necessarily equal first states of voltage, respectively, said switching means responds to the first state of said second control signal by substantially opening its main current conduction path, thereby preventing current flow through said unidirectional current means, said first state of said first control signal causing base current to flow through said impedance means and said output transistor, turning on said output transistor into saturation, whenever said first and second control signal concurrently have said first and a second states of voltage, respectively, said switching means responds to the second state of said second control signal by substantially closing its main current conduction path, thereby permitting the flow of current through said unidirectional current means, said unidirectional current means being polarized for diverting some current away from the base electrode of said output transistor, to the collector electrode of said output transistor, thereby reducing the magnitude of the base current, the impedance of said impedance means being greater than the impedance of said unidirectional current means, causing the voltage drop across said impedance means to be greater than that across said unidirectional current means, thereby preventing saturation of said output transistor, whereby if said first and second control signals are then concurrently placed at respective second states of voltage, the second state of said first control signal being a voltage level for turning off said output transistor, base current flow in said output transistor is rapidly reduced for fast turnoff thereof.

4,246,502

MEANS FOR COUPLING INCOMPATIBLE SIGNALS TO AN INTEGRATED CIRCUIT AND FOR DERIVING OPERATING SUPPLY THEREFROM

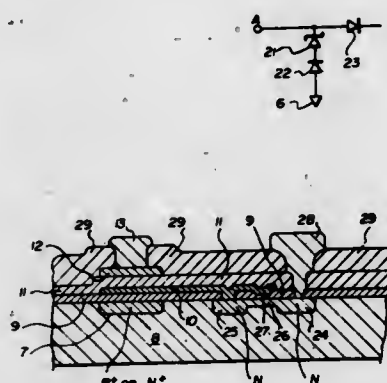
James J. Kubinec, Taboma, Calif., assignor to Mitel Corporation, Canada

Filed Aug. 16, 1978, Ser. No. 933,984

Int. Cl.³ H01L 29/78; H03K 3/26, 3/353

U.S. Cl. 307—303

19 Claims



14. A semiconductor integrated circuit structure comprising:
 (a) a plurality of interconnected CMOS transistors,
 (b) a power input bus to said transistors,
 (c) an input terminal for clock signals connected to predetermined ones of said transistors,
 (d) a pair of series connected capacitor means, one capacitor means having a bottom conductive region of heavily doped silicon, a first silicon dioxide insulating layer covering the conductive region, and an upper conductive layer over the insulating layer covering at least a substantial portion of the bottom conductive region,
 (e) the junction between the pair of capacitor means being connected through circuit means to the power input bus,
 (f) the input terminal for clock signals being connected to the other terminal of the other of the pair of capacitor means, whereby the clock source provides both clock signals and operating power for said transistors.

4,246,503

GAS FLOW COOLING SYSTEM FOR A ROTARY ELECTRIC MACHINE

Kazumasa Fujioka, Shimomiyoshi, and Wataru Nakayama, Kashiwa, both of Japan, assignors to Hitachi, Ltd., Japan

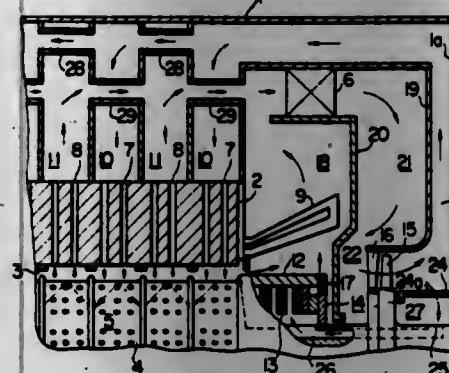
Filed Dec. 13, 1978, Ser. No. 968,985

Claims priority, application Japan, Dec. 16, 1977, 52-150567

Int. Cl.³ H02K 9/00

U.S. Cl. 310—59

5 Claims



1. A rotary electric machine comprising:
 a hermetic casing filled with a cooling gas;
 a stator core having a plurality of cooling ducts in a radial direction;
 a rotor having a rotor body cooled by the self-pumping effects of a plurality of inlet and exhaust holes formed in the outer periphery for supplying or draining the cooling gas and having an end region, said rotor including a fan for circulating the cooling gas;
 a cooler arranged in a path communicating with the fan inlet region of said casing for cooling the gas to be introduced to the fan inlet region;
 a first cooling gas flow path for introducing the cooled gas from the outlet of said fan directly to said end region of said rotor;
 a second cooling gas flow path for introducing the cooled gas from said outlet of said fan to said inlet holes through first radial cooling ducts formed in said stator core;
 a third gas flow path for introducing the gas exhausted in an armature region from said end region of said rotor to the inlet side of said cooler; and
 a fourth gas flow path for introducing the gas exhausted out of said exhaust holes to said inlet side of said cooler through second radial cooling ducts formed in said stator core.

4,246,504

ELECTRIC MOTORS

Cecil F. Clifford, and Laurence H. Finlayson, both of Bath, England, assignors to Horstmann Clifford Magnetics Limited, Bath, England

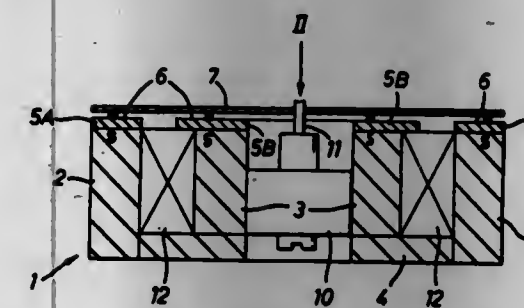
Filed Jan. 21, 1978, Ser. No. 917,574

Claims priority application, United Kingdom, June 30, 1977, 27368/77

Int. Cl.³ H02K 21/26

U.S. Cl. 310—181

18 Claims



1. An alternating current electric motor comprising a stator and a substantially flat armature of magnetic material adapted

to move relative to the stator and having a plurality of sections mutually spaced in the direction of intended movement of the armature the stator having a plurality of poles having coplanar polefaces spaced apart in the direction of travel of the armature all of which polefaces are spaced from and face one side only of the armature, and at least one winding wound upon the stator and so arranged that on energisation of the winding by an alternating current all of the polefaces are of like polarity and the relative flux density of adjacent ones of the polefaces is caused to alternate without polarity change about a mean value, thereby to induce movement of the armature relative to the stator.

4,246,505

ROTOR WITH SALIENT POLES AND SHIELD PLATES BETWEEN THE POLES

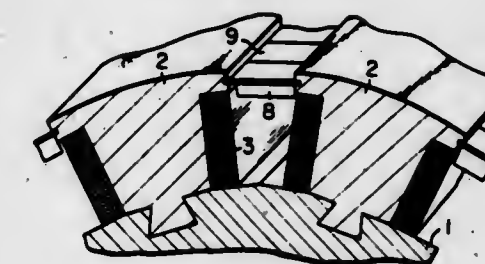
Yasuhiro Yasaka, and Yosio Furukawa, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 19, 1979, Ser. No. 21,917

Int. Cl.³ H02K 1/18

U.S. Cl. 310—218

9 Claims



1. A rotor with salient poles for electric rotating machines, comprising a rotor rim, a plurality of salient poles with field coils mounted on said rotor rim, and a plurality of shield plates supported between the heads of adjacent poles and extending substantially along the whole axial length of said poles so that said rotor presents a substantially cylindrical configuration thereby reducing its air friction loss, each of said shield plates being divided into a plurality of parts along the direction of the rotor axis and provided with reinforcing ribs extending along the circumference of the rotor.

4,246,506

CURRENT SUPPLYING DEVICE FOR ROTOR WINDING OF ELECTRIC MACHINE

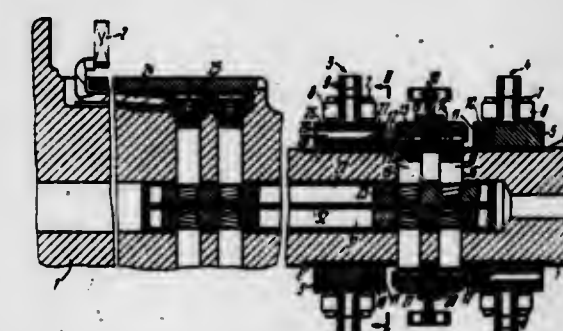
Gurgen P. Vartanian, ulitsa Budapeshtskaya, 15, korpus 2, kv. 29; Vladimir S. Vitchenko, Vitebsky prospekt 29, korpus 2, kv. 142; Gennady K. Smirnov, ulitsa Prazhskaya, 20, kv. 132, and Vladimir G. Shalaev, Novo-Izmailovsky, 55, kv. 92, all of Leningrad, U.S.S.R.

Filed Nov. 2, 1978, Ser. No. 956,892

Int. Cl.³ H02K 13/00

U.S. Cl. 310—232

1 Claim



1. In a brush contact device of an electric machine having a rotor with a shaft and a rotor winding, including current collecting bus bars with a plurality of brushes, a current supplying device for said rotor winding, comprising:

a slip ring mounting on said rotor shaft with an electrical insulation therefrom and for contacting said brushes; at least one distribution ring mounted on the end of said slip ring; a current supplying bus bar secured to said distribution ring and electrically connected with said rotor winding; said slip ring and said distribution ring formed with a plurality of through holes arranged around the circumference of these rings, said holes having equal diameters and having longitudinal axes parallel to the longitudinal axes of said rings, and each of said through holes of one ring corresponding to one of said through holes of the other ring and being coaxial with it so that said through holes form an integral ventilating channel; an additional electrically conductive layer disposed on the inner surface of said ventilating channels and electrically connected said distribution ring with said slip ring; said additional electrically conductive layer formed of a material with a lower specific electric resistance than that of the material of said slip ring; whereby the electric current flowing between said current collecting bus bar and said current supplying bus bar through said slip ring, is uniformly distributed along the surface and in the body of said slip ring.

4,246,507

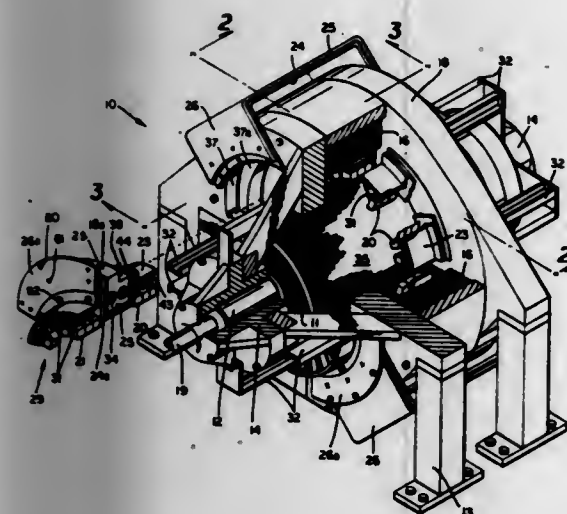
REMOVABLE BRUSH MECHANISM FOR A HOMOPOLAR GENERATOR

William F. Weldon, and James M. Weldon, both of Austin, Tex., assignors to Astec Industries, Inc., Chattanooga, Tenn.
Filed Sep. 28, 1978, Ser. No. 946,667

Int. Cl.² H02K 39/38

U.S. Cl. 310-242

6 Claims



1. In a homopolar generator including a ferromagnetic yoke defining a cavity having a field coil therein encircling a rotor, and a plurality of brushes selectively biased against said rotor, the improvement comprising:

- a track means extending from the exterior of said yoke cavity into said yoke cavity; and
- a removable brush unit including a conductive member carrying said brushes, a ferromagnetic member carrying said conductive member and said brushes, and a plurality of bearings positioned to engage said track means to slidably mount said unit on said track means for selective movement into and out of said yoke cavity, said ferromagnetic member being received by a mating opening defined by said yoke when said unit is moved into said yoke cavity.

BRUSH HOLDER ASSEMBLIES FOR SMALL ELECTRIC MOTORS

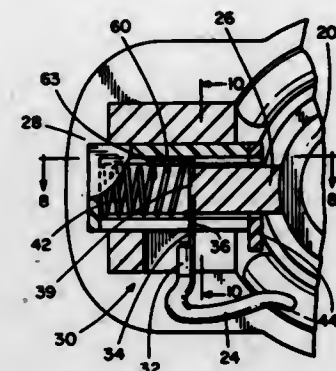
Ralph O. Zimmer, Chicago, Ill., assignor to Skil Corporation, Chicago, Ill.

Filed Dec. 22, 1978, Ser. No. 972,227

Int. Cl.³ H02K 13/00

U.S. Cl. 310-242

11 Claims



1. A brush holder assembly for small electric motors comprising:

- (a) a hollow brush housing open at one end and including a channel extending through one wall thereof in the direction of brush travel,
- (b) an electrically conducting brush positioned in said housing and dimensioned to extend through the open end of said housing for engaging a commutator,
- (c) a terminal connector positioned in the housing behind said brush and in electrical contact therewith, said connector including a portion extending outwardly through said channel for electrical connection external to the housing,
- (d) means for biasing said brush and connector toward said open end,
- (e) means secured to said housing in the path of movement of said connector portion for pivoting said connector relative to said housing when the brush wears down to a selected size, and
- (f) flange means attached to said terminal connector for wedging said connector against said housing in response to pivoting movement of the former to prevent further movement of the brush, connector and biasing means toward the open end of the housing.

4,246,509

GAS DISCHARGE LAMP WITH ABOUT 4 PARTS NITROGEN AND 1 PART XENON

Jürgen Schiffer, Hasselroth, and Günter Thomas, Hanau, both of Fed. Rep. of Germany, assignors to Original Hanau Quarzlampen GmbH, Hanau am Main, Fed. Rep. of Germany
Filed Oct. 10, 1978, Ser. No. 949,879

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748731

Int. Cl.³ H01J 17/20, 61/12

U.S. Cl. 313-224

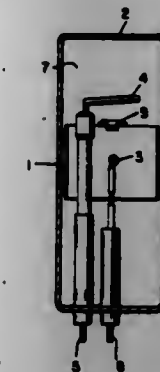
2 Claims

1. Gas discharge lamp particularly for spectroscopic and photometric use and having an essentially continuous spectral output within the visible light range having

- a bulb or housing (1);
- electrodes (3, 4) within the housing;
- means (5, 6) supplying electrical current to the electrodes;
- and a fill comprises a mixture of nitrogen and xenon within the bulb or housing

wherein, in accordance with the invention,

the nitrogen and xenon are present in the mixing range, by volume, of of xenon to nitrogen in a ratio of, for each part



xenon, about 4 parts nitrogen, and with an overall fill pressure of about 100 millibar.

4,246,510

RETINA FOR PYROELECTRIC VIDICON

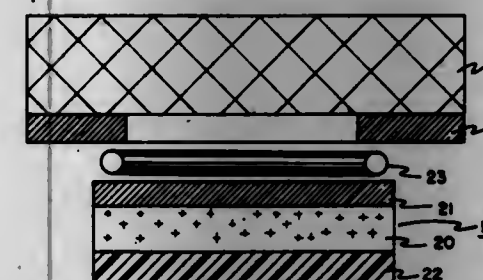
Wellman L. Clark, Springfield; John T. Cox, Alexandria; Gerald Klauber, Fredericksburg; Ferdinand C. Pettit; John B. Ramsey, Jr., both of Alexandria, and John E. Waylonis, Fairfax Station, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 7, 1976, Ser. No. 647,271

Int. Cl.² H01J 29/45, 31/49

U.S. Cl. 313-388

3 Claims



1. In an optical system, wherein a wafer of pyroelectric material chosen from the group comprising Triglycine Sulfate, Triglycine Tetrafluoroborate, Deuterated Triglycine Tetrafluoroborate, Lithium Tantalate, Lithium Niobate, and Lead Lanthanum Zirconate is coated on one broad side with a thin layer of conductive material and an electronic means coupled to said thin layer is provided to scan the remaining broad side of said wafer with an electron beam whereby a thermal image induced on said one side is detected; the improvement comprising:

- a single layer only of dielectric material entirely covering said remaining side of said wafer, said layer having a secondary emission coefficient greater than one and having a sheet resistance greater than 10¹² ohm/square, and said dielectric layer being formed of a compound chosen from the group consisting of SiO₂, BaF₂, MgO, MgF₂, KCl, BaO₂, spinel and Ge.

4,246,511

ELECTRON GUN

Shoichi Washino, Amagasaki, and Etsuo Nosaka, Nagakakyō, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1978, Ser. No. 966,046

Claims priority, application Japan, Dec. 9, 1977, 52/148321

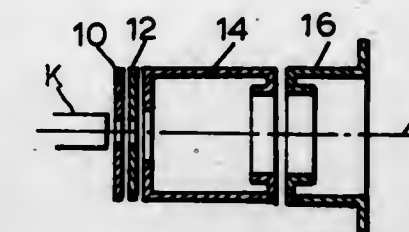
Int. Cl.³ H01J 29/46, 29/56

U.S. Cl. 315-14

4 Claims

1. An electron gun comprising a main electron lens and an electron lens preceding said main electron lens and said preceding electron lens including at least an acceleration type electron lens portion, said acceleration type electron lens por-

tion having the principal plane of the object space thereof located adjacent to the position of the virtual object point of the outermost electron ray of the electron beam incident upon said acceleration type electron lens portion; wherein said main electron lens is formed of a pair of spaced end grids and an intermediate grid interposed therebetween,



tween, all of said grids being equal or nearly equal in diameter to one another and disposed coaxially with respect to one another, said end grids having a potential different from said equal potentials applied thereto, and wherein said applied different potential and the length of said intermediate grid determined so that the parameters of said main electron lens fulfills

$$\frac{C_s/R}{(f/R)^3} \approx 0.4 \sim 0.7$$

where C_s designates the spherical aberration of the main electron lens, R the grid radius thereof and f designates the focal distance thereof.

4,246,512

CO-AXIAL MULTI CAVITY ANODE MAGNETRONS

Alan H. Pickering; Geoffrey J. Rowlands, and David R. Tice, all of Chelmsford, England, assignors to English Electric Valve Company Limited, Chelmsford, England

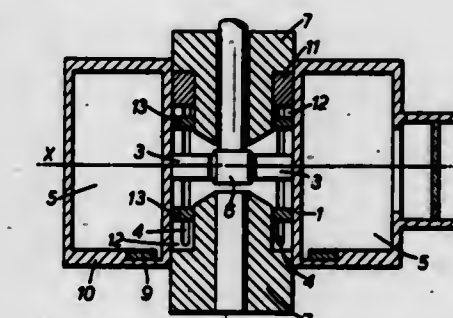
Filed Apr. 25, 1979, Ser. No. 33,241

Claims priority, application United Kingdom, Apr. 25, 1978, 16172/78

Int. Cl.³ H01J 25/50

U.S. Cl. 315-39.77

16 Claims



1. A co-axial multi-cavity magnetron which comprises a cathode, an anode shell co-axially surrounding said cathode and including a plurality of radial vanes extending toward said cathode but terminating in spaced relation thereto, a main resonator co-axially surrounding said anode shell, said vanes defining cavities therebetween and said anode shell having a plurality of longitudinally extending slots coupling a plurality of said cavities with said main resonator, a magnetic pole piece extending axially inwardly from one end of said anode shell and having an end portion disposed in axially spaced relation from said vanes and with such end portion being dimensioned to provide a space between it and the surrounding portion of said anode shell, said slots extending into and terminating within surrounding portion of said anode shell, slot attenuator means within said space and overlapping the terminations of said slots for attenuating slot modes, and further means within

said space for suppressing spurious resonances tending to cause anomalous power dissipation in said slot attenuator means.

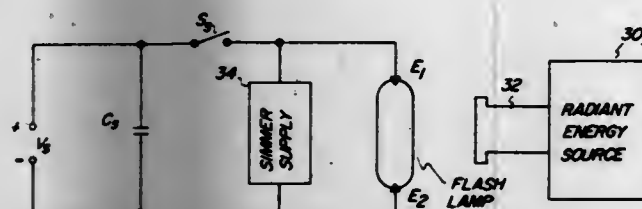
4,246,513

FLASH LAMP DISCHARGE USING RADIANT ENERGY
Clifton S. Pettit, Webster, and Robert B. Edwards, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1978, Ser. No. 872,717
Int. Cl.³ H05B 41/30

U.S. Cl. 315—150

16 Claims



9. Apparatus for operating a flash lamp in a simmer mode, the flash lamp comprising a pair of electrodes in an envelope containing gas molecules, said apparatus comprising:

- a simmer supply for applying a simmer voltage to the lamp electrodes;
- a source of radiant energy for applying radiant energy to the flash lamp to lower the impedance between the lamp electrodes to allow the simmer voltage to discharge through the flash lamp and establish a simmer arc between the lamp electrodes; and
- an energy storage device for firing the flash lamp by applying a flash voltage to the lamp electrodes which discharges through the flash lamp causing the lamp to fire.

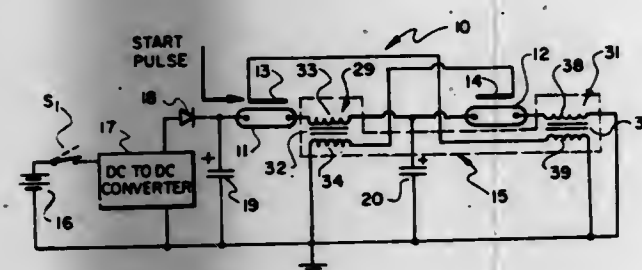
4,246,514

ENERGY-SAVING ELECTRONIC STROBE FLASH APPARATUS HAVING DUAL FLASHTUBES
Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,189
Int. Cl.³ H05B 41/34

U.S. Cl. 315—241 P

6 Claims



1. In electronic flash apparatus comprising first and second flashtubes having first and second electrodes, respectively, for triggering their respective flashtubes into conduction to produce light pulses, first and second capacitors for supplying firing currents to said first and second flashtubes, respectively, for causing them to produce respective light pulses, means for charging said first capacitor, a first circuit comprising said first flashtube and said first and second capacitors, and having (1) a first state, occurring in response to triggering said first flashtube, for causing a first firing current to flow from said first capacitor through said first circuit to fire said first flashtube and to charge said second capacitor, and (2) a second state, occurring in response to charging said second capacitor to a predetermined voltage, for interrupting the first firing current, thereby quenching said first flashtube, and a second circuit comprising said second flashtube and said second capacitor, responsive to triggering said second flashtube, for causing a

second firing current to flow from said second capacitor to fire said second flashtube, the improvement comprising:

- (a) initiating means for applying an initial trigger voltage to said first electrode for triggering said first flashtube; and
- (b) current-sensitive means, coupling said first circuit to said second electrode, for triggering said second flashtube in response to the interruption of the first firing current, whereby said first and second flashtubes are fired sequentially to produce sequential light pulses.

4,246,515

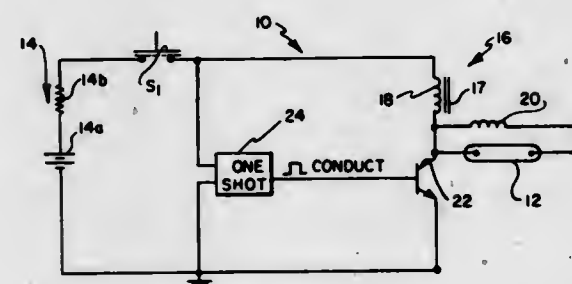
ENERGY-REGULATING FIRING CIRCUIT FOR AN ELECTRONIC STROBE FLASH UNIT

Carl N. Schaufele, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 20, 1979, Ser. No. 58,962
Int. Cl.³ H05B 41/32

U.S. Cl. 315—290

2 Claims



1. Electronic strobe flash apparatus adapted to be energized by a battery, said flash apparatus comprising:

- (a) a flashtube energizable to produce radiation in proportion to the energy delivered to said flashtube;
- (b) a transformer comprising a primary winding connectable to the battery, a secondary winding connected to said flashtube, and a core adapted to store magnetic energy in correspondence with current flowing into said transformer, said secondary winding being adapted to convert this stored energy into electrical energy and to deliver the same to said flashtube in response to the terminating of current into said transformer;
- (c) actuable switch means having (1) a first condition, occurring in response to the actuating of said switch means, for connecting said primary winding to the battery, and (2) a second condition for disconnecting said primary winding from the battery; and
- (d) bistable means having (1) a first state, occurring in response to said switch means assuming its first condition, for causing battery current to flow into said transformer, thereby causing said core to store magnetic energy, and (2) a second state, occurring a predetermined interval after said bistable means assumes its first state, for terminating battery current into said transformer, said bistable means being adapted to cause a predetermined amount of magnetic energy to be stored in said core so that an approximately constant amount of energy is delivered to said flashtube each time said switch means is actuated.

4,246,516

LIGHT BIASED CAMERA TUBE ARRANGEMENTS
Hans Scholz, Maldon, and David G. Holland, Braintree, both of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Aug. 24, 1978, Ser. No. 936,636

Claims priority, application United Kingdom, Aug. 25, 1977, 35799/77

Int. Cl.³ H01J 29/98

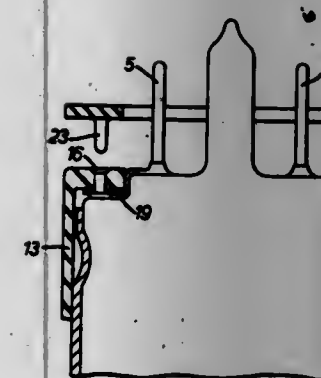
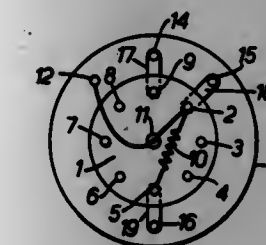
U.S. Cl. 315—291

8 Claims

1. A light biased camera tube arrangement comprising a light biased camera tube having a plurality of connecting pins extending through its base of which two are heater pins con-

nected internally to supply a cathode heater and of which one of said two is connected to one end of a light bias source provided within the overall outline of the tube envelope with the other end of said light bias source being connected to a lead extending to a terminal carried by a protective end base cap for said tube, and wherein said protective base end cap is provided with at least two further terminals, one of said two further terminals being connected to said one of said heater pins and

an AC voltage supply having a cosinusoidal output for powering the illumination lamps; means for triggering the AC voltage supply to deliver a precise voltage to the illumination lamps; and means, having an output current sinusoidally related to the input voltage for linearly controlling the means for triggering the AC voltage supply in response to the means for sensing load voltage deviations from a reference voltage.



the other of said two further terminals being connected to the other of said heater pins and wherein a removable disc is provided to fit between the base of said tube and a valve base into which said tube is fitted in use, said removable disc bearing circuitry by which said terminal on said protective base end cap, to which said other end of said internal light bias source is connected, is connected to that one of said two further terminals carried by said protective base end cap to which said other of said two heater pins is connected.

4,246,517

SCR LAMP SUPPLY

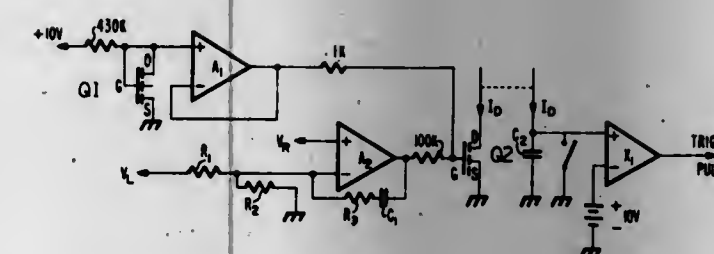
Housan Dakrouh, Dearborn, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 24, 1979, Ser. No. 69,562

Int. Cl.³ H05B 39/08

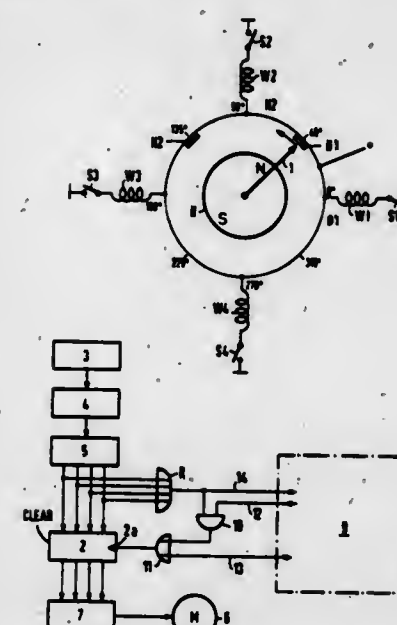
U.S. Cl. 315—307

8 Claims



1. A silicon controlled rectifier lamp supply circuit for controlling the voltage delivered to illumination lamps in a document image capturing system comprising:
means for sensing load voltage deviations from a reference voltage;
means for stabilizing the response of the means for sensing load voltage deviations from the reference voltage;

1. A commutation circuit for a brushless dc motor comprising selection circuit means for receiving a signal corresponding to the position of the rotor of the dc motor and generating a commutation signal in response thereto, actuable storage circuit means having a control input, an input coupled to the output of the selection circuit means and an output adapted to being coupled to the motor commutator, means for providing a control circuit including counter means coupled to the output of the selection circuit means, the counter circuit means receiving the commutation signal from the selection circuit means and a signal corresponding to the desired state of energization of the motor windings and in response thereto providing the control signal to the control input of the storage circuit means, the control signal being a stepping pulse signal adapted to operate the motor in a stepping mode, the storage circuit means receiving the commutation signal from the selection circuit means and transferring the received commutation signal to the output of the storage circuit means upon actuation of the storage circuit means by the control signal applied to the control input, the storage circuit means maintaining the transferred commutation signal at its output until actuated by a next control signal.



4,246,519

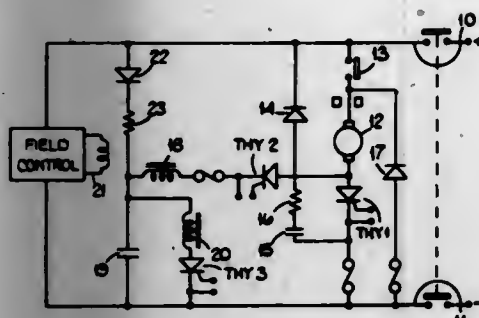
D.C. MOTOR CONTROL FOR AN ELECTRICALLY POWERED VEHICLE

Trevor C. Boxer, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England
Continuation of Ser. No. 847,283, Oct. 31, 1977, abandoned.
This application Jul. 6, 1979, Ser. No. 55,237
Claims priority, application United Kingdom, Nov. 2, 1976, 45460/76

Int. Cl.³ H02P 5/16

U.S. Cl. 318—139

4 Claims



1. A d.c. motor control circuit for an electrically powered vehicle, in which the field winding current and armature current and controlled independently of one another by separate current control circuits, the armature current control circuit comprising:

- a main thyristor connected in series with the armature between a pair of supply terminals;
- a commutating thyristor, first inductor and capacitor connected in series across the main thyristor;
- a third thyristor connected in series with a second inductor across the capacitor;
- separate firing circuits for said main thyristor, commutating thyristor and third thyristor;
- means for generating an armature current demand signal;
- means sensitive to actual armature current for generating a feedback signal;
- trigger means controlled by said demand and feedback signals for triggering the firing circuit for the main thyristor when an increase in the actual armature current is demanded by said demand signal, said trigger means under control of said signals thereafter triggering the firing circuit for the third thyristor when a reduction in the actual armature current is demanded by said demand signal and then, after a fixed delay, triggering the firing circuit for the commutating thyristor, whereby the main thyristor is first, the third thyristor is fired next and the commutating thyristor is fired last; and
- charging path means for said capacitor for maintaining the voltage across it at a level not significantly less than that between said supply terminals.

4,246,520

MOTOR CONTROL AND REVERSING CIRCUIT

John T. Giles, III, Kenosha, Wis., assignor to Cherry Electrical Products Corp., Waukegan, Ill.
Filed Sep. 21, 1979, Ser. No. 77,751

Int. Cl.³ H02P 1/22

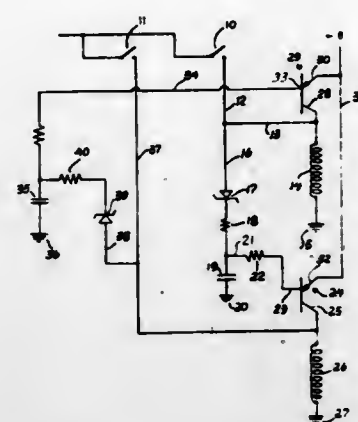
U.S. Cl. 318—280

6 Claims

1. An energizing and reversing circuit for directional control of a reversible motor comprising:

- a pair of directional control means that determines the direction of operation of the reversible motor,
- a circuit for each of said control means including manually operable switches for independently energizing each of said control means to determine the initial direction of operation of the reversible motor, and

(c) means coupled through each of said circuits with said control means and responsive to the deenergization of the



initially energized control means to reverse the direction of operation of the motor.

4,246,521

DC MOTOR SPEED CONTROL SYSTEM

Katsuji Soeda; Mitsuhiro Oyama, and Fumio Sakuma, all of Sukagawa, Japan, assignors to Yamamoto Electric Industrial Co., Ltd., Fukushima, Japan

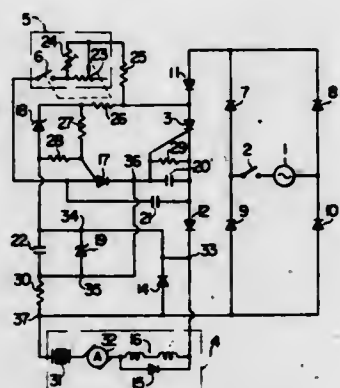
Filed Mar. 20, 1979, Ser. No. 22,314

Claims priority, application Japan, Apr. 28, 1978, 53-51927

Int. Cl.³ H02P 5/16

U.S. Cl. 318—331

5 Claims



1. A DC motor speed control system comprising:

- a main motor circuit which supplies a motor current from an AC source through a full-wave rectifying circuit and a semiconductor element having a control electrode, to a DC motor;
 - a manually variable voltage setting means connected with the full-wave rectifying circuit;
 - a charging circuit connected with the manually variable voltage setting means;
 - a switching element having an anode, a cathode and a control electrode connected with the charging circuit, such that when the charged voltage in the charging circuit reaches a predetermined value, the switching element conducts to discharge the charging circuit thereby to supply the discharge current to the semiconductor element as a trigger current;
 - a first constant voltage element connected with the full-wave rectifying circuit; and
 - a detecting means for detecting the counter electromotive force induced across said motor;
- said first constant voltage element and said counter electromotive detecting means being connected in series to form a series circuit, the terminal voltage of which is applied between the cathode and the control electrode of said switching element;
- said predetermined value for conduction of said switching element being variable in response to said counter electromotive force to delay the conduction angle of the semiconductor element for an increased counter electromotive force and to advance the conduction angle of the semicon-

ductor element for a decreased counter electromotive force.

4,246,522

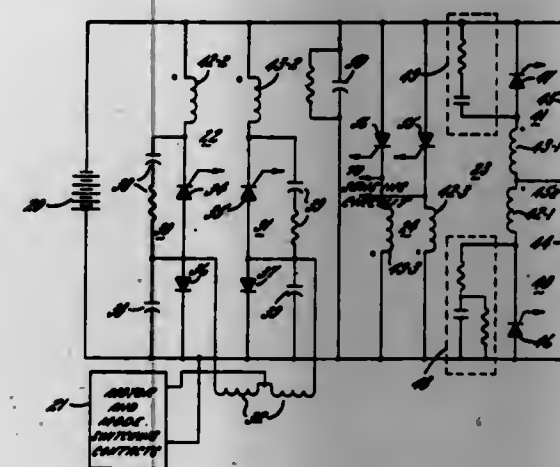
POWER CONVERTER WITH PROGRAMMABLE COMMUTATION

Robert F. Bourke, Kamiah, Id., and David M. Thimmesch, Elgin, Ill., assignors to Gould Inc., Rolling Meadows, Ill.
Filed Sep. 19, 1978, Ser. No. 943,572

Int. Cl.³ H02P 5/16

U.S. Cl. 318—338

10 Claims



1. An improved power converter operable from a DC power source comprising in combination a thyristor controlled chopper, means for varying the operating level of the chopper for delivering a variable power output to a load over a relatively wide range, a commutating inverter for commutating the chopper thyristor, a transformer coupling the commutating inverter to the chopper for delivering commutation energy thereto, the transformer also having a clamp winding, control thyristor means in series with the clamp winding and across the power source, and program means for firing the control thyristor to terminate the cycle of the commutating inverter at a point dependent on the operating level of the chopper, thereby to program the amount of energy in the commutating inverter for limiting losses therein.

4,246,523

BRAKE TIMING CONTROL METHOD AND APPARATUS THEREFOR

Shun-ichi Nagai, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Selsakusho, Tokyo, Japan

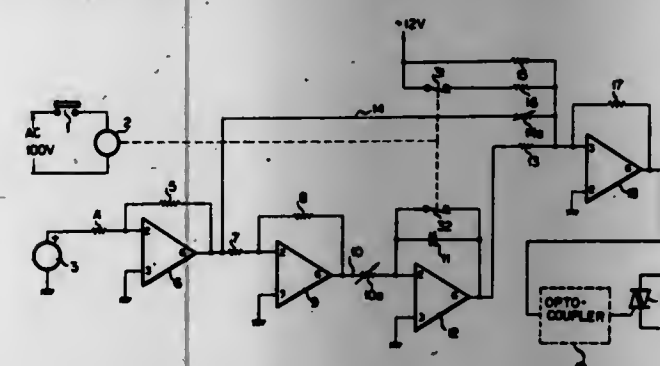
Filed Nov. 28, 1978, Ser. No. 964,164

Claims priority, application Japan, Feb. 9, 1978, 53-14341

Int. Cl.³ H02P 3/00

U.S. Cl. 318—369

3 Claims



1. A brake timing control apparatus for use with a press machine including a press slide driven through a crank shaft by a variable speed motor, the apparatus comprising detector means responsive to the speed of rotation of the motor for providing an output voltage proportional to the motor speed, first inverter means receiving the output voltage of the detector means for inverting the same, second inverter means re-

ceiving the inverted output voltage of the first inverter means for inverting the same again, number of strokes range detector means responsive to the output voltage of the second inverter means for specifying one from a plurality of ranges of the number of strokes of the press slide predetermined such that each approximated slip angle characteristic is available in each range of the number of strokes, first circuit means receiving the output voltage of the second inverter means for providing an output voltage according to the range of the number of strokes specified by the number of strokes range detector means; second circuit means receiving the output voltage of the first inverter means for providing an output voltage representing a slip angle through which the crank shaft as well as the press slide will continue to move after braking is initiated on the press machine in accordance with the range of the number of strokes specified by the number of strokes range detector means, integrator-inverter means receiving the output voltage of the first circuit means for integrating and inverting the same, means for actuating and resetting the integrator-inverter means during each stroke of the press slide, a reference voltage source for providing a predetermined reference voltage, and comparator means receiving the voltages derived from the integrator-inverter means and the second circuit means and also the reference voltage for additively combining them to provide a stop signal for initiating braking on the press machine when the sum of the former two voltages reaches the reference voltage, whereby the press slide can be brought to positively stop at its top dead center regardless of the speed of rotation of the crank shaft.

4,246,524

Patent Not Issued For This Number

4,246,525

MOTOR CONTROL SYSTEM

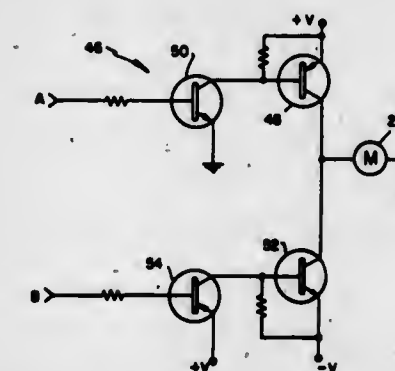
Vincent G. Coppola, Branford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 18, 1978, Ser. No. 970,523

Int. Cl.³ H02P 3/10

U.S. Cl. 318—612

14 Claims



1. A motor control system comprising means for selectively applying an electrical voltage of a first polarity to a motor to drive the motor in a first mode of operation, means for selectively applying an electrical voltage of an opposite polarity to the motor to operate the motor in the opposite mode, means providing a signal for stopping the motor when the motor is operating in one of the modes, means receiving the stopping signal and in response thereto discontinuing the application of one electrical polarity to the motor and initiating the application of the other electrical polarity to the motor for a base period greater than the motor response time and thereafter alternating the application of the first and opposite electrical polarities for durations of less than the response time of the motor whereby the motor is rapidly stopped.

4,246,526

CONTROL CIRCUIT FOR A MOTOR DRIVEN
AUTOMATIC VALVE

Edward G. Phillips, Colne, England, assignor to Lucas Industries Limited, Birmingham, England

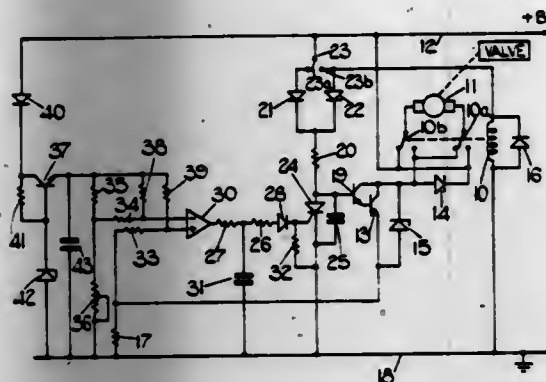
Filed Oct. 12, 1979, Ser. No. 84,191

Claims priority, application United Kingdom, Oct. 18, 1978, 41098/78

Int. Cl.³ G05G 5/00

U.S. Cl. 318—626

6 Claims



1. A control circuit for a motor driven automatic valve, comprising relay means having contacts, controlling the connection of the motor to determine the direction of running thereof, an electronic switch circuit connected in series with the motor via said contacts, biasing means biasing said electronic switch circuit to a conductive state and limit means sensitive to the motor current for switching said electronic switch means to a non-conductive state when the motor current exceeds a predetermined level, said limit means including an electronic latching circuit for maintaining said electronic switch means non-conductive after said motor current has exceeded said predetermined level.

4,246,527

SUPPLY EQUIPMENT FOR A SYNCHRONOUS
MACHINE

Vilmos Török, Lidköping, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

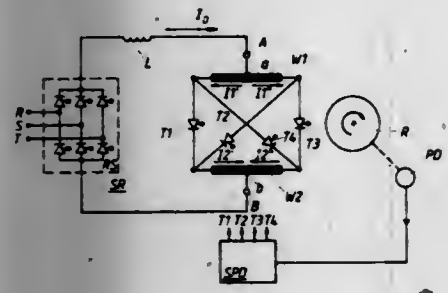
Filed Jan. 19, 1979, Ser. No. 4,798

Claims priority, application Sweden, Jan. 27, 1978, 7801011

Int. Cl.³ H02P 5/28

U.S. Cl. 318—721

10 Claims



1. In an improved current supply apparatus of a type wherein first and second power connectors are connected to a current source for supplying at least a first and a second power

winding of a synchronous machine with driving current to rotate a rotor of the synchronous machine, the improvement comprising:

first tap means connected to said first power connector and said first power winding for passing at least a portion of said driving current in a particular direction through said first power winding;

switching means for connecting each end of said first power winding to the ends of said second power winding and changing the polarity of the current flowing in at least one of the power windings in response to control signals corresponding to the angular position of said rotor; and

second tap means connected to said second power connector and said second power winding to pass at least a portion of said driving current in a particular direction through said second power winding.

4,246,528

SYSTEM FOR CONTROLLING ALTERNATING
CURRENT MOTORS

Kihei Nakajima, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

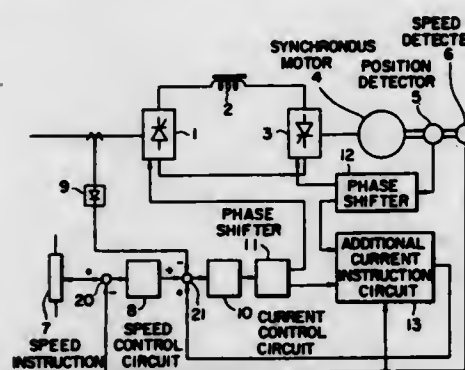
Filed Feb. 22, 1979, Ser. No. 14,098

Claims priority, application Japan, Feb. 27, 1978, 53/20848

Int. Cl.³ H02P 5/28

U.S. Cl. 318—721

2 Claims



1. In a system of controlling an alternating current motor fed from a source of alternating current via a rectifier and an inverter, each comprising semiconductor switching elements, wherein the speed of the motor is controlled by a control current produced by a current control system including a speed control circuit responsive to a reference speed signal and an actual speed signal of said motor, and a current control circuit responsive to the output of said speed control circuit for producing a first pulse signal supplied to the semiconductor switching elements of said rectifier and wherein the semiconductor elements of said inverter is controlled by a second pulse corresponding to an angular position of the rotor of said motor, the improvement which comprises an additional current instruction circuit responsive to said first and second pulse signals and a signal representing said actual speed, and means for applying the output of said additional current instruction circuit to said current control circuit.

4,246,529

CURRENT INTEGRATING BATTERY CHARGER

Gunter R. Jurgens, Collaroy Beach, and Mohammed A. Helal, Harbord, both of Australia, assignors to Minitronics Pty Limited, Australia

Filed Oct. 16, 1978, Ser. No. 951,507

Claims priority, application Australia, Nov. 4, 1977, 2308/77

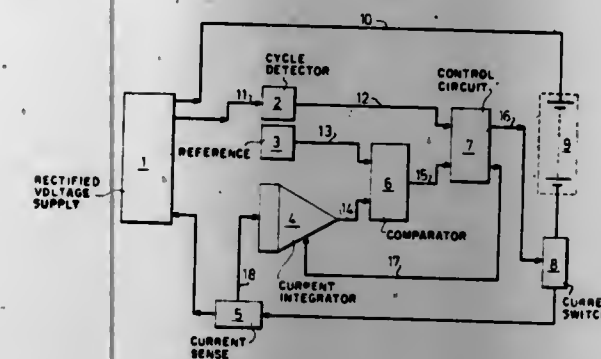
Int. Cl.³ H04J 7/04

U.S. Cl. 320—39

8 Claims

1. In a battery charging circuit, current integrating means, battery charging current sense means supplying the sensed current flow through a battery being charged to said current integrating means, a current switch, control circuit means controlling said current switch in series with said battery and

controlling periodic starting and resetting of said integrating means, and wherein charging current flows through the battery, the current switch and the current sense means when the voltage of the charging current exceeds the battery voltage after the start of each period, comparator means for comparing



the output of the integrating means with a predetermined charging current level, said comparator means being connected to said control circuit means which open circuits said current switch and resets the integrating means when the output of the integrating means attains said predetermined charging current level.

4,246,530

MEMORY NETWORK FOR TDM SWITCHING SYSTEM

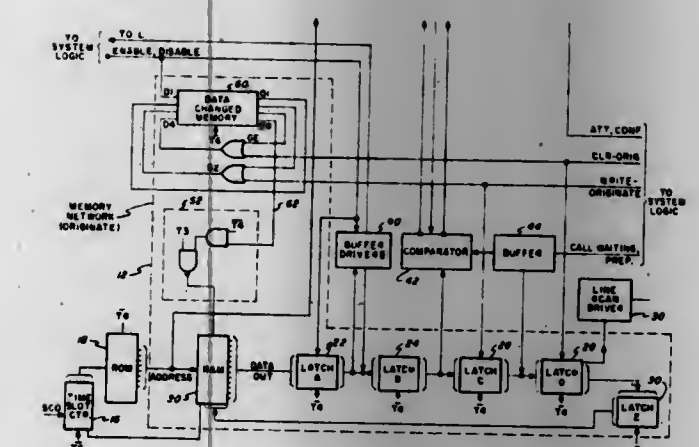
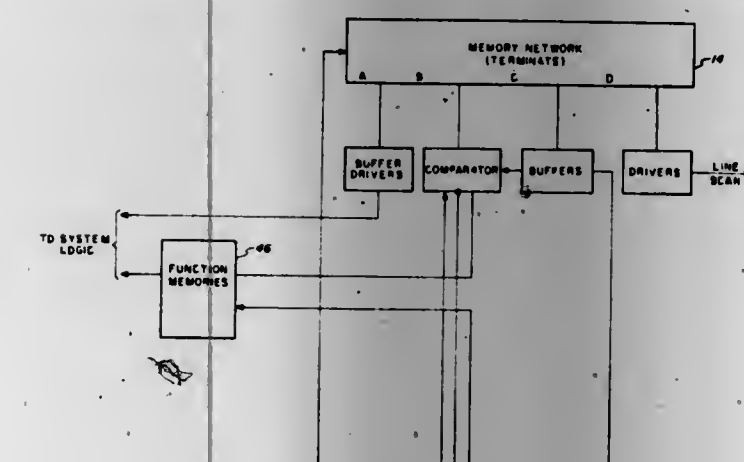
Billy A. Montgomery, Milan, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 965,851

Int. Cl.³ H04Q 11/04

U.S. Cl. 370—58

7 Claims



1. A memory system for a time division telecommunications system in which address data is stored, and in which the address data may be changed only during a predetermined group of time slots of a time division frame, said memory system including a random access memory (RAM) in which there is a memory location for each time slot, a serial chain of latch means for receiving and temporarily storing address data from said memory, during the time slots of said group, means associ-

ated with certain of said latch means for changing address data while the data is stored at said certain latch means, a further memory with locations associated with said certain latch means for storing an indication of a change of address data, means for feeding changed address data from the final latch means into said RAM for storage therein only when an indication is received from said further memory indicating an address data change has been made.

4,246,531

CONSTANT FREQUENCY VARIABLE RPM
GENERATOR

John E. Jordan, 441 S. 850 East, Orem, Utah 84070

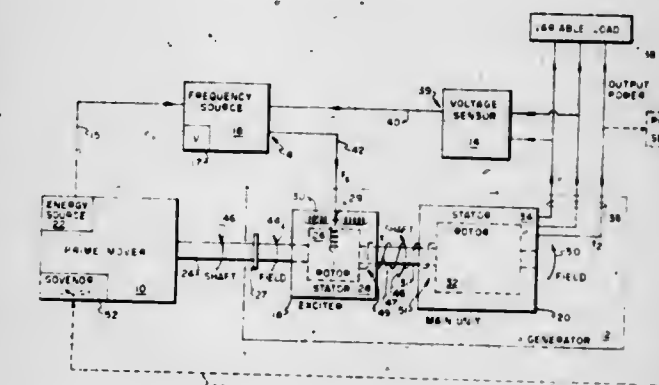
Continuation-in-part of Ser. No. 819,853, Aug. 18, 1977,

abandoned. This application Sep. 20, 1978, Ser. No. 944,147.

Int. Cl.³ H02P 9/42, 9/48

U.S. Cl. 322—28

18 Claims



1. A system for generating electrical power comprising:

a prime mover to supply rotational torque through an output shaft at variable rotational rates different from electrical synchronous speed;

secondary energy source means;

a first electrical machine with a preselected number of electrical poles having a rotor and a stator, said rotor being connected to be rotated by said prime mover output shaft for rotation within said stator at rotational rates proportional to the rotational rates of said prime mover output shaft, said rotor having an electrical output, and said stator having an electrical input;

a second shaft connected to be rotated by the prime mover output shaft to rotate at rotational rates proportional to the rotational rates of said prime mover output shaft;

a second electrical machine with a preselected number of electrical poles having a rotor and a stator, said rotor being connected to said second shaft for rotation thereby within said stator, said rotor having an electrical input, and said stator having an electrical output;

first conductor means interconnecting the electrical output of the rotor of said first machine with the electrical input of the rotor of said second machine;

system output means conductively connected by conductor means to the output of the stator of said second machine to act as an electrical power output;

a voltage sensor conductively connected to said system output means to sense the electrical output voltage and to supply an output signal reflective of the magnitude of the system output voltage;

a frequency source having a first input adapted to receive energy from said secondary energy source of said prime mover, a second input conductively connected to receive the output signal of said voltage sensor and an output conductively connected to the stator input of said first electrical machine, said frequency source having means to generate an electrical output signal at a preselected fixed frequency at variable power levels, which power levels are related to the magnitude of said system output voltage to maintain said system output voltage at a preselected magnitude;

signals from said actuator means and for generating velocity signal components at high acceleration rates; means coupled to said channels for providing a fill-in signal during the discontinuous portions of said displacement signals; and means to combine the velocity signal components from said displacement signal channel and said current signal channel with said fill-in signal, so that a continuous accurate velocity signal over the entire velocity range of said actuator is produced.

4,246,537

SPIN RESONANCE SPECTROMETER

Günther R. Laucke; Toai Keller, both of Rheinstetten-Forchheim; Dieter Koch, Ettlingen, all of Fed. Rep. of Germany, and Werner Tschopp, Zurich-Fällanden, Switzerland, assignors to Spectrospin AG, Zürich, Switzerland

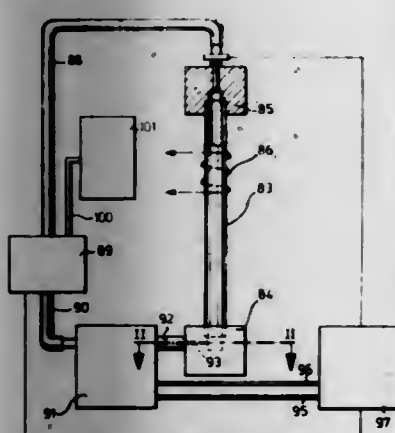
Filed Nov. 15, 1978, Ser. No. 960,788

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 2751521; Oct. 21, 1978, 2845961

Int. Cl. G01N 27/00

U.S. Cl. 324—321

10 Claims



1. A spin resonance spectrometer comprising: a stationary sample vessel; means for introducing a flowable test substance into said sample vessel and for discharging the test substance therefrom; stationary guide means adjacent said sample vessel for imparting to the test substance prior to introduction of same into said sample vessel a tangential component of movement relative to the longitudinal axis of the sample vessel; and means for applying nuclear magnetic resonance to the test substance within said sample vessel.

4,246,538

METHOD OF INVESTIGATING THE ELECTRICAL RESISTIVITY OF THE GROUND AND APPARATUS FOR USE IN THE METHOD

Ronald D. Barker, 4, Hayfield Rd., Moseley, Birmingham, West Midlands, England

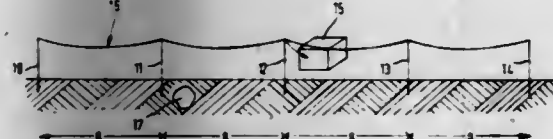
Filed Oct. 2, 1978, Ser. No. 948,025

Claims priority, application United Kingdom, Feb. 10, 1977, 45147/77

Int. Cl. G01V 3/00

U.S. Cl. 324—347

10 Claims



1. In or for apparatus for investigating the electrical resistivity of the ground comprising a plurality of electrodes for ground implantation at respective electrode positions spaced

apart along a line, a source of electrical current, and measuring means for measuring electrical current and potential between respective pairs of the electrodes, the improvement comprising two sets of insulated electrical conductors for connecting said electrodes to said measuring means, each conductor having a respective terminal for connection to said measuring means and a respective tap for connection to a respective one of said electrodes, and a support on which said terminals are mounted adjacent to each other, the taps being movable away from the support upon extension of said conductors along said line, and, in each of the sets, the respective lengths of the conductors from the terminals to the taps varying from one conductor to another and forming substantially a geometric progression when the conductors are in their extended positions.

4,246,539

FREQUENCY SYNTHESIZING SYSTEM FOR AM-SSB TRANSCEIVER

Hiroshi Haruki, Yokohama, and Masahiro Watanabe, Sagami-hara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

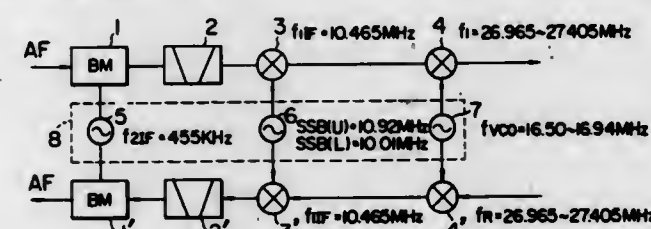
Filed Apr. 16, 1979, Ser. No. 30,387

Claims priority, application Japan, Apr. 20, 1978, 53-47448

Int. Cl. H04B 1/40

U.S. Cl. 455—76

10 Claims



1. A frequency synthesizing system for use in an AM-SSB transceiver of double conversion type comprising a PLL synthesizer, said system comprising:

a single crystal oscillator generating a fundamental frequency X_0 of said PLL synthesizer given by the equation

$$X_0 = 2 \times M \times f_2IF$$

where M is a positive integer, and f_2IF is a second intermediate frequency; means for dividing the fundamental frequency X_0 by the factor of M to provide a frequency f_1 which is two times the second intermediate frequency f_2IF and given by the equation

$$f_1 = (X_0/M) = 2 \times f_2IF$$

means for dividing the frequency f_1 by the factor of 2 to provide said second intermediate frequency f_2IF given by the equation

$$f_2IF = (f_1/2);$$

means for mixing said fundamental frequency X_0 and said frequency f_1 to provide a frequency f_2 which represents the sum of them or the difference therebetween and is given by the equation

$$f_2 = X_0 + 2 \times f_2IF;$$

means for providing a first intermediate frequency f_1IF which represents the sum of said fundamental frequency X_0 and said second intermediate frequency f_2IF or the difference therebetween and is given by the equation

$$f_1IF = X_0 \pm f_2IF;$$

means for dividing said second intermediate frequency f_2IF

or said frequency $f_1 = 2 \times f_2IF$ to provide one of the two inputs to a phase comparator in said PLL synthesizer for energizing said PLL synthesizer; and voltage controlled oscillator means for providing an output frequency f_{VCO} of said PLL synthesizer which frequency represents the sum of a transmitting and receiving frequency f_{TR} and said first intermediate frequency f_1IF or the difference therebetween and is given by the equation

$$f_{VCO} = f_{TR} \pm f_1IF$$

whereby all the frequencies required for the operation of the AM-SSB transceiver can be provided by the oscillation of the single crystal oscillator generating the fundamental frequency of said PLL synthesizer.

4,246,540

FREQUENCY SYNTHESIZER EXTENDING METHOD AND APPARATUS

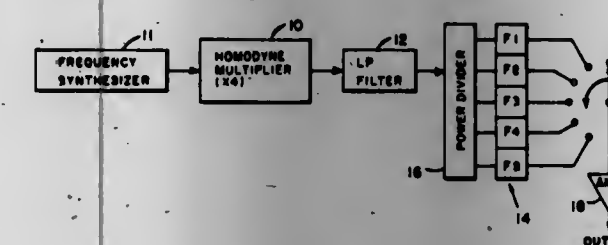
Gustaf J. Rast, Jr., and Thomas A. Barley, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 21, 1978, Ser. No. 972,178

Int. Cl. H03B 19/00

U.S. Cl. 328—18

5 Claims



1. A frequency range extending circuit comprising: a multiplier adapted for receiving a range of low frequency input frequencies and having an output extended frequency range which is a harmonic multiple of the input range, an array of very high frequency bandpass filters coupled to receive the output of said multiplier, said filters having respective passbands of equal width and overlapping at the 1 db point and having respective filter outputs adapted for providing separate and distinct output frequency bands from adjacent and separate passbands.

4,246,541

SYSTEM FOR REMOVING INTERFERENCE DISTORTION IN THE DEMODULATED SIGNAL OF A FREQUENCY-MODULATED SIGNAL

Yukinobu Ishigaki, Yamato, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

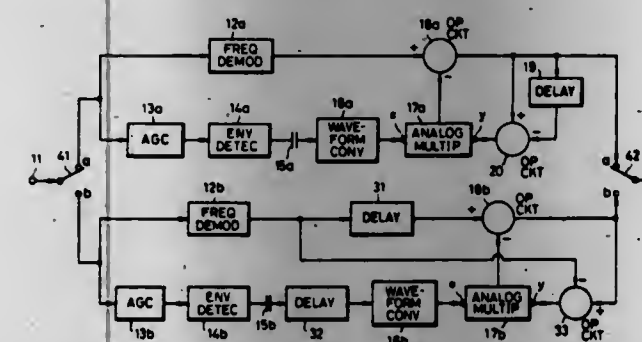
Filed May 10, 1979, Ser. No. 37,754

Claims priority, application Japan, May 21, 1978, 53-60470

Int. Cl. H03D 3/00

U.S. Cl. 329—132

7 Claims



ference distortion of said demodulated signal with said distortion cancellation signal;
 fourth operation means supplied with the output signal of said third operation means and with the output signal of said second demodulating means, thereby carrying out a signal combining operation and supplying the resulting output signal thereof to the y input terminal of said second analog multiplier; and
 means for obtaining the output of said first or third operation means as a demodulated signal in which the interference distortion has been cancelled and thus removed.

4,246,542

FILTER USING A STATE-VARIABLE BIQUADRATIC TRANSFER FUNCTION CIRCUIT

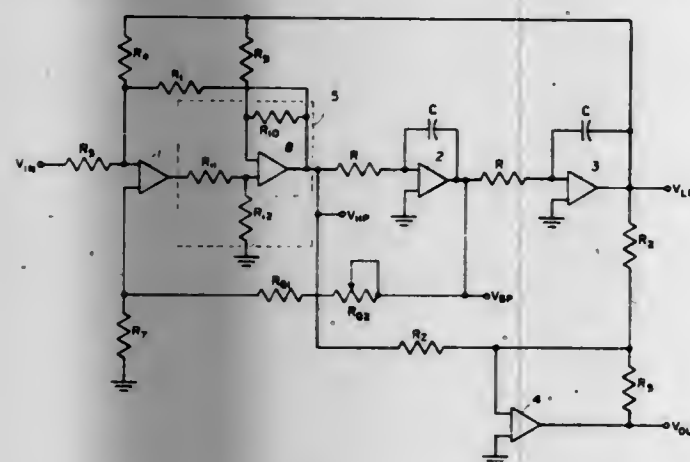
S. N. Thanos, Spring Valley, N.Y., assignor to Rockland Systems Corporation, Rockleigh, N.J.

Filed May 8, 1979, Ser. No. 37,057

Int. Cl.³ H03F 1/36

U.S. Cl. 330-107

11 Claims



1. An electronic filter stage comprising:
 - a first input amplifier stage (1);
 - a second compensating amplifier stage (5) coupled to the output of said amplifier stage (1);
 - a third amplifier stage (2) coupled to the output of said second compensating amplifier stage (5) via a resistor (R);
 - a fourth amplifier stage (3) coupled to the output of said third amplifier stage (2) via a resistor (R);
 - a first capacitor coupling the output of said third amplifier stage to an input thereof;
 - a second capacitor (C) coupling the output of said fourth amplifier stage to an input thereof; and
 - variable resistance means coupling the output of said third amplifier stage to an input of said first amplifier stage for varying the Q factor of the filter stage.

4,246,543

DELAYED AGC CIRCUIT

Masaru Noda, Fujisawa; Toshio Murakami, and Mamoru Sugita, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 24, 1979, Ser. No. 32,755

Claims priority, application Japan, Apr. 24, 1978, 53-48527

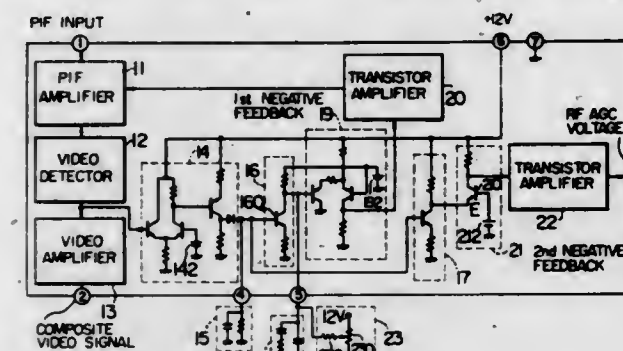
Int. Cl.³ H03G 3/30

U.S. Cl. 330-280

7 Claims

1. A delayed AGC circuit comprising:
 - (a) first amplifier means for amplifying a signal having a reference portion;
 - (b) second amplifier means for amplifying further an output signal of said first amplifier means;
 - (c) detector means for generating a detection voltage changing with the magnitude of the reference portion of said output signal of said second amplifier means;
 - (d) buffer means having an input terminal and an output terminal connected to said detector means, in which a signal is transmitted from the input terminal to the output

- terminal while no signal is transmitted from the output terminal to the input terminal;
- (e) filter means connected to the output terminal of said buffer means for smoothing the detection voltage that has passed through said buffer means;
- (f) first negative feedback means for negatively feeding back the smoothed detection voltage to the second amplifier means thereby to control the gain of said second amplifier means;
- (g) comparator means connected to said detector means, including a first input terminal supplied with the detection voltage, a second input terminal supplied with a fixed reference voltage and an output terminal, said comparator means producing a predetermined output voltage at the output terminal thereof when the voltage at the first input



terminal is lower than the voltage at the second input terminal, and an output voltage corresponding to an excess voltage at the output terminal thereof when the voltage at the first input terminal exceeds the voltage at the second input terminal;

- (h) second negative feedback means for negatively feeding back to the first amplifier means the output voltage generated at the output terminal of said comparator means to thereby control the gain of said first amplifier means; and
- (i) variable voltage superimposing means for supplying a variable current to the filter means, for generating a variable voltage corresponding to said variable current, and for superimposing said variable voltage on the smoothed detection voltage, thereby changing the detection voltage applied to said buffer means, in accordance with said variable voltage.

4,246,544

BIAS CIRCUIT FOR A LINEAR AMPLIFIER

Noriji Itoh, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

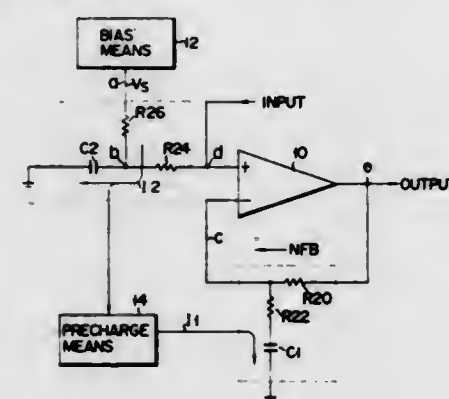
Filed May 3, 1979, Ser. No. 35,640

Claims priority, application Japan, May 15, 1978, 53/57411; May 15, 1978, 53/57412

Int. Cl.³ H03F 1/08

U.S. Cl. 330-293

28 Claims



1. A bias circuit for a linear amplifier comprising:

- (a) amplifier means with inverted and non-inverted input terminals;
- (b) negative feedback means inserted between the output terminal of the amplifier means and the inverted input terminal;
- (c) a first capacitor inserted between a feedback signal circuit of said negative feedback means and a circuit with zero AC potential, said first capacitor making a DC transfer function of said feedback means larger than an AC transfer function of it;
- (d) bias means for applying to said amplifier means such a given bias potential as to clip the AC output signal from said amplifier means symmetrically with respect to zero level;
- (e) a second capacitor connected between a circuit for providing the given bias potential and the circuit with zero AC potential in a place disposed between said bias means and the non-inverted input terminal of said amplifier means, said second capacitor being charged by said bias means from the instant when a power supply circuit starts to supply power to said amplifying means; and
- (f) precharge means for feeding precharge current to said first capacitor only for a period of time from the initiation of the power supply to said amplifier means until said amplifier means is biased by the given bias potential.

4,246,545

DATA SIGNAL RESPONSIVE PHASE LOCKED LOOP USING AVERAGING AND INITIALIZING TECHNIQUES

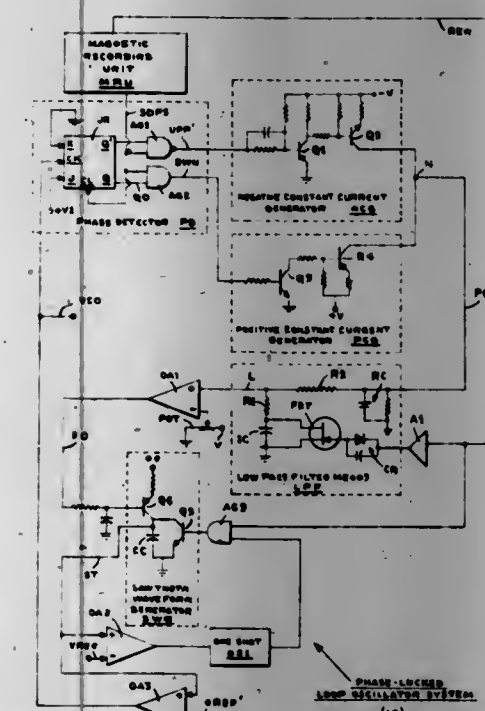
Frederick Reisfeld, Commack, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 2, 1979, Ser. No. 9,380

Int. Cl.³ H03L 7/08

U.S. Cl. 331-1 A

6 Claims



1. A phase-locked oscillator system for generating a train of signals having a repetition rate in synchronism with the repetition rate of a train of received input signals comprising: means for generating a start signal at the beginning of the train of received input signals, a phase comparator means having a first input for receiving the train of received input signals and a second input for receiving a train of pulses, and an output for generating a signal whose amplitude is directly related to the difference in phase between signals simultaneously received at the first and second inputs; a low pass filter means having an input connected to the output of said phase comparator means and output for transmitting low pass filtered signals, said low pass filter means including a capacitor connected between the input thereof and a reference potential; controlled switching means receiving said start signal for discharging said capacitor only at the start of the reception of the train of received input

signals; and a voltage controlled oscillator means having an input connected to the output of said low pass filter means and an output connected to the second input of said phase comparator means for generating a train of signals having a repetition rate which is a function of the amplitude of the signal received from said low pass filter means.

4,246,546

APPARATUS AND METHOD FOR LOCKING A PLL ONTO A SELECTED OFFSET FREQUENCY SIDEBAND

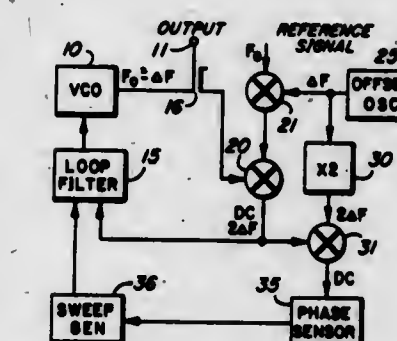
Thomas W. McDonald, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 5, 1979, Ser. No. 27,200

Int. Cl.³ H03L 7/12

U.S. Cl. 331-4

9 Claims



1. A phase locked loop wherein a voltage controlled oscillator is controlled to phase lock onto a frequency spaced from a reference frequency by a specific offset frequency and including apparatus for locking the voltage controlled oscillator onto a selected one of the upper and lower sidebands, said phase locked loop comprising:

- (a) a voltage controlled oscillator providing an output signal and having a control input;
- (b) a reference frequency source;
- (c) an offset frequency source providing an offset frequency signal and a signal at an integer multiple of the offset frequency;
- (d) first mixing means coupled to receive the output signal of said voltage controlled oscillator and further coupled to said reference frequency source and to receive the offset frequency signal from said offset frequency source, said first mixing means being coupled to provide an output signal including a control component and a component having a frequency equal to twice the offset frequency when the voltage controlled oscillator is locked;
- (e) means coupling the control component from the first mixing means to the control input of said voltage controlled oscillator; and
- (f) means coupled to said first mixing means, said offset frequency source and said coupling means for comparing the phase of the double offset frequency component from said first mixing means to the integer multiple signal from said offset frequency source and providing a sweeping signal to said coupling means until the phase comparison indicates the selected sideband is in phase lock.

4,246,547

PHASE LOCKED LOOP FREQUENCY GENERATOR HAVING STORED SELECTABLE DIVIDING FACTORS
 Roger E. J. Gerard, and Boleslaw M. Sosin, both of Chelmsford, England, assignors to The Marconi Company Limited, Chelmsford, England

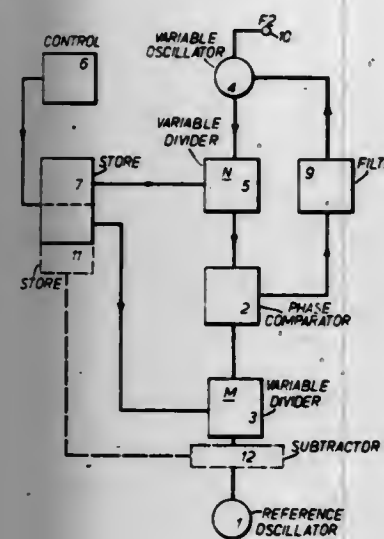
Filed Sep. 5, 1978, Ser. No. 939,686

Claims priority, application United Kingdom, Sep. 7, 1977, 37256/77

Int. Cl.³ H03L 7/18

U.S. Cl. 331-16

2 Claims



1. A frequency generator comprising, in combination: variable frequency oscillator means for producing a frequency controlled output; and control means for controlling said variable frequency oscillator means for causing the frequency of the output thereof to switch among a finite number of fixed, discrete frequencies F_2 which correspond, with small errors, to desired frequencies F ; said control means comprising a reference oscillator having a relatively stable output F_1 ; comparator means having an output connected to said variable oscillator means and first and second inputs derived respectively from the output signals of said variable frequency oscillator means and said reference oscillator for producing a number, equal to said finite number, of discrete outputs $F_2 = F_1 N / M$ at the output of said variable frequency oscillator means; first variable frequency divider means for dividing the frequency of said variable frequency oscillator by the divisor value N to provide said first input to said comparator means; second variable frequency divider means dividing the frequency of said reference oscillator by the divisor value M to provide said second input to said comparator means; storage means for storing a number, equal to said finite number, of pairs of said divisor values N and M , the values of N and M for each of which pairs being different and selected to produce a particular one of said discrete outputs F_2 from said variable frequency oscillator means which approximates, with small error, a corresponding desired frequency F ; selector means for selecting which pair of said stored divisor values is applied respectively to said first and second variable frequency divider means whereby said variable frequency oscillator means economically produces an output whose frequency is determined by the selected pair of divisor values and approximates a desired frequency; said first variable frequency divider means including variable frequency offset means; said storage means storing at least on value of frequency offset; and said selector means being capable of selecting said stored value of frequency offset for application to said offset means.

4,246,548

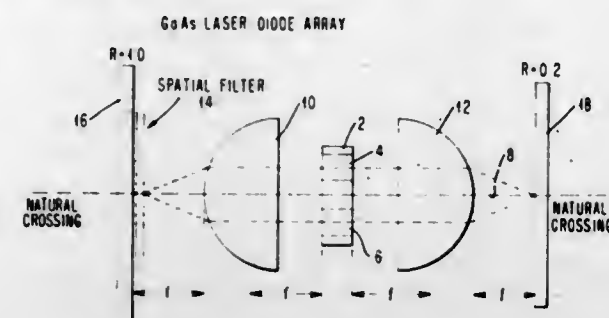
COHERENT SEMICONDUCTOR INJECTION LASER ARRAY
 Elisabeth M. Rutz, Bethesda, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 14, 1974, Ser. No. 497,351

Int. Cl.³ H01S 3/05, 3/096

U.S. Cl. 331-94.5 H

3 Claims



3. A spatially coherent solid state laser device comprising: a plural element laser array disposed symmetrically with respect to an optical axis; an external resonating cavity formed of spherical lenses and plane mirrors disposed about said plural element laser array with its axis of symmetry coincident with said optical axis; a free running mode spatial filter disposed in the Fourier plane for controlling the field of each laser of said plural element laser array to be in the lowest order transverse mode, said free running mode spatial filter not controlling the relative phase angle of said laser fields, which fluctuate randomly in said transverse mode, the width of said free running mode spatial filter being inversely proportional to the width of each single laser in said plural element laser array, and said transverse mode not being determined by the number of lasers in said plural element laser array or their spacings, thereby not requiring a change of said free running spatial filter when the number of said lasers in said plural element laser array is increased.

4,246,549

MAGNETO-OPTICAL PHASE-MODULATING DEVICES
 Walter S. Carter, Bracknell, and Richard B. Inwood, Crowthorne, both of England, assignors to Sperry Rand Limited, Bracknell, England

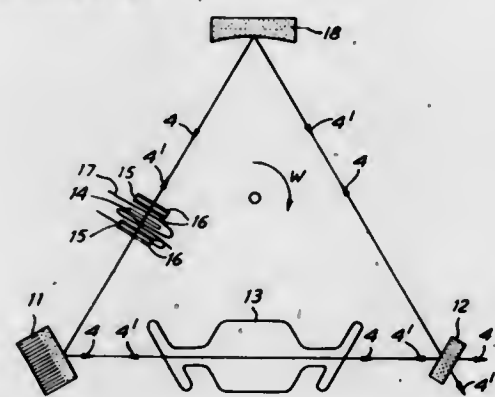
Filed Oct. 2, 1978, Ser. No. 947,968

Claims priority, application United Kingdom, Oct. 4, 1977, 41151/77

Int. Cl.³ H01S 3/10

U.S. Cl. 331-94.5 M

34 Claims



1. A device employing the transverse Kerr magneto-optic effect for phase modulating p-polarized light incident thereto comprising: a magneto-optic layer of bismuth doped garnet having the formula $\text{Bi}_{3-2y}\text{Ca}_{2y}\text{Y}_y\text{Fe}_{5-y}\text{O}_{12}$ where preferably y is 1;

a reflective layer positioned adjacent to the magneto-optic layer such that the p-polarized light is first incident to the magneto-optic layer and therefrom to the reflective layer.

4,246,550

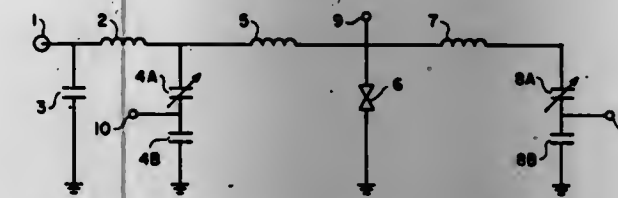
WIDEBAND, MILLIMETER WAVE FREQUENCY GUNN OSCILLATOR
 Leonard D. Cohen, Brooklyn, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 21, 1980, Ser. No. 142,170

Int. Cl.³ H03B 9/12

U.S. Cl. 331-107 DP

5 Claims



1. A Gunn diode oscillator designed to efficiently produce a signal tunable over a millimeter wavelength frequency range, beyond the normal operating frequency range of the Gunn diode, comprising:

- a Gunn diode having first and second terminals, said diode being biased to exhibit a negative resistance,
- a first series circuit comprising:
 - a first lumped element choke having first and second terminals, an electrical length of nominally one-fourth wavelength at the fundamental frequency of the oscillator and nominally one-half wavelength at the second harmonic of the oscillator, said choke being connected at its first terminal to the first terminal of the Gunn diode, and
 - a first lumped element variable capacitor having first and second terminals, connected at its first terminal to the second terminal of the first choke and at its second terminal to the second terminal of the Gunn diode, said capacitor being adjusted to present to the diode, by way of the first choke, a reactance which in combination with the reactances of and associated with the diode forms a substantial impedance at the diode at both the fundamental and second harmonic frequencies of the oscillator,
- a second series circuit, comprising:
 - a second lumped element choke having first and second terminals, said second choke being connected at its first terminal to the first terminal of the diode,
 - a second lumped element variable capacitor having a first and second terminal, said second capacitor being connected at its first terminal to the second terminal of the second choke, and at second terminal to the second terminal of the diode, said second capacitor and second choke presenting to the diodes a parallel resonant impedance at the fundamental frequency of the oscillator,
- a waveguide capable of propagating the fundamental and second harmonic frequencies of the oscillator,
- means for coupling the output of the Gunn diode to a point along the waveguide to propagate the oscillator signal in two opposite directions within the waveguide, said directions lying generally along the longitudinal axis of the waveguide,
- a short within the waveguide at a distance from the point at which the oscillator is coupled to cancel the fundamental and enhance the second harmonic flow in a direction away from the short, and
- means for ganging said first and second capacitors to tune said oscillator over a frequency range for an enhanced second harmonic signal at a frequency beyond the fundamental operating range of the oscillator.

4,246,551

MULTIVIBRATOR CIRCUIT

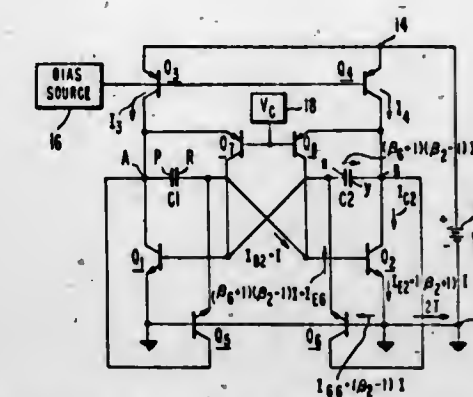
Carl F. Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 964,971

Int. Cl.³ H03K 3/282, 3/284

U.S. Cl. 331-113 R

10 Claims



4,246,553

INTEGRATED FILTER CIRCUIT

Hans-Jörg Pfeleiderer, Zorneding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

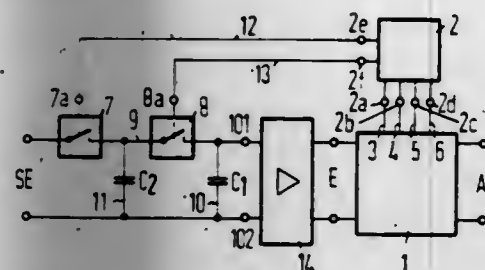
Filed Jan. 22, 1979, Ser. No. 51,118

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838096

Int. Cl.³ H03H 15/02

U.S. Cl. 333—165

11 Claims



1. Integrated filter circuit with a CTD transversal filter and a further low pass filter preconnected to the transversal filter, in which the preconnected filter includes a first capacitor, a second, significantly smaller capacitor, first and second alternately actuatable electronic switches, a transfer circuit for said second capacitor leading over said first switch, and a transfer circuit for a series connection formed of said first and second capacitors leading over said second switch.

4,246,554

INDUCTORLESS MONOLITHIC CRYSTAL FILTER NETWORK

Thomas W. Swanson, North Redington Beach, and Paul A. Herzig, St. Petersburg, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Dec. 11, 1978, Ser. No. 968,302

Int. Cl.³ H03H 9/50, 9/52, 9/56, 9/60

U.S. Cl. 333—192

19 Claims



1. A two-pole inductorless monolithic crystal filter element comprising:

- first and second spaced electrodes deposited on one face of said element,
- third and fourth spaced electrodes deposited on the opposite face of said element in superimposed relationship with said first and second electrodes,
- a first capacitor coupled between said first and fourth electrodes,
- means electrically coupling said second and third electrodes, and
- a second capacitor coupling said second and third electrodes to a point of reference potential, said first electrode and point of reference potential being designated as input terminals, and said fourth electrode and point of reference potential being designated as output terminals.

4,246,555

ODD ORDER ELLIPTIC FUNCTION NARROW BAND-PASS MICROWAVE FILTER

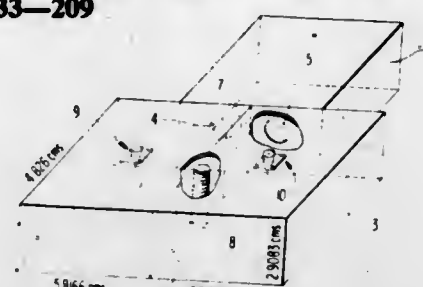
Albert E. Williams, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jul. 19, 1978, Ser. No. 926,056

Int. Cl.³ H01P 1/208, 1/209, 7/06

U.S. Cl. 333—209

5 Claims



1. An odd order elliptic function narrow band pass wave guide filter of the type having n cavities (n being an odd integer greater than 1) designated by reference numbers 1 to n respectively, wherein an input signal is received in cavity number 1 and coupled, in order, through cavities numeral 2 through n via simple coupling means for providing substantially constant coupling between successively numbered cavities, the improvement comprising:

resonant coupling means for providing a variable coupling between non-successively numbered cavities.

4,246,556

LOW PARASITIC SHUNT DIODE PACKAGE

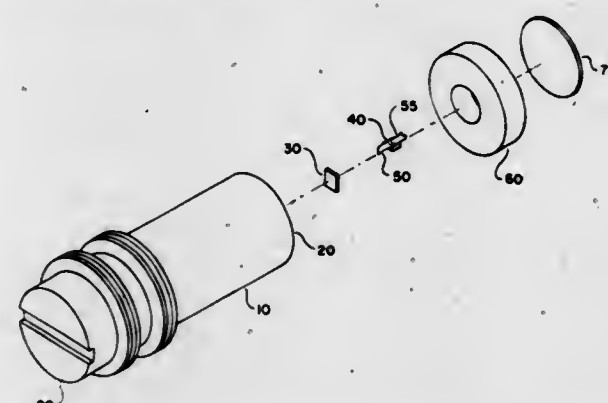
Philip B. Snow, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 9, 1979, Ser. No. 18,961

Int. Cl.³ H01P 5/04, 11/00, 7/04

U.S. Cl. 333—247

9 Claims



1. A diode package suitable for use at frequencies up to above 40 GHz for mounting a beam-lead diode in a stripline, coaxial or waveguide assembly, the diode having a first and second electrode, the package comprising:

- an electrically conductive tuning screw having at least one flat face;
- a gold ribbon mounted on said flat face of said tuning screw and connected to the first electrode of the beam-lead diode;
- an annular insulating member having a low dielectric constant surrounding the beam-lead diode and mounted on said flat face of said tuning screw; and
- an electrical conducting member mounted on said annular insulating member, said second electrical member being electrically connected to said second electrode.

4,246,557

BELL ALARM FOR CIRCUIT BREAKER

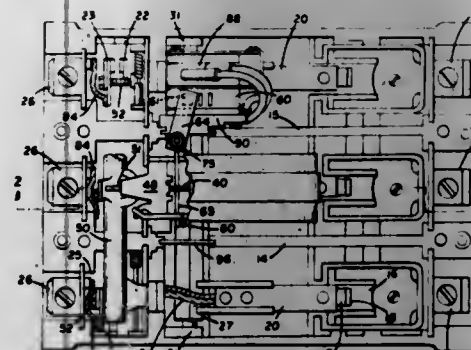
Anthony Michetti, Warminster; Charles Warner, Philadelphia, both of Pa., and John Rowan, Maple Shade, N.J., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 26, 1979, Ser. No. 52,288

Int. Cl.³ H01H 73/12

U.S. Cl. 335—17

11 Claims



1. A multipole circuit breaker including a hollow base having an open front; a removable cover secured to said base to cover said open front; said base having integrally formed barrier means dividing the interior of said base into a plurality of longitudinally extending compartments; within each of said compartments, a stationary contact and a cooperating movable contact engageable with said stationary contact; a transverse tie bar having said movable contacts of all poles operatively connected thereto for simultaneous operation of all said movable contacts; a spring powered contact operating mechanism operatively connected to said tie bar for simultaneously operating the movable contacts of all the circuit breaker poles into and out of engagement with their cooperating stationary contacts; said operating mechanism disposed within a first of said compartments and including a frame secured to said base and a releasable cradle mounted on said frame; latch means which when latched engages said cradle to hold the latter in a reset position permitting said operating mechanism to move said movable contacts into engagement with their cooperating respective stationary contacts, fault current responsive trip means operable to trip said latch means to release said cradle thereby controlling said operating mechanism to prevent said cooperating contacts from engaging; a switch unit in a second of said compartments next to said first compartment; said switch unit including a housing, a contact operator extending therefrom and contact means within said housing operable by said operator; an actuator mounted on said frame and guided for limited forward and rearward movement; biasing means urging said actuator forward; said cradle in moving toward its said reset position engaging said actuator and moving the latter rearward to operate said contact operator to move said contact means of said switch unit from its normal position.

4,246,558

AUXILIARY FEATURE MODULES FOR CIRCUIT BREAKERS

Martin V. Zubaty, Bellefontaine, Ohio, and Carl E. Gryctko, Cherry Hill, N.J., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 22, 1979, Ser. No. 5,189

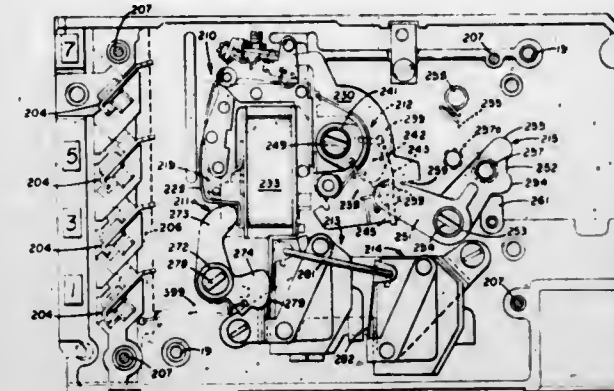
Int. Cl.³ H01H 83/00

U.S. Cl. 335—20

16 Claims

1. An auxiliary feature module including an electromagnet trip device comprising an actuator, first means biasing said actuator toward a tripping position and second means for holding said actuator in a normal reset position against the biasing force of said first means; a trip member adapted to be drivingly connected with a releasable trip latch of a circuit breaker module stacked with said auxiliary feature module; third means connecting said trip member to said actuator whereby movement of the latter to its said tripping position is transmitted through said trip member to release a circuit

breaker trip latch drivingly connected thereto; and fourth means including a reset member adapted to be drivingly connected with a releasable cradle of a circuit breaker module



stacked with said auxiliary feature module whereby movement of such cradle toward its tripped position is transmitted through said reset member to said actuator in a direction to reset the latter.

4,246,559

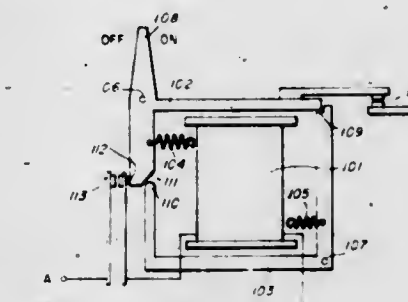
ELECTRO-MAGNETIC RELAY STRUCTURE

Charles R. Budrose, P.O. Box 1057, Saugus, Mass. 01906
Division of Ser. No. 849,310, Nov. 7, 1977, Pat. No. 4,163,134.
This application Feb. 21, 1979, Ser. No. 13,396

Int. Cl.³ H01H 67/02, 51/20

U.S. Cl. 335—120

5 Claims



1. A relay construction comprising; electro-magnetic means having opposite end poles, means coupling to said electro-magnetic means for receiving energizing power for said electro-magnetic means including switch closure means, and an armature disposed adjacent the electro-magnetic means and having manually operable means for initiating movement of said armature and means for closing said closure switch means to cause energization of said electro-magnetic means, another armature, said armatures being disposed respectively adjacent opposite end poles of the electro-magnetic means, biasing means for urging each armature away from the electro-magnetic means, said another armature having one end extending toward and for blocking movement of the first armature and another end engaging and assisting movement of the one armature manually operable means.

4,246,560

SELF-CONVERGING DEFLECTION YOKE

Toshiharu Shimizu, Takesuke Maruyama, Shuzo Matsumoto, Kei Yamashita, and Atushi Takeyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

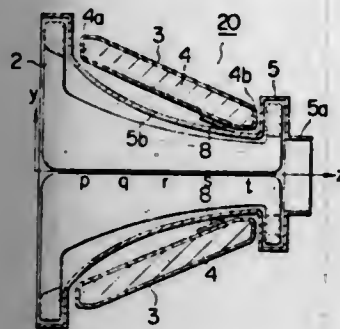
Filed Sep. 18, 1978, Ser. No. 943,347

Claims priority, application Japan, Sep. 21, 1977, 52-112559

Int. Cl.³ H01F 1/00, 7/00

U.S. Cl. 335—212

10 Claims



1. A deflection yoke for a television receiver comprising: a horn-shaped core having a larger opening and a smaller opening;
- a horizontal deflection coil disposed inside said core;
- a vertical deflection coil wound on said core so as to produce a pincushion shape magnetic field at said larger opening and a barrel shape magnetic field at said smaller opening with a winding angle of said vertical deflection coil at said smaller opening of said core being larger than a winding angle at said larger opening; and
- a magnetic material piece disposed inside said vertical deflection coil at a position, on said vertical deflection coil, close to said smaller opening.

4,246,561

TEMPERATURE-RESPONSIVE ELECTRICAL SWITCH WITH SLIDING CONTACT

John K. McVey, Bensenville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 25, 1979, Ser. No. 60,527

Int. Cl.³ H01H 37/76

U.S. Cl. 337—407

4 Claims



1. A temperature-responsive switch comprising a cylindrically-shaped electrically conductive housing, a first conductor insulated from said housing and passing into said housing and having a fixed contact thereon which is located in said housing, a cylindrically-shaped sliding contact that has a conductive wall in contact with a substantial length of the interior of said housing and that has a plurality of spring finger contact means integrally formed thereon, a collapsible thermal pellet having a cavity therein and a coiled spring bias means for forcing said sliding contact away from said fixed contact and toward said pellet, said spring finger contact means on said sliding contact

and said fixed contact being in contact with each other when said pellet is solid and being forced out of contact with each other when said pellet melts at a predetermined temperature so that said cylindrically-shaped sliding contact slides along, in contact with, the interior of said housing causing said spring finger contact means to move into a portion of said housing that was previously occupied by said solid pellet under the action of said coiled spring bias means due to the resulting decrease in volume of said housing that is occupied by the material comprising said pellet when it melts.

4,246,562

COIL FORM

Rudolf Widemann, Neubiberg, and Roland Ehrgott, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,311

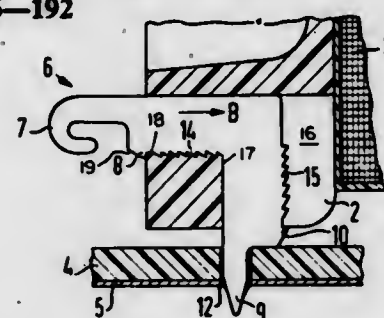
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741608; Sep. 15, 1977, 7728572[U]

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.³ H01F 15/10

U.S. Cl. 336—192

3 Claims



1. A printed circuit board coil form, comprising:
 - (a) form means for receiving a coil therearound;
 - (b) a flange connected to the form means;
 - (c) an L-shaped rectangular cross-section perforation channel at an edge of said flange, said channel having a right angle portion therein, an insertion slot providing an insertion entrance into the channel, and being formed of deformable material;
 - (d) a flat L-shaped pre-formed one-piece rectangular cross-section soldering lug mounted in said perforation channel, said soldering lug having a first leg electrically connecting to the coil and a second leg as a terminal at a right angle to the first leg;
 - (e) at least one of the first and second legs having an integral rigid non-springy latch forming an abutment surface at right angles to a longitudinal axis of the leg and a slanted surface slanted in a direction to facilitate insertion of the leg with the latch in a direction from the channel interior through one leg of the channel towards the exterior by deforming the channel material with the slanted surface until the latch abutment surface latches to an exterior surface of the flange, said latch being positioned so that the right angle of the soldering lug abuts against the channel right angle portion.

4,246,563

ELECTRIC SAFETY FUSE

Olav Noerholm, Helsingør, Denmark, assignor to Aktieselskabet Laur. Knudsen Nordisk Electricitet, Copenhagen, Denmark

Filed May 18, 1978, Ser. No. 907,354

Claims priority, application United Kingdom, May 28, 1977, 22659/77; Denmark, Mar. 10, 1978, 1097/78

Int. Cl.³ H01H 85/04

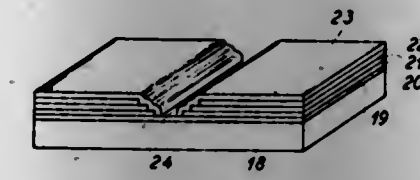
U.S. Cl. 337—296

6 Claims

1. A laminated electric safety fuse having an electrically insulating supporting substrate and at least one layer of electrically

cally conductive material deposited thereon, wherein the improvement comprises:

- said supporting substrate including a principal layer composed of an electrically insulating material having good thermal conductivity and an additional layer of electrically



cally insulating material disposed between the principal layer and the layer of electrically conductive material and having a thermal conductivity different from the thermal conductivity of said principal layer for providing a predetermined thermal time constant for said fuse.

4,246,564

METHOD OF ASSEMBLING A NORMALLY CLOSED THERMALLY ACTUATED CUT-OFF LINK AND THE LINK MADE THEREBY

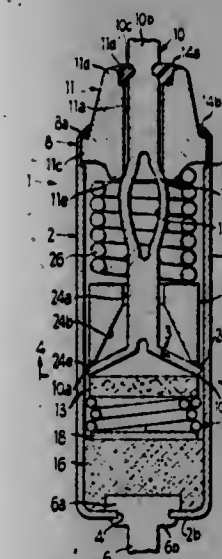
Harry W. Olson, Woodridge, and John M. Borzoni, Des Plaines, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Jun. 27, 1979, Ser. No. 52,396

Int. Cl.³ H01H 37/76

U.S. Cl. 331—409

13 Claims



1. An ambient thermal actuated cut-off link comprising: a casing of electrically conductive material; a first power lead exposed to the outside of said casing through an opening in said casing at a point where it is insulated therefrom, said first power lead having at the inner end thereof laterally outwardly extending, inwardly deformable contact-forming arm means making a low resistance contact with an inner conductive surface associated with said casing; a second exposed power lead making a permanent low resistance connection with said casing; a sandwich of elements held under spring pressure between spaced points in said casing and comprising stressed spring means, arm-deforming means to be urged by said spring means toward said arm means to deform the same inwardly when the spring means is allowed to move to the unstressed state thereof, backing means for said arm means against which said arm means is urged to expand the same against said casing to establish a given low resistance contact therewith, and a fusible body which melts at a given control temperature, the melting of said body of meltable material at said control temperature causing said spring means to move to an unstressed state to force said arm deforming means against said contact-forming means to bend the same away from said casing; and insulating closure means anchored and sealed in said casing opening, closure means being a rigid member into which said first power lead extends; said first power lead having outwardly facing shoulder means, and the inner portion of said closure means pressing against said shoulder means to force said contact-forming arm means at the inner end of said first power lead against said backing means.

perature causing said spring means to move to an unstressed state to force said arm deforming means against said contact-forming means to bend the same away from said casing; and insulating closure means anchored and sealed in said casing opening, closure means being a rigid member into which said first power lead extends; said first power lead having outwardly facing shoulder means, and the inner portion of said closure means pressing against said shoulder means to force said contact-forming arm means at the inner end of said first power lead against said backing means.

4,246,565

RETENTION PLUG

George R. Wiley, Upland, and Francis F. Dewees, Riverside, both of Calif., assignors to Bourns, Inc., Riverside, Calif.

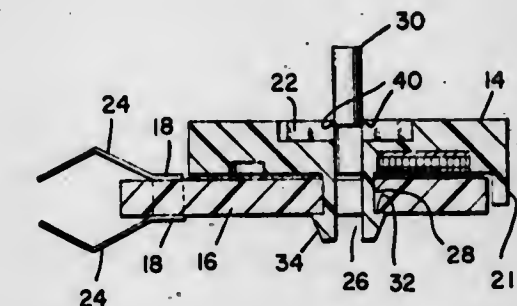
Continuation of Ser. No. 811,119, Jun. 29, 1977, abandoned.

This application Apr. 16, 1979, Ser. No. 30,496

Int. Cl.³ H01C 10/32

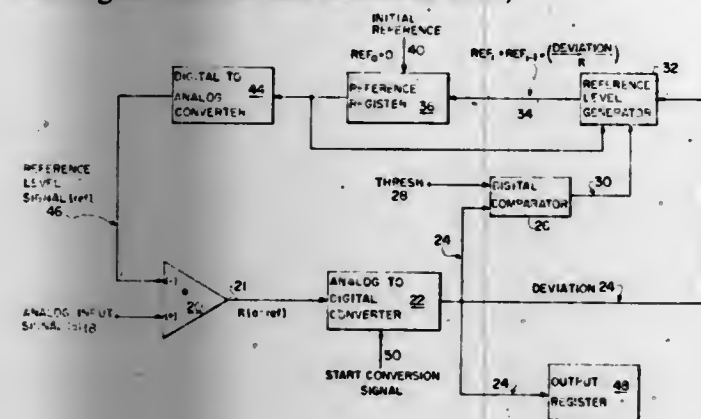
U.S. Cl. 338—163

1 Claim



1. A rotatable electrical device comprising: a flat substrate of substantially uniform thickness having at least one first electrical contact thereon; an aperture in said flat substrate positioned adjacent said first electrical contact; a rotor having at least one second electrical contact on one side positioned to continually contact said first electrical contact; a hollow articulated bushing formed unitarily with said rotor and rotatable attached to said flat substrate through said aperture, said bushing comprising: elongated members forming a hollow, extending resilient cylindrical shank of longitudinal dimension bounded at its proximate extremity by said one side of said rotor and at the distal portion by a stepped shoulder, the distance between said one side of said rotor and said stepped shoulder being substantially the combined thickness of said flat substrate and said first electrical contact so as to provide rotatable attachment of said rotor to said flat substrate and mating between said first and second electrical contacts, a ramp-like taper extending from said stepped shoulder to the end of said bushing, said taper being provided to facilitate the insertion of said cylindrical shank into said aperture in said flat substrate; a cylindrical retention rod of uniform diameter formed unitarily with said rotor at a rupturable joint that positions and retains said retention rod to said rotor prior to combination of said rotor with said flat substrate, such that an axial force applied to said rod toward said substrate ruptures said joint and pushes said rod into said hollow shank, said diameter of said rod relative to the inside diameter of said hollow shank being such as to prevent substantial radially inward flexing of said elongate members, while slightly increasing the rotational resistance between said bushing and said substrate to enhance the positional integrity of said rotor while maintaining the rotatable attachment between said bushing and said substrate.

analog input signal and said reference level signal is produced;
an analog to digital converter coupled to the output of said differential amplifier whereby a digital deviation signal equivalent to said amplified difference signal is generated;
a digital comparator coupled to the output of said analog to digital converter and to an external source for providing a threshold level signal, for generating a reference update instruction whenever the magnitude of said digital deviation signal exceeds said threshold level;



means coupled to said digital comparator and to said analog to digital converter for generating a modified reference level signal in digital form in response to said reference update instruction; and
a digital to analog converter coupled to said modified reference level signal generator for converting said digital form modified reference level signal into analog form wherein said analog form modified reference level signal is coupled to said differential amplifier.

4,246,572

DETECTION CIRCUIT WITH HYSTERESIS

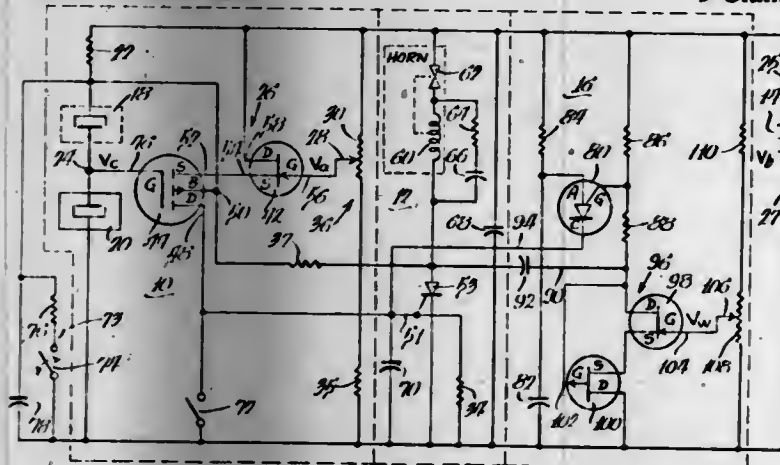
Larry D. Larsen, Elgin, Ill., assignor to Patent Development & Management Company, Elgin, Ill.

Continuation-in-part of Ser. No. 638,843, Dec. 8, 1975, Pat. No. 4,083,037. This application Mar. 27, 1978, Ser. No. 890,289. The portion of the term of this patent subsequent to Apr. 4, 1995, has been disclaimed.

Int. Cl.² G08B 17/10

U.S. Cl. 340—501

9 Claims



1. In a detection circuit having means for generating a sensing signal which varies in accordance with a phenomenon being sensed, means for establishing an alarm reference signal, and means for generating an output signal in response to the sensing signal exceeding the alarm reference signal in one sense and terminating the output signal in response to the sensing signal exceeding the alarm reference signal in an opposite sense, a hysteresis circuit, comprising:

means responsive to the output signal for developing a feedback signal; and
means responsive to said feedback means for altering one of said sensing signal and said alarm reference signal to estab-

lish a hysteresis characteristic for said detection circuit, said detection circuit terminating generation of said output signal at a level of the phenomenon being sensed less than the level at which said output signal is initially generated.

4,246,573

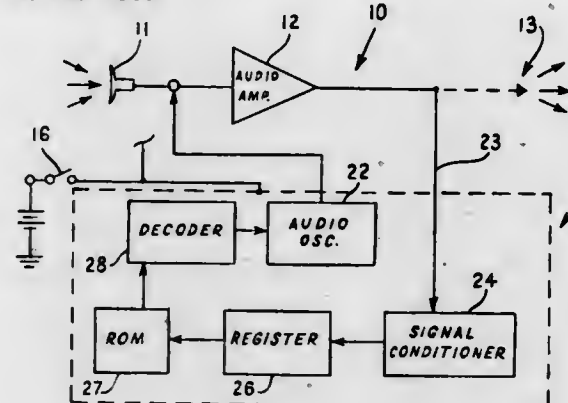
PROTECTION SYSTEM FOR ELECTRONIC GEAR

Laszlo A. Kiss, 23 Carver La., Sunol, Calif. 94536

Continuation-in-part of Ser. No. 726,273, Sep. 24, 1976, abandoned. This application May 5, 1978, Ser. No. 903,245 Int. Cl.³ G08B 1/08; H04K 1/00

U.S. Cl. 340—539

13 Claims



8. A protection system for electronic gear operating between an energized and de-energized state and having electrical circuit means for producing input signals including a predetermined input signal and providing an electrically produced output, said system comprising:

signal means adapted for connection with said gear for automatically generating a theft signal in response to the energization of said gear from its de-energized state, said signal means also being adapted for connection with said electrical circuit means for applying said theft signal to said circuit means for at least distorting its output, and control means adapted for connection with said gear to receive said input signals from the latter and connected to said signal means upon receipt of said predetermined input signal for preventing application of said theft signal to said circuit means of said electronic gear.

4,246,574

MOISTURE RESPONSIVE SWITCH

George E. Sanner, Cypress Hill, Sparks, Md. 21204

Continuation-in-part of Ser. No. 676,877, Apr. 14, 1976, Pat. No. 4,061,893, which is a division of Ser. No. 625,350, Oct. 23, 1975, Pat. No. 4,014,359, which is a continuation-in-part of Ser. No. 466,693, May 3, 1974, Pat. No. 3,915,185, which is a

continuation-in-part of Ser. No. 272,793, Jun. 18, 1972, Pat. No. 3,848,616, which is a continuation-in-part of Ser. No. 018,829, Feb. 12, 1970, abandoned, which is a division of Ser. No. 456,787, May 18, 1965, Pat. No. 3,500,844. This application Nov. 23, 1977, Ser. No. 854,326

The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.

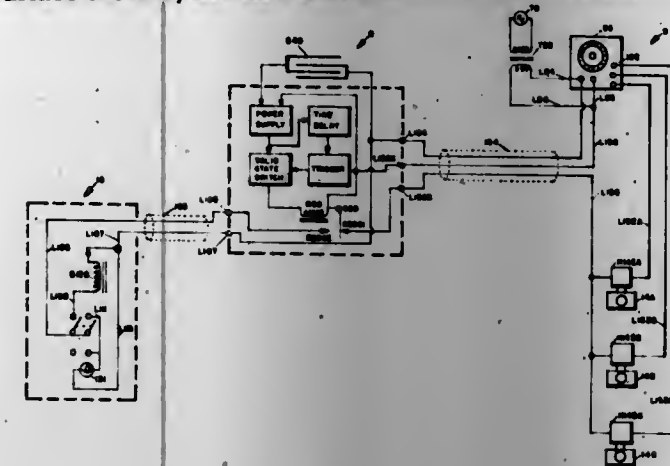
Int. Cl.³ G08B 21/00

U.S. Cl. 340—602

7 Claims

1. A moisture responsive actuator which comprises: a housing; an electrical switch and an electrical switch actuator located in said housing; load circuit means for connecting said electrical switch to an electrical load external of said housing; a moisture responsive sensor switch located exterior of said housing; sensor switch circuit means for so connecting said sensor switch, said electrical switch actuator and a power source in series that, when said sensor switch is activated, said electrical switch actuator is energized; said electrical switch is deactivated and said external electrical load is de-energized and that, when said sensor switch is deactivated, said electrical switch actuator is de-energized, said electrical switch is acti-

vated, and said external electrical load is energized; said sensor switch being constructed to avoid retention of water on the surface thereof; and said sensor switch circuit means compris-



ing time delay means for delaying the deactivation of said electrical switch for a predetermined time interval after said sensor switch is activated.

4,246,575

MOISTURE DETECTOR

Jack L. Purtell, and Rufus J. Purtell, both of P.O. Box 1152, Brownfield, Tex. 79316

Filed Feb. 2, 1979, Ser. No. 8,494

Int. Cl.² G08B 21/00

U.S. Cl. 340—605

4 Claims



1. In a water leak alarm system having
 - a. a source of electrical energy,
 - b. an alarm,
 - c. a detector including a two faced expansion wafer which expands upon contact with water,
 - d. a connection means for connecting the source of electrical energy and alarm to the detector;
 the improved method of detecting moisture comprising:
 - e. hinging said wafer at one edge,
 - f. attaching a plate to one face of the wafer which plate extends beyond the hinged edge,
 - g. attaching an opposing plate to an opposing face of the wafer which plate extends beyond the hinged edge,
 - h. opening the plates by expansion of the wafer, and thereby
 - j. levering the extensions into contact.

4,246,576

CYCLONE MONITORING APPARATUS AND METHOD

Donald F. Grieve, La Honda, and Edward D. Barnett, Sunnyvale, both of Calif., assignors to Krebs Engineers, Menlo Park, Calif.

Continuation-in-part of Ser. No. 873,275, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 781,141, Mar. 25, 1977, abandoned. This application Apr. 26, 1979, Ser. No. 33,704

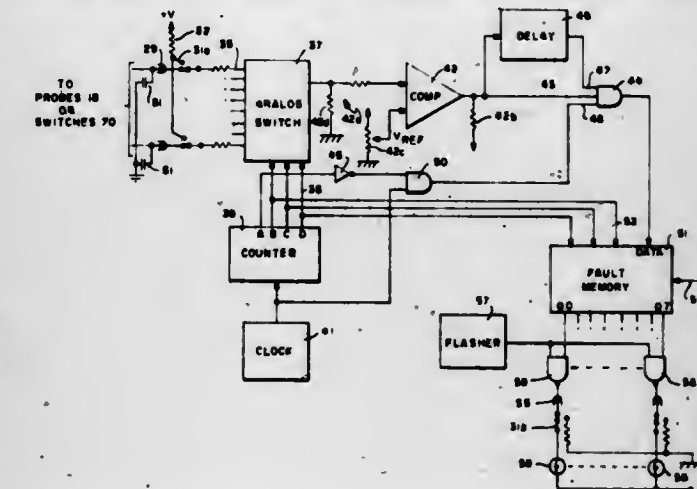
Int. Cl.³ G08B 21/00

U.S. Cl. 340—606

7 Claims

1. In apparatus for monitoring the operation of a hydrocyclone from which a conical spray of heavier underflow material is continuously discharging, sensing means responsive to abnormal operation of the cyclone which interrupts the normal conical spray pattern of the discharging material, said means comprising an assembly having a probe extending into the spray pattern, a sensing circuit controlled by the sensing

means, the circuit including a path that is electrically conductive when the underflow is discharged in a normal spray pattern and which is substantially reduced in conductivity when the underflow discharge pattern is interrupted or becomes abnormal, and electrical circuitry connected to said path, said circuitry comprising switching means serving cyclically to momentarily apply a predetermined voltage across the conductive path established by the probe, a comparator for generating a signal, the inputs of the comparator being connected to the output of the switching means and also to a source of



reference voltage whereby the voltage of each probe is sequentially applied to the comparator by the switching means, the comparator serving to apply an output pulse when the voltage applied from the switching means is less than the reference voltage, time delay means connected to receive each output pulse from the comparator and to deliver an output pulse after a predetermined time delay, a plurality of indicators adapted to be energized to indicate faulty operation of a cyclone, and means for energizing an indicator corresponding to a particular cyclone when the voltage on the probe is such that it causes the delay means to deliver an output pulse.

4,246,577

TOOL BREAKAGE DETECTING APPARATUS

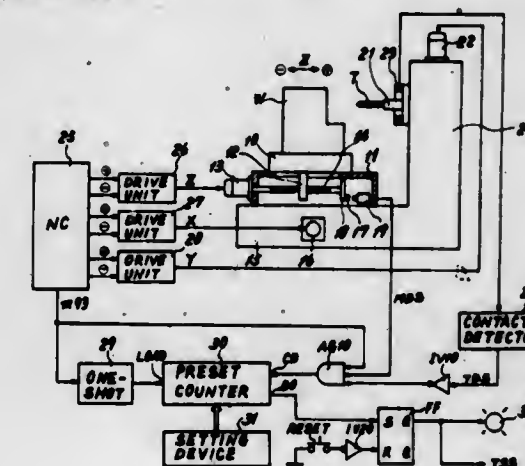
Yoshio Shima, Ohbu, Kyosuke Hagi, Anjo, Kunihiko Eto, Toyota, and Tetsuro Yamakage, Kariya, all of Japan, assignors to Toyota-Koki Kabushiki-Kaisha, Aichi, Japan

Filed Aug. 22, 1978, Ser. No. 935,779

Claims priority, application Japan, Aug. 30, 1977, 52/103779 Int. Cl.² G01B 11/14; G05B 3/04; G08B 21/00

U.S. Cl. 340—680

6 Claims



1. In a machine tool including a bed, a work table mounted on said bed for mounting thereon a workpiece to be machined, a column, a tool spindle rotatably mounted upon said column for supporting a tool, a control means for effecting relative movement between said work table and said tool spindle at

various speeds, a tool breakage detecting apparatus comprising:

- first signal generating means for generating a signal when either one of the workpiece and the tool is in contact with the other thereof;
- second signal generating means for generating a signal each time either one of the workpiece and the tool is moved a unit distance relative to the other thereof;
- third signal generating means for continuing to generate a signal when either one of the workpiece and the tool is positioned at a reference position spaced a predetermined distance from the other thereof to be moved therefrom relative to the other thereof at a cutting feed speed within said various speeds;
- gate means operatively connected to said first, second and third signal generating means to receive signals therefrom and to generate an output signal each time either one of the workpiece and the tool is moved said unit distance toward the other thereof from said reference position under the condition that the signal is generated from said third signal generating means but not generated from said first signal generating means; and
- counter means presettable therein to a predetermined value corresponding to said predetermined distance and responsive to the signal from said third signal generating means to be preset with said predetermined value;
- said predetermined value of said counter means being subtracted by the signal generated by said second signal generating means in response to the output signal from said gate means; and
- said counter means generating a signal indicative of tool breakage when the content thereof is reduced an amount corresponding to a distance larger than the predetermined distance.

4,246,578

PATTERN GENERATION DISPLAY SYSTEM

Itaru Kawasaki, Misono, and Goro Hamano, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

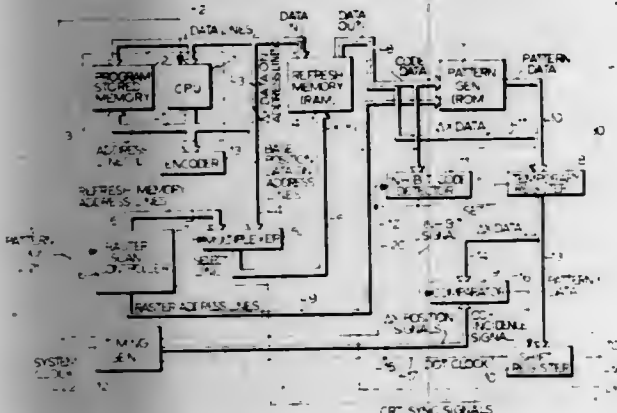
Filed Feb. 8, 1979, Ser. No. 10,988

Claims priority, application Japan, Feb. 8, 1978, 53-13734; Jun. 26, 1978, 53-77647

Int. Cl.³ G06F 3/153

U.S. Cl. 340-750

6 Claims



1. A pattern generation display system having in combination a display screen and means for controlling shifting of positions of patterns by a small pitch on a display screen, said controlling means comprising:

- a pattern code processing means for producing (1) pattern code data, and (2) position data composed of base position address data and displacement data representing displacement with respect to each pattern and its position on the display screen;
- a raster scan controller for generating base address data signals and raster address data signals corresponding to positions of rasters on the display screen;
- a refresh memory coupled to said pattern code processing means and said raster scan controller for (1) storing pat-

tern code data and displacement data at addresses corresponding to base position address data from said pattern code processing means, and (2) for transmitting pattern code data and displacement data when supplied with base position address data signals from said raster scan controller;

- a pattern generator coupled to said refresh memory and said raster scan controller for generating pattern data corresponding to said pattern code data from said refresh memory and said raster address data from said raster scan controller; and
- a pattern data signal processing means coupled to said pattern generator and said refresh memory for transmitting said pattern data from said pattern generator with a timing defined by said base position address data and said raster address data from said raster scan controller, and by said displacement data of said refresh memory.

4,246,579

ELECTROCHROMIC DISPLAY SWITCHING AND HOLDING ARRANGEMENT

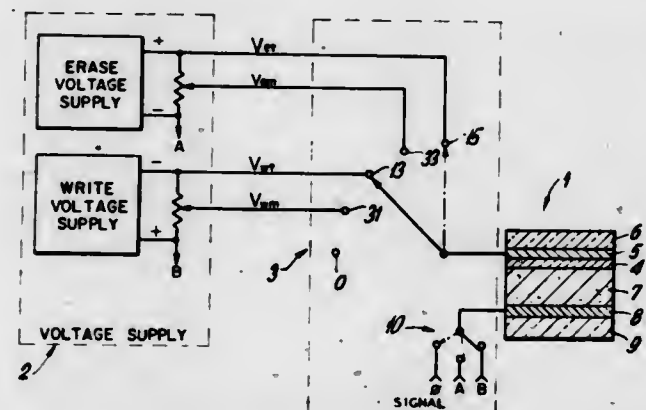
Leo Wiesner, Kew Gardens, N.Y., assignor to Timex Corporation, Waterbury, Conn.

Filed Mar. 1, 1978, Ser. No. 882,477

Int. Cl.³ G06F 3/14

U.S. Cl. 340-763

2 Claims



1. A switching and holding circuit for an electrochromic display cell having at least one segment and a common electrode comprising:

- circuit means for providing a command transition write signal and a command maintain write signal and a common transition erase signal and a command maintain erase signal;
- alternating signal means for providing to said common electrode an alternating signal having a write signal level and an erase signal level,
- said alternating signal having a period substantially shorter than that of any of said command signals, whereby said command signals may be modulated as a series of pulses,
- means coupled to said circuit means and to said alternating signal means and controlled by said command transition write signal and said write signal level to provide a plurality of transition write voltage pulses to said segment in coincidence with said write signal level being applied to said common electrode for providing a transition write potential between said common electrode and said segment, said means also being controlled by said command maintain write signal and said write signal level to provide a plurality of maintain write voltage pulses to said segment in coincidence with said write signal level being applied to said common electrode for providing a maintain write potential between said common electrode and said segment, said means also being controlled by said command transition erase signal and said erase signal level to provide a plurality of transition erase voltage pulses to said segment in coincidence with said erase signal level being applied to said common electrode for providing a transi-

tion erase potential between said common electrode and said segment, said control means also being controlled by said command maintain erase signal and said erase signal level to provide a plurality of maintain erase voltage pulses to said segment in coincidence with said erase signal level being applied to said common electrode for providing a maintain erase potential between said common electrode and said segment.

4,246,580

IMAGE PROCESSING FOR BISTATIC IMAGE RADAR

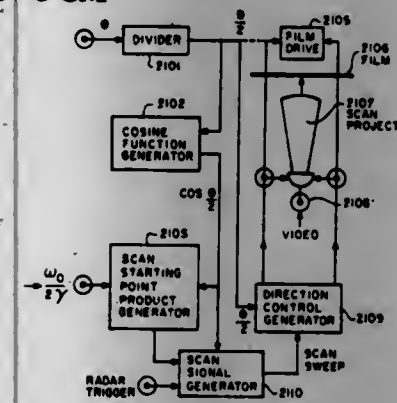
William J. Caputi, Jr., Centerport, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 25, 1979, Ser. No. 33,312

Int. Cl.³ G01S 13/90

U.S. Cl. 343-5 CM

4 Claims



1. Apparatus for correcting data from a bistatic synthetic aperture radar, of the type employing Stretch and Spotlight techniques to eliminate distortions due to the relative positions and motions of the radar transmitter and receiver with respect to a target, said apparatus accepting signals representing the bistatic angle, the transmitter start frequency divided by the slope of the transmitted FM signal, the radar trigger and the received radar video, comprising:

- (a) a divider means, having an input port and an output port, said divider means accepting at its input port the signal representing the bistatic angle, and producing at its output port a signal representing one-half the bistatic angle,
- (b) a cosine function generator means having an input port and an output port, said cosine function generator means accepting at its input port the signal representing one-half the bistatic angle from said divider means and producing at its output port a signal representing the cosine of one-half bistatic angle,
- (c) a scan starting point product generator means with two input ports and one output port for accepting at the first input port the signal representing the transmitter start frequency divided by the slope of the transmitted FM signal and at the second input port the cosine of half of the bistatic angle for producing at the output port a signal representing the product of the two input signals,
- (d) a scan signal generator means with three input ports and one output port for accepting at its input ports signals representing said product, the cosine of one-half the bistatic angle and the radar trigger to produce at its output a scan sweep signal where the scan is initiated at a starting point which is at a distance away from the origin that is proportional to said product, the scan is compressed by an amount proportional to the cosine of one-half the bistatic angle and the scan is initiated from the starting point in synchronism with the radar trigger,
- (e) a direction control means having two input ports and an output port for accepting at its input ports a signal representing one-half the bistatic angle and the output signal of the scan signal generator means to produce an output control signal which sets the scan direction at an angle equal to one-half the bistatic angle from an arbitrary reference angle, and
- (f) a scan projector means having two input ports and an

output port, said scan projector accepting at its input ports the output signals of the direction control generator means and the video signal of the radar receiver to project a scan at an angle which is equal to one-half the bistatic angle from an arbitrary angular reference, beginning at a starting point a distance from the origin proportional to the starting frequency of the transmitter divided by the slope of the transmitted FM signal, said scan being compressed proportional to the cosine of the bistatic angle after initiation.

4,246,581

DIRECTION FINDER

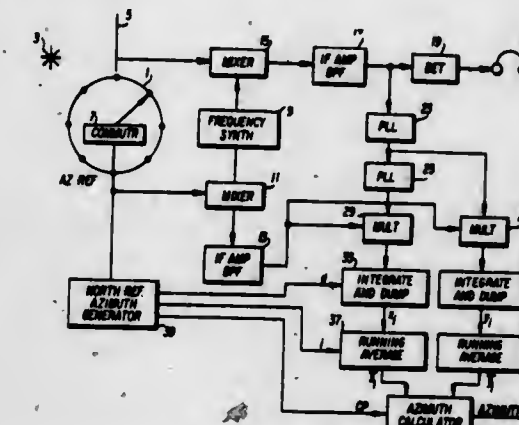
Michael J. DiToro, Massapequa, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 1, 1979, Ser. No. 8,447

Int. Cl.³ G01S 3/12

U.S. Cl. 343-116

17 Claims



1. A direction finder for deriving an approximation of the azimuth of a target source of signals, comprising:

- array receiving means having a plurality of receiving elements arranged in a spaced relation to receive the signals from said target source,
- central receiving means for receiving the signals from the target source;
- phase shift means for receiving signals from said central receiving means and generating a corresponding first signal having the same phase as the received signal and a second signal shifted 90° in phase with respect to said first signal;
- array commutation means for successively scanning the signal of each of said receiving elements for a commutation time interval and generating a select output signal corresponding to the scanned signal;
- coordinate generation means for receiving said first and second signals and said select output signal for each receiving element of the array and generating corresponding first and second coordinate average signals, said coordinate average signals representing a running average of the baseband rectangular components of the phasors for the signals received by the receiving element over a plurality of scans of the array;
- computation means for comparing azimuth candidate coordinate signals corresponding to the rectangular components of the candidate azimuth phasors of candidate azimuth targets to said first and second coordinate average signals of each receiving element to identify a candidate target azimuth having coordinate signals approximating the coordinate average signals of the receiving elements and an azimuth approximating the azimuth of the target source.

4,246,582

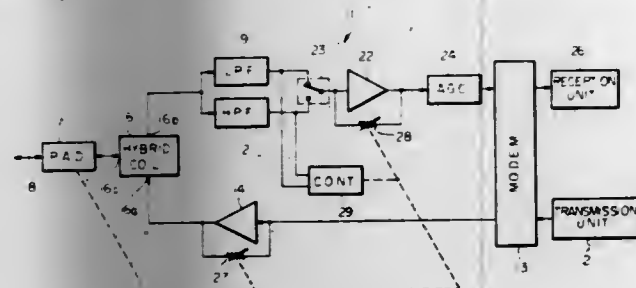
FULL DUPLEX TRANSCIVER COMPRISING HYBRID COIL AND AUTOMATIC IMPEDANCE ADJUSTMENT MEANS

Yoshiaki Kondo, and Akira Okamoto, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 26, 1978, Ser. No. 972,882

Claims priority, application Japan, Dec. 31, 1977, 52-158476
Int. Cl.³ H04B 1/58

U.S. Cl. 370-32

10 Claims



1. A transceiver apparatus including transmission means, reception means, transmission line means and hybrid coil means connecting the transmission means and reception means to the transmission line means, characterized by comprising: variable resistance means provided in the transmission line means; sensor means for sensing an impedance of the transmission line means as viewed from the hybrid coil means; and control means responsive to the sensor means for automatically varying a resistance of the resistance means so as to adjust said impedance to a predetermined value.

4,246,583

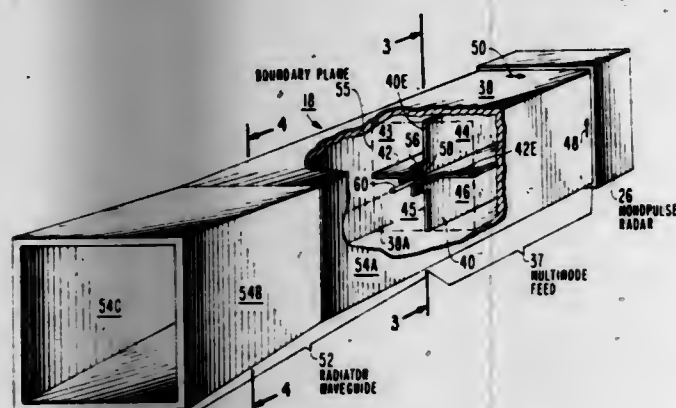
MULTIMODE FEED FOR A MONOPULSE RADAR

Charles E. Profera, Cherry Hill, and James J. Campbell, Medford, both of N.J., assignors to RCA Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 864,610, Dec. 27, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,195

Int. Cl.³ H01Q 19/13; H01P 1/16

U.S. Cl. 343-781 CA

4 Claims



1. A multimode feed for coupling a wave of electromagnetic energy at a predetermined frequency between a monopulse radar and a waveguide radiator that has a first cavity with a rectangular cross-section at one end and a first center axis, said feed comprising:

- a rectangular housing waveguide that has a second cavity with a cross-section substantially the same as said rectangular cross-section of said radiator and, a second center axis, one end of said housing waveguide being axially aligned and connected to said one end of said radiator to cause the first and second cavities of said radiator and said housing waveguide, respectively, to be contiguous;
- a pair of perpendicularly intersecting, electrically conductive walls connected within said housing waveguide, said conductive walls bisecting each other at said second cen-

ter axis of said second cavity to subdivide said second cavity thereof into four equal rectangular subwaveguide cavities that each support a TE₁₀ mode of propagation of a first electromagnetic wave at said frequency having a known polarization and a second electromagnetic wave at said frequency having a polarization orthogonal to said known polarization, each of said walls having a boundary edge substantially at the boundary between said first and second contiguous cavities; and

means for generating LSE₁₂ mode waves at said frequency initially out of phase with said TE₁₀ mode wave, said means including a pair of electrically conductive tabs connected to the boundary edges of said walls, said tabs being substantially shorter than said walls and intersecting each other at said first center axis of said first cavity, said tabs extending across said connection between said housing waveguide and said radiator and into said first cavity of said radiator with at least one of said tabs being substantially parallel to the direction of said known polarization and at least one of said tabs being parallel to said polarization of said second electromagnetic wave.

4,246,584

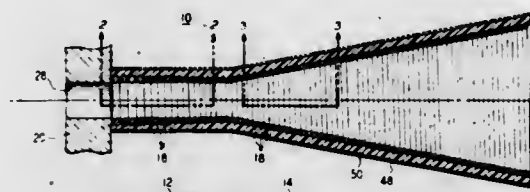
HYBRID MODE WAVEGUIDE OR FEEDHORN ANTENNA

Anthony R. Noerpel, Long Branch, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 22, 1979, Ser. No. 68,726

Int. Cl.³ H01G 13/02

U.S. Cl. 343-786

7 Claims



4. A hybrid mode feedhorn antenna comprising: a hollow waveguide body (48) including an inner surface and comprising a first section (12) of uniform cross-section which changes into a second section (14) that flares outward from one end of the first section to form a mouth of the feedhorn antenna

characterized in that

the feedhorn antenna further comprises:

a spiro-helical projection (18, FIGS. 1-5) comprising a helically wound wire structure (18) bonded to the inner surface of the waveguide body with a dielectric layer (50), said wire structure comprising a mode conversion section (II-V, FIG. 2) comprising a plurality of subsections capable of converting a TE₁₁ mode signal into a HE₁₁ mode signal formed of a layer of closely-spaced helical turns of dielectrically coated wires with each subsection comprising a different cross-sectional sized wire with the wire size between the subsections of said mode conversion section gradually decreasing as the helix progresses from the other end of the first section towards the second section of the waveguide body, the remaining section (14) of the wire structure comprising closely-spaced helical turns of a dielectrically coated wire of a cross-sectional size no larger than the smallest size wire in said mode conversion section.

4,246,585

SUBARRAY PATTERN CONTROL AND NULL STEERING FOR SUBARRAY ANTENNA SYSTEMS

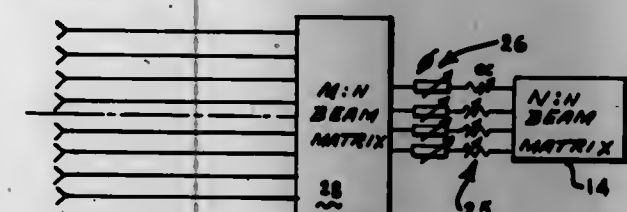
Robert J. Mailloux, Wayland, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 7, 1979, Ser. No. 73,584

Int. Cl.³ H01Q 3/28, 3/46

U.S. Cl. 343-854

9 Claims U.S. Cl. 346-1.1



1. In a subarray antenna system having an array of radiation elements, a Fourier transform feed circuit and an array of feed elements fed by said Fourier transform feed circuit and feeding said array of radiation elements, the improvement residing in a subarray pattern control means, said subarray pattern control means comprising illumination intensity control means controlling the outputs of said feed elements, said illumination intensity control means comprising a variable attenuator controlling each feed element, said variable attenuators in combination effecting a tapered illumination intensity distribution at the output of said array of feed elements.

4,246,586

RADIO ANTENNAE

Ann Henderson, Wantage, and James R. James, Swindon, both of England, assignors to National Research Development Corporation, London, England

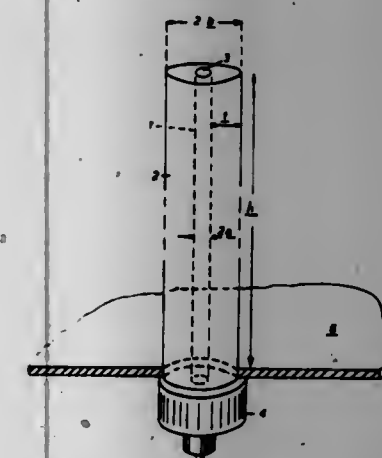
Filed Dec. 20, 1978, Ser. No. 3,881

Claims priority, application United Kingdom, Dec. 20, 1977, 53039/77

Int. Cl.³ H01Q 1/40

U.S. Cl. 343-873

3 Claims



1. A radio antenna comprising a length of conductor of thickness $2a$ electromagnetically coupled with a cladding of dielectric material having an average thickness t and a relative magnetic permeability substantially greater than unity and substantially greater than the relative dielectric permittivity thereof, wherein the ratio N of the electrical length of the clad conductor to that of a corresponding unclad conductor in free space at the operating frequency is equal to or greater than $350(t+a)/\lambda_0$ where λ_0 is the free space wavelength at the operating frequency, and wherein the value of $(t+a)/\lambda_0$ for the antenna lies on or near the knee in the graphical plot of N versus $(t+a)/\lambda_0$ for a fixed ratio of t/a using the same cladding material.

4,246,587

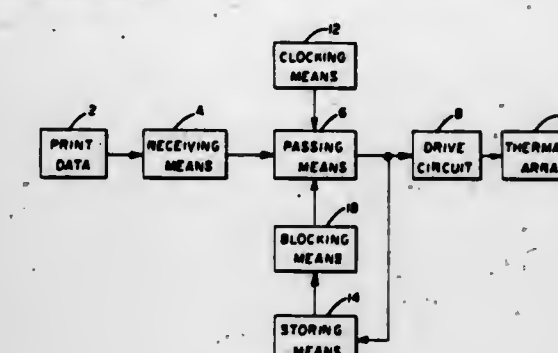
THERMAL ARRAY PROTECTION METHOD AND APPARATUS

Edward J. Reilly, Mayfield Heights, and Glenn L. Williams, Bay Village, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 4, 1979, Ser. No. 72,542

Int. Cl.³ G01D 15/10

19 Claims



1. A method for thermal array protection for use in thermal imaging apparatuses of the type having a linear array of heat-generating resistive elements used to place marks on thermal sensitive recording media during printing operations, said method comprising the steps of:

- a. receiving an incoming digital first line of data from an appropriate source, said first line of data comprising a plurality of individual datum;
- b. passing said received digital first line of data to a driving means for current driving thermal array stylus;
- c. clocking the passing first line of data to position and synchronize the individual datum within said first line of data to the individual stylus to be driven;
- d. storing said passing first line of data;
- e. receiving an incoming digital second line of data from said appropriate source, said second line of data comprising a plurality of individual datum; and
- f. blocking the passing to said driver means of the individual datum within the second line of data for those positions in which data exists in corresponding positions of the stored first line of data.

4,246,588

PARTICLE FEED ARRANGEMENT FOR APPLYING SOLID PARTICLES TO THE IMAGE CARRIER OF A NON-IMPACT PRINTER

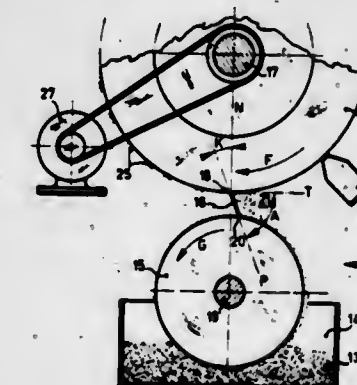
Jean J. Binder, Valdoie, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France

Filed Oct. 17, 1978, Ser. No. 952,061

Claims priority, application France, Oct. 24, 1977, 77 31966
Int. Cl.³ G03G 19/00, 15/08

U.S. Cl. 346-74.1

14 Claims



1. Apparatus for developing a latent image formed on the

surface of an image carrier arranged for movement in a predetermined path, comprising:

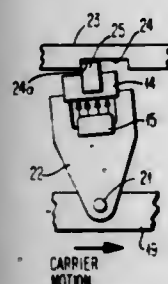
- a tank for containing a supply of attractable solid particles; conveying means adapted for movement in a path past said supply of particles to cause said particles to be fed to the vicinity of a lowermost position in the path of said image carrier;
- a deflector interposed between said conveying means and said image carrier at said lowermost position, said deflector having two opposite parallel edges, one of said edges being disposed in close proximity to the surface of said image carrier to preclude a fluidized standing wave of particles from forming and to form, in conjunction with said surface, a trough of generally prismatic shape in which are accumulated said particles arrested by said last mentioned edge, the other of said edges being in contact with said conveying means to cause particles conveyed by said means to be collected and accumulated in said trough, a driving means for moving said image carrier in a direction in which it carries accumulated particles towards said deflector edge in close proximity to the surface of said carrier, the distance between said deflector edge and said surface being greater than a first limiting value in order to allow particles which are carried by said image carrier not to be arrested by said deflector and smaller than a second limiting value in order to prevent the formation of a wave of particles.

4,246,589

INERTIAL DEFLECTION FIELD TILTING FOR BI-DIRECTIONAL PRINTING IN INK JET PRINTERS
Clifford M. Denny, Lexington, Ky.; John G. Hughes, Los Angeles, Calif., and Donald L. West, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 17, 1979, Ser. No. 76,040
Int. Cl. G01D 15/18

U.S. Cl. 346—75

15 Claims



1. An ink jet printer comprising:
 - a nozzle for emitting a stream of ink drops along a predetermined path;
 - a charging electrode for charging the ink drops in accordance with a signal to be recorded;
 - a pair of deflection electrodes, and means for forming an electric field therebetween for deflecting ink drops passing between said electrodes in accordance with the amplitudes of the individual charges on the ink drops;
 - a record receiving means for forming images indicative of the signals on said deflected ink drops;
 - carrier means mounting said nozzle, charging electrode and deflection electrodes, and drive means for effecting movement of said carrier relative to said record receiving means resulting, if uncompensated for, an inclination of said images formed by said ink drops;
 - and rocker means mounting said deflection electrodes in spaced apart relation, said rocker means mounted for rotation on said carrier, stop means operative in conjunction with said rocker means for limiting the rotation of said rocker means between a first position, inclining said electric field in a first direction for relative movement between said carrier and record receiving media in a first direction, and a second position for relative movement in the opposite direction;

said rocker means being dependent for its position upon the acceleration of said carrier by said drive means.

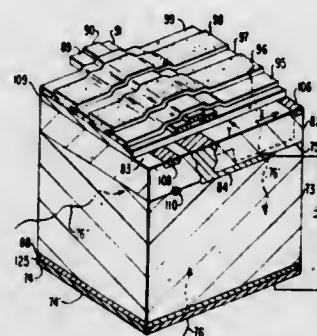
4,246,590

RESTORATION OF HIGH INFRARED SENSITIVITY IN EXTRINSIC SILICON DETECTORS
Richard N. Thomas, Murrysville, and Timothy T. Braggins, Penn Hills, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 22, 1979, Ser. No. 5,535
Int. Cl. H01L 27/14

U.S. Cl. 357—30

11 Claims



1. A sensor for converting radiant energy into electrical signals comprising:
 - a crystalline substrate having a first and second surface including means for passing radiant energy into said substrate,
 - said substrate including doping atoms for generating electronic charge in response to the absorption of radiant energy and including impurity atoms of a first type which diffuse readily throughout the substrate at times said substrate is above 900° C.,
 - a first electrode formed in said first surface,
 - a second electrode formed in said second surface,
 - means for coupling a first voltage across said first and second electrodes to attract electronic charge to said first electrode, and a layer having a damaged crystalline lattice structure formed in said substrate to getter impurity atoms of said first type from said substrate at times when said substrate is above 900° C. to enhance the majority carrier lifetime of the substrate material.

4,246,591

CCD IMAGERS

Walter F. Kosonocky, Skillman, N.J., and Robert L. Rodgers, 3rd, Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

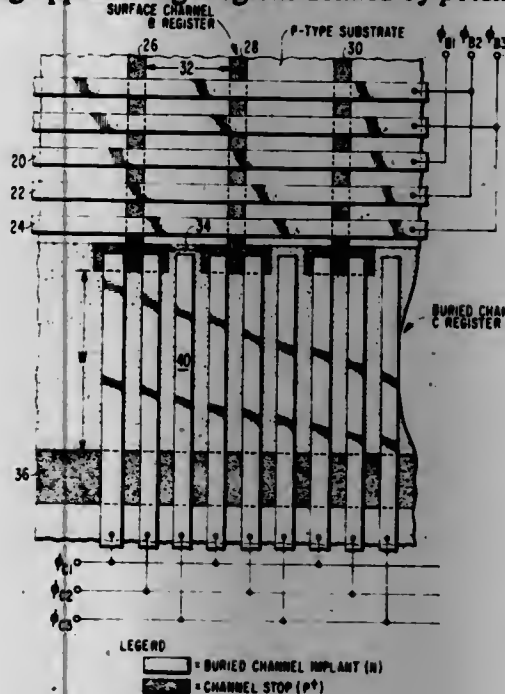
Filed Dec. 27, 1976, Ser. No. 754,690
Claims priority, application United Kingdom, Jul. 30, 1976, 31953/76; Dec. 14, 1976, 31953/76

Int. Cl. H01L 29/78, 27/14, 31/00; G11C 19/28
U.S. Cl. 357—24

8 Claims

1. A charge-coupled device (CCD) imager of the field-transfer type comprising:
 - a surface channel CCD A register including a substrate formed with channels extending in a column direction, the opposite edges of each channel being defined by potential barriers in the substrate for confining any charge which may be present in a channel to the channel, said A register also having electrodes extending in a row direction substantially orthogonal to said column direction, over said channels, responsive to applied voltages for the storage in and transfer of charges along said channels, said register for producing and storing charge signals in response to a radiation image projected onto said register;
 - a CCD B register coupled to said A register into which a field of charge signals from said A register may be shifted for temporary storage in said B register, said B register including a substrate formed with channels aligned with

corresponding channels of the A register, the opposite edges of each such channel in said B register also being defined by potential barriers in the substrate for confining any charge which may be present in a channel to that channel, said B register having electrodes extending in the row direction over the channels of said B register responsive to applied voltages for the storage in and transfer of charge along the channels of said B register; and a buried channel CCD C register including a semiconductor formed with a channel extending in the row direction and having opposite edge regions defined by potential barriers



in the semiconductor extending in the row direction for confining any charge which may be present in said channel to said channel, said channel comprising a semiconductor surface layer of one conductivity type over a semiconductor of opposite conductivity type, said channel of said C register being coupled to the channels of said B register for receiving charge signals, in parallel, a row at a time, from said B register, and said C register also including electrodes extending in the column direction over its channel for the storage in and transfer of charge along the channel of said C register.

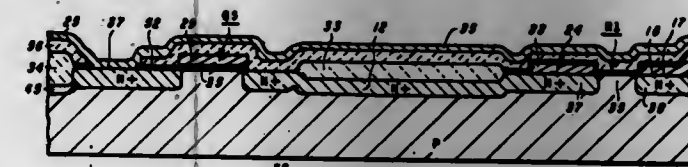
4,246,592

HIGH DENSITY STATIC MEMORY CELL
Keith G. Bartlett, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1979, Ser. No. 624
Int. Cl. H01L 27/02

U.S. Cl. 357—41

10 Claims



1. A static memory cell of the type formed in a face of a semiconductor body comprising:
 - a pair of driver transistors each having source and drain regions, a channel, and a gate, the source and drain regions being formed by heavily doped regions in the face of the semiconductor body beneath a layer of thermal field oxide, the gate of each of the driver transistors overlying the channel thereof and being separated therefrom by a gate oxide layer much thinner than said layer of thermal field oxide;
 - conductive means separately connected to the drain regions of each of the driver transistors and forming the gate of

the other driver transistor to provide a cross-coupled bistable circuit, the conductive means at least partially overlying said layer of field oxide over said heavily doped regions;

- a pair of access transistors each having a source to drain path and a gate;
- a pair of data lines on said face with means coupling each data line separately through the source to drain path of a different one of the access transistors to the drain region of a different one of the driver transistors;
- an address line on said face connected to the gate of both of access transistors; and
- a pair of load devices at said face of the body with each load device having one electrode coupled to a voltage supply line on said face and another electrode coupled separately to a different one of said drain regions of the driver transistors.

4,246,593

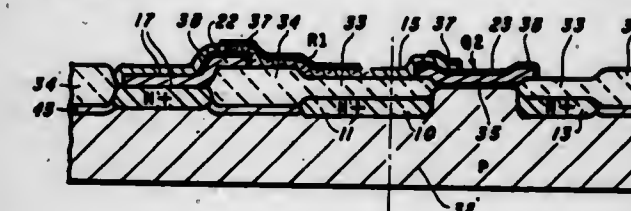
HIGH DENSITY STATIC MEMORY CELL WITH POLYSILICON RESISTORS

Keith G. Bartlett, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1979, Ser. No. 623
Int. Cl. H01L 27/02

U.S. Cl. 357—41

10 Claims



1. A static memory cell of the type formed in a face of a semiconductor body comprising:

- a pair of driver transistors each having source and drain regions, a channel, and a gate, the source and drain regions being formed by heavily doped regions in the face of the semiconductor body beneath a layer of thermal field oxide, the gate of each of the driver transistors overlying the channel thereof and being separated therefrom by a thin gate oxide layer;
- conductive means including first level polysilicon separately connecting the drain regions of each of the driver transistors to the gate of the other driver transistor to provide a cross-coupled bistable circuit, the conductive means at least partially overlying said heavily doped regions but being insulated therefrom;
- a pair of access transistors each having a source to drain path and a gate;
- a pair of data lines on said face with means coupling each data line separately through the source to drain path of a different one of the access transistors to the drain region of a different one of the driver transistors;
- an address line including first level polysilicon on said face connected to the gate of both of the access transistors; and
- a pair of load resistors at said face of the body with each resistor having one end coupled to a voltage supply line on said face and an opposite end coupled separately to a different one of said drain regions of the driver transistors, the load resistors including second level polysilicon overlapping the driver transistors.

4,246,594

LOW CROSSTALK TYPE SWITCHING MATRIX OF MONOLITHIC SEMICONDUCTOR DEVICE

Masamichi Mori, Tokorozawa, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

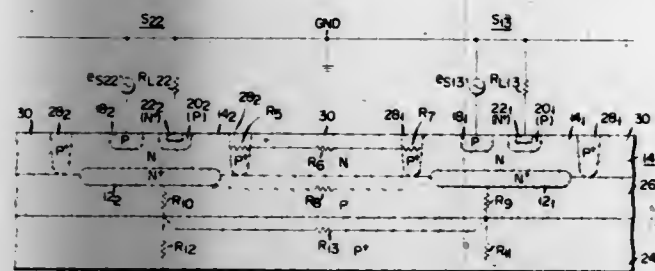
Filed Mar. 6, 1978, Ser. No. 883,796

Claims priority, application Japan, Mar. 8, 1977, 52-24378

Int. Cl.³ H01L 27/04; B01L 29/74; H01L 29/747, 29/72, 29/72

U.S. Cl. 357-48

13 Claims



1. In a low crosstalk type switching matrix of monolithic semiconductor device having a plurality of lateral type PNPN type switching elements (S_{ij}) arranged in matrix fashion comprising:

- a first conductivity type double layered substrate (11) including in its entirety a first layer (24) having high impurity concentration and a second layer (26) having low impurity concentration, said first and second layers being layered one upon another;
 - a second conductivity type third layer (14) having low impurity concentration formed on said second layer in order to form said switching elements;
 - second conductivity type buried layers (12) having high impurity concentration formed at the junction between said second and third layers and at respective crosspoints of the matrix;
 - switch regions (14, 18, 20, 22) formed in said third layer over said buried layers at the respective crosspoints of the matrix, in order to form the switching elements; and
 - first conductivity type isolation regions (28) formed in said third layer (14), enclosing each of said switch regions and contacting said second layer (26), said isolation regions (28) having outer peripheries;
- the improvement wherein:
- said substrate (11) has a low resistivity; and
 - said third layer (14) includes second conductivity type separation regions (30) having low impurity concentration which form a separation distance (l_2) between the outer peripheries of said isolation regions (28) for reducing the signal crosstalk in cooperation with said low resistivity of said substrate (11), said separation distance (l_2) being about 10 microns.

4,246,595

ELECTRONICS CIRCUIT DEVICE AND METHOD OF MAKING THE SAME

Masaharu Noyori, and Hiroaki Fujimoto, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 28, 1978, Ser. No. 882,152

Claims priority, application Japan, Mar. 8, 1977, 52/25603; Apr. 7, 1977, 52/40022; May 13, 1977, 52/55624; Sep. 21, 1977, 52/114296; Sep. 28, 1977, 52/117068

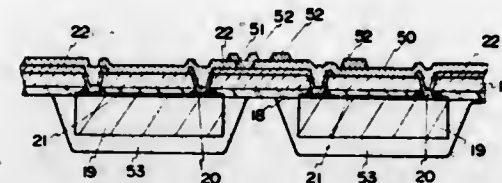
Int. Cl.² H01L 23/48

U.S. Cl. 357-70

26 Claims

1. An electronic circuit device comprising a resin film of heat-resistive and flexible synthetic resin having wiring conductors of a specified pattern on one face thereof, at least one semiconductor device held on said resin film, characterized in that said semiconductor device is secured bonding its principal face by means of a bond layer on the other face of said resin film, said resin film has a reinforcing frame formed on said other face and a specified number of through-holes with sloped

wall thereby said through-hole having the larger diameter on said one face of the resin film and its smaller diameter on said other face of said resin film and, specified electrodes on said



4,246,596

HIGH CURRENT PRESS PACK SEMICONDUCTOR DEVICE HAVING A MESA STRUCTURE

Masami Iwasaki, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

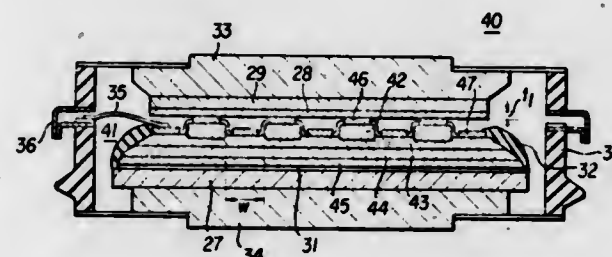
Filed Nov. 1, 1978, Ser. No. 956,608

Claims priority, application Japan, Jan. 7, 1978, 53/376

Int. Cl.³ H01L 23/42, 23/44, 23/46

U.S. Cl. 357-79

6 Claims



1. Press pack semiconductor device comprising:

- (a) a semiconductor element having two main surfaces, at least one mesa formed on one of the main surfaces, a first electrode formed on the top of said mesa, a second electrode formed on the bottom of said mesa, and a third electrode formed on the other main surface;
- (b) a supporting plate fixed to said third electrode;
- (c) a first intermediate plate attached to the surface of said first electrode and a second intermediate plate interposed between said first intermediate plate and first disc, the thickness of said first intermediate plate being equal to or less than half of the ditch width of said mesa;
- (d) said first disc and a second disc respectively electrically connected through said first intermediate plate to said first electrode and through said supporting plate to said third electrode;
- (e) an insulating housing surrounding said semiconductor element;
- (f) a flange section disposed in an external portion of said housing; and
- (g) a lead for electrically connecting together said second electrode and said flange section.

4,246,597

AIR COOLED MULTI-CHIP MODULE HAVING A HEAT CONDUCTIVE PISTON SPRING LOADED AGAINST THE CHIPS

Allan S. Cole, and Omkarnath R. Gupta, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,679

Int. Cl.³ H01L 23/02, 23/16, 23/42

U.S. Cl. 357-81

9 Claims

1. A module having a plurality of chips mounted face down to a substrate comprising;

a module cap connected at the edges thereof to said substrate;

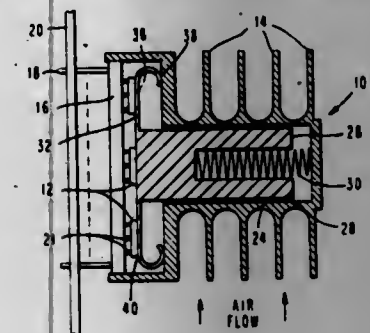
one or more cylinders formed in said module cap, each centered over the middle chip of a group of chips;

cooling fins extending from each of said cylinders;

a heat conductive piston located in each of said cylinders forming a small interface between said piston and said cylinders and said piston and said middle chip;

a spring member forcing said heat conductive piston against said middle chip;

a heat conductive conformal surface flange extending radially from the outer end of each of said pistons so as to have



the bottom surface thereof, contacting the exposed surface of said adjacent chips in said group of chips thereby providing parallel conduction cooling from said adjacent chips to said central heat conductive piston;

slots located between said adjacent chips in said group of chips extending into said flange from the outer edge thereof forming a flexible contact member in said conformal surface flange for making good surface contact with said adjacent chips regardless of any tilt thereof; and

heat conductive spring means connected between said module cap and said contact elements of said flange for providing a seating force against said contact element and providing an additional heat transfer path from the chip.

4,246,598

COLOR TELEVISION CAMERA SYSTEM HAVING SOLID-STATE OPTO-ELECTRIC TRANSDUCERS FOR LUMINANCE AND CHROMINANCE SIGNALS

Gerd Bock, Seebeln, and Gerd Brand, Wendeburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

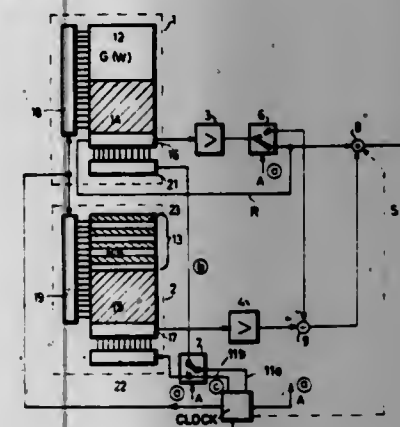
Filed Nov. 16, 1979, Ser. No. 95,145

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850309

Int. Cl.³ H04N 9/04

U.S. Cl. 358-12

8 Claims



1. Color television camera system having a luminance opto-electronic transducer (1) and a chrominance opto-electronic transducer (2) and means to obtain combined color video signals from said transducers by scanning the chrominance component output signal during the line blanking interval of

the luminance component signal, wherein, in accordance with the invention,

each transducer comprises

a two-dimensional semiconductor sensor (1, 2), each sensor including

a transducer portion (12, 13);

a storage portion (14, 15);

and a read-out portion (16, 17);

timing means (11) including first clock means (11a) controlling read-out, at a line scanning rate, of the read-out portion (16) of the luminance sensor to provide a luminance signal;

means (R, 16) reentering the information read out into the luminance semiconductor sensor for restorage therein of the luminance component of the video signal;

said timing means further including second clock means (11b) controlling read-out of the read-out portion (17) of the chrominance sensor (2) to provide a chrominance signal, said second clock means being operative during the blanking interval and controlling said read-out at a rate high with respect to the line scanning rate, said second clock means additionally controlling read-out of the reentered luminance component of the video signal in the luminance sensor during the blanking interval to form a compressed luminance signal; and

subtraction function circuit means (9) subtracting the compressed luminance signal component read out from said read-out portion of the chrominance sensor to obtain a combined time multiplexed signal having, sequentially, the luminance component during the line scanning interval and, during the blanking interval, a chrominance difference signal component.

4,246,599

ABNORMAL SEPARATION DETECTING CIRCUITS OF CHROMATIC SIGNALS OF SECAM SYSTEMS

Takashi Sugimoto, Yokohama, and Hiroshi Takahashi, Ayase, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

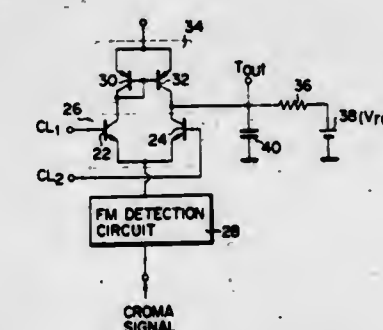
Filed Sep. 7, 1979, Ser. No. 73,493

Claims priority, application Japan, Sep. 13, 1978, 53-112528

Int. Cl.³ H04N 9/47

U.S. Cl. 358-18

4 Claims



1. An abnormal separation detecting circuit of chromatic signals sent by a SECAM system comprising

a current mirror circuit,

a differential amplifier circuit including a pair of transistors with their base electrodes connected to respectively receive first and second pulse signals of opposite phases for controlling the operation of said current mirror circuit, the levels of said first and second pulse signals varying in synchronism with the beginning of periods of an R-Y signal and a B-Y signal contained in said chromatic signal;

detecting means for detecting identification signals added to front ends of said R-Y signal and said B-Y signal for identifying said R-Y and B-Y signals thereby generating a current having a magnitude corresponding to frequencies of the detected identification signals,

a capacitor connected between a current output terminal of said current mirror circuit and a point of reference poten-

tial to be changed and discharged in response to the operation of said differential amplifier circuit; and means connected across said capacitor for supplying thereto a constant voltage.

4,246,600

COLOR IMAGE PICK-UP SYSTEM FOR A COLOR TELEVISION SYSTEM

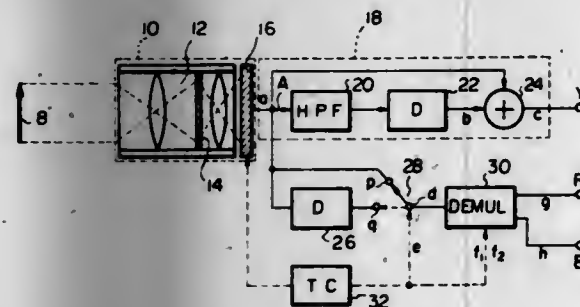
Shiro Nakagawa, and Kiyoshi Matsui, both of Tokyo, Japan, assignors to TDK Electronics Company Limited and Olympus Optical Co., Ltd., both of Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,255

Claims priority, application Japan, Mar. 3, 1978, 53/23605
Int. Cl.³ H04N 9/07

U.S. Cl. 358-44

6 Claims



6. A color filter for a color television system comprising an array of color cells with the three primary colors in a first horizontal scanning line and another three complementary primary colors in a second horizontal scanning line, the colors in the first scanning line being complementary to that of the second scanning line for an adjacent cell in the vertical direction.

4,246,601

SOLID-STATE COLOR IMAGING DEVICE

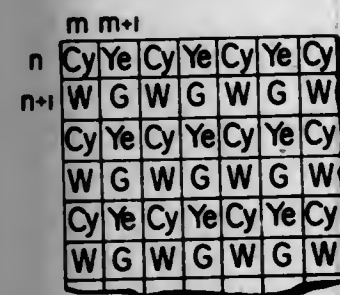
Kazuhiko Sato, Tokyo; Shusaku Nagahara, Hachioji; Masuo Umemoto, Hinodemachi; Toshiyuki Akiyama, Kokubunji; Morishi Izumita, Inagi; Kenji Takahashi, Kodaira, and Seichi Mita, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 9, 1979, Ser. No. 10,886

Claims priority, application Japan, Feb. 10, 1978, 53-15031[U]
Int. Cl.³ H04N 9/04, 9/07

U.S. Cl. 358-47

16 Claims



1. A solid-state color imaging device comprising:
a single image sensor including a plurality of photo-sensors which are arrayed in horizontal and vertical directions;
means for reading out optical signals of said photosensors sequentially in the horizontal direction;
a mosaic color filter which is made up of filter elements arranged in correspondence with the respective photosensors; and
a signal processing circuit which provides a color signal on the basis of the optical signals delivered by said read-out means;
wherein any group of four adjacent filter elements in two rows and two columns comprises a first filter which is made of a panchromatic transmission filter, a second filter

which is selected from the group consisting of a first spectral region-transmitting filter, a second spectral region-transmitting filter and a third spectral region-transmitting filter having transmission characteristics different from one another, and third and fourth filters which are made of complementary color filters which transmit a transmission component of said second filter and having transmission components different from each other, and said signal processing means is supplied with all optical signals necessary to produce said color signal from said signal image sensor through said read-out means.

4,246,602

ELECTRONIC TIMEPIECE

Fukuo Sekiya, Tokorozawa, and Takashi Yamada, Sayama, both of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

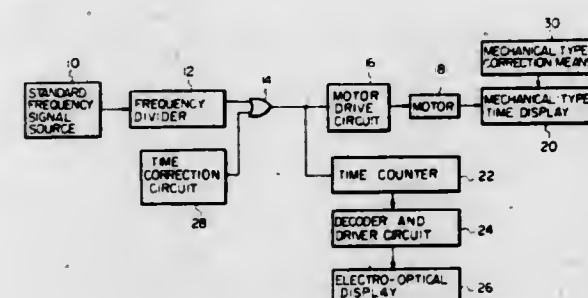
Filed Dec. 6, 1978, Ser. No. 966,916

Claims priority, application Japan, Dec. 9, 1977, 52/165534[U]; Dec. 9, 1977, 52/165535[U]; Dec. 10, 1977, 52/165860[U]

Int. Cl.³ G04C 9/00; G04B 27/00

U.S. Cl. 368-471

5 Claims



1. An electronic timepiece powered by a battery, comprising:
a source of a standard time signal;
electro-optical display means for displaying at least the minutes and hours of time;
electronic counter means responsive to said standard time signal for counting at least the minutes and hours of time, and having an output coupled to said electro-optical display means;
time indicating hands;
a motor for rotating said time indicating hands;
motor drive circuit means responsive to said standard time signal for driving said motor to cause said time indicating hands to indicate at least the minutes and hours of time;
first correction means for enabling one of said electro-optical display means and said time indicating hands to be set to indicate a desired value of time independently of the other one of said electro-optical display means and said time indicating hands; and
second correction means for enabling both said electro-optical display means and said time indicating hands to be set to indicate a desired value of time substantially simultaneously.

4,246,603

WIDE ANGLE TELEVISION DISPLAY SYSTEM

Hanns H. Wolff, 8624 Caracas Ave., Orlando, Fla. 32817

Filed Jan. 23, 1976, Ser. No. 699,042

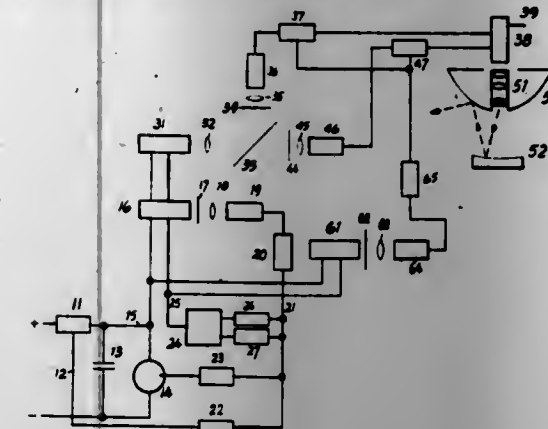
Int. Cl.³ H04N 5/68

U.S. Cl. 358-87

21 Claims

1. In a wide angle television display system the combination

of a plane annular input-circularly arranged screen output optical system and means for a constant spherical-angular



speed scanning at the display of several constant elevation angular distances spaced display lines forming the display.

4,246,604

PIPE INSPECTION APPARATUS

Hans W. Handertmark, and Alan E. Davey, both of 81 Payneham Rd., Saint Peters, South Australia, Australia

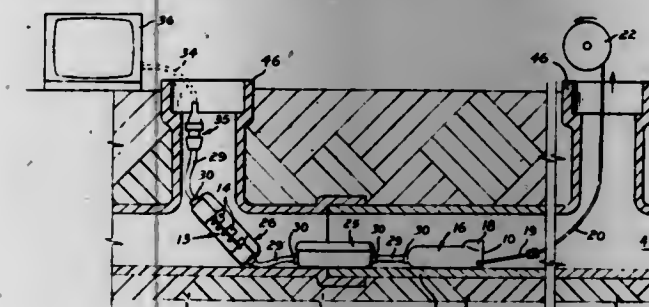
Filed May 18, 1979, Ser. No. 40,280

Claims priority, application Australia, May 19, 1978, PD4438

Int. Cl.³ H04N 7/18

U.S. Cl. 358-100

9 Claims



1. Closed circuit television inspection apparatus useable for pipe inspection comprising:
a television camera, illuminating means for illuminating a space forwardly of the camera, and a water-proof housing containing the camera and illuminating means;
a scanner having electronic components interconnected in a scanning circuit, and a water-proof scanner housing containing the scanner,
an amplifier having electronic components interconnected in an amplifier circuit, and a water-proof amplifier housing containing the amplifier,
the shape, cross-sectional size and length of each said housing being such that it can be moved through a bend or tee of the pipe,
flexible cables and flexible tension members interconnecting said camera, scanner and amplifier and their respective housings in tandem and closely spaced from one another, and
a television readout screen, and an elongate television cable extending from said amplifier to said readout screen.

4,246,605

OPTICAL SIMULATION APPARATUS

Joseph A. La Russa, Yorktown Heights, N.Y., assignor to Farand Optical Co., Inc., Valhalla, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,290

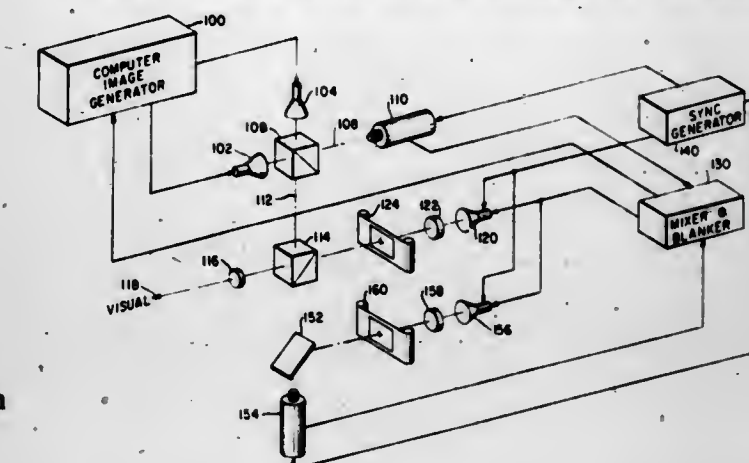
Int. Cl.³ H04N 7/18

U.S. Cl. 358-104

6 Claims

1. Optical apparatus comprising:
(a) a first cathode ray tube means for generating an illuminating first raster;

(b) a terrain image containing film positioned in front of and illuminated by said first raster;
(c) means for generating an image of a target;
(d) a first video camera for viewing said image of a target;
(e) electronic means connected to said first video camera and to said first cathode ray tube for blanking out a portion of



said first illuminating raster identical to the image outline of the target viewed by said first video camera;
(f) optical means for combining and superimposing said image of said target upon said blanked out portion of said first raster, to present a composite view of said target superimposed upon said terrain image to an observer.

4,246,606

INSPECTION APPARATUS

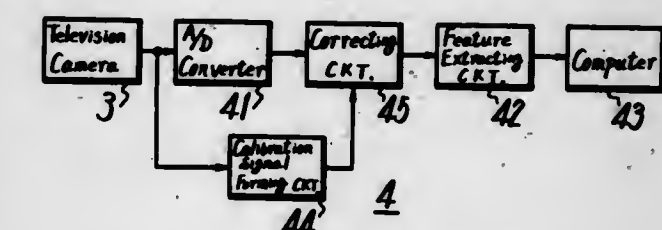
Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,853

Int. Cl.³ H04N 7/18

U.S. Cl. 358-106

6 Claims



1. An object inspection apparatus comprising:
(a) image sensing means having a visual field for producing a video signal responsive to objects in said visual field;
(b) a calibration body in said visual field;
(c) a reference body in said visual field, said reference body being substantially identical to said object;
(d) means for normalizing at least the portion of said video signal which is responsive to said reference body according to a portion of said video signal which is responsive to said calibration body to produce a normalized reference signal;
(e) means for storing said normalized reference signal;
(f) means for permitting replacement of said reference body with said object;
(g) said means for normalizing being further operative for normalizing at least the portion of said video signal which is responsive to said object according to a portion of said video signal which is responsive to said calibration body to produce a normalized object signal, whereby said normalized object signal is independent of changes in said image sensing means; and
(h) means for comparing said normalized object signal with the stored normalized reference signal to judge whether or not said object corresponds to said reference body.

4,246,607

X-RAY FLUOROSCOPY DEVICE

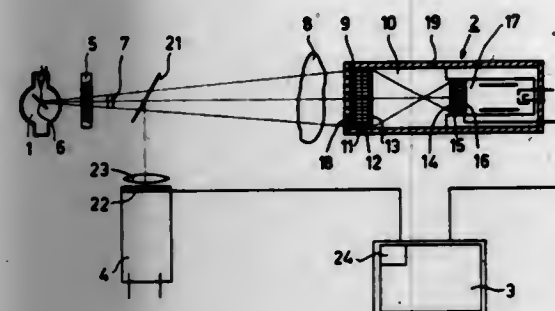
Gerardus P. M. Vijverberg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,546

Claims priority, application Netherlands, Mar. 16, 1978, 7802858

Int. Cl.³ H04N 5/32

U.S. Cl. 358—111



1. An X-ray fluoroscopy device for displaying an image of a part of an object comprising:

- an X-ray source disposed to irradiate an area of the object;
- an image intensifier disposed to intensify an image of X-rays from the source which pass through the object;
- a first television camera tube disposed to receive a first image from the output of the image intensifier;
- a first television monitor connected to display the first image from the first camera tube; and
- a second television camera disposed and connected to display an optical image of the object, which optical image includes the area of the object irradiated by the X-ray source;

wherein the image intensifier includes an entrance detection screen and an exit screen, a transverse dimension of the entrance screen being not more than a few times the transverse dimension of the exit screen.

4,246,608

METHOD FOR MEASURING CROSSVIEW BETWEEN TWO CHANNELS IN A WIRED TELEVISION BROADCASTING SYSTEM

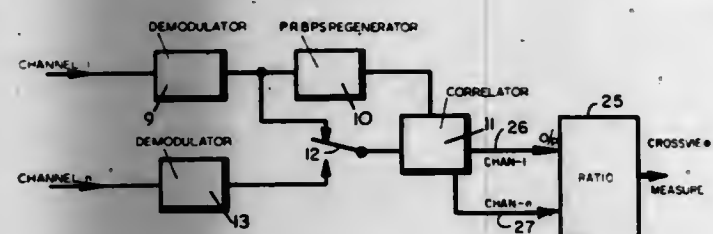
Henry L. Baker, Northwood, England, assignor to Communications Patents Limited, London, England

Filed May 31, 1978, Ser. No. 911,093

Claims priority, application United Kingdom, Jun. 15, 1977, 14636/77

Int. Cl.³ H04N 7/02

U.S. Cl. 358—139



1. A method for measuring crossview between channels having input sending and output receiving ends in a wired television broadcasting system, wherein two identical PRBPS signal sequences time displaced one with respect to the other are applied one to a first channel and the other to a second channel, the signals passed through the two channels are correlated in turn with a further identical sequence generated at the output end to provide separate correlated outputs at the output end having a ratio representative of the crossview protection ratio between the first and second channels and comparing the separate correlated outputs to provide a measure of the crossview ratio.

SWITCHABLE SYNCHRONIZING-SIGNAL GENERATOR SUITABLE FOR SEVERAL TELEVISION STANDARDS

Nicolaas J. L. Van Der Valk, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

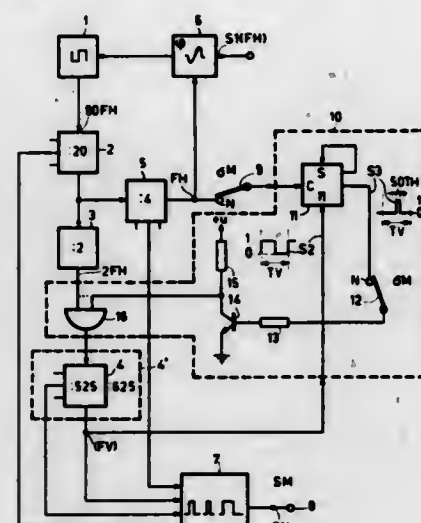
Filed Nov. 14, 1978, Ser. No. 960,526

Claims priority, application Netherlands, Dec. 27, 1977, 7714397

Int. Cl.³ H04N 5/02

U.S. Cl. 358—140

3 Claims



1. A switchable synchronizing-signal generator suitable for several television standards, comprising a clock pulse generator, a plurality of frequency dividers coupled to said clock pulse generator and including a first divider for supplying pulses at double the line frequency and a second divider coupled to said first divide and arranged to divide by 525, and a synchronizing signal generator coupled to said dividers, wherein said synchronizing signal generator comprises a pulse blocking stage for selectively blocking, during 50 line periods of each field period, the supply of pulses at double the line frequency to said second divider, thereby effectively changing the second divider from being a divide-by-525 divider to a divide-by-625 divider when the synchronizing signal according to the N-standard, with 625 lines and a field frequency of 50 Hz, is desired.

4,246,610

NOISE REDUCTION SYSTEM FOR COLOR TELEVISION SIGNAL

Hiroshi Takahashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

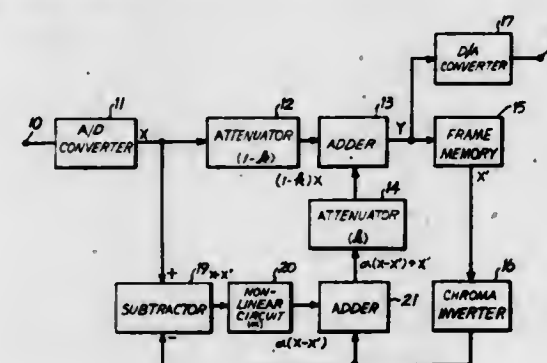
Filed Mar. 27, 1979, Ser. No. 24,415

Claims priority, application Japan, Mar. 27, 1978, 53-35805

Int. Cl.³ H04N 5/21

U.S. Cl. 358—167

5 Claims



1. A noise reduction system for reducing noise contained in a television video signal, said system comprising: memory means for storing said video signal for a period

4,246,612

OPTICAL RASTER SCANNING SYSTEM

Peter J. Berry, and David S. Ritchie, both of Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

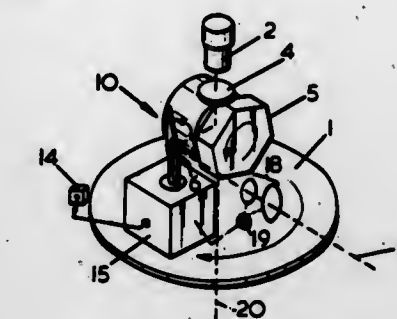
Filed Nov. 28, 1979, Ser. No. 98,366

Claims priority, application United Kingdom, Feb. 28, 1979, 7907081/79

Int. Cl.³ H04N 3/08; G02B 77/17

U.S. Cl. 358—206

6 Claims



1. An optical system comprising a raster scan imager mounted on a support which is rotatable in azimuth, said imager being arranged to provide a line scan which is substantially coplanar with the azimuthal rotational axis and a frame scan which is orthogonal to said line scan, a sensor for monitoring azimuthal rotation rate ω of said support and frame scan control means coupled to said sensor and arranged to provide that the frame scan rate at a field of view is constant and corresponds to a standard T.V. field scan rate irrespective of said rotation rate ω .

4,246,611

DIGITAL CONTROL SYSTEM AND A METHOD OF TRANSMITTING CONTROL DATA IN SUCH A SYSTEM

Colin J. Davies, Olney, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

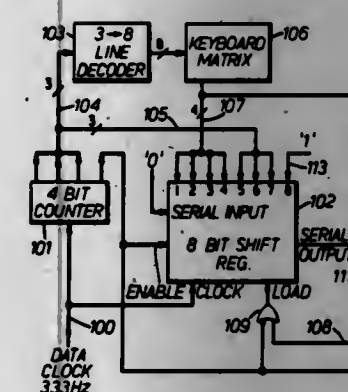
Filed Jun. 9, 1978, Ser. No. 914,109

Claims priority, application United Kingdom, Jun. 21, 1977, 25831/77

Int. Cl.³ H04B 9/00

U.S. Cl. 358—194.1

34 Claims



1. A digital control system having control apparatus for providing output control signals in response to signals generated by signal input means, and means operatively coupling the signal input means with said control apparatus and responsive to a single input from the signal input means to generate a group of serial data bits occupying a predetermined number of equal bit periods and comprising an initial predetermined start signal followed by serial data bits identifying that particular input and to transmit to the control apparatus a predetermined number of repetitions of said serial data bit group separated by constant signal level gaps occupying a predetermined series of equal bit periods providing means for verification of valid timing of the group of serial data bits; and said control apparatus including microprocessor means for checking said gaps to verify valid timing of said groups of serial data bits and responsive to a plurality of validly timed identical groups of serial data bits to generate a corresponding decoded digital output signal.

4,246,613

ANTI-GLARE SCREEN WITH ELECTROMAGNETIC INTERFERENCE REJECTION

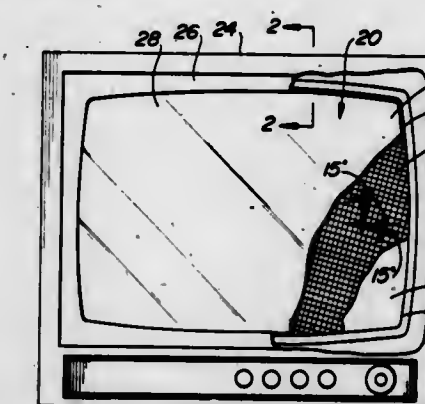
Jerome Choder, Southampton, Pa.; Robert H. Pote, Pitman, N.J.; Philip F. Becker, Annandale, and Ryerson J. Gewalt, Springfield, both of Va., assignors to Delta Data Systems Corporation, Cornwells Heights, Pa.

Filed Jan. 10, 1979, Ser. No. 2,269

Int. Cl.³ H04N 5/65, 5/72

U.S. Cl. 358—245

10 Claims



1. A screen for a video display terminal, said terminal comprising alpha-numeric display means, a case therefor and electrically conductive retaining means for engaging and retaining said screen, said screen being arranged to reduce glare on said display means and to attenuate electromagnetic interference emanating from said display means, said screen comprising a transparent front panel, a transparent rear panel, gasket means encircling the periphery of said front panel and a mesh of electrically conductive strands interposed between said panels and including peripheral portions extending beyond the periphery of said front panel to overly the gasket and directly engage said retaining means to form an electrically conductive interface therebetween.

4,246,614

BINARY GRAPHIC PRINTER SYSTEM HAVING AN ELECTRONIC SCREEN WITH SHIFT CONTROL SUITED FOR RESCREENING

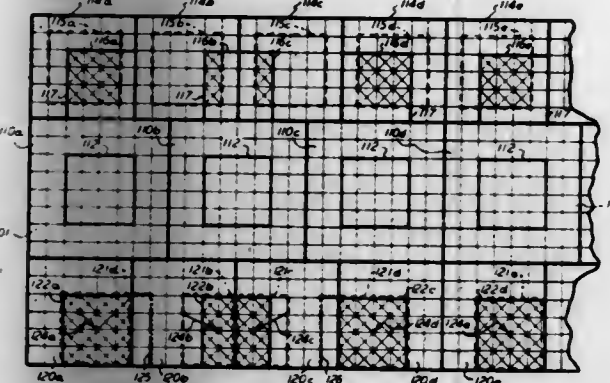
Keith T. Knox, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 26, 1979, Ser. No. 107,282

Int. Cl.³ H04N 1/40

U.S. Cl. 358—283

11 Claims



1. Binary graphic printing apparatus comprising binary graphic printing means for setting a pixel on a graphic medium to either its high or low image density state in response to a printing signal, the graphic medium having a reproduction of an original image made on it in a raster pattern of contiguous pixels, input terminal means coupled to receive video signals representative of continuous tone image densities of pixels in a raster pattern image of the original image to be reproduced, electrical screen signal generator means for generating screen signals representative of image density levels in the format of the raster pattern thereby defining an electrical screen including a plurality of like halftone cells having electrical screen signals organized at pixel locations therein in a centered pattern, combining circuit means coupled to receive video and screen signals for generating the printing signals applied to the graphic printing means for producing the reproduction of the original image and shift circuit means coupled to receive video signals in a quantity to locate the center of either high or low density video signals within a halftone cell of the screen and for generating shift signals applied to the screen generator means to shift the centered screen signals relative to the center of either the high or low density video signals within the boundaries of the cell.

4,246,615

SYSTEM FOR RECORDING AND/OR REPRODUCING AN AUDIO SIGNAL WHICH HAS BEEN CONVERTED INTO A DIGITAL SIGNAL

Yuma Shiraiishi, Kamakura, and Akira Hirota, Chigasaki, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Dec. 15, 1978, Ser. No. 971,004

Claims priority, application Japan, Dec. 16, 1977, 52-151550; Dec. 26, 1977, 52-157104

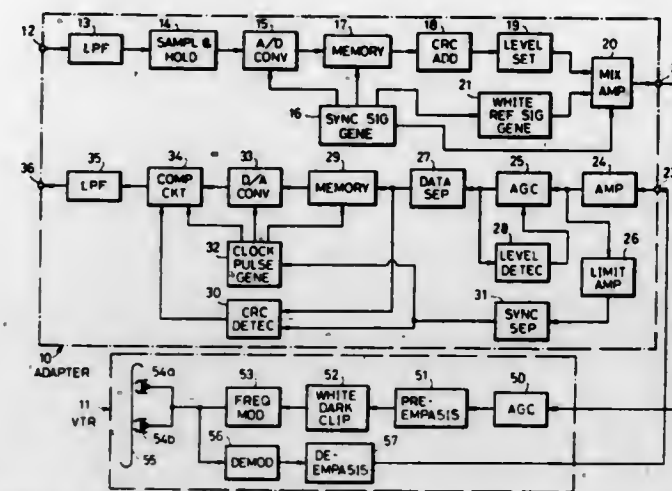
Int. Cl.³ H04N 5/76, 7/04

U.S. Cl. 360—8

9 Claims

1. A system for recording an audio signal which has been converted into a digital signal by an apparatus for recording and/or reproducing a composite video signal, the recording system comprising: means for converting an input analog audio signal into a digital signal; means for generating a synchronizing signal corresponding to a synchronizing signal of the composite video signal; means for time-axis compressing the digital signal from the

converting means so that the digital signal does not exist in the period corresponding to the synchronizing signal; level-setting means for setting the level of the compressed digital signal at a value which is lower than the white peak level of the composite video signal;



- means for mixing the level set digital signal and the generated synchronizing signal to obtain a composite digital signal; and means for supplying the composite digital signal to the recording and/or reproducing apparatus, the recording and/or reproducing apparatus recording the composite digital signal on a recording medium.

4,246,616

SYSTEM FOR REPRODUCING A VIDEO SIGNAL IN A SLOW MOTION OR STILL PICTURE REPRODUCTION

Seisuke Hiraguri, Yokohama, and Akira Hirota, Chigasaki, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

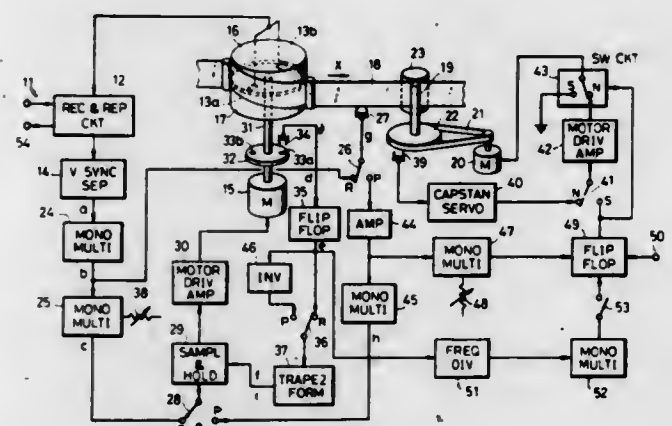
Filed Feb. 2, 1979, Ser. No. 9,077

Claims priority, application Japan, Feb. 3, 1978, 53-10416

Int. Cl.³ H04N 5/78; G11B 15/06

U.S. Cl. 360—10

7 Claims



1. A video signal reproducing system for carrying out still picture reproduction comprising: a tape on which a video signal is recorded along video tracks, which extend obliquely with respect to the longitudinal direction of the tape with substantially no space between the tracks, and a control signal recorded along a control track extending in the longitudinal direction of the tape, said video tracks being recorded by a plurality of rotating video heads having gaps with mutually different azimuth angles, said control signal being recorded along the control track interrelatedly with the recording of the video tracks by the video heads; means comprising a capstan rotated by a motor for driving the tape or for stopping the tape; reproducing means including a plurality of rotating video heads for successively tracing the recorded video track to

pick up and reproduce the recorded video signal, the rotating video heads having gaps with mutually different azimuth angles that are respectively the same as the first mentioned azimuth angles, and which have different height positions above the rotational plane at the centers of the tracks in the width direction thereof; means for reproducing the control signal from the control track while the driven tape is traveling; switching means for supplying and cutting off electric driving power for the motor; and means for producing a switching signal to operate the switching means to cut off the electric power, said means for producing the switching signal comprising means for delaying the control signal reproduced from the control track by a specific delay time, and means for shaping the switching signal to have a voltage waveform which rises in response to a still picture reproduction mode signal and falls in response to the delayed signal, the tape being stopped at a position where the reproducing video heads are reproducing the video signal with a minimum level while the relative head and tape positions are within or in the vicinity of the vertical blanking period.

discrete time signals $Y(nR, k\Omega_0) = \alpha(n\beta R, k\Omega_0) e^{j\theta(n\beta R, k\Omega_0)/B}$ in each channel, providing a short-time Fourier synthesis with a sampling rate increase of 1:R on said plurality of channels of signals $Y(nR, k\Omega_0)$ to provide a time-sampled digital signal of said rate changed speech, converting said rate changed speech digital signal by digital to analog conversion to an analog signal having substantially the same frequencies as in the original analog speech signal but slowed down with respect to the original speech signal.

4,246,618

FLOPPY DISC DRIVE UNIT

Paul Bauer, Ergolding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 19,112

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812574

Int. Cl.³ G11B 5/016, 17/02

U.S. Cl. 360—99

5 Claims

DIGITAL SYSTEM FOR CHANGING THE RATE OF RECORDED SPEECH

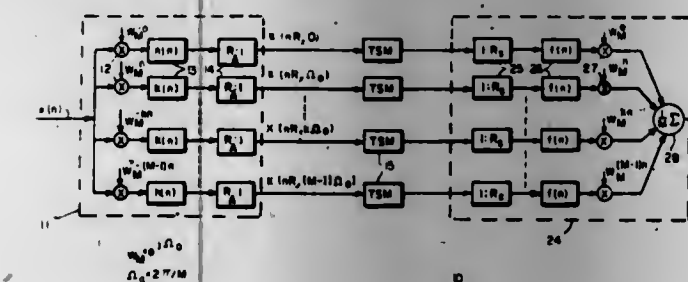
Michael R. Portnoff, Somerville, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 30, 1979, Ser. No. 62,027

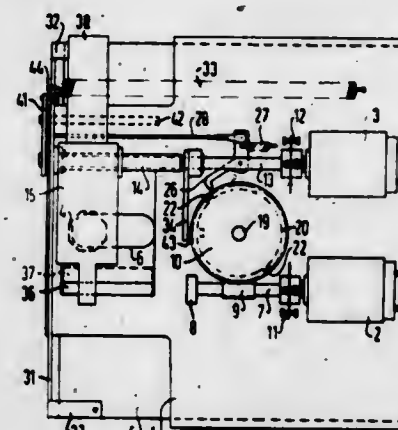
Int. Cl.³ G11B 5/00

U.S. Cl. 360—32

4 Claims



1. A method for slowing the rate of recorded speech comprising, sampling a band-limited analogue speech signal at at least twice the highest frequency of the analogue signal, converting said sampled signal to a digital signal by analog to digital conversion, analyzing said digital signal by short-time Fourier analysis to provide a plurality of channels with complex (real and imaginary components) digital signals, each channel signal corresponding to a band of frequencies of the original speech demodulated down to zero frequency which has been low-pass filtered, reducing the sampling rate of each channel by a factor R where $2\pi/R$ is greater than twice the cut-off frequency in radians of the low-pass filtered channel signal, changing the rate of occurrence of samples of said digital signals by the factor β to provide a different sequence of complex discrete time signals $X(n\beta R, k\Omega_0)$ in each channel, each sample of the analyzed digital signal in each channel having a magnitude and phase determined by its real and imaginary components, determining the instantaneous frequency of successive values of said sampled digital signals from the time-rate of change of their successive phase values, summing said values of instantaneous frequency for each sampled signal to obtain a phase value for each sampled signal which is without phase jumps or discontinuities, dividing this unwrapped phase θ of each of the said signals $X(n\beta R, k\Omega_0) = \alpha(n\beta R, k\Omega_0) e^{j\theta(n\beta R, k\Omega_0)}$ by the factor $\beta (\beta < 1)$ to provide a plurality of sequences of complex



1. A floppy disc drive unit comprising: a frame including means defining a receipt slot for receiving a floppy disc; a reversible positioning motor mounted in said frame, a movably mounted head carrier with a magnetic head supported thereon, said reversible positioning motor operatively coupled to said head carrier to position said magnetic head on various tracks on said disc; movably mounted grasping means for grasping a floppy disc and connecting means releasably coupling said grasping means to said positioning motor to load the floppy disc into and unload the floppy disc from the drive unit; a reversible drive motor mounted in said frame; clamping means mounted in said frame on both sides of said receipt slot, said clamping means connected to and reversibly operated by said drive motor to clamp and unclamp the floppy disc when latched and to rotate the floppy disc for transducing when unlatched; and linkage means moved by said grasping means to first and second positions, said linkage means latching said clamping means in said first position to prevent disc rotation and effect clamping and unlatching said clamping means in said second position to permit disc rotation for transducing.

4,246,619

ELECTROMAGNETIC TRANSDUCER HEAD

Shiro Hirai, Atsushi Nel, and Kunibide Sakai, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

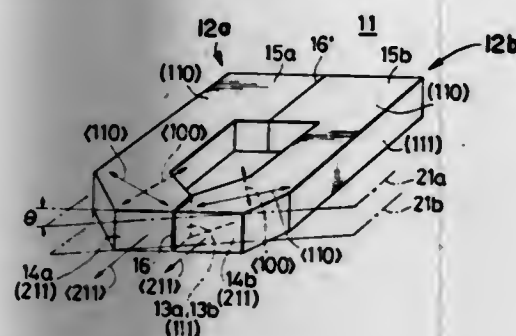
Filed Jan. 11, 1979, Ser. No. 2,564

Claims priority, application Japan, Jan. 13, 1978, 53/1905

Int. Cl.³ G11B 5/14

U.S. Cl. 360—125

6 Claims



1. An electromagnetic transducer head comprising a pair of single-crystalline ferrite half core elements each having crystal planes (211), (111) and (110) which are at right angles to each other, said core elements being secured together to form a magnetic circuit with a magnetic gap therein, said magnetic gap lying in a plane which is substantially parallel with said crystal plane (111), said core elements forming a tape contact face which is parallel with said crystal plane (211) and intersecting the plane of said magnetic gap at right angles, said core elements forming a common surface substantially parallel with said crystal plane (110), each of said core elements having a crystallographic axis <110> extending at an angle to the plane of said magnetic gap to intersect the crystallographic axis <110> of the other core element at a point lying in said tape contact face, and a coil wound on said magnetic circuit.

4,246,620

THIN FILM MAGNETIC HEAD AND METHOD FOR MANUFACTURING THE SAME

Nobuyuki Kaminaka, Moriguchi, Kenji Kanai, Neyagawa; Norimoto Nouchi, Katano, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

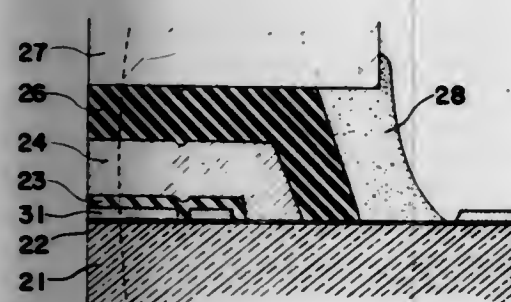
Filed Jan. 31, 1979, Ser. No. 8,335

Claims priority, application Japan, Feb. 3, 1978, 53-11681

Int. Cl.³ G11B 5/14, 5/28, 5/42

U.S. Cl. 360—127

3 Claims



1. A multi-track thin film magnetic head having a contact surface which, when the magnetic head is in use, is in sliding contact with a magnetic information carrier for recording and/or reproducing information, said magnetic head comprising, in combination:

- a supporting substrate of magnetic material
- a layer of non-magnetic electrically insulating material on said substrate having at least one conductor layer therein;
- a further layer of a plurality of side-by-side portions alternate ones of which are metallic magnetic material and the remainder of which are of a non-magnetic electrically

insulating material and having a thickness equal to the thickness of said metallic portions and having a wear resistance substantially equal to or higher than the wear resistance of said metallic material portions, said metallic and non-magnetic electrically insulating portions being positioned on the non-magnetic electrically insulating layer with the portions of the non-magnetic insulating layer between said metallic magnetic portions and said magnetic substrate forming transducing gaps; and a retainer plate of electrically insulating material plurality of against the surface of said metallic and said non-magnetic electrically insulating portions which are opposite the surfaces contacting said layer of non-magnetic electrically insulating layer;

the edges of said layers, said portions and said retainer plate together defining said contact surface, and said plurality of portions extending along said contact surface in a direction transverse to the direction of the sliding contact said metallic magnetic portions being magnetically coupled to said magnetic substrate at positions remote from said contact surface to form magnetic circuits.

4,246,621

ENERGIZING CIRCUIT FOR SOLENOID VALVE

Toshio Tsukioka, Yokohama, Japan, assignor to Yuken Kogyo Company Limited, Fujisawa, Japan

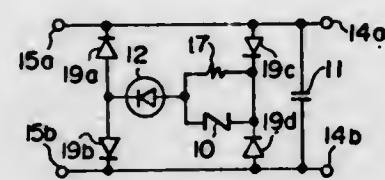
Filed Jul. 12, 1978, Ser. No. 924,208

Claims priority, application Japan, Jul. 15, 1977, 52-93437[U]; Feb. 13, 1978, 53-15580[U]; Feb. 22, 1978, 53-20718[U]

Int. Cl.³ H02H 9/04

U.S. Cl. 361—56

13 Claims



1. In an energizing circuit for a solenoid valve having a power source connected to a solenoid coil of the solenoid valve through on-off contacts, the improvement wherein a capacitor and a solid-state surge absorber are respectively connected in parallel with said solenoid coil, said surge absorber being composed of a sintered powder material essentially consisting of a metal oxide, said surge absorber having an electric resistance which is nonlinear with respect to an applied voltage, further comprising a light emitting diode disposed to form a closed series circuit together with the parallel circuit of said solenoid coil and said capacitor and said surge absorber, wherein a series circuit, formed by connecting said light emitting diode and a diode in series with said surge absorber in opposite polarity with respect to said power supply voltage, is connected in parallel with said solenoid coil in addition to said capacitor.

4,246,622

OVERLOAD PROTECTIVE DEVICE OF ELECTRIC MOTORS

Kazumi Hosoda, Tachikawa, and Masaharu Noguchi, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 1, 1978, Ser. No. 956,726

Claims priority, application Japan, Nov. 8, 1977, 52-149708[U]

Int. Cl.³ H02H 3/08

U.S. Cl. 361—95

3 Claims

1. An overload protective device for an electric motor, comprising:

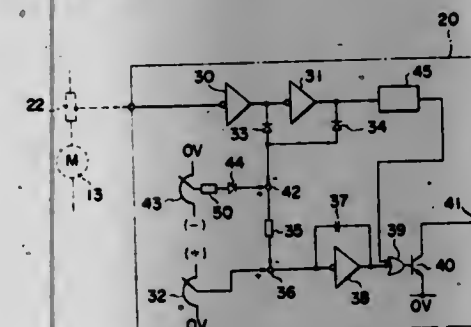
- a current detector for detecting current flowing through

said motor and producing a detection signal proportional in magnitude to the detected current;

a static overload relay including;

- a knee point setter for producing, when said detection signal is in excess of a predetermined level, a signal having a polarity reverse to the polarity of said detection signal and having a magnitude which increases with the magnitude of said detection signal, thereby setting a knee point at a predetermined point along an overload protective characteristic of said static overload relay,

a first comparator for producing a difference in magnitude between the output of said knee point setter and said detection signal,



- a rated current setter for setting a value representing a predetermined continuous current carrying capacity of said motor,
- a second comparator for producing a difference in magnitude between the output of said rated current setter and the output of said first comparator,
- an integrating means for integrating an output of said second comparator, and
- means for producing a tripping signal when an output of said integrating means exceeds a predetermined value, and
- a circuit breaker connected in series with said motor for interrupting the supply of current to said motor when tripped by said tripping signal.

4,246,623

PROTECTIVE RELAY DEVICE

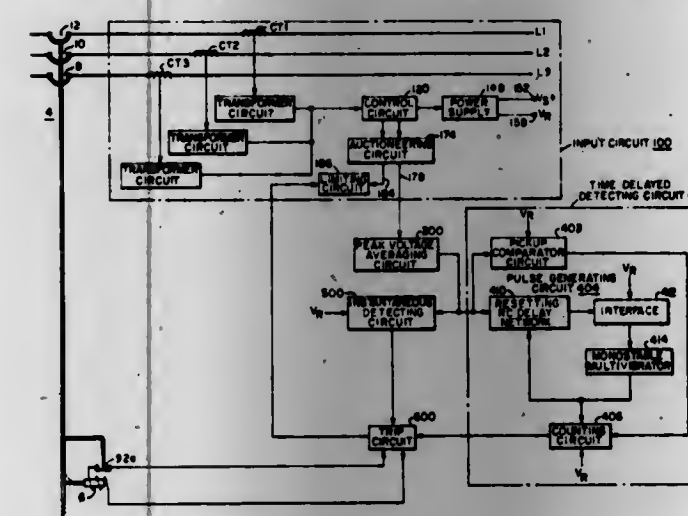
Shan C. Sun, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 648,689, Jan. 13, 1976, abandoned, which is a continuation of Ser. No. 527,460, Nov. 26, 1974, abandoned. This application Sep. 8, 1978, Ser. No. 940,801

Int. Cl.³ H02H 3/08

U.S. Cl. 361—97

36 Claims



- 1. An electrical quantity responding device comprising: a current transformer, said current transformer including a primary winding adapted to be energized by an alternating current, and first and second output windings,

1002 O.G.—50

power supply means responsive to said first output winding, current sensing means responsive to said second output winding,

and control means controlling said first and second output windings to achieve substantially complete balancing of the ampere turns of the primary winding in a selected one of said first and second output windings, and then in the other, within the same half cycle of the alternating current.

4,246,624

APPARATUS FOR REMOVING ELECTRO-STATIC CHARGE FROM AN AIRCRAFT WINDSCREEN

Brian D. Lazelle, Maulden, England, assignor to Lucas Industries Limited, Birmingham, England

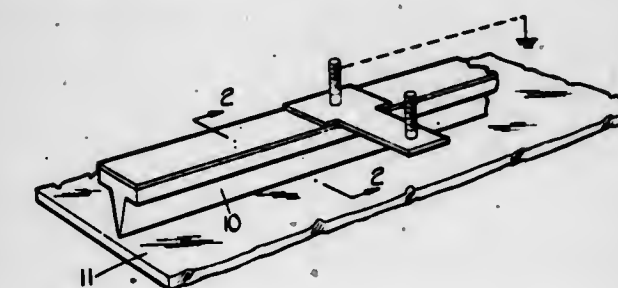
Filed May 23, 1979, Ser. No. 41,738

Claims priority, application United Kingdom, May 26, 1978, 23379/78

Int. Cl.³ H05F 3/00

U.S. Cl. 361—218

9 Claims



1. Apparatus for removing electrostatic charge from an aircraft windscreen comprising an electrically conductive member movably mounted on the aircraft structure and electrically earthed thereto, said conductive member being movable across the windscreen and being arranged to collect charge from the windscreen surface.

4,246,625

CERAMIC CAPACITOR WITH CO-FIRED END TERMINATIONS

Sri Prakash, Simpsonville, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,469

Int. Cl.³ H01G 1/01

U.S. Cl. 361—321

1 Claim



1. A ceramic capacitor formed by firing at temperatures in the range of about 1300°–1400° C. a green ceramic body containing a plurality of embedded electrodes and having end portions coated with a paste consisting essentially of a mixture, in an organic vehicle, of a finely divided metal selected from nickel and copper; glass frit, said glass being selected from barium borosilicate glass and barium aluminosilicate glass; and MnO₂; the proportions by weight of the said metal, glass frit and MnO₂ being from about 80 to 95% metal

3 to 14% glass frit
1.5 to 3% MnO₂

said green ceramic body, electrodes and paste being co-fired, said paste after co-firing providing end terminations for said capacitor comprising a sponge-like network of sintered selected metal with particles of manganese oxide and glass filling the network, said manganese oxide particles being intermediate to glass and selected metal.

4,246,626

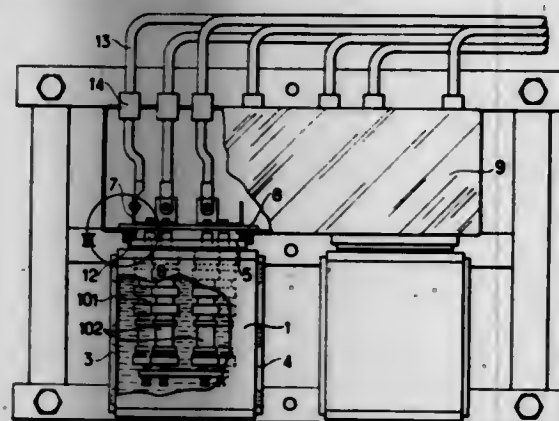
MECHANICAL PROTECTION OF ELECTRICAL CONNECTORS OF ELECTRONIC POWER ASSEMBLIES COOLED BY A FLUORINATED HYDROCARBON

Bernard Legend, Villiers St. Frederic, and Michel Masselin, Velizy Villacoublay, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Mar. 6, 1979, Ser. No. 18,100
Int. Cl.³ H05K 7/20

U.S. Cl. 361—385

1 Claim



1. In combination, an enclosure bearing electronic power assemblies and fluorinated hydrocarbon for cooling said power assemblies internal of said enclosure, a support underlying said enclosure and bearing guide rails, said enclosure being positioned within said guide rails and movable with respect to said support, a cover overlying one end of said enclosure, multiple electrical connectors, each of said connectors including a female portion passing through said cover, a terminal box including a fixed insulating plate facing said cover and being spaced therefrom, said electrical connectors including a male portion passing through said fixed insulating plate, said female and male portions of said connectors being removably plugged together, and an annular seal ring secured to said fixed insulating plate, surrounding said plurality of electrical connectors and forming with said cover and said fixed insulating plate a sealed mechanical protection chamber.

4,246,627

ELECTRICAL CIRCUIT ELEMENT WITH MULTIPLE CONNECTION PINS FOR SOLDER PLUG-IN CONNECTION

Helmut H. Poenagen, Rückerdorf, Fed. Rep. of Germany, assignor to Stettner & Co., Nuremberg, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,328

Int. Cl.³ H05K 01/04

U.S. Cl. 361—405

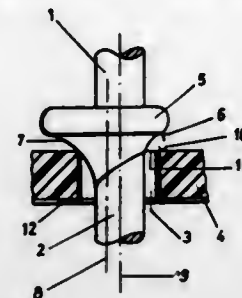
10 Claims

1. Electrical circuit element (14) for combination with a circuit support (4) and including an electrical solder-plug-in connection arrangement,

wherein the circuit element (14) has at least one projecting connection pin or wire (1) projecting therefrom, for insertion into a respective, at least partly metallized and essentially circular opening (3) in the circuit support (4), and for subsequent soldering therein,

said connection pin or wire (1) being formed with an essentially circular, circumferentially essentially uniform bead (5) to define an insertion position of the pin or wire into the opening,

wherein, in accordance with the invention, the surface (6) of the bead (5) facing the surface of the support (4) is non-



symmetrical with respect to the axis (9) of the opening (3) in the support (4).

4,246,628

DRIVING MECHANISM FOR RETRACTABLE LAMPS OF MOTOR VEHICLES

Naoyuki Ikemizu, Hiroshima, and Kiyohide Terada, Yono, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima and Tanaka Instrument Co., Ltd., Yono, both of Japan

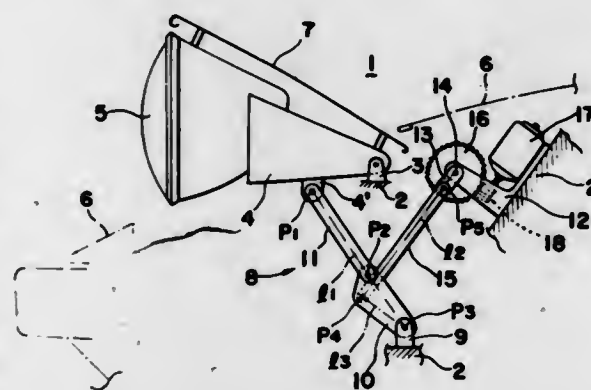
Filed Oct. 11, 1978, Ser. No. 950,516

Claims priority, application Japan, Oct. 13, 1977, 52-137781[U]

Int. Cl.³ B60Q 1/06, 11/00

U.S. Cl. 362—65

4 Claims



1. A driving mechanism for moving retractable lamps of motor vehicles which are pivotally mounted on the vehicle between a position in which they are housed in the vehicle body and a position in which they are exposed from the vehicle body, said driving mechanism comprising driving means which can be started for driving the driving mechanism and stopped when the lamp has reached the desired position, a first link connected to said driving means for being rotated around a pivot point at one end of said first link, a second link having one end pivotally connected to the vehicle, a first rod having one end pivotally connected to the other end of said second link and having the other end pivotally connected to said lamp, and a second rod pivotally connected between said first link and said second link, said links and connecting rods being positioned for, when the lamp has been moved to the exposed position, having the pivot point around which said first link is rotated by said driving means, the pivot point where said second rod is pivotally connected to said first link and the pivot point where said second rod is pivotally connected to said second link in a substantially straight line, and also having the pivot point at which said second link is pivoted on the vehicle, the pivot point at which said second link is pivoted to said first rod and the point at which said first rod is pivotally connected to the lamp aligned in a substantially straight line, whereby the error in the position of the lamp in the exposed position due to an error in the time of stopping of the driving means is minimized.

4,246,629

FLUORESCENT LIGHT FIXTURE

Louis Marrero, 1209 Via Ramon, Escondido, Calif. 92025

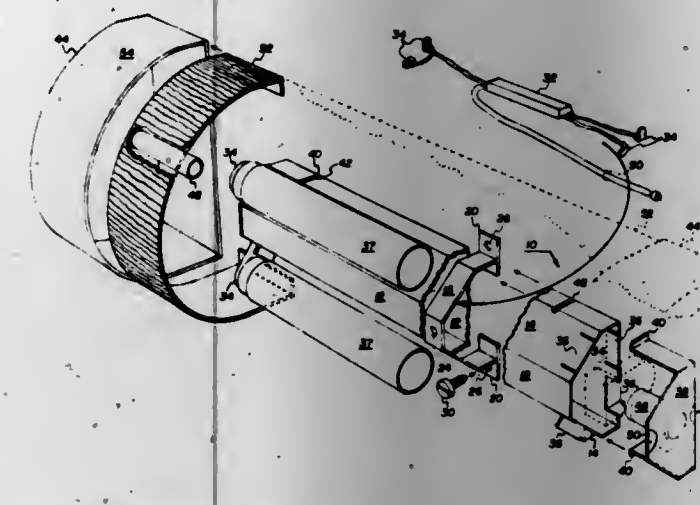
Filed Oct. 15, 1979, Ser. No. 84,836

Int. Cl.³ F21S 1/02

U.S. Cl. 362—147

8 Claims

$y(\text{Me}_{1-x}\text{Ce}_x)\text{Al}_{12}\text{O}_{18} + y + (xy/2)$
where
Me = Sr and/or Ca and
 $x = 0.15-0.50$
 $y = 0.60-1.0$



1. A fluorescent light fixture comprising:
 - (a) an elongated housing dimensioned to house a fluorescent transformer/ballast and having socket mounts in each end thereof mounting at least one fluorescent tube socket, said sockets being wired to said transformer/ballast;
 - (b) at least two brackets for engaging said housing in spaced positions therealong, one side of each bracket defining a flat plane for wall mounting and the other side defining a pair of orthogonal planes for corner mounting;
 - (c) two end caps and means retaining same at respective ends of said housing; and
 - (d) an elongated planar lens spanning the length of said housing and being engaged by said end caps to cover the otherwise exposed area of a fluorescent tube plugged into said sockets.

4,246,630

ULTRAVIOLET EMITTING CE ALKALINE EARTH ALUMINATE LAMP PHOSPHORS AND LAMPS UTILIZING SAME

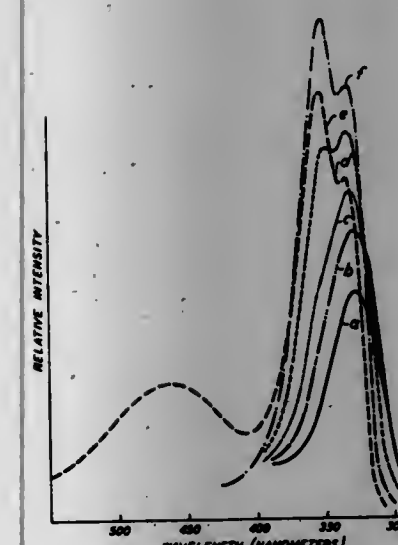
Robert W. Wolfe, Wysox, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 19, 1979, Ser. No. 105,327

Int. Cl.³ C09K 11/46; H01J 1/63; G03B 27/54

U.S. Cl. 362—260

3 Claims



1. Cerium substituted alkaline earth magnetoplumbite phosphors represented by the molar formula:

4,246,631

VEHICLE HEADLAMP

Geoffrey R. Draper, Lichfield, and David A. Birt, Cannock, both of England, assignors to Lucas Industries Limited, Birmingham, England

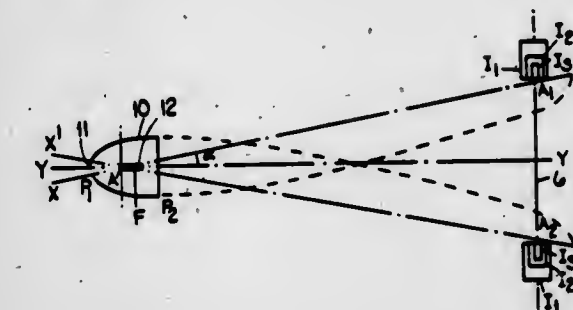
Filed May 14, 1979, Ser. No. 39,008

Claims priority, application United Kingdom, May 23, 1978, 21587/78

Int. Cl.³ F21V 7/00

U.S. Cl. 362—309

4 Claims



1. A vehicle headlamp comprising a dished reflector which receives, in use, a passing beam filament and shield arrangement producing, with the reflector, a basic beam pattern having an opposite side, inclined cut-off (as defined herein) in use, said dished reflector having a reflective area lying on a surface defined by rotating an ellipse about an axis which passes through the inner focus of the ellipse and which is inclined at an acute angle to the focal axis of the ellipse, and lensing arranged to diffract the basic beam pattern in use, said lensing being arranged (a) to split the area of the basic beam pattern immediately below the substantially horizontal portion of the cut-off line into parts which define the upper and lower, mutually laterally displaced horizontal cut-off portions in the required Z-beam pattern, (b) to utilize part of the part-circular portion of the cut-off to the basic beam pattern to define the inclined portion joining the upper and lower portions in the required Z-beam pattern, (c) to depress an area of the basic beam pattern below the inclined portion of the cut-off thereof and (d) to shift laterally part of the basic beam pattern below the inclined portion of the cut-off thereof so as to increase the intensity of that portion of the Z-beam pattern which is below the junction between the upper horizontal cut-off portion and the inclined portion.

4,246,632

LAMP ASSEMBLY AND METHOD OF MANUFACTURE THEREOF

Royston N. Hancox, Coventry, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 7, 1978, Ser. No. 940,228

Claims priority, application United Kingdom, Sep. 21, 1977, 39294/77

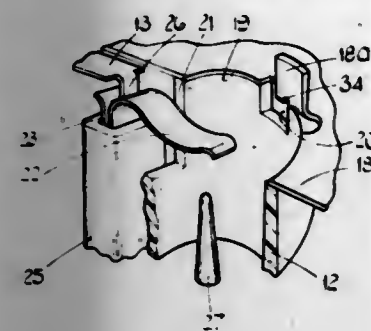
Int. Cl.³ F21V 21/00

U.S. Cl. 362—382

5 Claims

1. A lamp assembly comprising an electrically insulating hollow body, a plurality of bulbholders, a plurality of spaced, electrically conductive elements, cut from an electrically conductive sheet, extending between a location in the body at which an electrical supply connector is attached to the assembly in use and respective locations in the body adjacent the bulbholders, at least one bulb contact blade extending into each

bulbholder, each bulb contact blade having a substantially U-shaped portion disposed externally of the bulbholder, and blade portions which are integral with at least some of the



electrically conductive elements and each of which is in facial contact with the internal faces of the respective substantially U-shaped portion.

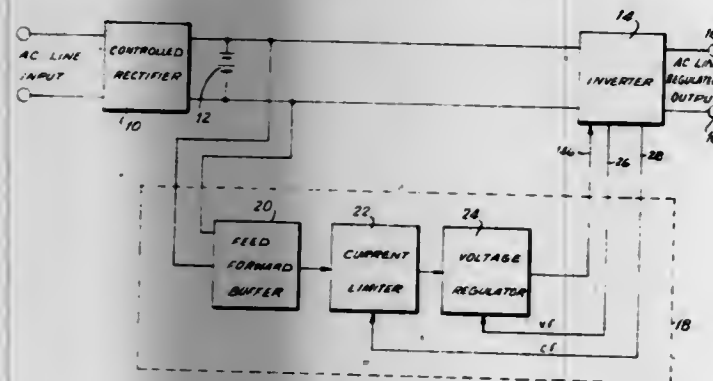
4,246,633

VOLTAGE CONTROL CIRCUITRY FOR UPS
Henry S. Borkovitz, Skokie, Ill., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 9, 1979, Ser. No. 10,668
Int. Cl.³ H02P 13/20; H02M 5/44

U.S. Cl. 363—37

9 Claims



1. In an emergency or uninterruptible power supply system, which system includes input and output terminals, a controlled rectifier for receiving an AC input and for providing a DC output, a set of batteries connected to the output of said controlled rectifier, and an inverting means having an input connected across said set of batteries, the improvement which comprises:

a voltage control means connected to control the magnitude of the output voltage of said inverting means, by compensating for variations arising in the input voltage or in the output so that these variations do not cause undesired fluctuations in the output voltage, including feed forward means, having its input directly connected to said set of batteries and its output connected to said inverting means, for responding to variations in the magnitude of the voltage across said set of batteries so as to control said inverting means and prevent said undesired fluctuations in the output voltage, feedback means for responding to a signal proportional to the inverter's output current, and feedback means for responding to a signal proportional to the inverter's output voltage.

4,246,634

START-UP CIRCUIT FOR SWITCH MODE POWER SUPPLY

Mark F. Parol, Pinckney, Mich., assignor to Ann Arbor Terminals, Inc., Ann Arbor, Mich.

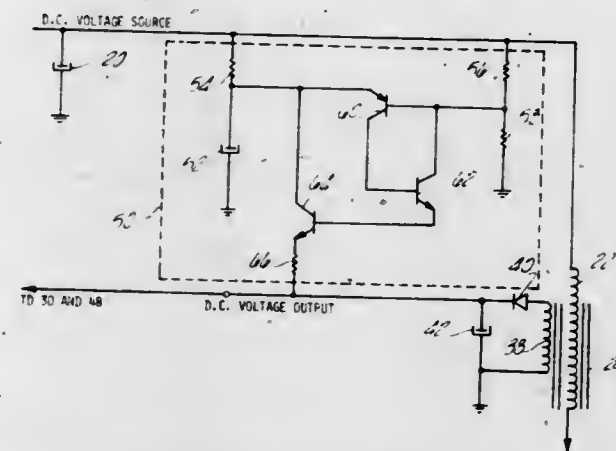
Filed Mar. 7, 1979, Ser. No. 17,988
Int. Cl.³ H02M 3/335

U.S. Cl. 363—49

8 Claims

1. In a power supply for electric circuitry, including a source of direct current power, a transformer, a bi-stable oscillating switching circuit connected in series with a direct current

power supply and the primary of the transformer; and means for powering the bi-stable switching circuit with power derived from the transformer after initiation of the oscillating action, the improvement comprising: a circuit for initiating operation of the oscillating action of the switching circuit including electric power storage means connected to the direct current supply so as to accumulate a store of power at a voltage which increases in time after initiation of the direct current power source; a source of a reference voltage having a value which is a function of the nominal voltage required to power the switching circuit; and switching means connected to the power storage means and to the reference voltage source and operative to provide the power stored in the storage means to



the switching circuit at such time as the stored voltage equals the reference voltage, to thereby initiate oscillation of the switching circuit to thereby provide power to the switching circuit from the secondary winding of the transformer, said switching means comprising a first, second and third transistor, said first transistor being operably coupled between said reference voltage source and said power storage means and activatable when the voltage of said power storage means equals the value of the voltage of said reference voltage source, said third transistor having the collector-emitter circuit thereof operably coupled with said first transistor and defining the output of said initiating circuit, said second transistor being operably coupled with said first and second transistors and with said reference voltage source.

4,246,635

POWER-SUPPLY DEVICE WHICH BOOSTS AND STABILIZES THE VOLTAGE

Takeo Arima, Tokyo, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,622

Claims priority, application Japan, Oct. 14, 1977, 52-138381[U]

Int. Cl.³ H02M 3/18

U.S. Cl. 363—101

2 Claims

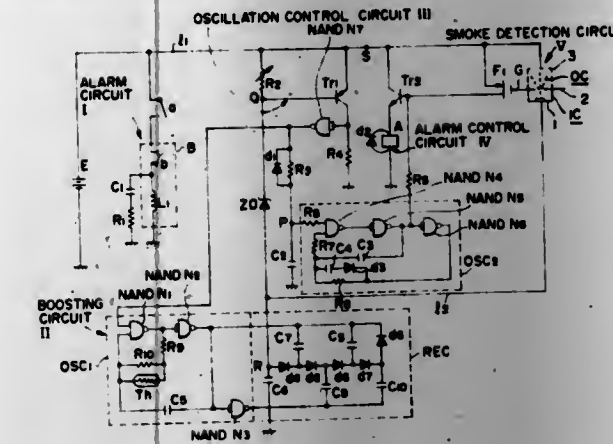
1. A power-supply device for providing a boosted and stabilized dc voltage from a dc power source comprising:

an oscillator circuit for energization by the dc power source for producing an oscillation signal;

a voltage multiplying rectifier circuit including an electric energy storage means for storing electric energy therein having a voltage proportional to said electric energy and connected to said oscillator circuit for rectifying said oscillation signal, for multiplying the voltage of said oscillation signal for producing a multiplied voltage dc signal, and for storing said multiplied voltage dc signal in said electric energy storage means, said voltage proportional to said electric energy stored in said electric energy storage means being said boosted and stabilized dc voltage; and

an oscillator control circuit connected to said oscillator circuit and to said voltage multiplying rectifier circuit for inhibiting said production of said oscillation signal by said

oscillator circuit when said voltage of said electric energy storage means exceeds a predetermined voltage, whereby when said oscillator circuit is inhibited said electric energy stored in said electric energy storage means is discharged until said voltage of said electric energy storage means decreases to said predetermined voltage whereupon said oscillator control circuit no longer inhibits said oscillator circuit.



4,246,636

FLYBACK TRANSFORMER HAVING TERMINAL PINS FOR CONNECTION TO PRINTED CIRCUIT BOARDS
Junichiro Kawamura, Tokyo, and Junichi Iwasawa, Yokohama, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

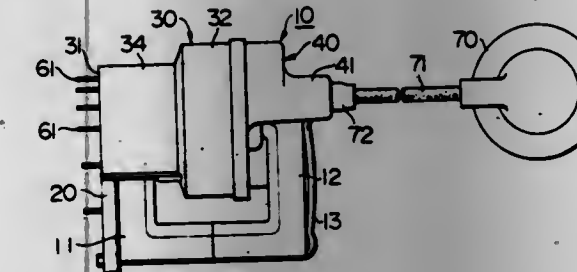
Filed Sep. 27, 1978, Ser. No. 946,349

Claims priority, application Japan, Sep. 27, 1977, 52/129815[U]

Int. Cl.³ H02M 1/00

U.S. Cl. 363—146

15 Claims



1. A flyback transformer comprising

- a pair of U-shaped cores,
- a coil bobbin to be mounted on the legs of said cores,
- at least one low potential coil to be wound around said coil bobbin,
- a high voltage coil which is mounted on said coil bobbin in parallel with said low potential coil,
- a plurality of terminal means to be connected respectively with the lead wire of said low potential coil and the low potential side lead wire of said high voltage coil,
- a means which supports said plurality of terminal means on said coil bobbin,
- a hollow housing which has an opening through which said coil bobbin is inserted at its one end and another opening through which said plurality of terminal means are projected outside and the leg of said one core is inserted at its other end and houses said coil bobbin provided with said low potential coil and high voltage coil,
- a rectifying circuit connected to the high potential side lead wire of said high voltage coil,
- an anode lead which is connected to said rectifying circuit to take out a rectified high voltage,
- a housing cap which is mounted on one end of said hous-

ing and has a hole for inserting the leg of said other core and houses said rectifying circuit, and
(k) an electrically insulating resin compound for filling a space surrounded by said housing, housing cap and coil bobbin.

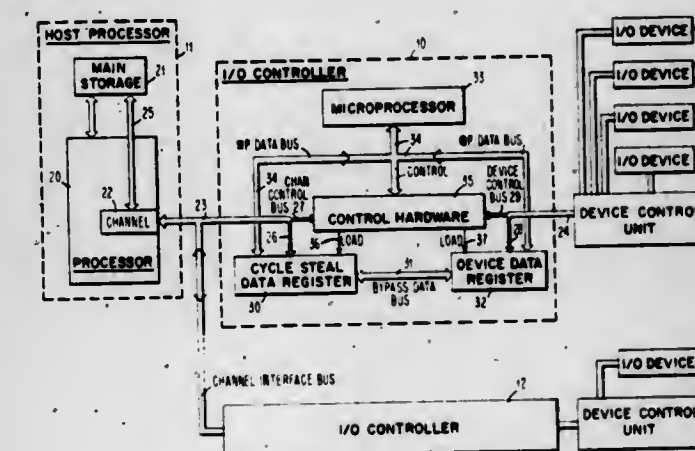
4,246,637

DATA PROCESSOR INPUT/OUTPUT CONTROLLER
Lewis W. Brown, Boca Raton; Douglas R. Chisholm, Delray Beach, and Jerry D. Dixon, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1978, Ser. No. 919,107
Int. Cl.³ G06F 3/00; 9/22, 15/16

U.S. Cl. 364—200

13 Claims



1. An input/output controller for transferring data between a host processor and one or more input/output units and comprising:

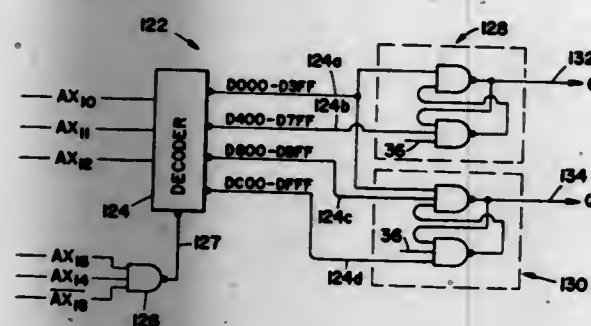
- first plural-bit data storage means for sending data to and receiving data from a host processor;
- second plural-bit data storage means for sending data to and receiving data from an input/output unit;
- a microprocessor for controlling input/output activities; circuitry for transferring data between the first data storage means and the microprocessor;
- circuitry for transferring data between the microprocessor and the second data storage means;
- a data transfer bus providing a direct data transfer connection between the first and second data storage means; selectively operative automatic transfer control circuitry coupled to the first and second data storage means and effective, when operative, for automatically and sequentially transferring multiple units of data between the host processor and an input/output unit via the first and second data storage means and the direct data transfer bus and without requiring any action on the part of the microprocessor, said automatic transfer control circuitry further including:
- first load signal generating circuitry operative during input data transfer operations for supplying load signals to the first storage means when the second storage means is not empty and the first storage means is not full;
- and second load signal generating circuitry operative during output data transfer operations for supplying load signals to the second storage means when the first storage means is not empty and the second storage means is not full;
- and auto mode circuit means responsive to a start-up signal from the microprocessor for rendering the automatic transfer control circuitry operative.

4,246,638
METHOD AND APPARATUS FOR CONTROLLING
USAGE OF A PROGRAMMABLE COMPUTING
MACHINE

William J. Thomas, 6146 Winterbrook Dr., San Jose, Calif. 95129

Filed Sep. 14, 1978, Ser. No. 942,422
 Int. Cl.³ G06F 13/00; H04K 1/00

U.S. Cl. 364-200 23 Claims



1. A method of preventing unauthorized use of a program on a programmable computing machine which operates in accordance with uncoded machine language operation codes, comprising:

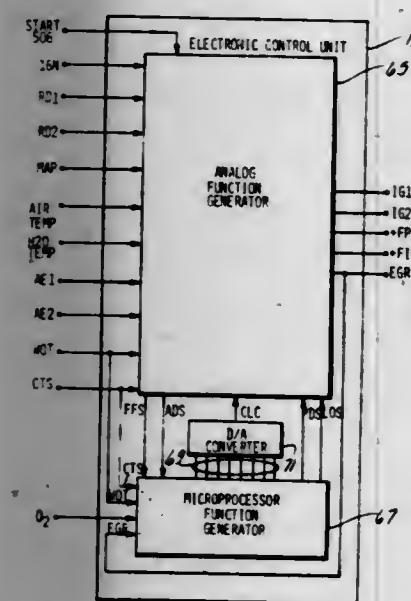
- (a) encoding the uncoded operation codes of instructions of the program as a function of location of the instructions of the program in a memory and as a function of the state of the machine prior to using the program on the computing machine; and
- (b) adding to the computing machine a decoder to decode the encoded operation codes to perform the object of the program.

4,246,639
START AND WARM UP FEATURES FOR ELECTRONIC
FUEL MANAGEMENT SYSTEMS

Ralph W. Carp, Newport News, Va., and Roman O. Marchak, Northville, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jan. 22, 1978, Ser. No. 918,291
 Int. Cl.³ G06F 15/20; F02B 3/00; G05B 13/02

U.S. Cl. 364-431 9 Claims



1. An electronic control unit for the management of the air/fuel ratio of an internal combustion engine, said electronic control unit comprising:

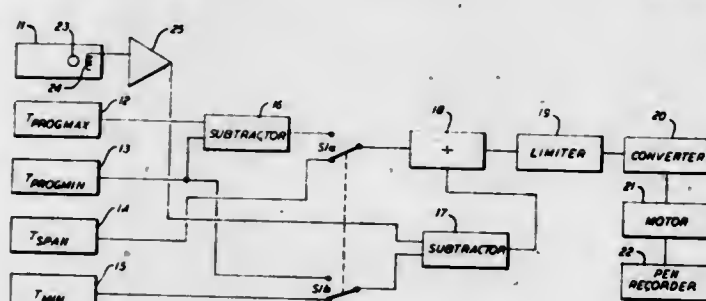
- base calibration means for regulating the air/fuel ratio of the engine in response to sensed engine operating parameters indicative of the mass air flow and mass fuel flow inducted into the engine, said base calibration means regulating the air/fuel ratio by sensing one of said mass air flow and said

mass fuel flow and calculating the other from a schedule of desired air/fuel ratios; and
 starting means for enriching the air/fuel ratio during engine cranking by a starter motor wherein said starting means is enabled by a start signal indicating that the starter motor is cranking the engine and wherein said starting means includes crank override means to inhibit said enrichment if the speed of the internal combustion engine exceeds a predetermined value in excess of the cranking speed of the starter motor.

4,246,640
AUTOMATIC RECORDER ABSCISSA SCALING
 Simon Babil, Trumbull, and Andrew R. Muir, Wilton, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 26, 1979, Ser. No. 15,067
 Int. Cl.³ G01D 9/26

U.S. Cl. 364-520 6 Claims



1. In a thermal analysis system having an X-Y recorder for graphically displaying changes in sample properties through a temperature range,

- pen recorder means,
- drive means connected to said pen recorder means for driving said pen recorder in the X direction in response to changes in sample temperature,
- first means responsive to sample temperature to generate a signal proportional to sample temperature,
- second means connected between said drive means and first means for offsetting said signal to zero at preselected sample temperature and scaling said signal to be at its maximum when said sample temperature is at a preselected maximum.

4,246,641
AUTOMATIC TEMPERATURE CALIBRATION OF
THERMAL ANALYZERS

Simon Babil, Trumbull, and Andrew R. Muir, Wilton, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

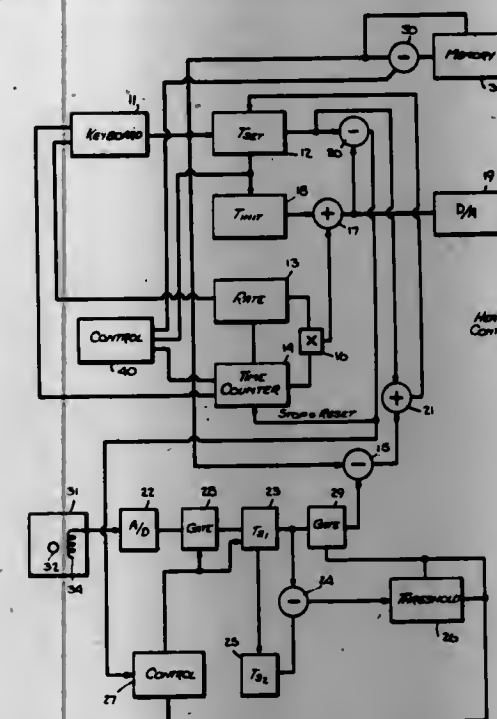
Filed Feb. 26, 1979, Ser. No. 15,556
 Int. Cl.³ G01K 7/10

U.S. Cl. 364-571 15 Claims

1. A thermal analysis system for heating or cooling a test sample to one or more temperatures within a predetermined temperature scale, comprising in combination:

- an oven,
- a sample disposed in said oven,
- first means providing a signal proportional to the temperature of said sample,
- second means providing a signal proportional to the temperature of the oven including heater means for raising the temperature of the oven,

computer means disposed between said first and second means for correcting automatically for discrepancies be-

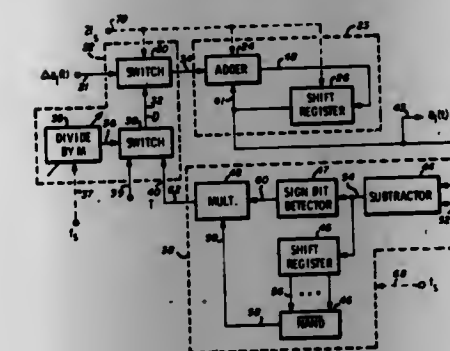


tween oven temperatures and desired sample temperatures.

4,246,642
LEAKY DIGITAL INTEGRATOR
 D. Thomas Magill, Palo Alto, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 22, 1979, Ser. No. 5,298
 Int. Cl.³ G06F 7/49, 15/31

U.S. Cl. 364-733 11 Claims



1. An adaptive leaky integrator circuit comprising: accumulator means including an adder having first and second adder input terminals and an adder output terminal, and a shift register coupling the adder output terminal back to the second adder input terminal and to an integrator output terminal;
- ternary operator means coupled to said integrator output terminal and operative to develop one of three decay factor signals depending upon whether the integrator output signal level is above, equal to, or below a predetermined reference level; and
- switching means having a first switched terminal which is periodically coupled at a first rate to the first adder input terminal to input update data signals to the accumulator circuit, and a second switched terminal which is periodically coupled at a second rate to the first adder input terminal to input decay data signals to the accumulator circuit such that the circuit as a whole performs according to the equation

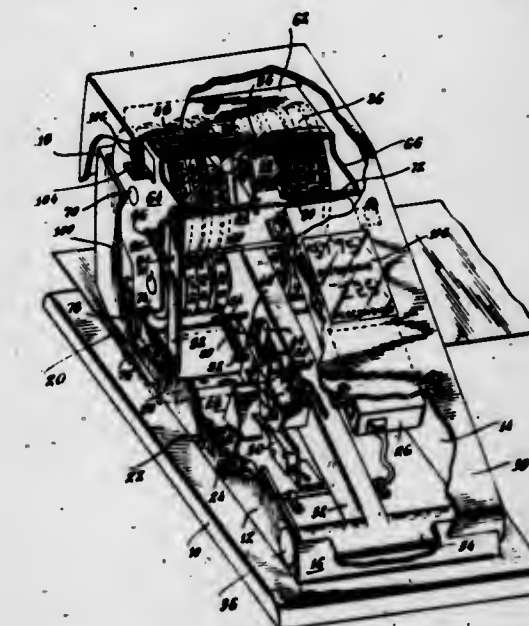
$$a(t) = Da(t-1) + \Delta a(t)$$

where $a(t)$ is the integrator output at time t ; D is the decay factor and $\Delta a(t)$ is the update increment.

4,246,643
LOW COST POSTAGE APPLICATOR
 David W. Hubbard, Stamford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

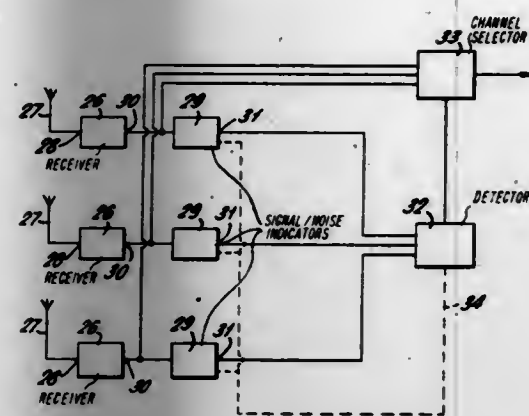
Filed Feb. 13, 1978, Ser. No. 877,175
 Int. Cl.² B41L 47/46

U.S. Cl. 364-900 30 Claims



1. A postage applicator including: a first member which must be depressed by a user to initiate a postage-printing cycle;
- a plurality of postage symbol printing elements, such of said elements being independently settable;
- manually-actuated means for setting each of said printing elements;
- encoding means for providing electrical signals representative of the current status of each of said printing elements;
- switch means responsive to movement of said first member to a predetermined first position to generate a read-enabling signal;
- detent means for inhibiting movement of said first member beyond the predetermined first position;
- an electronic means connected to said encoding means, said switch means and said detent means to release said detent means under predetermined conditions to enable said first member to be moved beyond the predetermined first position into a postage-printing second position, said electronic means containing storage locations for postal accounting data.

the receipt of the signal at the input and the beginning of the comparator's output provides an indication of the signal/noise ratio;



means for detecting which of said circuits produces an output first in response to a received signal; and
means for selecting the signal receiver associated with the first circuit to produce an output.

4,246,656

DIVERSITY SWITCH CORRELATION SYSTEM

Wilhelm A. H. Wood, Walpole, and Darrel J. Peterson, Plymouth, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 24, 1978, Ser. No. 954,259

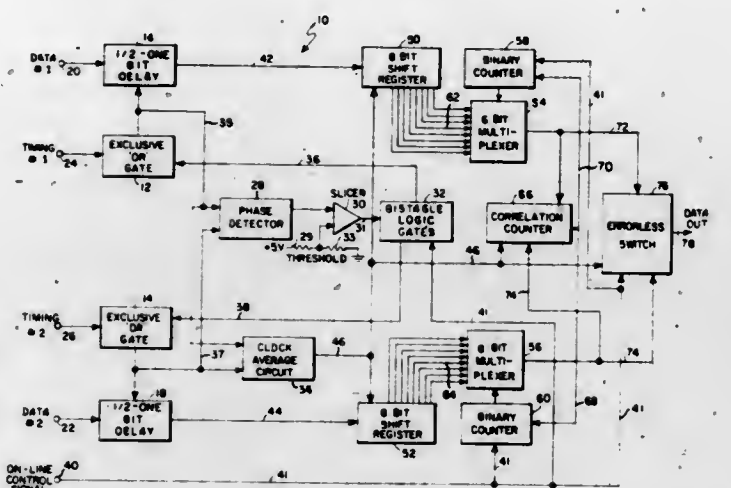
Int. Cl. H04B 7/08

U.S. Cl. 455-136

14 Claims

8. a diversity channel switching system for use in a diversity channel system comprising:

a first channel adapted to carry data bit signals;
a second channel adapted to carry data bit signals;
delay means in each data channel adapted to provide a predetermined delay;
first and second timing channels adapted to carry timing signals corresponding respectively to said data bit signals of said first and second channels;
phase comparison means for comparing said timing signals



for the first channel and said second channel to provide a difference signal;
an exclusive OR circuit coupled respectively to each delay means and actuated by said difference signal having a polarity to select a delay adapted to compensate for a difference in time of occurrence of said data bit signals of said first and second channels; and
switching means connected to said first and said second channel and adapted to switch the data bit signals of said first or said second channels to an output channel.

DESIGNS

JANUARY 20, 1981

257,908

CLEAT PLATE FOR A SPORT SHOE SOLE

Masanobu Inohara, Akashi, Japan, assignor to Asics Corporation, Kobe, Japan

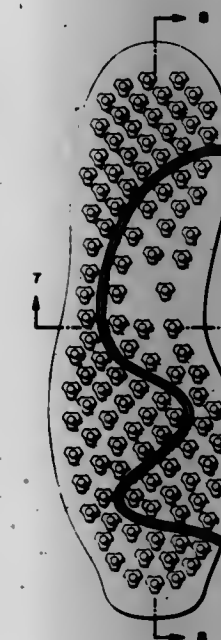
Filed Jun. 1, 1978, Ser. No. 911,443

Claims priority, application Japan, Dec. 22, 1977, 52-51072

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-317



257,910

WORKMAN'S VEST

Matti Vilo, Box 563, 191 05 Sollentuna, Sweden
Filed May 2, 1978, Ser. No. 902,156

Claims priority, application Sweden, Nov. 2, 1977, 772226

The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.

Term of patent 14 years

Int. Cl. D2-07

U.S. Cl. D2-190



257,911

SHOE SOLE

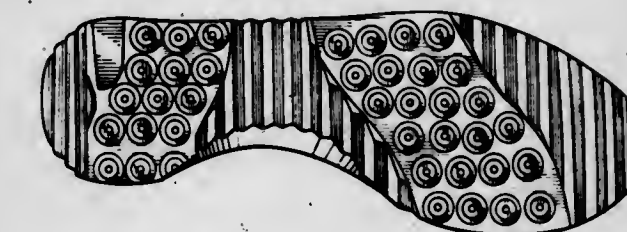
Leif Ostberg, Wayne, N.J., assignor to Manow International Corp., New York, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,564

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-320



257,909

LACROSSE PROTECTIVE GLOVE

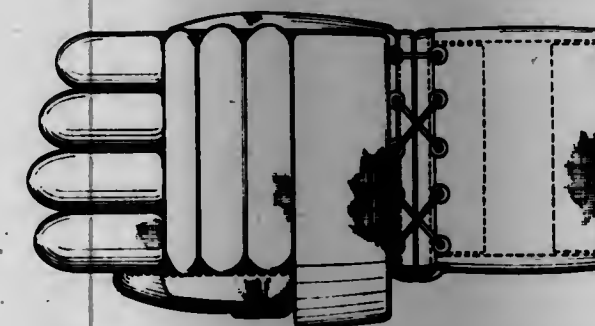
Peter J. Brine, Wellesley, Mass., assignor to W. H. Brine Company, Milford, Mass.

Filed Feb. 26, 1979, Ser. No. 14,994

Term of patent 14 years

Int. Cl. D2-06

U.S. Cl. D2-361



257,912

CONTAINER FOR TOOTH-PICKS OR THE LIKE

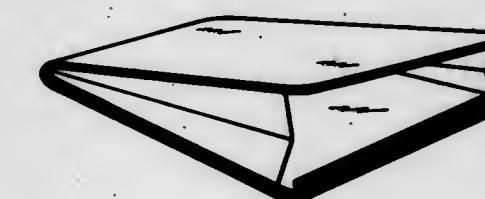
Huang Kuen-Yi, 3rd Fl., 122 Chung Hsiao East Rd., Section 2, Taipei, Taiwan

Filed Nov. 14, 1978, Ser. No. 960,850

Term of patent 14 years

Int. Cl. D3-02

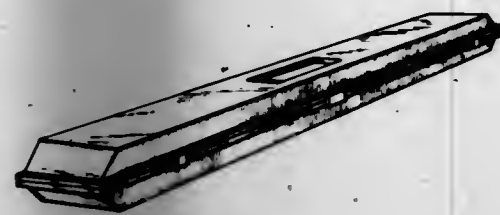
U.S. Cl. D3-30



257,913

SKI TRANSPORT CONTAINER
Timothy J. O'Dair, 6109 Gale Dr., Boulder, Colo. 80303
Filed Mar. 5, 1979, Ser. No. 17,566
Term of patent 14 years
Int. Cl. D3-02

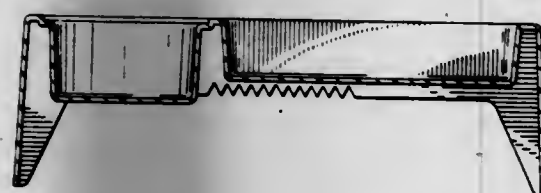
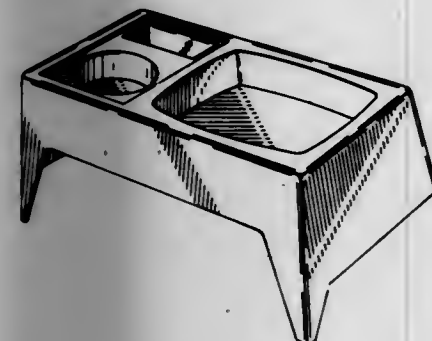
U.S. Cl. D3-36



257,914

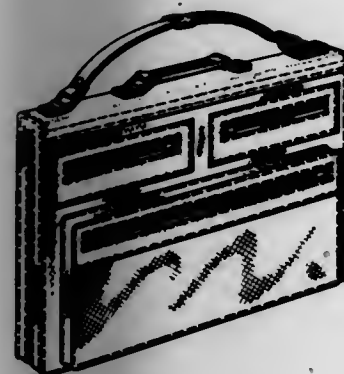
AUTO ACCESSORIES TRAY
Dwight N. Wooters, La Grange, Ga., assignor to Rubbermaid Specialty Products Inc., LaGrange, Ga.
Filed Apr. 9, 1979, Ser. No. 28,498
Term of patent 14 years
Int. Cl. D03-99; D07-99

U.S. Cl. D3-40

257,915
LUGGAGE

Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company
Filed Apr. 2, 1979, Ser. No. 29,807
Term of patent 14 years
Int. Cl. D3-01

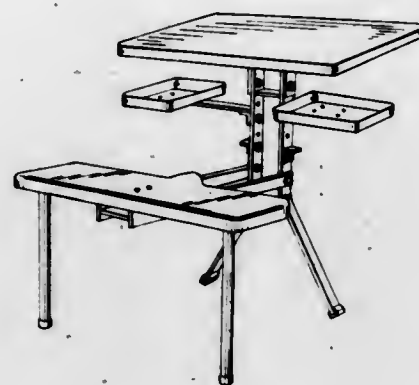
U.S. Cl. D3-71



257,916

COMBINED SEAT AND WORK BENCH FOR HOBBYISTS
Warren E. Shelton, 15733 Pearl Rd., Cleveland, Ohio 44136
Filed Aug. 30, 1978, Ser. No. 938,035
Term of patent 14 years
Int. Cl. D6-05

U.S. Cl. D6-17

257,917
CHAIR

Douglas C. Ball, Senneville, Canada, assignor to Hauserman Ltd.
Filed Dec. 23, 1977, Ser. No. 863,651
Term of patent 14 years
Int. Cl. D6-01

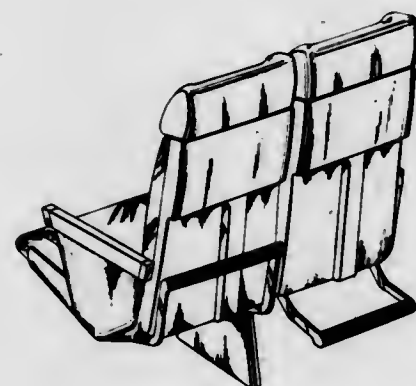
U.S. Cl. D6-31



257,918

RECLINING VEHICLE SEAT
William D. Roida, Green Mountain Falls, and Othar P. Kennedy, Colorado Springs, both of Colo., assignors to Aircraft Mechanics Inc., Colorado Springs, Colo.
Filed Sep. 18, 1978, Ser. No. 943,170
Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-48

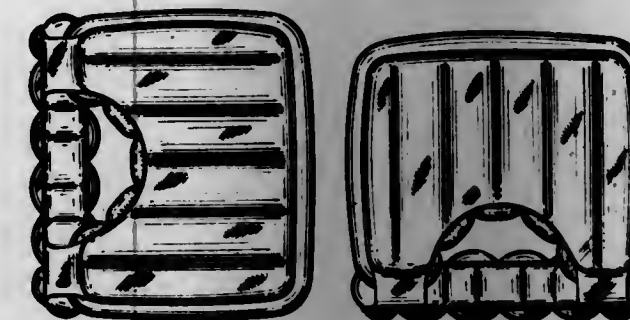


257,919

CHIROPRACTIC CAR SEAT, OR SIMILAR ARTICLE
Frederick H. Kroll, 72 Wood Hollow Ln., New Rochelle, N.Y. 10804

Filed Jan. 25, 1979, Ser. No. 6,297
Term of patent 14 years
Int. Cl. D6-01

U.S. Cl. D6-48

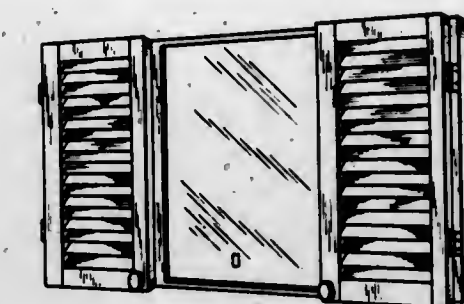


257,922

BATHROOM CABINET
Lars Andersson, Halmstad, Sweden, assignor to HAFABABRIKS AB, Halmstad, Sweden

Filed Nov. 29, 1978, Ser. No. 964,584
Term of patent 14 years
Int. Cl. D6-04

U.S. Cl. D6-104

257,920
SOFA

Pierre E. C. Roset, Serrières de Briord, France, assignor to Roset S.A. Geneva, Geneva, Switzerland
Filed Oct. 18, 1978, Ser. No. 952,564
Claims priority, application France, May 30, 1978, 78 66999
Term of patent 31 years
Int. Cl. D6-01

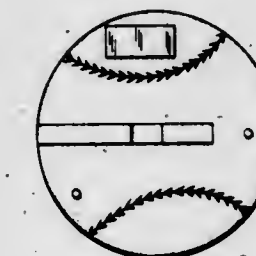
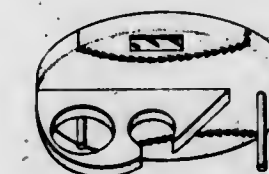
U.S. Cl. D6-63



257,923

WALL MOUNTED SUPPORT RACK FOR BASEBALL EQUIPMENT
Herman L. Wolfe, Sr., 811 Blount Dr., Savannah, Tenn. 38372
Filed Jul. 25, 1979, Ser. No. 60,341
Term of patent 14 years
Int. Cl. D6-04

U.S. Cl. D6-114



257,921

DINING ROOM CHAIR
Melbourne F. Smith, Jr., Hickory, N.C., assignor to Broyhill Furniture Industries, Inc., Lenoir, N.C.
Filed Oct. 12, 1978, Ser. No. 950,703
Term of patent 14 years
Int. Cl. D6-01

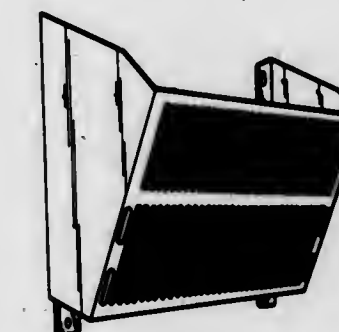
U.S. Cl. D6-68



257,924

VERTICALLY MOUNTED FILE HOLDER
Donald B. Rabig, Elizabeth, N.J., assignor to Borden, Inc., Columbus, Ohio
Filed Jan. 14, 1980, Ser. No. 111,813
Term of patent 14 years
Int. Cl. D6-04

U.S. Cl. D6-130



257,925

CIRCULAR GAME TABLE

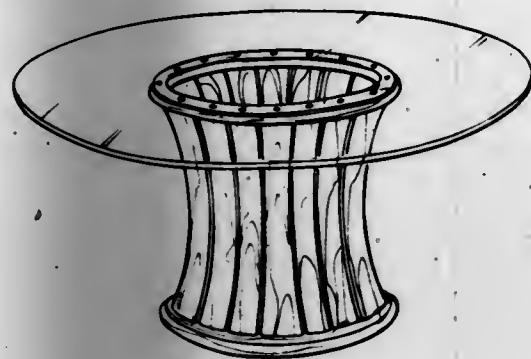
Jobie G. Redmond, P.O. Box 1133, High Point, N.C. 27260

Filed Nov. 8, 1978, Ser. No. 958,843

Term of patent 14 years

Int. Cl. D6-03

U.S. Cl. D6-146



257,926

COCKTAIL TABLE

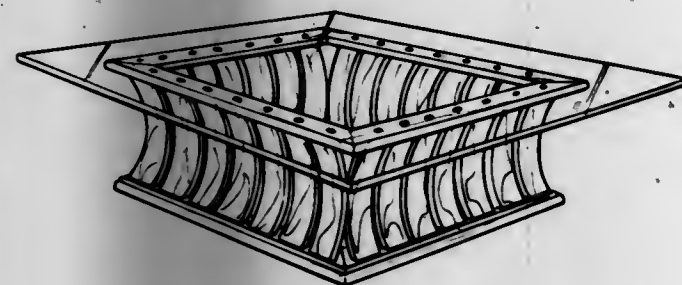
Jobie G. Redmond, P.O. Box 1133, High Point, N.C. 27260

Filed Nov. 8, 1978, Ser. No. 958,851

Term of patent 14 years

Int. Cl. D6-03

U.S. Cl. D6-175



257,927

MIRROR

Huey T. Keller, 332 1/2 Wrenn St., High Point, N.C. 27290

Filed Aug. 8, 1977, Ser. No. 822,614

Term of patent 14 years

Int. Cl. D6-07

U.S. Cl. D6-241



257,928

FLOWER POT HOLDER

Joe C. Lozano, 1302 W. Malone, San Antonio, Tex. 78225

Filed Mar. 27, 1979, Ser. No. 24,195

Term of patent 14 years

Int. Cl. D6-06; D6-08

U.S. Cl. D6-113



257,929

COFFEE TABLE

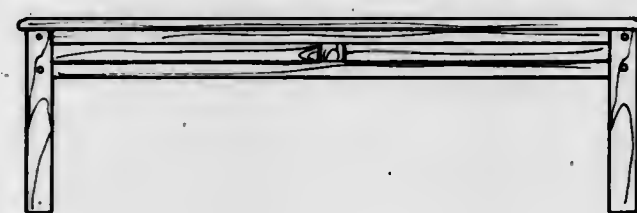
Jobie G. Redmond, P.O. Box 1133, High Point, N.C. 27260

Filed Nov. 8, 1978, Ser. No. 958,849

Term of patent 14 years

Int. Cl. D6-03

U.S. Cl. D6-177



257,930

CLOSED CONTAINER OR THE LIKE

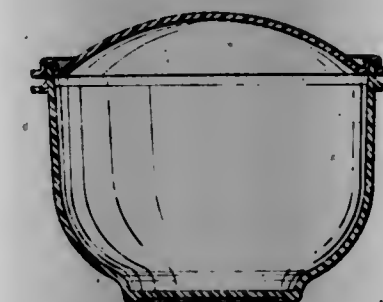
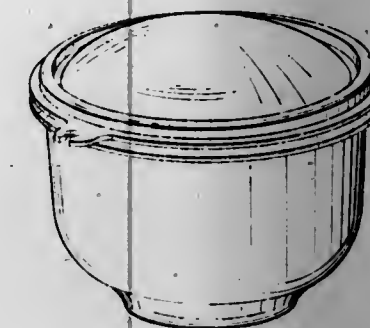
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 16, 1979, Ser. No. 66,903

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-17



257,931

CONTAINER OR THE LIKE

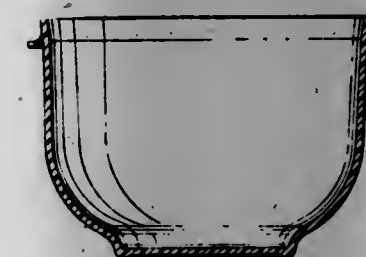
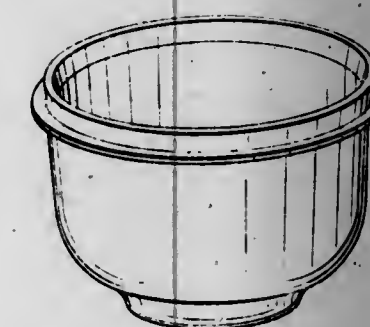
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 16, 1979, Ser. No. 66,904

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-23



257,932

MULTIPLE TACO HOLDER

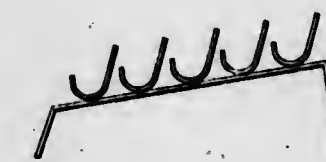
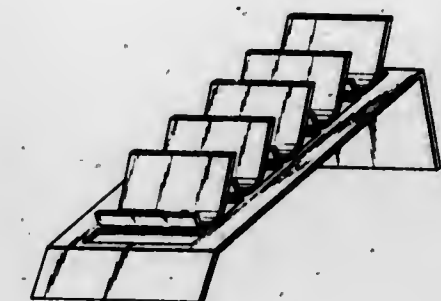
Arthur G. Putt, 5901 Cornell Blvd., North Ridgeville, Ohio 44039

Filed Feb. 14, 1979, Ser. No. 12,061

Term of patent 14 years

Int. Cl. D07-99

U.S. Cl. D7-38



257,933

CONTAINER CLOSURE OR THE LIKE

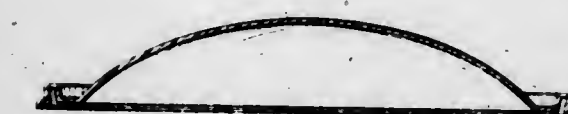
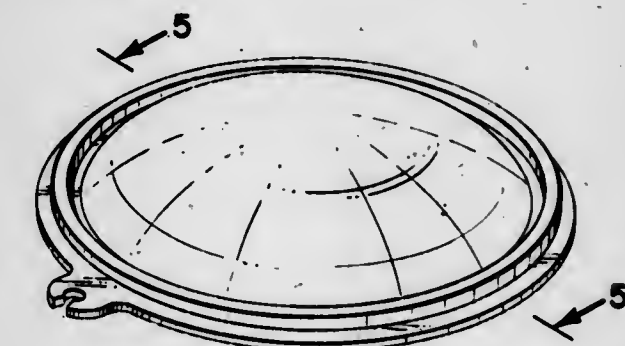
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 16, 1979, Ser. No. 66,906

Term of patent 14 years

Int. Cl. D07-01

U.S. Cl. D7-40



257,934
ICE CHEST

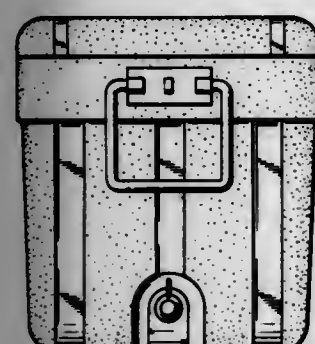
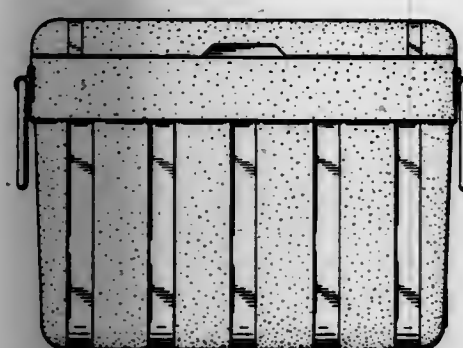
Kenton A. Bass, Oxford, Kans., assignor to Igloo Corporation, Jorma Vennola, Iittala, Finland, assignor to A. Ahlstrom Osakeyhtiö, Noormarkku, Finland

Filed Nov. 6, 1978, Ser. No. 957,977

Term of patent 14 years

Int. Cl. D07-07

U.S. Cl. D7-61



257,935
WINE DECANTING MACHINE

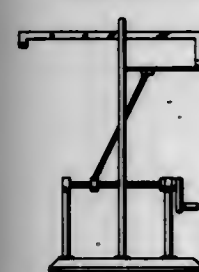
David J. Allan, Tealby near Market Rasen, England, assignor to Allwines Limited, London, England

Filed Aug. 25, 1978, Ser. No. 936,768

Claims priority, application United Kingdom, Mar. 8, 1978, 983,654

Term of patent 14 years
Int. Cl. D07-06

U.S. Cl. D7-70



257,936
ICE CUBE TONGS OR SIMILAR ARTICLE

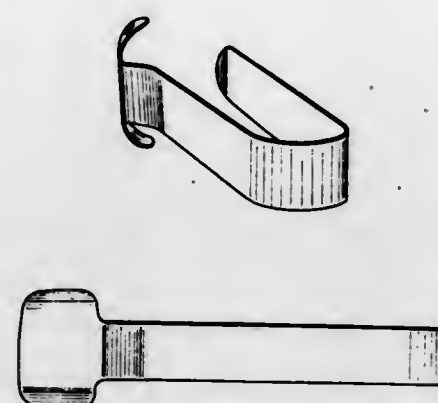
Jorma Vennola, Iittala, Finland, assignor to A. Ahlstrom Osakeyhtiö, Noormarkku, Finland

Filed Jan. 12, 1979, Ser. No. 2,941

Term of patent 14 years

Int. Cl. D07-06

U.S. Cl. D7-105



257,937
MICROWAVE OVEN

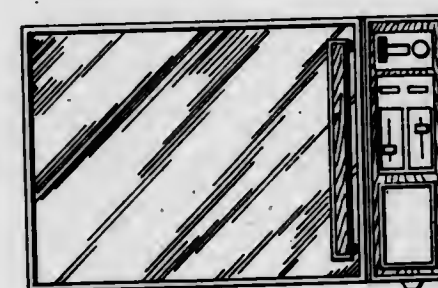
Donald G. Wolfe, 68 Flint Dr., Lake Barrington, Ill. 60010, and Joseph R. Mango, 14651 S. 49th Ct., Midlothian, Ill. 60445

Filed May 24, 1978, Ser. No. 909,210

Term of patent 14 years

Int. Cl. D7-02

U.S. Cl. D7-128



257,938
ROTATING TURNTABLE FOR USE IN A MICROWAVE OVEN

Allen N. Danley, Los Gatos, Calif., and Albert E. Colsto, Woodbury, Minn., assignors to Plastics, Inc.

Filed Feb. 23, 1979, Ser. No. 14,300

Term of patent 14 years

Int. Cl. D7-02

U.S. Cl. D7-128



257,939
COVER FOR A FOOD CONTAINER

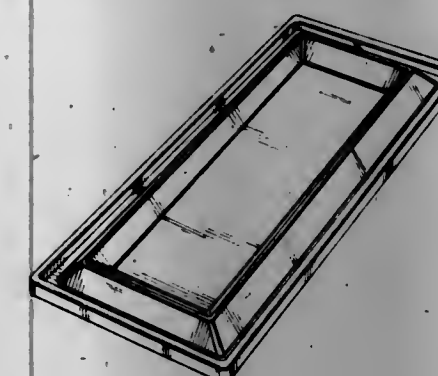
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Feb. 12, 1979, Ser. No. 11,244

Term of patent 14 years

Int. Cl. D07-01, 07

U.S. Cl. D7-131



257,940
SPRINKLER CLEANER

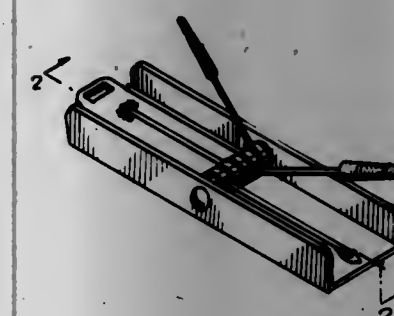
Harvey C. Holland, Box 35, Ord Ferry Stage, Chico, Calif. 95926

Filed Jul. 5, 1978, Ser. No. 922,106

Term of patent 14 years

Int. Cl. D7-05

U.S. Cl. D7-161



257,941
HAND-HELD VACUUM CLEANER APPLIANCE

Suen S. Tack, Hong Kong, Hong Kong, assignor to Bon Aire Industries, Inc.

Filed Oct. 27, 1978, Ser. No. 935,405

Term of patent 14 years

Int. Cl. D7-05

U.S. Cl. D7-164



257,942
FIREPLACE SCREEN

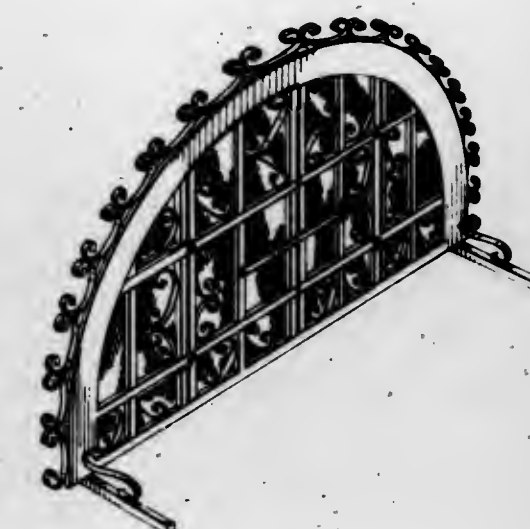
Seferino C. Hernandez, 170 E. Morales, Chandler, Ariz. 85224

Filed Nov. 16, 1978, Ser. No. 961,108

Term of patent 14 years

Int. Cl. D7-08

U.S. Cl. D7-208



257,943
FOLDING SAW

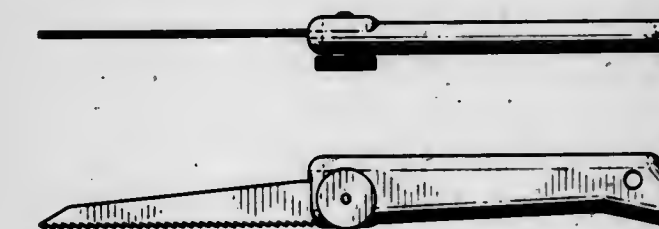
Robert L. Finlay, Emporia, Kans., assignor to BPE, Inc., Emporia, Kans.

Filed May 10, 1978, Ser. No. 904,626

Term of patent 14 years

Int. Cl. D08-03

U.S. Cl. D8-95



257,944
COMBINED DOOR STOP AND LATCHING DEVICE

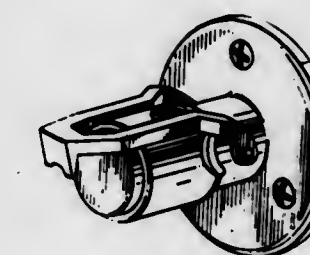
Mike Y. Morita, 17518 Kristin Ave., Torrance, Calif. 90504

Filed Jul. 27, 1978, Ser. No. 928,722

Term of patent 14 years

Int. Cl. D08-08, 09

U.S. Cl. D8-331

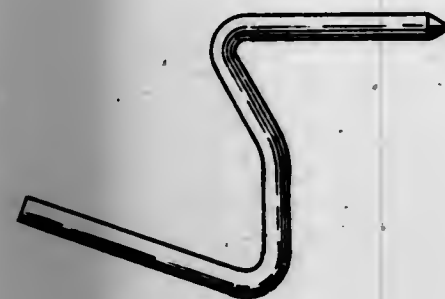


257,945

WALL HANGER

Kenneth F. Fischer, Roseland, N.J., assignor to Acme Metal Goods Manufacturing Company, Newark, N.J.
 Filed Mar. 15, 1979, Ser. No. 20,640
 Term of patent 14 years
 Int. Cl. D8-08

U.S. Cl. D8-370



257,946

WALL HANGER

Kenneth F. Fischer, Roseland, N.J., assignor to Acme Metal Goods Manufacturing Company, Newark, N.J.
 Filed Mar. 21, 1979, Ser. No. 22,504
 Term of patent 14 years
 Int. Cl. D8-08

U.S. Cl. D8-370

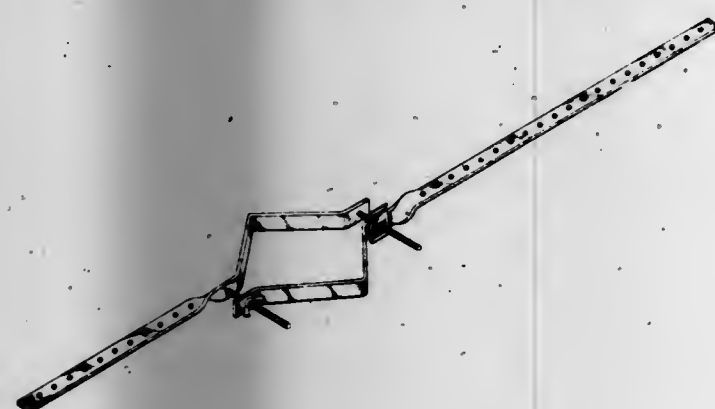


257,947

BRACKET FOR MOUNTING HEATER VENT PIPE BETWEEN JOISTS AND RAFTERS

Edward Reynoso, 3196 Northview Dr., Sacramento, Calif. 95833
 Filed Jun. 12, 1978, Ser. No. 914,810
 Term of patent 14 years
 Int. Cl. D8-08

U.S. Cl. D8-373

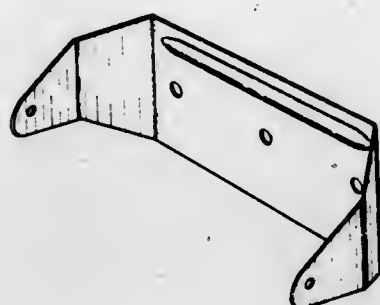


257,948

DOWNSPOUT BRACKET

James D. Klingensmith, Apollo, Pa., assignor to Aluminum Company of America
 Filed Feb. 15, 1979, Ser. No. 12,372
 Term of patent 14 years
 Int. Cl. D8-08; D6-04

U.S. Cl. D8-373

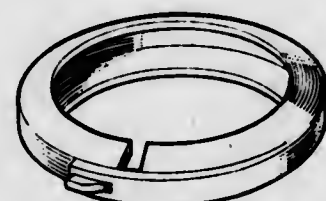


257,949

CONNECTOR RING

Torsten E. T. Ström, Ringvägen 9, S-513 00 Fristad, Sweden
 Filed Jul. 6, 1976, Ser. No. 702,961
 Claims priority, application Sweden, Jan. 21, 1976, 76103
 Term of patent 14 years
 Int. Cl. D8-99

U.S. Cl. D8-396

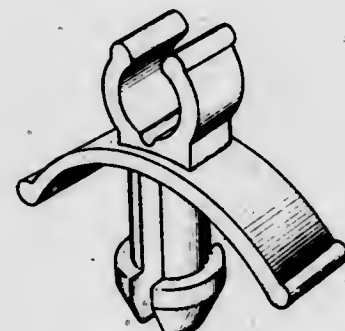


257,950

TUBING CLIP

Arch W. Van Meter, Jr., Barrington, Ill., and Roger W. Tetzlaff, Somerville, Ala., assignors to Ryder International Corporation, Arab, Ala.
 Filed Sep. 22, 1978, Ser. No. 944,871
 Term of patent 14 years
 Int. Cl. D8-08

U.S. Cl. D8-396



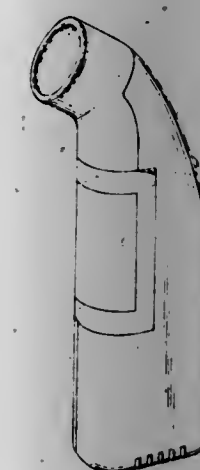
257,951

DISPENSING CONTAINER

Ernst Reichl, Munich, Fed. Rep. of Germany, assignor to Bosch Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany
 Filed Jan. 10, 1978, Ser. No. 868,471
 Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 4691

Term of patent 14 years
 Int. Cl. D9-01

U.S. Cl. D9-373



257,953

BOTTLE OR SIMILAR ARTICLE

Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.
 Filed Nov. 27, 1978, Ser. No. 963,849
 Term of patent 14 years
 Int. Cl. D9-01

U.S. Cl. D9-376

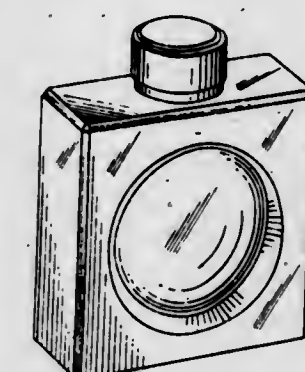


257,954

BOTTLE OR SIMILAR ARTICLE

Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
 Continuation-in-part of Ser. No. 662,299, Mar. 1, 1976, Pat. No. Des. 247,281. This application Feb. 14, 1977, Ser. No. 768,444
 Term of patent 14 years
 Int. Cl. D9-01

U.S. Cl. D9-406



257,952

BOTTLE

Albert H. Torongo, Jr., Yardley, Pa., assignor to The Procter & Gamble Company, Cincinnati, Ohio
 Filed Dec. 4, 1978, Ser. No. 965,954
 Term of patent 14 years
 Int. Cl. D9-01

U.S. Cl. D9-376

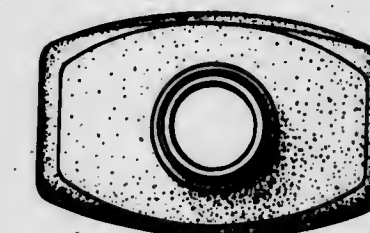


257,955

BOTTLE OR SIMILAR ARTICLE

Vincent M. Shortino, Independence, Mo., assignor to Ethyl Development Corporation, Baton Rouge, La.
 Filed Nov. 27, 1978, Ser. No. 963,848
 Term of patent 14 years
 Int. Cl. D9-01

U.S. Cl. D9-404



257,956
BOTTLE OR THE LIKE

Nobuyoshi Ito, Kyoto, Japan, assignor to Santory Limited, Edward W. Sexton, Jr., 990 Massachusetts Ave., Arlington, Mass. 02174

Filed Mar. 15, 1978, Ser. No. 886,928

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-384



257,958
CAN

Edward W. Sexton, Jr., 990 Massachusetts Ave., Arlington, Mass. 02174

Filed Apr. 17, 1978, Ser. No. 896,915

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-351



257,959
WALL THERMOSTAT

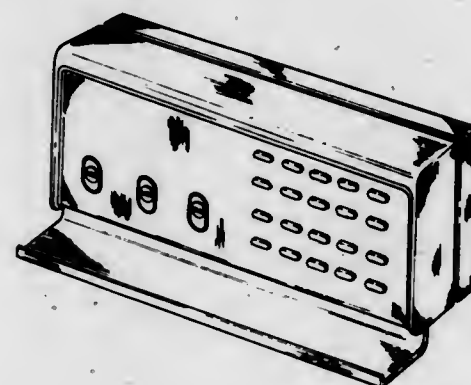
Arthur W. Chin; Robert M. Drobeck, both of Lubbock, Tex., and Orville W. Larson, Elmhurst, Ill., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 15, 1979, Ser. No. 3,562

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-50



257,957
COMBINED PACKING AND DISPLAY CARD

Donald A. Gilling, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Jan. 12, 1978, Ser. No. 868,824

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-313



257,960
TRANSMISSION SHIM SELECTOR

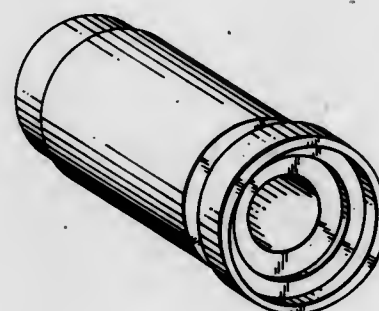
Joel S. Johnson, Troy, Mich., assignor to Kent-Moore Corporation, Warren, Mich.

Filed Jan. 4, 1979, Ser. No. 838

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-64



257,961
ELECTRONIC SURVEYING INSTRUMENT OR THE LIKE

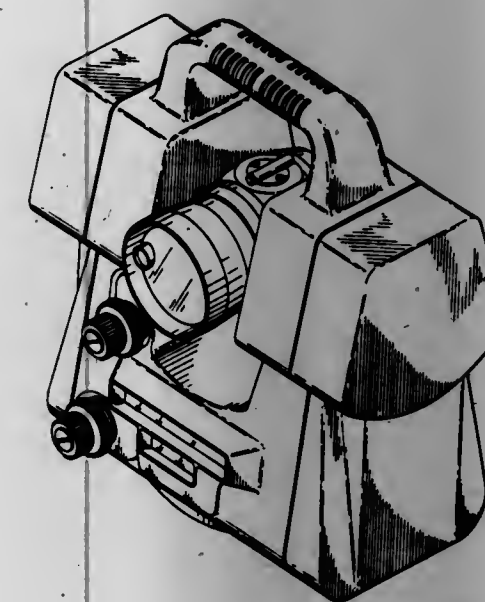
J. Peter E. Kool, Succasunna, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed May 14, 1979, Ser. No. 39,045

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-66



257,963
ELECTRONIC DIGITAL TIMEPIECE FACE

William Sticker, Hastings House #2A, Hastings on Hudson, N.Y. 10706

Filed Jan. 15, 1978, Ser. No. 915,703

Term of patent 14 years

Int. Cl. D10-07

U.S. Cl. D10-126



257,964
SLED

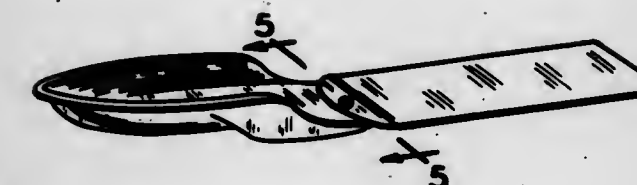
Raymond D. Bitz, Jr., 5515 W. Erie Rd., Ottawa Lake, Mich. 49267

Filed Mar. 8, 1979, Ser. No. 18,602

Term of patent 14 years

Int. Cl. D12-14

U.S. Cl. D12-11



257,962
REFLECTIVE HEIGHT MEASURING DEVICE

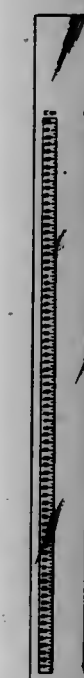
Myrna Youdelman, 7 Tennyson St.; Seymour Bain, and Roslyn Bain, both of 3 Shaw Ln., all of Hartdale, N.Y. 10530

Filed May 14, 1979, Ser. No. 38,900

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-71



257,965
CART

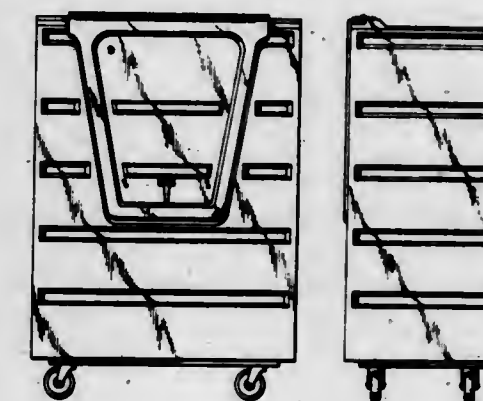
Stephen A. Bacskay, 247 Glenwild Ave., Bloomington, N.J. 07506

Filed Nov. 13, 1978, Ser. No. 960,123

Term of patent 14 years

Int. Cl. D12-02

U.S. Cl. D12-27



257,966

SLIDE-IN BED FOR PICK-UP TRUCKS AND SIMILAR VEHICLES

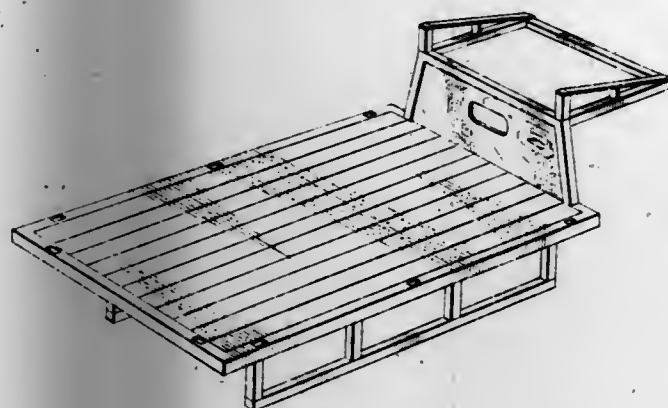
Richard E. Page, 25132 Mawson, Laguna Hills, Calif. 92653

Filed Sep. 18, 1978, Ser. No. 943,434

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-98



257,967

MOTORCYCLE RADIO HOUSING

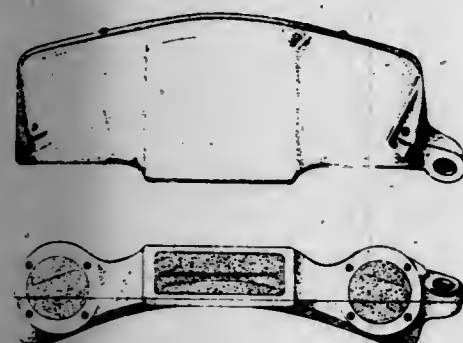
Fred O. Hoese, P.O. Box 41, Bulverde, Tex. 78216

Filed Apr. 26, 1979, Ser. No. 33,797

Term of patent 14 years

Int. Cl. D12-11; D14-03

U.S. Cl. D12-114



257,968

VEHICLE SIDE PANEL WITH STORAGE COMPARTMENTS

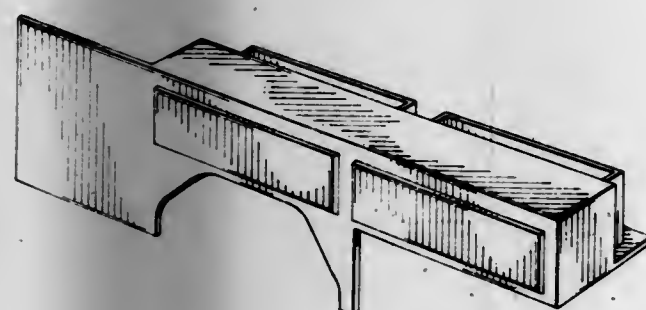
James D. Rice, 18 Tennessee La., Auburndale, Fla. 33823

Filed Nov. 13, 1978, Ser. No. 959,716

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-156



257,969

REAR AUTO MAT

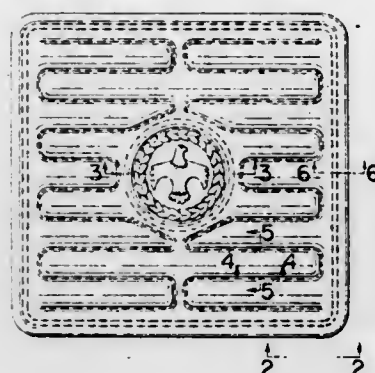
Dwight N. Wooters, La Grange, Ga., assignor to Rubbermaid Specialty Products Inc., LaGrange, Ga.

Filed Nov. 15, 1978, Ser. No. 961,028

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-203



257,970

VAN UNIT

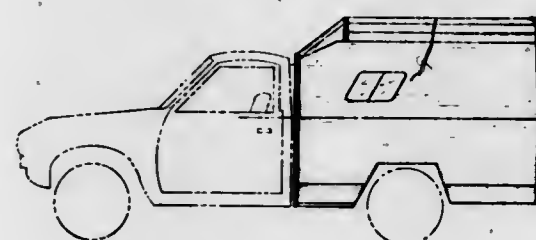
Dixon D. Handwerk, 5121 Ecoff Ave., Chester, Va. 23831

Filed Nov. 13, 1978, Ser. No. 960,133

Term of patent 14 years

Int. Cl. D12-08

U.S. Cl. D12-99



257,971

MOTORCYCLE RADIO HOUSING

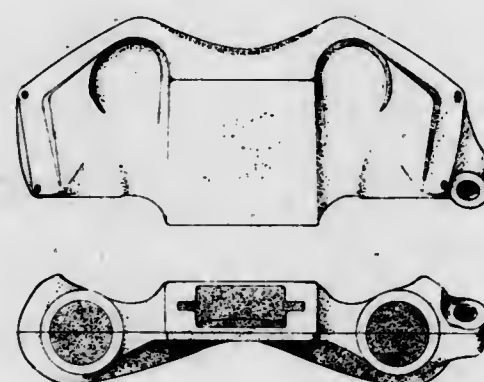
Fred O. Hoese, P.O. Box 41, Bulverde, Tex. 78216

Filed Apr. 26, 1979, Ser. No. 33,798

Term of patent 14 years

Int. Cl. D12-11; D14-03

U.S. Cl. D12-114



257,972

ZERO INSERTION FORCE CONNECTOR, OR THE LIKE

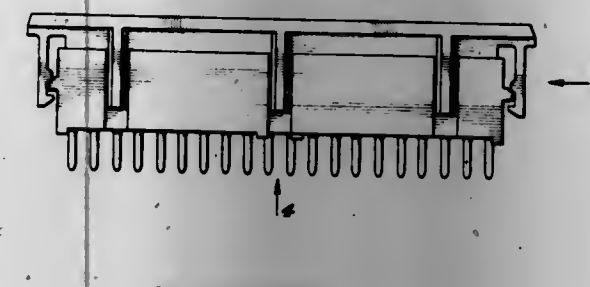
Eugene G. Freehauf, Ontario, and Gene C. Hollingsworth, Cerritos, both of Calif., assignors to Zero Corporation, El Monte, Calif.

Filed Jan. 5, 1978, Ser. No. 912,570

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-24



257,973

ELECTRONIC CONTROL MODULE FOR ELECTRIC BRAKE OF TOWED VEHICLE

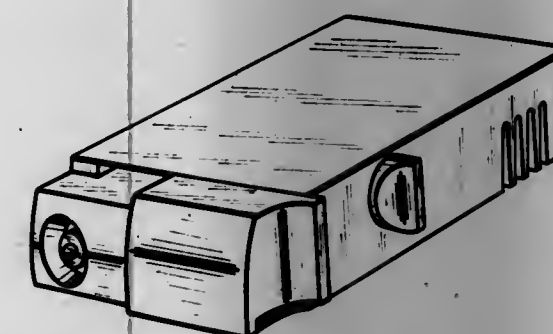
Donald J. Reid, Pleasant Ridge, Mich., assignor to Kelsey Hayes Co., Romulus, Mich.

Filed Apr. 6, 1978, Ser. No. 893,928

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-32



257,974

TAPE RECORDER AND PLAYER OR SIMILAR ARTICLE

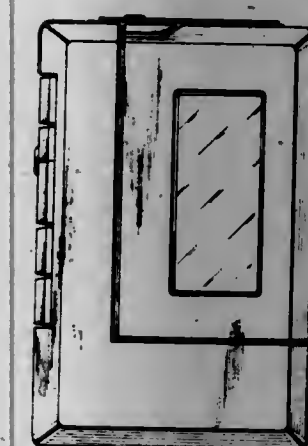
John T. Houlihan, Fayetteville, N.Y., assignor to General Electric Company

Filed Sep. 13, 1978, Ser. No. 942,140

Term of patent 14 years

Int. Cl. D14-01, 03

U.S. Cl. D14-6



257,975

MICRO CASSETTE TAPE RECORDER

Kunishige Miki, Katano, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

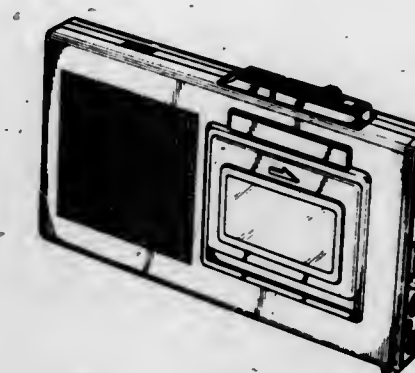
Filed Sep. 29, 1978, Ser. No. 947,228

Claims priority, application Japan, Apr. 28, 1978, 53-17880

Term of patent 14 years

Int. Cl. D14-01, 03

U.S. Cl. D14-6



257,976

COMPUTER

Helmut Schmidt, Mannheim, Fed. Rep. of Germany, assignor to Labor Mannheim GmbH für Labortechnik, Mannheim, Fed. Rep. of Germany

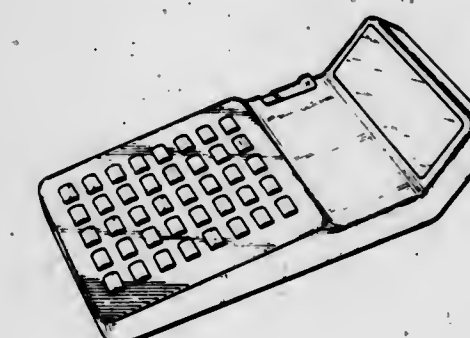
Filed Jul. 20, 1978, Ser. No. 926,587

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 1142

Term of patent 14 years

Int. Cl. D14-02; D18-01

U.S. Cl. D14-45



257,977

TELEPHONE INSTRUMENT

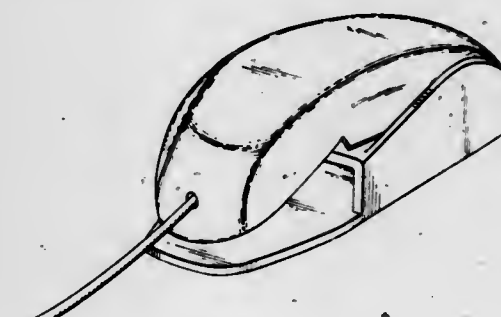
Knut H. Blomberg, Lokattsvägen 39, S-161 37 Bromma, Sweden

Filed Apr. 26, 1978, Ser. No. 900,336

Term of patent 7 years

Int. Cl. D14-03

U.S. Cl. D14-53



257,978

TELEPHONE SET BASE ENCLOSURE

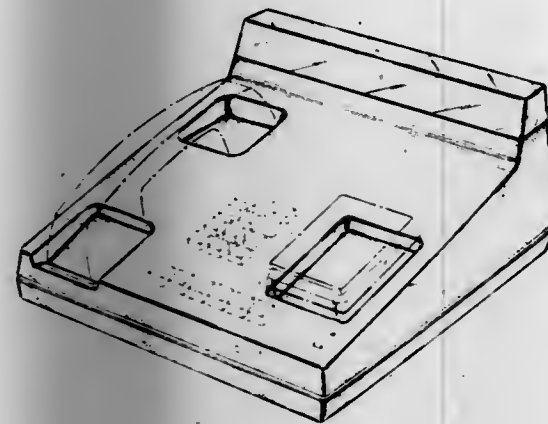
Edward W. Festa, Holmdel; Donald M. Genaro, Haworth; Dilipkumar B. Patel, Easton, all of N.J., and Gordon E. Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1978, Ser. No. 929,551

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D14—60



257,979

CROP SPRAYING TRAILER

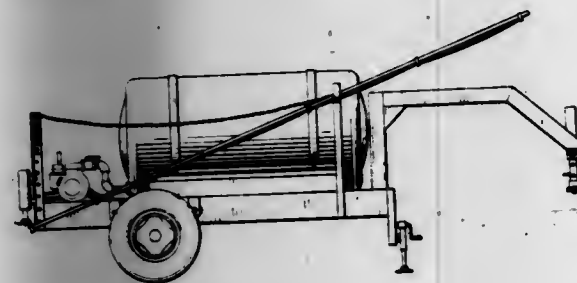
Otho A. Clark, and Ralph V. Pearson, both of Rte. 1, Independence, Mo. 64050

Filed Jul. 17, 1978, Ser. No. 925,607

Term of patent 14 years

Int. Cl. D15—03

U.S. Cl. D15—13



257,980

DRINKING FOUNTAIN

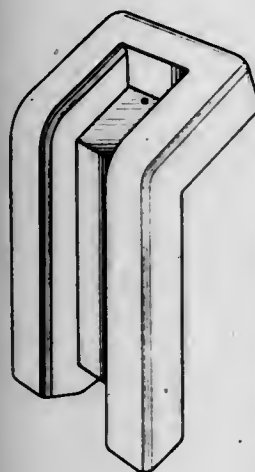
Peter Sörensen, Rottnäsvägen 43, 14142 Huddinge, Sweden

Filed Apr. 7, 1978, Ser. No. 894,645

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D15—118



257,981

CONVEYOR CHAIN IDLER UNIT

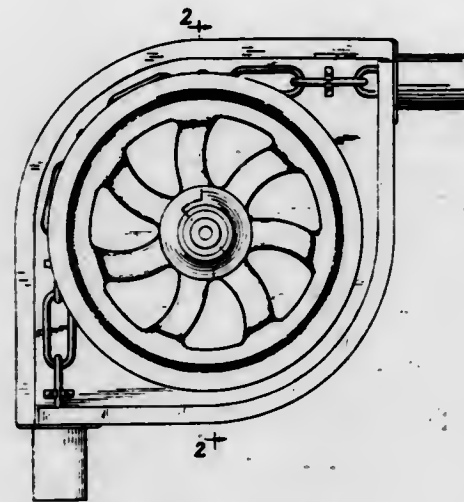
Gerald L. Kitson, 9709 Belding Rd. NE., Rockford, Mich. 49341

Division of Ser. No. 507,610, Sep. 20, 1974, which is a continuation-in-part of Ser. No. 271,819, Jul. 14, 1972, abandoned. This application Apr. 4, 1977, Ser. No. 784,231

Term of patent 14 years

Int. Cl. D15—99

U.S. Cl. D15—199



257,982

CAMERA

Yoshihisa Maitani, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

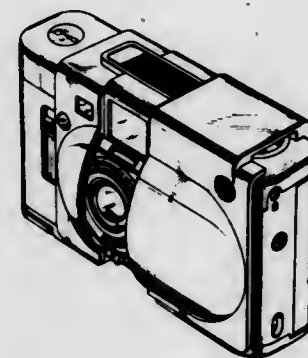
Filed Nov. 24, 1978, Ser. No. 963,333

Claims priority, application Japan, Jun. 14, 1978, 53-24375

Term of patent 14 years

Int. Cl. D16—01

U.S. Cl. D16—05



257,983

CAMERA WITH STROBO UNIT

Yoshihisa Maitani, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

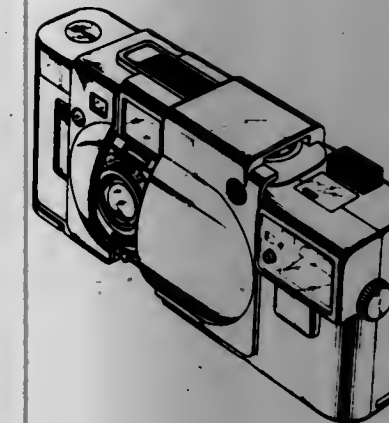
Filed Nov. 24, 1978, Ser. No. 963,334

Claims priority, application Japan, Jun. 14, 1978, 53-24373

Term of patent 14 years

Int. Cl. D16—01

U.S. Cl. D16—06



257,985

PAIR OF SPECTACLES

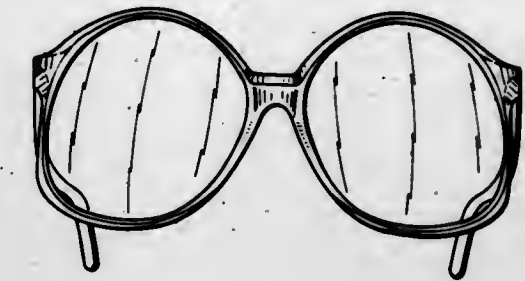
Richard W. Canavan, III, South Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jun. 19, 1978, Ser. No. 916,698

Term of patent 14 years

Int. Cl. D16—06

U.S. Cl. D16—65



257,986

MULTILAMP FLASHLAMP ARTICLE HAVING COMBUSTIBLE MEMBER THEREIN

Paul M. Marecek, Montoursville, and John W. Shaffer, Williamsport, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 831,068, Sep. 6, 1977, Pat. No. Des. 253,431. This application May 14, 1979, Ser. No. 39,068

Term of patent 14 years

Int. Cl. D16—05

U.S. Cl. D16—42



257,984

ELECTROPHOTOGRAPHICAL DUPLICATOR

Shigeru Kurozumi, and Isao Kitai, both of Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan

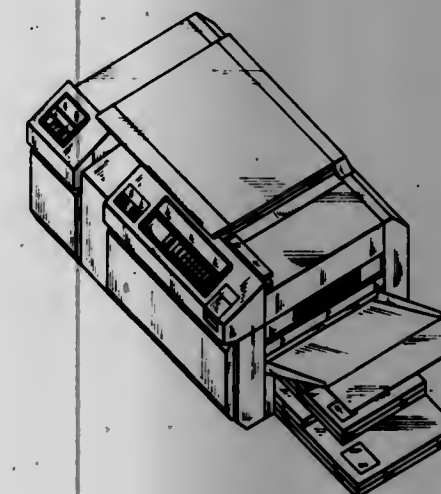
Filed Apr. 26, 1978, Ser. No. 900,281

Claims priority, application Japan, Oct. 27, 1977, 52-43187

Term of patent 14 years

Int. Cl. D16—03

U.S. Cl. D16—31



257,987

KEYBOARD STAND

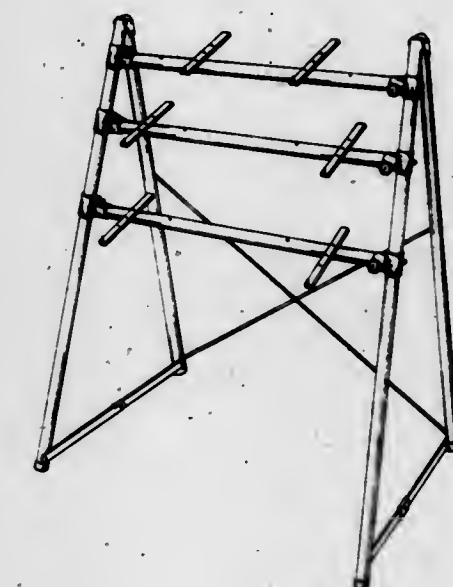
Darrell A. Schoenig, 432 Clover La., Ft. Collins, Colo. 80521

Filed Jun. 8, 1979, Ser. No. 46,703

Term of patent 14 years

Int. Cl. D17—01, 99 E; D6—04

U.S. Cl. D17—09

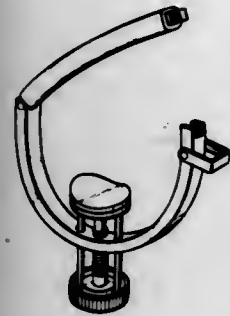


257,988

CAPODASTRO FOR A GUITAR

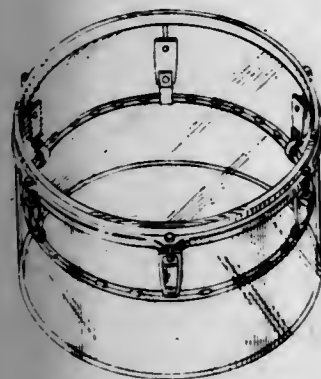
Terumi Nakamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
 Filed Jul. 5, 1978, Ser. No. 921,990
 Claims priority, application Japan, Jan. 25, 1978, 53-2071
 Term of patent 14 years
 Int. Cl. D17-03

U.S. Cl. D17-20

257,989
DRUM

William F. Ludwig, Oak Brook, Ill., assignor to Ludwig Industries, Chicago, Ill.
 Filed Jul. 16, 1976, Ser. No. 705,904
 Term of patent 14 years
 Int. Cl. D17-04

U.S. Cl. D17-22

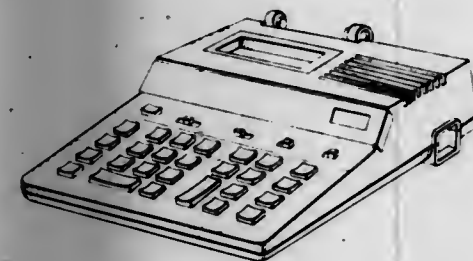


257,990

COMBINED DESK TOP ELECTRONIC CALCULATOR AND CLOCK

Takashi Hirata, Kawasaki, and Kunio Hirose, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
 Filed Dec. 26, 1978, Ser. No. 973,109
 Claims priority, application Japan, Jul. 3, 1978, 53-27955
 Term of patent 14 years
 Int. Cl. D18-01

U.S. Cl. D18-7



257,991

COMBINED DESK PEN SET AND PLAQUE

Carl G. Bestler, Owatonna, Minn., and William B. Campbell, deceased, Saint Paul, Minn. (by Doris B. Campbell, executrix), assignors to Princeton Industries Corporation, Princeton, Ind.

Filed Apr. 18, 1977, Ser. No. 788,654
 Term of patent 14 years
 Int. Cl. D19-06

U.S. Cl. D19-75

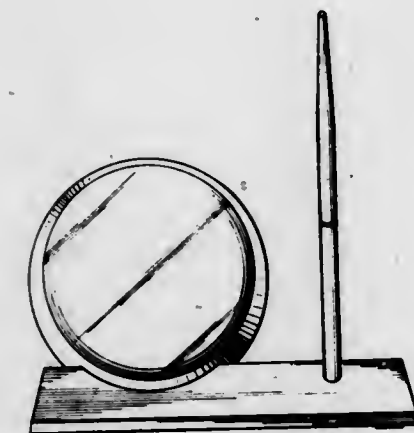


257,992

COMBINED DESK PEN SET AND PLAQUE

Jerome A. Grunstad, West Saint Paul, Minn., assignor to Princeton Industries Corporation, Princeton, Ind.
 Filed Jan. 17, 1978, Ser. No. 870,266
 Term of patent 14 years
 Int. Cl. D19-06

U.S. Cl. D19-75

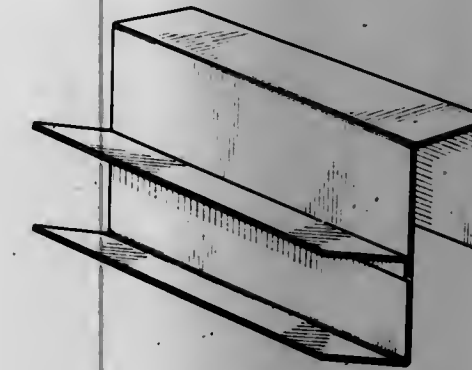


257,993

WALL OR PARTITION HUNG IN/OUT TRAY

Donald A. DeMars, Canoga Park, Calif., assignor to LeRoy M. Lefkowitz, Van Nuys, Calif., a part interest
 Filed Nov. 30, 1978, Ser. No. 965,442
 Term of patent 14 years
 Int. Cl. D20-03

U.S. Cl. D20-42



257,994

TOY DRAWING DESK

Frederick H. Kroll, 72 Wood Hollow La., New Rochelle, N.Y. 10804
 Filed Jun. 1, 1978, Ser. No. 911,373
 Term of patent 3 1/2 years
 Int. Cl. D21-01

U.S. Cl. D21-59

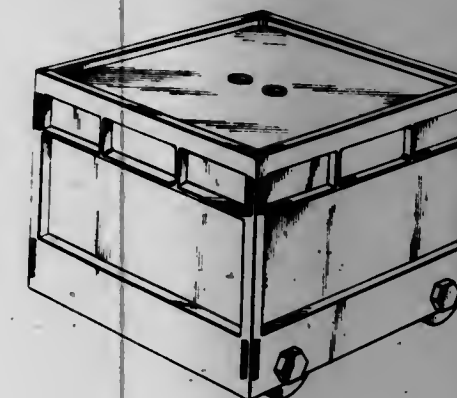


257,995

PLAY AND STORAGE BOX

Henrik Mikkelsen, Copenhagen, and Bjarne B. Andersen, Holte, both of Denmark, assignors to Inter-Ikea A/S, Humlebaek, Denmark
 Filed Nov. 29, 1978, Ser. No. 964,687
 Claims priority, application Denmark, May 29, 1978, 436/78
 Term of patent 14 years
 Int. Cl. D21-01

U.S. Cl. D21-71

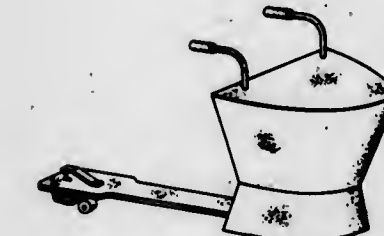


257,996

COASTER

Raymond Frago, 1967 Courtland Ave., Oakland, Calif. 94601
 Filed Mar. 6, 1978, Ser. No. 884,021
 Term of patent 14 years
 Int. Cl. D21-01

U.S. Cl. D21-81

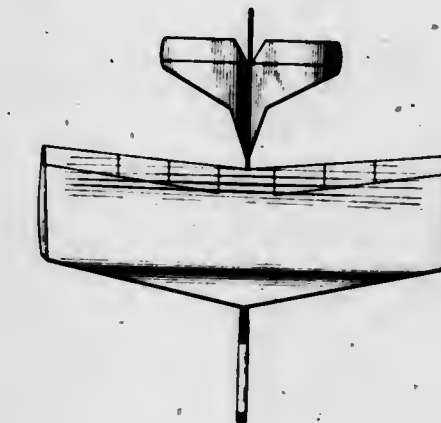


257,997

TOY AIRPLANE

William G. Hoeft, 1774 Aiello Ct., Concord, Calif. 94519
 Filed Jan. 31, 1979, Ser. No. 7,991
 Term of patent 14 years
 Int. Cl. D21-01

U.S. Cl. D21-89



257,998

STUFFED TOY ANIMAL

Dollene G. Freeland, 15612 Gridley Rd., Norwalk, Calif. 90650
 Filed Mar. 22, 1979, Ser. No. 22,793
 Term of patent 14 years
 Int. Cl. D21-01

U.S. Cl. D21-148



257,999
DOLL

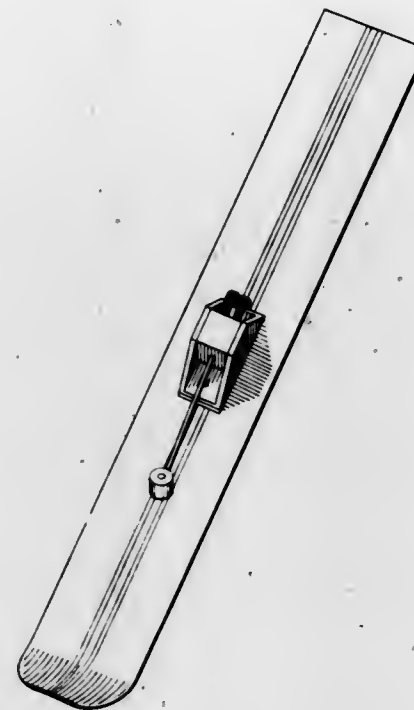
Patricia I. Holstine, 16 N. Main, Conrad, Mont. 59425
Filed Jan. 3, 1979, Ser. No. 686
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D21—166



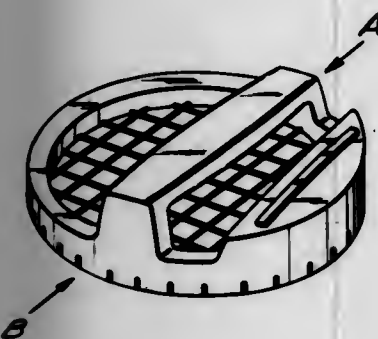
258,001
MODEL AIRCRAFT SKI
David K. Litt, 11824 Chicago Plz., #3, Omaha, Nebr. 68124, and
Donald L. Kaar, 12230 N St., Omaha, Nebr. 68137
Filed Sep. 25, 1978, Ser. No. 945,352
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D21—229

258,000
HAND RACQUET

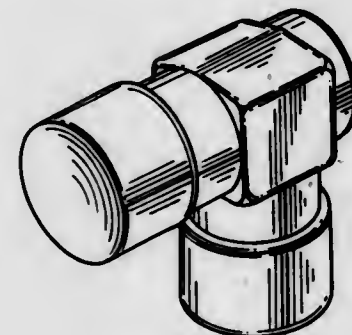
James E. Greenwood, 6110 W. Blackburn Ave., Los Angeles,
Calif. 90036
Filed Mar. 29, 1979, Ser. No. 24,904
Term of patent 14 years
Int. Cl. D21—02

U.S. Cl. D21—212



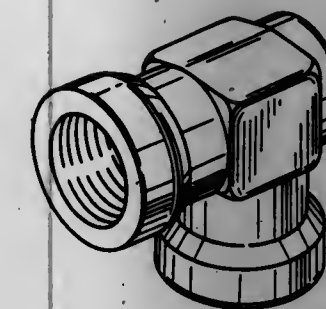
258,002
BLANK FOR AN ELBOW FITTING
Bernard J. Gallagher, Mayfield; Erling G. Wennerstrom; Mark
R. Houdek, both of Cleveland, and László Aliczky, Solon, all
of Ohio, assignors to Cajon Company, Macedonia, Ohio
Filed Mar. 26, 1979, Ser. No. 23,659
Term of patent 14 years
Int. Cl. D23—01

U.S. Cl. D23—43

258,003
ELBOW FITTING

Bernard J. Gallagher, Mayfield; Erling G. Wennerstrom; Mark
R. Houdek, both of Cleveland, and László Aliczky, Solon, all
of Ohio, assignors to Cajon Company, Macedonia, Ohio
Filed Mar. 26, 1979, Ser. No. 23,660
Term of patent 14 years
Int. Cl. D23—01

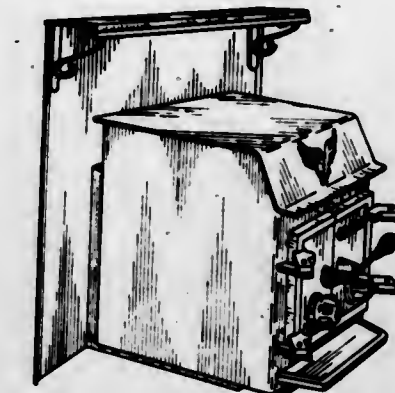
U.S. Cl. D23—43

258,005
WOOD BURNING STOVE

Edmund P. Ballard, Sr., R.D. 2, Box 191, Canastota, N.Y.
13032, and Gary A. Togni, 402 Palmer Dr., N. Syracuse, N.Y.
13212

Filed Jul. 2, 1979, Ser. No. 54,260
Term of patent 14 years
Int. Cl. D23—03

U.S. Cl. D23—97



258,006
FIREPLACE GRATE AND ASHPIT STRUCTURE
Kenneth H. Hansmeyer, 1011 W. Tecumseh Rd., Norman, Okla.
73069

Filed Aug. 28, 1978, Ser. No. 937,500
Term of patent 14 years
Int. Cl. D23—03

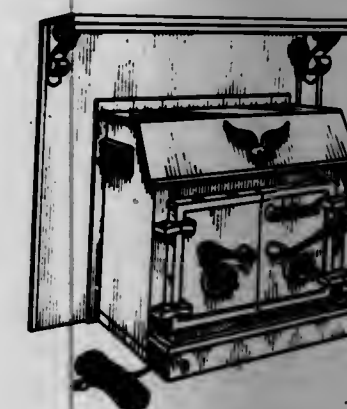
U.S. Cl. D23—131



258,004
WOOD BURNING STOVE
Edmund P. Ballard, Sr., R.D. 2, Box 191, Canastota, N.Y.
13032, and Gary A. Togni, 402 Palmer Dr., N. Syracuse, N.Y.
13212

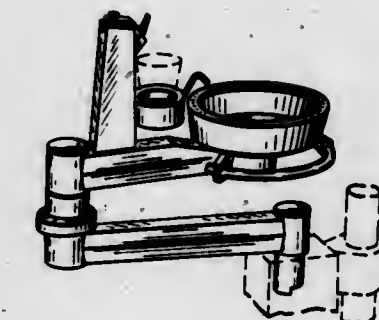
Filed Jul. 2, 1979, Ser. No. 54,259
Term of patent 14 years
Int. Cl. D23—03

U.S. Cl. D23—97



258,007
DENTAL CUSPIDOR
Theodore E. Schmidt, Carlton, Oreg., assignor to A-Dec, Inc.,
Newberg, Oreg.
Filed Feb. 15, 1978, Ser. No. 877,907
Term of patent 14 years
Int. Cl. D24—01

U.S. Cl. D24—5



258,008

RESTAURANT BUILDING

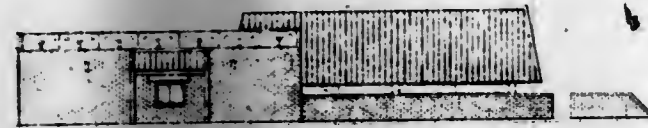
J. Patrick Ross, Columbus, Ohio, assignor to Rax Systems, Inc., Columbus, Ohio

Filed May 22, 1979, Ser. No. 41,311

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—8



258,009

LIGHT FIXTURE

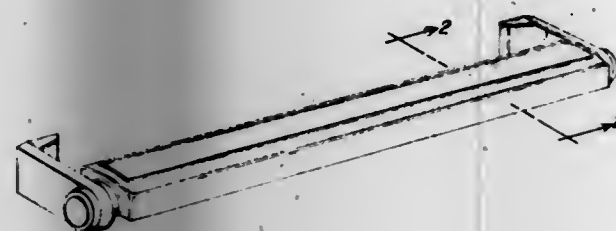
Joseph P. Wotowicz, Cuyahoga Falls, Ohio, and Thurman Bowls, New Smyrna Beach, Fla., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,860

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D26—75



258,010

COMBINED LAMP HOUSING AND BASE THEREFOR

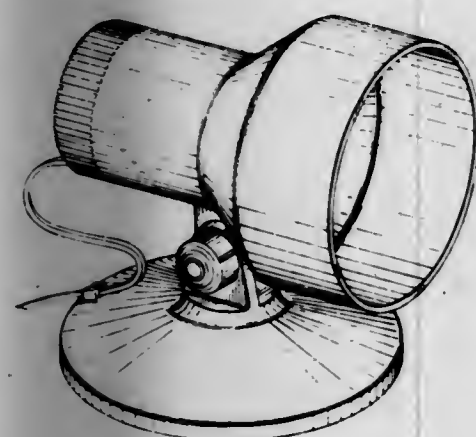
Thurman Bowls, Louisville; Donald G. Falk, Taylorsville, and Jon M. Newgard, Louisville, all of Ky., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 22, 1978, Ser. No. 917,812

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D26—63



258,011

MAGNETIC HOLDER FOR ELECTRIC TORCH

Chung-Chee Wong, San Po Kong, Hong Kong, and David R. Dalton, Sydney, Australia, assignors to Sonca Industries Limited, San Po Kong, Hong Kong and Union Carbide Australia Limited, Sydney, Australia

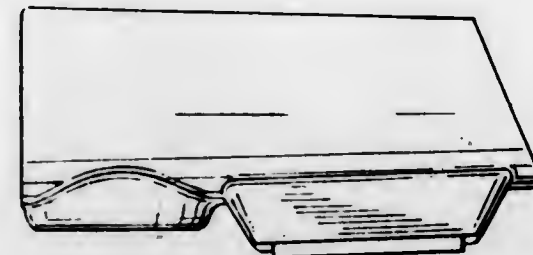
Filed Jul. 7, 1978, Ser. No. 923,258

Claims priority, application United Kingdom, Jan. 9, 1978, 982892/78

Term of patent 14 years

Int. Cl. D26—99

U.S. Cl. D26—138



258,012

WATER PIPE

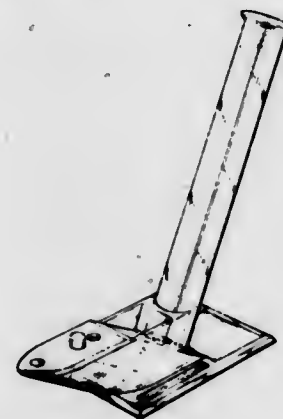
Mark E. Murphy, 476 #B Sturtevant Dr., Sierra Madre, Calif. 91024

Filed Dec. 18, 1978, Ser. No. 970,219

Term of patent 14 years

Int. Cl. D27—02

U.S. Cl. D27—03



258,013

WATER PIPE

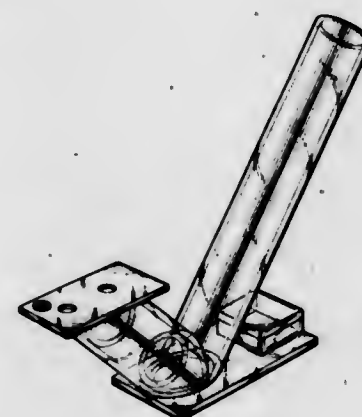
Mark E. Murphy, 476 #B Sturtevant Dr., Sierra Madre, Calif. 91024

Filed Dec. 18, 1978, Ser. No. 970,220

Term of patent 14 years

Int. Cl. D27—02

U.S. Cl. D27—03



258,014

HAIR DRYER

Shun F. Lam, Hong Kong, Hong Kong, assignor to Chi Lik Metal & Plastic Manufacturing Co. Ltd.

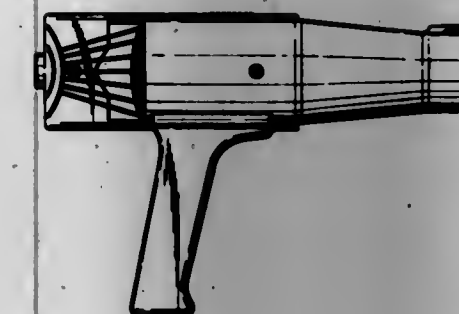
Filed Dec. 5, 1978, Ser. No. 966,728

Claims priority, application United Kingdom, Jan. 15, 1978, 985045/78

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D28—13



258,016

SLANTED SAFETY RAZOR

Thomas Pace, 2426 Beechwood Ave., San Jose, Calif. 95128

Filed Oct. 25, 1978, Ser. No. 954,355

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D28—46



258,015

HAIR CURLER

Shun F. Lam, Hong Kong, Hong Kong, assignor to Chi Lik Metal & Plastic Manufacturing Co. Ltd.

Filed Dec. 5, 1978, Ser. No. 966,828

Claims priority, application United Kingdom, Jan. 15, 1978, 985044/78

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D28—35

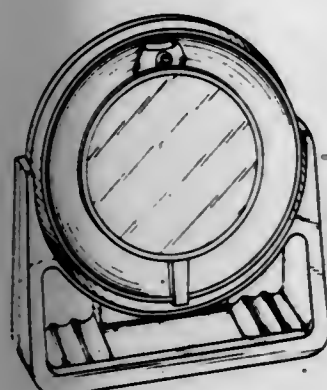


258,017
LIGHTED MAKEUP MIRROR

Norman A. Steinkamp, La Grange Park, and Bernard Bluestein, Des Plaines, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 8, 1979, Ser. No. 1,554
Term of patent 14 years
Int. Cl. D28-03

U.S. Cl. D28-67

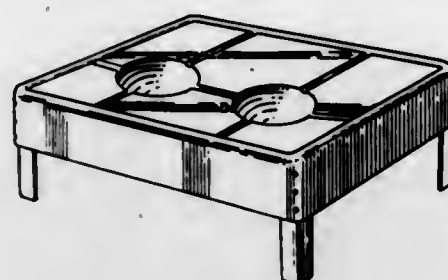


258,018
HEIGHT ADJUSTABLE PLATFORM FOR FEEDING PETS

Michael J. Venditto, and Dolores R. Venditto, both of 64 Francis St., Revere, Mass. 02151

Filed Mar. 8, 1979, Ser. No. 18,839
Term of patent 14 years
Int. Cl. D30-03

U.S. Cl. D30-16

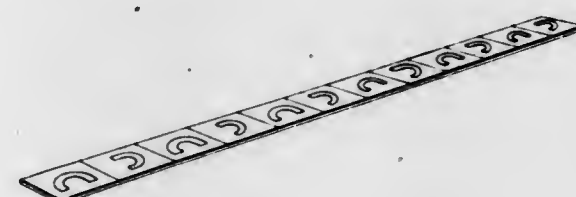


258,019
DECORATIVE STRIP

Wilmatchka Baronet, Rte. 1, P.O. Box 494, Arroyo Grande, Calif. 93420

Filed Feb. 21, 1978, Ser. No. 880,025
Term of patent 14 years
Int. Cl. D5-04

U.S. Cl. D92-1 AF



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF JANUARY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- "A" Company, Inc.: See—
Andrews, Lawrence F., 4,245,986, Cl. 433-5.000.
Aagaard, Paul M.: See—
Pearce, James C.; Aagaard, Paul M.; and Strickland, Gordon E., 4,245,929, Cl. 405-211.000.
AB Akerlund & Rausing: See—
Jeppson, Jan-Bertil, 4,246,461, Cl. 219-10.530.
AB Nordstroms Linbanor: See—
Sandwall, Nils K. A., 4,245,942, Cl. 414-144.000.
Abar Corporation: See—
Gunther, Rush B.; and Jindal, Prem C., 4,246,434, Cl. 13-20.000.
Metalsky, William J., 4,245,943, Cl. 414-152.000.
Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, to Nissan Motor Company, Limited. Internal combustion engine for motor vehicles. 4,245,595, Cl. 123-195.00C.
Abe, Shozo: See—
Suzuki, Kiyonori; Eto, Takeaki; Otsuka, Takeyasu; Abe, Shozo; and Yoshikawa, Sadao, 4,246,182, Cl. 260-405.000.
Abe, Yoichi: See—
Matsumoto, Hajime; and Abe, Yoichi, 4,245,486, Cl. 63-23.000.
Abex Corporation: See—
Frank, Earl E., 4,245,719, Cl. 184-3.00A.
Abraham, Fayez F., to Tyler Refrigeration Corporation. Glass door merchandiser. 4,245,482, Cl. 62-256.000.
Abrahams, Louis: See—
Hutchins, Burleigh M.; and Abrahams, Louis, 4,245,963, Cl. 417-265.000.
Abrahamsen, Johan E.; and Spector, George. Oscillating lawn spray with variable width and length. 4,245,786, Cl. 239-242.000.
Abrams, Jack Z.; and Sherwin, Robert M., to Bechtel International Corporation. SO₂ Removal. 4,246,245, Cl. 423-242.000.
Acco Industries, Inc.: See—
Knudsen, Kenneth F., 4,245,562, Cl. 104-172.00S.
Accornero, Louis, to Aurora Products Canada Limited. Toy vehicle with noisemaker. 4,245,427, Cl. 46-111.000.
Ackeret, Peter, to Licinvest AG. Picture viewer. 4,245,417, Cl. 40-513.000.
Acme Resin Corporation: See—
Laiter, Robert A., 4,246,157, Cl. 260-30.60R.
Acushnet Company: See—
Hottel, H. Clarke, Jr.; and Berard, Raymond A., 4,246,217, Cl. 264-105.000.
Adams, Peter B.: See—
Ayers, William A.; and Adams, Peter B., 4,246,258, Cl. 424-93.000.
Adolph Coors Company: See—
McCullough, Davey L.; and Rouse, R. Wayne, 4,245,946, Cl. 414-412.000.
Agar, Robert S., to Robert S. Agar, Inc.; Thorall Holdings Ltd.; and Mudlake Holdings Ltd. Modified suspension assembly for partition panel. 4,245,448, Cl. 52-489.000.
Agence Nationale de Valorisation de la Recherche (ANVAR): See—
Wakselman, Claude; and Tordeux, Marc, 4,246,200, Cl. 564-248.000.
Agency of Industrial Science & Technology, Ministry of International Trade & Industry: See—
Nakamura, Sen-ichi, 4,246,246, Cl. 423-263.000.
AGFA-Gevaert, A.G.: See—
Laar, Erwin; Ganser, Friedrich; and Hammer, Thomas, 4,245,397, Cl. 34-34.000.
Thiele, Hartmut, 4,245,740, Cl. 206-387.000.
AGFA-GEVAERT N.V.: See—
Palmans, Willy J.; and Waterschoot, William C., 4,245,586, Cl. 118-647.000.
Agnew, Robert A., Sr., to Agnew & Sons Company. Attachment for dispensing nozzle. 4,245,682, Cl. 141-392.000.
Agnew & Sons Company: See—
Agnew, Robert A., Sr., 4,245,682, Cl. 141-392.000.
Aimants Ugimag S.A.: See—
Bronner, Claude; and Jullien, Daniel, 4,246,049, Cl. 148-103.000.
Air Drive, Inc.: See—
Matthews, David G., 4,245,960, Cl. 416-244.00R.
Air Industrie: See—
Garcin, Felix, 4,245,784, Cl. 239-3.000.
Air Products and Chemicals, Inc.: See—
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,245,744, Cl. 206-812.000.
Aisin Seiki Kabushiki Kaisha: See—
Kondo, Hiroyuki; and Takeshita, Hiroshi, 4,245,867, Cl. 303-6.00C.
Akerstrom, Bengt, to Hugin Kassaregiater AB. Device for feeding and stacking forms in a box. 4,245,833, Cl. 271-198.000.
Akiyama, Tohiyuki: See—
Sato, Kazuhiro; Nagahara, Shusaku; Umemoto, Masuo; Akiyama, Tohiyuki; Izumita, Morishi; Takahashi, Kenji; and Mita, Seichi, 4,246,601, Cl. 358-47.000.
Aktiebolaget ASEA-ATOM: See—
Lindner, Johann; and Nylund, Olov, 4,246,068, Cl. 176-61.000.
Aktiebolaget Fermenta: See—
Larson, Per-Olof; Moebach, Klaus H.; and Ohlson, Sten A., 4,246,346, Cl. 435-37.000.
Aktieselskabet Laur. Knudsen Nordisk Electricitets: See—
Noerholm, Olav, 4,246,563, Cl. 337-296.000.
Akzo N.V.: See—
Dohy, Gilles; Kersten, Hilde; Meyer, Gerhard; Toth, Anton; and Vollmer, Jean P., 4,246,151, Cl. 260-29.27N.
Akzona Incorporated: See—
McCorsley, Clarence C., III, 4,246,221, Cl. 264-203.000.
Alafandi, Hamid; and Stamires, Dennis, to Filtrol Corporation. Crystalline alumino silicate-silica-alumina gel catalysts and processes for producing same. 4,246,138, Cl. 252-438.000.
Albanese, Nick: See—
Gill, William J.; Albanese, Nick; Herbacek, Michael B.; and Nelken, Harvey H., 4,245,588, Cl. 122-6.00A.
Albert Rolland S.A.: See—
Bassin, Pierre, 4,246,277, Cl. 424-285.000.
Alberta Research Council: See—
Bertram, Edward F.; Harris, Philip; and Myroniuk, Darrell W., 4,246,025, Cl. 75-37.000.
Albiser, Anthony M.; and Leibel, Bernard S., to Hospital for Sick Children. Artificial beta cell. 4,245,634, Cl. 128-213.00R.
Albrecht, Charles W., to Singer Company. The. One-way index for gas meters. 4,245,504, Cl. 73-275.000.
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., to American Cyanamid Company. Antilipidemic para-(thienyl and furyl (alkyl or alkenyl)amino)-benzoic acid derivatives. 4,246,273, Cl. 424-275.000.
Alcan Aluminum Corporation: See—
Jenkins, Thomas E., 4,245,446, Cl. 52-232.000.
Alcan Research and Development Limited: See—
Dewing, Ernest W., 4,245,822, Cl. 266-171.000.
Aldag, John; and Wells, Willis L., to Blackhawk Systems, Inc. Apparatus for fabrication of metal buildings. 4,245,828, Cl. 269-228.000.
Alfa Farmaceutici, S.p.A.: See—
Borzatta, Valerio, 4,246,201, Cl. 564-317.000.
Alheid, Robert J.; and Budd, Robert O., to Beloit Corporation. Adjustable rod holder for metering rod coaters. 4,245,582, Cl. 118-119.000.
Alheid, Robert J.; and Phillips, Irvin J., to Beloit Corporation. Web coater. 4,246,301, Cl. 427-348.000.
Aldredge, Robert L. Liquid sand filter. 4,246,119, Cl. 210-279.000.
Allen, Frank L., Jr., to Rockwell International Corporation. Textile bobbin. 4,245,799, Cl. 242-118.300.
Allen Organ Company: See—
Woron, Robert P., 4,245,542, Cl. 84-1.260.
Alley, Robert P., to General Electric Company. Use of motor power control circuit losses in a clothes washing machine. 4,245,488, Cl. 68-12.00R.
Allied Chemical Corporation: See—
Garner, Eugene F.; and Seldner, Alvin A., 4,246,051, Cl. 149-7.000.
Allis-Chalmers Canada, Limited: See—
Couperus, Egbert, 4,245,732, Cl. 198-313.000.
Alstom-Atlantique: See—
Legrand, Bernard; and Masselin, Michel, 4,246,626, Cl. 361-385.000.
Alston, Julia M., to Research Laboratories of Australia Pty Limited. Electrostatic transfer process for producing lithographic printing plates. 4,245,553, Cl. 101-466.000.
Alten Corporation: See—
Heinemann, Klaus W., 4,245,620, Cl. 126-447.000.
Altenpohl, William F.; and Altenpohl, Paul J., to W. F. Altenpohl, Inc. Two-stage operated nozzle for tight bagging system. 4,245,453, Cl. 53-530.000.
Altenpohl, Paul J.: See—
Altenpohl, William F.; and Altenpohl, Paul J., 4,245,453, Cl. 53-530.000.
Altman, Daniel E., to United States of America, Navy. Fail-safe optical repeater-amplifier assembly for fiber optic systems. 4,246,475, Cl. 455-612.000.
Altstetter, Manfred; Pache, Norbert; and Mazac, Karel, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Device for welding metallic hollow bodies with a magnetically moved electric arc. 4,246,464, Cl. 219-123.000.
Aluminum Company of America: See—
Dawless, Robert K., 4,246,249, Cl. 423-348.000.

Maczura, George; Heilich, Raymond P.; and Rohr, Frank J., 4,246,035, Cl. 106-64.000.

Alza Corporation: See—
Choi, Nam S., 4,246,397, Cl. 528-380.000.

AM International, Inc.: See—
Songer, Larry A.; and Cooper, C. Ray, 4,245,834, Cl. 271-213.000.

Amano, Masahiro; and Koike, Takashi, to Mitsubishi Paper Mills, Ltd. Method for producing fibrous sheet. 4,246,066, Cl. 162-141.000.

Amchem Products, Inc.: See—
Koch, Robert W., 4,246,130, Cl. 252-143.000.

American Can Company: See—
Guarnery, Joseph M.; and Watt, William R., 4,246,298, Cl. 427-46.000.

American Cyanamid Company: See—
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,246,275, Cl. 424-275.000.

American Hoechst Corporation: See—
Bower, J. David, 4,246,150, Cl. 260-28.50D.
Haddad, Theodore A.; Kondig, Walter; and Phillips, Richard A., 4,245,991, Cl. 8-506.000.
Seaver, Alton L., 4,246,390, Cl. 526-352.000.

American Optical Corporation: See—
LeBoeuf, Albert R., 4,246,389, Cl. 526-279.000.
Rosen, Julius S., 4,245,907, Cl. 356-244.000.
Siegmund, Walter P., 4,246,016, Cl. 65-3.00A.

American Safety Equipment Corporation: See—
Ziv, Avraham, 4,245,856, Cl. 280-802.000.

Amon, William F., Jr.: See—
Neideman, Saul L.; Amon, William F., Jr.; and Geigert, John, 4,246,347, Cl. 435-105.000.

AMP Incorporated: See—
Johnson, Tore R., 4,245,887, Cl. 350-96.210.
Ritchie, Leon T.; and Harwood, Robert G., 4,245,876, Cl. 339-59.00M.
Shaffer, Howard R.; and Wycheck, Thomas H., 4,245,875, Cl. 339-32.00R.
Zimmerman, John A., Jr.; and Long, William B., 4,245,880, Cl. 339-97.00R.

Amsted Industries Incorporated: See—
Lynn, Jean C., 4,246,028, Cl. 75-252.000.

Amsterdamse Ballast Bagger en Grond (Amsterdam Ballast Dredging) B. V.: See—
van Zeggelaar, Gerrit H., 4,245,932, Cl. 406-33.000.

Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Granulating apparatus. 4,245,972, Cl. 425-67.000.

Anderson, Celius R.; and Chadwick, Curtis E., II, to Caterpillar Tractor Co. Fluid heater for pneumatic control mechanisms. 4,245,665, Cl. 137-341.000.

Anderson Jacobson, Inc.: See—
Mason, Roy G., 4,246,444, Cl. 179-2.00C.

Anderson, Roy: See—
Schuman, Paul D.; Westmoreland, Geraldine; and Anderson, Roy, 4,246,411, Cl. 544-313.000.

Ando, Hiromi; and Azuma, Tomizo, to Tokico Ltd. Vacuum booster device. 4,245,845, Cl. 277-189.000.

Andoh, Naoki; Nishiwaki, Ituo; Iio, Akira; and Arakawa, Masatoshi, to Japan Synthetic Rubber Co., Ltd. Process for producing methacrylic acid. 4,246,427, Cl. 562-535.000.

Andreva, Nina K.: See—
Sokolov, Igor D.; Safirgin, Jury S.; Muraviev, Alexandr V.; Andreva, Nina K.; and Zykov, Valery A., 4,246,019, Cl. 71-59.000.

Andresen, John H., Jr., to Intercontinental Dynamics Corporation. Pressure indicator. 4,245,508, Cl. 73-386.000.

Andrews, Earl C., to Hardinge Brothers, Inc. One-piece collet. 4,245,846, Cl. 279-46.00R.

Andrews, Lawrence F., to "A"-Company, Inc. Orthodontic face bow. 4,245,986, Cl. 433-5.000.

Anger, Klaus; Frosten, Jürgen; and Lischke, Burkhard, to Siemens Aktiengesellschaft. Method and device for determining the focal length of a long focal length electron optical lens. 4,246,487, Cl. 250-492.00R.

Ann Arbor Terminals, Inc.: See—
Puroi, Mark F., 4,246,634, Cl. 363-49.000.

Anstalt Mura: See—
Posch, Oskar, 4,246,232, Cl. 422-156.000.

Anton, Octavian; Gosseye, Alain; and Poncellet, Georges, to S.A. Redco. Colored composite material of the asbestos-cement or similar type and its manufacture. 4,246,036, Cl. 106-99.000.

Antos, George J., to UOP Inc. Hydrocarbon conversion with a sulfided superactive multimetallic catalytic composite. 4,246,095, Cl. 208-139.000.

Aonuma, Masashi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,246,316, Cl. 428-329.000.

Aonuma, Shigeo: See—
Tanaka, Koichi; Kobayashi, Kenji; and Aonuma, Shigeo, 4,246,332, Cl. 430-109.000.

Aoyama, Shunichi, to Nissan Motor Company, Limited. EGR Control system for internal combustion engine. 4,245,607, Cl. 123-568.000.

Applegate, Robert J.: See—
Ionnou, Basil N.; Kearns, Donald S.; Applegate, Robert J.; Sano, Richard M.; and Prokop, Edward K., 4,245,646, Cl. 128-653.000.

Appleton Papers Inc.: See—
Baum, Henry H., 4,246,318, Cl. 428-411.000.

Arai, Takashi: See—
Kakiuchi, Yoshihiro; and Arai, Takashi, 4,245,495, Cl. 73-643.000.

Arakawa, Masatoshi: See—
Andoh, Naoki; Nishiwaki, Ituo; Iio, Akira; and Arakawa, Masatoshi, 4,246,427, Cl. 562-535.000.

Arakelian, Arthur N.; and Davis, Kirk E., to Lubrizol Corporation. The 2,5-Dimercapto-1,3,4-thiadiazole derivatives and lubricants containing them. 4,246,126, Cl. 252-47.500.

Architectes Internationaux Paul Depondt: See—
Depondt, Paul; Echalié, Claude; Levy, Albert; and Boussin, Louis, 4,245,447, Cl. 52-262.000.

Arco Industries Ltd.: See—
D'Andrade, Bruce M., 4,245,425, Cl. 46-98.000.

Ardiente, Nestor P. System for increasing heating efficiency. 4,245,779, Cl. 236-1.00G.

Arex Oy: See—
Wahlberg, Arvo O., 4,246,018, Cl. 71-23.000.

Arima, Takeo, to Hochiki Corporation. Power-supply device which boosts and stabilizes the voltage. 4,246,635, Cl. 363-101.000.

Arlt, Dieter; and Behlau, Franz-Gerhard, to Bayer Aktiengesellschaft. Process for the preparation of N-alkyl-substituted carboxylic acid amides. 4,246,199, Cl. 564-124.000.

Arnal, Claude E. G. Rotary wire brushes. 4,245,366, Cl. 15-164.000.

Arnsen, Sigurdur I., to General Tire & Rubber Company. The Nozzle valve for in-the-mold coating apparatus. 4,245,976, Cl. 425-549.000.

Arndt, Otto; Papenfuhs, Theodor; Bohme, Peter; Tronich, Wolfgang; and Mees, Bernhard, to Hoechst AG. Diaminophenyl ureas. 4,246,196, Cl. 564-50.000.

Aron S.A.: See—
Noel, Michel, 4,246,272, Cl. 424-272.000.

Arseneault, Pierre-Michel; Bouillon, Gratien; Picard, Roland; and Tremblay, Gilles. Self-locking cerebral electrical probe. 4,245,645, Cl. 128-642.000.

Asahi Kasei Kabushiki Kaisha: See—
Miyauchi, Hirotugu; Sagami, Hiroshi; and Tsushima, Sakae, 4,246,353, Cl. 521-28.000.

Asahi Kasei Kogyo Kabushiki Kaisha: See—
Honda, Makoto; Ozawa, Kohe; Hosoya, Kazuhiro; and Kurita, Jiro, 4,246,382, Cl. 526-79.000.
Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Mizuno, Masayuki, 4,246,351, Cl. 435-182.000.
Takenaka, Yoshinori; Tsuda, Nobuaki; and Kuroda, Toru, 4,246,107, Cl. 210-806.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: See—
Karikawa, Tohru; and Mita, Kunio, 4,245,901, Cl. 354-43.000.
Satoh, Mitsuo, 4,245,904, Cl. 354-153.000.

Asahimatsu Koridofu Kabushiki Kaisha: See—
Nakamura, Hiroshi, 4,245,553, Cl. 99-628.000.

Asano, Kazuhiro, to Kabushiki Kaisha Daini Sekiosha. Semiconductor integrated driving circuit including C-MOS and junction FET's. 4,246,498, Cl. 307-270.000.

ASEA Aktiebolag: See—
Torok, Vilmos, 4,246,527, Cl. 318-721.000.

Ashland Oil, Inc.: See—
Grimm, Robert A.; Langer, Heimo J.; and Plummer, John F., 4,246,167, Cl. 260-42.70.

Asszonyi, Csaba; Klausz, Istvan; Kmety, Istvan; Meitzen, Nandor; and Pasztor, Rezzo, to Magyar Szenbanyaszati Troszt. Welded grid, primarily for securing underground cavities, cavity systems, as well as process for making the grid. 4,245,926, Cl. 405-150.000.

Astec Industries, Inc.: See—
Weldon, William F.; and Weldon, James M., 4,246,507, Cl. 310-242.000.

Astill, Michael; Sunderland, Alec; and Waine, Maurice G., to British Nuclear Fuels Limited. Shear machine with replaceable shear assembly. 4,245,532, Cl. 83-390.000.

Astle, William H., to Tri Tool, Inc. Elbow mandrel arrangement. 4,245,529, Cl. 82-4.00C.

Atkins, Walter J., Sr., to Chrysler Corporation. Controlled flow purge system and apparatus. 4,245,592, Cl. 123-572.000.

Atlantic Richfield Company: See—
Gefvert, Leland V., 4,245,930, Cl. 405-217.000.
Styring, Ralph E., Jr., 4,246,015, Cl. 62-12.000.
Wolcott, Herbert B., Jr., 4,246,093, Cl. 208-8.00R.

Auriana, Mark, to Burndy Corporation. Circuit package receptacle with movable base separation means. 4,245,877, Cl. 339-74.00R.

Aurimma, Robert S. Traffic delineator post. 4,245,922, Cl. 404-10.000.

Aurora Products Canada Limited: See—
Accornero, Louis, 4,245,427, Cl. 46-111.000.

Avco Corporation: See—
Milo, George T., 4,245,465, Cl. 60-39.080.

Avery International Corporation: See—
Reed, Charles F., 4,246,058, Cl. 156-183.000.

Axen, Udo F., to Upjohn Company. The 6-Keto-PGE₁ amides. 4,246,197, Cl. 564-169.000.

Ayers, William A.; and Adams, Peter B., to United States of America. Agriculture. Biological control system. 4,246,258, Cl. 424-93.000.

Aylor, Eugene W. Phonograph record storage rack. 4,245,746, Cl. 211-40.000.

Azuma, Tomizo: See—
Ando, Hiromi; and Azuma, Tomizo, 4,245,845, Cl. 277-189.000.

B. F. Goodrich Company, The: See—
Lai, John T., 4,246,412, Cl. 544-384.000.

Babcock & Wilcox Co., The: See—
Wiener, Murray, 4,245,618, Cl. 126-438.000.

Babil, Simon; and Muir, Andrew R., to Perkin-Elmer Corporation. The. Automatic recorder abscissa scaling. 4,246,640, Cl. 364-320.000.

Babil, Simon; and Muir, Andrew R., to Perkin-Elmer Corporation. The. Automatic temperature calibration of thermal analyzers. 4,246,641, Cl. 364-571.000.

Bach, Nicholas J.: See—
Kornfeld, Edmund C.; and Bach, Nicholas J., 4,246,265, Cl. 424-261.000.

Bache, John K.; Sanderson, Albert M.; and Pearson, Arthur, to George Salter & Company, Ltd. Apparatus for stabilizing springs. 4,245,819, Cl. 266-90.000.

Bachmann, G. M.; Burrous, Homer C.; and Shelton, Walter L., to Coca-Cola Company. The. Display panel for a vending machine. 4,245,730, Cl. 194-1.00A.

Bahoshy, Bernard J.: See—
Klose, Robert E.; Bahoshy, Bernard J.; Sjonvall, Ragnar E.; and Yeransian, James A., 4,246,286, Cl. 426-3.000.

Bain, Douglas I.: See—
Dixit, Shyam N. S.; Bain, Douglas I.; and Carter, David A., 4,245,573, Cl. 110-343.000.

Baizer, Manuel M.; and Rogers, Thomas E., to Monsanto Company. Initiation of anionic polymerization of vinyl monomers by reduced graphite. 4,246,388, Cl. 526-217.000.

Baker, Daniel A., to Whirlpool Corporation. Control circuit for protecting vacuum cleaner motor from jammed beater brush damage. 4,245,370, Cl. 15-319.000.

Baker, Henry L., to Communications Patents Limited. Method for measuring crossview between two channels in a wired television broadcasting system. 4,246,608, Cl. 358-139.000.

Baker, Henry O., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Portable accelerometer. 4,245,510, Cl. 73-517.00R.

Baker, Richard H., to Exxon Research & Engineering Co. Gated back-clamped transistor switching circuit. 4,246,501, Cl. 307-300.000.

Baker, Robert G.; Frates, Paul S.; and Morgan, Jeffrey E., to Nordson Corporation. Adhesive hand gun with swivel connector and safety mechanism. 4,245,759, Cl. 222-146.0HE.

Bakos, Peter; Darrow, Russell E.; Rivenburgh, Dennis L.; and Williams, William F., to International Business Machines Corporation. Screenable and strippable solder mask and use thereof. 4,246,147, Cl. 260-18.0EP.

Baldwin, John L. E.; Bellis, Robert A.; and Ive, John G. S., to Independent Broadcasting Authority. Digital recognition circuits. 4,246,569, Cl. 340-146.200.

Ballast-Nedam Groep N.V.: See—
van Zeggelaar, Gerrit H., 4,245,932, Cl. 406-33.000.

Balle, Gerhard: See—
Wagner, Kuno; Ick, Jürgen; and Balle, Gerhard, 4,246,160, Cl. 260-33.40R.

Ban, Seiji: See—
Kokubo, Ichiro; Ban, Seiji; Takisawa, Kensaburo; Koyama, Yuuji; Kobayashi, Junkiti; and Ueda, Choei, 4,245,490, Cl. 72-234.000.

Barber-Colman Company: See—
Mason, Dale E., 4,245,380, Cl. 29-157.30H.

Barber, Eugene, to International Telephone and Telegraph Corporation. Telephone transducer assembly and method of making same. 4,246,450, Cl. 179-115.50R.

Barbulescu, Adrian; Boulet, Rodrigue; Charland, Jean-Paul; and Fortin, Paul, to Centre de Recherche Industrielle du Québec. Apparatus for making seedling tubes. 4,245,431, Cl. 47-1.00A.

Barker, Robert I.; and Rice, Patrick F., to Monsanto Company. Method and apparatus for measuring modulus of a plastic polymer. 4,245,517, Cl. 73-760.000.

Barker, Ronald D. Method of investigating the electrical resistivity of the ground and apparatus for use in the method. 4,246,538, Cl. 324-347.000.

Barley, Thomas A.: See—
Rast, Gustaf J., Jr.; and Barley, Thomas A., 4,246,540, Cl. 328-18.000.

Barnett, Allan E.: See—
Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., 4,246,140, Cl. 252-452.000.

Barnett, Edward D.: See—
Grieve, Donald F.; and Barnett, Edward D., 4,246,576, Cl. 340-606.000.

Barr & Stroud Limited: See—
Berry, Peter J.; and Ritchie, David S., 4,246,612, Cl. 358-206.000.

Barrett, Edward J. Interconnectable molecular models and a fastener for connecting same. 4,245,920, Cl. 403-305.000.

Bartek, Joseph P.; and Grasselli, Robert K., to Standard Oil Company. The. Oxydehydrogenation process for alkylaromatics. 4,246,421, Cl. 546-352.000.

Bartlett, Keith G., to Texas Instruments Incorporated. High density static memory cell. 4,246,592, Cl. 357-41.000.

Bartlett, Keith G., to Texas Instruments Incorporated. High density static memory cell with polysilicon resistors. 4,246,593, Cl. 357-41.000.

Batalin, Oleg E.; Dykman, Arkady S.; Belgorodsky, Izrail M.; Ostroukhov, Oleg A.; Golovko, Ljudmila V.; Nevstruev, Vladimir I.; and Lukashov, Anatoly I. Method of preparing a calcium phosphate catalyst. 4,246,247, Cl. 423-311.000.

Batson, William A., to Singer Company. The. Motorized circular miter chop saw. 4,245,533, Cl. 83-471.300.

Baudet, Jacques; Salmon, Michel; and Sausse, Andre, to Rhone-Poulenc S.A. Fluid treatment apparatus. 4,246,120, Cl. 210-321.300.

Bauer, Evgeny T.: See—
Dolgov, Anatoly V.; Kononov, Leonid V.; Perks, Leib B.; Deev, Stanislav L.; Dyakov, Vitaly E.; Semenov, Alexandr E.; Bauer, Evgeny T.; and Suturin, Serafim N., 4,246,106, Cl. 210-774.000.

Bauer, Paul, to Siemens Aktiengesellschaft. Floppy disc drive unit. 4,246,618, Cl. 360-99.000.

Bauer, Werner R.; and Van Fossen, Robert A., to Robertshaw Controls Company. Reversing valve construction and piston head assembly thereof and methods of making the same. 4,245,670, Cl. 137-625.290.

Baum, Henry H., to Appleton Papers Inc. Thermally-responsive record material. 4,246,318, Cl. 428-411.000.

Bauman, Albert J., to United States of America, National Aeronautics and Space Administration. Molten salt pyrolysis of latex. 4,246,001, Cl. 44-62.000.

Baxter Travenol Laboratories, Inc.: See—
Boggs, Daniel R., 4,245,383, Cl. 29-428.000.

Bayer Aktiengesellschaft: See—
Arlt, Dieter; and Behlau, Franz-Gerhard, 4,246,199, Cl. 564-124.000.
Block, Hans-Dieter; Kallfass, Herbert; and Kleinstuck, Roland, 4,246,103, Cl. 210-699.000.
Boehmke, Günther; and Hendricks, Udo-Winfried, 4,246,172, Cl. 260-205.000.
Bonse, Gerhard; Blank, Heinz U.; Brandes, Wilhelm; and Volker, Paul, 4,246,279, Cl. 424-302.000.
Groll, Manfred, 4,246,174, Cl. 260-242.200.
Hagel, Rainer; and Redecker, Klaus, 4,246,052, Cl. 149-23.000.
Hartmann, Alfons; Marhold, Albrecht; Lantzech, Reinhard; Hammann, Ingeborg; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,246,276, Cl. 424-282.000.
Heins, Ferdinand; and Matner, Martin, 4,246,156, Cl. 260-29.70H.
Hugl, Herbert; Otten, Hans-Günter; Petroll, Hans W.; and Wolf, Karlheinz, 4,245,995, Cl. 8-574.000.
Kinast, Günther; and Schedel, Michael, 4,246,345, Cl. 435-84.000.
Kolling, Heinrich; Niemers, Ekkehard; Wollweber, Hartmund; and Thomas, Herbert, 4,246,260, Cl. 424-228.000.
Lehnen, Josef P.; and Zingelmann, Gerd, 4,246,224, Cl. 264-328.140.
Leister, Heinrich; Dittmer, Helmut; and Schönhagen, Hubert, 4,246,180, Cl. 260-371.000.
Meyer, Rolf V.; and Tacke, Peter, 4,246,371, Cl. 525-183.000.
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Beck, Henry E., to Caterpillar Tractor Co. Manual release for a spring applied brake assembly. 4,245,724, Cl. 188-170.000.

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- Behlau, Franz-Gerhard: See—
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- Belgorodsky, Izrail M.: See—
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- Bell, George: See—
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- Bell, Robert L.; and Fisher III, Alfred J., to Fisher Corporation. Linear control for reclining seat. 4,245,866, Cl. 297-365.000.
- Bell Telephone Laboratories, Incorporated: See—
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- Bell, Theodore F. Flash arrester. 4,246,002, Cl. 48-192.000.
- Bellis, Robert A.: See—
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- Beloit Corporation: See—
Alheid, Robert J.; and Budd, Robert O., 4,245,582, Cl. 118-119.000.
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- Benard, David J.: See—
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- Bendix Corporation, The: See—
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- Benefis Systems Limited: See—
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- Bennett, George R.: See—
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- Benrud, Vernal M.: See—
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- Benemann, Erle W., to Benefis Systems Limited. Pressurized fluid circuits. 4,245,579, Cl. 116-70.000.
- Benton, William J.; and Quigley, Joseph R. Multi-band liquid crystal film laminate. 4,246,302, Cl. 428-1.000.
- Bentz, Gerard; and Racouchot, Bernard, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude. Method for manufacturing a gas delivery device. 4,246,216, Cl. 264-71.000.
- Benzing, George, III; and Iltis, Rumult, to Children's Hospital Medical Center. Method and apparatus for measuring the ohmic contact resistance of an electrode attached to body tissue. 4,245,643, Cl. 128-419.0PT.
- Berard, Raymond A.: See—
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- Bergkvist, Carolyn: See—
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- Bergkvist, Lars A. Device such as an instrument for optically, preferably visually, determining a definite plane. 4,245,912, Cl. 356-374.000.
- Berkmann, Adolf, to Nordson Corporation. Coating booth for electrostatic application of pulverized materials. 4,245,551, Cl. 98-115.0SB.
- Berkowitz, Barry J.; and Kane, Russell D., to Exxon Research & Engineering Co. Superalloys having improved resistance to hydrogen embrittlement and methods of producing and using the same. 4,245,698, Cl. 166-244.00C.
- Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenshtein, Khaim-Mordke A.; Bernatsek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marshavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Filipovskaya, Julia M. Liquid photopolymerizable composition for making printing forms. 4,246,336, Cl. 430-288.000.
- Bernatsek, Vladislav V.: See—
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- Berry, Peter J.; and Ritchie, David S., to Barr & Stroud Limited. Optical raster scanning system. 4,246,612, Cl. 358-206.000.
- Bert, Stephen F., to Tectron, Inc. Non-expandable linkage bracelet and method of manufacture thereof. 4,245,461, Cl. 59-82.000.
- Bertoldi, John J., to Denar Corporation. Dental articulator. 4,245,987, Cl. 433-61.000.
- Bertram, Edward F.; Harris, Philip; and Myroniuk, Darrell W., to Alberta Research Council. Beneficiation process for oxidized iron ore. 4,246,025, Cl. 75-37.000.
- Bessin, Pierre, to Albert Rolland S.A. Lowering the concentration of plasma triglycerides. 4,246,277, Cl. 424-285.000.
- Beurer, Frederick C.: See—
Zane, Anthony J.; and Beurer, Frederick C., 4,245,393, Cl. 33-276.000.
- Beyl, Jean J. A., to Look, S.A. Ski boot. 4,245,409, Cl. 36-117.000.
- Bhasin, Madan M.; and O'Connor, George L., to Union Carbide Corporation. Process for producing acetic acid, ethanol, and acetaldehyde from synthesis gas. 4,246,186, Cl. 260-449.00R.
- Bianco, Vincent; Grogna, Paul D.; and Chetoni, Henri, to Compagnie Maritime d'Expertises. Process and apparatus for handling a diving machine. 4,245,578, Cl. 114-312.000.
- Biber, Conrad H., to Polaroid Corporation. Electrostatic transducer having optimum sensitivity and damping. 4,246,449, Cl. 179-111.00R.
- Bickerdike, Robert L.; Hughes, Garyth; and Mair, William N., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State in Her Britannic Majesty's Government of the. Apparatus for producing mechanically-worked vapor-deposited bulk alloys. 4,245,823, Cl. 266-211.000.
- Bieri, Leonard, Jr.: See—
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- Binder, Jean J., to Compagnie Internationale pour l'Informatique. Particle feed arrangement for applying solid particles to the image carrier of a non-impact printer. 4,246,588, Cl. 346-74.100.
- Bingham, Elena M.; and Middleton, William J., to Du Pont de Nemours, E. I., and Company. 3-Fluorobenzodiazepines and compositions and uses thereof. 4,246,270, Cl. 424-269.000.
- Bio-Humus, Inc.: See—
Starr, Jerry, 4,246,100, Cl. 210-610.000.
- Bio-Rad Laboratories, Inc.: See—
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- Birnbaum geb. Schinko, Charlotte: See—
Kopp, Otto; Holzer, Helmut; and Birnbaum geb. Schinko, Charlotte, 4,246,315, Cl. 428-315.000.
- Birt, David A.: See—
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- Bishop, Walter F., to McGraw-Edison. Flexible connector assembly for track lighting system. 4,245,874, Cl. 339-14.00R.
- Black Body Corporation: See—
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- Black, Thomas J.: See—
Shutt, Robert C.; Black, Thomas J.; and Matthews, Victor Y., 4,246,463, Cl. 219-73.200.
- Blackhawk Systems, Inc.: See—
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- Blake, Donald M.: See—
Meath, Kenneth R.; McReynolds, Kent B.; and Blake, Donald M., 4,246,155, Cl. 260-29.70W.
- Blank, Heinz U.: See—
Bonse, Gerhard; Blank, Heinz U.; Brandes, Wilhelm; and Volker, Paul, 4,246,279, Cl. 424-302.000.
- Blatt, L. Douglas. Automation vertical lift unit. 4,245,548, Cl. 92-5.00R.
- Bley, Peter: See—
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- Bloch, Aaron N.: See—
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- Block, Alvin, to Intimate Jewels Inc. Earring. 4,245,484, Cl. 63-12.000.
- Block, Hans-Dieter; Kalfass, Herbert; and Kleinstuck, Roland, to Bayer Aktiengesellschaft. Propane-1,3-diphosphonic acids for conditioning water. 4,246,103, Cl. 210-699.000.
- Boaz, Premakaran T., to Ford Motor Company. Electric terminal for connecting a heating grid on a thermal window. 4,246,467, Cl. 219-522.000.
- Bock, Gerd; and Brand, Gerd, to Robert Bosch GmbH. Color television camera system having solid-state opto-electric transducers for luminance and chrominance signals. 4,246,598, Cl. 358-12.000.
- Bocquet, Gilbert: See—
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- Bocquet, Jean P., to Societe SKID. Apparatus for recoating surfaces of a thermoplastic material. 4,245,585, Cl. 118-410.000.
- Bodenseewerk Perkin-Elmer Co.: See—
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- Boehmke, Gunther; and Hendricks, Udo-Winfried, to Bayer Aktiengesellschaft. Cationic dyestuffs organophosphonic acid salts of quaternary ammonium alkylene amino azo dyes. 4,246,172, Cl. 260-205.000.
- Boeing Company, The: See—
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- Stephan, Leonard P., 4,245,805, Cl. 244-188.000.
- Boger, Manfred; and Drabek, Jozef, to Ciba-Geigy Corporation. Pesticidally active 1-phenyl-1,3,5-triazas-4-sulfa-5-alkylsulfonyl and -phenylsulfonyl-pent-1-en derivatives. 4,246,283, Cl. 424-321.000.
- Boggs, Daniel R., to Baxter Travenol Laboratories, Inc. Centrifugal processing apparatus with reduced-load tubing. 4,245,383, Cl. 29-48.000.
- Bohme, Peter: See—
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- Bolen, Charles E.: See—
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- Bolto, Brian A.; Dixon, David R.; and Eldridge, Robert J., to ICI Australia Limited. Ion exchange processes and products. 4,246,355, Cl. 521-38.000.

- Bond, David L. Scoring attachment for power saws. 4,245,390, Cl. 30-164.950.
- Bonse, Gerhard; Blank, Heinz U.; Brandes, Wilhelm; and Volker, Paul, to Bayer Aktiengesellschaft. Novel dichloromaleic acid diamide derivatives and their use as fungicides. 4,246,279, Cl. 424-302.000.
- Borkovitz, Henry S., to General Signal Corporation. Voltage control circuitry for UPS. 4,246,633, Cl. 363-37.000.
- Bornstein, Norman S.; Wallace, Francis J.; and De Crescente, Michael A., to United Technologies Corporation. Plasma sprayed MCrAlY coating. 4,246,323, Cl. 428-678.000.
- Borom, Marcus P.: See—
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- Borrelli, Nicholas F.; and Young, Peter L., to Corning Glass Works. Photosensitive medium for optical information storage. 4,246,337, Cl. 430-496.000.
- Borzatta, Valerio, to Alfa Farmaceutici, S.p.A. Substituted N-(3-phenylthiopropyl)-3,3-diphenyl-propylamines possessing pharmacological activity. 4,246,201, Cl. 364-317.000.
- Borzoni, John M.: See—
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- Bossmaker, Terence R. J.; and Sangway, Peter C., to Ciba-Geigy Aktiengesellschaft. X-ray intensifying screens. 4,246,485, Cl. 250-486.000.
- Boudreau, Robert J., to Hedstrom Co. Scissor frame lock. 4,245,850, Cl. 280-87.02W.
- Bouillon, Gratien: See—
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- Bourke, Robert F.; and Thimmesch, David M., to Gould Inc. Power converter with programmable commutation. 4,246,522, Cl. 318-338.000.
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- Bousek, Ronald R.: See—
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- Boussin, Louis: See—
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- Bouteille, Daniel; Duclos, Michel; Marguet, Hugues; Nicolas, Michel; and Petrimaux, Eric, to La Telemechanique Electrique. Pneumatic logic circuit. 4,245,673, Cl. 137-884.000.
- Boutier, Jacques L.: See—
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- Boutron, Claude; Caffoz, Robert; and Juston, Claude, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Device for transferring tobacco leaves and for cutting out wrappers. 4,245,531, Cl. 83-169.000.
- Bowen, Anita L. Hand-controlled puppet. 4,245,428, Cl. 42-126.000.
- Bowen, Thomas L.: See—
Shank, Samuel R., Jr.; and Bowen, Thomas L., 4,245,467, Cl. 60-39.150.
- Bower, J. David, to American Hoechst Corporation. Lubricant for heat processing of vinyl chloride resins. 4,246,150, Cl. 260-28.50D.
- Bowles, David J.; Clancy, Douglas E.; Johnson, Carl F.; and Neal, Danny M., to International Business Machines Corporation. Erase through tab. 4,245,918, Cl. 400-697.100.
- Boxer, Trevor C., to Lucas Industries Limited. D.C. Motor control for an electrically powered vehicle. 4,246,519, Cl. 318-139.000.
- BP Chemicals Limited: See—
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- BPE, Inc.: See—
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- Bracegirdle, Paul E. Apparatus for making asphalt concrete. 4,245,915, Cl. 366-12.000.
- Brad Harrison Co.: See—
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- Braddock, Charles E., to Sid Richardson Carbon & Gasoline Company. Method of producing carbon black. 4,246,251, Cl. 423-450.000.
- Bradley, Edward F.; and Mueller, Francis E., to International Business Machines Corporation. Electronic velocity measurement device. 4,246,536, Cl. 324-177.000.
- Bradley, Steven A.: See—
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- Braggins, Timothy T.: See—
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- Brandes, Wilhelm: See—
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- Hartmann, Alfons; Marhold, Albrecht; Lantzsch, Reinhard; Hammann, Ingeborg; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,246,276, Cl. 424-282.000.
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- Braukmann, Bernhard W., to Braukmann Armaturen AG. Safety valve. 4,245,667, Cl. 137-493.000.
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- Breslow, Jeffrey D.: See—
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- Bridgestone Tire Co., Ltd.: See—
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- Brikenshtein, Khaim-Mordke A.: See—
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- Brinckmann, Paul; and Polster, Jurgen. Partial pelvic prosthesis. 4,245,360, Cl. 3-1.912.
- Briotet, Jean P. F. G., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device to control a jet engine. 4,245,470, Cl. 60-243.000.
- Brisonneau & Lotz Marine S.A.: See—
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- Bristol Composite Materials Engineering Ltd.: See—
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- Bristol-Myers Company: See—
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- Montzka, Thomas A.; Matiskella, John D.; and Partyska, Richard A., 4,246,413, Cl. 546-63.000.
- Bristow (nee Elley), Dale M.: See—
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- Britax (GEO) S.A.: See—
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- British Nuclear Fuels Limited: See—
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- Broger, Emil A., to Hoffmann-La Roche Inc. Process for manufacturing triphenylphosphine. 4,246,204, Cl. 568-17.000.
- Bromley, James E.: See—
Yu, Jing-peir; and Bromley, James E., 4,246,219, Cl. 264-171.000.
- Brommel, Walter, to Didier Engineering GmbH. Process and apparatus for quenching hot coke. 4,246,072, Cl. 201-39.000.
- Broniewski, Bogdan M., to Occidental Research Corporation. Method of concentrating alkali metal hydroxide in hybrid cells having cation selective membranes. 4,246,078, Cl. 204-98.000.
- Bronner, Claude; and Jullien, Daniel, to Aimants Ugimac S.A. Process for the thermal treatment of Fe-Co-Cr alloys for permanent magnets. 4,246,049, Cl. 148-103.000.
- Bronswerk B.V.: See—
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- Brookfield Athletic Shoe Company, Inc.: See—
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- Brown, George. Fusible linkage aquatic device that will override the failure of a defective thermostat or the like within a motor. 4,245,782, Cl. 236-34.500.
- Brown, Jasper H.; and Morgan, Albert W., to Monsanto Company. Fire retardant, non-dripping flexible polyurethane foam. 4,246,360, Cl. 521-102.000.
- Brown, Lester H., to Master Air Inc. Gas-handling apparatus. 4,245,965, Cl. 417-360.000.
- Brown, Lewis W.; Chisholm, Douglas R.; and Dixon, Jerry D., to International Business Machines Corporation. Data processor input/output controller. 4,246,637, Cl. 364-200.000.
- Brown, Neil L.: See—
Lawson, Kenneth D.; and Brown, Neil L., 4,246,497, Cl. 307-232.000.
- Brown, Olin C., III: See—
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- Brown, Ralph H., to Rockwell International Corporation. Start mark preventer for looms. 4,245,676, Cl. 139-316.000.
- Brown, Thomas M.: See—
Wilkinson, Richard A.; and Brown, Thomas M., 4,245,631, Cl. 128-204.170.
- Bruder, Werner; and Merkle, Roland, to Daimler-Benz Aktiengesellschaft. Shifting means for actuating valve turn-off in multi-cylinder internal combustion engine. 4,245,596, Cl. 123-198.00F.
- Bruguera, Ramon, to Patentes Y Novedades, S.A. Urea/formaldehyde adhesives. 4,246,152, Cl. 260-29.40R.
- Brunner, Winfried; and Dederra, Helmut, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung. Press mould half, more especially for producing records. 4,245,811, Cl. 249-80.000.
- Buchel, Karl H.: See—
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- Buck, Josef J., to Magnetic Controls Company. Latch assembly. 4,245,879, Cl. 339-91.00R.
- Buckeye International, Inc.: See—
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- Buckley, B. Shawn, to Chevron Research Company. Valve. 4,245,617, Cl. 126-434.000.
- Buckley, Frank T., Jr. Drag reducer for land vehicles. 4,245,862, Cl. 296-1.00S.
- Budd, Robert O.: See—
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- Buddemeyer, Edward U. Test sample container. 4,246,352, Cl. 435-291.000.
- Budrose, Charles R. Electro-magnetic relay structure. 4,246,559, Cl. 335-120.000.
- Bugaut, Andre: See—
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- Bulatovic, Srdjan, to Falconbridge Copper Limited. Flotation process. 4,246,096, Cl. 201-167.000.
- Bumsted, Joseph H.: See—
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- Bunting, Jackie O.; and Simon, Wayne E., to Martin Marietta Corporation. Ejector utilizing a vortex flow. 4,245,961, Cl. 417-171.000.
- Burger, Robert, to Locitite Corporation. Dispenser for pressurized fluid. 4,245,812, Cl. 251-10.000.
- Burlington Industries, Inc.: See—
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- Burmeister & Wain A/S: See—
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- Burrows, Homer C.: See—
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- Burtis, Eric F.: See—
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- Busch, Dieter M.; and McAlonan, Christopher G. Method of making a segmented cup grinding wheel. 4,246,004, Cl. 51-295.000.
- Buschhorn, Floyd E.; and Wirsbinski, James L., to Veda, Inc. Lubricating system for pump and control valve therefor. 4,245,968, Cl. 418-87.000.
- Bushong, Robert N. Finger ring guard. 4,245,485, Cl. 63-15.600.
- Busselet, Jean-Claude G., to Etablissements Valois. Pump for a hand actuated device for producing an atomized spray. 4,245,967, Cl. 417-510.000.
- Butcher, Michael J. A.; and Jelfs, Stewart D., to Dowty Meco Limited. Belt conveyors and belt supporting stools therefor. 4,245,738, Cl. 198-812.000.
- Butler, Charles H. S.; and McGauley, Patrick J., to Corning Glass Works. Method of removing gaseous pollutants from flue gas. 4,246,242, Cl. 423-210.000.
- Butler Manufacturing Company: See—
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- Byrne, LeRoy H.; Fassman, Arnold; and Simmel, Thomas L. Article dispensing and positioning device. 4,245,756, Cl. 221-185.000.
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- Callaway, Milton A., to Watercoil, Inc. Flotation mattress. 4,245,363, Cl. 5-451.000.
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- Campbell, James J.: See—
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- Campbell Soup Company: See—
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- Caputi, William J., Jr., to Eaton Corporation. Image processing for bistatic image radar. 4,246,580, Cl. 343-5.00CM.
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- Carr, Albert A., to Richardson-Merrell Inc. Neuroleptic-4-(naphthylmethyl)piperidine derivatives. 4,246,268, Cl. 424-267.000.
- Carr, William E. S. Artificial bait for aquatic species. 4,245,420, Cl. 43-42.060.
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- Carter, David T. Protective insert for the sides of load carrying vehicles. 4,245,863, Cl. 296-39.00R.
- Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., to Exxon Research & Engineering Co. Supported nickel-cobalt-silica coprecipitated hydrogenation catalyst. 4,246,140, Cl. 252-452.000.
- Carter, Walter H.; and Nix, Cedric A., to Texaco Inc. Enhanced oil recovery method. 4,245,700, Cl. 166-273.000.
- Carter, Walter S.; and Inwood, Richard B., to Sperry Rand Limited. Magneto-optical phase-modulating devices. 4,246,549, Cl. 331-94.50M.
- Cartwright, David; and Salmon, Roger, to Imperial Chemical Industries Limited. Herbicidal compounds. 4,246,419, Cl. 546-291.000.
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- Chambersburg Engineering Company: See—
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- Chandler, David P., to Mattel, Inc. Switch apparatus. 4,246,452, Cl. 200-5.00A.
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- Chelsea Industries, Inc.: See—
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- Clements, Thomas W.; and Waters, E. Craig, to Will Ross, Inc. Variable area meter insert unit. 4,245,513, Cl. 73-861.590.
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Crawford, William B.; and Solomon, Anthony T., to Burlington Industries, Inc. Pleating machine, 4,245,576, Cl. 112-262.100.
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Croopnick, Gerald A.; and Sauer, Irwin W., to Dresser Industries, Inc. Microstrainer apparatus and method, 4,246,108, Cl. 209-291.000.
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Curnutt, Charles R. High pressure air suspension system, 4,245,854, Cl. 280-711.000.
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- Dover Corporation: See—
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- Dow Chemical Canada Limited: See—
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- Dow Chemical Company, The: See—
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- Dresser Industries, Inc.: See—
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- Khlopkov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexander A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmikov, Vladimir N.; Musiiko, Vitaly A.; Garmash, Vladimir I.; Tkachenko, Vladimir A.; Shipilov, Viktor F., deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.
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- Cohen, Leonard D., 4,246,550, Cl. 331-107.0DP.
- Franz, Rudolph J., 4,245,780, Cl. 236-13.000.
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- Ecodyne Corporation: See—
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- Edwards, Robert B.: See—
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- Edwin Cooper, Inc.: See—
- Papay, Andrew G.; and O'Brien, Joseph P., 4,246,125, Cl. 252-46.600.
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- Egerer, Rudolf, to Wieland-Werke Aktiengesellschaft. Method of making heat-insulated structural section assemblies. 4,245,384, Cl. 29-433.000.
- Eglinton, Robert B., to Chromalloy American Corporation. System for handling flexible sheet rolls. 4,245,796, Cl. 242-66.000.
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- Ehrfeld, Wolfgang: See—
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- Eichler, Joachim. Back support device. 4,245,628, Cl. 128-78.000.
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- Oberhoff, Wolfgang; and Geschka, Hugo W., 4,245,413, Cl. 38-2.000.
- El Paso Products Company: See—
- Cihonski, John L., 4,246,202, Cl. 564-423.000.
- Eldridge, Robert J.: See—
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- Electric Power Research Institute, Inc.: See—
- Hatch, Burton D., 4,246,325, Cl. 429-30.000.
- Electro Audio Dynamics, Inc.: See—
- Marchese, Justin W.; and von Recklinghausen, Daniel R., 4,246,453, Cl. 200-11.00R.
- Elgal, Galoust M.; Perkins, Rita M.; and Knoepfner, Nestor B., to United States of America, Agriculture. Prepolymer preparation and polymerization of flame retardant chemicals from THP-salts. 4,246,031, Cl. 106-18.140.
- Elhaus, Friedrich W.; and Hilde, Bernhard, to Prolizenz Aktiengesellschaft. Apparatus for heat treatment of material to be worked on, especially of aluminum or magnesium alloys. 4,245,818, Cl. 266-87.000.
- Eli Lilly and Company: See—
- Kornfeld, Edmund C.; and Bach, Nicholas J., 4,246,265, Cl. 424-261.000.
- Ellard, James A., to Monsanto Research Corporation. Fire-resistant material and process. 4,246,358, Cl. 521-77.000.
- Elliott Brothers: See—
- Clark, William J. R., 4,246,480, Cl. 250-349.000.

- Elliott, Thomas J.; and Ford, David, to Beecham Group Limited. Cosmetic degreasing and matting composition. 4,246,257, Cl. 424-78.000.
- Ellis, Henry D. Container for paint. 4,245,753, Cl. 220-288.000.
- Ellis, Henry D. Container including plastic molded receptacle and cover with buttress retainers. 4,245,754, Cl. 220-304.000.
- Ellsworth, William G.: See—
- Figler, Robert G.; Ellsworth, William G.; and Misiorowski, Richard J., 4,246,231, Cl. 422-147.000.
- Emerson Electric Co.: See—
- Punahon, William D.; and Peachee, C. Theodore, 4,245,870, Cl. 308-36.000.
- Emhart Industries, Inc.: See—
- Ray, Donald L., 4,246,454, Cl. 200-38.00R.
- EMI Limited: See—
- Fetter, Richard W., 4,246,484, Cl. 250-445.00T.
- Empson, Kenneth G. Hydraulically damped railway car body roll. 4,245,563, Cl. 103-197.00H.
- Endo, Katsusuke: See—
- Fuseya, Yoshiharu; Karino, Yukio; Sakakibara, Yoshio; and Endo, Katsusuke, 4,246,333, Cl. 430-219.000.
- Endo, Kunio; Kobayashi, Nobuyuki; Watanabe, Haruo; and Kawai, Mitsuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Malfunction diagnosing apparatus for electronic control system for vehicles. 4,246,566, Cl. 340-52.00F.
- Energy Sciences Inc.: See—
- Nablo, Sam V.; and Fussa, Alfred D., 4,246,297, Cl. 427-44.000.
- Engelhard Minerals & Chemicals Corporation: See—
- Mixon, Robert B., Jr., 4,246,039, Cl. 106-288.00B.
- Rogers, William M., 4,246,235, Cl. 422-198.000.
- English Clays Lovering Pochin & Co. Ltd.: See—
- Keat, Gordon S., 4,246,122, Cl. 210-350.000.
- English Electric Valve Company Limited: See—
- Jones, Eric; and Townsend, Rodney P., 4,246,228, Cl. 422-94.000.
- Pickering, Alan H.; Rowlands, Geoffrey J.; and Tice, David R., 4,246,512, Cl. 315-39.770.
- Scholz, Hans; and Holland, David G., 4,246,516, Cl. 315-291.000.
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- Enterprise Machine and Development Corp.: See—
- Price, Samuel T., 4,245,378, Cl. 28-271.000.
- Environmental Research Institute of Michigan: See—
- Chang, Byung J., 4,245,882, Cl. 350-3.720.
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- Honacker, Horst, 4,246,010, Cl. 55-119.000.
- Erb, Robert A. Method and apparatus for the hysteroscopic non-surgical sterilization of females. 4,245,623, Cl. 128-1.00R.
- Erceg, Graham W. PEEP providing circuit for anesthesia systems. 4,245,633, Cl. 128-205.170.
- Erickson, Robert A., to Kennametal Inc. Clamping mechanism for cutting insert. 4,245,937, Cl. 407-105.000.
- Ericsson, Rolf, to ESAB Aktiebolag. Pulsed-arc D.C. TIG welding apparatus. 4,246,465, Cl. 219-130.510.
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- Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,245,382, Cl. 29-407.000.
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- Busselet, Jean-Claude G., 4,245,967, Cl. 417-510.000.
- Estes, Morton B.; and Korn, Charles S., to Sunnen Products Company. Knurling tool. 4,245,489, Cl. 72-123.000.
- Estradier, Françoise: See—
- Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Françoise, 4,246,181, Cl. 260-396.00N.
- Ethyl Corporation: See—
- Dagani, Michael J., 4,246,175, Cl. 260-326.200.
- Zaiko, Edward J., 4,246,176, Cl. 260-326.470.
- Eto, Kunihiko: See—
- Shima, Yoshio; Haga, Kyosuke; Eto, Kunihiko; and Yamakage, Tetsuro, 4,246,577, Cl. 340-680.000.
- Eto, Takeaki: See—
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- Eulenfeld, Karl-Heinz, to Waggon Union GmbH. Center bearing socket construction. 4,245,564, Cl. 105-199.00C.
- Evans, Robert F. Breast prosthesis or augmenting form including spring-mass system. 4,245,644, Cl. 128-476.000.
- Evans, Samuel, to Ciba-Geigy Corporation. Phenol phosphorus compounds as polyolefin stabilizers. 4,246,170, Cl. 260-45.95C.
- Evanson, Robert. Water bed mattress. 4,245,361, Cl. 5-450.000.
- Ewers, Marion H. Vertical axis wind turbine. 4,245,958, Cl. 416-197.00A.
- Exxon Research & Engineering Co.: See—
- Baker, Richard H., 4,246,501, Cl. 307-300.000.
- Berkowitz, Barry J.; and Kane, Russell D., 4,245,698, Cl. 166-244.00C.
- Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., 4,246,140, Cl. 252-452.000.
- Goodrich, Robert R.; Kunz, Robert G.; Lipton, Sydney; and Owen, Keith, 4,246,079, Cl. 204-98.000.
- Smith, Hoses E., 4,245,694, Cl. 165-82.000.
- Eymard, Pierre L.: See—
- Chignac, Michel; Grain, Claude; Jammot, Fernand; Pigerol, Charles; Eymard, Pierre L.; and Combet (epae Broll), Madeleine, 4,246,282, Cl. 424-320.000.
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- Sear, Leonard, 4,245,939, Cl. 409-191.000.
- Fabaz, Anthony G.: See—
- Farr, Larry D.; and Fabaz, Anthony G., 4,245,656, Cl. 128-775.000.
- Facet Enterprises, Inc.: See—
- Miller, Donald L., 4,246,567, Cl. 340-58.000.
- Fainzilberg, Leonid S.: See—
- Skurikhin, Vladimir I.; Fainzilberg, Leonid S.; and Zhitetsky, Leonid S., 4,246,470, Cl. 235-92.0PB.
- Fairfield Manufacturing Company: See—
- Dammon, James R., 4,245,524, Cl. 74-710.500.
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- Falconi, Joseph G., to Boeing Company. The. Continuously curved countersink used with deformable rivet. 4,245,921, Cl. 403-408.000.
- Falconbridge Copper Limited: See—
- Bulatovic, Srdjan, 4,246,096, Cl. 201-167.000.
- Fallon, George W., III, to Combustion Engineering, Inc. Scrubber bypass system. 4,245,569, Cl. 110-215.000.
- Fangman, John S.: See—
- Deweese, Thomas J.; Fangman, John S.; and Lin, Wen, 4,246,064, Cl. 156-608.000.
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- Scapini, Giancarlo; Rainondi, Armando; and Poidomani, Placido, 4,246,407, Cl. 544-118.000.
- Farr, Glyn P. R., to Girling Limited. Control valve assembly. 4,245,868, Cl. 303-6.00C.
- Farr, Larry D.; and Fabaz, Anthony G. Obstetric gloves. 4,245,656, Cl. 128-775.000.
- Farrand Optical Co., Inc.: See—
- La Russa, Joseph A., 4,246,605, Cl. 358-104.000.
- Fartro, John C.: See—
- Sun, John; Fartro, John C.; and Ramey, Richard A., 4,246,472, Cl. 235-401.000.
- Fassman, Arnold: See—
- Byrne, LeRoy H.; Fassman, Arnold; and Simmel, Thomas L., 4,245,756, Cl. 221-185.000.
- Federal Cartridge Corporation: See—
- Hoffman, Harry W.; and Posthuma, Kerwin A., 4,246,436, Cl. 174-52.00R.
- Felder, Ernst; Pitre, Davide; and Zutter, Hans, to Syntex Corporation. Process for the resolution of (+) and (-)-6-methoxy- α -methyl-2-naphthalenecarboxylic acid. 4,246,164, Cl. 260-501.170.
- Feldmann, Joachim: See—
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- Feldt, Klas-Göran, to Nordfria Industrietextillier AB. Method and machine for manufacturing multi-tube filters. 4,246,061, Cl. 156-474.000.
- Feller, Murray F., to Willgood Corporation. Selective heating and cooling energy meter. 4,245,501, Cl. 73-193.00R.
- Felt Products Mfg. Co.: See—
- Pyle, Lawrence F., 4,245,925, Cl. 404-72.000.
- Fergus, David A.: See—
- Hunt, Michael O.; Lehmann, William F.; and Fergus, David A., 4,246,310, Cl. 428-106.000.
- Ferguson, Douglas J.: See—
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- Ferguson, Wilfred J., to Research Organics, Inc. Amino-hydroxy-alkyl sulfonic acid-zwitterions. 4,246,194, Cl. 260-513.00N.
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- Feuerman, Arnold I. Method for producing vaporized fuel for internal combustion engine. 4,246,082, Cl. 204-136.000.
- Fichte, Frank; and Paul, Wolfgang, to VEB Polygraph Leipzig Kombinat fuer Polygraphische Maschinen und Ausrustungen. Correction of transverse offset of sheets in sheet feeding unit. 4,245,830, Cl. 271-164.000.
- Fidler, Fred: See—
- Murphy, Thomas P.; Bell, George; and Fidler, Fred, 4,246,088, Cl. 204-181.00R.
- Figler, Robert G.; Ellsworth, William G.; and Misiorowski, Richard J., to Standard Oil Company (Indiana). Fluidized solids apparatus. 4,246,231, Cl. 422-147.000.
- Fillipovskaya, Julia M.: See—
- Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenstein, Khaim-Mordke A.; Bernatsek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marshavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Filipovskaya, Julia M., 4,246,336, Cl. 430-288.000.
- Filtrol Corporation: See—
- Alafandi, Hamid; and Stamires, Dennis, 4,246,138, Cl. 252-438.000.
- Finlay, Robert L., to BPE, Inc. Archery bow stabilizer. 4,245,612, Cl. 124-89.000.
- Finlayson, Laurence H.: See—
- Clifford, Cecil F.; and Finlayson, Laurence H., 4,246,504, Cl. 310-181.000.

- Fisher Corporation: See—
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- Fisher, Gordon S.: See—
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Bell, Robert L.; and Fisher III, Alfred J., 4,245,866, Cl. 297-365.000.
- Fitzpatrick, Donald C.: See—
Frye, Kenneth G.; and Fitzpatrick, Donald C., 4,245,530, Cl. 83-99.000.
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- Flaherty, Michael, to United States of America, Navy. Infrared proximity fuze electronic amplifier. 4,245,558, Cl. 102-213.000.
- Flockenhaus, Claus: See—
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- Flour City Architectural Metals, a division of the Segrave Corporation: See—
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- Flymo Societe Anonyme: See—
Martin, Kenneth G., 4,245,455, Cl. 56-12.800.
- Flynn, Richard T.; and Kindell, Jerry L., to Honeywell Information Systems Inc. Vector branch indicators to control firmware. 4,246,644, Cl. 364-900.000.
- FMC Corporation: See—
Norris, Robert D.; Fretz, E. Robert, Jr.; and Beacham, Harry H., 4,246,169, Cl. 260-45.95D.
- Soloway, Jean, 4,245,663, Cl. 137-192.000.
- Foldaway Research International Anstalt: See—
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- Foley, Thomas P.: See—
Mosciatti, Roger; Foley, Thomas P.; and Moritz, Frederick G., 4,245,917, Cl. 400-144.200.
- Folkenroth, Richard P.; and Plowman, Richard E., to Dentsply Research & Development Corp. Water economizing system for dental equipment. 4,245,989, Cl. 433-92.000.
- Folser, Karl: See—
Theurer, Josef; and Folser, Karl, 4,245,703, Cl. 171-16.000.
- Fondacci, Jean-Luc, to Societe Nationale d'Etude et de Construction de Moyeurs d'Aviation. Control device for a gas turbine. 4,245,468, Cl. 60-39.28R.
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- Ford Motor Company: See—
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- Fortin, Paul: See—
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- Fortini, Anthony; and Kazaroff, John M., to United States of America, National Aeronautics and Space Administration. Heat exchanger and method of making. 4,245,469, Cl. 60-204.000.
- Fosco Trading, A.G.: See—
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- Foster Wheeler Energy Corporation: See—
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- Four Star Corporation: See—
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- Fousa, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., to Hancor, Inc. Arch conduit. 4,245,924, Cl. 405-45.000.
- Fox, Irwin. Use of steel plant waste dusts for scavenging hydrogen sulfide. 4,246,243, Cl. 423-225.000.
- Fox, Irwin, to Gas Sweetener, Inc. Process for scavenging hydrogen sulfide from hydrocarbon gases. 4,246,244, Cl. 423-225.000.
- Frame, Charles W.: See—
Clarke, Eugene C., Jr.; and Frame, Charles W., 4,245,492, Cl. 72-407.000.
- Frank, Earl E., to Abex Corporation. Railroad lubricators. 4,245,719, Cl. 184-3.00A.
- Frank, Kurt, to Siemens Aktiengesellschaft. X-Ray diagnostic generator with control means for the adjustment of the X-ray tube voltage via the X-ray tube current. 4,246,460, Cl. 250-409.000.
- Franz Plesner Bahnbaumaschinen-Industriegesellschaft m.b.H.: See—
Theurer, Josef; and Folser, Karl, 4,245,703, Cl. 171-16.000.
- Franz, Rudolph J., to Eaton Corporation. Temperature regulator assembly and signal modulator therefor. 4,245,780, Cl. 236-13.000.
- Frates, Paul S.: See—
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- Freeman, James D. Blind-end connector for fastening sheet metal to fiber-board ducts. 4,245,545, Cl. 411-342.000.
- Freid, Wilbert B., to General Electric Company. Variable area nozzle system. 4,245,787, Cl. 239-265.410.
- Fretz, E. Robert, Jr.: See—
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- Frey, Werner U.; Lomax, Ronald W.; Clark, Herbert W.; and Smith, David W., to International Standard Electric Corporation. Sealing apertures through which electrical terminals protrude. 4,246,437, Cl. 174-52.0PE.
- Froehlich, Robert J. System and method for combining film images. 4,245,906, Cl. 355-43.000.
- Frohberger, Paul-Ernst: See—
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- Frost, James K. Detecting body movements. 4,245,651, Cl. 128-721.000.
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- Frypan S.p.A.: See—
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- Fuji Photo Film Co., Ltd.: See—
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- Fujita, Shinsaku; Ono, Shigetoshi; and Hayashi, Hidetoshi, 4,246,414, Cl. 546-182.000.
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- Satomura, Masato, 4,245,857, Cl. 282-27.500.
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- Fuji Photo Optical Co., Ltd.: See—
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- Fuji Seal Industry Co., Ltd.: See—
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- Fuji Xerox Co., Ltd.: See—
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- Fujii, Itsuo: See—
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- Fujii, Shin; Oikawa, Koue; and Seino, Takashi, to Nissan Motor Company, Limited. Preparation of coated casting sand using unsaturated polyester resin as binder. 4,246,165, Cl. 260-40.00R.
- Fujii, Tsumoru: See—
Ogata, Takashi; Namihisa, Shoichiro; and Fujii, Tsumoru, 4,246,240, Cl. 423-139.000.
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- Fujimoto, Hiroaki: See—
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- Fujio, Masaaki, to Fuji Seal Industry Co., Ltd. Method and apparatus for wrapping an object in a sheet. 4,245,452, Cl. 53-399.000.
- Fujioka, Kazumasa; and Nakayama, Wataru, to Hitachi, Ltd. Gas flow cooling system for a rotary electric machine. 4,246,503, Cl. 310-59.000.
- Fujisawa, Fumio: See—
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- Fujisawa, Hideya: See—
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- Fujisawa Pharmaceutical Company, Limited: See—
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- Fukasawa, Atsushi; Miyamoto, Ryoichi; and Sato, Takuro, to Oki Electric Industry Co., Ltd. Stripline circulator wherein each inner conductor is V-shaped. 4,246,552, Cl. 333-1.100.
- Fukuda, Makoto: See—
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- Fukui, Yoshiharu: See—
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- Fukumori, Yukitsugu: See—
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- Fulmer, Glenn E.: See—
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- Fumaux, Eric; Zinsstag, Christoph; and Delseth, Roland, to Lonza Ltd. Process for the separation of a mixture of chloroacetyl chloride and dichloroacetyl chloride. 4,246,074, Cl. 203-70.000.

- Funahashi, Takumi: See—
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- Funk, Roger L.: See—
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- Furtwangler, Hans-Rolf: See—
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- Furukawa Metals Co., Ltd.: See—
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- Furukawa, Yosio: See—
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- Fussa, Alfred D.: See—
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- GAF Corporation: See—
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- Galitsky, Nikolai V.: See—
Khlopov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexander A.; Drobob, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmikov, Vladimir N.; Musiiko, Vitaly A.; Garmash, Vladimir I.; Tkalenko, Vladimir A.; Shipilov, Viktor F.; deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.
- Gallagher, Patrick K.; Gorygy, Ernst M.; Johnson, David W., Jr.; and Robbins, Murray, to Bell Telephone Laboratories, Incorporated. Method of making MnZn ferrites. 4,246,128, Cl. 252-62.570.
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- Gardner, William R., to Xerox Corporation. Method for producing nozzles for ink jet printers. 4,246,076, Cl. 204-11.000.
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- Gashenko, Stanislav I.: See—
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- Gefvert, Leland V., to Atlantic Richfield Company. Offshore drilling and production. 4,245,930, Cl. 405-217.000.
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- Gelin, Robert J.: See—
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- General American Transportation Corporation: See—
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- General Cable Corporation: See—
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- General Electric Company: See—
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- Carreno, Diether E., 4,245,959, Cl. 416-198.00A.
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- Pasco, Wayne D.; Klug, Frederic J.; and Borom, Marcus P., 4,246,215, Cl. 264-64.000.
- Randall, Harvey G., 4,245,647, Cl. 128-659.000.
- Vaughn, Howard A., Jr.; and Holub, Fred F., 4,246,038, Cl. 106-287.160.
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- General Industries, Inc.: See—
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- General Motors Corporation: See—
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- Des Lauriers, Edwin D., 4,245,599, Cl. 123-353.000.
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- Rice, John O.; and McCauley, Gary P., 4,245,605, Cl. 123-492.000.
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- DiToro, Michael J., 4,246,581, Cl. 343-116.000.
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- George Salter & Company, Ltd.: See—
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- Georgia Bonded Fibers, Inc.: See—
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- Georgia Tech. Research Institute: See—
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- Geosource Inc.: See—
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- Gerlach, Pierre; and Hoet, Roger, to Thomson-CSF. Method of fabrication of flat grids of pyrolytic graphite for electron tubes. 4,245,379, Cl. 29-25.180.
- Gerlinger, Frederic, to Kuhn, S.A. Haymaking machine. 4,245,457, Cl. 56-370.000.
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- Gerry, Martin E. Modulated AC ignition system. 4,245,609, Cl. 123-594.000.
- Gertisser, Berthold, to Sandoz Ltd. Basic indoline dyestuffs. 4,246,404, Cl. 542-466.000.
- Geschka, Hugo W.: See—
Oberhoff, Wolfgang; and Geschka, Hugo W., 4,245,413, Cl. 38-2.000.
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- Gill, William J.; Albanese, Nick; Herbacek, Michael B.; and Nelken, Harvey H., to Foster Wheeler Energy Corporation. Vapor generating system having a division wall penetrating a furnace boundary wall formed in part by angularly extending fluid flow tubes. 4,245,588, Cl. 122-6.00A.
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- Giuliani, Marc S. A.: See—
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- Goldacker, Hubert; Koch, Gunter; Schmieder, Helmut; Warnecke, Ernst; and Comper, Walter, to Kernforschungszentrum Karlsruhe GmbH. Dissolver for removing nuclear fuel materials from fuel element segments. 4,246,238, Cl. 422-275.000.
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- Gopinathan, Kannampuzha G., to National Research Development Corporation. Empustic energy analysis. 4,246,479, Cl. 250-305.000.
- Gordon, Donald W., to Nissen Corporation. Pole vaulting landing pit. 4,245,838, Cl. 272-104.000.
- Gorny, Dietrich: See—
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- Reilly, Edward J.; and Williams, Glenn L., 4,246,587, Cl. 346-1.100.
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- Grain, Claude: See—
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- Grantham, LeRoy F., to Rockwell International Corporation. Disposal of PCB. 4,246,255, Cl. 423-659.000.
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- Gras, Rainer; and Wolf, Elmar, to Chemische Werke Huls AG. Isocyanurate group- and terminally-blocked isocyanate group-containing mixtures. 4,246,132, Cl. 252-182.000.
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- Grasselli, Robert K.; Miller, Arthur F.; and Suresh, Dev D., to Standard Oil Company, The. Ammonoxidation with tellurium catalysts. 4,246,190, Cl. 260-465.300.
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- Green, Melvin P. Apparatus for constructing concrete cantilevered decking around swimming pools. 4,245,810, Cl. 249-19.000.
- Greenfield, Irving E., Jr.; and Jacobson, Ronald C. Food service beverage dispenser. 4,245,680, Cl. 141-82.000.
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- Gregg, Edward H., to Norton Company. Dispenser for abrasive discs. 4,245,765, Cl. 225-13.000.
- Grenier, Wilfred J., to General Industries, Inc. Flush valve. 4,245,813, Cl. 251-32.000.
- Grieco, Gary J., to Research Cottrell, Inc. Roof baffles for fluework transporting dust-laden gases. 4,245,568, Cl. 110-147.000.
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- Groll, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of phthalocyanine reactive dyestuffs. 4,246,174, Cl. 260-242.200.
- Gronebaum, Theo; to Heinrich Kuper, Firma. Machine for assembling veneer strips. 4,246,063, Cl. 156-558.000.
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- Groupp, Barry A. Sound sustaining device for musical instruments. 4,245,540, Cl. 84-1.140.
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- Grozinger, Werner; and Rabus, Friedrich, to Robert Bosch GmbH. Electronic control apparatus for a fuel injection system in internal combustion engines. 4,245,590, Cl. 123-488.000.
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- Grytko, Carl E.: See—
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- GTE Products Corporation: See—
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- Guarnery, Joseph M.; and Watt, William R., to American Can Company. Rapid curing of epoxy resin coating compositions by combination of photoinitiation and controlled heat application. 4,246,298, Cl. 427-46.000.
- Guenther, Bob D.: See—
Hartman, Richard L.; and Guenther, Bob D., 4,245,890, Cl. 350-175.00GN.
- Guertin, Robert W., to Dover Corporation. Automatic shut-off nozzle having an independent sensor arrangement for sensing the presence of liquid in vapor return means of the nozzle. 4,245,681, Cl. 141-206.000.
- Gunther, Rush B.; and Jindal, Prem C., to Abar Corporation. Work support for vacuum electric furnaces. 4,246,434, Cl. 13-20.000.
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- Gurske, William A., to Beckman Instruments, Inc. Electrophoretic technique for assaying the relative distribution of lactate dehydrogenase isoenzymes and buffers for use therein. 4,246,084, Cl. 204-180.00G.
- Guse, Rolf: See—
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- Haafkens, Rudolf; Luque, Rafael F.; and De Vries, Willem, to Shell Internationale Research Maatschappij B.V. Method for forming channels of high fluid conductivity in hard acid-soluble formations. 4,245,702, Cl. 166-307.000.
- Haas, Franz, Jr.: See—
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- Hadl, Clyde F., to Owens-Illinois, Inc. Method and apparatus for forming tubular plastic sleeves for flat folding. 4,246,059, Cl. 156-218.000.
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- Hagus C. Luchtenberg GmbH & Co. KG: See—
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- Hale Fire Pump Company: See—
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- Hall, Peter J., to Microvue Products, Inc. Microfiche reader. 4,245,898, Cl. 353-27.00R.
- Hall, Stephen, to Rotaflex (Great Britain) Limited. Electrical wallplate fittings. 4,245,878, Cl. 339-88.00R.
- Haller, Ingo: See—
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- Hamill, Maurice R., Jr. Orthodontic face bow inner wire having an integral safety extension. 4,245,984, Cl. 433-5.000.
- Hamilton, Alexander; and Nelson, Colin, to Ciba-Geigy Corporation. Continuous diazotization process, wherein the rate of addition of inorganic nitrite is automatically controlled by polarovoltic means. 4,246,171, Cl. 260-141.000.
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- Hancox, Royston N., to Lucas Industries Limited. Lamp assembly and method of manufacture thereof. 4,246,632, Cl. 362-382.000.
- Hansen, Erik, to Burmeister & Wain A/S. Apparatus for effecting multi-bead welding of two workpieces. 4,245,767, Cl. 228-27.000.
- Hansford, Rowland C.: See—
Hass, Robert H.; and Hansford, Rowland C., 4,246,141, Cl. 252-455.00Z.
- Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method for improving the light fastness of organic substrate materials including photographic dye images. 4,246,329, Cl. 430-17.000.
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- Hardinge Brothers, Inc.: See—
Andrews, Earl C., 4,245,846, Cl. 279-46.00R.
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- Harralson, John C.: See—
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- Haruki, Hiroaki; and Watanabe, Masahiro, to Matsushita Electric Industrial Co., Ltd. Frequency synthesizing system for AM-SSB transceiver. 4,246,539, Cl. 455-76.000.
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- Hashimoto, Takemi, to Ricoh Company, Ltd. Method and device for confirming correct connection between data terminals in data communication system using telephone network. 4,246,442, Cl. 179-2.00DP.
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- Hawk, Charles E.; and Livingston, Danny K., to Teledyne, Inc. Thermal flowmeter. 4,245,503, Cl. 73-204.000.
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- Heinemann, Klaus W., to Altan Corporation. Solar heat collector. 4,245,620, Cl. 126-447.000.
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- Henderson, David M., to Hughes Aircraft Company. Spatial coding of laser beams by optically biasing electro-optic modulators. 4,245,800, Cl. 244-3.130.
- Henderson, Dewey D., to Dayco Corporation. Method of making an endless power transmission belt. 4,246,055, Cl. 156-138.000.
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- Hennessy Industries, Inc.: See—
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- Herbacek, Michael B.: See—
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- Herbin, Jean E. E.; de Koker, Jean; Pralle, Patrick J. B.; Giuliani, Marc S. A.; Drode, Teddy E. A.; Boutier, Jacques L.; and Grammont, Paul D. A., to Diamond Shamrock Corporation. Process for bromination of resins based on crosslinked vinylaromatic copolymers. 4,246,354, Cl. 521-32.000.
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- Hicks, Harry H., to Industrial Air, Inc. Smooth floor construction for the chamber beneath carding and similar textile machines. 4,245,444, Cl. 52-173.00R.
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- Hilbertz, Wolf H., to Marine Resources Company. Mineral accretion of large surface structures, building components and elements. 4,246,075, Cl. 204-1.00R.
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- Hill, Peter; and Thompson, Jack, to Vulnax International Limited. Vulcanization process and compositions for use therein. 4,246,375, Cl. 525-341.000.
- Hinchcliffe, Dennis; and Bennett, George R., to Molins Limited. Conveying rod-like articles. 4,245,934, Cl. 406-62.000.
- Hinds, Farley T., to United States of America, Air Force. Missile hoisting sling. 4,245,860, Cl. 294-74.000.
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- Hipp, Jan. Apparatus for displaying the detonating, light flash and smoke development of ammunition. 4,245,403, Cl. 434-11.000.
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- Hirst, Samuel P., to Chelsea Industries, Inc. Wall covering comprising a web having an impregnation and a back coating. 4,246,311, Cl. 428-195.000.
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- Imura, Ryo, 4,246,646, Cl. 365-2.000.
- Katada, Hiroshi, 4,245,600, Cl. 123-415.000.
- Noda, Masaru; Murakami, Toshio; and Sugita, Mamoru, 4,246,543, Cl. 330-280.000.
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- Okouchi, Isao; Izumi, Kenkichi; Yamazaki, Haruyuki; and Takahashi, Sankichi, 4,245,998, Cl. 23-295.00R.
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- Yasaka, Yasuhiro; and Furukawa, Yosio, 4,246,505, Cl. 310-218.000.

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- Hitzelberger, Alan L., to General Motors Corporation. Quick release turbine gate valve. 4,245,464, Cl. 60-39.250.
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- Hodge, Malcolm H., to TRW Inc. Fiber optic relay switch for precise fiber alignment and method of making the same. 4,245,885, Cl. 350-96.200.
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- Hoffman, Harry W.; and Posthuma, Kerwin A., to Federal Cartridge Corporation. Junction enclosure assembly. 4,246,436, Cl. 174-52.00R.
- Hoffman, Robert O. High beam warning apparatus. 4,245,889, Cl. 350-102.000.
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- Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,246,402, Cl. 542-426.000.
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- Holladay, Jimmie L., to Hennessy Industries, Inc. Tire changing apparatus. 4,245,686, Cl. 157-1.100.
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- Hollobaugh, George E. Structural building component. 4,245,621, Cl. 126-450.000.
- Holton, Percy G., to Syntex Corporation. Process for the resolution of d,l 2-(6-methoxy-2-naphthyl)propionic acid. 4,246,193, Cl. 260-501.170.
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- Honeywell Information Systems Inc.: See—
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- Horsma, David A., to Raychem Corporation. Electrical devices containing PTC elements. 4,246,468, Cl. 219-553.000.
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- Houston, Charles E., to S.C.A.B.A., Inc. Underwater breathing apparatus. 4,245,632, Cl. 128-205.130.
- Howard, Dennis D., to Lord Corporation. Radiation curable coating compositions. 4,246,379, Cl. 525-440.000.
- Howell, Thomas J.; Paterson, William G.; and Pattison, Ian, to Rohm and Haas Company. Ion exchange resins. 4,246,386, Cl. 526-207.000.
- Hoyt, Steven D. Voice responsive toy. 4,245,430, Cl. 46-266.000.
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- Hubbard, David W., to Pitney Bowes Inc. Low cost postage applicator. 4,246,643, Cl. 364-900.000.
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- Hundertmark, Hans W.; and Davey, Alan E. Pipe inspection apparatus. 4,246,604, Cl. 358-100.000.
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Mann, Brian M.; Sholder, Jason A.; and Hurowitz, Marc I., 4,245,641, Cl. 128-419.0PG.

Hurwitz, Evelyn R. See—
Hurwitz, Mathew; and Hurwitz, Evelyn R., 4,245,614, Cl. 126-202.000.

Hurwitz, Mathew; and Hurwitz, Evelyn R., to Hurwitz, Mathew. Fireplace screen. 4,245,614, Cl. 126-202.000.

Hutchins, Burleigh M.; and Abrahams, Louis, to Waters Associates, Inc. Pump. 4,245,963, Cl. 417-265.000.

Hutchins, Thomas B., IV. Inflatable/deflatable device for a heart-assist pump. 4,245,622, Cl. 128-1.00D.

Ichikawa, Kiyoshi. See—
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,246,213, Cl. 264-46.700.

ICI Australia Limited. See—
Bolton, Brian A.; Dixon, David R.; and Eldridge, Robert J., 4,246,355, Cl. 521-38.000.

Ick, Jürgen. See—
Wagner, Kuno; Ick, Jürgen; and Balle, Gerhard, 4,246,160, Cl. 260-33.40R.

ICN Pharmaceuticals. See—
Robins, Roland C.; and Revankar, Ganapathi R., 4,246,408, Cl. 544-209.000.

IEC Electronics Corporation. See—
Vorie, Gilbert C., 4,246,447, Cl. 179-110.00A.

Ihara Chemical Industry Co., Ltd. See—
Koike, Wataro; Takayama, Masami; Ohashi, Hideaki; and Yazawa, Chihiro, 4,246,392, Cl. 528-64.000.

Koike, Wataro; Takayama, Masami; Ohashi, Hideaki; and Yazawa, Chihiro, 4,246,425, Cl. 560-47.000.

Iida, Takahiko, to Mitsubishi Denki Kabushiki Kaisha. Pulse generating circuit. 4,246,499, Cl. 307-293.000.

Iio, Akira. See—
Andoh, Naoki; Nishiwaki, Ituo; Iio, Akira; and Arakawa, Masatoshi, 4,246,427, Cl. 562-535.000.

Iizuka, Haruhiko. See—
Sugawara, Fukashi; Iizuka, Haruhiko; and Matsumoto, Junichiro, 4,245,471, Cl. 60-276.000.

Ikawa, Kazuo. See—
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,246,213, Cl. 264-46.700.

Ikeda, Akihiko. See—
Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Mizuno, Masayuki, 4,246,351, Cl. 435-182.000.

Ikemizu, Naoyuki; and Terada, Kiyohide, to Toyo Kogyo Co., Ltd.; and Tanaka Instrument Co., Ltd. Driving mechanism for retractable lamps of motor vehicles. 4,246,628, Cl. 362-65.000.

Ikeyama, Masami. See—
Yamashita, Yasuo; Ikeyama, Masami; and Nishikawa, Takao, 4,245,992, Cl. 8-461.000.

Illinois Tool Works Inc. See—
McVey, John K., 4,246,561, Cl. 337-407.000.

Ilitis, Rumult. See—
Benzing, George, III; and Ilitis, Rumult, 4,245,643, Cl. 128-419.0PT.

Imai, Masafumi. See—
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,246,136, Cl. 252-429.00B.

Imperial Chemical Industries Limited. See—
Cartwright, David; and Salmon, Roger, 4,246,419, Cl. 546-291.000.

Shepherd, Margaret C.; Worthington, Paul A.; and Parry, Keith P., 4,246,020, Cl. 71-76.000.

Imura, Ryo, to Hitachi, Ltd. Magnetic bubble chip-mounting plane. 4,246,646, Cl. 365-2.000.

Inaba, Naomi. See—
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,246,136, Cl. 252-429.00B.

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Baldwin, John L. E.; Bellis, Robert A.; and Ive, John G. S., 4,246,569, Cl. 340-146.200.

Industrial Air, Inc. See—
Hicks, Harry H., 4,245,444, Cl. 52-173.00R.

Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. See—
Altstetter, Manfred; Pache, Norbert; and Mazac, Karel, 4,246,464, Cl. 219-123.000.

Ingenieursbureau voor Systemen en Octrooien "Spanstaal" B. V. See—
van Zeggelaar, Gerrit H., 4,245,932, Cl. 406-33.000.

Ingersoll-Rand Company. See—
Hugh, Melvin D.; and Vliet, Walter C., 4,245,528, Cl. 81-177.00G.

Inolex Corporation. See—
Lohr, John W., 4,246,131, Cl. 252-153.000.

Inoue Gomu Kogyo Kabushiki Kaisha. See—
Narita, Kozi, 4,245,450, Cl. 52-716.000.

Inoue, Hisao. See—
Ohtomo, Masaru; Hiroi, Sumio; Inoue, Hisao; and Higuti, Sinito, 4,245,825, Cl. 267-64.00R.

Inoue, Hitoshi; Watanabe, Kenichi; and Sumimoto, Takashi, to Toyo Kogyo Co., Ltd. Independent wheel suspension for motor vehicles. 4,245,853, Cl. 280-701.000.

Institut Français du Pétrole. See—
Cholet, Henri; and Boulet, Jean, 4,245,708, Cl. 175-325.000.

Institutul de Cercetari Stiintifice, Inginerie Tehnologica si Proiectari Pentru Sectoare Calde. See—
Stefanescu, Doru M.; Dinescu, Lucian; Craciun, Stefan; and Cristea, Ioan, 4,246,026, Cl. 75-130.00R.

Instrumentation Laboratory Inc. See—
Mody, Dinesh I.; Bergkvist, Carolyn; and Dreier, Gustav H., 4,245,509, Cl. 73-423.00A.

Intellectual Trade Cy S.A. Great Duchy of Luxemburg. See—
Heinen, Hans D. J., 4,245,445, Cl. 52-221.000.

Intercontinental Dynamics Corporation. See—
Andresen, John H., Jr., 4,245,508, Cl. 73-386.000.

International Business Machines Corporation. See—
Bakos, Peter; Darrow, Russell E.; Rivenburgh, Dennis L.; and Williams, William F., 4,246,147, Cl. 260-18.0EP.

Bowles, David J.; Clancy, Douglas E.; Johnson, Carl F.; and Neal, Danny M., 4,245,918, Cl. 400-697.100.

Bradley, Edward F.; and Mueller, Francis E., 4,246,536, Cl. 324-177.000.

Brown, Lewis W.; Chisholm, Douglas R.; and Dixon, Jerry D., 4,246,637, Cl. 364-200.000.

Cole, Allan S.; and Gupta, Omkarnath R., 4,246,597, Cl. 357-81.000.

Denny, Clifford M.; Hughes, John G.; and West, Donald L., 4,246,589, Cl. 346-75.000.

Habich, Adolph B.; and Hunt, Ronald E., 4,245,916, Cl. 400-144.200.

Heller, Lawrence G., 4,246,496, Cl. 307-221.00D.

Kolodzey, James S.; Stilwell, George R., Jr.; and Uberbacher, Edward C., 4,245,886, Cl. 350-96.200.

Magura, Paul; and Merkel, Gerald U., 4,245,884, Cl. 350-96.160.

Rutz, Elisabeth M., 4,246,548, Cl. 331-94.50H.

International Flavors & Fragrances Inc. See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,246,287, Cl. 426-3.000.

International Standard Electric Corporation. See—
Frey, Werner U.; Lomax, Ronald W.; Clark, Herbert W.; and Smith, David W., 4,246,437, Cl. 174-52.0PE.

International Telephone and Telegraph Corporation. See—
Barber, Eugene, 4,246,450, Cl. 179-115.50R.

Montgomery, Billy A., 4,246,530, Cl. 370-58.000.

INTERx Research Corporation. See—
Higuchi, Takeru; and Kotwal, Pramod M., 4,246,399, Cl. 536-17.00A.

Intimate Jewels Inc. See—
Block, Alvin, 4,245,484, Cl. 63-12.000.

Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Tomioka, Kenichi; and Shiozaki, Tetsuya, deceased (by Shiozaki, Hiroko, legal representative), to Yamanouchi Pharmaceutical Co., Ltd. 20-Alkoxy-16-alkyl-prostadienoic acid derivatives. 4,246,280, Cl. 424-305.000.

Inwood, Richard B. See—
Carter, Walter S.; and Inwood, Richard B., 4,246,549, Cl. 331-94.50M.

Ionnou, Basil N.; Kearns, Donald S.; Applegate, Robert J.; Sano, Richard M.; and Prokop, Edward K., to Picker Corporation. Nuclear cardiology apparatus and method. 4,245,646, Cl. 128-653.000.

Ishigaki, Yukinobu, to Victor Company of Japan, Limited. System for removing interference distortion in the demodulated signal of a frequency-modulated signal. 4,246,541, Cl. 329-132.000.

Ishihara, Toshinobu. See—
Yamamoto, Akira; Taguchi, Kenichi; Hayashida, Akira; and Ishihara, Toshinobu, 4,246,178, Cl. 260-345.80R.

Ishii, Kazuhiko. See—
Tada, Masahisa; Kato, Masahiko; Ukita, Tsuneo; Segawa, Hiroshi; Domoto, Masao; Mori, Kiyoteru; Ishii, Kazuhiko; Horinouchi, Shinobu; Tsuzuki, Masami; and Uemura, Eiichi, 4,246,118, Cl. 210-275.000.

Ishii, Yoshio. See—
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Hsiao, James C.; and Ishikawa, Yoichiro, 4,245,575, Cl. 112-256.000.

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Ishizuka, Hiroshi. Diamond aggregate abrasive materials for resin-bonded applications. 4,246,005, Cl. 51-298.000.

Isobe, Yasuo. See—
Nakamoto, Soichi; Ito, Fumio; Isobe, Yasuo; and Ito, Tadashi, 4,245,900, Cl. 354-23.00D.

Isowa Industry Co., Ltd. See—
Hattori, Fukutaro, 4,245,975, Cl. 425-363.000.

Itatani, Hiroshi. See—
Toyokuni, Kazuo; Miyata, Junji; Itatani, Hiroshi; and Kuroiwa, Ryozo, 4,245,518, Cl. 474-111.000.

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Nakamoto, Soichi; Ito, Fumio; Isobe, Yasuo; and Ito, Tadashi, 4,245,900, Cl. 354-23.00D.

Ito, Tadashi. See—
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Ito, Takusen, to Hitachi Shipbuilding & Engineering Company Limited. Apparatus for disposing of waste gas by burning. 4,245,979, Cl. 431-202.000.

Itoh, Johtarō. See—
Umeda, Tomio; Shiroko, Katsuo; Niida, Kazuo; and Itoh, Johtarō, 4,246,073, Cl. 203-25.000.

Itoh, Noriji, to Tokyo Shibaura Denki Kabushiki Kaisha. Bias circuit for a linear amplifier. 4,246,544, Cl. 330-293.000.

Ivanov, Boris G. See—
Ivanov, Nikolai A.; Ivanov, Boris G.; Zarogatsky, Leonid P.; Mitrofanov, Evgeny S.; and Cherkassky, Vladimir A., 4,245,791, Cl. 241-207.000.

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Ive, John G. S. See—
Baldwin, John L. E.; Bellis, Robert A.; and Ive, John G. S., 4,246,569, Cl. 340-146.200.

Iwamoto, Hidenori. See—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Tomioka, Kenichi; and Shiozaki, Tetsuya, deceased, 4,246,280, Cl. 424-305.000.

Iwasaki, Masami, to Tokyo Shibaura Denki Kabushiki Kaisha. High current press pack semiconductor device having a mesa structure. 4,246,596, Cl. 357-79.000.

Iwasawa, Junichi. See—
Kawamura, Junichiro; and Iwasawa, Junichi, 4,246,636, Cl. 363-146.000.

Iwaya, Hirokatsu. Device for switching power of active toy. 4,245,515, Cl. 74-25.000.

Izawa, Toichiro. See—
Sawada, Hideo; Kotani, Motoharu; Sato, Koji; Izawa, Toichiro; Sugimori, Ken-ichiro; and Katanosaka, Akisato, 4,246,009, Cl. 53-74.000.

Izumi, Kenkichi. See—
Okouchi, Isao; Izumi, Kenkichi; Yamazaki, Haruyuki; and Takahashi, Sankichi, 4,245,998, Cl. 23-295.00R.

Izumita, Morishi. See—
Sato, Kazuhiro; Nagahara, Shusaku; Umemoto, Masuo; Akiyama, Toshiyuki; Izumita, Morishi; Takahashi, Kenji; and Mita, Seichi, 4,246,601, Cl. 358-47.000.

Izumiyama, Naoki, to Konishiroku Photo Industry Co., Ltd. Optical system having an optical surface containing aspherical terms with real number powers. 4,245,892, Cl. 350-189.000.

J. I. Case Company. See—
Jarrett, Ronald T., 4,246,110, Cl. 210-90.000.

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Lamond, Trevor G.; and Cuthbertson, Charles R., 4,246,220, Cl. 264-117.000.

Jackson, Andrew G. Frame-forming method and apparatus. 4,245,809, Cl. 249-15.000.

Jackson, Thomas E., to Steel Web Corporation. Truss employing both metallic and non-metallic webs. 4,245,449, Cl. 52-639.000.

Jacobi, Hareddin. See—
Opitz, Wolfgang; Etschenberg, Eugen; Dell, Hans-Dieter; and Jacobi, Hareddin, 4,246,278, Cl. 424-301.000.

Jacobi, John H.; and Larsen, Lawrence E., to United States of America, Army. Calibration method for lumped capacitance measurement of complex permittivity at HF, VHF and UHF frequencies. 4,246,534, Cl. 324-57.00R.

Jacobone, Donato, to Frypan S.p.A. New coatings for polyolefinic products and products covered by said coatings. 4,246,319, Cl. 428-413.000.

Jacobson, Ronald C. See—
Greenfield, Irving E., Jr.; and Jacobson, Ronald C., 4,245,680, Cl. 141-82.000.

James, James R. See—
Henderson, Ann; and James, James R., 4,246,586, Cl. 343-873.000.

Jammot, Fernand. See—
Chignac, Michel; Grain, Claude; Jammot, Fernand; Pigerol, Charles; Eymard, Pierre L.; and Combet (epae Broll), Madeleine, 4,246,282, Cl. 424-320.000.

Janowski, Kenneth R.; Shum, Ming S.; and Bradley, Steven A., to UOP Inc. Heat transfer surface and method for producing such surface. 4,246,057, Cl. 156-150.000.

Janssen Pharmaceutica, N.V. See—
Van Daele, Georges, 4,246,429, Cl. 562-456.000.

Japan Synthetic Rubber Co., Ltd. See—
Andoh, Naoki; Nishiwaki, Ituo; Iio, Akira; and Arakawa, Masatoshi, 4,246,427, Cl. 562-535.000.

Jarrett, Ronald T., to J. I. Case Company. Compensating device for filter contaminant indicating system. 4,246,110, Cl. 210-90.000.

Jeffery, Philip A. E. See—
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Jelco Laboratories. See—
Kontos, Stavros B., 4,245,635, Cl. 128-214.400.

Jelfs, Stewart D. See—
Butcher, Michael J. A.; and Jelfs, Stewart D., 4,245,738, Cl. 198-812.000.

Jennings, Lyston C. See—
Caslow, Joseph H.; and Jennings, Lyston C., 4,245,969, Cl. 418-132.000.

Jensen, Eric L., to Reynolds Metals Company. Can transport. 4,246,300, Cl. 427-233.000.

Jeppson, Jan-Bertil, to AB Akerlund & Rausing. Induction welding apparatus for plastic containers. 4,246,461, Cl. 219-10.530.

Jernow, Jane L. See—
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,246,402, Cl. 542-426.000.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,246,426, Cl. 560-231.000.

Jindal, Prem C. See—
Gunter, Rush B.; and Jindal, Prem C., 4,246,434, Cl. 13-20.000.

Jo, Ikuro. See—
Nei, Motoo; Uchikawa, Eisaku; Jo, Ikuro; and Sato, Minoru, 4,245,928, Cl. 405-195.000.

Johann Wolf Gesellschaft m.b.H. KG. See—
Wolf, Johann, 4,245,933, Cl. 406-56.000.

Johansing, Paul G., Jr. System for spraying liquid emulsion and solvent therefor. 4,245,785, Cl. 239-112.000.

John, Julius F., to Norco Industries, Inc. Compact interlocking jack stand. 4,245,808, Cl. 248-352.000.

John Zink Company. See—
Reed, Robert D.; Goodnight, Hershel E.; and Martin, Richard R., 4,245,980, Cl. 431-182.000.

Johns Hopkins University, The. See—
Cowan, Dwaine O.; Bloch, Aaron N.; and Bechgaard, Klaus, 4,246,173, Cl. 260-239.00R.

Johnson, Burton R. Three dimensional educational toy model subdivision. 4,245,400, Cl. 434-93.000.

Johnson, Carl F. See—
Bowles, David J.; Clancy, Douglas E.; Johnson, Carl F.; and Neal, Danny M., 4,245,918, Cl. 400-697.100.

Johnson, Claris E.; and Crump, Hubert C., to Butler Manufacturing Company. Flying stitcher. 4,245,766, Cl. 227-7.000.

Johnson, David W., Jr. See—
Gallagher, Patrick K.; Gyorgy, Ernst M.; Johnson, David W., Jr.; and Robbins, Murray, 4,246,128, Cl. 252-62.570.

Johnson, Howard L., to Caterpillar Tractor Co. Flow force balanced spool valve. 4,245,816, Cl. 251-282.000.

Johnson, Johnny T. Controlled pressure sewer system. 4,245,664, Cl. 137-236.00R.

Johnson, Leo F.; Singh, Shobha; and Van Uiter, LeGrand G., to Bell Telephone Laboratories, Incorporated. Electrochromic optical device. 4,245,883, Cl. 350-96.140.

Johnson, Leslie H.; Nelson, George F.; and Benrud, Vernal M., to Sperry Corporation. Differential magneto-resistive detector for cross-tie wall memory system. 4,246,647, Cl. 365-8.000.

Johnson, Matthey & Co., Limited. See—
Notton, John H. F., 4,246,083, Cl. 204-146.000.

Wall, John E.; and Lloyd, Ernest E., 4,246,322, Cl. 428-670.000.

Johnson, Ronald V., to Champion International Corporation. Carton having reclosable or removable top and blank for forming same. 4,245,772, Cl. 229-33.000.

Johnson, Tore R., to AMF Incorporated. Optical waveguide connector. 4,245,887, Cl. 350-96.210.

Jones, Alan P., to Parmac Technology, Inc. Musical platform. 4,245,539, Cl. 84-1.010.

Jones, Allen, Jr. Steering and stabilization apparatus for rotary wing aircraft. 4,245,802, Cl. 244-17.190.

Jones, Dennis J. See—
Milton, Thomas J.; and Jones, Dennis J., 4,245,953, Cl. 415-144.000.

Jones, Eric; and Townsend, Rodney P., to English Electric Valve Company Limited. Combustible gas detectors. 4,246,228, Cl. 422-94.000.

Joosten, Joannes J. W. M., to Océ-van der Grinten N.V. Apparatus for positioning sheet like originals. 4,245,836, Cl. 271-228.000.

Jordan, Bertram L.; and Mitchell, John D., to Harrington Manufacturing Company. Method and apparatus for loading bulk tobacco barns. 4,245,657, Cl. 131-138.000.

Jordan, John E. Constant frequency variable rpm generator. 4,246,531, Cl. 322-28.000.

Jordan, Richard A., to Solar Suede Corporation. Method for depositing flock fibers. 4,246,294, Cl. 427-27.000.

Joseph, Werner. See—
Rinke, Hans; and Joseph, Werner, 4,246,432, Cl. 13-6.000.

Joy Manufacturing Company. See—
Wright, David W.; and Peterson, Harley G., 4,246,014, Cl. 55-378.000.

Judkins, Thomas E., to Alcan Aluminum Corporation. Fusible panel clip. 4,245,446, Cl. 52-232.000.

Jullien, Daniel. See—
Bronner, Claude; and Jullien, Daniel, 4,246,049, Cl. 148-103.000.

Jurgens, Gunter R.; and Helal, Mohammed A., to Minitronics Pty. Limited. Current integrating battery charger. 4,246,529, Cl. 320-39.000.

- Juston, Claude: See—
Boutron, Claude; Caffoz, Robert; and Juston, Claude, 4,245,531, Cl. 83-169.000.
- Kabushiki Kaisha Daini Seikisha: See—
Asano, Kazuhiro, 4,246,498, Cl. 307-270.000.
- Kabushiki Kaisha Komatsu Seisakusho: See—
Nagai, Shun-ichi, 4,246,523, Cl. 318-369.000.
- Uehara, Kazuo; Toma, Hideaki; and Sato, Yoshito, 4,245,962, Cl. 417-218.000.
- Kabushiki Kaisha Seikisha: See—
Moritani, Nakanobu; and Oda, Hajime, 4,246,650, Cl. 368-69.000.
- Kabushiki Kaisha Toyo Seisakusho: See—
Murai, Susumu, 4,245,483, Cl. 62-376.000.
- Kabushiki Kaisha Toyoda Iidoshokki Seisakusho: See—
Suzuki, Hajime, 4,245,677, Cl. 139-435.000.
- Kabushiki Kaisha Wako: See—
Kondo, Kazuyoshi; and Nakamura, Yoshiaki, 4,245,491, Cl. 72-254.000.
- Kacher, Mark L., to Procter & Gamble Company, The. Surfactant cake compositions containing solubility reducing agents, 4,246,129, Cl. 252-90.000.
- Kadambi, Vedanth: See—
Keramati, Bahram; and Kadambi, Vedanth, 4,246,490, Cl. 290-1.00A.
- Kakigi, Yasuji, to Cybernet Electronics Corporation. Casing for electronic appliances, 4,245,872, Cl. 312-242.000.
- Kakiuchi, Yoshihiro; and Arai, Takashi, to Hokkaido University. Needle-type colloid osmometer, 4,245,493, Cl. 73-643.000.
- Kallander, Stefan, to Svenska Utvecklings Aktiebolaget. Apparatus for detecting particles suspended in a gas, 4,245,910, Cl. 356-338.000.
- Kallfass, Herbert: See—
Block, Hans-Dieter; Kallfass, Herbert; and Kleinstuck, Roland, 4,246,103, Cl. 210-699.000.
- Kalmykov, Vladimir N.: See—
Khlopkov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexander A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmykov, Vladimir N.; Musilko, Vitaly A.; Garmash, Vladimir I.; Tkachenko, Vladimir A.; Shipilov, Viktor F.; deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.
- Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oréal. Quinonediimine intermediates for indoanilines, 4,246,181, Cl. 260-396.00N.
- Kaltenbach & Voigt GmbH & Co.: See—
Elbforner, Eugen; and Strohmaier, Ernst, 4,245,985, Cl. 433-114.000.
- Kamegai, Tsuneteru: See—
Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,246,213, Cl. 264-46.700.
- Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Thin film magnetic head and method for manufacturing the same, 4,246,620, Cl. 360-127.000.
- Kammann, Knut; and Tiemann, Gerhard, to Werner Kammann Maschinenfabrik GmbH. Process and apparatus for cutting portions out of a web of material, 4,245,538, Cl. 83-880.000.
- Kammann, Wilfried; and Tiemann, Gerhard, to Werner Kammann Maschinenfabrik GmbH. Screen printing process and machine, 4,245,554, Cl. 101-124.000.
- Kamohara, Hisato: See—
Kawai, Mitsuo; Kawaguchi, Kanji; Kamohara, Hisato; and Miyazaki, Matsu, 4,246,048, Cl. 148-32.000.
- Kanai, Kenji: See—
Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, 4,246,620, Cl. 360-127.000.
- Kane, James F.: See—
Dewey, John L.; Scott, Charles E.; Kane, James F.; Stratton, Claud L.; Rushing, John C.; and Spoons, Robert H., 4,246,239, Cl. 423-125.000.
- Kane, Russell D.: See—
Berkowitz, Barry J.; and Kane, Russell D., 4,245,698, Cl. 166-244.00C.
- Kano, Seiji: See—
Kubota, Shigeru; Kano, Seiji; and Kubo, Masahiro, 4,245,733, Cl. 198-391.000.
- Kansai Paint Company, Limited: See—
Murae, Heihachi, 4,246,368, Cl. 525-117.000.
- Kaplan, Michael A. Spectacles, 4,245,896, Cl. 351-41.000.
- Kaplan, Sam H. Additive color photographic film assembly with diffraction grating, 4,246,338, Cl. 430-496.000.
- Kappell, Gerhard; and Hugk, Klaus P., to Norddeutsche Affinerie. Refining furnace for nonferrous metal, 4,245,821, Cl. 266-163.000.
- Kapps, Manfred: See—
Mitschke, Karl-Heinz; and Kapps, Manfred, 4,246,206, Cl. 260-970.000.
- Karikawa, Tohru; and Mita, Kunio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Interchangeable-lens type TTL automatic exposure camera, 4,245,901, Cl. 354-43.000.
- Karino, Yukio: See—
Fusaya, Yoshiharu; Karino, Yukio; Sakakibara, Yoshio; and Endo, Katsunuke, 4,246,333, Cl. 430-219.000.
- Katada, Hiroshi, to Hitachi, Ltd. Contactless ignition system for internal combustion engine, 4,245,600, Cl. 123-415.000.
- Katanosaka, Akisato: See—
Sawada, Hideo; Kotani, Motoharu; Sato, Koji; Izawa, Toichiro; Sugimori, Ken-ichiro; and Katanosaka, Akisato, 4,246,009, Cl. 53-74.000.
- Katayama, Morimitsu: See—
Miyahara, Masayoshi; and Katayama, Morimitsu, 4,245,514, Cl. 74-15.840.
- Kathawala, Faizulla G., to Sandoz, Inc. Higher alkyl diaryl sulfonium salts, 4,246,259, Cl. 424-185.000.
- Kato, Masahiko: See—
Tada, Masahisa; Kato, Masahiko; Ukita, Tsuneo; Segawa, Hiroshi; Domoto, Masao; Mori, Kiyoteru; Ishii, Kazuhiko; Horinouchi, Shinobu; Tsuzuki, Masami; and Uemura, Eiichi, 4,246,118, Cl. 210-275.000.
- Kato, Yoshio: See—
Sasaki, Hiroo; Komiya, Katsuo; and Kato, Yoshio, 4,246,362, Cl. 521-149.000.
- Katsube, Junki: See—
Ohashi, Naohito; Takashima, Yoshinori; and Katsube, Junki, 4,246,428, Cl. 562-401.000.
- Katsumoto, Koichi: See—
Hazama, Kiyosaki; and Katsumoto, Koichi, 4,245,903, Cl. 354-86.000.
- Katzman, Allison W.; Holahan, Edward T.; and Disko, Harry, to Marvin Glass & Associates. Baby doll, 4,245,429, Cl. 46-164.000.
- Kauffman, Robert N.: See—
Smith, James D. B.; and Kauffman, Robert N., 4,246,161, Cl. 260-37.0EP.
- Kausche, Helmold; Mayer, Gerhard; and Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Method of manufacturing a solar cell battery, 4,245,386, Cl. 29-372.000.
- Kawaguchi, Hiroshi: See—
Miyaki, Takeo; Tenmyo, Osamu; Konishi, Masataka; and Kawaguchi, Hiroshi, 4,246,400, Cl. 536-17.00R.
- Kawaguchi, Kanji: See—
Kawai, Mitsuo; Kawaguchi, Kanji; Kamohara, Hisato; and Miyazaki, Matsu, 4,246,048, Cl. 148-32.000.
- Kawai, Hisasi: See—
Morino, Seiji; and Kawai, Hisasi, 4,245,594, Cl. 123-606.000.
- Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,245,602, Cl. 123-425.000.
- Kawai, Mitsuo; Kawaguchi, Kanji; Kamohara, Hisato; and Miyazaki, Matsu, to Tokyo Shibaura Electric Co., Ltd. Forged atomic power plant parts, 4,246,048, Cl. 148-32.000.
- Kawai, Mitsuo: See—
Endo, Kunio; Kobayashi, Nobuyuki; Watanabe, Haruo; and Kawai, Mitsuo, 4,246,566, Cl. 340-52.00F.
- Kawai Musical Instrument Mfg. Co., Ltd.: See—
Deutsch, Ralph, 4,245,541, Cl. 84-1.220.
- Kawaki, Takao: See—
Sugio, Akitoshi; Kuramoto, Atsuo; Kawaki, Takao; Urabe, Hiroyuki; Kurihara, Tatsuhiko; Masumoto, Isamu; and Hasebe, Akio, 4,246,398, Cl. 528-496.000.
- Kawamura, Junichiro; and Iwasawa, Junichi, to Denki Onkyo Co., Ltd. Flyback transformer having terminal pins for connection to printed circuit boards, 4,246,636, Cl. 363-146.000.
- Kawasaki, Itaru; and Hamano, Goro, to Matsushita Electric Industrial Co., Ltd. Pattern generation display system, 4,246,578, Cl. 340-750.000.
- Kawasaki Steel Corporation: See—
Nei, Motoo; Uchikawa, Eisaku; Jo, Ikuo; and Sato, Minoru, 4,245,928, Cl. 405-195.000.
- Kawashima, Yutaka: See—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,245,602, Cl. 123-425.000.
- Kayaba Kogyo Kabushiki Kaisha: See—
Ohtomo, Masaru; Hiroi, Sumio; Inoue, Hisao; and Higuti, Sinito, 4,245,825, Cl. 267-64.00R.
- Kazaroff, John M.: See—
Fortini, Anthony; and Kazaroff, John M., 4,245,469, Cl. 60-204.000.
- Kearns, Donald S.: See—
Ionnou, Basil N.; Kearns, Donald S.; Applegate, Robert J.; Sano, Richard M.; and Prokop, Edward K., 4,245,646, Cl. 128-653.000.
- Keat, Gordon S., to English Clays Lovering Pochin & Co. Ltd. Preflit directing impermeable membrane of varying force exertion, 4,246,122, Cl. 210-350.000.
- Kedem, Ora: See—
Perry, Mordechai; Linder, Charles; and Kedem, Ora, 4,246,092, Cl. 204-301.000.
- Kefeli, Tamara Y.: See—
Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenshtein, Khaim-Mordke A.; Bernatek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marshavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Fillipovskaya, Julia M., 4,246,336, Cl. 430-288.000.
- Kellberg, Howard E., to Corning Glass Works. Devitrifying solder sealing glasses, 4,246,034, Cl. 106-53.000.
- Keller, Guenter: See—
Fohl, Andreas; Hintz, Gerhard; and Keller, Guenter, 4,245,844, Cl. 277-3.000.
- Keller, Jed V., to Motorola, Inc. Plasma development process controller, 4,246,060, Cl. 156-345.000.

- Keller, Toni: See—
Laukien, Gunther R.; Keller, Toni; Koch, Dieter; and Tschopp, Werner, 4,246,537, Cl. 324-321.000.
- Kelly, Leonard T.; and Hamel, Esther V. M., to Hamely International, Inc. Device and method for preventing foreign substance migration through an opening in living animal tissue, 4,245,652, Cl. 128-736.000.
- Kendall Company, The: See—
Patel, Bhupendra C., 4,245,655, Cl. 128-765.000.
- Kennametal Inc.: See—
Erickson, Robert A., 4,245,937, Cl. 407-105.000.
- Kennedy, Joseph P.; and Castner, Kenneth F. Synthesis of substituted cyclopentadienes and cyclopentadiene-functionalized polymers, 4,246,373, Cl. 525-274.000.
- Kennedy, Ralph C., to High Standard, Inc. Magazine catch for firearms, 4,245,418, Cl. 42-7.000.
- Keogh, Kevin E.; and Zimmer, John J., to W. R. Grace & Co. Shape dispensing of photopolymer, 4,246,335, Cl. 430-278.000.
- Keramati, Bahram; and Kadambi, Vedanth, to General Electric Company. Rotating nozzle generator, 4,246,490, Cl. 290-1.00A.
- Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung: See—
Nguyen, Van Dy; and Valenta, Pavel, 4,245,499, Cl. 73-171.000.
- Kernforschungszentrum Karlsruhe GmbH: See—
Becker, Erwin-Willy; Bley, Peter; Ehrfeld, Ursula; Ehrfeld, Wolfgang; and Knapp, Ulrich, 4,246,007, Cl. 55-17.000.
- Goldacker, Hubert; Koch, Gunter; Schmieder, Helmut; Warnecke, Ernst; and Comper, Walter, 4,246,238, Cl. 422-275.000.
- Malang, Siegfried, 4,245,500, Cl. 73-190.00H.
- Kersey, Frank N. Mining vehicle, 4,245,714, Cl. 180-265.000.
- Kersten, Bernard. Corn shelling attachment for combines, 4,245,948, Cl. 414-523.000.
- Kersten, Hilde: See—
Dohy, Gilles; Kersten, Hilde; Meyer, Gerhard; Toth, Anton; and Vollmer, Jean P., 4,246,151, Cl. 260-29.2TN.
- Kettle, Alan: See—
Timmins, Stephen F.; and Kettle, Alan, 4,246,117, Cl. 210-230.000.
- Khan, Tawassul A.; and Moese, Michel P., to Geosource Inc. Seismic source signature evaluation apparatus, 4,246,652, Cl. 367-42.000.
- Khera, Awtar S.: See—
Krebs, J. Robert; and Khera, Awtar S., 4,246,114, Cl. 210-151.000.
- Khlopkov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexander A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmykov, Vladimir N.; Musilko, Vitaly A.; Garmash, Vladimir I.; Tkachenko, Vladimir A.; Shipilov, Viktor F.; deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by. Apparatus for isolating titanium tetrachloride, 4,246,012, Cl. 55-315.000.
- Kihara, Toshihiko: See—
Yoshida, Mitsuo; Kihara, Toshihiko; and Nagasawa, Hiroshi, 4,246,489, Cl. 250-577.000.
- Kikly, Ned L.: See—
Savage, Jack W.; and Kikly, Ned L., 4,245,957, Cl. 416-135.000.
- Kilbert, Jean-Claude: See—
Verelle, Philippe M.; and Kilbert, Jean-Claude, 4,245,745, Cl. 211-8.000.
- Kim Hotstart Manufacturing Co., Inc.: See—
Stein, John, 4,245,593, Cl. 123-142.50R.
- Kimura, Akira: See—
Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, 4,245,595, Cl. 123-195.00C.
- Kinast, Gunther; and Schedel, Michael, to Bayer Aktiengesellschaft. Process for the production of 6-amino-6-deoxy-L-sorbose, 4,246,345, Cl. 435-84.000.
- Kindell, Jerry L.: See—
Flynn, Richard T.; and Kindell, Jerry L., 4,246,644, Cl. 364-900.000.
- Kinsell, William D., Jr., to SCM (Canada) Ltd. Bias container/applicator trim package for dimensionally stable solid paints and related materials, 4,245,919, Cl. 401-97.000.
- Kirch, William: See—
Dombro, Robert A.; and Kirch, William, 4,246,137, Cl. 252-436.000.
- Kirner, Hans D.; and Wegmann, Jacques, to Rohner AG Pratteln. Highly concentrated, stable, free-flowing aqueous dispersions of diazotizable aromatic amines bearing electrophilic substituents, 4,245,993, Cl. 8-664.000.
- Kiss, Laszlo A. Protection system for electronic gear, 4,246,573, Cl. 340-539.000.
- Kittrell, James R.; and Herman, Donald L., to New England Power Service Company; and Northeast Utilities Service Company. Method and apparatus for reducing nitric oxide, 4,246,234, Cl. 422-171.000.
- Klauber, Gerald: See—
Clark, William L.; Cox, John T.; Klauber, Gerald; Petito, Ferdinand C.; Ramsey, John B., Jr.; and Waylonis, John E., 4,246,510, Cl. 313-388.000.
- Klausz, Istvan: See—
Aaszyoni, Csaba; Klausz, Istvan; Kmetz, Istvan; Meitzen, Nandor; and Pasztor, Rezzo, 4,245,926, Cl. 405-150.000.
- Kleemann, Axel; and Schwarze, Werner, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of hydroxynitriles from epoxides and ketone cyanohydrins, 4,246,189, Cl. 260-465.00F.
- Kleinstuck, Roland: See—
Block, Hans-Dieter; Kallfass, Herbert; and Kleinstuck, Roland, 4,246,103, Cl. 210-699.000.
- Klenk, Emil; and Heina, Karl-Fritz, to Maschinenbau Oppenweiler GmbH. Apparatus for the stacking of sheets, 4,245,832, Cl. 271-185.000.
- Klose, Robert E.; Bahoshy, Bernard J.; Sjonvall, Ragnar E.; and Yeran-sian, James A., to General Foods Corporation. Chewing gums of improved sweetness retention, 4,246,286, Cl. 426-3.000.
- Klotz, Erhard: See—
Weiss, Hermann; Linde, Rolf; Tiemens, Ulf; and Klotz, Erhard, 4,246,483, Cl. 250-445.00T.
- Klug, Frederic J.: See—
Pasco, Wayne D.; Klug, Frederic J.; and Borom, Marcus P., 4,246,215, Cl. 264-64.000.
- Kmetz, Istvan: See—
Aaszyoni, Csaba; Klausz, Istvan; Kmetz, Istvan; Meitzen, Nandor; and Pasztor, Rezzo, 4,245,926, Cl. 405-150.000.
- Knapp, Ulrich: See—
Becker, Erwin-Willy; Bley, Peter; Ehrfeld, Ursula; Ehrfeld, Wolfgang; and Knapp, Ulrich, 4,246,007, Cl. 55-17.000.
- Knappworst, Jürgen; Gawlick, Heinz; and Brieger, Helmut, to Dynamit Nobel AG. Projectile, especially for hand firearms and automatic pistols, 4,245,557, Cl. 102-91.000.
- Knasel, Thomas M.; and Houghton, Alexander J., to Science Applications, Inc. Fixed solar energy concentrator, 4,246,042, Cl. 136-246.000.
- Knifton, John F., to Texaco Development Corp. Process for preparing unsaturated aliphatic esters from aliphatic dienes, 4,246,183, Cl. 260-408.000.
- Knight, Allan R.: See—
Mathur, Indresh; Bristow (nee Elley), Dale M.; and Knight, Allan R., 4,246,241, Cl. 423-179.000.
- Kniola, Clement J.: See—
Stark, Marvin; and Kniola, Clement J., 4,245,565, Cl. 105-377.000.
- Knoepfler, Nestor B.: See—
Elgal, Galoust M.; Perkins, Rita M.; and Knoepfler, Nestor B., 4,246,031, Cl. 106-18.140.
- Knott, Christopher. Wheelchair, 4,245,847, Cl. 280-5.200.
- Knox, Keith T., to Xerox Corporation. Binary graphic printer system having an electronic screen with shift control suited for rescreening, 4,246,614, Cl. 358-283.000.
- Knudsen, Kenneth F., to Acco Industries, Inc. Power and free conveyor system, 4,245,562, Cl. 104-172.00S.
- Kobayashi, Junkiti: See—
Kokubo, Ichiro; Ban, Seiji; Takisawa, Kensaburo; Koyama, Yuuji; Kobayashi, Junkiti; and Ueda, Chosei, 4,245,490, Cl. 72-234.000.
- Kobayashi, Kenji: See—
Tanaka, Koichi; Kobayashi, Kenji; and Aonuma, Shigeo, 4,246,332, Cl. 430-109.000.
- Kobayashi, Nobuyuki: See—
Endo, Kunio; Kobayashi, Nobuyuki; Watanabe, Haruo; and Kawai, Mitsuo, 4,246,566, Cl. 340-52.00F.
- Kobayashi, Toshiaki; Nobe, Tomio; Niimi, Hiroshi; and Wada, Tetsuo, to New Japan Chemical Co., Ltd.; Mitsui Coke Co., Ltd.; Mitsui Miike Machinery Co., Ltd.; and Toko Kasei Ltd. Fuel compositions comprising coal-liquid fuel mixture, 4,246,000, Cl. 44-51.000.
- Kobe Steel, Limited: See—
Kokubo, Ichiro; Ban, Seiji; Takisawa, Kensaburo; Koyama, Yuuji; Kobayashi, Junkiti; and Ueda, Chosei, 4,245,490, Cl. 72-234.000.
- Koch, Dieter: See—
Laukien, Gunther R.; Keller, Toni; Koch, Dieter; and Tschopp, Werner, 4,246,537, Cl. 324-321.000.
- Koch, Gunter: See—
Goldacker, Hubert; Koch, Gunter; Schmieder, Helmut; Warnecke, Ernst; and Comper, Walter, 4,246,238, Cl. 422-275.000.
- Koch, Robert W., to Amchem Products, Inc. Stripping composition and method for metals, 4,246,130, Cl. 252-143.000.
- Kochert, Wilfried; and Hauff, Paul, to Computer Gesellschaft Konstanz mbH. Optical wand for mechanical character recognition, 4,246,570, Cl. 340-146.35Y.
- Kochi, Hiromu: See—
Takaya, Takao; Kochi, Hiromu; and Masugi, Takashi, 4,246,405, Cl. 544-16.000.
- Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., to Upjohn Company, The. Process for polyisocyanurate foams based on an amide-diol blend, 4,246,364, Cl. 521-167.000.
- Kogler, Georg; and Schalk, Karl, to Siemens Aktiengesellschaft. Brushless direct current motor, 4,246,518, Cl. 318-138.000.
- Kohler, Dieter, to Werkstoff Eisenhütte Westfalen. Supply systems for mobile appliances, particularly mining machines, 4,245,726, Cl. 191-23.00A.
- Koike, Takashi: See—
Amano, Masahiro; and Koike, Takashi, 4,246,066, Cl. 162-141.000.
- Koike, Wataro; Takayama, Masami; Ohashi, Hideaki; and Yazawa, Chihiro, to Ihara Chemical Industry Co., Ltd. Method for the preparation of polyurethane elastomers based on polyethyleneglycol-bis(4-aminobenzoates), 4,246,392, Cl. 528-64.000.
- Koike, Wataro; Takayama, Masami; Ohashi, Hideaki; and Yazawa, Chihiro, to Ihara Chemical Industry Co., Limited. 4-Chloro-3,5-diaminophenyl acetates and curing agent, 4,246,425, Cl. 560-47.000.
- Kojima, Minoru: See—
Yukuta, Toshio; Ohashi, Takashi; Kojima, Minoru; and Saito, Masumi, 4,246,361, Cl. 521-128.000.
- Kokubo, Ichiro; Ban, Seiji; Takisawa, Kensaburo; Koyama, Yuuji; Kobayashi, Junkiti; and Ueda, Chosei, to Kobe Steel, Limited. Thin rolled steel plate having unequal thickness, 4,245,490, Cl. 72-234.000.
- Kokusan Denki Co., Ltd.: See—
Kubo, Masaki, 4,246,532, Cl. 322-89.000.

Kolb, Elizabeth, executrix: See—
Eiermann, Kurt; and Kolb, Franz, deceased, 4,245,502, Cl. 73-204.000.

Kolb, Franz, deceased: See—
Eiermann, Kurt; and Kolb, Franz, deceased, 4,245,502, Cl. 73-204.000.

Kolling, Heinrich; Niemers, Ekkehard; Wollweber, Hartmund; and Thomas, Herbert, to Bayer Aktiengesellschaft. Substituted omicron-phenylenediamine derivatives, process for their preparation and their use as medicaments. 4,246,260, Cl. 424-228.000.

Kolodzey, James S.; Stilwell, George R., Jr.; and Uberbacher, Edward C., to International Business Machines Corporation. Fiber optics light switch. 4,245,886, Cl. 350-96.200.

Kolosov, Ivan A.; and Kuryshv, Nikolai V. Apparatus for applying paste upon blank strips for cement electrodes of alkaline storage batteries. 4,245,584, Cl. 118-407.000.

Komatsu, Yuzo; and Nomura, Yasushi, to Citizen Watch Company Limited. Electronic timepiece. 4,246,651, Cl. 368-73.000.

Kometani, Kiichi; and Okasaka, Hotsuma, to Toray Industries, Inc. Thermoplastic polyester resinous composition. 4,246,378, Cl. 525-438.000.

Komiya, Katsuo: See—
Sasaki, Hiroo; Komiya, Katsuo; and Kato, Yoshio, 4,246,362, Cl. 521-149.000.

Komiya, Osamu, to Olympus Optical Co., Ltd. Endoscope with flexible tip control. 4,245,624, Cl. 128-4.000.

Komura, Minoru: See—
Nakamura, Syuichi; Ogawa, Satoshi; Moriyama, Yasuhiro; Ueno, Tomihisa; and Komura, Minoru, 4,245,674, Cl. 138-110.000.

Kondig, Walter: See—
Haddad, Theodore A.; Kondig, Walter; and Phillips, Richard A., 4,245,991, Cl. 8-506.000.

Kondo, Hiroyuki; and Takeshita, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Fluid brake pressure control system. 4,245,867, Cl. 303-6.000.

Kondo, Kazuyoshi; and Nakamura, Yoshiaki, to Kabushiki Kaisha Wako. Method and device for producing hollow articles having flanges. 4,245,491, Cl. 72-254.000.

Kondo, Yoshiaki; and Okamoto, Akira, to Ricoh Company, Ltd. Full duplex transceiver comprising hybrid coil and automatic impedance adjustment means. 4,246,582, Cl. 370-32.000.

Konishi, Masataka: See—
Miyaki, Takeo; Tenmyo, Osamu; Konishi, Masataka; and Kawaguchi, Hiroshi, 4,246,400, Cl. 536-17.000.

Konishiroku Photo Industry Co., Ltd.: See—
Hazama, Kiyosaki; and Katsumoto, Koichi, 4,245,903, Cl. 354-86.000.

Izumiya, Naoki, 4,245,892, Cl. 350-189.000.

Kononov, Leonid V.: See—
Dolgov, Anatoly V.; Kononov, Leonid V.; Perks, Leib B.; Deev, Stanislav L.; Dyakov, Vitaly E.; Semenov, Alexandr E.; Bauer, Evgeny T.; and Sutin, Serafim N., 4,246,106, Cl. 210-774.000.

Kononov, Vladimir P.: See—
Uvarov, Boris A.; Tsvetkova, Valentina I.; Dyachkovsky, Fridrikh S.; Zvyagin, Oleg M.; Kononov, Vladimir P.; Uvarova, Elvira A.; Ljustgarten, Elena I.; Novokshonova, Ljudmila A.; Kudanova, Olga I.; and Maklakova, Tatyana A., 4,246,134, Cl. 252-429.000.

Konst, Wilhelmus M. B.; ter Heide, Roelof; and Wobben, Hendrik J., to Naarden International N.V. Substituted cyclohexanones as flavor materials. 4,246,292, Cl. 426-538.000.

Kontos, Stavros B., to Jelco Laboratories. Catheter assembly for intermittent intravenous use. 4,245,635, Cl. 128-214.000.

Kopchik, Richard M., to Rohm and Haas Company. Imidized acrylic polymers. 4,246,374, Cl. 525-329.000.

Kopp, Otto; Holzer, Helmut; and Birnbaum geb. Schinko, Charlotte, to Sud-West Chemie GmbH. Carrier materials impregnated with thermosetting resins, process for their manufacture and their use. 4,246,315, Cl. 428-315.000.

Korn, Charles S.: See—
Estes, Morton B.; and Korn, Charles S., 4,245,489, Cl. 72-123.000.

Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. 6-n-Propyl-8a-methoxymethyl or methylmercaptomethylergolines and related compounds. 4,246,265, Cl. 424-261.000.

Kosaka, Takao; and Tahara, Yukio, to Mitsubishi Paper Mills, Ltd. Thermal sensitive paper-minimized in release of tailings liable to deposit on thermal head. 4,246,312, Cl. 428-207.000.

Kosonocky, Walter F.; and Rodgers, Robert L., 3rd, to RCA Corporation. CCD imagers. 4,246,591, Cl. 357-24.000.

Kosugui, Seiji, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Solenoid pilot operated valve. 4,245,671, Cl. 137-625.640.

Kotani, Motoharu: See—
Sawada, Hideo; Kotani, Motoharu; Sato, Koji; Izawa, Toichiro; Sugimori, Ken-ichi; and Katanosaka, Akisato, 4,246,009, Cl. 53-74.000.

Kotwal, Pramod M.: See—
Higuchi, Takeru; and Kotwal, Pramod M., 4,246,399, Cl. 536-17.00A.

Kovalenko, Boris V.: See—
Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenshtein, Khaim-Mordke A.; Bernatek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marahavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Filipovskaya, Julia M., 4,246,336, Cl. 430-288.000.

Kowalski, Daniel J.; and Ferguson, Douglas J., to Four Star Corporation. Article carrier having variably positionable cross-rail bracket. 4,245,764, Cl. 224-321.000.

Koyama, Yuuji: See—
Kokubo, Ichiro; Ban, Seiji; Takisawa, Kensaburo; Koyama, Yuuji; Kobayashi, Junkiti; and Ueda, Chosei, 4,245,490, Cl. 72-234.000.

Kraft, Paul: See—
Coll-Palagos, Miguel; Groch, Frank O.; Kraft, Paul; and Lin, Ruey Y., 4,246,320, Cl. 428-463.000.

Kraftwerk Union Aktiengesellschaft: See—
Schabert, Hans-Peter; and Laurer, Erwin, 4,245,412, Cl. 137-357.000.

Krebs Engineers: See—
Grieve, Donald F.; and Barnett, Edward D., 4,246,576, Cl. 340-606.000.

Krebs, J. Robert; and Khara, Awtar S., to Multi-Flo, Inc. Aerobic waste treatment package. 4,246,114, Cl. 210-151.000.

Krieger, Detlef: See—
Muller, Rudolf; Radeklau, Hans-Jurgen; Doeck, Harald; and Krieger, Detlef, 4,245,399, Cl. 34-166.000.

Kriegel, Max; and Riedmayr, Georg, to Carl Hurth Maschinen- und Zahnradfabrik. Device for positioning a tool carriage. 4,245,938, Cl. 409-15.000.

Krob, Erwin; and Svoboda, Josef, to TMC Corporation. Ski brake. 4,245,851, Cl. 280-605.000.

Krug, Hans J. Controllable distributing conveying systems. 4,245,561, Cl. 104-27.000.

Kubinec, James J., to Mitel Corporation. Means for coupling incompatible signals to an integrated circuit and for deriving operating supply therefrom. 4,246,502, Cl. 307-303.000.

Kubo, Masaaki, to Kokusan Denki Co., Ltd. Synchronous generator. 4,246,532, Cl. 322-89.000.

Kubo, Masahiro: See—
Kubota, Shigeru; Kano, Seiji; and Kubo, Masahiro, 4,245,733, Cl. 198-391.000.

Kubota, Ltd.: See—
Miyahara, Masayoshi; and Katayama, Morimitsu, 4,245,514, Cl. 74-15.840.

Morita, Shigeru; and Horie, Fumiharu, 4,245,705, Cl. 172-125.000.

Toyokuni, Kazuo; Miyata, Junji; Itatani, Hiroshi; and Kuroiwa, Ryozo, 4,245,518, Cl. 474-111.000.

Kubota, Shigeru; Kano, Seiji; and Kubo, Masahiro, to Nitto Kogyo K.K. Feeder. 4,245,733, Cl. 198-391.000.

Kudinova, Olga I.: See—
Uvarov, Boris A.; Tsvetkova, Valentina I.; Dyachkovsky, Fridrikh S.; Zvyagin, Oleg M.; Kononov, Vladimir P.; Uvarova, Elvira A.; Ljustgarten, Elena I.; Novokshonova, Ljudmila A.; Kudanova, Olga I.; and Maklakova, Tatyana A., 4,246,134, Cl. 252-429.000.

Kuhn, S.A.: See—
Gerlinger, Frederic, 4,245,457, Cl. 56-370.000.

Kuhnel, Werner, to Dynamit Nobel Aktiengesellschaft. Process for the production of foam materials on polyolefin basis. 4,246,211, Cl. 264-37.000.

Kuna, Wayne A.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Projectile launching game. 4,245,842, Cl. 273-357.000.

Kunz, Peter, to Mettler Instrument AG. Weighing apparatus including a tapped electromagnetic load compensation coil. 4,245,711, Cl. 177-212.000.

Kunz, Robert G.: See—
Goodrich, Robert R.; Kunz, Robert G.; Lipton, Sydney; and Owen, Keith, 4,246,079, Cl. 204-98.000.

Kuramoto, Atsuo: See—
Sugio, Akitoshi; Kuramoto, Atsuo; Kawai, Takao; Urabe, Hiroyuki; Kurihara, Tatsuhiko; Masumoto, Isamu; and Hasebe, Akio, 4,246,398, Cl. 528-496.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: See—
Murayama, Naohiro; Fukuda, Makoto; Sujuki, Sirou; and Sakagami, Teruo, 4,246,091, Cl. 204-296.000.

Kurihara, Tatsuhiko: See—
Sugio, Akitoshi; Kuramoto, Atsuo; Kawai, Takao; Urabe, Hiroyuki; Kurihara, Tatsuhiko; Masumoto, Isamu; and Hasebe, Akio, 4,246,398, Cl. 528-496.000.

Kurihara, Toshi: See—
Nishiyama, Yutaka; Mizutani, Nagao; and Kurihara, Toshi, 4,246,478, Cl. 250-231.05E.

Kurita, Jiro: See—
Honda, Makoto; Ozawa, Kohe; Hosoya, Kazuhiro; and Kurita, Jiro, 4,246,382, Cl. 526-79.000.

Kurita, Tokio; and Horie, Koji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Drum brake with hydraulic tube, vibration dampening support structure. 4,245,725, Cl. 188-326.000.

Kuroda, Toru: See—
Takenaka, Yoshinori; Tsuda, Nobuaki; and Kuroda, Toru, 4,246,107, Cl. 210-806.000.

Kuroiwa, Ryozo: See—
Toyokuni, Kazuo; Miyata, Junji; Itatani, Hiroshi; and Kuroiwa, Ryozo, 4,245,518, Cl. 474-111.000.

Kuryshv, Nikolai V.: See—
Kolosov, Ivan A.; and Kuryshv, Nikolai V., 4,245,584, Cl. 118-407.000.

Kusumoto, Sho: See—
Shiohata, Koki; Ohno, Masaharu; Fujisawa, Fumio; Sato, Kazuo; Kusumoto, Sho; and Hisano, Katsukuni, 4,245,950, Cl. 415-103.000.

Kvamsdal, Rolf, to Moss Rosenberg Verft A/S. Leak protection system on a tank for storing or transporting liquefied gas. 4,245,748, Cl. 220-1.00C.

Kyker, Glendon D.: See—
Paul, Kalidas; and Kyker, Glendon D., 4,246,205, Cl. 570-220.000.

Kyowa Chemical Industry Co., Ltd.: See—
Miyata, Shigeo; and Okada, Akira, 4,246,254, Cl. 423-635.000.

La Telemecanique Electrique: See—
Bouteille, Daniel; Duclos, Michel; Marguet, Hugues; Nicolas, Michel; and Petrimaux, Eric, 4,245,673, Cl. 137-884.000.

Laar, Erwin; Ganser, Friedrich; and Hammer, Thomas, to AGFA-Gevaert, A.G. Apparatus for drying webs of photographic paper or the like. 4,245,397, Cl. 34-54.000.

Labaz: See—
Chignac, Michel; Grain, Claude; Jammot, Fernand; Pigerol, Charles; Eymard, Pierre L.; and Combet (epse Broll), Madeleine, 4,246,282, Cl. 424-320.000.

Labrousse, Michel: See—
Dupuy, Gerard; Fajeau, Maurice; Labrousse, Michel; Lerouge, Bernard; and Minguet, Jean-Luc, 4,246,069, Cl. 176-65.000.

Lafont, Raymond; and Desforges, Patrick J. J., to Britax (GECO) S.A. External rear view mirror controllable from inside a vehicle. 4,245,893, Cl. 350-289.000.

Lagodmos, George P.: See—
Glode, John B.; and Lagodmos, George P., 4,245,477, Cl. 62-6.000.

Lahiff, John E., to General Motors Corporation. Neutral to drive transient enrichment for an engine fuel supply system. 4,245,604, Cl. 123-478.000.

Lai, John T., to B.F. Goodrich Company, The. Synthesis of 2-keto-1,4-diazacycloalkanes with a soft ion catalyst. 4,246,412, Cl. 544-384.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: See—
Benz, Gerard; and Racouchot, Bernard, 4,246,216, Cl. 264-71.000.

Laiter, Robert A., to Acme Resin Corporation. Binder compositions containing phenolic resins and organic phosphate and/or carbonate solvents. 4,246,157, Cl. 260-30.60R.

Lambertson, Carmon D., to Cessna Aircraft Company, The. Phase and speed control system. 4,245,955, Cl. 416-34.000.

Lameyer, Michael. Stainless steel container for fluid and method. 4,246,046, Cl. 148-12.00E.

Lamond, Trevor G.; and Cuthbertson, Charles R., to J. M. Huber Corporation. Process for producing pelletized kaolin clay. 4,246,220, Cl. 264-117.000.

Landay, David L.; and Wolf, Alvan H., to Brookfield Athletic Shoe Company, Inc. Athletic shoe. 4,245,406, Cl. 36-14.000.

Landes, Richard A. Firearm sight picture simulator and teaching aid. 4,245,402, Cl. 434-19.000.

Lang, Walter: See—
Loew, Peter; and Lang, Walter, 4,245,990, Cl. 8-582.000.

Langer, Heimo J.: See—
Grimm, Robert A.; Langer, Heimo J.; and Plummer, John F., 4,246,167, Cl. 260-42.470.

Lantzsch, Reinhard: See—
Hartmann, Alfons; Marhold, Albrecht; Lantzsch, Reinhard; Hammann, Ingeborg; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,246,276, Cl. 424-282.000.

Lanzilotta, Raymond P.; and Weibel, Michael K., to Novo Laboratories, Inc. Microbiologic conversion of L-galactonate into 2-Keto L-galactonate. 4,246,348, Cl. 435-137.000.

Laporte Industries Limited: See—
Robinson, Michael, 4,246,022, Cl. 75-11.000.

Large, Helen F. Fitted top contour sheet. 4,245,365, Cl. 5-496.000.

La Rosa, John F., to C. R. Bard, Inc. Self-inflating urinary catheter. 4,245,639, Cl. 128-349.000.

Larsen, John E.; and McGregor, Rob R., to Colgate-Palmolive Company. Athletic shoe. 4,245,408, Cl. 36-50.000.

Larsen, Larry D., to Patent Development & Management Company. Detection circuit with hysteresis. 4,246,572, Cl. 340-501.000.

Larsen, Lawrence E.: See—
Jacobi, John H.; and Larsen, Lawrence E., 4,246,534, Cl. 324-57.00R.

Larson, James M. Process of preparing potato snack product. 4,246,293, Cl. 426-637.000.

Larson, Thomas M., to Dover Corporation. Vehicle stabilizer. 4,245,855, Cl. 280-765.000.

Larsson, Hans F.: See—
Hjelmer, Ulf R.; and Larsson, Hans F., 4,246,102, Cl. 210-704.000.

Larsson, Per-Olof; Mosbach, Klaus H.; and Ohlson, Sten A., to Aktiebolaget Fermenta. Antibiotic and steroid transformation process. 4,246,346, Cl. 435-57.000.

La Russa, Joseph A., to Farrand Optical Co., Inc. Optical simulation apparatus. 4,246,605, Cl. 358-104.000.

Lasche, Jakob, to Hugo Kern und Liebers & Co. Lock for safety belts. 4,245,376, Cl. 24-230.0AL.

Latter, Albert L., to R & D Associates. Artificial and solar lighting system. 4,246,477, Cl. 250-214.0AL.

Laubie, Michel: See—
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,246,267, Cl. 424-267.000.

Laukien, Gunther R.; Keller, Toni; Koch, Dieter; and Tachopp, Werner, to Spectrospin AG. Spin resonance spectrometer. 4,246,537, Cl. 324-321.000.

Laurer, Erwin: See—
Schabert, Hans-Peter; and Laurer, Erwin, 4,245,412, Cl. 137-357.000.

Lavanchy, Andre C., to Pennwalt Corporation. Centrifuge apparatus. 4,245,777, Cl. 233-7.000.

LaVieta, Daniel: See—
Grard, Henry P.; LaVieta, Daniel; and Mergelsberg, Edmond M., 4,245,689, Cl. 162-134.000.

Lawson, Kenneth D.; and Brown, Neil L., to Neil Brown Instruments Systems, Inc. Phase measuring circuit. 4,246,497, Cl. 307-232.000.

Lazarenko, Eduard T.: See—
Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenshtein, Khaim-Mordke A.; Bernatek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marahavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Filipovskaya, Julia M., 4,246,336, Cl. 430-288.000.

Lazelle, Brian D., to Lucas Industries Limited. Apparatus for removing electrostatic charge from an aircraft windscreen. 4,246,624, Cl. 361-218.000.

Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique. Method and apparatus for reading magnetically coded data. 4,246,474, Cl. 235-450.000.

Lebeck, Harold E.; and Rhodes, Donald B., to Lebeck, Harold E. Surgical anastomosis clamping apparatus. 4,245,638, Cl. 128-334.00C.

LeBegue, Maurice K., to National Mine Service Company. Limited slip differential. 4,245,525, Cl. 74-711.000.

LeBoeuf, Albert R., to American Optical Corporation. Contact lens composition having increased oxygen permeability. 4,246,389, Cl. 526-279.000.

Leconturier, Jacques M. Automatic flossing apparatus. 4,245,658, Cl. 132-92.00A.

Lee, Robert G. H.: See—
Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, 4,246,111, Cl. 210-96.100.

Leeds & Northrup Company: See—
Clack, Peter J., 4,245,914, Cl. 356-440.000.

Leeds, William G.: See—
Gilmour, James; Hatton, Leslie R.; Parnell, Edgar W.; Warburton, Dennis; and Leeds, William G., 4,246,021, Cl. 71-92.000.

Legendre, Michael G.; and Fisher, Gordon S., to United States of America, Agriculture. Inlet system for direct gas chromatographic and combined gas chromatographic/mass spectrometric analysis of food volatiles. 4,245,494, Cl. 73-23.100.

Legge, Dennis: See—
Donaldson, Ian S.; and Legge, Dennis, 4,245,770, Cl. 229-2.5EC.

Legrand, Bernard; and Masselin, Michel, to Alstom-Atlantique. Mechanical protection of electrical connectors of electronic power assemblies cooled by a fluorinated hydrocarbon. 4,246,626, Cl. 361-385.000.

Lehmann, William F.: See—
Hunt, Michael O.; Lehmann, William F.; and Fergus, David A., 4,246,310, Cl. 428-106.000.

Lehnen, Josef P.; and Zingelmann, Gerd, to Bayer Aktiengesellschaft. Process and apparatus for molding elastomers. 4,246,224, Cl. 264-328.140.

Leibel, Bernard S.: See—
Albasser, Anthony M.; and Leibel, Bernard S., 4,245,634, Cl. 128-213.00R.

Leister, Heinrich; Dittmer, Helmut; and Schonhagen, Hubert, to Bayer Aktiengesellschaft. Process for separating off 1-amino-4-bromoanthraquinone-2-sulphonic acid. 4,246,180, Cl. 260-371.000.

Lembke, Andreas; and Gorny, Dietrich. Oral or edible compositions. 4,246,256, Cl. 424-50.000.

Lenox Machine Company, Inc.: See—
Frye, Kenneth G.; and Fitzpatrick, Donald C., 4,245,530, Cl. 83-99.000.

Leo Pharmaceutical Products, Ltd. A/S: See—
Vangedal, Ib S., 4,246,262, Cl. 424-244.000.

Leonard, Haydn A., to Marconi Company Limited, The. Monitoring devices. 4,246,456, Cl. 200-61.080.

Lerouge, Bernard: See—
Dupuy, Gerard; Fajeau, Maurice; Labrousse, Michel; Lerouge, Bernard; and Minguet, Jean-Luc, 4,246,069, Cl. 176-65.000.

Les Entreprises Rotot Ltee: See—
Thiboutot, Robert, 4,245,849, Cl. 280-20.000.

Leagourgues, Jacques, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Process for the manufacture of a piece comprising at least one porous abrasible material. 4,246,218, Cl. 264-111.000.

Levi Strauss & Co.: See—
Saunders, Eugene M., 4,245,512, Cl. 73-789.000.

Levy, Albert: See—
Depondt, Paul; Echallier, Claude; Levy, Albert; and Boussin, Louis, 4,245,447, Cl. 52-262.000.

Lewalter, Jurgen: See—
Zecher, V'lfried; Lewalter, Jurgen; Merten, Rudolf; and Dunwald, Willi, 4,246,393, Cl. 528-75.000.

Lewis, Sheldon N.; and Haggard, Richard A., to Rohm and Haas Company. Use of novel polymers of alkyl acrylates. 4,246,370, Cl. 525-131.000.

Licinvest AG: See—
Ackeret, Peter, 4,245,417, Cl. 40-513.000.

Lie, Tjong T.; and Wright, Charles G., to Rockwell International Corporation. Tandem axle suspension bracket assembly. 4,245,852, Cl. 280-680.000.

Liebl, Helmut, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften E.V. Contact ionization apparatus. 4,246,481, Cl. 250-423.00R.

- Lien, Ming T.; and Burtis, Eric F., to said Eric F. Burtis; by said Ming T. Lien. Machine for teaching reading. 4,245,405, Cl. 434-178.000.
- Light, Bette M.: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,246,287, Cl. 426-3.000.
- Lillo, Jean-Pierre, to Rhone-Poulenc Industries. Method and apparatus for cleaning a rotary agitator in a reactor. 4,246,041, Cl. 134-23.000.
- Lilly Industries Limited: See—
Williamson, William R. N., 4,246,281, Cl. 424-308.000.
- Lin, Ruy Y.: See—
Coll-Palagos, Miguel; Groch, Frank O.; Kraft, Paul; and Lin, Ruy Y., 4,246,320, Cl. 428-463.000.
- Lin, Wen: See—
Deweese, Thomas J.; Fangman, John S.; and Lin, Wen, 4,246,064, Cl. 156-608.000.
- Lincoln Electric Company, The: See—
Shutt, Robert C.; Black, Thomas J.; and Matthews, Victor Y., 4,246,463, Cl. 219-73.200.
- Linde, Rolf: See—
Weiss, Hermann; Linde, Rolf; Tiemens, Ulf; and Klotz, Erhard, 4,246,483, Cl. 250-445.00T.
- Lindell, Lennart J. Impact press. 4,245,493, Cl. 72-436.000.
- Linder, Charles: See—
Perry, Mordechai; Linder, Charles; and Kedem, Ora, 4,246,092, Cl. 204-301.000.
- Lindmayer, Joseph, to Solarix Corporation. Yttrium oxide antireflective coating for solar cells. 4,246,043, Cl. 136-236.000.
- Lindner, Johann; and Nylund, Olov, to Aktiebolaget ASEA-ATOM. Boiling reactor with direct feed water input to the fuel boxes. 4,246,068, Cl. 176-61.000.
- Lindroos, Runar I. Screw conveyor for feeding lime sludge or cement to a lime and cement kiln, respectively. 4,245,983, Cl. 432-235.000.
- Lindstrom, Bengt A., to Chemetics International Ltd. Pressure regulator. 4,245,668, Cl. 137-534.000.
- Linear Dynamics, Inc.: See—
Willis, John G., 4,245,815, Cl. 251-129.000.
- Lingorski, Nikola A.: See—
Savov, Peter H.; Peev, Vassil G.; Valchev, Alexander Y.; and Lingorski, Nikola A., 4,246,023, Cl. 75-12.000.
- Linor, William I. Theronuclear fusion system. 4,246,067, Cl. 176-3.000.
- Lipinski, Richard J., to Mogul Corporation, The. Corrosion inhibiting compositions and the process for using same. 4,246,030, Cl. 106-14.120.
- Lipowski, Stanley A., to Diamond Shamrock Corporation. Water soluble polymeric textile treating agent. 4,245,994, Cl. 8-74.000.
- Lipton, Sydney: See—
Goodrich, Robert R.; Kunz, Robert G.; Lipton, Sydney; and Owen, Keith, 4,246,079, Cl. 204-98.000.
- Lischke, Burkhard: See—
Anger, Klaus; Froese, Jürgen; and Lischke, Burkhard, 4,246,487, Cl. 250-492.00R.
- Littelfuse, Inc.: See—
Olson, Harry W.; and Borzoni, John M., 4,246,564, Cl. 331-409.000.
- Liton Systems, Inc.: See—
Loomer, Weston R., 4,245,715, Cl. 180-279.000.
- Livingston, Danny K.: See—
Hawk, Charles E.; and Livingston, Danny K., 4,245,503, Cl. 73-204.000.
- Ljustgarten, Elena I.: See—
Uvarov, Boris A.; Tsvetkova, Valentina I.; Dyachkovsky, Fridrikh S.; Zvyagin, Oleg M.; Konovalov, Vladimir P.; Uvarova, Elvira A.; Ljustgarten, Elena I.; Novokshonova, Ljudmila A.; Kudanova, Olga I.; and Maklakova, Tatyana A., 4,246,134, Cl. 252-429.00B.
- LKB-Producter AB: See—
Lundin, Arne T.; and Myhrman, Arne, 4,246,340, Cl. 435-8.000.
- Lloyd, Ernest E.: See—
Wall, John E.; and Lloyd, Ernest E., 4,246,322, Cl. 428-670.000.
- Lloyd, Ronald; and Walter, Brian W., to T. J. Smith & Nephew, Ltd. Tearable composite strip of materials. 4,245,630, Cl. 128-155.000.
- Lockwood, Larry D.; and Lockwood, Lawrence D. Portable sawmill and method for cutting logs. 4,245,535, Cl. 83-798.000.
- Lockwood, Lawrence D.: See—
Lockwood, Larry D.; and Lockwood, Lawrence D., 4,245,535, Cl. 83-798.000.
- Locit Corporation: See—
Burger, Robert, 4,245,812, Cl. 251-10.000.
- Loew, Peter; and Lang, Walter, to Ciba-Geigy Corporation. Process for producing solutions of salts of water-soluble carboxylic acids of cationic dyes or optical brighteners. 4,245,990, Cl. 8-582.000.
- Lohr, John W., to Inolex Corporation. Low-irritant surfactant composition. 4,246,131, Cl. 252-153.000.
- Lohse, Friedrich: See—
Schmid, Rolf; Schmitter, Andre; Gutekunst, Ferdinand; and Lohse, Friedrich, 4,246,366, Cl. 521-178.000.
- Lomax, Ronald W.: See—
Frey, Werner U.; Lomax, Ronald W.; Clark, Herbert W.; and Smith, David G., 4,246,437, Cl. 174-52.00PE.
- Lombardino, Joseph G.; and Harbert, Charles A., to Pfizer Inc. Anti-inflammatory and immunoregulatory pyrimidines, their method of use and pharmaceutical compositions. 4,246,263, Cl. 424-251.000.
- Long, William B.: See—
Zimmerman, John A., Jr.; and Long, William B., 4,245,880, Cl. 339-97.00R.
- Loning, Ferdinand: See—
Upmeyer, Hartmut; Helbig, Helmut; Zimmermann, Werner J.; Winkler, Gerhard; and Loning, Ferdinand, 4,246,212, Cl. 264-40.100.
- Lonza Ltd.: See—
Fumaux, Eric; Zinsstag, Christoph; and Delseth, Roland, 4,246,074, Cl. 203-70.000.
- Look, S.A.: See—
Beyl, Jean J. A., 4,245,409, Cl. 36-117.000.
- Loomer, Weston R., to Litton Systems, Inc. Automatic drive prevention. 4,245,715, Cl. 180-279.000.
- Loos, Hendricus G. Optical instrument for measurement of particle size distributions. 4,245,909, Cl. 356-336.000.
- Lord Corporation: See—
Howard, Dennis D., 4,246,379, Cl. 525-440.000.
- L'Oreal: See—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 4,246,181, Cl. 260-396.00N.
- LSB Industrie, Inc.: See—
Murteza, Riza E., 4,245,728, Cl. 192-8.00R.
- Lubrizol Corporation, The: See—
Arakelian, Arthur N.; and Davis, Kirk E., 4,246,126, Cl. 252-47.500.
- Lucas Industries Limited: See—
Boxer, Trevor C., 4,246,519, Cl. 318-139.000.
- Draper, Geoffrey R.; and Birt, David A., 4,246,631, Cl. 362-309.000.
- Hancox, Royston N., 4,246,632, Cl. 362-382.000.
- Lazelle, Brian D., 4,246,624, Cl. 361-218.000.
- Phillips, Edward G., 4,246,526, Cl. 318-626.000.
- Luchtenberg, Curt, to Hagus C. Luchtenberg GmbH & Co. KG. Angle-reflecting mirror. 4,245,894, Cl. 350-303.000.
- Ludszewelt, Dieter; and Schluter, Karl-Heinz, to Hauni-Werke Korber & Co. Kg. Supplying bobbins to web splicing devices. 4,245,795, Cl. 242-56.00R.
- Ludwig Merckle, K.G., Chem. Pharm. Fabrik: See—
Metz, Gunter; and Specker, Manfred, 4,246,264, Cl. 424-253.000.
- Lukashov, Anatoly I.: See—
Batalin, Oleg E.; Dykman, Arkady S.; Belgorodsky, Izrail M.; Ostroukhov, Oleg A.; Golovko, Ljudmila V.; Nevstuev, Vladimir I.; and Lukashov, Anatoly I., 4,246,247, Cl. 423-311.000.
- Lumms Company, The: See—
Tso, Utah, 4,246,417, Cl. 546-286.000.
- Lundberg, Jan A., to Victor Hasselblad AB. Slide magazine for slide projectors. 4,245,899, Cl. 353-117.000.
- Lundin, Arne T.; and Myhrman, Arne, to LKB-Producter AB. Method and reagent for bioluminescence. 4,246,340, Cl. 435-8.000.
- Lunke, Manfred; and Walter, Jürgen, to Vulkan Kupplungs-und Getriebbau Bernhard Hackforth GmbH & Co. KG. Safety shaft coupling. 4,245,729, Cl. 192-56.00F.
- Luque, Rafael F.: See—
Haafkens, Rudolf; Luque, Rafael F.; and De Vries, Willem, 4,245,702, Cl. 166-307.000.
- Luther, Erich; and Maelzer, Martin, to Luther & Maelzer GmbH. Method and apparatus for sorting and stacking conductor plates tested in a conductor plate tester and an apparatus for carrying out the same. 4,245,940, Cl. 414-95.000.
- Luther & Maelzer GmbH: See—
Luther, Erich; and Maelzer, Martin, 4,245,940, Cl. 414-95.000.
- Lynn, Jean C., to Amsted Industries Incorporated. Powder mixture of iron alloy silicon-carbon. 4,246,028, Cl. 75-252.000.
- M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft: See—
Wildenrotter, Karl, 4,245,895, Cl. 350-310.000.
- Mack, Kurt: See—
Schmidt, Friedrich; Mack, Kurt; and Furtwangler, Hans-Rolf, 4,246,104, Cl. 210-759.000.
- MacMillan, Kenneth T., to Donald MacMillan & Son, Inc. Molding machine with expandable chamber and locking means. 4,245,971, Cl. 425-47.000.
- MacMillan, Kenneth T. Method of and apparatus for utilizing dry heated pulverulent material to cure a tire. 4,246,226, Cl. 264-501.000.
- Maczura, George; Heilich, Raymond P.; and Rohr, Frank J., to Aluminum Company of America. High purity mortar suitable for bonding refractory brick. 4,246,035, Cl. 106-64.000.
- Madison, Vernon E.: See—
Riegelman, Harry M.; and Madison, Vernon E., 4,245,436, Cl. 49-446.000.
- Madsen, Knud, to Siemens Aktiengesellschaft. X-ray photography device. 4,246,486, Cl. 250-491.000.
- Maelzer, Martin: See—
Luther, Erich; and Maelzer, Martin, 4,245,940, Cl. 414-95.000.
- Maffet, Vere, to UOP Inc. Process for drying and granulating sewage sludge. 4,245,396, Cl. 34-12.000.
- Magic Chef, Inc.: See—
Moss, Harold J., 4,245,615, Cl. 126-273.00R.
- Magill, D. Thomas, to Ricoh Company, Ltd. Leaky digital integrator. 4,246,642, Cl. 364-733.000.
- Magnetic Controls Company: See—
Buck, Josef J., 4,245,879, Cl. 339-91.00R.
- Maguire, Frederick J., to Charles D. Burnes Company. Picture mount. 4,245,416, Cl. 40-152.100.
- Magura, Paul; and Merckel, Gerald U., to International Business Machines Corporation. Optical coupler for interconnecting two or more optical transmission lines. 4,245,884, Cl. 350-96.160.

- Magyar Szenbanyaszati Troasz: See—
Asszonyi, Csaba; Klausz, Istvan; Kmety, Istvan; Meitzen, Nandor; and Pasztor, Rezo, 4,245,926, Cl. 405-150.000.
- Mahler, Jacques: See—
Molinier, Jacques; Mahler, Jacques; Bocquet, Gilbert; and de Massey, Bernard, 4,246,145, Cl. 260-7.500.
- Mailloix, Robert J., to United States of America, Air Force. Subarray pattern control and null steering for subarray antenna systems. 4,246,585, Cl. 343-854.000.
- Mair, William N.: See—
Bickerdike, Robert L.; Hughes, Garyth; and Mair, William N., 4,245,823, Cl. 266-211.000.
- Makhlouf, Joseph M.; and Parker, Earl E., to PPG Industries, Inc. Low smoke density fire-retardant resins. 4,246,163, Cl. 260-40.00R.
- Maklakova, Tatyana A.: See—
Uvarov, Boris A.; Tsvetkova, Valentina I.; Dyachkovsky, Fridrikh S.; Zvyagin, Oleg M.; Konovalov, Vladimir P.; Uvarova, Elvira A.; Ljustgarten, Elena I.; Novokshonova, Ljudmila A.; Kudanova, Olga I.; and Maklakova, Tatyana A., 4,246,134, Cl. 252-429.00B.
- Malang, Siegfried, to Kernforschungszentrum Karlsruhe GmbH. Sensor for determining heat flux through a solid medium. 4,245,500, Cl. 73-190.00H.
- Mallinckrodt, Inc.: See—
Nemitz, Russell H.; and Shelton, Jewel J., 4,245,685, Cl. 150-52.00R.
- Malm, Robert, to Northrop Corporation. In-phase quadrature demodulator for CPSK signals. 4,246,653, Cl. 375-82.000.
- Malm, Robert, to Northrop Corporation. Digital coherent phase demodulator. 4,246,654, Cl. 375-82.000.
- Manders, Logan J. Oil filter apparatus. 4,246,109, Cl. 210-90.000.
- Mann, Brian M.; Sholder, Jason A.; and Hurowitz, Marc I., to Facet Systems, Inc. Display and control system and method for programmable living tissue stimulator. 4,245,641, Cl. 128-419.00G.
- Mansson, Martin; and Torstenfeld, Ragnar, to Stal-Laval Turbin AB. Gas turbine plant. 4,245,463, Cl. 60-39.14M.
- Manuel, Tom, to Christensen, Inc. Removable drill string stabilizers. 4,245,709, Cl. 175-325.000.
- Marchak, Roman O.: See—
Carp, Ralph W.; and Marchak, Roman O., 4,246,639, Cl. 364-431.000.
- Marchese, Justin W.; and von Recklinghausen, Daniel R., to Electro Audio Dynamics, Inc. Switch. 4,246,453, Cl. 200-11.00R.
- Marconi Company Limited, The: See—
Gerard, Roger E. J.; and Sosin, Boleslaw M., 4,246,547, Cl. 331-16.000.
- Leonard, Haydn A., 4,246,456, Cl. 200-61.080.
- Marguet, Hugues: See—
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- Marhold, Albrecht: See—
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- Marilli, Nedo: See—
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- Marine Resources Company: See—
Hilbertz, Wolf H., 4,246,075, Cl. 204-1.00R.
- Markowitz, Israel J. Adjustably positionable electrical outlet. 4,245,873, Cl. 339-9.00R.
- Marmon Company: See—
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- Marquis, Edgar E.: See—
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- Marrero, Louis. Fluorescent light fixture. 4,246,629, Cl. 362-147.000.
- Marshavina, Natalya L.: See—
Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenshtein, Khaim-Mordke A.; Bernatek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marshavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Filipovskaya, Julia M., 4,246,336, Cl. 430-288.000.
- Martin, Eugene R., to SWS Silicones Corporation. Silicone polyether copolymers. 4,246,423, Cl. 556-423.000.
- Martin, Kenneth G., to Fiyomo Societe Anonyme. Lawn mower. 4,245,455, Cl. 56-12.800.
- Martin Marietta Corporation: See—
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- Martin, Richard R.: See—
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- Martinez-Vera, Enrique R.: See—
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- Martini, Thomas: See—
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- Marton, Miksa. Rotary tool suction housing. 4,245,437, Cl. 51-273.000.
- Maruyama, Takesuke: See—
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- Marvin Glass & Associates: See—
Katzman, Allison W.; Holahan, Edward T.; and Disko, Harry, 4,245,429, Cl. 46-164.000.
- Kuna, Wayne A.; and Breslow, Jeffrey D., 4,245,842, Cl. 273-357.000.
- Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., to Owens-Corning Fiberglass Corporation. Asphalt-coated glass fibers. 4,246,314, Cl. 428-378.000.
- Maschinenbau Oppenweiler GmbH: See—
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- Masel, Marvin, to Otis Elevator Company. Floor distance sensor for an elevator car. 4,245,721, Cl. 187-29.00R.
- Mason, Roy G., to Anderson Jacobson, Inc. Telephone handset acoustic coupling cup. 4,246,444, Cl. 179-2.00C.
- Massachusetts Institute of Technology: See—
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- Masselin, Michel: See—
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- Master Air Inc.: See—
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- Masuda, Masahiro: See—
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- Masugi, Takashi: See—
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- Masumoto, Isamu: See—
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- Mathur, Indresh; Bristol (nee Elley), Dale M.; and Knight, Allan R., to Dow Chemical Canada Limited. Process for selective removal of sodium sulfate from an aqueous slurry. 4,246,241, Cl. 423-179.000.
- Matsikella, John D.: See—
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- Matner, Martin: See—
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- Matson, Crawford: See—
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- Matsui, Kiyoshi: See—
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- Matsui, Takeshi: See—
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- Matsumoto, Hajime; and Abe, Yoichi, to Toybox Corporation. Retractable charm device. 4,245,486, Cl. 63-23.000.
- Matsumoto, Junichiro: See—
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- Matsumoto, Shuzo: See—
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- Matsumura, Kazuhiro: See—
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- Matsushita Electric Industrial Co., Ltd.: See—
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- Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, 4,246,620, Cl. 360-127.000.
- Kawasaki, Itaru; and Hamano, Goro, 4,246,578, Cl. 340-750.000.
- Noyori, Masaharu; and Fujimoto, Hiroaki, 4,246,595, Cl. 357-70.000.
- Sonoda, Nobuo; Shimotsuna, Wataru; and Tsubasaki, Shigeru, 4,246,143, Cl. 252-518.000.
- Matsuura, Kazuo: See—
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- Mattel, Inc.: See—
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- Matthews, David G., to Air Drive, Inc. Connecting structure for a hub and fan blade. 4,245,960, Cl. 416-244.00R.
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- Mattock, Patrick, to United Kingdom Atomic Energy Authority. Fractionation of proteins. 4,246,085, Cl. 204-180.00R.
- Mausgrover, Robert H., to Ultracorp, Inc. Oil-water separator having means for conditioning the water for reuse. 4,246,112, Cl. 210-104.000.
- Mausgrover, Robert H., to Ultracorp, Inc. Apparatus and method for removing oil contaminants from waste water. 4,246,113, Cl. 210-115.000.
- Mausson, Daniel, to Compagnie Internationale pour l'Informatique. Character reading system. 4,246,473, Cl. 235-449.000.
- Max-Planck-Gesellschaft zur Förderung der Wissenschaften E.V.: See—
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- Maxson, Dale E., to Barber-Colman Company. Multiple heat pipe heat exchanger and method for making. 4,245,380, Cl. 29-157.30H.

- May & Baker Limited: See—
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- Mayer, Gerhard: See—
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- Mazabra, Jean, to Societe des Chaussures Seducta Charles Jourdan & Fils. Arch and heel assembly for shoes. 4,245,407, Cl. 36-24.500.
- Mazac, Karel: See—
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- McAlonan, Christopher G.: See—
Busch, Dieter M.; and McAlonan, Christopher G., 4,246,004, Cl. 51-295.000.
- McBride, William S.; and Pantaleon-Stemberg, Gerd, to Dragerwerk Aktiengesellschaft. Starting device for a chemical oxygen generator. 4,246,229, Cl. 422.000.
- McCabe, Roger A., to Quantum Concepts Corporation, Inc. Method and apparatus for measuring molten metal stream flow. 4,245,758, Cl. 222-52.000.
- McCarbery, Gary P.: See—
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- McCauley, David A.; and Nevitt, Thomas D., to Standard Oil Company (Indiana). Process for upgrading naphtha hydrocarbons. 4,246,094, Cl. 208-57.000.
- McClellan, Thomas R.: See—
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- McClendon, Marshall K. Grading and dozing attachment for a tractor. 4,245,707, Cl. 172-788.000.
- McCombs, Howard L., Jr., to Bendix Corporation. The Starting system for a turbine engine. 4,245,462, Cl. 60-39.14R.
- McCortley, Clarence C., III, to Akzona Incorporated. Process for shaped cellulose article prepared from a solution containing cellulose dissolved in a tertiary amine N-oxide solvent. 4,246,221, Cl. 264-203.000.
- McCullough, Davey L.; and Rouse, R. Wayne, to Adolph Coors Company. Apparatus for removing bags from stacked can ends. 4,245,946, Cl. 414-412.000.
- McDermott, Raymond J. Supplemental cold-air supply system. 4,245,481, Cl. 62-187.000.
- McDermott, William E.; Benard, David J.; Pchelkin, Nicholas R.; and Bousek, Ronald R., to United States of America, Air Force. Gas generating system for chemical lasers. 4,246,252, Cl. 423-579.000.
- McDonald, Thomas W., to Motorola, Inc. Apparatus and method for locking a PLL onto a selected offset frequency sideband. 4,246,546, Cl. 331-4.000.
- McGauley, Patrick J.: See—
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- McGee, John K., to Combustion Engineering, Inc. Heat responsive back seat arrangement for valve operator. 4,245,661, Cl. 137-72.000.
- McGee, John K., to Combustion Engineering, Inc. Heat responsive back seat arrangement for valve operator with fusible lock-out cap. 4,245,662, Cl. 137-75.000.
- McGill, Kenneth E.; and Wright, Eugene B., Jr., to Tennessee Valley Authority. Simplified batch clarification of liquid ammonium polyphosphate. 4,246,248, Cl. 423-305.000.
- McGinnis, Vincent D.; and Stevenson, Donald R., to SCM Corporation. Compositions containing carbamate curing agents and their uses. 4,246,369, Cl. 525-126.000.
- McGraw-Edison: See—
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- McGregor, Rob R.: See—
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- McKinney, Richard W.: See—
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- McManus, Regis P. Quick-release holder. 4,245,419, Cl. 43-21.200.
- McMath, Edward W. Manual scoop type snow pusher/lifter. 4,245,411, Cl. 37-53.000.
- McReynolds, Kent B.: See—
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- McVey, John K., to Illinois Tool Works Inc. Temperature-responsive electrical switch with sliding contact. 4,246,561, Cl. 337-407.000.
- Meath, Kenneth R.; McReynolds, Kent B.; and Blake, Donald M., to Dow Chemical Company. The Blend of asbestos fibers, carboxylated copolymer latex and synthetic rubber latex. 4,246,155, Cl. 260-29.70W.
- Meckel, Joachim F.: See—
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- Medtronic, Inc.: See—
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- Mees, Bernhard: See—
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- Meginias, George B., to General Motors Corporation. Laminate bonding method. 4,245,769, Cl. 228-173.00B.
- Mehl, Wolfgang; and Hendriks, Dieter, to Sublatic Holding SA. Electrophotographic developers containing sublimable dyes. 4,246,331, Cl. 430-107.000.
- Meiklejohn, William H., to General Electric Company. Porous membrane humidity sensor. 4,245,506, Cl. 73-336.000.
- Meisel, Nicolas. Microwave tunnel oven for the continuous processing of food products. 4,246,462, Cl. 219-10.55A.
- Meitzen, Nandor: See—
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- Mendenhall, Charles A., to General Motors Corporation. Delta electro-magnetic control valve. 4,245,466, Cl. 60-289.000.
- Menschel, Johannes. Occupant propelled rotary conveyor. 4,245,837, Cl. 272-33.00R.
- Merck & Co., Inc.: See—
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- Cragoe, Edward J., Jr.; Woltersdorf, Otto W., Jr.; and DeSolms, Susan J., 4,246,406, Cl. 544-34.000.
- Merckel, Gerald U.: See—
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- Mergelsberg, Edmond M.: See—
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- Merkle, Roland: See—
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- Merlo, Angelo, to Dickey-John Corporation. Microwave seed sensor. 4,246,469, Cl. 235-92.0PK.
- Merten, Rudolf: See—
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- Zecher, Wilfried; Lewalter, Jürgen; Merten, Rudolf; and Dunwald, Willi, 4,246,393, Cl. 528-75.000.
- Mervinsky, Roman I.: See—
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- Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung: See—
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- Messing, Ralph A.; Oppermann, Robert A.; Ramsey, William S.; and Takeguchi, Milton M., to Corning Glass Works. Stabilization of immobilized bacteria. 4,246,349, Cl. 435-176.000.
- Messner, Charles R., to Campbell Soup Company. Apparatus for processing of poultry. 4,245,372, Cl. 17-11.000.
- Metal Box Limited: See—
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- Metalsky, William J., to Abar Corporation. Unloading apparatus for vacuum electric furnaces. 4,245,943, Cl. 414-152.000.
- Mettler Instrument AG: See—
Kunz, Peter, 4,245,711, Cl. 177-212.000.
- Metz, Günter; and Specker, Manfred, to Ludwig Merckle, K.G., Chem. Pharm. Fabrik. Treatment of hyperuricaemia with etofylline clofibrate. 4,246,264, Cl. 424-253.000.
- Metzeler Schaum GmbH: See—
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- Metzger, Lenard M., to Eastman Kodak Company. Energy-saving electronic strobe flash apparatus having dual flashtubes. 4,246,514, Cl. 315-241.00F.
- Meyer, Gerhard: See—
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- Meyer, Rolf V.; and Tacke, Peter, to Bayer Aktiengesellschaft. Polyamide blends. 4,246,371, Cl. 525-183.000.
- Michaelis, Klaus P.; and Wirth, Hermann O., to Ciba-Geigy Corporation. Additives for lubricants. 4,246,127, Cl. 252-48.200.
- Michaels, Leonard H., to Brad Harrison Co. Electrical connector. 4,245,881, Cl. 339-256.00R.
- Michatek, Stephen F., to Eastman Kodak Company. Adjustable tray. 4,245,831, Cl. 271-171.000.
- Michetti, Anthony; Warner, Charles; and Rowan, John, to Gould Inc. Bell alarm for circuit breaker. 4,246,557, Cl. 335-17.000.
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- Microfibres, Inc.: See—
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- Microvue Products, Inc.: See—
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- Middleton, William J.: See—
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- Miller, Donald L., to Facet Enterprises, Inc. Device for detecting and indicating low pressure and high heat in pneumatic tires. 4,246,567, Cl. 340-58.000.
- Miller, Gerald D.: See—
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- Miller Manufacturing Corp.: See—
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- Milliken Research Corporation: See—
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- Millipore Corporation: See—
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- Milo, George T., to Avco Corporation. Gas turbine engine lubrication system including three stage flow control valve. 4,245,465, Cl. 60-39.080.
- Milton, Thomas J.; and Jones, Dennis J., to General Motors Corporation. Engine turbocharger with cartridge wastegate valve. 4,245,953, Cl. 415-144.000.
- Miner, John E., to Security Corporation of Michigan. Pass-through drawer assembly. 4,245,776, Cl. 232-43.300.
- Miner, Thomas G.: See—
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- Minguet, Jean-Luc: See—
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- Ministerstwo Komunikacji Department Komunikacji Drogowej of U.Chalubinski: See—
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- Minitronics Pty Limited: See—
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- Minnesota Mining and Manufacturing Company: See—
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- Silver, Spencer F., III, 4,246,344, Cl. 435-39.000.
- Minnich, John B., to General Motors Corporation. Power turbine support. 4,245,951, Cl. 415-139.000.
- Misaki, Hideo; Matsura, Kazuo; Harada, Saburo; Takenaka, Satoshi; and Horiuchi, Yoshifumi, to Toyo Jozo Kabushiki Kaisha. Process for the manufacture of pyruvate oxidase, and analytical method and kit for the use of the same. 4,246,342, Cl. 435-25.000.
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- Mita, Kunio: See—
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- Mita, Seiichi: See—
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- Mitchell, Harry R.; and Rice, Hal H., to General Motors Corporation. Ceramic insulated engine pistons. 4,245,611, Cl. 123-669.000.
- Mitchell, John D.: See—
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- Mitchell S.A.: See—
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- Mitel Corporation: See—
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- Mitrofanov, Evgeny S.: See—
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- Ivanov, Nikolai A.; Ivanov, Boris G.; Zarogatsky, Leonid P.; Mitrofanov, Evgeny S.; and Cherkasaky, Vladimir A., 4,245,792, Cl. 241-207.000.
- Mitschke, Karl-Heinz; and Kapp, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of N,N-bis-(2-hydroxyalkyl)-aminomethane phosphonic acid dimethyl ester. 4,246,206, Cl. 260-970.000.
- Mitsubishi Chemical Industries, Limited: See—
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- Mitsubishi Denki Kabushiki Kaisha: See—
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- Mitsubishi Paper Mills, Ltd.: See—
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- Kosaka, Takao; and Tahara, Yukio, 4,246,312, Cl. 428-207.000.
- Mitsui Coke Co., Ltd.: See—
Kobayashi, Toshiaki; Nobe, Tomio; Niimi, Hiroshi; and Wada, Tetsuo, 4,246,000, Cl. 44-51.000.
- Mitsui Milke Machinery Co., Ltd.: See—
Kobayashi, Toshiaki; Nobe, Tomio; Niimi, Hiroshi; and Wada, Tetsuo, 4,246,000, Cl. 44-51.000.
- Miura, Motohisa, to Nippondenso Co., Ltd. Secondary air supply control apparatus for internal combustion engine. 4,245,472, Cl. 60-290.000.
- Mixon, Robert B., Jr., to Engelhard Minerals & Chemicals Corporation. Kaolin clay processing. 4,246,039, Cl. 106-288.00B.
- Miyahara, Masayoshi; and Katayama, Morimitsu, to Kubota, Ltd. Transmission mechanism for vehicles. 4,245,514, Cl. 74-15.840.
- Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Mizuno, Masayuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Protein adsorbent. 4,246,351, Cl. 435-182.000.
- Miyaki, Takeo; Tenmyo, Osamu; Konishi, Masataka; and Kawaguchi, Hiroshi, to Bristol-Myers Company. Tallysomyacin compounds. 4,246,400, Cl. 536-17.00R.
- Miyamoto, Ryoichi: See—
Fukusawa, Atsushi; Miyamoto, Ryoichi; and Sato, Takuro, 4,246,552, Cl. 333-1.100.
- Miyata, Junji: See—
Toyokuni, Kazuo; Miyata, Junji; Itatani, Hiroshi; and Kuroiwa, Ryozo, 4,245,518, Cl. 474-111.000.
- Miyata, Shigeo; and Okada, Akira, to Kyowa Chemical Industry Co., Ltd. Fibrous magnesium hydroxide and process for production thereof. 4,246,254, Cl. 423-635.000.
- Miyauchi, Hirotsugu; Sagami, Hiroshi; and Tsushima, Sakae, to Asahi Kasei Kabushiki Kaisha. Melt processing of fluorinated polymers. 4,246,353, Cl. 521-28.000.
- Miyazaki, Matsuo: See—
Kawai, Mitsuo; Kawaguchi, Kanji; Kamohara, Hisato; and Miyazaki, Matsuo, 4,246,048, Cl. 148-32.000.
- Mizuho Kogyo Kabushiki Kaisha: See—
Tada, Masahisa; Kato, Masahiko; Ukita, Tsuneo; Segawa, Hiroshi; Domoto, Masao; Mori, Kiyoteru; Ishii, Kazuhiko; Horinouchi, Shinobu; Tazuki, Masami; and Uemura, Eiichi, 4,246,118, Cl. 210-275.000.
- Mizuno, Masayuki: See—
Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Mizuno, Masayuki, 4,246,351, Cl. 435-182.000.
- Mizutani, Nagao: See—
Nishiyama, Yutaka; Mizutani, Nagao; and Kurihara, Tohio, 4,246,478, Cl. 250-231.05E.
- Moasser, Manoucher. Nontraumatic prosthetic valve with magnetic closure. 4,245,358, Cl. 3-1.500.
- Moba Holding Barneveld B.V.: See—
van Ginkel, Mannes; and Plug, Jan, 4,245,944, Cl. 414-330.000.
- Mochida, Haruo; and Morikawa, Toyohiko, to Nissan Motor Company, Limited. Carburetor control system for motor vehicle including apparatus to maintain the vehicle in running at some desired speed. 4,245,713, Cl. 180-176.000.
- Modica, Giovanni: See—
de Nora, Oronzio; Giuffrè, Luigi; and Modica, Giovanni, 4,246,090, Cl. 204-296.000.
- Mody, Dinesh I.; Bergkvist, Carolyn; and Dreier, Gustav H., to Instrumentation Laboratory Inc. Sampling apparatus. 4,245,509, Cl. 73-423.00A.
- Moesse, Michel P.: See—
Khan, Tawassul A.; and Moesse, Michel P., 4,246,652, Cl. 367-42.000.
- Mogul Corporation, The: See—
Lipinski, Richard J., 4,246,030, Cl. 106-14.120.
- Mohla, Prem P., to Ford Motor Company. In situ furnace metal desulfurization/nodularization by high purity magnesium. 4,245,691, Cl. 164-56.000.
- Molinier, Jacques; Mahler, Jacques; Bocquet, Gilbert; and de Massey, Bernard, to Saint-Gobain Industries. Aqueous size for glass fibers. 4,246,145, Cl. 260-7.500.
- Molins Limited: See—
Hinchcliffe, Dennis; and Bennett, George R., 4,245,934, Cl. 406-62.000.
- Molitor, Robert P., to Questor Corporation. Foamed ski boot. 4,245,410, Cl. 36-117.000.
- Monash University: See—
Potter, Owen E., 4,245,395, Cl. 34-10.000.
- Monsanto Company: See—
Baizer, Manuel M.; and Rogers, Thomas E., 4,246,388, Cl. 526-217.000.
- Barker, Robert I.; and Rice, Patrick F., 4,245,517, Cl. 73-760.000.
- Brown, Jasper H.; and Morgan, Albert W., 4,246,360, Cl. 521-102.000.
- Mortimer, George A., 4,246,395, Cl. 528-208.000.
- Yu, Jing-peir; and Bromley, James E., 4,246,219, Cl. 264-171.000.
- Monsanto Research Corporation: See—
Ellard, James A., 4,246,358, Cl. 521-77.000.
- Montedison S.p.A.: See—
Di Giocchino, Alberto; Tommasi, Giulio; and de Manuele, Mario, 4,246,236, Cl. 422-202.000.
- Monteyne, Guido: See—
Radoux, Henri; Heinz, Carlo; Ensch, Herbert; and Monteyne, Guido, 4,245,982, Cl. 432-233.000.
- Montgomery, Billy A., to International Telephone and Telegraph Corporation. Memory network for TDM switching system. 4,246,330, Cl. 370-58.000.
- Monthony, James F., to Bio-Rad Laboratories, Inc. Gel slab casting. 4,246,222, Cl. 264-219.000.
- Montzka, Thomas A.; Matiskella, John D.; and Partyka, Richard A., to Bristol-Myers Company. 6-Oxamorphans. 4,246,413, Cl. 546-63.000.
- Mookherjee, Braja D.: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,246,287, Cl. 426-3.000.
- Moon, Ronald L., to Varian Associates, Inc. Lattice constant grading in the Al_{0.9}Ga_{0.1}As-xSb alloy system. 4,246,050, Cl. 148-171.000.
- Morese, Francesco A. Method and apparatus for hydrocarbon flame ignition and detection. 4,245,977, Cl. 431-6.000.
- Morgan, Albert W.: See—
Brown, Jasper H.; and Morgan, Albert W., 4,246,360, Cl. 521-102.000.

- Morgan, Jeffrey E.: See—
Baker, Robert G.; Frates, Paul S.; and Morgan, Jeffrey E., 4,245,759, Cl. 222-146.0HE.
- Morgan, Roy E., Jr.: See—
Turner, Robert B.; and Morgan, Roy E., Jr., 4,246,363, Cl. 521-163.000.
- Mori, Kiyoteru: See—
Tada, Masahisa; Kato, Masahiko; Ukita, Tsuneo; Segawa, Hiroshi; Domoto, Masao; Mori, Kiyoteru; Ishii, Kazuhiko; Horinouchi, Shinobu; Tsuzuki, Masami; and Uemura, Eiichi, 4,246,118, Cl. 210-275.000.
- Mori, Masamichi, to Nippon Telegraph and Telephone Public Corporation. Low crosstalk type switching matrix of monolithic semiconductor device. 4,246,594, Cl. 357-48.000.
- Morikawa, Toyohiko: See—
Mochida, Haruo; and Morikawa, Toyohiko, 4,245,713, Cl. 180-176.000.
- Morino, Seiji; and Kawai, Hisasi, to Nippon Soken, Inc. Ignition device. 4,245,594, Cl. 123-606.000.
- Morita, Shigeru; and Horie, Fumiharu, to Kubota, Ltd. Apparatus for taking off vibratory power for tractor. 4,245,705, Cl. 172-125.000.
- Moritani, Nakanobu; and Oda, Hajime, to Kabushiki Kaisha Seikosha. Multi-function electronic timepiece. 4,246,650, Cl. 368-69.000.
- Moritz, Alfred: See—
Regler, Dieter; and Moritz, Alfred, 4,246,003, Cl. 51-293.000.
- Moritz, Frederick G.: See—
Mosciatti, Roger; Foley, Thomas P.; and Moritz, Frederick G., 4,245,917, Cl. 400-144.200.
- Moriya, Michio, to Sumitomo Electric Industries, Ltd. Disc brake apparatus for a motor vehicle. 4,245,723, Cl. 188-72.300.
- Moriyama, Yasuhiro: See—
Nakamura, Syuichi; Ogawa, Satoshi; Moriyama, Yasuhiro; Ueno, Tomihisa; and Komura, Minoru, 4,245,674, Cl. 138-110.000.
- Mortimer, George A., to Monsanto Company. 6T/6I Terpolyamide. 4,246,395, Cl. 528-208.000.
- Mosbach, Klaus H.: See—
Larson, Per-Olof; Mosbach, Klaus H.; and Ohlson, Sten A., 4,246,346, Cl. 435-57.000.
- Mosciatti, Roger; Foley, Thomas P.; and Moritz, Frederick G. Linear actuator driven printer. 4,245,917, Cl. 400-144.200.
- Moss, Harold J., to Magic Chef, Inc. Modular range construction. 4,245,615, Cl. 126-273.00R.
- Moss Rosenberg Verft A/S: See—
Kvamdal, Rolf, 4,245,748, Cl. 220-1.00C.
- Motorola, Inc.: See—
Keller, Jed V., 4,246,060, Cl. 156-345.000.
- McDonald, Thomas W., 4,246,546, Cl. 331-4.000.
- Motsch, Ladistas C.: See—
Gould, Michael S.; and Motsch, Ladistas C., 4,246,099, Cl. 210-603.000.
- Mouzin, Gilbert: See—
Cousse, Henri; Mouzin, Gilbert; Tarayre, Jean-Pierre; and Casadio, Silvano, 4,246,271, Cl. 424-270.000.
- Mudlake Holdings Ltd.: See—
Agar, Robert S., 4,245,448, Cl. 52-489.000.
- Mueller, Francis E.: See—
Bradley, Edward F.; and Mueller, Francis E., 4,246,536, Cl. 324-177.000.
- Mueller, Leo F., to Watercoil, Inc. Flotation mattress. 4,245,362, Cl. 5-451.000.
- Muir, Andrew R.: See—
Babil, Simon; and Muir, Andrew R., 4,246,640, Cl. 364-520.000.
- Babil, Simon; and Muir, Andrew R., 4,246,641, Cl. 364-571.000.
- Mukai, Seiichi: See—
Sukegawa, Ikuo; Nozawa, Seiichi; Mukai, Seiichi; and Shikama, Masaharu, 4,246,396, Cl. 528-238.000.
- Mukhin, Viktor M.: See—
Tikhonov, Valentin N.; Shlykov, Gennady N.; Zhestkov, Vitaly I.; Zhigalov, Gennady V.; Mukhin, Viktor M.; and Dyachkov, Vasily M., 4,245,459, Cl. 57-58.890.
- Muller, Rudolf; Radeklaus, Hans-Jürgen; Doefke, Harald; and Krieger, Detlef, to Schering Aktiengesellschaft. Material dryer with air and screw agitator. 4,245,399, Cl. 34-166.000.
- Muller, Walter: See—
Neef, Rutger; Rolf, Meinhard; and Muller, Walter, 4,246,401, Cl. 542-415.000.
- Multi-Flo, Inc.: See—
Krebs, J. Robert; and Khera, Awtar S., 4,246,114, Cl. 210-151.000.
- Mulvey, William J., to United Technologies Corporation. Tail rotor control cable-pylon fold accommodation. 4,245,801, Cl. 244-17.110.
- Munir, Mohammad; and Schiweck, Hubert, to Sueddeutsche Zucker-Aktiengesellschaft. Process for recovering xylitol from end syrups of the xylitol crystallization. 4,246,431, Cl. 568-872.000.
- Murai, Susumu, to Kabushiki Kaisha Toyo Seisakusho. System for purifying contaminated refrigerant and reproducing the same for use with freezing liquid spray refrigerator. 4,245,483, Cl. 62-376.000.
- Murakami, Masuo: See—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Tomioka, Kenichi; and Shiozaki, Tetsuya, deceased, 4,246,280, Cl. 424-305.000.
- Murakami, Toshio: See—
Noda, Masaru; Murakami, Toshio; and Sugita, Mamoru, 4,246,543, Cl. 330-280.000.
- Murase, Heihachi, to Kansai Paint Company, Limited. Powder coating compositions for forming multi layer coatings. 4,246,368, Cl. 525-117.000.
- Muraviev, Alexandr V.: See—
Sokolov, Igor D.; Safrayin, Jury S.; Muraviev, Alexandr V.; Andreeva, Nina K.; and Zykov, Valery A., 4,246,019, Cl. 71-59.000.
- Murayama, Naohiro; Fukuda, Makoto; Sujuki, Sirow; and Sakagami, Teruo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for the electrolytic treatment of alkali halide. 4,246,091, Cl. 204-296.000.
- Murphy, Thomas P.; Bell, George; and Fidler, Fred, to Metal Box Limited. Method and apparatus for electrolytic treatment of containers. 4,246,088, Cl. 204-181.00R.
- Murray, Pat L.: See—
Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., 4,246,364, Cl. 521-167.000.
- Murray, William M. Air-activated water agitator for hydrotherapy treatments. 4,245,625, Cl. 128-66.000.
- Murteza, Riza E., to LSB Industries, Inc. Door member opening and closing apparatus. 4,245,728, Cl. 192-8.00R.
- Muryn, Stephen, to Wheeling-Pittsburgh Steel Corporation. Pipe curtain for pollution control hood. 4,245,820, Cl. 266-158.000.
- Musiiko, Vitaly A.: See—
Khlopkov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmykov, Vladimir N.; Musiiko, Vitaly A.; Garmash, Vladimir I.; Tkachenko, Vladimir A.; Shipilov, Viktor F., deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.
- Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., to International Flavors & Fragrances Inc. Flavoring with fenchyl ethyl ether. 4,246,287, Cl. 426-3.000.
- Myhrman, Arne: See—
Lundin, Arne T.; and Myhrman, Arne, 4,246,340, Cl. 435-8.000.
- Myroniuk, Darrell W.: See—
Bertram, Edward F.; Harris, Philip; and Myroniuk, Darrell W., 4,246,025, Cl. 75-37.000.
- N. J. Phillips Pty. Limited: See—
Phillips, Ian R.; and Reynolds, Mervyn F., 4,245,757, Cl. 222-43.000.
- Naarden International N.V.: See—
Konst, Wilhelmus M. B.; ter Heide, Roelof; and Wobben, Hendrik J., 4,246,292, Cl. 426-538.000.
- Nabio, Sam V.; and Fussa, Alfred D., to Energy Sciences Inc. Process and apparatus for the curing of coatings on sensitive substrates by electron irradiation. 4,246,297, Cl. 427-44.000.
- Nagahara, Shusaku: See—
Sato, Kazuhiro; Nagahara, Shusaku; Umemoto, Masuo; Akiyama, Toshiyuki; Izumita, Morishi; Takahashi, Kenji; and Mita, Seiichi, 4,246,601, Cl. 358-47.000.
- Nagai, Shun-ichi, to Kabushiki Kaisha Komatsu Seisakusho. Brake timing control method and apparatus therefor. 4,246,523, Cl. 318-369.000.
- Nagasawa, Hiroshi: See—
Yoshida, Mitsuo; Kihara, Toshihiko; and Nagasawa, Hiroshi, 4,246,489, Cl. 250-577.000.
- Nagase, Tsuneyuki; Suzukamo, Gohu; and Suzuki, Yoshio, to Sumitomo Chemical Company, Limited. Method for racemization of optically active amines. 4,246,424, Cl. 560-38.000.
- Nakagawa, Shiro; and Matsui, Kiyoshi, to TDK Electronics Company Limited; and Olympus Optical Co., Ltd. Color image pick-up system for a color television system. 4,246,600, Cl. 358-44.000.
- Nakagawa, Tohru: See—
Tamaki, Sigeo; and Nakagawa, Tohru, 4,245,608, Cl. 123-588.000.
- Nakajima, Kibei, to Tokyo Shibaura Denki Kabushiki Kaisha. System for controlling alternating current motors. 4,246,528, Cl. 318-721.000.
- Nakamoto, Soichi; Ito, Fumio; Isobe, Yasuo; and Ito, Tadashi, to Canon Kabushiki Kaisha. Electronic exposure control apparatus. 4,245,900, Cl. 354-23.00D.
- Nakamura, Hiroshi, to Asahimatsu Koridofu Kabushiki Kaisha. Bean treating apparatus. 4,245,553, Cl. 99-628.000.
- Nakamura, Kotaro: See—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,246,329, Cl. 430-17.000.
- Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,246,330, Cl. 430-17.000.
- Nakamura, Sen-ichi, to Agency of Industrial Science & Technology. Ministry of International Trade & Industry. Method for manufacture of hydrated borates. 4,246,246, Cl. 423-263.000.
- Nakamura, Syuichi; Ogawa, Satoshi; Moriyama, Yasuhiro; Ueno, Tomihisa; and Komura, Minoru, to Nitto Denki Kogyo Kabushiki Kaisha; and Osaka Gasu Kabushiki Kaisha (Osaka Gas Company Ltd.). Protective cover for a thermoresponsive tube. 4,245,674, Cl. 138-110.000.
- Nakamura, Tohru: See—
Okada, Yutaka; Nakamura, Tohru; and Okabe, Takahiro, 4,246,500, Cl. 307-299.00B.
- Nakamura, Yoshiaki: See—
Kondo, Kazuyoshi; and Nakamura, Yoshiaki, 4,245,491, Cl. 72-254.000.
- Nakashima, Masahiro: See—
Takano, Masaaki; and Nakashima, Masahiro, 4,246,430, Cl. 562-600.000.

- Nakayama, Wataru: See—
Fujioaka, Kazumasa; and Nakayama, Wataru, 4,246,503, Cl. 310-59.000.
- Nakazono, Katsushige: See—
Watanabe, Tadahiko; Nakazono, Katsushige; and Tokuhiko, Yunosuke, 4,246,027, Cl. 75-244.000.
- Namihisa, Shoichiro: See—
Ogata, Takashi; Namihisa, Shoichiro; and Fujii, Tsumoru, 4,246,240, Cl. 423-139.000.
- Napetschnig, Fred. Portable material hardness tester. 4,245,496, Cl. 73-83.000.
- Narita, Kozi, to Inoue Gomu Kogyo Kabushiki Kaisha. Connecting structure of ornamental trims or trim strips. 4,245,450, Cl. 52-716.000.
- National Distillers and Chemical Corp.: See—
Shypula, Michael W., 4,245,414, Cl. 40-124.000.
- National Electric Corporation: See—
Foreman, Luther M.; and Hightower, William S., 4,246,494, Cl. 307-116.000.
- National Mine Service Company: See—
LeBegue, Maurice K., 4,245,525, Cl. 74-711.000.
- National Research Development Corporation: See—
Gopinathan, Kannampuzha G., 4,246,479, Cl. 250-305.000.
- Henderson, Ann; and James, James R., 4,246,586, Cl. 343-873.000.
- Naylor, Floyd E., to Phillips Petroleum Company. Conversion of alpha-methylstyrene-type monomers in the formation of copolymers with conjugated diene monomers. 4,246,372, Cl. 525-271.000.
- Neal, Danny M.: See—
Bowles, David J.; Clancy, Douglas E.; Johnson, Carl F.; and Neal, Danny M., 4,245,918, Cl. 400-697.100.
- Nebeling, Reinhard: See—
Schade, Franz; Nebeling, Reinhard; and Zinz, Bruno, 4,245,996, Cl. 8-94.240.
- Neef, Rutger; Rolf, Meinhard; and Muller, Walter, to Bayer Aktiengesellschaft. Azomethine pigments. 4,246,401, Cl. 542-415.000.
- Nei, Atsushi: See—
Hirai, Shiro; Nei, Atsushi; and Sakai, Kunihide, 4,246,619, Cl. 360-125.000.
- Nei, Motoo; Uchikawa, Eisaku; Jo, Ikuo; and Sato, Minoru, to Kawasaki Steel Corporation. Joining process of panel points for members in a marine structure and method for the construction of structures in accordance with the process. 4,245,928, Cl. 405-195.000.
- Neideman, Saul L.; Amon, William F., Jr.; and Geigert, John, to Cetus Corporation. Process for the production of fructose. 4,246,347, Cl. 435-105.000.
- Neil Brown Instruments Systems, Inc.: See—
Lawson, Kenneth D.; and Brown, Neil L., 4,246,497, Cl. 307-232.000.
- Neill, Scott E., Jr. Fast food restaurant. 4,245,720, Cl. 186-38.000.
- Neiman, Michel, to Societe de Diffusion Neiman. Anti-theft filler cap. 4,245,751, Cl. 220-204.000.
- Nelken, Harvey H.: See—
Gill, William J.; Albanese, Nick; Herbaczek, Michael B.; and Nelken, Harvey H., 4,245,588, Cl. 122-6.00A.
- Nelson, Colin: See—
Hamilton, Alexander; and Nelson, Colin, 4,246,171, Cl. 260-141.000.
- Nelson, George F.: See—
Johnson, Leslie H.; Nelson, George F.; and Benrud, Vernal M., 4,246,647, Cl. 365-8.000.
- Nemitz, Russell H.; and Shelton, Jewel J., to Mallinckrodt, Inc. Protective carrier. 4,245,685, Cl. 150-52.00R.
- Nester, James F., to Perkin-Elmer Corporation. The Polymer membranes for X-ray masks. 4,246,054, Cl. 156-74.000.
- Nevitt, Thomas D.: See—
McCauley, David A.; and Nevitt, Thomas D., 4,246,094, Cl. 208-57.000.
- Nevstruev, Vladimir I.: See—
Batalin, Oleg E.; Dykman, Arkady S.; Belgorodsky, Izrail M.; Ostrokhov, Oleg A.; Golovko, Ljudmila V.; Nevstruev, Vladimir I.; and Lukashov, Anatoly I., 4,246,247, Cl. 423-311.000.
- New England Power Service Company: See—
Kittrell, James R.; and Herman, Donald L., 4,246,234, Cl. 422-171.000.
- New Japan Chemical Co., Ltd.: See—
Kobayashi, Toshiaki; Nobe, Tomio; Niimi, Hiroshi; and Wada, Tetsuo, 4,246,000, Cl. 44-51.000.
- Nguyen, Van Dy; and Valenta, Pavel, to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung. Apparatus for the controlled sampling of rain water. 4,245,499, Cl. 73-171.000.
- Nichols, Robert L. Shutoff valve sleeve. 4,245,637, Cl. 128-276.000.
- Nicolas, Michel: See—
Bouteille, Daniel; Duclos, Michel; Marguet, Hugues; Nicolas, Michel; and Petrimaux, Eric, 4,245,673, Cl. 137-884.000.
- Niemers, Ekkehard: See—
Kolling, Heinrich; Niemers, Ekkehard; Wollweber, Hartmund; and Thomas, Herbert, 4,246,260, Cl. 424-228.000.
- Nihonshikizai Kogyo Co., Ltd.: See—
Okumura, Jugo; and Noma, Satoshi, 4,246,040, Cl. 106-308.00B.
- Niida, Kazuo: See—
Umeda, Tomio; Shiroko, Katsuo; Niida, Kazuo; and Itoh, Johtaro, 4,246,073, Cl. 203-25.000.
- Niimi, Hiroshi: See—
Kobayashi, Toshiaki; Nobe, Tomio; Niimi, Hiroshi; and Wada, Tetsuo, 4,246,000, Cl. 44-51.000.
- Nilsson, Lars-Olof. Spare wheel carrier. 4,245,762, Cl. 224-42.240.
- Ninneman, Lawrence D., to Owens-Illinois, Inc. Method for forming tubular plastic articles. 4,246,225, Cl. 264-336.000.
- Ninomiya, Masakazu: See—
Omori, Norio; Fujisawa, Hideyo; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,245,602, Cl. 123-425.000.
- Nippon Electric Co., Ltd.: See—
Takahashi, Hiroshi, 4,246,610, Cl. 358-167.000.
- Nippon Mining Co., Ltd.: See—
Ogata, Takashi; Namihisa, Shoichiro; and Fujii, Tsumoru, 4,246,240, Cl. 423-139.000.
- Nippon Paint Co., Ltd.: See—
Tada, Masahisa; Kato, Masahiko; Ukita, Tsuneo; Segawa, Hiroshi; Domoto, Masao; Mori, Kiyoteru; Ishii, Kazuhiko; Horinouchi, Shinobu; Tsuzuki, Masami; and Uemura, Eiichi, 4,246,118, Cl. 210-275.000.
- Nippon Soken, Inc.: See—
Morino, Seiji; and Kawai, Hisasi, 4,245,594, Cl. 123-606.000.
- Nishida, Minoru; Hattori, Tadashi; Yamaguchi, Hiroaki; Goto, Kenji; Sawada, Daisaku; and Shigematsu, Takashi, 4,245,591, Cl. 123-416.000.
- Omori, Norio; Fujisawa, Hideyo; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,245,602, Cl. 123-425.000.
- Nippon Telegraph and Telephone Public Corporation: See—
Mori, Masamichi, 4,246,594, Cl. 357-48.000.
- Nippondenao Co., Ltd.: See—
Endo, Kunio; Kobayashi, Nobuyuki; Watanabe, Haruo; and Kawai, Mitsuo, 4,246,566, Cl. 340-52.00F.
- Miura, Motohisa, 4,245,472, Cl. 60-290.000.
- Omori, Norio; Fujisawa, Hideyo; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,245,602, Cl. 123-425.000.
- Nishida, Minoru; Hattori, Tadashi; Yamaguchi, Hiroaki; Goto, Kenji; Sawada, Daisaku; and Shigematsu, Takashi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing control system for internal combustion engines. 4,245,591, Cl. 123-416.000.
- Nishikawa, Takao: See—
Yamashita, Yasuo; Ikegaya, Masami; and Nishikawa, Takao, 4,245,992, Cl. 8-461.000.
- Nishiwaki, Ituo: See—
Andoh, Naoki; Nishiwaki, Ituo; Iio, Akira; and Arakawa, Masatoshi, 4,246,427, Cl. 562-535.000.
- Nishiyama, Yutaka; Mizutani, Nagao; and Kurihara, Tohio, to Citizen Watch Company Limited. Position detector with two timing disks rotating at different speeds. 4,246,478, Cl. 250-231.05E.
- Nissan Motor Company, Limited: See—
Abe, Fumiyuki; Hayashi, Yoshimasa; and Kimura, Akira, 4,245,595, Cl. 123-195.00C.
- Aoyama, Shunichi, 4,245,607, Cl. 123-568.000.
- Chiba, Yoshiharu; and Masuda, Masahiro, 4,245,675, Cl. 139-304.000.
- Fujii, Shin; Ookawa, Koue; and Seino, Takashi, 4,246,165, Cl. 260-40.00R.
- Mochida, Haruo; and Morikawa, Toyohiko, 4,245,713, Cl. 180-176.000.
- Okamura, Kenji, 4,245,606, Cl. 123-568.000.
- Sugawara, Fukaishi; Iizuka, Haruhiko; and Matsumoto, Junichiro, 4,245,471, Cl. 60-276.000.
- Suzuki, Kazuhiko; Sone, Masazumi; Fukumori, Yukitsugu; and Hayaishi, Kazuo, 4,245,550, Cl. 98-2.110.
- Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, 4,246,213, Cl. 264-46.700.
- Nissen Corporation: See—
Gordon, Donald W., 4,245,838, Cl. 272-104.000.
- Nisamo, Jim A.: See—
Sjostedt, Ernst H. S.; and Nisamo, Jim A., 4,245,433, Cl. 47-59.000.
- Nitto Denki Kogyo Kabushiki Kaisha: See—
Nakamura, Syuichi; Ogawa, Satoshi; Moriyama, Yasuhiro; Ueno, Tomihisa; and Komura, Minoru, 4,245,674, Cl. 138-110.000.
- Nitto Kogyo K.K.: See—
Kubota, Shigeru; Kano, Seiji; and Kubo, Masahiro, 4,245,733, Cl. 198-391.000.
- Nix, Cedric A.: See—
Carter, Walter H.; and Nix, Cedric A., 4,245,700, Cl. 166-273.000.
- Nix, Walter E., to Gladwin, Inc. Security mounting system for coin telephone. 4,246,451, Cl. 179-146.00R.
- Nobe, Tomio: See—
Kobayashi, Toshiaki; Nobe, Tomio; Niimi, Hiroshi; and Wada, Tetsuo, 4,246,000, Cl. 44-51.000.
- Noda, Hideyo: See—
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- Noda, Masaru; Murakami, Toshio; and Sugita, Mamoru, to Hitachi, Ltd. Delayed AGC circuit. 4,246,543, Cl. 330-280.000.
- Noel, Michel, to Aron S.A. Benzamide derivatives. 4,246,272, Cl. 424-272.000.
- Noerholm, Olav, to Aktieselskabet Laur. Knudsen Nordisk Elektricitets-Electric safety fuse. 4,246,563, Cl. 337-296.000.
- Noerpel, Anthony R., to Bell Telephone Laboratories, Incorporated. Hybrid mode waveguide or feedhorn antenna. 4,246,584, Cl. 343-786.000.

Noguchi, Masaharu: See—
Hosoda, Kazumi; and Noguchi, Masaharu, 4,246,622, Cl. 361-95.000.

Noma, Satoshi: See—
Okumura, Jugoro; and Noma, Satoshi, 4,246,040, Cl. 106-308.00B.

Nomura, Noboru: See—
Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, 4,246,620, Cl. 360-127.000.

Nomura, Yasushi: See—
Komatsu, Yuzo; and Nomura, Yasushi, 4,246,651, Cl. 368-73.000.

Norco Industries, Inc.: See—
John, Julius F., 4,245,808, Cl. 248-352.000.

Norddeutsche Affinerie: See—
Kappell, Gerhard; and Hugi, Klaus P., 4,245,821, Cl. 266-163.000.

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Feldt, Klas-Göran, 4,246,061, Cl. 156-474.000.

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Baker, Robert G.; Frates, Paul S.; and Morgan, Jeffrey E., 4,245,759, Cl. 222-146.00HE.

Berkman, Adolf, 4,245,551, Cl. 98-115.05B.

Norris, Robert D.; Fretz, E. Robert, Jr.; and Beacham, Harry H., to FMC Corporation. Flammable plastics containing a flame retardant amount of polyarylphosphates and the polyarylphosphates, 4,246,169, Cl. 260-45.95D.

Norris, Sarena K. Collecting device for ceiling leaks, 4,245,666, Cl. 137-357.000.

Northeast Utilities Service Company: See—
Kittrell, James R.; and Herman, Donald L., 4,246,234, Cl. 422-171.000.

Northrop Corporation: See—
Malm, Robert, 4,246,653, Cl. 375-82.000.

Malm, Robert, 4,246,654, Cl. 375-82.000.

Norton Company: See—
Gregg, Edward H., 4,245,765, Cl. 225-13.000.

Nosaka, Eisio: See—
Washino, Shoichi; and Nosaka, Eisio, 4,246,511, Cl. 315-14.000.

Notton, John H. F., to Johnson, Matthew & Co., Limited. Removal of surface material, 4,246,083, Cl. 204-146.000.

Nouchi, Norimoto: See—
Kaminaka, Nobuyuki; Kanai, Kenji; Nouchi, Norimoto; and Nomura, Noboru, 4,246,620, Cl. 360-127.000.

Novo Laboratories, Inc.: See—
Lanzilotta, Raymond P.; and Weibel, Michael K., 4,246,348, Cl. 435-137.000.

Novokoshonova, Ljudmila A.: See—
Uvarov, Boris A.; Tsvetkova, Valentina I.; Dyachkovsky, Fridrikh S.; Zvyagin, Oleg M.; Kononov, Vladimir P.; Uvarova, Elvira A.; Ljustgarten, Elena I.; Novokoshonova, Ljudmila A.; Kudina, Olga I.; and Maklakova, Tatyana A., 4,246,134, Cl. 252-429.00B.

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Nozawa, Seiichi: See—
Sukegawa, Ikuo; Nozawa, Seiichi; Mukai, Seiichi; and Shikama, Masaharu, 4,246,396, Cl. 528-238.000.

Nygaard & Co. A/S: See—
Undheim, Kjell; and Ulsaker, Gunnar A., 4,246,266, Cl. 424-263.000.

Nylund, Olov: See—
Lindner, Johann; and Nylund, Olov, 4,246,068, Cl. 176-61.000.

Oase, Vernon S., to Owens-Corning Fiberglass Corporation. Cable and fabric roof structure, 4,245,440, Cl. 52-83.000.

Obendorf, Johann: See—
Schulde, Felix; and Obendorf, Johann, 4,246,394, Cl. 528-117.000.

Oberdorfer, Guido. Vacuum cleaning apparatus, 4,246,011, Cl. 55-274.000.

Oberhoff, Wolfgang; and Geschka, Hugo W., to Eisen- und Metallindustrie E. Blum Kg. Automatic towel dispenser, 4,245,413, Cl. 38-2.000.

O'Brien, Joseph P.: See—
Papay, Andrew G.; and O'Brien, Joseph P., 4,246,125, Cl. 252-46.600.

Occidental Oil Shale, Inc.: See—
Chambers, Carlton C., 4,245,701, Cl. 166-303.000.

Ricketts, Thomas E., 4,245,865, Cl. 299-2.000.

Occidental Research Corporation: See—
Broniewski, Bogdan M., 4,246,078, Cl. 204-98.000.

Oce-van der Grinten N.V.: See—
Joosten, Joannes J. W. M., 4,245,836, Cl. 271-228.000.

O'Connor, George L.: See—
Bhasin, Madan M.; and O'Connor, George L., 4,246,186, Cl. 260-449.00R.

Oda, Hajime: See—
Moritani, Nakano; and Oda, Hajime, 4,246,650, Cl. 368-69.000.

Oesterlin, Rudolf; and Pareene, Peter A., to Sterling Drug Inc. Process for preparing 3-(4-pyridinyl)-2-cyclohexene-1-oxime, 4,246,420, Cl. 546-338.000.

Opata, Takashi; Namihisa, Shoichiro; and Fujii, Tsumoru, to Nippon Mining Co., Ltd. Process for separating cobalt and nickel from a solution containing cobalt and nickel, 4,246,240, Cl. 423-139.000.

Ogawa, Satoshi: See—
Nakamura, Syuichi; Ogawa, Satoshi; Moriyama, Yasuhiro; Ueno, Tomihisa; and Komura, Minoru, 4,245,674, Cl. 138-110.000.

Ogilvie, Michael B. Solar energy collection panel, 4,245,619, Cl. 126-444.000.

Ohashi, Hideaki: See—
Koike, Wataro; Takayama, Masami; Ohashi, Hideaki; and Yazawa, Chihiro, 4,246,392, Cl. 528-64.000.

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Ohashi, Naohito; Takashima, Yoshinori; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Method for separation of diastereoisomeric 3-(3,4-dibenzoyloxyphenyl)serine, 4,246,428, Cl. 562-401.000.

Ohashi, Takashi: See—
Yukuta, Toshio; Ohashi, Takashi; Kojima, Minoru; and Saito, Masumi, 4,246,361, Cl. 521-128.000.

Ohkawara Mfg. Co., Ltd.: See—
Okawara, Kahei, 4,245,580, Cl. 118-19.000.

Ohls, James W., to Corning Glass Works. Method of coating optical waveguide filaments, 4,246,299, Cl. 427-54.100.

Ohlson, Sten A.: See—
Larsson, Per-Olof; Mosbach, Klaus H.; and Ohlson, Sten A., 4,246,346, Cl. 435-57.000.

Ohno, Masaharu: See—
Shiohata, Koki; Ohno, Masaharu; Fujisawa, Fumio; Sato, Kazuo; Kusumoto, Sho; and Hisano, Katsukuni, 4,245,950, Cl. 415-103.000.

Ohno, Michio: See—
Hasegawa, Katsumi; and Ohno, Michio, 4,245,794, Cl. 242-45.000.

Ohtomo, Masaru; Hiroi, Sumio; Inoue, Hisao; and Higuti, Sinito, to Kayaba Kogyo Kabushiki Kaisha. Shock absorber for wheeled vehicle, 4,245,825, Cl. 267-64.00R.

Okabe, Takahiro: See—
Okada, Yutaka; Nakamura, Tohru; and Okabe, Takahiro, 4,246,500, Cl. 307-299.00B.

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Miyata, Shigeo; and Okada, Akira, 4,246,254, Cl. 423-635.000.

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Okamoto, Akira: See—
Kondo, Yoshiaki; and Okamoto, Akira, 4,246,582, Cl. 370-32.000.

Okamura, Kenji, to Nissan Motor Company, Limited. EGR Control system for internal combustion engine, 4,245,606, Cl. 123-568.000.

Okasaka, Hotsuma: See—
Kometani, Kiichi; and Okasaka, Hotsuma, 4,246,378, Cl. 525-438.000.

Okawa, Masahisa: See—
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,246,135, Cl. 252-429.00B.

Okawara, Kahei, to Ohkawara Mfg. Co., Ltd. Device for coating granular solids, 4,245,580, Cl. 118-19.000.

Oki Electric Industry Co., Ltd.: See—
Fukasawa, Atsushi; Miyamoto, Ryoichi; and Sato, Takuro, 4,246,552, Cl. 333-1.100.

Okouchi, Isao; Izumi, Kenkichi; Yamazaki, Haruyuki; and Takahashi, Sankichi, to Hitachi, Ltd.; and Hitachi Plant Engineering and Construction Co., Ltd. Method and apparatus for crystallization of solution containing salts, 4,245,998, Cl. 23-295.00R.

Okumura, Hiroyuki: See—
Yanabu, Satoru; Tamagawa, Tohoru; Souma, Shigeo; Funahashi, Takumi; Okumura, Hiroyuki; and Takahashi, Nobuyuki, 4,246,458, Cl. 200-144.00B.

Okumura, Jugoro; and Noma, Satoshi, to Nihonshikizai Kogyo Co., Ltd.; and Takeda Chemical Industries, Ltd. Surface treatment method, 4,246,040, Cl. 106-308.00B.

Olson, Harry W.; and Borzoni, John M., to Littelfuse, Inc. Method of assembling a normally closed thermally actuated cut-off link and the link made thereby, 4,246,564, Cl. 331-409.000.

Olympus Optical Co., Ltd.: See—
Komiya, Osamu, 4,245,624, Cl. 128-4.000.

Nakagawa, Shiro; and Matsui, Kiyoshi, 4,246,600, Cl. 358-44.000.

Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Ignition timing control method for internal combustion engine, 4,245,602, Cl. 123-425.000.

Onghin, Lucio, to Union Carbide Corporation. Vulcanizable semi-conductive compositions, 4,246,142, Cl. 252-511.000.

Ono, Shigetoshi: See—
Fujita, Shinsaku; Ono, Shigetoshi; and Hayaishi, Hidetoshi, 4,246,414, Cl. 546-182.000.

Ookawa, Koue: See—
Fujii, Shin; Ookawa, Koue; and Seino, Takashi, 4,246,165, Cl. 260-40.00R.

Opitz, Wolfgang; Etschenberg, Eugen; Dell, Hans-Dieter; and Jacobi, Haidreddin, to Bayer Aktiengesellschaft. Medicaments having an antiphlogistic action, 4,246,278, Cl. 424-301.000.

Oppermann, Robert A.: See—
Messing, Ralph A.; Oppermann, Robert A.; Ramsey, William S.; and Takeguchi, Milton M., 4,246,349, Cl. 435-176.000.

Oriel, Patrick J.: See—
Hier, Deborah E.; and Oriel, Patrick J., 4,246,350, Cl. 435-180.000.

Original Hanau Quarzlampe GmbH: See—
Schafer, Jürgen; and Thomas, Gunter, 4,246,509, Cl. 313-224.000.

Oronzio de Nora Impianti Elettrochimici S.p.A.: See—
de Nora, Oronzio; Giuffrè, Luigi; and Modica, Giovanni, 4,246,090, Cl. 204-296.000.

Ortner, Eduard: See—
Schollkopf, Ernst; Rimmel, Walter; Skultety, Hans; and Ortner, Eduard, 4,245,583, Cl. 118-259.000.

Osaka Gas Kabushiki Kaisha (Osaka Gas Company Ltd.): See—
Nakamura, Syuichi; Ogawa, Satoshi; Moriyama, Yasuhiro; Ueno, Tomihisa; and Komura, Minoru, 4,245,674, Cl. 138-110.000.

Osborn, Charles, to Grand Haven Stamped Products Company. Manual transmission shifter for operating a transmission with flexible cables, 4,245,521, Cl. 74-476.000.

Oswald, Jürgen; Patzelt, Heinz W.; and Schmidt, Helmut, to Metzeler Schaum GmbH. Method of molding polyurethane foams in steam heated molds and adhesion steam condensate is used to cool the molds, 4,246,214, Cl. 264-51.000.

Ostroukhov, Oleg A.: See—
Batalin, Oleg E.; Dykman, Arkady S.; Belgorodsky, Izrail M.; Ostroukhov, Oleg A.; Golovko, Ljudmila V.; Nevstruev, Vladimir I.; and Lukashov, Anatoly I., 4,246,247, Cl. 423-311.000.

Otis Elevator Company: See—
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Otsuka, Takeyasu: See—
Suzuki, Kiyonori; Eto, Takeaki; Otsuka, Takeyasu; Abe, Shozo; and Yoshikawa, Sadao, 4,246,182, Cl. 260-405.000.

Otten, Hans-Gunter: See—
Hugl, Herbert; Otten, Hans-Gunter; Petroll, Hans W.; and Wolf, Karlheinz, 4,245,995, Cl. 8-574.000.

Owen, Keith: See—
Goodrich, Robert R.; Kunz, Robert G.; Lipton, Sydney; and Owen, Keith, 4,246,079, Cl. 204-98.000.

Owens-Corning Fiberglass Corporation: See—
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,246,314, Cl. 428-378.000.

Oase, Vernon S., 4,245,440, Cl. 52-83.000.

Phillips, John D., 4,246,017, Cl. 65-8.000.

Wilson, Edward L.; Cottrell, Walter D.; and Gelin, Robert J., 4,246,210, Cl. 264-28.000.

Owens, Fred L., Jr. Golf training device, 4,245,841, Cl. 273-183.00B.

Owens-Illinois, Inc.: See—
Hadl, Clyde F., 4,246,059, Cl. 156-218.000.

Ninmann, Lawrence D., 4,246,225, Cl. 264-336.000.

Stengle, Edward J., Jr., 4,246,313, Cl. 428-266.000.

Owens, Omer O.: See—
Sommer, Harold Z.; Wicks, George E., Jr.; and Owens, Omer O., 4,246,416, Cl. 546-261.000.

Oyama, Mitsuhiro: See—
Soeda, Katsuji; Oyama, Mitsuhiro; and Sakuma, Fumio, 4,246,521, Cl. 318-331.000.

Ozawa, Kohe: See—
Honda, Makoto; Ozawa, Kohe; Hosoya, Kazuhiro; and Kurita, Jiro, 4,246,382, Cl. 526-79.000.

Pacesetter Systems, Inc.: See—
Mann, Brian M.; Sholder, Jason A.; and Hurowitz, Marc I., 4,245,641, Cl. 128-419.00PG.

Pache, Norbert: See—
Altstetter, Manfred; Pache, Norbert; and Mazac, Karel, 4,246,464, Cl. 219-123.000.

Padana AG: See—
Scheffer, Dietrich; and Guse, Rolf, 4,245,869, Cl. 308-10.000.

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Conway, Tim D.; and Paddock, Paul F., 4,246,098, Cl. 209-558.000.

Paolini, Romeo, to Ciba-Geigy Corporation. Antidepressant piperidines, 4,246,269, Cl. 424-267.000.

Palman, Willy J.; and Waterschoot, William C., to AGFA-GEVAERT N.V. Developing device for xerographic copying machines, 4,245,586, Cl. 118-647.000.

Pantaleon-Stemberg, Gerd: See—
McBride, William S.; and Pantaleon-Stemberg, Gerd, 4,246,229, Cl. 422-122.000.

Pantasote Company, The: See—
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Paolino, Charles M. Automatic cooking device for pelvic support section of chiropractic table, 4,245,626, Cl. 128-70.000.

Papay, Andrew G.; and O'Brien, Joseph P., to Edwin Cooper, Inc. Lubricating oil and fuel composition, 4,246,125, Cl. 252-46.600.

Papenfuhs, Theodor: See—
Arndt, Otto; Papenfuhs, Theodor; Bohme, Peter; Tronich, Wolfgang; and Mees, Bernhard, 4,246,196, Cl. 564-50.000.

Pareene, Peter A.: See—
Oesterlin, Rudolf; and Pareene, Peter A., 4,246,420, Cl. 546-338.000.

Parker, Bernhard D. Circuit for providing an indication of signal/noise ratio in a selector diversity system, 4,246,653, Cl. 455-135.000.

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Parker, John J.: See—
Fous, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., 4,245,924, Cl. 405-45.000.

Parnas Technology, Inc.: See—
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Gilmour, James; Hatton, Leslie R.; Parnell, Edgar W.; Warburton, Dennis; and Leeds, William G., 4,246,021, Cl. 71-92.000.

Parry, Keith P.: See—
Shepherd, Margaret C.; Worthington, Paul A.; and Parry, Keith P., 4,246,020, Cl. 71-76.000.

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Montzka, Thomas A.; Matiakella, John D.; and Partzka, Richard A., 4,246,413, Cl. 546-63.000.

Pasco, Wayne D.; Klug, Frederic J.; and Borom, Marcus P., to General Electric Company. Method for firing low density graphite/alumina compacts and cores, 4,246,215, Cl. 264-64.000.

Pasztor, Rezzo: See—
Asszonyi, Csaba; Klausz, Istvan; Kmetty, Istvan; Meitzen, Nandor; and Pasztor, Rezzo, 4,245,926, Cl. 405-150.000.

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Larsen, Larry D., 4,246,572, Cl. 340-501.000.

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Paul, Kalidas; and Kyker, Glendon D., to Velsicol Chemical Corporation. Process for preparing hexachlorocyclopentadiene, 4,246,205, Cl. 570-220.000.

Paul, Wolfgang: See—
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Paul Wurth S.A.: See—
Radoux, Henri; Heinz, Carlo; Ensch, Herbert; and Monteyne, Guido, 4,245,982, Cl. 432-233.000.

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Payne, Kenneth G.; and Curnow, Richard D., to Bristol Composite Materials Engineering Ltd. Antistatic fire-retardant structures, particularly pipes, of reinforced plastics material, 4,246,306, Cl. 428-36.000.

Pchelkin, Nicholas R.: See—
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PCR Incorporated: See—
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Peachee, C. Theodore: See—
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Pearce, James C.; Aagaard, Paul M.; and Strickland, Gordon E., to Chevron Research Company. Arctic multi-angle conical structure, 4,245,929, Cl. 405-211.000.

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Peelman, Harold E.: See—
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Peerless Machine and Tool Corporation: See—
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Pelikan A.G.: See—
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Warkentin, Aaron J., 4,245,936, Cl. 406-137.000.

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Peoples, Herman R. Pneumatic staple remover, 4,245,817, Cl. 254-28.000.

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Babil, Simon; and Muir, Andrew R., 4,246,640, Cl. 364-520.000.

Babil, Simon; and Muir, Andrew R., 4,246,641, Cl. 364-571.000.

Nester, James F., 4,246,054, Cl. 156-74.000.

Perkins, Rita M.: See—
Elgal, Galoust M.; Perkins, Rita M.; and Knoepfler, Nestor B., 4,246,031, Cl. 106-18.140.

Perkis, Leib B.: See—
Dolgov, Anatoly V.; Kononov, Leonid V.; Perkins, Leib B.; Deev, Stanislav L.; Dyakov, Vitaly E.; Semenov, Alexandr E.; Bauer, Evgeny T.; and Suturin, Serafim N., 4,246,106, Cl. 210-774.000.

Perry, Mordechai; Linder, Charles; and Kedem, Ora, to Research Products Rehovot Ltd. Method and apparatus for the performance of selective electrodialysis, 4,246,092, Cl. 204-301.000.

Peterson, Darrel J.: See—
Wood, Wilhelm A. H.; and Peterson, Darrel J., 4,246,656, Cl. 455-136.000.

Peterson, Egon N.; and Richtzenhain, Hermann, to Dynamit Nobel Aktiengesellschaft. Arylsulfonic acid bromophenyl esters, their preparation, and their use as flameproofing agents, 4,246,188, Cl. 260-456.00P.

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Wright, David W.; and Peterson, Harley G., 4,246,014, Cl. 55-378.000.

Peterson, Jerald G. Clamping device for straight edge. 4,245,394, Cl. 33-430.000.

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Clark, Wellman L.; Cox, John T.; Klauber, Gerald; Petito, Ferdinand C.; Ramsey, John B., Jr.; and Waylonis, John E., 4,246,510, Cl. 313-388.000.

Petrinaux, Eric: See—
Bouteille, Daniel; Duclos, Michel; Marguet, Hugues; Nicolas, Michel; and Petrinaux, Eric, 4,245,673, Cl. 137-884.000.

Petroll, Hans W.: See—
Hugl, Herbert; Otten, Hans-Gunter; Petroll, Hans W.; and Wolf, Karlheinz, 4,245,995, Cl. 8-574.000.

Petit, Clifton S.; and Edwards, Robert B., to Eastman Kodak Company. Flash lamp discharge using radiant energy. 4,246,513, Cl. 315-150.000.

Pfizer Inc.: See—
Lombardino, Joseph G.; and Harbert, Charles A., 4,246,263, Cl. 424-251.000.

Pfleiderer, Hans-Joerg, to Siemens Aktiengesellschaft. Integrated filter circuit. 4,246,553, Cl. 333-165.000.

Phaal, Cornelius. Method of making sintered metal-diamond aggregates. 4,246,006, Cl. 51-309.000.

Phillips, Edward G., to Lucas Industries Limited. Control circuit for a motor driven automatic valve. 4,246,526, Cl. 318-626.000.

Phillips, Ian R.; and Reynolds, Mervyn F., to N. J. Phillips Pty. Limited. Dose adjustment mechanism for a trench gun. 4,245,757, Cl. 222-43.000.

Phillips, Irvin J.: See—
Alheid, Robert J.; and Phillips, Irvin J., 4,246,301, Cl. 427-348.000.

Phillips, John D., to Owens-Corning Fiberglass Corporation. Method and apparatus for forming mineral fibers. 4,246,017, Cl. 65-8.000.

Phillips, Paul R. Fishing lure. 4,245,421, Cl. 43-42.470.

Phillips, Peter: See—
Hartley, Dennis; and Phillips, Peter, 4,245,739, Cl. 198-856.000.

Phillips Petroleum Company: See—
Cheng, Paul J., 4,245,693, Cl. 165-1.000.

Cox, Russell C., 4,245,858, Cl. 285-158.000.

Hofferber, James A., 4,246,070, Cl. 196-132.000.

Naylor, Floyd E., 4,246,372, Cl. 525-271.000.

Platt, Louis; and Poteet, Thomas S., 4,246,053, Cl. 156-159.000.

Selman, Charles M., 4,246,384, Cl. 526-142.000.

Swanson, Billy L., 4,246,124, Cl. 252-8.55R.

Witt, Donald R., 4,246,139, Cl. 252-451.000.

Wu, Yulin; and Zuech, Ernest A., 4,246,177, Cl. 260-345.100.

Phillips, Richard A.: See—
Haddad, Theodore A.; Kondig, Walter; and Phillips, Richard A., 4,245,991, Cl. 8-506.000.

Picard, Roland: See—
Arseneault, Pierre-Michel; Bouillon, Gratien; Picard, Roland; and Tremblay, Gilles, 4,245,645, Cl. 128-642.000.

Picker Corporation: See—
Hura, Michael, 4,246,488, Cl. 250-513.000.

Ionnou, Basil N.; Kearns, Donald S.; Applegate, Robert J.; Sano, Richard M.; and Prokop, Edward K., 4,245,646, Cl. 128-653.000.

Zupancic, Anton Z., 4,246,482, Cl. 250-445.00T.

Pickering, Alan H.; Rowlands, Geoffrey J.; and Tice, David R., to English Electric Valve Company Limited. Co-axial multi cavity anode magnetrons. 4,246,512, Cl. 315-39.770.

Pigerol, Charles: See—
Chignac, Michel; Grain, Claude; Jammot, Fernand; Pigerol, Charles; Eymard, Pierre L.; and Combet (epse Broll), Madeleine, 4,246,282, Cl. 424-320.000.

Pillsbury Company, The: See—
Spencer, Rupert L., 4,245,581, Cl. 118-24.000.

Pillsbury, Richard L. Chain pull sockets. 4,246,453, Cl. 200-51.150.

Pioneer Electronic Corporation: See—
Sugai, Yoshiro; and Ueno, Eiichi, 4,246,441, Cl. 179-1.0GD.

Yoshida, Satoshi; Chijiwa, Masaru; and Yasuda, Shinji, 4,246,446, Cl. 369-136.000.

Pirck, Dietrich: See—
Fuchs, Gundolf; Humbert, Heiko; and Pirck, Dietrich, 4,246,149, Cl. 260-27.00R.

Pitcraft Summit Limited: See—
Pentith, Gerald R. O., 4,245,727, Cl. 191-25.000.

Pitney Bowes Inc.: See—
Coppola, Vincent G., 4,246,525, Cl. 318-612.000.

Hubbard, David W., 4,246,643, Cl. 364-900.000.

Pitre, Davide: See—
Felder, Ernst; Pitre, Davide; and Zutter, Hans, 4,246,164, Cl. 260-501.170.

Platt, Louis; and Poteet, Thomas S., to Phillips Petroleum Company. Web rolling method and apparatus. 4,246,053, Cl. 156-159.000.

Plempel, Manfred: See—
Regel, Erik; Buchel, Karl H.; Haller, Ingo; and Plempel, Manfred, 4,246,274, Cl. 424-273.00R.

Plowman, Richard E.: See—
Folkneroth, Richard P.; and Plowman, Richard E., 4,245,989, Cl. 433-92.000.

Plug, Jan: See—
van Ginkel, Mannes; and Plug, Jan, 4,245,944, Cl. 414-330.000.

Plummer, John F.: See—
Grimm, Robert A.; Langer, Heimo J.; and Plummer, John F., 4,246,167, Cl. 260-42.470.

Poengen, Helmut H., to Stettner & Co. Electrical circuit element with multiple connection pins for solder plug-in connection. 4,246,627, Cl. 361-405.000.

Pohl, Andreas; Hintz, Gerhard; and Keller, Guenter, to Carl Schenck AG, Firma. Apparatus for removing leakage flow of a pressurized medium from gap type seals. 4,245,844, Cl. 277-3.000.

Poidomani, Placido: See—
Scapini, Giancarlo; Raimondi, Armando; and Poidomani, Placido, 4,246,407, Cl. 544-118.000.

Poisson, Leandre A. Solar dehydrator. 4,245,398, Cl. 34-93.000.

Polaroid Corporation: See—
Biber, Conrad H., 4,246,449, Cl. 179-111.00R.

Polster, Jurgen: See—
Brinckmann, Paul; and Polster, Jurgen, 4,245,360, Cl. 3-1.912.

Polymer Corporation, The: See—
Chen, John H., 4,246,159, Cl. 260-32.80N.

Polysius AG: See—
Tegtmeyer, Gert; Goldmann, Wolf; and Triebel, Wolfgang, 4,245,981, Cl. 432-58.000.

Polytype AG: See—
Schollkopf, Ernst; Rimmel, Walter; Skultety, Hans; and Ortnier, Eduard, 4,245,583, Cl. 118-259.000.

Pomerantz, Allen J., to General Motors Corporation. Adaptive vehicle engine closed loop air and fuel mixture controller. 4,245,603, Cl. 123-440.000.

Poncelet, Georges: See—
Anton, Octavian; Gosseye, Alain; and Poncelet, Georges, 4,246,036, Cl. 106-99.000.

Popp, Walter; and Sedivy, Johannes, to Wacker-Chemie GmbH. Fire retardant plasticized polyvinyl chloride compositions containing triphosphate plasticizer, aluminum hydroxide and antimony trioxide filler. 4,246,158, Cl. 260-30.60R.

Poquette, Raymond S., Jr., to Singer Company, The. Well surveying instrument sensor. 4,245,498, Cl. 73-151.000.

Portnoff, Michael R., to Massachusetts Institute of Technology. Digital system for changing the rate of recorded speech. 4,246,617, Cl. 360-32.000.

Posch, Oskar, to Anstalt Mura. Apparatus for making carbon black. 4,246,232, Cl. 422-156.000.

Posthuma, Kerwin A.: See—
Hoffman, Harry W.; and Posthuma, Kerwin A., 4,246,436, Cl. 174-52.00R.

Poston, Daniel W.; and Hestad, James R., to Miller Manufacturing Corp. Collapsible work support. 4,245,718, Cl. 182-153.000.

Pote, Robert H.: See—
Choder, Jerome; Pote, Robert H.; Becker, Philip F.; and Gewalt, Ryerson J., 4,246,613, Cl. 358-245.000.

Poteet, Thomas S.: See—
Platt, Louis; and Poteet, Thomas S., 4,246,053, Cl. 156-159.000.

Potter, Owen E., to Monash University. Fluidized bed drying. 4,245,395, Cl. 34-10.000.

Pouillon, Emile R. J., to Societe Anonyme Cribla. Method and device for separating particles suspended in a liquid by guiding these particles through a magnetic field. 4,246,097, Cl. 209-214.000.

PPG Industries, Inc.: See—
Girgis, Mikhail M., 4,246,144, Cl. 260-5.000.

Makhlof, Joseph M.; and Parker, Earl E., 4,246,163, Cl. 260-40.00R.

Prakash, Sri, to Union Carbide Corporation. Ceramic capacitor with co-fired end terminations. 4,246,625, Cl. 361-321.000.

Prasad, Ravi; Gottesman, Martin; and Scarella, Robert A., to General Foods Corporation. Decaffeination of aqueous extracts. 4,246,291, Cl. 426-387.000.

Pressick, John C.; and Reiners, Robert A., to CPC International Inc. Extraction of oil from vegetable materials. 4,246,184, Cl. 260-412.400.

Pressman, Jerome. Television monitor and control. 4,246,495, Cl. 307-141.000.

Price-Falcon, Juan F.; and Martinez-Vera, Enrique R., to Grupo Industrial Alfa, S.A. Method for the gaseous reduction of metal ores using reducing gas produced by gasification of solid or liquid fossil fuels. 4,246,024, Cl. 75-35.000.

Price, Samuel T., to Enterprise Machine and Development Corp. Air jet for interlacing multifilament yarn. 4,245,378, Cl. 28-271.000.

Price, William F.: See—
Crosby, Samuel C.; Whitney, Thomas M.; and Price, William F., 4,246,227, Cl. 264-536.000.

Procter & Gamble Company, The: See—
Kacher, Mark L., 4,246,129, Cl. 252-90.000.

Van Duzee, Barry F., 4,246,285, Cl. 424-358.000.

Profera, Charles E.; and Campbell, James J., to RCA Corporation. Multimode feed for a monopulse radar. 4,246,583, Cl. 343-781.0CA.

Prokop, Edward K.: See—
Ionnou, Basil N.; Kearns, Donald S.; Applegate, Robert J.; Sano, Richard M.; and Prokop, Edward K., 4,245,646, Cl. 128-653.000.

Prolizenz Aktiengesellschaft: See—
Elhaus, Friedrich W.; and Hilge, Bernhard, 4,245,818, Cl. 266-87.000.

Prosser, Gunter; Schinzel, Erich; Schonberger, Norbert; Martini, Thomas; and Rosch, Gunter, to Hoechst Aktiengesellschaft. 1,3,4-Oxadiazolone(2) compounds and process for their manufacture. 4,246,403, Cl. 542-432.000.

Prle, Patrick J. B.: See—
Herbin, Jean E. E.; de Koker, Jean; Prle, Patrick J. B.; Giuliani, Marc S. A.; Drode, Teddy E. A.; Boutier, Jacques L.; and Grammont, Paul D. A., 4,246,354, Cl. 521-32.000.

Prueher, Andrew B. Lid for drinking container. 4,245,752, Cl. 220-266.000.

Przewalski, Zygmunt J., to T R Systems, Inc. Thermal reductor system and method for recovering valuable metals from waste. 4,245,571, Cl. 110-246.000.

Pujado, Peter R., to UOP Inc. Ammonoxidation process. 4,246,191, Cl. 260-465.300.

Pujado, Peter R., to UOP Inc. Ammonoxidation process with isolated catalyst regeneration zone. 4,246,192, Cl. 260-465.300.

Pullman Berry: See—
Rymarchyk, Nicholas M., 4,245,824, Cl. 266-287.000.

Pullman Incorporated: See—
Stark, Marvin; and Knola, Clement J., 4,245,565, Cl. 105-377.000.

Punshon, William D.; and Peachee, C. Theodore, to Emerson Electric Co. Electric motor bearing assembly. 4,245,870, Cl. 308-36.000.

Pure Cycle Corporation: See—
Selby, Howard W., III, 4,246,101, Cl. 210-615.000.

Purol, Mark F., to Ann Arbor Terminals, Inc. Start-up circuit for switch mode power supply. 4,246,634, Cl. 363-49.000.

Purtell, Jack L.; and Purtell, Rufus J. Moisture detector. 4,246,575, Cl. 340-605.000.

Purtell, Rufus J.: See—
Purtell, Jack L.; and Purtell, Rufus J., 4,246,575, Cl. 340-605.000.

Pyle, Lawrence F., to Felt Products Mfg. Co. Expansion joint sealing apparatus and method for sealing same. 4,245,925, Cl. 404-72.000.

Quantum Concepts Corporation, Inc.: See—
McCabe, Roger A., 4,245,758, Cl. 222-52.000.

Queen's University of Belfast, The: See—
Donaldson, Ian S.; and Legge, Dennis, 4,245,770, Cl. 229-2.5EC.

Questor Corporation: See—
Molitor, Robert P., 4,245,410, Cl. 36-117.000.

Quickie Manufacturing Corporation: See—
Cotey, John; and Volpe, Lee, 4,245,368, Cl. 15-229.00A.

Quigley, Joseph R.: See—
Benton, William J.; and Quigley, Joseph R., 4,246,302, Cl. 428-1.000.

R & D Associates: See—
Latter, Albert L., 4,246,477, Cl. 250-214.0AL.

Rabus, Friedrich: See—
Grozinger, Werner; and Rabus, Friedrich, 4,245,590, Cl. 123-488.000.

Racouchot, Bernard: See—
Bentz, Gerard; and Racouchot, Bernard, 4,246,216, Cl. 264-71.000.

Radeklu, Hans-Jurgen: See—
Muller, Rudolf; Radeklu, Hans-Jurgen; Doefke, Harald; and Krieger, Detlef, 4,245,399, Cl. 34-166.000.

Radoux, Henri; Heinz, Carlo; Ensch, Herbert; and Monteyne, Guido, to Paul Wurth S.A. Cooling box for shaft furnaces. 4,245,982, Cl. 432-233.000.

Radugina, Anna A.: See—
Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenstein, Khaim-Mordike A.; Bernatek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marshavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Filipovskaya, Julia M., 4,246,336, Cl. 430-288.000.

Raimondi, Armando: See—
Scapini, Giancarlo; Raimondi, Armando; and Poidomani, Placido, 4,246,407, Cl. 544-118.000.

Rainin, Edgar A. Tweezer device for manipulation of soft contact lenses. 4,245,859, Cl. 294-1.0CA.

Raitto, Russell G., to Concord Laboratories, Inc. Blood sampling syringe. 4,245,654, Cl. 128-765.000.

Rambauske, Werner R., to Raytheon Company. Antitank weapon system and elements therefor. 4,245,560, Cl. 102-213.000.

Ramey, Richard A.: See—
Sun, John; Fartro, John C.; and Ramey, Richard A., 4,246,472, Cl. 235-401.000.

Ramsey, John B., Jr.: See—
Clark, Wellman L.; Cox, John T.; Klauber, Gerald; Petito, Ferdinand C.; Ramsey, John B., Jr.; and Waylonis, John E., 4,246,510, Cl. 313-388.000.

Ramsey, William S.: See—
Messing, Ralph A.; Oppermann, Robert A.; Ramsey, William S.; and Takeguchi, Milton M., 4,246,349, Cl. 435-176.000.

Ramu International: See—
Smith-Johannsen, Robert, 4,246,209, Cl. 264-28.000.

Randall, Harvey G., to General Electric Company. Arrhythmia rejection circuit for gated cardiac image display systems. 4,245,647, Cl. 128-659.000.

Rannenberg, George C., to United Technologies Corporation. Efficiency fluid pumping system including sequential unloading of a plurality of pumps by a single pressure responsive control valve. 4,245,964, Cl. 417-287.000.

Rast, Gustaf J., Jr.; and Barley, Thomas A., to United States of America, Army. Frequency synthesizer extending method and apparatus. 4,246,540, Cl. 328-18.000.

Ray, Donald L., to Emhart Industries, Inc. Timing mechanism having a short pulse prior to its overall program. 4,246,454, Cl. 200-38.00R.

Raychem Corporation: See—
Gozlan, Gilles R., 4,246,438, Cl. 174-88.00C.

Horsma, David A., 4,246,468, Cl. 219-555.000.

Rayfield, James F., to Sperry Corporation. Vehicle access ladder. 4,245,716, Cl. 182-86.000.

Raytheon Company: See—
Rambauske, Werner R., 4,245,560, Cl. 102-213.000.

Wakeman, David R.; and Brown, Olin C., III, 4,245,559, Cl. 102-213.000.

Wood, Wilhelm A. H.; and Peterson, Darrel J., 4,246,656, Cl. 455-136.000.

RCA Corporation: See—
Huang, Ho-Chung; and Sechi, Franco N., 4,246,535, Cl. 324-57.00R.

Koonocky, Walter F.; and Rodgers, Robert L., 3rd, 4,246,591, Cl. 357-24.000.

Profera, Charles E.; and Campbell, James J., 4,246,583, Cl. 343-781.0CA.

Wheatley, Carl F., Jr., 4,246,551, Cl. 331-113.00R.

Redecker, Klaus: See—
Hagel, Rainer; and Redecker, Klaus, 4,246,052, Cl. 149-23.000.

Rederaktiebolaget Nordstjernan: See—
Hjelmner, Ulf R.; and Larsson, Hans F., 4,246,102, Cl. 210-704.000.

Reed, Charles F., to Avery International Corporation. Label matrix stripping. 4,246,058, Cl. 156-183.000.

Reed, Robert D.; Goodnight, Hershel E.; and Martin, Richard R., to John Zink Company. Burner for reduced NOx emission and control of flame spread and length. 4,245,980, Cl. 431-182.000.

Regel, Erik; Buchel, Karl H.; Haller, Ingo; and Plempel, Manfred, to Bayer Aktiengesellschaft. Antimycotic hydroxypropyl-imidazoles. 4,246,274, Cl. 424-273.00R.

Regie Nationale des Usines Renault: See—
Itey-Bernard, Georges, 4,245,712, Cl. 180-70.00R.

Regler, Dieter; and Moritz, Alfred, to Wacker Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Lap cutting abrasive. 4,246,003, Cl. 51-293.000.

Reidt, Dean K., to Minnesota Mining and Manufacturing Company. Cable harness assembly fixture. 4,245,387, Cl. 29-749.000.

Reilly, Edward J.; and Williams, Glenn L., to Gould Inc. Thermal array protection method and apparatus. 4,246,587, Cl. 346-1.100.

Reinecke, Erich: See—
Schlamann, Wilhelm; Feldmann, Joachim; and Reinecke, Erich, 4,245,722, Cl. 188-71.400.

Reiners, Robert A.: See—
Pressick, John C.; and Reiners, Robert A., 4,246,184, Cl. 260-412.400.

Reiniger, Haigh McD., to Safe, Kenneth S., Jr. Method and apparatus for obtaining low ash content refuse fuel, paper and plastic products from municipal solid waste and said products. 4,245,999, Cl. 44-1.00D.

Reisfeld, Frederick, to Burroughs Corporation. Data signal responsive phase locked loop using averaging and initializing techniques. 4,246,545, Cl. 331-1.00A.

Reismuller, Anton. Monitoring and remote-indicator apparatus for vacuum-generating internal combustion engines. 4,245,497, Cl. 73-115.000.

Remond, Georges: See—
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,246,267, Cl. 424-267.000.

Research Cottrell, Inc.: See—
Grieco, Gary J., 4,245,568, Cl. 110-147.000.

Research Laboratories of Australia Pty Limited: See—
Alston, Julia M., 4,245,555, Cl. 101-466.000.

Research Organics, Inc.: See—
Ferguson, Wilfred J., 4,246,194, Cl. 260-513.00N.

Research Products Rehovot Ltd.: See—
Perry, Mordechai; Linder, Charles; and Kedem, Ora, 4,246,092, Cl. 204-301.000.

Revankar, Ganapathi R.: See—
Robins, Roland K.; and Revankar, Ganapathi R., 4,246,408, Cl. 544-209.000.

Rex, Roger, to Display Corporation International. Centralized video or audio center display device. 4,245,871, Cl. 312-223.000.

Reynolds, Gordon S.: See—
Sparks, Sam L.; and Reynolds, Gordon S., 4,245,636, Cl. 128-214.00R.

Reynolds, Mervyn F.: See—
Phillips, Ian R.; and Reynolds, Mervyn F., 4,245,757, Cl. 222-43.000.

Reynolds Metals Company: See—
Dewey, John L.; Scott, Charles E.; Kane, James F.; Stratton, Claud L.; Rushing, John C.; and Spooner, Robert H., 4,246,239, Cl. 423-125.000.

Jensen, Eric L., 4,246,300, Cl. 427-233.000.

Reynolds, Ronald W., to Commercial Shearing, Inc. Rotary to linear servo mechanisms. 4,245,547, Cl. 91-49.000.

Rhodes, Donald B.: See—
Lebeck, Harold E.; and Rhodes, Donald B., 4,245,638, Cl. 128-334.00C.

Rhone-Poulenc Industries: See—
Daniel, Jean-Claude; Grossoleil, Jacques; and Roulet, Robert, 4,246,309, Cl. 428-95.000.

Lillo, Jean-Pierre, 4,246,041, Cl. 134-23.000.

Rhone-Poulenc S.A.: See—
Baudet, Jacques; Salmon, Michel; and Sausse, Andre, 4,246,120, Cl. 210-321.300.

Rice, Hal H.: See—
Mitchell, Harry R.; and Rice, Hal H., 4,245,611, Cl. 123-669.000.

Rice, John O.; and McCarbery, Gary P., to General Motors Corporation. Acceleration enrichment for an engine fuel supply system. 4,245,605, Cl. 123-492.000.

Rice, Patrick F.: See—
Barter, Robert I.; and Rice, Patrick F., 4,245,517, Cl. 73-760.000.

Rice, Richard E.; Cohen, Barry M.; and Webb, George W., to Hooker Chemicals & Plastics Corporation. Electric heat storage apparatus. 4,246,466, Cl. 219-325.000.

Richardson-Merrell Inc.: See—
Carr, Albert A., 4,246,268, Cl. 424-267.000.

Richter, Albert P., Jr.; and Peelman, Harold E., to Texaco Inc. Temperature stabilization method. 4,245,479, Cl. 62-119.000.

Richter, Hans. Condensation steam trap comprising a plate-like bimetal body having a curved shape. 4,245,783, Cl. 236-59.000.

Richtzenhain, Hermann: See—
Peterson, Egon N.; and Richtzenhain, Hermann, 4,246,188, Cl. 260-456.00P.

Ricketts, Thomas E., to Occidental Oil Shale, Inc. Explosive expansion to a limited void with uniform scaled depth of burial. 4,245,865, Cl. 299-2.000.

Ricoh Company, Ltd.: See—
Hashimoto, Takemi, 4,246,442, Cl. 179-2.0DP.

Kondo, Yoshiaki; and Okamoto, Akira, 4,246,582, Cl. 370-32.000.

Magill, D. Thomas, 4,246,642, Cl. 364-733.000.

Riedmayr, Georg: See—
Kriegel, Max; and Riedmayr, Georg, 4,245,938, Cl. 409-15.000.

Riegelman, Harry M.; and Madison, Vernon E., to Rusco Industries, Inc. Metal window with offset sash and balance mechanisms. 4,245,436, Cl. 49-446.000.

Riehle, Harald. Planning device. 4,245,401, Cl. 434-430.000.

Rieve, Johann J. Prestressing and prestressed road pavements. 4,245,923, Cl. 404-70.000.

Riffe, Delmar R., to Westinghouse Electric Corp. Reciprocating piston device with changeable stroke length. 4,245,966, Cl. 417-539.000.

Riker Laboratories, Inc.: See—
Hammar, Walton J.; and Rustad, Mark A., 4,246,179, Cl. 260-346.220.

Rimmele, Walter: See—
Schollkopf, Ernst; Rimmele, Walter; Skultety, Hans; and Ortnier, Eduard, 4,245,583, Cl. 118-259.000.

Rinkes, Hans; and Joseph, Werner, to Bayer Aktiengesellschaft. Method and apparatus for melting frits for inorganic oxide surface coatings by electric resistance heating. 4,246,432, Cl. 13-6.000.

Ritchie, David S.: See—
Berry, Peter J.; and Ritchie, David S., 4,246,612, Cl. 358-206.000.

Ritchie, Leon T.; and Harwood, Robert G.; to AMP Incorporated. Laminated connector. 4,245,876, Cl. 339-59.00M.

Rivenburgh, Dennis L.: See—
Bakos, Peter; Darrow, Russell E.; Rivenburgh, Dennis L.; and Williams, William F., 4,246,147, Cl. 260-18.0EP.

Rizzo, Luke J., to Sun Pipe Line Company. Pipeline scraper handling apparatus. 4,245,945, Cl. 414-349.000.

Robbins, Murray: See—
Gallagher, Patrick K.; Gyorgy, Ernst M.; Johnson, David W., Jr.; and Robbins, Murray, 4,246,128, Cl. 252-62.570.

Robert Bosch GmbH: See—
Bock, Gerd; and Gerd, 4,246,598, Cl. 358-12.000.

Grozinger, Werner; and Rabus, Friedrich, 4,245,590, Cl. 123-488.000.

Robert S. Agar, Inc.: See—
Agar, Robert S., 4,245,448, Cl. 52-489.000.

Roberts, Leslie N., to Buckeye International, Inc. Coupler. 4,245,747, Cl. 213-153.000.

Roberts, Michael G.: See—
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,246,314, Cl. 428-378.000.

Robertshaw Controls Company: See—
Bauer, Werner R.; and Van Fossen, Robert A., 4,245,670, Cl. 137-625.290.

Hardin, George T., 4,245,549, Cl. 92-48.000.

Slier, Boyd P., 4,245,781, Cl. 236-34.500.

Teichert, Allen L.; McKinney, Richard W.; and Marquis, Edgar E., 4,246,457, Cl. 200-303.000.

Robeson, Lloyd M., to Union Carbide Corporation. Polyarylate blends with copolyesters. 4,246,381, Cl. 525-444.000.

Robins, Roland K.; and Revankar, Ganapathi R., to ICN Pharmaceuticals. Imidazo[1,2-a]s-triazine. 4,246,408, Cl. 544-209.000.

Robinson, Merritt A. Bicycle steering and control member. 4,245,522, Cl. 74-480.00R.

Robinson, Michael, to Laporte Industries Limited. Processing metal chlorides. 4,246,022, Cl. 75-11.000.

Rockland Systems Corporation: See—
Thanos, S. N., 4,246,542, Cl. 330-107.000.

Rockwell International Corporation: See—
Allen, Frank L., Jr., 4,245,799, Cl. 242-118.300.

Brown, Ralph H., 4,245,676, Cl. 139-316.000.

Eahghy, Siavash, 4,245,381, Cl. 29-240.000.

Eahghy, Siavash, 4,245,382, Cl. 29-407.000.

Grantham, LeRoy F., 4,246,255, Cl. 423-659.000.

Lie, Tjong T.; and Wright, Charles G., 4,245,852, Cl. 280-680.000.

Rodgers, Robert L., 3rd: See—
Kosonocky, Walter F.; and Rodgers, Robert L., 3rd, 4,246,591, Cl. 357-24.000.

Rodrigues, John J.: See—
Stevenson, James S.; and Rodrigues, John J., 4,245,760, Cl. 222-148.000.

Rogatkin, Alexandr A.: See—
Khlopov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmikov, Vladimir N.; Musilko, Vitaly A.; Garmash, Vladimir I.; Tkachenko, Vladimir A.; Shipilov, Viktor F.; deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.

Rogers, Thomas E.: See—
Baizer, Manuel M.; and Rogers, Thomas E., 4,246,388, Cl. 526-217.000.

Rogers, William M., to Engelhard Minerals & Chemicals Corporation. Horizontal flow catalytic reactor. 4,246,235, Cl. 422-198.000.

Rohm and Haas Company: See—
Howell, Thomas J.; Paterson, William G.; and Pattison, Ian, 4,246,386, Cl. 526-207.000.

Kopchik, Richard M., 4,246,374, Cl. 525-329.000.

Lewis, Sheldon N.; and Haggard, Richard A., 4,246,370, Cl. 525-131.000.

Rohner AG Pratteln: See—
Kirner, Hans D.; and Wegmann, Jacques, 4,245,993, Cl. 8-664.000.

Rohr, Frank J.: See—
Maczura, George; Heilich, Raymond P.; and Rohr, Frank J., 4,246,035, Cl. 106-64.000.

Rohrer, Ernst. Method for the reduction of the chemical oxygen demand of water and waste water by catalytic oxidation and use of such method. 4,246,105, Cl. 210-763.000.

Rolf, Meinhard: See—
Neff, Ruter; Rolf, Meinhard; and Muller, Walter, 4,246,401, Cl. 542-415.000.

Romano, Giuliano; Marilli, Nedo; and Gonfiotti, Riccarda. Thermodynamic systems for generating mechanical energy. 4,245,474, Cl. 60-519.000.

Romein, Jacob J., to U.S. Philips Corporation. Acoustic writing combination, comprising a stylus with an associated writing tablet. 4,246,439, Cl. 178-18.000.

Rosch, Gunter: See—
Frossel, Gunter; Schinzel, Erich; Schonberger, Norbert; Martini, Thomas; and Rosch, Gunter, 4,246,403, Cl. 542-432.000.

Rosen, Julius S., to American Optical Corporation. Disposable blood chamber. 4,245,907, Cl. 356-244.000.

Rosen, Perry: See—
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,246,402, Cl. 542-426.000.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,246,426, Cl. 560-231.000.

Rosenberger, Siegfried; and Schmidt, Andreas, to Ciba-Geigy Corporation. Hindered phenolic amides. 4,246,198, Cl. 564-158.000.

Rossmo, William. Medication dispenser. 4,245,742, Cl. 206-534.000.

Rotalflex (Great Britain) Limited: See—
Hall, Stephen, 4,245,878, Cl. 339-88.00R.

Roulet, Robert: See—
Daniel, Jean-Claude; Grossoleil, Jacques; and Roulet, Robert, 4,246,309, Cl. 428-95.000.

Rouse, R. Wayne: See—
McCullough, Davey L.; and Rouse, R. Wayne, 4,245,946, Cl. 414-412.000.

Rowan, John: See—
Michetti, Anthony; Warner, Charles; and Rowan, John, 4,246,557, Cl. 335-17.000.

Rowlands, Geoffrey J.: See—
Pickering, Alan H.; Rowlands, Geoffrey J.; and Tice, David R., 4,246,512, Cl. 315-39.770.

Rozniecki, Edward J., to United States of America, Army. Manual override for short stroke valve. 4,245,660, Cl. 137-68.00A.

Ruhl, Hermann. Speed control device. 4,245,598, Cl. 123-333.000.

Ruhrchemie Aktiengesellschaft: See—
Hobes, John V.; and Payer, Wolfgang, 4,246,357, Cl. 521-77.000.

Rusco Industries, Inc.: See—
Riegelman, Harry M.; and Madison, Vernon E., 4,245,436, Cl. 49-446.000.

Rushing, John C.: See—
Dewey, John L.; Scott, Charles E.; Kane, James F.; Stratton, Claud L.; Rushing, John C.; and Spoons, Robert H., 4,246,239, Cl. 423-125.000.

Rustad, Mark A.: See—
Hammar, Walton J.; and Rustad, Mark A., 4,246,179, Cl. 260-346.220.

Rutz, Elisabeth M., to International Business Machines Corporation. Coherent semiconductor injection laser array. 4,246,548, Cl. 331-94.50H.

Ryan, Joseph C. Exothermic injector adapter. 4,245,589, Cl. 123-298.000.

Rymarchyk, Nicholas M., to Pullman Berry. Chute for charging vessels. 4,245,824, Cl. 266-287.000.

S.C.A.B.A., Inc.: See—
Houston, Charles E., 4,245,632, Cl. 128-205.130.

Sado, Kenzo: See—
Doi, Yoshikazu; and Sado, Kenzo, 4,245,891, Cl. 350-184.000.

Safe, Kenneth S., Jr.: See—
Reiniger, Haigh McD., 4,245,999, Cl. 44-1.00D.

Safrygin, Jury S.: See—
Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; Andreeva, Nina K.; and Zykov, Valery A., 4,246,019, Cl. 71-59.000.

Sagami, Hiroshi: See—
Miyachi, Hirotsugu; Sagami, Hiroshi; and Tsushima, Sakae, 4,246,353, Cl. 521-28.000.

Saint-Gobain Industries: See—
Moliner, Jacques; Mahler, Jacques; Bocquet, Gilbert; and de Massy, Bernard, 4,246,145, Cl. 260-7.500.

St. Onge, Henri S. Apparatus having a tubular inflatable bladder and a grout dispensing nozzle for connecting lateral branches to a reined main. 4,245,970, Cl. 425-13.000.

Saito, Masumi: See—
Yukuta, Toshio; Ohashi, Takashi; Kojima, Minoru; and Saito, Masumi, 4,246,361, Cl. 521-128.000.

Sakagami, Teruo: See—
Murayama, Naohiro; Fukuda, Makoto; Sujuki, Sirou; and Sakagami, Teruo, 4,246,091, Cl. 204-296.000.

Sakai, Kunihide: See—
Hirai, Shiro; Nei, Atsushi; and Sakai, Kunihide, 4,246,619, Cl. 360-125.000.

Sakakibara, Yoshio: See—
Fusaya, Yoshiharu; Karino, Yukio; Sakakibara, Yoshio; and Endo, Katsusuke, 4,246,333, Cl. 430-219.000.

Sakuma, Fumio: See—
Soeda, Katsuji; Oyama, Mitsuhiro; and Sakuma, Fumio, 4,246,521, Cl. 318-331.000.

Salmon, Michel: See—
Baudet, Jacques; Salmon, Michel; and Sausse, Andre, 4,246,120, Cl. 210-321.300.

Salmon, Roger: See—
Cartwright, David; and Salmon, Roger, 4,246,419, Cl. 546-291.000.

Samulski, Thaddeus V. Temperature probe. 4,245,507, Cl. 73-356.000.

Sanborn, Philip A., Jr., to W. R. Grace & Co. Reclosable package. 4,246,288, Cl. 426-122.000.

Sanders, Albert J., Jr., to SWS Silicones Corporation. Detergent resistant vinyl coatings. 4,246,029, Cl. 106-3.000.

Sanders, James M.: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,246,287, Cl. 426-3.000.

Sanderson, Albert M.: See—
Bache, John K.; Sanderson, Albert M.; and Pearson, Arthur, 4,245,819, Cl. 266-90.000.

Sandoval, Dante J. Fluid motor. 4,245,473, Cl. 60-496.000.

Sandoz, Inc.: See—
Kathawala, Faizulla G., 4,246,259, Cl. 424-185.000.

Sandoz Ltd.: See—
Gerisier, Berthold, 4,246,404, Cl. 542-466.000.

Sandwall, Nils K. A., to AB Nordstroms Linbanor. Bulk cargo ship hold arrangement. 4,245,942, Cl. 414-144.000.

Sangway, Peter C.: See—
Bosomaier, Terence R. J.; and Sangway, Peter C., 4,246,485, Cl. 250-486.000.

Sanner, George E. Moisture responsive switch. 4,246,574, Cl. 340-602.000.

Sano, Richard M.: See—
Ionnou, Basil N.; Kearns, Donald S.; Applegate, Robert J.; Sano, Richard M.; and Prokop, Edward K., 4,245,646, Cl. 128-653.000.

Sansum, Robert D., to Gerrard Industries Limited. Package strapping tools. 4,245,678, Cl. 140-93.400.

Sarlos, Seppo E. Scanning and detecting device. 4,245,913, Cl. 356-431.000.

Sasaki, Hiroo; Komiya, Katsuo; and Kato, Yoshio, to Toyo Soda Manufacturing Co., Ltd. Hydrophilic separating carrier and preparation thereof. 4,246,362, Cl. 521-149.000.

Sasaki, Toshio: See—
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,246,135, Cl. 252-429.00B.

Sater, Bernard L., to United States of America, National Aeronautics and Space Administration. Method of cold welding using ion beam technology. 4,245,768, Cl. 228-116.000.

Sato, Kazuhiro; Nagahara, Shusaku; Umamoto, Masuo; Akiyama, Tohiyuki; Izumita, Moriaki; Takahashi, Kenji; and Mita, Seichi, to Hitachi, Ltd. Solid-state color imaging device. 4,246,601, Cl. 358-47.000.

Sato, Kazuo: See—
Shiohata, Koki; Ohno, Masaharu; Fujisawa, Fumio; Sato, Kazuo; Kuamoto, Sho; and Hisano, Katsukuni, 4,245,930, Cl. 415-103.000.

Sato, Kazuyoshi: See—
Yamamoto, Susumu; and Sato, Kazuyoshi, 4,246,047, Cl. 148-38.000.

Sato, Koji: See—
Sawada, Hideo; Kotani, Motoharu; Sato, Koji; Izawa, Toichiro; Sugimori, Ken-ichiro; and Katanosaka, Akiato, 4,246,009, Cl. 53-74.000.

Sato, Masamichi; Fujii, Itsuo; and Sato, Tohikazu, to Fuji Photo Film Co., Ltd. Process of forming mask images. 4,246,328, Cl. 430-5.000.

Sato, Minoru: See—
Nei, Motoo; Uchikawa, Eisaku; Jo, Ikuo; and Sato, Minoru, 4,245,928, Cl. 405-195.000.

Sato, Takuro: See—
Fukusawa, Atsushi; Miyamoto, Ryoichi; and Sato, Takuro, 4,246,552, Cl. 333-1.100.

Sato, Tohikazu: See—
Sato, Masamichi; Fujii, Itsuo; and Sato, Tohikazu, 4,246,328, Cl. 430-5.000.

Sato, Yoshito: See—
Uehara, Kazuo; Toma, Hideaki; and Sato, Yoshito, 4,245,962, Cl. 417-218.000.

Satogosei Co., Ltd.: See—
Suzuki, Tadashi, 4,245,374, Cl. 24-16.0PB.

Satoh, Mitsuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. SLR Mirror and shutter rebound prevention mechanism. 4,245,904, Cl. 354-153.000.

Satomura, Masato, to Fuji Photo Film Co., Ltd. Recording element. 4,245,857, Cl. 282-27.500.

Satterfield, Larry S., to Milliken Research Corporation. Carpet scrubber. 4,245,371, Cl. 15-320.000.

Sauer, Irwin W.: See—
Croopnick, Gerald A.; and Sauer, Irwin W., 4,246,108, Cl. 209-291.000.

Saunders, Eugene M., to Levi Strauss & Co. Fabric stretch testing device. 4,245,512, Cl. 73-789.000.

Saunders, James F., to Trane Company. The Refrigerant charge adjuster apparatus. 4,245,480, Cl. 62-149.000.

Sausse, Andre: See—
Baudet, Jacques; Salmon, Michel; and Sausse, Andre, 4,246,120, Cl. 210-321.300.

Savage, Jack W.; and Kikly, Ned L., to General Motors Corporation. Bladed fan assembly and compression loaded connector. 4,245,957, Cl. 416-135.000.

Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, to Canadian Liquid Air Ltd./Air Liquide Canada LTEE. Apparatus for biological treatment of waste water. 4,246,111, Cl. 210-96.100.

Savov, Peter H.; Peev, Vasil G.; Valchev, Alexander Y.; and Lingorski, Nikola A., to DSO "Charna Metalurgia". Method and apparatus for the refining of iron-based melts. 4,246,023, Cl. 75-12.000.

Sawada, Daisaku: See—
Nishida, Minoru; Hattori, Tadaaki; Yamaguchi, Hiroaki; Goto, Kenji; Sawada, Daisaku; and Shigematu, Takashi, 4,245,591, Cl. 123-416.000.

Sawada, Hideo; Kotani, Motoharu; Sato, Koji; Izawa, Toichiro; Sugimori, Ken-ichiro; and Katanosaka, Akiato, to Daicel Ltd.; and Goeikagaku Institute Ltd. Smoke filter material and use thereof. 4,246,009, Cl. 53-74.000.

Scapini, Giancarlo; Raimondi, Armando; and Poidomani, Placido, to Farmaceutici Geymonat Sud S.p.A. Method of making a fomonoben/theophylline complex. 4,246,407, Cl. 544-118.000.

Scarella, Robert A.: See—
Prasad, Ravi; Gottesman, Martin; and Scarella, Robert A., 4,246,291, Cl. 426-387.000.

Schaab, Rudolph S.; and Harralson, John C. Method and apparatus for knitting sliver loop knit fabric. 4,245,447, Cl. 66-9.00B.

Schabert, Hans-Peter; and Laurer, Erwin, to Kraftwerk Union Aktiengesellschaft. Steam power plant, especially nuclear power plant. 4,245,412, Cl. 137-357.000.

Schade, Franz; Nebeling, Reinhard; and Zinz, Bruno, to Bayer Aktiengesellschaft. Condensation products of terphenylsulphonic acids, naphthalenesulphonic acids, bis-(4-hydroxyphenyl) sulphone and formaldehyde. 4,245,996, Cl. 8-94.240.

Schafer, Jürgen; and Thomas, Gunter, to Original Hanau Quarzlampen GmbH. Gas discharge lamp with about 4 parts nitrogen and 1 part xenon. 4,246,509, Cl. 313-224.000.

Schalk, Karl: See—
Kogler, Georg; and Schalk, Karl, 4,246,518, Cl. 318-138.000.

Schaulfele, Carl N., to Eastman Kodak Company. Energy-regulating firing circuit for an electronic strobe flash unit. 4,246,515, Cl. 315-290.000.

Schedel, Michael: See—
Kinast, Gunther; and Schedel, Michael, 4,246,345, Cl. 435-84.000.

Scheepwerf en Machinefabriek "De Liesbosch" B.V.: See—
van Zeggelaar, Gerrit H., 4,245,932, Cl. 406-33.000.

Scheffer, Dietrich; and Guse, Rolf, to Padana AG. Magnetic bearings. 4,245,869, Cl. 308-10.000.

Schering Aktiengesellschaft: See—
Muller, Rudolf; Radeklau, Hans-Jürgen; Doefke, Harald; and Krieger, Detlef, 4,245,399, Cl. 34-166.000.

Schinzel, Erich: See—
Frossel, Gunter; Schinzel, Erich; Schonberger, Norbert; Martini, Thomas; and Rosch, Gunter, 4,246,403, Cl. 542-432.000.

Schiweck, Hubert: See—
Munir, Mohammad; and Schiweck, Hubert, 4,246,431, Cl. 568-872.000.

Schlammann, Wilhelm; Feldmann, Joachim; and Reinecke, Erich, to Wabco Fahrzeugbremsen GmbH. Vehicle disk brake with improved means for changing brake pads. 4,245,722, Cl. 188-71.400.

Schlusener, Horst: See—
Hautschopp, Alois; Steinkuhl, Bernd; and Schlusener, Horst, 4,245,756, Cl. 198-735.000.

Schluter, Karl-Heinz: See—
Ludazewit, Dieter; and Schluter, Karl-Heinz, 4,245,795, Cl. 242-56.00R.

Schmid, Rolf; Schmitter, Andre; Gutekunst, Ferdinand; and Lohae, Friedrich, to Ciba-Geigy Corporation. Mixtures of glycidylated hydantoins and polyhydric phenols and the use thereof for the preparation of plastics. 4,246,366, Cl. 521-178.000.

Schmidt, Alfred C. Self-actuated flow regulator system. 4,245,669, Cl. 137-550.000.

Schmidt-Anderien, Poul. Device for monitoring biological signals from patients, while an electro-surgical appliance is being simultaneously used. 4,245,649, Cl. 128-696.000.

Schmidt, Andreas: See—
Rosenberger, Siegfried; and Schmidt, Andreas, 4,246,198, Cl. 564-158.000.

Schmidt, Friedrich; Mack, Kurt; and Furtwangler, Hans-Rolf, to Bayer Aktiengesellschaft. Pressure-hydrolytic treatment of effluent. 4,246,104, Cl. 210-759.000.

Schmidt, Helmut: See—
Oswald, Jürgen; Patzelt, Heinz W.; and Schmidt, Helmut, 4,246,214, Cl. 264-51.000.

Schmidt, Johan M.: See—
Van Der Heide, Henri J.; and Schmidt, Johan M., 4,246,440, Cl. 179-1.0GD.

Schmieder, Helmut: See—
Goldacker, Hubert; Koch, Gunter; Schmieder, Helmut; Warnecke, Ernst; and Comper, Walter, 4,246,238, Cl. 422-275.000.

Schmitt, Felix: See—
Gras, Rainer; Schmitt, Felix; and Wolf, Elmar, 4,246,380, Cl. 525-440.000.

Schmitt, Frederick L.: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,246,287, Cl. 426-3.000.

Schmitter, Andre: See—
Schmid, Rolf; Schmitter, Andre; Gutekunst, Ferdinand; and Lohse, Friedrich, 4,246,366, Cl. 521-178.000.

Schmitz, Wolfgang: See—
Wiedermann, Rolf; Merten, Rudolf; Dietrich, Werner; and Schmitz, Wolfgang, 4,246,365, Cl. 521-172.000.

Schollkopf, Ernst; Rimmle, Walter; Skultety, Hans; and Ortnier, Edward, to Polytipe AG. Mechanism to transfer a viscous coating medium. 4,245,583, Cl. 118-259.000.

Scholz, Hans; and Holland, David G., to English Electric Valve Company Limited. Light biased camera tube arrangements. 4,246,516, Cl. 315-291.000.

Schonberger, Norbert: See—
Proesel, Gunter; Schinzel, Erich; Schonberger, Norbert; Martini, Thomas; and Rosch, Gunter, 4,246,403, Cl. 542-432.000.

Schonhagen, Hubert: See—
Leister, Heinrich; Dittmer, Helmut; and Schonhagen, Hubert, 4,246,180, Cl. 260-371.000.

Schott Dubon, Carlos C.: See—
Schott, Malo, Carlos; and Schott Dubon, Carlos C., 4,245,672, Cl. 137-869.000.

Schott Malo, Carlos; and Schott Dubon, Carlos C. Sealing valve for sludge scavenging system. 4,245,672, Cl. 137-869.000.

Schreiber, Bruno, to Ciba-Geigy Corporation. Epoxy resin moulding compositions. 4,246,162, Cl. 260-37.0EP.

Schulde, Felix; and Obendorf, Johann, to Vebe-Chemie Aktiengesellschaft. Process of hardening epoxy coating composition with dicyandiamide/imidazole derivative. 4,246,394, Cl. 528-117.000.

Schuman, Paul D.; Westmoreland, Geraldine; and Anderson, Roy, to PCR Incorporated. 5,5-Difluorouracil. 4,246,411, Cl. 544-313.000.

Schwander, Hansrudolf; and Zickendraht, Christian, to Ciba-Geigy Aktiengesellschaft. Naphtholactam dyestuffs. 4,246,410, Cl. 544-300.000.

Schwander, Hansrudolf; and Zickendraht, Christian, to Ciba-Geigy AG. Naphtholactam dyestuffs. 4,246,422, Cl. 548-143.000.

Schwartz, Sidney J., to Burroughs Corporation. Passive annihilator. 4,246,645, Cl. 365-1.000.

Schwartz, Sidney J., to Burroughs Corporation. Phase controlled replicate/swap gate for bubble memories. 4,246,648, Cl. 365-13.000.

Schwartz, Sidney J., to Burroughs Corporation. Phase controlled gating. 4,246,649, Cl. 365-16.000.

Schwarze, Werner: See—
Kleemann, Axel; and Schwarze, Werner, 4,246,189, Cl. 260-465.00F.

Science Applications, Inc.: See—
Knael, Thomas M.; and Houghton, Alexander J., 4,246,042, Cl. 136-246.000.

Science Union et Cie: See—
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,246,267, Cl. 424-267.000.

SCM (Canada) Ltd.: See—
Kinsell, William D., Jr., 4,245,919, Cl. 401-97.000.

SCM Corporation: See—
McGinnis, Vincent D.; and Stevenson, Donald R., 4,246,369, Cl. 525-126.000.

Scott, Charles E.: See—
Dewey, John L.; Scott, Charles E.; Kane, James F.; Stratton, Claud L.; Rushing, John C.; and Spoons, Robert H., 4,246,239, Cl. 423-125.000.

Scott Paper Company: See—
Urion, Kenneth E., 4,245,536, Cl. 83-821.000.

Sear, Leonard, to F. Jos. Lamb Company. Method and apparatus for machining spherical combustion chambers. 4,245,939, Cl. 409-191.000.

Seaver, Alton L., to American Hoechst Corporation. Molding powder of ultra-high molecular weight polyethylene and process for its preparation. 4,246,390, Cl. 526-352.000.

Sechi, Franco N.: See—
Huang, Ho-Chung; and Sechi, Franco N., 4,246,535, Cl. 324-57.00R.

Security Corporation of Michigan: See—
Miner, John E., 4,245,776, Cl. 232-43.300.

Sedivy, Johannes: See—
Popp, Walter; and Sedivy, Johannes, 4,246,158, Cl. 260-30.60R.

Segawa, Hiroshi: See—
Tada, Masahisa; Kato, Masahiko; Ukita, Tsuneo; Segawa, Hiroshi; Domoto, Masao; Mori, Kiyoteru; Ishii, Kazuhiko; Horinouchi, Shinobu; Tsuzuki, Masami; and Uemura, Eiichi, 4,246,118, Cl. 210-275.000.

Seifried, George B.; and Steitz, William R., to Toledo Engineering Co., Inc. Square glass furnace with sidewall electrodes. 4,246,433, Cl. 13-6.000.

Seino, Takashi: See—
Fujii, Shin; Ookawa, Koue; and Seino, Takashi, 4,246,165, Cl. 260-40.00R.

Sekiya, Fukuio; and Yamada, Takashi, to Citizen Watch Company Limited. Electronic timepiece. 4,246,602, Cl. 368-471.000.

Selby, Howard W., III, to Pure Cycle Corporation. Water recycling system. 4,246,101, Cl. 210-615.000.

Seldner, Alvin A.: See—
Garner, Eugene F.; and Seldner, Alvin A., 4,246,051, Cl. 149-7.000.

Self, Freddy R. Dry chemical recovery device for fire extinguishers. 4,245,679, Cl. 141-2.000.

Selman, Charles M., to Phillips Petroleum Company. Magnesium reducing agent for producing titanium trihalide catalyst component. 4,246,384, Cl. 526-142.000.

Semar, Harold W., to Westinghouse Electric Corp. Reversing apparatus. 4,245,520, Cl. 74-377.000.

Semenov, Alexandr E.: See—
Dolgov, Anatoly V.; Konovalov, Leonid V.; Perkins, Leib B.; Deev, Stanislav L.; Dyakov, Vitaly E.; Semenov, Alexandr E.; Bauer, Evgeny T.; and Sutorin, Serafim N., 4,246,106, Cl. 210-774.000.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: See—
Boutron, Claude; Caffoz, Robert; and Juston, Claude, 4,245,531, Cl. 83-169.000.

Shaffer, Howard R.; and Wycheck, Thomas H., to AMP Incorporated. Heavy duty plug and socket. 4,245,875, Cl. 339-32.00R.

Shalaev, Vladimir G.: See—
Vartanian, Gurgen P.; Vitchenko, Vladimir S.; Smirnov, Gennady K.; and Shalaev, Vladimir G., 4,246,506, Cl. 310-232.000.

Shank, Samuel R., Jr.; and Bowen, Thomas L. Isolated reverse turbine system for gas turbine engines. 4,245,467, Cl. 60-39.150.

Sharp, Kenneth C. Furnace cooling system. 4,245,572, Cl. 110-336.000.

Shaw, David N., to Dunham-Bush, Inc. Solar augmented heat pump system with automatic staging reciprocating compressor. 4,245,476, Cl. 62-2.000.

Sheeline, Randall D., to United Technologies Corporation. Inert carrier drying and coating apparatus. 4,246,233, Cl. 422-159.000.

Shell Internationale Research Maatschappij B.V.: See—
Haafkens, Rudolf; Luque, Rafael F.; and De Vries, Willem, 4,245,702, Cl. 166-307.000.

Shelton, Jewel J.: See—
Nemitz, Russell H.; and Shelton, Jewel J., 4,245,685, Cl. 150-52.00R.

Shelton, Walter L.: See—
Bachmann, G. M.; Burrous, Homer C.; and Shelton, Walter L., 4,245,730, Cl. 194-1.00A.

Shepherd, Margaret C.; Worthington, Paul A.; and Parry, Keith P., to Imperial Chemical Industries Limited. Imidazole and triazole compounds, fungicidal and plant growth regulating compositions, method of combating fungal infections in plants and method of regulating plant growth. 4,246,020, Cl. 71-76.000.

Shepherd, Robert G.: See—
Albright, Jay D.; Miner, Thomas G.; and Shepherd, Robert G., 4,246,275, Cl. 424-275.000.

Sherwin, Robert M.: See—
Abrams, Jack Z.; and Sherwin, Robert M., 4,246,245, Cl. 423-242.000.

Sherwood Medical Industries Inc.: See—
Cornell, William D.; and Wetzel, Victor H., 4,246,123, Cl. 210-782.000.

Shindler, E. Melvin, 4,246,133, Cl. 252-408.000.

Shibata, Akira, to Chugai Denki Kogyo Kabushiki-Kaisha. Ag-SnO Alloy composite electrical contact. 4,246,321, Cl. 428-614.000.

Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, to Sumitomo Chemical Company, Limited. Olefin polymerization catalyst. 4,246,135, Cl. 252-429.00B.

Shigematu, Takashi: See—
Nishida, Minoru; Hattori, Tadashi; Yamaguchi, Hiroaki; Goto, Kenji; Sawada, Daisaku; and Shigematu, Takashi, 4,245,591, Cl. 123-416.000.

Shikama, Masaharu: See—
Sukegawa, Ikuro; Nozawa, Seiichi; Mukai, Seiichi; and Shikama, Masaharu, 4,246,396, Cl. 528-238.000.

Shima, Yoshio; Haga, Kyosuke; Eto, Kunihiro; and Yamakage, Tetsuro, to Toyota-Koki Kabushiki-Kaisha. Tool breakage detecting apparatus. 4,246,577, Cl. 340-680.000.

Shimansky, Richard A.; and Spencer, Rodney S., to United States of America, National Aeronautics and Space Administration. Safety shield for vacuum/pressure chamber viewing port. 4,245,566, Cl. 109-49.500.

Shimizu, Kunio. Fluid shut-off device. 4,245,814, Cl. 251-65.000.

Shimizu, Toshiharu; Maruyama, Takesuke; Matsumoto, Shuzo; Yamashita, Kei; and Takeyama, Atsushi, to Hitachi, Ltd. Self-converging deflection yoke. 4,246,560, Cl. 335-212.000.

Shimotsuma, Wataru: See—
Sonoda, Nobuo; Shimotsuma, Wataru; and Tsubusaki, Shigeru, 4,246,143, Cl. 252-518.000.

Shimp, David A.; Hicks, Darrell D.; and Graver, Richard B., to Celanese Corporation. Two component aqueous coating composition based

on an epoxy-polyamine adduct and a polyepoxide. 4,246,148, Cl. 260-18.0EP.

Shin-Etsu Chemical Co., Ltd.: See—
Yamamoto, Akira; Taguchi, Kenichi; Hayashida, Akira; and Ishihara, Toshinobu, 4,246,178, Cl. 260-345.80R.

Shinn, William A. Solar-energy-process-converter system. 4,246,080, Cl. 204-129.000.

Shinoda, Yoshio: See—
Hayasaka, Toshiaki; Shinoda, Yoshio; and Terasawa, Masatoshi, 4,246,445, Cl. 179-18.0DA.

Shiohata, Koki; Ohno, Masaharu; Fujisawa, Fumio; Sato, Kazuo; Kusumoto, Sho; and Hisano, Katsukuni, to Hitachi, Ltd. Turbine rotor-constructions. 4,245,950, Cl. 415-103.000.

Shiozaki, Hiroko, legal representative: See—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Tomioka, Kenichi; and Shiozaki, Tetsuya, deceased, 4,246,280, Cl. 424-305.000.

Shiozaki, Tetsuya, deceased: See—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Tomioka, Kenichi; and Shiozaki, Tetsuya, deceased, 4,246,280, Cl. 424-305.000.

Shipilov, Fedor D., administrator by: See—
Khlopov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmykov, Vladimir N.; Musilko, Vitaly A.; Garmash, Vladimir I.; Tkalenko, Vladimir A.; Shipilov, Viktor F., deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.

Shipilov, Gennady V., administrator by: See—
Khlopov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmykov, Vladimir N.; Musilko, Vitaly A.; Garmash, Vladimir I.; Tkalenko, Vladimir A.; Shipilov, Viktor F., deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.

Shipilov, Viktor F., deceased: See—
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Shirashi, Yuma; and Hirota, Akira, to Victor Company of Japan, Limited. System for recording and/or reproducing an audio signal which has been converted into a digital signal. 4,246,615, Cl. 360-8.000.

Shiroko, Katsuo: See—
Umeda, Tomio; Shiroko, Katsuo; Niida, Kazuo; and Itoh, Johtarō, 4,246,073, Cl. 203-25.000.

Shitanoki, Kazuaki, to Honda Giken Kogyo Kabushiki Kaisha. Lifting device in vehicle sliding door device. 4,245,864, Cl. 296-222.000.

Shlykov, Gennady N.: See—
Tikhonov, Valentin N.; Shlykov, Gennady N.; Zhestkov, Vitaly I.; Zhigalov, Gennady V.; Mukhin, Viktor M.; and Dyachkov, Vasily M., 4,245,459, Cl. 57-58.890.

Shofner, Martin K. Crutch assembly. 4,245,659, Cl. 135-68.000.

Shoketsu Kinzoku Kogyo Kabushiki Kaisha: See—
Kosugi, Seiji, 4,245,671, Cl. 137-625.640.

Sholder, Jason A.: See—
Mann, Brian M.; Sholder, Jason A.; and Hurowitz, Marc I., 4,245,641, Cl. 128-419.0PG.

Shum, Ming S.: See—
Janowski, Kenneth R.; Shum, Ming S.; and Bradley, Steven A., 4,246,057, Cl. 156-150.000.

Shuster, Edward J.: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,246,287, Cl. 426-3.000.

Shutt, Robert C.; Black, Thomas J.; and Matthews, Victor Y., to Lincoln Electric Company, The. Method and apparatus for arc welding of metal plates from one side only. 4,246,463, Cl. 219-73.200.

Shypula, Michael W., to National Distillers and Chemical Corp. Display rack and card therefor. 4,245,414, Cl. 40-124.000.

Sid Richardson Carbon & Gasoline Company: See—
Braddock, Charles E., 4,246,251, Cl. 423-450.000.

Siegmund, Walter P., to American Optical Corporation. Method of making graded refractive index fibers and rods. 4,246,016, Cl. 65-3.00A.

Siemens Aktiengesellschaft: See—
Anger, Klaus; Frosien, Jürgen; and Lischke, Burkhard, 4,246,487, Cl. 250-492.00R.

Bauer, Paul, 4,246,618, Cl. 360-99.000.

Frank, Kurt, 4,246,460, Cl. 250-409.000.

Kausche, Helmut; Mayer, Gerhard; and Stein, Karl-Ulrich, 4,245,386, Cl. 29-572.000.

Kogler, Georg; and Schalk, Karl, 4,246,518, Cl. 318-138.000.

Madsen, Knud, 4,246,486, Cl. 250-491.000.

Pfleiderer, Hans-Joerg, 4,246,553, Cl. 333-165.000.

Soldner, Richard E., 4,245,511, Cl. 73-625.000.

Welker, Manfred; and Wolf, Herbert, 4,245,650, Cl. 128-696.000.

Widenmann, Rudolf; and Ehrigott, Roland, 4,246,562, Cl. 336-192.000.

SIG Schweizerische Industrie-Gesellschaft: See—
Deutschlander, Oert; and Wipf, Alfred, 4,245,734, Cl. 198-412.000.

Sigmund Pulsometer Pumps Limited: See—
Candler, Nigel D. Q., 4,245,949, Cl. 415-73.000.

Silakov, Grigory I.: See—
Khlopov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmykov, Vladimir N.; Musilko, Vitaly A.; Garmash, Vladimir I.; Tkalenko, Vladimir A.; Shipilov, Viktor F., deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.

Silent Channel Products Limited: See—
Townsend, Walter S., 4,246,303, Cl. 428-31.000.

Silver, Spencer F., III, to Minnesota Mining and Manufacturing Company. Method of detecting adherent cells. 4,246,344, Cl. 435-39.000.

Simmel, Thomas L.: See—
Byrne, LeRoy H.; Fassman, Arnold; and Simmel, Thomas L., 4,245,756, Cl. 221-185.000.

Simon, Wayne E.: See—
Bunting, Jackie O.; and Simon, Wayne E., 4,245,961, Cl. 417-171.000.

Sinfelt, John H.: See—
Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., 4,246,140, Cl. 252-452.000.

Singer Company, The: See—
Albrecht, Charles W., 4,245,504, Cl. 73-275.000.

Batson, William A., 4,245,533, Cl. 83-471.300.

Poquette, Raymond S., Jr., 4,245,498, Cl. 73-151.000.

Zoeher, Josef, 4,245,577, Cl. 112-262.100.

Singh, Shobha: See—
Johnson, Leo F.; Singh, Shobha; and Van Uiter, LeGrand G., 4,245,883, Cl. 350-96.140.

Sjovall, Ragnar E.: See—
Klose, Robert E.; Bahoshy, Bernard J.; Sjonvall, Ragnar E.; and Yernanian, James A., 4,246,286, Cl. 426-3.000.

Sjostedt, Ernst H. S.; and Nismo, Jim A. Method and apparatus of growing plants without soil. 4,245,433, Cl. 47-59.000.

Skarstad, Paul M.; and Hayes, Thomas G., to Medtronic, Inc. High energy-density battery system. 4,246,327, Cl. 429-105.000.

Skibina, Elena S., administrator: See—
Khlopov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmykov, Vladimir N.; Musilko, Vitaly A.; Garmash, Vladimir I.; Tkalenko, Vladimir A.; Shipilov, Viktor F., deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.

Skill Corporation: See—
Zimmer, Ralph O., 4,246,508, Cl. 310-242.000.

Skubitz, Frank; and Funk, Roger L., to Medtronic, Inc. Lead connector. 4,245,642, Cl. 128-419.00P.

Skultety, Hans: See—
Schollkopf, Ernst; Rimmle, Walter; Skultety, Hans; and Ortnier, Edward, 4,245,583, Cl. 118-259.000.

Skurikhin, Vladimir I.; Fainzilberg, Leonid S.; and Zhitetsky, Leonid S. Digital device for checking steady-state value of analogue signal. 4,246,470, Cl. 235-92.0PB.

Slechts, Edward W.: See—
Trimmer, Gordon A.; and Slechts, Edward W., 4,245,648, Cl. 128-680.000.

Sliger, Boyd P., to Robertshaw Controls Company. Engine cooling system thermostat and method of making the same. 4,245,781, Cl. 236-34.500.

Small, Robert E.; Hildebolt, William M.; and Hundt, Murray T., to Campbell Soup Company. Protein texturization. 4,245,552, Cl. 99-483.000.

Smirnov, Gennady K.: See—
Vartanian, Gurgen P.; Vitchenko, Vladimir S.; Smirnov, Gennady K.; and Shalaev, Vladimir G., 4,246,506, Cl. 310-232.000.

Smith, David W.: See—
Frey, Werner U.; Lomax, Ronald W.; Clark, Herbert W.; and Smith, David W., 4,246,437, Cl. 174-52.0PE.

Smith, Edward D. Telephone interface controller for unattended operation. 4,246,443, Cl. 179-2.00R.

Smith, Hosea E., to Exxon Research & Engineering Co. Supports for closely spaced tubes. 4,245,694, Cl. 165-82.000.

Smith, Howard. Extendable tool bar for hay rakes. 4,245,458, Cl. 56-376.000.

Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Carbonyl latent accelerators for curing epoxy resins. 4,246,161, Cl. 260-37.0EP.

Smith-Johannsen, Robert, to Ramu International. Freezing inorganic particulate slurries. 4,246,209, Cl. 264-28.000.

Smith, Marc L.: See—
Taou, Ivan H.; and Smith, Marc L., 4,246,087, Cl. 204-181.00C.

Smith, Raymond E., Jr. Telescoping aerial lift. 4,245,441, Cl. 52-111.000.

Smith, William B. Trap setting device and method. 4,245,424, Cl. 43-97.000.

Snow, Philip B., to Tektronix, Inc. Low parasitic shunt diode package. 4,246,556, Cl. 333-247.000.

- Societe AATON: See—
Beauviala, Jean-Pierre; and Charras, Jean-Pierre, 4,245,897, Cl. 352-180.000.
- Societe Anonyme Cribla: See—
Pouillon, Emile R. J., 4,246,097, Cl. 209-214.000.
- S.A. Redco: See—
Anton, Octavian; Gossaye, Alain; and Poncelet, Georges, 4,246,036, Cl. 106-99.000.
- Societe de Diffusion Neiman: See—
Neiman, Michel, 4,245,751, Cl. 220-204.000.
- Societe des Chausures Seducta Charles Jourdan & Fils: See—
Mazabra, Jean, 4,245,407, Cl. 36-24.500.
- Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: See—
Briotet, Jean P. F. G., 4,245,470, Cl. 60-243.000.
Lesgourgues, Jacques, 4,246,218, Cl. 264-111.000.
- Societe Nationale d'Etude et de Construction de Moyeurs d'Aviation: See—
Fondacci, Jean-Luc, 4,245,468, Cl. 60-39.28R.
- Societe Nouvelle de Constructions Industrielles: See—
Depondt, Paul; Echallier, Claude; Levy, Albert; and Boussin, Louis, 4,245,447, Cl. 52-262.000.
- Societe SKID: See—
Bocquet, Jean P., 4,245,585, Cl. 118-410.000.
- Soda Koryo Kabushiki Kaisha: See—
Suzuki, Kiyomori; Eto, Takeaki; Otsuka, Takeyasu; Abe, Shozo; and Yoshikawa, Sadao, 4,246,182, Cl. 260-405.000.
- Soeda, Katsuji; Oyama, Mitsuhiko; and Sakuma, Fumio, to Yamamoto Electric Industrial Co., Ltd. DC Motor speed control system, 4,246,521, Cl. 318-331.000.
- Sokolov, Igor D.; Safrin, Yuri S.; Muraviev, Alexander V.; Andreeva, Nina K.; and Zylkov, Valery A. Method of producing a complex mineral fertilizer, 4,246,019, Cl. 71-59.000.
- Solar Suede Corporation: See—
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- Solarez Corporation: See—
Lindmayer, Joseph, 4,246,043, Cl. 136-256.000.
- Solberg, Merle F. Distance marker, 4,246,471, Cl. 235-92.00DN.
- Soldner, Richard E., to Siemens Aktiengesellschaft. Ultrasonic applicator for ultrasonic scanning of bodies and method of using the same, 4,245,511, Cl. 73-625.000.
- Solentanche-Entreprise: See—
Delattre, Henri, 4,246,305, Cl. 428-36.000.
- Solomon, Anthony T.: See—
Crawford, William B.; and Solomon, Anthony T., 4,245,576, Cl. 112-262.100.
- Solowy, Jean, to FMC Corporation. Valve with condensate recovery device, 4,245,663, Cl. 137-192.000.
- Soltes, Isaac B. Jewelry chain clasp, 4,245,377, Cl. 24-230.00R.
- Sommer, Harold Z.; and Wicks, George E., Jr., to United States of America, Army. Picoil unsymmetrical bis-quaternary carbamates, 4,246,415, Cl. 546-261.000.
- Sommer, Harold Z.; Wicks, George E., Jr.; and Owens, Omer O., to United States of America, Army. Chemical agents, 4,246,416, Cl. 546-261.000.
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- Sone, Masazumi: See—
Suzuki, Kazuhiko; Sone, Masazumi; Fukumori, Yukitsugu; and Hayashi, Kazuo, 4,245,550, Cl. 98-2.110.
- Songer, Larry A.; and Cooper, C. Ray, to AM International, Inc. Print receiving tray, 4,245,834, Cl. 271-213.000.
- Sonoda, Nobuo; Shimotsuna, Wataru; and Tsubasaki, Shigeru, to Matsushita Electric Industrial Co., Ltd. Process of preparing conductive tin dioxide powder, 4,246,143, Cl. 252-518.000.
- Sorenson Research Co., Inc.: See—
Sparks, Sam L.; and Reynolds, Gordon S., 4,245,636, Cl. 128-214.00R.
- Sorenson, Wayne R., to Conoco, Inc. Anti-static vinyl chloride polymers, 4,246,168, Cl. 260-43.75J.
- Sosin, Boleslaw M.: See—
Gerard, Roger E. J.; and Sosin, Boleslaw M., 4,246,547, Cl. 331-16.000.
- Soucy, Donald P. Fire escape ladder, 4,245,717, Cl. 182-96.000.
- Souma, Shigeo: See—
Yanaba, Satoru; Tamagawa, Tohoru; Souma, Shigeo; Funahashi, Takumi; Okumura, Hiroyuki; and Takahashi, Nobuyuki, 4,246,458, Cl. 200-144.00B.
- Souza, Anthony J., to Woodstream Corporation. Container including pull-out stacking tray structure, 4,245,422, Cl. 43-57.50R.
- Souza, Anthony J.; and Bumsted, Joseph H., to Woodstream Corporation. Animal trap, 4,245,423, Cl. 43-81.000.
- Sparks, Sam L.; and Reynolds, Gordon S., to Sorenson Research Co., Inc. Continuous flushing apparatus, 4,245,636, Cl. 128-214.00R.
- Spaziente, Placido M.: See—
de Nora, Vittorio; and Spaziente, Placido M., 4,246,324, Cl. 429-17.000.
- Specker, Manfred: See—
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- Spector, George: See—
Abrahamson, Johan E.; and Spector, George, 4,245,786, Cl. 239-242.000.
Cataldo, Joseph W.; and Spector, George, 4,245,902, Cl. 354-76.000.
- Spectrospin AG: See—
Laukien, Gunther R.; Keller, Toni; Koch, Dieter; and Tschopp, Werner, 4,246,537, Cl. 324-321.000.
- Spees, Arthur T., to Viaw-Flex Company. File card for filing system, 4,245,415, Cl. 40-380.000.
- Spencer, Rodney S.: See—
Shimansky, Richard A.; and Spencer, Rodney S., 4,245,566, Cl. 109-49.500.
- Spencer, Rupert L., to Pillsbury Company, The. Parsley applicator, 4,245,581, Cl. 118-24.000.
- Spencer Wright Industries, Inc.: See—
Wilson, Bobby L., 4,245,574, Cl. 112-79.00R.
- Sperry Corporation: See—
Johnson, Leslie H.; Nelson, George F.; and Benrud, Vernal M., 4,246,647, Cl. 365-8.000.
Rayfield, James F., 4,245,716, Cl. 182-86.000.
- Sperry Rand Limited: See—
Carter, Walter S.; and Inwood, Richard B., 4,246,549, Cl. 331-94.50M.
- Spoons, Robert H.: See—
Dewey, John L.; Scott, Charles E.; Kane, James F.; Stratton, Claud L.; Rushing, John C.; and Spoons, Robert H., 4,246,239, Cl. 423-125.000.
- Sprague Devices, Inc.: See—
Clem, John L., 4,245,369, Cl. 15-250.230.
- Sprengel, Dietrich; and Halbig, Helmut, to Varta Batterie, A.G. Multi-layer auxiliary electrode, 4,246,326, Cl. 429-59.000.
- Spycher, Anton A., to Corning Glass Works. Method for casting glass-plastic lenses comprising allyl diglycol carbonate plastic, 4,246,207, Cl. 264-1.000.
- Stabilus GmbH: See—
Wirges, Winfried, 4,245,826, Cl. 267-131.000.
- Stahlecker, Fritz: See—
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- Stal-Laval Turbin AB: See—
Mansson, Martin; and Torstenfelt, Ragnar, 4,245,463, Cl. 60-39.14M.
- Stamcarbon, B.V.: See—
Steeman, Johannes W. M., 4,245,699, Cl. 166-271.000.
van de Moedijk, Cornelis G. M., 4,246,250, Cl. 423-387.000.
- Stamires, Dennis: See—
Alafandi, Hamid; and Stamires, Dennis, 4,246,138, Cl. 252-438.000.
- Standard Oil Company, The: See—
Bartek, Joseph P.; and Grasselli, Robert K., 4,246,421, Cl. 546-352.000.
Grasselli, Robert K.; Miller, Arthur F.; and Suresh, Dev D., 4,246,190, Cl. 260-465.300.
- Standard Oil Company (Indiana): See—
Figler, Robert G.; Ellsworth, William G.; and Misiorowski, Richard J., 4,246,231, Cl. 422-147.000.
McCauley, David A.; and Nevitt, Thomas D., 4,246,094, Cl. 208-57.000.
- Stark, Marvin; and Knola, Clement J., to Pullman Incorporated. Cambered hatch cover seal arrangement, 4,245,565, Cl. 105-377.000.
- Starr, Jerry, to Bio-Humus, Inc. Composition and method for the treatment of sewage, 4,246,100, Cl. 210-610.000.
- Staufert, Helmut; and Stahlecker, Fritz, to Staufert, Helmut. Open-end spinning unit, 4,245,460, Cl. 57-58.890.
- Stauffer Chemical Company: See—
Coll-Palagos, Miguel; Groch, Frank O.; Kraft, Paul; and Lin, Ruey Y., 4,246,320, Cl. 428-463.000.
- Stauffer, Norman L., to Honeywell Inc. Automatic focusing apparatus for use with a plurality of lenses, 4,246,476, Cl. 250-201.000.
- Steel Web Corporation: See—
Jackson, Thomas E., 4,245,449, Cl. 52-639.000.
- Steeman, Johannes W. M., to Stamcarbon, B.V. Method for in-situ recovery of methane from deeply buried coal seams, 4,245,699, Cl. 166-271.000.
- Stefanescu, Doru M.; Dinescu, Lucian; Craciun, Stefan; and Cristea, Ioan, to Institutul de Cercetari Stiintifice, Inginerie Tehnologica si Proiectari Pentru Sectoare Calde. Manufacturing process of vermicular graphic cast-irons through double modification, 4,246,026, Cl. 75-130.00R.
- Steger, Charles B., to General Motors Corporation. Lockbar release and anti-rewind feature for seat belt retractor, 4,245,798, Cl. 242-107.40A.
- Stein, John, to Kim Hotstart Manufacturing Co., Inc. Liquid heating and circulating system, 4,245,593, Cl. 123-142.50R.
- Stein, Karl-Ulrich: See—
Kausche, Helmut; Mayer, Gerhard; and Stein, Karl-Ulrich, 4,245,386, Cl. 29-572.000.
- Steinbrenner, Ernest W., to United States of America, Air Force. Economical fast scan spectrometer, 4,245,911, Cl. 356-328.000.
- Steinkuhl, Bernd: See—
Hauschopp, Alois; Steinkuhl, Bernd; and Schlusener, Horst, 4,245,736, Cl. 198-735.000.
- Steitz, William R.: See—
Seifried, George B.; and Steitz, William R., 4,246,433, Cl. 13-6.000.
- Stemen, Michael J., to Continental Group, Inc., The. Non-removable drum side handle, 4,245,750, Cl. 220-94.00R.
- Stengle, Edward J., Jr., to Owens-Illinois, Inc. Heat-resistant composite material and method of making same, 4,246,313, Cl. 428-266.000.
- Stepan Chemical Company: See—
Deutsch, Julius H., 4,246,387, Cl. 526-209.000.
- Stephan, Leonard P., to Boeing Company, The. Turbulence compensated throttle control system for aircraft having throttle command

- signal path control means responsive to engine rating control and flare initiation, 4,245,805, Cl. 244-188.000.
- Sterling Drug Inc.: See—
Collins, Joseph C.; and Diana, Guy D., 4,246,284, Cl. 424-321.000.
Oesterlin, Rudolf; and Pareene, Peter A., 4,246,420, Cl. 546-338.000.
- Stettner & Co.: See—
Poenagen, Helmut H., 4,246,627, Cl. 361-405.000.
- Stevenson, Donald R.: See—
McGinniss, Vincent D.; and Stevenson, Donald R., 4,246,369, Cl. 525-126.000.
- Stevenson, James S.; and Rodrigues, John J., to Terminator Products, Inc. Container with built-in probe assembly and coupling head assembly therefor, 4,245,760, Cl. 222-148.000.
- Stewart, John, to Twiflex Couplings Limited. Draw off control system for a roll of material, 4,245,793, Cl. 242-75.430.
- Stilwell, George R., Jr.: See—
Kolodzey, James S.; Stilwell, George R., Jr.; and Uberbacher, Edward C., 4,245,886, Cl. 350-96.200.
- Sting, Donald W.: See—
Fous, James L.; Parker, John J.; Child, James L., Jr.; and Sting, Donald W., 4,245,924, Cl. 405-45.000.
- Stollberg, Ray H., to Crown Zellerbach Corporation. Container with stacking alignment and latching structure, 4,245,773, Cl. 229-33.000.
- Stoner, Glenn E.: See—
Wilkins, Judd R.; and Stoner, Glenn E., 4,246,343, Cl. 435-32.000.
- Stoute, Noel C. Dip stick wiper, 4,245,367, Cl. 15-210.00B.
- Stratton, Claud L.: See—
Dewey, John L.; Scott, Charles E.; Kane, James F.; Stratton, Claud L.; Rushing, John C.; and Spoons, Robert H., 4,246,239, Cl. 423-125.000.
- Street, Glynn E.; and Crandell, Arthur R. Golf bag system, 4,245,684, Cl. 150-1.50B.
- Strickland, Gordon E.: See—
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- Strohmaier, Ernst: See—
Eibofner, Eugen; and Strohmaier, Ernst, 4,245,985, Cl. 433-114.000.
- Studt, William L.: See—
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipaky, Jerome J., 4,246,409, Cl. 544-211.000.
- Stuhmer, Karl-Gerhard, to Sulzer Brothers Limited. Plug for openings produced by operative procedures in medullated bones, 4,245,359, Cl. 3-1.900.
- Styring, Ralph E., Jr., to Atlantic Richfield Company. Process for separating carbon dioxide and ethane, 4,246,008, Cl. 55-68.000.
- Sublatic Holding SA: See—
Mehl, Wolfgang; and Hendriks, Dieter, 4,246,331, Cl. 430-107.000.
- Sud-West Chemie GmbH: See—
Kopp, Otto; Holzer, Helmut; and Birnbaum geb. Schinko, Charlotte, 4,246,315, Cl. 428-315.000.
- Suddeutsche Zucker-Aktiengesellschaft: See—
Munir, Mohammad; and Schiweck, Hubert, 4,246,431, Cl. 568-872.000.
- Sugai, Yoshio; and Ueno, Eiichi, to Pioneer Electronic Corporation. FM Receiver equipped with noise pulse suppression device, 4,246,441, Cl. 179-1.00GD.
- Sugasawa, Fukashi; Iizuka, Haruhiko; and Matsumoto, Junichiro, to Nissan Motor Company, Limited. Stoichiometric and enrichment mixture control during different split engine modes, 4,245,471, Cl. 60-276.000.
- Sugimori, Ken-ichiro: See—
Sawada, Hideo; Kotani, Motoharu; Sato, Koji; Izawa, Toichiro; Sugimori, Ken-ichiro; and Katanosaka, Akisato, 4,246,009, Cl. 53-74.000.
- Sugimoto, Takashi; and Takahashi, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Abnormal separation detecting circuits of chromatic signals of SECAM systems, 4,246,599, Cl. 358-18.000.
- Sugio, Akitoishi; Kuramoto, Atsuo; Kawaki, Takao; Urabe, Hiroyuki; Kurihara, Tatsuhiko; Masumoto, Isamu; and Hasebe, Akio, to Mitsubishi Gas Chemical Company, Inc. Method for recovering polyphenylene oxides, 4,246,398, Cl. 528-496.000.
- Sugita, Mamoru: See—
Noda, Masaru; Murakami, Toshio; and Sugita, Mamoru, 4,246,543, Cl. 330-280.000.
- Sugiura, Noboru, to Hitachi, Ltd. Ignition apparatus for internal combustion engine, 4,245,610, Cl. 123-609.000.
- Sujuki, Sirou: See—
Murayama, Naohiro; Fukuda, Makoto; Sujuki, Sirou; and Sakagami, Tero, 4,246,091, Cl. 204-296.000.
- Sukegawa, Ikuro; Nozawa, Seiichi; Mukai, Seiichi; and Shikama, Masaharu, to Mitsubishi Chemical Industries, Limited. Process for producing polyoxymethylene, 4,246,396, Cl. 528-238.000.
- Sullivan, Mark. Wheeled figure, 4,245,426, Cl. 46-103.000.
- Sulzer Brothers Limited: See—
Stuhmer, Karl-Gerhard, 4,245,359, Cl. 3-1.900.
- Sumimoto, Takashi: See—
Inoue, Hitoshi; Watanabe, Kenichi; and Sumimoto, Takashi, 4,245,853, Cl. 280-701.000.
- Sumitomo Chemical Company, Limited: See—
Nagase, Tsuneyuki; Suzukamo, Gohu; and Suzuki, Yoshio, 4,246,424, Cl. 560-38.000.
- Ohashi, Naohito; Takashima, Yoshinori; and Katsube, Junki, 4,246,428, Cl. 562-401.000.
- Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,246,135, Cl. 252-429.00B.
- Takagishi, Hisao; and Tanaka, Haruo, 4,246,153, Cl. 260-29.40R.
- Sumitomo Electric Industries, Ltd.: See—
Moriya, Michio, 4,245,723, Cl. 188-72.300.
Yamanoto, Susumu; and Sato, Kazuyoshi, 4,246,047, Cl. 148-38.000.
- Sun, John; Fartro, John C.; and Ramey, Richard A., to United States of America, Navy. Controlled store separation system, 4,246,472, Cl. 235-401.000.
- Sun Pipe Line Company: See—
Rizzo, Luke J., 4,245,945, Cl. 414-349.000.
- Sun, Shan C., to Westinghouse Electric Corp. Protective relay device, 4,246,623, Cl. 361-97.000.
- Sunderland, Alec: See—
Astill, Michael; Sunderland, Alec; and Waine, Maurice G., 4,245,532, Cl. 83-390.000.
- Sunkist Growers, Inc.: See—
Conway, Tim D.; and Paddock, Paul F., 4,246,098, Cl. 209-558.000.
- Sunnen Products Company: See—
Estes, Morton B.; and Korn, Charles S., 4,245,489, Cl. 72-123.000.
- Suresh, Dev D.: See—
Grasselli, Robert K.; Miller, Arthur F.; and Suresh, Dev D., 4,246,190, Cl. 260-465.300.
- Suturin, Serafim N.: See—
Dolgov, Anatoly V.; Kononov, Leonid V.; Perka, Leib B.; Deev, Stanislav L.; Dyakov, Vitaly E.; Semenov, Alexander E.; Bauer, Evgeny T.; and Suturin, Serafim N., 4,246,106, Cl. 210-774.000.
- Suzukamo, Gohu: See—
Nagase, Tsuneyuki; Suzukamo, Gohu; and Suzuki, Yoshio, 4,246,424, Cl. 560-38.000.
- Suzuki, Hajime, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for supplying transport fluid to auxiliary jet nozzles in a jet loom, 4,245,677, Cl. 139-435.000.
- Suzuki, Kazuhiko; Sone, Masazumi; Fukumori, Yukitsugu; and Hayashi, Kazuo, to Nissan Motor Company, Limited. Electronic air cleaner for passenger compartment of vehicle, 4,245,550, Cl. 98-2.110.
- Suzuki, Kiyomori; Eto, Takeaki; Otsuka, Takeyasu; Abe, Shozo; and Yoshikawa, Sadao, to Soda Koryo Kabushiki Kaisha. Process for the preparation of omega-hydroxy fatty acids from omega-hydroxy (or acyloxy)-alkyl- γ -butyrolactones, 4,246,182, Cl. 260-405.000.
- Suzuki, Tadashi, to Satogosei Co., Ltd. Connector, 4,245,374, Cl. 24-16.00B.
- Suzuki, Yoshiaki: See—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,246,329, Cl. 430-17.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,246,330, Cl. 430-17.000.
- Suzuki, Yoshio: See—
Nagase, Tsuneyuki; Suzukamo, Gohu; and Suzuki, Yoshio, 4,246,424, Cl. 560-38.000.
- Svenska Utvecklings Aktiebolaget: See—
Kallander, Stefan, 4,245,910, Cl. 356-338.000.
- Svoboda, Josef: See—
Krob, Erwin; and Svoboda, Josef, 4,245,851, Cl. 280-605.000.
- Swank, Bryan W., to Cummins Engine Company, Inc. Multi-valve interlock apparatus, 4,246,115, Cl. 210-168.000.
- Swanson, Billy L., to Phillips Petroleum Company. Gelled compositions and well treating, 4,246,124, Cl. 252-8.55R.
- Swanson, Thomas W.; and Herrig, Paul A., to E-Systems, Inc. Inductorless monolithic crystal filter network, 4,246,554, Cl. 333-192.000.
- SWS Silicones Corporation: See—
Martin, Eugene R., 4,246,423, Cl. 556-423.000.
- Sanders, Albert J., Jr., 4,246,029, Cl. 106-3.000.
- Syntex Corporation: See—
Felder, Ernest; Pitre, Davide; and Zutter, Hans, 4,246,164, Cl. 260-501.170.
- Holton, Percy G., 4,246,193, Cl. 260-501.170.
- Szecei, Peter L., to Halcon Research and Development Corporation. Purification of carbonylation products, 4,246,195, Cl. 260-549.000.
- T. J. Smith & Nephew, Ltd.: See—
Lloyd, Ronald; and Walter, Brian W., 4,245,630, Cl. 128-155.000.
- T. R. Systems, Inc.: See—
Przewalski, Zygmunt J., 4,245,571, Cl. 110-246.000.
- Tacke, Peter: See—
Meyer, Rolf V.; and Tacke, Peter, 4,246,371, Cl. 525-183.000.
- Tada, Masahisa; Kato, Masahiko; Ukita, Tsuneo; Segawa, Hiroshi; Domoto, Masao; Mori, Kiyoteru; Ishii, Kazuhiko; Horinouchi, Shinobu; Tsuzuki, Masami; and Uemura, Eiichi, to Nippon Paint Co., Ltd.; and Mizuho Kogyo Kabushiki Kaisha. Apparatus for separating solid and liquid, 4,246,118, Cl. 210-275.000.
- Taguchi, Kenichi: See—
Yamamoto, Akira; Taguchi, Kenichi; Hayashida, Akira; and Ishihara, Toshinobu, 4,246,178, Cl. 260-345.80R.
- Tahara, Yukio: See—
Kosaka, Takao; and Tahara, Yukio, 4,246,312, Cl. 428-207.000.
- Takagishi, Hisao; and Tanaka, Haruo, to Sumitomo Chemical Company, Limited. Process for producing aqueous solution of polyurea/polysulfide thermosetting resin, 4,246,153, Cl. 260-29.40R.
- Takahashi, Hiroshi, to Nippon Electric Co., Ltd. Noise reduction system for color television signal, 4,246,610, Cl. 358-167.000.
- Takahashi, Hiroshi: See—
Sugimoto, Takashi; and Takahashi, Hiroshi, 4,246,599, Cl. 358-18.000.

- Takahashi, Kenji: See—
Sato, Kazuhiro; Nagahara, Shusaku; Umemoto, Masuo; Akiyama, Toshiyuki; Izumita, Morihiko; Takahashi, Kenji; and Mita, Seiichi, 4,246,601, Cl. 358-47.000.
- Takahashi, Nobuyuki: See—
Yanabu, Satoru; Tamagawa, Tohoru; Souma, Shigeo; Funahashi, Takumi; Okumura, Hiroyuki; and Takahashi, Nobuyuki, 4,246,458, Cl. 200-144.00B.
- Takahashi, Sankichi: See—
Okouchi, Isao; Izumi, Kenkichi; Yamazaki, Haruyuki; and Takahashi, Sankichi, 4,243,998, Cl. 23-295.00R.
- Takamatsu, Yukio; Wakabayashi, Takashi; Noda, Hideyo; Ichikawa, Kiyoshi; Kamegai, Tsuneteru; and Ikawa, Kazuo, to Nissan Motor Company, Limited. Method of producing a cover member for a safety air-cushion. 4,246,213, Cl. 264-46.700.
- Takano, Masaaki; and Nakashima, Masahiro, to Chiaso Corporation. Method for producing crystals of sorbic acid. 4,246,430, Cl. 562-600.000.
- Takashima, Yoshinori: See—
Ohashi, Naohito; Takashima, Yoshinori; and Katsube, Junki, 4,246,428, Cl. 562-401.000.
- Takaya, Takao; Kochi, Hiromu; and Masugi, Takashi, to Fujisawa Pharmaceutical Company, Limited. Method for preparation of β -lactam compound. 4,246,405, Cl. 544-16.000.
- Takayama, Masami: See—
Koike, Wataro; Takayama, Masami; Ohashi, Hideaki; and Yazawa, Chihiro, 4,246,392, Cl. 528-64.000.
- Koike, Wataro; Takayama, Masami; Ohashi, Hideaki; and Yazawa, Chihiro, 4,246,425, Cl. 560-47.000.
- Takayama, Masao, to Copal Company Limited. Blade actuating device for focal plane shutters. 4,245,905, Cl. 354-246.000.
- Takeda Chemical Industries, Ltd.: See—
Okumura, Jugoro; and Noma, Satoshi, 4,246,040, Cl. 106-308.00B.
- Takeda, Kunihiko: See—
Miyake, Tetsuya; Takeda, Kunihiko; Ikeda, Akihiko; and Mizuno, Masayuki, 4,246,351, Cl. 435-182.000.
- Takaguchi, Milton M.: See—
Messing, Ralph A.; Oppermann, Robert A.; Ramsey, William S.; and Takaguchi, Milton M., 4,246,349, Cl. 435-176.000.
- Takenaka, Satoshi: See—
Misaki, Hideo; Matsura, Kazuo; Harada, Saburo; Takenaka, Satoshi; and Horiuchi, Yoshifumi, 4,246,342, Cl. 435-25.000.
- Takenaka, Yoshinori; Tsuda, Nobuaki; and Kuroda, Toru, to Asahi Kasei Kogyo Kabushiki Kaisha. Separation of lymphocytes from lymphocyte-containing suspension by filtration. 4,246,107, Cl. 210-806.000.
- Takeshita, Hiroshi: See—
Kondo, Hiroyuki; and Takeshita, Hiroshi, 4,245,867, Cl. 303-6.00C.
- Takeyama, Atsushi: See—
Shimizu, Toshiharu; Maruyama, Takesuke; Matsumoto, Shuzo; Yamashita, Kei; and Takeyama, Atsushi, 4,246,560, Cl. 335-212.000.
- Takisawa, Kenzaburo: See—
Kokubo, Ichiro; Ben, Seiji; Takisawa, Kenzaburo; Koyama, Yuuji; Kobayashi, Junkiti; and Ueda, Chosei, 4,245,490, Cl. 72-234.000.
- Tam, Man C.; and Chang, Loh-Yi, to Uniroyal Ltd. Electromechanical transducer. 4,246,448, Cl. 179-111.00E.
- Tamagawa, Tohoru: See—
Yanabu, Satoru; Tamagawa, Tohoru; Souma, Shigeo; Funahashi, Takumi; Okumura, Hiroyuki; and Takahashi, Nobuyuki, 4,246,458, Cl. 200-144.00B.
- Tamai, Yasuo: See—
Aonuma, Masashi; and Tamai, Yasuo, 4,246,316, Cl. 428-329.000.
- Tamaki, Sigeo; and Nakagawa, Tohru, to Hitachi, Ltd. Idling control apparatus for internal combustion engine. 4,245,608, Cl. 123-588.000.
- Tamura Electric Works, Ltd.: See—
Hayasaka, Toshiaki; Shinoda, Yoshio; and Terasawa, Masatoshi, 4,246,445, Cl. 179-18.0DA.
- Tamura, Toshinari: See—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Tomioka, Kenichi; and Shiozaki, Tetsuya, deceased, 4,246,280, Cl. 424-305.000.
- Tanaka, Haruo: See—
Takagishi, Hideo; and Tanaka, Haruo, 4,246,153, Cl. 260-29.40R.
- Tanaka Instrument Co., Ltd.: See—
Ikemizu, Naoyuki; and Terada, Kiyohide, 4,246,628, Cl. 362-65.000.
- Tanaka, Koichi; Kobayashi, Kenji; and Aonuma, Shigeo, to Fuji Xerox Co., Ltd. Electrophotographic toner comprising low and high molecular weight blend of binder resins. 4,246,332, Cl. 430-109.000.
- Tarayre, Jean-Pierre: See—
Couasse, Henri; Mouzin, Gilbert; Tarayre, Jean-Pierre; and Casadio, Silvano, 4,246,271, Cl. 424-270.000.
- Taylor-Smith, Ernest J. Automatic method and apparatus for laying block units. 4,245,451, Cl. 52-747.000.
- TDK Electronics Company Limited: See—
Nakagawa, Shiro; and Matsui, Kiyoshi, 4,246,600, Cl. 358-44.000.
- Technic, Inc.: See—
Hradil, Edward; Hradil, Hans; and Weisberg, Alfred M., 4,246,077, Cl. 204-43.00R.
- Tegtmeyer, Gert; Goldmann, Wolf; and Triebel, Wolfgang, to Polysius AG. Shaft type countercurrent heat exchanger. 4,245,981, Cl. 432-58.000.
- Teichert, Allen L.; McKinney, Richard W.; and Marquis, Edgar E., to Robertshaw Controls Company. Electrical switch construction, parts therefor and methods of making the same. 4,246,457, Cl. 200-303.000.
- Tektronix, Inc.: See—
Snow, Philip B., 4,246,556, Cl. 333-247.000.
- Teledyne, Inc.: See—
Hawk, Charles E.; and Livingston, Danny K., 4,245,503, Cl. 73-204.000.
- Tenmyo, Osamu: See—
Miyaki, Takeo; Tenmyo, Osamu; Konishi, Masataka; and Kawaguchi, Hiroshi, 4,246,400, Cl. 536-17.00R.
- Tennessee Valley Authority: See—
McGill, Kenneth E.; and Wright, Eugene B., Jr., 4,246,248, Cl. 423-305.000.
- Terada, Kiyohide: See—
Ikemizu, Naoyuki; and Terada, Kiyohide, 4,246,628, Cl. 362-65.000.
- Terasawa, Masatoshi: See—
Hayasaka, Toshiaki; Shinoda, Yoshio; and Terasawa, Masatoshi, 4,246,445, Cl. 179-18.0DA.
- ter Heide, Roelof: See—
Konst, Wilhelmus M. B.; ter Heide, Roelof; and Wobben, Hendrik J., 4,246,292, Cl. 426-538.000.
- Terminator Products, Inc.: See—
Stevenson, James S.; and Rodrigues, John J., 4,245,760, Cl. 222-148.000.
- Texaco Development Corp.: See—
Knifton, John F., 4,246,183, Cl. 260-408.000.
- Texaco Inc.: See—
Carter, Walter H.; and Nix, Cedric A., 4,245,700, Cl. 166-273.000.
- Richter, Albert P., Jr.; and Peelman, Harold E., 4,245,479, Cl. 62-119.000.
- Texas Instruments Incorporated: See—
Bartlett, Keith G., 4,246,592, Cl. 357-41.000.
- Bartlett, Keith G., 4,246,593, Cl. 357-41.000.
- Davies, Colin J., 4,246,611, Cl. 358-194.100.
- Textron, Inc.: See—
Bert, Stephen F., 4,245,461, Cl. 59-82.000.
- Thanos, S. N., to Rockland Systems Corporation. Filter using a state-variable biquadratic transfer function circuit. 4,246,542, Cl. 330-107.000.
- Theurer, Josef; and Folser, Karl, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile ballast cleaning machine. 4,245,703, Cl. 171-16.000.
- Thiboutot, Robert, to Les Entreprises Rotot Ltee. Collapsible support devices and structure. 4,245,849, Cl. 280-20.000.
- Thiele, Hartmut, to AGFA-Gevaert, A.G. Container for magnetic tape cassette. 4,245,740, Cl. 206-387.000.
- Thill, Ernest M. Split cycle heat engines. 4,245,597, Cl. 123-204.000.
- Thimmesch, David M.: See—
Bourke, Robert F.; and Thimmesch, David M., 4,246,522, Cl. 318-338.000.
- Thomas, Gunter: See—
Schafer, Jürgen; and Thomas, Gunter, 4,246,509, Cl. 313-224.000.
- Thomas, Herbert: See—
Kolling, Heinrich; Niemers, Ekkehard; Wollweber, Hartmund; and Thomas, Herbert, 4,246,260, Cl. 424-228.000.
- Thomas, Richard N.; and Braggins, Timothy T., to Westinghouse Electric Corp. Restoration of high infrared sensitivity in extrinsic silicon detectors. 4,246,590, Cl. 357-30.000.
- Thomas, William J. Method and apparatus for controlling usage of a programmable computing machine. 4,246,638, Cl. 364-200.000.
- Thompson, Jack: See—
Hill, Peter; and Thompson, Jack, 4,246,375, Cl. 525-341.000.
- Thompson, Paul F., to General Cable Corporation. Filled communication cable employing a paraffinic oil-base filling compound. 4,246,435, Cl. 174-23.00C.
- Thomson-CSF: See—
Gerlach, Pierre; and Hoet, Roger, 4,245,379, Cl. 29-25.180.
- Thorsell Holdings Ltd.: See—
Agar, Robert S., 4,245,448, Cl. 52-489.000.
- Tice, David R.: See—
Pickering, Alan H.; Rowlands, Geoffrey J.; and Tice, David R., 4,246,512, Cl. 315-39.770.
- Tiemann, Gerhard: See—
Kammann, Knut; and Tiemann, Gerhard, 4,245,538, Cl. 83-880.000.
- Kammann, Wilfried; and Tiemann, Gerhard, 4,245,554, Cl. 101-124.000.
- Tiemens, Ulf: See—
Weiss, Hermann; Linde, Rolf; Tiemens, Ulf; and Klotz, Erhard, 4,246,483, Cl. 250-445.00T.
- Tikhonov, Valentin N.; Shlykov, Gennady N.; Zhestkov, Vitaly I.; Zhigalov, Gennady V.; Mukhin, Viktor M.; and Dyachkov, Vasily M. Spinning chamber of apparatus for open-end spinning. 4,245,459, Cl. 57-58.890.
- Timex Corporation: See—
Wiemer, Leo, 4,246,579, Cl. 340-763.000.
- Timmins, Stephen F.; and Kettle, Alan, to Clayton Aniline Company Limited. The Plural drives each driving plural filter press plate engaging hooks. 4,246,117, Cl. 210-230.000.
- Tischenko, Anatoly R.: See—
Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenshtein, Khaim-Mordke A.; Bernatek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marshavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Filipovskaya, Julia M., 4,246,336, Cl. 430-288.000.
- Tissot, Guy, to Mitchell S.A. Fishing reels. 4,245,797, Cl. 242-84.20G.

- Tkalenko, Vladimir A.: See—
Khlopov, Leonid P.; Gashenko, Stanislav I.; Rogatkin, Alexander A.; Drobot, Dmitry V.; Silakov, Grigory I.; Danilevsky, Anatoly P.; Galitsky, Nikolai V.; Kalmikov, Vladimir N.; Musilko, Vitaly A.; Garmash, Vladimir I.; Tkalenko, Vladimir A.; Shipilov, Viktor F., deceased; Skibina, Elena S., administrator; Shipilov, Gennady V., administrator by; and Shipilov, Fedor D., administrator by, 4,246,012, Cl. 55-315.000.
- TMC Corporation: See—
Krob, Erwin; and Svoboda, Josef, 4,245,851, Cl. 280-605.000.
- Toa Nenryo Kogyo Kabushiki Kaisha: See—
Ueno, Hiroshi; Imai, Masafumi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,246,136, Cl. 252-429.00B.
- Todd, Vern L.; and Edye, Antony J. Method of making a baby's bath. 4,246,056, Cl. 156-145.000.
- Togashi, Akita. Tubular body. 4,245,697, Cl. 165-179.000.
- Tokico Ltd.: See—
Ando, Hiromi; and Azuma, Tomizo, 4,245,845, Cl. 277-189.000.
- Toko Kasei Ltd.: See—
Kobayashi, Toshiaki; Nobe, Tomio; Niimi, Hiroshi; and Wada, Tetsuo, 4,246,000, Cl. 44-51.000.
- Tokuhiro, Yunosuke: See—
Watanabe, Tadahiko; Nakazono, Katsushige; and Tokuhiro, Yunosuke, 4,246,027, Cl. 75-244.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—
Haginomori, Eiichi, 4,246,459, Cl. 200-148.00A.
- Hosoda, Kazumi; and Noguchi, Masaharu, 4,246,622, Cl. 361-93.000.
- Itoh, Noriji, 4,246,544, Cl. 330-293.000.
- Iwasaki, Masami, 4,246,596, Cl. 357-79.000.
- Nakajima, Kihai, 4,246,528, Cl. 318-721.000.
- Sugimoto, Takashi; and Takahashi, Hiroshi, 4,246,599, Cl. 358-18.000.
- Yanabu, Satoru; Tamagawa, Tohoru; Souma, Shigeo; Funahashi, Takumi; Okumura, Hiroyuki; and Takahashi, Nobuyuki, 4,246,458, Cl. 200-144.00B.
- Yanase, Toshihiko, 4,246,044, Cl. 148-1.500.
- Tokyo Shibaura Electric Co., Ltd.: See—
Kawai, Mitsuo; Kawaguchi, Kanji; Kamohara, Hisato; and Miyazaki, Matsuo, 4,246,048, Cl. 148-32.000.
- Yoshida, Mitsuo; Kihara, Toshihiko; and Nagasawa, Hiroshi, 4,246,489, Cl. 250-577.000.
- Toledo Engineering Co., Inc.: See—
Seiffred, George B.; and Seitz, William R., 4,246,433, Cl. 13-6.000.
- Toledo Stamping & Manufacturing Company: See—
Wherry, Joseph L., 4,245,523, Cl. 74-579.00E.
- Toma, Hideaki: See—
Uehara, Kazuo; Toma, Hideaki; and Sato, Yoshito, 4,245,962, Cl. 417-218.000.
- Tomioka, Kenichi: See—
Inukai, Noriyoshi; Murakami, Masuo; Iwamoto, Hidenori; Yanagisawa, Isao; Tamura, Toshinari; Ishii, Yoshio; Tomioka, Kenichi; and Shiozaki, Tetsuya, deceased, 4,246,280, Cl. 424-305.000.
- Tomko, Frederick G.: See—
Zemek, Albert W.; Tomko, Frederick G.; Mason, Crawford; and Darrow, Burr, 4,245,385, Cl. 29-564.800.
- Tommasi, Giulio: See—
Di Gioacchino, Alberto; Tommasi, Giulio; and de Manuele, Mario, 4,246,236, Cl. 422-202.000.
- Toray Industries, Inc.: See—
Hasegawa, Katsumi; and Ohno, Michio, 4,245,794, Cl. 242-45.000.
- Kometani, Kichii; and Okasaka, Hotsuma, 4,246,378, Cl. 525-438.000.
- Yamashita, Yasuo; Ikegama, Masami; and Nishikawa, Takao, 4,245,992, Cl. 8-461.000.
- Tordeux, Marc: See—
Wakselman, Claude; and Tordeux, Marc, 4,246,200, Cl. 564-248.000.
- Toro Company, The: See—
Zien, Gerald J., 4,245,434, Cl. 56-12.700.
- Torok, Vilmos, to ASEA Aktiebolag. Supply equipment for a synchronous machine. 4,246,527, Cl. 318-721.000.
- Torstenfelt, Ragnar: See—
Mansson, Martin; and Torstenfelt, Ragnar, 4,245,463, Cl. 60-39.14M.
- Toth, Anton: See—
Dohy, Gilles; Kersten, Hilde; Meyer, Gerhard; Toth, Anton; and Vollmer, Jean P., 4,246,151, Cl. 260-29.2TN.
- Towmotor Corporation: See—
Hildebrecht, Harold V., 4,245,527, Cl. 74-874.000.
- Townsend, Rodney P.: See—
Jones, Eric; and Townsend, Rodney P., 4,246,228, Cl. 422-94.000.
- Townsend, Walter S., to Silent Channel Products Limited. Dual durometer elongate body side moulding. 4,246,303, Cl. 428-31.000.
- Toybox Corporation: See—
Matsumoto, Hajime; and Abe, Yoichi, 4,245,486, Cl. 63-23.000.
- Toyoko Jozo Kabushiki Kaisha: See—
Misaki, Hideo; Matsura, Kazuo; Harada, Saburo; Takenaka, Satoshi; and Horiuchi, Yoshifumi, 4,246,342, Cl. 435-25.000.
- Toyoko Kogyo Co., Ltd.: See—
Ikemizu, Naoyuki; and Terada, Kiyohide, 4,246,628, Cl. 362-65.000.
- Inoue, Hiroshi; Watanabe, Kenichi; and Sumimoto, Takashi, 4,245,853, Cl. 280-701.000.
- Toyo Soda Manufacturing Co., Ltd.: See—
Sasaki, Hiroo; Komiya, Katsuo; and Kato, Yoshio, 4,246,362, Cl. 521-149.000.
- Toyoda-Koki Kabushiki-Kaisha: See—
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- Whelan, William P., to Uniroyal, Inc. Flame retardant for hydrocarbon diene rubbers. 4,246,359, Cl. 521-92.000.
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- Wiener, Leo, to Timex Corporation. Electrochromic display switching and holding arrangement. 4,246,579, Cl. 340-763.000.
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- Will Ross, Inc.: See—
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- William H. Rorer, Inc.: See—
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- Williams, Albert E., to Communications Satellite Corporation. Odd order elliptic function narrow band-pass microwave filter. 4,246,555, Cl. 333-209.000.
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- Williams, Robert M. Sewage sludge disposal apparatus and method of disposal. 4,245,570, Cl. 110-238.000.
- Williams, Robert M. Pressure relief for material shredders. 4,245,790, Cl. 241-31.000.
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- Willis, John G., to Linear Dynamics, Inc. Proportional solenoid valve and connector. 4,245,815, Cl. 251-129.000.
- Wilson, Bobby L., to Spencer Wright Industries, Inc. Tufted fabric and method and apparatus for making same. 4,245,574, Cl. 112-79.00R.
- Wilson, Edward L.; Cottrell, Walter D.; and Gelin, Robert J., to Owens-Corning Fiberglass Corporation. Low temperature maturation of sheet molding compositions. 4,246,210, Cl. 264-28.000.
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- Wood, Louis L.; and Fulmer, Glenn E., to W. R. Grace & Co. Fire retardant coating system utilizing polyurethane hydrogel. 4,246,146, Cl. 260-9.000.
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- Wright, David W.; and Peterson, Harley G., to Joy Manufacturing Company. Bag filter thimble. 4,246,014, Cl. 55-378.000.
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- Yabroff, Ronald M., to Du Pont de Nemours, E. I., and Company. Separation of 2,4-tolylene diisocyanate from mixtures of 2,4- and 2,6-tolylene diisocyanate. 4,246,187, Cl. 260-453.05P.
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- Yanabu, Satoru; Tamagawa, Tohoru; Souma, Shigeo; Funahashi, Takumi; Okumura, Hiroyuki; and Takahashi, Nobuyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Vacuum interrupter. 4,246,458, Cl. 200-144.00B.
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Yu, Ruey J.: See—
Van Scott, Eugene J.; and Yu, Ruey J., 4,246,261, Cl. 424-240.000.

Yuken Kogyo Company Limited: See—
Tsukioka, Toshio, 4,246,621, Cl. 361-56.000.

Yukuta, Toshio; Ohashi, Takashi; Kojima, Minoru; and Saito, Masumi, to Bridgestone Tire Co., Ltd. Method for producing flame- and smoke-resistant polyurethane foam sheet by incorporation of a urea derivative in reaction mixture. 4,246,361, Cl. 521-128.000.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: See—
Herlitzek, Werner, 4,245,519, Cl. 74-331.000.

Zaiko, Edward J., to Ethyl Corporation. Synthesis of 5-aryl-1-hydrocarbylpyrrole-2-acetic acid. 4,246,176, Cl. 260-326.470.

Zalipsky, Jerome J.: See—
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,246,409, Cl. 544-211.000.

Zane, Anthony J.; and Beurer, Frederick C. Instant position finder and course plotter. 4,245,393, Cl. 33-276.000.

Zarogatsky, Leonid P.: See—
Ivanov, Nikolai A.; Ivanov, Boris G.; Zarogatsky, Leonid P.; Mitrofanov, Evgeny S.; and Cherkassky, Vladimir A., 4,245,791, Cl. 241-207.000.

Ivanov, Nikolai A.; Ivanov, Boris G.; Zarogatsky, Leonid P.; Mitrofanov, Evgeny S.; and Cherkassky, Vladimir A., 4,245,792, Cl. 241-207.000.

Zecher, Wilfried; Lewalter, Jurgen; Merten, Rudolf; and Dunwald, Willi, to Bayer Aktiengesellschaft. Process for the preparation of poly(thio)hydantoin. 4,246,393, Cl. 528-75.000.

Zemek, Albert W.; Tomko, Frederick G.; Matson, Crawford; and Darrow, Barr, to Universal Instruments Corporation. Radial lead component insertion machine. 4,245,385, Cl. 29-564.800.

Zhestkov, Vitaly I.: See—
Tikhonov, Valentin N.; Shiykov, Gennady N.; Zhestkov, Vitaly I.; Zhigalov, Gennady V.; Mukhin, Viktor M.; and Dyachkov, Vasily M., 4,245,459, Cl. 57-58.890.

Zhigalov, Gennady V.: See—
Tikhonov, Valentin N.; Shiykov, Gennady N.; Zhestkov, Vitaly I.; Zhigalov, Gennady V.; Mukhin, Viktor M.; and Dyachkov, Vasily M., 4,245,459, Cl. 57-58.890.

Zhitetsky, Leonid S.: See—
Skurikhin, Vladimir I.; Fainzilberg, Leonid S.; and Zhitetsky, Leonid S., 4,246,470, Cl. 235-92.0PB.

Zhizhileva, Tatyana A.: See—
Berlin, Alfred A.; Dubrovitsky, Fedor I.; Lazarenko, Eduard T.; Kefeli, Tamara Y.; Brikenstein, Khaim-Mordke A.; Bernatsek, Vladislav V.; Zhizhileva, Tatyana A.; Kovalenko, Boris V.; Marshavina, Natalya L.; Mervinsky, Roman I.; Radugina, Anna A.; Tischenko, Anatoly R.; and Filipovskaya, Julia M., 4,246,336, Cl. 430-288.000.

Zickendraht, Christian: See—
Schwander, Hansrudolf; and Zickendraht, Christian, 4,246,410, Cl. 544-300.000.

Schwander, Hansrudolf; and Zickendraht, Christian, 4,246,422, Cl. 548-143.000.

Zien, Gerald J., to Toro Company, The. Line metering apparatus. 4,245,454, Cl. 56-12.700.

Zikakis, John P., to University of Delaware. Process for detecting enzymatically active xanthine oxidase. 4,246,341, Cl. 435-25.000.

Zimmer, John J.: See—
Keogh, Kevin E.; and Zimmer, John J., 4,246,335, Cl. 430-278.000.

Zimmer, Ralph O., to Skil Corporation. Brush holder assemblies for small electric motors. 4,246,508, Cl. 310-242.000.

Zimmerman, John A., Jr.; and Long, William B., to AMP Incorporated. Convenience outlet. 4,245,880, Cl. 339-97.00R.

Zimmermann, Werner J.: See—
Upmeyer, Hartmut; Helbig, Helmut; Zimmermann, Werner J.; Winkler, Gerhard; and Loning, Ferdinand, 4,246,212, Cl. 264-40.100.

Zingelmann, Gerd: See—
Lehnen, Josef P.; and Zingelmann, Gerd, 4,246,224, Cl. 264-328.140.

Zinastag, Christoph: See—
Fumaux, Eric; Zinastag, Christoph; and Delseth, Roland, 4,246,074, Cl. 203-70.000.

Zinz, Bruno: See—
Schade, Franz; Nebeling, Reinhard; and Zinz, Bruno, 4,245,996, Cl. 8-94.240.

Zipfel, Heinz. Rotary lawnmower with grass clearing means. 4,245,456, Cl. 56-12.800.

Ziv, Avraham, to American Safety Equipment Corporation. Emergency release for passive seat belt systems. 4,245,856, Cl. 280-802.000.

Zocher, Josef, to Singer Company, The. Lockstitch sewing by needle looper. 4,245,577, Cl. 112-262.100.

Zubaty, Martin V.; and Grytko, Carl E., to Gould Inc. Auxiliary feature modules for circuit breakers. 4,246,558, Cl. 335-20.000.

Zuech, Ernest A.: See—
Wu, Yulin; and Zuech, Ernest A., 4,246,177, Cl. 260-345.100.

Zupancic, Anton Z., to Picker Corporation. Computed tomography method and apparatus. 4,246,482, Cl. 250-445.00T.

Zutter, Hans: See—
Felder, Ernst; Pitre, Davide; and Zutter, Hans, 4,246,164, Cl. 260-501.170.

Zvyagin, Oleg M.: See—
Uvarov, Boris A.; Tsvetkova, Valentina I.; Dyachkovsky, Fridrikh S.; Zvyagin, Oleg M.; Kononov, Vladimir P.; Uvarova, Elvira A.; Ljustgarten, Elena I.; Novokhonova, Ljudmila A.; Kudanova, Olga I.; and Maklakova, Tatyana A., 4,246,134, Cl. 252-429.00B.

Zykov, Valery A.: See—
Sokolov, Igor D.; Safrygin, Jury S.; Muraviev, Alexandr V.; Andreeva, Nina K.; and Zykov, Valery A., 4,246,019, Cl. 71-59.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF JANUARY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott, Harry T., to Brunswick Corporation. Longitudinal load carrying method for fiber reinforced filament wound structures. Re. 30,489, Cl. 156-175.000.

Attridge, Russell G., Jr.; and Kulick, Andrew, to Ranco Incorporated. Air conditioning control system. Re. 30,485, Cl. 236-44.00C.

Baxter Travenol Laboratories, Inc.: See—
Seitz, Lamont J.; and Jerg, Louis, Re. 30,483, Cl. 73-425.600.

Beck, Louis. Nozzle assemblies for atomizing and mixing different fluids and combining the mixture with solids and the like. Re. 30,486, Cl. 239-423.000.

Belke, Jack T., to Westran Corporation. Landing gear construction. Re. 30,487, Cl. 280-763.000.

Bethlehem Steel Corporation: See—
Kreiger, John W.; and Jablonski, Charles E., Re. 30,488, Cl. 75-3.000.

Broadus, Gene C.; and Fredrickson, Sherman E., to Halliburton Company. Zonal fracture treatment of well formations. Re. 30,484, Cl. 166-307.000.

Brunswick Corporation: See—
Abbott, Harry T., Re. 30,489, Cl. 156-175.000.

Fredrickson, Sherman E.: See—
Broadus, Gene C.; and Fredrickson, Sherman E., Re. 30,484, Cl. 166-307.000.

General Electric Company: See—
Miske, Stanley A., Jr.; and Kresge, James S., Re. 30,490, Cl. 361-128.000.

Halliburton Company: See—
Broadus, Gene C.; and Fredrickson, Sherman E., Re. 30,484, Cl. 166-307.000.

Jablonski, Charles E.: See—
Kreiger, John W.; and Jablonski, Charles E., Re. 30,488, Cl. 75-3.000.

Jerg, Louis: See—
Seitz, Lamont J.; and Jerg, Louis, Re. 30,483, Cl. 73-425.600.

Kreiger, John W.; and Jablonski, Charles E., to Bethlehem Steel Corporation. Method for preparing dry collected fume for use in metallurgical furnaces. Re. 30,488, Cl. 75-3.000.

Kresge, James S.: See—
Miske, Stanley A., Jr.; and Kresge, James S., Re. 30,490, Cl. 361-128.000.

Kulick, Andrew: See—
Attridge, Russell G., Jr.; and Kulick, Andrew, Re. 30,485, Cl. 236-44.00C.

Miske, Stanley A., Jr.; and Kresge, James S., to General Electric Company. Triggering circuit for spark gap assemblies. Re. 30,490, Cl. 361-128.000.

Ranco Incorporated: See—
Attridge, Russell G., Jr.; and Kulick, Andrew, Re. 30,485, Cl. 236-44.00C.

Seitz, Lamont J.; and Jerg, Louis, to Baxter Travenol Laboratories, Inc. Pipette. Re. 30,483, Cl. 73-425.600.

Westran Corporation: See—
Belke, Jack T., Re. 30,487, Cl. 280-763.000.

LIST OF DESIGN PATENTEEES

A. Ahlstrom Osakeyhtiö: See—
Vennola, Jorma, 257,936, Cl. D7-105.000.

A-Dec, Inc.: See—
Schmidt, Theodore E., 258,007, Cl. D24-5.000.

Acme Metal Goods Manufacturing Company: See—
Fischer, Kenneth F., 257,945, Cl. D8-370.000.

Fischer, Kenneth F., 257,946, Cl. D8-370.000.

Aircraft Mechanics Inc.: See—
Reida, William D.; and Kennedy, Othar P., 257,918, Cl. D6-48.000.

Aliczky, Laszlo: See—
Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,002, Cl. D23-43.000.

Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,003, Cl. D23-43.000.

Allan, David J., to Allwines Limited. Wine decanting machine. 257,935, 1-20-81, Cl. D7-70.000.

Allwines Limited: See—
Allan, David J., 257,935, Cl. D7-70.000.

Aluminum Company of America: See—
Klingensmith, James D., 257,948, Cl. D8-373.000.

American Can Company: See—
Gilling, Donald A., 257,957, Cl. D9-313.000.

American Cyanamid Company: See—
Grodin, Adam J., 257,954, Cl. D9-406.000.

American Optical Corporation: See—
Canavas, Richard W., III, 257,985, Cl. D16-65.000.

Andersen, Bjarne B.: See—
Mikkelsen, Henrik; and Andersen, Bjarne B., 257,995, Cl. D21-71.000.

Andersson, Lars, to HAFAB Fabriks AB. Bathroom cabinet. 257,922, 1-20-81, Cl. D6-104.000.

Asica Corporation: See—
Inohara, Masanobu, 257,908, Cl. D2-317.000.

Bacskay, Stephen A. Cart. 257,965, 1-20-81, Cl. D12-27.000.

Bain, Roslyn: See—
Yodelman, Myrna; Bain, Seymour; and Bain, Roslyn, 257,962, Cl. D10-71.000.

Bain, Seymour: See—
Yodelman, Myrna; Bain, Seymour; and Bain, Roslyn, 257,962, Cl. D10-71.000.

Ball, Douglas C., to Hauserman Ltd. Chair. 257,917, 1-20-81, Cl. D6-31.000.

Baronet, Wilmatchka. Decorative strip. 258,019, 1-20-81, Cl. D92-1.0AF.

Bell Telephone Laboratories, Incorporated: See—
Festa, Edward W.; Genaro, Donald M.; Patel, Dilipkumar B.; and Sylvester, Gordon E., 257,978, Cl. D14-60.000.

Bestler, Carl G.; and Campbell, William B., deceased (by Campbell, Doris B., executrix), to Princeton Industries Corporation. Combined desk pen set and plaque. 257,991, 1-20-81, Cl. D19-75.000.

Bitz, Raymond D., Jr. Sled. 257,964, 1-20-81, Cl. D12-11.000.

Blomberg, Knut H. Telephone instrument. 257,977, 1-20-81, Cl. D14-53.000.

Bluestein, Bernard: See—
Steinkamp, Norman A.; and Bluestein, Bernard, 258,017, Cl. D28-67.000.

Bon Aire Industries, Inc.: See—
Tack, Suen S., 257,941, Cl. D7-164.000.

Borden, Inc.: See—
Rabig, Donald B., 257,924, Cl. D6-130.000.

Boech Siemens Haugerate GmbH: See—
Reichl, Ernst, 257,951, Cl. D9-373.000.

Bowls, Thurman; Falk, Donald G.; and Newgard, Jon M., to General Electric Company. Combined lamp housing and base therefor. 258,010, 1-20-81, Cl. D26-63.000.

Bowls, Thurman: See—
Wotowicz, Joseph P.; and Bowls, Thurman, 258,009, Cl. D26-75.000.

BPE, Inc.: See—
Finlay, Robert L., 257,943, Cl. D8-95.000.

Brine, Peter J., to W. H. Brine Company. Lacrosse protective glove. 257,909, 1-20-81, Cl. D2-361.000.

Broyhill Furniture Industries, Inc.: See—
Smith, Melbourne F., Jr., 257,921, Cl. D6-68.000.

Bullard, Edmund P., Sr.; and Togni, Gary A. Wood burning stove. 258,004, 1-20-81, Cl. D23-97.000.

Bullard, Edmund P., Sr.; and Togni, Gary A. Wood burning stove. 258,005, 1-20-81, Cl. D23-97.000.

Bus, Kenton A., to Igloo Corporation. Ice chest. 257,934, 1-20-81, Cl. D7-61.000.

Cajon Company: See—
Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,002, Cl. D23-43.000.

Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,003, Cl. D23-43.000.

Campbell, Doris B., executrix: See—
Bestler, Carl G.; and Campbell, William B., deceased, 257,991, Cl. D19-75.000.

- Campbell, William B., deceased: See—
Bestler, Carl G.; and Campbell, William B., deceased, 257,991, Cl. D19-75.000.
- Canavan, Richard W., III, to American Optical Corporation. Pair of spectacles. 257,985, 1-20-81, Cl. D16-65.000.
- Canon Kabushiki Kaisha: See—
Hirata, Takashi; and Hirose, Kunio, 257,990, Cl. D18-7.000.
- Chi Lik Metal & Plastic Manufacturing Co. Ltd.: See—
Lam, Shun F., 258,014, Cl. D28-13.000.
Lam, Shun F., 258,015, Cl. D28-35.000.
- Chin, Arthur W.; Drobeck, Robert M.; and Larson, Orville W., to Texas Instruments Incorporated. Wall thermostat. 257,999, 1-20-81, Cl. D10-50.000.
- Clark, Otho A.; and Pearson, Ralph V. Crop spraying trailer. 257,979, 1-20-81, Cl. D15-13.000.
- Colato, Albert E.: See—
Danley, Allen N.; and Colato, Albert E., 257,938, Cl. D7-128.000.
- Conti, Rino, to Dart Industries Inc. Closed container or the like. 257,930, 1-20-81, Cl. D7-17.000.
- Conti, Rino, to Dart Industries Inc. Container or the like. 257,931, 1-20-81, Cl. D7-23.000.
- Conti, Rino, to Dart Industries Inc. Container closure or the like. 257,933, 1-20-81, Cl. D7-40.000.
- Conti, Rino, to Dart Industries Inc. Cover for a food container. 257,939, 1-20-81, Cl. D7-131.000.
- Dalton, David R.: See—
Wong, Chung-Chee; and Dalton, David R., 258,011, Cl. D26-138.000.
- Danley, Allen N.; and Colato, Albert E., to Plastics, Inc. Rotating turntable for use in a microwave oven. 257,938, 1-20-81, Cl. D7-128.000.
- Dart Industries Inc.: See—
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Conti, Rino, 257,931, Cl. D7-23.000.
Conti, Rino, 257,933, Cl. D7-40.000.
Conti, Rino, 257,939, Cl. D7-131.000.
- Davis, Robert P.: See—
Katz, Ira R.; and Davis, Robert P., 257,915, Cl. D3-71.000.
- DeMars, Donald A., to Leftkowitz, LeRoy M., a part interest. Wall or partition hung in/out tray. 257,993, 1-20-81, Cl. D20-42.000.
- Drobeck, Robert M.: See—
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- Ethyl Development Corporation: See—
Shortino, Vincent M., 257,953, Cl. D9-376.000.
Shortino, Vincent M., 257,955, Cl. D9-404.000.
- Falk, Donald G.: See—
Bowls, Thurman; Falk, Donald G.; and Newgard, Jon M., 258,010, Cl. D26-63.000.
- Festa, Edward W.; Genaro, Donald M.; Patel, Dilipkumar B.; and Sylvester, Gordon E., to Bell Telephone Laboratories, Incorporated. Telephone set base enclosure. 257,978, 1-20-81, Cl. D14-60.000.
- Finlay, Robert L., to BPE, Inc. Folding saw. 257,943, 1-20-81, Cl. D8-95.000.
- Fischer, Kenneth F., to Acme Metal Goods Manufacturing Company. Wall hanger. 257,945, 1-20-81, Cl. D8-370.000.
- Fischer, Kenneth F., to Acme Metal Goods Manufacturing Company. Wall hanger. 257,946, 1-20-81, Cl. D8-370.000.
- Fragoso, Raymond. Coaster. 257,996, 1-20-81, Cl. D21-81.000.
- Freehauf, Eugene G.; and Hollingsworth, Gene C., to Zero Corporation. Zero insertion force connector, or the like. 257,972, 1-20-81, Cl. D13-24.000.
- Freeland, Dollene G. Stuffed toy animal. 257,998, 1-20-81, Cl. D21-148.000.
- Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczyk, Laszlo, to Cajon Company. Blank for an elbow fitting. 258,002, 1-20-81, Cl. D23-43.000.
- Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczyk, Laszlo, to Cajon Company. Elbow fitting. 258,003, 1-20-81, Cl. D23-43.000.
- Genaro, Donald M.: See—
Festa, Edward W.; Genaro, Donald M.; Patel, Dilipkumar B.; and Sylvester, Gordon E., 257,978, Cl. D14-60.000.
- General Electric Company: See—
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Houlihan, John T., 257,974, Cl. D14-6.000.
Wotowicz, Joseph P.; and Bowls, Thurman, 258,009, Cl. D26-75.000.
- Gilling, Donald A., to American Can Company. Combined packing and display card. 257,957, 1-20-81, Cl. D9-313.000.
- Greenwood, James E. Hand racquet. 258,000, 1-20-81, Cl. D21-212.000.
- Grodin, Adam J., to American Cyanamid Company. Bottle or similar article. 257,954, 1-20-81, Cl. D9-406.000.
- Grunstad, Jerome A., to Princeton Industries Corporation. Combined desk pen set and plaque. 257,992, 1-20-81, Cl. D19-75.000.
- GTE Products Corporation: See—
Marecek, Paul M.; and Shaffer, John W., 257,986, Cl. D16-42.000.
- HAFAB Fabrics AB: See—
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- Handwerk, Dixon D. Van unit. 257,970, 1-20-81, Cl. D12-99.000.
- Hanemeyer, Kenneth H. Fireplace grate and ashpit structure. 258,006, 1-20-81, Cl. D23-131.000.
- Hartmann Luggage Company: See—
Katz, Ira R.; and Davis, Robert P., 257,915, Cl. D3-71.000.
- Hauserman Ltd.: See—
Ball, Douglas C., 257,917, Cl. D6-31.000.
- Hernandez, Seferino C. Fireplace screen. 257,942, 1-20-81, Cl. D7-208.000.
- Hirata, Takashi; and Hirose, Kunio, to Canon Kabushiki Kaisha. Combined desk top electronic calculator and clock. 257,990, 1-20-81, Cl. D18-7.000.
- Hirose, Kunio: See—
Hirata, Takashi; and Hirose, Kunio, 257,990, Cl. D18-7.000.
- Hoeft, William G. Toy airplane. 257,997, 1-20-81, Cl. D21-89.000.
- Hoese, Fred O. Motorcycle radio housing. 257,967, 1-20-81, Cl. D12-114.000.
- Hoese, Fred O. Motorcycle radio housing. 257,971, 1-20-81, Cl. D12-114.000.
- Holland, Harvey C. Sprinkler cleaner. 257,940, 1-20-81, Cl. D7-161.000.
- Hollingsworth, Gene C.: See—
Freehauf, Eugene G.; and Hollingsworth, Gene C., 257,972, Cl. D13-24.000.
- Holstine, Patricia I. Doll. 257,999, 1-20-81, Cl. D21-166.000.
- Houdek, Mark R.: See—
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- Houlihan, John T., to General Electric Company. Tape recorder and player or similar article. 257,974, 1-20-81, Cl. D14-6.000.
- Igloo Corporation: See—
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- Inohara, Masanobu, to Asics Corporation. Cleat plate for a sport shoe sole. 257,908, 1-20-81, Cl. D2-317.000.
- Inter-Ikea A/S: See—
Mikkelsen, Henrik; and Andersen, Bjarne B., 257,995, Cl. D21-71.000.
- Ito, Nobuyoshi, to Suntory Limited. Bottle or the like. 257,956, 1-20-81, Cl. D9-384.000.
- Johnson, Joel S., to Kent-Moore Corporation. Transmission shim selector. 257,960, 1-20-81, Cl. D10-64.000.
- Kaar, Donald L.: See—
Litt, David K.; and Kaar, Donald L., 258,001, Cl. D21-229.000.
- Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 257,915, 1-20-81, Cl. D3-71.000.
- Keller, Huey T. Mirror. 257,927, 1-20-81, Cl. D6-241.000.
- Kelsey Hayes Co.: See—
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- Kennedy, Othar P.: See—
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- Kent-Moore Corporation: See—
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- Keuffel & Esser Company: See—
Kooi, J. Peter E.; and Keuffel & Esser Company, 257,961, Cl. D10-66.000.
- Kitai, Isao: See—
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- Kitson, Gerald L. Conveyor chain idler unit. 257,981, 1-20-81, Cl. D15-199.000.
- Klingensmith, James D., to Aluminum Company of America. Downspout bracket. 257,948, 1-20-81, Cl. D8-373.000.
- Kooi, J. Peter E., to Keuffel & Esser Company. Electronic surveying instrument or the like. 257,961, 1-20-81, Cl. D10-66.000.
- Kroll, Frederick H. Chiropractic car seat, or similar article. 257,919, 1-20-81, Cl. D6-48.000.
- Kroll, Frederick H. Toy drawing desk. 257,994, 1-20-81, Cl. D21-59.000.
- Kuen-Yi, Huang. Container for tooth-picks or the like. 257,912, 1-20-81, Cl. D3-30.000.
- Kurozumi, Shigeru; and Kitai, Isao, to Sharp Kabushiki Kaisha (Sharp Corporation). Electrophotographical duplicator. 257,984, 1-20-81, Cl. D16-31.000.
- Labora Mannheim GmbH fur Labortechnik: See—
Schmidt, Helmut, 257,976, Cl. D14-45.000.
- Lam, Shun F., to Chi Lik Metal & Plastic Manufacturing Co. Ltd. Hair dryer. 258,014, 1-20-81, Cl. D28-13.000.
- Lam, Shun F., to Chi Lik Metal & Plastic Manufacturing Co. Ltd. Hair curler. 258,015, 1-20-81, Cl. D28-35.000.
- Larson, Orville W.: See—
Chin, Arthur W.; Drobeck, Robert M.; and Larson, Orville W., 257,999, Cl. D10-50.000.
- Leftkowitz, LeRoy M.: See—
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- Litt, David K.; and Kaar, Donald L. Model aircraft ski. 258,001, 1-20-81, Cl. D21-229.000.
- Lozano, Joe C. Flower pot holder. 257,928, 1-20-81, Cl. D6-113.000.
- Ludwig Industries: See—
Ludwig, William F., 257,989, Cl. D17-22.000.
- Ludwig, William F., to Ludwig Industries. Drum. 257,989, 1-20-81, Cl. D17-22.000.
- Maitani, Yoshihisa, to Olympus Optical Company, Ltd. Camera. 257,982, 1-20-81, Cl. D16-05.000.
- Maitani, Yoshihisa, to Olympus Optical Company, Ltd. Camera with strobo unit. 257,983, 1-20-81, Cl. D16-06.000.
- Mango, Joseph R.: See—
Wolfe, Donald G.; and Mango, Joseph R., 257,937, Cl. D7-128.000.
- Manow International Corp.: See—
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- Marecek, Paul M.; and Shaffer, John W., to GTE Products Corporation. Multilamp flashlamp article having combustible member therein. 257,986, 1-20-81, Cl. D16-42.000.

- Matsushita Electric Industrial Co., Ltd.: See—
Miki, Kunishige, 257,975, Cl. D14-6.000.
- Miki, Kunishige, to Matsushita Electric Industrial Co., Ltd. Micro cassette tape recorder. 257,975, 1-20-81, Cl. D14-6.000.
- Mikkelsen, Henrik; and Andersen, Bjarne B., to Inter-Ikea A/S. Play and storage box. 257,995, 1-20-81, Cl. D21-71.000.
- Morita, Mike Y. Combined door stop and latching device. 257,944, 1-20-81, Cl. D8-331.000.
- Murphy, Mark E. Water pipe. 258,012, 1-20-81, Cl. D27-03.000.
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- Pearson, Ralph V.: See—
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- Plastics, Inc.: See—
Danley, Allen N.; and Colato, Albert E., 257,938, Cl. D7-128.000.
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- Rabig, Donald B., to Borden, Inc. Vertically mounted file holder. 257,924, 1-20-81, Cl. D6-130.000.
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- Redmond, Jobie G. Circular game table. 257,925, 1-20-81, Cl. D6-146.000.
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- Reynoso, Edward. Bracket for mounting heater vent pipe between joists and rafters. 257,947, 1-20-81, Cl. D8-373.000.
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- Roset, Pierre E. C., to Roset S.A. Geneva. Sofa. 257,920, 1-20-81, Cl. D6-63.000.
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- Rosa, J. Patrick, to Rax Systems, Inc. Restaurant building. 258,008, 1-20-81, Cl. D25-8.000.
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Wooters, Dwight N., 257,969, Cl. D12-203.000.
- Ryder International Corporation: See—
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Kurozumi, Shigeru; and Kitai, Isao, 257,984, Cl. D16-31.000.
- Shelton, Warren E. Combined seat and work bench for hobbyists. 257,916, 1-20-81, Cl. D6-17.000.
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- Shortino, Vincent M., to Ethyl Development Corporation. Bottle or similar article. 257,955, 1-20-81, Cl. D9-404.000.
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- Strom, Torsten E. T. Connector ring. 257,949, 1-20-81, Cl. D8-396.000.
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- Texas Instruments Incorporated: See—
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- Togni, Gary A.: See—
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Bullard, Edmund P., Sr.; and Togni, Gary A., 258,005, Cl. D23-97.000.
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Wong, Chung-Chee; and Dalton, David R., 258,011, Cl. D26-138.000.
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- Venditto, Dolores R.: See—
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Brine, Peter J., 257,909, Cl. D2-361.000.
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Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczyk, Laszlo, 258,003, Cl. D23-43.000.
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- Conard-Pyle Company, The: See—
Meiland, Marie-Louise, 4,625, Cl. 24.000.
- Duffett, William E.: See—
Jessel, Walter H., Jr.; and Duffett, William E., 4,629, Cl. 74.000.
- Jackson & Perkins Company: See—
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- Nieuwkoop, Jacob, to Jackson & Perkins Company. Rose plant. 4,626, 1-20-81, Cl. 25.000.
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CLASSIFICATION OF PATENTS

ISSUED JANUARY 20, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

163	CLASS 2	4,245,357	53	CLASS 37	4,245,411	58.89	CLASS 57	4,245,523	579 E	4,245,523	64	CLASS 110	4,245,567	419 B	4,245,640
	CLASS 3			CLASS 38			CLASS 58	4,245,524	710.5	4,245,524		CLASS 111	4,245,568	419 P	4,245,642
1.5	4,245,358			CLASS 39	4,245,413		CLASS 59	4,245,525	711	4,245,525	147	4,245,569	419 PG	4,245,643	
1.9	4,245,359			CLASS 40			CLASS 60	4,245,526	856	4,245,526	215	4,245,570	419 PT	4,245,644	
1.912	4,245,360			124	4,245,414		39.08	4,245,527	874	4,245,527	238	4,245,571		4,245,645	
	CLASS 5			152.1	4,245,415		11	4,246,022		CLASS 75	3	Re.30,488		4,245,646	
450	4,245,361			380	4,245,416		12	4,246,023		CLASS 76	11	4,246,024		4,245,647	
451	4,245,362			513	4,245,417		35	4,246,025		CLASS 77	12	4,246,026		4,245,648	
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452	4,245,364			7	4,245,418		39.25	4,246,029		CLASS 79	244	4,246,030		4,245,650	
496	4,245,365			126	4,245,428		39.28 R	4,246,031		CLASS 80	252	4,246,032		4,245,651	
	CLASS 8				CLASS 43		204	4,246,033		CLASS 81	177 G	4,245,528		4,245,652	
74	4,245,394			21.2	4,245,419		243	4,246,034		CLASS 82	4 C	4,245,529		4,245,653	
94.24	4,245,396			42.06	4,245,420		276	4,246,035		CLASS 83	99	4,245,530		4,245,654	
461	4,245,397			42.47	4,245,421		289	4,246,036		CLASS 84	169	4,245,531		4,245,655	
506	4,245,398			57.5 R	4,245,422		290	4,246,037		CLASS 85	390	4,245,532		4,245,656	
574	4,245,399			81	4,245,423		496	4,246,038		CLASS 86	471.3	4,245,533		4,245,657	
582	4,245,400			97	4,245,424		519	4,246,039		CLASS 87	500	4,245,534		4,245,658	
664	4,245,401				CLASS 44		641	4,246,040		CLASS 88	798	4,245,535		4,245,659	
	CLASS 13			1 D	4,245,425		2	4,245,476		CLASS 89	821	4,245,536		4,245,660	
6	4,246,432			51	4,246,000		6	4,245,477		CLASS 90	879	4,245,537		4,245,661	
20	4,246,434			62	4,246,001		12	4,246,015		CLASS 91	880	4,245,538		4,245,662	
	CLASS 18				CLASS 46		119	4,245,478		CLASS 92	99	4,245,539		4,245,663	
164	4,245,366			98	4,245,423		149	4,245,479		CLASS 93	169	4,245,540		4,245,664	
210 B	4,245,367			103	4,245,426		187	4,245,481		CLASS 94	390	4,245,541		4,245,665	
229 A	4,245,368			164	4,245,429		256	4,245,482		CLASS 95	471.3	4,245,542		4,245,666	
250.23	4,245,369			266	4,245,430		376	4,245,483		CLASS 96	500	4,245,543		4,245,667	
319	4,245,370				CLASS 47			CLASS 63		CLASS 97	798	4,245,544		4,245,668	
320	4,245,371			1 A	4,245,431		12	4,245,484		CLASS 98	821	4,245,545		4,245,669	
	CLASS 17			57.6	4,245,432		15.6	4,245,485		CLASS 99	879	4,245,546		4,245,670	
11	4,245,372			59	4,245,433		23	4,245,486		CLASS 100	99	4,245,547		4,245,671	
32	4,245,373			80	4,245,434			CLASS 65		CLASS 101	169	4,245,548		4,245,672	
	CLASS 23				CLASS 48		3 A	4,246,016		CLASS 102	390	4,245,549		4,245,673	
232 R	4,245,397			192	4,246,002		8	4,246,017		CLASS 103	471.3	4,245,550		4,245,674	
295 R	4,245,398				CLASS 49		9 B	4,245,487		CLASS 104	500	4,245,551		4,245,675	
	CLASS 24			64	4,245,435		12 R	4,245,488		CLASS 105	798	4,245,552		4,245,676	
16 PB	4,245,374			446	4,245,436			CLASS 71		CLASS 106	821	4,245,553		4,245,677	
73 R	4,245,375				CLASS 51		23	4,246,018		CLASS 107	879	4,245,554		4,245,678	
230 AL	4,245,376			275	4,245,437		59	4,246,019		CLASS 108	99	4,245,555		4,245,679	
230 R	4,245,377			293	4,246,003		76	4,246,020		CLASS 109	169	4,245,556		4,245,680	
	CLASS 28			295	4,246,004		92	4,246,021		CLASS 110	390	4,245,557		4,245,681	
271	4,245,378			298	4,246,005			CLASS 72		CLASS 111	471.3	4,245,558		4,245,682	
	CLASS 29			309	4,246,006		123	4,245,489		CLASS 112	500	4,245,559		4,245,683	
25.18	4,245,379			377	4,245,438		234	4,245,490		CLASS 113	798	4,245,560		4,245,684	
157.3 H	4,245,380				CLASS 52		407	4,245,492		CLASS 114	821	4,245,561		4,245,685	
240	4,245,381			71	4,245,439		436	4,245,493		CLASS 115	879	4,245,562		4,245,686	
407	4,245,382			83	4,245,440			CLASS 73		CLASS 116	99	4,245,563		4,245,687	
428	4,245,383			111	4,245,441		23.1	4,245,494		CLASS 117	169	4,245,564		4,245,688	
433	4,245,384			122	4,245,442		83	4,245,495		CLASS 118	390	4,245,565		4,245,689	
564.8	4,245,385			169.5	4,245,443		115	4,245,496		CLASS 119	471.3	4,245,566		4,245,690	
572	4,245,386			173 R	4,245,444		151	4,245,497		CLASS 120	500	4,245,567		4,245,691	
749	4,245,387			221	4,245,445		171	4,245,498		CLASS 121	798	4,245,568		4,245,692	
	CLASS 30			232	4,245,446		190 H	4,245,500		CLASS 122	821	4,245,569		4,245,693	
47	4,245,388			262	4,245,447		204	4,245,502		CLASS 123	879	4,245,570		4,245,694	
	4,245,389			301	4,245,448		275	4,245,504		CLASS 124	99	4,245,571		4,245,695	
164.95	4,245,390			489	4,245,449		296	4,245,505		CLASS 125	169	4,245,572		4,245,696	
	CLASS 33			639	4,245,450		336	4,245,506		CLASS 126	390	4,245,573		4,245,697	
174 F	4,245,391			716	4,245,451		356	4,245,507		CLASS 127	471.3	4,245,574		4,245,698	
	4,245,392			747	4,245,452		386	4,245,508		CLASS 128	500	4,245,575		4,245,699	
276	4,245,393				CLASS 53		423 A	4,245,509		CLASS 129	798	4,245,576		4,245,700	
430	4,245,394			74	4,246,009		425.6	4,245,510		CLASS 130	821	4,245,577		4,245,701	
	CLASS 34			399	4,245,452		517 R	4,245,511		CLASS 131	879	4,245,578		4,245,702	
10	4,245,395			530	4,245,453		625	4,245,512		CLASS 132	99	4,245,579		4,245,703	
12	4,245,396				CLASS 55		643	4,245,513		CLASS 133	169	4,245,580		4,245,704	
54	4,245,397			17	4,246,007		760	4,245,514		CLASS 134	390	4,245,581		4,245,705	
93	4,245,398			119	4,246,010		789	4,245,515		CLASS 135	471.3	4,245,582		4,245,706	
166	4,245,399			274	4,246,012		861.55	4,245,516		CLASS 136	500	4,245,583		4,245,707	
	CLASS 35			315	4,246,013			CLASS 74		CLASS 137	798	4,245,584		4,245,708	
35 C	4,245,404			340	4,246,014		15.84	4,245,517		CLASS 138	821	4,245,585		4,245,709	
	CLASS 36			378	4,246,015		25	4,245,518		CLASS 139	879	4,245,586		4,245,710	
14	4,245,406				CLASS 56		32	4,245,519		CLASS 140	99	4,245,587		4,245,711	
24.5	4,245,407			12.7	4,245,434		331	4,245,520		CLASS 141	169	4,245,588		4,245,712	
50	4,245,408			12.8	4,245,435		377	4,245,521		CLASS 142	390	4,245,589		4,245,713	
117	4,245,409				4,245,436		476	4,245,522		CLASS 143	471.3	4,245,590		4,245,714	
	4,245,410			376	4,245,438		480 R	4,245,523		CLASS 144	500	4,245,591		4,245,715	
										CLASS 145	798	4,245,592		4,245,716	
										CLASS 146	821	4,245,593		4,245,717	
										CLASS 147	879	4,245,594		4,245,718	
										CLASS 148	99	4,245,595		4,245,719	
										CLASS 149	169	4,245,596		4,245,720	
										CLASS 150	390	4,245,597		4,245,721	
										CLASS 151	471.3	4,245,598		4,245,722	
										CLASS 152	500	4,245,599		4,245,723	
										CLASS 153	798	4,245,600		4,245,724	
										CLASS 154	821	4,245,601		4,245,725	
										CLASS 155	879	4,245,602		4,245,726	
										CLASS 156	99	4,245,603		4,245,727	
										CLASS 157	169	4,245,604		4,245,728	
										CLASS 158	390	4,245,605		4,245,729	
										CLASS 159	471.3	4,245,606		4,245,730	
										CLASS 160	500	4,245,607		4,245,731	
										CLASS 161	798	4,245,608		4,245,732	
										CLASS 162	821	4,245,609		4,245,733	
										CLASS 163	879	4,245,610		4,245,734	
										CLASS 164	99	4,245,611		4,245,735	
										CLASS 165	169	4,245,612		4,245,736	
										CLASS 166	390	4,245,613		4,245,737</	

175	Re.30,489	170	4,245,724	806	4,246,107	413	4,246,185	94	4,245,861
183	4,246,058	326	4,245,725	CLASS 211		449 R	4,246,186	CLASS 296	
218	4,246,059	CLASS 191		8	4,245,745	453 SP	4,246,187	1 S	4,245,862
345	4,246,060	23 A	4,245,726	40	4,245,746	456 P	4,246,188	39 R	4,245,863
474	4,246,061	25	4,245,727	CLASS 213		465 F	4,246,189	222	4,245,864
498	4,246,062	CLASS 192		153	4,245,747	465.3	4,246,190	CLASS 297	
558	4,246,063	8 R	4,245,728	CLASS 219			4,246,191	365	4,245,866
608	4,246,064	56 F	4,245,729	10.53	4,246,461		4,246,192	CLASS 299	
1.1	4,245,686	CLASS 194		10.55 A	4,246,462	501.17	4,246,193	2	4,245,865
CLASS 199		1 A	4,245,730	73.2	4,246,463	513 N	4,246,194	CLASS 303	
22	4,246,065	4 C	4,245,731	123	4,246,464		4,246,195	6 C	4,245,867
CLASS 160		CLASS 196		130.51	4,246,465	CLASS 264	4,246,206	CLASS 307	
177	4,245,687	132	4,246,070	325	4,246,466	1	4,246,207	CLASS 308	
178 C	4,245,688	CLASS 198		522	4,246,467	14	4,246,208	CLASS 309	
CLASS 162		CLASS 198		553	4,246,468	28	4,246,209	40	4,246,492
134	4,245,689	313	4,245,732	CLASS 220		40.1	4,246,210	116	4,246,493
141	4,246,066	391	4,245,733	1 C	4,245,748	46.7	4,246,211	141	4,246,494
CLASS 164		412	4,245,734	82 A	4,245,749	51	4,246,212	221 D	4,246,496
4	4,245,690	492	4,245,735	94 R	4,245,750	51	4,246,213	232	4,246,497
56	4,245,691	735	4,245,736	204	4,245,751	64	4,246,214	270	4,246,498
436	4,245,692	756	4,245,737	266	4,245,752	71	4,246,215	293	4,246,499
CLASS 165		812	4,245,738	288	4,245,753	105	4,246,216	299 B	4,246,500
1	4,245,693	856	4,245,739	304	4,245,754	111	4,246,217	300	4,246,501
82	4,245,694	CLASS 200		CLASS 221		117	4,246,218	303	4,246,502
133	4,245,695	5 A	4,246,452	109	4,245,755	171	4,246,219	CLASS 308	
134 R	4,245,696	11 R	4,246,453	185	4,245,756	203	4,246,220	10	4,245,869
179	4,245,697	38 R	4,246,454	CLASS 222		219	4,246,221	36	4,245,870
CLASS 166		51.15	4,246,455	43	4,245,757	292	4,246,222	CLASS 310	
244 C	4,245,698	61.08	4,246,456	52	4,245,758	328.14	4,246,223	59	4,246,503
271	4,245,699	144 B	4,246,457	146 HE	4,245,759	336	4,246,224	181	4,246,504
273	4,245,700	148 A	4,246,457	148	4,245,760	501	4,246,225	218	4,246,505
303	4,245,701	303	4,246,457	590	4,245,761	536	4,246,226	232	4,246,506
307	Re.30,484	CLASS 201		CLASS 224		87	4,246,227	242	4,246,508
CLASS 171		39	4,246,071	42.24	4,245,762	158	4,246,228	CLASS 312	
16	4,245,703	167	4,246,072	45 P	4,245,763	163	4,246,229	223	4,245,871
CLASS 172		321	4,246,074	CLASS 225		171	4,246,230	242	4,245,872
49	4,245,704	25	4,246,073	13	4,245,765	211	4,246,231	CLASS 313	
125	4,245,705	70	4,246,074	CLASS 227		287	4,246,232	224	4,246,509
180	4,245,706	CLASS 204		7	4,245,766	64 R	4,246,233	388	4,246,510
788	4,245,707	1 R	4,246,075	CLASS 228		131	4,246,234	CLASS 315	
CLASS 174		43 R	4,246,076	143	4,246,130	94	4,246,235	14	4,246,511
23 C	4,246,435	98	4,246,077	153	4,246,131	228	4,246,236	39.77	4,246,512
52 FE	4,246,437	129	4,246,078	182	4,246,132	CLASS 269	4,246,237	150	4,246,513
52 R	4,246,438	116	4,246,079	408	4,246,133	CLASS 271	4,246,238	261 P	4,246,514
88 C	4,246,438	130	4,246,080	429 B	4,246,134	CLASS 272	4,246,239	290	4,246,515
CLASS 175		136	4,246,081	CLASS 229		164	4,246,240	291	4,246,516
325	4,245,708	146	4,246,082	2.5 EC	4,245,770	171	4,246,241	307	4,246,517
337	4,245,710	180 G	4,246,083	22	4,245,771	185	4,246,242	CLASS 318	
CLASS 176		180 R	4,246,084	33	4,245,772	198	4,246,243	138	4,246,518
3	4,246,067	181 C	4,246,085	47	4,245,773	213	4,246,244	139	4,246,519
61	4,246,068	181 N	4,246,086	71	4,245,774	226	4,246,245	280	4,246,520
65	4,246,069	181 R	4,246,087	CLASS 232		228	4,246,246	331	4,246,521
CLASS 177		296	4,246,088	43.3	4,245,776	CLASS 272	4,246,247	338	4,246,522
212	4,245,711	301	4,246,089	CLASS 233		33 R	4,246,248	369	4,246,523
CLASS 178		CLASS 206		7	4,245,777	104	4,246,249	612	4,246,525
18	4,246,439	387	4,245,740	CLASS 235		116	4,246,250	626	4,246,526
CLASS 179		534	4,245,741	5	4,246,144	137	4,246,251	721	4,246,527
1 GD	4,246,440	611	4,245,742	92 DN	4,246,471	CLASS 273	4,246,252	CLASS 320	
2 C	4,246,441	812	4,245,743	92 PB	4,246,470	183 B	4,246,253	39	4,246,529
2 DP	4,246,442	CLASS 208		92 PK	4,246,469	393	4,246,254	CLASS 322	
2 R	4,246,443	401	4,246,472	449	4,246,473	CLASS 277	4,246,255	28	4,246,531
18 DA	4,246,445	450	4,246,474	CLASS 236		3	4,246,256	89	4,246,532
110 A	4,246,447	CLASS 209		1 G	4,245,778	CLASS 279	4,246,257	CLASS 323	
111 E	4,246,448	214	4,246,097	13	4,245,779	46 R	4,246,258	349	4,246,533
111 R	4,246,449	291	4,246,098	34.5	4,245,780	CLASS 280	4,246,259	CLASS 324	
115.5 R	4,246,450	558	4,246,099	44 C	4,245,781	5.2	4,246,260	57 R	4,246,534
146 R	4,246,451	CLASS 210		59	4,245,782	11.28	4,246,261	177	4,246,535
CLASS 180		90	4,246,109	CLASS 239		20	4,246,262	321	4,246,537
70 R	4,245,712	96.1	4,246,110	3	4,245,784	87.02 W	4,246,263	347	4,246,538
176	4,245,713	104	4,246,111	112	4,245,785	605	4,246,264	CLASS 328	
265	4,245,714	115	4,246,112	242	4,245,786	680	4,246,265	18	4,246,540
279	4,245,715	151	4,246,113	265.41	4,245,787	701	4,246,266	CLASS 329	
CLASS 182		168	4,246,114	327	4,245,788	711	4,246,267	132	4,246,541
86	4,245,716	170	4,246,115	423	4,245,789	763	4,246,268	CLASS 330	
96	4,245,717	230	4,246,116	585	4,245,790	765	4,246,269	107	4,246,542
153	4,245,718	275	4,246,117	CLASS 241		802	4,246,270	280	4,246,543
CLASS 184		279	4,246,118	31	4,245,791	CLASS 282	4,246,271	293	4,246,544
3 A	4,245,719	321.3	4,246,119	207	4,245,792	27.5	4,246,272	CLASS 331	
CLASS 186		330	4,246,120	CLASS 242		158	4,246,273	1 A	4,246,545
38	4,245,720	603	4,246,121	45	4,245,793	CLASS 285	4,246,274	4	4,246,546
CLASS 187		610	4,246,122	56 R	4,245,794	CLASS 288	4,246,275	16	4,246,547
29 R	4,245,721	615	4,246,123	66	4,245,795	CLASS 290	4,246,276	94.5 H	4,246,548
CLASS 188		699	4,246,124	75.43	4,245,796	CLASS 294	4,246,277	94.5 M	4,246,549
71.4	4,245,722	704	4,246,125	84.2 G	4,245,797	1 CA	4,246,278	107 DP	4,246,550
72.3	4,245,723	739	4,246,126	107.4 A	4,245,798	74	4,246,279	113 R	4,246,551
		763	4,246,127	118.3	4,245,799	86 LS	4,246,280	409	4,246,554
		774	4,246,128						
		782	4,246,129						

CLASS 333			CLASS 356			CLASS 369			CLASS 423			CLASS 525		
1.1	4,246,552	244	4,245,907	136	4,246,446	202	4,246,236	329	4,246,316					
165	4,246,553	328	4,245,908	CLASS 370			224	4,246,237	375	4,246,317				
192	4,246,554		4,245,911	32	4,246,582	275	4,246,238	378	4,246,318	411	4,246,319	49	4,246,367	
209	4,246,555	336	4,245,909	58	4,246,530	125	4,246,239	413	4,246,320	463	4,246,321	126	4,246,368	
247	4,246,556	374	4,245,910	CLASS 375			139	4,246,240	614	4,246,322	183	4,246,370		
CLASS 335			431	4,245,913	82	4,246,653	179	4,246,241	670	4,246,322	271	4,246,371		
17	4,246,557	440	4,245,914	CLASS 377			210	4,246,242	678	4,246,323	274	4,246,372		
20	4,246,558			CLASS 378			225	4,246,243			329	4,246,373		
120	4,246,559	24	4,246,591	CLASS 400			242	4,246,244	CLASS 429			341	4,246,374	
212	4,246,560	30	4,246,590	144.2	4,245,916	263	4,246,245	17	4,246,324	398	4,246,325	398	4,246,375	
CLASS 336			41	4,246,592	697.1	4,245,918	305	4,246,246	50	4,246,325	437	4,246,376		
192	4,246,562		4,246,593	CLASS 401			348	4,246,247	59	4,246,326	438	4,246,377		
CLASS 337			48	4,246,594	CLASS 403			450	4,246,248	105	4,246,327	440	4,246,378	
296	4,246,563	70	4,246,595	97	4,245,919	CLASS 404			579	CLASS 430			444	4,246,381
407	4,246,561	79	4,246,596	CLASS 405			605	4,246,249	5	4,246,328	79	4,246,382		
CLASS 338			81	4,246,597	305	4,245,920	635	4,246,250	17	4,246,329	92	4,246,383		
163	4,246,565			CLASS 398			659	4,246,251	107	4,246,330	142	4,246,384		
CLASS 339			12	4,246,598	CLASS 406			655	4,246,252	109	4,246,331	207	4,246,385	
9 R	4,245,873	44	4,246,600	10	4,245,922	CLASS 407			219	4,246,332	209	4,246,386		
14 R	4,245,874	47	4,246,601	70	4,245,923	CLASS 408			278	4,246,333	217	4,246,387		
32 R	4,245,875	87	4,246,603	72	4,245,924	CLASS 409			288	4,246,334	219	4,246,388		
59 M	4,245,876	100	4,246,604	CLASS 410			185	4,246,253	496	4,246,335	277	4,246,389		
74 R	4,245,877	104	4,246,605	35	4,245,925	CLASS 411				4,246,336	332	4,246,390		
88 R	4,245,878	106	4,246,606	150	4,245,926	CLASS 412			CLASS 431					
91 R	4,245,879	111	4,246,607	163	4,245,927	CLASS 413			6	4,245,977	69	4,246,391		
97 R	4,245,880	139	4,246,608	195	4,245,928	CLASS 414			72	4,245,978	75	4,246,392		
256 R	4,245,881	140	4,246,609	211	4,245,929	CLASS 415			182	4,245,980	117	4,246,393		
CLASS 340			167	4,246,610	217	4,245,930	CLASS 416			202	4,245,979	208	4,246,394	
52 F	4,246,566	194.1	4,246,611	CLASS 406			263	4,246,256	CLASS 432			238	4,246,395	
58	4,246,567	206	4,246,612	CLASS 407			267	4,246,257	58	4,245,981	380	4,246,396		
146.2	4,246,569	245	4,246,613	33	4,245,932	CLASS 408			233	4,245,982	496	4,246,397		
146.3 E	4,246,568	283	4,246,614	56	4,245,933	CLASS 409			235	4,245,983	CLASS 536			
146.3 SY	4,246,570			62	4,245,934	CLASS 410			CLASS 433			17 A	4,246,399	
347 AD	4,246,571			105	4,245,935	CLASS 411			CLASS 434			17 R	4,246,400	
301	4,246,572	8	4,246,615	137	4,245,936	CLASS 412			CLASS 435			CLASS 542		
539	4,246,573	10	4,246,616	CLASS 407			272	4,246,271	5	4,245,984	CLASS 543			
602	4,246,574	32	4,246,617	CLASS 408			273 R	4,246,272		4,245,985	415	4,246,401		
605	4,246,575	99	4,246,618	105	4,245,937	CLASS 409			61	4,245,986	426	4,246,402		
606	4,246,576	125	4,246,619	CLASS 410			275	4,246,273	68	4,245,987	432	4,246,403		
680	4,246,577	127	4,246,620	CLASS 411			282	4,246,274	92	4,245,988	436	4,246,404		
750	4,246,578	191	4,245,938	15	4,245,938	CLASS 412			114	4,245,989	CLASS 544			
763	4,246,579		4,245,939	191	4,245,939	CLASS 413			CLASS 436			16	4,246,405	
CLASS 343			56	4,246,621	CLASS 414			301	4,246,278	CLASS 437			118	4,246,406
5 CM	4,246,580	95	4,246,622	CLASS 415			302	4,246,279	11	4,245,403	44	4,246,407		
781 CA	4,246,581	128	4,246,623	342	4,245,943	CLASS 416			19	4,245,402	54	4,246,408		
786	4,246,582	218	Re. 30,490	CLASS 417			305	4,246,280	93	4,245,401	209	4,246,409		
854	4,246,583	321	4,246,624	95	4,245,940	CLASS 418			178	4,245,402	211	4,246,410		
873	4,246,584	318	4,246,625	144	4,245,942	CLASS 419			430	4,245,403	300	4,246,411		
CLASS 344			385	4,246,626	CLASS 420			321	4,246,282	CLASS 438			313	4,246,412
1.1	4,246,587	65	4,246,627	330	4,245,944	CLASS 421			CLASS 439			384	4,246,413	
74.1	4,246,588	147	4,246,628	349	4,245,945	CLASS 422			7	4,246,339	CLASS 546			
75	4,246,589	260	4,246,629	412	4,245,946	CLASS 423			8	4,246,340	63	4,246,414		
CLASS 350			382	4,246,630	CLASS 424			13	4,245,970	25	4,246,341	182	4,246,415	
3.72	4,245,882	67	4,246,631	CLASS 425			17	4,245,971	32	4,246,342	261	4,246,416		
96.14	4,245,883	145	4,246,632	CLASS 426			27	4,245,972	39	4,246,343	286	4,246,417		
96.16	4,245,884	37	4,246,633	CLASS 427			676	4,245,973	57	4,246,344	291	4,246,418		
96.20	4,245,885	49	4,246,634	CLASS 428			308	4,245,974	84	4,246,345	338	4,246,419		
	4,245,886	101	4,246,635	CLASS 429			343	4,245,975	105	4,246,346	352	4,246,420		
96.21	4,245,887	146	4,246,636	CLASS 430			549	4,245,976	137	4,246,347	CLASS 548			
97	4,245,888			CLASS 431			122	4,246,287	176	4,246,348	143	4,246,422		
102	4,245,889			CLASS 432			254	4,246,288	180	4,246,349	CLASS 549			
175 GN	4,245,890	200	4,246,637	CLASS 433			275	4,246,289	182	4,246,350	289	4,246,423		
184	4,245,891		4,246,638	CLASS 434			387	4,246,290	191	4,246,351	CLASS 550			
189	4,245,892	431	4,246,639	CLASS 435			387	4,246,291	CLASS 440			423	4,246,423	
289	4,245,893	520	4,246,640	CLASS 436			538	4,246,292	76	4,246,339	CLASS 551			
303	4,245,894	571	4,246,641	CLASS 437			637	4,246,293	135	4,246,355	38	4,246,424		
310	4,245,895	733	4,246,642	CLASS 438			27	4,246,294	136	4,246,356	47	4,246,425		
CLASS 351			900	4,246,643	CLASS 439			36	4,246,295	612	4,246,475	231	4,246,426	
41	4,245,896		4,246,644	CLASS 440			36	4,246,296	CLASS 474			CLASS 562		
CLASS 352				4,246,645	CLASS 441			38	4,246,297	111	4,245,918	401	4,246,428	
180	4,245,897	1	4,246,646	CLASS 442			46	4,246,298	CLASS 475			456	4,246,429	
CLASS 353			2	4,246,647	CLASS 443			54.1	4,246,299	CLASS 476			535	4,246,427
27 R	4,245,898	13	4,246,648	CLASS 444			233	4,246,300	439	4,245,829	600	4,246,430		
117	4,245,899	16	4,246,649	CLASS 445			348	4,246,301	CLASS 521			CLASS 564		
CLASS 354					CLASS 446			CLASS 477			CLASS 565			
23 D	4,245,900	12	4,245,915	CLASS 447			CLASS 478			CLASS 566				
43	4,245,901			CLASS 448			CLASS 479			CLASS 567				
76	4,245,902			CLASS 449			CLASS 480			CLASS 568				
86	4,245,903	42	4,246,652	CLASS 450			CLASS 481			CLASS 569				
153	4,245,904			CLASS 451			CLASS 482			CLASS 570				
246	4,245,905			CLASS 452			CLASS 483			CLASS 571				
CLASS 355			69	4,246,650	CLASS 453			CLASS 484			CLASS 572			
43	4,245,906	471	4,246,602	CLASS 454			CLASS 485			CLASS 573				
				CLASS 455			CLASS 486			CLASS 574				
				CLASS 456			CLASS 487			CLASS 575				
				CLASS 457			CLASS 488			CLASS 576				
				CLASS 458			CLASS 489			CLASS 577				
				CLASS 459			CLASS 490			CLASS 578				
				CLASS 460			CLASS 491			CLASS 579				
				CLASS 461			CLASS 492			CLASS 580				
				CLASS 462			CLASS 493			CLASS 581				
				CLASS 463			CLASS 494			CLASS 582				
				CLASS 464			CLASS 495			CLASS 583				
				CLASS 465			CLASS 496			CLASS 584				
				CLASS 466			CLASS 497			CLASS 585				
				CLASS 467			CLASS 498			CLASS 586				
				CLASS 468			CLASS 499			CLASS 587				
				CLASS 469			CLASS 500			CLASS 588				
				CLASS 470			CLASS 501			CLASS 589				
				CLASS 471			CLASS 502			CLASS 590				
				CLASS 472			CLASS 503			CLASS 591				
				CLASS 473			CLASS 504			CLASS 592				
				CLASS 474			CLASS 505			CLASS 593				
				CLASS 475			CLASS 506			CLASS 594				
				CLASS 476			CLASS 507			CLASS 595				
				CLASS 477			CLASS 508			CLASS 596				
				CLASS 478			CLASS 509			CLASS 597				
				CLASS 479			CLASS 510			CLASS 598				
				CLASS 480			CLASS 511			CLASS 599				
				CLASS 481			CLASS 512			CLASS 600				
				CLASS 482			CLASS 513			CLASS 601				
				CLASS 483			CLASS 514			CLASS 602				
				CLASS 484			CLASS 515			CLASS 603				
				CLASS 485			CLASS 516			CLASS 604				
				CLASS 486			CLASS 517			CLASS 605				
				CLASS 487			CLASS 518			CLASS 606				
				CLASS 488			CLASS 519			CLASS 607				
				CLASS 489			CLASS 520			CLASS 608				
				CLASS 490			CLASS 521			CLASS 609				
				CLASS 491			CLASS 522			CLASS 610				
				CLASS 492			CLASS 523			CLASS 611				
				CLASS 493			CLASS 524			CLASS 612				
				CLASS 494			CLASS 525			CLASS 613				
				CLASS 495			CLASS 526			CLASS 614				
				CLASS 496			CLASS 527			CLASS 615				
				CLASS 497			CLASS 528			CLASS 616				
				CLASS 498			CLASS 529			CLASS 617				
				CLASS 499			CLASS 530			CLASS 618				
			</											

CLASSIFICATION OF DESIGNS

D2—	190	257,910	175	257,926		257,946	27	257,965	31	257,984	D23—	43	258,002		
	317	257,908	177	257,929	373	257,947	96	257,966	42	257,986			258,003		
	320	257,911	241	257,927		257,948	99	257,970	65	257,985	97		258,004		
	361	257,909	17	257,930	396	257,949	114	257,967	D17—	09			258,005		
D3—	30	257,912	23	257,931		257,950		257,971	20	257,988	131		258,006		
	36	257,913	38	257,932	D9—	313	257,957	156	257,968	22	257,989	D24—	5	258,007	
	40	257,914	40	257,933		351	257,958	203	257,969	7	257,990	D25—	8	258,008	
	71	257,915	61	257,934		373	257,951	D13—	24	257,972	D26—	63	258,010		
D6—	17	257,916	70	257,935		376	257,952	32	257,973	D19—	75		75	258,009	
	31	257,917	105	257,936			257,953	D14—	6	257,974					
	48	257,918	128	257,937		384	257,956		257,975	D20—	42	257,993	138	258,011	
		257,919		257,938		404	257,955	45	257,976	D21—	59	257,994			
	63	257,920	131	257,939		406	257,954	53	257,977	71	257,995	D27—	03	258,012	
	68	257,921	161	257,940	D10—	50	257,959	60	257,978	81	257,996	D28—	13	258,014	
	104	257,922	164	257,941		64	257,960	D15—	13	257,979	89	257,997	35	258,015	
	113	257,928	208	257,942		66	257,961	118	257,980	148	257,998		46	258,016	
	114	257,923	95	257,943		71	257,962	199	257,981	166	257,999		67	258,017	
	130	257,924	331	257,944		126	257,963	D16—	05	257,982	212	258,000	D30—	16	258,018
	146	257,925	370	257,945	D12—	11	257,964	06	257,983	229	258,001	D92—	1 AF	258,019	

CLASSIFICATION OF PLANTS

P.—	10	4,624	24	4,625	25	4,626	51	4,627	54	4,628	74	4,629
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PATENTS

1 :	4,245,817	4,245,558	4,246,642	4,245,782	4,245,842	4,245,754
2 :	4,245,930	4,245,567	4,246,645	4,245,841	4,245,874	4,245,809
4 :	4,245,947	4,245,609	4,246,648	4,245,860	4,245,881	4,245,918
6 :	4,246,239	4,245,619	4,246,649	4,245,873	4,245,906	4,246,148
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	4,245,449	4,245,641	4,246,654	4,245,969	4,245,960	4,246,294
	4,245,512	4,245,644	4,246,657	4,246,002	4,246,028	4,246,589
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	4,246,235	4,245,800	4,246,637	4,246,637	4,246,205	4,245,358
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8 :	4,246,101	4,245,936	4,246,671	4,245,801	4,246,561	4,245,640
	4,246,119	4,245,978	4,246,671	4,245,956	4,246,564	4,245,684
9 :	4,245,818	4,245,986	4,246,671	4,245,964	4,246,572	4,245,682
	4,245,876	4,245,987	4,246,671	4,246,016	4,246,633	4,246,043
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01 :	4,245,890	4,246,037	4,246,671	4,246,380	4,246,682	4,246,258
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04 :	4,245,720	4,246,078	4,246,671	4,246,398	4,246,701	4,246,415
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	4,246,084	4,246,084	4,246,671	4,246,441	4,246,718	4,246,418
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06 :	Re. 30,483	4,246,141	4,246,671	4,246,643	4,246,843	4,246,555
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	4,245,436	4,246,264	4,246,671	4,246,367	4,246,843	4,246,606
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	4,245,477	4,246,288	4,246,671	4,246,420	4,246,843	4,246,610
	4,245,478	4,246,293	4,246,671	4,246,475	4,246,843	4,246,616
	4,245,496	4,246,302	4,246,671	4,246,501	4,246,843	4,246,616
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	4,245,529	4,246,348	4,246,671	4,246,621	4,246,843	4,246,616
	4,245,541	4,246,358	4,246,671	4,246,632	4,246,843	4,246,616
			4,246,680	4,246,648	4,246,843	4,246,616
				4,246,680	4,246,843	4,246,616

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4,246,497	31 :	Re.30,489		4,245,920		4,245,931		4,245,914		4,246,093
4,246,501		4,245,806		4,245,959		4,245,955		4,245,915		4,246,183
4,246,559		4,245,840		4,246,034		4,245,957		4,245,922		4,246,185
4,246,585	32 :	4,246,209		4,246,038		4,246,017		4,245,937		4,246,202
4,246,617	33 :	4,245,988		4,246,147		4,246,029		4,245,943		4,246,220
4,246,636		4,246,354		4,246,207		4,246,030		4,245,952		4,246,251
26 : Re.30,487	34 :	4,245,365		4,246,208		4,246,058		4,245,954		4,246,363
4,245,370		4,245,368		4,246,215		4,246,059		4,245,966		4,246,364
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4,245,482		4,245,536		4,246,275		4,246,129		4,246,045		4,246,575
4,245,516		4,245,537		4,246,284		4,246,167		4,246,062		4,246,592
4,245,521		4,245,552		4,246,286		4,246,190		4,246,064		4,246,593
4,245,534		4,245,568		4,246,291		4,246,194		4,246,130		4,246,652
4,245,548		4,246,295		4,246,299		4,246,210		4,246,144	49 :	4,245,363
4,245,562		4,245,635		4,246,311		4,246,225		4,246,159		4,245,636
4,245,592		4,245,687		4,246,320		4,246,253		4,246,161		4,245,709
4,245,603		4,245,688		4,246,325		4,246,268		4,246,163		4,246,408
4,245,604		4,245,694		4,246,337		4,246,313		4,246,237		4,246,531
4,245,605		4,245,721		4,246,349		4,246,314		4,246,249	50 :	4,246,496
4,245,611		4,245,883		4,246,413		4,246,358		4,246,261	51 :	4,245,503
4,245,656		4,245,973		4,246,427		4,246,369		4,246,302		4,245,670
4,245,660		4,245,988		4,246,440		4,246,373		4,246,317		4,245,714
4,245,691		4,245,994		4,246,465		4,246,412		4,246,374		4,245,717
4,245,764		4,246,065		4,246,490		4,246,421		4,246,379		4,245,731
4,245,774		4,246,079		4,246,492		4,246,431		4,246,386		4,245,746
4,245,776		4,246,089		4,246,513		4,246,463		4,246,406		4,245,802
4,245,789		4,246,128		4,246,514		4,246,482		4,246,409		4,245,984
4,245,798		4,246,131		4,246,515		4,246,488		4,246,434		4,246,042
4,245,827		4,246,140		4,246,542		4,246,493		4,246,491		4,246,300
4,245,852		4,246,142		4,246,545		4,246,558		4,246,590		4,246,343
4,245,866		4,246,150		4,246,550		4,246,567		4,246,592		4,246,472
4,245,882		4,246,169		4,246,567	40 :	Re.30,484		4,246,613		4,246,510
4,245,939		4,246,195		4,246,579		4,245,394		4,246,623		4,246,639
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4,246,087		4,246,367		4,245,444		4,246,070		4,246,077		4,245,805
4,246,155		4,246,377	37 :	4,245,453		4,246,124		4,246,308		4,245,807
4,246,197		4,246,381		4,245,576		4,246,139	45 :	4,245,371		4,245,921
4,246,227		4,246,385		4,245,657		4,246,168		4,245,533		4,245,820
4,246,423		4,246,402		4,245,676		4,246,177		4,245,664		4,246,186
4,246,467		4,246,417		4,245,685		4,246,372		4,245,775		4,246,391
4,246,469		4,246,426		4,245,974		4,246,384		4,245,846		4,245,421
4,246,517		4,246,435		4,246,013	41 :	4,245,535		4,246,053	55 :	4,245,430
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4,245,977	36 :	Re.30,490		4,245,469		4,245,419		4,245,659		4,246,301
4,246,179		4,245,385		4,245,473		4,245,422		4,245,682		4,246,318
4,246,327		4,245,402		4,245,485		4,245,423		4,245,686		4,246,552
4,246,344		4,245,424		4,245,517						
4,246,376		4,245,427		4,245,523						

6 :	257,944		258,019	21 :	258,010		257,955		257,963		258,008
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04 :	257,942		257,918		257,930		257,999		257,994	40 :	258,006
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	258,016		257,943	29 :	257,953		257,962				

06 :	4,624	47 :	4,627	54 :	4,629			
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**OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE**

January 27, 1981

Volume 1002

Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the *OFFICIAL GAZETTE* of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee.....	\$35.00
Search fee.....	300.00
Basic fee (first 30 pages).....	190.00
Basic fee supplement (each sheet over 30).....	3.50
Designation fee.....	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

June 17, 1980.

National Inventor's Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, Feb. 7, 1981, from 1:00 p.m. to 5:00 p.m. and Sunday, Feb. 8, 1981 from 10:00 a.m. to 5:00 p.m. The public is invited to view the exhibits on these days and to attend the ceremony at 2:00 p.m. on Sunday, Feb. 8, 1981 during which time a number of inventors will be inducted into the National Inventors Hall of Fame.

In order to assemble the exhibits it will be necessary to close the Search Room on Friday, Feb. 6, 1981 at 5:00 p.m. We would appreciate the cooperation of all users of the Search facilities by removing all personal property for the early closing.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Oct. 29, 1980.

Experiment With Four-Day Work Weeks For PTO Employees

An experiment is underway at the Patent and Trademark Office with "compressed work schedules." Under the experiment many PTO employees, including many patent and trademark examiners, are working their 40 hour average work weeks in fewer than five days a week. These employees work 9 or 10 hours a day instead of 8 hours. Under a "4-10" plan, employees work 10 hours a day and have off one day each week. Under a "5-4/9" plan, employees work 9 hours a day and have a day off every other week. All employees are on duty on "core days," which are Tuesdays and Thursdays.

The experiment is scheduled to run through March 1982. It complements the flexible working hours program announced in the *OFFICIAL GAZETTE* in January 1979 (978 O.G. 140) under which many employees have flexibility to begin their work days as early as 6:30 a.m. and end as late as 6:00 p.m., provided they are on duty during core hours, between 9:30 a.m. and 3:00 p.m.

The public hours of the Patent and Trademark Office continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public are staffed to answer telephone calls and receive visitors during those hours. The Patent Public Search Room continues to operate from 8:00 a.m. to 8:00 p.m. The Trademark Public Search Room operates from 8:00 a.m. to 5:30 p.m.

1002 O.G.—116

Members of the public are reminded they should make appointments in advance when they wish to interview examiners.

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Date: Dec. 29, 1980.

Department of Commerce

PATENT AND TRADEMARK OFFICE

RECOGNITION OF UNITED STATES DEPOSITORY AS AN INTERNATIONAL DEPOSITORY AUTHORITY UNDER THE BUDAPEST TREATY

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the United States announces recognition of the American Type Culture Collection, Rockville, Maryland, as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according to this recognition of January 31, 1981 follows:

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Date: Dec. 30, 1980.

Budapest Notification No. 11

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depository Authority by the American Type Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on November 17, 1980, of a written communication from the Government of the United States of America, relating to the American Type Culture Collection, indicating that the said depository institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depository authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on April 28, 1977.

The American Type Culture Collection will acquire the status of international depository authority under the said Treaty as from January 31, 1981, the date of publication of the said communication in the January 1981 issue of *Industrial Property/La Propriété Industrielle* (see Article 7(2) of the said Treaty).

December 3, 1980.

Department of Commerce

PATENT AND TRADEMARK OFFICE

RECOGNITION OF UNITED STATES DEPOSITORY AS AN INTERNATIONAL DEPOSITORY AUTHORITY UNDER THE BUDAPEST TREATY

As provided in Article 7 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms

JANUARY 27, 1981

U. S. PATENT AND TRADEMARK OFFICE

1002 O.G.—117

for the Purposes of Patent Procedure, the United States announces recognition of the Agricultural Research Culture Collection, Peoria, Ill. as an international depository authority. The communication of the Director General of the World Intellectual Property Organization according to this recognition as of January 31, 1981 follows:

SIDNEY A. DIAMOND,
Commissioner of Patents
and Trademarks.

Date: Dec. 30, 1980.

Budapest Notification No. 12

BUDAPEST TREATY ON THE INTERNATIONAL RECOGNITION OF THE DEPOSIT OF MICROORGANISMS FOR THE PURPOSES OF PATENT PROCEDURE

Communication of the United States of America Relating to the Acquisition of the Status of International Depository Authority by the Agricultural Research Culture Collection

The Director General of the World Intellectual Property Organization (WIPO) presents his compliments to the Minister for Foreign Affairs and has the honor to notify him of the receipt, on December 2, 1980, of a written communication from the Government of the United States of America, relating to the Agricultural Research Culture Collection, indicating that the said depository institution is located on the territory of the United States of America and including a declaration of assurances to the effect that the said institution complies and will continue to comply with the requirements concerning the acquisition of the status of international depository authority as specified in Article 6(2) of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, done at Budapest on April 28, 1977.

The Agricultural Research Culture Collection will acquire the status of international depository authority under the said Treaty as from January 31, 1981, the date of publication of the said communication in the January 1981 issue of *Industrial Property/La Propriété Industrielle* (see Article 7(2) of the said Treaty).

December 8, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,507,547, Re. S.N. 173,575, Filed Jul. 30, 1980, Cl. 350/55, TELESCOPE HAVING MULTIPLE OBJECTIVE MIRRORS, Warren R. Thomas, Owner of Record: *Inventor*, Attorney or Agent: Albert C. Nolte, Jr., et al., Ex. Gp.: 257

4,040,637, Re. S.N. 190,561, Filed Sep. 25, 1980, Cl. 277/224, LOW FRICTION BALANCED PISTON RING, Harold E. McCormick, Owner of Record: *Ramsey Corporation*, St. Louis, Mo., Attorney or Agent: J. Herman Yount, et al., Ex. Gp.: 241

4,102,326, Re. S.N. 171,648, Filed Jul. 23, 1980, Cl. 126/425, CENTRAL RECEIVER SOLAR COLLECTOR USING MECHANICALLY LINKED MIRRORS, Warren T. Sommer, Owner of Record: *Inventor*, Attorney or Agent: Warren T. Sommer, Ex. Gp.: 345

4,118,014, Re. S.N. 191,787, Filed Sep. 29, 1980, Cl. 256/1, VEHICULAR IMPACT ABSORPTION SYSTEM, Albert C. Knoch, et al., Owner of Record: *Inventors*, Attorney or Agent: Robert D. Marchant, et al., Ex. Gp.: 353

4,131,379, Re. S.N. 180,527, Filed Aug. 25, 1980, Cl. 403/197, SELF-RETAINING CONDUIT ANCHORING DEVICE, Donald G. Gordy, et al., Owner of Record: *Orschelm Co. Moberly, Mo.*, Attorney or Agent: Lawrence E. Laubscher, et al., Ex. Gp.: 353

4,159,409, Re. S.N. 188,785, Filed Sep. 19, 1980, Cl. 219/130.21, CURRENT UNIT FOR ARC WELDING, John Bengt Goran Hedberg, Owner of Record: *Thermal Dynamics Corporation, West Lebanon, N.H.*, Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 213

4,191,212, Re. S.N. 156,673, Filed Jun. 5, 1980, Cl. 137/246, MULTIPLE BLADE DAMPER ASSEMBLY, Donald K. Hagar, Owner of Record: *Damper Design Inc., Allentown, Pa.*, Attorney or Agent: Donald D. Jeffery, et al., Ex. Gp.: 341

4,214,513, Re. S.N. 193,711, Filed Oct. 3, 1980, Cl. 098/42 R, ONE-PIECE ROOF VENT DEVICE AND METHOD OF CONSTRUCTING AND UTILIZING SAME, James W. Ballard, et al., Owner of Record: *Inventors*, Attorney or Agent: Irving M. Weiner, et al., Ex. Gp.: 344

PATENT NOTICES

Certificates of Correction for the Week of Jan. 27, 1981

Re. 30,406	4,209,339	4,224,141	4,226,893
D. 254,831	4,212,952	4,224,344	4,226,910
4,033,183	4,215,142	4,224,379	4,226,931
4,063,656	4,216,103	4,224,603	4,227,549
4,086,576	4,217,958	4,224,680	4,227,619
4,087,424	4,218,351	4,224,804	4,227,637
4,107,253	4,218,586	4,224,894	4,227,700
4,116,876	4,219,025	4,225,226	4,228,007
4,128,213	4,219,046	4,225,262	4,228,169
4,130,806	4,219,852	4,225,321	4,228,180
4,138,486	4,219,880	4,225,412	4,228,805
4,154,507	4,219,987	4,225,575	4,228,827
4,164,570	4,220,243	4,225,582	4,229,237
4,170,598	4,220,320	4,225,620	4,229,410
4,175,477	4,220,399	4,226,179	4,229,638
4,177,551	4,220,609	4,226,210	4,229,672
4,178,440	4,221,641	4,226,295	4,229,734
4,182,268	4,221,802	4,226,447	4,229,742
4,196,652	4,222,911	4,226,468	4,229,827
4,200,739	4,223,725	4,226,559	4,230,868
4,203,954	4,223,836	4,226,642	4,234,761
4,206,225	4,224,074		

Disclaimers

3,964,158.—John L. Janning, Dayton, Ohio. METHOD OF MAKING A LIQUID CRYSTAL DISPLAY CELL. Patent dated June 22, 1976. Disclaimer filed Nov. 10, 1980, by the assignee, *NCR Corporation*.

The term of this patent subsequent to Sept. 10, 1991, has been disclaimed.

4,099,403.—Richard A. Alcock and Robert M. Guthrie, Rockford, Ill. IN-LINE WIRE DRAWING MACHINE. Patent dated July 11, 1978. Disclaimer filed Nov. 21, 1980, by the assignee, *Rockford Manufacturing Group Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,165,928.—John L. Janning, Dayton, Ohio. LIQUID CRYSTAL ALIGNMENT STRUCTURE. Patent dated Aug. 28, 1979. Disclaimer filed Nov. 10, 1980, by the assignee, *NCR Corporation*.

The term of this patent subsequent to Sept. 10, 1991, has been disclaimed.

4,202,299.—Eyvind Boyesen, Kempton, Pa. TWO CYCLE INTERNAL COMBUSTION ENGINE. Patent dated May 13, 1980. Disclaimer filed Nov. 24, 1980, by the assignee, *Performance Industries, Inc.*

The term of this patent subsequent to July 17, 1996, has been disclaimed.

Disclaimers and Dedications

3,375,903.—Judson S. Swearingen, Los Angeles, Calif. ANTI-CAVITATIONAL ROTATIONAL POWER ABSORBER AND BEARING LUBRICATION SYSTEM THEREFOR. Patent dated Apr. 2, 1968. Disclaimer and Dedication filed Oct. 28, 1980, by the inventor.

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

3,547,806.—Judson S. Swearingen, Los Angeles, Calif. METHOD OF AND APPARATUS FOR DETECTING DEPOSITION IN TURBOEXPANDER. Patent dated Dec. 15, 1970. Disclaimer and Dedication filed Oct. 28, 1980, by the inventor.

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

4,215,115.—Caroline P. Disanzo, Medina, N.Y. NEMATOCIDAL PHOSPHORODITHIOATE. Patent dated July 29, 1980. Disclaimer and Dedication filed Dec. 3, 1980, by the assignee, *FMC Corporation*.

Hereby disclaims and dedicates to the Public claim 1 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for \$5.00 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for \$5.00 each (\$10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,

Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch, Administration
Service Division, Federal Bldg., Science and Education
Administration, Hyattsville, Md. 20782

Patent application 6-151,068. Control of Nematodes and Other Helminths. Filed May 19, 1980.

Patent application 6-156,292. Process for the Preparation of Tris(N-carbalkoxyaminomethyl)phosphine Oxides and Sulfides. Filed June 4, 1980.

Patent application 6-160,752. A Dry Chemical Process for Grafting Acrylic and Methyl Acrylic Ester and Amide Monomers Onto Starch-Containing Materials. Filed June 18, 1980.

Patent application 6-160,753. Process and Apparatus for Encapsulating Additives in Resealed Erythrocytes for Disseminating Chemicals Via the Circulatory System. Filed June 18, 1980.

Patent application 6-160,754. Preferential Degradation of Lignin in Gramineous Materials. Filed June 18, 1980.

Patent application 6-163,850. Control of Cotton Seedling Disease Pathogens With Pyrrolinidin. Filed June 27, 1980.

Patent 4,209,433. Method of Bonding Particle Board and the Like Using Polyisocyanate/Phenolic Adhesive. Filed Dec. 19, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,212,800. Inhibition of Lanthionine Formation During Alkaline Treatment of Keratinous Fibers. Filed Sept. 26, 1978. Patented July 15, 1980. Not available NTIS.

Patent 4,214,873. Tris(N-carbalkoxyaminomethyl)phosphine Oxides and Sulfides. Filed Apr. 30, 1979. Patented July 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent 4,201,773. 7-O-(2,6-Dideoxy-Alpha-L-Lyx-Hexopyranosyl)-Caunomycinone, Desmethoxy Caunomycinone, Adriamycinone, and Carminomycinone. Filed July 26, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,206,208. Use of 4-Carboxy-Phthalato-(1,2-Diaminocyclohexane)-Platinum (II) and Alkali Metal Salts Thereof in Alleviating L1210 Murine Leukemia. Filed Dec. 22, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,206,226. Use of 4-Carboxy-Phthalato-(1,2-Diaminocyclohexane)-Platinum (II) and Alkali Metal Salts Thereof in Alleviating L1210 Murine Leukemia. Filed July 19, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,210,745. Procedure for the Preparation of 9-Beta-D-Arabinofuranosyl-2-Fluoroadenine. Filed Nov. 20, 1978. Patented July 1, 1980. Not available NTIS.

Patent 4,217,708. Automated Test Tube Stopper Remover. Filed Apr. 30, 1979. Patented Aug. 19, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts., NW,
Washington, D.C. 20240

Patent application 6-108,191. Electrowinning of Lead From H₂SiF₆ Solution. Filed Dec. 27, 1979.

Patent application 6-109,361. Permeability Restoration and Lowering of Uranium Leakage From Leached Ore Beds. Filed Jan. 3, 1980.

Patent application 6-116,695. Extraction of Metals From Mixtures of Oxides or Silicates. Filed Jan. 30, 1980.

Patent application 6-116,697. Recovery of Lithium From Low-Grade Ores. Filed Jan. 30, 1980.

Patent application 6-125,498. Process for Recovering Ni(II), Cu(II) and Co(II) From an Ammoniacal-Ammonium Sulfate Leach Liquor. Filed Feb. 28, 1980.

Patent application 6-138,397. Polyimide Reverse Osmosis Membranes. Filed Apr. 8, 1980.

Patent application 6-140,380. Method for Wrought and Cast Aluminum Separation. Filed Apr. 14, 1980.

Patent application 6-141,087. Leaching Gold-Silver Ores. Filed Apr. 17, 1980.

Patent application 6-141,088. Leaching Gold-Silver Ores. Filed Apr. 17, 1980.

Patent application 6-147,690. Method and Apparatus for the Measurement of Ionic Activities in Water With Differential Pressure Transducers. Filed May 7, 1980.

Patent application 6-152,211. Thorium Oxide-Containing Catalyst and Method of Preparing Same. Filed May 21, 1980.

Patent application 6-152,212. Selective Paging and Intercommunication System. Filed May 21, 1980.

Patent application 6-162,542. High Surface Area Transition Metal Catalysts and Method of Preparing Same. Filed June 24, 1980.

Patent 4,198,297. Removal of Trace Copper Ions From Water. Filed Nov. 23, 1978. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,203,192. Method of Anchoring a Vibrating Wire Into a Hollow Gauge Body. Filed Oct. 23, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,208,275. Froth Flotation Using Lanolin Modifier. Filed Jan. 24, 1979. Patented June 17, 1980. Not available NTIS.

Patent 4,208,294. Dilution Stable Water Based Magnetic Fluids. Filed Feb. 12, 1979. Patented June 17, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table follow-

ing, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	Name of Library	Telephone Contact
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
	Chicago Public Library	(312) 269-2814
Illinois	Boston Public Library	(617) 536-5400 Ext. 265
Massachusetts	Detroit Public Library	(313) 833-1458
Michigan	Minneapolis Public Library & Information Center	(612) 372-6552
Minnesota	Kansas City: Linda Hall Library	(816) 363-4600
Missouri	St. Louis Public Library	(314) 241-2288 Ext. 214
	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
Nebraska	Durham: University of New Hampshire Library	(603) 862-1777
New Hampshire	Newark Public Library	(201) 733-7740
New Jersey	Albany: New York State Library	(518) 474-5125
New York	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
	Dallas Public Library	(214) 748-9071
Texas	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5:00 p.m.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 29, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director.....	11-23-79
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director.....	10-10-79
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director.....	9-11-79
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins with Natural Polymers and Resins; Reclaiming; Foaming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthetic Devices; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director.....	12-12-79
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director.....	12-6-79
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Oas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant.....	1-8-79
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant.....	7-2-79
Ordnance; Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics; Communications; Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant.....	10-4-79
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director.....	1-22-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Flueout Material Handling.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director.....	12-21-78
Semiconductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 260—Vacant.....	1-8-79
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director.....	8-18-79
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Sorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director.....	7-20-79
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Work; Tools; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director.....	8-1-79
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavation; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director.....	6-1-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director.....	3-10-79
Building Structures; Rafts; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 146) and Public Law 610, 83rd Congress, approved August 23, 1964 (64 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 263. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Numbers 3,109,176 to 3,112,488, inclusive
Numbers 2,295 to 2,322, inclusive

1002 O.G.—121

REISSUES

JANUARY 27, 1981

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,491

APPARATUS FOR BINDING LOOSE SHEETS

Albert Gomez, N. Merrick, N.Y., assignor to Spiral Binding Company, Inc., Clifton, N.J.

Original No. 4,020,516, dated May 3, 1977, Ser. No. 635,735, Nov. 26, 1975. Application for reissue Jan. 19, 1978, Ser. No. 871,127

Int. Cl.² B42C 19/00

U.S. Cl. 11—1 A

26 Claims

Re. 30,492

REVERSE DIRECTION GUIDANCE SYSTEM FOR LIFT TRUCK

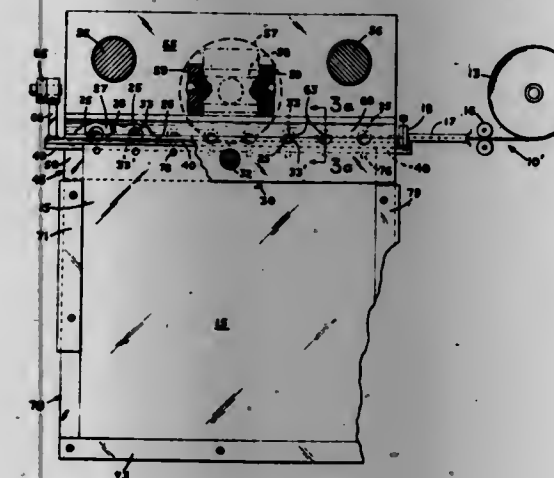
Thomas R. Blakeslee, Woodside, Calif., assignor to Logisticon, Inc., Sunnyvale, Calif.

Original No. 4,043,418, dated Aug. 23, 1977, Ser. No. 644,549, Dec. 29, 1975. Continuation-in-part of Ser. No. 629,491, Nov. 6, 1975, Pat. No. 4,040,500. Application for reissue Apr. 19, 1979, Ser. No. 31,618

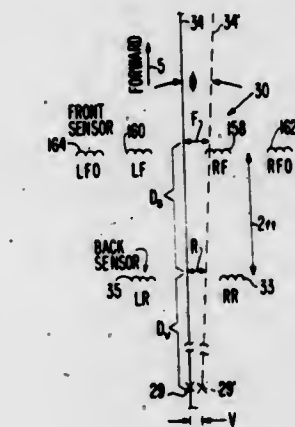
Int. Cl.³ B62D 1/28

U.S. Cl. 180—168

12 Claims



1. A machine for binding a book of loose perforated sheets with a wire binder composed of a [continuous] piece of wire having a plurality of reversely disposed loops formed as straight parallel fingers and connected together at their roots by longitudinal portions to form a flat comb-like structure, comprising a binding station, means for supporting a binder so that the straight binder fingers thereof with the tips of the fingers foremost are directed toward said station in proper position for entry through the perforations of the book of sheets to be bound, means for feeding binders of a desired length to said supported proper position, including means for advancing a continuous length of such wire and for automatically severing such desired binder lengths from the leading end of said continuous length of wire, means engageable with the longitudinal portions of [the] a severed so supported binder for pushing the straight binder fingers thereof lengthwise into said station with the tip ends of said fingers in leading position, and means operative at said binding station as the straight binder fingers [ae] are pushed thereinto for progressively bending the straight fingers under the pressure of said pushing means into circular form starting with the tip ends thereof so that the bent finger portions progressively pass into and through the means including restraining means for each straight binder finger operative to prevent the portions thereof between said pushing means and said operative means becoming bent during the pushing action of said pushing means and until such portions reach said operative means, and said pushing means maintaining an advancing force on the binder fingers only until the tip ends thereof become situated in the gaps at the roots of the fingers between the longitudinal portions of the binder.



11. An improved, self-guided vehicle of the type which automatically follows an externally defined path, and which has at least one ground engaging steerable wheel, a pair of wheels on a fixed axle, a path sensor mounted on the vehicle for generating a position error signal representative of both the lateral position of the vehicle with respect to the path and the inclination of direction of vehicle travel with respect to the path, a steering actuator attached to the ground engaging steerable wheel for steering the vehicle in response to a steering control signal to the steering actuator, and a steering circuit controller supplied with the position error signal for generating said steering control signal for the steering actuator to cause the steering actuator to automatically steer the vehicle along the path, wherein the improvement comprises a first and a second pair of sensors, both pairs of sensors being mounted on the vehicle between the steerable wheel and the fixed axle to guide the vehicle along the path when the vehicle is traveling in a direction such that the fixed axle wheels precede the steerable wheel, the first pair of sensors being mounted closest to the fixed axle wheels and each of the first and second pairs of sensors being mounted on the vehicle so as to normally straddle the path, each of the first and second pairs of sensors producing an output signal representative of the difference of the outputs of the sensors of each pair, and means supplied with output signals of the sensor pairs for generating a position error signal (V) with respect to a virtual sense point, located beyond the fixed axle wheels and in the direction of vehicle travel, according to the formula:

$$V = (1 + K)A - KB$$

where A = difference of outputs of first pair of sensors; B = difference of outputs of the second pair of sensors; and K = constant = ratio of the distance between the first pair of sensors and the virtual sense point to the distance between the first and second pairs of sensors, this ratio being greater than 1.

Re. 30,493

APPARATUS FOR THE PREVENTION OR LIMITATION OF WATER DAMAGE

Bengt G. A. E. Kullberg, Storövägen 20, S-141 42 Huddinge, Sweden

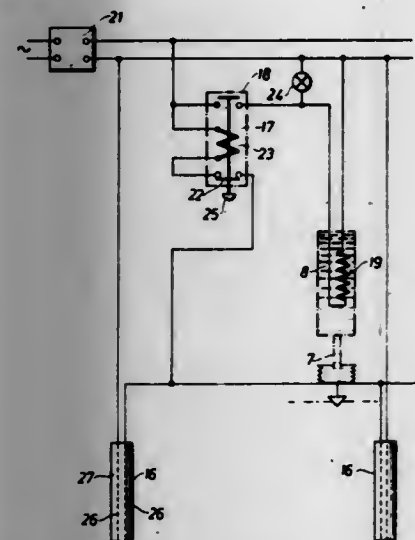
Original No. 4,136,823, dated Jan. 30, 1979, Ser. No. 769,667, Feb. 17, 1977. Application for reissue Jun. 18, 1979, Ser. No. 49,184

Claims priority, application Sweden, Feb. 26, 1976, 7602561; May 21, 1976, 7605806

Int. Cl.³ H01H 35/00; F24D 3/00

U.S. Cl. 237-8 R

9 Claims



1. An apparatus for limiting water damage in structural floors and covering floors in a building which have water-carrying means connected to a central water circulating apparatus, characterized by at least one moisture sensing device positioned at floor level in proximity with said water-carrying means, a relay means connecting said relay to the moisture sensing means, a direct acting thermostatic valve positioned in the central water circulating apparatus supplying the water-carrying means to control the flow of water to the water-carrying means, said valve having a sensing body for actuating the valve, a heating element arranged in proximity with the sensing body, and circuit means connecting said heating element through a source of electric current to said relay to be controlled thereby, said relay being arranged to close the circuit means energizing the heating element from an impulse from the sensing device indicating that a predetermined moisture limit has been exceeded and operative to actuate the thermostatic valve to close the flow of water to the water-carrying means.

Re. 30,494

CUTTING TEETH FOR ETCHED ABRASIVES

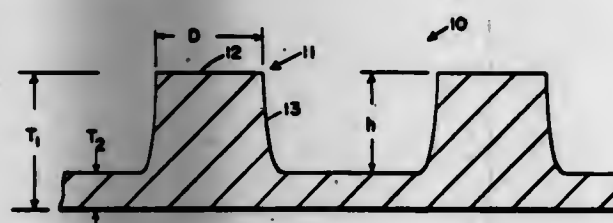
Herbert M. Bond, St. Paul, Minn., and Michael E. Rucinski, Crystal Falls, Mich., assignors to Buckbee-Mears Company, St. Paul, Minn.

Original No. 4,099,935, dated Jul. 11, 1978, Ser. No. 764,501, Jan. 31, 1977. Continuation of Ser. No. 627,751, Oct. 31, 1975, abandoned, and a continuation of Ser. No. 489,247, Jul. 17, 1974, abandoned. Application for reissue Aug. 9, 1978, Ser. No. 932,430

Int. Cl.³ B24D 3/06

U.S. Cl. 51-309

2 Claims



1. A one piece abrading device for smoothly abrading away

material, said abrading device comprising a flexible base member having rigid abrading teeth thereon, said base member and said abrading teeth comprised of the same metallic base material, said base member defined by a width, a thickness and a length; said thickness of said abrading member being substantially of less dimension than said width and said length so that said base member lacks rigidity and flexes in response to a force on the surface of said base member, said abrading teeth comprising a plurality of metallic post-shaped cutting teeth spaced widthwise and lengthwise across said base member, said abrading teeth having a rigid top cutting surface, said teeth characterized by being distributed throughout said base member to thereby provide said abrading device with a tooth density of approximately 700 to 900 teeth per square inch, sufficient teeth so as to smoothly shear away material on the surface of an article to be abraded when said abrading device is rubbed over the article to be abraded, said cutting teeth integrally formed with said base member and projecting a distance H from said base member, said plurality of post-shaped cutting teeth having a substantially flat top and substantially vertical side walls, said substantially flat top of said plurality of post-shaped cutting teeth having a diameter designated by D, said diameter of said teeth having a minimum dimension of about 0.0015 inches to prevent said teeth from piercing the surface of the article to be abraded with said dimension H of said teeth having a minimum dimension of about 0.0025 inches to thereby produce abrading teeth which are sufficiently rigid to smoothly abrade away material.

Re. 30,495

META-THIOCARBAMYL PHENYLENE UREAS

Eugene G. Teach, El Cerrito, Calif., and Duane R. Arneklev, Plentywood, Mont., assignors to Stauffer Chemical Company, Westport, Conn.

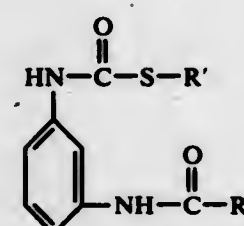
Original No. 3,723,474, dated Mar. 27, 1973, Ser. No. 86,379, Nov. 2, 1970. Application for reissue Dec. 26, 1979, Ser. No. 106,619

Int. Cl.³ C07C 153/11

U.S. Cl. 260-455 A

13 Claims

1. A compound having the formula



in which R' is alkyl containing from one to six carbon atoms, inclusive, or benzyl and R is alkyl containing from one to 10 carbon atoms, inclusive, mono-alkylamino, N,N-di-substituted amino wherein said substituents are independently selected from the group consisting of alkyl containing from one to six carbon atoms, inclusive, alkoxy containing from one to six carbon atoms, inclusive, furfuryl and cycloalkenyl containing from three to seven carbon atoms, inclusive.

Re. 30,496

TRYPEPTIDE DERIVATIVES WITH CENTRAL NERVOUS SYSTEM ACTIVITY AND PREPARATION THEREOF

Amedeo Failli, St. Laurent; Hans U. Immer, Mount Royal, and Manfred K. Götz, Hudson, all of Canada, assignors to Ayerst, McKenna & Harrison, Ltd., Montreal, Canada

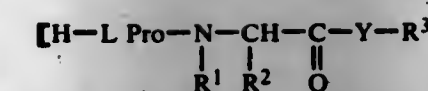
Original No. 4,018,912, dated Apr. 19, 1977, Ser. No. 599,450, Jul. 28, 1975. Application for reissue Feb. 26, 1979, Ser. No. 15,091

Int. Cl.³ A61K 37/02; C07C 103/52; A61K 37/24

U.S. Cl. 424-177

21 Claims

1. A compound [of formula 1] [



[In which R¹ is hydrogen, lower alkyl or NR⁴R⁵ wherein R⁴ and R⁵ each are lower alkyl; R² is hydrogen or lower alkyl, R³ is amino, lower alkylamino, di(lower)alkylamino or amino(lower)alkylamino, and Y is one of the amino acid residues Gly or D-Ala with the proviso that when R¹ is NR⁴R⁵ is lower alkylamino, di(lower)alkylamino or amino(lower)alkylamino and with the further proviso that when R¹ is hydrogen, R² is CH₂CH(CH₃), R³ is amino then Y is D-Ala.] selected from the group consisting of L-prolyl-D-(N-methyl)leucyl-glycinamide, L-prolyl-L-(N-methyl)leucyl-glycinamide, L-prolyl-(N-isobutyl)glycyl-glycinamide, L-prolyl-DL-(N-dimethylamino)leucyl-glycine-4-amino-n-butylamide, L-prolyl-L-(N-methyl)leucyl-D-alaninamide, L-prolyl-N-(D-methyl)-leucyl-D-alaninamide and L-prolyl-L-leucyl-glycine-4-amino-n-butylamide.

Re. 30,497

CROSSLINKED OLEFIN POLYMER HAVING IMPROVED FLAME RETARDANCE

Charles F. Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Original No. 4,012,343, dated Mar. 15, 1977, Ser. No. 504,019, Sep. 9, 1974. Continuation-in-part of Ser. No. 53,332, Jul. 8, 1970, abandoned, and Ser. No. 168,756, Aug. 3, 1971, abandoned. Application for reissue Sep. 4, 1979, Ser. No. 72,728

Int. Cl.³ C08K 3/02; C08J 9/10; C08K 5/02

U.S. Cl. 521-85

14 Claims

1. In an olefin polymer composition containing a halogenated organic moiety which is active chlorinated organic compound, active brominated organic compound, passive brominated organic compound or hexachlorocyclopentadiene, dimerized hexachlorocyclopentadiene, hexachloroendomethylene tetrahydrophthalic acid or a derivative thereof and having the halogen concentration from about 5 to about 95 weight percent based on said moiety, the olefin polymer being selected from the group consisting of homopolymers and copolymers of aliphatic hydrocarbon monolefins having no more than 12 carbon atoms, substituted α-monoolefins wherein the substituent is carboxylic acid, alkyl or haloalkyl ester of carboxylic acid wherein alkyl or haloalkyl has from 1 to 12 carbon atoms, acyl having from 1 to 12 carbon atoms, carboxylate having

from 1 to 12 carbon atoms, alkoxy having from 1 to 12 carbon atoms, and aryloxy having 6 to 12 carbon atoms, the improvement wherein the olefin polymer is crosslinked to at least its gel point and contains a flame retarding amount of elemental phosphorus having a specific gravity greater than 2.0.

Re. 30,498

FILAMENT SHOCK MOUNTING FOR LAMPS

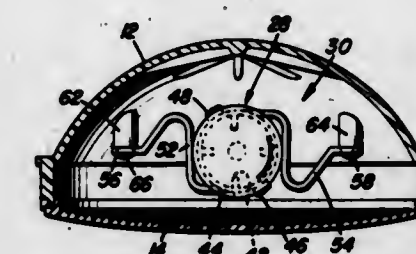
George D. Baldwin, Jamestown, N.Y., assignor to Truck-Lite Co., Inc., Jamestown, N.Y.

Original No. 3,327,110, dated Jun. 20, 1967, Ser. No. 453,700, May 6, 1965. Application for reissue Aug. 25, 1978, Ser. No. 936,794

Int. Cl.³ F21V 15/04

U.S. Cl. 362-296

18 Claims



1. A lamp adapted to be subjected to [the] vibratory shock loads comprising, a relatively rigid reflector, relatively flexible suspension means having a receptacle portion, a bulb supported by said receptacle portion in a predetermined orientation relative to said reflector, said suspension means including a pair of elastically deformable elongated flexible arms disposed horizontally in the use position of the lamp each extending laterally from the receptacle portion as a sinuous strip curving along like horizontally reverse curve paths throughout the arm's vertical height defining substantially U-curves about vertical axes of curvature for accommodating flexing in horizontal directions, and means pivotally mounting said suspension means between parallel spaced supporting axes fixed relative to the reflector for limited elastic displacement of the receptacle portion in a direction perpendicular to said supporting axes.

PLANT PATENTS

GRANTED JANUARY 27, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,630

ROSE PLANT

Ernest Schwartz, deceased, late of Kingsville, Md. (by Hazel E. Schwartz, executrix), assignor to F. Harmon Saville, Nor'East Miniature Roses, Rowley, Mass.

Filed Jan. 18, 1979, Ser. No. 49,565
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—8

1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by off-white to white blooms borne in many-flowered sprays on a vigorous plant quite resistant to mildew and blackspot.

4,631

SEEDLING ROSE PLANT

Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed Aug. 15, 1979, Ser. No. 66,868
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—11

1 Claim

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by its abundant and continuous production of medium sized flowers of Talisman coloration borne on medium strong stems of medium length, and by its vigorous and responsive growth habits under the poor light conditions of winter months.

4,632

FLOWERING CRAB APPLE TREE

William Flemer, III, Princeton, N.J., assignor to Treesearch, Kingston, N.J.

Filed Jan. 25, 1979, Ser. No. 6,508
Int. Cl.³ A01H 5/03

U.S. Cl. Plt.—34

1 Claim

1. A new and distinct variety of flowering crab apple tree substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the very abundant quantity of blooms which are deep purplish pink as the blooms open, becoming moderate pink when fully open, dark red young leaves which become leathery dark green at maturity, and very high resistance to scab fungus (*Venturia inaequalis*) and fire blight (*Erwinia amylovora*).

4,633

COOP 22

Daniel F. Dayton, Urbana, Ill.; Frank H. Emerson; Jules Janick, both of West Lafayette, Ind.; Edwin B. Williams, Lafayette, Ind.; Catherine H. Bailey, Englishtown, N.J.; James B. Mowry, Carbondale, Ill., and L. Fredric Hough, Bloomsbury, N.J., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 29, 1979, Ser. No. 70,855
Int. Cl.³ A01H 5/03

U.S. Cl. Plt.—34

1 Claim

1. A new and distinct apple tree substantially as shown and described, particularly characterized by resistance to apple scab, excellent flesh quality and texture, and maturing approximately with 'Jonathan'.

4,634

ALSTROEMERIA PLANT NAMED KING CARDINAL

M. C. van Staaveren, 30, Hornweg, 1432 GM Aalsmeer, Netherlands

Filed Apr. 23, 1979, Ser. No. 32,676
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinctive Alstroemeria cultivar, substantially as herein shown and described, characterized by the large size of its red flowers appearing on very long and strong raceme stems and by its vigorous growth and profuse flower production.

4,635

ALSTROEMERIA NAMED RED SUNSET

M. C. van Staaveren, 30, Hornweg, 1432 GM Aalsmeer, Netherlands

Filed Apr. 23, 1979, Ser. No. 32,678
Int. Cl.³ A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. The new and distinct variety of Alstroemeria plant substantially as herein shown and described, characterized by the distinctive red coloring of the flowers and the yellow coloring at the base of each of the inside petals, and by the straight, sturdy and long peduncle which supports each of the flowers.

PATENTS

GRANTED JAN. 27, 1981

ERRATA

For CLASS	See PATENT NO.
434-022.....	4,246,705
400-045.....	4,246,828
440-017.....	4,246,861
440-073.....	4,246,862
440-088.....	4,246,863
029-771.....	4,246,939
369-233.....	4,247,118
369-077.....	4,247,119
369-173.....	4,247,120
217-033.....	4,247,122
228-052.....	4,247,137
156-163.....	4,247,318
564-251.....	4,247,477
564-422.....	4,247,478
564-436.....	4,247,479
564-298.....	4,247,480
564-492.....	4,247,481
564-508.....	4,247,482
568-341.....	4,247,483
568-326.....	4,247,484
568-464.....	4,247,485
568-454.....	4,247,486
568-422.....	4,247,487
568-012.....	4,247,488
570-234.....	4,247,532
369-043.....	4,247,741
371-015.....	4,247,941

PATENTS

GRANTED JANUARY 27, 1981

GENERAL AND MECHANICAL

4,246,657
GARMENT

Sylvia Roodner, 1385 York Ave., New York, N.Y. 10021
Filed May 17, 1979, Ser. No. 39,782
Int. Cl.³ A41D 1/22

U.S. Cl. 2—71

4,246,658
CORD NECKTIE

Wan-Yiun Liaw, 26 Hsin Tien Road, Hsin Hsing Site, Kao Shung, Taiwan
Filed May 31, 1979, Ser. No. 44,393
Int. Cl.³ A41D 25/14

6 Claims

U.S. Cl. 2—152 R

1 Claim



1. A dress comprising an elongated fabric panel having side edges and end edges, said panel having a retroverted portion between its opposite end edges, said retroverted portion being adapted to be disposed between a person's legs below and spaced from the person's crotch, means joining at least portions of said side edges below the waist spaced from and above said retroverted portion, to leave openings below the waist extending upwardly from said retroverted portion at the sides of the dress for the insertion of the person's legs therethrough, such that the portion of the dress circumscribing the person's waist down to the retroverted portion has the appearance and functions of a skirt, said retroverted portion dividing the panel into a front segment and a rear segment, the upper edge of the front segment which constitutes an end edge of the panel being at the shoulder of the wearer in front of the person's torso, said panel running in one piece from said upper edge to the retroverted portion and then to the rear of the waist of the person, a panel at the back of the dress, the upper edge of the back panel being attached to the upper edge of the elongated fabric panel, the side edges of the back panel being attached to the side edges of the elongated fabric panel down to the waist of the dress, said back panel having a tail adapted to be tucked in the edge of the elongated fabric panel at the rear of the waist of the dress, the elongated fabric panel being shirred at the front of the waist of the dress, the edge of the elongated fabric panel at the rear of the waist of the dress being shirred, lengths of linear tape extending from each side edge of the edge of the elongated fabric panel at the rear waist of the dress, said linear tapes being of sufficient length so that they may be tied to each other at the front of the waist of the dress, and gores at the junctions between the lengths of linear tape and the edges of the elongated fabric panel at the rear waist of the dress, the top edges of said gores being secured to the respective tapes and the vertical edge of each gore being secured to the respective side edges of the elongated fabric panel at the rear of the person so that the gores overlay portions of the elongated fabric panel at the front of the person immediately below the person's waist.



1. A cord necktie comprising:
a knot plate having a body and a pair of wings with a closed elongate slot defined in each wing and a pair of vertically spaced closed apertures defined in said body, said wings each curving backwardly and upwardly from said body to be inwardly concave in shape, said slots each having a longitudinal axis oriented along the length of said each wing toward said body;
a cord threaded through said apertures and said slots to have both ends thereof extending through said apertures outwardly of said knot plate, said cord having a body portion located outwardly of said knot plate and forming a loop which fits around a wearer's neck; and
a necktie attached to one end of said cord, said necktie being adapted to be wound around said knot plate to form a necktie knot about said knot plate.

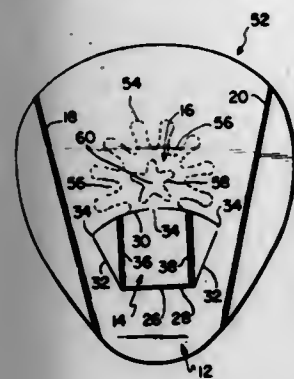
4,246,659
POP-UP HAT AND BLANK FOR FORMING SAME
Russell J. Lyons, Franklin Park, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Jan. 5, 1979, Ser. No. 45,824
Int. Cl.³ A42B 1/20, 1/22

U.S. Cl. 2—175

4 Claims

1. A unitary, planar blank formed of paperboard for forming a hat comprising:
a brim portion;
a display portion located within said brim portion having front, rear and side edges, said front edge being hingedly attached to said brim portion along a fold line, said rear and side edges of said display portion being substantially severed; and
means for selectively forming a plurality of differently sized apertures comprising, in combination,
a punch-out portion located within said brim portion and adjacent said rear edge, said punch-out portion being

defined by an undulating curvilinear line of perforations, said line defining a plurality of radially inwardly extending finger-like sections which radiate towards a point generally in the center of said punch-out portion, said finger-like sections capable of being variously deformed to form differently sized apertures after removal of said punch-out portion, and



an opening created by pivoting said display portion to a position in which it is oriented at an angle relative to said brim portion; whereby a hat may be formed from the blank to fit heads of different sizes.

4,246,660

ARTIFICIAL LIGAMENT

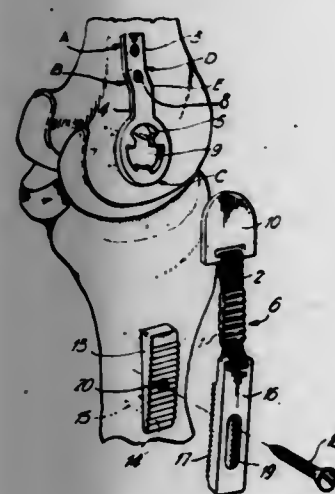
Heak W. Wevers, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed Dec. 26, 1978, Ser. No. 972,997

Int. Cl.³ A61F 1/03

U.S. Cl. 3—1

12 Claims



1. A prosthetic ligament device for replacing a natural ligament flexibly connecting first and second natural skeletal members together, comprising:

- (a) an elongated elastic element having elastic properties substantially similar to those of a natural ligament and comprising a plurality of interwoven parallel cord wrap elements and parallel transverse radially deformable tubular weft elements;
- (b) lock means to releasably secure one end of said elastic element to said first skeletal member; and
- (c) means to secure the other end of said elastic element to said second skeletal member, including means to adjust said element to a predetermined length and stress level.

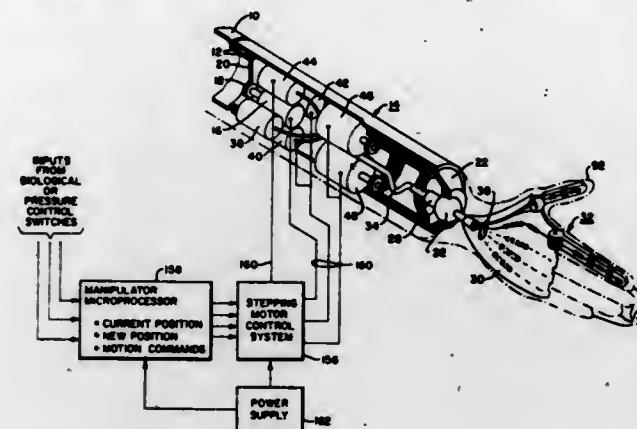
4,246,661
DIGITALLY-CONTROLLED ARTIFICIAL HAND
George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 15, 1979, Ser. No. 20,575

Int. Cl.³ A61F 1/00, 1/06

U.S. Cl. 3—1.1

12 Claims



7. In a prosthetic device capable of reproducing motions of a human body member, the combination comprising a hollow prosthetic forearm, a prosthetic attachment to said forearm to which the reproduced motion is imparted, a shaft with said attachment secured to one end of said shaft, ball and socket joint means mounting said shaft to said forearm intermediate the ends of said shaft for pivoting said prosthetic attachment about an end of said forearm, means adapted to move the end of said shaft opposite said prosthetic attachment and within the interior of said forearm, and means to control said means of motion responsive to the prosthesis wearer.

4,246,662

PROSTHETIC JOINT

Danny L. Pastrick, Warsaw, Ind., assignor to Zimmer USA, Inc., Warsaw, Ind.

Filed Jun. 7, 1979, Ser. No. 46,297

Int. Cl.³ A61F 1/03

U.S. Cl. 3—1.91

4 Claims



1. A prosthetic joint for replacement of bone joints comprising a one-piece body of flexible physiologically inert material, said body having an enlarged central portion and outwardly directed proximal and distal stem portions each adapted to be inserted into a medullary canal of a bone of said joint, said central portion having a height equal to or greater than its width and a slot extending substantially through said central portion from the distal end of the dorsal surface of said central portion toward the proximal end of the volar surface of said central portion forming a hinge near the volar surface which is offset from the center of said central portion toward the proximal end of said central portion.

4,246,663

HOT TUB COVER

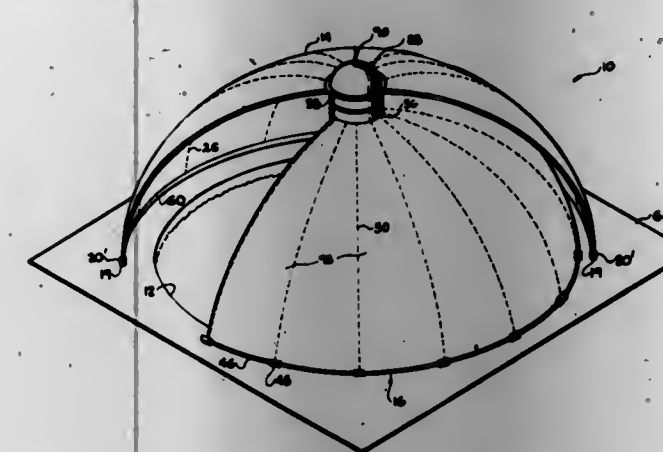
Anthony J. Aragona, 2124 Labette Manor Dr., Apt. L-13, Little Rock, Ark. 72205, and Michael E. La Plante, 10217 E. 63rd Ter., Raytown, Mo. 64133

Filed Sep. 17, 1979, Ser. No. 76,173

Int. Cl.³ E04H 3/16, 3/18

U.S. Cl. 4—500

20 Claims



1. An adjustable cover, having a primary configuration, for protective extension over a hot tub or similar apparatus comprising:

- first and second shells having complementary configurations therebetween for forming said cover primary configuration upon placement of said first and second shells at an initial closure position, said first and second shell configurations being relatively sized therebetween to allow said first shell to overlie second shell in a spaced-apart relationship upon placement of said second shell therebelow; and means mounting at least one of said shells for pivotable rotation about an upright axis passing therethrough and providing for movement of said shell from said initial closure position upon said rotation, said pivotable shell cooperating with said relative shell sizes to present a range of selectable superjacent relationships between said first and second shells during said shell movement, said selectable shell relationships corresponding to a selectable variance of said shells from said primary configuration whereby to adjust the degree of said protective extension offered by said cover.

4,246,664

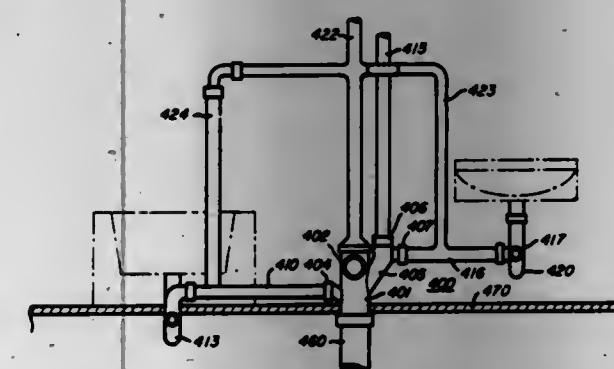
PLUMBING SYSTEM AND PLUMBING FITTINGS FOR USE THEREIN

Roy L. Reynolds, 13334 Aldine-Westfield, Houston, Tex. 77039
Continuation-in-part of Ser. No. 865,628, Dec. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 794,516, May 6, 1977, abandoned. This application Dec. 5, 1979, Ser. No. 100,477

Int. Cl.³ E03C 1/122

U.S. Cl. 4—191

6 Claims



1. A plumbing system for providing waste drainage and gas venting for a plurality of plumbing fixtures located at conventional elevations above a first floor level such that only a single

penetration of said first floor is required for connecting said plumbing system to a substantially vertical common waste line; which plumbing system comprises, in combination:

- (a) a plumbing fitting comprising a vertical tubular body member having an open top and having an open bottom adapted for connection to said common waste line; an open horizontal bathtub drain stub in communication with said body member, at an elevation above said first floor level for draining a standard above-the-floor bathtub; a lavatory drain stub in communication with said body member at an elevation above said first floor level sufficient for receiving waste discharge from a lavatory; an open, horizontal first water closet drain stub in communication with said body member at an elevation above said first floor level sufficient for receiving waste discharge from a standard back-flush water closet, an upwardly directed drain header the lower end of which is in communication with said body member at an elevation above said first floor level such that a projection of said drain header will strike the opposite wall of said body member below the opening for said bathtub drain stub, an open, vertical upper storey drain stub in communication with the upper end of said drain header, wherein the centerlines of said bathtub drain stub, said drain header, said upper storey drain stub and said lavatory drain stub are substantially within a vertical plane such that said plumbing system may be enclosed by a straight wall section and wherein the centerline of said water closet drain stub is perpendicular to said plane;
- (b) a substantially horizontal bathtub drain header in communication with said bathtub drain stub for draining wastes from a bathtub to said common waste line;
- (c) a lavatory waste header in communication with said lavatory drain stub for draining wastes from a lavatory to said common waste line;
- (d) a substantially vertical common vent header in communication with the open top of said body member for venting sewer gases to the atmosphere at an elevation above said plumbing fixtures drained through said plumbing fitting;
- (e) upwardly directed bathtub vent line having open upper and lower ends, said lower end in communication with said bathtub drain header and the upper end in communication with said common vent header at an elevation above said lavatory, for venting gases from said bathtub drain header;
- (f) an upwardly directed lavatory vent line having open upper and lower ends, said lower end in communication with said lavatory waste header and said upper end in communication with said common vent header for venting gases from said lavatory waste header;
- (g) a substantially vertical upper storey waste line in communication with the upper end of said upper storey drain stub for draining wastes to said common waste line from a second floor level above said first floor level.

4,246,665

NON-POLLUTING TOILET SYSTEM

James H. Albertassi, West Falmouth, Mass.; Walter O. Heinze, Swarthmore, Pa., and Aaron Landman, Buzzards Bay, Mass., assignors to International Water Saving Systems, Inc., New York, N.Y.

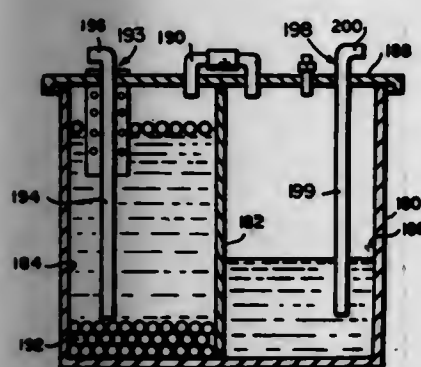
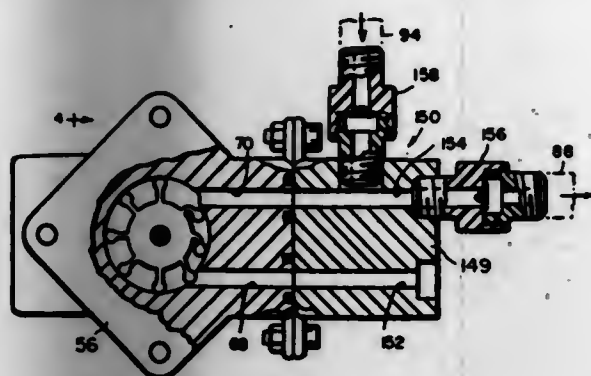
Continuation-in-part of Ser. No. 939,992, Sep. 6, 1978, abandoned. This application May 11, 1979, Ser. No. 37,654
Int. Cl.³ E03D 5/01, 5/016; B01D 23/10; C02F 1/34

U.S. Cl. 4—318

5 Claims

1. A toilet system capable of rendering the effluent innocuous and reducing solid matter therein to microparticle size, comprising a bowl, a treating tank for receiving effluent from the bowl for treatment, a macerator in the treating chamber for macerating the contents thereof, first means connected to the bowl for supplying fluid thereto for flushing, filter means, second means connecting the filter means to the treating tank and the first means to provide a closed circuit for repeated

circulation of a predetermined quantity of fluid in the system, said filter means comprising a tank divided into two chambers, a filter chamber and a storage chamber, a mass of freely suspended, inert, buoyant particles in the filter chamber and means connecting the top of the filter chamber to the top of the

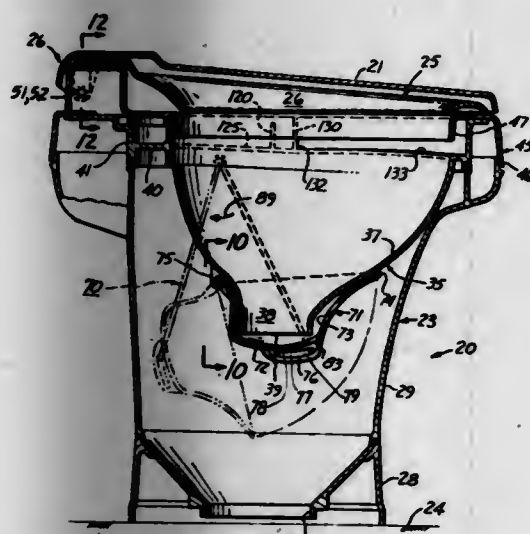


storage chamber for transferring filtered fluid from the filter chamber to the storage chamber, said second means connecting the treating chamber to the bottom of the filter chamber of the filter means and the bottom of the storage chamber of the filter means to the first means.

4,246,666 FLUSH TOILET

Benjamin H. Stansbury, Jr., 803 N. Doheny Dr., Beverly Hills, Calif. 90210

Continuation-in-part of Ser. No. 813,842, Jul. 8, 1977, abandoned. This application Nov. 17, 1978, Ser. No. 961,516
Int. Cl.³ E03D 11/08, 11/10; A47K 13/12; E05D 7/10
U.S. Cl. 4—438 22 Claims



1. A flush toilet comprising: a bowl having an inner wall with an upper rim and a bottom drain port, said drain port having a lower margin, said wall tapering generally inwardly and downwardly so as to form an upwardly facing concavity; a closure comprising a pan beneath the drain port at the outside of the bowl, said pan having a bottom and an upwardly extending peripheral wall with an upper margin, said pan being pivot-

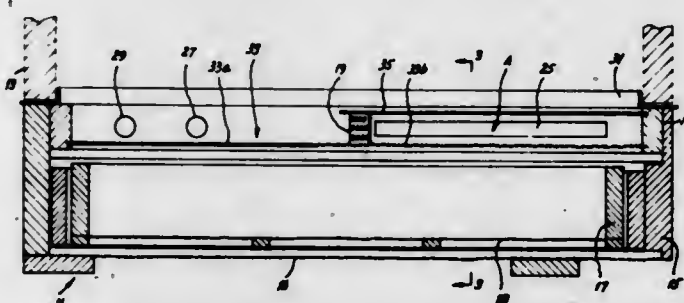
ally mounted relative to the bowl by pivot means which is located sidewardly relative to the lower margin of the drain port so that said pan is swingable to an upper substantially horizontal closed position beneath the drain port where its upper margin stands above the lower margin of the drain port whereby sufficient water in the pan will form a gas seal at the drain port, and is also swingable to a tilted open position wherein the pan is removed from the drain port to permit drainage therethrough and part of it is disposed below the elevation of said drain port in the path of a substantial portion of the water flowing out of the drain port whereby to be rinsed by said water, said pan being shaped so that substantially all water drains from it while in said open position; linkage means pivotally mounted relative to the bowl and connected to the pan to swing the pan to its said positions; and flushing means comprising a water inlet conduit connectible to a supply of water under pressure a flushing valve and a vacuum breaker connected in said inlet conduit, and nozzle means receiving water passed by the said valve and vacuum breaker discharging said water into the bowl to flush the same, said linkage means also being connected to said valve to open said valve for at least some of the time the pan is away from its closed position, said linkage means comprising a pivoted rigid member mounted relative to the bowl and having a swingable portion, a lever plate fixed to the pan, said lever plate having a slot receiving the swingable portion the slot and the member being so disposed and arranged that the pan can tilt downwardly over a portion of the arcuate movement of the swingable portion, but is held in its closed position at another arcuate position of the member.

4,246,667 ENTRANCE FOR A BEEHIVE

Kenneth T. Healy, P.O. Box 131, Cannington, W.A., Australia (6107)

Filed Apr. 10, 1979, Ser. No. 28,644
Claims priority, application Australia, Apr. 14, 1978, PD4036
Int. Cl.³ A01K 47/06 14 Claims

U.S. Cl. 6—4 R



1. A pollen collecting entrance structure for a beehive comprising a base for supporting the beehive, said base defining a space located below the beehive and in open communication therewith through the bottom of said beehive, a pollen-collecting receptacle slideably supported in the bottom of said space and removable transversely from said base, an accessway through a wall of said base providing access for bees from the exterior of said base to the area above said receptacle, and pollen-extracting means slideably supported in said base and removable transversely therefrom, said pollen-extracting means comprising means defining an area in communication with said accessway whereby bees may enter said area through said accessway, a vertically extending perforate member providing communication between said area and the portion of said space in communication with the open bottom of the beehive and a floor extending horizontally and located between said pollen-collecting receptacle and the bottom of the beehive, said floor having a grid extending beneath said perforate member and above said pollen-collecting receptacle for permitting pollen to fall into said pollen-collecting receptacle.

4,246,668 TREATMENT OF A WEB OF MATERIAL

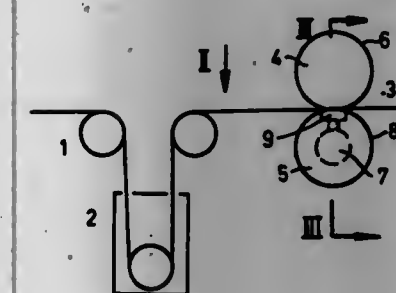
Werner Spillmann, Kilchberg, and Rolf Lehmann, Rudolfstetten, both of Switzerland, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed May 16, 1979, Ser. No. 39,452
Claims priority, application Switzerland, Jun. 9, 1978, 6307/78

U.S. Cl. 8—149

Int. Cl.³ D06B 11/00

14 Claims



1. A process for producing a web of material having gradual transitions between regions of different colored effects comprising the steps of impregnating the web with a visual effect-producing agent; passing the web containing said agent through the nip of a pair of plain pressure rollers; and subjecting various portions of the web to different pressures in the nip as the web advances to thereby cause agent in web portions subjected to higher nip pressures to be squeezed out and to pass into web portions subjected to lower nip pressures.

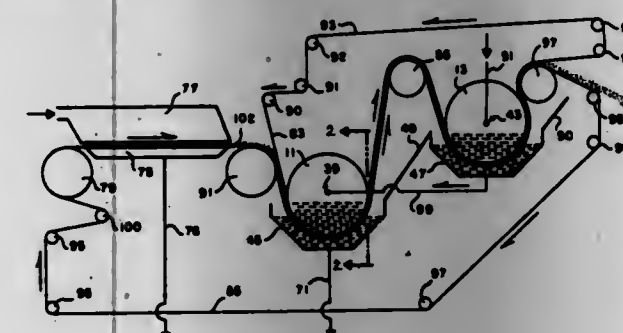
4,246,669 DUAL BELT PULP WASHER

Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation of Ser. No. 853,068, Nov. 21, 1977, Pat. No. 4,160,297. This application Oct. 16, 1978, Ser. No. 951,540
Int. Cl.³ D06B 5/04; D21C 9/06

U.S. Cl. 8—156

18 Claims



1. A machine for washing paper stock pulp and other free filtering materials comprising:

- two or more horizontally-disposed wash drums each having a sidewall through which liquid can pass, said wash drums being mounted for rotation about their horizontal axes and disposed in side-by-side, vertically-stepped relationship with the first of said drums being the lowest and the last being the highest;
- two or more open tanks mounted to encompass the lower parts of respective ones of said wash drums, said tanks being constructed to contain liquid exterior to said wash drums and being constructed so that liquid cannot flow directly from one tank to another so that each tank and drum cooperate to form a plurality of separate wash zones in vertically-stepped relationship with the first being the lowest and the last being the highest;
- roller members mounted for rotation at spaced-apart locations above said wash drums;
- first and second endless filter belts trained to pass under

each of said wash drums and over each of said roller members in face-to-face relationship with each other to hold a mat of material to be washed;

- a first set of guide means mounted above said wash drums to guide said first endless filter belt from the last of said wash drums to the first of said wash drums, and a second set of guide means mounted below said wash drums to guide said second endless filter belt from the last of said wash drums to the first of said wash drums;
- drive means mounted to drive said first and second endless belts;
- hydrostatic differential means connected in communication with each of said wash drums and each of said tanks to form a first body of liquid inside said drums and a second body of liquid inside said tanks and to provide a hydrostatic head differential between the first and second bodies of liquid to force the liquid through the material held between said first and second endless belts, thereby to wash the material; and,
- transfer means coupled to said hydrostatic differential means to transfer liquid from said last wash zone to a lower wash zone.

15. In a machine including two or more wash drums mounted in associated open tanks which contain liquid exterior of the wash drums, which drums have perforated sidewalls and are arranged in vertically-stepped relationship to one another, the first drum being the lowest and the last being the highest, and further including roller members mounted for rotation at spaced-apart locations above each of said wash drums, a method of washing paper stock pulp and other free-filtering materials comprising:

- training an upper and a lower filter belt in face-to-face relationship to pass under each of said filter drums and over each of said roller members;
- forming a mat of the material between the two belts;
- driving the two belts to carry the mat of material under each of the drums and over each of the rollers from the first drum to the last drum;
- introducing liquid into the interior of the last said drum to flow through the perforated sidewall of that drum and then through the mat into the tank associated with that drum, whereby the mat is washed by the liquid;
- conveying without pumping, the once-used liquid from the tank associated with the last drum directly into the interior of a lower drum without flowing through the tank associated with said lower drum;
- removing the washed mat of material from between the two belts after the belts have passed over the roller member associated with the last drum; and
- removing the liquid from the tank associated with the first drum.

4,246,670

PROCESS FOR IMPROVING THE COLOR YIELD AND FASTNESS PROPERTIES OF DYEINGS PRODUCED WITH ANIONIC DYES ON CELLULOSE FIBRE MATERIAL AND CATIONIC FIBRE-REACTIVE COMPOUNDS

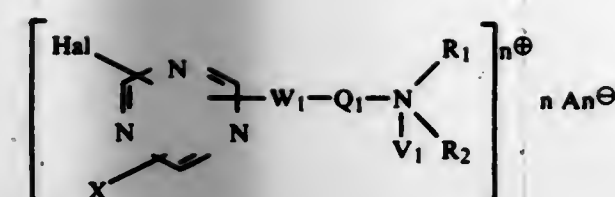
Pierre Perrin, Basel; Gert Hegar, Schönenbuch; Gerald Siegrist; Herbert Soller, both of Riehen, and Ulrich Horn, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 805,208, Jun. 9, 1977, Pat. No. 4,180,664. This application Jul. 16, 1979, Ser. No. 58,045

Claims priority, application Switzerland, Jun. 16, 1976, 7674/76

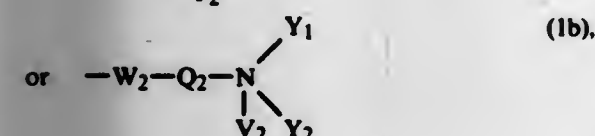
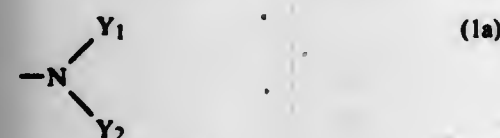
Int. Cl.³ D06M 13/46; D06P 3/60, 1/66; C07D 251/50
U.S. Cl. 8—866 17 Claims

1. A process for improving the color yield and the wetfastness properties of dyeings produced with anionic dyes on cellulose fibers, which process comprises treating said fibers before, during or after dyeing with a cationic fiber-reactive compound of the formula



wherein

Hal is a reactive halogen atom,
X is halogen, lower alkoxy, lower alkylthio, phenoxy, phenylthio, ---NH_2 , $\text{---NH(Y}_1\text{)}$ or a group of the formula



each of W_1 and W_2 independently is the direct bond, ---N(---Z)--- , $\text{---SO}_2\text{---N(Z)---}$ or ---CON(Z)--- ,
Z is hydrogen, lower alkyl or hydroxy-lower alkyl,
each of Q_1 and Q_2 independently is an aliphatic or cycloaliphatic radical, selected from the group consisting of alkylene of 2 to 4 carbon atoms and cyclohexylene, each of R_1 , R_2 , V_1 , V_2 , Y_1 and Y_2 independently is lower alkyl or benzyl or lower alkyl or benzyl each of which is substituted by halogen, hydroxyl or cyano,
 An^\ominus is the anion of an organic acid, and n is 1 or 2.

4,246,671

BUOY ANCHORING SYSTEM

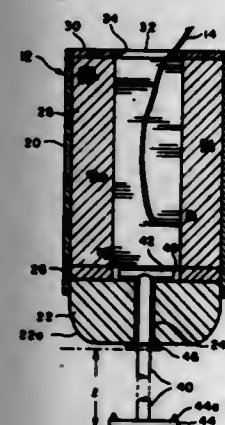
Richard C. Swenson, Carriere, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1979, Ser. No. 96,708

Int. Cl.³ B63B 21/52

U.S. Cl. 9—8 R.

11 Claims



1. An anchor device of the type wherein mooring line is paid out as the device falls through a body of water and automatically secures the line against further payout upon impact with the floor of the body of water, said device comprising:

- a cannister having top and bottom ends, a weight member at the bottom end of said cannister, and closure means having a top end of said cannister, said closure means having a central opening therein;
- a wound bale of mooring line confined in said cannister, said bale having top and bottom ends and characterized by a hollow core in registration with said opening whereby

said mooring line can be withdrawn through said opening from the inner layer of said bale;
a shaft extending through the bottom end of said cannister and projecting downwardly therefrom a distance substantially equal to the length of said bale between the top and bottom ends thereof, the upper end of said shaft being disposed adjacent the bottom end of said bale;
arm means extending radially from said upper end of said shaft; and
retainer means cooperable between said shaft and said cannister for holding said shaft against movement inwardly of said cannister while said device falls through said body of water, said retainer means being yieldable upon said impact to permit said shaft to move inwardly of said cannister into the hollow core of said bale so as to shift said arm means to a position adjacent the top ends of said bale and cannister, whereby said line will engage said arm means and wrap around said shaft with sufficient turns to frictionally secure said line.

4,246,672

AUTOMATIC INFLATABLE SAFETY WORK VEST

Hikaru Fujiyama, and Masayoshi Shimada, both of Kawagoe, Japan, assignors to Nippon Oil and Fats Company, Limited and Fujikura Rubber Works, Limited, both of Tokyo, Japan

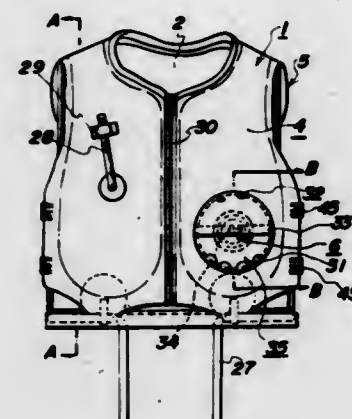
Filed Apr. 18, 1979, Ser. No. 31,145

Claims priority, application Japan, Jun. 30, 1978, 53-89255[U]

Int. Cl.³ B63C 9/18

U.S. Cl. 9—321

8 Claims



1. An automatically inflatable safety work vest in which a gas is automatically charged into a gas tight chamber forming a floating body upon contacting water, which comprises a back part of the vest formed of a non-floating material, a floating body provided at the front of the vest and connected with stretchable bands to the back part and having a gas tight chamber, a pillow integrally formed at the upper portion of the vest which communicates with said gas tight chamber, said pillow being folded over and having the free end thereof fixed releasably to the outer surface of said back part and a gas charging device in communication with said gas tight chamber and connected to the floating body through a connector, said gas charging device being a flat cylindrical vessel provided with a gas outlet at the bottom surface, a pair of electrodes positioned oppositely and fixed at a side wall near an upper cover portion of said cylindrical vessel, an electric switch provided at the upper portion of said cylindrical vessel and connected to said electrodes and consisting of a power supply circuit, a charging circuit and a switching circuit, and an inner cylindrical vessel provided at the lower portion of said cylindrical vessel and provided with a bottom plate having a plurality of projections at the outside, a cylindrical perforated side wall having at least one projection and an electric ignition device fixed at the center portion and connected to said switching circuit, said electric ignition device being in turn surrounded concentrically by, first, a gas generating solid agent and, second, a solid cooling agent.

4,246,673

BAND FOR OPERATING ON SHOES

Rudi Fichtner, Rosbach, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

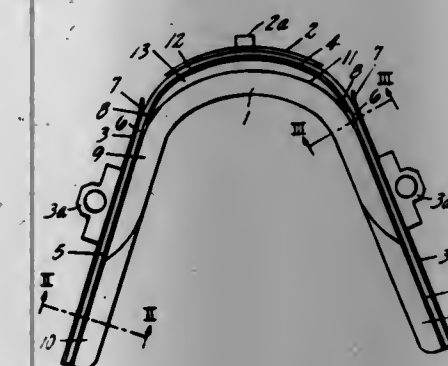
Filed Mar. 30, 1979, Ser. No. 25,538

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814509

Int. Cl.² A43D 21/12

U.S. Cl. 12—14.4

10 Claims



1. A toe band for utilization in a shoe lasting machine, said toe band comprising:
a radially innermost shoe-engaging band;
an outer reinforcement member comprising an arrangement of two steel bands with an elastic insert extending therebetween.

4,246,674

AUTOMATIC BOWLING LANE STRIPPER

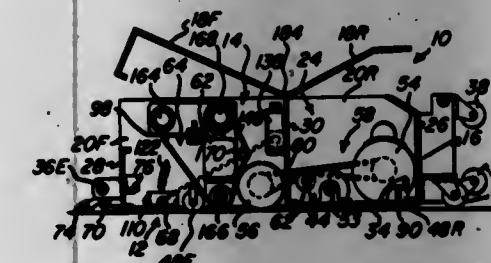
Donald E. Ingemann, Arvada; Eldon G. Sauer, Broomfield, and Ronald L. Smith, Boulder, all of Colo., assignors to Century International Corp., Golden, Colo.

Filed Sep. 10, 1979, Ser. No. 73,737

Int. Cl.³ A47L 11/282

U.S. Cl. 15—4

10 Claims



1. In combination in an automatic bowling lane cleaning apparatus: a carriage; a reversible drive mechanism housed within said carriage including a drive shaft and surface-engaging drive wheels mounted on said shaft operative to advance same along a predetermined course in a forward and reverse direction; solvent applicator means including a wettable pad extending transversely of the carriage mounted for movement relative thereto between an operative position extended into lane-engaging relation and an inoperative position retracted up into the carriage; solvent supply means including a solvent reservoir, a manifold positioned atop the wettable pad adapted to receive a charge of solvent and distribute same along the latter, and valve-controlled means interconnecting the reservoir and manifold operation upon actuation to control the delivery of solvent to the latter; applicator pad shifting means connected to the applicator pad operative upon actuation and deactuation to extend and retract same; first control means responsive to the position of the carriage along the lane during the forward run thereof to actuate the reversible drive means so as to commence the return run, and said first control means being effective upon completion of the forward run to act upon the shifting means in a manner to retract the applicator pad; residue removal means including a pick-up roller having an

absorbant surface in continuous side-to-side contact with the lane surface and drive means for rotating same, said roller being positioned and adapted to remove the solvent applied to the lane by the applicator pad during the forward run and both the solid and liquid residues remaining during the return run; solvent transfer means including an absorbant curtain, supply and storage rollers so arranged relative to one another and to the pick-up roller as to remove at least a substantial proportion of the liquid residues removed thereby in advance of their being redeposited on the lane surface; curtain drive means connected to the solvent transfer means for continuously moving a fresh area of the curtain across the pick-up roller; manually adjustable means connected to the solvent supply means operative to vary the interval during the forward and return runs of the carriage during which solvent is transferred to the applicator pad; and, second control means responsive to the return of the carriage to its starting point effective to shut-off the drive therefor along with those for the curtain and pick-up roller.

4,246,675

INDUSTRIAL VACUUM APPARATUS

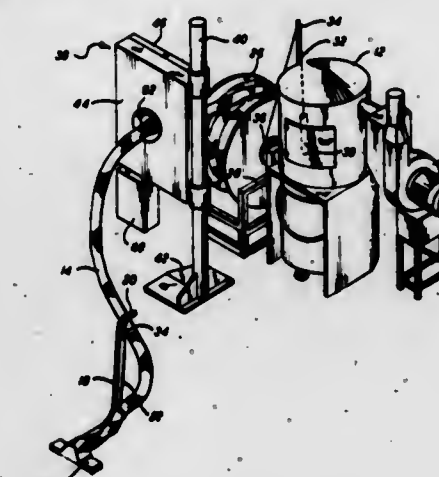
Dean V. Costanzo, Lakewood, N.Y., assignor to N.Y. 13037

Filed Jul. 27, 1979, Ser. No. 61,372

Int. Cl.³ A47L 9/24

U.S. Cl. 15—315

12 Claims



1. Industrial scale vacuum cleaning apparatus comprising, in combination:

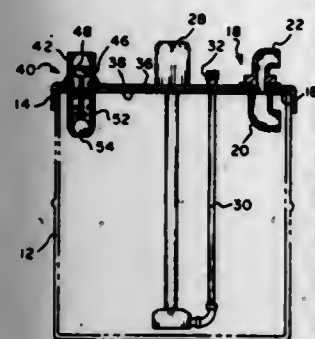
- (a) an elongated hose having intake and outlet ends;
- (b) manually engageable handle means connected to said intake end of said hose;
- (c) a rotatable drum upon which said hose may be wound and unwound;
- (d) receptacle means with which said outlet end of said hose communicates, for receiving and containing material passing through said hose;
- (e) blower means communicating with said receptacle means for creating a vacuum to draw material through said hose from said intake end to said outlet end and thence to said receptacle means;
- (f) at least three resilient roller members mounted for rotation about axes in a common plane and having peripheries tangent to a circle substantially equal in circumference to said hose;
- (g) said hose passing through said plane with its longitudinal axis normal thereto and frictionally engaged on its outer surface by each of said roller members;
- (h) reversible motor means for imparting rotation to all of said roller members at the same speed in either direction for selectively moving said hose toward or away from said drum; and
- (i) control means mounted upon said handle means for selective actuation by an operator thereof for causing movement of said motor means in either direction.

4,246,676

LIQUID COLLECTING VACUUM CONTAINER
Alexander Hallsworth, and Gary Hallsworth, both of 308 Cypress Ave., Lindenwold, N.J. 08021
Filed Aug. 15, 1979, Ser. No. 66,810
Int. Cl.³ A47L 9/10

U.S. Cl. 15—353

6 Claims



1. A liquid collecting vacuum container comprising:
 - a liquid and airtight container;
 - a cover for said container and means for sealing said cover to said container;
 - an inlet port mounted on said cover and being adapted to be connected to a hose means;
 - a vacuum port means mounted on said cover, said vacuum port means including a substantially cylindrically shaped portion extending upwardly from the top of said cover and at least one aperture passing through a side wall of said cylindrically shaped portion at a portion above the top of said cover, said vacuum port means being adapted to be connected to a vacuum source at a point above said aperture, and
 - a liquid level sensing means mounted on said cover beneath said vacuum port means, said liquid level sensing means including a ball float within said container, an elongated rod extending substantially vertically upwardly therefrom into said cylindrically shaped portion and a closure member carried by the upper end of said rod; said float, rod and closure member being movable in unison such that said aperture is closed by said closure member when liquid in said container is below a predetermined level and said closure member rises to open said aperture when the liquid level rises above said predetermined level.

4,246,677

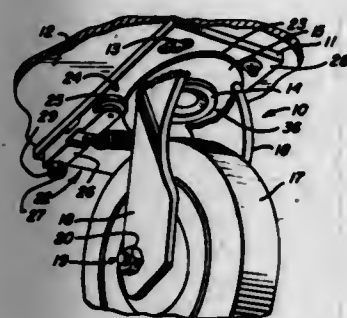
CART CASTER

Joe R. Downing, Caruthersville, Mo., and Leslie G. Williams, Dyersburg, Tenn., assignors to The Colson Company, Caruthersville, Mo.

Filed May 14, 1979, Ser. No. 38,572
Int. Cl.³ B60B 33/00

U.S. Cl. 16—35 R

2 Claims



1. A cart caster comprising:
 - a base;
 - a generally elliptical plate defining a midportion and having a peripheral elliptical camming surface including a pair of centering portions disposed at opposite ends of the minor axis of the cam plate, and rise portions extending away from each of said centering portions and progressively

further away from said midportion to the opposite ends of the major axis of the cam plate;
means mounting said cam plate to said base for rotation about an axis at said midportion;
a wheel;
a pair of wheel supports carried by said cam plate and rotatably mounting said wheel therebetween;
a cam follower engaging said camming surface; and
biasing means urging said cam follower against said camming surface to urge said cam plate rotatively about said axis of rotation to a position wherein said cam follower engages a centering portion, said cam follower comprising a carrier having a midportion and opposite end portions, a roller rotatively carried on one end portion of the carrier, and means pivotally mounting the opposite end portion of the carrier to said base, said biasing means comprising a spring acting on said midportion of said carrier to urge said roller against said camming surface at an angle to a line from said axis of rotation to said centering portion of the camming surface thereof.

4,246,678

ANIMAL FEEDER

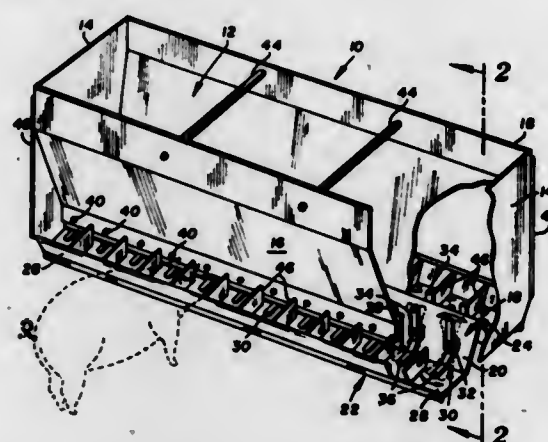
Gordon R. Cunningham, Hector, Minn., assignor to Anna E. Cunningham, Hector, Minn., a part interest

Filed Feb. 15, 1979, Ser. No. 12,345

Int. Cl.³ A01K 5/00

U.S. Cl. 119—54

7 Claims



1. An animal feeding apparatus comprising:
 - a pair of oppositely opposed vertical end walls;
 - an elongated feed hopper extending between said end walls, said hopper having two oppositely opposed relatively flat sidewalls which are fixedly attached to said end walls, at least one side wall sloping downwardly and inwardly;
 - a flow diverter means positioned at the bottom of said feed hopper and extending between said end walls, with at least one wall of the diverter means being inclined outwardly from top to bottom;
 - a feeding trough extending between said end walls, said feeding trough having a substantially horizontal base with an upwardly and outwardly extending front portion and a rear wall formed by said inclined wall of said flow diverter means;
 - agitator means in the form of a plurality of substantially L-shaped agitator members pivotally attached to said flow diverter means, each agitator member having a rigid upper terminal portion in the form of a flat bar extending substantially vertically into said feed hopper and spaced from the adjacent wall of the diverter means, means pivotally securing said vertical upper portion of the agitator member to said adjacent wall of the diverter means for swinging sidewise movement in the plane of said flat bar, each agitator member further having a lower portion forming a rigid continuation of said upper portion and extending downwardly and outwardly along the contour of the feeding trough and closely adjacent to the bottom of said feeding trough so that an animal coming in contact with said agitator when the trough is substantially empty

tends to cause sidewise movement of said lower portion and hence said sidewise movement of said upper portion.

4,246,679

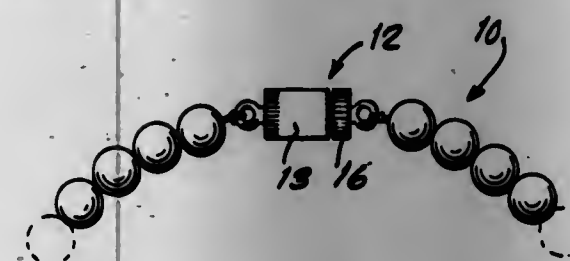
RELEASABLE CLASP FOR A NECKLACE OR THE LIKE
Edward J. Monett, Westfield, N.J., assignor to Roller Corporation of America, South Plainfield, N.J.

Continuation-in-part of Ser. No. 864,468, Dec. 27, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 953,479

Int. Cl.³ A44B 19/00

U.S. Cl. 24—230 R

14 Claims



12. A releasable clasp for a necklace or the like comprising a rigid housing having an open end, a holder supported by said housing therewithin, said holder comprising a web of flexible material having a hole therethrough adjacent said open housing end, said housing and holder constituting a first clasp part, and a shaft of rigid material having an enlarged head at one end thereof, said shaft constituting a second clasp part, said enlarged head being sized so that it stretches said hole and passes therethrough with the application of a predetermined joining force and is withdrawn therefrom only upon application of a preestablished withdrawal force, so as to releasably join together said two clasp parts, in which said holder is of high tear strength and long flex life stretchable material, said web is transverse to and joined to a wall structure of a material the same as said web, said web is intermediate the ends of said wall structure, the wall thickness of said wall structure is greater on one side of said web than on the other side of said web, said web is positioned closer to that end of said wall structure of greater wall thickness than to the other end, and said holder is of increasing wall thickness proceeding from the end thereof closer to said web toward said web.

4,246,680

JEWELRY CLASP

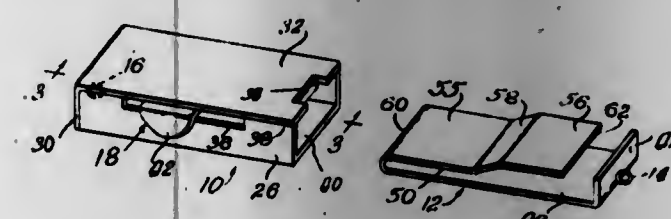
Ernest F. Gray, 3246 San Amadeo - Apt. 0, Laguna Hills, Calif. 92653

Filed Nov. 26, 1979, Ser. No. 97,139

Int. Cl.³ A44B 19/00

U.S. Cl. 24—230 R

4 Claims



1. A clasp comprising, two main parts
 - (a) a receptor,
 - (b) a spring clip,
 the receptor having an opening at one end and a downwardly directed stop element at the top of the opening, the spring clip having an end insertable into the opening, and including a bottom element and a spring finger return-bent about a curved interconnecting element, the spring finger being self-biased to an upper locking position in which it engages said stop element when the spring clip is in position in the receptor in response to its insertion thereinto,

and thereby releasably locking the spring clip in place in locking position, receptor including a release member of small mass extending transversely therethrough and having ends exposed laterally of the receptor for gripping thereof by the fingers of the user, and slideable longitudinally of the receptor, from a retracted inactive position to an advanced operative position, and in so sliding, operative for camming the spring finger out of locking position, and the spring finger being made up of end portions that are substantially straight longitudinally, and an intermediate portion inclined at an abrupt angle to the longitudinal direction of the end portions, forming an abutment operative, pursuant to insertion of the spring clip into the receptor and consequent engagement with the release member, for moving the release member to retracted position, but functioning as a camming element in response to movement of the release member thereagainst and thereby enabling the release member to release it from locking position.

4,246,681

METHOD FOR REMOVING FASTENER ELEMENTS FROM A SLIDE FASTENER CHAIN AND APPARATUS THEREFOR

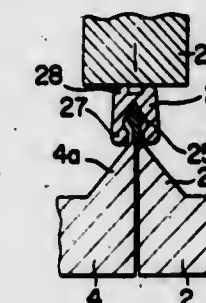
Takehiko Yamada, Yao, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,922

Claims priority, application Japan, Nov. 16, 1978, 53/141607
Int. Cl.³ B23P 19/04

U.S. Cl. 29—426.4

5 Claims



1. A method of removing a fastener element from a slide fastener chain by dividing the fastener element forcibly into two pieces while the carrier tape of the fastener chain is firmly gripped at the boundary with the leg portion of the fastener element, characterized in that said dividing of the fastener element is effected by forcibly pressing the head portion of the fastener element toward the leg portion thereof whereby the bifurcated leg portion securely attached to the carrier tape is widened to come off the stringer core of the carrier tape until the fastener element is cracked at the head portion thereof into two pieces.

4,246,682

METHOD OF MAKING CATHODE SUPPORT NICKEL STRIP

George L. Davis, Coulsdon, England, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Dec. 6, 1978, Ser. No. 966,913

Claims priority, application United Kingdom, Dec. 6, 1977, 50723/77

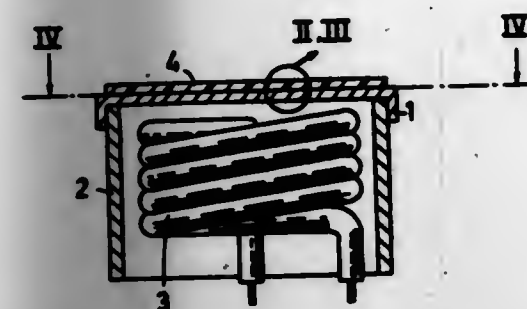
Int. Cl.³ H01J 9/02

U.S. Cl. 29—25.11

12 Claims

1. A method of making a cathode support comprising the steps of preparing a mixture comprised of nickel powder and nickel coated particles of an alloy comprised of nickel and an

activator capable of reducing barium oxide to barium, compacting the mixture and sintering the compacted mixture at a



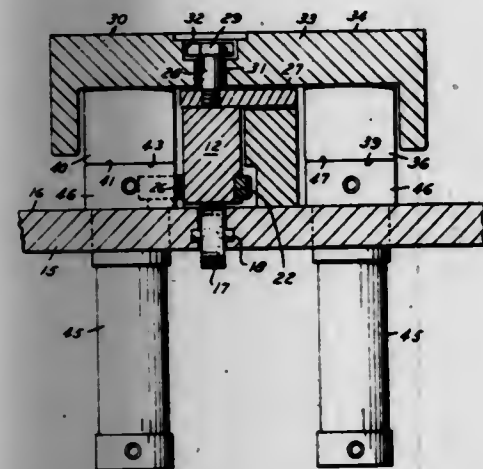
temperature between 900° and 1100° C. to thereby form said support.

4,246,683 MACHINE TOOL

Andrew V. Siarto, West Bloomfield, Mich., assignor to Siarto Machine & Tool Co., Inc., Novi, Mich.
Continuation-in-part of Ser. No. 801,181, May 27, 1977, abandoned. This application Dec. 22, 1978, Ser. No. 972,300
Int. Cl.³ B23P 23/00

U.S. Cl. 29—38 C

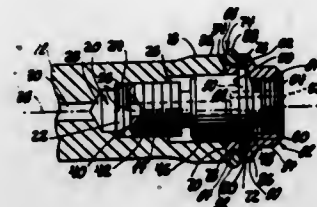
1 Claim



1. A machine tool having a plurality of machining stations and a combined loading and unloading station located adjacent a horizontal support surface, an annular gear overlying said support surface, a plurality of rollers, one for each station, engaging the undersurface of the gear to support said gear for rotation about a vertical axis, a plurality of arcuate recesses in the undersurface of the gear corresponding in number to the number of said machining and loading and unloading stations, each of said recesses receiving a roller therein to accommodate lowering of said gear while supported on said rollers, a pallet at each station for supporting a part to be machined at a machining station, means interconnecting each pallet and said gear for joint rotational and vertical movement, yet accommodating limited relative vertical and horizontal movement therebetween, a pallet abutment surface located adjacent each of said stations and positioned above the support surface and in the path of vertical movement of the corresponding pallet as said gear is lowered, each pallet first engaging the corresponding abutment surface as each roller enters a recess upon the lowering of said gear to thereby position the pallets in alignment with said stations, said pallets being retained on said abutment surfaces independently of said gear as the gear is lowered, the interconnecting means accommodating such retention of each pallet on the corresponding abutment surfaces.

4,246,684
BURNISHING TOOL
Edison D. Barker, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 1, 1979, Ser. No. 62,672
Int. Cl.³ B21C 37/30
U.S. Cl. 29—90 R

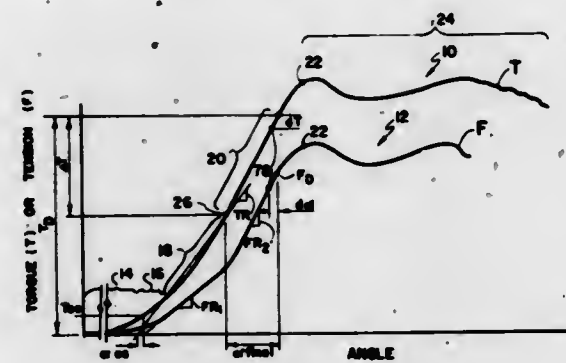
5 Claims



1. A burnishing tool comprising:
a tool shank having one end adapted to be driven by a suitable tool drive means and the other end formed with an open recess including one part of a fastening means,
a draw bolt having an end in said open recess comprising another part of said fastening means and a headed end adapted to receive a draw bolt drive tool such as a wrench,
a compression ring secured to and about said draw bolt intermediate said draw bolt ends and having an axially tapered outer peripheral surface tapering in the direction of said draw bolt threaded end,
and a burnishing ring received about said draw bolt compression ring and axially engaging said tool shank other end, said burnishing ring having an outer diameter greater than the maximum outer diameter of at least the portion of said tool shank adjacent said tool shank other end and adapted to be inserted in a bore to be burnished, said burnishing ring outer diameter also being greater than the maximum outer diameter of said draw bolt, said burnishing ring having an inner diameter axially tapered surface mating with said axially tapered outer peripheral surface of said compression ring,
said draw bolt when being tightened holding said compression ring tightly within said burnishing ring, said burnishing ring having a precise desired outer diameter for burnishing a bore.

4,246,685
TENSION CONTROL OF FASTENERS
Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,350
Int. Cl.³ B23P 19/06
U.S. Cl. 29—407

2 Claims

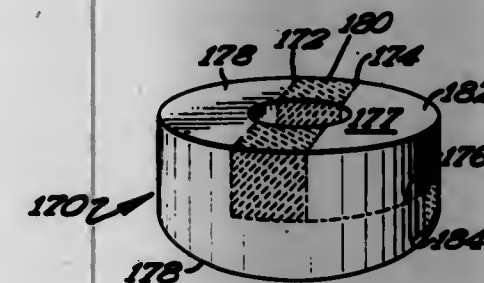


1. A process for sequentially tightening a multiplicity of

shear joints including at least one threaded fastener in which a substantial part of the expected external load lies in a plane perpendicular to the fastener, comprising
applying torque and imparting rotation to the fastener;
sensing applied torque and rotation of the fastener;
determining, while tightening, a shut off parameter variable from one joint to the next sufficient to tighten the fastener to a predetermined final stress value;
terminating tightening of the fastener in response to the shut off parameter;
restarting rotation of the fastener in a tightening direction in the event that the applied torque adjacent the termination of tightening is below a first predetermined value; and p1 finally terminating rotation of the fastener in response to a second predetermined torque value greater than the first value.

4,246,686
METHOD FOR FORMING AN ATTACHING, ROTATIONAL, SELF-ALIGNMENT APPARATUS
Gerald A. Specktor, 409 Cleveland Ave. South, St. Paul, Minn. 55105
Division of Ser. No. 722,825, Sep. 13, 1976, Pat. No. 4,138,877, which is a continuation of Ser. No. 550,378, Feb. 18, 1975, abandoned. This application Jan. 4, 1979, Ser. No. 869
Int. Cl.³ B23P 17/00, 13/04
U.S. Cl. 29—416

7 Claims

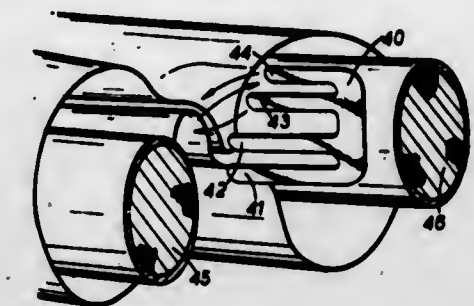


1. Method for forming apparatus, for rotation about a vertical axis, for attaching accessories to a support surface of a repairing and straightening apparatus, for allowing rotational self-alignment of the accessories about the vertical axis, and for allowing the accessories to be substantially in line with the counterforce, with the support surface being of a finite thickness and including at least one regularly shaped aperture passing vertically through the support surface, comprising the steps of:

- providing a thick wall tubing having a top, having a diameter substantially equal to but slightly less than the diameter of the support surface aperture, and having a height greater than the thickness of the support surface;
- first cutting the thick wall tubing along a chord of the circular cross section of the thick wall tubing extending into the thick wall tubing from the top to a depth from the top of the thick wall tubing substantially equal to but slightly greater than the thickness of the support surface;
- second cutting the thick wall tubing spaced from and parallel to the first cut and extending into the thick wall tubing from the top to a depth equal to the depth of the first cut;
- third cutting the thick wall tubing intersecting with the first and second cuts at a depth from the top of the thick wall tubing substantially equal to but slightly greater than the thickness of the support surface;
- removing the material located between the first and second cuts;
- attaching together the remaining portions of the thick wall tubing into face to face contact along the first and second cuts; and
- attaching the top of the thick wall tubing to the bottom surface of the accessory.

4,246,687
BRANCH-OFF METHOD
Jean-Marie E. Nolf, Beauvechain, Belgium, assignor to N.V. Raychem S.A., Kessel, Belgium
Filed Apr. 3, 1979, Ser. No. 26,573
Claims priority, application United Kingdom, Apr. 4, 1978, 13123/78
Int. Cl.³ B29C 27/00; B23P 11/02
U.S. Cl. 29—447

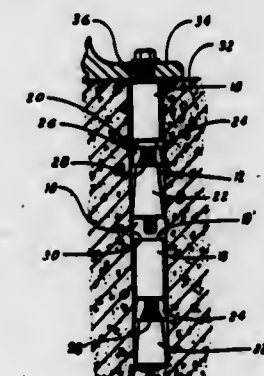
23 Claims



1. A method of forming a branch-off seal between a heat-shrinkable sleeve and at least two substrates, which comprises threading an end portion of the sleeve which is positioned between the two substrates about the prongs of a fork member so that, on recovery, the heat-shrinkable material tightens within the prongs of said fork member and at least two of the prongs of the fork member about the outer surfaces of the sleeve surrounding the substrates so as to retain the fork member firmly in position.

4,246,688
METHOD OF ANCHORING IN CONCRETE
Grant S. Risdon, 21 Meadow Pl., Carmel Valley, Calif. 93924
Filed Oct. 6, 1978, Ser. No. 949,218
Int. Cl.³ B23P 19/02
U.S. Cl. 29—426.5

3 Claims



1. A method of anchoring an object upon a rigid structure comprising:
forming a shaft in said structure,
inserting into said shaft an anchor having an elongated annular core no greater than half the length of said shaft and interiorly threaded throughout its length said core having an upper section of cylindrical outer configuration of a diameter sized to fit within the diameter of said shaft and forming a transverse overhanging shoulder at its lower extremity and a lower section shaped as a frustum of a cone converging upward to meet said transverse overhanging shoulder a malleable metal expansion device formed of a pair of semicircular, semicylindrical half ring sections having a uniform inner diameter and a uniform outer diameter throughout their lengths encompassing said lower section below said shoulder,
engaging an elongated threaded fastener with said object and threadably engaging said fastener with said core, whereby upward force on said core draws said core slightly upward and increases radially outwardly directed force on said expansion device to immobilize said anchor in said shaft,

tightening said fastener into said core to take up any slack that develops from upward movement of said core in said bore, and
ultimately dislodging said anchor by driving said core further downward into said shaft a distance at least equal to the length of said core, whereby said shoulder carries said expansion device with said core as said core is driven downward.

4,246,689

METHOD OF PRESS ASSEMBLY OF TRACK LINKS ON TRACK PINS

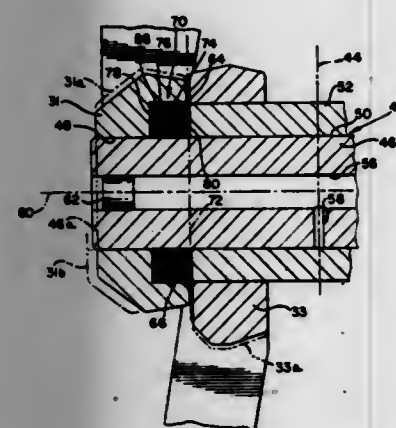
Jack M. Deli, Wheaton, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 737,967, Nov. 2, 1976, Pat. No. 4,112,574.
This application Aug. 28, 1978, Ser. No. 937,291

Int. Cl.³ B23P 19/00

U.S. Cl. 29—436

7 Claims



1. Method of rotary seal bearing press assembly of separate parts comprising a track pin to receive links by press fitting and having counterbored track pin links ready to be so pressed, and a pin pushing element therebetween in preassembly having each end of the bushing element in the path of the counterbore at that end and acting as spacer (52) for the assembly, said method characterized by the steps of:

interposing rotary seal-bearing-spacer-bushings of composite material in the preassembly in the paths between the bushing element ends and confronting base of each counterbore, each said spacer-bushing formed in one piece from pluralities of originally discrete laminae of elastomeric and nonextensible material arranged in alternating layers, each of the laminae of each plurality being substantially incompressible whereby the entire spacer-bushing will be substantially incompressible to compression forces with force up to a substantial magnitude; and

pressing together the assembly establishing said link-pin press fit points at final points on the pin permanently determined by the combined axial length of the spacer (52) and its interposed spacer-bushings (70) at its respective ends, maintaining substantial axial bearing preloading to provide a slip free drive between said track pin links and said pin bushing spacer (52).

4,246,690 METHOD OF MAKING A HOSE CLAMP WITH TANGENTIAL SCREW

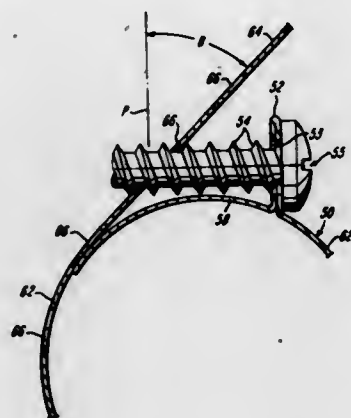
Alan F. Meckstroth, 2357 Shelterwood Dr., Dayton, Ohio 45409, and James F. Pease, 5805 Folkestone Dr., Dayton, Ohio 45459

Continuation-in-part of Ser. No. 885,675, Mar. 13, 1978, Pat. No. 4,173,816, which is a division of Ser. No. 703,760, Jul. 9, 1976, Pat. No. 4,078,281, Continuation-in-part of Ser. No. 565,545, Apr. 7, 1975, abandoned. This application Feb. 5, 1979, Ser. No. 9,455

Int. Cl.³ B23P 19/00

U.S. Cl. 29—526 R

10 Claims



1. A method of making a hose clamp having a part-cylindrical band portion integrally connecting a first ear portion and a second ear portion, comprising the steps of folding one end portion of an elongated metal strip to form a folded metal first ear portion with an integral tongue portion projecting therefrom, bending the strip to form the part-cylindrical band portion, forming a second end portion of the strip to define a second ear portion adapted to be bent relative to the band portion, forming holes within the first and second ear portions, extending a screw through the holes within the ear portions with the screw threads engaging the second ear portion, and cocking the second ear portion at a substantial angle relative to a reference plane perpendicular to the axis of the screw and in converging relation with the first ear portion for producing a positive non-stripping engagement of the second ear portion with the screw threads.

5. A method of making a hose clamp having a part-cylindrical band portion integrally connecting a first ear portion and a second ear portion, comprising the steps of bending an elongated metal strip at longitudinally spaced locations to form a first ear portion, a second ear portion and a tongue portion, forming holes within the first and second ear portions, bending the strip to form the part-cylindrical band portion and to position the tongue portion between the ear portions, extending a screw through the holes within the ear portions with the screw threads engaging the second ear portion, and forming the second ear portion to cock at a substantial angle relative to a reference plane perpendicular to the axis of the screw and in converging relation with the first ear portion in response to tightening the screw for producing a positive non-stripping engagement of the second ear portion with the screw threads.

4,246,691

TRACTION DEVICE

Leroy A. Ulmer, 11993 Lockart Rd., Philadelphia, Pa. 19116

Filed Jul. 23, 1979, Ser. No. 59,542

Int. Cl.³ B60C 27/00

U.S. Cl. 29—526 R

12 Claims

1. A traction device for use with a vehicle wheel supported by wheel lugs and having a tire comprising:

a base having openings for the reception of at least two, but less than all, of the lugs for supporting the base so as to leave at least one lug supporting the wheel on its wheel base while mounting the base onto the wheel,

spaced radial arms supported by the base and each having an end adapted to extend beyond the outer periphery of the tire and protrude into an icy surface, each of said ends adapted to lie in a substantially vertical plane adjacent the outer side wall of the tire.

12. A method of mounting the traction device of any of claims 1 to 4 onto a wheel, comprising the steps of



removing two or more but less than all of the lug nuts from the lugs, leaving at least one lug nut undisturbed and supporting the wheel on its wheel base, mounting the traction device on the lugs from which the nuts have been removed, and replacing the nuts.

4,246,692

MOS INTEGRATED CIRCUITS WITH IMPLANTED RESISTOR ELEMENTS

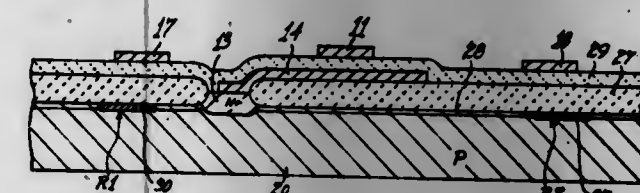
G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1976, Ser. No. 691,252

Int. Cl.³ B01J 17/00

U.S. Cl. 29—571

12 Claims



1. A method of making resistor elements in N-channel, silicon-gate MOS integrated circuit devices, comprising the steps of:

growing a thin silicon oxide coating on a surface of a monocrystalline silicon slice containing a first conductivity type determining impurity;
covering the thin silicon oxide coating with a thin layer of silicon nitride;
removing the silicon nitride coating in a pattern to expose selected resistor areas;
implanting a second conductivity-type determining impurity opposite the first type into a shallow surface-adjacent region of the silicon in said resistor areas by exposing the slice to an ion beam, such implanting being done through said thin silicon oxide coating;
subjecting the slice to an elevated temperature in an inert atmosphere to raise the concentration of the first impurity below said surface-adjacent region;
oxidizing the slice at an elevated temperature for a time exceeding that used in the prior step to create a thick silicon oxide coating in said exposed areas and covering the resistor areas;
forming an electrical connection to each of a plurality of spaced portions of the implanted region in said resistor area;

removing the remaining silicon nitride from the surface of the slice; and
forming MOS transistors on said slice by diffusing or implanting into the slice said second conductivity-type determining impurity creating regions in the slice contiguous to said resistor areas.

4,246,693

METHOD OF FABRICATING SEMICONDUCTOR DEVICE BY BONDING TOGETHER SILICON SUBSTRATE AND ELECTRODE OR THE LIKE WITH ALUMINUM

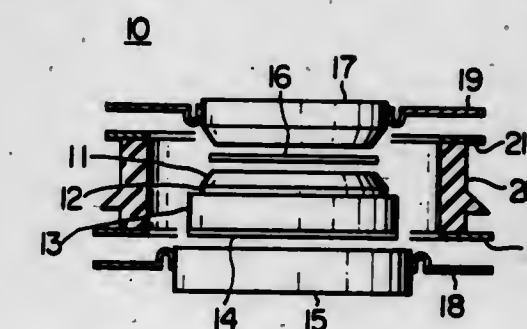
Jin Onuki, Ko Soeno, both of Hitachi; Masateru Suwa, Ibaraki, and Hisakichi Onodera, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 20, 1979, Ser. No. 32,018

Claims priority, application Japan, Apr. 28, 1978, 53/49971
Int. Cl.³ H01L 21/22, 21/28, 21/306

U.S. Cl. 29—580

15 Claims



1. In a method of fabricating a semiconductor device wherein a silicon substrate having at least in part an n-type conductivity is bonded to a second silicon substrate or to an electrode with an aluminum solder by heating said silicon substrate, aluminum solder, and second silicon substrate or electrode, whereby a p-type regrowth layer is formed on the n-type conductivity surface of said silicon substrate, thereby increasing the forward voltage drop of the semiconductor device, the process of substantially preventing the increase in the forward voltage drop of said semiconductor device comprising forming in the bonding surface of n-type conductivity of said silicon substrate which is to be bonded to said second silicon substrate or to said electrode, prior to said heating, recesses each of which has a bonding surface of a higher order plane index than that of said bonding surface.

4,246,694

METHOD OF MAKING LINEAR MOTOR STATOR

Hans-Georg Raschbichler, Ottobrunn; Otto Breitenbach, Nuremberg; Jürgen Böll, Nuremberg, and Josef Uttenreuther, Nuremberg, all of Fed. Rep. of Germany, assignors to Kabel- und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hanover and Thyssen Industrie Aktiengesellschaft, Essen, both of, Fed. Rep. of Germany

Filed May 26, 1978, Ser. No. 909,794

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721905

Int. Cl.³ H02K 15/04

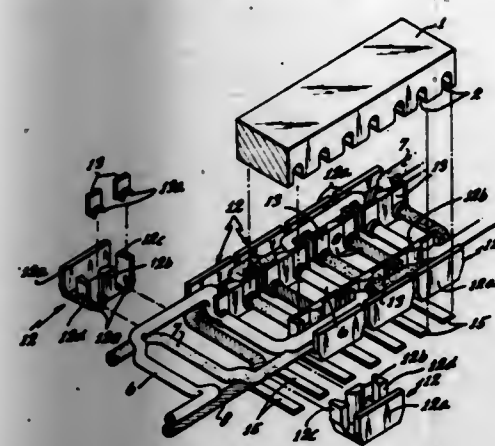
U.S. Cl. 29—596

4 Claims

1. Method of making a stator for a linear motor, comprising the steps of:

providing a dummy which includes spacer blocks separated by parallel grooves, resembling in length and width respectively the length and width of grooves in a stator core;
using the dummy to establish windings by placing three different cables into the grooves, each in a meandering pattern, whereby each of the cables is placed into grooves separated from each other by respective two grooves, and each of the three cables being placed into different

grooves, thereby forming loops as coil ends which overlap each other adjacent to the blocks; tying the loops of the cables together;



removing the cables as placed and as tied into a uniform and coherent configuration, from the dummy and as being held together as the result of the tying step; and placing the cables as removed into parallelly extending grooves of a stator core.

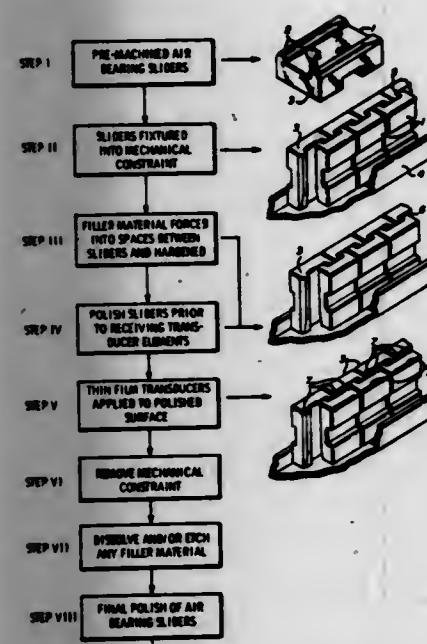
4,246,695

TWO RAIL SLIDER ASSEMBLY PRODUCTION TECHNIQUE FOR MAKING THIN FILM HEADS
Robert T. Tsai, Hillsborough, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Aug. 31, 1979, Ser. No. 71,434
Int. Cl.³ G11B 5/42

U.S. Cl. 29—603

11 Claims



1. A method of simultaneously manufacturing a plurality of read/write inductive transducers comprising:
 - a. pre-machining a plurality of air bearing sliders;
 - b. mechanically constraining a plurality of said air bearing sliders in a fixture with the surfaces to receive read/write magnetic transducers facing outward from said fixture;
 - c. filling spaces between said sliders with suitable filler material;
 - d. hardening said filler material;
 - e. polishing said transducer receiving surfaces;
 - f. applying read/write magnetic transducers simultaneously to said sliders; and,
 - g. removing said filler material from said sliders.

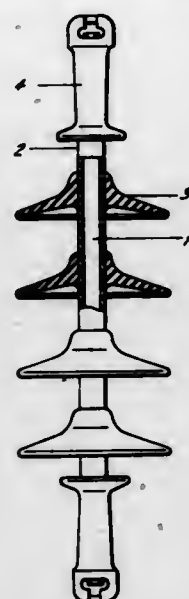
4,246,696
PROCESS FOR MANUFACTURING OPEN-AIR COMPOUND INSULATORS

Ewald Bauer, Wunsiedel, and Martin Kuhl, Selb, both of Fed. Rep. of Germany, assignors to Rosenthal Technik AG, Bavaria, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,865
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746870

Int. Cl.³ H01B 19/04, 19/00, 17/04
U.S. Cl. 29—631

12 Claims



WHAT IS CLAIMED IS:

1. A process for manufacturing a sparkoversafe, open air compound insulator consisting essentially of surface treating a prefabricated glass fiber rod with a silane, extruding a rubber layer on said treated rod, strengthening said rubber layer, assembling radially preexpanded prefabricated screens to said rod and vulcanizing said assembly.

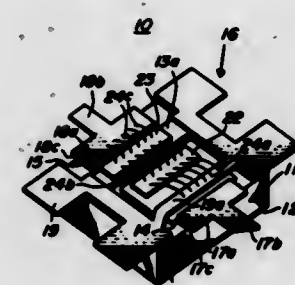
4,246,697
METHOD OF MANUFACTURING RF POWER SEMICONDUCTOR PACKAGE

John M. Smith, Glen Ellyn, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 736,015, Oct. 27, 1976, abandoned, which is a division of Ser. No. 516,054, Oct. 18, 1974, Pat. No. 3,996,603. This application Apr. 6, 1978, Ser. No. 894,053

Int. Cl.³ H01R 43/02; H05K 3/34
U.S. Cl. 29—827

6 Claims



1. A method for manufacturing semiconductor device packages comprising the steps of:
 - metalizing with substantially gold free metalizations the bottom surface and a plurality of isolated top surface areas on a plurality of ceramic carriers;
 - bonding a number of finger projections of a substantially gold free metal lead frame strip to a number of said top metalized areas on each of said plurality of ceramic carriers to form an assembly electrically and mechanically connected by said lead frame strip;
 - then electroplating with gold, simultaneously, said lead frame strip and said number of bonded top metalized areas on said plurality of ceramic carriers while said number of

top metalized areas of said plurality of carriers are still mechanically and electrically bonded to said lead frame strip;
the method including prior to the step of bonding said gold free lead frame strip to said number of gold free metalizations, the steps of:
cladding said substantially gold free metal lead frame strip with an exterior silver cladding,
providing a nickel exterior overcoat to said top surface gold free metalizations, and
wherein said bonding step further comprises bonding said silver cladding to said top metalization nickel exterior overcoat.

4,246,698

SUTURE REMOVER

Jeffrey I. Lasser, Purchase, and Francisco H. Aleixo, Tarrytown, both of N.Y., assignors to Laesch Instruments Corp., North Tarrytown, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,318
Int. Cl.³ B26B 13/00

U.S. Cl. 30—134

11 Claims



1. In a suture remover comprising a shearing portion having a cutting edge, and a blade having a cutting section, at least one of said edge and said section being adapted for movement toward and away from the other along a cutting plane for shearing contact with a suture to be cut,
an elongated suture gripping element having a contact area and connected to said shearing portion at an end of the element remote from said contact area, said gripping element being substantially planar along its elongation and resiliently deformable for gripping the suture whereby relative movement of said cutting edge and cutting section along said cutting plane for shearing contact with the suture during operative use of the suture remover causes deformation of the gripping element such that its contact area is resiliently moved along said cutting plane and substantially perpendicular to the elongation of the gripping element,
said suture gripping element further including at least a bend in the plane of its elongation and adjacent said end remote from the contact area for facilitating the distribution of said deformation of the element between said bend and said end connection of the element during operative use of the suture remover so as to prevent premature deterioration of said connection and thereby extend the useful operational life of the suture remover.

4,246,699

NUT CUTTING OR NUT BREAKING TOOL
Cliff Van Riper, P.O. Box 6897, San Jose, Calif. 95150

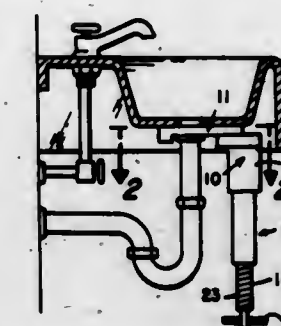
Filed Jul. 17, 1978, Ser. No. 925,275
Int. Cl.³ B26B 17/02

U.S. Cl. 30—182

7 Claims

1. A nut cutting tool comprising:
 - (a) a cutting head;
 - (b) a yoke mounted on said cutting head for embracing a nut to be cut;

- (c) a fixed cutting blade mounted on said yoke for engaging a nut to be cut;
- (d) a movable cutting knife;
- (e) a first named guideway formed on said cutting head for supporting and guiding said movable cutting knife along a cutting plane toward said fixed cutting blade and nut to be cut;
- (f) a tubular handle on one end of said cutting head opposite said yoke and having an axis extending at right angles to the cutting plane of the movable cutting knife;
- (g) pressure exerting means movable axially of and within said tubular handle;



- (h) a second named guideway formed in said tubular handle adjacent the non-cutting end of said cutting head and in communication with the first named guideway; and
- (i) a cam block arranged in said second named guideway for movement therein by said pressure exerting means, said cam block having a cam surface thereon disposed to face the after end of said movable cutting knife for wedgingly driving said movable cutting knife toward a nut to be cut in response to the operation of said pressure exerting means.

4,246,700

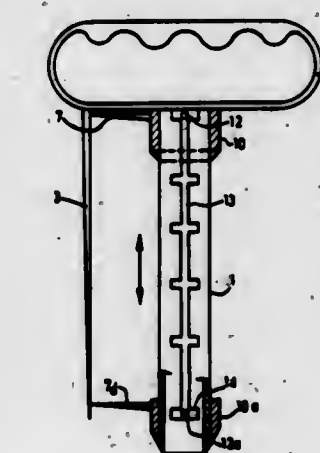
APPARATUS FOR CUTTING OUT AND EXTRACTING THE PULP OF A FRUIT OR VEGETABLE WITHOUT RUINING ITS PEEL OR RIND

Serge Coulon, 46, Cours des Dames, 17000 La Rochelle, and Louis Amour, 54, rue Pasteur, 44340 Boussais, both of France

Filed Mar. 30, 1979, Ser. No. 25,741
Claims priority, application France, Apr. 5, 1978, 78 10990; Feb. 21, 1979, 79 04457

Int. Cl.³ A47J 25/00; B26B 3/00
U.S. Cl. 30—300

6 Claims



1. A device for cutting out and extracting pulp of a fruit or vegetable, having an outer shell (including its peel or rind), a base and a central core, without severing the base from the rest of the outer shell, the device comprising a coring tube or sleeve having a cutting edge for severing the central core of the fruit or vegetable from its pulp, a shank having a handle on one end and carrying or integral with the coring tube or sleeve for rotation with the handle, cutting means (carried by said handle and spaced from said tube or sleeve) for severing the pulp from

the outer shell (including the peel or rind) and a radial cutting blade carried by said coring tube or sleeve and adapted for optional placement in inoperative position or in position to cut the pulp on at least one plane perpendicular to the axis of the coring tube or sleeve as said coring tube or sleeve is rotated about its axis.

4,246,701

SAFETY BRAKING DEVICE FOR A PORTABLE POWER SAW

Rolf A. G. Johansson, Ummeryd, Sweden, assignor to Jonsereds AB, Sweden

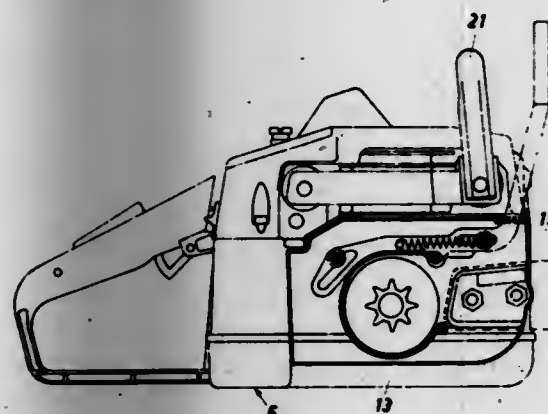
Filed May 14, 1979, Ser. No. 38,915

Claims priority, application Sweden, May 18, 1978, 7805690

Int. Cl.³ B27B 17/00

U.S. Cl. 30—382

20 Claims



1. A safety braking device for a portable power saw, particularly a chain saw of the type incorporating a brake drum coupled to the drive shaft of the power saw, a flexible brake element disposed about at least a part of said brake drum, and a control handle, which cooperates with an actuating member, retained in operating position against the action of a spring and which is releasable by influence of the control handle for actuation of the brake, characterized thereby, that the actuating member is designed as an oblong, flat sheet metal member having one first end connected to the control handle under an angle, the actuating member being adapted to cooperate with at least one first guide designed to allow a certain degree of displacement of the actuating member in its longitudinal direction and also to make possible a pivoting movement, whereby its second end, turned away from the control handle, is pivotable from said operating position, in which the actuating member is detained by a spring due to cooperation between at least a second guide and a latch and to a release position in which the actuating member is displaced by the spring during simultaneous tightening of the brake element about the brake drum.

4,246,702

APPARATUS FOR USE IN DRAWING DESIGNS

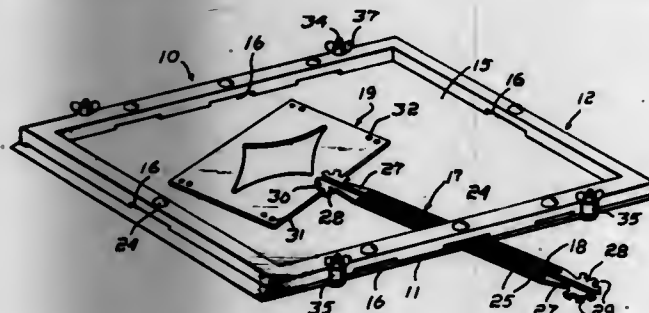
Frank R. Burt, Box 296A, Jay, Me. 04239

Filed Nov. 29, 1979, Ser. No. 98,542

Int. Cl.³ B43L 13/20

U.S. Cl. 33—174 B

13 Claims



1. Apparatus for use in drawing designs, said apparatus including a tray having vertical marginal walls and dimensioned to receive and hold a sheet of paper of predetermined

dimensions, said walls having lengthwise slots, a wand of transparent stock extendable through a selected one of said slots over a paper sheet positioned in the tray with an end outside the tray to serve as a handle, means detachably connecting said wand to the wall having the selected slot when an end of the wand is inserted therethrough and enabling the connected wand to be slid and pivoted relative thereto, a transparent stencil plate, and means detachably connecting said plate to the end of the wand within the tray, said wand of such length that the stencil plate may be moved over a substantial portion of the sheet.

4,246,703

ELECTRONIC DRAFTING INSTRUMENT WITH DIGITAL READOUT OF DISPLACEMENT

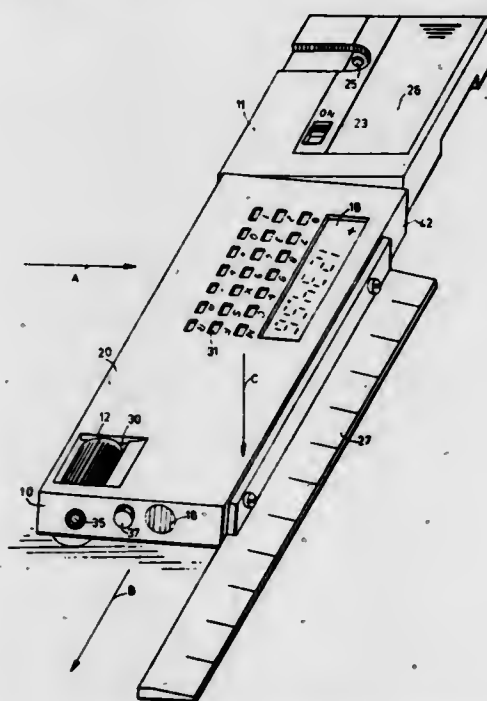
McLous Robinet, 214 S. Elmwood Ave., Oak Park, Ill. 60302

Filed Jun. 28, 1979, Ser. No. 52,805

Int. Cl.³ B43L 13/02

U.S. Cl. 33—430

19 Claims



1. An integral self-measuring electronic drafting instrument comprising:
a chassis having a straight edge portion;
a rolling means mounted to the chassis by a shaft and bearings such that the rolling means rotates when the chassis is moved over a drawing media;
a direction sensing displacement sensor which is fixed to the chassis and is driven by the rolling means and produces electronic pulses whose number are proportional to the displacement (from a selected reference point) of the rolling means;
a transmission means by which rotary motion from the rolling means is communicated to the direction sensing displacement sensor;
an electronic pulse processing means which is housed in the chassis and processes pulses from the direction sensing displacement sensor such that the number of pulses accumulated increases when the chassis is moved in one direction and the number of pulses accumulated decreases when the chassis is moved in the opposite direction, the pulse processing means also being capable of modifying the number of pulses, the modification being multiplication and division by any chosen number and, the modification being other mathematical operations;
a digital display means which is mounted in the chassis and continuously reads out the accumulated number of pulses from the pulse processing means;
a means mounted on the chassis for selecting the mathematical operation and the number by which the electronic pulse processing means will modify the accumulated num-

ber of pulses before they are read out on the digital display means; and
a contact sensor means and annunciator means, both mounted to the chassis such that a warning is announced when the rolling means is lifted from the drawing media.

4,246,704

PROCESS AND PLANT FOR DRYING SOLID WOOD IN PLANKS OR SEMIFINISHED PRODUCTS BY MEANS OF A SUPERHEATED STEAM SYSTEM

Vincenzo Pagnozzi, Fraz. Rocchetta, and Ernesto G. Pagnozzi, Via Camponovo, both of Cairo Montenotte (Savona), Italy

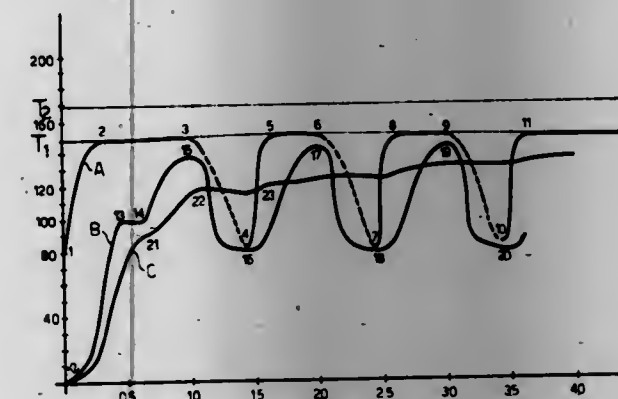
Filed Mar. 28, 1979, Ser. No. 24,549

Claims priority, application Italy, Apr. 13, 1978, 67820 A/78

Int. Cl.³ F26B 5/04

U.S. Cl. 34—16.5

16 Claims



1. A process for drying solid wood, particularly in the form of planks or semifinished products, by means of superheated steam, comprising the alternating steps of heating the wood above 100° C. and cooling the wood below 100° C., in order to improve the plasticisation of the wood during the entire drying process.

4,246,705

ALIGNMENT OF WEAPON TRAINING SYSTEMS

Derek J. Lee, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

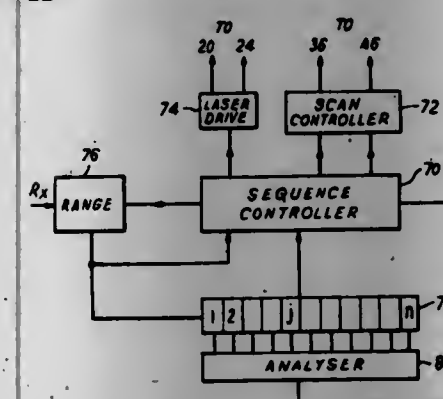
Filed Sep. 10, 1979, Ser. No. 74,208

Claims priority, application United Kingdom, Sep. 13, 1978, 36658/78

Int. Cl.³ F41G 3/26

U.S. Cl. 434—22

9 Claims



1. A method for the alignment of weapon training system comprising the steps of:
sighting a weapon, having associated therewith source means for providing a beam of electromagnetic radiation, at means for enabling incidence of a beam thereupon to be detected;
scanning said source means through a plurality of beam orientations relative to said weapon;
energising said source means for each orientation and storing

1002 O.G.—55

an indication of each orientation in which incidence of the beam is detected; and
deriving from said indications the beam orientation in which the system is aligned with the weapon.

4,246,706

REINFORCING PAD FOR ATHLETIC SHOES

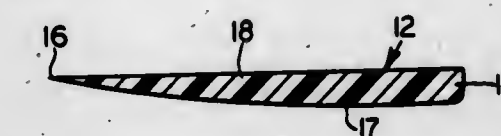
Seth G. Persons, Jr., P.O. Box 3528, Montgomery, Ala. 36109

Filed May 21, 1979, Ser. No. 40,543

Int. Cl.³ A43B 13/22; A43C 13/00

U.S. Cl. 36—73

1 Claim



1. In a reinforcing pad for athletic shoes, an elastomeric-like body formed of material having generally the physical properties of high density polyurethane, said material having a durometer of from about 70 to 95 on the Shore A scale, said body being generally triangular shaped in plane view with the base and one leg thereof being the major thickness portion of the body, said body tapering from the base and side to substantially feather edge along the hypotenuse of the body, one side of the pad being generally flat, said pad being adapted for securement to the sole of a shoe in high-wear areas thereof with the flat side secured to the sole, the hypotenuse of the triangle extending generally fore and aft of the sole and with the thicker side of the body adjacent an edge of the sole.

4,246,707

CONVERTIBLE OVERSHOES

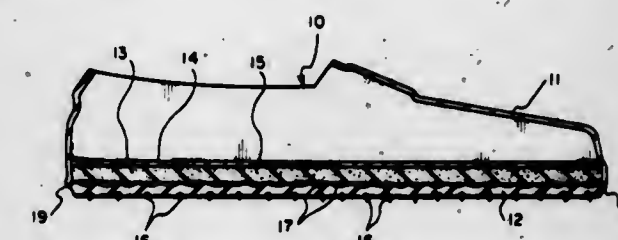
Frank Pedersen, P.O. Box 517, Mays Landing, N.J. 08330

Filed Mar. 27, 1980, Ser. No. 134,293

Int. Cl.³ A43B 3/24, 1/00, 13/38, 23/28

U.S. Cl. 36—100

5 Claims



1. Convertible rubber footwear comprising:
(a) a reversible shoe boot with a sole portion having two surfaces, wherein the shoe boot turned inside out forms essentially the same shape, wherein the first surface has imbedded therein an abrasion means which will essentially prevent sliding on ice, and wherein the second surface is provided with a standard non-slip surface, and
(b) an innersole of a shape to fit inside the shoe boot covering the inside of the sole portion, with the innersole having an upper surface of a semi-rigid material capable of holding the interior shape of the sole and a lower softer surface of a material that will not deteriorate the abrasion means.

4,246,708

SPORT SHOE, ESPECIALLY FOR CROSS-COUNTRY SKIING AND TENNIS

Janez Gladek, Hergiswil, Switzerland, assignor to "Montana-Research" Müller and Co., Hergiswil, Switzerland

Filed Sep. 24, 1979, Ser. No. 78,065

Claims priority, application Switzerland, Dec. 14, 1978, 12705/78

Int. Cl.³ A43B 23/00, 5/04, 13/12

U.S. Cl. 36-107

11 Claims



1. A sport shoe, especially for cross-country skiing and tennis, comprising:

- an upper portion and a sole formed at the upper portion;
- an at least partially resiliently elastic plate embedded in said sole;
- said plate extending approximately over the entire length of the sole;
- said sole having a tip region; and
- said plate having bores at the tip region of the sole for the reception of parts of a ski binding.

4,246,709

IDENTIFICATION CARRYING MEANS

Frank K. A. Sellenaga, Haasrode, Belgium, assignor to N.V. Raychem S.A., Kessel, Belgium

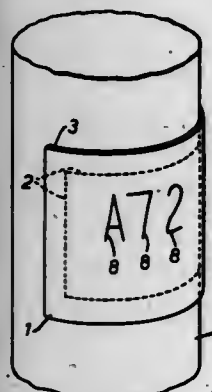
Filed Feb. 7, 1978, Ser. No. 875,890

Claims priority, application United Kingdom, Oct. 5, 1977, 41407/77

Int. Cl.³ A44C 3/00

U.S. Cl. 40-2 R

7 Claims



1. Identification carrying means that curls on heating, comprising a transparent sheet that curls on heating and an adhesive layer bonded thereto along portions only of the surface of the transparent sheet, which surface becomes concave on heating, the areas of bonding allowing the insertion of a further sheet between the transparent sheet and the adhesive layer, wherein the transparent sheet is formed of a crosslinked thermoplastic material that has been deformed from a curled configuration to a room-temperature stable planar configuration.

4,246,710

BREAKAWAY TAG LABEL HOLDER

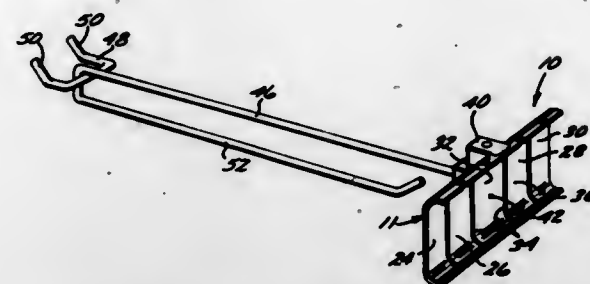
Terence W. Mixer, Fountain Valley, Calif., assignor to Sam Pivac Company, Long Beach, Calif.

Filed Feb. 2, 1979, Ser. No. 8,493

Int. Cl.³ G09F 3/18

U.S. Cl. 40-16.4

7 Claims



5. A merchandise display label holder for holding a laminar card bearing merchandise information comprising, an integrally molded plastic mounting member having a shallow, concave front surface for holding a card as aforesaid and having at least one pair of parallel grooves transverse to the length of said member, defined in at least one of said front surface and a convex back surface of said mounting member completely thereacross, and the grooves in each pair are equidistant from the longitudinal center of said mounting member, whereby said grooves define a plurality of weakened webs extending transversely across the entire breadth of said mounting member to delineate a center section and equal end sections at opposite ends of said mounting member, which end sections can be broken away and discarded to conform the length of said of mounting member to the length of said card.

4,246,711

MILK CARTON DISPLAY ATTACHMENT

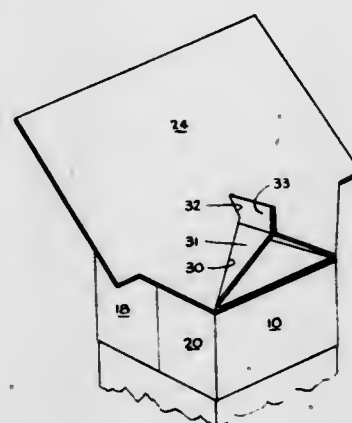
Kenneth E. Wagner, Williamsville, N.Y., assignor to Carton-Craft Corp., Buffalo, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,256

Int. Cl.³ G09F 1/00

U.S. Cl. 40-312

1 Claim



1. A cardboard display device adapted to be mounted upon the upper end of a conventional gable-topped carton for milk and the like, said device being formed from a blank having a mounting portion and a display panel portion, the mounting portion comprising a sleeve adapted to telescope downwardly over a milk carton, the display panel being hinged to said mounting portion and having a triangular opening adapted to engage over the conventional gable-top of said carton when the display panel is inclined rearwardly, said triangular opening having a slot extension adapted to engage frictionally the usual vertical flange of conventional cartons of this type, said display panel being connected to said sleeve by triangular gussets hinged to said display panel and said sleeve by score lines, said gussets being adapted to fold under said display

panel when the latter is moved rearwardly to assembled position on a carton.

4,246,712

PIPE IDENTIFICATION SYSTEM

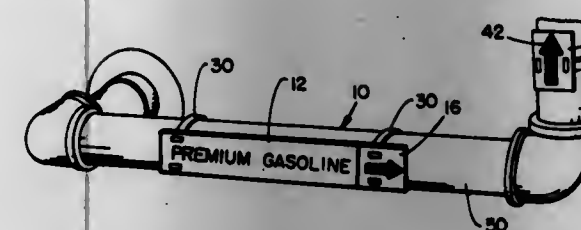
James A. Vander Wall, 5579 Lake Harbor Rd., Muskegon, Mich. 49441

Filed May 4, 1979, Ser. No. 36,181

Int. Cl.³ G09F 3/14

U.S. Cl. 40-316

10 Claims



1. A marker for identifying the contents of pipe, conduit and the like, comprising:

- an elongated body of rigid material having a central portion and a pair of integral, removable end portions frangibly connected to said central portion at longitudinal ends thereof, said central portion having identifying indicia imprinted thereon and said end portions having oppositely directed flow identifying indicia imprinted thereon, said body having lines of weakness at the interface between each end portion and the central portion, the indicia on the central portion indicates the contents of the pipe, conduit and the like with which the marker is used and the indicia on the removable end portions are flow direction indicators in the form of arrows, said central portion and said end portion each define integral, lanced offset strap portions for receiving an attachment strap.

4,246,713

ILLUMINATED ADVERTISING DISPLAY DEVICE WITH CHANGING VISUAL EFFECTS

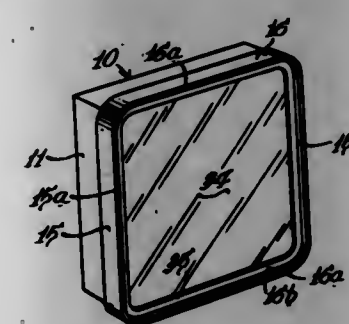
Ronald P. Eckert, Northbrook, Ill., assignor to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Filed Jan. 8, 1979, Ser. No. 46,802

Int. Cl.³ G09F 13/06, 13/12

U.S. Cl. 40-437

9 Claims



1. An illuminated advertising display device comprising, in combination:

- a housing which is open at the front;
- a light source in the rear of said housing;
- a panel which has a reflective surface facing the front of the housing, said panel having a pattern of tiny holes;
- supporting means in said housing maintaining said panel in a fixed position;
- parallel guideways operatively associated with said supporting means and extending upwardly from the lower part of the housing immediately behind the panel, said guideways having rear flanges in a plane parallel to said panel;
- an opaque shutter which is mounted for reciprocating movement in said guideways and held against the panel by said rear flanges, said shutter having a pattern of transparent spots which are so arranged that each such spot registers

with a hole in the panel at some point in the movement of the shutter, said spots being elongated in the direction of reciprocation of the shutter;

means for reciprocating said shutter to sequentially register different ones of said spots with said holes for periods of time that depend upon the rate of reciprocation of the shutter and the difference between the lengths of the transparent spots and the dimensions of the holes in the direction of elongation of said spots;

and a light transmitting reflective sheet fixed in the housing forward of the panel and in parallel, spaced relationship to said panel.

4,246,714

MULTI-SIDED DISPLAY DEVICE

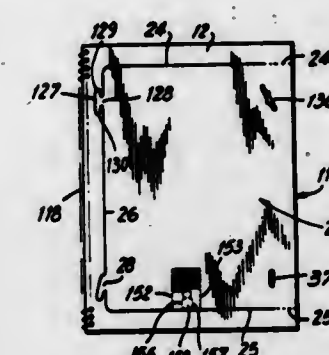
Alan J. Rothchild, East Hills, N.Y., assignor to Rothchild Printing Company, Inc., Elmhurst, N.Y.

Continuation-in-part of Ser. No. 824,200, Aug. 12, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,335

Int. Cl.³ G06F 1/06

U.S. Cl. 40-538

12 Claims



1. A multi-sided display device assemblable from a plurality of flexible sheets bound in book-like fashion comprising:

- at least three sheets, each formed with a cut-out display flap selectively displaceable away from the uncut remaining portion of said sheets;
- binding means for binding said sheets along at least a portion of one edge of said uncut portion of said sheets, said binding means allowing free movement of said sheets and defining a central axis of said device when assembled;
- each display flap formed with at least two interlocking tabs defined by a cut-line substantially parallel to said axis, said tabs projecting towards said binding means and one of said interlocking tabs being a self-locking tab formed with a projecting neck region and two opposed lips extending substantially parallel to said axis; and
- each uncut portion of said sheets on the side away from said axis formed with at least two cooperating elongated receiving slots for receiving said tabs, said slot for receiving said self-locking tab being formed at an acute angle to the axis and including a central region substantially parallel to the axis and dimensioned to engage the neck of said self-locking tab when parallel to the axis for maintaining said other tab in engagement with the corresponding slot for preventing disassembly of the device when assembled, whereby said tabs interlock with said receiving slots formed in an adjacent sheet, said uncut portion of said sheet adapted to form flared radials extending from said binding means through the vertex angles of said device when viewed in plan views.

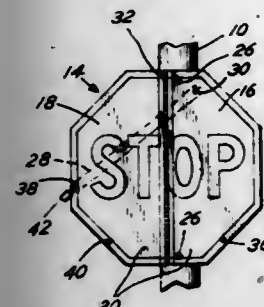
4,246,715

TRAFFIC SIGNS

Mark E. Nelson, 3205 Helden Cir., Lake Bluff, Ill. 60044
 Filed Sep. 28, 1979, Ser. No. 80,009
 Int. Cl.³ G09F 15/00

U.S. Cl. 40—607

16 Claims



1. A sign comprising first and second substantially flat sheet means, each said sheet means having a portion of a message on one face thereof and which together contain an entire message, hinge means coupling said first and second sheet means together such that said one face of said first sheet means may be positioned in a first position in overlying relation to said one face of said second sheet means to cover all said portions of said message thereon, and to a second position in which said one face is in planar side by side relationship to together display the entire message, and locking means mounted to one of said sheet means for pivoting thereon and movable across the other face of at least one of said sheet means and substantially entirely within the perimeter of both said sheet means between one location for locking both said sheet means in said first position and another location for locking both said sheet means in said second position.

4,246,716

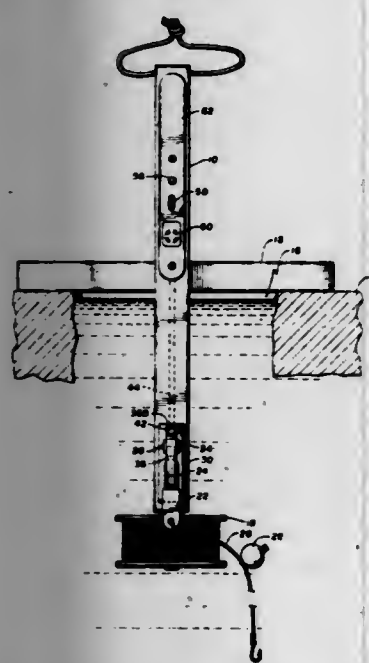
ICE FISHING APPARATUS

James W. Elmer, 13861 - 129th Avenue North, Anoka, Minn. 55303

Filed Mar. 5, 1979, Ser. No. 17,382
 Int. Cl.³ A01K 97/12

U.S. Cl. 43—17

12 Claims



1. Fishing apparatus for use with a fishing line comprising: a magnet for providing a magnetic field; a magnetically actuated switch for changing state in response to the magnetic field from the magnet, the magnetically actuated switch being positioned in close proximity to the magnet; a metal tab for insertion between the magnet and the magnetically actuated switch, the metal tab having means for

engaging a fishing line to permit a force on the fishing line to move the metal tab in a direction tending to remove the metal tab from its inserted position between the magnet and the magnetically actuated switch, the metal tab shielding the magnetically actuated switch from the magnetic field of the magnet when the metal tab is in its inserted position between the magnet and the magnetically actuated switch, whereby when a force on the fishing line removes the metal tab from its inserted position between the magnet and the magnetically actuated switch the magnetic field causes the magnetically actuated switch to change state;

a base for carrying the magnetically actuated switch, the base having a generally planar surface;

an arm having first and second ends, the arm carrying the magnet proximate its first end;

pivotal mounting means extending outward from the planar surface of the base for pivotally mounting the arm with respect to the base, the pivotal mounting means defining a pivot axis which is generally parallel to the planar surface, and wherein the arm is pivotally mounted at a position between its first and second ends to pivot about the pivot axis;

means for providing an adjustable clamping force between the first end of the arm and the planar surface of the base comprising a compression screw threaded through the arm proximate the second end of the arm and having an end engaging the planar surface of the base for applying an adjustable force between the second end of the arm and the planar surface of the base, wherein turning the compression screw adjusts the force between the second end of the arm and the planar surface of the base to adjust thereby the clamping force between the first end of the arm and the planar surface of the base and the force on the fishing line required to remove the tab from its inserted position between the magnet and the magnetically actuated switch; and

signalling means connected to the magnetically actuated switch for providing a signal in response to a change in state of the magnetically actuated switch.

4,246,717

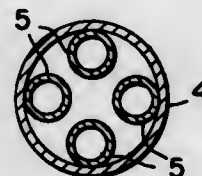
BUBBLE PIPE

Jack S. Wachtel, Larchmont, N.Y., assignor to Joseph R. Ehrlich, New York, N.Y., a part interest

Filed Apr. 3, 1979, Ser. No. 26,528
 Int. Cl.³ A63H 33/28

U.S. Cl. 46—6

6 Claims



1. A bubble pipe for blowing bubbles by mouth, comprising an outer tube having one end adapted to be used as a mouthpiece for blowing bubbles, and a plurality of shorter and narrower inner tubes connected to the other end of said outer tube with at least a portion of each said inner tube projecting beyond said outer tube, said inner tubes being spaced apart within the outer tube with an area of free space between them for permitting air blown through the outer tube to exit from the outer tube while by-passing the inner tubes, the projecting ends of said inner tubes being free from one another to allow only said projecting ends to be wetted by a bubble composition, said pipe being operable to form bubbles only when air is blown through said mouthpiece, part of the air blown through the outer tube being divided and distributed among the inner tubes and part passing through said free space and by-passing the inner tubes.

4,246,718

INTERCONNECTING TOY BLOCK ARRANGEMENT

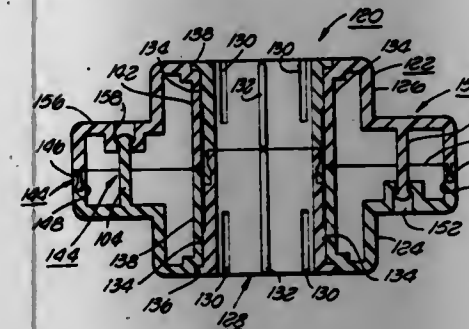
Yasushi Chatani, Tokorozawa, Japan, assignor to Kawada Co., Ltd., Japan

Filed Aug. 7, 1979, Ser. No. 64,521

Claims priority, application Japan, Sep. 3, 1979, 54-29212[U]
 Int. Cl.³ A63H 33/08

U.S. Cl. 46—25

22 Claims U.S. Cl. 46—41



1. A toy block arrangement comprising, in combination: a semi-rigid body means having a first predetermined flexibility and having a plurality of wall members, and each of said plurality of wall members having inner surfaces and outer surfaces, and said inner surfaces thereof defining a body cavity, and said body means comprising: a first body member having a first group of said plurality of wall members; and a second body member having a second group of said plurality of wall members; and said first body member coupled to said second body member along a median plane and each of said first and second body members having peripheral edge surfaces at said median plane; coupling means on said first body member and said second body member for coupling said first body member to said second body member along said median plane; a first wall of said first group of said plurality of wall members of said first body member of said body means having first internal walls defining a first aperture therethrough; a second wall of said second group of said plurality of wall members of said second body member of said body means having second internal walls defining a second aperture therethrough aligned with said first aperture; a first semi-rigid female interblock coupler means discrete from said semi-rigid body means comprising a first female coupler member and a second female coupler member, and each of said first and second female coupler members having: an outer end; an inner end spaced a preselected distance from said outer end, and said inner end positioned in said body cavity of said body means; walls extending from said outer end to said inner end and said walls having external surfaces and internal surfaces, said internal surfaces defining a male coupler receiving aperture extending from said outer end toward said inner end; and interconnection means on said inner ends of said first and second female coupler members for interconnecting said first female coupler member to said second female coupler member, and said first female coupler member positionable in said first aperture of said first body member of said body means and said second female coupler member positionable in said second aperture in said second body member of said body means whereupon said first female coupler member and said second female coupler member are coupled together by said interconnection means thereon; and retention means for retaining said outer end of said first female coupler member at said first wall of said first body member and said outer end of said second female coupler member at said second wall of said second body member.

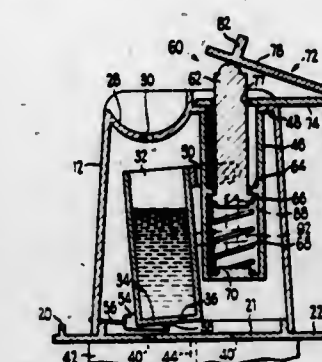
4,246,719

FLUID ACTUATED TOY

Ralph J. Kulesza, Chicago; Palmer J. Schoenfeld, Evanston, and Harry Disko, South Barrington, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 21, 1979, Ser. No. 106,152
 Int. Cl.³ A63H 29/14, 23/10

10 Claims



1. A fluid actuated toy, comprising: a housing including an inlet means and outlet means for the flow of fluid; means pivotally mounted in said housing for accumulating fluid from said inlet means; means for biasing said accumulating means to a first preset position; and a biased member slidably mounted within said housing and engageable with said accumulating means whereby said biased member is maintained in a first position when said accumulating means is in said preset position and is moved under bias to a release position when said accumulating means is moved to a second position by the accumulation of fluid.

4,246,720

ATTACHMENT FOR FLYING DISK TOY

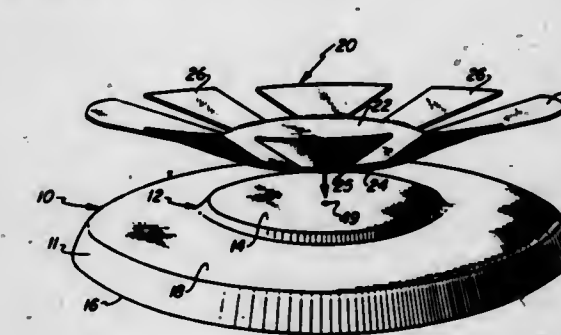
Myron Stone, 307 Prospect Ave., Hackensack, N.J. 07601

Filed Nov. 16, 1979, Ser. No. 94,969

Int. Cl.³ A63H 27/00

U.S. Cl. 46—74 D

13 Claims

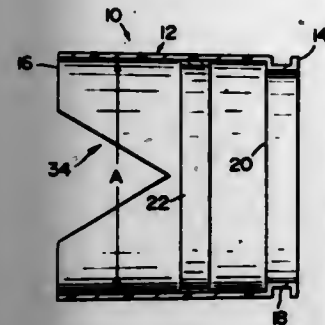


1. An attachment for a flying disk toy, the flying disk toy including a member having an upper surface with a generally central area and an outer rim, said attachment comprising: a central portion capable of being affixed over the central area of the flying disk toy; a plurality of cantilevered vanes having free tips and projecting radially from the central portion to the free tips for extending over the upper surface of the flying disk toy between the central area and the outer rim thereof; and means for enabling flexing of the vanes relative to the central portion of the attachment so as to allow the vanes to flutter and generate a distinctive fluttering sound in response to rotation and translation of the flying disk toy during flight.

4,246,721 AERIAL TOY

Louis Bowers, 10600 N. 62nd St., Temple Terrace, Fla. 33617
Filed Sep. 10, 1979, Ser. No. 73,850
Int. Cl.³ A63H 27/00

U.S. Cl. 46—79



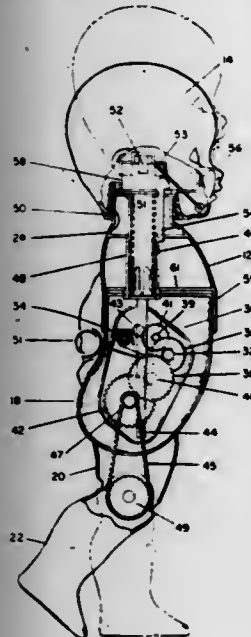
1. An aerial toy comprising a hollow substantially cylindrical body having a thin wall intermediate portion including a leading and trailing edge formed on opposite ends thereof, a recess formed on the outer surface of said thin wall intermediate portion adjacent said leading edge such that said aerial toy may be tossed to project said aerial toy through the air by hand, said thin wall intermediate portion includes a plurality of notches formed in said trailing edge, said plurality of notches extend less than half the length of said thin wall intermediate portion, a weighting substantially annular member comprising a ring movably disposed within said thin wall intermediate portion to permit the operator to selectively move the center of gravity of said aerial toy to vary the aero-dynamic characteristics thereof.

4,246,722

GROWING BABY DOLL

Jurgis Sapkus, Manhattan Beach; J. Stephen Lewis, Pacific Palisades, and Raymond J. Douglas, Carson, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 16, 1979, Ser. No. 12,920
Int. Cl.³ A63H 11/00

U.S. Cl. 46—120



1. A baby doll comprising a lower torso portion, a pair of lower legs coupled to said lower torso portion, said pair of lower legs being capable of assuming a first bent position, an upper torso portion overlying said lower torso portion, said upper torso portion including a neck, a head positioned over the neck in a first position, motor means within one of said upper and lower torso portions, means responsive to operation of said motor means for simultaneously moving said pair of lower legs to a second position whereby they are straightened

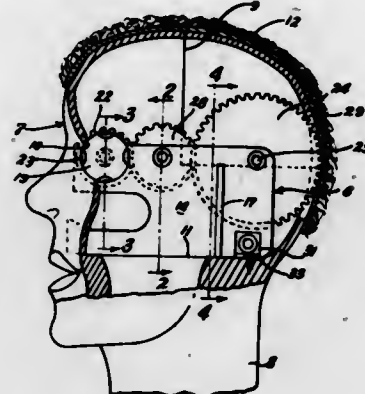
and moving the head to a second position with respect to the neck whereby the neck appears to elongate.

4,246,723 COLOR CHANGEABLE EYES DEVICE FOR MANIKIN HEADS

William M. Winters, 315 Cora Ave., Lawrenceburg, Ind. 47025
Filed Nov. 19, 1979, Ser. No. 95,924
Int. Cl.³ A63H 3/38

U.S. Cl. 46—135 R

1 Claim



1. In combination with the hollow head of a store manikin having a pair of eye openings and a removable hair piece covering the head; a slot formed through the back of the head in an area covered by the hair piece, a color changeable eyes device consisting of a pair of spaced, upstanding plates adapted to be mounted within the head between the eye openings and in alignment with the slot in the head, a manually operable toothed wheel journaled between the plates and having a portion thereof projecting through the slot, a cross shaft journaled in the plates, a pair of eye balls mounted on opposite ends of the cross shaft, a series of differently colored irises arcuately spaced apart on great circles of the eye balls aligned in pairs and each pair of irises selectively visible through the eye openings in the head, a toothed wheel journaled between the plates connected to the pair of eye balls, releasable means for holding said pairs of irises in selected positions in the eye openings of the head, said releasable means comprising the hair piece which, when in position, engages the teeth of the manually operable toothed wheel, and an idler wheel journaled between the plates and operatively connecting the manually operable toothed wheel to the toothed wheel connected to the pair of eye balls, whereby, when the decor of the merchandise to be modeled by the manikin is changed, the color of the irises may be changed to complement said decor.

4,246,724

AEROPLANE WITH CIRCULAR FLIGHT

Bernard Vechot, Paris, France, assignor to Compagnie Generale du Jouet Importation en abregé C.E.J.I. Import, France
Filed Apr. 16, 1979, Ser. No. 30,159
Claims priority, application France, Mar. 16, 1979, 79 06767
Int. Cl.³ A63H 17/00

U.S. Cl. 46—249

8 Claims

1. A model aeroplane adapted for circular flight and powered by an electric motor therein, said aeroplane including a diving rudder comprising one or more flaps pivoted for angular displacement to control the ascending and descending movements of the aeroplane, a control handle connected to the aeroplane by a pair of cables secured to respective end portions on a pair of arms of an operating lever pivotally mounted on the aeroplane, a linkage member connected between said lever and said rudder controlling the angular displacement of said flaps, said cables formed of electrically conductive material and connected between said electric motor and a source of electricity in said handle, said lever formed of insulating material and said end portions serving to mechanically connect said cables and said flaps, said end portions of said arms being

formed with a perforation for accommodating a rigid end element in the form of a conductive wire grip connected to a

differently spaced locations by the insertion of said handling strap through differently spaced pairs of said assembly slots, said base member and said handling strap being formed of materials which can be readily cut to reduce the respective sizes thereof whereby, said transplanting device may be readily adapted for use with differently sized plant pots.



cable by means of a coupling, and each arm including an electrically conducting strip in electrical connection between one of said cables and said motor.

4,246,725

PLANT TRANSPLANTING DEVICE

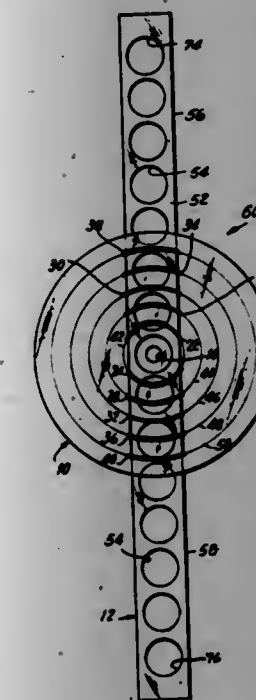
Alan Brannman, Northport, N.Y., assignor to Northway Marketing Ltd., Northport, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,339

Int. Cl.³ A01G 9/10

U.S. Cl. 47—73

4 Claims



1. In a device for the transplanting of plants which includes a base member for disposition in a plant pot beneath the plant root ball and a handling strap for attachment to said base member in such manner that handling strap portions will extend upwardly therefrom toward the plant pot rim to enable ready removal of the plant root ball from the plant pot by the lifting of said base member therefrom through grasping of said handling strap portions, the improvements comprising, means to attach said handling strap to said base member at differently spaced locations on the latter in general accordance with the size of the bottom of the plant pot, and wherein said base member is of generally circular configuration, and said attachment means comprise a plurality of pairs of differently diametrically spaced assembly slots, with the assembly slots of each of said pairs being formed respectively to opposite sides of the central portion of said base member and sized to enable the insertion of said handling strap therethrough whereby, said handling strap may be attached to said base member at said

4,246,726

WINDOW GUIDE ARRANGEMENT

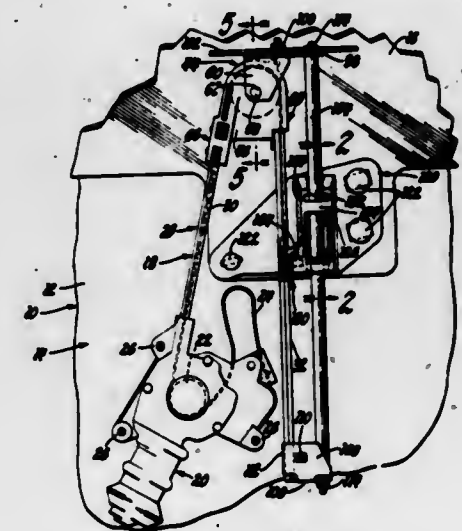
Cornell Breaz, Pontiac, and Bobdan Kazewych, Union Lake, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1979, Ser. No. 70,641

Int. Cl.³ E05F 11/48

U.S. Cl. 49—227

3 Claims



1. In combination with a support, a window movable along a predetermined non-linear path relative to the support, and drive means for moving the window, the improvement comprising, a driven member interconnecting the drive means and the movable window and including a spherical type bearing seat of molded plastic material, a spherical type bearing of molded plastic material having an axial aperture therethrough, cooperating integral rib means on the bearing and respective integral groove means in the bearing seat limiting movement of the bearing relative to the bearing seat to a plane containing the path of movement of the movable window, the bearing seat being molded about the bearing whereby the bearing ribs provide the pattern for the bearing seat grooves during the molding of the bearing seat, and a window guide member fixed to the support and defining the predetermined path of movement of the window, the guide member being received through the axial aperture of the bearing and rotating the bearing relative to the bearing seat in the plane of the path of movement as the bearing moves along the path of movement defined by the guide member.

4,246,727

FIXTURE FOR USE IN GRINDING AND POLISHING TABLE FACETS OF GEMS

Ilan Weissman, Herzliya, Israel, assignor to Hargem Limited, Ramat Gan, Israel

Filed Jan. 26, 1979, Ser. No. 7,477

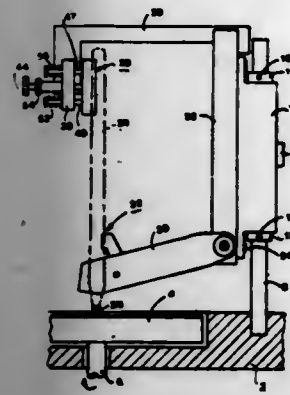
Int. Cl.³ B24B 9/16

U.S. Cl. 51—121

8 Claims

1. A fixture to be pivotally mounted to a vertical stand at one side of a rotary-driven grinding and polishing disc for aiding the grinding and polishing of a faceted gem carried at the end of a holder stick, the fixture comprising: upper and lower supporting arms to overlie the disc when the fixture is so mounted; an upper alignment head supported at the end of the supporting arm open at one side of the fixture to define a positioning face engageable only with one side of the upper end of the holder stick; and a lower alignment head supported

at the end of the lower supporting arm open at the opposite side of the fixture to define a positioning face engageable only with the opposite side of the holder stick, to thereby permit manual positioning and holding of the holder stick and the



faceted gem carried by it at a right angle to the disc as the fixture is manually swung on the stand to sweep the gem across the face of the disc; at least one of said alignment heads being adjustable to permit same to be preset to align the holder stick to the right angle.

4,246,728

CONDUIT END TREATING TOOL

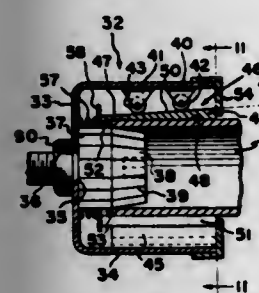
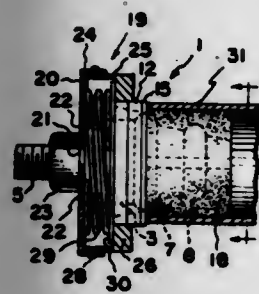
Arthur L. Leasher, 3447 N. Branch Dr., Beaverton, Mich. 48612

Filed Oct. 1, 1979, Ser. No. 80,943

Int. Cl.³ B24B 19/00

U.S. Cl. 51—241 S

15 Claims



1. A tool for treating an end of a conduit comprising a rotatable body member; a hollow carrier member, said carrier member being axially slit to enable radially expanding and contracting movements thereof; means coupling said body member and said carrier member for relative telescoping movements and for conjoint rotation; cooperable means on said members operable in response to relative telescoping movements thereof to effect radial expansion and contraction of said carrier; and abrading means carried by said carrier member for engagement with and disengagement from a surface of said conduit in response to said radial movements of said carrier.

4,246,729
SHARPENER FOR SELF-SHARPENING FEED
CHOPPING KNIVES

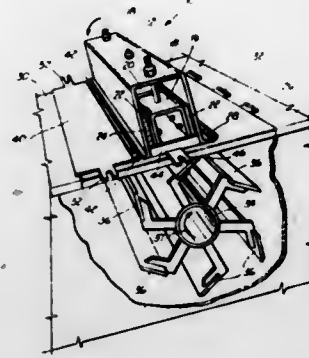
Charles J. Murphy, Rte. 1, Abilene, Kans. 67410

Filed Jun. 7, 1979, Ser. No. 46,221

Int. Cl.³ B24B 3/36

U.S. Cl. 51—250

4 Claims



1. An improved sharpener for self-sharpening feed chopping knives, the knives mounted on a rotating cutter head disposed inside a chopper box, the improvement comprising:
a shield pivotally attached to the top of the chopper box, the shield having an elongated opening therein, the length of the opening disposed above the length of the knives as the knives are rotated thereby, the shield pivotally attached so that it can be raised above the cutter head in the chopper box and foreign material removed from around the cutter head and maintenance performed thereon;
a stone holder housing hinged to the top of the shield and along the length of one side of the opening, the stone holder housing, when pivoted downwardly into a lowered position on top of the shield, covering the opening;
an elongated sharpening stone mounted in the stone holder housing, the stone extending through the opening in the shield and disposed adjacent the length of the cutting edge of the knives and tangent thereto when the stone holder housing is in a lowered position on top of the shield, the stone holder housing when pivoted upwardly above the top of the shield into a raised position, pivots the stone upwardly away from the cutting edge of the knives to prevent the sharpening thereof; and
an access cover hinged to the top of the shield and along the length of the opposite side of the opening in the shield, the access cover when pivoted downwardly covers the opening in the top of the shield when the stone holder housing is in a raised position.

4,246,730

SUPPORT STRUCTURE FOR A ROOF OF AN
ACCOMMODATION FOR CULTIVATION

Alphonsus J. Hulscher, Leiden, Netherlands, assignor to Handelsonderneming Priva B.V., Deller, Netherlands

Filed Sep. 11, 1979, Ser. No. 74,303

Claims priority, application Netherlands, Sep. 15, 1978, 7809424

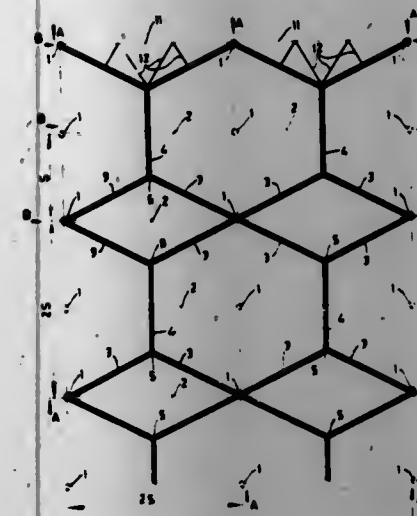
Int. Cl.³ E04B 7/02

U.S. Cl. 52—90

12 Claims

1. In a support structure for a roof of an accommodation for cultivation, in particular a green house, comprising posts lined up in rows for supporting a roof structure, the posts being provided with cross beams for the bracing in said support structure, said cross beams being rigidly connected with the

posts and running in a direction deviating from the direction in which each row of posts is placed and also deviating from a



direction perpendicular to said row, said cross beams being connected to cross beams of a neighboring post.

4,246,731

WINDOW FRAME ASSEMBLY

Carl F. Miro, 1805 Atoka Ave., Youngstown, Ohio 44501

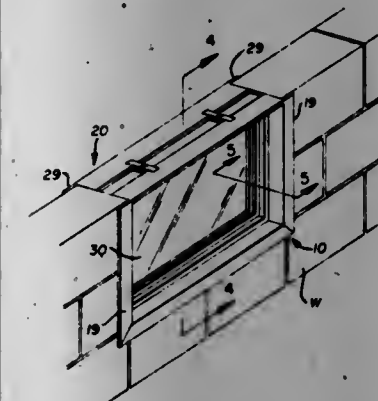
Continuation-in-part of Ser. No. 765,262, Feb. 3, 1977,

abandoned. This application Jun. 12, 1978, Ser. No. 914,568

Int. Cl.³ E06B 1/04

U.S. Cl. 52—204

13 Claims



1. A frame assembly for reception of a window in a window opening formed in a wall, comprising:

- (A) a pair of rigid frame sections each having
 - (1) opposed top and bottom components and
 - (2) opposed end components interconnecting said top and bottom components adjacent their ends to form a rectangular frame section;
- (B) locking means carried by at least some of said components in opposed relationship for engagement with each other and interconnection of said frame sections and including opposed male and female members; and
- (C) sealing means disposed on said top, bottom and end components of said frame sections for engagement with the frame of the window; at least some of said sealing means being adjustable relatively of said top, bottom and end components in a direction normal to the plane of said window.

4,246,732

POLE, IN PARTICULAR FOR ELECTRIC LINES

Roland Frehner, Talstrasse 17, 8620 Wetzikon, Switzerland

Filed Feb. 27, 1978, Ser. No. 881,787

Claims priority, application Switzerland, Feb. 27, 1977, 2376/77

Int. Cl.³ E04C 3/36

U.S. Cl. 52—309.1

6 Claims



1. An elongated substantially rigid pole for electric lines and the like comprising;
a plurality of strands under tension laid longitudinally of the length of the pole forming an elongated hollow core,
a plurality of reinforcing members located within said core and spaced apart along the pole and extending radially of the pole longitudinal axis to engage said strands,
an outer sheath of fiber reinforced plastic material wound over said strands and generally crosswise thereto to deflect the strands inwardly to form a generally hyperboloid shape between every two adjacent reinforcing members, and
a material for solidifying the strands on the outer sheath into a substantially rigid structure with the reinforcing members.

4,246,733

PRE-FABRICATED WALL ASSEMBLY

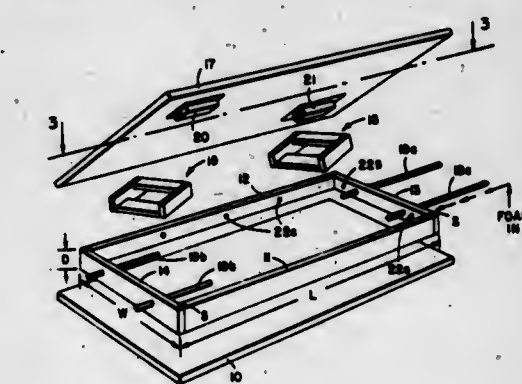
Terry M. Haber, Mission Viejo, Calif., assignor to William L. Thompson, Mission Viejo, Calif.

Filed Jul. 2, 1979, Ser. No. 53,958

Int. Cl.³ E04B 2/22

U.S. Cl. 52—309.11

6 Claims



1. A pre-fabricated wall assembly including, in combination:
(a) a first rectangular panel member;
(b) a rectangular frame of given length, width and depth

- dimensions, said first panel member being secured to one side of said rectangular frame;
- (c) at least one reinforcing insert having a depth dimension equal to said given depth dimension positioned in said rectangular frame;
- (d) a second rectangular panel secured to the opposite side of said rectangular frame so that said rectangular frame and insert are sandwiched between said first and second panels; and
- (e) foam material filling the voids within said rectangular frame and insert between the opposing wall surfaces of said first and second panels, said insert comprising two parallel long sides and two parallel short sides extending between the adjacent ends of the long sides to define essentially a square frame, one of the shorter sides extending between lower portions of first ends of the longer sides to also engage the inner wall of said first panel, and the other shorter side extending between upper portions of the second ends of the longer sides to engage the inner wall of said second panel, there being open spaces above and below the one and other shorter sides respectively for permitting said foam to pass through and fill the insert.

4,246,734

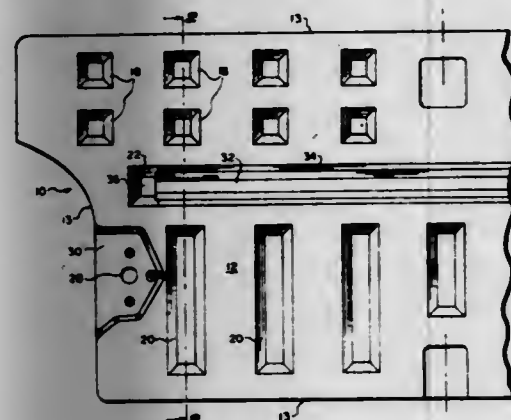
FOLD DOWN MULTI-PURPOSE VEHICLE SEAT BACK CORE WITH INMOLDED METAL REINFORCING MEMBER

Alva E. Fogle, Jr., Buffalo Grove, Ill.; William E. Brennan, Troy, and Jacques Passino, Orchard Lake, both of Mich., assignors to K & M Plastics Inc., Elk Grove Village, Ill. Continuation-in-part of Ser. No. 845,845, Oct. 27, 1977, Pat. No. 4,142,757. This application Oct. 18, 1978, Ser. No. 951,031. The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.

Int. Cl.³ E04C 1/00

U.S. Cl. 52—309.16

12 Claims



1. A load floor for the core of a fold down vehicle seat or the like automotive structural member comprising:

- A. a hollow blow-molded member of synthetic resin whose overall thickness is substantially less than its size and which is generally rectangular in configuration,
- B. including a pair of generally parallel walls extending over substantially all of said member and having a peripheral connecting wall joining them around the member,
- C. a plurality of tying links extending between the parallel walls on the interior of the member and comprising:
- each such link being integral with a first parallel wall and comprising an indented formation having a bottom which is generally parallel with said first parallel wall from which the indented formation extends,
 - the depth of the indented formation being such as to carry the said bottom into engagement with the interior surface of the second and opposite parallel wall and forming a web therewith which is approximately twice the thickness of either of the parallel walls,
 - the indented formation being produced during the blow-molding operation whereby the said bottom and

- the said portion of the respective parallel walls are permanently welded together,
- D. said tying links being distributed throughout the entire area of said member whereby to rigidify and strengthen said member throughout its area to serve as weight support,
- E. said member having means to accommodate if not enable securement of automotive hardware, and
- F. at least one of said indentations extending a substantial distance along the length of said load floor and having a channel shaped reinforcing member of metal locked to the bottom and sides thereof.

4,246,735

JOINTING CONSTRUCTION

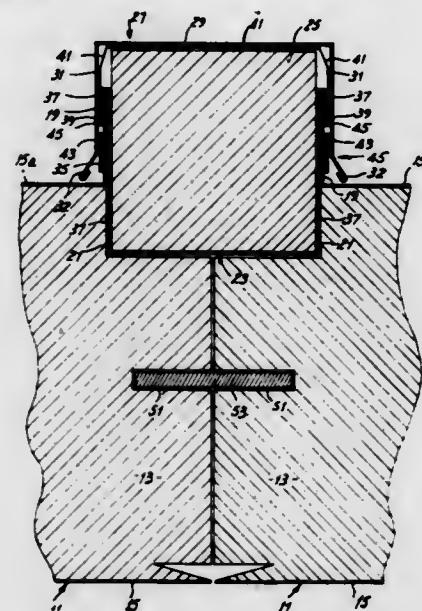
Michael O. H. Herzfeld, Osborne Park, Australia, assignor to Producer Manufacturers Pty. Ltd., Osborne Park, Australia. Filed Dec. 7, 1978, Ser. No. 967,353

Claims priority, application Australia, Dec. 7, 1977, PD2697

Int. Cl.³ E04D 3/36

U.S. Cl. 52—465

9 Claims



1. A jointing construction for laminated panels of the type having a core lamination of heat insulating material and facing sheet laminations bonded to opposed sides of the core, said joint construction comprising at least one pair of flanges each of which is defined by turning one of a pair of opposed edge portions of one facing sheet outwardly substantially perpendicular to the plane of said sheet, the jointing construction being intended to join a pair of said panels disposed in use such that one flange of one panel is adjacent one flange of the other panel, a joint cap engaging said adjacent flanges, said joint cap including a bridging portion extending between said flanges and a pair of spaced side portions each depending from said bridging portion, one side portion of the joint cap being disposed adjacent each flange on the side thereof opposite to the adjacent panel, each said side portion being substantially parallel to its adjacent flange, and a water seal fitted between each flange and the adjacent side portion of the joint cap, said water seal comprising membrane means extending between the adjacent surfaces of each of said flanges and the respective side portions and across the area between said flanges and sealing means providing a seal between each of said flanges and said side portions and said membrane means.

4,246,736

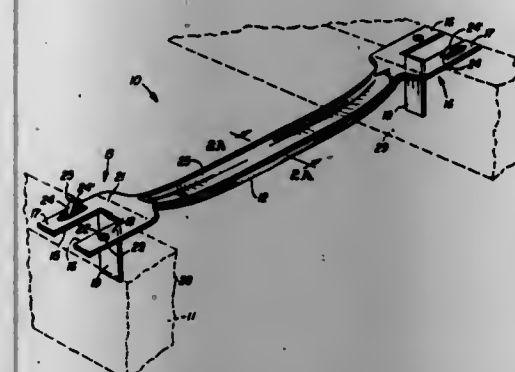
JOIST BRIDGING MEMBER

Paul J. Kovar, 4613 N. 53rd Dr., Phoenix, Ariz. 85031, and Marvin D. Southerlan, 2409 E. Yucca, Phoenix, Ariz. 85028. Filed Apr. 2, 1979, Ser. No. 25,921

Int. Cl.³ E04C 3/02

U.S. Cl. 52—696

9 Claims



1. An integral bridging element for interconnecting spaced substantially parallel longitudinal structural members such as joists, roof rafters and studding comprising:
- an elongated thin, flat, rigid strip,
- a part of each of the opposite ends of said strip being bent into a plane normal to the plane of said ends and at a distance spaced from the associated end of said strip to form abutment flanges substantially parallel to each other spaced apart a distance equal to the desired distance between adjacent structural members,
- the portion of said strip between said ends being bent longitudinally thereof to form a reinforced web,
- means formed in each of said ends for use in fastening the bridging element to the associated structural members, said part of each of the opposite ends of said strip comprising a tab formed by at least one cut extending into and through the end of said strip longitudinally thereof and through a predetermined distance, and
- said tab being normal to the surface of said end to provide the abutment flange.

4,246,737

METAL STRUCTURAL MEMBERS

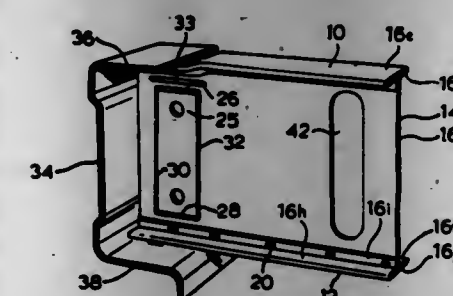
Nigel C. Elloart, Caledon, and Gordon A. Webster, Dundas, both of Canada, assignors to Brockhouse Canada Limited, Bramalea, Canada

Continuation-in-part of Ser. No. 832,212, Sep. 12, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,990

Int. Cl.³ E04C 3/32, 17/00

U.S. Cl. 52—729

4 Claims



1. A metal structural member comprising two spaced flanges and an intervening connecting web, wherein at least at one end thereof part of one of the flanges is offset toward the other flange to permit the insertion of the respective member end between the flanges of another similar member, the intervening portion of the web between the said offset flange part and the corresponding part of the other flange having an area thereof displaced out of its plane transverse thereto, whereby the boundary of the displaced area is of parallelogram shape to provide first and second transverse stiffening ribs in the web

extending substantially from flange to flange spaced from the respective adjacent web end and spaced from one another, the first endmost transverse stiffening rib being spaced from the adjacent web end a distance between 20 and 30 times the thickness of the web metal, and the second transverse stiffening rib being disposed at least approximately at the junction of said offset flange part and the remainder of the flange, the displaced area also providing first and second spaced longitudinal ribs extending parallel to one another closely adjacent to their respective flanges and connecting the two transverse ribs.

4,246,738

AIR CHUCK FOR CAPPING OR UNCAPPING MACHINE

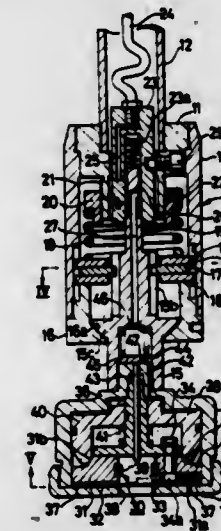
Hiroshi Ono, Kanazawa, Japan, assignor to Shibuya Kogyo Company, Ltd., Kanazawa, Japan

Filed Jun. 18, 1979, Ser. No. 49,937

Int. Cl.³ B67B 3/20; B65B 7/28

U.S. Cl. 53—331.5

8 Claims



1. An air chuck for applying or removing screw caps from bottles, comprising: an upright outer casing rotatable about a vertical axis and having an opening in its bottom coaxial with said vertical axis; an upright elongated chuck guide extending vertically through said opening and having an upper portion received within said outer casing and a lower portion extending downwardly from said outer casing; slip drive means connected between said outer casing and said upper portion of said chuck guide for normally rotating said chuck guide conjointly with said casing and permitting said outer casing to rotate relative to said chuck guide when rotation of said chuck guide is prevented; a chuck casing fixedly mounted on the lower end of said chuck guide for rotation therewith, said chuck casing having an opening in its bottom coaxial with said vertical axis and adapted for receiving the neck of a bottle therethrough, said chuck casing also having a central internal cavity therein above said opening; a plurality of sector-shaped hard members disposed in said cavity for radial sliding movement in a horizontal plane between corresponding first positions close to said vertical axis and corresponding second positions remote from said vertical axis, said hard members having arcuate radially inner surfaces which mate to define a substantially circular surface when said hard members are positioned in said first positions for engaging a bottle cap and rotating same relative to a bottle neck; a driving member disposed in said chuck casing above said hard members and means mounting said driving member for vertical sliding movement in said cavity in said chuck casing; means connecting said driving member to said hard members so that vertical movement of said driving member in said chuck casing moves said hard members between said first positions and said second positions; means defining an air cylinder for actuating said driving member; pressurized air supply conduit means extending through said upper portion of said chuck guide to said cylinder and valve means interposed between said cylinder and said pressurized air supply conduit means.

4,246,739

FISH SIZING DEVICE

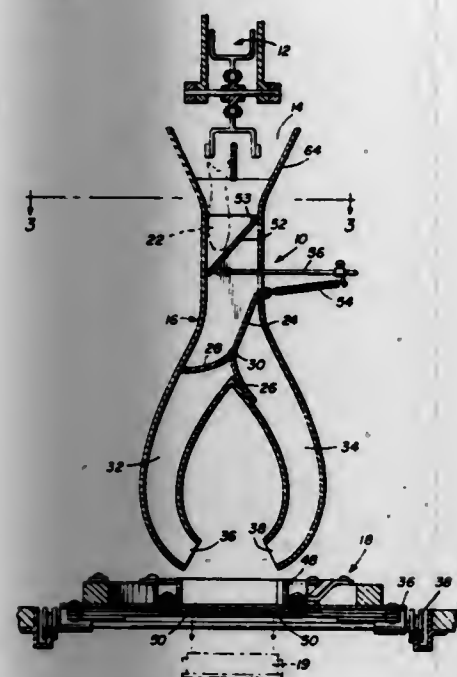
John R. Rogerson, P.O. Box 10, Leonardville, Canada (EOG 2GO)

Filed Jan. 25, 1979, Ser. No. 52,129

Int. Cl.³ B65B 1/24, 63/02, 1/30

U.S. Cl. 53—438

13 Claims



9. The method of canning fish portions comprising the steps of:

- (1) orienting the said fish portions in a common direction;
- (2) measuring a common dimension of each fish portion individually;
- (3) allowing each individual fish portion to fall into a receiving member; and
- (4) advancing said member by an amount equal to the measured diameter of each fish portion prior to receiving that fish portion.

4,246,740

METHOD AND APPARATUS FOR FILLING A BOX WITH OBJECTS

Alexis Chenevard, Morges, Switzerland, assignor to Sopal Societe Anonyme des Pliques Automatiques, Switzerland

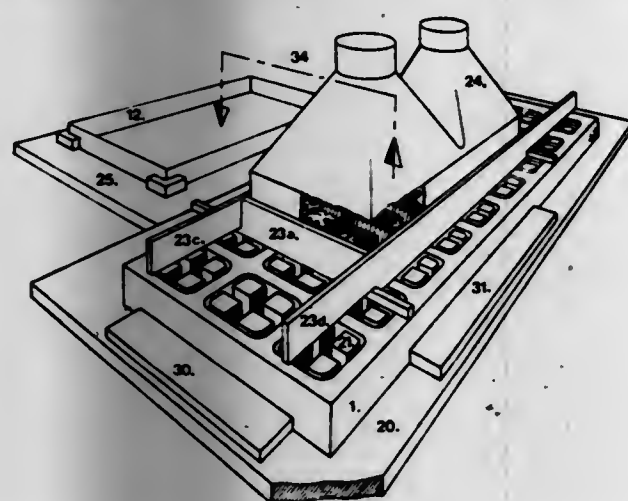
Filed Oct. 10, 1978, Ser. No. 950,148

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748138

Int. Cl.³ B65B 5/08, 35/38

U.S. Cl. 53—448

3 Claims



1. A method of filling a box with objects, comprising the steps of first introducing the objects into an insertion plate and retaining said plate on a table, pushing simultaneously the objects upwards from below, using one plunger for each ob-

ject, out of the insertion plate, holding said objects from above by a suction device, removing said insertion plate for re-use, placing movable walls around said objects and advancing said walls towards said objects to urge said objects together into a space corresponding to the internal area of said box into which said objects are to be placed, and introducing simultaneously into said box all said objects held by said suction device.

4,246,741

IMPLEMENT FOR GATHERING HAY, WINDROWED CROPS AND OTHER STREWN MATERIAL

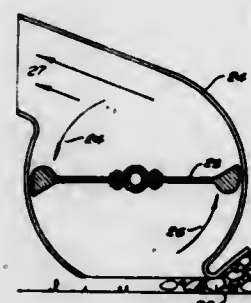
Roy D. Eykamp, "Medway", Quirindi, New South Wales 2343, Australia

Filed Feb. 14, 1979, Ser. No. 12,080

Int. Cl.³ A01D 50/00, 65/02, 77/08

U.S. Cl. 56—13.2

4 Claims



1. A gathering implement comprising:

- (a) a rotor consisting of a central drive shaft and a plurality of aprons of pliant sheet material, each attached by one side edge to and longitudinally of said shaft;
- (b) means to support said rotor and travel it so that the distal longitudinal marginal portions of said aprons sweep into the material to be gathered;
- (c) means to rotate said rotor while it is being travelled as aforesaid; and
- (d) on each of said marginal portions a weighting element which extends longitudinally of its marginal portion, is secured eccentrically to the rear, non-gathering face of said portion; and, upon rotation of said rotor, causes said marginal portions due to centrifugal force, to become angled relative to the remainder of its apron and projected towards the direction in which said apron is turning, thereby to form an up-scooping distal edge portion on said apron.

4,246,742

DOUBLE SICKLE MECHANISM

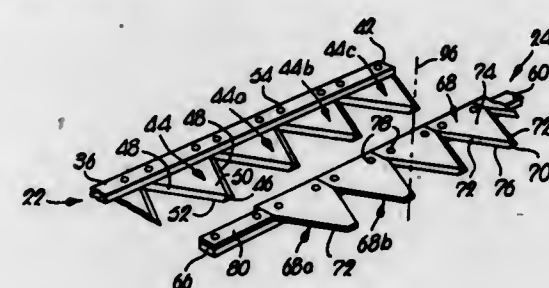
Stanley R. Clark, and Howard R. Lohrenz, both of Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Dec. 11, 1978, Ser. No. 968,341

Int. Cl.³ A01D 55/02

U.S. Cl. 56—259

3 Claims



1. A double sickle assembly for use in connection with a support extending across the intended path of travel of the assembly during mowing, said assembly comprising:
a pair of elongated sickles each having a longitudinally extending backing bar and a series of knife sections

mounted on said bars and projecting laterally outwardly therefrom,
said sections being respectively provided with outer tips spaced outwardly from their corresponding bars and with respective pairs of knife edges that converge toward said tips,
said sections further being respectively provided with top and bottom surfaces extending between said edges,
said backing bar of one of said sickles being located along said top surfaces of its sections and the backing bar of the other sickle being located along the bottom surfaces of its sections;
means for attaching said sickles to the support for reciprocation along the latter in mutually opposite directions through inward and outward strokes and in a common vertical plane,
said one sickle being raised with respect to said other sickle and said backing bars of the sickles being mutually overlapped during both of said strokes; and
means for effecting said reciprocation of the sickles,
said attaching means comprising a series of pointed guards and fastening means for securing said guards to the support with the points of the guards projecting outwardly from the support,
said guards supporting the sickles during said reciprocation thereof, being provided with normally horizontally disposed clearance slots for receiving said sections during reciprocation of the latter, and cooperating with the sections in effecting severance of standing crop material, the stroke of each sickle corresponding in length to the width of one section as measured along said bars,
said one sickle having at least a pair of sections adjacent an inner end thereof which are superimposed upon and in direct registration with a corresponding pair of sections adjacent an inner end of the other sickle when the sickles are at the full extent of their inward strokes such that the sections of the sickles overlap by at least two stroke lengths at said full extent of the inward strokes,
said sickles when at the full extent of their outward strokes being so disposed that the cutting portion of said assembly as defined by said edges of the sections extends continuously along the entire length of the assembly without a gap adjacent the midpoint thereof whereby to avoid leaving an uncut strip of standing crop material during operation,
the edges of those sections on said one sickle which are superimposed upon corresponding sections of the other sickle when the sickles are at the full extent of their inward strokes being provided with upwardly facing bevels, the edges of said corresponding sections of the other sickle being square and unbeveled to assure severing action of said corresponding sections with both their guards and the superimposed sections of said one sickle.

4,246,743

FULL BALE ALARM SYSTEM

L. Lavern Anstee, Leola, and Aquila D. Mast, Lancaster, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 1, 1979, Ser. No. 62,666

Int. Cl.³ A01D 87/00

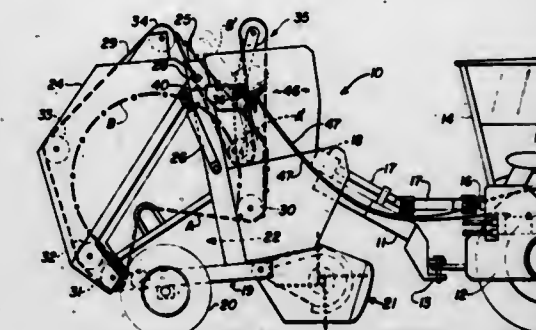
U.S. Cl. 56—341

9 Claims

1. In a roll forming machine adapted to be towed across a field behind a prime moving vehicle controlled by a vehicle operator in a cab comprising:

- (a) a mobile frame having opposing sides;
- (b) a pickup mounted to the frame for gathering crop material from the field;
- (c) delivery means movably mounted to the frame adjacent the pickup to receive the crop material from the pickup;
- (d) bale forming means movably mounted to the frame adjacent the pickup and the delivery means so that crop material brought into contact with the bale forming means is imparted with a rotative motion:

- (e) a bale forming region on the frame generally defined by the bale forming means and the delivery means;
- (f) takeup means movably mounted to the frame to control the playing out of the bale forming means about the crop material as it expands circumferentially in size and is formed into a roll;
- (g) an electrical power source connectable to the machine;
- (h) an electrical switch attached to the frame and connectable to the electrical power source cooperative with the



takeup means so that when the takeup means moves to a predetermined position relative to the frame in response to the expansion of the roll to a predetermined size the takeup means contacts the electrical switch; and
(i) indicator means remotely mounted from the frame and connectable to the power source and the electrical switch to indicate to the operator in response to the takeup means contacting the electrical switch to complete the circuit between the power source and the indicator means when the roll has reached the predetermined size.

4,246,744

PNEUMATIC YARN SPLICING APPARATUS

Isamu Matsui; Shigeru Takasaki, both of Kyotoshi, and Hiroshi Mima, Joyoshi, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

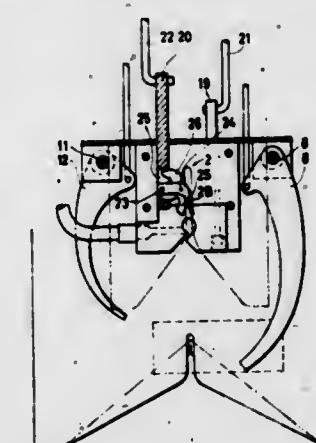
Filed Mar. 12, 1979, Ser. No. 19,418

Claims priority, application Japan, Mar. 17, 1978, 53-31251

Int. Cl.³ D01H 15/00

U.S. Cl. 57—22

10 Claims



1. Yarn splicing apparatus comprising an air jet nozzle having an elongated yarn inserting hole into which spun yarn ends are introduced, a yarn inserting slit extending in the tangential direction of the yarn inserting hole, and a V-shaped yarn inserting guide portion connecting with the yarn inserting slit and air jet means communicating with the hole to create a swirling air stream therein, and a yarn end cutting and holding device disposed at at least one end of the yarn inserting hole.

4,246,745

APPARATUS FOR LINING A HOUSING OF A FIBER OPENING DEVICE AND ROLLER

Siegfried Rehm, Stammham, and Kurt Beizinger, Ingolstadt, both of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

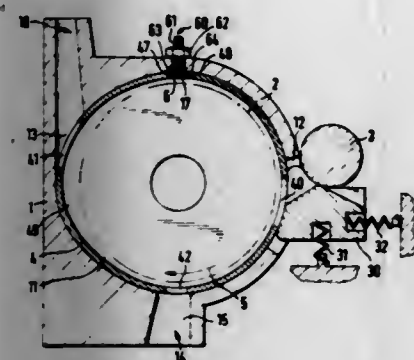
Filed Apr. 18, 1979, Ser. No. 31,224

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819060

Int. Cl.³ D01H 7/892

U.S. Cl. 57—58.91

11 Claims

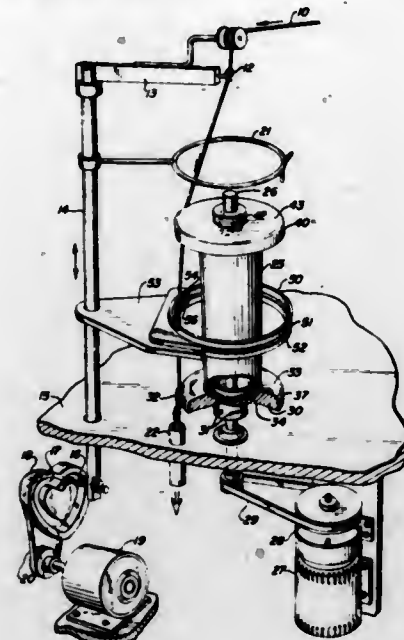


1. A fiber opening device for an open-end spinning apparatus having a housing, the inner wall of which surrounds an opening roller and which includes apertures in its generated surface which connect the interior of the housing to other parts of the spinning apparatus wherein the inner wall of the housing opposite the periphery of the opening roller consists of a thin-walled, wear-resistant insert constructed in the form of a metal band which has apertures in the region of the housing apertures wherein the improvement comprises:

said metal band including two free ends defining a joint therebetween disposed as viewed in the direction of conveyance of the fiber between an aperture in the housing leading to a feed passage and an aperture leading to a delivery device;

said housing including a recess in the region of said joint; and a tightening device received in said recess for pressing the metal band against the inner wall of said housing.

(e) a twister ring concentrically positioned about said spindle and having a slit; and



(f) a rotatable traveler positioned on said twister ring having at least one hook inwardly directed toward said spindle.

4,246,747

HEAT BULKABLE POLYESTER YARN AND METHOD OF FORMING SAME

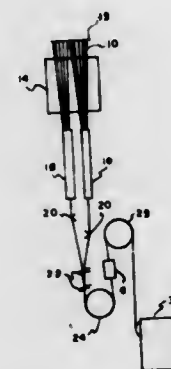
Joseph A. Plunkett, and James R. Talbot, both of Charlotte, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Filed Jan. 2, 1979, Ser. No. 219

Int. Cl.³ D02G 1/18; D01D 5/084, 5/088

U.S. Cl. 57—245

15 Claims



1. A process for producing a latent heat bulkable polyethylene terephthalate yarn comprising melt spinning a polyethylene terephthalate fiber-forming polymer into a plurality of filaments, cooling the melt-spun filaments below the second order transition temperature, dividing the filaments into at least two groups, subjecting at least one group of filaments to a heat treatment at a temperature above the second order transition temperature, recombining the filaments into a yarn and taking up the yarn at a speed in excess of 8000 feet per minute and subsequently subjecting the yarn to a heat treatment at a temperature of 100 to 225 degrees centigrade in a relaxed state to differentially shrink said yarn and develop bulk.

4,246,746

METHOD AND APPARATUS FOR WINDING AND TWISTING YARN

Robert M. Rumsey, College Park, and Robert W. Thornton, Douglasville, both of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 31, 1979, Ser. No. 7,955

Int. Cl.³ D01H 7/52

U.S. Cl. 57—75

24 Claims

1. An inline twister for winding and twisting yarn onto a spool, which comprises:

- (a) a rotatable spindle;
- (b) a bottom flange securely fastened to said spindle having at least one catch on the outer periphery;
- (c) a removable interlocking top flange positioned on said spindle;
- (d) means for positioning said spool concentrically about said spindle;

4,246,748

METHOD AND APPARATUS FOR DETECTING THE FAULTY OPERATION OF SPINNING UNITS OPEN-END SPINNING MACHINES

Peter Artzt, Pfullingen; Gerhard Egbers; Rolf Guse, both of Reutlingen, and Sohrab Tabibi, Pfullingen, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

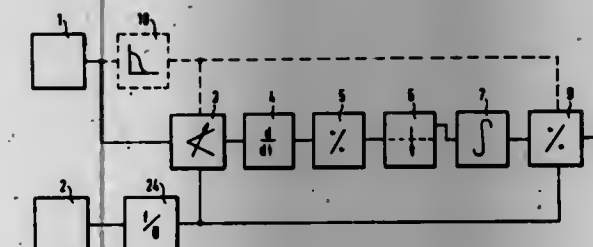
Filed Feb. 11, 1977, Ser. No. 767,998

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605736

Int. Cl.³ D01H 13/22, 13/32; G06F 15/46

U.S. Cl. 57—265

6 Claims



1. A method of detecting faulty operation of spinning units of open-end spinning machine by monitoring the faults appearing in the yarn being produced on said spinning machine, wherein a sensor is positioned between a spinning compartment and a package receiving said yarn generating an electrical signal corresponding to the faults in said yarn, said method comprising the following steps:

- (a) differentiating said electrical signal produced by said yarn sensor producing pulses corresponding to the faults in said yarn,
- (b) shaping said pulses with a pulse shaping circuit,
- (c) integrating said shaped pulses producing an integrated signal, and
- (d) comparing said integrated signal with a predetermined threshold value for producing a signal indicating when the faults in said yarn exceed a predetermined level.

4. An apparatus for detecting faulty operation of spinning units of an open-end spinning machine by monitoring faults appearing in the yarn being produced on said spinning machine as it is fed from a spinning compartment to a package, said apparatus comprising:

- (a) means for monitoring said yarn as it is fed from said spinning compartment to said package and generating an electrical signal responsive to faults occurring in said yarn,
- (b) means for differentiating said electrical signal producing pulses corresponding to the faults appearing in said yarn,
- (c) means for shaping said pulses,
- (d) means for integrating said shaped pulses producing an integrated signal, and
- (e) means for generating a threshold signal, and
- (f) means for comparing said integrated signal with said threshold signal and generating a signal when said integrated signal exceeds said threshold signal.

4,246,749

METHOD OF AND APPARATUS FOR PIECING YARN IN OPEN END ROTOR SPINNING UNITS

Karel Mikulecky, Chocen; Jiri Elias, Brandys nad Orlicí; Frantisek Burysek, Usti nad Orlicí; Stanislav Esner, Usti nad Orlicí; Stanislav Skoda, Usti nad Orlicí; Miloslav Tyl, Usti nad Orlicí, and Jan Janousek, Brandys nad Orlicí, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlicí, Czechoslovakia

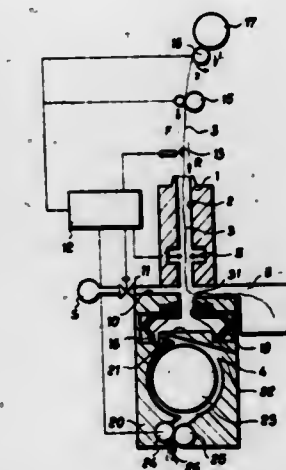
Filed Apr. 12, 1979, Ser. No. 29,371

Claims priority, application Czechoslovakia, Apr. 21, 1978, 2561-78

Int. Cl.³ D01H 15/02

U.S. Cl. 57—263

4 Claims



1. In a method of piecing yarn in spinning units for open end rotor spinning which includes reintroducing into a spinning rotor a yarn end located inside a withdrawing channel under an underpressure effect, said yarn end being severed before being reintroduced within the withdrawing channel section, and the severed section thereof being removed,

the improvement wherein the reintroduction of yarn for the purpose of piecing is performed in two stages, the first stage comprising: stopping the yarn end within the sucking range of the spinning rotor immediately upon breakage, transporting said yarn end immediately thereupon by a first, shorter reverse motion of the yarn into a withdrawal chamber in which the end of yarn is retained, and the second stage comprising: thereupon separating the end of yarn and withdrawing it by the withdrawal chamber, and thereafter starting a second, longer reverse motion of the yarn by which a new yarn is introduced into the spinning rotor.

4,246,750

SELF-TWIST YARN AND METHOD OF MAKING SAME

Alan H. Norris, and Phillip W. Chambley, both of Rome, Ga., assignors to WVG Industries, Inc., Rome, Ga.

Continuation of Ser. No. 906,483, May 17, 1978, abandoned.

This application Jul. 24, 1979, Ser. No. 60,095

Int. Cl.³ D02G 3/28; D01H 7/92; D02G 1/02

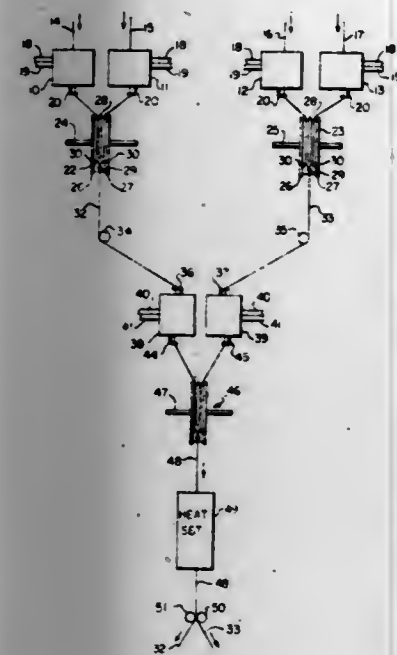
U.S. Cl. 57—293

3 Claims

1. A method of forming stable twisted yarn products comprising the steps of providing a plurality of singles yarns in a plurality of groups and maintaining the yarns in each group separated from each other;

impairing false twist to at least one of the singles yarns in each group to form in said yarn a sequence of twist regions having longitudinally spaced regions of alternating S and Z twist separated by nodes of twist reversal; placing the singles yarns in each group in closely spaced relationship with each other with regions of the same direction of twist disposed beside each other; permitting at least two of the singles yarns in each group to self-twist to form a plurality of plied strands and imparting

additional twist to at least two of said plied strands to form therein a sequence of twist regions of alternating S and Z ply twist separated by the nodes; placing said plied strands in closely spaced relationship with



each other with their regions of opposite ply twist being disposed beside each other and joining the plied strands to each other between regions of opposite twist; and heating the joined plied strands to a temperature sufficient to heat-set the twist characteristics thereof.

4,246,751

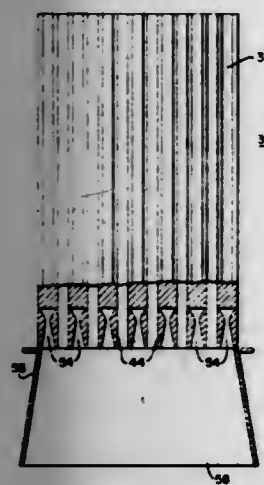
THRUST ENGINE AND PROPELLANT EXHAUST ARRANGEMENT THEREFOR

Francis D. Retallick, Bethel Park, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 12, 1963, Ser. No. 272,726

Int. Cl.² G21D 5/02

U.S. Cl. 60-203



1. A nuclear engine and nozzle arrangement for a nuclear rocket, said arrangement comprising a cluster of elongated fissile fuel bearing and high temperature capacity modules suitably supported in a pressure vessel, said modules each having a plurality of coolant-propellant channels extending therethrough, a convergent-divergent nozzle structure of fixed cross-sectional dimension secured to the end portion of each of said modules said modules, a divergent-only unitary skirt member connected directly to the propellant exit end of said modular cluster in series with and diverging from the divergent ends of said convergent-divergent nozzle structures, said modules being formed to conduct a compressible propellant therethrough at sub-sonic velocities, said nozzle structures being formed to develop supersonic velocities of the propellant and

said divergent-only skirt being formed to develop further the supersonic velocities of said propellant.

4,246,752

TURBOCHARGED ENGINE CONTROL

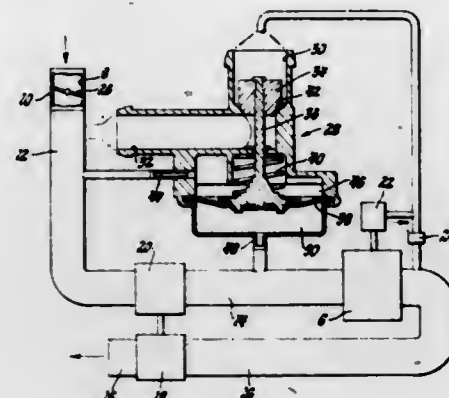
Dean G. Tryon, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1978, Ser. No. 957,456

Int. Cl.³ F01N 3/10; F02B 75/10, 33/44

U.S. Cl. 60-290

4 Claims



1. In an engine having an induction passage, a throttle in said passage movable to and from an open position for controlling flow through said passage, and a compressor in said passage downstream of said throttle, the improvement comprising a control responsive to the difference between the pressure in said induction passage downstream of said compressor and the pressure in said induction passage between said compressor and said throttle and effective to vary an engine operating parameter only when said difference exceeds a value occurring only as said throttle is moved from said open position.

4,246,753

ENERGY SALVAGING SYSTEM

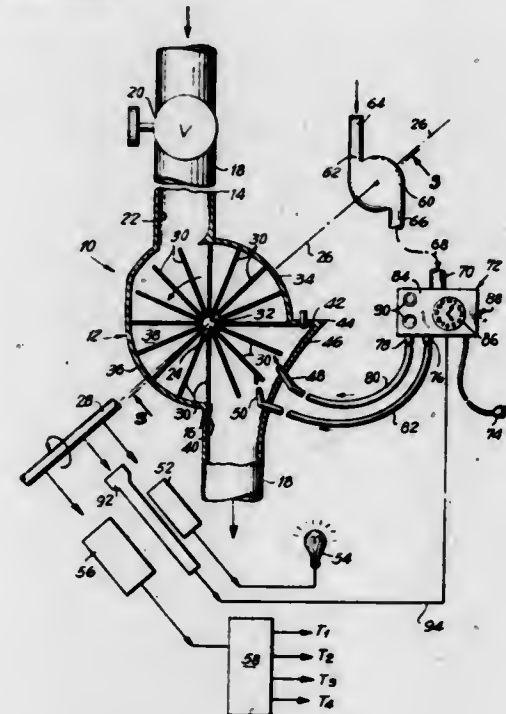
Benjamin Redmond, 520 E. 77th St., New York, N.Y. 10021

Filed Oct. 24, 1979, Ser. No. 88,085

Int. Cl.³ F16D 31/02

U.S. Cl. 60-398

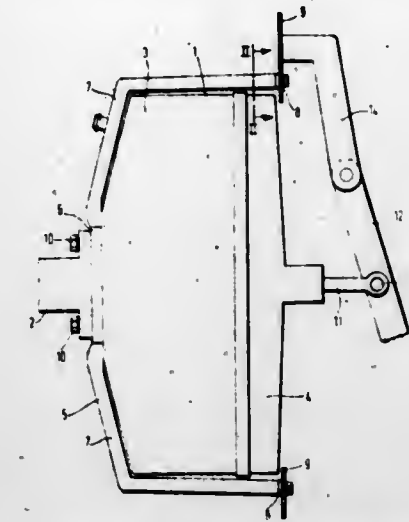
4 Claims



1. An energy salvaging system for use in conjunction with buildings having non-pressurized drainpipes for gravitationally conducting wet and substantially non-homogeneous sewage including solids from one or more points of entry toward a discharge station into a public sewer system, or the like, com-

prising, in combination: rotatable means communicatively disposed within said drainpipe intermediate said entry points and said discharge station, for salvaging otherwise wasted kinetic energy associated with moving substantially non-homogeneous sewage including solids, said rotatable means comprising a housing, a shaft extending through said housing journaled for rotation within said housing, and a plurality of impellers integrated with said shaft and positioned to intercept the flowing sewage, said impellers being formed with impact surfaces normally contacted by the moving sewage at an impact location with a force sufficient to impart rotary movement to said integrated impellers and shaft, and cleaning means disposed at a position spaced from said impact location for forcibly directing a jet of cleaning matter at said impact surfaces at a time when they are facing the flow direction of the moving sewage, thereby causing a dislodging of solid sewage remaining on the impact surfaces after initial contact so as to utilize gravitational forces to draw the dislodged sewage toward the public sewer system, and accumulation means communicating with said shaft for storing useful potential energy generated from said kinetic energy.

said vacuum casing being secured to said housing structure to place said master cylinder and said booster in an



operative relationship, said housing structure supporting said unit.

4,246,754

SOLID STATE THERMAL ENGINE

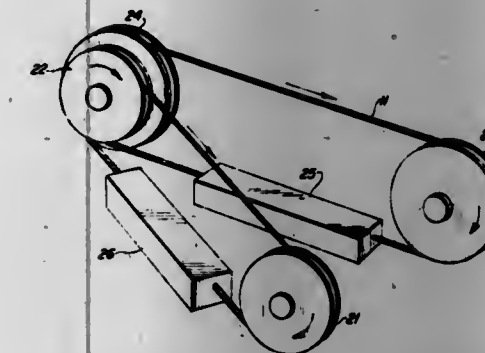
Clarence M. Wayman, Urbana, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

Filed Mar. 12, 1979, Ser. No. 19,866

Int. Cl.³ F03G 7/06

U.S. Cl. 60-527

9 Claims



1. A solid state thermal engine comprising:
(a) an endless braided belt fabricated from a marmem alloy;
(b) means for guiding the belt along a closed path;
(c) cooling means and heating means in said closed path;
(d) means for applying tension to the belt; and
(e) means for utilizing the energy output of the engine in relation to the motion of the belt.

4,246,755

MECHANICALLY CONTROLLED POWER BRAKE UNIT

Rolf Weller, Frankfurt-Sindlingen, Fed. Rep. of Germany, assignor to IIT Industries, Inc., New York, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,866

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814372

Int. Cl.³ B60T 13/00

U.S. Cl. 60-547 R

12 Claims

1. A mechanically controlled power brake unit for an automotive vehicle comprising:
a master cylinder;
a booster utilizing the pressure difference between a vacuum and atmospheric pressure including a vacuum casing; and
a cage-like housing structure including a centrally disposed annular flange and a plurality of embracing ribs fastened to said flange, said housing structure completely enclosing said vacuum casing and secured to a splashboard of said vehicle, one end of said master cylinder and one end of

4,246,756

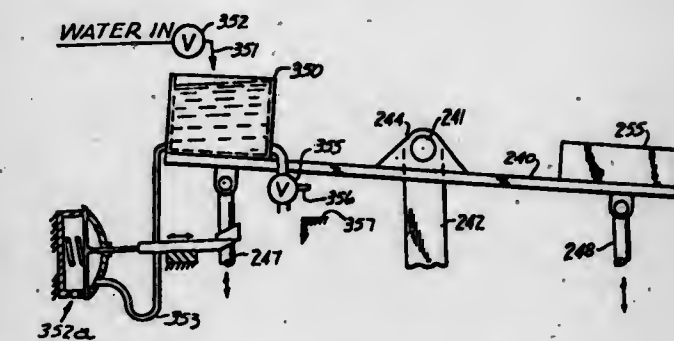
PRESSURE SOURCE AND SYSTEMS INCORPORATING IT

William S. West, 380 Cliff Dr., Apt. 2, Pasadena, Calif. 91107
Division of Ser. No. 659,979, Feb. 2, 1976, Pat. No. 4,074,526, and Ser. No. 432,667, Jan. 17, 1974, Pat. No. 3,961,480. This application Jan. 9, 1978, Ser. No. 868,182

Int. Cl.³ F03G 3/00

U.S. Cl. 60-640

2 Claims



1. A pressure source comprising: pressurizing means comprising an enclosure which bounds a chamber, said enclosure comprising a first and a second portion, at least one of which is movable relative to the other as a consequence of a force applied to one of them so as to reduce the volume of the chamber and thereby to place under pressure fluid which is contained therein; a conduit leading from said chamber through which a stream of said fluid under pressure can flow for use in doing work; weight means; force transmission means so disposed and arranged as to apply force from elevated weight means to one of said portions for reducing the volume as a consequence of the descent in elevation of said weight means, whereby to produce said stream under pressure; and release means comprising a latch preventing the descent of the weight means until released as a consequence of the presence of a predetermined weight, said latch being engageable to said force transmission means for that purpose, and being releasable by fluid pressure derived from a supply of liquid constituting the weight means and having at least the said predetermined weight.

4,246,757

COMBUSTOR INCLUDING A CYCLONE PRECHAMBER AND COMBUSTION PROCESS FOR GAS TURBINES FIRED WITH LIQUID FUEL

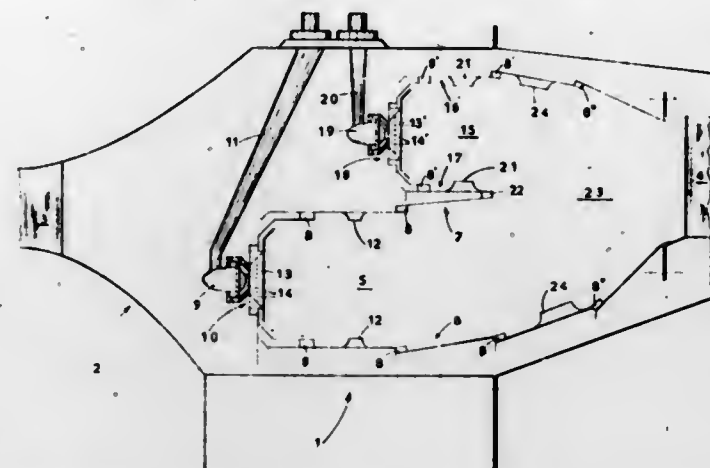
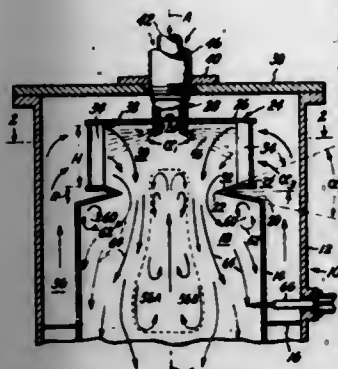
Paul V. Heberling, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 27, 1979, Ser. No. 24,265

Int. Cl.³ F02C 7/22

U.S. Cl. 60—737

8 Claims



1. A combustion apparatus for a gas turbine engine comprising, in combination:

(a) a combustion liner defining a combustion chamber terminating at its upstream end in an inlet throat and termination downstream of said throat in an outlet for exhausting combustion gases;

(b) a cyclonic prechamber assembly including

(i) a cyclonic prechamber adapted to vaporize liquid fuel therein, said prechamber being substantially cylindrical through at least a portion of its axial extent, terminating at its downstream end in said throat, and opening to said combustion chamber through the throat;

(ii) a plurality of converging, spaced-apart highly-angled vanes disposed circumferentially about the cylindrical portion of said prechamber such that the ratio of "total chamber flow area" to the cylindrical area of said prechamber is from about 0.05:1 to about 0.5:1, with opposing faces of each pair of adjacent vanes defining inwardly converging airflow channels adapted to introduce air therethrough with a high tangential component of velocity into the prechamber;

(c) means in flow communication with the upstream end of said prechamber for introducing liquid fuel with a spray pattern in the form of a substantially hollow cone coaxial with said prechamber and having a vertex angle sufficiently large such that the introduced fuel is directed toward an upstream portion of each vane and not toward said throat opening, and

(d) an ignitor in said combustion chamber for igniting fuel vapor received in premixed form from said prechamber.

4,246,758

ANTIPOLLUTION COMBUSTION CHAMBER

Jacques E. J. Caruel, Dammarie les Lys, and Philippe M. D. Gastebois, Melun, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Aug. 30, 1978, Ser. No. 937,929

Claims priority, application France, Sep. 2, 1977, 77 27038

Int. Cl.³ F02C 7/22

U.S. Cl. 60—747

5 Claims

1. A combustion device for a turbojet engine, comprising: an annular casing, the upstream part of said casing defining a diffuser for air issuing from a compressor, two annular, coaxial flame tubes, located in the casing, with their radial heights being approximately the same, while their axial lengths differ, each tube consisting of an internal annular wall and an external wall, secured at their upstream ends to a base upon which fuel injectors are mounted, the external wall of the inner tube and the internal wall of the outer tube being connected to form a

junction at their downstream ends, the external wall of the outer tube and the internal wall of the inner tube extending past said junction to define a common dilution and mixing zone for the gaseous flows emanating from the two tubes, the axial length of the inner tube being sufficient to permit the achievement of combustion reactions prior to the entry of the gases in the common dilution and mixing zone, the injectors of the inner tube being mounted on the base of said tube by the intermediary of a flared member of less volume than the tube, a

large number of small orifices being formed in said intermediate member, allowing the injection of a portion of the air necessary for combustion in the immediate vicinity of the injector, the outer tube having an axial length less than that of the inner tube with its base being located downstream with respect to the base of the inner tube, said common dilution and mixing zone having on the upstream part of its walls orifices regularly distributed in coplanar rows, effecting the injection of a flow of air to assure the homogenization of the gaseous flows emanating from the two tubes.

4,246,759

METHOD AND APPARATUS FOR CONDITIONING AIR

Jacques Signoret, Toulouse, France, assignor to ABG-Semca S.A., Toulouse, France

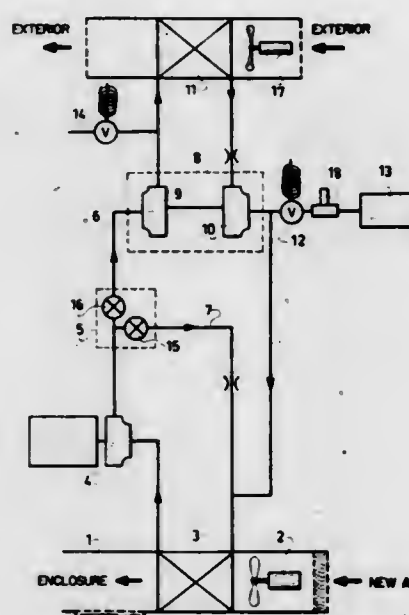
Filed Apr. 25, 1977, Ser. No. 790,674

Claims priority, application France, Apr. 28, 1976, 76 13080

Int. Cl.³ F25B 9/00, 29/00, 41/04, 45/00

U.S. Cl. 62—77

13 Claims



1. A process for conditioning air for an enclosure comprising passing air to be admitted to the enclosure through a conditioning exchanger for selectively heating or cooling the air, circulating a primary gas throughout a conditioning circuit, compressing said primary gas whereby said primary gas absorbs

external energy, directing said compressed primary gas to a first portion of said conditioning circuit, a second portion of said conditioning circuit or partially into said first and second portions, said first portion conveying said compressed primary gas to said conditioning exchanger for heating air passing into said enclosure, said second portion conveying said primary gas through a compressor for future compressing said primary gas, an ambient air heat exchanger for cooling said further compressed primary gas and an expansion turbine for further cooling said primary gas to said conditioning exchanger for cooling air passing into said enclosure, varying the flowing mass of the primary gas in said conditioning circuit so that the energy absorbed by said primary gas during compression is proportional to the degree of heating or cooling required in said conditioning exchanger by maintaining the velocity of the flowing gas essentially constant and varying the pressure of said primary gas in response to the temperature of the air in said enclosure by admitting additional primary gas to or releasing some primary gas from said conditioning circuit, providing bypass means responsive to the temperature in said enclosure for directing said primary gas into said first portion, said second portion or partially into said first and second portions and providing means for admitting primary gas to and releasing primary gas from said conditioning circuit and operable in response to the flow directing positioning of said bypass means.

4,246,760

NON-REVERSE HOT GAS DEFROST SYSTEM

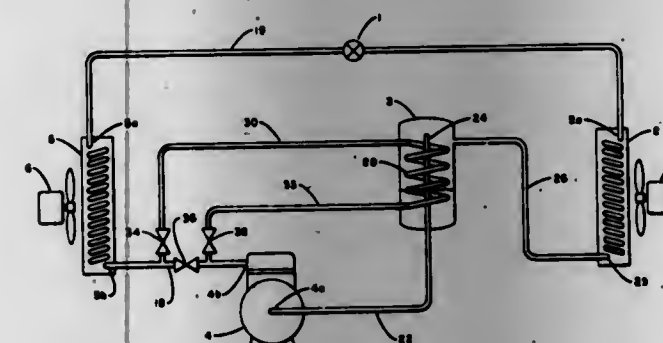
Peter L. Cann, Canastota; Richard J. Duell, and Donald J. Casler, both of Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,361

Int. Cl.³ F25B 41/00; F25D 21/06; F25B 47/00

U.S. Cl. 62—81

4 Claims



1. A method of defrosting a heat exchanger within a refrigeration system having a compressor, condenser, evaporator, an evaporator fan, means for circulating heat transfer media in heat exchange relation with the condenser, an expansion device and an accumulator with a heat exchanger which comprises the steps of:

- conducting gaseous refrigerant from the compressor to the heat exchanger in the accumulator;
- conducting the refrigerant from the heat exchanger to the expansion device wherein the refrigerant pressure is decreased;
- circulating the liquid refrigerant through the evaporator having ice on its surface such that the liquid refrigerant is further condensed and subcooled supplying heat to melt the ice on the evaporator;
- preventing the evaporator fan and the means for circulating heat transfer media to the condenser from operating;
- conducting the liquid refrigerant from the evaporator to the accumulator where it is vaporized in heat exchange relation with the hot gaseous refrigerant flowing through the heat exchanger; and
- routing gaseous refrigerant from the accumulator to the compressor.

4,246,761

ABSORPTION HEAT PUMP CONTROL SYSTEM

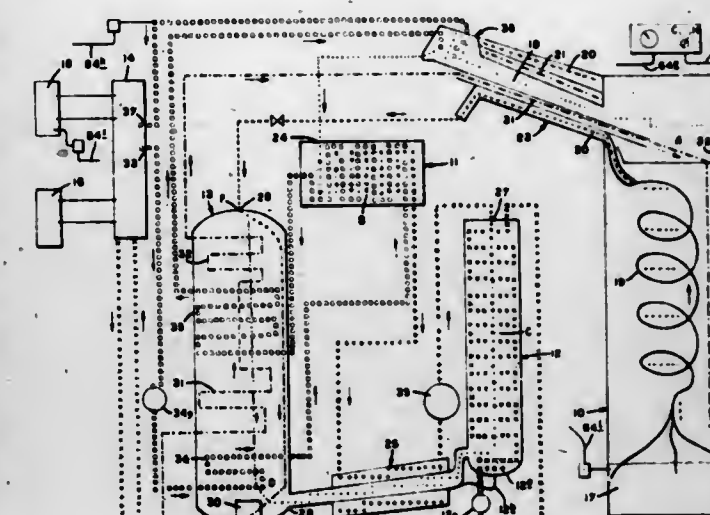
Benjamin A. Phillips, Benton Harbor, and Gordon P. McFaul, St. Joseph, both of Mich., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 30, 1978, Ser. No. 956,118

Int. Cl.³ F25B 15/00

U.S. Cl. 62—148

30 Claims



1. In an absorption heat pump having a generator, heating means associated with the generator for imparting heat to the generator, a condenser, an evaporator, an absorber, solution pumping means for pumping solution from the absorber to the generator, a first coolant circuit in heat exchange relation with the absorber and condenser, a second coolant circuit in heat exchange relation with the evaporator, first coolant pumping means for circulating coolant through the first coolant circuits, second coolant pumping means for circulating coolant through the second coolant circuit, an ambient air heat exchanger, outside fan means for passing ambient air over the ambient air heat exchanger, an indoor heat exchanger and valve means for selectively interconnecting in a heating mode the first coolant circuit to the indoor heat exchanger and the second coolant circuit to the ambient air heat exchanger, and for selectively interconnecting in a cooling mode the second coolant circuit to the indoor heat exchanger and the first coolant circuit to the ambient heat exchanger,

an electrical control circuit which comprises:

- unit activation means having an on and an off position responsive to indoor temperature;
- mode selection means having a heating mode position and a cooling mode position;
- safety means for sensing hazardous operating conditions;
- timer means which is activated by the unit activation means being in the on position and the safety means sensing no hazardous operating conditions, and which after a predetermined period of activation turns an output to an on position;
- first control means for operating the outside fan means when the unit activation means is in the on position;
- second control means for operating the solution pumping means when said timer means output is in the on position;
- third control means for operating the second coolant pumping means when said timer means output is in the on position;
- fourth control means for moving the valve means to the heating position when said mode selection switch is in the heating position and for moving the valve means to the cooling position when said mode selection means is in the cooling position; and
- fifth control means for operating the heating means associated with the generator when said timer means output is in the on position, the unit activation means is in the on position and said safety means senses no hazard.

4,246,762

ABSORPTION REFRIGERATION SYSTEM

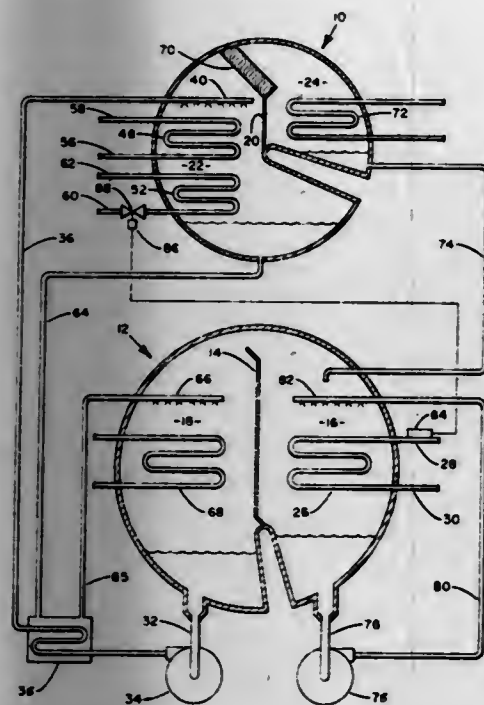
Joseph R. Bourne, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 913,621, Jan. 8, 1978, abandoned. This application Jan. 18, 1979, Ser. No. 49,028

Int. Cl.³ F25B 15/00, 27/00, 33/00, 27/02

U.S. Cl. 62-148

13 Claims



1. In an absorption refrigeration system an improved apparatus for separating refrigerant from a solution of refrigerant and absorbent fluid including:

- a primary heat exchanger,
- means to connect the primary heat exchanger to a source of low temperature energy for passing heat therefrom to the primary heat exchanger,
- an auxiliary heat exchanger,
- means to connect the auxiliary heat exchanger to a source of high temperature energy for passing heat therefrom to the auxiliary heat exchanger,
- means to pass solution having a high proportion of refrigerant in heat transfer relation with the primary heat exchanger whereby heat from the low temperature energy source is transmitted to the solution through the primary heat exchanger to drive off refrigerant vapor, and to pass the solution in heat transfer relation with the auxiliary heat exchanger after it has passed in heat transfer relation with the primary heat exchanger, whereby heat from the high temperature energy source is transmitted to the solution through the auxiliary heat exchanger to drive off additional refrigerant vapor, and
- means to control the amount of heat transmitted to the solution from the high temperature energy source in response to the difference between the heat required to produce the desired concentrated solution and the heat transmitted to the solution from the low temperature energy source.

4,246,763

HEAT PUMP SYSTEM COMPRESSOR FAULT DETECTOR

Dale A. Mueller, St. Paul, and Stephen L. Serber, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 24, 1978, Ser. No. 954,266

Int. Cl.³ F25B 13/00, 49/00

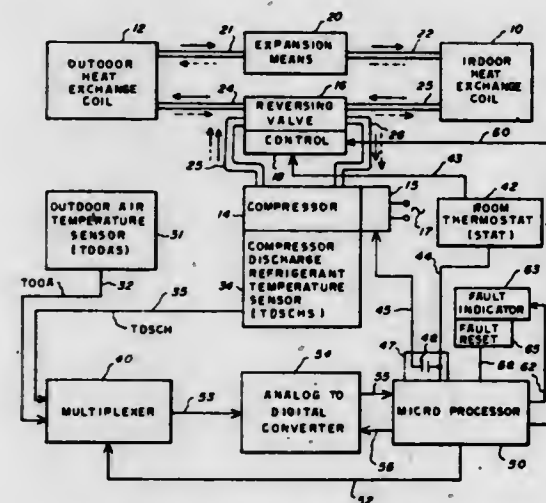
U.S. Cl. 62-160

8 Claims

1. A compressor fault detection and control system (hereinafter "fault detection system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling a building wherein said system comprises refrigerant compression

means, refrigerant compression control means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said fault detection system comprising:

- outdoor air temperature sensing means (hereinafter "TODAS") having an output indicative of outdoor air temperature (hereinafter "TODA");
- compressor discharge temperature sensing means (hereinafter "TDSCHS") having an output indicative of the temperature (hereinafter "TDSCH") of the refrigerant discharged from said refrigerant compression means; and
- building temperature sensing means (hereinafter "STAT") having an output indicative of a demand for heating or cooling of the building; and
- controller means having operative connections to said



TODAS, TDSCHS, and STAT so as to receive the outputs thereof, said controller means including circuit connect-disconnect means selectively interconnecting said STAT output to said refrigerant compression control means whereby when said STAT output is connected thereto said compression means is enabled to operate and when said STAT output is disconnected therefrom said compression means is inhibited from operating, said controller means also including timing means and means for comparing the value of TDSCH and the value of TODA plus a preselected constant K_1 , and said controller further being characterized by being adapted to inhibit said compression means from operating if, after a preselected time interval as measured by said timing means, the value of TDSCH is less than the value of TODA plus said predetermined constant.

4,246,764

WATER AND ENERGY CONSERVATION SYSTEM FOR FOOD SERVING ESTABLISHMENTS

Jimis Papadakis, 125 Elm St., Yonkers, N.Y. 10701

Filed Feb. 16, 1979, Ser. No. 12,876

Int. Cl.³ F25B 27/02

U.S. Cl. 62-183

6 Claims

1. A water and energy conserving apparatus for supplying pre-heated water to a hot water heater and for cooling at least one refrigeration unit using a compressible medium in a food serving establishment comprising:

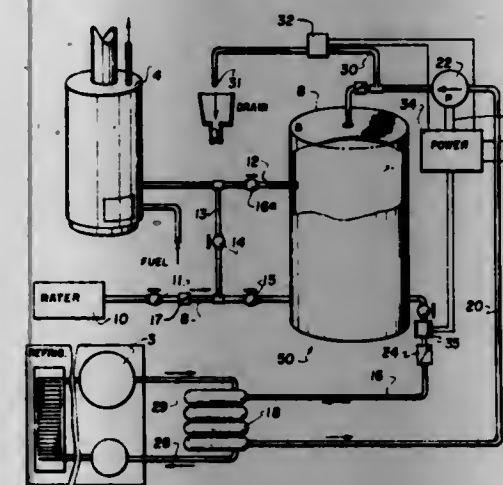
- a pre-heater tank adapted to be connected to a supply of cold water for receiving cold water therefrom;
- a cold water input line connected to said pre-heater tank and adapted to be connected to the source of cold water to supply cold water to said pre-heater tank;
- a cold water output line connected to said pre-heater tank;
- a heat exchanger connected to said cold water output line for receiving the compressible medium from the refrigeration unit and cooling the medium;
- a heated water output line connected to said heat exchanger and to said pre-heater tank for supplying water heated by

the compressible medium in said heat exchanger to said pre-heater tank;

circulator means connected to at least one of said cold water output line and said heated water output line for circulating water between said pre-heater tank and said heat exchanger;

a drain line connected to at least one of said cold water output line and said heated water output line for venting water to a drain;

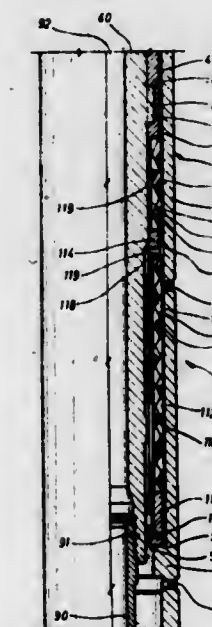
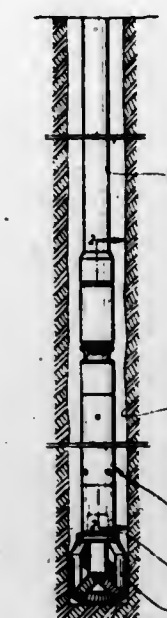
valve means connected to said drain line, for normally closing the flow of water therein;



thermostat means connected to said cold water output line for sensing the temperature of water therein;

said thermostat means connected to said valve means for opening said valve means and permitting a flow of water in said drain line when the temperature of water in said cold water output line rises above a selected temperature; and,

a pre-heated water line connected between said pre-heater tank and the hot water heater for supplying pre-heated water to the hot water heater.



outer rings and closed inner rings with tapered contact surfaces on the closed outer and inner rings.

4,246,766

VIBRATION-DAMPENING FLEXIBLE COUPLING

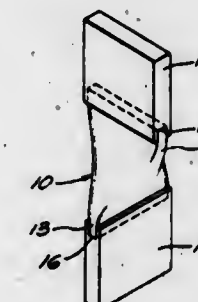
Robert E. Gottschalk, Los Angeles, Calif., assignor to Panavision, Incorporated, Tarzana, Calif.

Filed Oct. 2, 1978, Ser. No. 947,491

Int. Cl.³ F16D 3/58

U.S. Cl. 64-11 R

9 Claims



4,246,765

SHOCK ABSORBING SUBASSEMBLY

Clarence J. Zabcik, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,824

Int. Cl.³ E21B 17/07; F16D 3/06

U.S. Cl. 64-23

16 Claims

1. In a shock absorbing subassembly, for use in an oil well drilling string above a drilling bit to absorb and reduce bit induced vibration and impact loads, having a mandrel, a body non-rotatably and slidably mounted about said mandrel, and a shock absorber element, the improvement which comprises:

1. A flexible coupling for connecting a driving member to a driven member, the coupling being formed of elastomeric material in the shape of a cylindroid having axially spaced straight end ribs positioned at right angles, and a flexible body extending between said end ribs, said body being bounded by

smooth warped surfaces and being convex midway between said end ribs.

4,246,767

COUPLING FOR THE VIBRATION-DAMPING TRANSMISSION OF TORQUES

Ilie Chivari, Berliner Strasse 1, 4690 Herne 2, Fed. Rep. of Germany

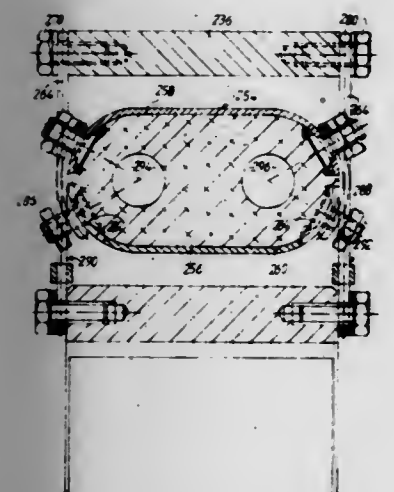
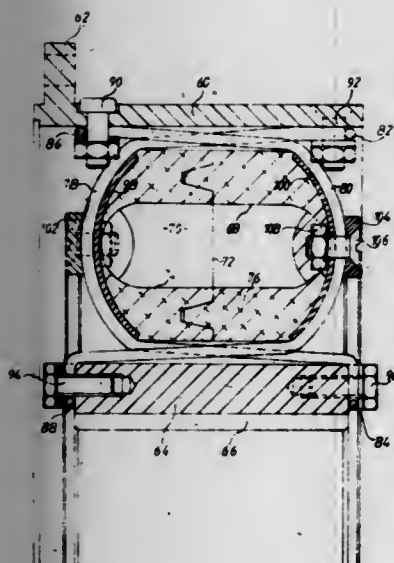
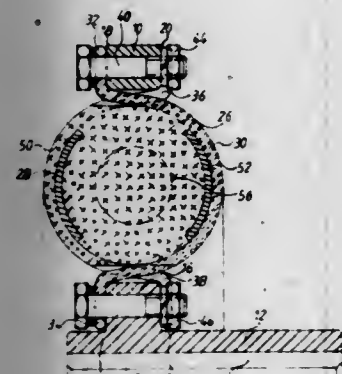
Filed Feb. 8, 1979, Ser. No. 10,426

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806350

Int. Cl.³ F16D 3/48, 3/28, 3/52

U.S. Cl. 64—11 R

27 Claims



1. A coupling for the vibration-damping transmission of torques, comprising:

a first coupling member;
a second coupling member substantially coaxial with said first coupling member;
a resiliently deformable intermediate member arranged between said first and second coupling members;
connection means for holding said intermediate member between said first and second coupling members, said connection means including a plurality of flexible elements, each of said flexible elements being attached to at least one of said first and second coupling members and each of said flexible elements engaging said intermediate member, said intermediate member being free from any structural connection to said coupling members other than said engagement with said flexible elements; and
said first and second coupling members, said intermediate member, and said connection means being so constructed and arranged that said intermediate member is resiliently deformed by compressive loading from said flexible elements with relative angular movement of said first and second coupling members.

4,246,768

APPARATUS FOR USE IN PRODUCING KNIT FABRICS

Walter Palange, 655 Park Shore Dr., Naples, Fla. 33940

Division of Ser. No. 886,776, Mar. 15, 1978. This application

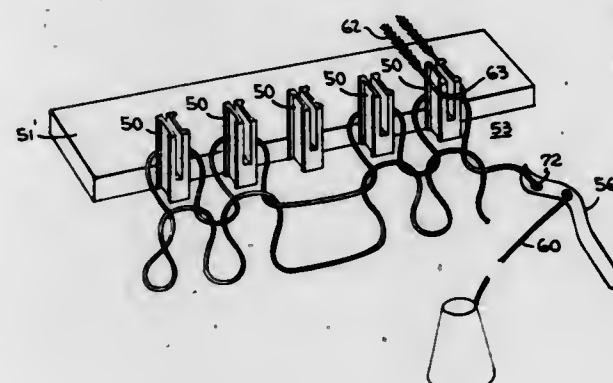
Mar. 23, 1979, Ser. No. 23,455

Claims priority, application Italy, Jun. 28, 1977, 16905 A/77; Oct. 21, 1977, 51513 A/77

Int. Cl.³ D04B 3/00, 35/02

U.S. Cl. 66—4

8 Claims



1. Apparatus for producing knitted fabrics comprising:
a base member having an outer edge;
a series of spaced substantially upright knitting support members, each support member including an outward-facing surface and an inward-facing surface relative to said outer edge, a pair of side surfaces, a free upper end and a lower end disposed along said outer edge;
support surface means, disposed on said base member adjacent said inward-facing surfaces of said support members for supporting a loop of yarn material being knitted when said loop is disposed about at least one of said support members;
at least one needle for use in forming looped stitches of said yarn material about said support members, said needle including: a forward end portion terminating in a tip and having an upwardly crested arch disposed rearwardly of said tip; a first yarn-threading eye in said forward end portion adjacent said tip; and a second yarn-threading eye in said forward end portion spaced rearwardly from said first yarn-threading eye substantially at the crest of said arch, said needle forward end portion extending continuously along an imaginary straight line defined between said first and second eyes;
said support members each having portions defining slot means therein, said slot means having an open upper end extending upwardly to said free upper end of each said support member and extending downwardly to a level below said support surface means, said slot means being

configured for receiving said needle, tip first, from below said support surface means from the direction of said outer edge of said base member.

4,246,769

CAM FOR CABINET LOCKING SYSTEM

Gordon McLaughlin, Beachburg, Canada, assignor to Storwal International Inc., Pembroke, Canada

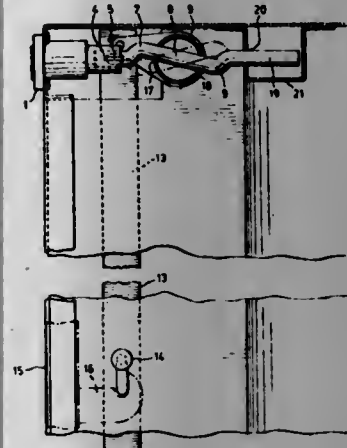
Filed Sep. 25, 1978, Ser. No. 947,296

Claims priority, application Canada, Sep. 20, 1978, 311719

Int. Cl.³ E05B 65/46

U.S. Cl. 70—85

4 Claims



1. In a locking mechanism for doors or drawers of articles of furniture comprising at least one lock bar slidably mounted in a said article and adapted to move from a first position wherein said doors or drawers may be opened to a second position wherein said doors or drawers are locked closed, and a lock rod member adapted to move said lock bar from said first to said second position, and a lock cylinder, the improvement comprising a pair of slots in said lock rod member, a cam member having a general axis perpendicular to said lock rod member, a support to receive and rotatably support one end of said cam member, said lock cylinder adapted to support the other end of said cam member and adapted to cause rotation of said cam member upon rotation of said lock cylinder, said cam member comprising an offset portion, said offset portion projecting through said pair of slots in said lock rod member and, said slots being dimensioned to receive said offset portion to effect rotation of said lock rod member upon rotation of said cam member.

4,246,770

APPARATUS FOR OPERATING ON HOLLOW WORKPIECES

Jozef T. Franek, Chorleywood, and Paul Porucznik, St. Albans, both of England, assignors to Metal Box Limited, Reading, England

Filed Jun. 12, 1979, Ser. No. 47,738

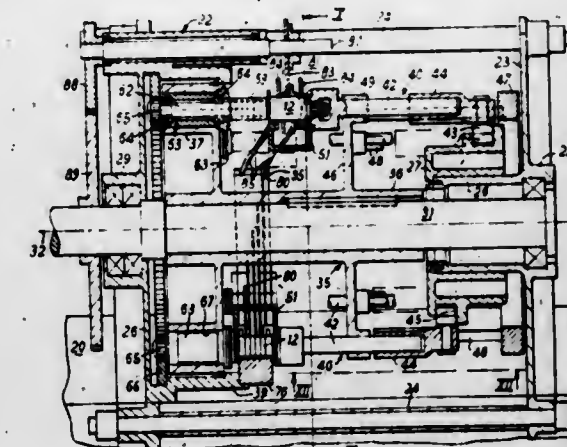
Int. Cl.³ B21D 17/04

U.S. Cl. 72—92

15 Claims

1. Apparatus for performing an operation on a succession of thin-walled hollow workpieces, comprising a fixed machine frame; a main turret rotatable about its own axis in said frame; a plurality of holding means carried by the main turret and spaced apart on a common pitch circle for holding a plurality of said workpieces; a feed station for feeding successive workpieces to the holding means; a discharge station, spaced circumferentially from the feed station with respect to the main turret axis for removing successive workpieces from the holding means; means on the main turret for carrying a male tool element for engagement within a said workpiece; means for carrying a further tool element for external engagement with a said workpiece in co-operation with the main tool element whereby to perform said operation on each workpiece in succession whilst the workpiece is held by the holding means between the feed station and the discharge station; and the

apparatus further comprising placing means carried by the main turret, for effecting relative movement, longitudinally of the main turret and in synchronism with rotation thereof, as between each holding means in succession and said male tool element, so as to put each workpiece and the tool elements into, and to take them out of, their relative dispositions for said operation, characterised in that each of said holding means



comprises a separate cradle having opposed end walls for accommodating a thin-walled hollow workpiece therebetween, a first of said end walls having an opening for receiving a said male tool element therethrough, and at least one of said end walls having lateral locating means for the workpiece, the cradle being open at one side for receiving the workpiece through that side.

4,246,771

CRIMPING TOOL HAVING DUAL PURPOSE RAM

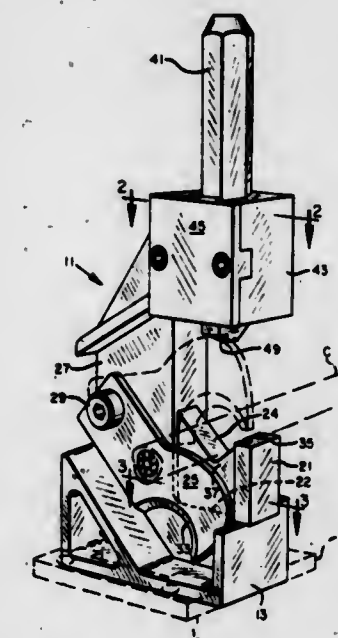
John W. Covill, 1525 NE. 129th Pl., Portland, Ore. 97230, and Henry Larson, Jr., 36201 Enterprise Rd., Creswell, Ore. 97426

Filed Jun. 5, 1978, Ser. No. 912,350

Int. Cl.³ B21D 39/04; H01R 43/04

U.S. Cl. 72—326

9 Claims



1. A severing and crimping tool for cables comprising a frame having a vertical guideway, a ram non-rotatably, slidably fitting in said guideway, a knife constituting an element separate from said ram, a stationary member having a recess located below and in alignment with said ram and adapted to hold the cable to be cut and thereafter a connector to be crimped, means mounting said knife on said frame independently of said ram and in spaced relation from said ram for move-

ment of said knife from an upper position to a lower position along a predetermined path coinciding with a portion of said ram.

means on said ram whereby said ram may be actuated to engage said knife for cutting the cable and for subsequently crimping a connector onto the cable, said ram being configured on its working end for direct indentation into a connector surrounding a cable portion.

4,246,772

PRESSING BRANCH PIPE ON THICK-WALLED SHELL-DEVICE FOR REALIZATION THEREOF

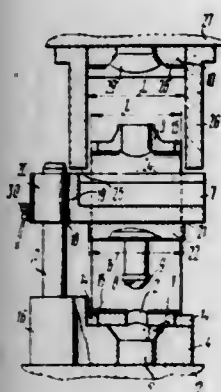
Evgeny N. Moshnin, ulitsa Ak. Pavlova, 50, kv. 5; Nikolai I. Romashko, Sumskoi proezd, 12, korpus 4, kv. 108; Leonid V. Prozorov, Sharikopodshipnikovskaya ulitsa, 2, kv. 39; Nikolai N. Zorev, ulitsa Noviki, 6, kv. 23; Oleg V. Scherba, ulitsa Shturvalnaya, 5, korpus 2, kv. 61; Viktor A. Odnodushny, Stremyanny pereulok, 2/12, kv. 8; Nikolai I. Zhiltsov, Leningradsky prospekt, 1, kv. 7; Lev A. Rabinovich, ulitsa Bolotnikovskaya, 40, korpus 3, kv. 13, all of Moscow; Lev V. Tupitsyn, Pushkin, ulitsa I Maya, 27/44, kv. 9, Leningrad; Konstantin P. Alexeev, Kolpino, ulitsa Truda, 15/5, kv. 16, Leningrad; Boris P. Kukushkin, Kolpino, ulitsa Lenina, 32, kv. 6, Leningrad; Jury V. Brjukhanov, Kolpino, ulitsa V. Slutskoi, 40, kv. 5, Leningrad; Boris A. Trifonov, Kolpino, ulitsa Proletarskaya, 58, kv. 185, Leningrad; Vyacheslav A. Morozov, Sudostroitelnaya ulitsa, 45, kv. 3; Gennady V. Rudyak, Gruzinsky pereulok, 14, kv. 50, both of Moscow, all of U.S.S.R.; Sergei K. Bakhvalov, deceased, late of Leningrad; U.S.S.R., and Larisa M. Bakhvalova, administrator, Kolpino, prospekt Lenina, 45, kv. 52, Leningrad, U.S.S.R.

Filed Jul. 19, 1978, Ser. No. 926,018

Int. Cl.² B21D 22/00

U.S. Cl. 72-358

8 Claims



1. A device for pressing a branch pipe on a thick-walled shell located between the upper and lower cross-heads of a press comprising a flanging die with projections for interaction with the corresponding slots on the faces of said thick-walled shell and for fixing the latter in the required position on said flanging die; guide columns secured on said flanging die; an arbor cantilevered on said guide columns with a provision for longitudinal movement relative to these columns; fixing devices, each mounted on said arbor and interacting with said guide column for fixing said arbor on said column; a punch holder secured on said arbor and having a lower surface whose shape corresponds to the shape of the inner surface of said thick-walled shell; a flanging punch secured on said punch holder; pushers secured on said upper movable cross-head of the press and arranged symmetrically to the longitudinal axis of said flanging punch and normally to the longitudinal axis of said arbor with which they interact; an additional movable straightening die secured on said upper movable cross-head of the press between said pushers and having a lower surface whose shape corresponds to the shape of the external surface of said thick-walled shell.

4,246,773 COMBUSTION PROPERTY OF GAS MEASURING APPARATUS

Masao Haruta, Osaka, Japan, assignor to Osaka Gas Company Ltd., Osaka, Japan

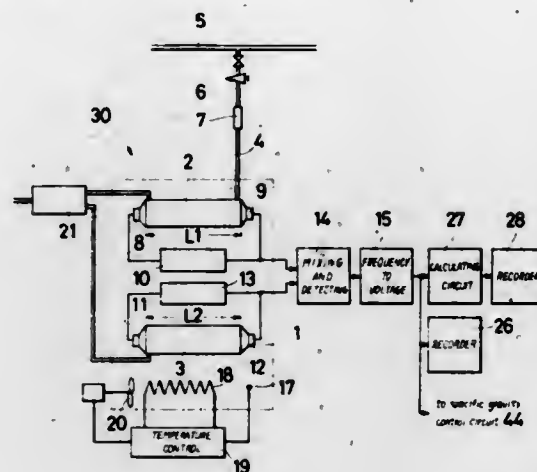
Filed Mar. 20, 1979, Ser. No. 22,357

Claims priority, application Japan, Mar. 31, 1978, 53-38707; Mar. 31, 1978, 53-38708; Jun. 26, 1978, 53-77667

Int. Cl.³ G01N 29/02

U.S. Cl. 73-24

4 Claims



1. An apparatus for measuring gross calorific value of a gas to be measured and consisting of a mixed gas which consists of plural gas components of a homologous series of hydrocarbons, said apparatus comprising:

first and second totally separate and isolated acoustic tubes; means for introducing into said first acoustic tube, from a suitable source, said gas to be measured, said suitable source of said gas to be measured comprising a gas supply pipe, a first supply of a mixed gas consisting of plural gas components of a homologous series of hydrocarbons, and first pipe means connecting said first supply to said gas supply pipe;

means for introducing into said second acoustic tube, from a source isolated and separate from and having no communication with said source of gas to be measured, a standard gas totally separate and isolated from said gas to be measured and of a known gross calorific value, said standard gas consisting of plural gas components of a homologous series of hydrocarbons;

said first acoustic tube having associated therewith first microphone means, first speaker means and first amplifier means for generating a first frequency signal representative of said gross calorific value of said gas to be measured;

said second acoustic tube having associated therewith second microphone means, second speaker means and second amplifier means for generating a second frequency signal representative of said known gross calorific value of said standard gas;

mixing and detecting circuit means for receiving said first and second frequency signals from said first and second amplifier means, respectively, and for generating an output signal having a beat frequency representative of a differential between said first and second frequency signals;

frequency voltage converter means for receiving said output signal from said mixing and detecting circuit means and for generating a voltage output signal proportional to said beat frequency and representative of said gross calorific value of said gas to be measured; and

means for maintaining the gross calorific value of said gas to be measured, in said suitable source thereof, at a predetermined value, said maintaining means comprising a second supply of at least one gas component of said homologous series of hydrocarbons, the calorific value of said mixed gas from said first supply being different from the calorific

value of said at least one gas component from said second supply, second pipe means connecting said second supply to said gas supply pipe, first and second flow meters in said first and second pipe means, respectively, for measuring the flows therethrough, a flow control valve in said second pipe means for regulating the quantity of said at least one gas component supplied to said gas supply pipe, calculating means connected to said first and second flow meters for producing a flow output representative of the flows through said first and second pipe means, control means connected to said frequency voltage converter means for receiving therefrom said voltage output signal and for generating a difference output indicative of any deviation between said gross calorific value of said gas in said gas supply pipe and said predetermined value, and flow rate control means for receiving said flow output from said calculating means and said difference output from said control means and connected to said flow control valve for controlling said flow control valve to adjust the quantity of said at least one gas component supplied to said gas supply pipe and to thereby adjust the gross calorific value of said gas in said gas supply pipe to said predetermined value.

4,246,774

DEVICE FOR MEASURING THE DRAFT OF SMOKING ARTICLES SUCH AS CIGARETTES AND COMBINED MEASURING APPARATUS INCLUDING SUCH A DEVICE

Jacques Flesselles; Jean Buisson; Michel Morin, all of Orleans; Jean-Pierre Boittin, Fleury-les-Aubrais; Pierre Triplot, Orleans, and Claude Vallee, Chaingy, all of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

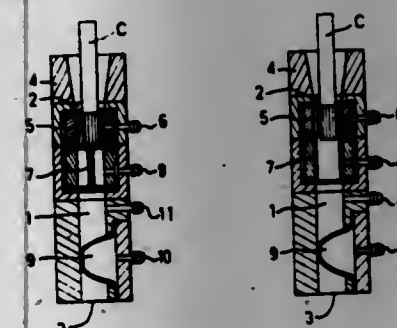
Filed Jul. 10, 1979, Ser. No. 56,292

Claims priority, application France, Jul. 13, 1978, 78 20930; Jul. 13, 1978, 78 20931

Int. Cl.³ G01N 15/08

U.S. Cl. 73-38

8 Claims



1. A device for measuring the draft of smoking articles of cylindrical shape comprising a tubular body, whose inner diameter is greater than the diameter of said articles, disposed vertically, means for feeding the articles one by one above the body and for directing them along the axis of the body, means operable to obturate the body thereby to stop an article in a given position, means for sealingly holding the article in said position, actuated when said obturation means is released, sealing means for defining with said holding means a gas-tight chamber inside the body, placed below said obturation means, and an orifice formed in the body between said obturation means and said sealing means and connected to a source of air under vacuum.

4,246,775 POROSITY MEASURING APPARATUS AND PERFORATING SYSTEM USING SAME

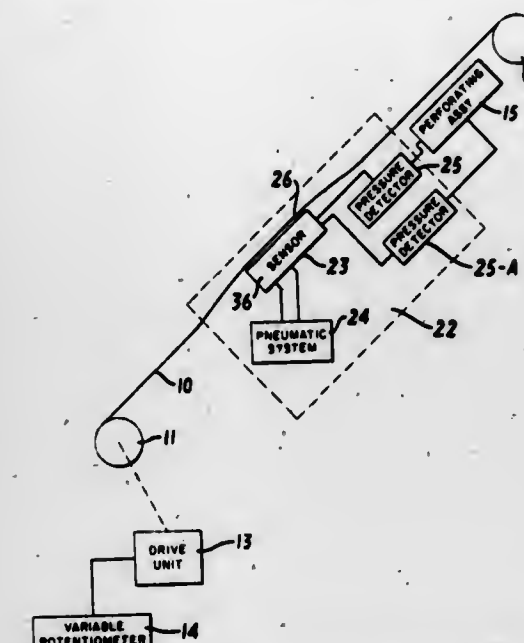
Edward B. Stultz, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,966

Int. Cl.³ G01N 15/08

U.S. Cl. 73-38

24 Claims



1. Apparatus for use with a moving web of sheet material comprising:

means for transporting said web of sheet material along a predefined path;

a sensor for measuring the porosity of said web, said sensor having a chamber and comprising a wall disposed adjacent said moving web, said wall having first and second ends transverse to said path and over which said web is initiated and terminates movement past said sensor, said wall further having first and second ends to the interior of said wall, and interior of said solid end sections about five apertures of lateral expanse in the direction of said path of about 1/4 inch and spaced from one another by lands of expanse in the direction of said path of about 1/4 inch, said apertures communicating with said chamber;

and means for subjecting said chamber to a pressure differential, whereby a seal is obtained between said moving web and said wall during flow through said web and said apertures and into said chamber.

4,246,776 LEAK SCOPE FOR DETECTING LEAKS IN PLUMBING EQUIPMENT

Cornell Thompson, 5927 Third St., Washington, D.C. 20011

Filed Sep. 25, 1979, Ser. No. 78,726

Int. Cl.³ A61B 7/02; G01M 3/24

U.S. Cl. 73-40.5 A

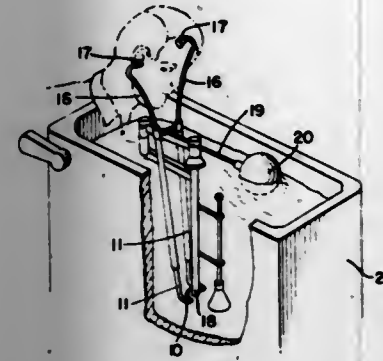
4 Claims

1. An apparatus for detecting water leaks in plumbing equipment by sound transmission, the combination comprising:

(a) an elongated metal rod having two upstanding portions and a third portion formed at substantially a 90° angle to said upstanding portions, said third portion arcuately shaped so as to be more easily positioned around a pipe so as to detect sound vibrations in a restricted area in said plumbing equipment, said rod operably connected to

(b) means for transmitting said sound vibrations to the ear, said transmitting means comprising tubes connecting an end of each of said upstanding portions of said metal rod to ear pieces, said tubes containing a plurality of wires for

transmitting the sound vibrations to the car, said wires positioned in a lower portion of each of the tubes in close



proximity to the upstanding portions of said rod to which said tubes are attached.

4,246,777

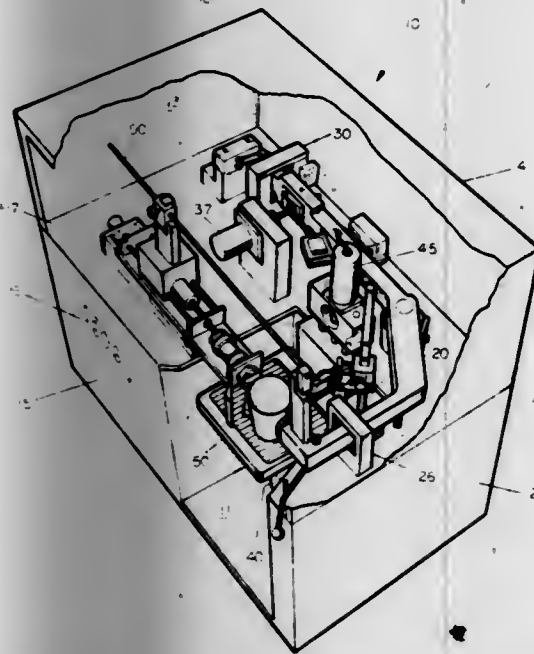
TEST DEVICE FOR CONTAINERS

Richard A. Birner, and Arthur C. Einfalt, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Aug. 3, 1979, Ser. No. 63,892

Int. Cl.³ G01N 3/48

U.S. Cl. 73—83

20 Claims



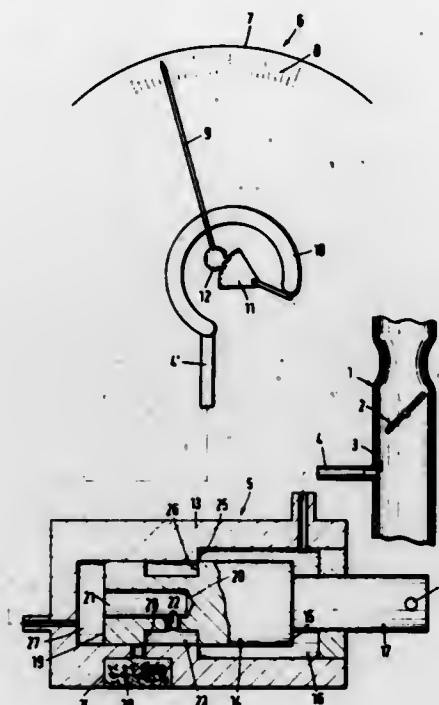
1. An apparatus for measuring the resiliency of an object, a movable force arm for applying a force against said object, a support anvil positioned so as to react to the force applied to the object by the force arm, a force cell having a movable core that is attached to said support anvil, a linear variable differential transformer having a coil with a movable core positioned therein, said force cell core attached to the linear variable differential transformer core and means connected between said force arm and the coil of the linear variable differential transformer so that the displacement of the force cell-core does not influence the relative displacement between the core and coil of the linear variable differential transformer when a force is applied to said object, and means coupled to said force cell and said linear variable differential transformer to detect the magnitude of the force applied to the object after it has been permitted to deform a preselected amount.

4,246,778
FUEL CONSUMPTION INDICATING INSTRUMENT
Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany
Filed May 18, 1979, Ser. No. 40,122
Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822664

Int. Cl.³ G01F 9/00

U.S. Cl. 73—114

13 Claims



1. In a system for indicating the fuel consumption rate of a vehicle driven by an internal combustion engine through a multi-speed transmission, said system including a vacuum pressure responsive instrument for indicating consumption rate connected by a pressure conduit to an intake passage of said engine at a position of said passage following a throttle valve in the direction of intake flow, a pressure transformer in said conduit, responsive to the operating condition of said transmission, to operate when said transmission is in its next highest gear, to convert the negative pressure of said intake passage to a lower value of negative pressure to be presented to said indicating instrument, said conversion having a vacuum pressure ratio equal to the ratio of the highest gear in said transmission to the next highest gear in said transmission.

4,246,779

METHOD OF DETERMINING MOTORCYCLE POWER OUTPUT

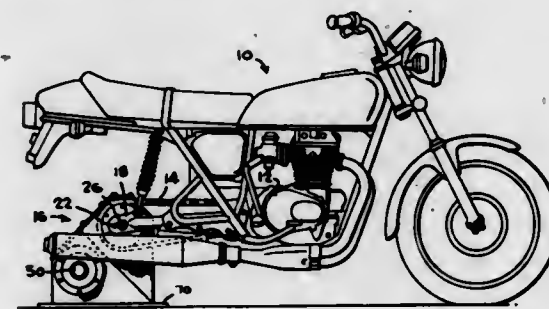
Woodrow W. Leone, Sr., 3465 Kenwood Dr., Beaumont, Tex. 77706

Division of Ser. No. 953,192, Oct. 17, 1978, Pat. No. 4,196,617.
This application Oct. 16, 1979, Ser. No. 85,439.

Int. Cl.³ G01L 3/16

U.S. Cl. 73—134

2 Claims



1. A method of determining the power output of a motorcycle engine of a chain-drive motorcycle comprising the steps of: removing the rear wheel from the motorcycle to be tested;

connecting the axle receiving openings of the motorcycle frame to a fixedly positioned support shaft; connecting the motorcycle chain to input drive means drivingly connected to a dynamometer; and operating the motorcycle engine to determine the power output thereof.

4,246,780

FORCE SENSING SYSTEM

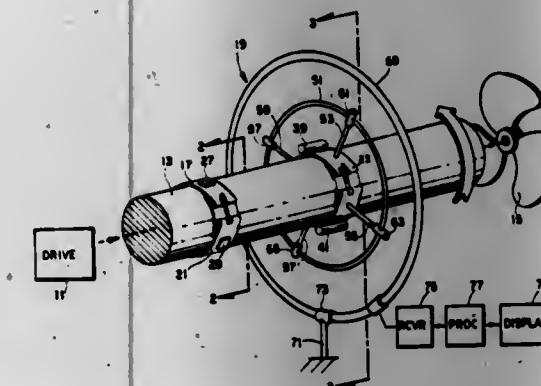
Jay R. Reed, Harrison Township, Mercer County, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,886

Int. Cl.³ G01L 5/12

U.S. Cl. 73—140

15 Claims



1. Apparatus for measuring the thrust loading on a rotating shaft, comprising:
stressing means adapted to be disposed around the shaft for rotation therewith in a plane perpendicular to the thrust for applying a predetermined compression load to the shaft;
lubricating means applied to the inner surface of said stressing means for reducing friction between the shaft and said stressing means while applied thereto;
sensing means connected to said stressing means for producing an output signal indicative of strain experienced by said stressing means; and
transmitting means formed to be secured to the shaft for rotation therewith and connected to receive said output signal for transmitting an r.f. signal indicative thereof to a remote receiver.

4,246,781

ARRANGEMENTS FOR MEASURING TENSION LOADING IN WIRES

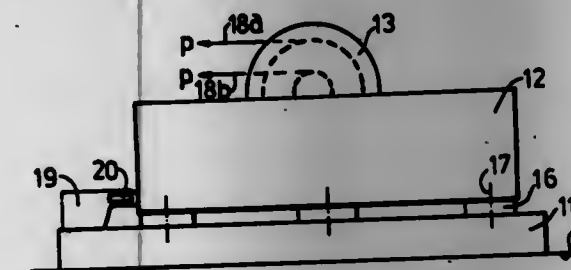
Magne Moe, Harstad, Norway, assignor to Knaarås Mek. Verksted A/S, Harstad, Norway

Filed Apr. 2, 1979, Ser. No. 25,872

Claims priority, application Norway, Apr. 4, 1978, 781176
Int. Cl.³ G01L 5/10

U.S. Cl. 73—143

8 Claims



1. An arrangement for measuring tension loading in a wire spaced from a support along a line perpendicular to said wire, which arrangement comprises:

(a) a holding means having a second portion to which one end of said wire is fastened and a first portion located between said second portion and said support, said first

and second portions being rigidly connected to one another without springs and said first portion being connected to said support,
(b) a support arm having one end connected to said first portion and its opposite end connected to said second portion at a predetermined distance from said first portion along a line perpendicular to said wire,
(c) a cell means carried by said support arm for measuring mutual movements of said second portion relative to said first portion, and
(d) indicating means electrically connected to said cell means for displaying measured results as an expression of the tension loading in the wire.

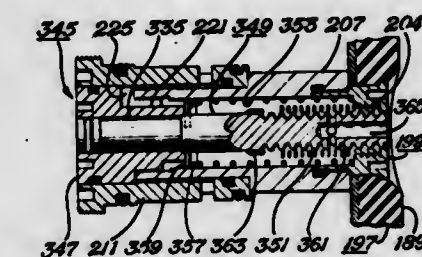
4,246,782

TOOL FOR TESTING EARTH FORMATIONS IN BOREHOLES

Bobby J. Hallmark, Fort Worth, Tex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.
Division of Ser. No. 42,431, May 25, 1979. This application May 5, 1980, Ser. No. 146,706
Int. Cl.³ E21B 47/00

U.S. Cl. 73—155

3 Claims



1. A tool for testing earth formations in boreholes, comprising:
formation isolation means including hydraulically controlled extendable and retractable seal pad means and backup pad means;
said extendable and retractable seal pad means comprising a seal pad, first piston means having a central bore and fixed to said seal pad, and first cylinder means sealingly engaged by said first piston means;
closure means sealingly closing the outer end of said first cylinder means and having a central cylindrical bore;
a sand screen assembly comprising an elongated piston shaft, sand screen spring means, and piston shaft return bias means;
said elongated piston shaft having a first end portion sealingly engaging said closure means central cylindrical bore and movable longitudinally thereof, and a first end face, with said first end face being exposed to the well bore annulus when the tool is in operation;
said seal pad means having a central opening communicating between the central bore of said first piston means and the earth formation to be tested when said seal pad is set in a well bore;
said elongated piston shaft having a second end portion mating with said seal pad central opening and movable longitudinally thereof, and a second end face, with said second end face abutting the earth formation to be tested when said seal pad is set in a well bore;
said sand screen spring means comprising a spirally wound spring having numerous turns that are normally separated sufficiently to permit flow of formation fluids as well as sand therethrough, with the inner diameter of said spring mating with the exterior surface of said elongated piston shaft, and means fixing said spring at its outer end portion to said seal pad, with the free portion of said spring extending inwardly along said piston shaft;
passage means communicating between said piston shaft

second end face and its exterior surface along the length of said spring and beyond the inner end of said spring; abutment means fixed to said piston shaft adjacent the inner end of said passage means, for engaging said spring upon predetermined movement of said piston shaft outwardly toward said earth formation; whereby, said passage means can become limited to the spaces between the turns of said spring, which spaces are limited to the diameters of sand particles trapped therebetween.

4,246,783

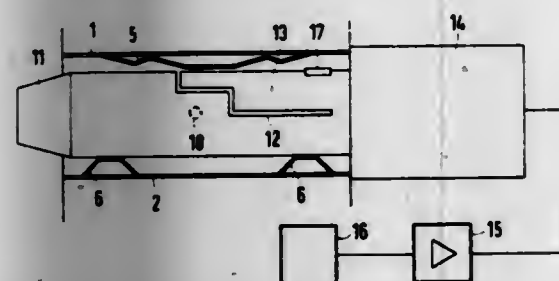
SPRING-FORCE MEASURING DEVICE

Josef Steven, Neunkirchen, and Helmut Bezold, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany
Filed Nov. 2, 1978, Ser. No. 957,425
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749996

Int. Cl.³ G21C 19/00; G01M 19/00

U.S. Cl. 73-161

3 Claims



1. Handheld device for measuring the spring-force of resilient spacer projections set into spacer grids of nuclear reactor fuel assemblies to push fuel rods surrounded by spacer meshes against at least two oppositely disposed rigid spacer projections, comprising a force measuring plug having a diameter equal to the diameter of a fuel rod to be fixed in the spacer grid, and a flexible beam integral with said force measuring plug, said flexible beam having a free end in contact with a first resilient spacer projection to be measured, and another end firmly connected to said force measuring plug and having at least one wire strain gage disposed thereon, said flexible beam being formed by a stress-free slot formed in said force measuring plug.

4,246,784

PASSIVE REMOTE TEMPERATURE SENSOR SYSTEM

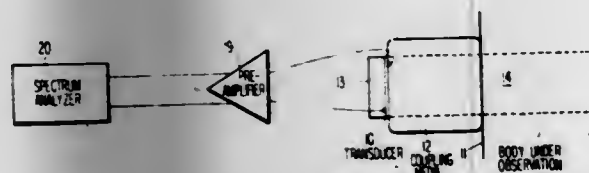
Theodore Bowen, 1202 Calle Gardenias, Tucson, Ariz. 85705

Filed Jun. 1, 1979, Ser. No. 44,743

Int. Cl.³ G01K 1/00

U.S. Cl. 73-339 A

22 Claims



1. A passive remote temperature sensor system for non-invasive temperature measurement of the interior of a body, said system comprising at least one acoustic transducer adapted to be coupled with the surface of said body for intercepting an acoustical noise signal from within the interior of said body and generating a corresponding electrical signal, and power spectrum analyzer means connected to receive said electrical signal for analyzing at least one frequency component of said electrical signal to provide a measure of the temperature over a predetermined depth region within the interior of said body.

4,246,785

TESTING EFFECTIVENESS OF THERMAL INSULATION

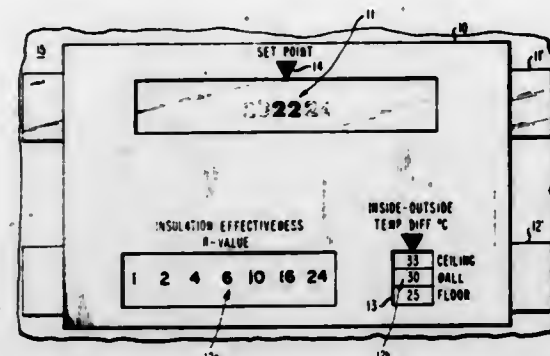
Gregory J. Sellers, 320 South St., Apartment 14A, Morristown, N.J. 07960, and Gerald R. Bretts, 6 Tanglewood Dr., Livingston, N.J. 07039

Filed Feb. 28, 1979, Ser. No. 15,930

Int. Cl.³ G01K 11/16

U.S. Cl. 73-356

6 Claims



1. A device for determining thermal impedance values, expressed in units of effectiveness of insulation, of interior surfaces defining a living space which comprises:

- (a) a holder, having marked thereon a first reference point and a second reference point;
- (b) a temperature sensing and indicating means supported on first support means slidably mounted in said holder, said temperature sensing and indicating means encompassing ambient temperatures within the living space defined by said interior surfaces;
- (c) a first means in said holder for exposing a portion of said temperature sensing and indicating means, said first exposing means adjacent said first reference point;
- (d) a reference scale supported on second support means slidably mounted in said holder, said reference scale having marked thereon
 - (1) a series of values of temperature difference, and
 - (2) a series of R values;
- (e) a second means in said holder for exposing a portion of said temperature difference values, said second exposing means adjacent said second reference point; and
- (f) a third means in said holder for exposing a portion of said R values,

said temperature sensing and indicating means, said reference scale with said R values and temperature difference values marked thereon and said reference points positioned such that upon (i) determining the temperature difference on both the interior and exterior side of a surface, (ii) setting inside temperature against said first reference point and (iii) holding said device against said surface to generate its temperature value, then the R value of said surface is substantially aligned with the indicated interior surface temperature value.

4,246,786

FAST RESPONSE TEMPERATURE SENSOR AND METHOD OF MAKING

Klaus C. Wiemer, Richardson, Tex., and Joseph D. Lejeune, Spartanburg, S.C., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 13, 1979, Ser. No. 48,122

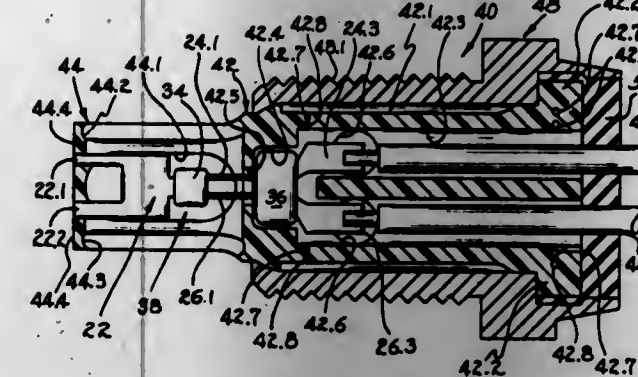
Int. Cl.³ G01K 7/22

U.S. Cl. 73-362 AR

13 Claims

1. Temperature sensing means comprising a body of electrical resistance material having a resistivity which varies with change in temperature, lead means electrically connected to the body for connecting the body in an electrical circuit, means encapsulating the body and portions of the lead means for shielding the body from an environment in a zone whose temperature is to be monitored and for permitting the lead means to extend from the encapsulating means to be connected in an electrical circuit, and additional means having relatively

greater thermal conductivity than the encapsulating means secured in heat-transfer relation to the body of resistance material



rial to extend outside the encapsulating means for receiving and rapidly conducting heat to the body of resistance material from the zone to be monitored.

4,246,787

FAST RESPONSE TEMPERATURE SENSOR AND METHOD OF MAKING

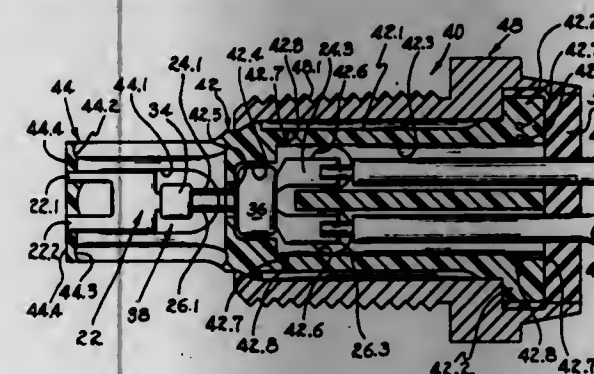
V. Paul Harper, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 13, 1979, Ser. No. 48,123

Int. Cl.³ G01K 7/22

U.S. Cl. 73-362 AR

12 Claims



1. In combination with temperature sensing means having a body of electrical resistance material of a resistivity which varies with change in temperature, lead means electrically connected to the body for connecting the body in an electrical circuit, means encapsulating the body and portions of the lead means for shielding the body from an environment in a zone whose temperature is to be monitored and for locating the lead means relative to the body, and means having relatively greater thermal conductivity than the encapsulating means secured in heat-transfer relation to the body of resistance material so that a portion of the thermally-conducting means extends outside the encapsulating means for receiving and conducting heat to the body from the temperature zone to be monitored, mounting means for the temperature sensing means comprising a plurality of housing sections of a material of relatively lower thermal conductivity than said thermally conducting means, said housing section being secured together to hold the temperature sensing means therebetween with said extending portion of the thermally conducting means exposed to receive and conduct heat from the temperature zone to be monitored, said housing sections having extensions thereof disposed in spaced surrounding relation to the exposed portion of the thermally conducting means to shield said exposed portion from physical blows while permitting fluid flow around said exposed portion in the zone to be monitored.

4,246,788

METHOD AND APPARATUS FOR SAMPLING OF A PARTICLE-BEARING GAS

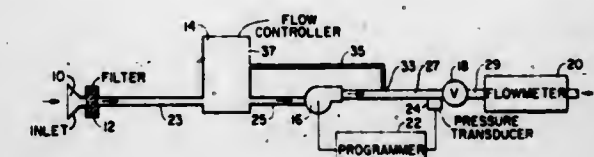
John G. Olin, Carmel Valley, Calif., and Norman C. Ahlquist, Seattle, Wash., assignors to Sierra Instruments, Inc., Carmel Valley, Calif.

Filed Nov. 30, 1978, Ser. No. 965,224

Int. Cl.³ G01N 1/22

U.S. Cl. 73-421.5 R

26 Claims



1. A method of sampling a relatively static body of particle-bearing ambient gas for the determination of particle concentration, the gas being sampled by a device of the type utilizing a vacuum pump, the method comprising the steps of: generating a stream of flowing gas from the ambient gas to be sampled by operating the vacuum pump; continuously collecting particles in said stream and retaining the collected particles within said stream, such that the rate of flow of said stream and therewith the static pressure in said stream tends to decrease; continuously sensing the static pressure in said stream; and continuously throttling the flow of said stream upstream of the vacuum pump in response to the difference between said sensed pressure and the ambient pressure of the gas while maintaining the speed of the vacuum pump relatively constant, whereby the rate of flow of said stream is maintained relatively constant.

4,246,789

GRADUATE WITH AUTOMATIC MEASURING MEANS

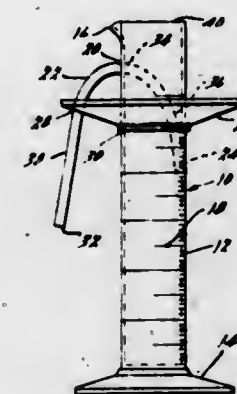
George M. Olds, 3401 Glasgow Dr., Lansing, Mich. 48910

Filed Oct. 24, 1979, Ser. No. 68,081

Int. Cl.³ G01F 19/00

U.S. Cl. 73-427

16 Claims



1. A vessel with automatic liquid measuring means comprising, in combination, a tubular body closed at the lower end thereof, the upper end of said tubular body being open, said tubular body defining an opening near, but spaced from, the upper end thereof, a flexible tube extending through said opening, the inner end of said tube being disposed within said tubular body at a predetermined level, the outer end of said tube being disposed at a level below said inner end of said tube.

4,246,790

COMBINATION SPEED TRANSDUCER AND SPEEDOMETER CABLE

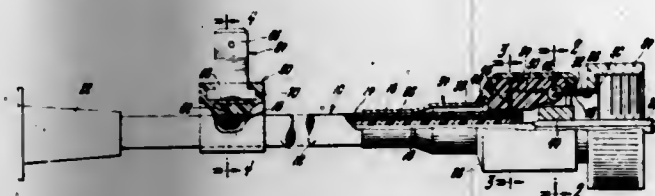
Wayne C. Nichols, Corunna, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1979, Ser. No. 87,012

Int. Cl.³ G01P 1/07, 3/484

U.S. Cl. 73—493

3 Claims



1. The combination of an electrical speed transducer and a speedometer cable adapted to connect to the transmission of a vehicle comprising

a speedometer cable having a central rotatable core housed in a sheath, the sheath comprising an insulating tube with a conductive reinforcement embedded therein, an end fitting on one end of the sheath including a metallic adaptor for an electrical connection to a transmission housing,

a transducer within the end fitting comprising a rotor secured to the core for rotation therewith and a stationary signal means coupled to the rotor for producing an electrical signal at a frequency proportional to the rotor speed, the signal means having a first lead connected to the said adaptor for electrical grounding therethrough, and a second lead connected to the said conductive reinforcement, and

an electrical terminal attached to the speedometer cable at a point remote from the said end fitting and electrically connected to the conductive reinforcement, whereby the reinforcement serves as an electrical conductor in circuit with the signal means for carrying speed information to the terminal.

4,246,791

ULTRASONIC IMAGING APPARATUS

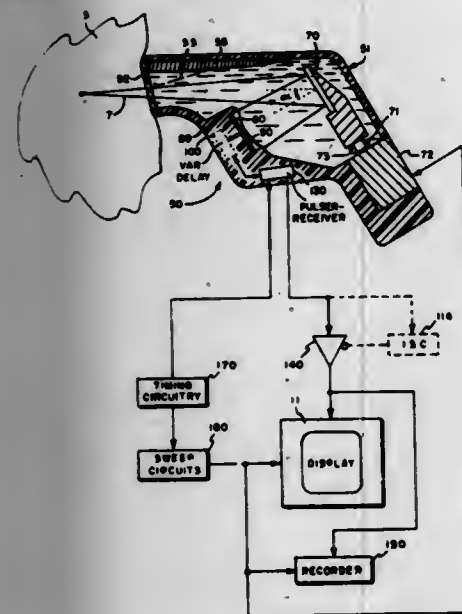
William E. Glenn, Ft. Lauderdale, Fla., assignor to New York Institute of Technology, Old Westbury, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,378

Int. Cl.³ G01N 29/04

U.S. Cl. 73—620

90 Claims



1. In an apparatus for ultrasonically imaging sections of a body by transmitting ultrasonic energy in to the body and determining the characteristics of the ultrasonic energy reflected therefrom, said apparatus including timing means for generating timing signals; energizing/receiving means alter-

nately operative in response to timing signals; and display/record means synchronized with said timing signals for displaying and/or recording image-representative signals from the energizing/receiving means; an improved portable scanning module, comprising:

a fluid-tight enclosure having a window and a reflective scanner spaced from the window and generally facing the window;

a transducer for converting energy from said energizing/receiving means to a beam of ultrasonic energy and for converting reflected ultrasonic energy to electrical signals, said transducer being stationarily mounted in said enclosure with the ultrasound-emitting face of the transducer generally facing said reflective scanner;

said reflective scanner being pivotally mounted to scan said beam across said window in a scan path that maintains substantially constant, at a non-zero angle of less than about forty-five degrees, the angle formed between the central ray of said beam incident on said reflective scanner and the plane defined by the path of the central ray reflected from said reflective scanner during the scan;

fluid means contained in said enclosure; and driving means synchronized with said timing signals for moving said scanner in periodic fashion.

4,246,792

SELF-CONTAINED ULTRASONIC SCANNER

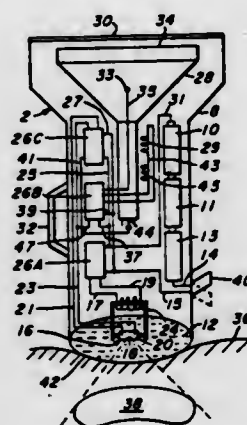
Terrance Matzak, 154 Eileen Dr., Pittsburgh, Pa. 15214

Filed Jun. 1, 1979, Ser. No. 44,639

Int. Cl.³ G01N 29/00

U.S. Cl. 73—620

62 Claims



1. Self-contained ultrasonic scanning apparatus for insonifying a specimen comprising

a housing, an ultrasonic transducer disposed within said housing and mounted for movement therewithin, magnetic means for effecting movement of said transducer, energizing means for electrically energizing said magnetic means,

cathode-ray tube means disposed within said housing with its screen visible from the exterior of said housing, and signal processing means for receiving signals from said transducer and delivering corresponding signals to said cathode-ray tube.

4,246,793

NONDESTRUCTIVE TESTING

Barry P. Fairand, Upper Arlington, and Matthew J. Golis, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 859,808, Dec. 12, 1977, abandoned. This application Feb. 8, 1979, Ser. No. 10,387

Int. Cl.³ G01N 29/04

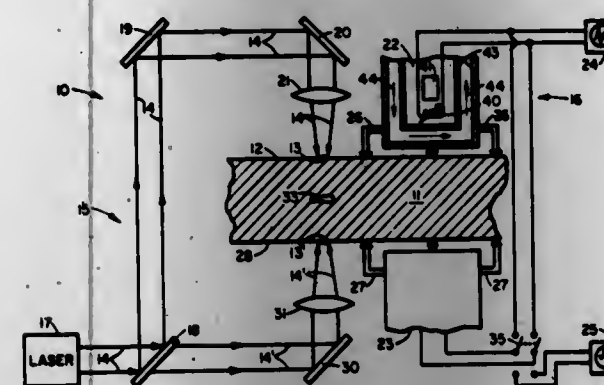
U.S. Cl. 73—628

19 Claims

1. A method of nondestructively testing a body of material having a surface in contact with a gaseous environment, that comprises

directing to a region at the surface of the body a pulse of laser radiation having sufficient energy density and sufficiently long wavelength to initiate in the adjacent gas a

parallel to the center line of the pivot pin about which the caster swivels.



blast wave that impinges on the surface and provides an ultrasonic wave in the body, and detecting a portion of the ultrasonic wave that has been affected by the body.

4,246,794

APPARATUS AND METHOD FOR ULTRASONIC INSPECTION OF ROUND STOCK SUCH AS TUBING, PIPE AND ROD

Harold L. Sheets, Chesapeake, Ohio, and James H. Rowsey, Huntington, W. Va., assignors to Huntington Alloys, Inc., Huntington, W. Va.

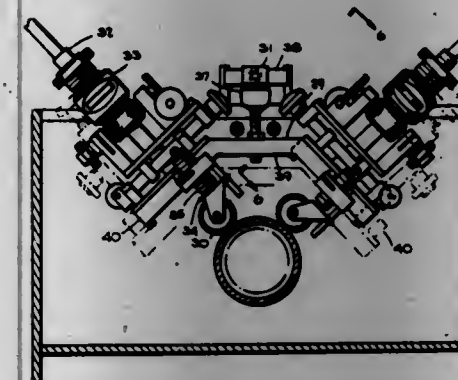
Continuation of Ser. No. 909,769, May 26, 1978, abandoned.

This application Jul. 23, 1979, Ser. No. 59,683

Int. Cl.³ G01N 29/04

U.S. Cl. 73—637

6 Claims



1. Apparatus for conducting liquid-submerged ultrasonic testing of round stock wherein the round stock to be inspected is rotated in a single direction and is advanced lengthwise under the ultrasonic head such that a point on the surface of the round stock describes a helical path comprising an ultrasonic test head having a carriage adapted to hold at least one ultrasonic probe in fixed relation thereto, said carriage being mounted on a plurality of casters provided with non-metallic wheels, said casters being arranged to ride on the outer surface of the round stock being inspected and being rotatable about the caster vertical axis such that the rotational axis of the caster wheel is always perpendicular to the pitch of a helix described by a point on the surface of said round stock when said pitch is changed during the course of the test, said casters bearing the weight of said carriage upon the surface of the round stock such that the distance between said ultrasonic probe and said round stock surface is maintained constant during the course of the test, means to vary and reverse the pitch of said helix, adjusting means to adjust the distance from said carriage to said caster wheels such that a geometric relationship is established in which a line extending from the center of the round stock to be inspected through the axle of said caster wheel is

4,246,795

CONTACT SENSING HEAD

Hans Sigg, Neuchâtel; Robert Viret, Lausanne, and Heinz Wegmann, Colombier, all of Switzerland, assignors to Messeltron S.A., Corcelles, Switzerland

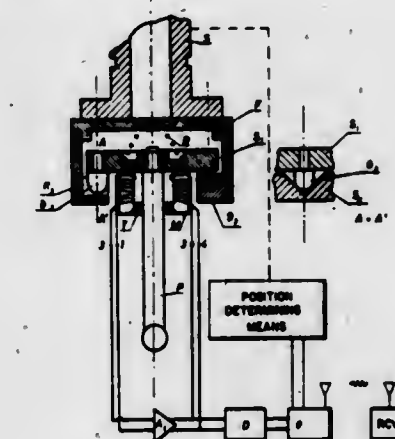
Filed Sep. 15, 1978, Ser. No. 942,787

Claims priority, application Switzerland, Sep. 27, 1977, 11758/77

Int. Cl.³ G01H 13/00

U.S. Cl. 73—651

28 Claims



1. Contact sensing head for a position determining system comprising:

- a support structure;
- a sensor having a free end provided for contacting an object to be measured which is able to vibrate at a given frequency and an end attached to the support structure;
- means for determining the position of said free end at the moment where said contact is detected; and
- means for detecting the mechanical contact between the free end of the sensor and said object to be measured, the means for detecting comprising means for causing said free end to transversely vibrate at low amplitude at said given frequency, a transducer for transforming the vibrations of said sensor into a corresponding electrical signal, and means for detecting any disturbance of said signal from said transducer caused by said mechanical contact.

4,246,796

PRESSURE GAUGE CONSTRUCTION

Richard H. Wetterhorn, Fairfield, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 859,514, Dec. 12, 1977, which is a continuation of Ser. No. 708,470, Jul. 26, 1976, abandoned, which is a continuation of Ser. No. 413,483, Nov. 7, 1973, abandoned, which is a continuation-in-part of Ser. No. 186,120, Oct. 4, 1971, abandoned. This application Mar. 26, 1979, Ser. No. 23,551

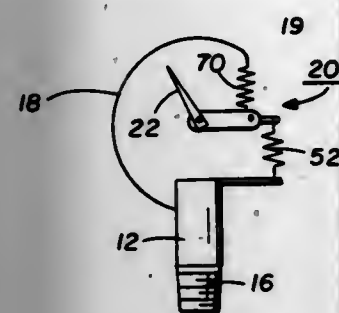
Int. Cl.³ G01L 7/04

U.S. Cl. 73—732

8 Claims

1. In a pressure gauge including a pressure responsive element having a free end subject to displacement motion in response to changes in pressure supplied thereto, an amplifier comprising a segment gear, a pinion driven by said segment gear and a frame supporting both said segment gear and said pinion, said amplifier being operable for communicating displacement motion of said pressure responsive element to an output drive, a housing enclosing said pressure responsive element and said amplifier, and a connector extending through said housing and adapted for installing the gauge in a system

for which pressure measurement is to be obtained, the improvement comprising means affording isolation of said ampli-



from said bushing in sealing engagement with said piston rod, an integral spring retainer and bearing assembly having a bore through which said piston rod extends, said assembly having an annular bearing, an annular spring guide and a flange separating said bearing and said guide, said bearing extending into and piloting in the bore of said end plug and being spaced from said bushing, said flange abutting said first abutment surface, and an O-ring seal in said plug bore sealingly interposed between said plug and slide seal and occupying the space between said bushing and said bearing.

fier in a spring suspension intervening between said amplifier and relatively rigid components of the gauge.

4,246,797 PRESSURE INDICATOR

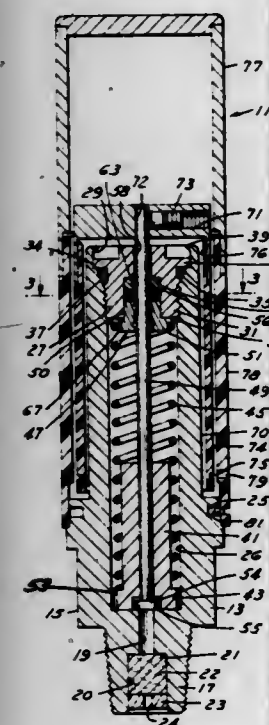
J. Edgar Myles, W. Bloomfield, Mich., assignor to J. E. Myles, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 31,270, Apr. 18, 1979, Pat. No. 4,199,992, which is a continuation of Ser. No. 945,762, Sep. 25, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,954

Int. Cl.³ G01L 7/16

U.S. Cl. 73-744

18 Claims



1. A pressure indicator having a body with an attachment shank with a pressure fluid passage, a cylinder bore at one end communicating with said passage and having the other end opened and threaded, an end plug with inner and outer ends, said plug having a bore and a counterbore snugly threaded into said open other end, the bore of said end plug terminating at said inner end in a first annular flat abutment surface which faces said one end of said body, the counterbore of said end plug terminating in a second annular flat abutment surface located between the inner and outer ends of said plug and forming one end of said plug bore, a piston nested in said cylinder bore having an elongated piston rod axially extending through said cylinder bore and projecting through and outwardly of said plug, a compression spring interposed at its ends between said plug and piston yieldably biasing said piston towards said one end of said cylinder bore, said piston being variably movable longitudinally against said spring on application of pressure to said pressure fluid passage, a bushing nested within said plug bore and abutting said second abutment surface, said bushing axially and guidably receiving said piston rod, a cylindrical slide seal of a permanently lubricated material within said plug bore and projecting into and depending

into said open other end, the bore of said end plug terminating at said inner end in a first annular flat abutment surface which faces said one end of said body, the counterbore of said end plug terminating in a second annular flat abutment surface located between the inner and outer ends of said plug and forming one end of said plug bore, a piston nested in said cylinder bore having a piston rod axially extending through said cylinder bore and projecting through and outwardly of said plug, a compression spring interposed at its ends between said plug and piston yieldably biasing said piston towards said one end of said cylinder bore, said piston being variably movable longitudinally against said spring on application of pressure to said pressure fluid passage, and an integral annular spring retainer and bearing assembly having a bore through which said piston rod extends, said assembly having an annular bearing, an annular spring guide and a flange separating said bearing from said guide, said bearing extending into and piloting in the bore of said end plug and being spaced from said second abutment surface, said flange abutting said first abutment surface and said spring guide piloting one end of said compression spring.

4,246,798 PRESSURE INDICATOR

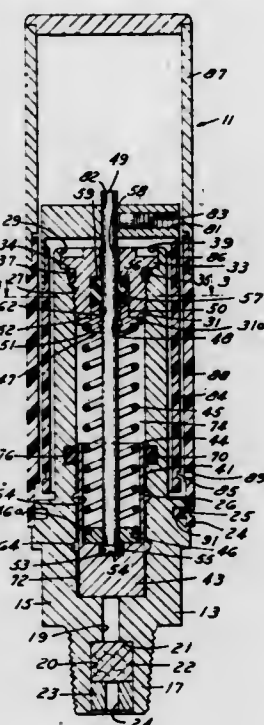
J. Edgar Myles, W. Bloomfield, Mich., assignor to J. E. Myles, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 31,270, Apr. 18, 1979, Pat. No. 4,199,992, Continuation of Ser. No. 945,762, Sep. 25, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,959

Int. Cl.³ G01L 7/16

U.S. Cl. 73-744

15 Claims



4,246,799 VACUUM INDICATOR

J. Edgar Myles, West Bloomfield, Mich., assignor to J. E. Myles, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 31,270, Apr. 18, 1979, Pat. No. 4,199,992, which is a continuation of Ser. No. 945,762, Sep. 25, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,960

Int. Cl.³ G01L 7/16

U.S. Cl. 73-744

15 Claims



1. A vacuum indicator having a body with an attachment shank which is provided with a fluid passage, a cylinder bore at one end communicating with said passage and having the other end opened and threaded, an end plug with inner and outer ends, said plug having a bore and a counterbore snugly threaded into said open other end, the bore of said end plug terminating at said inner end in a first annular flat abutment surface which faces said one end of said body, the counterbore of said end plug terminating in a second annular flat abutment surface located between the inner and outer ends of said plug and forming one end of said plug bore, a piston nested in said cylinder bore having a piston rod secured thereto, said piston rod projecting axially through and outwardly of said end plug, an annular bearing element in said plug bore surrounding said piston rod, said piston having an annular end surface facing said first abutment surface, a compression spring interposed at its ends between said one end of said cylinder bore and said piston yieldably biasing said piston towards said first abutment surface, said piston being variably movable longitudinally against said spring towards said one end of the cylinder bore on application of a vacuum to said fluid passage.

4,246,800 STROBED POWER SUPPLY FOR AN ULTRASONIC MEASURING INSTRUMENT

William E. Bidgood, Glendora, and John D. Klarin, San Pedro, both of Calif., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Oct. 24, 1979, Ser. No. 87,859

Int. Cl.³ G01F 1/05

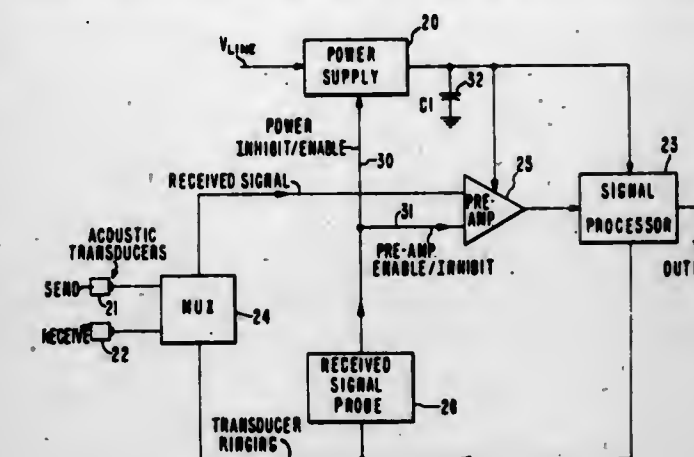
U.S. Cl. 73-861.27

19 Claims

1. A method of operating an instrument for providing information about a medium through which ultrasonic signals can be transmitted, said instrument comprising means for sending and receiving said ultrasonic signals, electronic amplification means for amplifying receiving signals to a level suitable for processing to provide said information, a power supply for activating said sending and receiving means and said amplification means, and capacitive means for activating said amplification means when said power supply is deactivated, said method substantially precluding electronic noise generated by said

power supply from establishing a gain limit for said amplification means, said method comprising the steps of:

(a) activating said power supply during periodic intervals so as to provide intervening spans of time when said power supply does not generate any substantial electronic noise,



(b) activating said amplification means by said capacitive means for at least a portion of each of said intervening spans of time.

4,246,801

SEMI-ACTIVE LASER SEEKER GYROSCOPE

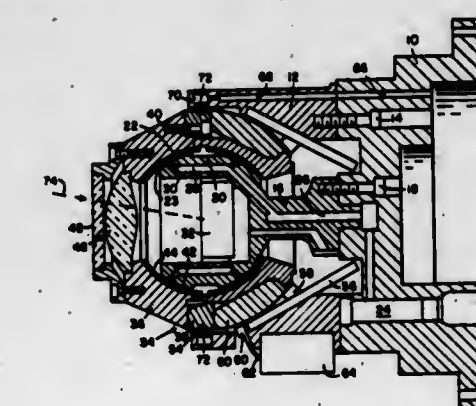
Aubrey Rodgers, and William G. Robertson, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 1, 1979, Ser. No. 8,464

Int. Cl.³ G01C 19/12, 19/20

U.S. Cl. 74-5.7

7 Claims



1. In a gyro adapted to withstand a high-g launching environment, the improvement comprising: a gyro stator having spherical bearing surface means, a gyro rotor rotatably mounted relative to said stator by spherical bearing surface means, one of said spherical bearing surface means being metal and the other being a resilient material bonded to support material, said resilient material having a hardness ratio of about 0.49 to about 0.5 Poisson and a thickness of about 15 to about 30 thousandths of an inch to provide a thickness sufficient to withstand high-g launching environment of about 12,500 g load, and means in said stator for supplying fluid to said spherical bearing surface means to provide an air bearing space therebetween.

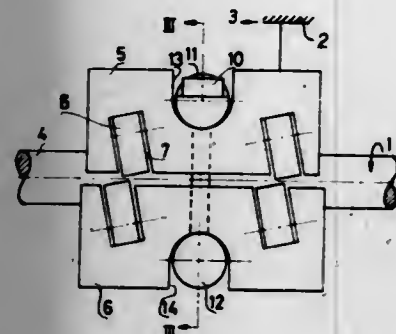
4,246,802

FRICION DRIVE MECHANISM FOR CONVERTING A ROTATIONAL MOVEMENT INTO AN AXIAL MOVEMENT, OR VICE VERSA

John Rasmussen, 21 Ornebakken, Holte, and Ole Hauberg, 16 Strandhøjvej, Charlottenlund, both of Denmark
 Filed Aug. 7, 1978, Ser. No. 931,690
 Claims priority, application Denmark, Aug. 24, 1977, 2761/77
 Int. Cl.² F16H 21/16

U.S. Cl. 74—25

4 Claims



1. A friction drive mechanism for converting a rotational movement into an axial movement, or vice versa, and comprising a friction assembly cooperating with a driving means and a load, respectively, said friction assembly comprising a smooth shaft, at least two axially displaced sets of roller members, each set comprising at least four roller members, a holder surrounding said shaft and journalling said rolling members to be equally spaced around said shaft in external frictional engagement therewith and to be rotatable around axes having the same inclination to, but not intersecting the axis of said shaft, the points of engagement between the rolling members of each set and the shaft remaining substantially in a common plane normal to the axis of said shaft, said holder being made in two parts each carrying two roller members of each set of roller members, and clamping means being provided for connecting said two holder parts with a tension sufficient to secure frictional engagement between said rolling members and said shaft, said clamping means comprising interconnected first and second portions engaging each of the two holder parts in a manner so as to be pivotable relative thereto about a respective pivot axis transverse to the axis of said shaft, only one of said portions being fixed relative to said driving means or said load, whereas the other portion has no firm connection with said driving means or said load, whereby in the absence of an axial load said clamping means assumes a neutral position with both of said pivot axes extending substantially in the same plane normal to the axis of said shaft, while in the presence of an axial load, the clamping means will be turned out from said neutral position to reduce the separation of the two holder parts.

4,246,803

TRACTION CONTROL MECHANISM FOR HYDROSTATIC TRANSMISSION

David S. Klia, 3341 Xenia Ave. North, Minneapolis, Minn. 55422, and Walter J. Petersen, 8034 Eden Rd., Eden Prairie, Minn. 55343

Filed Jul. 29, 1977, Ser. No. 820,115
 Int. Cl.³ G05G 1/14

U.S. Cl. 74—513

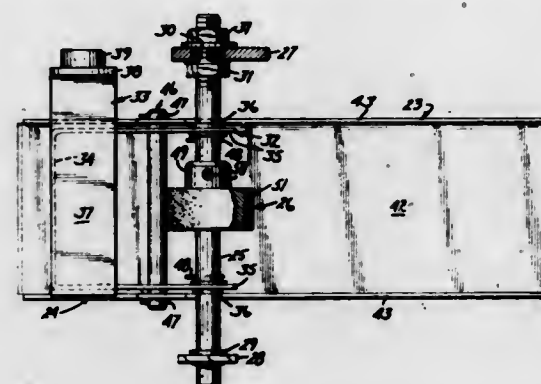
5 Claims

1. Traction control mechanism for a hydrostatic transmission, said traction control mechanism comprising:

- (a) a mounting shaft;
- (b) means for supporting the mounting shaft on a vehicle;
- (c) lever means having spaced apart first and second lever portions connected together, said first lever portion being pivotally mounted on said mounting shaft;
- (d) said second lever portion having means for pivotal connection to a transmission control member to impart trans-

mission controlling movements to said control member responsive to pivotal movements of said lever means;

- (e) a control element having inner and outer surfaces;
- (f) pivot means mounting said control element to said lever means in overlying relationship thereto and for limited pivotal movement relative to said lever means on an axis in spaced parallel relation to the axis of said mounting shaft;
- (g) and a fixed motion damping member having a surface curving generally in the direction of pivotal movement of said control element, said damping member surface being disposed to be tangentially engaged by said inner surface



of said control element to impede movement of said control element in one direction relative to said lever means, said motion damping member being responsive to pressure applied against said control element and lever means, when said lever means is moved to impart vehicle movement to the transmission, to restrain movement of the control element in either direction of said pivotal movement thereof;

(h) said control element and lever means being mounted for movements selectively in opposite directions from respective given neutral positions to provide for neutral, forward and reverse directional operation of said transmission.

4,246,804

STEERING WHEEL WITH SPLAYED LEAVES

Lloyd R. Vivian, Jr., Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

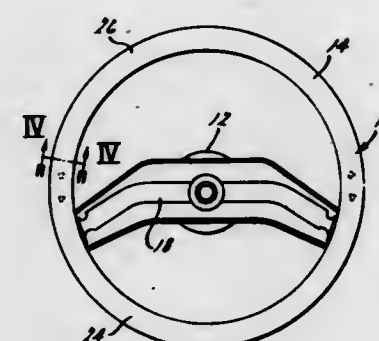
Continuation of Ser. No. 959,980, Nov. 13, 1978, abandoned.

This application Dec. 17, 1979, Ser. No. 104,236

Int. Cl.³ B62D 1/04; G05G 1/10

U.S. Cl. 74—552

8 Claims



1. A steering wheel for a motor vehicle comprising:

- a hub;
- a rim having a lower portion and upper portion;
- a spoke assembly interconnecting the hub with the lower portion of the rim;
- said lower and upper portions being covered with a flexible outer covering;
- said upper portion of said rim including a plurality of stacked arcuate leaf springs;
- seat means mounting said leaf springs such that the leaf

springs are splayed about the seat means and said seat means is interposed between the leaf springs;

said seat means comprising:

said lower portion of the rim having a seat portion at each upper end thereof with opposing surfaces;

the ends of each seat portion being tapered by said opposing surfaces angling toward each other;

each opposing surface abutting a leaf spring;

fastener means for fastening said leaf springs to said seat portion;

said upper portion being deformable in response to an impact imposed thereon in a direction parallel to the axis of said steering wheel;

said upper portion being constructed to be substantially rigid with respect to a tangential force applied by a vehicle operator to said upper portion for the purpose of turning said steering wheel;

said leaf springs seated on each seat portion converging at a point spaced away from the end of said seat portions forming a narrowing gap between said leaf springs above said seat portions.

input signal, each being a function of a negative pressure from an engine intake manifold, and;

selecting means operatively related to said input signal producing means for selecting an application of one of said two different valve actuating input signals from said input signal producing means to said throttle pressure supply valve means in response to whether said ignition timing is in said advancing timing region or in said retarding timing region for purifying pollutants in exhaust emissions of the engine.

4,246,806

MULTI-MODE HYDROMECHANICAL TRANSMISSION SHIFT SYSTEM

David W. Reynolds, Huxley, and Frederic W. Pollman, Ames, both of Iowa, assignors to Sandstrand Corporation, Rockford, Ill.

Filed Jan. 16, 1978, Ser. No. 869,755

Int. Cl.³ F16H 47/04, 47/00

U.S. Cl. 74—687

16 Claims

DRIVE RANGE CONTROL FOR AN AUTOMATIC TRANSMISSION

Mitsuo Umezawa, Akikawashi, Japan, assignor to Fuji Heavy Industries Co., Ltd., Tokyo, Japan

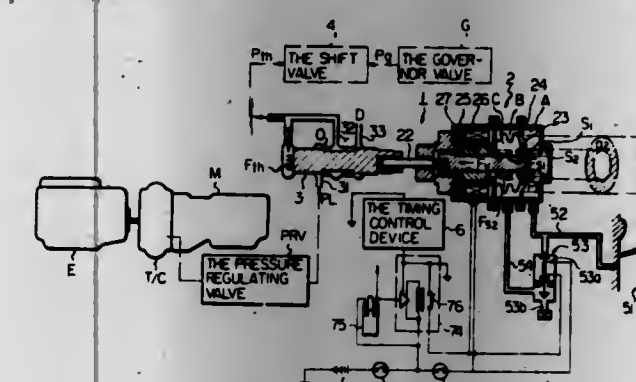
Filed May 31, 1978, Ser. No. 911,152

Claims priority, application Japan, Jun. 6, 1977, 52/65730

Int. Cl.³ B60K 41/04

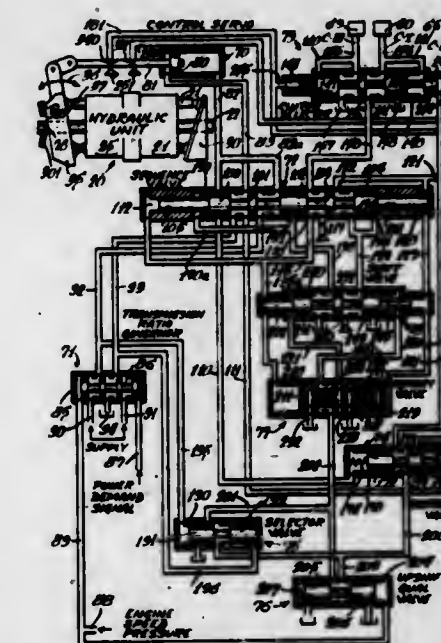
U.S. Cl. 74—851

5 Claims



1. An automatic transmission with torque converter adapted for use with an internal combustion engine having an ignition control device in which the ignition timing of the engine is changed over from an advancing timing region to a retarding timing region or vice versa in compliance with change in the operating condition of the engine, and control means for controlling automatic shifting from one speed to another, said control means comprising:

- shift valve means being operatively responsive to a throttle valve means and a governor valve means to operate predetermined transmission elements for controlling an occurrence of an automatic speed-shifting under the control of a throttle pressure generated by said throttle valve and a governor pressure generated by said governor valve applied thereto, respectively;
- said governor valve means being operatively connected to said shift valve means for supplying said shift valve means with said governor pressure generated in response to the speed of a vehicle on which the internal combustion engine is mounted;
- said throttle valve means being operatively connected to said shift valve means for supplying said shift valve means with said throttle pressure generated in accordance with an application thereto of a valve actuating input signal;
- input signal producing means operatively related to said engine for producing two different said valve actuating



1. A multi-mode hydromechanical transmission shift system having a hydrostatic unit with at least one variable and reversible displacement component with displacement setting means operable to control the direction and amount of displacement, a plurality of members separately operable for setting the mode of operation of the transmission, and control circuit means responsive to a shift signal generated by the position of the displacement controlling means for operation of a selected member other than the member currently in operation, a memory valve positioned dependent on the member which is in operation, shift signal generating means for generating said shift signal indicating a predetermined position of the displacement controlling means, said control circuit means including a clutch selector valve, a shift valve piloted to one of two positions by said shift signal for delivering pressure fluid to said clutch selector valve, said memory valve being operable for directing said shift signal as a pilot signal to the shift valve, a hysteresis valve as part of said control circuit means and through which said shift signal passes in advance of said memory valve and operable to prevent nuisance shifts between modes, said variable displacement unit being an axial piston pump with a variable angle swash plate, said displacement setting means including a control servo having a piston rod connected to said swash plate, and said shift signal generating means including a pair of pressure ports in a housing surrounding a part of said rod, said housing also having a pair of shift signal lines, and means on said rod operable in two opposite limit positions of rod movement to connect, alternatively, one or the other of the pressure ports to a shift signal line.

4,246,807

APPARATUS FOR CONTROL OF A CONTINUOUSLY VARIABLE BELT DRIVE FOR OPERATING A VEHICLE
Wolfgang Kofink, Aichwald-Schanbach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

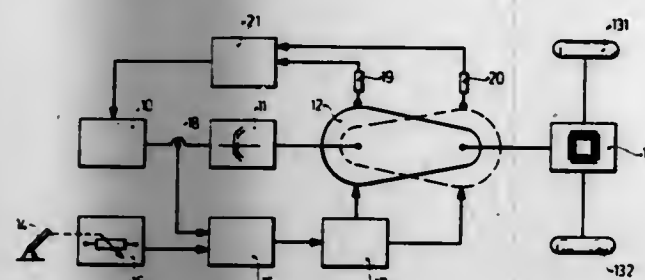
Filed Dec. 14, 1977, Ser. No. 860,572

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658719

Int. Cl.³ B60K 41/14; F16H 55/56

U.S. Cl. 74—872

5 Claims



1. An apparatus for operating a vehicle equipped with a stepless variable belt drive coupling a motor having a drive shaft to at least one drive wheel of said vehicle, said motor and belt drive being mounted in said vehicle, said apparatus further comprising:

- means for operating said motor at a first constant speed (n_2) at which the power delivered by said motor to said drive shaft is substantially a maximum;
- means for operating said motor at a second constant speed (n_1) at which the torque applied by said motor to said drive shaft is substantially a maximum;
- changeover switching means for enabling one of said constant speed operating means at a time and for transferring operation of said motor between said first and second constant speeds;
- a torque responsive transducer (18) for producing an electrical signal representative of the torque transmitted by said drive shaft;
- a second transducer (15) mechanically connected to a control pedal for producing an electrical signal representative of the position of said control pedal;
- an electric signal processing circuit (16) for producing a control signal in response to and taking account of the respective magnitudes of both said signal produced by said torque-responsive transducer and said signal produced by said second transducer;
- means (17) responsive to said control signal for determining the drive transmission ratio of said stepless variable belt drive;
- means for operating said changeover switching means to enable said maximum power constant speed operating means in response to the condition of said stepless variable belt drive corresponding to a first drive transmission ratio thereof and for operating said changeover switching means to enable said maximum torque constant speed operating means in response to the condition of said stepless variable belt drive corresponding to a second drive transmission ratio thereof which is greater than said first drive transmission ratio.

4,246,808

PRECISION SMALL WIRE STRIPPER AND BLADE STRUCTURE

Julius W. Sandy, Marvin J. Peplow, both of Sycamore, and Elmer W. Baneck, Genoa, Ill., assignors to Ideal Industries, Inc., Sycamore, Ill.

Filed Mar. 9, 1979, Ser. No. 19,262

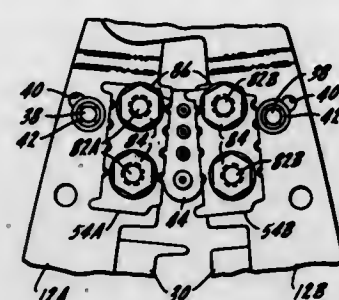
Int. Cl.³ H02G 1/12

U.S. Cl. 81—9.5 R

10 Claims

1. A hand tool for stripping the insulation from insulated wire comprising:

a pair of elongated members pivotally connected together, providing handles at one end for manual manipulation, first and second cutting blade assemblies, having cooperating cutting edges, means for releasably mounting the first cutting blade assembly in a fixed position on one of the elongated members, means for releasably mounting the second cutting blade assembly in an adjustable position to the other elongated member, the entire second cutting blade assembly being adjustable relative to the first cutting blade assembly in a direction parallel to the cooperating cutting edges,



means for aligning the first and second cutting blade assemblies including at least one alignment peg attached to one of the blade assemblies and extending toward the other blade assembly, and a corresponding seat in the adjacent edge of said other blade assembly, engagement of the peg and seat bringing the first and second blade assemblies into alignment so they are cooperable upon an opening and closing action of the handles to sever the insulation on a wire without cutting the wire itself.

4,246,809

POWER TONG APPARATUS FOR MAKING AND BREAKING CONNECTIONS BETWEEN LENGTHS OF SMALL DIAMETER TUBING

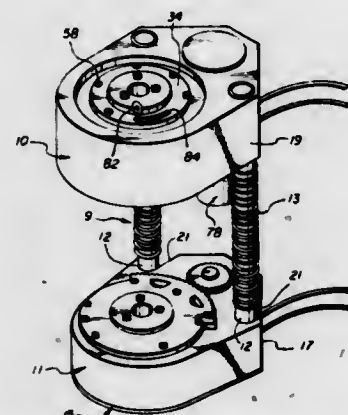
Larry G. Keast, Houston, Tex., and Herbert D. Horton, Mayhill, N. Mex., assignors to World Wide Oil Tools, Inc., Houston, Tex.

Filed Oct. 9, 1979, Ser. No. 82,873

Int. Cl.³ B25B 17/00

U.S. Cl. 81—57.16

2 Claims



1. An improved apparatus for making and breaking connections between lengths of small diameter tubing, comprising:

- a pipe-rotating power tong through which the tubing may pass for gripping the tubing and rotating the tubing either clockwise or counterclockwise;
- a backup tong through which the tubing may pass for gripping the tubing and holding the pipe firmly against rotational forces acting on the pipe;
- means for mounting the pipe-rotating power tong and the backup tong in a desired space relationship with each other wherein the tubing passing through the pipe-rotating power tong and the backup tong is aligned and the pipe-rotating power tong and the backup tong may move longitudinally relative to each other;
- the pipe-rotating power tong including:

an annular cage mounted for rotation within the housing, a plurality of pipe-gripping rocker arm devices pivotally mounted on the annular cage, each of which includes:

- a surface facing the pipe to be gripped and which presents complementary gripping teeth, and
- a surface facing away from pipe to be gripped and which presents complementary camming surfaces, and

an annular rotatable bull gear mounted in association with the annular cage and carrying rollers each of which is mounted in association with one of the pivotal pipe-gripping rocker arms mounted on the annular cage, the pipe-gripping rocker arms, the annular cage and the annular rotatable bull gear being constructed such that rotation of the bull gear sufficiently in either direction causes the roller carried by the bull gear to contact one of the camming surfaces on the portion of the pipe-gripping rocker arm device associated therewith and to move the pipe-gripping rocker arm devices such that one of the sets of complementary teeth carried thereon engages the pipe to be gripped; an endless chain externally engaging the bull gear for rotation thereof; motive means for driving the endless chain in either the clockwise or counterclockwise direction; two motion restraining pinholes formed in the bull gear each of which is adapted to receive a motion restraining pin; an arcuate slot formed in the annular cage of sufficient width to accommodate a motion restraining pin while the pin rests in either of the motion-restraining pin holes; a restraining pin to be removably inserted in either of the motion-restraining pin holes; the space between the motion-restraining pin holes and the length and location of the arcuate slot with respect to the motion-restraining pin holes being such that the movement of the bull gear is prevented from exceeding a certain magnitude with respect to the annular cage during the selected rotation of the motive means; and the backup tong including:

- a housing;
- an annular cage mounted for rotation within the housing;
- a plurality of pipe-gripping rocker arm devices pivotally mounted on the annular cage, each of which includes:

- a surface facing the pipe to be gripped and which presents complementary gripping teeth, and
- a surface facing away from pipe to be gripped and which presents complementary camming surfaces; and

an annular rotatable bull gear mounted in association with the annular cage and carrying rollers each of which is mounted in association with one of the pivotal pipe-gripping rocker arms mounted on the annular cage; the pipe-gripping rocker arms, the annular cage and the annular rotatable bull gear being constructed such that rotation of the bull gear sufficiently in either direction causes the roller carried by the bull gear to contact one of the camming surfaces on the portion of the pipe-gripping rocker arm device associated therewith and to move the pipe-gripping rocker arm devices such that one of the sets of complementary teeth carried thereon engages the pipe to be gripped; and motive means for rotating the bull gear in either the clockwise or counterclockwise direction.

4,246,810

TOOL FOR PRE-TENSIONING A FASTENER

Frank E. Keske, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT NO. PCT/US79/00312, § 371 Date May 10, 1979, § 102(e) Date May 10, 1979.

This PCT application filed May 10, 1979, Ser. No. 89,112

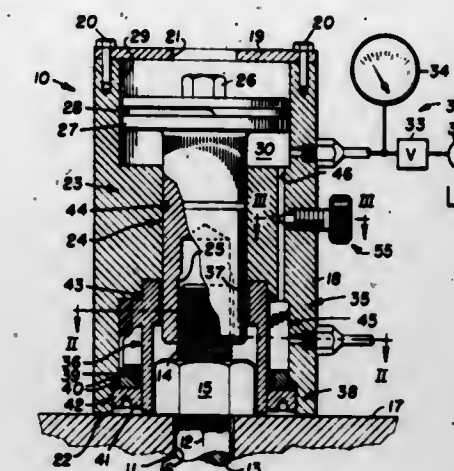
Int. Cl.³ B25B 29/02

U.S. Cl. 81—57.38

24 Claims

1. A fastening tool (10,10a) comprising tensioning means (23,23a) for detachably engaging an end of

a stud (13) and for imposing a predetermined tension (12) thereon, rotating means (35,35a) for detachably engaging and rotating a nut (15) threadably mounted on said stud (13) to at least substantially retain said predetermined tension (12) on said stud (13), and



fluid control means (31) common to each of said tensioning means (23,23a) and said rotating means (35,35a) for at least substantially simultaneously imposing said predetermined tension (12) on said stud (13) and for rotating said nut (15) in response to fluid pressure.

4,246,811

BALL HEAD POLYGONAL WRENCH

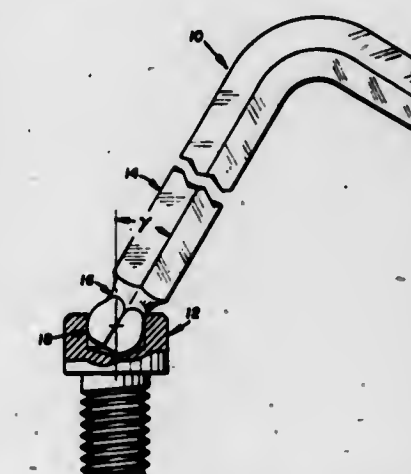
John R. Bondhus, Monticello, Minn., and Fred L. Helm, Millersville, Pa., assignors to Bondhus Corporation, Monticello, Minn.

Filed Sep. 24, 1979, Ser. No. 77,938

Int. Cl.³ B25B 13/48

U.S. Cl. 81—436

8 Claims



1. A wrench with a polygonal cross section comprising:

- a drive shank portion having a longitudinal central axis; and
- a drive head portion secured to said shank portion and having a plurality of curved sides disposed polygonally with the outermost portions of said sides being spaced from the longitudinal central axis by a distance of $\frac{1}{2}D$ and with the center of curvature of each curved side being displaced from said longitudinal central axis by a distance substantially equal to $\frac{1}{2}D(1 - \cos \sigma)$ where

$$\sigma = \frac{360^\circ}{2 (\text{No. of sides})}$$

4,246,812

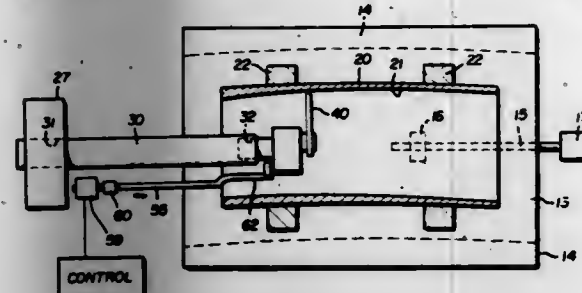
METHOD AND APPARATUS FOR BORING A TAPERED, CURVED I.D. TUBULAR CASTING MOLD

Floyd R. Gladwin, deceased, late of Grosse Ile, Mich. (by Yvonne J. Gladwin, executrix), and Joseph Grzincic, Grosse Ile, Mich., assignors to Gladwin Corporation, Taylor, Mich.

Filed Mar. 7, 1979, Ser. No. 18,131
Int. Cl.³ B23B 3/00, 41/06, 39/08

U.S. Cl. 82-1 C

8 Claims



1. A method for machining an accurately dimensioned curved interior wall within an elongated tube-like member, comprising:

positioning within the tube a rotatable cutting tool which has a fixed position axis of rotation and is movably adjustable radially of such axis, with such axis being aligned with the tube axis;

moving the tube axially longitudinally relative to the cutting tool along a large radius curve which is substantially tangent to the tube axis and the cutting tool axis of rotation at their intersection with the radius upon which the cutting edge of the cutting tool is located to thereby form a curved interior wall within the tube, and including regularly moving the cutting tool while it is rotating, in a radial direction to thereby taper at least a portion of the interior wall.

4,246,813

STRAIGHT TURNING AUTOMATIC LATHE

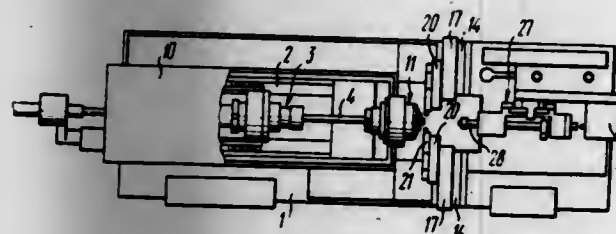
Konstantin A. Grachev, Naberezhnaya Kosmonavtov, 3, Kv. 67; Jury N. Sulie, ulitsa Sovetskaya, 63, Kv. 9, and David N. Tverskoi, ulitsa Pushkina, 17/25, Kv. 184, all of Saratov, U.S.S.R.

Filed Jun. 15, 1979, Ser. No. 48,801

Claims priority, application U.S.S.R., Aug. 8, 1978, 2640258
Int. Cl.³ B23B 13/00, 21/00

U.S. Cl. 82-2.5

2 Claims



1. A straight turning automatic lathe comprising: a bed; a workpiece-carrying spindle headstock slidably mounted on said bed so that it can move along the bed to provide longitudinal feed; a spindle of said spindle headstock; a means for rotation of said spindle and for longitudinal movement of said spindle headstock; at least one upright secured on said bed at a certain distance from the forward end face of said spindle headstock in its extreme advanced position; a cross slide mounted on said upright at the side facing the forward end of said spindle headstock; cutting tools clamped in said cross slide at the side facing the forward end of said spindle headstock; said cross slide being attached on said upright so that it can move radially relative to the upright to provide required transverse feed; a means for displacement of said cross slide.

4,246,814

ELBOW MANDREL

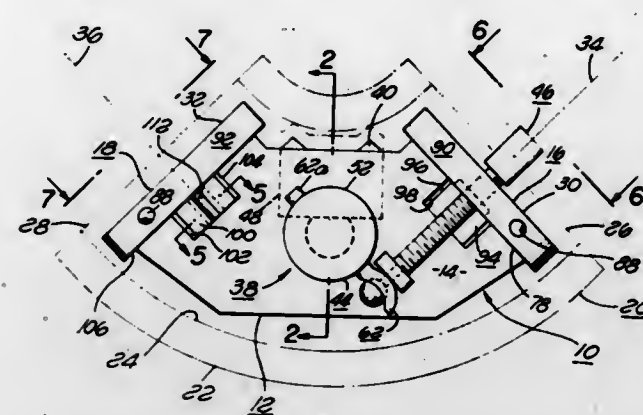
John E. Pertle, Garden Valley, Calif., assignor to Tri Tool, Inc., Placerville, Calif.

Filed Apr. 23, 1979, Ser. No. 32,499

Int. Cl.³ B23B 3/22, 41/00

U.S. Cl. 82-4 C

17 Claims



1. A mandrel for mounting a pipe machining tool for rotation relative to at least one end of a pipe bend to be machined, and said pipe bend having an inside surface, and an outside surface, comprising, in combination:

a frame means having a web portion and a first and second flange portion coupled to opposite ends of said web portion, said first flange portion having an outer surface in a first plane, an inner surface spaced from said outer surface and adjacent said web portion, and a peripheral edge surface, said second flange portion having an outer surface in a second plane at a predetermined angle with said first plane, an inner surface spaced from said outer surface and adjacent said web portion and a peripheral edge portion, and said frame means positionable within said pipe bend with said outer surface of said first flange portion adjacent a first end of said pipe bend and said outer surface of said second flange portion adjacent a second end of said pipe bend;

locking means mounted on said frame means, and said locking means comprising:

a clamping means movably mounted on said frame means and movable between a retracted position wherein said clamping means is substantially free of engagement with said inside surface of said pipe bend, and a clamping position wherein said clamping means frictionally engages said inside surface of said pipe bend;

cam means rotatably mounted on said frame means and operatively engaging said clamping means for moving said clamping means between said retracted position and said clamping position thereof; and cam control means movably mounted on said frame means and operatively engaging said cam means for rotating said cam means;

projection means on said peripheral edge surface of said first flange portion and said second flange portion for frictionally engaging said inside surface of said pipe bend for said clamping means in said clamping position thereof to frictionally retain said frame means in said pipe bend to prevent relative movement therebetween;

mandrel shaft means detachably mountable on said frame means for receiving said pipe machining tool for rotation about the axis of said mandrel shaft means,

mounting means on said frame means for adjustably mounting said mandrel shaft means to at least one of said first and second flange portions of said frame means to provide said mandrel shaft means extending substantially perpendicularly outwardly from said outer surface of said at least one of said first and second flange portions;

locating plate means detachably mountable on said frame means and having an engaging surface for engaging the

ends of said pipe bend to position said frame means with respect thereto; whereby said frame means may be positioned at a predetermined orientation with respect to said pipe bend and clamped in said predetermined position to prevent relative movement of said frame means with respect to said pipe bend, and said mandrel shaft means may be adjusted to predetermined positions on said frame means to receive said pipe machining tool for rotation thereabout.

4,246,815

VOLUMETRICALLY DEFORMED POLYMERIC SUPPORT FOR PUNCHES

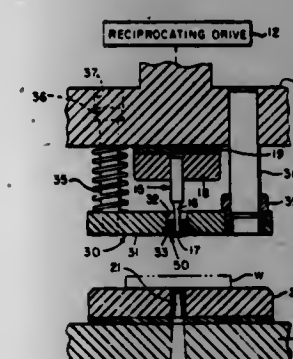
Harding R. Hugo, Darien, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Oct. 15, 1979, Ser. No. 85,051

Int. Cl.³ B26F 1/14

U.S. Cl. 83-139

2 Claims



1. In a punch press for punching a hole in a thick blank of metal, the combination comprising a ram having means for powered reciprocation, a bed mounting a die plate below the ram, a punch on the ram having an extended nib of constant diameter for entering a hole in the die plate, a horizontal stripper plate spaced below the ram and movable therewith, a punch bushing fixed in the stripper plate and having a central clearance opening the guiding the nib of the punch therethrough, stripper springs interposed between the ram and the stripper plate for urging the stripper plate downwardly away from the ram, means defining a normal extended position for the stripper plate with respect to the ram in which the face of the stripper plate extends downwardly a short distance beyond the tip of the punch, the punch bushing having a coaxial annular recess in its underside, an annular insert of volumetrically incompressible resilient polymeric material completely filling the recess and presenting an inwardly-directed collar surface substantially aligned with the clearance opening of the associated bushing, the insert being dimensioned to normally project downwardly a short distance beyond the recess to provide an exposed striking surface for engaging a workpiece interposed between the stripper plate and the die plate as the ram descends, the stripper springs being sufficiently strong so that when the striking surface of the insert engages the workpiece accompanied by compression of the stripper springs, the reaction force is sufficient to volumetrically deform the insert causing the inwardly-directed collar surface thereof to crowd inwardly against the nib of the punch to provide lateral support for the punch as the punch penetrates the workpiece.

4,246,816

SHEET CUTTING APPARATUS

Osmo O. Iyanoff, Satamakatu 7 A 4, SF-33200 Tampere 20, Finland

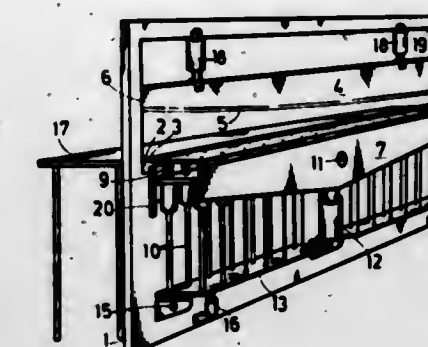
Filed Dec. 21, 1978, Ser. No. 971,927

Int. Cl.³ B26D 7/18, 7/20

U.S. Cl. 83-157

5 Claims

1. A sheet cutting means comprising a body, a lower blade provided with a cutting edge and supported on the body, an upper blade provided with a cutting edge and mounted on the body by means of a connecting means so as to be scissorwise



4,246,817

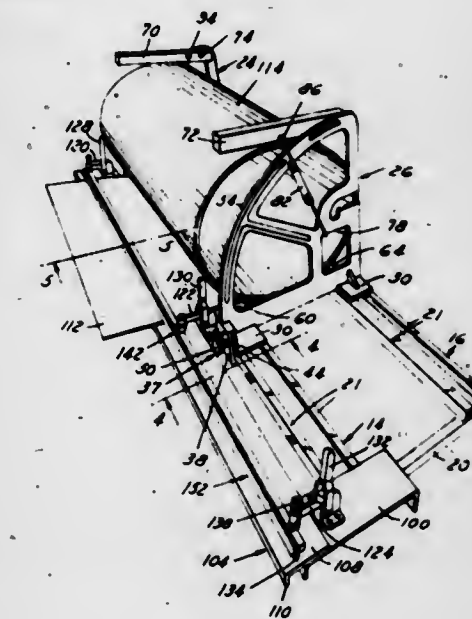
STAND FOR DISPENSING ROLLED SHEET STOCK
Walter G. Marsh, Detroit; James J. Rhodes, Garden City, both of Mich., and Frank Nolan, Cheshire, Conn., assignors to Tapco Products Company, Inc., Detroit, Mich.

Filed Mar. 28, 1979, Ser. No. 24,505

Int. Cl.³ B26D 7/02

U.S. Cl. 83-455

12 Claims



1. A coiled stand for dispensing rolled sheet stock comprising a base having a pair of upright support means carried by said base with at least one of said support means being adjustably positionable longitudinally of said base, said adjustable support means including means for locking said support means in a selected longitudinal position, each of said support means including a plurality of rollers on an arc for supporting a roll of sheet stock, first by means carried longitudinally of said base laterally of said support means for defining a flat clamping surfaces, and second means including a cutting edge for clamping uncoiled sheet stock against said flat surface to facilitate severing a portion of the uncoiled stock extending beyond said surface.

4,246,818

SLICER KNIFE SAFETY COVER

Veral L. McGraw, Jr., 2528 SW. Spring Garden St., Portland, Oreg. 97219

Filed May 21, 1979, Ser. No. 40,529

Int. Cl.³ B26D 7/22

U.S. Cl. 83—478

11 Claims



1. A safety cover for a rotating disk slicer knife comprising a circular member having a rim portion arranged to overlie the rim of said knife, a flange on said rim portion arranged to overhang and enclose the cutting edge of said knife, magnetic means for securing said cover to said knife, and handle means for applying said cover to the knife and removing the cover, said magnetic means comprising a magnet inside said cover, and said handle means comprising a protuberance on the outside of the cover overlying said magnet.

4,246,819

ADJUSTABLE SHEAR BLADE FOR A STRAIGHT LINE SHEARS

Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

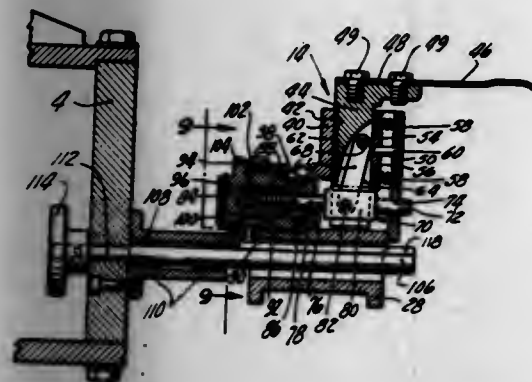
Division of Ser. No. 876,086, Feb. 8, 1978, Pat. No. 4,174,647.

This application Feb. 21, 1979, Ser. No. 13,482

Int. Cl.³ C03B 5/38

U.S. Cl. 83—582

5 Claims



1. In an apparatus for use with a feeder for shearing gobs from a column of plastic material and including at least one set of oppositely disposed shear blades movable in a straight line toward and away from each other, the improvement comprising mounting means for at least one of said blades having relative vertical movement with respect to the other of said blades, and means for moving said mounting means vertically with respect to said other blade, said means for moving said mounting means being operable to move said mounting means during all positions of the shear blades while said blades are moving.

4,246,820

APPARATUS FOR STRAIGHT LINE SHEARING

Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

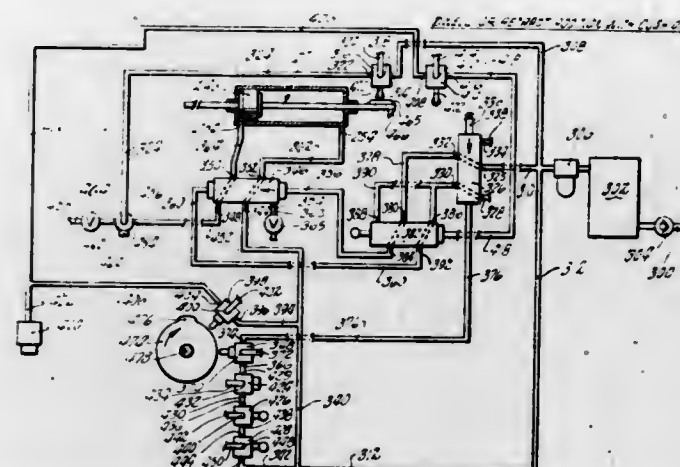
Division of Ser. No. 876,086, Feb. 28, 1978, Pat. No. 4,174,647.

This application Feb. 21, 1979, Ser. No. 13,360

Int. Cl.³ C03B 5/38; B26D 5/12

U.S. Cl. 83—617

2 Claims



1. An apparatus for use with a feeder for shearing gobs from a column of plastic material comprising:

- at least one set of shear blades movable toward and away from each other between shearing and open positions;
- pneumatic cylinder assembly means including a piston and an operating rod movable by fluid pressure between open and shearing positions for driving said shear blades between their open and shearing positions;
- first valve means having first and second positions: said first position connecting a source of fluid pressure to one side of said piston and connecting the other side to an exhaust line to move said piston into the open position, said second position connecting a source of fluid pressure to the other side of said piston to move said piston into the shearing position;
- cushion valve means having a first position permitting exhaust fluid to flow through said first valve means to the exhaust line and a second position blocking flow to said exhaust line; and
- cushion actuating means actuatable in response to the movement of the piston from its shearing to its open position to move said cushion valve means from the first position to its second position to block the flow to the exhaust from said other side.

4,246,821

ELECTRIC FOOD SLICER

Michio Fuse, Nagoya, Japan, assignor to Kabushikikaisha Aichidenkikosakusho, Japan

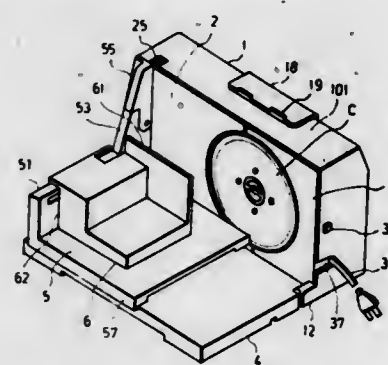
Filed Apr. 30, 1979, Ser. No. 34,799

Claims priority, application Japan, Aug. 8, 1978, 53-96854

Int. Cl.³ B26D 4/28

U.S. Cl. 83—707

5 Claims



1. An electric food slicer comprising:

a main body having a front wall, a rear wall, a top wall, a bottom wall and a pair of side walls;

a front plate defined by said front wall which is movable toward and away from said rear wall to adjust a slicing thickness;

a rotatable slicing cutter provided beside said front plate;

a motor housing removably received in said main body;

an electric motor in said motor housing for rotating said cutter;

means provided on said motor housing for locking it to said main body;

means provided on said rear wall of said main body for actuating a switch to start said motor;

a driving gear exposed in front of said motor housing and drivingly connected with said motor;

a driven gear integrally secured to said cutter and meshing with said driving gear;

a fixed shaft supporting said cutter rotatably, and having an outer end formed with a knob and an inner end provided with a lug;

means provided in said main body for engaging said inner end of said fixed shaft to removably support said cutter in front of said front wall;

a plate support removably and rotatably supported on said main body for rotation between a horizontal operative position and a vertical inoperative position in which said plate support faces said front plate and said cutter in close proximity thereto;

means for supporting said plate support on said main body, while allowing detachment of said plate support from said main body upon positioning of said plate support at a predetermined angle between said horizontal and vertical positions;

a slice plate removably supported on said plate support;

a food clamp removably supported on said slice plate;

an electric cord connected to said motor;

means provided on said plate support for holding said electric cord;

means provided on said top wall of said main body and said plate support for holding said slice plate, when not in use, on the outside of said plate support supported in said vertical position thereof;

said rear wall of said main body having an opening defining a hollow space through which sliced food is discharged, and in which said food clamp is accommodated when not in use; and

means provided in said hollow space for holding said food clamp in position.

4,246,822

DATA TRANSFER APPARATUS FOR DIGITAL POLYPHONIC TONE SYNTHESIZER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Filed Feb. 9, 1979, Ser. No. 10,946

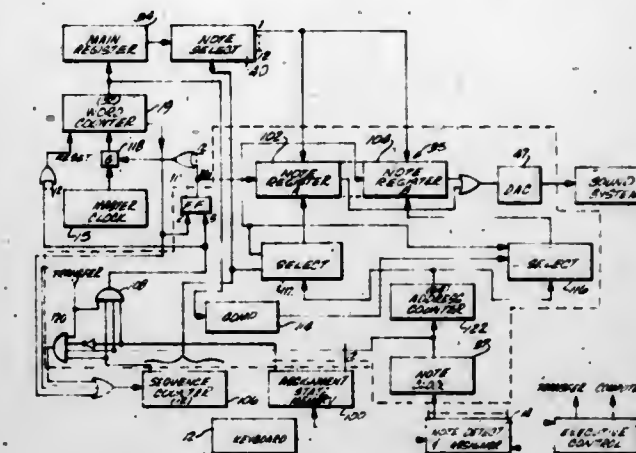
Int. Cl.³ G10H 7/00

U.S. Cl. 84—1.01

9 Claims

1. A polyphonic tone synthesizer comprising: a plurality of tone generators, each tone generator including a note register for storing a group of data words corresponding to the relative amplitudes of a plurality of points defining one full cycle of an audio signal, a digital-to-analog converter, and means transferring the data words sequentially from the note register to the converter at a rate proportional to the pitch of the tone being generated, the note register having at least two sections, each section storing a portion of said group of data words; means for generating and storing a group of data words defining a portion of a cycle of an audio signal; and means transferring sequentially from said last-named means the group of words defining a portion of a cycle to one of said note register sections in one or more of the tone generators at a rate which is

substantially higher than the highest rate at which data words are transferred from a note register to a converter without



interruption of the transfer of data words from the corresponding note register of the associated converter.

4,246,823

WAVESHAPE GENERATOR FOR ELECTRONIC MUSICAL INSTRUMENTS

Masatada Wachi, Mitsumi Katoh, and Koji Nishii, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

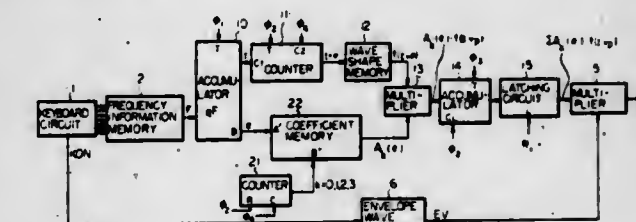
Filed Oct. 30, 1978, Ser. No. 955,523

Claims priority, application Japan, Nov. 1, 1977, 52/130283

Int. Cl.³ G10H 1/08, 7/00

U.S. Cl. 84—1.22

16 Claims



1. A waveshape generator for an electronic musical instrument, comprising:

address signal generating means for generating a sequence of first address signals, each of said first address signals including an integer part and a fractional part, said integer part being a non-negative integer I and said fractional part being any one of a discrete number of fractional values $0 \leq e < 1$;

waveshape memory means for storing a desired waveshape $f(x)$ in the form of m discrete sample values $f(i)$, $i = 1, 2, \dots, m$, each of said sample values $f(i)$ representing the magnitude of said desired waveshape $f(x)$ at a respective discrete location $x = i$ on said waveshape, m being a positive integer; and

sum forming means electrically connected to said address signal generator means and to said waveshape memory means, said sum forming means for forming the sum

$$\sum_{k=0}^n A_k(e) \cdot f(I+k)$$

for each of said first address signals generated by said address signal generating means, $A_k(e)$ being the coefficient values for an nth-order interpolation method of calculating the value $f(I+e)$ from $n+1$ of said discrete sample values $f(i)$ of said waveshape $f(x)$, wherein $f(I+e)$ is the magnitude of the waveshape $f(x)$ at the point $x = I+e$, $f(I+k)$ being the magnitude of that said discrete sample value $f(i)$ corresponding to the sampling point $i = I+k$, n being a positive integer.

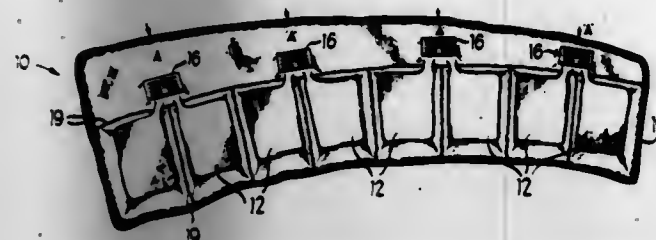
4,246,824 MUSICAL TOY

Steven P. Hanson, Naperville, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,939
Int. Cl.³ G10D 7/00

U.S. Cl. 84—336

1 Claim



1. A musical toy, free of sharp edges and chewable extensions so as to be safe for young children, comprising:
 - a pair of opposed walls made of heat sealable, flexible material, said walls sealed together around peripheral edges to form an enclosed chamber;
 - at least eight juxtaposed cavities within said chamber defined by heat seals between said opposed walls, said cavities filled with a soft, resilient material, each of said cavities having a single opening into the remainder of said chamber; and
 - at least eight whistles of different tones, together forming a complete musical octave, said whistles contained entirely within said chamber, each of said whistles being in exclusive fluid communication with one of said cavities through the opening in said cavity, arranged to form an ascending octave of tones from one cavity and associated whistle to the next adjacent cavity with its associated whistle, said whistles being secured together in pairs, each pair including two vibrating sounding elements, two sounding chambers in communication with one of said sounding elements, and an amplifier chamber for amplifying the sound produced having rigid walls, in communication with both sounding elements, each of said whistles having an exit port in communication with said amplifier chamber through one of said walls for the release of air, said wall through which said exit port exits being secured to said whistle around said port.

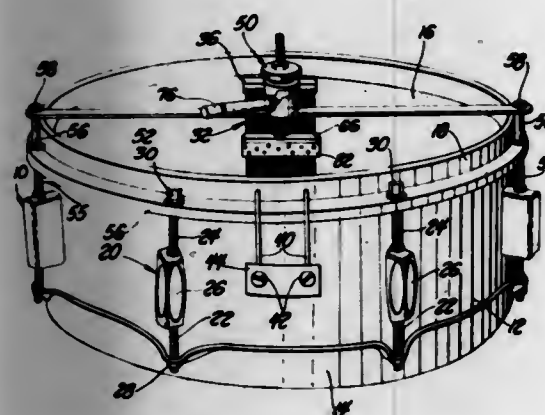
4,246,825 SNARE MUTING DEVICE

Robert S. Hodas, Rte. 1, Box 441 F, Half Moon Bay, Calif. 94019

Filed Nov. 14, 1979, Ser. No. 94,139
Int. Cl.³ G01D 13/02

U.S. Cl. 84—415

6 Claims



1. A snare muting mechanism for a drum of the type including cylindrical drum body, a bottom head enclosing one end of said body, a retaining ring for securing said head to said body, and a plurality of snare elements extending centrally across and

in abutting relationship with the bottom head, said muting mechanism comprising:

- a beam member, means supporting the ends of said beam upon and vertically spaced from said drum head retaining ring,
- said beam being generally normal to and vertically spaced from said snare elements,
- an elastomeric member adapted to clampingly retain the snare elements against the bottom drum head, and
- a device for moving said elastomeric member into and out of clamping engagement with said drum head, said device including:
 - a first cylindrical member fixed to said beam member,
 - a second cylindrical member rotatably mounted in and axially movable to said first cylindrical member,
 - a stud member coaxially disposed within said first and second cylindrical members and projecting through an opening in said beam member,
 - a plate element fixed to one end of the stud member and disposed between said beam member and said snare elements,
 - said elastomeric member being secured to said plate element and disposed proximate said snare elements,
 - a spring element supported between said beam and said plate element and biasing the plate element toward said snare elements,
 - nut means adjustably fixing said stud member to said second cylindrical member,
 - an inclined slot formed through said first cylindrical member and including axially spaced end positions,
 - a lever having one end extending through said slot and being fixed to said second cylindrical member,
 - said lever being rotatable to a first end position within said slot whereby said spring element moves said elastomeric member to clamp the snare elements against the bottom drum head,
 - said lever being rotatable to the other end position within said slot against the force of said spring element whereby the elastomeric element is vertically spaced from said snare elements.

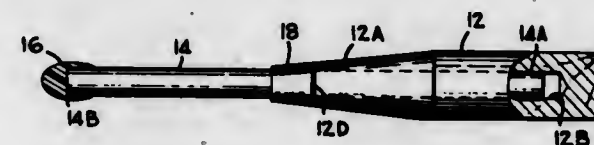
4,246,826 DRUMSTICK

David Warrick, 16020 Highland Dr., San Jose, Calif. 95127, and Tony Fulgar, 5679 Calmar Ave., San Jose, Calif. 95123

Filed Aug. 27, 1979, Ser. No. 69,747
Int. Cl.³ G10D 13/02

U.S. Cl. 84—422 S

7 Claims



1. A drumstick, comprising a generally cylindrical elongate wooden member having an axially extending opening in one end portion, a flexible fiberglass rod secured in said opening and having a flexing portion projecting outwardly from said wooden member, and a drum contact tip secured to the end of said flexing portion.

4,246,827 DEVICE FOR TEACHING MUSIC

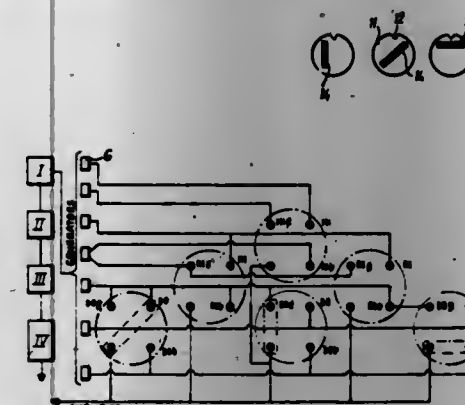
Giovanni Gazzola, No. 6A, Via di Villa Sacchetti, Rome, Italy
Filed Jan. 31, 1979, Ser. No. 8,024

Claims priority, application Italy, Feb. 10, 1978, 48016 A/78; Sep. 29, 1978, 51313 A/78

Int. Cl.³ G09B 15/04

U.S. Cl. 84—470 R

15 Claims



1. A device for teaching music, comprising, in combination,
 - (a) a set of pegs subdivided in seven groups corresponding to the seven musical notes;
 - (b) a card containing a musical passage consisting of coded holes corresponding to the notes of said passage; and
 - (c) means for reproducing the sounds corresponding to each of the seven notes when the respective pegs selectively associated with each hole are first introduced into said holes and then sequentially depressed.

4,246,828 BLIND FASTENER

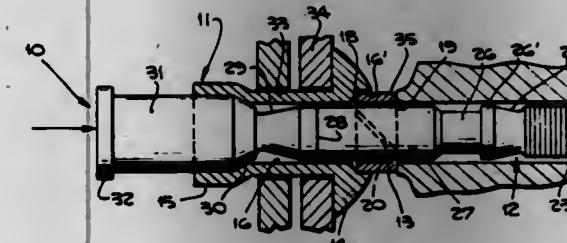
Emory K. Tamashiro, Harbor City, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.

Continuation of Ser. No. 887,958, Mar. 20, 1978, abandoned. This application Jul. 24, 1979, Ser. No. 60,131

Int. Cl.³ F16B 13/04

U.S. Cl. 411—45

5 Claims



1. In a blind fastener having a rivet sleeve, said rivet sleeve including a head and an integral expansive sleeve, both said head and said expansive sleeve having inter-connected throughbores extending therethrough, a core bolt having a serrated shaft portion generally the same diameter as said throughbores, a smooth-walled portion extending from said serrated shaft portion generally the same diameter as said throughbores, a breakneck groove interconnecting the smooth-walled portion with a second smooth-walled portion having at least a portion thereof of a diameter greater than said first mentioned smooth-walled portion, said rivet sleeve being mounted on the first-mentioned smooth-walled portion with said expansive sleeve extending away from said head, and a locking ring having a throughbore for receiving said core bolt therethrough, the outer diameter of said locking ring being substantially the same as the diameter of the throughbore in the head of said rivet sleeve and disposed therein and about said core bolt between said first-mentioned smooth-walled portion and said serrated threaded shaft portion said locking ring being under compression when said core bolt is being pulled into said

rivet sleeve and abutting against a portion of said rivet sleeve, the improvement which comprises:

- said locking ring being independent of said rivet sleeve, and being generally cylindrical and having a smooth-walled outer cylindrical surface and a smooth-walled cylindrical throughbore, the inner wall of said locking ring being chamfered in a direction leading into said throughbore of said locking ring, said locking ring being split at an angle of less than 90° inclined in a clockwise direction across the longitudinal extent of the ring progressively from one end to the other end thereof, said core bolt having a tapered portion extending from said breakneck groove to said second smooth-walled portion, said locking ring entering the throughbore in the head of said rivet sleeve; and
- the end of said locking ring facing in the direction opposite the direction of movement of said core bolt during assembly abutting against said tapered portion extending from said breakneck groove to said second smooth-walled portion.

4,246,829 REPEATING FIRING SYSTEM FOR GUNS

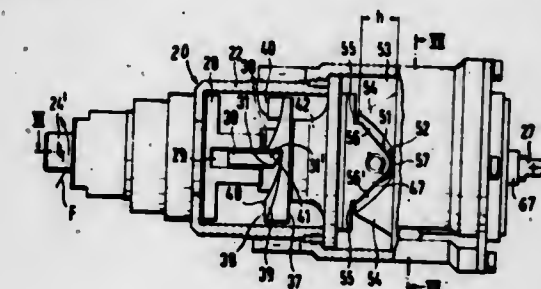
Erich Koehler, Hohenhausen, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,780
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750957

Int. Cl.³ F41F 13/04

U.S. Cl. 89—27 F

14 Claims



1. In a weapon having a barrel capable of being elevated, the weapon having a traversable lower gun carriage, a striker pin device on the barrel for initiating the firing of the weapon, a release device on the barrel for actuating the striker pin device, a repeating firing device for actuating the release device, the repeating firing device having a reciprocable firing pin which is advanced by an oscillatable firing lever against the opposition of a spring to actuate the release device from a position of rest to a firing position from which the firing lever has been turned to effect the firing operation it is returned by the restoring force of the spring to its position of rest, a directional and sighting device for the weapon readily accessible to a gunner occupying the gunner's position from which he fires the weapon, and a rotatable wheel at the gunner's position to traverse the lower gun carriage, the improvement wherein the axis along which the firing pin reciprocates is disposed transverse to the axis of the bore of the barrel and the axis of reciprocation of the striker pin, the repeating firing device and the striker pin device are separate and spaced from each other, when the barrel is in its rest position the release device is disposed in alignment with the firing pin of the repeating firing device, the firing lever is operatively connected to a manually operated oscillatable firing lever which is spaced therefrom and which is located adjacent the gunner's position, the repeating firing device being so located relative to the directional and sighting device, the lower gun carriage, and the axis of rotation of the lower gun carriage traversing wheel that the axis of oscillation of the manually firing lever remains unchanged for every position of elevation of the gun barrel, the axis of rotation of the traversing wheel and the axis of oscillation of the manually operated firing lever coinciding, the traversing wheel and manually operated firing lever being located in the

immediate vicinity of each other, the repeating firing device comprising a housing, a firing shaft rotatably mounted within the housing for oscillation by the firing lever, the firing shaft being mounted coaxially of the trunnion axis, a face cam mounted for rotation by and coaxial of the firing shaft, a cam follower reciprocable with respect to the housing cooperating with the cam, the firing pin being mounted upon the cam follower coaxial of the firing shaft.

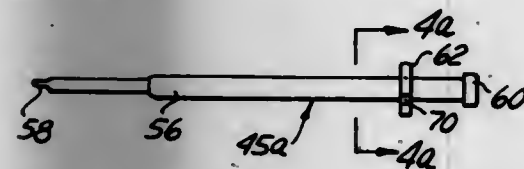
4,246,830 FIRING PIN

Robert R. Krieger, 2505 Town Hall, Troy, Mich. 48064
Filed Jun. 9, 1978, Ser. No. 914,031

Int. Cl.³ F41D 11/16

U.S. Cl. 89—179

18 Claims



1. In a firearm having a gas-operated bolt mechanism and a firing pin having a stem provided with a cylindrical peripheral surface slidably disposed in a longitudinal cylindrical bore in said bolt mechanism, said stem being provided with an integral shoulder abutment having a face engageable with an end of said bore for limiting the stroke of said firing pin in said bore in a direction causing firing of a bullet cartridge, and wherein gas is introduced in said bolt mechanism and said gas leaking through said bore between said bore and said stem causes a deposit to be formed on said stem peripheral surface proximate said shoulder abutment and on said face of said shoulder, the improvement comprising means for causing said firing pin to rotate, said means being at least one passageway through said shoulder abutment forming a gas escape path from a face to the other face of said shoulder abutment, said passageway being disposed adjoining said stem peripheral surface.

4,246,831

FLUID-PRESSURE OPERATED SERVO-MOTOR ASSEMBLIES

Glyn P. R. Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

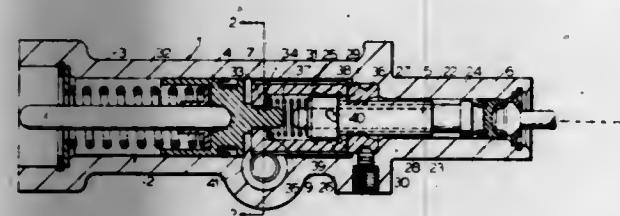
Filed Feb. 16, 1979, Ser. No. 13,199

Claims priority, application United Kingdom, Feb. 25, 1978, 07599/78

Int. Cl.³ F15B 9/10

U.S. Cl. 91—372

18 Claims



1. A fluid-pressure operated servo-motor assembly for a vehicle braking system comprising a housing, means defining a bore in said housing, a pedal-operated input member and an output member working in said bore, a movable wall working in said bore through which an effort is transmitted from said input member to said output member, means defining a boost chamber in said housing, a source of pressure fluid, valve means for controlling the supply of said fluid to said boost chamber for application to said movable wall to augment said effort, said valve means being located in a stationary part of said housing and being responsive to relative movement between parts of said assembly, and an operating assembly for operating said valve means located between said input and said output members, said operating assembly comprising a rotat-

able actuating member and a non-rotatable operating member, and a helical engagement between parts of said actuating member and said operating member such that relative movement of said actuating and operating members in an axial direction in response to said effort causes rotation of said actuating member to operate said valve means.

4,246,832

CONTROL ARRANGEMENT FOR A HYDRAULIC FORCE TRANSMISSION

Wolfgang Kötter, Mörkgrünigen, Friedrich-Wilhelm Höfer, Ditzingen; and Günther Schwerin, Mülgingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

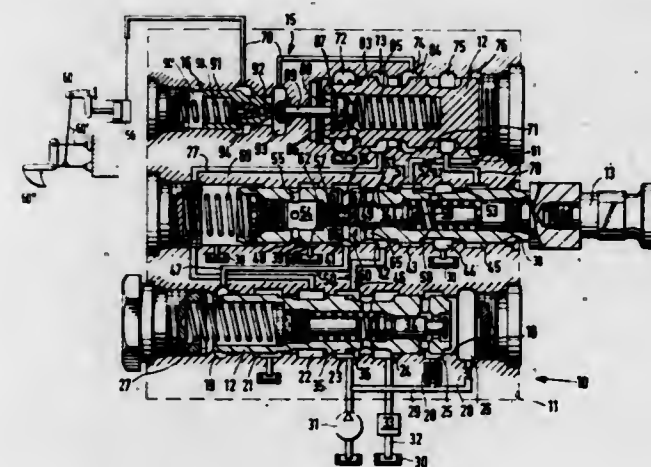
Filed Jan. 25, 1979, Ser. No. 6,502

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810375

Int. Cl.³ F15B 11/10

U.S. Cl. 91—444

12 Claims



1. In an arrangement for controlling the flow of a hydraulic fluid under pressure to and from a hydraulic consumer, especially a hydraulically operated load lifter, a combination comprising a housing formed with two bores therethrough; a main control slide axially movable in one of said bores; a precontrol slide axially movable in the other of said bores, said precontrol slide being provided with an axial bore closed at opposite ends; an auxiliary slide axially movable in said axial bore of said precontrol slide; blocking means in said housing between said precontrol slide and the consumer and controlled by said precontrol slide; said one bore in said housing being closed at opposite ends and forming between one of said closed ends and the facing end of the main control slide a spring compartment; the other bore in said housing forming about said precontrol slide an inlet chamber, a return chamber and a control chamber located between said inlet chamber and said return chamber, said precontrol slide having a first control edge controlling flow of fluid between said control chamber and said return chamber and a second control edge controlling flow of fluid between said control chamber and said inlet chamber, said bore in said precontrol slide forming between one of the closed ends thereof and said auxiliary slide a pressure chamber; a passage through said auxiliary slide connecting said control chamber with said pressure chamber; a throttle in said passage; a source of fluid under pressure; a pressure channel leading from said main control slide directly to said blocking means and connectable by said main control slide to said source; a return conduit; control passage means leading from said source over said precontrol slide and said auxiliary slide to said spring chamber and connectable by said main control slide to said return conduit, said second control edge forming a throttle passage in said control passage means and said control passage means connecting said control chamber with said spring chamber, said auxiliary slide controlling a bypass leading from the inlet chamber to said control chamber, said bypass being parallel to the pas-

sage leading over the second control edge and parallel to the passage in which said throttle is located.

frame, a thermostat on said frame between said heating elements and above the central portion of the length of said con-

4,246,833

HIGH PRESSURE SPHERICAL PISTON

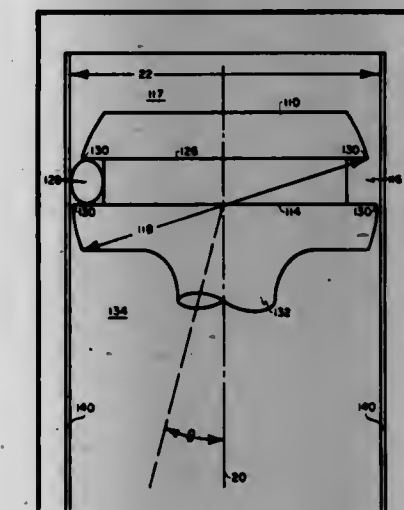
Vernon D. Burkland, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 29, 1978, Ser. No. 974,394

Int. Cl.³ F01B 31/10; F16J 9/00

U.S. Cl. 92—155

14 Claims



1. A high pressure single-acting spherical piston assembly comprising:

a block with a cylindrical opening of predetermined diameter for containing pressurized fluid;

a reciprocating spherical piston with a major diameter and a single-acting side within said cylindrical opening for working with said fluid to perform a predetermined task with said contained pressurized fluid and where said spherical piston has a spherical diameter equal to said major diameter but less than the diameter of said cylindrical opening; and

an O-ring placed in an O-ring groove on said spherical piston parallel to the major diameter of said spherical piston for closing a diametrical clearance equal to the difference between said cylinder diameter and said piston major diameter where said O-ring is on the single-acting side of said spherical piston such that one side of said O-ring groove forms a portion of the major diameter of said spherical piston such that said spherical piston can rock within said cylindrical opening without physical contact between said piston and said block.

4,246,834

PATTY BROILER

John S. Brown, Half Moon Bay, Calif., assignor to NPI Corporation, Burlingame, Calif.

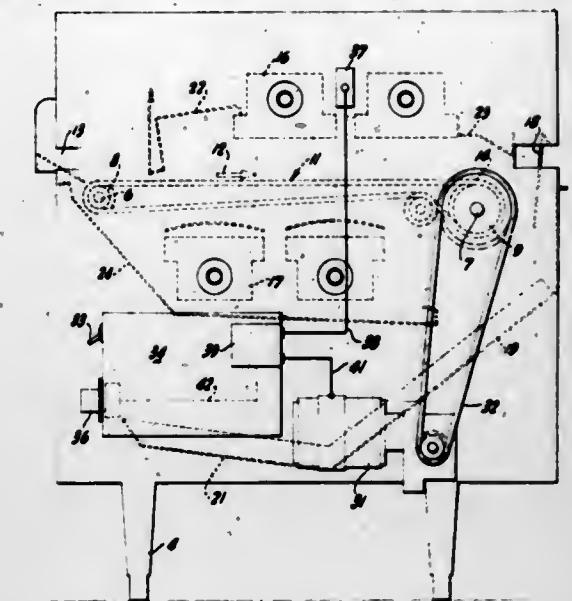
Filed Jul. 16, 1979, Ser. No. 58,087

Int. Cl.³ A47J 37/06

U.S. Cl. 99—334

1 Claim

1. A patty broiler comprising a substantially enclosed frame, a conveyor, means for mounting said conveyor on said frame to move across said frame, a motor on said frame for operating said conveyor, a pair of heating elements arranged side by side on said frame above the central portion of the length of said conveyor in position to heat a patty on said conveyor and to increase the temperature within said substantially enclosed



veyor subject to said temperature, and means for connecting said thermostat to control the speed of said motor.

4,246,835

APPARATUS FOR REDUCING THE TEMPERATURE OF BAKERY PRODUCTS

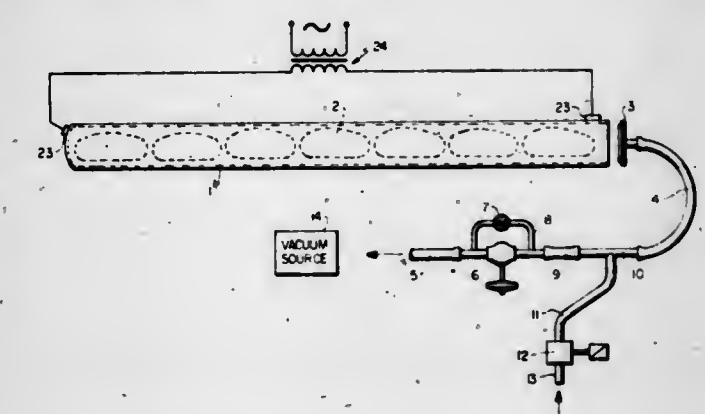
Leif B. Knutrud, Jar, Norway, assignor to Norsk Cerealindustri ved Statens Teknologiske Institutt, Oslo, Norway

Continuation-in-part of Ser. No. 748,452, Dec. 8, 1976, Pat. No. 4,115,596, which is a continuation-in-part of Ser. No. 541,944, Jan. 17, 1975, abandoned. This application Jul. 6, 1978, Ser. No. 922,426

Claims priority, application Norway, Jan. 18, 1974, 740166
Int. Cl.³ A23L 3/36; A21D 8/00

U.S. Cl. 99—472

15 Claims



1. An apparatus for reducing the temperature of hot bakery products, immediately after the discharge thereof from an oven, said apparatus comprising:

a vacuum chamber means adapted to be positioned for receiving bakery products immediately and directly from an oven; and

vacuum means, selectively connectable to said vacuum chamber means, for first controlling the pressure within the interior of said vacuum chamber means to provide a first pressure reduction which is substantially linear as a function of time at a first rate of from 10 to 60 mm Hg per second, and for thereafter controlling the pressure within said interior of said vacuum chamber means to provide a second pressure reduction at an increased second rate greater than said first rate.

4,246,836

APPARATUS FOR PROCESSING PARTICULATE SOLIDS

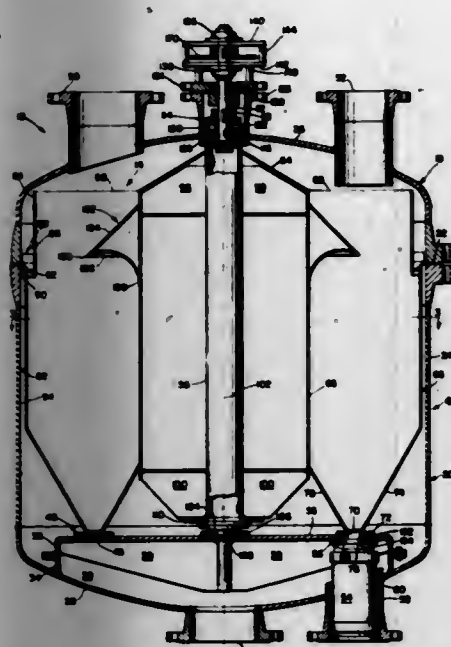
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.

Filed Nov. 5, 1975, Ser. No. 628,916

Int. Cl.³ A23B 7/00

U.S. Cl. 99—478

3 Claims



1. Apparatus for processing particulate solids which includes a reactor comprising: a shell, means in said shell comprising a movable assembly for supporting a bed of solids to be processed; means for rotating said movable assembly about a vertical axis to thereby displace the solids in said shell from a first location in said reactor to a second location spaced around the reactor from the first location; an inlet means above said movable assembly through which solids can be charged into said assembly; and deflector means for keeping solids from falling between said movable assembly and said shell to the bottom of the reactor, said movable assembly having an outer wall means for confining, and delineating an outer boundary of, said bed which includes a first member and a second member spaced inwardly from and extending above the first member to form a gap through which solids charged into but falling outside said movable assembly can be reintroduced thereinto and said deflector means comprising a deflector extending inwardly from said shell to said outer wall means to direct solids falling outside said movable assembly through the gap between the first and second members of the outer wall means into the interior of said movable assembly.

4,246,837

MEAT CUTTING APPARATUS

Brian R. Chenery, Bury St. Edmunds, England, assignor to Haverhill Meat Products Limited, Haverhill, England

Filed Jan. 19, 1978, Ser. No. 917,039

Claims priority, application United Kingdom, Jan. 20, 1977, 25696/77

Int. Cl.³ B23Q 15/00, 15/14, 15/22

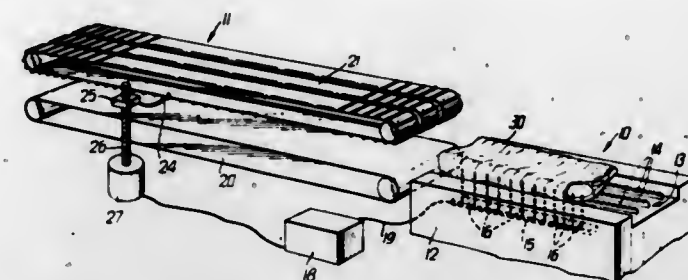
U.S. Cl. 99—486

8 Claims

1. Apparatus for removing fat from a meat carcass comprising:

- a measuring station including carcass support means for supporting a meat carcass, and sensing means positioned to be inserted in said carcass and operable to obtain a profile of the fat/lean interface across substantially the whole of a carcass disposed on said carcass support means;
- data storage means connected to said sensing means operable to receive and store information from said sensing means indicative of said fat/lean interface;
- means for moving a carcass from said measuring station to a cutting station; and
- said cutting station comprising cutting means including a

cutter device for cutting into a meat carcass to remove fat therefrom, and a control means connected to said data storage means and said cutting means operable to adjust the relative positions of the cutter device and a meat carcass at said cutting station in response to receipt of stored fat/lean interface information from said data storage means;



said data storage means being adapted to release said stored information to said control means when the appropriate meat carcass reaches said cutting station, and said control means being operable to continuously adjust the relative positions of said cutter device and said meat carcass during the progress of a cutting operation in response to said stored information.

4,246,838

MULTI-ROW DOUGH SLITTING APPARATUS

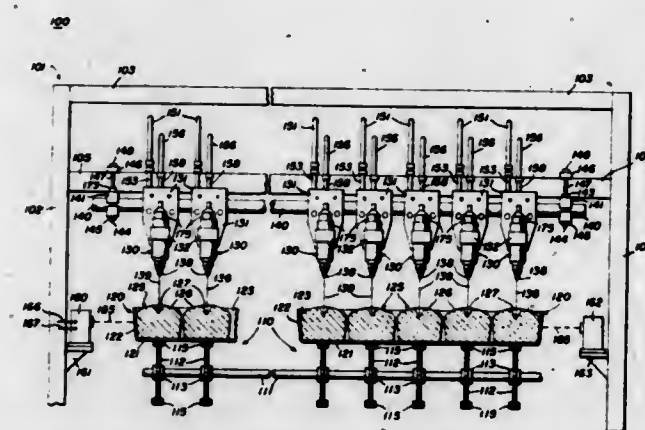
W. Clark Pulver, Burbank; William O. Pulver, Hinsdale; Henry A. Heide, Addison, and James J. Diver, South Holland, all of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.

Filed Apr. 9, 1979, Ser. No. 28,387

Int. Cl.³ B26D 3/08; B26F 3/00

U.S. Cl. 99—516

6 Claims



1. An apparatus for slitting the upper surfaces of a plurality of essentially parallel rows of proofed dough pieces on a conveyor conveying the rows of proofed dough pieces in a predetermined direction, the combination comprising a frame mounted adjacent to said conveyor and extending thereover and including a support member extending across said conveyor and disposed thereabove, a plurality of spray nozzles each including a mounting block adjustably pivotally mounting the associated nozzle for pivotal movement with respect thereto about a first axis extending substantially parallel to the path of associated rows of proofed dough pieces along the conveyor, each of said mounting blocks being adjustably pivotally mounted on said support member for pivotal movement about a second substantially horizontal axis disposed essentially normal to said first axis, each of said nozzles being in general vertical alignment with the longitudinal midline of the path of the associated row of proofed dough pieces, a supply of fluid connected to each of said nozzles and sprayable thereby in a stream upon the upper surfaces of the proofed dough pieces disposed therebelow to cut through the skins of the proofed dough pieces exposing the interiors thereof without cutting completely therethrough, each of said nozzles being

4,246,840

PRINTING MACHINE FOR PRINTING ON A THREE-DIMENSIONAL ARTICLE

Masaharu Yoshino, and Michio Hirabayashi, both of Osaka, Japan, assignors to Izumi Denki Corporation, Osaka, Japan

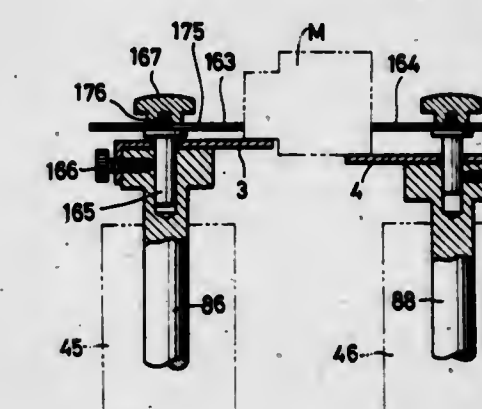
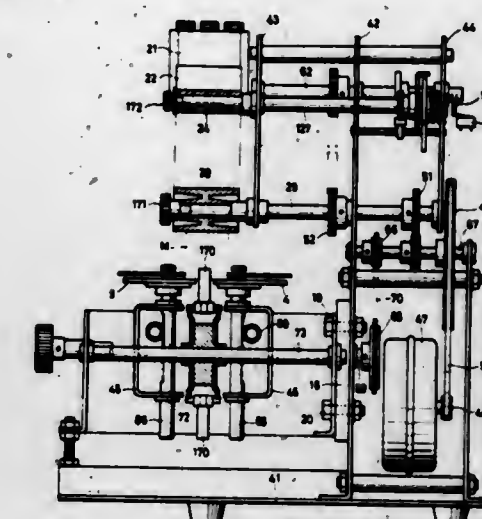
Filed Jul. 17, 1978, Ser. No. 925,700

Claims priority, application Japan, Jul. 15, 1977, 52-85335; Dec. 29, 1977, 52-177508[U]; Jun. 9, 1978, 53-69975

Int. Cl.³ B41F 17/24, 7/08; B65G 19/02

U.S. Cl. 101—37

3 Claims



1. A printing machine for printing on a three-dimensional article, comprising:

an inking means having a printing roller for printing on the article, and means associated with said printing roller for supplying printing ink to said roller, for distributing the ink on said roller and for controlling the amount of ink on said roller;

a guiding means having elongated members for slidably supporting an article to be printed for guiding the article along a path beneath said printing roller in a position for the article to be printed on by said printing roller, said guiding means having a pair of rails parallel to each other and a pair of guides above said rails and parallel to each other and extending along the respective rails, rods on which the respective rails are mounted for supporting the rails, separate frames on which the rods of the respective rails are respectively vertically movably mounted, two rotatable shafts connected to said rods for driving said rods in the vertical direction by rotation of said two shafts for vertically adjusting said rails, fixed shafts supporting said frames for horizontal movement in the direction transversely of the rails, two further rotatable shafts connected to said frames for moving said frames along said fixed shafts by the rotation of said two further shafts for horizontally adjusting said rails, and a knob fixed to each of the four rotatable shafts at one end thereof and arranged in a line on the front of the printing machine; and

a pushing means between said rails for sliding the article to be printed forward on and along said rails, said pushing means including means for driving said pushing means

adjustable about the associated first axis and the associated second axis so as accurately to impinge the stream of fluid therefrom at the desired point on the upper surfaces of the associated row of proofed dough pieces, each of said nozzles including an air valve controlling the issuance of the fluid stream therefrom and each air valve being connected to an air line having a control valve therein, and sensing mechanism for sensing the arrival of the rows of proofed dough pieces below said nozzles and for sensing the termination of the rows of proofed dough pieces below said nozzles, said control valve being responsive to said sensing mechanism to actuate said air valves to cause said nozzles to spray a stream of fluid therefrom upon the skin of the proofed dough pieces as they arrive beneath the associated nozzles, thereby continuously to cut through the skins of the rows of proofed dough pieces passing under said nozzles.

4,246,839

NONIMPACT PRINTER

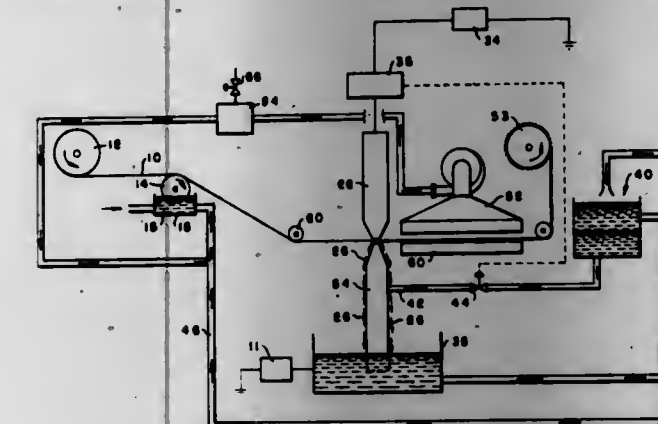
Charles E. Willbanks, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jul. 2, 1979, Ser. No. 53,853

Int. Cl.³ G01D 5/44; G03G 15/00

U.S. Cl. 101—1

3 Claims



1. An improved apparatus for printing on a receptor surface of the type having:

means for advancing said receptor surface;

means for applying an insulating liquid to one side of said receptor surface;

fountain means for contacting polar, conductive liquid with the insulating liquid on said receptor surface, said polar, conductive liquid being substantially immiscible with said insulating liquid;

stylus bar means disposed opposite said fountain means, said receptor surface passing between said fountain means and said stylus bar means, said stylus bar means including a plurality of energizable styli;

means for individually energizing said styli;

wherein the improvement comprises said fountain means including

a body member having a plurality of cavities formed therein each said cavity having an inlet through which polar conductive liquid may enter and an outlet through which said liquid may contact said insulating liquid on said receptor surface;

means for supplying polar, conductive liquid to each said inlet; and

flow restrictor means for insuring that the static pressure at each said outlet is sufficient to rupture any meniscus which may form at said outlet.

forward at the same speed as the peripheral surface speed of said printing roller in synchronization with the rotation of said printing roller.

4,246,841

BAND STAMP

Walter Just, P.O.B. 186, A - 4600 Wels, Austria

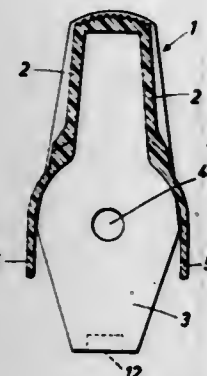
Filed Jan. 22, 1979, Ser. No. 5,337

Claims priority, application Austria, Feb. 27, 1978, 1380/78

Int. Cl.³ B41J 1/60

U.S. Cl. 101-111

2 Claims



1. In a band stamp comprising a stamping assembly which includes an axle having two ends, at least one drum mounted on the axle and rotatable about the axis thereof, a setting wheel integral with each of the drums, a cross-piece parallel to, and spaced from, the axle and a stamp band trained around each one of the drums and the cross-piece, each stamp band engaging an underside of the cross-piece and being forced thereby against a surface to be stamped; and a housing having two opposite side walls defining axially aligned apertures and front and rear walls interconnecting the side walls, the housing walls substantially enclosing the stamping assembly and the side walls engaging the cross-piece and serving as the sole means for retaining the cross-piece spaced from the axle for tensioning the stamp band about the axle and the cross-piece, the improvement of the housing walls forming a one-piece plastic unit and the enclosing housing walls of the plastic unit constituting a handle for the band stamp, the front and rear walls terminating in a tongue extending over each one of the drums from above to below the axle, adjacent ones of the tongues defining slots therebetween and each one of the tongues adjacent a respective one of the side walls defining a slot with the adjacent side wall, the slots being open at their lower ends and each setting wheel registering with a respective one of the slots and protruding radially therethrough, and the slotted interconnecting rear and front walls of the housing enabling the opposite side walls to be resiliently spread apart for insertion of the stamping assembly into the housing from below and for snapping the ends of the axle in the apertures of the side walls of the housing.

4,246,842

PRINTING ROLLER

Leland E. Williams, Centerville, Ohio, and James O. Griffith, Three Rivers, Mich., assignors to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 881,329, Feb. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 752,487, Dec. 20, 1976, abandoned. This application Aug. 3, 1979, Ser. No. 63,877

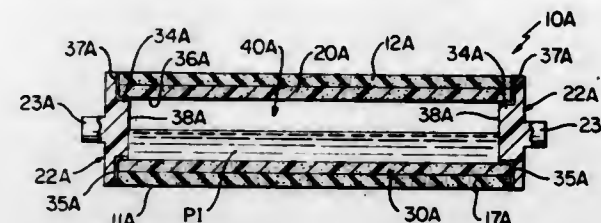
Int. Cl.³ B41F 21/36

U.S. Cl. 101-367

6 Claims

1. A printing roller consisting of annular inner and outer layers each having inner and outer surfaces, and a central reservoir, said outer layer consisting of a soft single piece tubular homogeneous ink-applying microporous rubber material having cavities interconnected by passages defining a first ink flow control means and having a hardness of about 20 to 30 on the Shore D scale, said cavities and passages defining uniformly disposed voids comprising between 30 and 70 percent

of the total volume of said layer; said inner layer having its outer surface contiguous with the inner surface of said outer layer and consisting of a harder sintered mass of material having a reticulated open pore structure with voids comprising between 25 and 75 percent of the total volume of said layer and



defining a second ink flow control means and having a hardness of about 65 to 75 on the Shore D scale; said reservoir defined by the inner surface of said inner layer adapted to contain printing ink for said roller; said first and second ink control means providing a successive dual control for ink contained in said roller to provide uniform inking.

4,246,843

METHOD FOR TREATING IMAGED LITHOGRAPHIC PRINTING PLATES

Walter L. Garrett, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 708,233, Jul. 23, 1976, Pat. No. 4,143,021.

This application May 1, 1978, Ser. No. 901,377

Int. Cl.³ B41M 1/06

U.S. Cl. 101-451

36 Claims

1. An imaged lithographic printing plate which has been treated with a composition comprising (1) water, (2) an active polymer component for rendering non-image areas of the plate hydrophilic, the active polymer component being selected from the group consisting of

- a polyacrylamide-based polymer wherein from about 3 to about 70 percent of the carbonyl sites are carboxyl groups, and the balance of said sites are amide moieties,
- a physical blend comprised of from about 97 to about 30 weight percent polyacrylamide and from about 3 to about 70 percent polyacrylic acid or an alkali metal or ammonium salt thereof,
- a physical blend comprised of polyacrylamide, or polyacrylic acid or an alkali metal or ammonium salt thereof, and at least one polyacrylamide-based polymer as described in (a), said polymers being employed in proportions such that of the total carbonyl sites present in the blend, from about 3 to about 70 percent are carboxyl groups and the balance are amide moieties,
- a mixture of any two or more of the foregoing (a)-(c), the weight average molecular weight of each of said polyacrylamide-based polymer, polyacrylamide, and polyacrylic acid or salt thereof being in the range of from about 5000 to about 1,000,000, and
- a co-mixture of one or more of the foregoing (a)-(d) with up to about 30 weight percent hydroxypropyl methylcellulose based on the total weight of the comixture, said hydroxypropyl methylcellulose being of a type which produces a 2 weight percent aqueous solution having a viscosity of from about 1 to about 100 cP when measured according to ASTM Method D 2363-72; and

- a polyoxyalkylene glycol in an amount which is effective to reduce tackiness while the treated plate is being dried, and which does not adversely affect the printing properties of said plate, said polyoxyalkylene glycol being selected from the group consisting of (a) a polyoxyethylene glycol with an average molecular weight of about 200 to about 800, (b) a polyoxypropylene glycol with an average molecular weight of about 200 to about 600, (c) a mixture of components from (a) and (b), (d) a triether of glycerine with a mixture of polypropylene and polyethylene oxides, and (e) a triether of glycerine with polypropylene oxides.

7. In the method of treating imaged lithographic printing plates wherein an aqueous solution of a synthetic desensitizing gum is applied to said plates and then dried, the improvement which comprises: employing as said solution a composition comprising (1) water, (2) an active polymer component for rendering non-image areas of the lithographic plate hydrophilic, said active polymer component being present in an amount of from about 3 to about 30 weight percent active polymer component, based on the weight of the active polymer component and the water, and active polymer component being selected from the group consisting of

- a polyacrylamide-based polymer wherein from about 3 to about 70 percent of the carbonyl sites are carboxyl groups, and the balance of said sites are amide moieties,
- a physical blend comprised of from about 97 to about 30 weight percent polyacrylamide and from about 3 to about 70 percent polyacrylic acid or an alkali metal or ammonium salt thereof,
- a physical blend comprised of polyacrylamide, or polyacrylic acid or an alkali metal or ammonium salt thereof, and at least one polyacrylamide-based polymer as described in (a), said polymers being employed in proportions such that of the total carbonyl sites present in the blend, from about 3 to about 70 percent are carboxyl groups and the balance are amide moieties,
- a mixture of any two or more of the foregoing (a)-(c), the weight average molecular weight of each of said polyacrylamide-based polymer, polyacrylamide, and polyacrylic acid or salt thereof being in the range of from about 5000 to about 1,000,000, and
- a co-mixture of one or more of the foregoing (a)-(d) with up to about 30 weight percent hydroxypropyl methylcellulose based on the total weight of the comixture, said hydroxypropyl methylcellulose being of a type which produces a 2 weight percent aqueous solution having a viscosity of from about 2 to about 100 cP when measured according to ASTM Method D 2363-72; and (3) a polyoxyalkylene glycol in an amount which is effective to reduce tackiness while the composition is drying and which does not adversely affect the printing properties of a plate treated with said composition, said polyoxyalkylene glycol being selected from the group consisting of (a) a polyoxyethylene glycol with an average molecular weight of about 200 to about 800, (b) a polyoxypropylene glycol with an average molecular weight of about 200 to about 600, (c) a mixture of components from (a) and (b); (d) a triether of glycerine with a mixture of polypropylene and polyethylene oxides, and (e) a triether of glycerine with polypropylene oxides.

4,246,844

METHOD OF FORMING HIGH FRAGMENTATION MORTAR SHELLS

Joseph M. Segmiller, and Thomas E. Lewis, both of Modesto, Calif., assignors to United States of America, Washington, D.C.

Filed Dec. 14, 1978, Ser. No. 973,638

Int. Cl.³ F42B 13/48

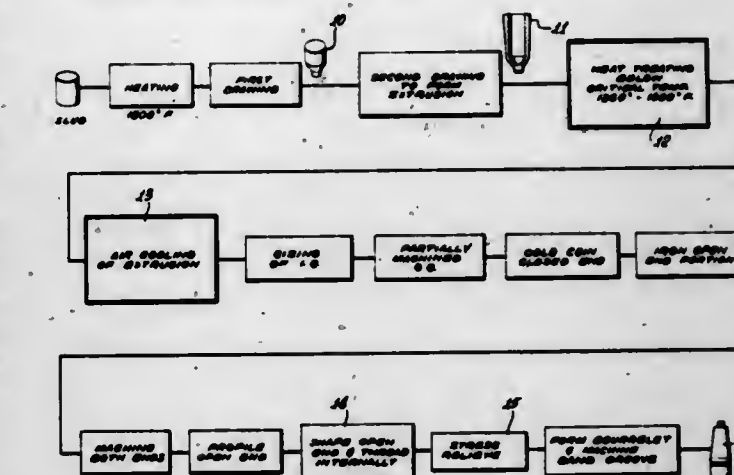
U.S. Cl. 102-67

5 Claims

1. In a hot-cup cold forming method of producing an ordnance shell having a capability of forming a high volume of small fragments from a hypoeutectoid steel billet wherein the billet is heated to approximately 1800° F., reducing the yield strength of said billet and increasing ductility thereof, and forming a cup therefrom while hot, thereafter slowly air cooling said cup to ambient temperature leaving a cooled cup and then performing subsequent intermediate shape forming operations cold followed by finishing steps to complete said shell, the improvement which comprises the intermediate steps following the forming of said cooled cup and prior to the finishing steps of:

heating said cooled cup to a temperature for a period of time whereby the iron carbide constituent of the microstructure of said hypoeutectoid steel is converted from a lamellar

to a spheroidal character sufficient to produce a minimum of 60% spheroidization of said hypoeutectoid steel; slowly air cooling said cup to a reduced temperature; exposing said cup to ambient temperature and air cooling to room temperature thereby forming a cup with a spheroidized structure; subsequently cold coining said spheroidized cup by cold working the same between a punch and die to severely change the geometric shape and wall thickness approximating the finished shell; and



cold ironing the wall of said shell between a punch and die to materially reduce the wall thickness of said shell to further approximate said finished ordnance shell, wherein said intermediate steps together renders said shell capable of said high volume of small fragmentation with the detonation of explosive material within said shell.

4. An ordnance shell having high susceptibility of shattering by detonation of explosive material within said shell as manufactured according to the steps of claim 1.

4,246,845

AC INITIATION SYSTEM

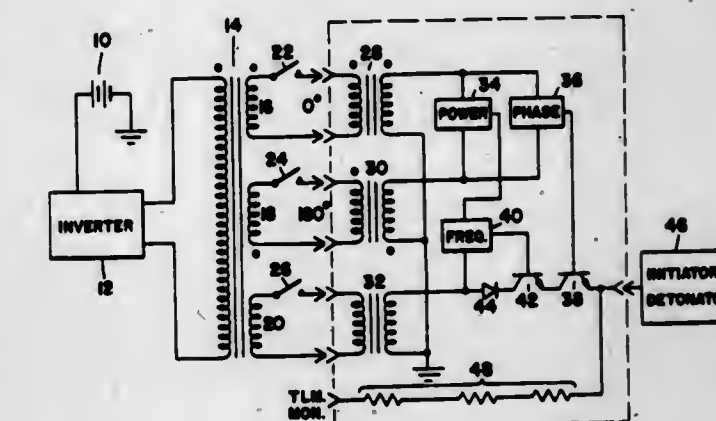
Murray T. Winton, Arnold; Dale L. Beasley, and Kwok S. Chan, both of Sunnyvale, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1978, Ser. No. 972,538

Int. Cl.³ F42C 11/00

U.S. Cl. 102-206

5 Claims



1. An ac initiation system comprising:
- means for determining the phases of a first and a second ac transmission signal;
 - means for determining the frequency of a third ac transmission signal; and
 - means for generating an initiation signal to a load when the phases of said first and second ac transmission signals, the frequency of said third ac transmission signal and the power level of said third ac transmission signal have predetermined values.

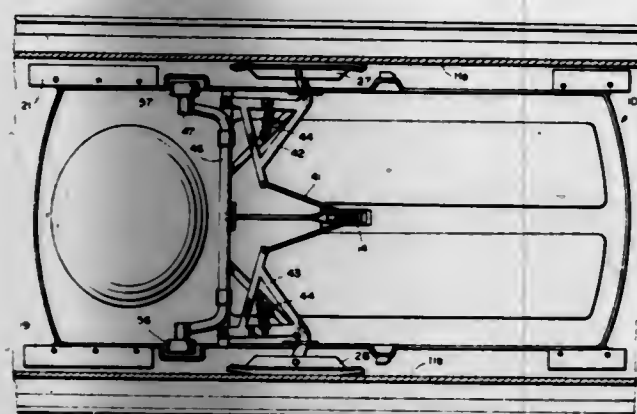
4,246,846

DOWNHILL SLEDDING SYSTEM

Alois J. Betschart, P.O. Box 10977, Zephyr Cove, Nev. 89448
Filed May 19, 1978, Ser. No. 907,600
Int. Cl.³ A63G 21/04

U.S. Cl. 104—69

12 Claims



1. A sledding system comprising: a track including a plurality of joined U-shaped sections and defining a path for a sled, the bight of said U-shaped section providing a substantially flat sledding surface and the substantially upright sides of said U-shaped section providing a common pair of sled retaining and braking surfaces; and at least one sled including dual function, unitary glide elements, each said glide element engaging both said sledding surface and said common pair of surfaces and also including selectively engageable braking means for retaining and guiding extendable from the sides of said sled for frictionally engaging said common surfaces in a wedging manner for braking said sled.

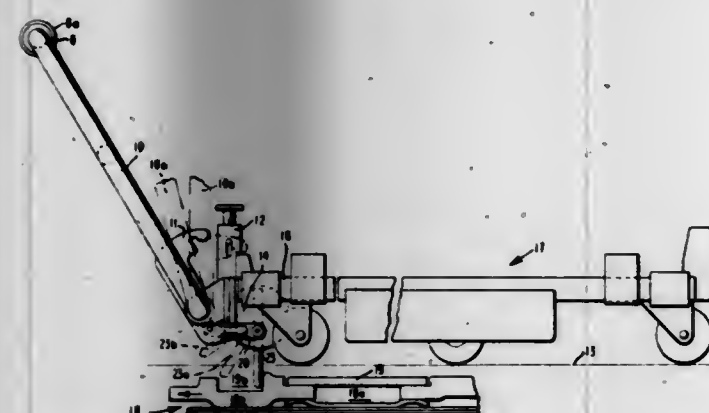
4,246,847

BUMPER ASSISTED FOR CART ACCUMULATOR

Walter H. Chapman, Beachwood, N.J.; David E. Hiland, Seaford, Del., and Erwin B. Kries, Norristown, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 20, 1978, Ser. No. 953,190
Int. Cl.³ B61B 13/12

U.S. Cl. 104—172 BT

9 Claims



5. In a system for propelling wheeled carts, that includes a moving conveyor below a floor and a wheeled cart positioned on the floor over said conveyor and adjacent thereto for movement by said conveyor, an apparatus for transmitting force between said conveyor and said cart, said apparatus comprising: a frame attached to said cart between the cart and the conveyor; a hub rotatably mounted to said frame on an axis transverse to the movement of the conveyor, said hub having a pin extending from it to act as a force transmitting member between the conveyor and the cart, said pin being slideably mounted to the hub for movement with respect to said axis; means for applying a predetermined force to said hub to resist rotary movement of said hub; a bumper assembly mounted on said cart adjacent said frame for pivotal movement between a first position and a second position; and a link coupled between said bumper assembly and an off center location on said hub for

transmitting rotary movement to said hub, said bumper in said first position placing said pin to act as a force transmitting member between the conveyor and the cart, said bumper when moving between said first and second positions transmitting rotary movement to said hub to move said pin out of engagement with said conveyor.

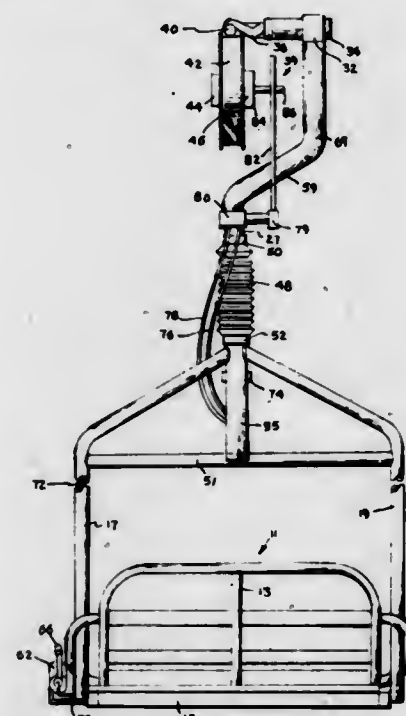
4,246,848

SKI LIFT WITH SWIVEL CHAIR

Donald C. Schneider, 342 St. Joseph, Long Beach, Calif. 90814
Continuation of Ser. No. 930,530, Aug. 2, 1978, abandoned, which is a continuation of Ser. No. 865,993, Dec. 30, 1977, abandoned, which is a continuation of Ser. No. 718,021, Aug. 26, 1976, abandoned. This application Apr. 26, 1979, Ser. No. 33,673
Int. Cl.³ B61B 11/00

U.S. Cl. 104—173 ST

8 Claims



1. In a ski lift including a plurality of cable towers spaced along a lift path between embarking and disembarking stations with wheel supports offset to one side thereof for suspension of a traveling overhead cable therebetween, cable drive means, and a plurality of passenger units, each unit suspended therefrom by a standard having a cable attachment means, the improvement comprising:

- (a) at least one passenger unit bearing swivel means dependent from its respective standard;
- (b) swivel motive means actuable by a passenger during passenger transit to operate said swivel means and selectively rotate said passenger unit from facing the forward path of direction of said unit, said swivel motive means including a hydraulic cylinder and piston actuator and is operative to elevate said passenger unit along a cam guide means carried by its respective standard with said respective standard including a sleeve bearing a helical track and receiving concentric tubing having key means within said track and said passenger unit carrying hydraulic pump means with hydraulic supply and return lines extending to said cylinder and piston actuator;
- (c) forward direction restoration means to return said unit to face said path of direction, said forward direction restoration means actuating said swivel means to reverse the rotation of said passenger unit; and
- (d) control means located along said lift path to automatically activate said direction restoration means and restore said unit facing forward at a preselected location along the passenger transit of said lift path.

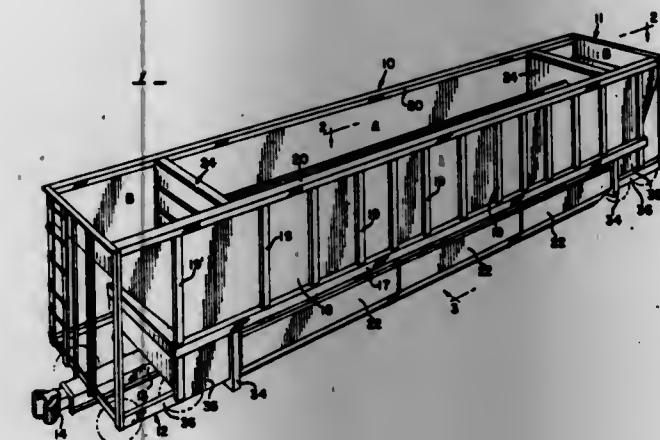
4,246,849

PARTITIONED RAILWAY HOPPER CAR

Harold E. Gramse, Chicago Heights, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Continuation of Ser. No. 839,222, Jan. 4, 1977, abandoned. This application Nov. 7, 1979, Ser. No. 92,164
Int. Cl.³ B61D 7/04, 7/08, 7/18

U.S. Cl. 105—251

8 Claims



1. A railway hopper car including a center sill and underframe arrangement, a car body supported on said underframe arrangement, the improvement comprising: longitudinally extending, laterally spaced raised side sills spaced substantially above said center sill and having upright side walls connected thereto, end wall structure on opposite ends of said car body including an end wall and end slope sheets extending downwardly and inwardly in sloping relation from said end wall, a pair of longitudinally extending hopper discharge slope sheets supported on said center sill and extending downwardly and outwardly of the center sill in sloping relation, the lower ends of said longitudinal slope sheet and said raised side sills providing therebetween a pair of enlarged, oppositely disposed hopper discharge openings extending from the side sills to the hopper discharge slope sheets, discharge doors pivotally supported on said side sills above said discharge openings and each having a vertically extending sidewall portion and terminating in an inwardly and downwardly sloping bottom portion, a pair of end bulkheads each extending transversely of the car and spaced from the end slope sheets to provide a bulkhead opening in a transverse plane, said end bulkheads being inwardly spaced from opposite end walls of the car body to provide a central compartment communicating with said discharge openings, an end compartment at each end of the central compartment of the car and being defined by the end bulkhead end slope sheet and end wall, said end compartment being capable of storing comminuted material and being emptied by communication between said end and central compartments to accommodate the discharge of materials from said end compartment through said hopper discharge openings, and divider wall means having a lower beam portion attached atop the center sill and extending longitudinally to interconnect said spaced end bulkheads, said divider wall means including a vertical portion extending from below the raised side sill to a point substantially above the raised side sill and cooperating with the vertically extending portions of said doors to provide narrow elongated hoppers suitable for receiving large elongated objects such as logs or the like.

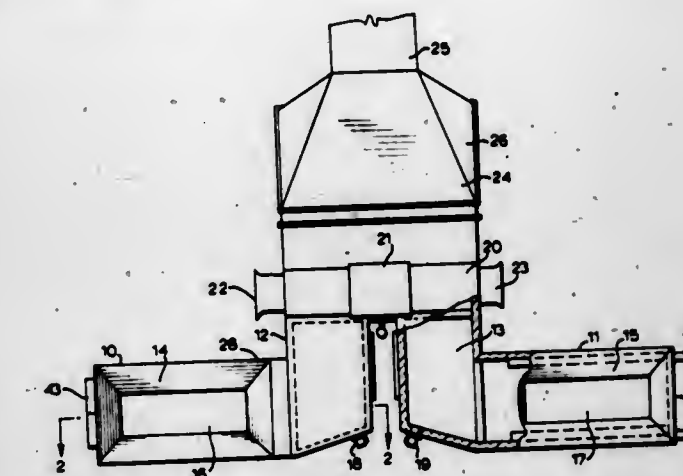
4,246,850

INCINERATOR

Jean J. O. Gravel, Chambly, and William K. Lombard, Weston, both of Canada, assignors to Trecon Limited, Canada
Filed Mar. 16, 1979, Ser. No. 21,122
Int. Cl.³ F23G 5/12

U.S. Cl. 110—235

5 Claims



1. A top-loading incinerator for incineration therein of combustible products, said incinerator comprising a combustion chamber and an after burner chamber;

the combustion chamber having a bottom surface for receiving combustible material, a loading aperture located above the bottom surface and in the top wall thereof, through which combustible material may be dropped onto the bottom surface for incineration, and air inlet means located at a vertical level below the aperture said air inlet means extending along substantially the full length of a side wall of said combustion chamber and directed in a downwardly inclined direction, and being thereby adapted to blow combustion air at substantial velocity across the upper interior of the combustion chamber below the loading aperture and above the level of combustible material in the chamber, in an air curtain extending substantially fully and continuously across the full width of the chamber between the fire and the loading aperture, and directed at an oblique angle to the side walls of the combustion chamber to promote air circulation therein; the after burner chamber communicating with the combustion chamber, below the level of the air curtain and communicating with a combustion gas exhaust means.

4,246,851

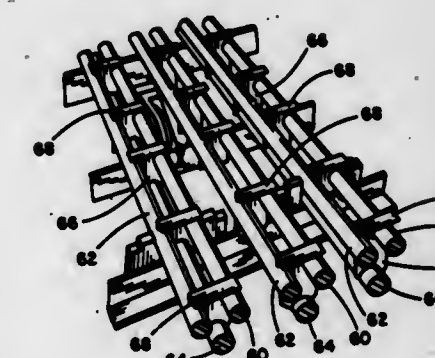
FURNACE GRATING

John C. Bergh, Elkhart, Ind., assignor to Wheelabrator-Frye Inc., Hampton, N.H.

Filed Jan. 2, 1979, Ser. No. 84
Int. Cl.³ F23H 7/08, 17/00

U.S. Cl. 110—281

14 Claims



1. Grate bars for the support of floor plates over which material is advanced through a furnace, in which the grate bars are in the form of elongate members arranged in side-by-side

parallel relation in the furnace, said grate bars comprising elongated rods of curvilinear cross section in triangular arrangement, longitudinally spaced apart bulkheads extending crosswise for engaging the rods in an assembled relation to form a beam, said bulkheads having portions extending upwardly above the uppermost of the rods for support of the floor plates.

4,246,852

INDUSTRIAL FURNACE WITH CERAMIC INSULATING MODULES

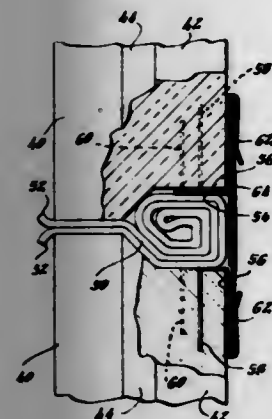
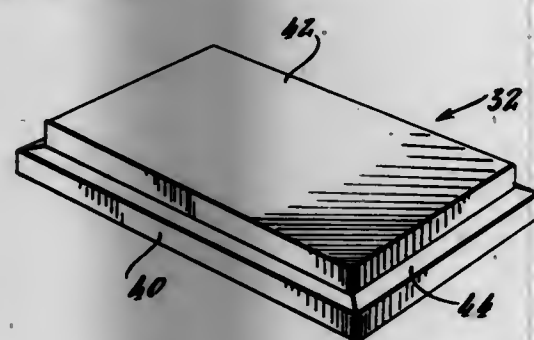
Ewald R. Werych, Elm Grove, Wis., assignor to General Signal Corporation, Stamford, Conn.

Filed Jan. 21, 1979, Ser. No. 50,547

Int. Cl.³ F23M 5/00

U.S. Cl. 110—336

8 Claims



1. An industrial furnace used for material heat treatment and the like, comprising:
a plurality of ceramic fiber insulating modules positioned side-by-side;
each of said modules including an inner section presenting a face to the interior of the furnace;
the side edges of said inner module sections being mated together in close proximity to establish an effectively continuous insulation area;
each of said modules further including outer sections integral with said inner sections but having smaller lateral dimensions to form set-back side edges;
flexible and compressible insulating material in the regions between adjacent set-back edges and at least substantially filling the spaces of said regions; and
support means securing said modules in position.

4,246,853

FUEL FIRING METHOD

Arun K. Mehta, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 27, 1979, Ser. No. 70,219

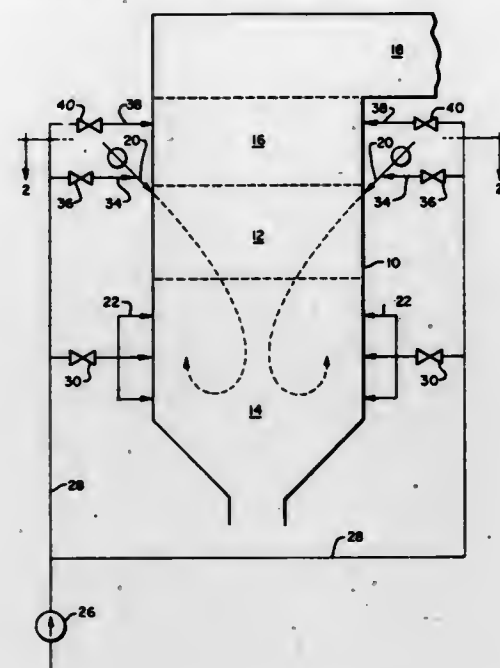
Int. Cl.³ F23K 1/00; F23D 1/00

U.S. Cl. 110—347

7 Claims

1. A method of firing a nitrogen bearing fuel in a furnace having an upstream zone, an intermediate zone, and a downstream zone, comprising: introducing fuel into said furnace

with a minimal amount of oxygen through said intermediate zone in a direction and at a velocity to carry the fuel particles into said upstream zone; introducing secondary air tangentially into said upstream zone, and burning most of the fuel therein, thereby forming combustion products; passing a major portion of the combustion products formed in said upstream zone



through said intermediate zone, in the same areas as the passage of fuel therethru, to said downstream zone; and introducing tertiary air into said downstream zone to complete the burning of fuel, whereby fuel nitrogen is volatilized in a hot oxygen deficient atmosphere, thus favoring the formation of diatomic nitrogen.

4,246,854

FERTILIZER INJECTOR TOOL

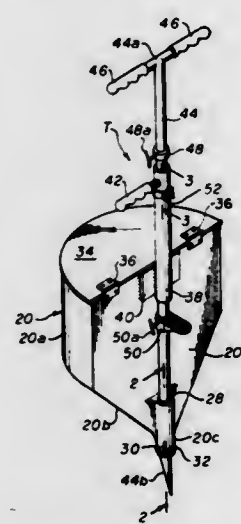
Bernard J. Lempa, Jr., 8422 Carvel La., Houston, Tex. 77036

Filed Jan. 17, 1979, Ser. No. 4,047

Int. Cl.³ A01C 5/02

U.S. Cl. 111—96

10 Claims



1. Apparatus for injecting fertilizer into the soil comprising: a hopper for receiving fertilizer having an upper storage section and a tubular bottom section, the axis of which is offset from said upper storage section, but having an opening along one side thereof to receive fertilizer from said storage section, the lower end of said tubular bottom section having an outlet through which fertilizer may be dispersed and the upper end of said tubular section having an upper opening;
an elongated tubular centralizer affixed to said hopper but totally outside thereof, the upper and lower ends of which are opened and the axis of which coincides with the axis of

said tubular bottom section of said hopper, the lower end of said centralizer being axially spaced from said upper opening of said tubular bottom section;
an injector rod slidably received in said tubular centralizer and the lower end of which is slidably disposed in said tubular bottom section of said hopper for reciprocation between an extended position, in which the lower end of said injector rod projects downwardly from said bottom tubular section for engagement with said soil but preventing flow of said fertilizer through said tubular section outlet, and a retracted position, allowing flow of fertilizer from said hopper to said soil through said tubular bottom section outlet; the upper end of said injector rod being provided with a handle by which said injector rod may be manipulated including reciprocation between said extended and retracted positions; and
a footpeg member affixed to said injector rod for radial projection therefrom between the lower end of said centralizer and the upper end of said tubular bottom section.

4,246,855

COMPENSATING NEEDLE BAR CONNECTING LINKAGE FOR A SEWING MACHINE

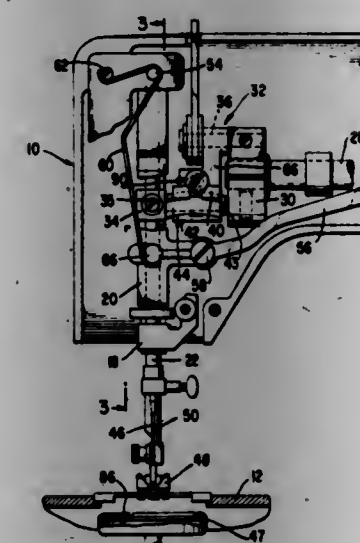
Ralph E. Johnson, Convent Station, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 18, 1979, Ser. No. 49,679

Int. Cl.³ D05B 3/02, 55/14

U.S. Cl. 112—158 R

9 Claims



1. In a sewing machine, a needle bar for imparting endwise reciprocating motion to a sewing needle, a vertical axis hook rotatable in timed relation to endwise reciprocation of the needle, a pivotally mounted gate wherein the needle bar is mounted for endwise reciprocation, mechanism for imparting zig-zag movement to the gate and thereby to the needle, and mechanism for reciprocating the needle bar endwise in the gate including a collar connected to the needle bar, a slide located to one side of the needle bar connected to the collar, a link connected to said slide at mutually engaging surfaces which contact along concentric circular arcs and permit the slide to move on the link during zig-zag movements of the gate, and cranking means for reciprocating the link in a vertical plane extending through the center of and perpendicular to said circular arcs for causing endwise reciprocatory needle bar motion as modified by movement of the slide on the link during zig-zag motion of the gate to be imparted to the needle bar such that the needle is similarly positioned relative to the hook for loop taking in alternate zig-zag positions of the needle bar.

4,246,856

PRESSER FOOT LIFT OPERABLE INDEPENDENTLY BY MANUAL OR POWER DEVICES

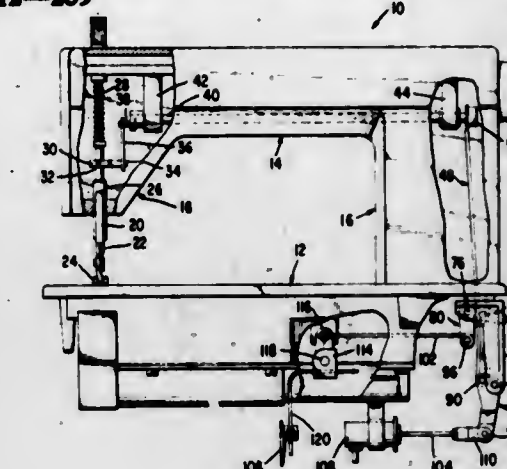
Eugene A. Sansone, Belle Meade, and Edward A. Sukovich, Colonia, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 13, 1979, Ser. No. 57,241

Int. Cl.³ D05B 29/02

U.S. Cl. 112—239

6 Claims



1. In a sewing machine, an improved presser lifting arrangement having both a manual direct operator lifting means as well as power actuated lifting means having complete independence of operation as between said manual and said power actuated means, said lifting arrangement comprising lost motion means connected between each of said manual lifting and power actuated lifting means and the presser lifter mechanism.

4,246,857

THREAD TENSIONING DEVICE FOR A SEWING MACHINE

Tohru Gonnai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

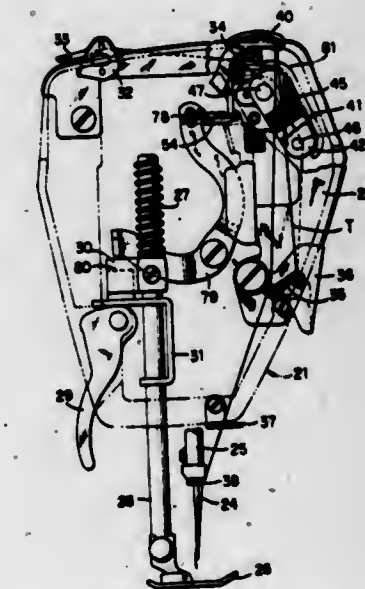
Filed Mar. 21, 1980, Ser. No. 132,540

Claims priority, application Japan, Mar. 28, 1979, 54-37482

Int. Cl.³ D05B 47/04

U.S. Cl. 112—254

10 Claims



1. A thread tensioning device for a sewing machine, comprising:
a pair of plate members mounted on the sewing machine in close confrontation to each other;
thread guide means for guiding thread to run between said plate members along a predetermined path;
urging means for producing pressure to urge one of said plate members toward the other for applying frictional

resistance to movement of the thread running between said plate members;
 gap forming means for forming a narrow gap, extending along said path, between said plate members, and resistance applying means is disposed in said gap to contact with the surface of the thread in said gap, for applying another resistance, which is independent of the frictional resistance due to said urging means, to movement of the thread in accordance with the condition of the thread surface, whereby the thread tension is automatically established in accordance with the kind of the thread running between said plate members.

4,246,858

SAFETY DEVICE FOR PATTERN SELECTION IN ZIGZAG SEWING MACHINES

Masao Ogawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

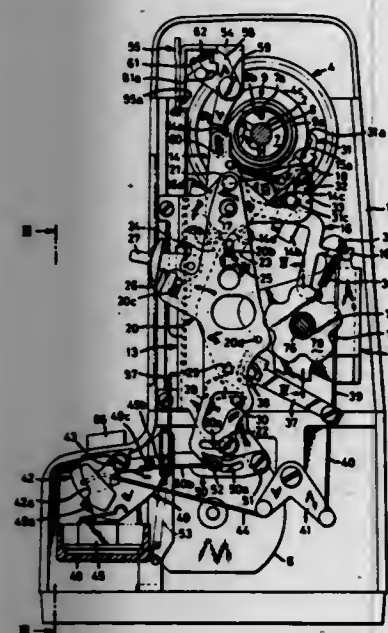
Filed Jul. 24, 1979, Ser. No. 60,052

Claims priority, application Japan, Aug. 11, 1978, 53-98404

Int. Cl.³ D05B 69/22, 3/02

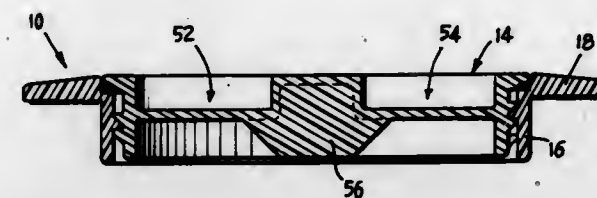
U.S. Cl. 112-275

11 Claims



1. A zigzag sewing machine comprising:
 a frame;
 a needle bar carrying a needle and mounted on said frame for lateral oscillation and endwise reciprocation;
 a main shaft rotatably mounted on said frame to actuate said needle bar for the endwise reciprocation;
 an electric motor for driving said main shaft;
 a motor driving circuit for supplying electrical power to said electric motor;
 a manually operable member for actuating said motor driving circuit to control running and stopping of the machine;
 pattern selecting means manually operated prior to the running of the machine and for selecting any one of a plurality of stitch patterns which are formed by a variety of the lateral oscillation of said needle bar;
 needle positioning means operative for stopping said main shaft at a predetermined position in which said needle is in the up position; and
 connection means operatively connecting said pattern selecting means with said needle positioning means for actuating the latter in relation to the initial operation of said pattern selecting means with said needle in the down position, whereby the substantial pattern selection is always effected with said needle in the up position.

4,246,859
COVER PLATE CONSTRUCTION FOR BOAT DECKS
 Frank S. Becker, Jr., 40 Dock Rd., Milford, Conn. 06460
 Filed May 25, 1978, Ser. No. 909,396
 Int. Cl.³ B63B 19/12
 U.S. Cl. 114-201 R 8 Claims



1. A threaded access cover plate construction for the deck of a boat, comprising in combination:
 (a) a deck fitting, having an annular mounting flange provided with mounting holes to enable the fitting to be secured to the deck of a boat and sealed thereto,
 (b) a screw closure receivable in the deck fitting,
 (c) said fitting and screw closure having cooperable, mating buttress-type threads adapted to engage one another when the closure is screwed into the fitting,
 (d) means defining a rim on the fitting,
 (e) means defining a centering shoulder on said closure, cooperable with said rim,
 (f) said cooperable buttress-type threads being dimensioned to provide excessive looseness for enabling lateral shifting of the closure with respect to the fitting, whereby the centering shoulder of the closure can precisely seat into the rim of the fitting when the closure is screwed into the latter, and
 (g) said flange having an underside mounting means adapted to engage the deck to effect a seal therewith,
 (h) the buttress thread on the fitting being constituted of solely a single thread helix, extending circumferentially through an angle of just under 360°.

4,246,860

METHOD FOR ANCHOR RETRIEVAL

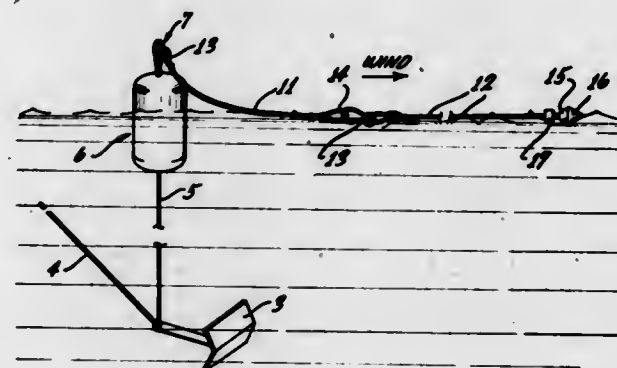
Dalip Saund, deceased, late of Laguna Beach, Calif., and by Dorothy Saund, sole heir, 12966 Rubens Ave., Los Angeles, Calif. 90066, assignors to Dorothy A. Saund, Los Angeles, Calif.

Filed Dec. 7, 1978, Ser. No. 967,214

Int. Cl.³ B63B 21/22

U.S. Cl. 114-293

3 Claims



1. A method for moving anchors having an anchor line passing through an anchor buoy terminating in a pendant loop comprising the steps of:
 attaching one end of a floatable haul line to the pendant loop,
 attaching one end of a floatable catch line to a trailer buoy and the other end to the floatable haul line,
 snagging the floatable catch line and the trailer buoy from a work vessel and hauling the trailer buoy onto the vessel,
 separating the floatable haul line from the floatable catch line and attaching a winch cable from the vessel to the

floatable haul line to haul the anchor pendant loop onto the vessel, and
 separating the winch cable from the floatable haul line and attaching the winch cable to the anchor pendant loop for hauling the anchor.

4,246,861

BUOYANT CRAFT

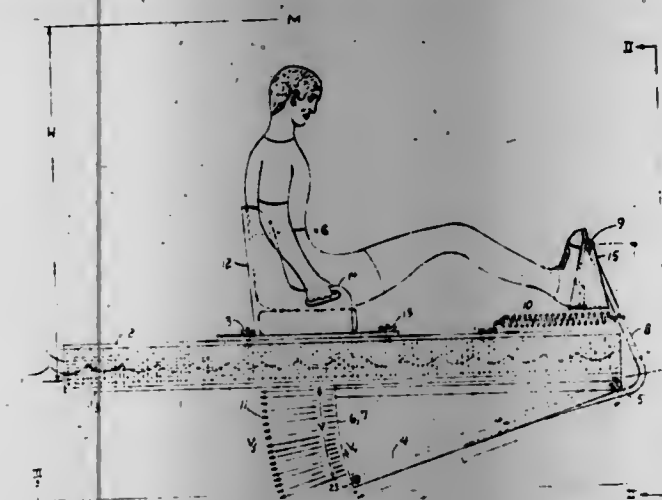
Stanley J. Mikina, 4782 Coquina Key Dr. SE., 440/17, Fla. 33705, and John A. Mikina, 16975 Fitzgerald Ave., Livonia, Mich. 48154

Filed Mar. 22, 1979, Ser. No. 23,021

Int. Cl.³ B63H 11/02, 16/00

U.S. Cl. 440-17

1 Claim



1. A buoyant craft including a floatable member, a seat supported on said floatable member, means for developing a water jet thrust to propel said floatable member comprising a pair of wedge shaped chambers, attached to the bottom surface of said floatable member, in the form of integral and separate liners of a flexible elastomer having openings extending through the entirety of the large ends of said chambers, actuating panels pivotally connected to said floatable member and having extensions projecting upwardly of the front end of said floatable member, return springs connecting said extensions to said floatable member at a point forward of said seat, a pair of pedals mounted on said extensions and in operative engagement with said wedge shaped chambers so as to effect jet action by complete collapsing of said chambers towards the underside of said floatable member against the action of said springs, said chambers being opened by the aid of said springs for quick and free intake of water, said pedals each independently operating one of said chambers to enable steering as well as propulsion of said craft.

4,246,862

SELF-CLEANING WEEDLESS PROPELLER

Troy M. Deal, 277 Triamen Ter., Winter Park, Fla. 32789

Filed Mar. 7, 1979, Ser. No. 18,134

Int. Cl.³ B63H 1/14

U.S. Cl. 440-73

1 Claim



1. A self cleaning attachment for the propeller shaft of water craft used in waterways infested with weeds comprising a gear

box adapted to be mounted on a propeller shaft and held against rotation, a pair of parallel stub shafts mounted in said box and driven in the same direction in timed relation by a common gear on said propeller shaft, helical screw propeller surfaces carried on said stub shafts and each of said propeller surfaces having radially extending teeth on the outer edge thereof, the teeth on one of said propeller surfaces having weed shearing clearance with the stub shaft of the other of said propeller surfaces respectively, and stub shear bars supported in fixed relation to said box and disposed radially outward and parallel to said stub shafts, said shear bars having cleaning teeth thereon which have weed shearing clearance with the teeth on said propeller surfaces.

4,246,863

FLUSHING ASSEMBLY

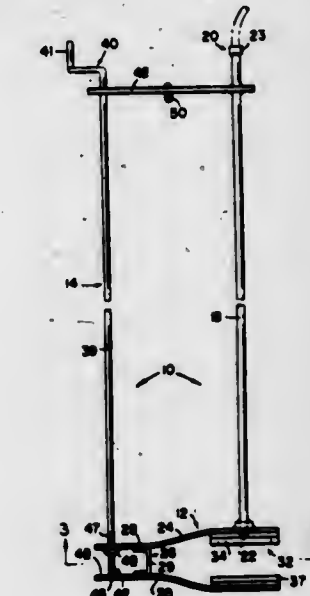
John T. Reese, 406 Buttonwood La., Largo, Fla. 33540

Filed Apr. 30, 1979, Ser. No. 31,942

Int. Cl.³ B08B 3/02, 9/00

U.S. Cl. 440-88

1 Claim



1. A flushing assembly of the type used to direct cleaning water from a remote location to the water intake ports of an outboard motor, said flushing assembly comprising: base means structured and configured to engage the motor adjacent the water intake ports, water outlet ports formed on said base means in communicating disposition with the intake ports, seal means secured to said base means and disposed thereon in substantially surrounding relation to the intake ports wherein said base means is attached to the motor, water inlet means disposed in interconnected flow communicating relation with said water outlet and remote from said base means, securement means mounted on said base means in spaced relation from said water outlet means and structured to aid in securement of said base means to the outboard motor, said base means comprises at least two base plates disposed in at least partially spaced apart relation to one another by a pivot means disposed in movable interconnection between said base plate and intermediate the ends thereof, said water outlet means and said seal means disposed opposite said pivot means relative to both said plates thereof and disposed to regulate the space therebetween when moved relative thereto, said two base plates movably interconnected to one another, whereby space therebetween may be varied, said base plates structured and dimensioned for clamping engagement with an outboard motor in covering relation to the intake ports thereof, said securement means comprises an elongated shaft having one end disposed in abutting engagement with one of said end plates and threadably engaging the other of said end plates, whereby rotational movement of said elongated shaft regulates distance between inner surfaces of said two base plates, the opposite end of said elongated shaft defining a crank handle

disposed in spaced apart, remote relation from said base means, said shaft interconnected to both base plates to allow regulation of the space therebetween, said seal means comprises resilient gasket means mounted on an inner surface of at least one of said base plates in surrounding engagement to said water outlet, said resilient gasket means structured and dimensioned to establish fluid flow between said water inlet and the intake port of the motor on which the base means is mounted, cushion means formed on the inner surface of one of said base plates and substantially oppositely disposed relative to said water outlet means, said cushion means formed from a substantially resilient material, said water outlet means disposable into secure clamping relation to the motor adjacent the intake port thereof upon activation of said securement means, elongated conduit means disposed in liquid communicating relation between said water outlet and said water inlet means and extending outwardly from said base means, said water inlet means being disposed at a remote location from said base means and being structured for attachment with a water supply, whereby cleaning water may be supplied to said base means and inlet ports of the motor to which it is attached at a location remote from the motor being cleaned, both said elongated shaft of said securement means and said elongated conduit extend outwardly from said base means and substantially in the same direction and terminating at a substantially equally distant location from the base means, said elongated shaft and said elongated conduit are disposed in substantially parallel relation to one another, said water outlet and said crank handle disposed in spaced apart and substantially parallel relation to one another, said water outlet and said crank handle disposed in spaced apart and substantially adjacent relation to one another at a location remote from said base means and support means disposed in interconnecting relation between said elongated shaft and elongated conduit adjacent said crank handle and including attachment means secured thereto, said support means disposable in positioning and supporting relation to the rest of said flushing assembly.

4,246,864

DEVICE FOR INDICATING AIRTIGHTNESS

Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

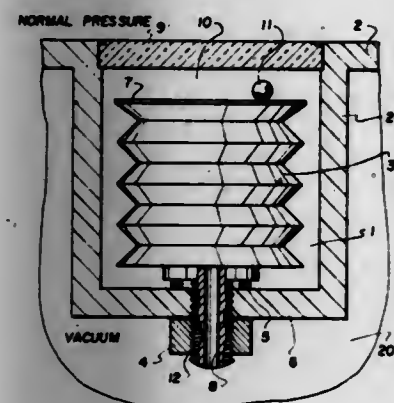
Filed May 9, 1979, Ser. No. 37,358

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1978, 2824175

Int. Cl.³ G01L 19/12; G08B 7/00

U.S. Cl. 116-4

4 Claims



1. A device for indicating the airtightness of a container for apparatus which is to be stored under vacuum and, particularly for protective breathing apparatus, comprising, a container wall of the device defining a packing space in which the apparatus is stored and having an outer surface with a recessed portion forming a chamber, a cover for said chamber overlying the recessed portion and closing the chamber, a hollow expandable and retractable member mounted in said chamber and having an opening which extends through said recessed portion and into the interior of the packing space so that the pressure inside said hollow expandable and retractable member

is the same as that inside the packing space, and a ball disposed between said hollow expandable and retractable member and said cover and being freely movable when said hollow expandable and retractable member is retracted with relatively low pressure therein and in said packing space and held motionless between said expandable and retractable member and said cover by expansion of said expandable and retractable member with a relatively increased pressure in said member and said packing space due to a failure of the airtightness of the container.

4,246,865

ONE SIDE SURFACE MOLTEN METALLIC COATING APPARATUS

Shoji Shimada, Kamakura; Yasunobu Matsushima, Kawasaki; Yokichi Sato, Kodaira; Kuniharu Matsumoto, Yokohama; Kazuyuki Akeyoshi, Yamato, and Takayuki Tobita, Yokohama, all of Japan, assignors to Asahi Glass Company Limited and Nihon Parkerizing Co., Ltd., both of Tokyo, Japan

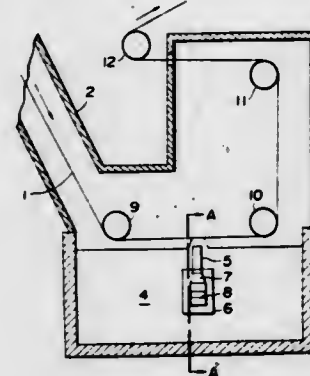
Filed Feb. 9, 1978, Ser. No. 876,335

Claims priority, application Japan, Feb. 15, 1977, 52-14587; Feb. 15, 1977, 52-14588; Feb. 15, 1977, 52-14589

Int. Cl.³ C23C 1/00; B05C 3/18

U.S. Cl. 118-65

15 Claims



1. A one side surface molten metallic coating apparatus comprising:
a vessel containing a molten metal bath having an upper level, said molten metal having zinc as a main component; at least one hollow holding means contained in said molten metal bath;
at least one tool immersed in said bath, each said at least one tool being fixed to a horn and having one surface adjacent said upper level; and
at least one ultrasonic vibrator for each said at least one tool, each said vibrator being positioned in one of said at least one hollow holding means and fixed to one of said horns, whereby each said vibrator may vibrate said one of said tools to raise said upper level adjacent said tool so that a running metal strip immersed adjacent said one surface of one of said at least one tool may be coated on one side.

4,246,866

APPARATUS FOR APPLYING A PATTERN ON A SUBSTRATE

Donald B. Hopings, Toledo, and Richard C. Phillips, Maumee, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Jul. 30, 1979, Ser. No. 62,158

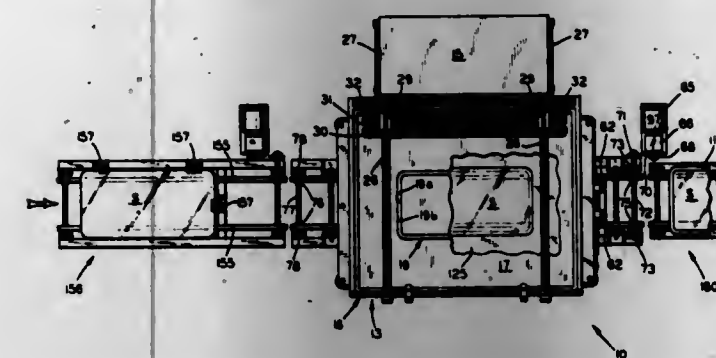
Int. Cl.³ B41F 15/08

U.S. Cl. 118-213

10 Claims

1. In apparatus for applying coating material in a desired configuration onto a flat substrate positioned on a supporting surface and including a stencil screen having a pattern formed therein disposed above said supporting surface and adapted to engage said substrate, and means for forcing coating material through said pattern of said screen in a desired configuration onto the upper surface of said substrate, the improvement

comprising a collar above said supporting surface in spaced relation thereto and having an opening therein complementary to the outline of said substrate, means for moving said collar



into embracing relation with said substrate for completely surrounding the marginal edge thereof, said collar having a surface for supporting at least a portion of said pattern during the coating operation.

4,246,867

XEROGRAPHIC DEVELOPING SYSTEM ROLLS HAVING MAGNETS OF DIFFERENT WIDTHS

Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

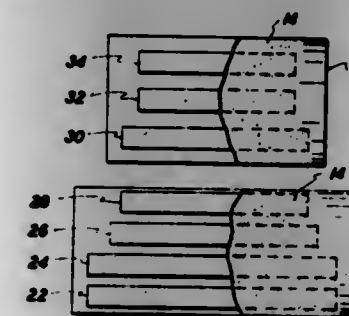
Continuation of Ser. No. 354,598, Apr. 26, 1973, abandoned.

This application Oct. 1, 1974, Ser. No. 510,939

Int. Cl.³ G03G 15/09

U.S. Cl. 118-655

19 Claims



1. In a developer system: developer having ferromagnetic properties, at least two endless rotatable members having said developer said members about a respective axis, first magnetic means for attracting developer from one of said rotatable members and holding the same on the other of said rotatable members, second magnetic means for attracting and holding said developer on said one rotatable member until the developer is rotated within the field of said first magnetic means, said first magnetic means including at least one permanent stationary magnet member extending in a generally axial direction surrounded by said other rotatable member, said second magnetic means including at least one permanent stationary magnet member extending in a generally axial direction surrounded by said one rotatable member, one of said magnet members being longer than the other of said magnet members with the ends of said longer magnet member extending in an axial direction beyond the ends of the shorter magnet member whereby the developer within the field of the longer of said magnet members will extend an axial width on its respective rotatable member corresponding substantially to the width of the longer magnet member and the developer within the field of the shorter magnet member will extend an axial width on its respective rotatable member corresponding substantially to the width of the shorter magnet member.

4,246,868

ENVELOPE MACHINE GUM BOX

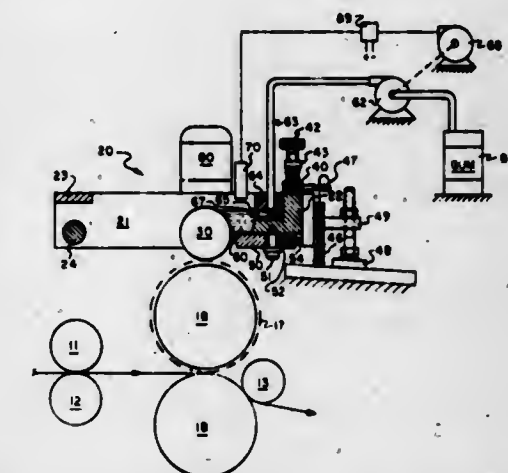
Richard C. Brown, Somers, Conn.; Harland S. Fisher, Longmeadow, Mass.; Theodore E. Kosciuszko, Worcester, Mass., and Joseph M. Murphy, Wilbraham, Mass., assignors to Westvaco Corporation, New York, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,184

Int. Cl.³ B05C 1/08

U.S. Cl. 118-694

16 Claims



1. A fluid metering apparatus for a rotary image transfer roll mounted within a primary machine frame, said apparatus comprising:

Independent frame means pivotally secured to said primary machine frame about an axis that is substantially parallel with said image transfer roll;
Meter roll means rotatably secured to said independent frame means substantially parallel to said image transfer roll;
Adjustable abutment means between said primary machine frame and said independent frame means to limit the proximity of said meter roll to said image transfer roll and to adjust the parallelism between said meter roll and said image transfer roll;
Resilient bias means disposed between said independent frame means and said primary machine frame to maintain abutment contact of said abutment means;
Actuator means between said independent frame means and said primary machine frame to selectively separate said abutment means against said bias means and pivot said independent frame means about said axis thereby separating said meter roll means from said image transfer roll;
First drive means for driving said meter roll in rotational coordination with said image transfer roll;
Sensory means responsive to operational cessation of said first drive means to initiate operation of said actuator means; and
Second drive means for driving said meter roll independently of said first drive means and said image transfer roll upon operational cessation of said first drive means.

4,246,869

BIRD FEEDER

Thomas J. Tobin, Jr., Leawood, Kans., assignor to Heath Manufacturing Company, Coopersville, Mich.

Filed Aug. 9, 1979, Ser. No. 65,379

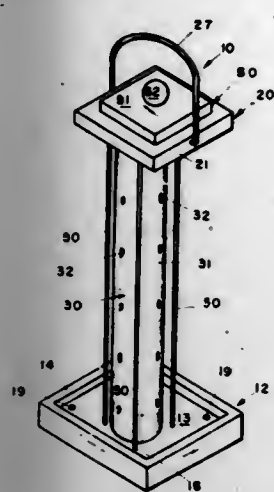
Int. Cl.³ A01K 39/01

U.S. Cl. 119-51 R

9 Claims

1. A bird feeder comprising: an elongated, tubular food storage tank having sidewalls surrounding a central axis; means to position said tank with said axis generally vertical; a series of vertically spaced apertures in said sidewalls; an elongated vertical perch; and means for positioning said perch generally

parallel to said axis on the exterior of said tank in generally adjacent relationship to at least two of said vertically spaced



aperture whereby several birds can feed from said apertures while perched in generally sideways orientation on said perch.

4,246,870

AUTOMATIC DRINKING-TROUGHS

Jean-Pierre R. Gustin, Charleville-Mezieres, France, assignor to La Buvette S.A., Charleville-Mezieres, France

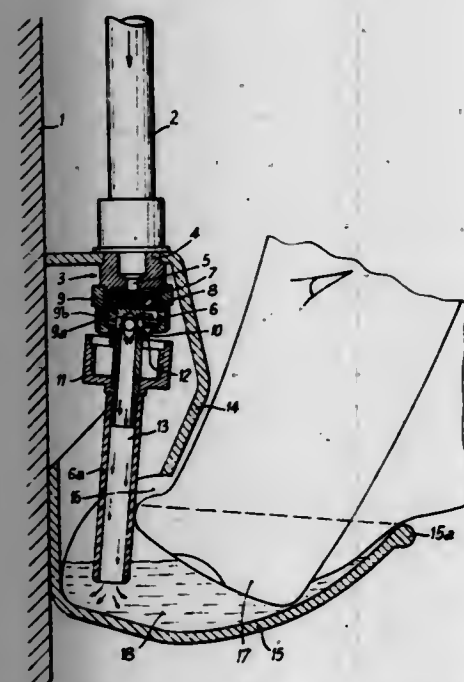
Filed Dec. 27, 1978, Ser. No. 973,709

Claims priority, application France, Jan. 4, 1978, 78 00118

Int. Cl. A01K 7/06

U.S. Cl. 119—75

4 Claims



1. An automatic drinking-trough for animals for use with a water duct having an aperture through which the water exits comprising:

- a valve adapted to be connected to said duct for controlling the exit of water from said duct,
- a bowl having a bottom portion located below said valve and a rear wall,
- a control member connected to said valve for directly actuating the valve upon movement of said control member in any direction, said control member including a hollow tube through which the water leaving the valve travels to the end of said tube remote from the valve which is located adjacent both the bottom and the rear of the bowl and from which the water is discharged into the bowl with a reduced amount of splashing,
- a fixed hood for shielding said valve and a substantial portion of the length of said tube below said valve leaving an exposed portion only adjacent the bottom of the bowl to be contacted by an animal who projects a part of its body into the bowl below the end of the hood to engage the

tube and move the control member to open the valve so that the water exits from the end of the tube, said valve being operable to open upon movement of the tube in any direction upon the part of the body of an animal engaging same.

4,246,871

STEAM GENERATOR

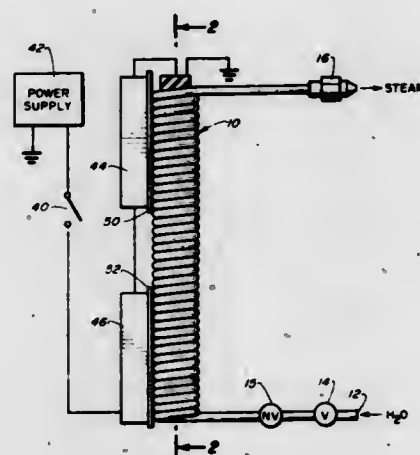
Ronald W. Bockruker, 11408 Albata St., Los Angeles, Calif. 90049, and Zvi H. Schachter, 5215 S. Sepulveda Blvd., Apt. 8C, Culver City, Calif. 90230

Filed May 4, 1979, Ser. No. 36,222

Int. Cl. F22B 1/00

U.S. Cl. 122—4 A

9 Claims



1. A vapor generator comprising in combination: a heat exchanger in the form of a continuous helix in which each revolution is in tangential contact with the adjacent revolution and the revolutions are joined and sealed to each other, said helix having an inlet end for receiving a flow of vaporizable liquid and an outlet end for emitting vapor; thermal means comprising an electrical resistance cartridge heater inserted into the interior of the helix for applying sufficient heat to a surface of the helix for vaporizing the liquid therein; means for regulating the electrical power supplied to the heater including a first thermostat mounted near the cold inlet end of the helix and a second thermostat mounted near the outlet end of the helix, and means connecting the thermostats in series contact with the heater.

4,246,872

HEAT EXCHANGER TUBE SUPPORT

David R. Skinner, Ralph S. Clemens, both of Georgetown, and Robert A. Cerrone, Westford, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Apr. 30, 1979, Ser. No. 34,377

Int. Cl. F22B 37/24

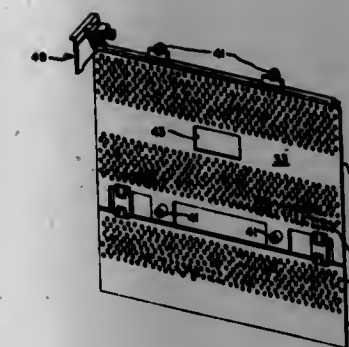
U.S. Cl. 122—510

3 Claims

1. A heat recovery steam generator section having at least one duct defining a hot gas flow path, said heat recovery steam generator including a plurality of tubes traversing said duct for carrying fluid in a non-contact, counterflow heat exchange relation with said hot gas; and, means for supporting said tubes comprising:

- a plurality of tube support plates mounted in said duct and having a plurality of apertures in each tube support plate for receiving said fluid carrying tubes;
- an upper tube support plate section attached at each upper end to opposite duct walls through a pivotal support means including a fixed first pin support, linkage rotatable about said fixed pin support and a second pin support carried by said linkage and rotatable therewith; and,
- a lower tube support plate section attached to the lower end of said upper tube support plate section through a hinge

joint comprising a pin connection at each end of each hinge joint whereby the upper and lower tube support



sections are free to rotate and translate with respect to one another and also with respect to said first fixed pin support.

4,246,873

PRESSURE ADDIBLE ENGINE

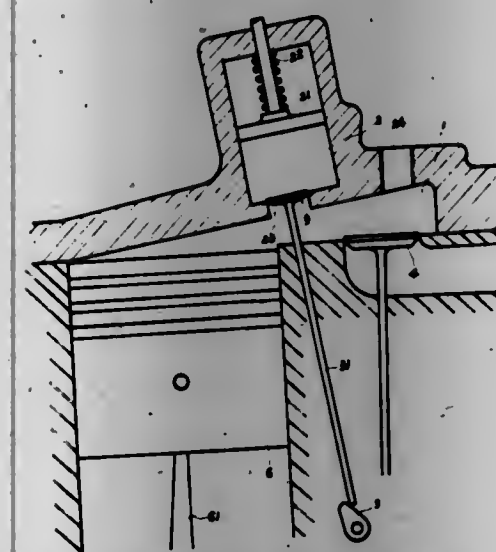
Jing Lih-Liaw, No. 18 La. 136 Yung Ho. St., Taichung City, Taiwan

Filed Oct. 11, 1978, Ser. No. 950,434

Int. Cl. F22D 9/00

U.S. Cl. 123—48 AA

1 Claim



1. An internal combustion engine comprising: a housing having a main chamber formed therein, a power member sealingly fitted in the main chamber for cyclical movement between a first position in which the volume of a closed combustion space defined between the power member and a portion of the chamber surface is a maximum and a second position in which the volume of said combustion space is a minimum; means for supplying air and fuel to the combustion space for combustion therein; said housing having a storage chamber formed therein and a portal extending between said storage chamber and said

combustion space for supplying high pressure gas to said combustion space;

a valve member movable between an open position inside said storage chamber and a closed position, said valve member being engagable with said portal in said closed position for preventing said high pressure gas from entering said combustion space when said power member is moving between said first position and said second position;

a rotatable cam, and a rod extending through said combustion space and having a first end fixed to said valve member and a second end engaging said rotatable cam, for moving said valve member into said open position just prior to ignition of said fuel and air and moving said valve member into said closed position just after said ignition so that the gas pressure in said combustion space is increased just prior to said ignition and high pressure ignited gas may flow into said storage chamber for temporary storage therein just after said ignition; and

a resilient spring mounted auxiliary piston formed in said storage chamber for storing energy when said ignited gases are stored in said storage chamber.

4,246,874

INTERNAL COMBUSTION ENGINE WITH DUAL INDUCTION SYSTEM AND WITH FUEL INJECTION SYSTEM TO DISCHARGE FUEL INTO PRIMARY INDUCTION SYSTEM

Yasuhiko Nakagawa, Kamakura; Yukihiko Etoh, Yokohama; Meroji Nakai, Yokosuka, and Ryoji Nakajima, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

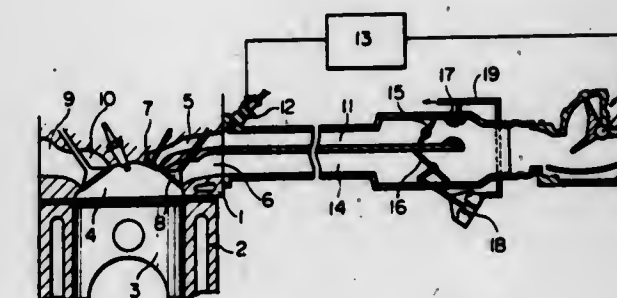
Filed Dec. 4, 1978, Ser. No. 966,374

Claims priority, application Japan, Dec. 19, 1977, 52-152552

Int. Cl. F02B 31/00

U.S. Cl. 123—308

7 Claims

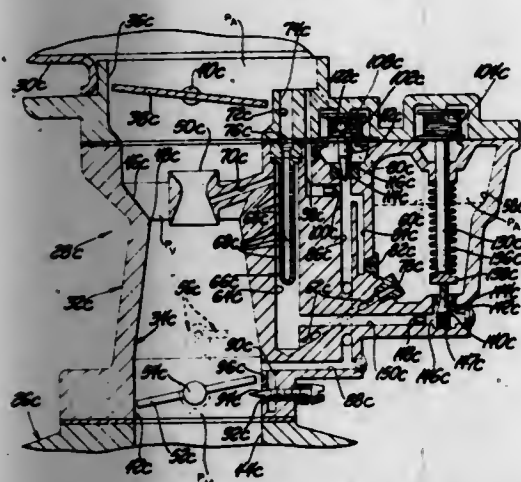


1. An internal combustion engine comprising: a cylinder block having a cylinder formed therein; a piston reciprocally mounted within said cylinder; a cylinder head positioned on one end of said cylinder; a primary induction system adapted to direct air into said cylinder to swirl about a central axis of the cylinder under all operating conditions of the engine; a secondary induction system adapted to direct air into said cylinder in such a direction as to impede the swirling air under a predetermined operating condition of the engine; means for measuring total air flow through said primary and secondary induction systems; and a fuel injector adapted to inject fuel only into the air flowing through said primary induction system, the quantity of fuel issuing from said fuel injector per each injection being controlled in response to said total air flow measuring means.

4,246,875
APPARATUS AND SYSTEM FOR CONTROLLING THE
AIR-FUEL RATIO SUPPLIED TO A COMBUSTION
ENGINE

Kenneth C. Bier, Bloomfield Hills, and Robert J. Miller, Warren, both of Mich., assignors to Colt Industries Operating Corp., New York, N.Y.
 Division of Ser. No. 684,547, May 10, 1976, Pat. No. 4,135,482.
 This application Jul. 13, 1978, Ser. No. 924,159
 Int. Cl.³ F02M 1/10, 7/20
 U.S. Cl. 123—440

32 Claims



1. A carburetor for a combustion engine, comprising carburetor body means, induction passage means formed in said body means, variably positionable throttle valve means for controlling the rate of motive fluid through said induction passage means and into said engine, fuel reservoir chamber means formed in said body means, idle fuel metering system means communicating generally between said fuel reservoir chamber means and said induction passage means, said idle fuel metering system means comprising first modulating valve means carried by said body means and effective to be variably positioned in order to thereby controllably alter the rate of metered idle fuel flow through said idle fuel metering system means to said induction passage means, said main fuel metering system means comprising second modulating valve means carried by said body means and effective to be variably positioned in order to thereby controllably alter the rate of metered main fuel flow through said main fuel metering system means to said induction passage means, first electrically energizable motor means carried by said body means and operatively connected to said first modulating valve means, said first electrically energizable motor means being effective to variably position said first modulating valve means in response to the electrical energization experienced by said first electrically energizable motor means, and second electrically energizable motor means carried by said body means and operatively connected to said second modulating valve means, said second electrically energizable motor means being effective to variably position said second modulating valve means in response to the electrical energization experienced by said second electrically energizable motor means.

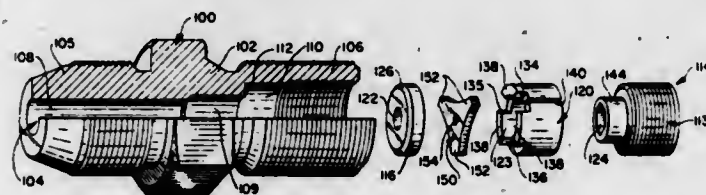
4,246,876
FUEL INJECTION SYSTEM SNUBBER VALVE
ASSEMBLY

Gerald R. Bouwkamp, West Hartford, and Norbert W. Overfield, Bloomfield, both of Conn., assignors to Stanadyne, Inc., Windsor, Conn.
 Filed Jan. 19, 1979, Ser. No. 4,751
 Int. Cl.³ F02M 39/00, 41/08
 U.S. Cl. 123—467

7 Claims

1. In a liquid fuel injection system for a multiple cylinder internal combustion engine having a fuel injection nozzle for each cylinder adapted to be momentarily opened by a pulse of

pressurized fuel for injecting a fuel charge into the cylinder, a positive displacement charge pump for delivering periodic short pulses of pressurized fuel for injection of fuel charges into the engine cylinders in synchronism therewith, a fuel distributor for sequentially conducting the fuel pulses from the charge pump to the fuel injection nozzles, a positive displacement fuel delivery valve intermediate the charge pump and distributor for maintaining a positive residual fuel pressure at each nozzle after injection of fuel thereby, and a fuel snubber valve assembly for each nozzle intermediate the nozzle and distributor for damping a reverse pressure pulse from the nozzle when the nozzle closes at the completion of fuel charge injection thereby, the snubber valve assembly having a valve body with an axial bore with a downstream end connected to the nozzle and an upstream end connected to the fuel distributor, a snubber valve with a snubber valve member axially shiftable in the bore between an upstream relatively closed axial position thereof and a downstream relatively open axial position thereof, and a pressurizing valve in the valve body bore upstream of the snubber valve and having a pressurizing valve member axially shiftable in the bore between an upstream closed axial position thereof and a downstream open axial position thereof and return spring means biasing the pressurizing valve member in the upstream axial direction to its closed position; the improvement wherein the snubber valve



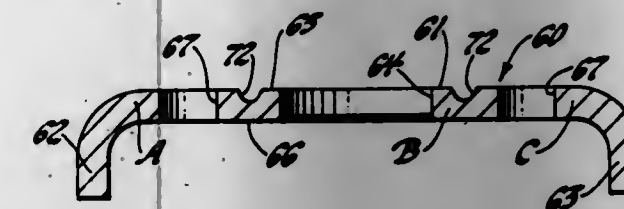
comprises in axially spaced engagement within the valve body bore an upstream valve seat with a generally central axial fuel passageway, an intermediate rolled-plate, generally annular and circumferentially discontinuous spacer sleeve and a downstream retainer with a generally central axial fuel passageway and secured within the bore for securing the valve seat and spacer sleeve within the bore, the rolled-plate spacer sleeve having a plurality of angularly spaced and axially extending slots; wherein the snubber valve member is a flat plate and has a generally central axial snubber port and a plurality of angularly spaced radial projections received within the angularly spaced slots to permit the snubber valve member to shift axially between a downstream relatively open limit position established by the slots in the spacer sleeve and an upstream relatively closed axial position in engagement with said valve seat and thereat limit reverse fuel flow with the snubber port; and wherein the pressurizing valve member is a spherical ball piston and the valve body bore has an elongated cylindrical pressurizing bore section closely receiving the ball piston and having a length greater than the diameter of the ball piston for upstream fuel pressurization therewith and by the upstream bias on the piston by the spring means and an enlarged bore section downstream of said cylindrical bore section permitting flow around the ball piston when the ball piston is axially shifted downstream thereto against the bias of the return spring means.

4,246,877
NOTCHED INJECTOR HOLD-DOWN CLAMP
 Lawrence C. Kennedy, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
 Filed Jul. 27, 1979, Ser. No. 61,191
 Int. Cl.³ F02B 3/00
 U.S. Cl. 123—470

3 Claims

1. A hold-down clamp for securing a fuel injector in the cylinder head of an engine, said clamp including a base, which is flat in its as formed configuration, said base having opposed first and second surfaces on opposite sides thereof with a pair of longitudinally spaced apart bolt receiving apertures extend-

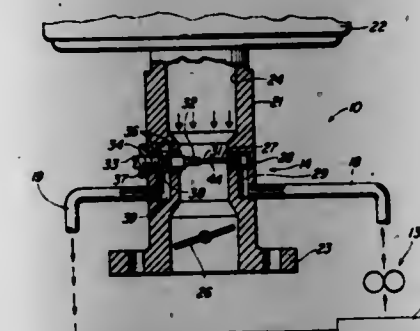
ing therethrough, said base having a through central aperture located substantially equidistance between said bolt receiving apertures, said central aperture being of a size so as to slidably receive a portion of the injector therethrough whereby portions of said second surface next adjacent to the said central aperture defines a waist portion adapted to embrace and abut



against the injector, and at least one groove in said base located intermediate said bolt receiving apertures, the at least one said groove being operative to provide in said base a plastic flow hinge function thereat whereby the portions of said base on opposite sides of the said groove can bend relative to each other under a relatively low bending moment.

4,246,878
FLUID JET CARBURETOR
 John J. Tusson, Evanston, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
 Filed Apr. 6, 1979, Ser. No. 27,640
 Int. Cl.³ F02M 7/12, 17/18
 U.S. Cl. 123—523

1 Claim



1. In a liquid fuel system for supplying fuel from a source to an internal combustion engine and the like having a liquid fuel source and a charge forming apparatus arranged for recirculating excess fuel, a regulator in said charge forming apparatus comprising a generally horizontally positioned tubular member with its bore connected at one end to said source of fuel and at the other end to a return for excess fuel, said tubular member having an elongated, upwardly oriented outlet port positioned to be exposed to a stream of air which strips fuel flowing as a stream of fuel across the outlet port, the improvement comprising:

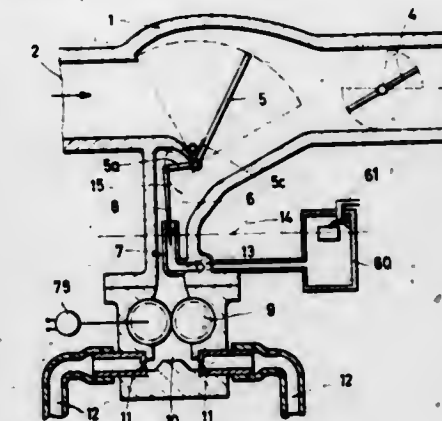
a generally horizontal member positioned closely adjacent to said outlet port and restricting the bore of said tubular member to change the shape of the stream of fuel flowing across said outlet port to provide a relatively flat wide-stream of fuel across said outlet port.

4,246,879
FUEL INJECTION APPARATUS
 Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany
 Filed Aug. 25, 1977, Ser. No. 827,808
 Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2638666

Int. Cl.³ F02M 69/08

U.S. Cl. 123—533

30 Claims



1. Apparatus for injecting fuel into the intake manifold of an internal combustion engine having at least one combustion chamber with an intake port and having a first intake passage through which there is an air flow to said combustion chamber by said intake manifold, comprising:

a second passage, separate from said first passage and having a venturi-like constriction;
 a pump following said constriction in said second passage, for drawing a continuous stream of air through said second passage, said pump having an output at a pressure which is greater than the pressure in said intake manifold; fuel proportioning means comprising a fuel reservoir wherein fuel is maintained at a constant level, a first orifice communicating with said air passage constriction, and a second variable cross-section orifice, arranged between said first orifice and said fuel reservoir;
 means, responsive to the rate of air flow in said first passage, for controlling the opening of said second orifice;
 and means for supplying the pressurized fuel carrying air stream from said pump to said intake manifold adjacent said intake port.

4,246,880
ARRANGEMENT FOR HEATING THE INTAKE PIPE OF
A SPARK-IGNITED INTERNAL COMBUSTION ENGINE
 Ulrich Henke, Alsdorf; Wojciech Marusiak, Düsseldorf, and Hermann Baumler, Burscheid, all of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Aug. 21, 1979, Ser. No. 68,963

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1978, 7825072[U]

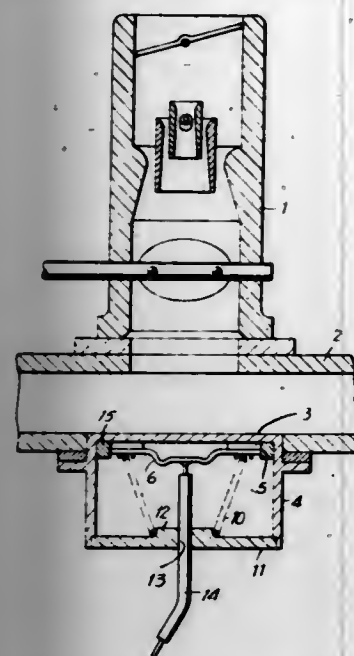
Int. Cl.³ F02M 31/00

U.S. Cl. 123—549

1 Claim

1. In an intake pipe of a spark-ignited internal combustion engine wherein the improvement comprises an arrangement for heat including: electrical heating elements with a positive temperature coefficient; a housing having a heating plate; said positive temperature coefficient heating elements being located on said heating plate, said heating plate forming part of a wall of said intake pipe; a carrier member rigidly connected to said heating elements; said carrier member having a plurality of elastic plates, one of said plates being for each of said heating

elements, said plates being connected to one central current contact surface, said carrier member being centered in said



heating plate; a housing cover; and a compression spring loading said carrier member and centered in said housing cover.

4,246,881

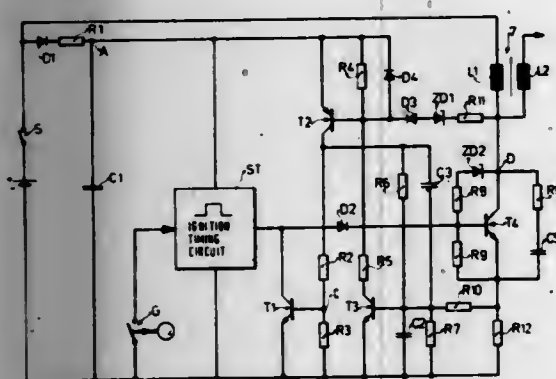
SYSTEM FOR DECREASING THE POWER CONSUMPTION IN THE OUTPUT TRANSISTOR OF AN IGNITION SYSTEM

Bernad Bodig, Leinfelden, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jul. 2, 1979, Ser. No. 54,288

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829628

Int. Cl.³ F02P 3/04

U.S. Cl. 123—644



1. In an internal combustion engine having an ignition system having an ignition coil with a primary winding (L1) and a secondary winding (L2), spark creating means connected to said secondary winding for generating a spark when the voltage across said primary winding exceeds a predetermined critical voltage, controllable current control means (T4) connected to said primary winding for controlling current flow therethrough during an interval immediately preceding said generation of said spark so that sufficient energy is stored in said ignition coil when said spark is generated, and current sensing means (R12) connected to said primary winding for furnishing a current limit signal when the current through said primary winding exceeds a predetermined current corresponding to said sufficient energy, a system for decreasing the average current consumption of said current control means comprising

regulator means (T1-T3) connected to said current control means and said current sensing means and operative only during said interval, and comprising means (T1, T3) for furnishing a control signal designed to decrease said current through said primary winding to said current control

means in response to said current limit signal, and means (ZD1, T2) for switching said current control means back to a fully conductive state when the voltage across said primary winding exceeds a maximum allowable voltage less than said predetermined critical voltage.

4,246,882

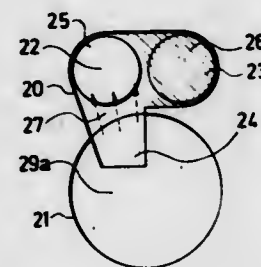
COMBUSTION CHAMBER FOR SIDE-VALVE TYPE INTERNAL-COMBUSTION ENGINE

Kojiro Kikuta; Katsumi Kurihara; Shobei Suzuki, all of Nagoya, and Teruaki Sasaki, Komaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 895,506, May 23, 1980, abandoned, which is a continuation of Ser. No. 720,625, Sep. 3, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,527
Int. Cl.³ F02B 23/08

U.S. Cl. 123—658

1 Claim



1. A side-valve type internal-combustion engine comprising a cylinder having an axial direction and a cylinder head extending transversely of the axial direction of and covering said cylinder, an inlet valve and an exhaust valve disposed in side-by-side relation and each located laterally outwardly from and approximately equidistant from said cylinder, said cylinder head extending laterally outwardly from said cylinder over and covering said inlet valve and exhaust valve, a recess formed in said cylinder head and being of a size sufficient to permit flow alternately therethrough between said inlet valve and said cylinder and said cylinder and said exhaust valve, wherein the improvement comprises that said recess opens to said inlet and exhaust valves and to the portion of said cylinder located laterally adjacent to said inlet and exhaust valves, said recess in said section taken transversely of the axial direction of said cylinder having an L-shaped configuration comprising a first leg and a second leg with said first and second legs being arranged approximately at right angles to one another, the junction of said first and second legs located above said inlet valve, said first leg of said recess extending from said cylinder to said inlet valve and said second leg extending from said inlet valve to said exhaust valve, said first leg having a pair of laterally spaced straight sides forming a straight sided passage for flow between said cylinder and said inlet valve, said pair of straight sides each located in a plane extending generally parallel to the axial direction of said cylinder, said pair of straight sides comprising a first side and a second side with said first and second sides disposed in diverging relation from said cylinder toward said inlet valve, said first side being located closer to said exhaust valve than said second side, said second leg extending from said inlet valve to said exhaust valve in the L-shaped configuration and forming a continuation of the passage in said first leg so that flow from said cylinder to said exhaust valve follows a generally L-shaped curved path first traversing said first leg to the junction with said second leg over said inlet valve before continuing through said second leg to said exhaust valve, said second leg having a pair of laterally spaced straight sides comprising a third side and a fourth side each located in a plane extending parallel to the axial direction of said cylinder with said third and fourth sides being spaced apart from one another and in generally parallel relation, said third side being closer to said cylinder than said fourth side and said third side being perpendicular to and extending from the end of said first side located outwardly from each cylinder, and

said recess having a lower surface opening to the upper end of said cylinder and containing said inlet valve and said exhaust valve at the uppermost positions thereof and an upper surface spaced upwardly from said lower surface and comprising a first upper surface extending for the full extent of said first leg from above said cylinder to above said inlet valve, and a second upper surface extending for that portion of said second leg directly above said exhaust valve with said second upper surface being considerably closer to said lower surface than said first upper surface and forming a considerably reduced height of the recess directly over said exhaust valve and being quite close to said exhaust valve when it is in its uppermost position corresponding to said lower surface, said second upper surface being closer to said lower surface than any other part of said upper surface, and an ignition plug located in said first upper surface directly above said inlet valve for effecting the initial combustion of a fuel-air mixture in said recess in the space above said inlet valve.

4,246,883

ARCHERY BOW WITH BOW LIMB COCKING MECHANISM

Lee A. Ash, Rte. 2, Box 142, Weatherford, Okla. 73096

Filed Jun. 25, 1979, Ser. No. 52,025

Int. Cl.³ F41B 5/00

U.S. Cl. 124—24 R

19 Claims



1. An archery bow, comprising:

- a bow handle;
- a first pair of bow limbs projecting outwardly from opposite ends of said handle to present a first pair of spaced free limb ends;
- a second pair of bow limbs projecting outwardly from opposite ends of said handle to present a second pair of spaced free limb ends;
- first means in operative relationship with said handle for supporting and guiding a cable in predetermined relationship with said handle;
- a cable attached to a first one of said first ends and positioned in supported and guided relationship with respect to said first means;
- second means attached to a second one of said first ends and to said cable for enabling tension on said cable and stress on said first pair of limbs to be increased or decreased; and
- third means attached to one of said second bow limbs in operative relationship with said second means for selectively mechanically interacting with said second means to result in reduction of the tension in said cable and in the stress in said first pair of limbs.

4,246,884

PLATE WARMER

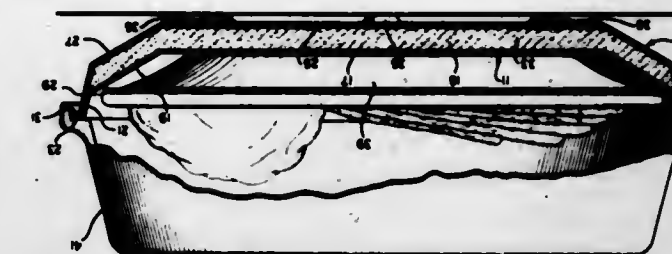
Edward B. Vandas, St. Louis, Mo., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Aug. 17, 1979, Ser. No. 67,417

Int. Cl.³ A24G 23/04

U.S. Cl. 126—246

9 Claims



1. A plate warmer for keeping food serving dishware warm for an extended period of time, said plate warmer comprising: an outer shell having an inwardly concave top wall, an inwardly concave bottom wall and peripheral sides wall interconnecting said top and bottom walls, said walls defining an airtight cavity within said shell; and a core comprising a heat storing material having a relatively high specific heat, a relatively high heat of fusion, and a relatively low melting temperature, said core initially comprising beads of heat storing material which have been compressed to expel substantially all air therefrom and to provide inwardly concave top and bottom core surfaces conforming to said top and bottom shell walls, said core filling said airtight cavity and being meltable to store heat therein when heated toward and above the melting temperature of said heat storing material and to release heat through said top shell wall to said dishware as said heat storing material cools.

said top and bottom shell walls being adapted to assume substantially flat configurations to accommodate expansion of said core as said core is heated and to reassume said inwardly concave configurations as said core cools.

4,246,885

SOLAR ENERGY COMPRESSOR SYSTEM

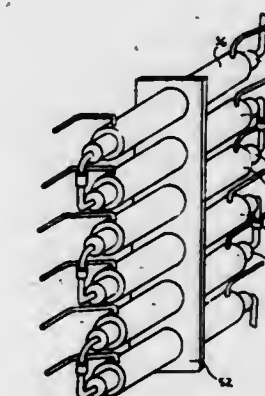
James W. Austin, 1400 Orange St., Melbourne Beach, Fla. 32951

Filed Apr. 24, 1978, Ser. No. 899,473

Int. Cl.³ F24J 3/02

U.S. Cl. 126—417

4 Claims



1. A flat plate solar compressor comprising a plurality of serially interconnected fluid containing tubes, the first of said tubes being connected to an upstream fluid supply and the last of said tubes being connected to a downstream compressed fluid storage means, each of said tubes being provided with a pressure sensitive release valve, said tubes being arranged with their longitudinal axes parallel, each of said tubes being provided with heat exchanger means, said tubes being located such that the heat from the sun will heat and compress a fluid contained within said tubes, said fluid when sufficiently compressed being released by said release valve to the next downstream tube.

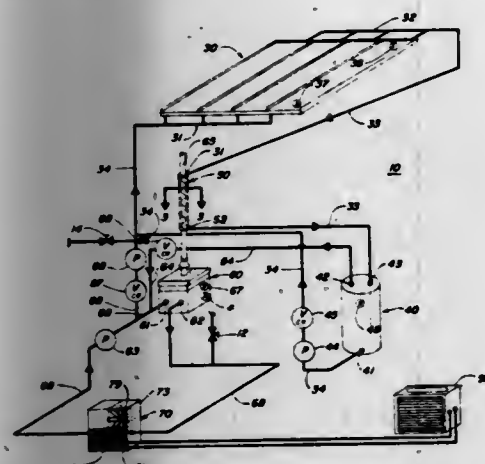
stream tube so that each of said tubes will maintain higher fluid pressure than the previous upstream tube, each said valve in the serially connected arrangement operating to release said compressed fluid at a higher fluid pressure than the immediately preceding valve.

4,246,886 FREEZE PROTECTED HOT WATER SOLAR HEATING APPARATUS

Rondal Sitzlar, Rte. 2, Syringa St., Boise, Id. 83703
Filed Nov. 20, 1978, Ser. No. 961,939
Int. Cl.³ F24J 3/02

U.S. Cl. 126—420

13 Claims



1. Freeze protected hot water solar heating apparatus comprising:

- a solar heat collector having an inlet and an outlet;
- water storage means including an inlet and a first and second outlet, the inlet in fluid communication with the outlet of said collector and the first outlet in fluid communication with the inlet of said collector;
- a freeze protector located between and in fluid communication with said collector and said storage means;
- first pump means operable to circulate water through the collector, freeze protector, and water storage means;
- a first sensor operable, once the water temperature in said solar heat collector drops below a preselected value, to activate said first pump to circulate heated water through said collector to prevent freezing of the water in said collector;
- a fuel burning boiler having a flue in heat transferring contact with said freeze protector, said boiler having an inlet and an outlet, the inlet in fluid communication with the second outlet of said water storage means and the inlet of said collector;
- at least one heat exchanger connected between and in fluid communication with the inlet and outlet of said boiler;
- second pump means operable to circulate water through said heat exchanger; and
- third pump means operable to circulate water through said collector, freeze protector, water storage means, boiler, and heat exchanger.

4,246,887 HEAT RECOVERY AND SOLAR ASSIST HEATING SYSTEM

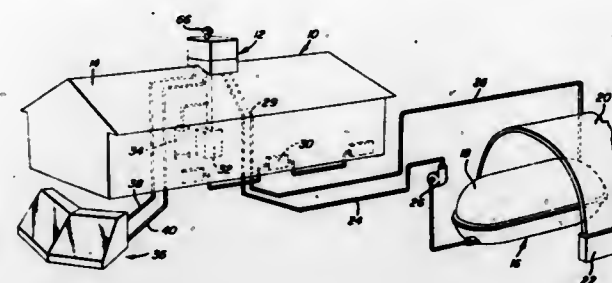
Marion W. Christiansen, Rte. #2, North, Pocatello, Id. 83201
Filed Jan. 12, 1978, Ser. No. 869,213
Int. Cl.³ F24J 3/02

U.S. Cl. 126—427

15 Claims

1. The combination with a heating device for an enclosed zone, from which exhaust gas is discharged at an elevated temperature, and a source of fluent heat transfer medium, a heat recovery unit mounted exteriorly of the enclosed zone for heating the fluent medium, comprising a reservoir tank enclosing a body of said fluent medium, an insulated housing mounted on said reservoir tank enclosing a heat exchange zone

and having a radiation transmissive wall portion through which solar radiation passes, heat transfer conduit means extending through the reservoir tank and the housing for conducting the exhaust gas in sequence through said body of fluent



medium and the heat exchange zone, and heat exchanger means mounted within the heat exchange zone for conducting the fluent medium between the source of the reservoir tank in heat transfer relation to the exhaust gas in the heat transfer conduit means and the air within the heat exchange zone.

4,246,888 SOLAR HEAT COLLECTING APPARATUS

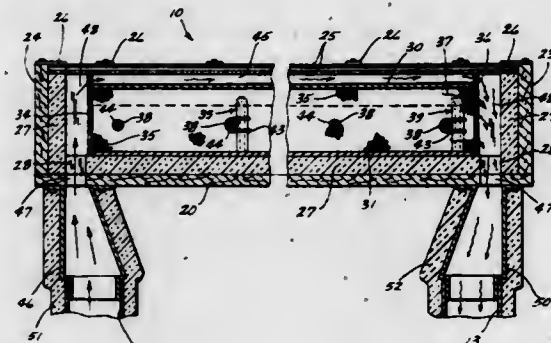
Jerome F. Jarzenbeck, Sr., #24 W. R.R. #1, South Sioux City, Nebr. 68776

Filed May 14, 1979, Ser. No. 38,436

Int. Cl.³ F24J 3/02

U.S. Cl. 126—429

1 Claim



1. A solar heat collecting apparatus comprising:
- an insulating frame means including a back, sides, a top and a bottom, said back having slot means therein for providing an air inlet and outlet;
 - collecting means including a front plate and a back plate disposed within said frame means;
 - an aggregate material disposed between the front and back collector plates;
 - conduit means constructed of a highly heat conductive material, said conduit means being disposed between the front and back plates of said collecting means for providing a path for fluid flow therethrough;
 - cover means sealingly attached to a front portion of said frame means for allowing rays of sunlight to pass therethrough;
 - air passageway means being formed between said front plate and said cover means, said air passageway means being in communication with said air inlet and air outlet;
 - wherein a screen is disposed across each of the ends of said front and back collector plates and attached thereto wherein said aggregate material is held between said front and back collector plates and heated air is allowed to move through said screen;
 - wherein said aggregate material completely fills said collecting means;

wherein said aggregate material is gravel;

wherein said front and back collector plates are constructed of galvanized steel;

wherein said front plate is corrugated and said back plate is flat;

wherein said front plate includes an epoxy primer on top of the galvanized steel, a coat of dark bronze colored fluorocarbon based enamel containing polyvinylidene fluoride on top of the epoxy primer, a coat of chalkboard slating on top of the fluorocarbon based enamel and a coat of 3M brand nextel-black velvet 101 - C10 on top of the chalkboard slating;

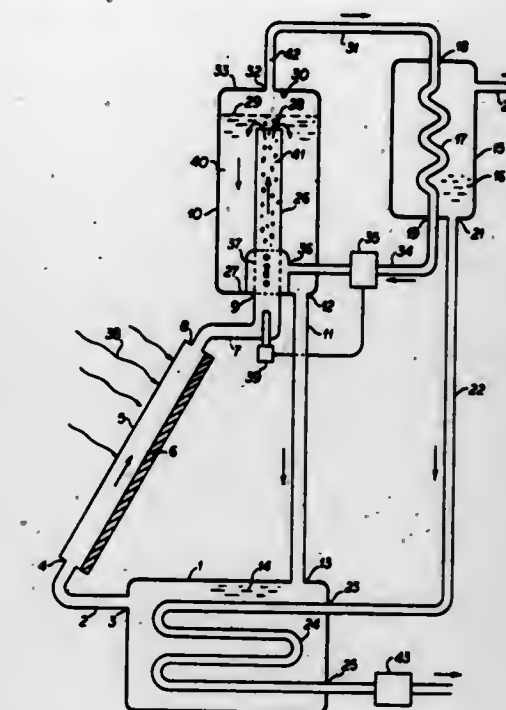
wherein said conduit means is formed into a series of partial loops;

wherein one end of said frame means is disposed at a higher elevation than the other end thereof whereby air heated in said air passageway means rises into said air outlet including valve means attached to a bottom portion of said conduit means for draining fluid from said conduit means, including pump means attached to said conduit means for circulating fluid through said conduit means, including means for connecting said air inlet to an enclosure to be heated and means for connecting said air outlet to said enclosure, including fan means disposed in one of said inlet or outlet connecting means for circulating air through said air passageway means and said enclosure, including a plurality of spacer means disposed within said aggregate and between said front plate and said back plate for holding said front and back plates a predetermined distance apart;

wherein each of said spacer means comprises a tube, bolt means extending through said tube and through the front plate and back plate and having nut means threadably disposed on one end of said bolt means, including means for attaching said conduit means to said spacer means for fixing the position of said conduit means with respect to said front and back plates of said collecting means.

at its lower end a plurality of openings, means for receiving said fluid from said collector means, and means for receiving a condensed gas;

c. a secondary fluid storage tank having a fluid inlet and a fluid outlet, and including an internally located condenser heat exchanger having an gas inlet, and means for receiving said gas from said gas outlet of said containment, and



means for conveying the condensed gas via control means to said openings within said tubular member;

d. a primary fluid storage tank having a fluid inlet and a fluid outlet, means for receiving fluid from said containment fluid outlet, and means for conveying said fluid from said outlet to said collector means, and including an internally located heat exchanger having a fluid inlet and means for receiving fluid from said secondary fluid storage tank, and fluid outlet and control means connecting to utility.

4,246,889

Patent Not Issued For This Number

4,246,890 PASSIVE SOLAR HEATER FLUID PUMP SYSTEM

Robert A. Kraus, and Edmund J. Kraus, both of 14160 Redhill Ave., Tustin, Calif. 92680

Filed Aug. 31, 1979, Ser. No. 71,786

Int. Cl.³ F24J 3/02; F28D 15/00; C10K 1/08

U.S. Cl. 126—433

3 Claims

1. A solar heat collecting and fluid pump means comprising:
- a. a solar heat collector means having means for receiving an liquid fluid, and means for receiving solar heat for heating of said fluid;
 - b. a pump assembly including fluid containment means having fluid inlet and fluid outlet at said containment lower end, and gas outlet at said containment upper end, a vertical tubular member located within said containment being fluid communicatively connected to said fluid inlet having

4,246,891 LOW REFLECTION LOSS CUSP LIKE REFLECTOR FOR SOLAR ENERGY COLLECTOR

Raymond H. Lambert, Englewood, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Sep. 12, 1979, Ser. No. 74,717

Int. Cl.³ F24J 3/02; G02B 5/10; F28F 9/04

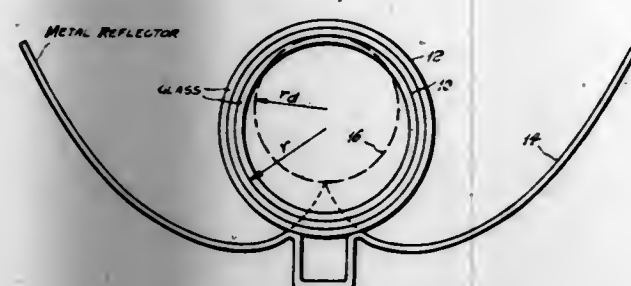
U.S. Cl. 126—438

6 Claims

1. A reflector for a solar energy collector having a circular absorber contained in a glass shroud comprising:
- a reflector profile having a first portion extending between $\theta=0$ and $\theta=\pi/2+\theta_0$ generated in accordance with:

$$p=r_0\theta$$

a second portion extending from $\theta = \pi/2 + \theta_a$ generated in accordance with:



$$p = r_d \left[\frac{\theta + \theta_a + (\pi/2) - \cos(\theta - \theta_a)}{1 + \sin(\theta - \theta_a)} \right]$$

where:

p = the perpendicular distance from the reflector to the tangent to the absorber,
 r_d = a radius smaller than that of the absorber,
 θ = the rotational position on the absorber measured from the negative y axis, and
 θ_a = the design $\frac{1}{2}$ field of view.

4,246,892

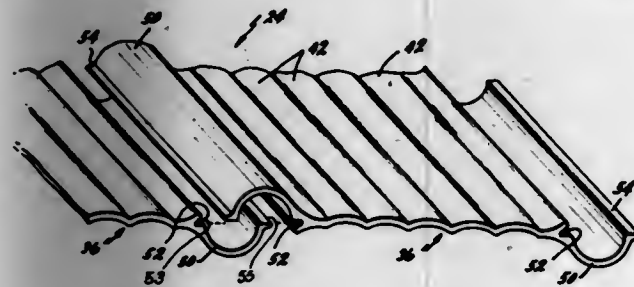
SOLAR ENERGY COLLECTOR PANEL

Meir R. Waiche, 4141 Hilldale Rd., San Diego, Calif. 92116
 Filed May 17, 1978, Ser. No. 906,462

Int. Cl.³ F24J 3/02

U.S. Cl. 126-443

5 Claims



1. A solar energy collector panel comprising:

- an absorber plate formed of a plurality of interfitable absorber plate sections,
 - each of said absorber plate sections having a fin portion at opposite ends thereof, the fin portion at each end having the shape of a half cylinder cut along the axis of the cylinder, the open end of the half cylinder at one end facing a first direction and the open end of the cylinder at the other end facing in a direction opposite to said first direction whereby the half cylinder of adjacent sections form a cylinder with each other, each of said fins including interfitable means for interfitting with an adjacent plate section when adjacent cylinder halves form a cylinder with each other, and
 - a tube having an outside diameter slightly larger than the inside diameter of said cylinder, positioned in said cylinder to force said interfitable means together and to lock said absorber plate sections together around said tube.
- (d) said interfitable means includes a recess at the interior side of said fin and a lip at the outer edge of said fin fittable into a said recess.

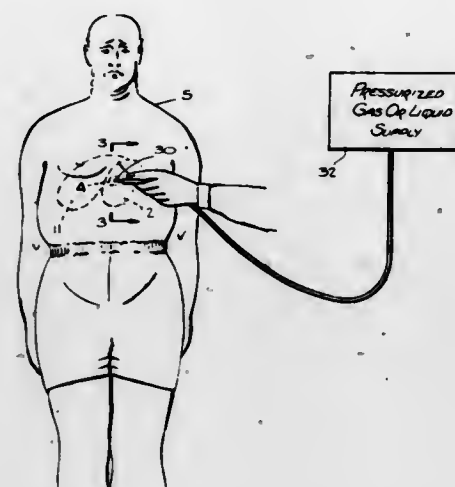
4,246,893
 INFLATABLE GASTRIC DEVICE FOR TREATING OBESITY

Daniel Berson, 199 Kings Highway, Congers, N.Y. 10920
 Filed Jul. 5, 1978, Ser. No. 922,229

Int. Cl.³ A61B 19/00, 17/00

U.S. Cl. 128-1 R

1 Claim



- The method of treating extreme obesity in a patient comprising the steps of forming an incision in the abdomen of an obese patient; surgically implanting an inflatable balloon in the abdominal cavity of the patient adjacent to the stomach, said balloon having a filling tube the distal end of which is sealingly attached in communication with a hollow spheroidal adjusting port of self-sealing elastomeric material; suturing the adjusting port subcutaneously to the anterior wall of the fascia of the patient adjacent to the incision; closing the incision over the adjusting port and subsequently locating the adjusting port by palpation; and inserting a hypodermic needle through the skin of the patient into the adjusting port and introducing a fluid under pressure into the port for passage through the filling tube into the balloon to expand the balloon to distend the upper abdomen and produce a sense of satiety, thereby reducing the patient's desire to ingest food, and to compress the stomach, thereby reducing its capacity.

4,246,894

METHOD AND SYSTEM FOR ADMINISTERING A DISSOCIATIVE, UNCONSCIOUS TYPE OF ANESTHESIA

Edward N. Hamacher, Ste. 660, Southcenter Medical Bldg., West 105, 8th Ave., Spokane, Wash.

Filed May 24, 1979, Ser. No. 42,027

Int. Cl.³ A61B 19/00; B65D 83/04

U.S. Cl. 128-1 R

7 Claims

- A method of inducing a dissociative, unconscious type of anesthesia for surgical procedures which is safe and capable of being used in an office and being administered by a nurse or physician without anesthesia training, the process allowing a minimal recovery period for the patient, comprising: administering a therapeutic dose of an anti-cholinergic agent intravenously to stabilize heart action, reduce and prevent laryngeal spasm, administering intravenously a sufficient amount of the basal hypnotic diazepam (Valium) in 1 to 3 mg. increments up to 10 mg. to relieve patient stress reaction, administering intravenously by titration a dosage of from 25 to 50 mg. of a phencyclidine derivative at the rate of 1 to 3 mg. a minute to induce a state of dissociation in the patient without rendering the patient unconscious, and administering by intravenous titration 10 to 40 mg. of the analgesic alphaprodine at the rate of about 1 mg. per minute.

4,246,895
 APPARATUS FOR PRODUCING A CONICAL SURFACE ON A BONE

Günther Rehder, Mümmelmannstrasse 10, 2805 Stuhr 3, Fed. Rep. of Germany

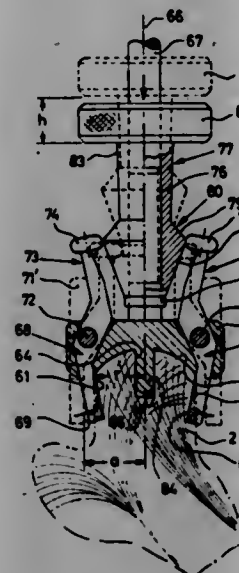
Filed May 29, 1979, Ser. No. 42,807

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834295

Int. Cl.³ A61F 5/04, 17/32; B26B 7/00

U.S. Cl. 128-92 E

18 Claims



- An apparatus for producing a conical, outwardly tapering surface on a bone, especially on a cylindrically-worked femur head of a human hip joint, comprising: a drive shaft, said drive shaft having a free end and a longitudinal axis; a knife-type cutting means being arranged at said free end of the drive shaft, said cutting means having an inner edge; and adjusting means for moving said inner cutting edge of said cutting means from an initial position essentially parallel to the longitudinal axis of the drive shaft, the cutting edge being radially outwardly offset relative to the longitudinal axis of the drive shaft, to a position forming an acute angle relative to the longitudinal axis; wherein, in the initial position, the extent of radial offsetting is at least as great as half the diameter (r) of the bone section to be treated.

4,246,896

INTRACERVICAL CUFF (ICC) FOR CONTRACEPTION AND PREVENTION OF VENEREAL DISEASE AND APPLICATOR THEREFOR

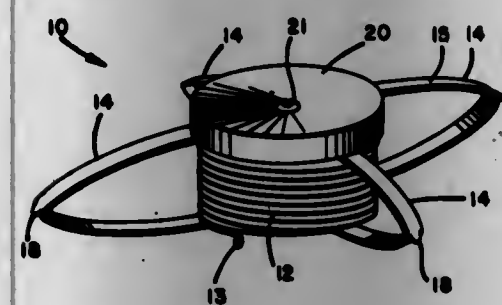
Herbert W. Horne, Jr., Framingham, and Joseph D. Gresser, Brookline, both of Mass., assignors to Dynatech Corp., Burlington, Mass.

Filed Oct. 30, 1978, Ser. No. 955,872

Int. Cl.³ A61F 5/46

U.S. Cl. 128-130

23 Claims



- An intracervical apparatus, sized to function wholly within the cervical canal, and consisting of an apertured central member and laterally-moveable positioning members attached to said means, said positioning members forming means

to move outwardly and push outwardly, as against the walls of the said cervical canal, and form means to hold said apparatus in a substantial fixed intracervical position and wherein said apparatus comprises a medicant-bearing material forming means to dispense medicane into said cervical canal and wherein said positioning means is formed of a coiled spring attached to said central member and flexible positioning means connected to said spring, said spring forming means to keep said flexible positioning member in a normal position in which they are bowed outwardly from said coil and said spring forming means, when extended, to pull said flexible positioning members inwardly toward the coil.

4,246,897

TRACHEOTOMY OBTURATOR AND TUBE FLANGE

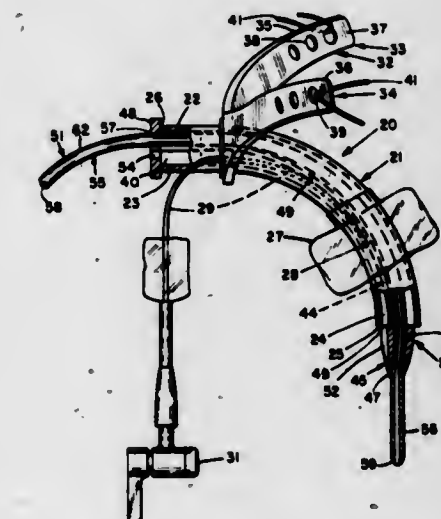
Rudolph Muto, 24 Williams St., Andover, Mass. 01810

Filed Feb. 15, 1979, Ser. No. 12,198

Int. Cl.³ A61M 16/00, 25/00

U.S. Cl. 128-207.15

17 Claims



- A tracheotomy tube device of the type comprising a hollow tube of arcuate configuration with inflatable cuff means proximate the inner end, integral, oppositely disposed, tie ears proximate the outer end and a unitary tracheotomy tube obturator removably positioned within the bore of said hollow tube, said device characterized by:

said unitary tracheotomy obturator having a valve plug with a forward nose of streamlined configuration normally projecting a predetermined distance beyond the inner end of said tube as a guide tip, a valve cap covering the outer end of said tube with a shank fitting within said outer end and a flexible strap connecting said plug to said cap within said tube and integrally attaching said cap to said plug for unitary withdrawal of said obturator; and said obturator having windpipe means of soft, flexible plastic independent of said strap for conducting air from in advance of said nose, through said curved tube to in rear of said cap; whereby a patient may breathe freely while said tube device, with its obturator in place, is being inserted through an incision well down into the trachea of a patient.

4,246,898

SYRINGE

Louis J. Travalent, Lee's Summit, Mo., and Herbert Aronson, Shawnee, Kans., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Jul. 23, 1979, Ser. No. 59,861

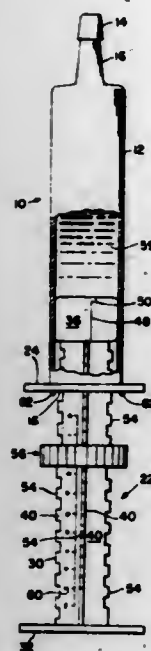
Int. Cl.³ A61M 5/00

U.S. Cl. 128-218 P

7 Claims

- A syringe having a barrel with a discharge end and an open opposite end for receiving a plunger, the plunger having a shaft with finger engaging means at one end and engagement

means at the other end for attachment of a disengageable plunger seal, the plunger seal comprising a generally tubular member having a forward end and a rearward end and which has an outer surface adapted for sliding contact with the interior of the barrel and fitment means on its interior for coaxing



with the engagement means, the tubular member being severed in a generally longitudinal direction so as to provide a single slit and permitting the member to be expanded for coaxing with the engagement means but thereafter assuming its normal unexpanded condition when fully coaxing with the engagement means.

4,246,899

DRAINAGE SYSTEM FOR A COLLECTION OF BODY FLUIDS

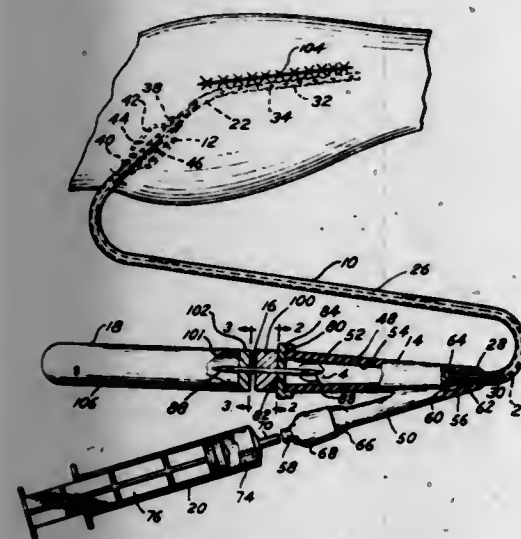
Herbert S. Loeff, 308 Woodley Rd., Winnetka, Ill. 60093

Filed Oct. 23, 1978, Ser. No. 953,946

Int. Cl.³ A61M 1/00

U.S. Cl. 128—276

3 Claims



1. A drainage system for the removal of a collection of fluids in a region about a wound within the body of a patient, for utilization during healing of the tissue of the wound, comprising:

an elongated tubular member having a distal portion, a proximal portion and an intermediate portion intermediate the distal portion and the proximal portion, the tubular member having a wall with an exterior and defining a centrally located drainage lumen within the wall for the drainage of fluids, an inflation lumen within the wall and separate from the drainage lumen for the passage of inflation fluid, a distal inflation opening through the wall, a plurality of drainage openings through the wall and an inflatable, elastomeric retention balloon on the exterior of

the wall, the drainage lumen extending through the proximal portion, the intermediate portion and the distal portion, the inflation lumen being located alongside the drainage lumen and extending through the proximal portion and the intermediate portion, and having a terminus within the intermediate portion, the distal inflation opening being along the intermediate portion between the terminus and the exterior of the intermediate portion for fluid communication of the terminus with the exterior, the drainage openings being along the distal portion between the drainage lumen and the exterior of the distal portion for fluid communication between the exterior and the drainage lumen with potentially obstructing masses being screened from the drainage lumen, and the retention balloon being on the intermediate portion and including an annular sleeve sealed to the exterior of the wall over the distal inflation opening and defining a free space between the sleeve and the wall in fluid communication with the distal inflation opening, the balloon being inflatable upon the introduction of inflation fluid to the free space so as to firmly retain the distal portion of the tubular member in situ adjacent the wound;

a needle adapter member having a distal end sealed to the wall of the proximal portion of the tubular member, the adapter member including a main drainage body extending from the distal end and an inflation arm branching off the main body from adjacent the distal end, the main body having a main body wall defining a drainage passageway and the inflation arm having an inflation arm wall defining an inflation passageway, the drainage passageway being in fluid communication with the drainage lumen through the distal end and the inflation passageway being in fluid communication with the inflation lumen through the distal end, the main body further having an enlarged proximal end defining an enlargement of the drainage passageway and the inflation arm having a free end;

a pierceable cap sealed to the enlarged, proximal end of the main body of the adapter member about the exterior thereof;

a disposable, evacuated container having an interior with an open end and a stopper sealed within the open end, the interior being evacuated prior to sealing;

a syringe removably attached to the free end of the inflation arm of the adapter member in fluid communication with the inflation passageway and therethrough with the inflation lumen, the distal inflation opening and the free space of the retention balloon so as to provide and remove pressurized inflation fluid to and from the retention balloon to inflate and deflate the balloon; and

a hollow drainage needle having a pointed first end adapted to be pierced through the cap, and a pointed second end adapted to be removably pierced through the stopper, the needle defining a central channel therethrough, the central channel adapted to be in fluid communication with the drainage passageway at the first end and adapted to be in fluid communication with the container interior at the second end, the container interior thereby being in fluid communication with the drainage passageway and therethrough with the drainage lumen, the drainage openings and the collection of fluids in the region of the wound, such that a vacuum may be exerted within the drainage passageway, the drainage lumen and the drainage openings which draws the collection of fluids to the interior of the disposable container, for sanitary disposal upon filling of the disposable container.

4,246,900

DIAPER INCLUDING MOISTURE-RESPONSIVE SEAL MEANS

Friedrich-Wilhelm Schröder, Heidenheim, Fed. Rep. of Germany, assignor to Paul Hartmann Aktiengesellschaft, Heidenheim, Fed. Rep. of Germany

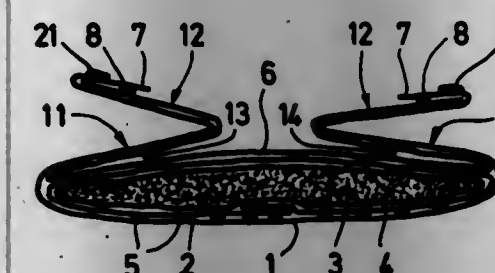
Filed Mar. 9, 1979, Ser. No. 19,138

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810680

Int. Cl.³ A61B 13/02

U.S. Cl. 128—287

8 Claims



1. A diaper construction, comprising
(a) a horizontal generally rectangular outer layer (1) formed of moisture-impermeable material;
(b) a moisture-permeable generally rectangular inner liner layer (6) arranged above, and connected at its edges with, said outer layer;
(c) a pair of elastic flexible leg seal members (21) connected with the upper surface of one of said layers and extending longitudinally adjacent the longitudinal edges thereof, respectively, said leg seal members being elastically operable between expanded and contracted conditions, respectively; and
(d) moisture-responsive means temporarily maintaining said leg seal members in their expanded conditions, whereby when the diaper is mounted on a user and the leg seal members become moisturized, said moisture-responsive means is operable to release said leg seal members for contraction into sealing engagement with the user's legs, respectively.

4,246,901

URINE COLLECTION DEVICE

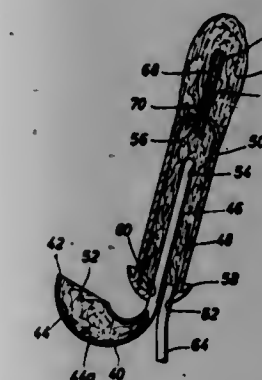
Robert A. Froesch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Roger B. Michaud, League City, Tex.

Filed May 30, 1978, Ser. No. 910,992

Int. Cl.³ A61F 5/44

U.S. Cl. 128—295

25 Claims



1. A urine collection device for human females comprising: a collection element defining a urine collection chamber and an inlet opening into said chamber, the portion of said collection element defining said inlet adapted to be disposed in a surrounding contacting relation to the urethral opening of the user between the labia minor and between the clitoris and the vaginal orifice, said collection element comprised of a material which is relatively rigid at normal room temperatures, but becomes more flexible and resilient at human body temperatures such as to readily

conform to the configuration of the user's anatomy when subjected to the temperature and pressure of the user's body against the material;
a drainage conduit connected to said collection element in communication with said chamber whereby said chamber and said drainage conduit together comprise a closed urine flow pathway for carrying urine generally away from said inlet;
and a first body of wicking material mounted adjacent said collection element and extending at least partially into said flow pathway.

4,246,902

SURGICAL CUTTING INSTRUMENT

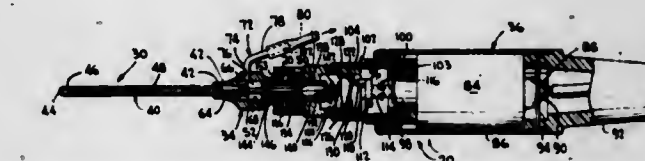
Miguel Martinez, 6006 Hunt Ridge Rd., Baltimore, Md. 21210

Filed Mar. 10, 1978, Ser. No. 885,523

Int. Cl.³ A61B 17/32

U.S. Cl. 128—305

12 Claims



1. A surgical cutting instrument comprising
hub means,
an elongate probe extending from said hub means including a tubular outer member having a distal end with an aperture in a side wall thereof, and
an inner cutting member slidably disposed in said outer member having a distal end defining a cutting edge positioned at said distal end of said outer member and an elongate body extending from said distal end of said inner cutting member and having a cut away portion running therealong from a position adjacent said cutting edge to said hub means, the cross sectional configuration of said elongate body along said cut away portion being partially cylindrical ranging from 180° to 220°;
drive means for reciprocating said inner cutting member and said outer member relative to each other to move said cutting edge of said inner cutting member back and forth past said aperture in said outer member; and
suction means communicating with said probe adjacent said hub means to remove substance cut by relative reciprocation of said inner cutting member and said outer member whereby said cut away portion along said elongate body of said inner cutting member provides increased cross sectional flow area along said probe and causes relative reciprocation of said inner cutting member and said outer member to agitate the cut substance to prevent clogging of said probe.

4,246,903

SURGICAL INSTRUMENT TO APPLY A HEMOSTATIC CLIP TO A VESSEL AND METHOD OF USING THE SAME

Joseph F. Larkin, Holland, Pa., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 2, 1979, Ser. No. 26,614

Int. Cl.³ A61B 17/12

U.S. Cl. 128—325

11 Claims

1. A surgical instrument to apply a single hemostatic clip to a vessel comprising:
a housing having a barrel and a handle;
jaws attached to the distal end of said barrel containing means to receive and maintain a hemostatic clip;
jaw cams attached to the proximal end of said jaws;
spring means to hold said jaws in separation;
a jaw wedge mounted adjacent to one side of said barrel, the distal end of said wedge having a rounded leading member

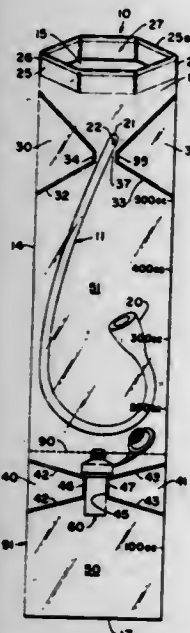
through connector means for engaging with said receiving connector, and indicating means connected thereto, whereby the intracranial pressure of a cerebrospinal fluid is converted to the internal pressure of the pressure receiving layer with the intracranial pressure transducer by means of a Coplanar method which maintains the dura to be coplanar by the depression of the pressure receiving layer of the transducer against the dura; the internal pressure of the pressure receiving layer being applied to the strain sensing member; the electrical signal being supplied by the strain sensitive element in response to the internal pressure of the pressure receiving layer; and the intracranial pressure being indicated on the indicating means.

4,246,909

DISPOSABLE URETHRAL CATHETER ASSEMBLY
Yeongchi Wu, Darien, and Roger A. Erber, Mt. Prospect, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 5, 1978, Ser. No. 947,961
Int. Cl.³ A61M 1/00

U.S. Cl. 128-762

10 Claims



1. A fluid collector including a urethral catheter for delivering a quantity of liquid from a human body, and a flexible bag containing the catheter prior to catheter use, said bag including first barrier means defining at least a first chamber capable of containing a predetermined volume of liquid and a second chamber capable of containing the liquid delivered from said body in excess of the liquid deposited in said first chamber, said collector further including a permanently positioned one-piece means defining a sealable passageway through said first barrier to provide controlled egress between said first and second chambers, said one-piece means including a pass-through tubular element having an enlargement adjacent one end thereof to provide shoulder means for engagement with said barrier means to prevent movement through said barrier into said first chamber and to maintain said element in substantially fixed relation to said barrier, said enlargement is reduced inwardly in diameter at said one end to form a neck means, and a cap means integrally connected by a hinge-like member to said element and adapted to sealingly cooperate with said neck means to close egress through said tubular element.

4,246,910

CIGARETTE FILTER MATERIAL COMPRISING COMPOUNDS OF IRON IN HIGH OXIDATION STATES
Norman B. Rainer, and Cynthia V. Bailey, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Aug. 1, 1977, Ser. No. 820,502
Int. Cl.³ A24D 3/16; B01D 53/04, 59/28; C01C 3/12

U.S. Cl. 131-10.9

9 Claims

6. An inert gas-permeable granular support material impreg-

nated with alkali or alkaline earth ferrate, said ferrate being present in an amount from about 15 to about 50% by weight of said impregnated material, in admixture with from about 30 to about 50% by weight of activated carbon having a surface area of from about 800 m²/gm to about 1600 m²/gm.

4,246,911

DEVICE FOR STORING SUBSTANTIALLY SIMILAR TOBACCO LEAF PORTIONS IN A TAPE REEL OR BOBBIN

Wilhelmus P. L. Boogers, Eindhoven, Netherlands, assignor to B.V. Arenco, P.M.B., Best, Netherlands

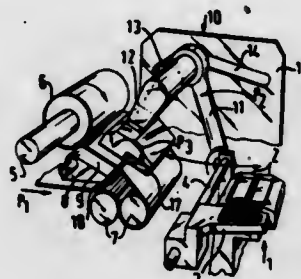
Filed Nov. 9, 1978, Ser. No. 959,224

Claims priority, application Netherlands, Nov. 14, 1978, 12517

Int. Cl.³ A24B 7/00, 7/14

U.S. Cl. 131-149

4 Claims



1. A device for winding a web of indefinite length into a coil while storing a plurality of similarly shaped tobacco leaf portions between successive layers of the coil in predetermined relationship with respect to the web wherein said leaf portions are similarly oriented with respect to the web but are disposed at regularly spaced intervals longitudinally thereof, comprising in combination:

winding means for receiving a web of indefinite length and winding it into a coil;

means for supplying the web to said winding means whereby the web continuously presents a flat receiving surface immediately prior to being coiled;

a cutting station disposed in spaced relation to said receiving surface and comprising at least two cutting dies which simultaneously cut tobacco leaf portions of the same geometrical shape but having a spatial relationship to each other different from said predetermined relationship; and means for transporting the tobacco leaf portions from the cutting station to said receiving surface of the web and for arranging them thereon in said predetermined relationship.

4,246,912

APPARATUS FOR PERFORATING CIGARETTES
Louis J. Landuydt, 33 Rue Scumont, 6249 Ombreux, Belgium
Continuation-in-part of Ser. No. 817,782, Jul. 20, 1977, and a continuation-in-part of Ser. No. 817,783, Jul. 20, 1977, abandoned. This application Sep. 7, 1977, Ser. No. 831,258
Claims priority, application Belgium, Sep. 9, 1976, 845984

Int. Cl.² A24F 47/00, 13/24

U.S. Cl. 131-170 R

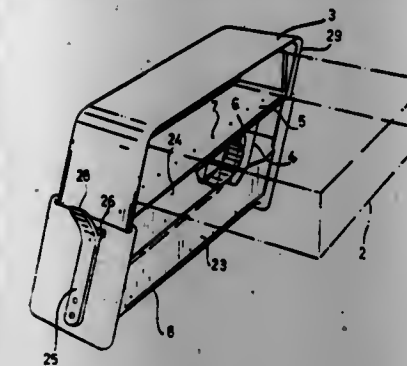
11 Claims

1. Apparatus for perforating cigarettes disposed in at least one row in a pack, said apparatus comprising:

two relatively movable members defining an opening for receiving an end of a pack of cigarettes, said members each having a lateral wall on each side of said opening, the lateral walls of each member being slidably engaged by the lateral walls of the other member;

perforation means mounted to at least one of said members for perforating cigarettes in the pack, said perforation means on said one member facing and in alignment with

the other member and being positioned to travel in said curved sections, and a non-abraded surface, extending in alignment with the abraded surface, for supportive accommodation



towards one another, thereby perforating cigarettes positioned in said opening.

4,246,913

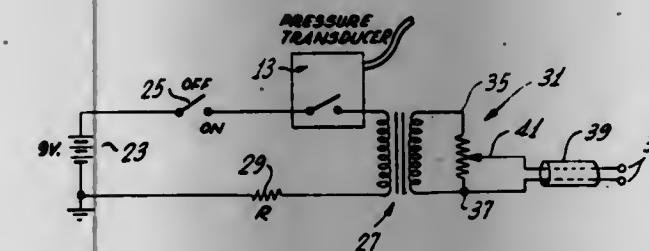
APPARATUS FOR REDUCING THE DESIRE TO SMOKE
Richard G. Ogden, and Robert P. Lawrence, both of Los Angeles, Calif., assignors to Henry R. Harrison, Tujunga, Calif., a part interest

Filed Apr. 2, 1979, Ser. No. 25,782

Int. Cl.³ A24F 7/00, 47/00

U.S. Cl. 131-171 A

4 Claims



1. A device for use by a smoker in reducing the desire to draw smoke from a smoking article, comprising:
means for sensing the drawing of smoke from a smoking article, and for producing a corresponding electrical control signal, said sensing means including
means for holding the smoking article and for creating a partial vacuum whenever smoke is drawn therethrough, and
pressure transducer means, coupled to said holding means, for sensing the presence of the partial vacuum therein and producing the control signal;
an electrical transformer for converting the control signal into an electrical shock signal, said electrical shock signal having a voltage level higher than that of the control signal;
a potentiometer for permitting a manual adjustment of the voltage level of the electrical shock signal to a prescribed level;
a pair of electrodes for engagement with the skin of a smoker; and
means for coupling the electrical shock signal to said pair of electrodes, whereby an electrical shock is administered to the skin of the smoker whenever smoke is drawn from the smoking article.

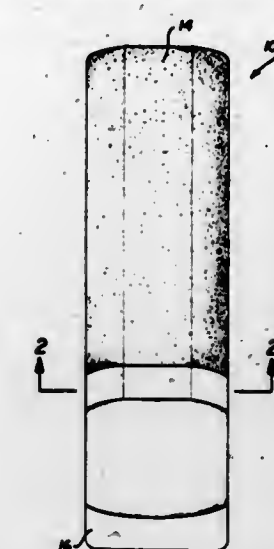
4,246,914

ABRASIVE RELIEF DEVICE FOR THE FOOT
Earl W. Keyser, Rte. 1, Box 629, Mount Shasta, Calif. 96067
Filed Jan. 10, 1979, Ser. No. 2,543
Int. Cl.³ A45D 29/20

U.S. Cl. 132-76.4

1 Claim

1. In a relief device for the foot, comprising one elongated bar, having an abraded surface including a longitudinal substantially flat center section merging bilaterally therefrom into



of the other foot, while the foot is treated on the abraded surface of the bar.

4,246,915

PORTABLE COIN BANK

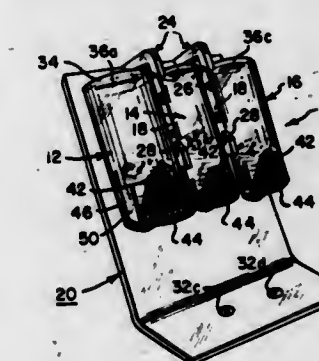
A. Douglass Hall, David's Hill Rd., Bedford Hills, N.Y. 10507

Filed Mar. 26, 1979, Ser. No. 23,677

Int. Cl.³ G07D 1/08

U.S. Cl. 133-6

11 Claims



1. An improved portable bank for tokens such as coins of the type having at least one generally circular tubular member for retaining a stacked plurality of coins of a particular denomination having means for depositing coins of said denomination into the tubular member, the improvement wherein the tubular member comprises:

- a lower support portion having an inclined bottom portion to ensure continuous slanted stacking of the coins as each new coin is deposited to facilitate removal of the lowermost coin, said bottom portion having a first opening at forward portions thereof to permit manual contact with the lowermost coin of the stack to aid in its individual removal;
- a second opening at lower forward portions conterminous with said first opening and in combination therewith to provide digital aid in the removal of the lowermost coin of the stack;
- a pair of spring members formed integrally on either side of each tubular member and facing laterally of said second opening to normally retain the stack of coins within the tubular member and permitting removal of the lowermost coin by flexing radially outward as said lowermost coin is withdrawn; and
- means for preventing the remaining coins of said stack from being simultaneously dispensed while the lowermost coin is being removed.

4,246,916

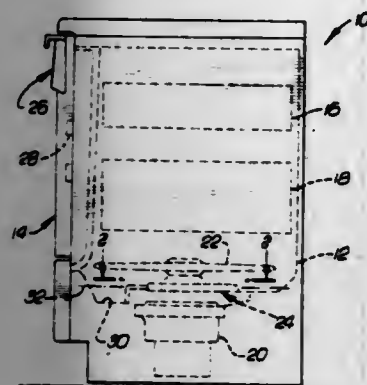
DISHWASHER WITH STEAM GENERATING HEATER AND COLD WATER INPUT

John A. Fay, Cyril M. Walsh, and Venancio P. Ko, all of Los Angeles County, Calif., assignors to Norris Industries, Inc., Los Angeles, Calif.

Filed Feb. 2, 1979, Ser. No. 8,951

Int. Cl.³ B08B 3/10; F22B 1/28; F24H 1/00
U.S. Cl. 134—105

4 Claims



1. In a dishwasher for washing, rinsing and drying dishes, the combination of:

- (a) a closed tub adapted to contain dishes to be washed, rinsed and dried and adapted to be filled with a body of water to a predetermined static water level;
- (b) electrical resistance heating means exposed to the interior of said tub adjacent the bottom thereof and disposed partly above and partly below the static water level in said tub when it contains water to said static level, said heating means comprising a heating element with an electrical resistance heater enclosed in a sheath, and with said sheath encased in a heat conductive jacket of enlarged cross-section greater than that of said sheath; and
- (c) whereby said heating means boils water from the surface of the body of water in said tub to produce steam within said tub during washing and/or rinsing of dishes therein.

4,246,917

HIGH-SPEED STABILIZATION OF MOLDED PARTS

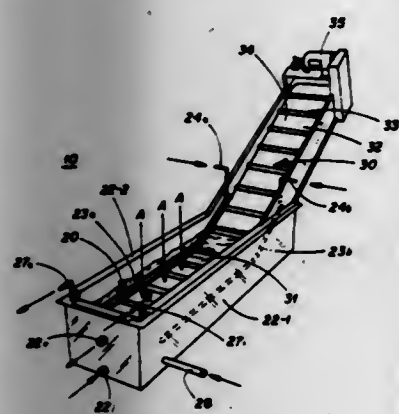
Ralph J. Cafarelli, 228 Stone St., Clinton, Mass. 01510

Filed Nov. 26, 1979, Ser. No. 97,495

Int. Cl.³ B29C 25/00

U.S. Cl. 134—105

14 Claims



1. An apparatus for the stabilization of molded parts, comprising

- a coolant bath;
- a conveyor positioned partly in and partly out of said bath;
- said conveyor forming a closed loop around a first end roll in said bath, an idling roll in said bath between a transition from a straight-line portion of the conveyor to an inclined portion thereof, and a second end roll out of said bath;
- and means above said conveyor for holding it in said bath.

4,246,918

METHOD AND APPARATUS FOR FORCED AIR BALANCING OF DAMPER BLADES

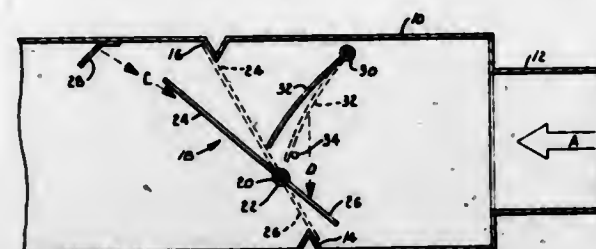
Raymond H. Dean, Shawnee Mission, Kans., assignor to Tempmaster Corporation, Kansas City, Mo.

Filed Feb. 9, 1979, Ser. No. 10,541

Int. Cl.³ F16K 1/22

U.S. Cl. 137—1

10 Claims



9. In an air control system comprising a conduit for directing air flow, a damper in said conduit for blocking air flow, said damper being characterized by an upstream portion and a downstream portion, said damper being operable in response to a first air pressure to move towards its open position and being operable in response to a second air pressure to move toward its closed position, the method of operating said damper comprising:

- first partially blocking the flow of air across one side of said downstream portion of said damper only; and
- then moving said damper toward its closed position.

4,246,919

METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

Gifford G. McClellin, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Dec. 13, 1978, Ser. No. 968,880

Int. Cl.³ F17D 1/17

U.S. Cl. 137—13

9 Claims

1. In the method of pumping a viscous hydrocarbon through a pipe the improvement which comprises forming an oil-in-water emulsion by adding to said hydrocarbon from about 20 to about 80 volume percent of an aqueous solution containing an effective amount, based on said hydrocarbon, of a combination of about 50 to about 10,000 parts per million of an ethoxylated alkyl phenol and about 50 to about 10,000 parts per million of an ethoxylated polypropylene glycol, said ethoxylated alkyl phenol being a monoalkyl phenol, wherein the alkyl group contains from about 8 to about 10 carbon atoms, and which contains from about 30 to about 70 ethoxy groups and said ethoxylated polypropylene glycol contains about 10 to about 50 weight percent ethylene oxide and has a molecular weight in the range of about 1300 to about 2900.

4,246,920

METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

Gifford G. McClellin, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 918,015, Jun. 22, 1978,

abandoned. This application Feb. 22, 1979, Ser. No. 13,867

Int. Cl.³ F17D 1/17

U.S. Cl. 137—13

10 Claims

1. In the method of pumping a viscous hydrocarbon through a pipe the improvement which comprises forming an oil-in-water emulsion by adding to said hydrocarbon from about 20 to about 80 volume percent of an aqueous solution, based on said hydrocarbon, containing about 400 to 10,000 parts per million alkali metal or ammonium hydroxide and about 10 to about 500 parts per million of a surfactant selected from the group consisting of:

- (a) water-soluble alkylbenzene sulfonates wherein the alkyl group or groups contain about 8 to about 14 carbon atoms, and
- (b) the combination of an ethoxylated mono- or dialkyl phenol, wherein the alkyl groups contain from about 8 to about 12 carbon atoms and said phenol contains from about 20 to about 100 ethoxy groups and a polyethylene glycol said combination having a phenol to glycol weight ratio of about 4:1, said polyethylene glycol having a molecular weight in the range of about 1,000 to about 3,000.

4,246,921

FLUID-PRESSURE OPERATED PILOT VALVE DEVICES

Mario Beccaria, Rivalta, and Renzo Moretti, Cambiano, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

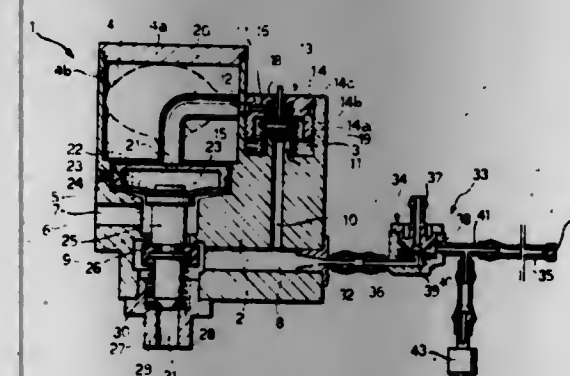
Filed Dec. 15, 1978, Ser. No. 970,027

Claims priority, application Italy, Dec. 22, 1977, 69880 A/77

Int. Cl.³ F16K 31/365

U.S. Cl. 137—102

7 Claims



1. A fluid pressure operated pilot valve device for producing a cyclic modulation of fluid pressure to operate a relay valve, said pilot valve device comprising, in combination: - means defining a control pressure duct, in which said modulation of pressure is produced;

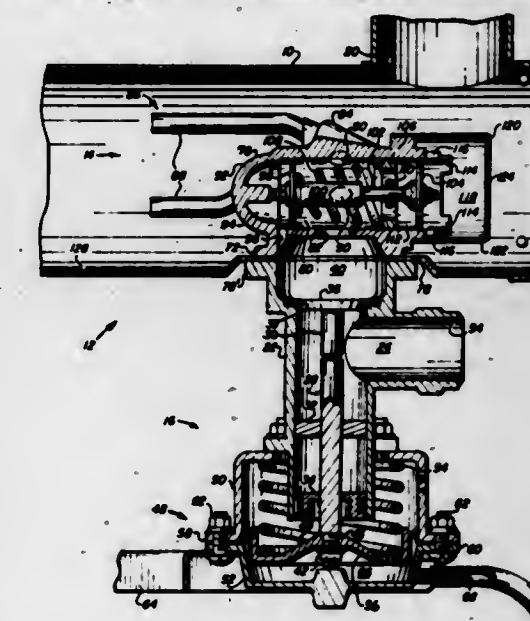
fluid pressure inlet means;

exhaust duct valve means, movable between a first position wherein said inlet means is connected to said control duct and a second position wherein said exhaust duct means is connected to said control duct;

actuator means for displacing said valve means from said first position to said second position;

a fluid pressure operated timer means comprised of a tubular elastic membrane operatively connecting said actuator means with said control duct to introduce a predetermined delay prior to said displacement of said valve means from said first position to said second position, said timer means providing an additional predetermined delay after said displacement of said valve means to said second position and

means for returning said valve means to said first position at the end of said additional delay.



lating control means and said inlet means of said nozzle means, and having an outlet end thereof discharging to the space of lower pressure; and

- (e) bypass fluid flow modulating control means including bypass valve means disposed in said fluid bypass passageway to modulate the fluid bypass flow therethrough, and further including actuating means coupled to said fluid bypass valve means, said actuating means having fluid pressure sensitive means subject to fluid pressure in said fluid flow passageway for modulating the fluid flow through said fluid bypass passageway, whereby a substantially constant fluid flow to the space of lower pressure is maintained.

4,246,923

SAFETY DEVICE FOR A PNEUMO-HYDRAULIC CONTROL CIRCUIT

Jacques Dayet, Lyons, France, assignor to Societe Anonyme dite: Delle-Alsthom, Villeurbanne, France

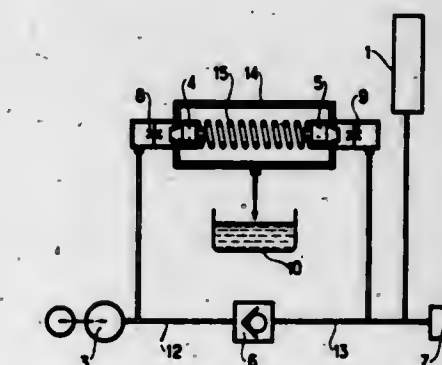
Filed Dec. 18, 1978, Ser. No. 970,595

Claims priority, application France, Jan. 5, 1978, 78 00202

Int. Cl.³ G05D 16/00

U.S. Cl. 137—116

2 Claims



1. A safety device for protection against the rise of pressure in a pneumo-hydraulic control circuit which includes, upstream, a pressure generator and downstream, a pneumo-

4,246,922

FLUID FLOW CONTROL APPARATUS

Gary L. Frederick, Tempe, and Paul R. Mohr, Phoenix, both of Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 7, 1977, Ser. No. 813,605

Int. Cl.³ G05D 11/03

U.S. Cl. 137—110

33 Claims

1. Fluid flow control apparatus providing a flow path for fluid from a pressurized source thereof to a space of lower pressure, comprising:

- (a) wall means defining a fluid flow passageway in the flow path and having inlet means arranged to admit pressurized fluid thereinto;
- (b) nozzle means having fluid inlet means coupled to and communicating with said fluid flow passageway, and

hydraulic accumulator, the improvement wherein said device includes, between the generator and the accumulator, a non-return valve, a first safety valve capable of a discharge at least equal to that of the generator upstream from the non-return valve, a second safety valve downstream from the non-return valve, means for ensuring that the second safety valve is subjected to only a small discharge, the adjustment threshold of the opening pressure of the first safety valve and the adjustment threshold of the opening pressure of the second safety valve being identical, said downstream second safety valve being provided with means for limiting its discharge rate, and wherein said safety valves are disposed at the ends of a single device and are subjected to antagonistic action of a common spring interposed between said safety valves.

4,246,924

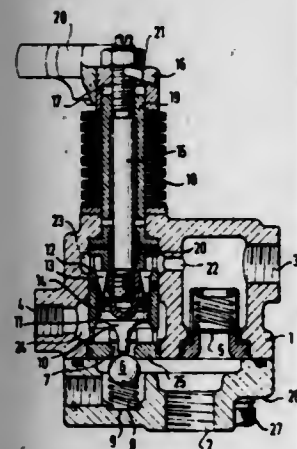
VALVE ARRANGEMENT

Lutz Droitsch, Bielefeld, and Horst Wolff, Hohenschäftlarn, both of Fed. Rep. of Germany, assignors to Speck Kolbenpumpenfabrik Otto Speck KG, Geretsried, Fed. Rep. of Germany. Continuation of Ser. No. 795,762, May 11, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,157. Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 2704754.

Int. Cl.³ G05D 11/03

U.S. Cl. 137-116

8 Claims



1. A valve arrangement for controlling the supply of an operating fluid and comprising a casing with an inlet port, a main flow path provided with a non-return valve extending from said inlet port to an operating outlet port and a secondary flow path extending from the inlet port to a by-pass outlet port, said secondary flow path containing a ball applied to a valve seat under spring prestressing to close said secondary flow path, there being further provided piston means, including a tappet operable within a cylinder against the bias of spring means in response to excess pressure communicated via a passage from the outlet operating port to displace the ball from the seat thereby opening said secondary flow path, wherein the casing comprises first and second casing halves separated at a flat joint face, said first casing half having first and second cylindrical bores therein, the first bore being adapted to receive said non-return valve and communicating with said outlet operating port, and the second bore being adapted to receive said piston and said valve seat and communicating with said by-pass outlet port, said second casing half cooperating with said first casing half to define a cavity communicating with said inlet port and forming parts of said main and secondary flow paths respectively leading to said non-return valve and said valve seat and in which said spring prestressing is effected by spring means disposed outside of the first casing half and operable to draw said piston against a stop within said second cylindrical bore via an operating control rod.

4,246,925
WASTE WATER VACUUM CONVEYANCE METHOD
AND APPARATUS

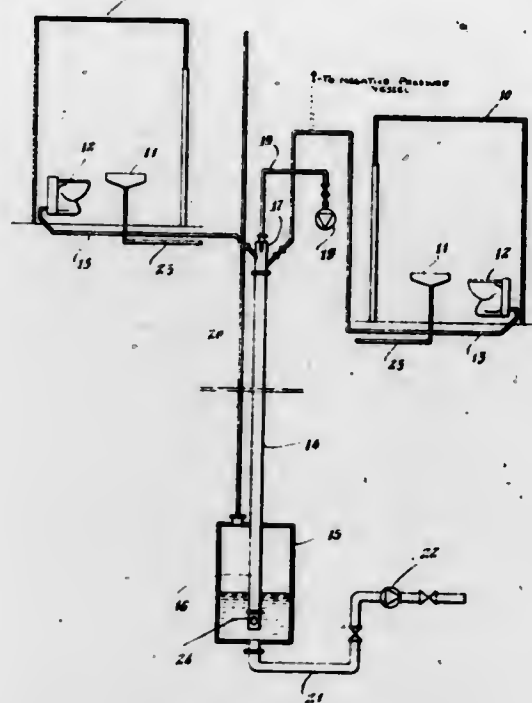
Sven Oldfelt, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Dec. 13, 1978, Ser. No. 969,063

Claims priority, application Sweden, Dec. 14, 1977, 7714199 Int. Cl.³ E03D 1/00

U.S. Cl. 137-205

3 Claims



1. A method of conveying waste water with the aid of a vacuum source from a plurality of sanitary installations through a system of conduits to a holding tank, or the like, comprising: transferring waste water in the form of a plug from said sanitary installations to said conduit system by operating a valve means during the simultaneous introduction of air into the system behind said plug, said conduit system including a relatively long pipe which is disposed generally vertically and is closed at its upper end, introducing said plug and air in the upper part of said pipe in such a manner that air is continuously separated from the waste water and removed by means of a vacuum pump, which applies a vacuum to the upper part of said vertical pipe, said waste water falling by gravity down said vertical pipe to be collected in the form of a standing liquid column in the lower part of said vertical pipe, said liquid column being of such a height that it is balanced by the vacuum prevailing in the upper part of said vertical pipe, said lower end of the vertical pipe being open and submerged within said holding tank, said standing liquid column being caused to flow to said holding tank, and a water seal in the lower part of said pipe preventing the entrance of air therein.

4,246,926
APPARATUS FOR REMOVING RESIDUAL WATER
FROM A WATER SYSTEM

Salvatore T. Morello, 1661 86th St., Brooklyn, N.Y. 11214. Continuation-in-part of Ser. No. 886,244, Mar. 13, 1978, abandoned. This application Apr. 25, 1979, Ser. No. 33,311.

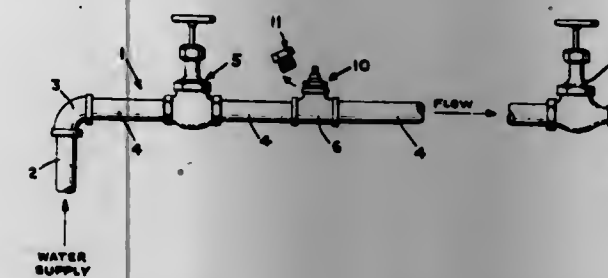
Int. Cl.³ F16K 51/00

U.S. Cl. 137-209

6 Claims

1. Apparatus for removing residual water from a water system including a water-supply pipe, a fitting in said pipe, and a shut-off valve in said pipe, said apparatus comprising a valve detachably mounted in said fitting in the water-supply pipe and including an air valve element controlling flow of supplied compressed air to said water-supply pipe to blow out residual water from said pipe after the shut-off valve has been closed, said valve comprising a hollow body having an axis of symmetry, threads on said body for threadably engaging said body with said pipe at a position therealong such that the body

extends radially of said pipe and communication is established between the interior of the body and the interior of the pipe and tool engaging means integral with said body for allowing said body to be threadably engaged and disengaged with said pipe by a tool, said air valve element being coaxially secured in said hollow body to control flow of compressed air to said pipe, said air valve element extending axially from said body and including an actuating element to permit introduction of compressed air to said pipe via said hollow body, said tool engaging means extending radially from said body and forming



a lower shoulder for bearing against said fitting, said hollow body having upper and lower ends, said air valve element projecting from said upper end, said hollow body having a bore with a first portion in which said air valve element is press-fit and a second portion of larger diameter surrounding said air valve element in annular spaced relation, said first and second portions forming a shoulder therebetween, and sealing means filling the space between said air valve element and said hollow body between said shoulder and the lower end of said hollow body for securing said air valve element in said hollow body and sealably closing said lower end of said body.

4,246,927

BATTERY FORMATION APPARATUS

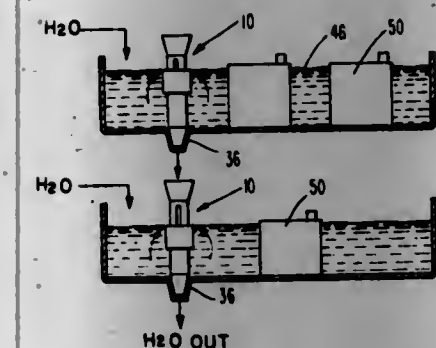
Kelly L. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Jun. 8, 1979, Ser. No. 46,625

Int. Cl.³ F17D 1/00

U.S. Cl. 137-269

11 Claims



1. A combination overflow and drain plug comprising: (a) a hollow plug member adapted at one end to fit around the outside of a drain opening and adapted at the opposite end for fitting into said drain opening, said hollow plug further having an elongated slot therein; and (b) collar means slidable and sealingly fitted around said plug member for sliding along said plug member and covering said slot in said plug member.

4,246,928
RESTRICTED MOVEMENT VALVE SEATS FOR AN
EXPANDING GATE VALVE

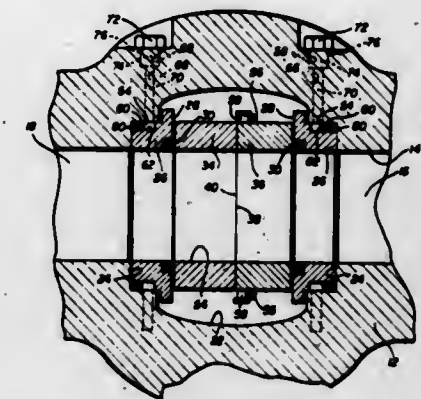
Ivan A. Burns, and William R. Hochmuth, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,911

Int. Cl.³ F16K 43/00

U.S. Cl. 137-315

9 Claims



1. An expanding valve structure comprising: a valve body presenting a fluid flow passageway and a valve chamber communicating with said flow passageway; a pair of spaced apart seat pockets formed about said flow passageway adjacent said valve chamber; a pair of annular valve seats mounted in said seat pockets and movable therein toward and away from one another, each valve seat having an inner sealing surface and a peripheral surface presenting a groove therein; an expanding valve member positioned in said valve chamber between said seats, said valve member being mounted in said valve chamber for movement in a collapsed condition between open and closed positions and being in an expanded condition in both the open and closed positions to seal against said sealing surfaces of the valve seats; a pair of passages in said valve body extending adjacent said grooves of the valve seats; and an elongate pin element mounted in each passage and extending into the groove of the adjacent valve seat in a loose fit therein to permit limited inward and outward movement of said seats toward and away from one another, said pins engaging said valve seats within the grooves to limit the inward movement of said valve seats toward one another to limiting positions wherein said seats are out of contact with said valve member in the collapsed condition thereof.

4,246,929

TAMPER PROOF IDLE ADJUSTING SCREWS

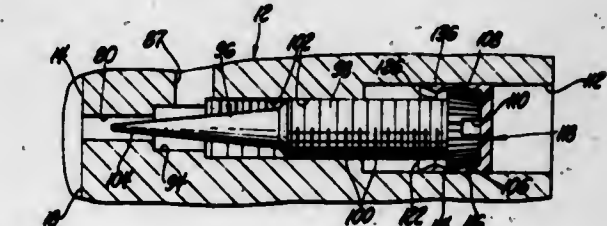
Russell J. Wakeman, Madison Heights, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Feb. 13, 1978, Ser. No. 876,884

Int. Cl.³ F16K 35/06

U.S. Cl. 137-382

7 Claims



1. A fuel metering system effective for metering the rate of fuel flow to an associated combustion engine, comprising body means, conduit means formed in said body means communicating with a source of fuel, orifice means formed generally in said body means for receiving fuel from said conduit means and

discharging said fuel into induction passage means associated with said engine, an opening formed in said body means, said opening receiving adjustably positionable valve means, said valving means being selectively adjustably positionable with respect to said orifice means in order to thereby cooperate with said orifice means in order to cooperatively define an effective metering area for metering said rate of said fuel flow from said conduit means and to said induction passage means, and separate closure means formed from a resilient, non-fragile material and press fitted into said opening after low torque adjustment of said valving means as to effectively close said opening to access to said valving means, said closure means comprising generally tubular body means received generally between said valving means and said opening, and an end wall portion carried by said tubular body means and covering an end of said valving means, said closure means being positioned upon application thereof so as to be recessed within said opening to conceal the presence of said valving means and simulate an ordinary body plug and to not be easily removable with hand tools, said end wall forming the bottom of said opening, said opening formed in said body means comprising an opening inner surface, said closure means comprising outer closure surfaces means and inner closure surface means, at least a major portion of said outer closure surface means engaging said opening inner surface, and said inner closure surface means engaging said adjustably positionable valving means, said tubular body means also providing a continuous press-fit air-tight seal to prevent vacuum leaks from said induction passage past said valve means to said opening, said press fit also providing axial retention of said valving means so as to maintain initial adjustment thereof.

4,246,930

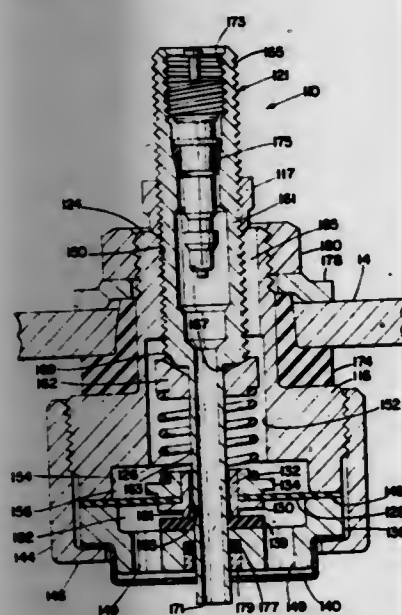
RELIEF VALVE

William V. Bishop, and Donald L. Richards, both of Durham, N.C., assignors to Eaton Corporation, Cleveland, Ohio
Filed Mar. 8, 1979, Ser. No. 19,014

Int. Cl. F16K 17/26

U.S. Cl. 137-493.9

12 Claims



1. A pressure relief valve comprising a valve body having a through bore formed therein and an enlarged counterbore formed in one end thereof; a diaphragm in engagement with said one end and disposed over said counterbore to define a first chamber; a diaphragm retaining member having a portion thereof in engagement with an annular edge portion of said diaphragm; retaining means clamping said diaphragm and said diaphragm retaining member against said one end of said valve body; a resilient sealing element attached to said diaphragm retaining member; a valve seat member attached to said diaphragm; spring means acting between said valve body and said diaphragm to bias said valve seat member into sealing engagement with said resilient sealing element; and tubular valve stem means received in said through bore and extending through

said valve seat member and through said diaphragm, said diaphragm retaining member, and said resilient sealing element; said valve stem means including a valve element received therein for selectively passing a pressurized fluid there-through.

4,246,931

FUEL SAFETY VALVE AND REGULATOR

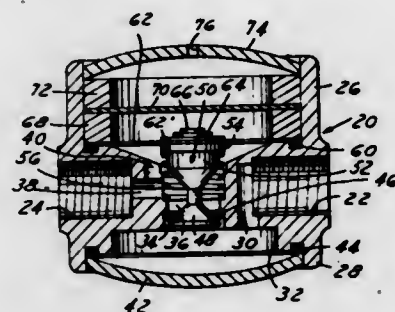
Alton J. O'Connor, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Dec. 3, 1979, Ser. No. 99,474

Int. Cl. F16K 31/12

U.S. Cl. 137-494

3 Claims



1. A diaphragm-operated valve for controlling fluid flow which comprises:
(a) a housing having a central axis and having a fluid inlet and a fluid outlet radial to said axis connected by an axial passage having a valve seat,
(b) said housing having an upstanding flange at one end and a depending flange at the other end forming flat recesses on the axis of the housing,
(c) means closing the depending flange to form a chamber in communication with said inlet and said valve seat,
(d) a plurality of spaced diaphragms lying across said recess within said upstanding flange in planes perpendicular to said central axis to form separate chambers within said upstanding flange,
(e) spacers between said diaphragms sealing the peripheries thereof,
(f) a closure for said upstanding flange above said recesses, and
(g) a control valve suspended from the lower of said diaphragms having a portion to cooperate with said valve seat to open and close said seat in response to pressures acting on said lower diaphragm.

4,246,932

MULTIPLE ADDITIVE VALVE ASSEMBLY

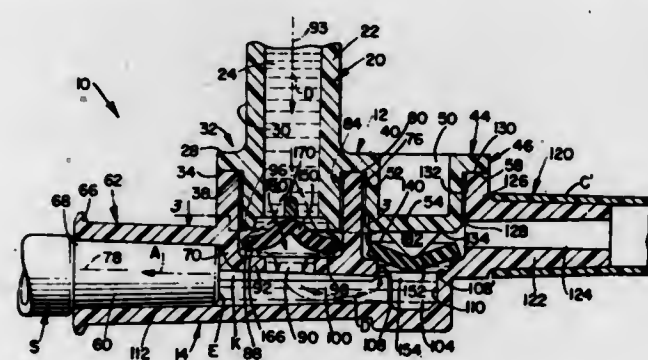
Kenneth Raines, Bethlehem, Pa., assignor to Burron Medical, Inc., Bethlehem, Pa.

Filed Oct. 18, 1979, Ser. No. 86,178

Int. Cl. F16K 15/14

U.S. Cl. 137-512

12 Claims



1. A multiple valve assembly for use in transferring fluid in medical applications, comprising:

an elongate hollow body portion having means on one end portion thereof for accommodating a fluid pressure establishing means, a first tube connector on another end portion thereof, a tube connector accommodating means between said ends and oriented at a right angle with respect to said first tube connector, an outer wall, a first port defined in said outer wall to fluidly connect said tube connector accommodating means with the interior of said hollow body portion and a second port defined in said wall to fluidly connect said first tube connector with the interior of said hollow body;

a top portion affixed to said body portion and including a second hollow tube connector positioned to be accommodated in said body portion tube connector accommodating means so that fluid communication between the inside of said second hollow tube connector and said body portion first port is possible;

a pair of flexible valve discs mounted on said hollow body portion, said valve discs being co-planar with each other and oriented at a right angle with one of said tube connectors and in a plane which is substantially parallel with the other one of said tube connectors, one of said valve discs positioned to occlude said second tube connector and the other valve disc being positioned to occlude said second port; and
valve disc biasing means adjacent each of said valve discs for biasing said valve discs toward an occluding position.

4,246,933

EXHAUST-INDICATOR

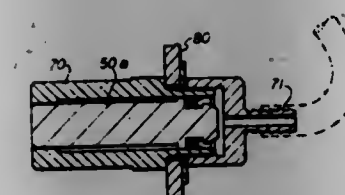
Joseph W. Taylor, P.O. Box 40509, Houston, Tex. 77040

Filed Dec. 21, 1978, Ser. No. 971,797

Int. Cl. F16K 37/00; F15B 13/042; G01L 19/12

U.S. Cl. 137-552

7 Claims



1. A device for utilizing exhaust fluid from a fluid control member, wherein said control member includes an inlet for monitored fluid, an inlet for actuator fluid, an outlet for actuator fluid, an exhaust for actuator fluid and a slide valve member for selectively establishing communication between either said actuator fluid inlet and outlet or between said actuator fluid outlet and said exhaust as a function of said monitored fluid's pressure in said inlet, said device comprising:

a cylindrical housing having an axial bore therethrough and having means at one end for removably fitting said device to said exhaust of said control member;
combination valve and indicator means including a valving portion slidable within said device's bore between a first position, blocking exhaust fluid communication between said control member exhaust and laterally extending aperture means in said housing, and a second position, permitting communication between said control member exhaust and said aperture means in said device housing, said combination valve and indicator means including an indicator portion extending at least partially outside said device housing when said combination valve and indicator means is in said second position wherein said indicator portion extends outside said housing prior to exhaust of said fluid through said aperture means; and
said laterally extending aperture means in said device housing in fluid communicating relationship to said control

member exhaust outlet only when said combination valve and actuator means is in said second position and not so communicating with said fluid when said combination valve and indicator means is in said first position.

4,246,934

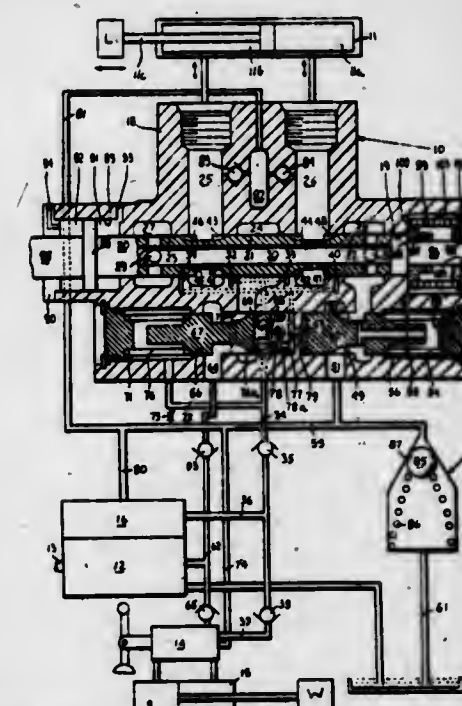
REMOTELY CONTROLLED LOAD RESPONSIVE VALVES

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022
Continuation-in-part of Ser. No. 949,250, Oct. 6, 1978, Pat. No. 4,222,409, which is a continuation-in-part of Ser. No. 773,421, Feb. 28, 1977, Pat. No. 4,122,865, Ser. No. 894,111, Apr. 17, 1978, Pat. No. 4,147,178, and Ser. No. 894,112, Apr. 17, 1978, Pat. No. 4,140,152, said Ser. No. 773,421, is a continuation-in-part of Ser. No. 729,696, Oct. 5, 1976, Pat. No. 4,028,889, and Ser. No. 655,561, Feb. 5, 1976, Pat. No. 4,099,379, which is a continuation-in-part of Ser. No. 522,324, Nov. 8, 1974, Pat. No. 3,998,134, said Ser. No. 729,696, is a continuation-in-part of Ser. No. 559,818, Mar. 19, 1975, Pat. No. 3,984,979, which is a continuation-in-part of Ser. No. 377,044, Jul. 6, 1973, Pat. No. 3,882,896, which is a continuation-in-part of Ser. No. 185,146, Sep. 30, 1971, Pat. No. 3,744,517. This application Jun. 28, 1979, Ser. No. 53,041

Int. Cl. F15B 13/08

U.S. Cl. 137-596.13

11 Claims



1. A valve assembly comprising a housing having a supply chamber communicable with a pump, first and second load chambers, and fluid exhaust means, first valve means for selectively interconnecting said load chambers with said supply chamber and said fluid exhaust means, fluid metering means on said first valve means, positive load flow force limiting means of said first valve means including positive load control means to limit pressure differential acting across said metering orifice means to a predetermined relatively constant level when said supply chamber is connected to one of said load chambers and said load chamber is pressurized, negative load flow force limiting means of said first valve means including negative load control means having throttling means to limit pressure differential across said metering orifice means to a predetermined relatively constant level when one of said load chambers is connected to said exhaust means and said load chamber is pressurized, spring biasing means to bias said first valve means in direction to reduce effective flow area of said metering orifice means, actuating means on said first valve means having force generating means responsive to a control signal and control signal generating means operable to transmit control signal to said force generating means of said actuating means, whereby said first valve means will assume a flow control

position proportional to said control signal and independent of the magnitude of said positive and said negative loads.

4,246,935

TEMPERATURE-COMPENSATED LAMINAR PROPORTIONAL AMPLIFIER

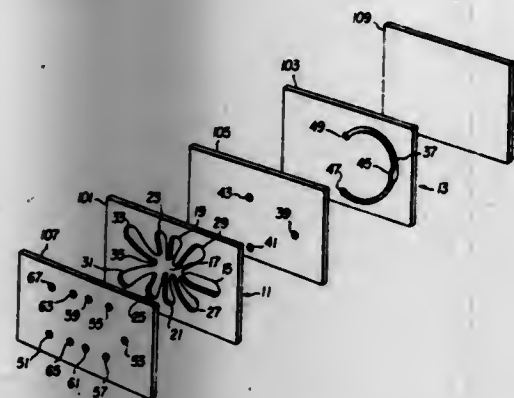
George Mon, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 23, 1979, Ser. No. 14,503

Int. Cl.³ F16K 1/18

U.S. Cl. 137-840

6 Claims



1. A temperature-compensated laminar proportional amplifier, said laminar proportional amplifier including an interaction chamber, control nozzles issuing into said interaction chamber, a power nozzle for issuing fluid into the interaction chamber, a source of fluid providing fluid flow to said power nozzle, wherein the interaction chamber is laterally extended into a plurality of opposed vented recess having outputs to a common pressure source; and fluid bypassing means comprising a linear resistance to fluid flow fluidically coupled between the source of fluid for the power nozzle and the fluid outputs of the plurality of vented recesses whereby fluid is passed from said source around the power nozzle to compensate the pressure gain of the laminar proportional amplifier for the effects of temperature.

4,246,936

PIPE FOR TRICKLE IRRIGATION

Ephraim Luz, deceased, late of Moshav Kokhav Michael, Israel; by Cecilia Luz, heir, and by Irit Luz, heir, both of Moshav Kokhav Michael, Mobile Post Sdeh Gat, Israel

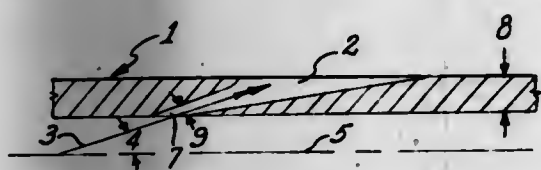
Continuation-in-part of Ser. No. 588,727, Jun. 20, 1975, abandoned. This application Jun. 25, 1979, Ser. No. 51,544

Claims priority, application Israel, Aug. 20, 1974, 45501

Int. Cl.³ E02B 13/00; B05B 1/20, 1/30

U.S. Cl. 138-103

2 Claims



1. An improved pipe for aboveground trickle irrigation at water supply pressures of 10-35 p.s.i., having a longitudinal axis and a direction of fluid flow in said pipe along said axis, and including fluid discharging apertures in the pipe wall opening to the outer surface thereof at spacings conforming to the spacings of the plants to be irrigated, the improvement comprising:

each of the apertures having a conical shape diverging from the inside to the outside of the pipe wall and having a

center line at an angle of 14° to 30° to the longitudinal axis of said pipe in the direction of fluid flow, to cause the fluid discharged through each of said apertures to adhere to said outer surface of said pipe to effect dripping of said discharged fluid from said pipe.

4,246,937

CABLE STRUCTURE WITH CABLE SHEATH

Hans R. Müller, Herrliberg, Switzerland, assignor to Bureau BBR Ltd., Zurich, Switzerland

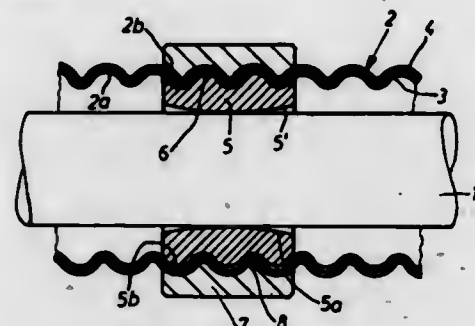
Filed Dec. 20, 1978, Ser. No. 971,494

Claims priority, application Switzerland, Dec. 21, 1977, 15826/77

Int. Cl.³ E04H 12/20; H01B 11/18; F16G 11/00

U.S. Cl. 138-108

1 Claim



1. A cable structure comprising: a cable; a cable sheath in the form of a flexible corrugated tube surrounding said cable and having an inner surface provided with thread-like windings; at least one guide body arranged at a predetermined location between the cable and the cable sheath, said guide body having an outer surface provided with thread-like portions engaging with said thread-like windings in order to fix the guide body at the inside of the cable sheath, and said guide body being structured as a substantially ring-shaped sleeve, said sleeve having an inner wall defining guide surface means for the cable which are domed in the direction of the cable in order to guide the cable both in its straight and bent condition, said inner wall tapering from one end of the sleeve towards the center thereof and then again widening from the center of said sleeve towards the other end thereof; and a reinforcement ring mounted at the outside of the cable sheath directly over the guide body, said reinforcement ring including means for threading said reinforcement ring onto the outside of the cable sheath.

4,246,938

VAPOR COLLECTING SYSTEM

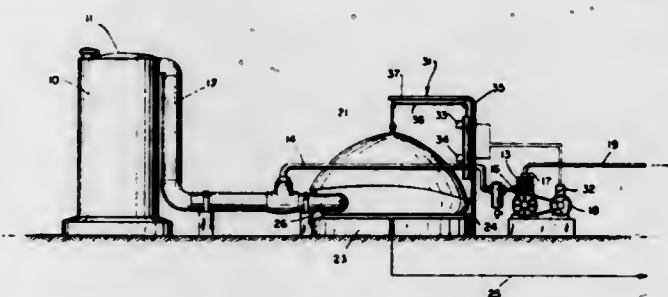
Glenn G. Morgan, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 7, 1979, Ser. No. 36,626

Int. Cl.³ B65B 3/04

U.S. Cl. 141-52

7 Claims



1. In a system for handling a vaporizable liquid and including at least one liquid storage tank for holding amounts of said

liquid, said storage tank having a vapor outlet communicated with a vapor compressor, the latter being intermittently operable to remove vapor from the tank, and a variable volume reservoir having a flexible walled vapor holding chamber therein communicated with said storage tank vapor outlet to receive a flow of vapor therefrom during periods when the compressor is in non-operating condition; the improvement in said system of:

control means in said compressor being actuatable to regulate operation of the compressor between on and off conditions, sensing means connected with said variable volume reservoir to sense upper and lower volumetric limits of vapor contained within said flexible walled holding chamber, said sensing means being connected with said control means, whereby to regulate operation of said compressor control means in response to said reservoir limitations being attained.

4,246,939

AUTOMATIC SCREW DRIVING APPARATUS

Gerhard Boegel, Heerbrugg, Switzerland, assignor to SFS Stalder AG, Heerbrugg, Switzerland

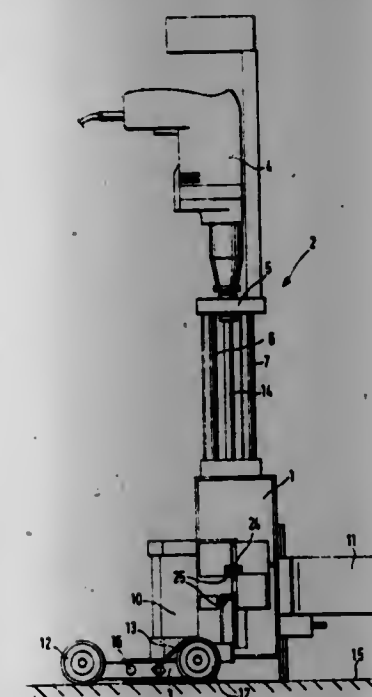
Filed Dec. 22, 1978, Ser. No. 972,395

Claims priority, application Switzerland, Dec. 27, 1977, 16158/77

Int. Cl.³ B25B 23/00; B23P 19/06

U.S. Cl. 29-771

12 Claims



1. Screw driving apparatus comprising: (a) a support having a first end and a second end with said support being elongated in the first end-second end direction; (b) a chute having a first end and a second end with the first and second ends thereof being oriented in the same manner and direction as the first and second ends of said support, an axis extending in the first end-second end direction thereof and formed with an opening affording access to the interior of said chute from the exterior thereof intermediate said first and second ends, said chute being movably displaceable on said support for movement in the direction between the first and second ends thereof; (c) feeding means mounted on said support for feeding screws one at a time through said opening into said chute; (d) a driver extending into said chute at the first end thereof for movement toward the second end thereof and shaped for driving engagement with a screw introduced into said chute by said feeding means; (e) drive means mounted on said support for movement in the first end-second end direction of said support for axially moving said driver in said chute and for rotating

said driver about an axis at least generally parallel to said axis of said chute for thereby engaging the driver with said screw and rotating the driver together with the screw while axially moving the screw with the rotating driver toward the second end of said chute;

- (f) a magazine located laterally of said chute and adapted to hold a plurality of apertured washers and said magazine being mounted on said support;
- (g) slide means for moving said washers one at a time transversely to said axis of said chute from said magazine to a position at the second end of said chute with the aperture in the moved washer aligned with the screw to be introduced into said chute; and
- (h) motion transmitting means at least partly mounted on said support and operatively connected to said feeding means, said drive means, and said slide means for transmitting motion from said drive means to said feeding means, and said said slide means in timed sequence.

4,246,940

VENEER LATHE CHARGING APPARATUS AND METHOD FOR DETERMINING LOG SPIN AXIS

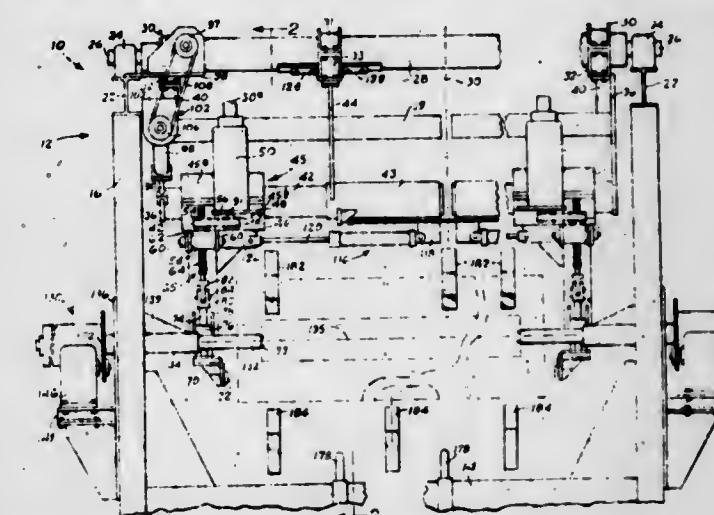
Paul O. Edwards, Sweet Home; William E. Bolton; Larry C. Hunter, both of Corvallis, and Amos A. Horner, Cascade, all of Oreg., assignors to Applied Theory Associates, Inc., Corvallis, Oreg.

Continuation-in-part of Ser. No. 772,010, Feb. 25, 1977, abandoned. This application Jul. 17, 1978, Ser. No. 925,521

Int. Cl.³ B27L 5/02; G01B 9/02

U.S. Cl. 144-209 A

9 Claims



1. A veneer lathe charging apparatus comprising: a frame; a pair of independently operable elongate charger arms, each being pivotally mounted on said frame and including gripping means for gripping the ends of a log, said gripping means being mounted on a rod which is slidably mounted in a guide means provided on each arm; power-driven means mounted on each of said arms, and power transmission means operably coupled to said power-driven means and said gripping means for selectively extending and retracting said rod relative to said guide means in a direction generally along the longitudinal axis of said arm; a pair of independently operable actuating means for angularly displacing an associated arm, each of said actuating means being mounted on said frame and shiftable in a substantially horizontal direction.

4,246,941

WOOD SPLITTER APPARATUS

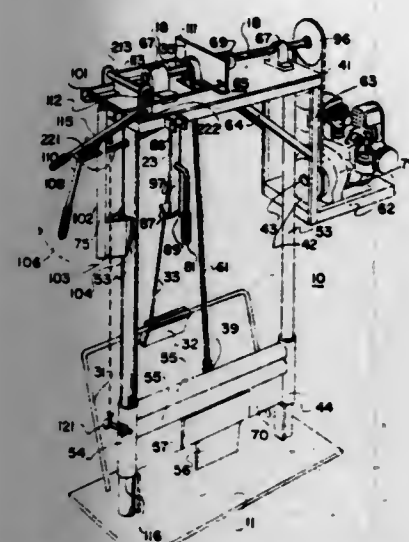
A. C. Campbell, Rte. 2, Box 45, Westminster, S.C. 29693

Filed Dec. 19, 1978, Ser. No. 970,890

Int. Cl.³ B27L 7/00

U.S. Cl. 144—193 B

4 Claims



- Apparatus for splitting wood comprising:
 - a frame;
 - sleeve means slidably carried by said frame;
 - a weighted member fixed to said sleeve means;
 - a wedge member carried by said weighted member for splitting wood;
 - engine means operatively connected to said weighted member for raising said weighted member to an elevated position;
 - clutch means operatively connected to said engine means having a release position in which said weighted member is released from said operative connection with said engine means;
 - control means for shifting said clutch means to an engaged position in which said engine means is operatively connected to said weighted member, and to said release position for releasing said clutch means;
 - latch means carried by said frame to retain said weighted member in said elevated position; and
 - an adjustable engagement device carried by said sleeve means so as to engage said control member of the clutch means in said elevated position of said weighted member so as to cause said clutch means to be shifted to said release position automatically upon arrival of said weighted member at said elevated position.

4,246,942

MEANS FOR SPLITTING LOGS

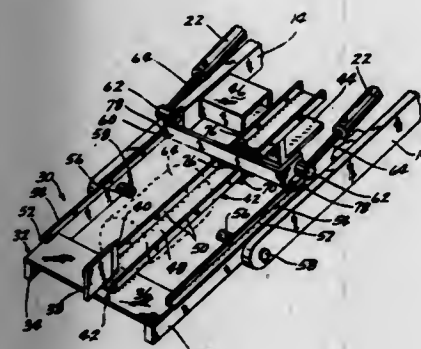
Henry Malik, Rte. 2, Box 296A, Yankton, S. Dak. 57078

Filed Jan. 17, 1979, Ser. No. 4,022

Int. Cl.³ B27L 7/00

U.S. Cl. 144—193 A

7 Claims



- A log splitting device for mounting on a front end loader assembly of a tractor, said loader assembly comprising a pair of spaced apart arms each pivotally secured to one of the opposite

sides of said tractor and extending forwardly therefrom, each of said arms having a pin adjacent its forward end for detachably mounting a loader tool to said loader assembly, at least one cross member interconnecting said arms, first cylinder means interconnecting said arms to said tractor for raising and lowering said arms, second cylinder means on said arms adapted to be connected to a loader tool, said log splitting device comprising:

- a frame assembly having a forward end, a rearward end and opposite side members, said side members each having pin receiving means intermediate their lengths for retentively receiving said pins to connect said frame assembly to said arms;
- a cutting wedge rigidly secured to said forward end of said frame assembly;
- a ram bar slidably mounted on said frame assembly and adapted to slide towards and away from said cutting wedge, said ram bar being connectable to said second cylinder means so that said second cylinder means can forcibly move said ram bar towards said cutting wedge whereby a log longitudinally positioned between said ram bar and said cutting wedge can be impaled upon and split by said cutting wedge;
- said frame assembly having an integral interlock member thereon for interlocking with and retentively engaging said front end loader assembly so as to hold said frame assembly against pivotal movement about said pins when said frame assembly retentively receives said pins;
- said interlock member comprising a yoke portion adapted to retentively fit over said one cross member interconnecting said arms.

4,246,943

INFEED ASSEMBLY FOR RANDOM LENGTH END SHAPING MACHINES

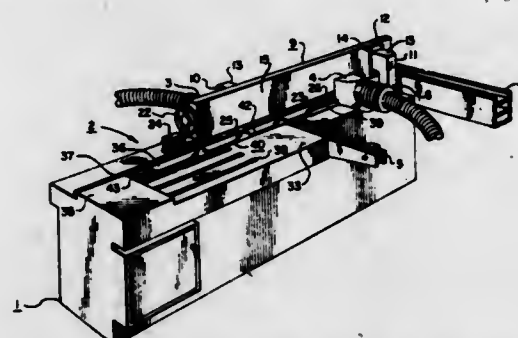
Gary L. Cromeens, Mesquite, Tex., assignor to Industrial Woodworking Machine Co. Inc., Garland, Tex.

Filed Aug. 29, 1979, Ser. No. 70,708

Int. Cl.³ B27B 27/00

U.S. Cl. 144—245 R

10 Claims



- In a woodworking apparatus that has at least one end shaper and table means for supporting sticks of random length during their travel through the apparatus and means overlying and coacting with the table means for holding the sticks against displacement during the shaping of their ends, an infeed assembly for advancing said sticks through said apparatus comprising
 - elongate shuttle means extending and movable longitudinally of said table means in a generally rhombic orbit and having upstanding push elements adapted to project above said table means during the feed stroke of the shuttle means for engagement with said sticks and adapted to retract below said table means during the return stroke of said shuttle means,
 - reciprocally mounted means underlying and supporting the elongate shuttle means,
 - a pair of spaced parallel link means of equal length extending between and pivotally connecting said shuttle means to the supporting means in spaced parallel relationship, one end of each link means having pivotal connection with

4,246,945

HAMPER HOOD

Noel S. Sterling, Northbrook, Ill., assignor to Medline Industries, Inc., Northbrook, Ill.

Filed Nov. 8, 1979, Ser. No. 92,547

Int. Cl.³ A45C 11/00

U.S. Cl. 150—51

6 Claims



- said shuttle means and the opposite end of each link means having pivotal connection with said supporting means for maintaining the spaced parallel relationship of said shuttle and supporting means,
- actuating means for initially pivoting each link means upwardly about the axis of its pivotal connection with said supporting means to an upright position so as to elevate said shuttle means and project its upstanding push elements above said table means for engagement with said sticks,
- stop means for engagement by at least one of the upright link means to prevent continued pivotal movement thereof and thereby impart straight line longitudinal movement to said shuttle means as well as reciprocal movement to said supporting means to complete the feed stroke of said shuttle means,
- the actuating means being reversible to initially pivot said link means downwardly in a reverse direction from its upright position so as to lower said shuttle means and retract its push elements below said table means,
- and limit means for engagement by at least one of said downwardly pivoted link means to prevent continued pivotal movement thereof whereby straight line longitudinal movement is imparted to said shuttle means to complete the return stroke of said shuttle means,
- said actuating means being pivotally mounted and being pivotally connected directly to at least one of said link and shuttle means so as to permit arcuate movement of said actuating and link means relative to each other as well as to said shuttle means.

4,246,944

HARVESTING BAG

Grahame B. R. Dixie, 24 Villiers St., Leamington Spa, Warwickshire, England

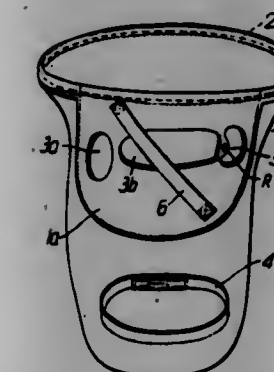
Filed Nov. 30, 1978, Ser. No. 965,043

Claims priority, application United Kingdom, Dec. 2, 1977, 50277/77

Int. Cl.³ A01D 46/22

U.S. Cl. 150—2

30 Claims



- A harvesting aid comprising a bag having an entrance, means to maintain the entrance in an open condition, and hand hold means operable, in use, to engage the harvester's hand while leaving the fingers and thumb free to move at the entrance, the hand-hold means comprising:
 - (a) an array of holes in a side wall of the bag below the entrance, one of the holes being adapted to receive the thumb from the outside of the bag, and the remaining holes being adapted to receive the remaining fingers so that all of the fingers project into the bag; and
 - (b) at least one strap on the outside of the bag arranged to grip the back of the hand when the hand is positioned between the strap and the bag with the fingers inserted in the holes.

4,246,946

FENDER CLEANING TIRE COMPONENT

Girdwood L. Stinoff, 56 Goodhue Dr., Akron, Ohio 44313

Filed May 25, 1978, Ser. No. 909,372

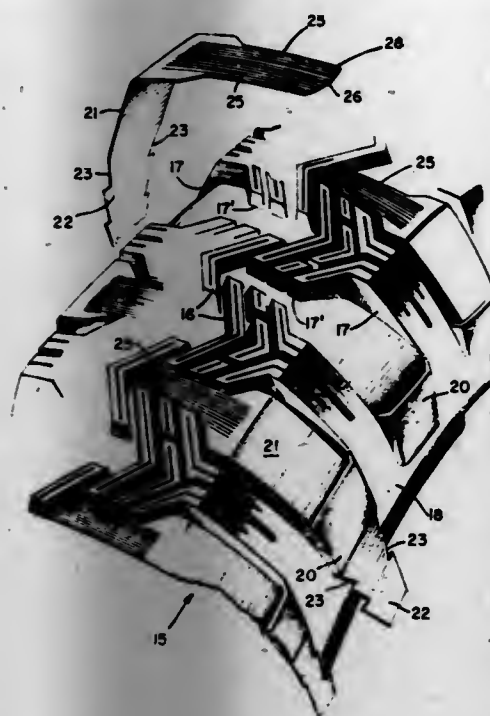
Int. Cl.³ B60C 19/00

U.S. Cl. 152—151

9 Claims

- An apparatus for use with a vehicle tire for cleaning foreign material deposits from the fender wells of the vehicle comprising at least one elongated flexible filament means having first and second end portions, hoop means for mounting said first end portion of said filament means on the vehicle tire, said hoop means being of a circumference to cooperatively engage the periphery of the vehicle tire, said filament means being of a length to extend to a position radially of said tire, and said second end of said filament means being radially

movable outwardly of the tire by centrifugal action as the tire is rotated, whereby said second end portion of said filament



means engages and dislodges foreign material collecting on the fender well as the tire is rotated.

4,246,947

VEHICLE TIRE

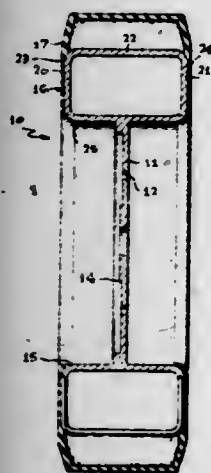
Michael D. Ewing, 1706 Autumn Glow, Diamond Bar, Calif. 91765

Filed Jul. 28, 1978, Ser. No. 929,017

Int. Cl.³ B60C 17/00, 17/04

U.S. Cl. 152—330 RF

9 Claims



1. A safety tire comprising the combination of:
a wheel hub having a central opening for insertably receiving the end of an axle;
said wheel hub further having a plurality of stud receiving openings arranged in a circular pattern coaxial with respect to said central axle opening;
said wheel hub terminating in a circular flange extending outwardly from opposite sides of its circumferential periphery;
brace means fixed to said flange and radiating outwardly therefrom;
a flexible tire casing bonded to opposite sides of said flange and to said brace means so as to capture air between the interior of said tire and the opposing surface of said flange;
said brace means includes a plurality of braces or spokes of substantially U-shaped configuration arranged in fixed spaced apart relationship;
each of said braces comprises a pair of spatial legs outwardly supported from opposite sides of said flange and having

the free ends of said legs joined by a cross member to complete said brace;
said tire casing includes sides bonded to said opposite sides of said flange and to said brace legs with a substantial space separating said cross members from the internal opposing surface of a tread portion joining said tire sides together.

4,246,948

PNEUMATIC TIRE HAVING A PNEUMATIC SAFETY INSERT WITH BEADS

Berge Sarkissian, Southington, Conn., assignor to Uniroyal, Inc., New York, N.Y.

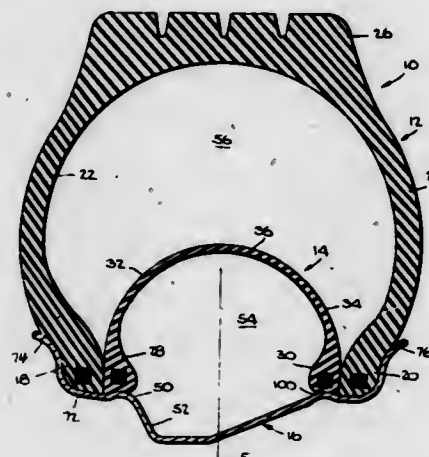
Filed Jun. 14, 1979, Ser. No. 48,571

The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.

Int. Cl.³ B60C 5/06, 17/00

U.S. Cl. 152—340

22 Claims



1. A pneumatic insert for a pneumatic tire in combination with a wheel rim having an axis of rotation and an axially extending annular support surface, said insert comprising a generally toroidal-shaped hollow insert member with a pair of axially spaced annular insert beads arranged to be supported on the axially extending annular support surface with said tire, said insert including a pair of insert sidewalls extending generally radially outwardly from the insert beads, and an insert crown portion joining the insert sidewalls, said insert having a predetermined lateral stiffness to provide a predetermined axial spacing of said insert beads, said insert beads comprising, in cross-section, an outer wall, an inner wall and a foot portion extending between said inner and outer walls, said foot portion including a heel portion adjacent to said outer wall and a toe portion adjacent to said inner wall, said foot portion including an elastomeric projection formed at said heel portion and having a first inner diametrical magnitude that is less than a second inner diametrical magnitude of the toe portion, to permit compression of said elastomeric projection against the axially extending annular support surface of said rim to ensure formation of a leak-tight seal between the insert beads and the support surface.

4,246,949

TUBELESS BIAS-PLY TIRE WITH AT LEAST ONE CARCASS PLY ENDING NEAR BEAD CORE WITHOUT BEING WRAPPED THEREAROUND

Takemi Kawasaki, and Tetsuro Sasaki, both of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Jun. 12, 1979, Ser. No. 47,732

Claims priority, application Japan, Jun. 13, 1978, 53-71762

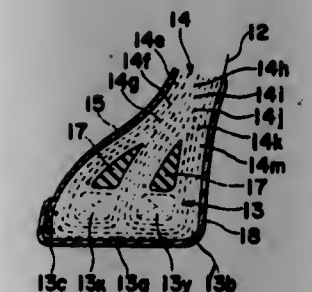
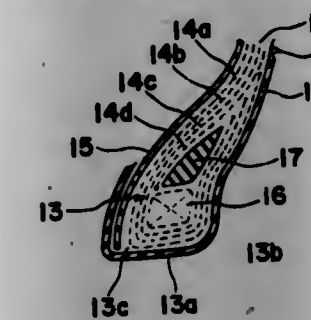
Int. Cl.³ B60C 9/06, 15/00, 15/06

U.S. Cl. 152—354 R

7 Claims

1. A small size bias-ply tubeless pneumatic motorcycle tire comprising a tire cover having a tread portion, a pair of opposed side walls integrally extending from respective side

edges of the tread portion and a pair of opposed bead portions integrally extending from respective free ends of the side walls, said bead portions being adapted to firmly engage with associated rim flanges of a wheel rim, an inner rubber lining applied to the inner surface of the tire cover, said tire cover including at least one bead core embedded in each of the bead portions and a bias-ply carcass structure, said bias-ply carcass structure including a plurality of carcass plies alternately laid on a bias at a predetermined angle relative to the midcircumferential plane of the tire, at least one of said carcass plies having each of its



opposed ends terminating in a region defined in the tire cover between the corresponding bead core and a lower portion of the corresponding side wall while the remaining of said carcass plies have their opposed ends turned up around and anchored to the corresponding bead core and terminating at a position adjacent the boundary between the side wall and the bead portion, said lower portion of said corresponding side wall being adjacent to said position where the end of each of said other carcass plies terminates after having been turned up around and anchored to the corresponding bead core.

4,246,950

ASYMMETRIC RIM HUMMING

Thomas N. H. Welter, Kelspelt, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

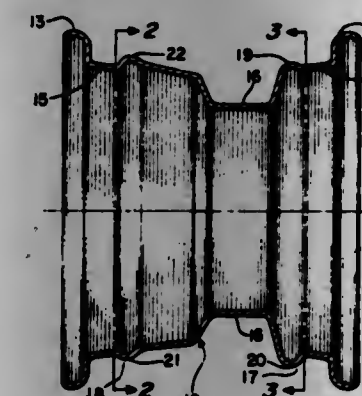
Continuation of Ser. No. 862,067, Dec. 19, 1977, abandoned.

This application Oct. 11, 1979, Ser. No. 83,916

Int. Cl.³ B60B 25/12

U.S. Cl. 152—381.4

26 Claims



1. A wheel for supporting a pneumatic tire provided with a pair of bead portions comprising:

a pair of circumferentially extending flanges in axially spaced-apart relationship;
a pair of rim seats of a first predetermined radius with respect to the rotational axis of said wheel for seating said bead portions of said tire, said rim seats merge from the axially inner ends of said flanges;
said wheel characterized in that at least one rim seat is provided with an asymmetric hump for engagement with the axially inner surface of said bead portion adjacent said bead seat, said asymmetric hump consisting of a radially extended portion, said radially extended portion extends about the circumference of said wheel for at least a portion of said circumference at the same axial position on said wheel, the height of said radially extended portion starting from one circumferential end of said radially extending portion proceeding circumferentially about the wheel gradually and continuously increases to maximum radial height of a second predetermined radius with respect to the axis of rotation of said wheel then gradually and continuously decreases back to said first predetermined radius at the other circumferential end of said radially extended portion.

4,246,951

VALANCE AND CORNICE FRAMES

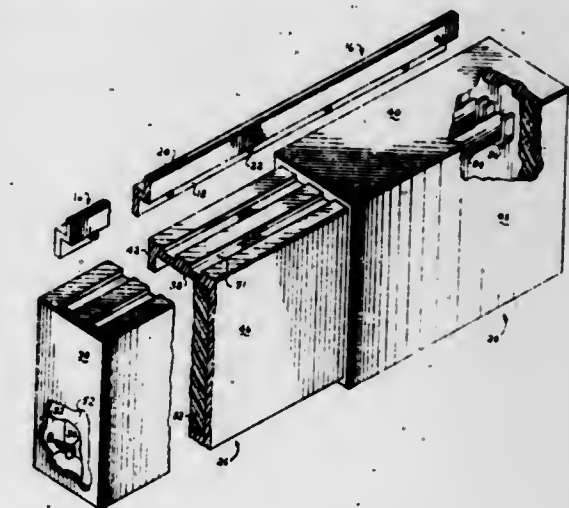
Ray K. Givens, 3401 - 92nd, Lubbock, Tex. 79423

Filed Jan. 15, 1979, Ser. No. 3,546

Int. Cl.³ E04F 10/00

U.S. Cl. 160—39

12 Claims



1. An improved frame for valances and cornices placed against a wall comprising:
a. an inner slide having
(i) an end panel with a flap flat against the wall and the panel extending from the wall,
(ii) a top connected to the end panel with a depending tongue adjacent the wall for substantially the full length of the inner slide,
b. an outer slide having
(i) an end panel with a flap flat against the wall and the panel extending from the wall parallel to the inner slide end panel,
(ii) a top connected to the outer slide end panel and telescoped over and stapled to the top of the inner slide with a depending tongue flat against the wall for substantially the full length of the outer slide, and
c. a rack extending substantially from one end panel to the other end panel having
(i) a flange flat against the wall,
(ii) fasteners holding the flange to the wall, and
(iii) an upwardly extending lip above the flange spaced from the wall, and
d. said tongues positioned between the lip and the wall, with the inner slide tongue against the lip.

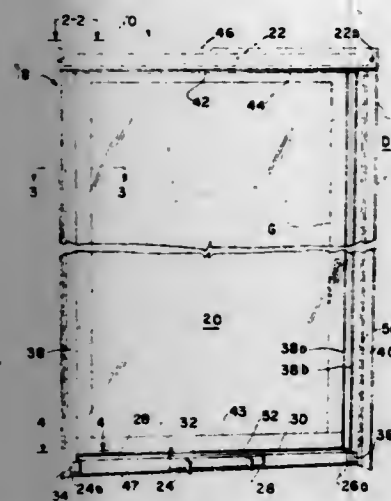
4,246,952

INTERIOR TYPE WEATHER SEAL PANEL

Lillian S. Helldorfer, 2219 Wicomico Rd., Baltimore, Md. 21221
Filed Oct. 5, 1978, Ser. No. 948,661Int. Cl.³ E06B 9/17

U.S. Cl. 160—271

3 Claims



1. In a weather seal unit of the type having a frame with a roller at the top holding a transparent flexible panel retractably in the frame, and an elongate bottom member supporting the free end of said panel, the improvement comprising: removable structure enclosing the roller, the panel passing downwardly from the roller through a slot in said enclosure; the frame having slotted tubular sides, the panel having beading along each lateral edge supportively retaining the panel lateral edges within respective slotted tubular sides, the bottom member being tubular and having a slot longitudinally in the top thereof and the panel having a beading detachably retaining the bottom end thereof in said longitudinal slot, the bottom member longitudinal slot being sufficiently wide for condensation to flow along the panel through said longitudinal slot into the bottom member, and closed end portions of the bottom member to retain condensate therein.

4,246,953

ADJUSTABLE FILLER MEANS FOR MOLDS AND METHOD THEREOF

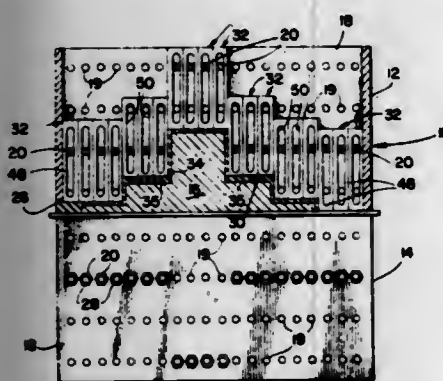
Lloyd M. Johnson, 16502 Marquardt Ave., Cerritos, Calif. 90701

Filed Aug. 3, 1979, Ser. No. 63,182

Int. Cl.³ B22C 9/00

U.S. Cl. 164—7

13 Claims



1. An adjustable filler means for molds, to establish the general contour of any given pattern to be cast, comprising: a generally rectangular flask-molding box, having a first and second box section; a plurality of finger members adapted to be adjustably positioned, both laterally and perpendicularly, within said flask molding box, whereby said fingers are held in a juxtaposed contiguous arrangement relative to the contour of said pattern;

means for adjustably positioning said fingers within said box and holding said fingers in selective positions; and means positioned between said fingers and said pattern to provide a predetermined spaced relationship between said fingers and said pattern, whereby a molding sand is adapted to be disposed therein to form a finished contoured mold cavity;

said means to provide a predetermined spaced relationship between said fingers and said pattern comprises a resilient medium having a selective thickness disposed between said fingers and said pattern.

9. A method of forming a molded workpiece, comprising the steps of: providing a flask-molding box having a first and second box section, each box section including a plurality of adjustable finger members mounted therein; positioning a pattern within said box sections; covering said pattern with a resilient medium; adjusting said fingers to conform substantially to the configuration of said pattern; providing a void space between said fingers and said pattern by removing said resilient medium; inserting molding media within said void space to form a molding face therein; removing said pattern from said box sections, whereby a molding cavity is formed; and pouring a castable material within said molding cavity to form said workpiece.

4,246,954

CASTING TREE FOR TANDEM MOLD PREPARATION AND METHOD OF USE THEREOF

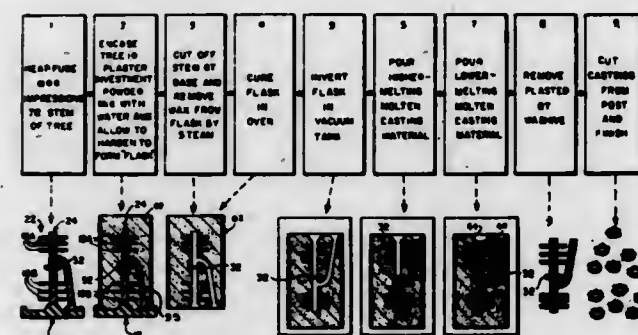
Abraham M. Cohen, Albertson, and Henry L. James, Regal Park, both of N.Y., assignors to Wasko Gold Products Corp., New York, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,533

Int. Cl.³ B22D 18/06, 25/00

U.S. Cl. 164—35

16 Claims



1. A casting tree for tandem mold casting of separate articles from different materials, said tree comprising:

a base; an upstanding stem mounted to said base, said stem having a first portion and a second portion; a non-fusible separator positioned between said first stem portion and said second stem portion; said first stem portion being of fusible material and having one end mounted to said base and the opposite end mounted to said separator, said first stem portion adapted to receive at least one model of fusible material corresponding to a first one of the articles to be cast; said second stem portion being of fusible material and having one end mounted to said separator and the opposite end extending therefrom, said second stem portion adapted to receive at least one model of fusible material corresponding to a second one of the articles to be cast; said separator separating said second stem portion in spaced relation to said first stem portion for blocking communication between the part of the tandem mold defined by said first stem portion and the part of the mold defined by said second stem portion; and

an auxiliary branch being of fusible material and having one end mounted to said base and the opposite end mounted to the second portion of said stem.

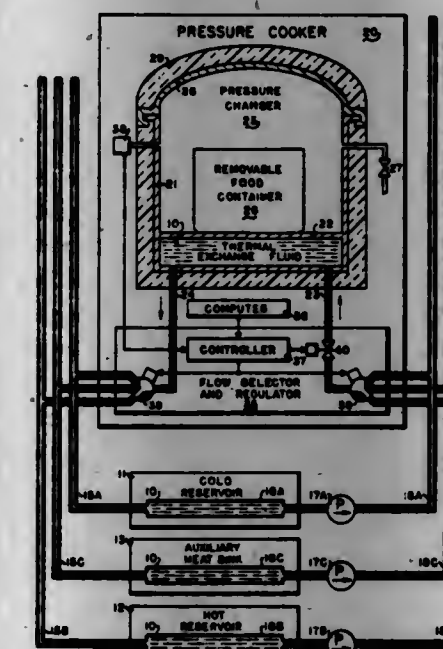
4,246,955

PRESSURE COOKING APPLIANCE WITH THERMAL EXCHANGE FLUID

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402
Continuation-in-part of Ser. No. 299,214, Oct. 4, 1972, Pat. No. 3,888,303, and Ser. No. 569,354, Apr. 18, 1975, abandoned, and Ser. No. 769,389, Feb. 16, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,123Int. Cl.³ F25B 29/00

U.S. Cl. 165—26

7 Claims



1. Apparatus for cooking food comprising a pressure vessel having a securable lid for admission of food to a pressure chamber for cooking and for removal of the food therefrom, a heat exchanger in a heat exchange relation with the pressure chamber connecting to a supply and a return conduit to receive flow of a thermal exchange fluid, the thermal exchange fluid which remains in a liquid phase at hot and cold temperatures at substantially atmospheric pressure, said hot temperature being sufficiently above the atmospheric boiling temperature of water to heat the pressure chamber to develop substantial water vapor pressure above atmospheric in the pressure chamber, said cold temperature being sufficiently low to cool said pressure chamber to a food serving temperature, means to heat the thermal exchange fluid separate from the heat exchanger and means to cool the thermal exchange fluid separate from the heat exchanger, means to deliver the heated and cooled thermal exchange fluid under a differential pressure for flow through the heat exchanger to heat the pressure vessel to cook the food therein at pressures above atmospheric and for cooling the food to the serving temperature.

4,246,956

CONTROL SCHEME FOR A SOLAR ASSISTED HEAT PUMP

Alan S. Drucker, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,664

Int. Cl.³ F25B 13/00

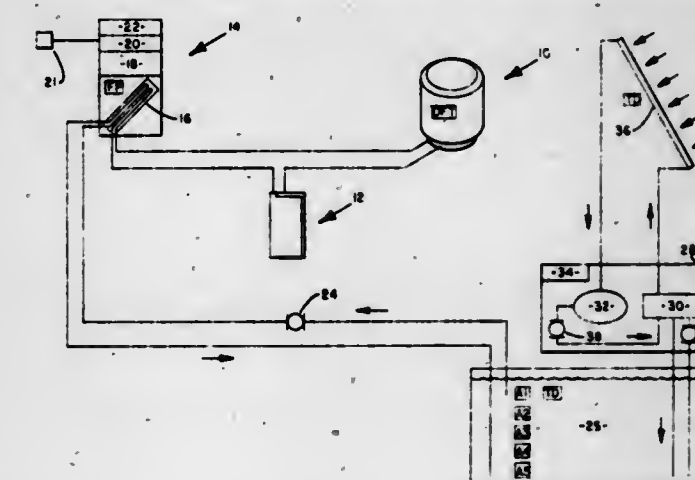
U.S. Cl. 165—29

22 Claims

1. A control means for operating a solar assisted heat pump system for heating and cooling an enclosure which comprises: solar collector means for heating a heat exchange fluid with solar energy;

a storage tank serving as reservoir for the heat exchange fluid; an indoor solar coil for transferring heat to or from the heat exchanger fluid; a heat pump system of the reversible type for circulating a refrigerant having an outdoor coil in heat exchange communication with the solar indoor coil, a compressor, an outdoor coil and means for reversing the direction of flow of the refrigerant through the coil; means for circulating the heat exchange fluid between the solar collector means, storage tank and the indoor solar coil; and control means having a thermostat for regulating the operation of the solar system heat pump system which further comprises:

(a) heating means for supplying heat on demand from the thermostat to the enclosure by either circulating heat exchange fluid to the indoor solar coil or energizing the heat pump in the heating mode of operation to supply



refrigerant to the indoor heat pump coil or a combination thereof; (b) cooling means for energizing the heat pump to remove heat from the enclosure upon demand from the thermostat; (c) defrost means for supplying heat to the outdoor heat pump coil by operating the heat pump in the cooling mode of operation, the indoor solar coil being used to supply heat to the indoor heat pump coil under the appropriate temperature conditions; (d) freeze protector means for operating the means for circulating heat exchange fluid through the indoor solar coil to prevent the heat exchange fluid from freezing therein; and (e) temperature differential means for operating the means for circulating the heat exchange fluid between the solar collector means and storage tank when the temperature of the heat exchange fluid in the solar collector means is greater than the temperature of the heat exchange fluid in the storage tank.

4,246,957

AUTOCLAVE FURNACE WITH COOLING SYSTEM

Charles W. Smith, Jr., Fairview; Franz X. Zimmerman, Erie, both of Pa., and William H. Walker, Spring, Tex., assignors to Autoclave Engineers, Inc., Erie, Pa.

Filed Dec. 7, 1978, Ser. No. 967,240

Int. Cl.³ F25B 29/00; C21D 1/74

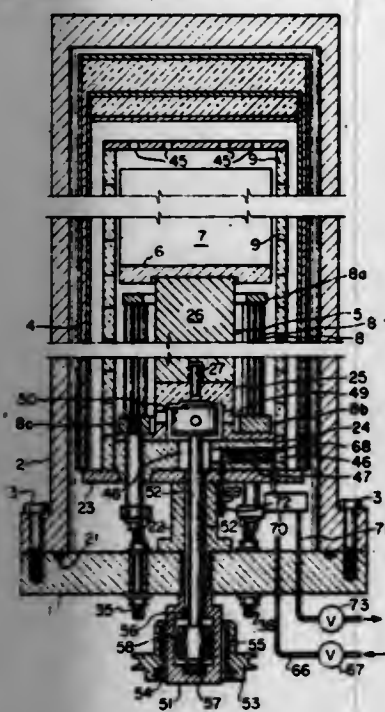
U.S. Cl. 165—61

5 Claims

1. A system for cooling the interior of an autoclave furnace vessel after it has been pressurized with a gas and heated comprising

a heat conducting conduit opening at one end to the furnace interior at a relatively cool location and at the other end to an exterior shutoff valve, said conduit coiled with the coiled portion in a relatively warm location and there

being a Joule-Thomson valve in the conduit on the intake side of the coiled portion, whereby furnace gases at a temperature below the inversion temperature thereof may



be forced into the conduit, cooled in passing the Joule-Thomson valve and heated in the coiled portion before exhausting through the exterior shut-off valve.

4,246,958

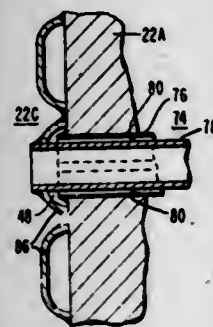
TUBE TO TUBESHEET CONNECTION SYSTEM

Stanley S. Sagan, Springfield; Angelo R. Giardina, Marple Township, Delaware County, both of Pa., and Samuel D. Reynolds, Jr., St. Petersburg, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 21, 1978, Ser. No. 888,724
Int. Cl.³ F28F 11/00; B23P 15/26

U.S. Cl. 165-70

4 Claims



1. A heat exchanger apparatus comprising: a shell structure; a plurality of tubes disposed in said shell structure; and a tubesheet apparatus which cooperates with the shell in isolating the shell's interior from the tubes' interiors, said tubesheet apparatus including an inner tubesheet and an outer tubesheet structure each of which have a plurality of holes for the reception of said tubes, said outer tubesheet structure constituting a plurality of cover strips each of which have a dished, channel-shaped inner surface which cooperates with both the inner tubesheet's outer surface and with a predetermined number of said tubes to provide a fluid-tight cavity.

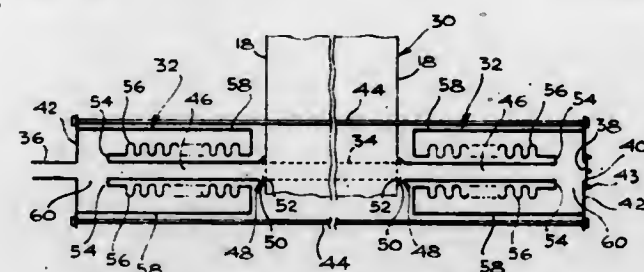
4,246,959
METHOD AND APPARATUS FOR ISOLATION OF
EXTERNAL LOADS IN A HEAT EXCHANGER
MANIFOLD SYSTEM

John P. Byrne, Westminster, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 26, 1978, Ser. No. 955,116
Int. Cl.³ F28F 7/00

U.S. Cl. 165-83

13 Claims



1. Apparatus for coupling air ducting to the integral manifold of a thin plate-and-fin heat exchanger core which is susceptible to thermal growth during operation, comprising: an externally pressurized bellows coupled between an associated external air duct and a manifold passage, the bellows having a selected annulus area capable of developing, when pressurized at operating pressures of the system, a pressure-times-area force sufficient to maintain a compressive load on the core for all operating conditions.

4,246,960

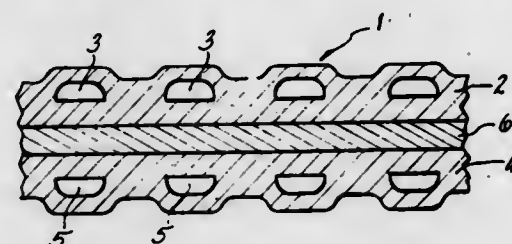
FAIL SAFE HEAT EXCHANGER

James M. Popplewell, Guilford, Conn., and Sheldon H. Butt, Godfrey, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Mar. 26, 1979, Ser. No. 23,631
Int. Cl.³ F28F 19/00, 21/08

U.S. Cl. 165-134 R

11 Claims



1. A fail safe metal heat exchanger comprising copper or a copper alloy, said heat exchanger comprising juxtaposed primary and secondary fluid passageways integral with and separated by a corrosion barrier comprising nickel or a nickel alloy which is noble to said copper or copper alloy of the remainder of said heat exchanger; whereby said corrosion barrier is adapted to prevent intermixing between a fluid in said primary passageway and a fluid in said secondary passageway.

4,246,961

PLATE HEAT EXCHANGER

Jean E. Chaix, Manosque; Bernard Chlique, Sceaux, and Maurice Fajean, Pertuis, all of France, assignors to Commissariat a l'Energie Atomique and Fives-Cail Babcock, both of Paris, France

Continuation of Ser. No. 786,561, Apr. 11, 1977, abandoned.

This application Mar. 13, 1979, Ser. No. 20,090

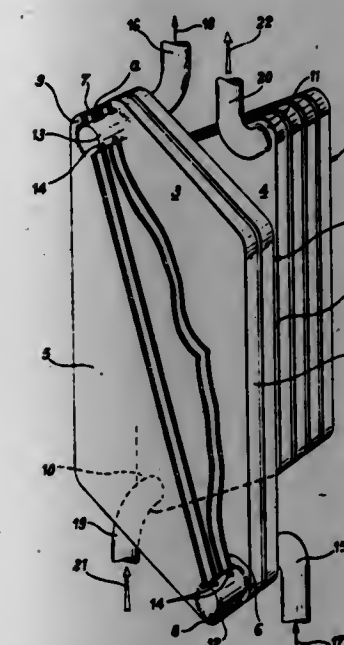
Claims priority, application France, Apr. 12, 1976, 76 10696
Int. Cl.³ F28F 9/22

U.S. Cl. 165-145

9 Claims

1. A plate-type heat exchanger comprising a plurality of exchange banks each formed by a number of closed flat compartments having parallel walls and separated by spaces forming passages for the circulation of a first fluid, each compart-

ment being employed for the circulation of a second fluid and provided with lateral extensions along two opposite sides of said compartment, wherein each heat-exchange bank is formed by at least two adjacent groups of compartments and each group comprises a plurality of adjacent compartments, the lateral extensions of the compartments being placed in identical manner in each group and in opposite manner in two adja-



cent groups, said lateral extensions being connected respectively in each group to a common admission manifold and to a common discharge manifold for the second fluid and wherein the compartments in each group are identical and arranged in opposite orientation from one group to the next with a symmetry with respect to an axial mid-plane at right angles to the plane of the compartments.

4,246,962

DEVICE FOR USE IN CONNECTION WITH HEAT
EXCHANGERS FOR THE TRANSFER OF SENSIBLE
AND/OR LATENT HEAT

Per S. Norbäck, Lidingsjö, Sweden, assignor to Aktiebolaget Carl Munter, Sollefteå, Sweden

Filed Jan. 9, 1978, Ser. No. 868,002

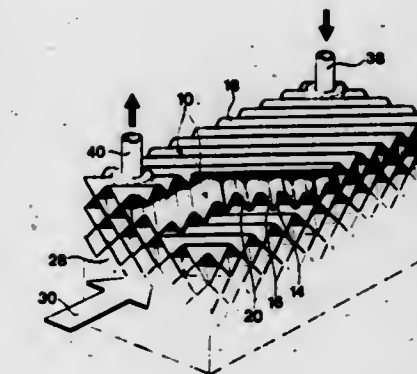
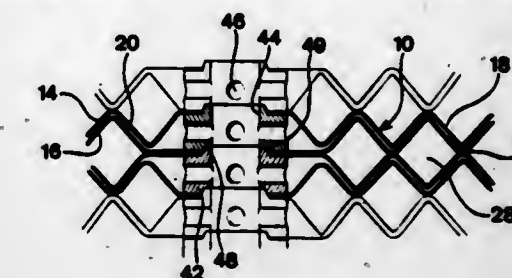
Claims priority, application Sweden, Jan. 14, 1977, 7700404
Int. Cl.³ F28F 3/08

U.S. Cl. 165-166

5 Claims

1. An exchanger body for transferring sensible heat, latent heat or both between a gas and a liquid, comprising:
 - (a) a plurality of contiguous layers of sheet units (10) having relatively large corrugations extending continuously on substantially straight parallel lines over the surface area of each unit;
 - (b) each of said units (10) comprising a pair of thin foils (14, 16) having their large corrugations identically oriented in spaced nested relationship to define between them relatively narrow liquid passages (20) of substantially uniform width; extending substantially laterally to define a sinuous passage through which the liquid is passed from the liquid inlet to the liquid outlet means;
 - (c) the inclined surfaces of the relatively large corrugations of each of said thin foils additionally having relatively small corrugations forming closely spaced ridges and grooves (22, 24) spacing said foils from one another to define said narrow liquid passages and to impart rigidity to said foils;
 - (d) said ridges and grooves being angularly oriented relative to each other to promote even distribution of the liquid throughout the surface area of said narrow liquid passages;
 - (e) said layers being angularly oriented relative to one another so that the relatively large corrugations in alternate

units will cross the relatively large corrugations of the intervening units with their apices bearing against one



another at their points of intersection to form relatively large open gas passages of non-uniform width.

4,246,963

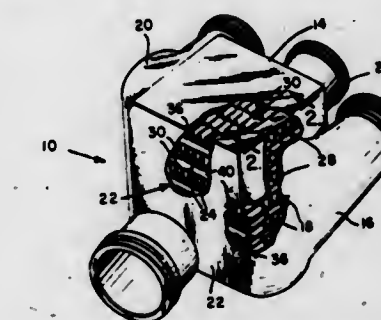
HEAT EXCHANGER

Alexander F. Anderson, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 26, 1978, Ser. No. 955,273
Int. Cl.³ F28F 3/00

U.S. Cl. 165-166

24 Claims



1. A heat exchanger comprising a core formed from a plurality of heat transfer elements defining first and second fluid flow paths with inlet and outlet ends for passage of a pair of fluids in heat exchange relation; manifold means for directing a relatively hot fluid for passage through said first flow path and for directing a relatively cold fluid for passage through said second flow path; and temperature control means for passing a portion of the hot fluid transversely across the inlet end of said second flow path for sufficiently maintaining the temperature level at said second flow path inlet end to prevent excessive ice formation.

4,246,964

DOWN HOLE PUMP AND TESTING APPARATUS

John T. Brandell, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 12, 1979, Ser. No. 57,093

Int. Cl.³ E21B 43/00, 33/127

U.S. Cl. 166-106

10 Claims

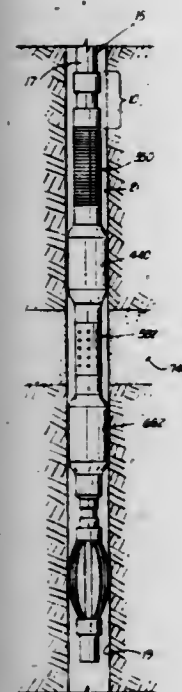
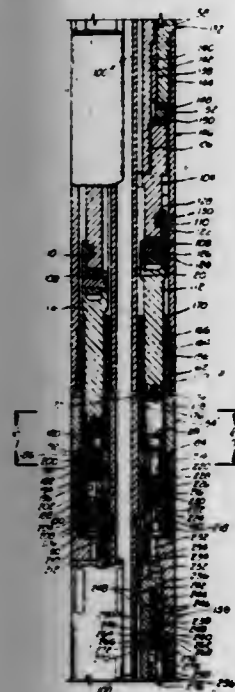
1. A downhole pump assembly, comprising: a top adapter means for threadedly attaching said pump assembly to an upper portion of a pipe string;

a ratchet mandrel, connected to an inner cylindrical surface of a lower end of said top adapter means;

a cylindrical torque adapter connected to an outer cylindrical surface of said lower end of said top adapter means;

a cylindrical torque housing, having an upper end connected to a lower end of said torque adapter and including a radially inward projecting annular flange at a lower end thereof;

a torque mandrel, having an upper end extending into a lower end of said torque adapter and including a downward facing annular shoulder with a plurality of splines extending radially outward adjacent said shoulder, said shoulder engaging in an upper surface of said flange of said torque housing, and said splines engaging a plurality of radially inward project-



ing splines of said torque housing to prevent relative rotational motion between said torque mandrel and said torque housing;

a ratchet case, including a cylindrical upper end located in an annular space between said ratchet mandrel and said torque mandrel, and including a cylindrical bore within which a lower end of said ratchet mandrel is slidably received;

a plurality of ratchet blocks, attached to an upper end of said ratchet case, said ratchet blocks including radially inner threads engaging a threaded outer surface of said ratchet mandrel and including radially outer surfaces closely engaging an upper inner cylindrical surface of said torque mandrel;

a release mandrel, having an upper end connected to a lower end of said ratchet case;

a pump housing assembly, within which a lower end of said torque mandrel is rotatably received, said pump housing assembly including:

a cylindrical pump housing, including a lower pump housing adapter means for threadedly attaching said pump housing to a lower portion of said pipe string;

a cam driven reciprocating piston pump disposed in said cylindrical pump housing, said pump being connected to said lower end of said torque mandrel so that said pump is driven when said torque mandrel is rotated relative to said pump housing;

intake passage means, connecting a suction of said pump with a lower end of said lower pump housing adapter for communication with a suction inlet means of said lower portion of said drill string;

discharge passage means, connecting a discharge of said pump with said lower end of said lower pump housing adapter; and

an inner cylindrical bore disposed in said pump housing assembly, and a relief port communicating said bore with said discharge means; and wherein

a lower end of said release mandrel is closely received within said inner cylindrical bore of said pump housing assembly, and is longitudinally movable relative to said inner bore, between a first position, wherein said relief port is open to communicate said discharge passage with an inner bore of said release mandrel and a second position wherein said relief port is closed.

4,246,965

METHOD FOR OPERATING AN IN SITU OIL SHALE RETORT HAVING CHANNELLING

Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

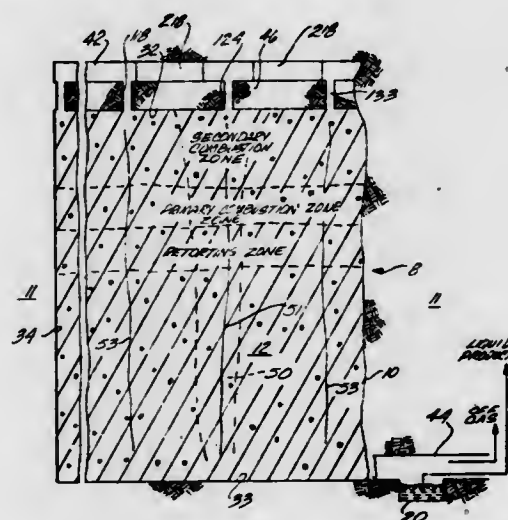
Continuation-in-part of Ser. No. 43,673, May 30, 1979, abandoned, which is a continuation of Ser. No. 888,301, Mar. 20, 1978, abandoned, which is a continuation-in-part of Ser. No.

844,035, Oct. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 728,991, Oct. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 648,358, Jan. 12, 1976, abandoned, which is a continuation of Ser. No. 465,097, Apr. 29, 1974, abandoned. This application Sep. 4, 1979, Ser. No. 72,445

Int. Cl.³ E21B 43/24

U.S. Cl. 166—251

64 Claims



52. A method for maintaining a substantially flat combustion zone advancing through a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort in a subterranean formation containing oil shale, the method comprising the steps of:

introducing a first retort inlet mixture containing oxygen and having a first composition into a first region of the frag-

mented mass having a first fluid path therethrough, the first path having a first gas permeability; and

introducing a second retort inlet mixture containing oxygen and having a second composition into a second region of the fragmented mass having a second fluid path therethrough, the second path having a second gas permeability higher than the first gas permeability, the second composition being sufficiently different from the first composition to provide substantially equal rates of advancement of the combustion zone through the fragmented mass in at least a portion of the first and second regions.

4,246,966

PRODUCTION AND WET OXIDATION OF HEAVY CRUDE OIL FOR GENERATION OF POWER

Xerxes T. Stoddard, 4617 W. 27th Ave., Denver, Colo. 80212; Vesper A. Vascon, 9840 W. 35th Ave., Wheat Ridge, Colo. 80033, and Ruel C. Terry, 3090 S. High St., Denver, Colo. 80210

Filed Nov. 19, 1979, Ser. No. 95,319

Int. Cl.³ E21B 43/40; F02G 3/00, 5/02; E21B 43/22
U.S. Cl. 166—267 6 Claims

1. A method of generating electricity wherein a source of heavy crude oil is connected to a wet oxidation reactor that converts the chemical energy of the heavy crude oil into heat, which, by indirect heat exchange, is used to raise steam that, in turn, drives a turbine connected to an electric generator, comprising the steps of

establishing a source of crude oil,

injecting the heavy crude oil together with an inert oxygen carrying liquid into a wet oxidation reactor,

wet oxidizing the heavy crude oil into carbon dioxide, water, sulphur dioxide and ash residue,

capturing the heat of wet oxidation reactions,

capturing the carbon dioxide, water and sulphur dioxide, transferring the said heat of wet oxidation reactions to water with the resultant conversion of the said water to steam, expanding the said steam through a turbine connected to an electric generator with the resultant generation of electricity,

separating the sulphur dioxide from the said captured carbon dioxide, water and sulphur dioxide,

establishing a source of carbon monoxide,

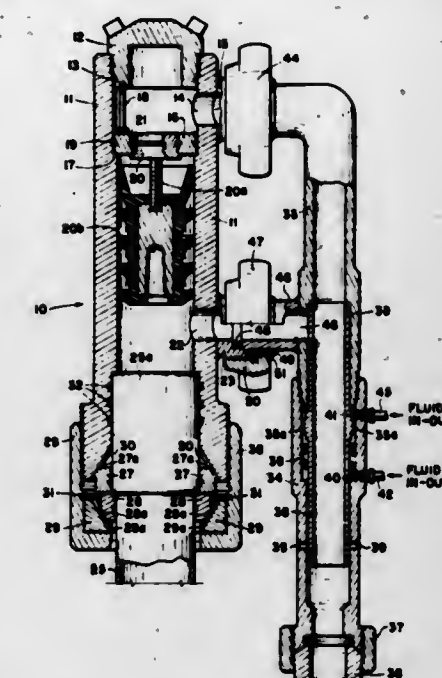
injecting the said separated sulphur dioxide into a redox vessel,

reducing the said sulphur dioxide to elemental sulphur and oxygen, then

oxidizing the said carbon monoxide to carbon dioxide.

second fluid outlet port adapted for coupling into the second fluid inlet port;

a tubular mandrel having an outside shoulder thereon, the mandrel being positioned inside the upper and lower manifold housings, and the mandrel being slidable to a closed position, which closes off the second fluid outlet port, and to an open position, which opens the second fluid outlet port;



an annular chamber being defined between the outside wall of the mandrel and the lower manifold housing;

the annular chamber having first and second fluid inlet ports, in communication with a source of fluid, the fluid providing means for moving the mandrel between its open and closed positions; and

the lower manifold housing being adapted for connection into a cement pumper apparatus.

4,246,968

CEMENTING TOOL WITH PROTECTIVE SLEEVE

Robert L. Jessup, Marlow, and Eugene E. Baker, Duncan, both of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 17, 1979, Ser. No. 85,529

Int. Cl.³ E21B 34/14

13 Claims



1. A cementing tool, comprising:

4,246,967 CEMENTING HEAD APPARATUS AND METHOD OF OPERATION

Monty E. Harris, Cleveland, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 26, 1979, Ser. No. 61,090

Int. Cl.³ E21B 33/05

U.S. Cl. 166—291 8 Claims

1. A cementing head apparatus for injecting a cementing plug into a well casing, the apparatus comprising:

a head unit including a plug housing, a baffle member secured inside the plug housing, a cementing plug assembly mounted in the baffle member and retained by a shear means;

the plug housing having a first fluid inlet port located above the baffle member, and a second fluid inlet port located below the cementing plug assembly;

the plug housing including a coupling means adapted for connecting the well casing into the head unit;

a manifold unit including an upper manifold housing, and a lower manifold housing coupled to the upper manifold housing;

the upper manifold housing having a first fluid outlet port adapted for coupling into the first fluid inlet port, and a

crowd bar means adapted to urge said auger horizontally as said support vehicle is moved.

4,246,975

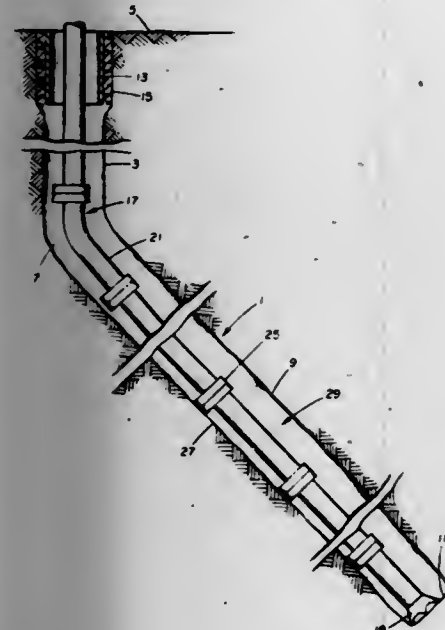
WELLBORE DRILLING TECHNIQUE USING ECCENTRIC TOOL JOINTS TO MITIGATE PRESSURE-DIFFERENTIAL STICKING

Thomas B. Dellinger, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 4, 1979, Ser. No. 26,844
Int. Cl.³ E21B 7/06, 17/02

U.S. Cl. 175-61

2 Claims



2. The method of claim 1 wherein said specialized drill string is comprised of joints of drill pipe connected one to the other with eccentric tool joints arranged in alternate pairs, with each pair having the eccentric of one tool joint thereof in angular alignment with the eccentric of the other tool joint and each alternate pair being aligned such that the eccentric of the tool joints of said alternate pair is aligned about 180° with the eccentric alignment of the next adjacent alternate pair of tool joints.

4,246,976

DOWN HOLE DRILLING MOTOR WITH PRESSURE BALANCED BEARING SEALS

William J. McDonald, Jr., Houston, Tex., assignor to Maurer Engineering Inc., Houston, Tex.

Filed Sep. 11, 1978, Ser. No. 941,405
Int. Cl.³ E21B 4/02

U.S. Cl. 175-107

14 Claims

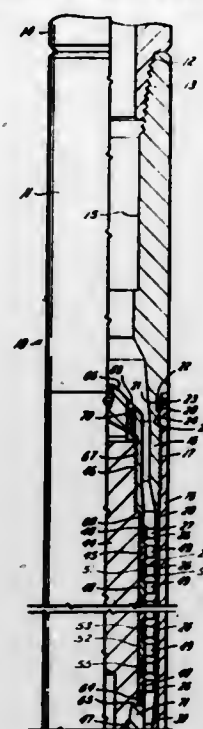
1. A downhole well drilling tool adapted for connection at one end to the lower end of a drill string and at the other end to a drill bit to be driven thereby comprising:

tubular housing means,
rotary shaft means supported in said housing means and extending therefrom for supporting a drill bit,
motor means in said housing means for actuation by flow of drilling fluid therethrough and operable to rotate said shaft means,
bearing means in said housing means supporting said rotary shaft means,

a first rotary seal positioned between said shaft means and said housing means below said bearing means having fluid communication with drilling fluid outside said housing means,

a second rotary seal positioned between said shaft means and said housing means above said bearing means having fluid communication with drilling fluid flowing from said motor means,

a lubricant fluid filling the space around said bearing means between said seals, and
pump means operated by said motor means positioned around and supported on said shaft means for rotation



therewith within said housing means above said second seal to pump drilling fluid between said shaft means and said housing means away from at least one of said second rotary seal to reduce the fluid pressure applied thereto and mitigate the intrusion of drilling fluid.

4,246,977

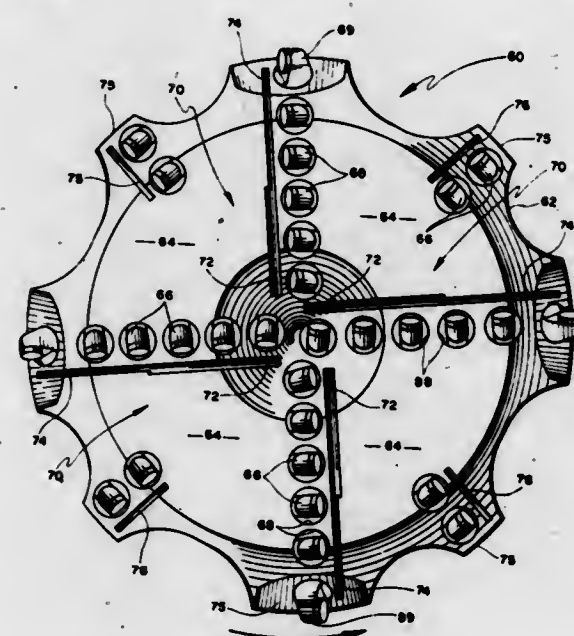
DIAMOND STUDDED INSERT DRAG BIT WITH STRATEGICALLY LOCATED HYDRAULIC PASSAGES FOR MUD MOTORS

James H. Allen, Lakewood, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 9, 1979, Ser. No. 28,629
Int. Cl.³ E21B 9/02, 9/36

U.S. Cl. 175-329

1 Claim



1. A diamond studded insert drag bit apparatus comprising: a substantially cylindrical drag bit body having a relatively flat first face end and a second pin end;
a multiplicity of individual diamond cutter blanks inserted in holes formed in said first face end of said drag bit body, said cutter blanks being strategically positioned in said face to assure maximum borehole penetration; and
a plurality of hydraulic passages formed in said first face end,

said passages are a plurality of variable width slots extending radially outwardly from a center of said first face end, said variable width slots being relatively wide nearest said center of said first face end and relatively narrow nearest a peripheral edge of said first face end of said drag bit body, said variable width slots thus distribute drilling mud uniformly across said face of said diamond studded drag bit, said drilling mud then simultaneously sweeps across the entire hole bottom thereby removing cuttings from the bottom of said borehole.

4,246,978

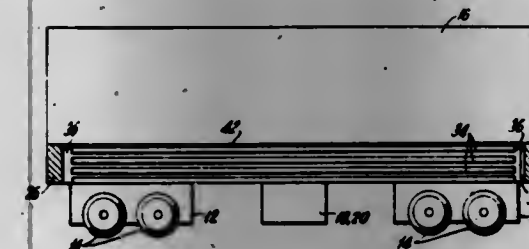
PROPULSION SYSTEM

Helmut W. Schulz, Harrison, and Gerald A. Domoto, Briarcliff Manor, both of N.Y., assignors to Dynacology, Harrison, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,719
Int. Cl.³ B60K 3/00

U.S. Cl. 180-165

19 Claims



1. A propulsion system for a wheeled vehicle having a main structure including a chassis and body, comprising in combination: a prime mover for driving a hydrostatic pump, hydrostatic motor means operably associated with the wheels of said vehicle to hydraulically drive said wheels, gas accumulator means comprising a pressure vessel which is an integral structural part of said vehicle structure, hydraulic means for compressing a gas in said pressure vessel to store the kinetic energy of said vehicle during deceleration of the vehicle by operating said hydrostatic motor means as a hydrostatic pump or by diverting all or part of the hydraulic fluid from the prime mover-driven hydrostatic pump to actuate the hydraulic gas compression means, said compressed gas being subsequently caused to expand to accelerate said wheeled vehicle by displacing said hydraulic fluid through the hydrostatic motor means to drive the wheels of said vehicle.

4,246,979

INTERNAL SLEEVE AIR RELEASE CONTROL APPARATUS IN SEISMIC AIR GUN

John T. Thomson, Dallas, and Roy C. Johnston, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 5, 1979, Ser. No. 27,198
Int. Cl.³ G01V 1/137, 1/387

U.S. Cl. 181-120

4 Claims



1. A seismic energy source apparatus having a housing defining at least one exhaust port and an inner chamber for storing compressed air and containing a shuttle having first and second

pistons disposed generally parallel to each other at opposite ends of a shaft with an orifice therethrough, having a first air supply means for providing compressed air to the chamber and having a second air supply means controlled by actuating means for supplying air pressure under the first piston to cause the shuttle to move upwardly to suddenly release the compressed air from the chamber through the exhaust port, and having an internal sliding valve, the valve comprising:

- a sleeve body, having at least one port therethrough for communication with the exhaust port;
- a lower contacting surface, integral with the body, adapted to be contacted by the lower surface of the second piston to effect downward motion; and
- an upper contacting surface, integral with the body, adapted to be contacted by the upper surface of the second piston to effect upward motion to move the sleeve port past the exhaust port, blocking further release of the compressed air at the instant of maximum discharge pressure.

4,246,980

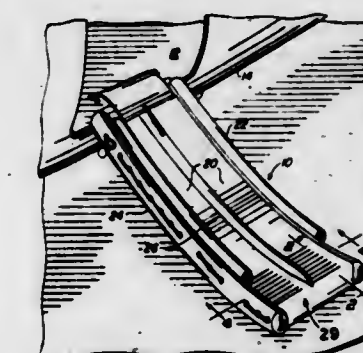
EVACUATION SLIDE DECELERATION

Ralph A. Miller, Monmouth Beach, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 17, 1979, Ser. No. 67,651
Int. Cl.³ A62B 1/20; B65G 11/10

U.S. Cl. 182-48

17 Claims



1. A method of decelerating evacuees sliding down an inflatable evacuation slide from an elevated egress of an aircraft to a lower surface upon which the aircraft is at rest, comprising the steps of:

- providing a generally taut fabric sliding surface for evacuees; and
- ripping the lower portion of the sliding surface to produce alternating transverse ridges and grooves thereacross.

4,246,981

PORTABLE OBSERVATION STAND

Harold L. Stavenau, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.

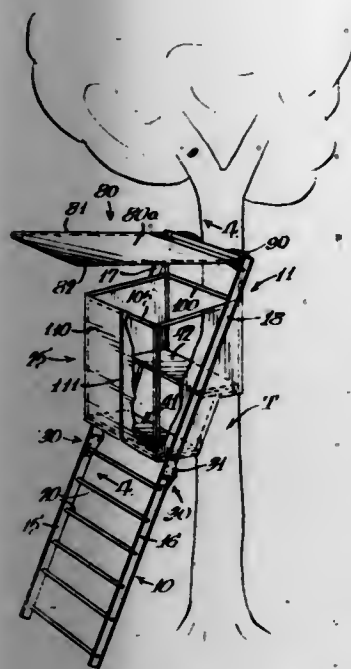
Filed Aug. 17, 1979, Ser. No. 67,532
Int. Cl.³ E06C 1/08, 1/393

U.S. Cl. 182-116

7 Claims

1. A portable observation stand comprising, a ladder formed of upper and lower ladder sections pivotally interconnected at adjacent ends for movement between a folded position and an extended position in end-to-end relation, a seat pivotally mounted on the upper ladder section and movable between a storage position and an operative position wherein said seat extends rearwardly only from said upper ladder section to be in

unobstructing relation with the ladder section for climbing thereof, a foot-support member pivotally mounted to said



upper ladder section, and means interconnecting said seat and foot-support member for simultaneous pivoting movement.

4,246,982

CAR RAMP AND DRIP PAN ASSEMBLY

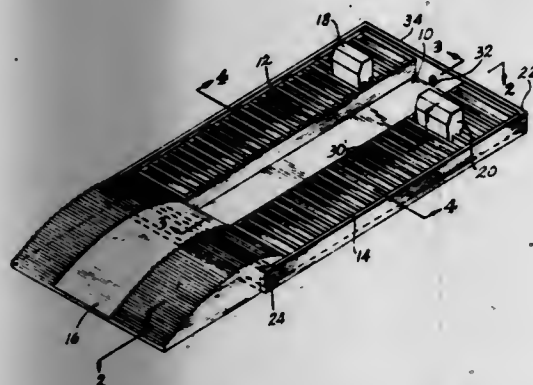
George Pretnick, 3231 W. 153rd St., Cleveland, Ohio 44111

Filed Jan. 1, 1979, Ser. No. 44,502

Int. Cl.³ F16N 31/00

U.S. Cl. 184-106

11 Claims



1. A car ramp and drip pan assembly for placement under parked motor vehicles to catch fluid and particle drippings therefrom comprising, a planar rectangular tray for catching the drippings, said tray having a pair of elongated racks positioned parallel to the sides of the tray and upon which the vehicle is driven and parked, whereby the vehicle wheels are spaced above the bottom of the tray so that the wheels do not touch the vehicle drippings, and a ramp connected to an end edge of the tray enabling facile entry of a vehicle onto the racks.

4,246,983

ELEVATOR CONTROL

John M. Brill, Moline, Ill., assignor to Montgomery Elevator Company, Moline, Ill.

Filed Mar. 31, 1978, Ser. No. 892,308

Int. Cl.³ B66B 1/18

U.S. Cl. 187-29 R

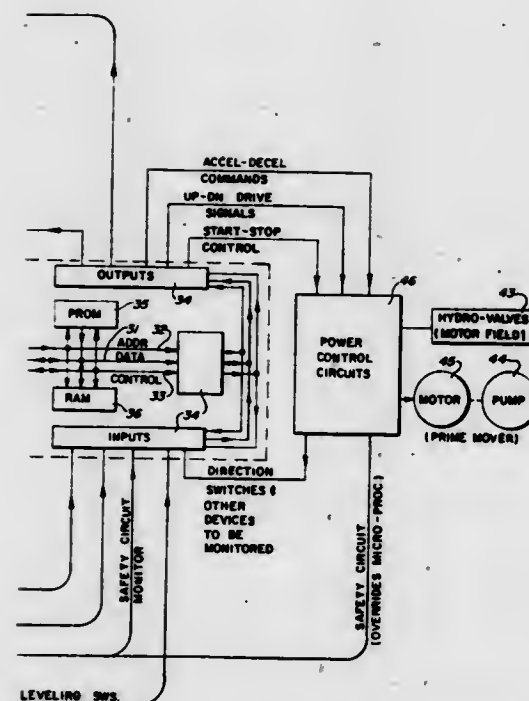
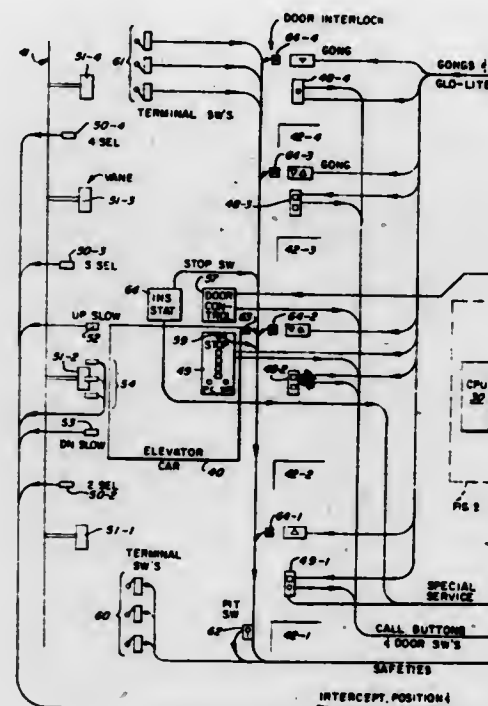
13 Claims

1. In an elevator system having an elevator car movable through a multiple landing structure to provide service to the landings, means providing input information regarding car condition and service requirements and means responsive to control signals for moving the car through the structure and

operating the doors thereof, an improved control usable in a system and structure having a set of unique physical parameters, comprising:

a memory for storing input information, having assigned addresses for the input information of systems and structures of many different physical parameters;

input circuits connected with the means for providing input information to transmit the input information to the memory;



a PROM with a series of sequential program function blocks for operating the elevator system;

a central processor unit for carrying out the sequential programs with respect to the system input information in the memory, generating control signals for the system; and

output circuits connected with the central processor unit for transmitting control signals to the means for moving the car and operating the doors thereof.

4,246,984

SAFETY APPARATUS FOR WHEELCHAIRS

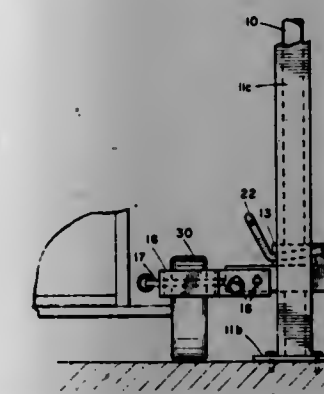
Robert L. Seay, deceased, late of Chula Vista, Calif.; by Euna A. Seay, executrix, 480 "I" St., Chula Vista, Calif. 92010; William E. Rogers, 248 Orange Ave., and Jack G. Willard, 1134 Twin Oaks Ave., both of Chula Vista, Calif. 92011, assignors to Mrs. Robert L. (Euna A.) Seay; Jack Gordon Willard and William Edward Rogers, all of Chula Vista, Calif.

Filed Mar. 19, 1979, Ser. No. 21,842

Int. Cl.³ B60T 1/04

U.S. Cl. 188-2 F

7 Claims



1. Safety apparatus for holding in place a wheelchair containing a handicapped occupant as they are being transported in a motorized vehicle, said apparatus being comprised of;

a rigid shaft having a length that exceeds the diameter of the largest wheel on said wheelchair;

means for rigidly supporting said shaft substantially perpendicular to the interior floor of said vehicle along one side of said largest wheel;

a collar mounted for vertical reciprocation on said shaft;

a yoke carried by said collar having a pair of spaced apart members extending transversely of said largest wheel and defining an opening therebetween for receiving the top portion of said wheel;

and

manually operable means for clamping said collar to said shaft to firmly hold said yoke against said wheel with the top portion of said wheel received in said opening.

4,246,985

AUTO-ADJUSTING MECHANISM FOR A DISC BRAKE

Hidetoshi Shimizu, and Junichi Tanoue, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

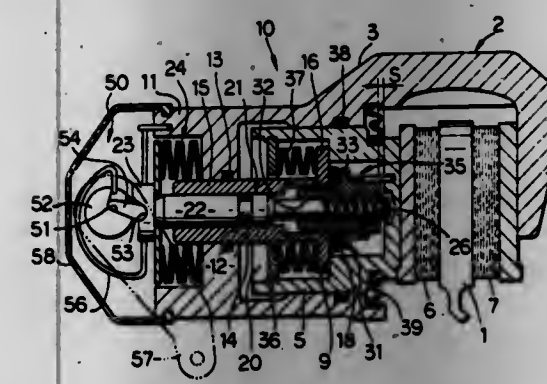
Filed Sep. 7, 1979, Ser. No. 73,382

Claims priority, application Japan, May 31, 1979, 54-67866

Int. Cl.³ F16D 65/56

U.S. Cl. 188-71.9

6 Claims



1. An auto-adjusting mechanism for preventing an over adjustment in a disc brake which includes a disc rotor having a pair of friction surfaces, a pair of brake pads disposed respectively capable of abutting on and separating from said pair of friction surfaces, a cylinder body, a piston slidably and oil-tightly fitted in said cylinder body for being operated by a back pressure to urge said brake pads onto each of said friction surfaces of said disc rotor, driving means for imparting an axial

1002 O.G.-58

thrusting force to said piston in response to a parking brake operation, said auto-adjusting mechanism, being disposed between said driving means and said piston, comprising:

an adjust bolt axially movably retained by said cylinder body at the rear side of said piston;

an adjust nut, being threaded on said adjust bolt, for abutting on the rear surface of said piston;

means for preventing reverse rotation of said adjust nut, in relation to said adjust bolt, while allowing forward rotation thereof;

a cylindrical piston of generally cylindrical shape, being fitted, at the outer peripheral surface and the inner peripheral surface thereof, slidably and oil-tightly in said cylinder body and on said adjust bolt respectively, and being exposed at one end portion thereof to the ambient atmosphere and abutable at the other end portion thereof on both said piston and said adjust nut, for transmitting, when said piston has moved beyond a predetermined value, the operating force of said piston to said adjust nut with a result of forward rotation thereof; and

spring means, disposed between said cylindrical piston and said piston, for biasing said cylindrical piston toward said adjust nut, whereby said cylindrical piston can, when the braking fluid pressure applied to the said cylinder body exceeds a predetermined value, move resisting the biasing force of said spring means in a direction away from said adjust nut to prevent said operating force of said piston from being transmitted to said adjust nut for preventing the over adjustment.

4,246,986

CURRENT COLLECTION SYSTEM FOR TRAVELLING BODY

Masamoto Shuto, Tokyo, Japan, assignor to Japan Air Line Co., Ltd., Tokyo, Japan

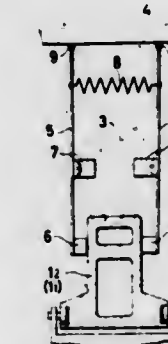
Filed Aug. 10, 1979, Ser. No. 65,745

Claims priority, application Japan, Aug. 15, 1978, 53-99242

Int. Cl.³ B60M 1/34

U.S. Cl. 191-29 R

5 Claims



1. A current collection system for a travelling body comprising in combination:

- main trolley rails continuously arranged one after another in the direction of the track of the travelling body;
- an auxiliary trolley rail which is arranged between and over confronting ends of adjacent main trolley rails in said continuous arrangement of the main rigid trolley rails, one end of said auxiliary rigid trolley rail being supported fixedly while the other end thereof being movably supported on the main trolley rail, and
- a pair of contactor carrying members which are attached to said travelling body and extend downward, each of said pair of contactor carrying members having a main contact element for contacting with the main trolley rail and an auxiliary contact point for contacting with the auxiliary trolley rail.

4,246,987

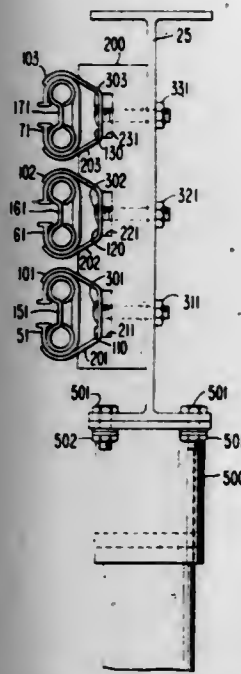
MOUNTING ASSEMBLY FOR ELECTRICALLY CONDUCTIVE RAIL

James R. McMordie, and Donald A. Sloan, both of Winston-Salem, N.C., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Apr. 4, 1979, Ser. No. 26,980
Int. Cl.³ B60M 1/30

U.S. Cl. 191—32

20 Claims



1. A mounting assembly for securing an electrically conductive rail to a support structure, said rail being enclosed in an electrically insulating sleeve, an opening being provided in said sleeve to permit sliding electrical contact along said rail by a means for conducting electrical power from said rail to a movable device, said mounting assembly comprising:

- (a) a resilient clip configured to grasp said insulating sleeve, said rail being retained within said sleeve;
- (b) a bracket configured to receive said clip; and
- (c) means passing through apertures in said clip and said bracket for coadunately fastening said clip and said bracket to said support structure.

4,246,988

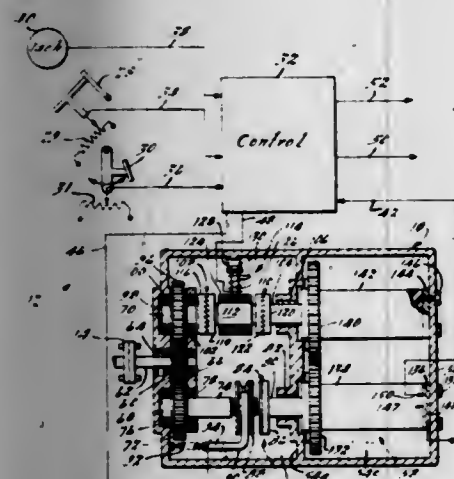
REGENERATIVE BRAKING SYSTEM

Lyle O. Hoppie, Birmingham, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 21, 1978, Ser. No. 944,442
Int. Cl.³ F16D 67/06; B60K 41/24

U.S. Cl. 192—2

23 Claims



1. A regenerative braking system adapted for installation in a machine including a driven means, a prime mover operative when activated by a driving torque signal to impart motion to

the driven means, and brake means operative when activated by a braking torque signal to stop said driven means, said system comprising:

- resilient means for converting kinetic energy from the motion of said driven means to potential energy in said resilient means and vice versa;
- first means adapted for driving connection with said driven means and operative when actuated to effect a flow of energy from said driven means into said resilient means for applying a braking torque to said driven means independent of said brake means;
- second means adapted for driving connection with said driven means and operative when actuated to effect a flow of energy from said resilient means to said driven means for applying a driving torque to said driven means independent of said prime mover; and
- control means adapted to receive said driving and braking torque signals, said control means operative in response to said braking torque signal to actuate said first means and operative in response to said driving torque signal to actuate said second means.

4,246,989

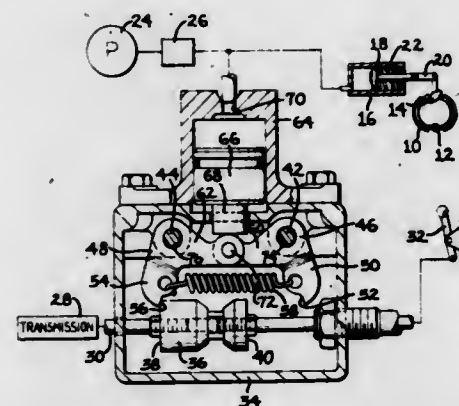
PARKING BRAKE AND TRANSMISSION INTERLOCK SYSTEM

Ramon C. Kohler, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 7, 1978, Ser. No. 967,542
Int. Cl.³ B60K 41/26; F16D 67/02

U.S. Cl. 192—4 A

7 Claims



7. A parking brake and transmission interlock system comprising:

- a transmission control element (30) movable in a path between at least two opposed drive positions and an intermediate neutral position;
- a parking brake control system including a fluid motor (16) having an output element movable between engaged and disengaged positions;
- a stop collar (36) rigidly mounted on said transmission control element (30) and having opposed stop surfaces (38,40);
- a pair of bellcranks (46,48) each pivotally mounted intermediate their ends and having first arms (50,54) continuously located in the path of movement of said stop collar (36) and facing a corresponding one of said stop surfaces (38,40) and second arms (60,62) in substantial abutment with said fluid motor output element (68); and
- a tension spring (58) interconnecting said first arms (50,54) to bias the same against said stop surfaces (38,40) to urge said stop collar (36) and said transmission control element (30) to said neutral position;
- said fluid motor output element (68), when in said disengaged position, driving said bellcranks (46, 48) against the bias of said spring (58) to positions wherein said first legs (50,54) are spaced to allow said collar (36) to move freely between said drive and neutral positions, and when in said

engaged position, allowing said spring (58) to engage said first legs (50,54) with said stop surfaces (38,40).

positions thereby to provide smooth transition regardless of the magnitude of the change in gear ratio.

4,246,990

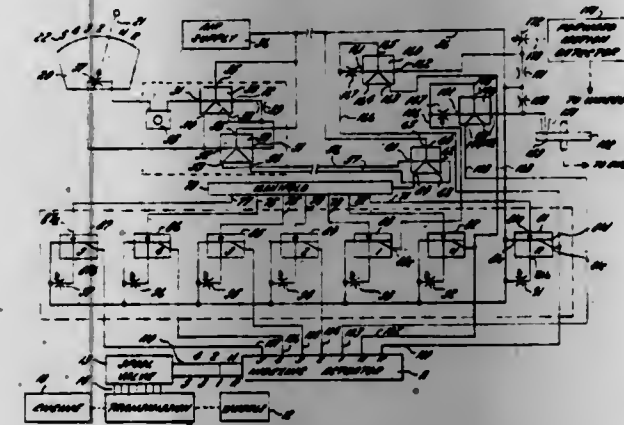
REMOTE CONTROL SYSTEM FOR AN AUTOMOTIVE TRANSMISSION IN AN EARTH-MOVING VEHICLE

Lawrence D. Strantz, Washington, Ill., assignor to Westinghouse Air Brake Company, Peoria, Ill.

Filed Jan. 2, 1979, Ser. No. 354
Int. Cl.³ B60K 41/10, 41/26

U.S. Cl. 192—4 C

11 Claims U.S. Cl. 192—8 C



1. In a remote control system for an automotive transmission in an earth-moving vehicle or the like having a plurality of forward gears as well as neutral and reverse and a progressively movable gear shift member for selecting the same, the combination comprising a fluidic variable frequency oscillator having a variable feedback loop and a fixed feedback loop as well as a pair of on and off output ports, the variable feedback loop having both resistance and capacitance and having associated means including a manual quadrant lever for progressively varying at least one of them and settable at a plurality of successive transmission control positions so that when the quadrant lever is moved between spaced control positions the frequency of the signal at the output ports is swept through the frequencies corresponding to intermediate control positions, the waveform of the output signal being non-symmetrical having an "off" time which is substantially constant and an "on" time which varies in length inversely in accordance with frequency, a transmitter in the form of a bistable fluidic amplifier having a pair of control ports and a pair of on and off output ports, the transmitter control ports being directly coupled to the respective oscillator output ports, a receiver in the form of a second bistable amplifier having a pair of control ports and a pair of on and off output ports, a pair of conduits for connecting the output ports of the transmitter to the control ports of the receiver for remote driving of the latter with substantial preservation of the oscillator waveform, a manifold, the off output port of the receiver being vented while the on output port of the receiver is connected to the manifold for developing a pressure therein which varies inversely with the frequency of the signal at the receiver output port, a plurality of Schmitt triggers corresponding to respective transmission settings, each of the Schmitt triggers having a control input port, a reference input port, a vent, and an output port, the control input ports of all of the Schmitt triggers being connected to the manifold, means for applying biasing pressure to each of the reference ports with the biasing pressures being progressively stepped so that pressure is produced at the output ports of the Schmitt triggers in succession in step with progressive movement of the manual quadrant lever into successive control positions, and a power actuator of the progressive indexing type having a series of ports and a plunger, the actuator ports being connected to the output ports of the respective Schmitt triggers, and the plunger of the actuator having a connection to the gear shift member of the transmission so that when the manual quadrant lever is moved between spaced control positions the transmission selectively goes through the gears corresponding to all of the intermediate

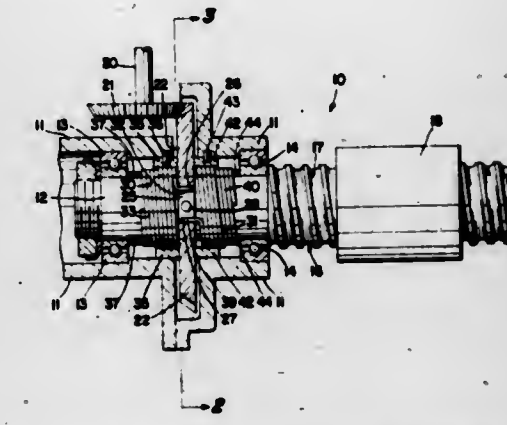
4,246,991

LINEAR MOTION MECHANISM WITH MEANS FOR PREVENTING BACK FORCES

Stephen Z. Oldakowski, Bedford, Ohio, assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Apr. 26, 1978, Ser. No. 900,238
Int. Cl.³ F16D 67/00

9 Claims



1. A mechanism for producing linear motion from a rotating input while preventing transmission of back forces in either direction, which comprises:

- a housing;
- an output shaft mounted for rotation within the housing;
- a rotatable input drive means coaxially mounted around the output shaft, the drive means having a central opening through which the output shaft extends, the drive means including a radially extending impelling portion, the output shaft extending axially on both sides of the impelling portion, the impelling portion comprising a circumferential elongated keyway means along a portion of the central opening, the circumferential extent of the keyway means defined by a pair of radially extending walls;
- a tubular hub fixedly mounted on the housing and extending around the output shaft on each side of the impelling portion of the drive means;
- a pair of coil springs wrapped around the output shaft, one spring on each side of the impelling portion of the drive means, each spring having a release toe at one end which extends axially to the impelling portion and which is capable of being engaged by one of the walls of the keyway means upon rotation of the drive means, the other end of each spring engaging the shaft to rotate therewith, a portion of each spring having a relaxed outer diameter larger than the inner diameter of the hub, whereby the springs engage the hub when relaxed; and
- means for producing linear motion from the rotation of the output shaft.

4,246,992

VEHICLE STEERING BRAKE AND CLUTCH CONTROL

Gary A. Hakes, North Brunswick, N.J.; Norma G. Shook, Morton; George W. Cackley, Hanna City, both of Ill.; Stephen D. Burdette, Edina, Minn., and Hugh C. Morris, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 688,798, May 21, 1976, Pat. No. 4,093,048.
This application Feb. 9, 1978, Ser. No. 876,581Int. Cl.³ F16D 67/04; B60K 41/24

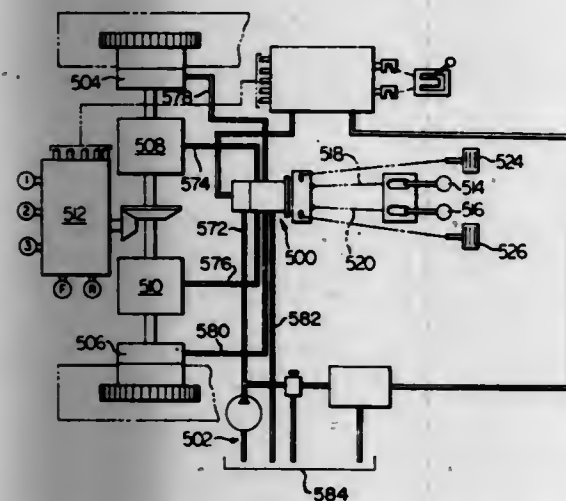
U.S. Cl. 192—13 R

7 Claims

1. In a vehicle in which driving force is applied to both sides thereof, including clutch and brake systems associated respectively with both sides thereof and responsive to fluid pressure from a source thereof for steering of the vehicle, each clutch and brake system associated with a side of the vehicle comprising clutch means disengageable to disconnect the driving force

applied to that side of the vehicle and engageable to connect the driving force to that side of the vehicle and brake means actuable to brake that side of the vehicle, and releasable to release that side of the vehicle, a control apparatus for each clutch and brake system comprising:

- a valve comprising a valve body, and first and second valving spools movably associated therewith;
- first means for providing fluid communication between said force and said valve means;
- second means for providing fluid communication between said valve means and said clutch means;
- third means for providing fluid communication between said valve means and said brake means;
- fourth means for providing fluid communication from said valve means and through which fluid pressure may be released from said valve means;
- the first valving spool being movable relative to said valve body to first and second positions, the first valving spool in one of said first and second positions allowing release of fluid pressure from said clutch means through said second fluid communication means and said fourth fluid communication means, the first valving spool in the other of said first and second positions providing communication of fluid pressure from said source through said first fluid communication means, through said second fluid communication means, to the clutch means;
- the second valving spool being movable relative to said

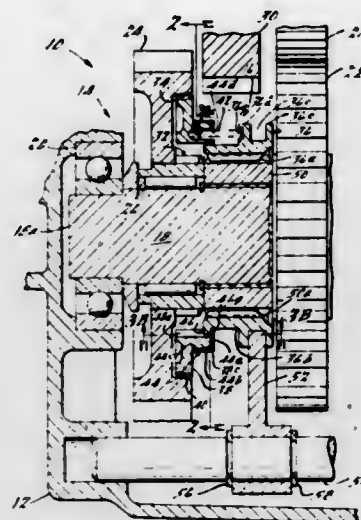


valve body to first and second positions, the second valving spool in one of said first and second positions providing communication of fluid pressure from said source through said first fluid communication means, through said third fluid communication means, to said brake means, the second valving spool in the other of said first and second positions allowing release of fluid pressure from said brake means through said third fluid communication means, and said fourth fluid communication means; means for providing movement of said first and second valving spools, comprising link means pivotally mounted relative to said valve body and having a portion thereof operatively associated with said first valving spool so as to be pivotable in a first direction to move said first valving spool to the second position, and means for providing movement of said first valving spool to said first position thereof with pivoting of the link means in a second pivotal direction;

bar means operatively coupled with said link means and movable in a first direction to pivot the link means in said first direction;

an extended member operatively coupled with said second valving spool so as to be movable in one or the other directions to provide movement of the second valving spool to said first and second positions thereof, the bar means upon movement to pivot said link means in the first direction contacting said extended member to move the second valving spool.

4,246,993
SYNCHRONIZER FOR TRANSMISSIONS
 Timothy J. Morscheck, Lathrup Village, Mich., assignor to Eaton Corporation, Cleveland, Ohio
 Filed May 1, 1978, Ser. No. 901,544
 Int. Cl.³ F16D 13/24
 U.S. Cl. 192—53 F 10 Claims



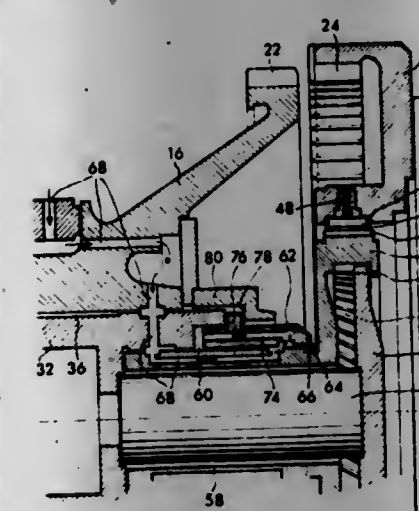
1. A synchronizer comprising: first and second jaw clutch members disposed for relative rotation about a common axis, said second jaw clutch member including an outer circumferential surface, and said second member mounted for movement along said axis from a first position to a positive engagement position in response to an actuating force applied thereto;
- first and second friction clutch members disposed for rotation about said axis, said first friction clutch member fixed against rotation and axial movement relative to said first jaw clutch member, and said second friction clutch member including an inner circumferential surface slidably receiving said outer surface and supported thereon for relative axial and limited rotational movement therebetween;
- resilient means reacting between said second members for resiliently moving said second friction clutch member into frictional engagement with said first friction clutch member in response to initial movement of said second jaw clutch member toward said positive engagement position, said frictional engagement for effecting said limited relative rotation;
- blocker means coacting between said second members, said blocker means operative to engage during substantial nonsynchronous rotation between said first and second members and in response to said frictional engagement effecting said limited relative rotation for preventing said positive engagement until substantial synchronism exists, said blocker means including:
 - a plurality of arcuately shaped blockers projecting radially outward from and circumferentially spaced about said outer surface, the circumferential ends of said blockers having radially extending unblocking ramp surfaces obliquely facing opposite circumferential directions, and
 - a plurality of axially extending grooves in said inner surface, each groove having an arcuate width slightly greater than the arcuate width of each blocker for slidably receiving one of said blockers therein, each of said grooves having a notched portion at each circumferential end for increasing the arcuate width of the groove in both circumferential directions and for defining radially extending unblocking ramp surfaces obliquely facing in opposite circumferential directions into said groove, said notches for receiving the circumferential ends of said blockers to allow said limited relative rotation, said unblocking ramp surfaces operative during said substantial nonsynchronous rotation to

engage for preventing axial sliding movement of said blockers and for transmitting said actuating force from said second jaw clutch member to said second friction clutch member, and said unblocking ramp surfaces operative during said substantial synchronous rotation to engage for aligning said blockers with said groove, thereby allowing said actuating force to move said second jaw clutch member axially relative to said second friction member and into positive engagement with said first jaw clutch member; and

stop means coacting between said second members for preventing said frictional engagement prior to said initial movement, said stop means including

an abutment surface defined by one of said blockers, and a flange fixed to said second friction clutch member, said flange operative to contact said abutment surface for limiting axial movement of said second friction clutch member by said resilient means to a position wherein the axial spacing between said friction members is slightly less than the axial spacing between said jaw clutch members while said second jaw clutch member is in said first position, whereby initial movement of said second jaw clutch member effects said frictional engagement through said resilient means prior to said positive engagement for effecting said limited relative rotation and said unblocking ramp surface engagements during said substantial nonsynchronous rotation.

4,246,994
AUTOMATICALLY ENGAGEABLE SYNCHRONOUS JAW CLUTCH WITH HYDRAULIC ENGAGEMENT-SERVO DEVICE
 Otto Staedeli, Menzingen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Ltd., Zürich, Switzerland
 Filed Jul. 2, 1979, Ser. No. 54,630
 Claims priority, application Switzerland, Jul. 14, 1978, 7652/78
 Int. Cl.³ F16D 11/00, 21/02, 25/061
 U.S. Cl. 192—53 H 5 Claims



1. An automatically engageable synchronous jaw clutch with hydraulic engagement-servo device, comprising:
 - a toothed drive clutch half;
 - a toothed power take-off clutch half;
 - a clutch star;
 - a first gear-tooth system for guiding said clutch star so as to be axially displaceable upon one of the toothed clutch halves;
 - a second gear-tooth system for engaging the clutch star with the other clutch half;
 - a screw socket for controlling, during engagement of the clutch, said clutch star;
 - a pair of coarse-pitch thread means for meshingly engaging said screw socket with one of the clutch halves;

a pawl blocking device for coupling said screw socket with the other clutch half;

an engagement-servo device provided for said clutch and containing a piston which entrains said clutch star;

said servo device having a servo cylinder compartment;

an infeed channel leading to said servo cylinder compartment;

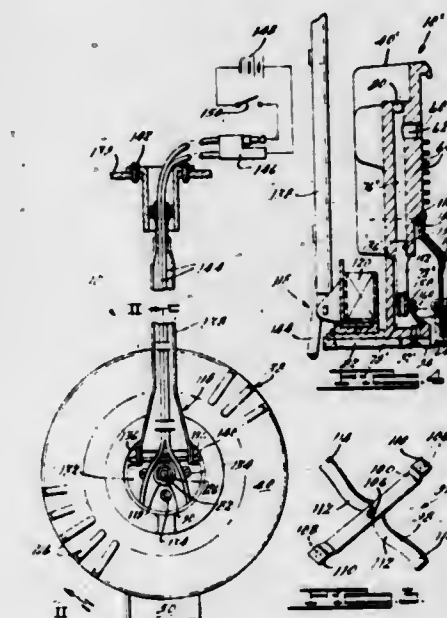
said piston being displaceable by the action of said screw socket in order to control said infeed channel leading to said servo cylinder compartment, in order to hydraulically augment the engagement of the clutch;

said engagement-servo device being structured as a servo follow-up control wherein said piston constitutes a follow-up piston;

said follow-up piston being provided with a control groove; and

said follow-up piston, when hydraulically loaded, following a sliding displacement of the leading screw socket which is axially movable to a limited degree relative to the clutch star and to the follow-up piston and opens and closes, by means of said control groove provided at said follow-up piston, the infeed channel to the servo cylinder compartment.

4,246,995
VISCOUS FLUID CLUTCH AND RESERVOIR BY-PASS VALVE THEREFOR
 Thomas A. Gee, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio
 Filed Oct. 4, 1978, Ser. No. 948,448
 Int. Cl.³ F16D 33/10
 U.S. Cl. 192—58 B 28 Claims



1. A viscous fluid clutch comprising:
 - a first member secured for rotation with a shaft;
 - a second member rotatably disposed on said shaft relative to said first member;
 - shear surfaces disposed on said first and second members and forming an operating chamber therebetween;
 - a fluid storage chamber adjacent said operating chamber;
 - pump means operative to displace fluid from said operating chamber to a return passage;
 - valve means operative to selectively interconnect said return passage alternatively with said fluid storage chamber and said operating chamber; and
 - means operative to selectively interconnect said fluid storage chamber and said operating chamber.

4,246,996

SCREW OPERATED COUPLING

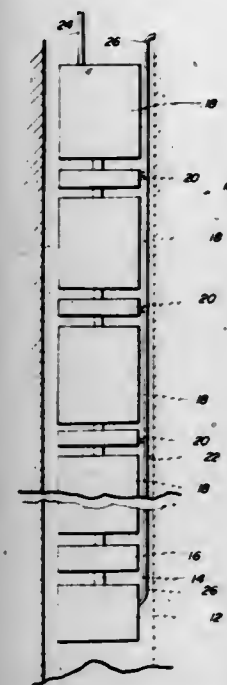
Arthur M. McIntosh, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 20, 1978, Ser. No. 962,267

Int. Cl.³ F16D 19/00

U.S. Cl. 192—94

7 Claims



1. In apparatus for drivingly connecting a driving shaft and a driven shaft, the improvement which comprises: coupling means comprising: axially movable means drivingly connected to said driven shaft and having a threaded bore and a threaded member connected to said driving shaft adapted to be receivable in said threaded bore, said axially movable means and said threaded member being operable to drivingly connect said shafts when said driving shaft is rotated in one direction to thereby engage said threaded member and said bore and to uncouple said shafts when said driving shaft is rotated in the opposite direction to thereby disengage said threaded member and said bore, and means to move said axially movable means into coupling position.

4,246,997

APPARATUS FOR CONTROLLING CLUTCH-EQUIPPED TORQUE CONVERTER

Yasumasa Tsurumizu, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

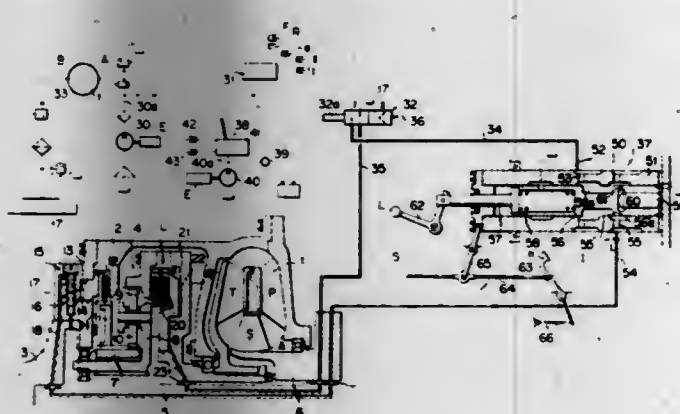
Filed Sep. 22, 1978, Ser. No. 944,866

Claims priority, application Japan, Sep. 22, 1977, 52/113256

Int. Cl.³ F16D 39/00

U.S. Cl. 192—3.27

4 Claims



1. An apparatus for controlling a clutch-equipped torque converter for use in a loader vehicle comprising, first clutch means disposed between input and output shafts

of said torque converter and operatively connected with said torque converter;
second clutch means disposed between said torque converter and the output shaft;
a planetary gear set connected with said first and second clutch means and the output shaft;
a tank for hydraulic fluid;
pump means connected with said tank;
an engine for driving said pump means and said loader vehicle;
selector valve means connected with said pump means, said selector valve means having two positions and output side thereof being connected to either said first clutch means or said second clutch means;
regulating valve means disposed between said selector valve means and said first clutch means; and
control means operatively connected with said regulating valve means for controlling the same in such a way that the pressure of hydraulic fluid supplied into said first clutch means can freely be changed while said engine is in high idling region and can be kept constant while said engine is in low idling region.

4,246,998

CONICAL SCREEN STRUCTURE

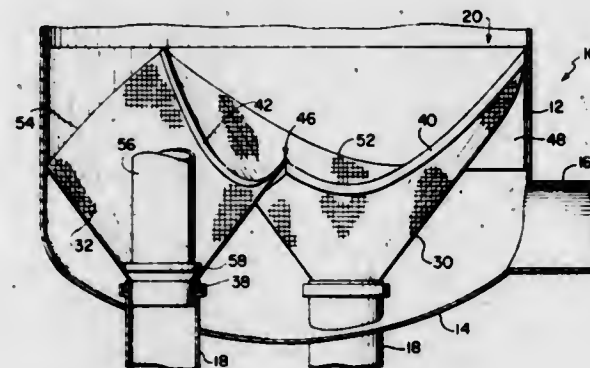
Joseph M. O'Fall, Shawnee Mission, Kans., assignor to Shale Oil Science & Systems, Inc., Kansas City, Mo.

Filed Jul. 20, 1979, Ser. No. 59,236

Int. Cl.³ C10G 1/02

U.S. Cl. 196—46.1

2 Claims



1. A screen comprising:
structure defining a plurality of adjacent, juxtaposed concavities each presenting perforate sidewalls and a material outlet opening adjacent the base of the concavity, said screen being substantially circular in plan, each of said concavities being substantially sector-shaped in plan, in the form of a portion of a regular cone, and having an outer marginal edge and a pair of side marginal edges which intersect said outer marginal edge and extend inwardly therefrom and converge to meet at the central region of said screen, each of said outer marginal edges being arcuate and extending from the points of intersection thereof with the associated side marginal edges downwardly to a point lower than said points of intersection at the central region of the outer marginal edges, each of said side marginal edges being arcuate and extending from the point of intersection thereof with the associated outer marginal edge inwardly and downwardly to a low point spaced radially outwardly from the center of said screen, and thence upwardly and inwardly from said low point to said central region of the screen, the latter being above said low point but below the points of intersection of the side marginal edges and the outer marginal edges of said concavities, said concavities being joined together along said side marginal edges thereof to present arcuate lines of juncture between respective concavities of configuration conforming to said side marginal edges;

4,246,999

GRAIN CUP

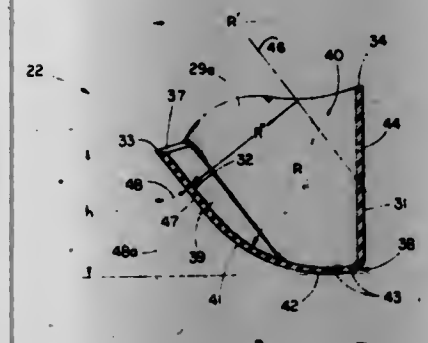
James G. Bryant, and Edmund P. Taylor, both of Greencastle, Ind., assignors to Bryant Poff Inc., Coatesville, Ind.

Filed Sep. 8, 1978, Ser. No. 940,621

Int. Cl.³ B65G 17/36

U.S. Cl. 198—713

15 Claims



1. A grain cup for use with the conveyor belt of a grain elevator, said grain cup comprising:
two oppositely disposed, flat side panels oriented substantially parallel to a first axis;
a flat rear panel joined to said two side panels and being oriented substantially parallel to said first axis; and
a forward panel joined to said rear panel and to said two side panels and having a leading edge of a constant curvature about said first axis, the section of said forward panel disposed between said leading edge and said rear panel being arranged solely into only two constant curvature portions, one of said constant curvature portions beginning at said rear panel and extending toward said leading edge, the constant curvature of said one constant curvature portion being established about a second axis, said first and said second axes being perpendicular to each other, the other one of said two constant curvature portions being curved solely about a third axis, said third axis being at an acute angle with respect to said first axis.

4,247,000

CERAMIC CONVEYOR ROLLS WITH METAL END CAPS CLAMPED THERETO

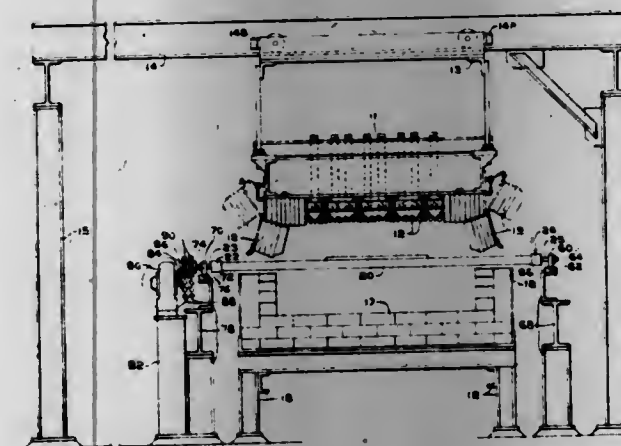
William H. Marriott, Jr., Altoona, and Vaughn R. Imier, Tyrore, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 16, 1979, Ser. No. 57,784

Int. Cl.³ B65G 13/02

U.S. Cl. 198—780

5 Claims



1. A conveyor for conveying glass sheets during thermal treatment comprising a plurality of ceramic rolls longitudinally

spaced from one another, each roll having an axially elongated substantially cylindrical shape extending transversely thereof, and a metal shaft located in alignment with each end of said roll, and means for drivingly connecting at least one of said shafts to said roll, said means comprising a metal, inner end cap member integral with and substantially concentric to said shaft and adapted to surround an end portion of said ceramic roll in flexible clamping relation thereto in direct contact therewith and constructed and arranged to flex radially inward in at least its axially inner end to provide a clamping force thereagainst, a metal, outer end cap member more rigid than said inner end cap member surrounding said inner end cap member, and means causing said outer end cap member to move axially with respect to said inner end cap member in order to increase said clamping force between the metal of said metal, inner end cap member and the ceramic roll in response to axial inward movement therebetween and to permit release of said clamping force in response to axial outward movement of said outer end cap member out of engagement with said inner end cap member.

4,247,001

SEALED CONTAINER WITH FRANGIBLE PARTITION

Georg Wiegner, Breslauer Strasse 35, 4060 Viersen 11, Fed. Rep. of Germany

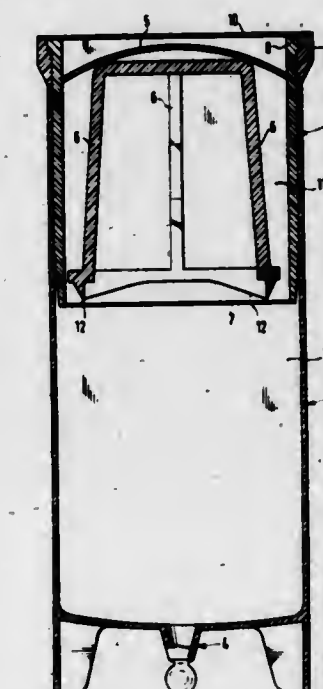
Continuation-in-part of Ser. No. 720,154, Sep. 3, 1976, Pat. No. 4,103,772. This application May 30, 1978, Ser. No. 910,864

Claims priority, application Fed. Rep. of Germany, May 31, 1977, 2724519

Int. Cl.³ B65D 23/04

U.S. Cl. 206—222

3 Claims



1. A container for separately packaging two substances and for enabling mixing of said substances prior to dispensing thereof from said container comprising: means defining a first and a second compartment for storing a first and a second of said substances, respectively; frangible seal means interposed between said first and second compartments for enabling separate storage of substances contained therein; means for enabling discharge from at least one of said compartments of a mixture of said substances; and puncturing means for severing said frangible seal means to effect mixing of said substances; said puncturing means being structured as a framework composed of generally slender frame members forming said puncturing means with a basket-like configuration including a sharp knife edge at one end thereof; said puncturing means being loosely contained within one of said compartments with said knife edge adjacent said frangible seal means to effect severing of said frangible seal means upon application of a force against said puncturing means driving said puncturing means with said knife edge against said frangible seal means; said puncturing

means being configured to drop through said severed frangible seal means from said one compartment into the other of said compartments and to enhance mixing of said substances when said container is agitated; said framework of said puncturing means comprising a pair of end frame sections formed from rod-like members arranged to define each of said end sections with a generally polygonal peripheral shape and elongated support struts extending between said end frame sections, said knife edge being formed on one of said end frame sections.

4,247,002

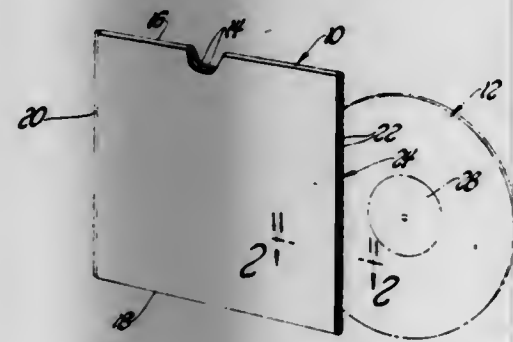
ANTISTATIC RECORD ENVELOPE

Richard C. Horian, 100 Magnolia Lake Ct. Sweetwater Club, Longwood, Fla. 32750

Continuation-in-part of Ser. No. 845,509, Oct. 25, 1977, abandoned. This application Jan. 19, 1978, Ser. No. 870,962
Int. Cl.³ B65D 85/57

U.S. Cl. 206—313

3 Claims



1. An antistatic phonograph record envelope of a flat shape comprising a pair of plastic layers made from extruded plastic film having a thickness between about 1 and 6 mils between the surfaces thereof; an internal antistatic agent extruded within the plastic film layers between the surfaces thereof; at least one seam between the plastic layers; the envelope having a closed end and closed sides at which the layers are connected; the envelope having an open end extending between the closed sides at a location opposite the closed end; the plastic layers having edges that extend alongside each other at the open end to form an elongated slit through which a phonograph record is inserted into the envelope for storage and pulled out of the envelope for use whereby the antistatic agent in the plastic film layers mitigates the buildup of static electricity on the record as the record is inserted into and pulled out of the envelope and also dissipates any accumulated static electricity on the record during storage within the envelope; and the edges of the plastic layers at the open end of the envelope including a seal having cooperable projections which can be interengaged with each other to seal the envelope and store the record or which can be disengaged from each other to remove the stored record or to insert the record into the envelope for storage.

4,247,003

PRODUCT DISPLAY CARD

Robert C. Jones, Hastings, Nebr., assignor to Dutton-Lainson Company, Hastings, Nebr.

Filed May 9, 1979, Ser. No. 37,367
Int. Cl.³ B65D 73/00; G09F 1/00; B65D 85/00

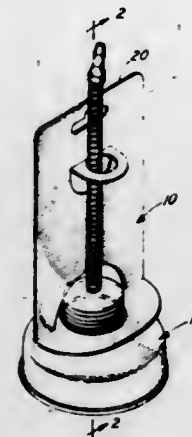
U.S. Cl. 206—486

4 Claims

1. An improved product display card for displaying a product of the type having a removable top of greater diameter than a threaded neck that receives the top, said card comprising:

a planar back member having at least two integral, generally parallel product support members cut from the back member and projecting horizontally and generally transversely from the back member from a fold line;
one of said support members having an opening sized for receipt of the neck only through the opening and providing means whereby a top may be affixed to the neck to

thereby retain the product on the card, said opening having a midpoint, the midpoint of said opening being transversely spaced from the planar back member;
the other product support member being spaced from the one member and also having an opening for receipt of the product and for permitting the product to project there-through, said other support member opening also having a midpoint which is substantially axially aligned with the



midpoint of said one support member, each of the openings being entirely within a transverse support member and generally conforming to a transverse section of the product shape, said product being removable from the display card only subsequent to removal of the top from the neck of the product; and
a hanger member incorporated integrally onto the back member along a top edge thereof.

4,247,004

STACKABLE CONTAINERS

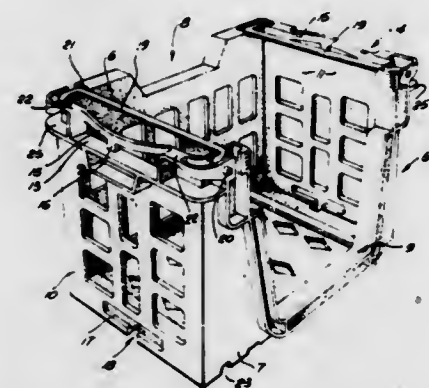
William C. Bird, Sydney, Australia, assignor to Commonwealth Moulding Pty., Ltd., New South Wales, Australia

Filed Jul. 30, 1979, Ser. No. 61,876

Claims priority, application Australia, Jul. 28, 1978, PD5264
Int. Cl.³ B65D 21/06, 21/02

U.S. Cl. 206—506

5 Claims



1. A stackable container furnished with interlocking means, comprising a floor and sidewall means upstanding therefrom to define an upwardly facing top aperture, a spring leaf mounted by its ends in an elongated opening extending generally parallel to said floor and adjacent the top edge portion of said sidewall means, said spring having a greater length than the opening in which it is mounted and depressible into either one of two stable positions, such that when the leaf is in its first position it over-lies the top aperture of the container, and in the second of said positions it is disposed clear of that aperture; and, a keeper hole adjacent the floor of said container; the arrangement being such that when the leaf is in its second position, the bottom of a second similar container is placeable within the top aperture of the first container, said leaf then

being movable into its second position thereby to engage lockingly within the keeper hole of the second container.

4,247,005

PACKAGE AND PACKAGING METHOD

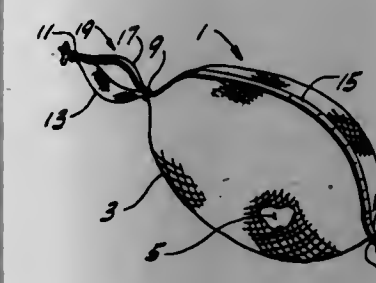
Larry E. Buxton, St. Louis County, Mo., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Mar. 30, 1979, Ser. No. 25,357

Int. Cl.³ B65D 75/58, 33/06; B65B 61/00, 29/04

U.S. Cl. 206—525

14 Claims



1. A package comprising a length of tubular packaging material and an item packaged therein,
said item being disposed in said tubular packaging material between a first end of said material which is bunched together and fastened by a first fastener, said end constituting the bottom of the package, and a second and intermediate portion of said packaging material which is bunched together and fastened by a second fastener at the end of the item opposite its bottom end,
said tubular packaging material having a further portion extending outwardly from said second fastener,
said extending portion of said packaging material being bunched together and fastened at its outer end by a third fastener,
and a length of strapping extending along the outside of the bunched extension of the packaging material and caught in said second and third fasteners, the second fastener comprising a staple clinched around the material and the strapping,
said bunched extension of said packaging material in conjunction with the strapping forming a handle.

4,247,006

CAPSULE BODY, IN PARTICULAR FOR USE WITH A JOINED CAPSULE FOR A PHARMACEUTICAL PREPARATION, AND METHOD OF AND APPARATUS FOR PRODUCING IT

Hans U. Bodenmann, Muenchenstein, Switzerland; Louis P. Van Herle, Berchem-Antwerp, and Winand H. Martens, Belsele, both of Belgium, assignors to Capsugel AG, Basel, Switzerland

Continuation of Ser. No. 905,918, May 15, 1978, abandoned.

This application Jul. 16, 1979, Ser. No. 57,937

Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722806

Int. Cl.³ B65D 83/04, 6/12; B29C 13/04

U.S. Cl. 206—528

7 Claims



1. A capsule body having substantially the shape of a cylinder closed at one end, in particular for use with a joined cap-

sule for a pharmaceutical preparation, and comprising a capsule body characterized in that the capsule body has a reduced diameter in the area of its open end.

5. A capsule for a pharmaceutical preparation comprising, a substantially cylindrical capsule body and a capsule cap fitted thereon characterized in that the capsule body prior to and during joining with a telescopically joinable capsule cap with respect to said shape has a constrictingly reduced diameter in the free edge area of its open end such that the free edge of the cap does not abut against the free edge of the body when brought together in joining relation.

4,247,007

STRANDS AND NETTING AND SCREENS MADE THEREOF

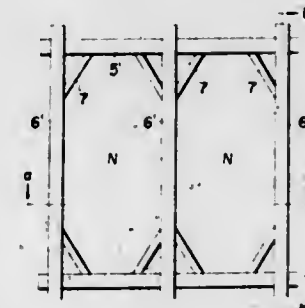
Yuriko Kai, 16-13, Hakataekimnamli Hakataku, Fukuokashi, Fukuokaken, Japan

Continuation of Ser. No. 719,396, Sep. 1, 1976, abandoned. This application Nov. 2, 1978, Ser. No. 957,321

Int. Cl.³ B07B 1/46

U.S. Cl. 209—392

1 Claim



1. An apparatus for screening including a preselectable, tensionable resilient screen to be used in a vibrating sieve, said screen comprising:

a first layer of tensionable transverse strands being laid in a plane, each of said transverse strands comprising of an elongated element having at least its outer surface constituted of an abrasion-resisting organic elastomer, said strands being laid parallel to each other and spaced by a first preselectable interval distance from each other;
a second of layer of tensionable longitudinal strands being laid upon said first layer of said transverse strands so as to be in a plane and forming mesh openings, said second layer of strands being constituted of longitudinal strands having at least their outer surfaces covered with a layer of abrasion-resisting organic elastomer, said second layer being fused to said first layer at crossing points by heating said first and second layers to produce a predetermined amount of melting whereby a resilient screen having mesh openings of a preselectable size is provided; and
a plurality of bridging strands extending across all corners of said mesh openings from said first strands to said second strands, said bridging strands comprising an elongated element having at least its outer surface constituted of an abrasion resisting organic elastomer.

4,247,008

METHOD AND SYSTEM FOR SORTING ENVELOPES

William G. Dobbs, Tulsa County, Okla., assignor to Stephens Industries, Inc., Lenexa, Kans.

Filed Dec. 28, 1978, Ser. No. 973,912

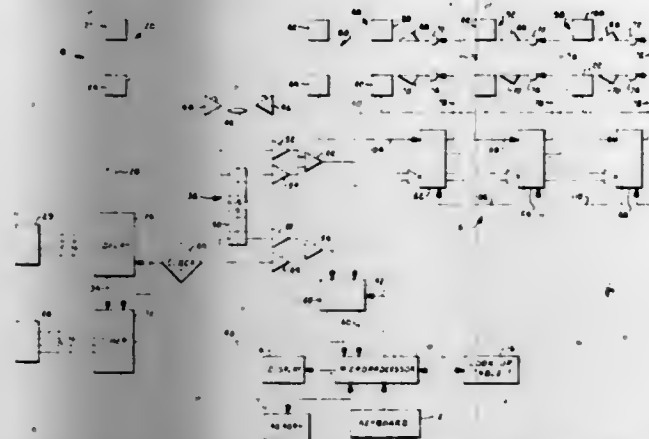
Int. Cl.³ B07C 5/342

U.S. Cl. 209—569

8 Claims

1. A microprocessor implemented method for sorting and assigning sort bins to a plurality of randomly distributed envelopes being handled by a mail sorting machine having a plurality of sort bins for receiving and sorting envelopes and means for directing an envelope to one of said sort bins in accordance with an associated bin designation signal, each of said envelopes having an associated zip code which may be readily

ascertained but which may be in any sequence prior to the sorting thereof, said method comprising the steps of: compiling a list of each zip code associated with one or more of said envelopes and a count which is representative of the number of envelopes having each zip code of said list, assigning a sort bin to each zip code on said list which has an associated count greater than a first preselected number, arranging the zip codes on said list which have not been assigned a sort bin into groups such that all of the zip



codes which have not been assigned a sort bin and have the same first three digits are assembled into a common group, summing the count associated with each zip code in a common group to provide a resulting sum for each common group, assigning the sort bin to each common group having a resulting sum which is greater than a second preselected number.

4,247,009

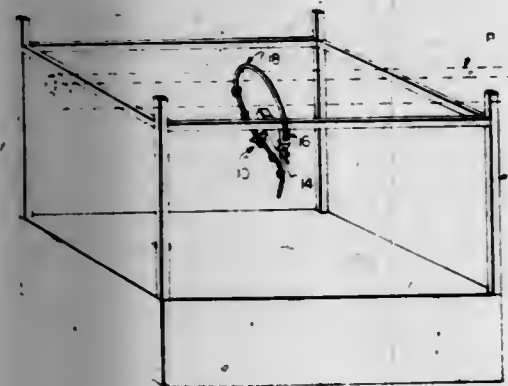
PIPE RACK FASTENER

Christopher R. Vaurigaud, 614 1/2 N. Woodlawn Ave., Metairie, La. 70001

Filed Jul. 18, 1978, Ser. No. 925,752
Int. Cl.³ A47F 7/00

U.S. Cl. 211—60 R

10 Claims



1. A pipe rack fastener for securing pipe-like articles to a rack comprising:
a tensioning mechanism having a fixed portion, a movable portion and driving means for moving said movable portion relative to said fixed portion, said movable portion including coupling means for releasably receiving a flexible cord;
mounting means coupled to said tensioning mechanism for attaching said tensioning mechanism to said rack; and
a flexible cord having a fixed end and a free end, said fixed end being fixedly attached to one of said mounting means and said tensioning mechanism fixed portion by an eye bolt having a threaded stem and an eye with said cord fixed end coupled to said eye and with said threaded stem extending through a portion of one of said mounting means and said tensioning mechanism fixed portion and fixed thereto by a nut threaded on said threaded stem, the

portion of said cord adjacent said free end having a plurality of enlargements fixed thereon and spaced along the length of said free end portion of said cord, each of said enlargements adapted to be selectively and releasably coupled to said coupling means of said tensioning mechanism movable portion;

whereby, when the fastener is attached to a rack, said cord may be looped about the rack and articles thereon with the size of the loop roughly set by selectively coupling a particular enlargement to said coupling means, and the articles may be secured on the rack by actuating said driving means to move said movable portion to tighten said cord about the articles.

4,247,010

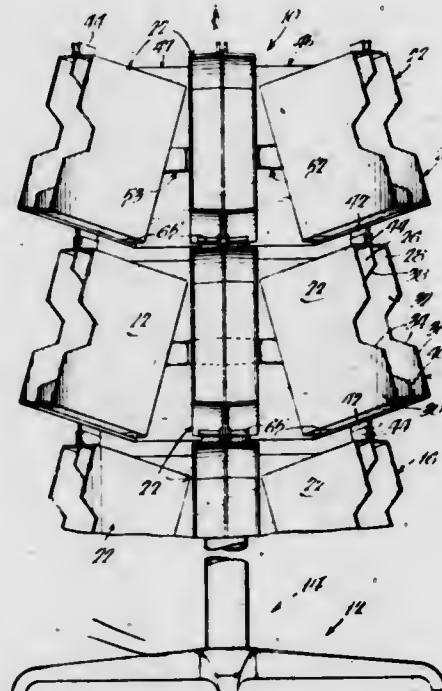
DISPLAY STAND AND METHOD OF MAKING SAME

Ronald P. Eckert, Northbrook, Ill., assignor to DLM, Inc., Niles, Ill.

Filed Aug. 7, 1978, Ser. No. 931,834
Int. Cl.³ A47F 5/00

U.S. Cl. 211—131

23 Claims



1. A display stand comprising a base having a vertical column, at least one tier of radially outwardly and upwardly tilted housings carried by said column, each said tier comprising a plurality of interfitting units, each unit having a web with a pair of housings on opposite ends thereof, two pairs of oppositely extending abutments carried by each unit, a hub carried by each web midway between said pair of housings, said hub having an axial length equal to $1/n$ times the axial length of said web where n equals the number of units in said tier, each said hub being located on its respective web in an axially spaced relation with each other hub in said tier such that the sum of the axial lengths of said hubs when juxtaposed on said column in each tier will equal the axial length of said webs whereby stacking said units with the hubs and associated webs will register the abutments with each other to equally space said housings apart circumferentially in said tier.

4,247,011

MODULAR SHELVING

Philip J. Walter, 4109 Victoria St., Minnetonka, Minn. 55343

Filed May 14, 1979, Ser. No. 38,921

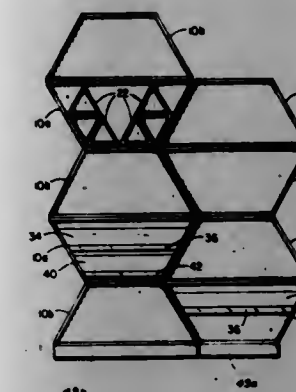
Int. Cl.³ A47B 53/00

U.S. Cl. 211—194

21 Claims

1. A shelving device comprising:
a quadrilateral module having a generally rectangular top, a generally rectangular bottom, and first and second generally rectangular side walls defining an open front of trapezoidal shape, the top and bottom being parallel to one

another and having substantially similar depth, with the top having a width greater than the bottom; and
a first trapezoidal shaped shelf or insertion in the module, the first trapezoidal shaped shelf having a front edge, a back edge, and first and second side edges, the front and back edges being essentially parallel to one another and the back edge having a width less than or equal to the width



of the top of the module and greater than the width of the bottom of the module, the front edge of the first trapezoidal shaped shelf having a width less than the width of the back edge and greater than or equal to the width of the bottom of the module, whereby the first trapezoidal shaped shelf, when inserted in the module, slopes downward from the back edge to the front edge.

4,247,012

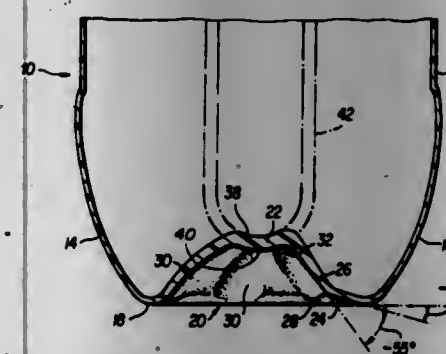
BOTTOM STRUCTURE FOR PLASTIC CONTAINER FOR PRESSURIZED FLUIDS

Alfred C. Alberghini, Dunwoody, Ga., assignor to Sewell Plastics, Inc., Atlanta, Ga.

Filed Aug. 13, 1979, Ser. No. 66,295
Int. Cl.³ B65D 1/02

U.S. Cl. 215—1 C

9 Claims



1. A bottle formed of a polymer for containing a pressurized fluid, said bottle comprising:

- a generally cylindrical sidewall portion having an opening at its upper end, and
- a bottom portion at the lower end of said sidewall portion having
 - a modified hemispherical shape, contiguous with the sidewall
 - a continuous seating ring, for stably supporting said bottle when placed on a flat surface in an upright position, which is of convex annular shape when viewed from below, the outer wall of the seating ring being contiguous with the modified hemispherical shape and the inner wall of the seating ring being contiguous with an intermediate portion, said seating ring having a diameter of 0.5 to 0.95 of the diameter of the cylindrical bottle,
 - an intermediate portion positioned between the seating ring and a center portion and contiguous therewith, said intermediate portion consisting of two truncated cones defining a concave surface bounding an excluded volume, the first truncated cone having a generatrix of about 18°, the base of the first cone being contiguous with the seating ring; the second truncated cone having a generatrix of about 55°, the base of the second cone being contiguous with the inner terminus of the first truncated cone, and the excluded volume defined by the first and second truncated cones being increased by an odd number of equally sized and equally spaced semi-ellipsoid shaped portions, each semi-ellipsoid shaped portion extending from the base of the first truncated cone to the inner terminus of the second truncated cone, and
 - a center portion contiguous with the inner terminus of the second truncated cone, the inner portion being convex as viewed from below.

4,247,013

DRIP BAR FOR BRUSHES

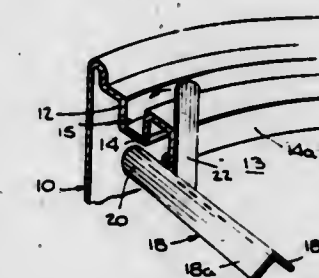
Hiroshi D. O'Hori, 150 Ridgedale Ave., Morristown, N.J. 07960

Filed Jul. 27, 1979, Ser. No. 61,513

Int. Cl.³ B65D 25/00

U.S. Cl. 220—90

11 Claims



1. A drip bar comprising a plastic elongated member of triangular cross-section for mounting across an opening of a container; and a pair of tangs each defined by a plate slidably mounted on said member, each said tang being disposed adjacent to a respective end of said elongated member for securing said member to the container and being of a material capable of being manually bent.

2. A drip bar for a can having an annular inwardly extending rim, comprising a one-piece body having a pair of legs defining a V-shaped intermediate portion, a tab at each end of one leg extending from said one leg in the same plane thereof beyond the juncture of said pair of legs, and a tang at each end of the other leg defining an extension of said other leg in spaced parallel relation to said tab, each said tang being of a longer length than a respective tab at one end of said body and being made of a material capable of being manually bent into perpendicular relation to said V-shaped portion, each tang defining supporting means to prevent said bar from falling into the can by being adapted to be bent over a portion of the container rim, each tab defining anchor means for placement under the can rim.

4,247,014

SELF-STORING PERMANENTLY ATTACHED OPENING MEANS

Karl Walz, 24 Purchase St., Worcester, Mass. 01606

Continuation-in-part of Ser. No. 965,315, Dec. 1, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,882

Int. Cl.³ B65D 41/32

U.S. Cl. 220—269

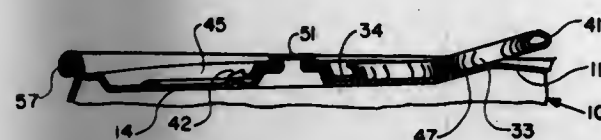
7 Claims

1. In combination with a hollow enclosed container for a quantity of liquid or other pourable contents, initially including an opening therethrough for filling said container thereafter enclosed by a thin-walled portion of said container comprising a cover for said opening suitably permanently attached to said container to contain, preserve and protect its contents and provided with a partially sheared generally U-shaped flap portion thereof including mutually spaced opposite ends

thereof and arranged to be rotated inwardly of said container to form a corresponding U-shaped opening through which to release the contents thereof,

a manually operative elongated pull tab with its free end arranged to be lifted away from said cover and its opposite end shaped and arranged to be biased against the flap portion of said cover when said pull tab is lifted to open the flap portion of said cover inwardly of said container, and

coextensive and coating mated portions of said pull tab and



said cover respectively off-set outwardly of said container from the outer surfaces of said pull tab and said cover and having a plurality of complementary mutually angularly off-set surfaces maintained in mutual engagement by connecting means permanently interconnecting said pull tab and said cover at said mated portions thereof, whereby the spatial relationship between the mated portions of said pull tab and said cover is maintained constant as the pull tab is lifted from said cover to open the flap portion of said cover, thereby maintaining said pull tab securely in engagement with said cover.

4,247,015

CLOSURE MEANS FOR A LARGE DIAMETER VESSEL

Hermann Straub, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

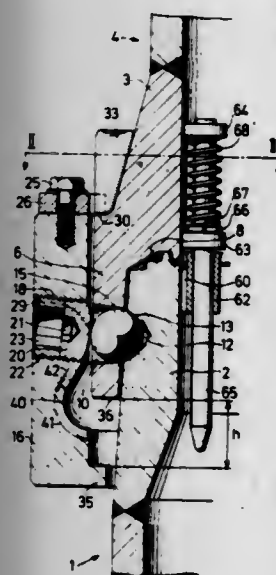
Filed Sep. 26, 1979, Ser. No. 79,065

Claims priority, application Switzerland, Oct. 10, 1978, 10502/78

Int. Cl.³ B65D 45/00

U.S. Cl. 220—328

6 Claims



1. In combination with a large diameter vessel having a pair of overlapping coaxial cylindrical sections wherein an inner one of said sections has a plurality of abutment surfaces spaced circumferentially about an outer surface thereof and the outer one of said sections has a plurality of radial passages, each said passage being aligned with a respective abutment surface, and a plurality of blocking members, each said member being disposed in a respective radial passage for abutting a respective abutment surface;

a ring disposed about said outer section, said ring being movable coaxially of said outer section and having an inner surface profiled to move said blocking members against said abutment surfaces upon movement of said ring in one direction and to allow said blocking members to move away from said abutment surfaces upon move-

ment of said ring in an appropriate direction, said ring having a plurality of threaded bores aligned respectively with said radial passages; and

a plurality of set screws, each said screw being threaded into a respective bore of said ring to press a respective blocking member against a respective abutment surface.

4,247,016

LID-STRAW COMBINATION FOR SOFT DRINK CUPS

Jack B. Shaw, 2710 Bedford St., Johnstown, Pa. 15904

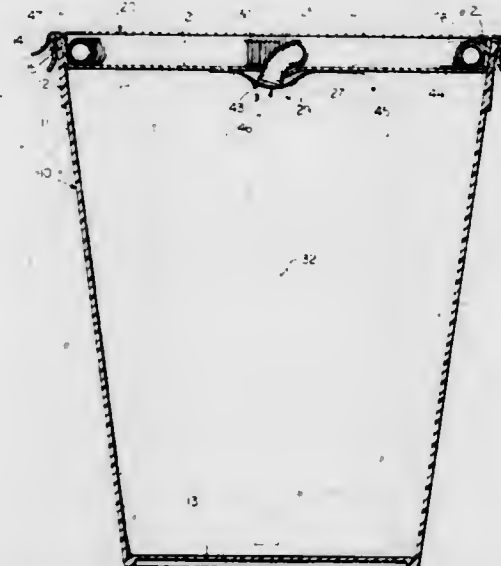
Continuation of Ser. No. 860,726, Dec. 15, 1977, abandoned.

This application Dec. 6, 1979, Ser. No. 101,020

Int. Cl.³ A47G 19/22; B65D 1/24, 1/36, 57/00

U.S. Cl. 220—90.2

7 Claims



1. A sanitary lid-straw combination comprising:

a substantially circular lid having a raised peripheral lip formed of an inner wall, a top surface and outer side wall, said lip being positionable over the upper edge of a drink cup;

a straw having pleats along a substantial portion of its length, said straw being positioned for a major proportion of its length around said inner wall of said lid, one end of said straw being maintained at said inner wall of said lid, the other end of said straw slidably passing through a central aperture in said lid and terminating adjacent thereto;

a first protective cover disposed over the entire top of said lid and attached to said peripheral lip, and

a second protective cover disposed over the central portion of the lid bottom, said second cover forming a seal between the straw end and the contents of a drink cup.

4,247,017

AUTOMATIC DISPENSING MACHINE FOR DISPENSING STACKED OBJECTS

Jean Guigan, 9, rue Jean Mermoz, 75008 Paris, France

Filed Sep. 10, 1979, Ser. No. 74,372

Claims priority, application France, Sep. 22, 1978, 78 27189

Int. Cl.³ B65G 59/06

U.S. Cl. 221—227

5 Claims

1. An automatic dispensing machine for dispensing stacked objects, said machine including:

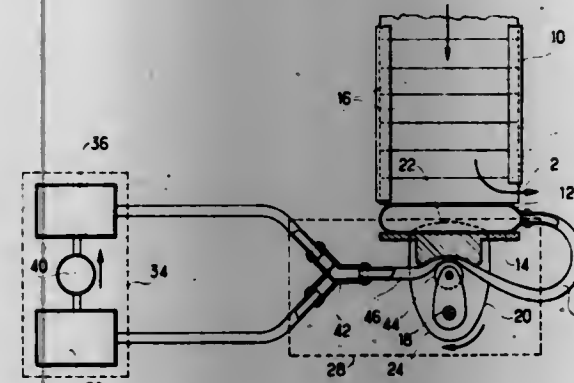
guide means for guiding a stack of objects to be dispensed, an ejector device which rotates on an axle and is disposed facing one end of the stack so as to be able to come into contact with the object situated at the bottom or end of the stack,

means for moving the stack towards the ejector device,

a motor for rotating the ejector device, and

a controlled spacer device which can be in either one of two states, one of which is an active state in which the stack is moved away from the ejector device so as to prevent contact between the ejector device and said object situated at the bottom or end of the stack and the other of which is a passive state in which the ejector device can come into contact with the object so that the ejector device drives the object out of the stack,

characterized in that the ejector device is constituted by an ejector cam with an active arc situated at a greater distance from the axis of rotation than a passive zone formed by the remainder of the periphery,



a stop being provided to limit the movement of the stack towards the ejector cam when the spacer device is in its passive state, so as to prevent contact between said object at the bottom or end of the stack and said passive zone while allowing contact between the object and the active arc, and

said spacer device being provided with an inhibition device synchronized with the rotation of the ejector cam so as to prevent it from changing state when the active arc is in contact with said object at the bottom or end of the stack.

4,247,018

NON-PRESSURIZED FLUID TRANSFER SYSTEM

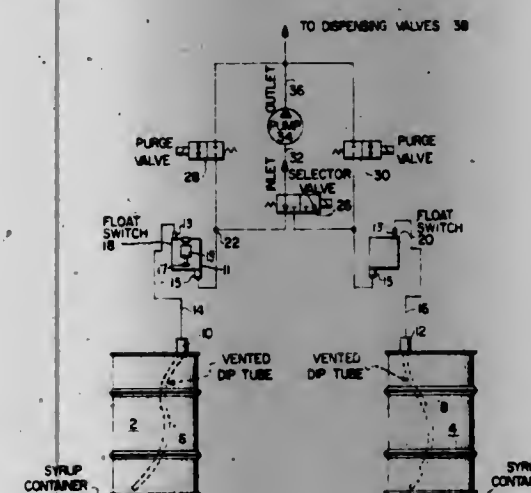
William S. Credle, Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Dec. 14, 1979, Ser. No. 103,457

Int. Cl.³ G01F 11/00; B67D 1/00

U.S. Cl. 222—1

10 Claims



1. An automatic changeover fluid dispensing system for continuously dispensing fluid comprising:

first and second fluid supply means, each having an output tube and including at least one replaceable container for containing the fluid to be dispensed;

pump means for drawing said fluid out of one of said liquid supply means when in fluid connection thereto;

selector valve means in fluid connection with said pump means for switching fluid connection from one of said fluid supply means to the other, said selector valve means

being actuated in response to a lack of fluid in the containers of the previously selected one of said fluid supply means; and

purge valve means for filling the output tube of the previously selected one of said fluid supply means after the empty containers are replaced with full containers, said purge valve means causing air present in said output tube to be displaced by said fluid to thereby maintain a continuous supply of fluid to the output of said pump.

9. A method of automatically dispensing liquid without interruption, from a plurality of containers, including the steps of:

pumping liquid from a first container using an output tube; sensing when said first container is empty;

actuating a selector valve in response to the emptying of the first container to select a second container;

pumping from the second container using a second output tube;

replacing the first empty container with a full new first container; and

purging the air from the system by routing some of the fluid pumped from the second container into the output tubes connected to said new first container which has replaced said first container.

4,247,019

ARTICLE HANDLING SYSTEM WITH DISPENSER

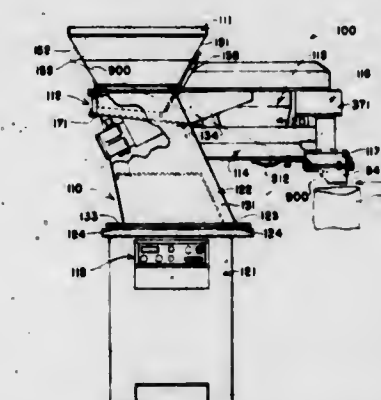
Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation-in-part of Ser. No. 618,025, Sep. 30, 1975, abandoned, and a continuation-in-part of Ser. No. 618,079, Sep. 30, 1975, abandoned. This application Sep. 14, 1977, Ser. No. 833,261

Int. Cl.³ G01G 13/08

U.S. Cl. 222—56

22 Claims



1. A compact freestanding dispensing apparatus, for disposition on a support which can be small relative to the overall size of the apparatus, the apparatus being adapted to overhang a collection receptacle located adjacent such support to dispense articles into the collection receptacle, comprising:

(a) a frame structure having an inclined upwardly extending base portion and a supporting portion, said base portion including a lower region and an upper region, said supporting portion extending laterally from the upper region of said base portion such that said frame structure when viewed from one side has substantially the configuration of the numeral "7";

(b) a supply hopper and a conveyor supported on the upper region of the base portion, and a vibratory feeder supported from said supporting portion;

(c) said supply hopper having its center of gravity over said base portion and being operable to receive articles to be dispensed and to feed such articles to said conveyor;

(d) said conveyor having its center of gravity over said base portion and being operable to convey articles from said supply hopper to said feeder hopper;

(e) said vibratory feeder comprising a vibratory motor drive

assembly and a recirculating bowl feeder hopper including an article discharge station, said feeder receiving articles from said conveyor and conveying them at substantially controlled feed rates to said article discharge station, said vibratory motor drive assembly being supported by said supporting portion and in turn supporting said feeder hopper with said motor drive assembly being disposed within said feeder hopper and said feeder hopper being supported in communication with said discharge section of said conveyor to receive articles therefrom, said article discharge station being displaced from the upper region of said base portion beyond the lower region of said base portion and overhanging the collection receptacle when in use;

- (f) said supply hopper, said conveyor, and said feeder hopper being positioned in series along an imaginary line which inclines downwardly as it extends from said supply hopper through said conveyor to said feeder hopper;
- (g) said imaginary line passing near the juncture of the base and supporting portions as it passes from the conveyor to the feeder hopper;
- (h) means including an accumulator receptacle positioned below the discharge station to receive, collect, and discharge articles which have passed through said discharge station; and
- (i) the center of gravity of said free standing dispensing apparatus always being disposed over the lower region of said base portion irrespective of the number of articles supported in the apparatus, whereby said freestanding dispensing apparatus rests stably upon the support while articles may be directly discharged from said overhanging accumulator into the underlying collection receptacle when such receptacle is in use.

4,247,020

LIQUID CONTAINING AND DISPENSING DEVICE
Bernard Desjardins, 1 Parent St., Port Cartier, Canada (G5B 2E6)

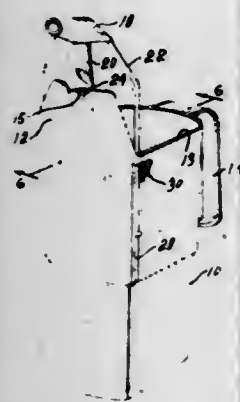
Filed Feb. 5, 1979, Ser. No. 9,453

Claims priority, application United Kingdom, Feb. 9, 1978, 05196/78

Int. Cl.³ B67B 7/28

U.S. Cl. 222—83.5

4 Claims



1. A liquid containing and dispensing device comprising:
- (a) a rigid wall container adapted to receive a sealed liquid containing pouch having flexible walls in close contact with the walls of said container; and
- (b) a pouring spout having a tubular depending portion with a sharpened end movably mounted at the top of said container and adapted to perforate the top of said pouch and form a seal around the opening of the pouch to effect pouring of the contents of the pouch, said pouring spout including two rust-proof wires and said container including two wire guiding means, one on each side thereof, permitting said wires to slide down along the sides of the container.

4,247,021

BOTTOM DISCHARGE PALLETIZED CONTAINER SYSTEM

Georges Renier, Apremont, and Jackie Jullien, Saint-Jeoire Priore, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation of Ser. No. 900,573, Apr. 27, 1978, abandoned.

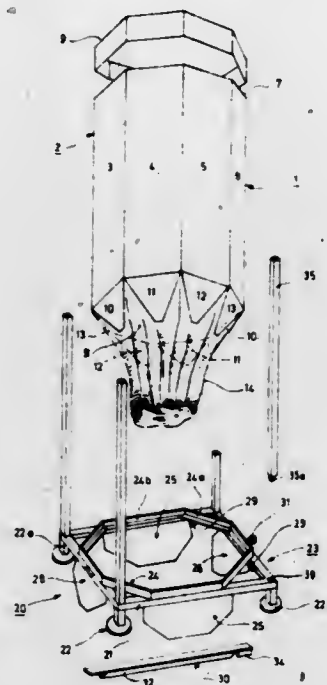
This application Jan. 7, 1980, Ser. No. 109,888

Claims priority, application France, Apr. 27, 1977, 77 12685

Int. Cl.³ B67D 5/32

U.S. Cl. 222—143

10 Claims



1. Equipment for the palletized handling of flowable solid material comprising a container for the material having vertical sidewalls, bottom closure flaps hinged to the sidewalls, a separate pallet for transportation and shipment of the container comprising a frame having spaced apart supporting members, a crown-like container support on said frame, said crown-like container support comprising a relatively narrow vertical retaining flange surrounding the bottom of the container and an inwardly facing horizontal flange, said vertical retaining flange being adapted to contact the side walls of the container adjacent the bottom, said inwardly facing horizontal flange providing for support of the bottom in a narrow zone extending inwardly from the periphery thereof, said inwardly facing horizontal flange further defining a relatively large central opening extending over a substantial portion of the container bottom, retractable shutter members hinged to the pallet, said shutter members being moveable from a substantially horizontal position in which the central opening and the bottom closure flaps are closed to an open position in which said central opening is substantially unrestricted and the flaps are open, and moveable locking means for locking said shutter members in said horizontal position, comprising a locking member moveable into and out of locking position, said locking member supporting the shutter members in said horizontal position when the locking member is in the locking position.

4,247,022

APPARATUS FOR SUPPLYING MOLTEN BITUMINOUS MATERIAL

Ignatius Fung, 3325 Tallmadge Crescent, Mississauga, Ontario, Canada (L5L 1K1), and Robert W. Mason, 1476 Mississauga Rd., North, Mississauga, Ontario, Canada, assignors to Marathon Equipment Ltd., Weston, Canada

Filed Jul. 3, 1979, Ser. No. 54,587

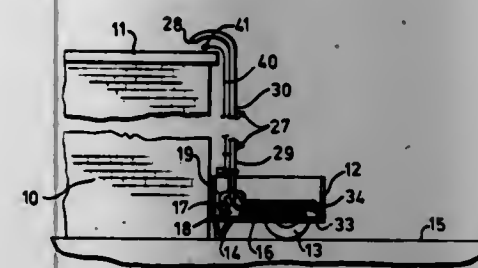
Int. Cl.³ B67D 5/62

U.S. Cl. 222—146 H

4 Claims

1. Apparatus for supplying molten bituminous material, the apparatus comprising a vat for bituminous material, a heater within the vat for melting the bituminous material, a pump

having an inlet and an outlet with the inlet being disposed within the vat, a valve having first, second, third and fourth ports, an upstanding supply pipe having a lower end in communication with the second port of the valve and an upper end disposed at an elevated level, the first port being in communication with the outlet of the pump, and the third and fourth ports being in communication with the interior of the vat, with the fourth port being disposed at a lower level than the second



port, and a valve member movable between a first condition in which the first port is in communication through the valve with the second port, and a second condition in which the first port is in communication through the valve with the third port and the second port is in communication through the valve with the fourth port for drainage under gravity of molten bituminous material from the supply pipe through the second port and the fourth port back to the vat.

4,247,023

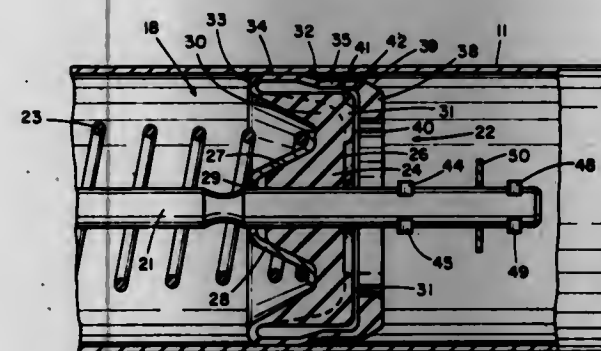
FOLLOWER ASSEMBLY FOR HAND GREASE GUNS
Jerry Shew, Niles, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Sep. 6, 1979, Ser. No. 72,969

Int. Cl.³ G01F 11/00

U.S. Cl. 222—386

15 Claims



14. A follower assembly for a lubrication gun adapted to hold either lubrication in bulk form or a cartridge of lubricant in a cylindrical body member, comprising: a follower rod reciprocable in the cylindrical body member of the lubrication gun, a follower surrounding the follower rod, said follower having a first annular portion with a bore therethrough to slidably receive the follower rod, said follower having a second generally radially and rearwardly extending portion connected to the first portion, a third generally forwardly extending portion connected to the second portion and having a resilient section engageable with the interior of the cartridge or the cylindrical body member, and means carried by one of said first and second portions for supporting the third portion by intermittent engagement therewith.

4,247,024

AEROSOL CONTAINER VALVE WITH MEANS FOR TAPPING ADDITIONAL GAS

Günter M. Vogel, Nuremberg, Fed. Rep. of Germany, assignor to Aerosol Inventions and Development S.A., Fribourg, Switzerland

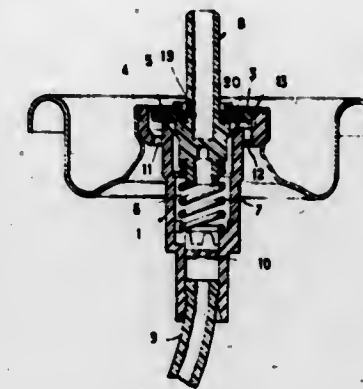
Filed Feb. 5, 1979, Ser. No. 9,652

Claims priority, application France, Feb. 13, 1978, 78 03937

Int. Cl.³ B65D 83/14

U.S. Cl. 222—402.16

6 Claims



1. An aerosol valve having an additional-gas tap and a valve stem which is displaceable by hand in opposition to a restoring spring from a closed position to a temporarily open position for dispensing a product from a container, wherein said valve comprises: a valve cup to be crimped on the container; a valve housing having outer and inner concentric annular bearing walls which are relatively displaced in height and which are connected together by an annular base; a gasket having a diameter greater than the diameter of said inner wall and less than the diameter of said outer wall and said gasket being traversed by said valve stem, said outer bearing wall being applied directly against said valve cup and adapted to contain said gasket, said inner bearing wall being applied against said gasket so as to form an internal chamber which communicates with the product to be dispensed; said annular base between said two bearing walls being pierced by a plurality of openings for filling the container by means of a flow which passes around said gasket and said internal chamber of the valve housing, and said annular base being pierced by at least one independent calibrated orifice for the flow of propellant gas from a headspace in the container above the product; and means for defining an admission chamber between said bearing walls for coupling said calibrated orifice to said internal chamber.

4,247,025

AEROSOL VALVE HAVING LIQUID-PHASE/VAPOR-PHASE MIXER-HOMOGENIZER

Adolph R. Gallitis, Winchester, Mass., assignor to Summit Packaging Systems, Inc., Manchester, N.H.

Filed Aug. 6, 1979, Ser. No. 64,086

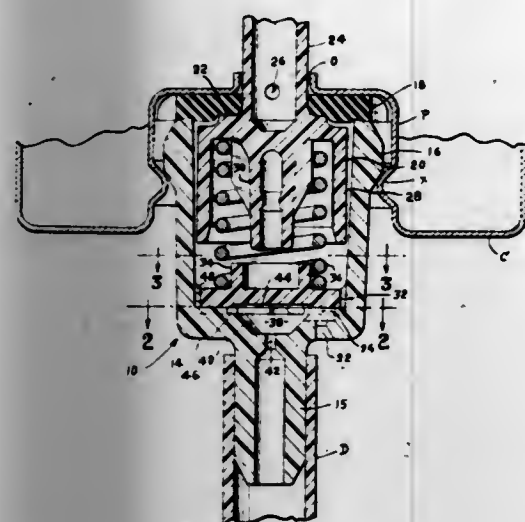
Int. Cl.³ B65D 83/14

U.S. Cl. 222—402.18

5 Claims

1. In a valve for an aerosol container having an opening at the upper end thereof, the valve comprising an annular gasket disposed in sealing engagement about the stem, a valve cup crimped into the upper end of the container having a downward dip tube and a valve body in the cup and having a tubular stem extending up through the opening in the container and having a head seating on the gasket, the stem having an inlet opening and adapted to be depressed to lower the opening below the gasket to permit flow of product out the stem, and a spring disposed between the head and bottom of the cup; the improvement of a disc-like homogenizer plate disposed between the bottom of the opening and the floor of the cup, the plate being spaced from the sidewall of the cup to define slot means, the plate and floor forming between them an entrance

swirl chamber with outward arms to the periphery of the plate, whereby the incoming product swirls in the chamber and then



passes outward to the periphery of the plate and then through said slot means.

4,247,026

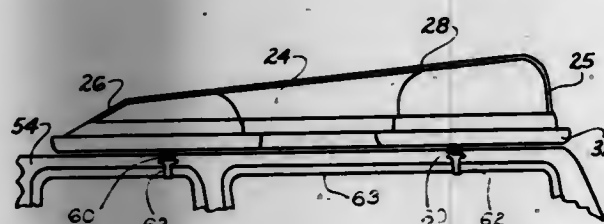
VEHICLE CARGO CONTAINER

Robert C. Heifner, 152 Grosvenor St., and Marcus J. Molea, Rte. 3, Box 254 Peach Ridge Rd., both of Athens, Ohio 45701
Filed Sep. 12, 1979, Ser. No. 74,792

Int. Cl.³ B60R 7/00, 9/00; B62D 33/00

U.S. Cl. 224-42.42

4 Claims



1. A cargo container for a passenger vehicle which is alternatively removably mounted in a first position as a cargo sleeve closely conforming to the cargo area of a standard vehicle or in a second position on the top roof of the vehicle as a car top storage carrier comprising, in combination, a receptacle means including side walls and a bottom wall provided with a top opening integrally forming a storage area having a predetermined configuration conforming to the cargo area of a predetermined standard passenger vehicle cargo area, said bottom walls including longitudinally extending ribs and said side walls being provided with an inwardly extending lip and an outer flanged rim; and a removably mounted lid portion conforming generally to said top opening and including edge portions adapted to engage said inwardly extending lip to form a closure to said storage area of said receptacle means in either said cargo sleeve or car top carrier configuration.

4,247,027

BOW-MOUNTED QUIVER

George E. Tardiff, Wayne, N.J., assignor to Mooney Brothers, Little Falls, N.J.

Filed May 18, 1979, Ser. No. 40,123

Int. Cl.³ B65D 71/00

U.S. Cl. 224-197

12 Claims

1. A quiver for use in connection with a bow for storing arrows and selectively locating such stored arrows in position, relative to the bow and the bowstring thereof, for nocking, said quiver comprising:

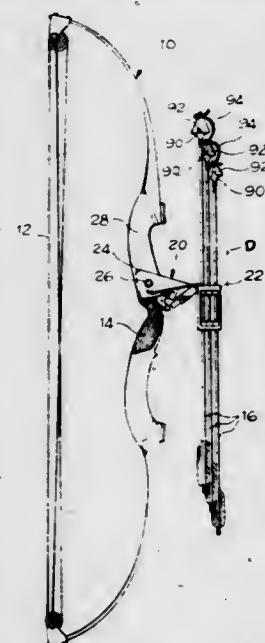
a frame;

holding means on the frame for releasably holding stored arrows in a generally parallel array, said holding means defining a fixed alignment along which stored arrows will

extend relative to the frame when held in the frame by the holding means;

a drive member carried by the frame such that the drive member extends along a longitudinal axis making an acute angle with the fixed alignment defined by the holding means;

mounting means adapted for attachment to a bow for receiving the drive member so as to support the frame for movement between a storage position, wherein the frame is oriented so that the fixed alignment extends in a first direction which is generally parallel to the bow and the bowstring thereof, when the mounting means is attached to the bow, and a nocking position, wherein the frame is oriented so that the fixed alignment extends in a second direction transverse to the first direction so as to extend



across the bow and the bowstring thereof, when the mounting means is attached to the bow;

coupling means coupling the drive member and the mounting means, with the longitudinal axis of the drive member extending in a third direction located angularly intermediate said first and second directions, so that the coupling means enables movement of the drive member simultaneously axially in said third direction and rotationally about the longitudinal axis thereof relative to the mounting means for moving the frame between the storage position and the nocking position; and

actuating means for selectively driving the drive member through the simultaneous axial and rotational movement to move the frame from the storage position to the nocking position.

4,247,028

SUSPENSION STRAP FASTENER FOR CAMERA

Yoshihisa Maitani, Hachioji, and Toyotaka Yamada, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,396

Claims priority, application Japan, Apr. 14, 1978, 53/49076[U]

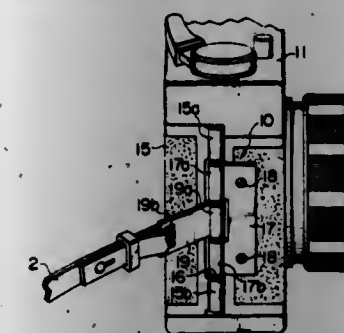
Int. Cl.³ G03B 17/02; A45F 3/15

U.S. Cl. 224-267

6 Claims

1. A camera having a camera body, a rear cover, and a hinge pivotally mounting said rear cover on said camera body; said hinge including a shaft and spaced-apart knuckles mounted on said shaft to define an uncovered shaft portion spaced from the ends of said shaft; said hinge further including first and second hinge plates; said spaced-apart knuckles being disposed on said first and second hinge plates; a strap fastener having a first end pivotally and removably mounted on said uncovered shaft portion and a second end for connection to a camera strap, said

shaft extending through said spaced-apart knuckles to cooperatively connect said first and second hinge plates and said strap



fastener to said camera body and to said rear cover of said camera.

4,247,029

STRINGED MUSICAL INSTRUMENT AND FRAME THEREFOR

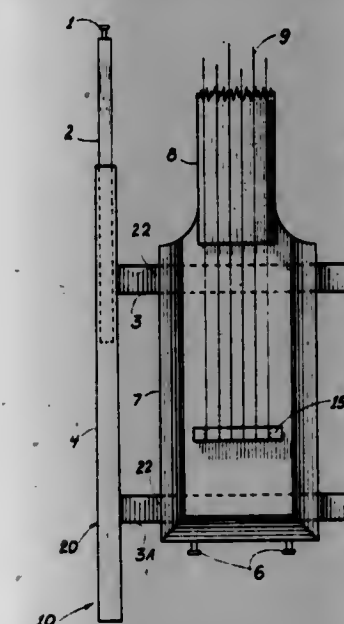
Jeffrey S. Levin, 25-36 Jackson Ave., Long Island City, N.Y. 11101

Continuation-in-part of Ser. No. 941,390, Sep. 11, 1978, abandoned. This application Aug. 30, 1979, Ser. No. 71,009

Int. Cl.³ G10D 3/00; G10G 5/00

U.S. Cl. 224-271

10 Claims



1. A stringed musical instrument comprising
a body,
a string support neck extending outward from said body,
a support frame for said body,
said frame including at least an arm extensible on said frame to vary the length thereof and the center of gravity of said frame, and
a shoulder support strap attached at one end to said instrument and at its other end to said extensible arm so that when said arm is selectively varied in its extension on said frame the same changes the location of the center of mass of said frame and the balance of said musical instrument.

4,247,030

RACK FOR ALL TERRAIN VEHICLE

Joseph A. Amacker, Tallulah, La., assignor to Amacker Inc., Tallulah, La.

Filed Dec. 17, 1979, Ser. No. 103,993

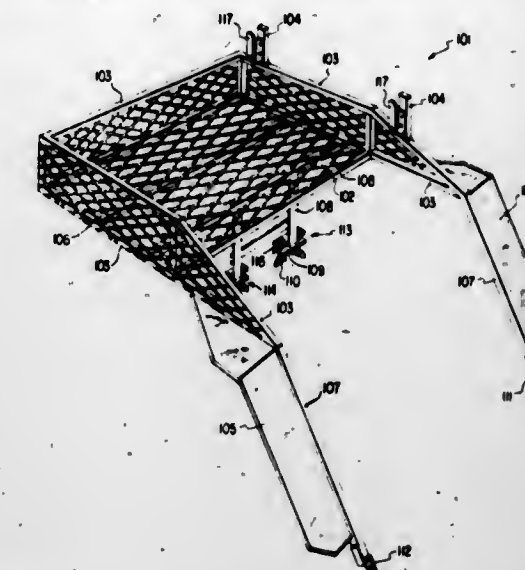
Int. Cl.³ B60R 9/00; B62D 61/08

U.S. Cl. 224-273

31 Claims

1. A rack for a wheeled vehicle comprising:
a. a seat means for holding articles or a person;
b. side wall means for containing said articles or the person;
c. means, connected to the side wall means, for allowing the

person to rest his or her leg thereon and also for preventing mud and the like splashed thereon; and



d. strut means for reinforcing the leg rest and mud guard means.

4,247,031

METHOD FOR CRACKING AND SEPARATING PELLETS FORMED ON A WAFER

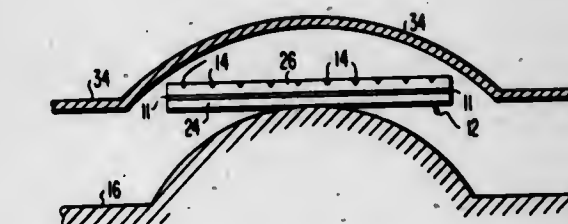
Thomas W. Pote, Gladstone, and William E. Ham, Mercerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 10, 1979, Ser. No. 28,873

Int. Cl.³ B26F 3/00

U.S. Cl. 225-2

5 Claims



1. A method of separating individual semiconductor circuit elements from a wafer on the obverse side of which the individual circuit elements were formed, the wafer being scored along lines arranged in rows and columns to define the boundary limits of the individual circuit elements comprising the steps of:

applying a soft, resilient, adherent protective layer to the circuit elements on the obverse side of the wafer, the layer characterized by having the ability to return to its original form after being deformed;
scoring the wafer on the reverse side thereof to define the boundary limits of the individual circuit elements; and
applying a breaking force to the obverse side of the wafer to separate the individual circuit elements, one from the other, along the scored lines.

4,247,032

MACHINE FOR THE ATTACHMENT OF RIVETS, BUTTONS OR THE LIKE

Raimund Stanik, Wuppertal, Fed. Rep. of Germany, assignor to Schaeffer-Homburg GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 924,980

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732931

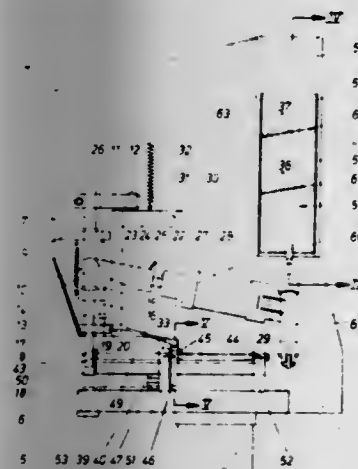
Int. Cl.³ A41H 37/10

U.S. Cl. 227-18

9 Claims

1. A machine for attachment of workpieces particularly to clothing pieces, with an upper tool traveling towards a lower tool, comprising

a machine housing,
an upper tool ram being vertically guidably mounted in said machine housing to be able to perform a working stroke,
an upper tool being mounted on said ram,
a lower tool operatively cooperating with said upper tool,
a wedge being formed with an inclined surface,
a roller mounted on said ram,
an abutment operatively mounted to said machine housing,
and
means for moving said wedge between said roller and said abutment, with said inclined surface running on said roller of the ram, whereby said working stroke of said ram being achieved by said inclined surface of said wedge running on said roller with said wedge stepping between said roller and said abutment,



means constituting spring-biased workpiece insertion sliders for sliding upper and lower of the workpieces in a forward movement into a working position between said upper and lower tools, said sliders extending from said upper tool and lower tool, respectively, and transversely directed relative to said ram,
means for translating a downward movement of said ram into a rearward movement of said sliders away from said tools,
storage means for storing the workpieces,
means comprising feed rails for bringing the workpieces from said storage means to said sliders,
spring means for forwardly moving said sliders when said ram is moved upwardly with their forward movement dependent on spring force, whereby said sliders move the workpieces forwardly into the working position.

4,247,033

METHOD OF AND DEVICE FOR PRODUCING MULTI-LAYER PIPES

Karl Dahmen, Hamm; Jürgen Engel; Heinz Gross, both of Dortmund; Martin Henning, Hamm, and Werner Wennemann, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany
Filed Oct. 6, 1978, Ser. No. 949,156

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745389

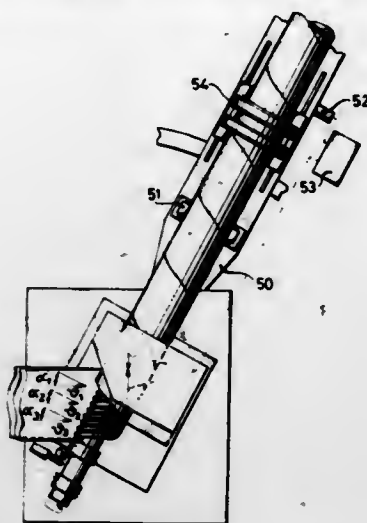
Int. Cl.³ B23K 31/06

U.S. Cl. 228—102

8 Claims

1. A method of producing multi-layer pipes from a plurality of bands, which includes in combination the steps of: advancing all bands in common and independently of the respective camber and other irregularities of the individual band edges in steadily straight lead-in directions corresponding to the respective pipe diameter, machining all band edges together in common for coordination atuned with respect to each other at the maximum possible width attainable at a particular time, helically winding said machined bands arranged one above the

other, and welding said layers together to form a multi-layer pipe while controlling the welding gap in conformity with the



coordinated band edges merely by pivoting the formed pipe to compensate welding gap changes.

4,247,034

METHOD OF INDIRECTLY CONNECTING TWO PARTS

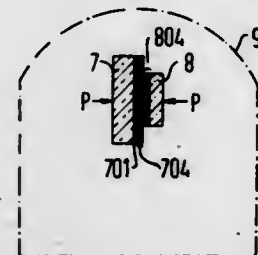
Klaus Burkart, Immenstadt, and Manfred Wintzer, Unterpöf-fenhofen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jul. 27, 1978, Ser. No. 928,683

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742922

Int. Cl.³ B23K 20/16

U.S. Cl. 228—116

7 Claims



1. In a method of indirectly connecting two parts in a vacuum-tight manner whereby metal layers are applied under vacuum to surfaces of such parts to be connected and free surfaces of such metal layers are brought into contact with one another under vacuum, the improvement comprising:
applying said metal layers onto surfaces of such parts to be joined so that such layers have a thickness in the range of about 0.5 to 55 nm; and
maintaining such applied layers at about room temperature and under vacuum conditions while substantially simultaneously applying a pressure of up to about 10 N/cm² onto such parts to force free surfaces of said metal layers into intimate contact with one another.

4,247,035

CRANE CONVERSION METHOD

James L. Eltzroth, P.O. Drawer 150, Wadsworth, Ohio 44281
Continuation-in-part of Ser. No. 823,597, Aug. 11, 1977, Pat. No. 4,105,151. This application Aug. 4, 1978, Ser. No. 931,123
The portion of the term of this patent subsequent to Aug. 8, 1995, has been disclaimed.

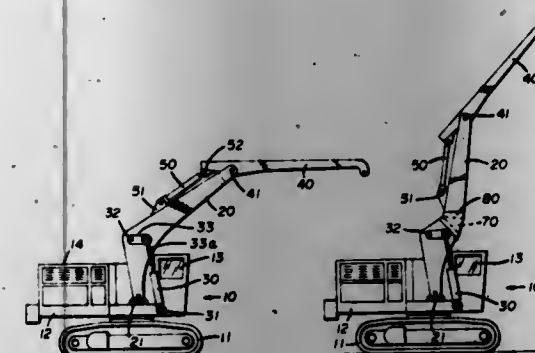
Int. Cl.³ B23K 31/02

U.S. Cl. 228—170

4 Claims

1. A method of retrofitting a knuckle boom crane designed for excavating purposes, comprising the steps of:

(A) cutting a notch in the side walls of the main boom extending inwardly from the bottom wall thereof;
(B) bending said main boom so that the top wall of said main boom forms an obtuse angle;



(C) forming inserts having a configuration complementary to the opening formed by the edges of said notches; and
(D) securing said inserts to the edges of said notches.

4,247,036

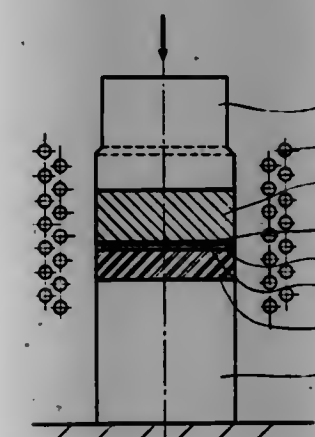
PROCESS FOR ASSEMBLING ALUMINUM-BASED MEMBERS AND STEEL MEMBERS

Marc Salese, Meylan, and Dominique Klein, Ham, both of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France
Filed Nov. 21, 1978, Ser. No. 962,685

Claims priority, application France, Dec. 7, 1977, 77 37751
Int. Cl.³ B23K 19/00, 35/365, 35/30

U.S. Cl. 228—194

16 Claims



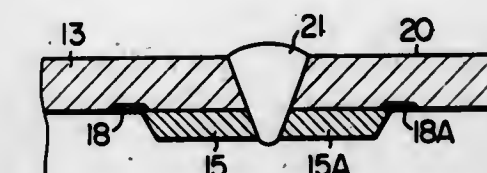
1. In an assembly process for the hot pressure bonding of an aluminum-based member and a steel member whose surfaces to be bonded have been cleaned in preparation for bonding, the improvement comprising the steps of: providing a layer of angular grains of silicon in association with at least one of the surfaces to be bonded; protection the silicon and the surfaces to be bonded from oxidation; heating the surfaces to be bonded to a temperature of from about 500° C. to about 650° C.; subjecting the members, with the surfaces to be bonded in interface, to a pressure sufficient for said angular grains of silicon to pierce any aluminum oxide layer present and form an aluminum-silicon eutectic and expel from the interface at least a portion of the eutectic formed by whereby bond impairing contaminant present at the interface is removed by being entrained in the eutectic expelled, said pressure being sufficient to bond the members; and cooling the bonded members to below the eutectic temperature.

4,247,037 METHOD FOR WELDING TUBULAR MEMBERS OF STAINLESS STEEL

Yasumasa Tamai, Hitachi, and Tetsuo Matsumoto, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Jul. 10, 1979, Ser. No. 56,238
Claims priority, application Japan, Jul. 11, 1978, 53-84299
Int. Cl.³ B23K 31/02

U.S. Cl. 228—203

3 Claims



1. A method for welding tubular members of stainless steel comprising the steps of:
depositing metal by build-up welding on a portion of the inner surface of each of the tubular members adjacent an edge of the tubular member where welding is to be effected, said portion of the inner surface being exposed to a corrosive fluid when in service;
melting a portion of the inner surface of each of the tubular members in a zone adjacent the metal deposited by build-up welding and affected by the welding heat when the build-up welding is performed, said portion of the inner surface being exposed to the corrosive fluid when in service; and
welding the tubular members of stainless steel at the edges thereof after the aforesaid steps have been completed.

4,247,038

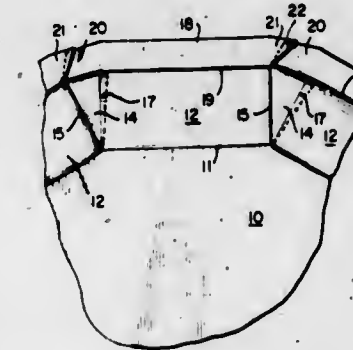
BAKE-IN-TRAY

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 15, 1979, Ser. No. 66,812
Int. Cl.³ B65D 3/04, 5/24

U.S. Cl. 229—32

2 Claims



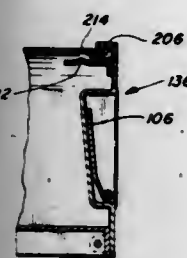
1. A polygonal shaped tray-like receptacle formed from a single blank of bendable material comprising, a bottom wall and an upwardly extending side wall foldably attached to said bottom wall and terminating along its upper edge in a peripherally extending flange, said side wall and peripheral flange each being formed from a plurality of discrete segments, the improvement wherein each side wall segment includes a tab element of generally triangular shape that is foldably connected along one side edge thereof to the side wall segment and which is secured to the outer surface of an adjacent side wall segment, and each peripheral flange segment includes extensions at each end thereof which are secured alternately to the upper and lower surfaces of the adjacent flange segments with the flange segment extension adjacent to said side wall tab element secured to the upper surface of its adjacent flange segment and the flange segment extension at the opposite end secured to the lower surface of its adjacent flange segment.

4,247,039

MAILBOX SIGNAL AND DOOR HANDLE DEVICE
Alexander M. Cornwell, Jr., St. Louis, Mo., assignor to Jack-
Evans Manufacturing Company, St. Louis, Mo.
Division of Ser. No. 812,373, Jul. 1, 1977, Pat. No. 4,148,432,
which is a continuation-in-part of Ser. No. 664,538, Mar. 8, 1976,
abandoned. This application Oct. 25, 1978, Ser. No. 954,335
Int. Cl.³ D65D 91/00

U.S. Cl. 232-35

6 Claims



1. In a mail box defined by a hollow container, a flag apparatus for indicating the presence of outgoing mail, said apparatus comprising:

an access door mounted on said container for pivotal movement about a horizontal axis;
a recess formed in said door and extending inwardly of said container, said recess being defined by a generally vertical wall affixed to said door by extending sidewalls; and
a flagging plate pivotally mounted in said recess for pivotal movement between a first, generally vertical, depending position parallel to the door and a second, generally vertical, upstanding position within said recess, said flagging plate being provided with projections which extend into said sidewalls for pivotal mounting, said mounting being transversely disposed from said vertical wall for permitting said flagging plate to be rested against said vertical wall in its upstanding position.

4,247,040

METHOD AND MECHANISM FOR SWITCHING HEAT GENERATING EQUIPMENT

William E. Davey, Wellington, New Zealand, assignor to A & T Burt Limited, Lower Hutt, New Zealand

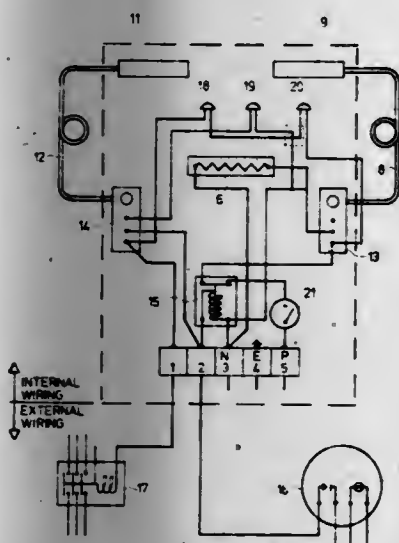
Filed May 29, 1979, Ser. No. 43,015

Claims priority, application New Zealand, Jul. 3, 1978, 187757

Int. Cl.³ F23N 5/20

U.S. Cl. 236-46 R

10 Claims



1. A control method which comprises the steps of:
positioning a control box containing a block, positioned within an insulating material, in association with a building;
maintaining the block within the control box at a first preset temperature (T1) during shut down conditions of a heat-

ing system incorporated within the building and which is to be operated by the control box;
deactivating at a pre-determined period prior to the time the building is to be occupied a heater which has maintained the block at its pre-determined temperature;
allowing the block to cool to a pre-determined temperature (T2); and
activating a main control mechanism or switch of the heating system when the block has cooled to the pre-determined temperature (T2) so that the building is heated to reach a desired temperature at start time for use of the building.

4,247,041

THERMALLY RESPONSIVE VALVE DEVICE
Kazuhiko Kitamura, and Atsushi Satomoto, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 965,209, Nov. 30, 1978, abandoned.

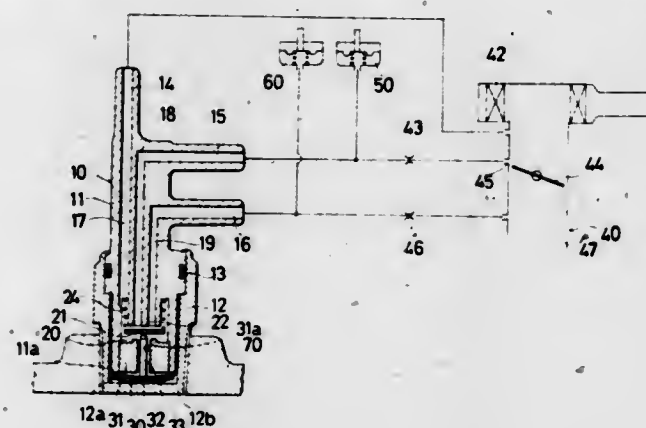
This application Apr. 3, 1980, Ser. No. 136,861

Claims priority, application Japan, Dec. 7, 1977, 52-164026

Int. Cl.³ G05D 23/10

U.S. Cl. 236-48 R

4 Claims



1. A thermally responsive valve device comprising body means having inlet port means and first and second outlet port means therein, chamber means in said body means in communication with said inlet port means, a valve seat comprising a surface disposed in said chamber means having first and second openings therein adjacent each other, first and second passage means connecting said first and second openings in said valve seat with said first and second outlet port means, respectively, valve means including a single valve member for controlling the opening and closing of said first and second openings in said valve seat simultaneously, spring means between said body and said valve member for biasing said valve member away from said seat to communicate said inlet port means with said first and second outlet port means at the same time and thermally responsive means operatively associated with said valve member to move said valve member to close said first and second openings at the same time in response to a predetermined temperature level.

4,247,042

VAPORIZER FOR INSECTICIDES AND/OR OTHER VOLATILE ACTIVE SUBSTANCES

Georg Schimanski, Breckerfeld, and Fritz von Philipp, Neuburg, both of Fed. Rep. of Germany, assignors to Global-Werk GmbH, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,441

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807424

Int. Cl.³ B05B 17/00

U.S. Cl. 239-43

12 Claims

1. A vaporizer for volatile active substances comprising a casing containing volatile active substances therein, a housing

4,247,044

COMPRESSION OPERATED INJECTOR

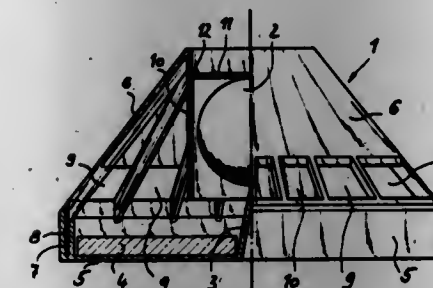
Richard H. Smith, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1979, Ser. No. 107,054

Int. Cl.³ F02M 49/02

U.S. Cl. 239-87

2 Claims



housing and enclosing the casing, a pushing member above and resting on the casing and attached to the shaft and which, when pushed down into the shaft breaks away from the shaft and acts to depress the casing and causes the opener to pierce the casing, thereby releasing the contents of the casing for absorption by the holder.

4,247,043

DEVICE FOR MARKING WORKPIECES BY MEANS OF POWDER

Georg Roeder, Helmut Sachs, both of Frankfurt am Main, and Dieter Hajok, Hattersheim, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

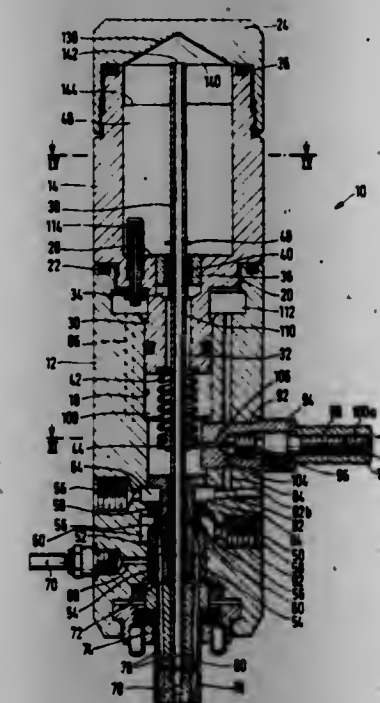
Filed Apr. 18, 1979, Ser. No. 31,023

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819146

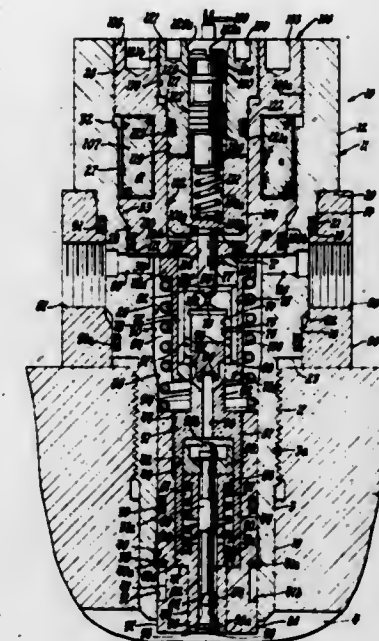
Int. Cl.³ B05B 7/16

U.S. Cl. 239-85

12 Claims



1. In a device for marking workpieces by means of powder with a nozzle from which, concentrically, a powder spray circumscribed by a heating flame emanates, the improvement being a burner, one end of said burner being attached to said nozzle for powder marking, the other end of said burner being attached to a powder container which is connected to said nozzle by means of a tube, said tube being equipped with a spring, one end of said spring being attached to a spring washer, and the other end of said spring resting against a projection of the base of said powder container.



1. A pressure operated fuel injection for delivering fuel directly to an engine combustion chamber, said injector device including an injector body having an axial stepped bore extending from an inboard end to an outboard end thereof relative to the combustion chamber; a solenoid valve means including a movable valve positioned in the outboard end of said bore; an actuator piston slidably positioned in the inboard end of said bore; a pump bushing means positioned in said bore intermediate said actuator piston and said solenoid valve means to define with said injector body a fuel supply chamber connectable to a source of fuel; said bushing having a stepped bore therethrough defining at one end a pump cylinder, at its other end a valve guide passage slidably receiving said valve with an intermediate valve seat for cooperation with said valve controlling encircling the bore opening to said pump cylinder; an injector nozzle means having an inlet and an outlet mounted in one end of said actuator piston with said outlet positioned for discharging fuel to the combustion chamber; a plunger fixed to the opposite end of said actuator piston for movement therewith with the free end of said plunger being slidably received in the pump cylinder of said pump bushing means; passage means in said plunger in communication with said inlet; cooperating passages in said bushing in fluid communication with said valve guide passage and positioned for cooperating with said passage means of said plunger for intermittently establishing communication between said passages and said fuel supply chamber upon relative movement of said plunger in said pump cylinder; and, means including a spring for causing and limiting outward movement of said actuator piston with respect to said injector body; said solenoid valve means being operative to effect movement of said valve in said valve guide passage relative to said valve seat to control the flow of pressurized fuel from said pump cylinder to said injector nozzle means during a pump stroke of said plunger whereby the start and end of fuel injection is controlled by operation of the solenoid valve means.

4,247,045

AUTOMATIC VOLUME CONTROL SYSTEM

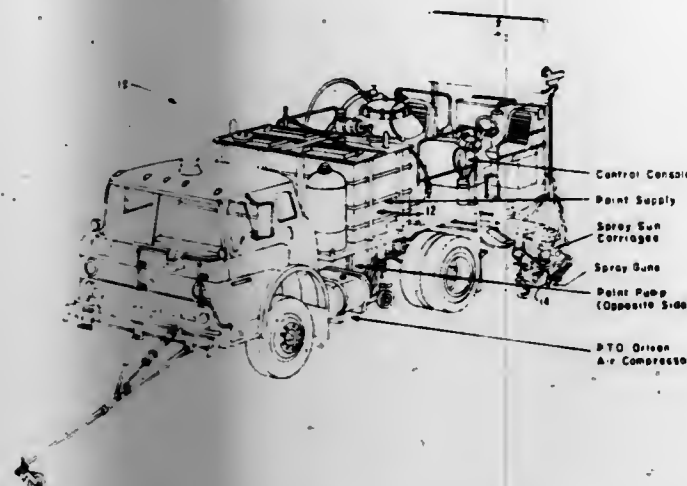
Wayne R. Mitchell, Muncy, and Kenneth Wanda, Riverside, both of Pa., assignors to Priamo Universal Corporation, Montgomery, Pa.

Filed Apr. 20, 1979, Ser. No. 31,964

Int. Cl.³ B05B 9/06

U.S. Cl. 239—156

13 Claims



1. A system for automatically controlling the rate at which a substance is deposited from a moving vehicle onto an adjacent surface to form a coating of uniform thickness, comprising: a first hydraulic motor and a second hydraulic motor; a hydraulic pump for pumping hydraulic fluid through said first and second hydraulic motors to operate said first and second motors at rates which vary as a function of the rates which fluid is pumped therethrough; adjustable valve means for limiting the rates of flow of hydraulic fluid between said hydraulic pump and said first and second hydraulic motors, respectively; first means, connected to and operated by said first motor, for depositing said substance at a rate which varies with the rate of operation of said first motor; second means, connected to and operated by said second motor, for depositing said substance at a rate which varies with the rate of operation of said second motor; and means for automatically adjusting said adjustable valve means in order to control the rates of fluid flow through said adjustable valve means as a function of vehicle speed to cause a uniform coating to be deposited; said adjustable valve means including first and second adjustable valves for respectively adjusting said rates of flow to said first and second hydraulic motors.

4,247,046

MULTI-STAGE SOLUTION PROPORTIONER DISPENSER

Valentine Hechler, IV, Northfield, Ill.

Continuation-in-part of Ser. No. 868,439, Jan. 10, 1978, Pat. No. 4,142,681, which is a continuation-in-part of Ser. No. 615,800, Sep. 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 520,676, Nov. 4, 1974, Pat. No. 3,984,053, which is a continuation-in-part of Ser. No. 443,831, Feb. 27, 1974, Pat. No. 3,933,179. This application Apr. 20, 1978, Ser. No. 898,076

Int. Cl.³ B05B 7/30

U.S. Cl. 239—318

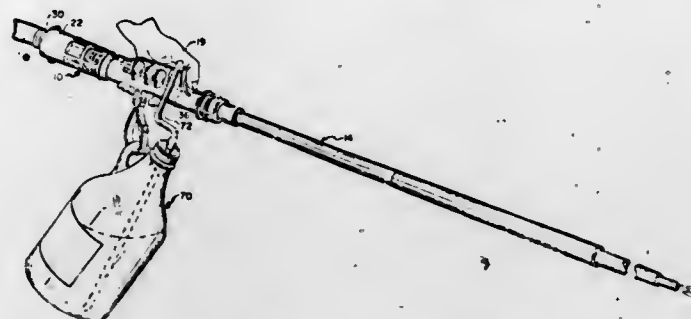
6 Claims

1. In a device of the class described having a housing defining a compartment with spaced solvent supply, solute supply and mixture discharge openings, interchangeable unitary means for proportioning, mixing and dispensing solutions of different ratios, each comprising: a shell assembly releasably received in sealed relation in said compartment, said shell being open at both ends and having a solute port through its wall in open communication with said solute supply opening; said shell assembly defining a plurality of nozzles having

passages converging in the direction of flow with their upstream ends in communication with said solvent opening and terminating in jet ports for converting solvent pressure to flow energy;

a plurality of diverging passage walls for converting flow energy to pressure each having an inlet port spaced from one of said jet ports to define therebetween a primary solution mixing chamber in open communication with said solute port;

an intermediate means in said shell having a secondary diverging wall passage energy converter having its inlet port spaced from another of said jet ports and defining therewith a second solution mixing chamber in communi-



cation with the outlet of said primary diverging wall energy converter passage; and downstream means in said shell having a tertiary diverging wall energy converter passage with its inlet port spaced from another of said jet ports and defining therewith a third solution mixing chamber in communication with the outlet of the final energy converter passage forming another solution mixing chamber; said downstream means including a nozzle means connected to said third stage diverging wall energy converter passage having a dispensing opening smaller in flow area size than the flow area of said downstream inlet port to maintain a substantially uniform pressure on the solute in the mixing zones.

4,247,047

MODULAR ZONED DIGITAL COOLANT CONTROL SYSTEM FOR STRIP MILL ROLLS

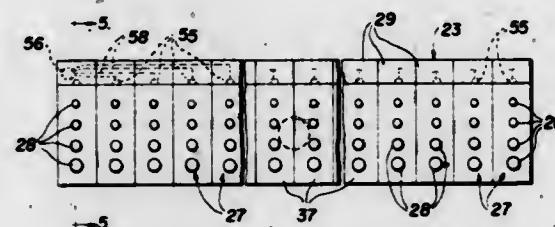
Edward J. Schaming, P.O. Box 1070, Butler, Pa. 16001

Filed Jan. 15, 1979, Ser. No. 3,345

Int. Cl.³ B05B 1/16

U.S. Cl. 239—391

7 Claims



1. A coolant distribution apparatus for the zoned cooling of rolls in a metal strip rolling mill comprising a coolant header having a coolant chamber and a coolant inlet leading to said chamber, plural modular coolant control valve and spray nozzle assemblies releasably mounted on said header, each modular assembly having a predetermined number of independently digitally operated control valves and associated coolant spray nozzles, the spray nozzles of each modular assembly having predetermined nozzle aperture sizes, digital power means connected with said control valves in said modular assemblies so that the valves in any or all assemblies may be selectively fully opened or fully closed to achieve the desired zoned cooling of said rolls, said digital power means being electrical, and each coolant control valve having an electromagnetic coil and a movable armature forming a valve element engageable with a seat in the particular modular assembly

containing such valve, wiring for all of the control valves of each modular assembly being contained within each modular assembly, and a common electrical connector on each modular assembly for the wiring contained therein.

4,247,048

DISPENSING NOZZLE

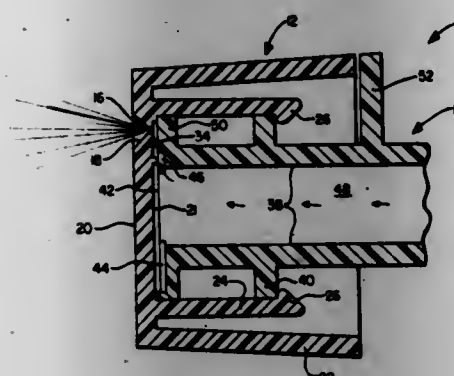
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 29, 1979, Ser. No. 24,788

Int. Cl.³ B05B 1/12

U.S. Cl. 239—396

11 Claims



1. A nozzle for the dispensing of liquids, said nozzle comprising:

- a. a tubular member having at its terminal end a circular, planar face, said planar face being coaxial with a hollow bore extending through said tubular member and said planar face, and said planar face having at least one recess in liquid passage communication with said bore;
- b. a cap having
 - i. an end wall with a planar inside surface,
 - ii. a cylindrical, hollow skirt projecting from said inside surface, a dispensing orifice in said end wall eccentric with the center axis of said circular skirt and registerable with said recess in said planar face;
 - iii. a sealing boss on said inside surface surrounding said dispensing orifice and surrounding said bore when said cap is fitted to said tubular member, said sealing boss forming, throughout its extent, a liquid-tight seal with said planar face, except for that portion of said boss overlying said recess when said orifice is in registration with said recess; and
- c. first and second mounting means, carried by said tubular member and said cap respectively, for achieving rotatable mounting of said cap to said tubular member.

4,247,049

ACTUATOR BUTTON HAVING SWIRL-INDUCING VANE PLATE

Adolph R. Gallitis, Winchester, Mass., assignor to Summit Packaging Systems, Inc., Manchester, N.H.

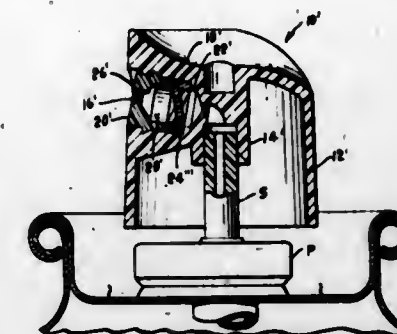
Filed Aug. 6, 1979, Ser. No. 63,820

Int. Cl.³ B05B 1/34

U.S. Cl. 239—497

2 Claims

1. An actuator button for an aerosol comprising a plastic molded body having an inlet opening adapted to fit over the discharge stem of an aerosol can, a discharge opening connected to said inlet of the body and being shaped as a cylindrical hollow having a bottom annular shelf, a vane disc disposed snugly in the hollow against the shelf, the vane disc comprising a molded plastic body including a pair of semi-circular vanes tangent at the center of the disc and disposed generally transverse of the disc but angled oppositely with respect to a radial plane passing through the point of tangency, and a circumferential ring molded integrally with the vanes; and a separate cup-shaped orifice insert having imperforate sidewalls defining a substantial swirl chamber disposed mouth-end first, into the hollow, its mouth engaging the outer end of the disc, the insert



hollow and is deflected by the vanes to swirl into the chamber and out the orifice in a fine mist.

4,247,050

FLUID REFLECTING MEMBER FOR USE IN A FLUID DISPERSING NOZZLE UNIT

Toshiharu Kumazawa, Fujisawa, Japan, assignor to Mitsubishi Precision Co., Ltd., Kamakura, Japan

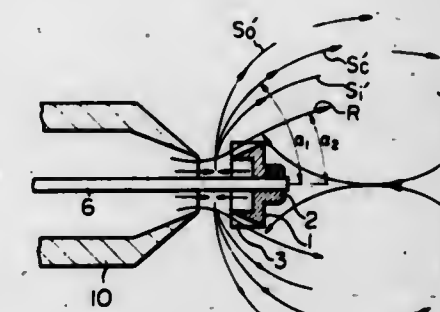
Filed Apr. 4, 1979, Ser. No. 26,942

Claims priority, application Japan, Jul. 3, 1978, 53-79744

Int. Cl.³ B05B 1/26

U.S. Cl. 239—498

4 Claims



1. A cavity type fluid reflecting member for use in combination with a fluid spouting nozzle element, for generating a dispersing stream of a fluid, said fluid reflecting member positioned on the axially downstream side of said fluid spouting nozzle element for cooperating therewith to define an outlet space in which fluid from said fluid spouting nozzle element collides with fluid reflected from said fluid reflecting member, wherein said cavity type fluid reflecting member is provided, at an outer circumference thereof, with a plurality of equiangularly arranged axial slots extending from the upstream side to downstream side of said fluid reflecting member, each slot having a bottom surface thereof axially extending and outwardly inclining with respect to the axis of said fluid reflecting member, wherein a part of said dispersing stream of the fluid passes through said slots and collapses a fluid stagnant zone hydrodynamically generated, in the absence of said slots, in the region adjacent to said outer circumference of said fluid reflecting member.

4,247,051

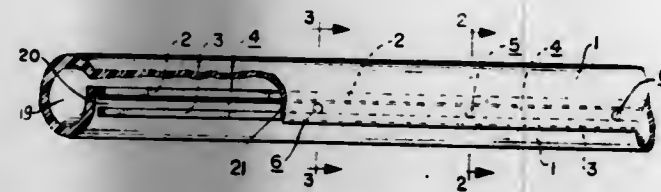
IRRIGATION HOSE AND METHOD FOR ITS CONSTRUCTION

Davies Allport, 8960-C Carroll Way, San Diego, Calif. 92121
Continuation-in-part of Ser. No. 887,348, Mar. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 784,064, Apr. 4, 1977, abandoned. This application Dec. 20, 1979, Ser. No. 105,518

Int. Cl.³ B05B 15/00

U.S. Cl. 239—542

24 Claims



3. An irrigation hose comprising: an elongated flat sheet of flexible water impervious material bent along its length to form a lapped longitudinal seam between opposing longitudinal margins of the sheet; first and second longitudinally extending transverse ribs in spaced apart relationship interconnecting the opposing margins along their length to seal the overlapping longitudinal seam, thereby forming a flow regulating tube defined by the ribs and the opposing margins and a supply tube defined at least in part by the remainder of the sheet; a plurality of longitudinally spaced inlets to the flow regulating tube; and a plurality of longitudinally spaced outlets from the flow regulating tube displaced from the respective inlets to provide a substantial path length from each inlet to a respective outlet.

4,247,052

ELECTROMAGNETIC FUEL INJECTOR

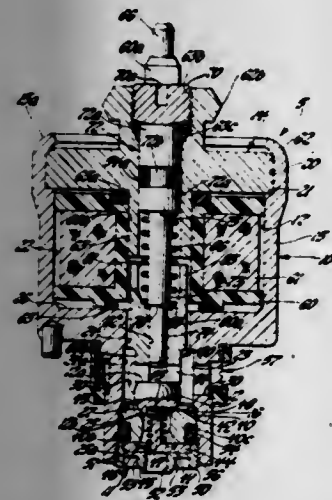
Leo A. Gray, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1979, Ser. No. 82,893

Int. Cl.³ B05B 1/30

U.S. Cl. 239—585

4 Claims



1. In an electromagnetic fuel injector having a hollow tubular body with a stepped bore therethrough providing a fuel chamber therein intermediate its ends adapted to receive fuel; a fuel injection nozzle positioned in said stepped bore at one end of said body to define a spray tip at said one end and an annular valve seat encircling a discharge passage upstream of said spray tip in communication with said fuel chamber; a valve positioned in said stepped bore for movement into and out of engagement with said valve seat; a solenoid means fixed in said stepped bore at the opposite end of said body, said solenoid means including a core having a central aperture therein, said central aperture in said core being aligned substan-

tially concentric with said valve seat with said core in an axial spaced apart relationship thereto; a cylindrical guide means of non-magnetic material; said guide means including a support portion positioned in said central aperture and a guide pin means extending from said core axially toward said valve seat substantially concentric therewith; an armature having a central axial stepped bore therein slidably positioned in said stepped bore of said body above said valve, said stepped bore defining an internal guide bore wall encircled by a radial stop shoulder, said guide pin means being slidably received in said guide bore wall of said armature whereby to axially guide said armature during movement thereof; and, a spring means operatively associated with said armature to normally bias said armature and therefore said valve in one direction to effect seating of said valve against said valve seat; the improvement wherein said guide means includes an abutment shoulder axially positioned on said guide pin means relative to said core whereby when said armature is moved in an opposite direction toward said core, said stop shoulder of said armature will abut against said abutment shoulder at a predetermined axial distance from said core whereby to define a fixed minimum working air gap between said core and said armature.

4,247,053

CHIPPER WITH MEANS FOR SEPARATING DEBRIS FROM CHIPS

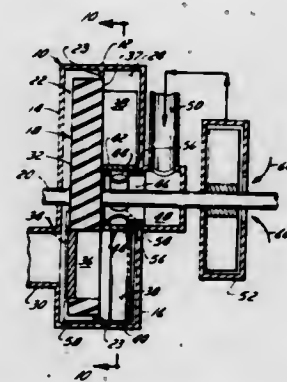
Joseph A. Lapointe, Pointe Claire, Canada, assignor to Domtar Inc., Montreal, Canada

Continuation-in-part of Ser. No. 949,870, Oct. 10, 1978, abandoned. This application Oct. 10, 1979, Ser. No. 83,452

Int. Cl.³ B02C 16/08

U.S. Cl. 241—57

9 Claims



1. A debris separating chipper comprising: a disc, means for mounting said disc for rotation around an axis, a cutting face on said disc, at least one knife mounted on said cutting face, a housing for said disc, a debris chamber in said housing, said cutting face forming one wall of said debris chamber, a chip slot through said cutting face leading to a chip space, compartment on said disc communicating with said slot, means for connecting said compartment to a means for providing air under pressure so as to eject air from said compartment through said chip slot into said debris chamber, a chip outlet from said chipper communicating with said space and a debris outlet from said chipper for ejecting debris from said debris chamber.

4,247,054

ARRANGEMENT FOR COMMUNUTING FOODSTUFFS

Rolf G. Schillein, Singhofen; Johannes Liebscher, Nassau, and Dieter Himmighofen, Roth, all of Fed. Rep. of Germany, assignors to Lelfelt International Günter Lelfelt, Nassau, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 29,913

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2816929; Mar. 9, 1978, 2909308

Int. Cl.³ A47J 43/25

U.S. Cl. 241—95

47 Claims

1. An arrangement for comminuting foodstuffs, such as

4,247,056

DEVICE FOR COMMUNUTING WASTE MATERIAL

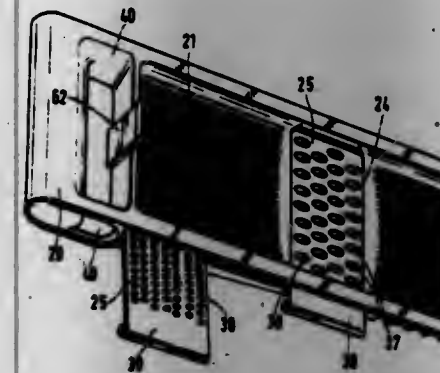
Al Kaczmarek, 136 W. Commercial Ave., Wood Dale, Ill. 60191
Filed Aug. 3, 1979, Ser. No. 63,538

Int. Cl.³ B02C 18/22

U.S. Cl. 241—167

7 Claims

potatoes, cucumbers, carrots, fruits and the like, with the use of comminuting plate members, comprising an elongated base plate having an upper surface relative to which foodstuffs to be comminuted are moved, and a lower surface spaced from said upper surface, said elongated base plate having a through-going opening extending between said upper and lower surfaces and arranged to removably accommodate one comminuting plate member so as to perform comminuting of a foodstuff by the latter, said elongated base plate having a plurality of



receptacles spaced from said opening and formed at said lower surface of said base plate, each of said receptacles being arranged to individually removably store another comminuting plate member which is not utilized for comminuting at that very instant, and each of said receptacles being outwardly open so that each of the other stored comminuting plate members may be taken out of a respective one of said receptacles without taking out the remaining other comminuting plate members and without removing any part of the arrangement.

4,247,055

PULVERIZER ROLLER LOADING

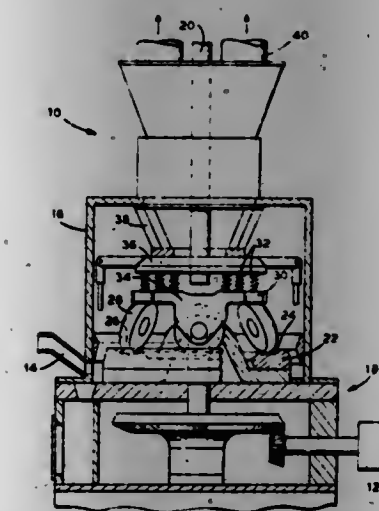
James T. Tucker, Jr., Barberton, Ohio, assignor to The Babcock and Wilcox Company, New Orleans, La.

Filed Sep. 28, 1979, Ser. No. 79,774

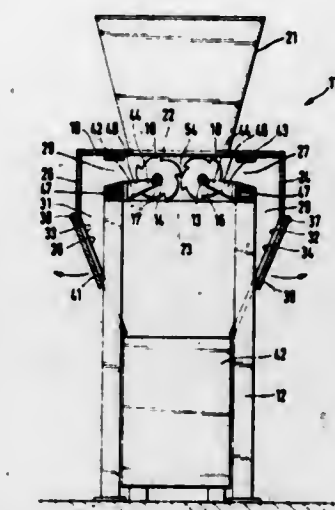
Int. Cl.³ B02C 15/06

U.S. Cl. 241—119

13 Claims



1. A pulverizer including a housing with wear plates, a horizontally disposed ring positioned within the housing and having an upwardly facing grinding surface, means for rotating the ring about an upright axis, a plurality of rollers circumferentially spaced about and disposed on the grinding surface, means for exerting downward pressure on the rollers, each roller being rotatably mounted on a bracket, corner blocks with wear plates cooperating with the housing wear plates are interposed between adjacent brackets, and means for connecting the adjacent ends of the corner blocks and brackets whereby the last named means is subjected to only a fraction of the pressure being exerted on said rollers.



1. A device for comminuting waste material, such as turnings or the like, comprising: two shafts which are driven in opposite senses of rotation and are parallel to each other and comprise disc-shaped knives of which the knives of one shaft engage respectively between the knives of the other shaft, a knife box which has an upper inlet opening and a lower outlet opening and in which the shafts equipped with the knives are arranged, two external walls extending substantially parallel to the shafts, stripping fingers arranged between the knives of both shafts in the circumferential areas directed towards the external walls, the stripping fingers having a stripping end which is arranged at a short distance from the shaft and a top that is directed towards the inlet opening which is designed as a sliding surface and is inclined and has a sliding surface end area in the direction of the respective external wall of the knife box, and the knife box having by-pass openings on both sides in the sliding surface end areas of the stripping fingers.

4,247,057

THREAD-STORAGE AND DELIVERY DEVICE

Kurt A. G. Jacobson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed May 14, 1979, Ser. No. 38,565

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821725

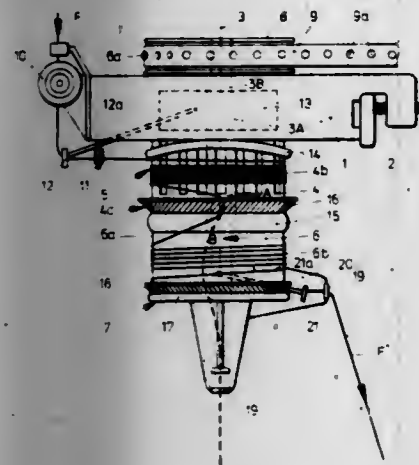
Int. Cl.³ B65H 51/20

U.S. Cl. 242—47.01

9 Claims

1. In a thread storage and delivery device for a textile machine, said device including second thread storage means for effecting positive thread delivery to the textile machine and first thread storage means connected ahead of said second storage means for permitting intermittent delivery of thread to the textile machine, said first thread storage means including a first thread storage drum adapted to have thread windings stored therearound and having a thread wind-up member associated therewith, the wind-up member and the first drum being supported for relative rotation therebetween, said second thread storage means including a second thread storage drum adapted to store thread windings therearound and having a thread withdrawal member associated therewith, said first and second drums being arranged coaxially with respect to one another, comprising the improvement wherein the first thread storage drum has a thread withdrawal area adjacent one

end thereof, the second thread storage drum having a thread wind-up area adjacent one end thereof, the withdrawal area of the first drum being arranged axially adjacent the wind-up area of the second drum so as to define a thread transfer area between said coaxially adjacent drums which permits the thread as withdrawn from the first drum to be transferred directly to and wound around said second drum, thread support means for engaging and deflecting the thread within the transfer area as the thread is transferred from the first drum to the second drum so that the thread is wound around the second drum in



the opposite direction to the windings on the first drum, said support means having means for permitting the transferred thread to freely move along the transfer area peripherally relative to said drums, first drive means for effecting relative rotation between said first drum and said wind-up member at a first relative peripheral speed to effect winding of thread on said first drum, and second drive means for effecting relative rotation between said first and second drums at a second relative peripheral speed which on the average over the operating time of the device corresponds approximately to twice said first peripheral speed.

4,247,058

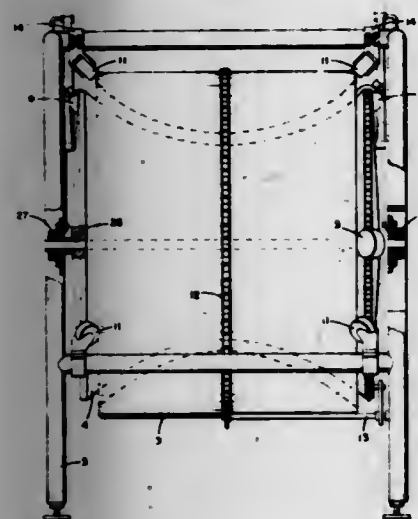
AXIAL FLOW CONTINUOUS LOOP FILM STORAGE SPOOL APPARATUS

Richard P. Eddy, 1450 W. Compton Blvd., #17, Gardena, Calif. 90247

Filed Jan. 19, 1979, Ser. No. 4,802
Int. Cl.³ G03B 21/00; G11B 23/08, 23/12

U.S. Cl. 242—55.17

27 Claims



1. A device for the storage of filmstrips or arbitrary length, said filmstrips having a more or less constant width, said width small in comparison to said filmstrip length, comprising: inner support means, having an outer surface with axial symmetry, for forming the inner side of an axially symmetrical film storage cavity; outer support means, having an inner surface with axial

symmetry, said outer support means concentrically located, and cooperatively shaped with said inner support means, for forming the outer side of said film storage cavity;

said film storage cavity edgewise supporting layers of filmstrip wound around said cavity, said cavity having a more or less constant width commensurate with the width of said filmstrip, said cavity width determined by the cooperative shapes of said inner and outer support means; a frame, concentrically positioning said inner and outer support means with respect to each other, thereby providing a common axis of symmetry for said inner support means, outer support means and cavity; and drive means, attached to said frame, for controllably rotating in synchronism said inner and outer support means about said axis of symmetry.

4,247,059

LIGHT EMITTING DIODE BEACONS FOR COMMAND GUIDANCE MISSILE TRACK LINKS

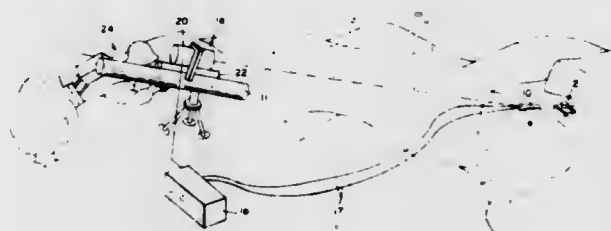
Jimmy R. Duke; Walter E. Miller, Jr.; Dorwin L. Kilbourn; Nicholas J. Mangus, Jr.; Robert L. Sliton, and Walter F. Fountain, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 25, 1978, Ser. No. 954,793

Int. Cl.³ F41G 7/00; F42B 15/02; G06F 15/50

U.S. Cl. 244—3.16

3 Claims



1. In an automatic missile tracking and guiding system wherein a launched missile is guided along a line-of-sight-maintained by the operator to a target, the system having tracking means for tracking a missile and guidance means for developing missile steering signals proportional to the deviation of the missile from the line-of-sight, the improvement comprising: an array of infrared photoemissive diodes disposed on said missile for directing optical emission to the rear thereof; a modulator coupled to said diode array for modulating the array output signal; said modulator comprising a rectangular waveform clock generator, a buffer amplifier having an input coupled to said clock, and a driver circuit coupled between said buffer amplifier and said diode array, said clock generator being an integrated circuit, said buffer amplifier being a transistor amplifier having the base coupled as said input and the emitter coupled to provide an output to said driver circuit, and said driver circuit being a transistor having a base input from said buffer amplifier and having the diode array coupled in series through the collector and emitter for driving said array at the clock output frequency; a remotely located infrared detection means for detecting the position of said array with respect to said line-of-sight, said infrared detection means comprising a detector positioned to receive and detect emission from said diode array and provide an output responsive to said received signal and an optical band pass filter for filtering optical energy impinging on said detector; and signal processing means coupled to said detector output for providing an output signal to said guidance means indicative of the position of said missile relative to said line-of-sight.

4,247,060

ATTITUDE RECOVERY DEVICE FOR HANG GLIDER

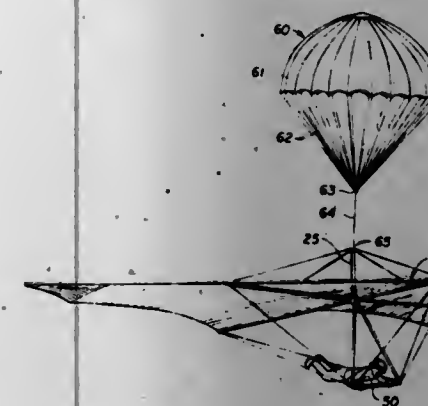
George J. Cory, 8235 SW. Ridgeway Dr., Portland, Oreg. 97225

Filed Mar. 27, 1979, Ser. No. 24,360

Int. Cl.³ B64D 17/80; B64C 31/02

U.S. Cl. 244—16

10 Claims



1. A device for stabilizing an out-of-attitude hang glider in which a pilot is supported beneath a point of suspension comprising:

drag means having a first non-operative configuration and a second operative configuration; activating means for causing said drag means to assume said second operative configuration; and spaced attachment means for providing an effective point of attachment of said drag means to said hang glider at a distance rigidly spaced away from said point of suspension along an axis normally extending above said point of suspension, said spaced attachment means permitting said drag means to oppose movement of said point of attachment generally independently of the angle between said axis and the direction of said movement, such that an upward force exerted by said drag means acting at said spaced point of attachment in cooperation with a downward gravitational force acting at said suspension point provides a righting moment about said point of suspension tending to bring said point of attachment into a position more closely in vertical alignment with said point of suspension.

4,247,061

HELICOPTER WITH STABILATOR DETUNED IN ANTISYMMETRIC VIBRATION MODES FROM MAIN ROTOR WAKE EXCITATION FREQUENCY

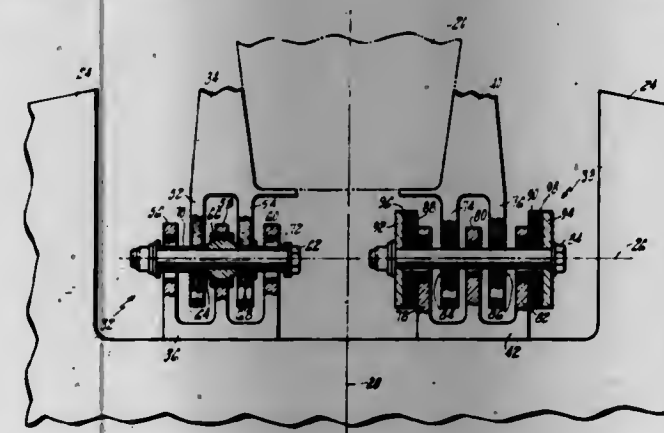
William A. Kuczynski, Branford, Conn., and John Marshall, II, deceased, late of Cheshire, Conn. (by Ruth Ann D. Marshall, administratrix), assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 12, 1978, Ser. No. 923,834

Int. Cl.² B64C 27/00, 5/10

U.S. Cl. 244—17.19

5 Claims



1. A helicopter having:
(A) a fuselage having a longitudinal axis,

(B) a main lift rotor supported from said fuselage and having (1) rotor blades supported to rotate about an axis of rotation,

(C) a tail section forming the after portion of said fuselage, and

(D) an airfoil shaped, horizontal stabilator extending substantially perpendicular to said longitudinal axis and positioned to intercept main rotor blade wakes to thereby establish symmetric and antisymmetric vibration modes in said stabilator, and

(E) means to support said stabilator from said tail section to be pivotable about a pitch change axis substantially perpendicular to said longitudinal axis and to detune one of said stabilator vibration modes from the main rotor wake excitation frequency,

(F) wherein said support means is constructed to detune said stabilator antisymmetric vibration modes from the main rotor wake excitation frequency,

(G) wherein said support means is constructed to have minimal effect upon stabilator symmetric vibration modes,

(H) wherein said support means is constructed to have minimal effect on stabilator vertical and pitch stiffness,

(I) wherein said stabilator support means is a three point suspension system supporting the stabilator from the tail section and including a first and a second mounting member between the stabilator and the tail section positioned on opposite sides of the longitudinal axis and enveloping the stabilator pitch change axis so as to support the stabilator for pivotable motion with respect to the tail section about the stabilator pitch change axis, and including a third mounting member displaced longitudinally from said first and second mounting members, and

(J) wherein said first and third mounting members are hard mounted, annular, antifriction bearings and wherein said third mounting member is actuatable so as to cause said stabilator to pivot about the stabilator pitch axis, and wherein said second mounting member is an annular elastomer bearing of selected stiffness to detune the stabilator antisymmetric vibration modes and thereby provide sufficient separation between the frequency thereof and the main rotor wake excitation frequency so as to avoid stabilator resonance.

4,247,062

HIGH EFFICIENCY VERTICAL TAIL ASSEMBLY COMBINED WITH A VARIABLE WING GEOMETRY

Hartmut Brueckner, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

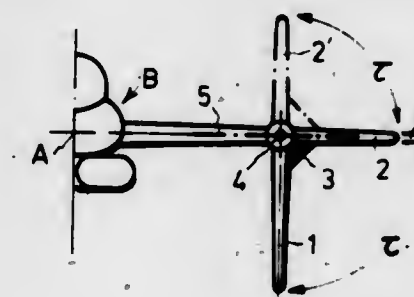
Filed Nov. 27, 1978, Ser. No. 964,126

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756107

Int. Cl.³ B64C 5/06, 5/10

U.S. Cl. 244—91

3 Claims



1. A high efficiency vertical tail assembly for an all-wing craft having a longitudinal axis and comprising a fuselage and two wings, said wings defining a common plane extending laterally away from said fuselage, each wing having a respective wing tip, said vertical tail assembly consisting of two identical vertical tail units, one vertical tail unit being provided

for each of said wing tips, each vertical tail unit consisting of its wing tip (2) and of a vertical tail surface (1) rigidly connected to the wing tip so as to include a given angle (τ) between the wing tip and the vertical tail surface, whereby in the normal position the wing tip extends in said common plane and the vertical tail surface extends downwardly from said common plane, and pivotal connecting means operatively connecting each vertical tail unit to its wing, said pivotal connecting means having an axis extending substantially in parallel to said longitudinal axis of the craft, whereby each vertical tail unit may be tilted out of said normal position so that the wing tip extends upwardly from said common plane and the vertical tail surface extends in said common plane to form the wing tip.

4,247,063

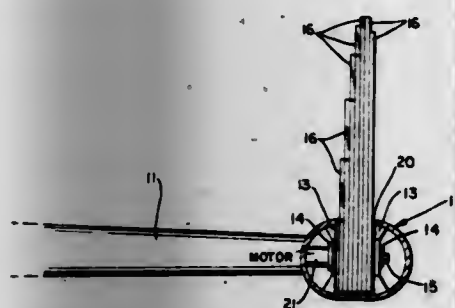
FLIGHT CONTROL MECHANISM FOR AIRPLANES
Michael W. Jenkins, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Filed Aug. 7, 1978, Ser. No. 931,735

Int. Cl.² B64C 5/08

U.S. Cl. 244—91

4 Claims



1. A flight control mechanism for an airplane having a fuselage and fixed wings extending laterally from said fuselage comprising an aerodynamic pod carried by each said wing adjacent the outer tip thereof, a slot in the upper surface of each said pod, a vane defined by flat sides disposed at all times in a fixed vertical plane substantially parallel to the longitudinal centerline of said fuselage and mounted internally of each said pod for vertical movement only in said fixed vertical plane to and from extreme positions of extension and retraction through its associated slot relative to its said pod and the upper surface only of the associated wing whereby the lower surface of each said pod and said associated wing remains aerodynamically unchanged, and a control device operative to move each said vane selectively in unison and individually.

4,247,064

LIMB RETENTION SYSTEM

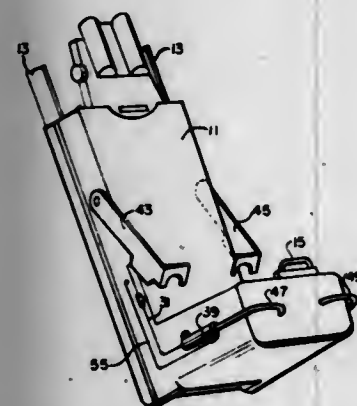
Marvin Schulman, Broomall, and Marcus Schwartz, Warminster, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 6, 1979, Ser. No. 46,066

Int. Cl.³ B64D 25/02, 25/10

U.S. Cl. 244—122 AG

4 Claims



1. Apparatus for capturing and restraining the limb of a

subject during normal ejection procedure from an aircraft, comprising:
an ejection seat;
a pair of rigid arm restraint members each pivotally connected to opposite sides of the seat on a transverse axis through the back of said seat, said arm members having a non-obstructing raised position and formed to engage and restrain the subject's arms in a lowered position;
a pair of rigid leg restraint members each slidably and rotatably connected to opposite sides of the seat on parallel axes extending from said seat, said leg members having a non-obstructing forward position and formed to engage and restrain the subject's legs in a rearward position;
control means responsive to an ejection command signal for actuating said arm and leg restraint members from the raised and forward positions to the lowered and rearward positions, respectively, and including retractor actuator means operatively connected to said seat and to said leg restraint members for releasably rotating and retracting said leg members between said positions having first gas generating means for producing a first quantity of gas under pressure, a casing fixed to said seat, a piston slidably disposed in said casing and receiving and displaced in said casing by said first quantity of gas, and transfer means connected between said piston and one of said leg members for displacing said leg member with respect to said seat with movement of said piston; and
cam means connected between said casing and said leg member for rotating said leg member about its longitudinal axis when it is displaced by said retractor means.

4,247,065

CARRYING WING WITH MOVING FLAP

Burkhard Grob, Wendelsteinstr. 8, 8023 Grosshesselohe; Ernst Gegenhuber, 8022 Grünwald, and Ekkehard Bretting, 8941 Ungerhausen, all of Fed. Rep. of Germany

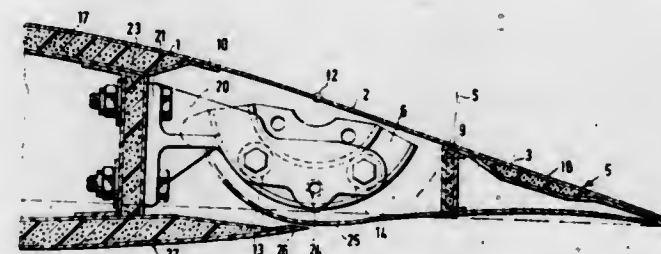
Filed Jan. 29, 1979, Ser. No. 7,602

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804254

Int. Cl.³ B64C 3/50

U.S. Cl. 244—215

5 Claims



1. A carrying wing for an aircraft having a movable flap comprising a main carrying wing, a flap attached to and supported on said main wing in spaced relationship thereto by a bearing means, said main wing and flap each having an outer surface skin, a flexible membrane spanning the space between and being secured at securing positions to said outer surface skins on the top of the wing to form a continuous smooth top surface, an arm supported on said main wing between said main wing and said flap, a cam guide having a U-shaped channel extending in a circular arc supported on said flap, said bearing means being at least two ball bearings having crown-like outer rings supported for rotation in spaced relationship on said arm and engaging in said U-shaped channel to facilitate up and down movement of the flap about a center of rotation located substantially in said membrane midway between said securing positions and movement of said securing positions on said flap to follow a track which is substantially spiral shaped.

4,247,066

AIRFOIL VARIABLE CAMBERING DEVICE AND METHOD

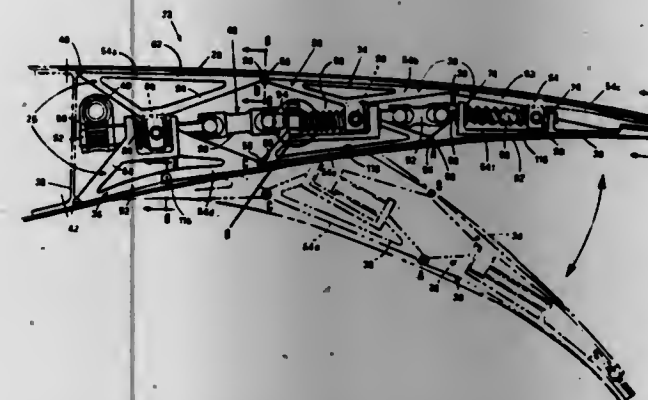
Richard C. Frost; Eduardo W. Gomez, and Robert W. McNally, all of Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Filed Feb. 21, 1978, Ser. No. 879,650

Int. Cl.² B64C 3/48

U.S. Cl. 244—219

27 Claims



1. An airfoil variable cambering device for varying the camber and the outer surface curvature of an airfoil in a smooth, continuous fashion over substantially the entirety thereof which comprises:
airfoil rib means positioned in the airfoil for giving structural support thereto,
outer directed portions of the rib means approximately defining a major portion of the airfoil cross section;
airfoil outer skin means arranged over said outer directed portions of said rib means to form substantially smoothly continuous outer surfaces for the airfoil;
means connecting said skin means to said rib means;
the rib means being formed as a bendable beam divided into first and second beam members each extending substantially the length of the beam;
said beam members being positionally movable chordwise one with respect to the other so as to alter the beam contour; and
jackscrew means connecting said first and second beam members and rotatable to effect said chordwise movement of said beam members one with respect to the other;
whereby rotation of the jackscrew means causes one of said beam members to be positionally shifted relative to the other beam member to provide a smooth continuous variation in the camber of the airfoil and the curvature of its outer surface.

4,247,067

CAMERA MOUNT

Harlan B. Smith, 395 NW. 10th, Canby, Ore. 97013

Filed Dec. 4, 1978, Ser. No. 965,990

Int. Cl.³ F16M 1/00

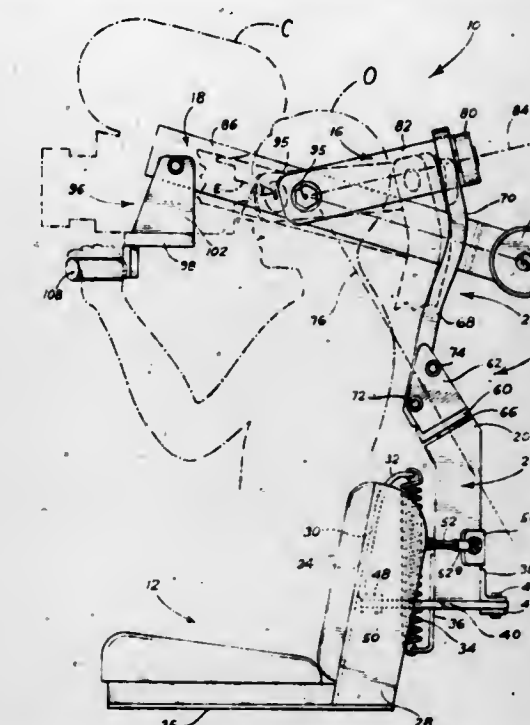
U.S. Cl. 248—123.1

3 Claims

1. A camera mount for supporting a camera in balance so that it may be panned, tilted and rolled by an operator to face a target comprising:

pedestal means including a mast arm operable for selective positioning behind the operator along an arcuate path having an axis of revolution lying on an imaginary line extending through the operator's head, said axis of revolution being inclined relative to the vertical, said pedestal means further including a base positioned behind the operator with said mast arm being rotatably mounted on said base for selective rotation about said axis of revolution;
first arm means including an elongate member having a laterally extending section which is pivotally connected to said mast arm adjacent an upper end thereof for pivotal

movement about a roll axis, said roll axis lying on an imaginary line extending through the operator's head; and second arm means pivotally connected to said first arm



means for pivotal movement about a tilt axis, said tilt axis lying on an imaginary line extending through the operator's head and said second arm means supporting the camera and a counterbalance.

4,247,068

EXTENSIBLE SUPPORT APPARATUS

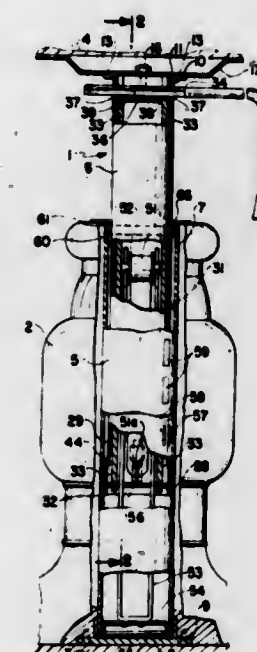
Leo Edelson, Marathon, Fla.; Trygve R. Oddsen, Northport, and Gustav A. Oddsen, Locust Valley, both of N.Y., assignors to G.I.R. Corporation, Westbury, N.Y.

Filed Sep. 22, 1978, Ser. No. 945,144

Int. Cl.³ F16M 11/00

U.S. Cl. 248—162.1

37 Claims



1. Extensible support apparatus comprising
a top plate having an upper side and an underside and adapted to carry a table top on the upper side thereof,
a pair of coaxing telescoping support members movable with respect to each other to change the extent of their telescoping relation and in turn the effective height of the table, one of such members forming a lower vertical member adapted to transmit the load of the table to a support surface and the other of such members forming an upper vertical member having an upper end portion arranged for abutting engagement with the underside of the top plate,

releasable locking means operatively interposed between the members for releasably locking such members in any selective position of telescoping relation therebetween, said releasable locking means including a stationary cam control wear plate and a movable cam control shim arranged in substantially coplanar slidable and force and wear distributing relation thereto and adapted to be slidably contacted and moved by a control ram for releasably locking the members and in turn to distribute operatively the resultant cam force and wear correspondingly throughout the common coplanar slidable extent of the shim and wear plate, hook seating means arranged on the upper end portion of the upper member, and tension hook means operatively interconnecting under tension the hook seating means and the top plate to maintain the upper end portion of the upper member in abutting engagement with the underside of the top plate.

4,247,069

CAMERA TRIPODS MOUNTING

Gerd Kurz, 7306 Joliette Crescent, Mississauga, Ontario, Canada

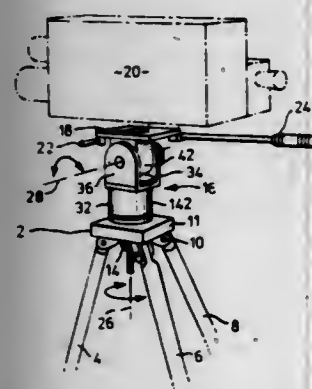
Filed Apr. 11, 1979, Ser. No. 28,986

Claims priority, application Canada, May 5, 1978, 302762

Int. Cl.² F16M 11/10

U.S. Cl. 248—185

10 Claims



1. In a camera tripod having a pan-head adapted to pivot a camera relative to said tripod about an axis of rotation; an axle mounted coaxial with said axis of rotation on said tripod pan-head; camera mounting means pivotally mounted on said axle for rotation about said axis; means for controlling said pivotal motion by frictional resistance, said means comprising: a rotor mounted on said axle substantially coaxial therewith and extending radially therefrom, said rotor being fixed to said pivotal mounting means to rotate therewith about said axis; at least one stator ring mounted on said axle substantially coaxial therewith and extending radially therefrom substantially coextensive with said rotor, said stator being restricted against rotational movement about said axis relative to said tripod; said rotor and stator having on the adjacent sides thereof respectively at least one circular raised ridge on one and a corresponding circular groove adapted to receive said ridge thereinto on the other; said ridge having tapered truncated sides and said grooves having tapered sides substantially parallel to said ridge sides, whereby said tapered sides and said ridges and said grooves are the surfaces of contact between said rotor and stator; means adapted to exert compressive pressure between said rotor and said stator to effect frictional resistance to relative rotational movement between them comprising: stop means mounted on said axle to one side of said rotor and stator limiting movement of said rotor and stator in that direction, bar means mounted on said axle on the other side of said rotor and stator and adapted to compress said

rotor and stator together by screw means threadably mounted on said axle and adapted to urge said bar means towards said rotor and stator in the direction of said stop means to exert compressive pressure between said rotor and stator and effect frictional resistance to relative rotational movement between them.

4,247,070

TILT COMPENSATING HANGER FOR TOILET TANK DISPENSING APPARATUS

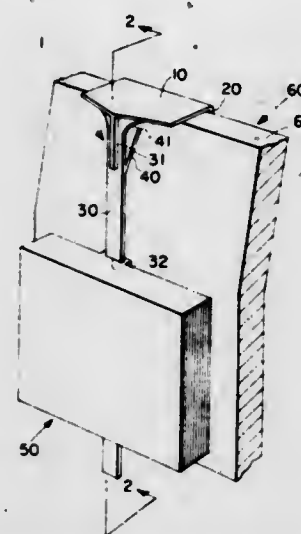
Robert S. Dirksing, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 23, 1979, Ser. No. 60,088

Int. Cl.³ F04G 5/06

U.S. Cl. 248—226.5

7 Claims



1. A tilt compensating hanger for a toilet tank dispenser comprising a generally U-shaped clip to be placed over the top edge of a toilet tank wall, said clip having a central portion located intermediate and secured at opposite ends to an outer leg which contacts the outermost surface of said toilet tank wall and an inner leg to which said dispenser is secured, said inner leg contacting the innermost surface of said toilet tank wall, said outer leg forming a pivot point where it contacts the outermost surface of said toilet tank wall, said pivot point being inwardly located from the juncture of said central portion and said outer leg, said inner leg having attachment means for securing said dispenser to said inner leg, said inner leg also having resilient means secured at least at one end to said inner leg, the free end of said resilient means projecting generally in the direction of said outer leg and contacting the innermost surface of said toilet tank wall at a point above said pivot point, whereby said resilient means exert a springload between said inner leg and the innermost surface of said toilet tank wall in use, said resilient means and said pivot point coacting to produce a coupled force system which holds the lowermost end of said dispenser against said toilet tank wall.

4,247,071

SEAT HEIGHT ADJUSTER

Richard F. Carella, Mt. Clemens, Mich., and Thomas W. Perry, South Bend, Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 903,193, May 5, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 30,126

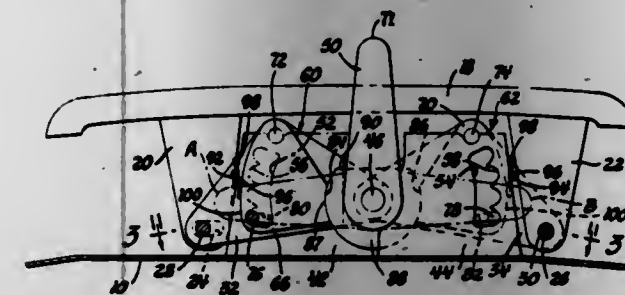
Int. Cl.³ F16M 13/00

U.S. Cl. 248—396

6 Claims

1. A seat-adjusting mechanism for a vehicle seat cushion comprising: a seat cushion mounting member having forward and rearward end portions; a floor mounted support member having forwardly located and rearwardly located slotted apertures therein each having a generally vertical elongation; first and second link arms for the support of the seat cushion and extending respectively in a forward direction and a rearward direction, the forward end of said first arm being pivotally

attached to said forward end portion of said seat cushion mounting member and the rearward end of said second arm being pivotally attached to the rearward end portion of said mounting member, the other end portion of said first and second arms being pivotally attached about a common axis to said support member midway between said slotted apertures; first and second latching members pivotally mounted respectively to said first and second link arms; pin means on said first and second latching members extending through said vertically extending slotted apertures and movable therein; toothed sectors formed upon the edges of said slotted apertures in said



support member defining vertically stacked grooves to receive the pin means on said first and second latching members when pivoted forward and rearward respectively thereby, the forward and rearward orientation of said seat cushion being determined by the engagement of said pin means and one of the vertically stacked grooves in the support member; a latch release actuator located between said first and second latching members and operative to selectively and alternately permit said latching members to pivot to a position moving said pin means thereon out of one of the vertically stacked grooves for subsequent movement to another of the vertically stacked grooves.

4,247,072

SWIVELED ROCKER BOX AND BASE

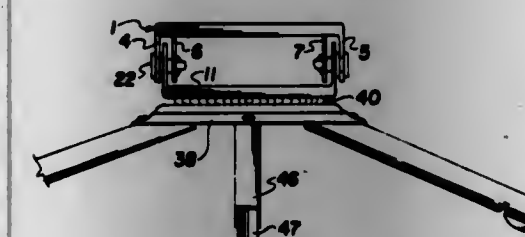
Roy F. McMahan, Sr., Louisville, Ky., assignor to Roy F. McMahan, Jr. and William L. McMahan, both of Louisville, Ky.

Filed Oct. 3, 1977, Ser. No. 840,482

Int. Cl.² A49C 3/00

U.S. Cl. 248—582

14 Claims



1. A rocker box for furniture and the like, comprising:

A. a rockable top plate having

1. two pairs of parallel laterally-spaced outer-depending side and inner-depending supplementary flanges containing perforations cooperatively providing four pivot-receiving openings on a common transverse axis,

a. one outer side and one inner supplementary flange being located at each of the opposite sides of the box,

b. each inner supplementary flange being spaced inwardly from the corresponding outer side flange so as to cooperate therewith in delimiting an interposed upper flange space;

B. a non-rockable bottom plate having, throughout its periphery, an endless upright rim providing peripheral side flanges and also providing upright front and rear flanges and further having

1. one pair of parallel laterally-spaced outer upright side flanges extending upwardly from said peripheral side flanges, one for each upper flange space,

a. each upright side flange projecting upwardly from

the bottom plate into the corresponding upper flange space where it is parallel to the corresponding depending side and supplementary flanges,

b. said pair of upright side flanges cooperatively providing two more pivot-receiving openings on said common transverse axis; and

C. means mounting the top plate upon the bottom plate for rocking movement out of a neutral position between extreme forward and rearward rocking positions,

1. said means including a pair of laterally-spaced flange-interconnecting pivotal structures, one pivotal structure at each side of the box.

4,247,073

CONCRETE FORM TIE ASSEMBLIES

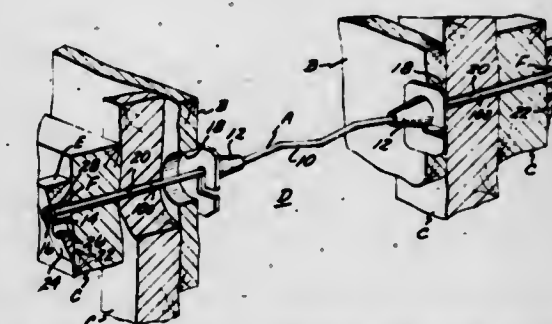
Mike Varlo, 7306 El Verano, Buena Park, Calif. 90620

Filed Nov. 2, 1978, Ser. No. 957,160

Int. Cl.² E04G 17/08

U.S. Cl. 249—38

1 Claim



1. In combination with a concrete receiving form that includes two laterally spaced, reinforced plywood sheets that have been previously used in defining a form and that have a pair of transversely aligned bolt holes therein that previously received a relatively large diameter bolt, a device for removably maintaining said sheets in fixed relationship with one another to again define a concrete receiving form using said pair of aligned bolt holes, said device including:

a. a metallic rod of substantially greater length than the distance between said plywood sheets, said rod having oppositely disposed end portions that extend through said pair of bolt holes and outwardly therefrom;

b. two longitudinally spaced first stops secured to said rod and inwardly from said ends thereof, said stops of less transverse cross sectional area than that of said bolt holes, said stops adjacent interior surfaces of said two plywood sheets;

c. a pair of rigid washers of greater transverse area than that of said bolt holes, said washers having L-shaped slots therein that slidably engage said rod, said washers when so engaged transversely supported on said rod, with each of said supported washers disposed between one of said first stops and said plywood sheet most adjacent thereto to prevent said first stops being drawn into said bolt holes when said pair of wedges are moved downwardly relative to said rod;

d. a pair of second stops secured to said ends of said rod, said second stops having a transverse area that is less than that of said bores; and

e. a pair of rigid wedges, each of said wedges including an elongate flat vertically positionable first edge surface and a second upwardly and outwardly extending second edge surface, and a transverse opening of inverted keyhole shape that extends between said first and second edge surfaces, said opening including a first portion through which one of said second stops and a section of said rod adjacent thereto can be moved and a second elongate portion that extends upwardly from said first portion, said second portion having a width greater than the diameter of said rod but less than the diameter of said second stop.

said wedges when driven downwardly having said rod sections enter said second opening portions as said second stops slide upwardly on said second end surfaces to force said wedges towards one another, with each of said wedges cooperating with said first stop and the one of said washers most adjacent thereto to grip one of said plywood sheets therebetween and said two plywood sheets being held in fixed lateral spacing to permit fluid concrete to be poured therebetween, said wedges capable of being removed from said rods after said concrete has set by driving said wedges upwardly to dispose said rod sections in said first opening portions, and said wedges then being movable outwardly from said rods together with said plywood sheets for reuse in providing another form to receive concrete to define a concrete wall.

4,247,074

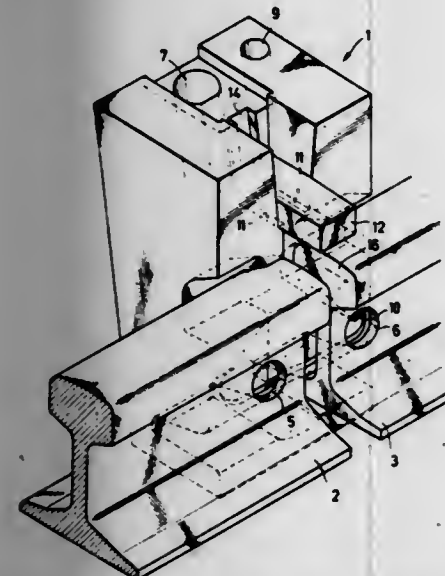
CASTING MOLD FOR ALUMINOTHERMICALLY WELDING RAILS TOGETHER

Josef Stratmann, Essen; Wilfried Müring, Essen-Haarzopf, and Gerhard Skreba, Essen, all of Fed. Rep. of Germany, assignors to Elektro-Thermit GmbH, Fed. Rep. of Germany
Filed Aug. 17, 1979, Ser. No. 67,410
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837966

Int. Cl.³ B22D 19/04; B23K 23/00

U.S. Cl. 249—86

4 Claims



1. A prefabricated casting mold for aluminothermically welding rail ends spaced apart by a gap while simultaneously welding shut a fishplate hole in the region of each rail end, comprising two mold halves which, when assembled, form a cavity adapted to enclose the rail ends and being so widened in the region of the rail web and in the longitudinal direction of the rails that the two fishplate holes are located within said cavity,

a pair of riser channels in each mold half, at least one of said riser channels in each half issuing centrally into the rail base region of said casting mold cavity and having at least one means of communication with the casting mold cavity in the rail web region,

and the other of said riser channels in each mold half communicating with the casting mold cavity in the vicinity of a fishplate hole.

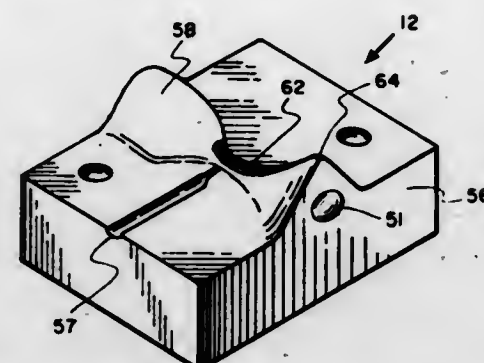
4,247,075
MOLDS FOR MAKING FEATHERED LURES
Walter J. Rogers, 2803 Homedale Rd., Klamath Falls, Oreg. 97601

Continuation-in-part of Ser. No. 965,320, Dec. 1, 1978, abandoned, which is a division of Ser. No. 882,131, Feb. 28, 1978, Pat. No. 4,149,334, which is a continuation of Ser. No. 671,046, Mar. 29, 1976, abandoned. This application Oct. 22, 1979, Ser. No. 87,249

Int. Cl.³ B29C 6/00

U.S. Cl. 249—95

1 Claim



1. In a mold for making a feathered lure,
a female mold section having a surface forming a sheet-like body cavity for receiving moldable material including a shank of a hook and a quill and the butt portions of barbules of a feather, and
a male mold section having a surface adapted to close the cavity and cover the shank and the butt portions of the barbules,
one of the mold sections having a groove portion in its surface and for forming part of said cavity, said groove portion loosely receiving the quill and the shank of the hook,
the mold sections having portions outside the body cavity serving to receive the barbules and press against the barbules from opposite sides to hold the barbules in upwardly and outwardly extending positions,
the mold sections holding the hook in a position in which the shank of the hook holds the quill in the groove portion, said one of the mold sections having a spacing rib extending along the length of the groove portion to hold the quill in a position spaced from the bottom of the groove portion, whereby material is molded into a pair of beads over the butt portions of the barbules adjacent the quill, the rib maintaining the feather in position in the groove portion against the pressure of the moldable material when the material is injected into the cavity.

4,247,076

TOGGLE ACTION TUBING CLAMP

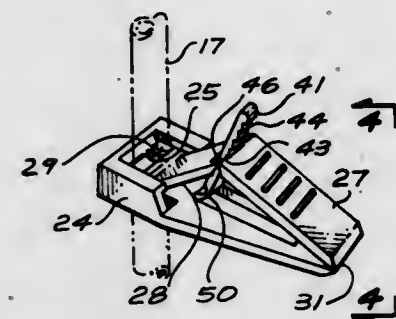
Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 16, 1979, Ser. No. 30,258

Int. Cl.³ F16K 7/06

U.S. Cl. 251—7

16 Claims



1. A tubing clamp for regulating flow through a length of flexible tubing comprising:

- a clamping body defining a base portion with a passageway for said length of tubing;
- a first arm member hingedly secured to said base portion;
- a second arm member presenting a tubing engaging portion and hingedly secured to said first arm member at a position opposite the securing of said first arm member to said base portion;
- guide means operatively associated with said tubing engaging portion of said second arm member and said base portion adjacent said passageway to position said tubing engaging portion in contact with said tubing; and
- ratchet means operatively associated with said base portion and said arm members to effect incremental movement of said tubing engaging portion against said tubing.

4,247,077

SLOW-OPENING VALVE OPERATED BY A SOLENOID PUMP

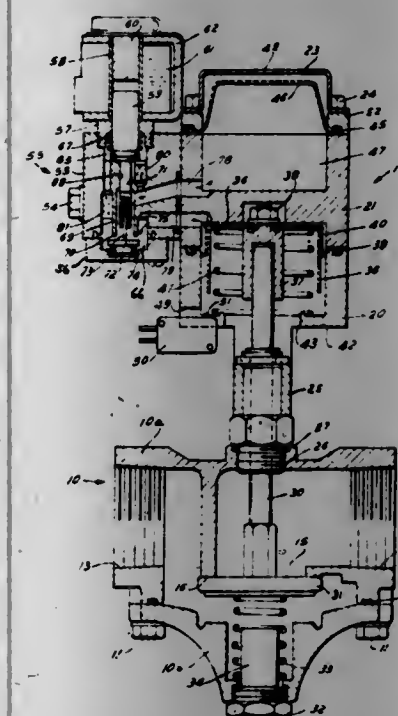
Gerard S. Banick, W. Orange, and Peter W. Van Seggern, Florham Park, both of N.J., assignors to Automatic Switch Company, Florham Park, N.J.

Filed Jan. 20, 1979, Ser. No. 50,386

Int. Cl.³ F16K 31/04, 31/122

U.S. Cl. 251—25

12 Claims



- A slow-opening and quick-closing valve comprising:
 - a main valve body having an inlet port, an outlet port, and an orifice between said ports surrounded by a valve seat,
 - a main valve member movable into engagement with, and away from, said valve seat to close and open the valve, respectively,
 - a chamber for receiving a control fluid other than the fluid controlled by said main valve member,
 - means responsive to the volume of control fluid in said chamber for positioning said valve member with respect to said valve seat,
 - a solenoid pump serving to pump fluid in one direction for changing the volume of control fluid in said chamber to open the main valve, said pump including an armature and an electrical solenoid for vibrating said armature to produce, with each vibration, incremental flow of control fluid with respect to said chamber, and
 - an auxiliary valve responsive to movement of said solenoid pump armature to a particular stationary position for opening said auxiliary valve to permit control fluid flow in the direction opposite to that in which the solenoid pump moves the control fluid for changing the volume of control fluid in said chamber so as to close the main valve.

1002 O.G.—59

4,247,078

OVERRRANGE VALVE OR THE LIKE

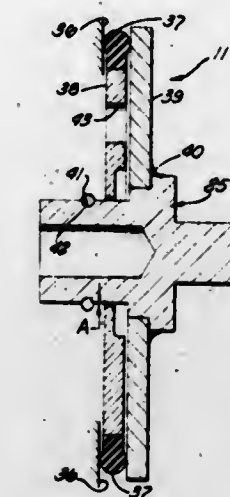
William J. Cooper, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,179

Int. Cl.³ F16K 25/00; F01B 19/00

U.S. Cl. 251—86

1 Claim



1. Apparatus to shut off fluid flow, said apparatus comprising: an annular plate, an annular valve seat axially spaced from but otherwise concentric with said annular plate; a hub fixed centrally to said plate; means to guide axial movement of said hub concentrically with said valve seat; a rigid disc having an annular periphery and an aperture extending centrally there-through, said hub extending loosely through said aperture; and an O-ring larger in diameter at its cross section than the thickness of said disc, said valve seat having a relatively flat surface for said O-ring diameter, said O-ring being mounted on the annular periphery of said disc between said valve seat and said annular plate to provide a fluid tight seal between said valve seat and said annular plate when said plate is moved toward said valve seat, said disc having a plurality of holes there-through to prevent entrapment of fluid between said annular plate and said disc when said seal between said valve seat and said annular plate is effected, a snap ring being mounted on said hub and spaced from said annular plate to allow axial movement of said disc over said hub a limited distance from said annular plate, said O-ring being bonded to said disc.

4,247,079

ANNULAR VALVE SEATING

Jean Friess, Clermont en Argonne, France, assignor to Societe Meusienne de Realisations Mecaniques "Realmeca", Clermont en Argonne, France

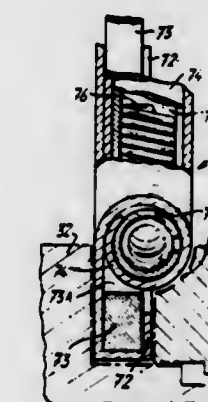
Continuation of Ser. No. 801,365, May 27, 1977, abandoned.

This application Sep. 6, 1979, Ser. No. 73,072

Int. Cl.³ F16K 1/226, 25/00

U.S. Cl. 251—174

10 Claims



1. A butterfly valve for high-temperature service, comprising a body formed with an axial duct having an annular shoulder

der and clamping means, a butterfly rotatable around an axis which is transverse with respect to the axis of said duct, said butterfly having on its periphery a spherical bearing surface whose center is at the intersection of the axis of rotation of the butterfly and the axis of said duct, said spherical bearing surface being adapted to engage an annular seat fitted in said duct, said annular seat comprising anchoring means fitted between said shoulder and said clamping means, and a rounded over wing made of a resilient metal wound on itself, one end of which is integral with said anchoring means and the other end of which is free with respect to said anchoring means, wherein said rounded over wing projects oppositely to the axis of rotation of the butterfly, said rounded over wing being capable of a resilient winding movement on itself when engaged by said spherical bearing surface, said clamping means comprising an annular curved edge adapted to retain by sliding engagement therewith the rounded over wing of said annular seat oppositely to the contact zone between the seat and the butterfly.

4,247,080

SEAL ASSEMBLY FOR VALVES

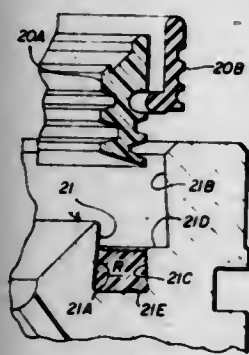
Bertram L. Morrison, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,149

Int. Cl.³ F16K 5/06

U.S. Cl. 251—315

10 Claims



6. A seat for a ball valve, comprising an annular body having inner and outer sides, a generally conically shaped face on one end, and an annular groove in said face, a seal assembly having inner and outer rings of relatively hard and soft sealing material which are locked within the groove by means of a resin which has hardened within voids between the assembly and the groove, each ring having a lip on its front end which protrudes from the groove for sealably engaging the spherical surface of the closure member, interlocking means on the rings which prevents relative axial movement between them, said assembly having a bearing surface on its front end which supports a fixture disposable over the face of the seat body, when the assembly is inserted into the groove, in order to hold the rear end of one ring tightly engaged with the closed end of the groove as the resin hardens, and the rear end of the other ring being spaced from the closed end of the groove, when the rear end of the one ring is held in tight engagement therewith, whereby the extent of protrusion of their lips is determined by the location of said one ring in a direction axially with the groove.

4,247,081

FRONT MOUNTED BRACE FOR AN UNDERGROUND PIPE INSTALLING DEVICE

William O. Schoeck, 7942 Marx Dr., North Fort Myers, Fla. 33903

Filed Aug. 20, 1979, Ser. No. 68,152

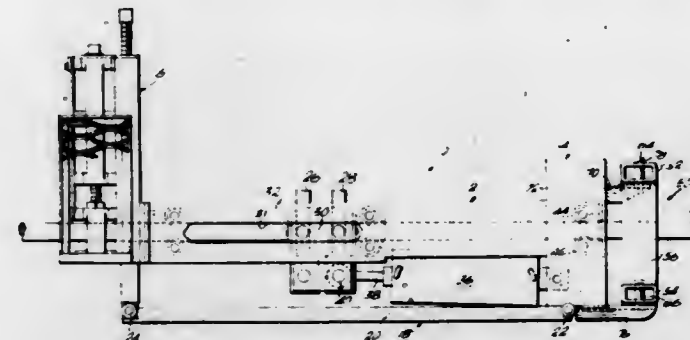
Int. Cl.³ E21B 19/00

U.S. Cl. 254—29 R

5 Claims

1. A brace structure for attachment to the front end portion of an underground pipe installer device of a type including reversible power operated means to drive a rod assembly

through the ground from a longitudinal operating trench portion for penetration into a target trench, in a forward drive position, and to withdraw the rod assembly, in a reverse drive position, with a pipe or other conduit, attached to a leading rod end, into an installed position through the hole in the ground, formed by the rod assembly, the brace structure comprising, abutment means for disposition in a generally transverse operating trench portion formed across a front end of the longitudinal operating trench portion in a manner so as to define a



generally T shaped trench, said abutment means being of a predetermined enlarged size so as to define a substantial area of contact with a rear generally vertical wall of the transverse operating trench portion in response to reaction forces, with the power operated means in said forward drive position, and a substantial area of contact with a forward vertical wall of the transverse operating trench portion in response to reaction forces with the power operated means in said reverse drive position; and means to centrally vertically pivotally attach said abutment means to said front end portion.

4,247,082

FLUID JACK AND LOCKING DEVICE

Ake G. Sjölund, Sollentuna, Sweden, assignor to AB Resmaste-service, Skövde, Sweden

Filed May 18, 1979, Ser. No. 40,269

Claims priority, application Sweden, May 29, 1978, 7806127

Int. Cl.³ B66F 3/30

U.S. Cl. 254—93 R

11 Claims



1. A double-acting jack comprising
 - (a) a cylinder (2);
 - (b) a piston (3) reciprocable in said cylinder by means of a pressure medium and having a piston rod (4) extending through an end wall (5) of said cylinder;
 - (c) a portion of said piston rod (4) protruding from said cylinder (2) being coaxially surrounded by a tubular sleeve (15; 23) having a first end connected to said piston rod (4) at a distance from said end wall (5) of said cylinder (2), a second end of said sleeve (15; 23), facing said cylinder (2), being arranged for engagement in all possible positions of said piston (3) relative to said cylinder (2) with

an abutment surface connected to said cylinder (2), said tubular sleeve (15; 23), upon engagement with said abutment surface, preventing retraction of said piston rod (4) into said cylinder; and
(d) a locking element (17; 27) connectable to said cylinder (2) for loading said tubular sleeve (15; 23) in the position of engagement, and preventing extension of said piston rod (4) out of said cylinder when it engages said sleeve.

4,247,083

WALL LIFTER

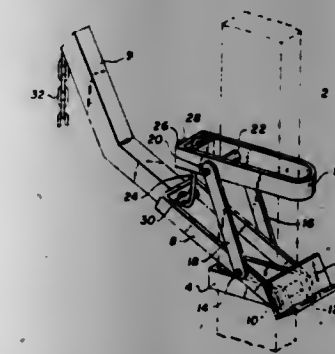
Leonard E. Koffski, R.R. #4, 7534 Trans Canada Highway, Duncan, British Columbia, Canada (V9L 3W8)

Continuation-in-part of Ser. No. 923,361, Jul. 10, 1978, Pat. No. 4,181,289. This application Nov. 5, 1979, Ser. No. 91,508

Int. Cl.³ B66F 1/00

U.S. Cl. 254—107

7 Claims



1. A wall lifter able to be made to climb a column to lift a prefabricated wall into a predetermined position, the lifter comprising:

- a first sleeve to surround the column;
- a saddle to engage the wall mounted on the first sleeve and extending forwardly of the first sleeve;
- a lever pivotally mounted on the first sleeve adjacent the saddle and able to raise and tilt said first sleeve,
- a fulcrum point for the first lever;
- a second sleeve to surround the column disposed above the first sleeve when the lifter is in its useful position;
- resilient means extending from the second sleeve to urge the lever upwardly; and
- a link between the second sleeve and the lever pivotally connected to the second sleeve and the lever.

4,247,084

STRINGING BLOCK THREADING APPARATUS

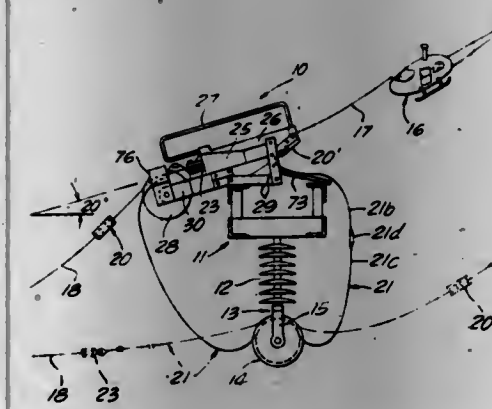
Keith E. Lindsey, 932 Flanders Rd., La Canada, Calif. 91011, and L. E. Lindsey, 2262 E. Mountain St., Pasadena, Calif. 91104

Filed Jan. 15, 1979, Ser. No. 3,408

Int. Cl.³ B66D 1/36

U.S. Cl. 254—134.3 PA

41 Claims



1. A stringing block threading apparatus comprising: an elongated main body provided with a generally tubular

open-ended passage having an upwardly flaring hauling line receiving passage extending therealong; means at each end of said passage for releasably supporting the respective ends of a stringing block threading loop, one end of said loop being equipped with a male coupling half and the other end thereof being equipped with a female coupling half; and means within said passage for automatically detaching a double ended female coupling separably connecting the adjacent ends of the leading contiguous sections of an aerially-transported conductor hauling line as said double-ended coupling is moved toward one end of said passage in said main body thereby releasing said adjacent ends of the said leading hauling line sections and permitting said ends of said hauling line sections to move apart along said passage into coupling engagement with the respective male and female coupling halves of said threading loop.

4,247,085

COMBINED BUMPER, JACK AND HOIST

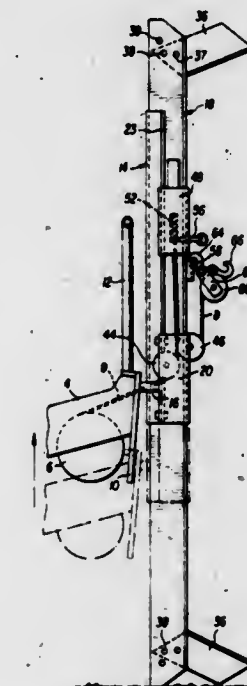
Chris Grimsrud, Box 455, Wolf Point, Mont. 59201

Filed May 4, 1979, Ser. No. 36,143

Int. Cl.³ B66C 23/60; B66D 3/00

U.S. Cl. 254—86 R

8 Claims



1. Apparatus for a vehicle having a powered winch thereon, comprising:

- an elongated member;
- a guide slidably supporting said member for longitudinal sliding movement;
- means for mounting said guide on said vehicle for pivotal movement about an axis extending fore-and-aft of said vehicle, for pivotally mounting said member in either a horizontal position or a vertical position;
- first pulley means including a first pulley fixed relative to said guide, when in its vertical position, for directing a cable from said winch upwardly along said guide and member; and
- further pulley means including a second pulley selectively mountable on one of said guide and member for directing said cable outwardly for selective securement to said member or to an external load.

4,247,086

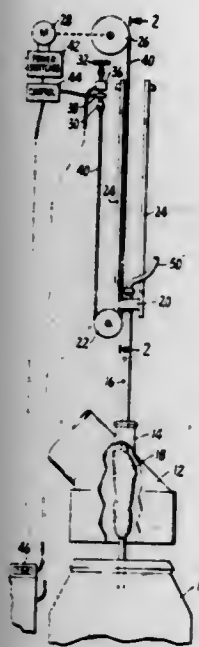
LANCE HOISTING AND SKULL DETECTING APPARATUS FOR BASIC OXYGEN STEELMAKING FURNACES

John G. Hepler, Jr., Upland, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

Filed Jan. 22, 1979, Ser. No. 5,198
Int. Cl.³ C21C 5/32

U.S. Cl. 266—86

1 Claim



1. In a basic oxygen steelmaking furnace having a hood with a lance port therein, a lance extending through the port for movement relative to the hood and furnace, and a lance carriage secured to the lance, the improvement comprising: a hoisting drum; an equalizer bar centrally suspended on a pivot; a pair of hoisting cables extending around pulleys on the carriage, said cables having first ends secured to opposite ends of the equalizer bar and second ends secured to the hoisting drum whereby reeling the cables on and off of the drum functions to raise and lower the carriage and the equalizer bar functions to maintain equal tension in the cables; a load detector connected between the equalizer bar and the first end of one of the cables to sense the weight of slag skull buildup on the lance; drive means to reel the cables on and off of the drum; and hoisting drum control means connected between the drive means and the load detector to interrupt the lifting operation of the drive means in the event the detector senses that the weight of slag skull buildup on the lance is of a magnitude which indicates that the skull cannot pass through the lance port.

4,247,087

FURNACE INSTALLATION FOR THE PYROMETALLURGICAL TREATMENT OF FINE-GRAINED ORE CONCENTRATES

Vladimir Suprunov, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany
Continuation of Ser. No. 827,547, Aug. 25, 1977, abandoned.

This application May 3, 1979, Ser. No. 35,689

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1976, 2638132

Int. Cl.³ C21C 1/00

U.S. Cl. 266—212

4 Claims

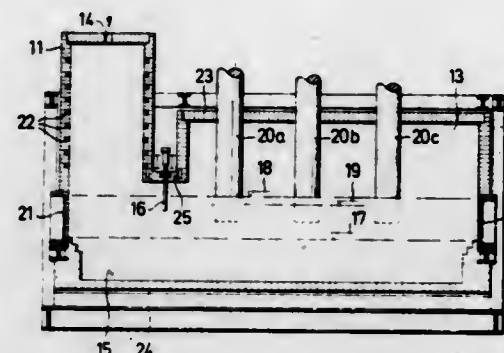
1. A furnace assembly for the pyrometallurgical treatment of fine-grained ore concentrates comprising:

- a housing having a roof and a relatively long longitudinal dimension,
- a melting shaft in said housing,
- means for introducing suspended particles of ore concentrate and an oxygen-rich gas into said melting shaft,
- means in said housing defining a collection chamber for collecting material melted in said melting shaft,

a settling hearth in said housing in free communication with said collection chamber,

a downwardly offset wall means in said roof of said housing terminating short of the melt contained in said furnace,

vertical partition means depending from said offset wall means and positioned to isolate the upper portion of said collection chamber from said settling hearth, said partition means being sufficiently long to be partly immersed in the melt in said furnace,



an exhaust gas shaft positioned adjacent said melting shaft, the axis of said shaft and the axis of said melting shaft lying in a common vertical plane which is perpendicular to the centerline of said longitudinal dimension, said exhaust gas shaft and said melting shaft lying on opposite sides of said centerline,

vertical wall means positioned along said centerline perpendicular to said vertical partition means, and

means for cooling said partition means.

4,247,088

MUD GUN

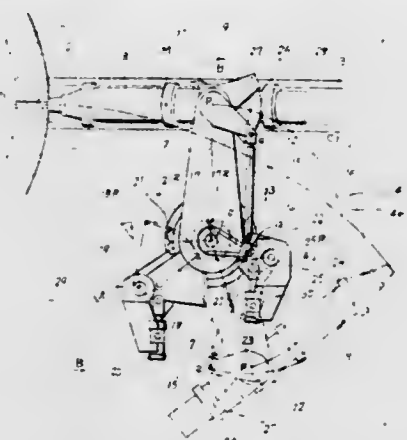
Masayuki Ueno; Fumiaki Sano, both of Yokohama; Makoto Sagae, Tokyo, and Tateo Kayama, Toride, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1978, Ser. No. 942,385

Int. Cl.³ C21B 7/12

U.S. Cl. 266—273

8 Claims



1. A mud gun comprising a fixed center post, a traversing arm rotatably supported at a first end thereof on the center post, a gun barrel mounted on the other end of the traversing arm and having a muzzle, a traversing gear securely attached to the first end of the traversing arm and rotatably mounted in coaxial relationship on said center post, a gear mechanism engageable with said traversing gear and operable to traverse said traversing arm through about 180°, and a pressing gear mechanism attached to said other end of the traversing arm and including a gear mounted on the center post, the pressing gear mechanism being adapted to begin tooth-engagement immediately before the muzzle of said gun barrel is brought in contact with the taphole of a blast furnace, the radius of said

traversing gear being shorter than the radius of said pressing gear mechanism relative to the axis of the center post.

4,247,089

SPRING CONSTRUCTION

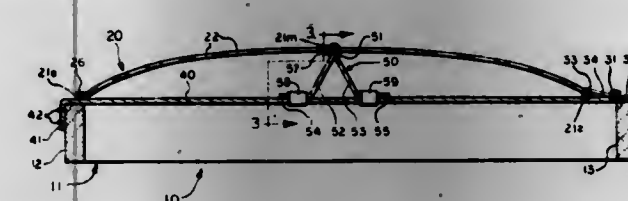
Lawton H. Crosby; M. P. Ferris, both of Lake Bluff, and Kurt Melzer, Chicago, all of Ill., assignors to Morley Furniture Spring Construction, Lake Bluff, Ill.

Continuation-in-part of Ser. No. 730,631, Oct. 7, 1976, abandoned. This application Oct. 6, 1978, Ser. No. 949,080

Int. Cl.³ F16F 3/00; A47C 27/08

U.S. Cl. 267—105

10 Claims



1. A seat spring assembly for an upholstered furniture seat, comprising:
 - a. a seat frame including a front rail, a back rail, and a side rail,
 - b. an outermost sinuous spring band connected to said front and back rails and extending therebetween in substantially parallel relationship with said side rail,
 - c. said band defining an arc in extending between said front and back rails,
 - d. a normally straight, stiff wire span member extending longitudinally of said outermost band, substantially coextensive therewith between said front and back rails, and subtending said arc,
 - e. one end of said wire span member being fastened to one of said band and one of said front and back rails at a point adjacent said one rail so that said one end of said wire member cannot move longitudinally relative to said fastening point,
 - f. the opposite end of said wire span member being fastened to one of said band and the other of said front and back rails at a point adjacent said other rail, and
 - g. vertically elongated key means disposed between said wire span member and said outermost band and fastened rigidly to both,
 - h. said span member and key means being effective to permit a controlled, limited deflection of said outermost band under normal load.

4,247,090

COMBINED CORNER CLAMP AND SUPPORT

Roy C. Hahn, 3N555 West Ave., Bensenville, Ill. 60106, and Ronald R. Hahn, 22890 N. Old Barrington Rd., Barrington, Ill. 60010

Filed Sep. 11, 1979, Ser. No. 74,444

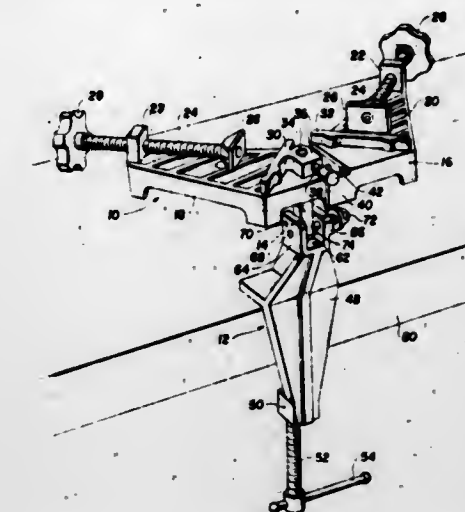
Int. Cl.³ B25B 1/20

U.S. Cl. 269—41

11 Claims

1. A combined work holder and support for producing right angle corners from strips comprising:
 - a platform having a pair of shoulders disposed relative to each other at an angle of ninety degrees;
 - clamping means on said platform for cooperating with a respective shoulder to clamp a strip therebetween;
 - a support having means for removably securing said support to a structure;
 - a post pivotally mounted to said support to rotate about a horizontal axis;
 - means on said platform for detachably connecting said platform to said post;
 - a pair of stop means disposed relative to each other at an angle of ninety degrees on said support for defining respectively a first and a second position of said post ninety

degrees apart whereby said platform may be pivoted from a horizontal position to a vertical position; and



a lock means located along an axis bisecting the angle between said pair of stop means for locking said post in either said first or second positions.

4,247,091

ADJUSTABLE LABOR-DELIVERY-RECOVERY HOSPITAL BED

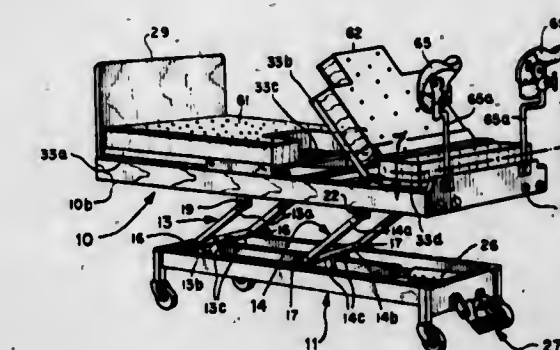
Gerald A. Glowacki, Glenarm, and David E. Cage, Baltimore, both of Md., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 8, 1979, Ser. No. 10,353

Int. Cl.³ A61G 13/00

U.S. Cl. 269—325

10 Claims



1. An adjustable multiple-use labor-delivery-recovery hospital bed to be used by a pregnant patient during the labor, delivery and recovery phases of childbirth, comprising:

- a frame;
- a mattress supporting structure mounted on said frame and having, from its head end to its foot end and in the order named, a separate primary back support section, a separate secondary back support section, and a separate seat support section, the three support sections normally being coplanar;
- first adjusting means for tilting said separate primary back support section upward during either said labor or recovery phases to raise the patient's back and head while the patient is in a reclining position and occupying substantially the entire bed;
- second adjusting means for tilting said separate secondary back support section upward during the delivery phase to raise the patient's back and head after the patient is seated on said separate seat support section;
- and a pair of leg crutches at the foot end of the bed for supporting the patient's legs at an elevated level during delivery.

4,247,092

APPARATUS FOR HANDLING A PLURALITY OF SIGNATURE BUNDLES

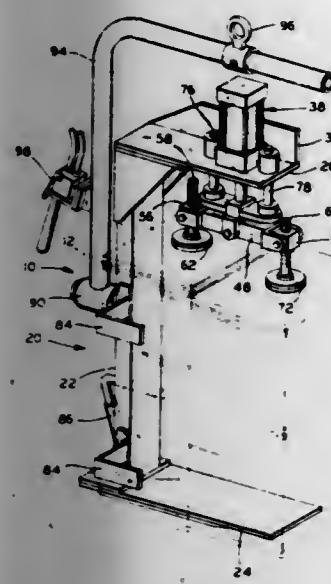
Robert E. Dwyer, Madison Heights, Mich., assignor to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Filed Jan. 1, 1979, Ser. No. 44,562

Int. Cl.³ B65H 39/02; B23Q 3/08

U.S. Cl. 270—54

10 Claims



1. Apparatus for handling a plurality of signature bundles comprising a generally C-shaped frame including two spaced legs and a connecting frame member connected to an end of each of said legs, fluid-operated means carried by one of said legs and having a piston rod extending toward the other of said legs, a pivotable bar pivotally carried by the outer end of said piston rod at an intermediate portion of said bar, two spaced clamping pads, and means pivotally connecting said clamping pads to spaced portions of said bar on either side of said piston rod.

4,247,093

METHOD AND APPARATUS FOR LOADING A CIRCULAR SHEET PILE FEEDER

Hermann Kistner, deceased, late of Tamm, Fed. Rep. of Germany, and by Werner Kistner, executor, Offenbach, Fed. Rep. of Germany, assignors to Maschinenbau Oppenweiler GmbH, Oppenweiler, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 830,038, Sep. 2, 1977,

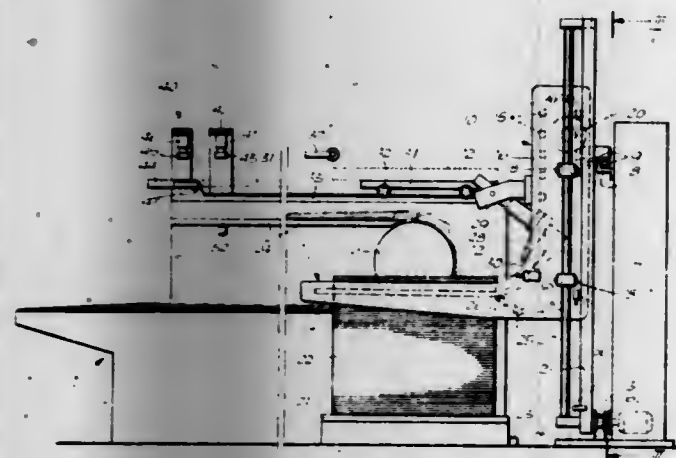
abandoned. This application Jul. 23, 1979, Ser. No. 59,596

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639676

Int. Cl.³ B65H 5/22

U.S. Cl. 271—3.1

19 Claims



1. In a method of loading a circular sheet pile feeder with piles of sheets removed successively from a stack of sheets, comprising the steps of:

automatically separating a pile of sheets from the stack of sheets, said pile of sheets having first and second ends; automatically conveying the separated pile of sheets to a splaying device; automatically splaying said pile of sheets by gripping the second end of said pile of sheets, and bending said second gripped end about an axis parallel to said second end; releasing the gripped second end of the pile of sheets and returning said pile of sheets to an unbent, splayed condition; and automatically positioning said splayed pile of sheets on said circular sheet pile feeder.

4,247,094

SHEET PILER

Hilmar Vits, Leichlingen, Fed. Rep. of Germany, assignor to Vits Maschinenbau GmbH, Langenfeld, Fed. Rep. of Germany

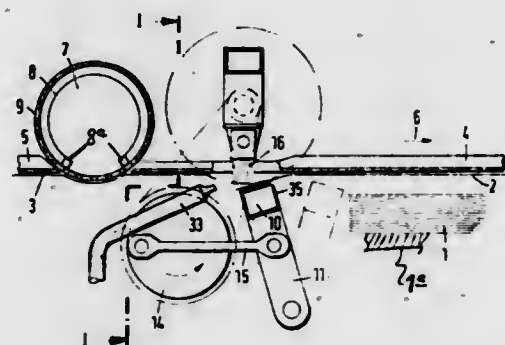
Filed Sep. 17, 1979, Ser. No. 76,355

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841658

Int. Cl.³ B65H 29/68

U.S. Cl. 271—183

6 Claims



1. A sheet piler for superimposing and piling one on top of another horizontal sheets traveling one at a time in end-to-end relationship beneath laterally interspaced horizontal suspension bars extending longitudinally and having means for blowing air over the sheets' top surfaces in a direction causing the sheets to float spaced beneath the bars and propelling means for causing the sheets to travel forwardly at a constant velocity, said device comprising a suction bar positioned transversely below the forwardly traveling sheets, means for reciprocating said bar in a plane parallel to the sheets' traveling direction with at least a forward stroke of lower velocity relative to said constant velocity, means for applying suction to said bar only during said forward stroke, a rotative mount extending transversely above the sheets and said suction bars, rotative depressing means for successively depressing the trailing ends of the sheets into contact with said bar so as to cause the sheets to be decelerated and then released at said lower velocity, said depressing means being carried for planetary revolution by said mount, and means for rotating said mount in synchronism with the sheets' travel and for causing said depressing means to rotate so as to orbitally revolve to sheet depressing positions only when the sheets' trailing ends travel above said suction bar during its said forward stroke.

4,247,095

SHEET FEEDING AND REGISTRATION APPARATUS

Joseph N. May, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,335

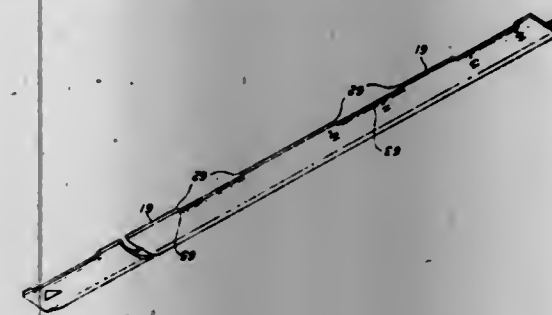
Int. Cl.³ B65H 9/04, 9/06

U.S. Cl. 271—233

11 Claims

1. A sheet feeding and registering apparatus comprising a flat support surface across which a sheet may be fed, a single flexible sheet transport belt extending at least across said flat support surface for transporting a sheet from one side of said

flat support surface to the opposite side of said flat support surface, a continuous sheet registration member adjacent said opposite side of said flat support surface, the improvement wherein said continuous sheet registration member comprises a plurality of spaced lower registration edge portions at a first level above the flat support surface and in the sheet transport path, and a plurality of spaced sheet stripping registration edge portions raised to a level



spaced above said first level located in the space between said lower portions and forming therewith a series of undulations, said raised stripping portions being inclined opposite to the direction of sheet transport and each forming with the flat support surface, a sheet capturing cavity of sufficient dimensions that a corner of a sheet being registered adjacent said registration edge may be inserted within the cavity and captured therein from further forward movement.

4,247,096

PORTABLE SWIMMER TRAINING APPARATUS

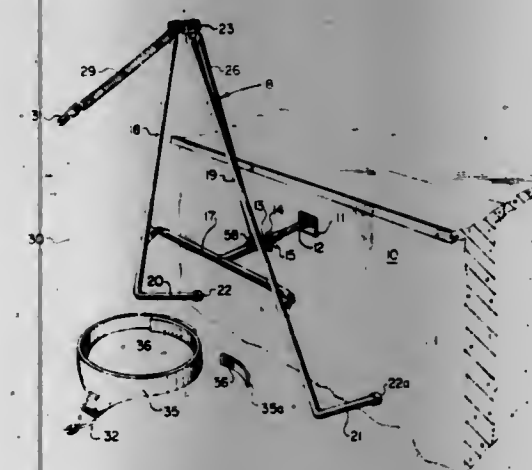
Larry Schmitt, 2635 S. 152nd Cir., Omaha, Nebr. 68144

Filed Jun. 1, 1979, Ser. No. 44,461

Int. Cl.³ A63B 69/14

U.S. Cl. 272—71

1 Claim



1. Apparatus for attachment to the inside wall of a swimming tank and the upstanding support therefrom without alteration thereto for facilitating exercise therein by a swimmer, said apparatus being substantially disposable within the walls of said swimming tank and comprising:

a detachable belt for positioning about the waist of a swimmer; a support frame for upstanding attachment to said swimming tank side wall; a tether connecting said belt and said support frame for restraint of the swimmer; said support frame including at least one upstanding support arm having a lower side wall engaging element and an upper lateral restraint means disposed beneath said tether, said frame being substantially confined within and pivotally braced against the side wall of the swimming tank by said lateral restraint means and said lower side wall engaging element for securement of the swimmer without alteration of the swimming tank; said support frame being comprised of a pair of upstanding

support arms configured in an A-frame configuration and structurally connected in a vertex at the top thereof with said A-frame configuration of said support frame including a cross arm extending between said support arms and wherein said lateral restraint means is structurally connected to said cross arm and includes a horizontal strut secured at one end to said cross arm and adapted at the other end for engagement to a securement means for support of said apparatus substantially within said swimming tank; and said A-frame configuration including a vertical support arm disposed between said upstanding arms and the side wall of said swimming tank, said vertical support arm being connected at the top to said vertex of said upstanding arms and at the bottom thereof to said horizontal strut.

4,247,097

VARIABLE WEIGHT AEROBIC EXERCISE GLOVE

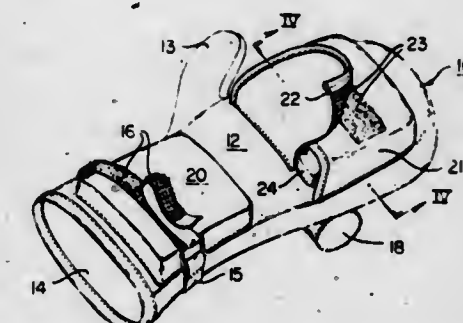
Leonard Schwartz, 3471 Fifth Ave., Pittsburgh, Pa. 15213

Filed Mar. 1, 1979, Ser. No. 16,399

Int. Cl.³ A63B 21/12

U.S. Cl. 272—119

6 Claims



1. A weight glove comprising a glove formed from front and back palm, wrist and finger enclosing pieces and thumb enclosing pieces, said front and back pieces extending over the wrist of a wearer covering the dorsal and palm portions of the hand respectively and being open to receive a wearer's hand, means for removably fastening said glove to the wearer's hand, pocket means in the front enclosing piece at the palm covering portion thereof removably receiving a solid elongate palm weight, around which the hand may be closed, a solid elongate palm weight in said pocket means extending substantially across the entire width of the palm, a first pocket on the dorsal portion of the back piece removably receiving selected flexible conforming weight means capable of conforming in use to the shape of the dorsal portion of the hand, generally flexible conforming weight means adapted to fit said first pocket, a second pocket on the back piece overlying a wearer's wrist, and generally flexible conforming weight means in said second pocket conforming in use to the shape of the wearer's wrist.

4,247,098

DUAL CYLINDER HIP EXERCISING DEVICE

Jerry D. Brentham, P.O. Box #599, Belton, Tex. 76513

Filed Dec. 11, 1978, Ser. No. 968,462

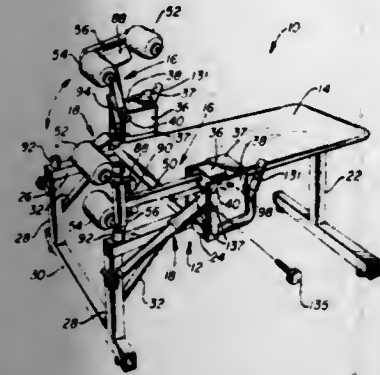
Int. Cl.³ A63B 21/00

U.S. Cl. 272—130

5 Claims

1. A hip and leg exercising device to strengthen the muscles in the hip and legs of a person comprising: a support frame; a pair of support arms; padded rollers; means rotatably securing a pair of said padded rollers to the outer end of each of said support arms to engage both sides of the portion of a leg above the knee of a user; means to selectively adjust the distance between the axes of rotation of each pair of said padded rollers on the outer end of each said arm; means pivotally securing each one of said support arms to each side of said support frame so as to permit individual pivoting by each said arm, the legs of the user being positioned between the support arms and the axis of rotation of each of said support arms being substantially aligned with the axis of rotation of the ball and socket

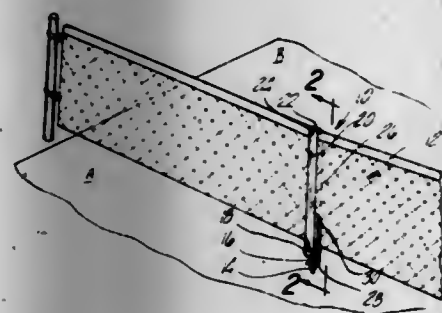
joined between the leg and the hip of the user; and actuated means pivotally secured between the support frame and each of the support arms to control the rate of movement of each said support arm independently of each said support arm such



4,247,099
TENNIS NET CENTER STAY AND MEASURING DEVICE
Zoltan I. Pandak, 53054 Dryden, Utica, Mich. 48087
Filed Dec. 26, 1978, Ser. No. 973,142
Int. Cl.³ A63B 61/00

U.S. Cl. 273-29 BA

11 Claims



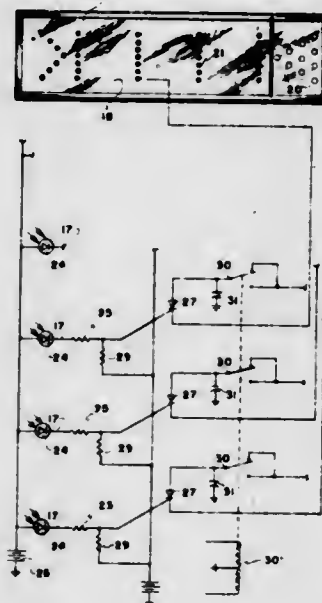
1. An adjustable measuring device for adjusting the height of a vertical net to a predetermined distance above a horizontal surface comprising:

- a strap for encircling said vertical net, said strap having at least one indicator mark, a first end portion, and a second end portion, said strap further having a first predetermined distance portion measured from the end of said first end portion to said at least one indicator mark;
- means for adjustably securing and maintaining said second end portion of said strap to said first predetermined distance portion of said strap at a plurality of locations; and
- means for fastening said strap to said horizontal surface, said fastening means movably attached to said second end portion of said strap and defining a second predetermined distance portion intermediate said first and second end portions such that when said measuring device is attached to said vertical net, said first predetermined distance portion extends from said horizontal surface upwardly on one side of said vertical net to said at least one indicator mark aligned with the top of the net, said second predetermined distance portion of said strap extends from said at least one indicator mark downwardly on the other side of said vertical net to said fastening means and further extends from said fastening means around the bottom of said vertical net to the end of said strap said securing means further being adjusted to position said at least one indicator mark atop said vertical net when the end of said first end portion is flush to said horizontal surface, said securing means

further securing said second end portion to said first predetermined distance portion at a location intermediate said indicator mark and said first end portion thereby holding said vertical net at said predetermined distance above said horizontal surface.

4,247,100
BOWLING BALL TRACKING DEVICE
Ronald D. Barbee, 1077 SW. 3rd Ave., Ontario, Oreg. 97919
Filed Apr. 12, 1976, Ser. No. 638,127
Int. Cl.³ A63D 5/04
U.S. Cl. 273-54 D

2 Claims



1. A bowling ball tracking device in combination with a conventional bowling lane having a lane approach space at one end and a bowling pin receiving space at the opposite end comprising:

- a plurality of reflective spots embedded in the surface of the lane;
- a source of light positioned above each spot, the light source focused on the spot;
- a photo-electric cell positioned above each spot, the cell aligned relative to the spot so as to receive light reflected from the spot by the light source;
- a visual display representative of the lane operatively connected to the lane;
- an indicator lamp on the display operatively connected to each of the photo-electric cells above the reflective spots through a plurality of circuits connected in parallel, each circuit comprising, in series, the photo-electric cell associated with the lamp to be activated, a first direct current source, a silicon controlled switch having connection through a resistor to the photo-electric cell, the cell and silicon controlled switch being connected to a second direct current source, the second source being of fractional intensity of the first direct current source, the anode portion of the silicon controlled switch being connected to a mechanical switch, and the cathode portion of the silicon controlled switch being connected to the respective lamp to be activated in the display;
- the circuit operative to activate the lamp in response to interruption of the reflective light from the spot associated with the photo-electric cell and the lamp.

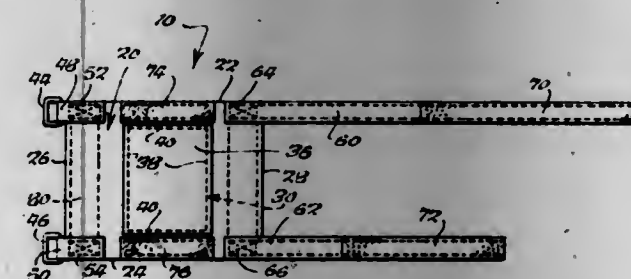
4,247,101
WEIGHTED ARM BAND FOR BOWLERS
Richard R. Gallmeyer, 142 Poultny St., Buffalo, N.Y. 14215
Filed Dec. 4, 1978, Ser. No. 966,055
Int. Cl.³ A63B 71/04, 23/00
U.S. Cl. 273-54 B

7 Claims

1. A device for improving the motion, extension and control

of the arm of a person playing a game such as bowling comprising:

- (a) a band of flexible material having a generally rectangular shape including spaced-apart substantially parallel side edges and spaced-apart substantially parallel end edges, said band having a thickness many times smaller than the length and width thereof, said band having an inner surface which is in firm contact with the arm of the person in the area of the of the wrist and above the hand when said device is in use and an oppositely-directed outer surface, said band being worn on the arm carrying the ball;
- (b) a weight of sufficient magnitude so as to improve the arm action of the person by enhancing the arm motion, causing fuller extension of the arm and providing control of arm movements;
- (c) means for holding said weight on said outer surface of said band in fixed relation thereto and at a location on only the outwardly or inwardly facing surface of the person's arm;
- (d) a pair of loops fixed to said band in spaced-apart relation along one of said end edges and located adjacent corresponding ones of said side edges of said band;
- (e) a pair of straps of flexible material, each fixed at one end thereof to said band in spaced-apart relation along the other of said end edges and located adjacent corresponding ones of said side edges of said band, said straps extending outwardly from said end edge in generally parallel relation to said side edges, said straps being of unequal lengths, the one of said straps being located farthest from the person's hand having the greater length;
- (f) fastening means on each of said straps, each of said fasten-



ing means being on the surface of the corresponding one of said straps which face in the same direction as said outer surface of said band when said band and said strap lie in substantially the same plane;

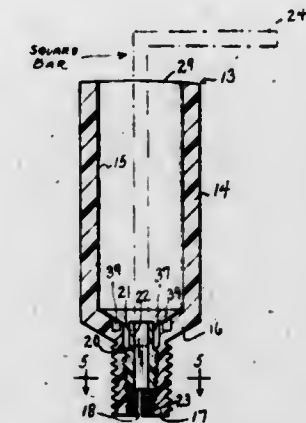
- (g) mating fastening means on said outer surface of said band in general longitudinal alignment with said fastening means on said straps, said mating fastening means being located adjacent corresponding ones of said side edges of said band and extending between said end edges of said band;
- (h) said fastening means on said straps and said mating fastening means on said band comprising plastic hook and loop tape type fasteners;
- (i) each of said straps extending from said end edge of said band along the surface of the person's arm and laterally of the arm and further extending through the corresponding one of said loops and then returning back past said end edge to the region of the corresponding one of said mating fastening means whereby each strap draws said band tightly against the surface of the person's arm and is held firmly in place by engagement between the fastening means on said strap and the corresponding one of said mating fastening means; and
- (j) said weight comprising a quantity of metal pellets and said holding means comprising a container for said pellets, said container being of a size in a direction generally parallel to said side edges of said arm band such that said container extends along a major portion of the surface portion of the person's arm contacted by said band, there being a plurality of pellets in said container located in directions generally parallel to said band side edges and generally parallel to said band end edges and in a direction generally normal to said band outer surface, said pellets

being concentrated in said quantity under influence of gravity and centrifugal force during a downward swing portion of the person's arm motion.

4,247,102
BOWLING BALL INCLUDING REMOVABLE FINGER GRIP INSERT
Robert Seyler, 28, Brown St., West Babylon, Long Island, N.Y. 11704

Filed Sep. 7, 1979, Ser. No. 73,504
Int. Cl.³ A63B 37/00, 43/04
U.S. Cl. 273-63 B

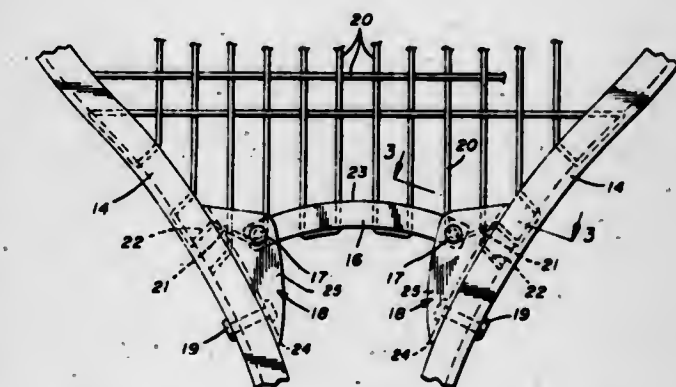
10 Claims



1. A bowling ball comprising a solid spherical body having a substantially cylindrical finger bore extending therein from the spherical surface of said body, the bottom of said bore having a central tapped hole, a substantially cylindrical hollow insert closely fitting in said finger bore and having a hollow expandable reduced axial bottom stud threadedly engaged in said central tapped hole, and a screw plug member having an externally threaded downwardly tapering lower portion threadedly engaging in said bottom stud so as to expand said stud responsive to rotation of the screw plug member and removably lock the insert in said finger bore.

4,247,103
TENNIS RACKET
John P. Garver, 9450 Sharrott Rd., Poland, Ohio 44514
Continuation-in-part of Ser. No. 886,296, Mar. 13, 1978, Pat. No. 4,189,101. This application Apr. 4, 1979, Ser. No. 26,810
Int. Cl.³ A63B 49/02
U.S. Cl. 273-73 G

8 Claims



1. A tennis racket comprising a frame having an ovaloid head portion terminating in a pair of closely spaced parallel extensions, said head portion being defined by a pair of oppositely curving portions of said frame, a pair of oppositely disposed support brackets on said oppositely curving portions of said frame and a throat positioned between said oppositely disposed supporting bracket and means pivotally securing said throat thereto, said oppositely disposed support brackets and said throat providing support for adjoining stringing extending

thereacross, said throat comprising a single arcuately curved member, means affixing said support brackets to said oppositely curving portions of said frame so that said throat is flexibly positioned therebetween.

4,247,104

TENNIS RACQUET

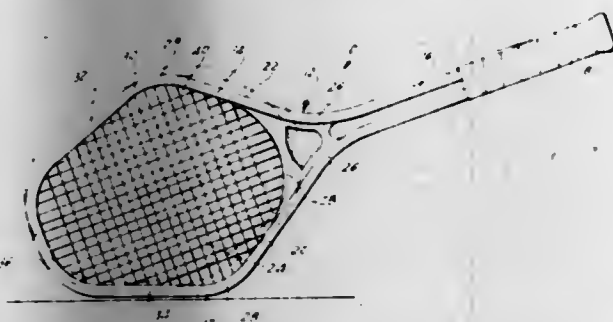
Eli D. Goldsmith, Roslyn Heights, N.Y., assignor to Crown Recreation, Inc., Hollis, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,879

Int. Cl.³ A63B 49/02

U.S. Cl. 273-73 C

9 Claims



1. A racket comprising a frame defining a head and a handle, said head having a generally polygonal configuration including a first pair of sides extending from first ends at said handle away from each other to second ends, a second pair of sides respectively associated with said first sides and connected at first ends to the second ends of their associated first sides and extending towards each other to second ends, said second pair of sides being larger in length than said first sides; and a fifth side connecting the second ends of said second pair of sides to close said head; and string means between said sides for defining an impact surface; the point of juncture of said first and second sides being spaced from each other a predetermined distance to define the widest point of said head and being located closer to said handle than one half the length of the head thereby to define an enlarged "sweet spot" on the racket; said first shorter sides of the head being generally parallel to the second longer sides of the head to which they are not connected.

4,247,105

SET OF GOLF CLUBS

Philippe M. Jeghers, Herstal, Belgium, assignor to Fabrique National Herstal S.A., Herstal-lez-Liege, Belgium

Continuation of Ser. No. 777,843, Mar. 15, 1977, Pat. No. 4,147,349, which is a continuation of Ser. No. 646,866, Jan. 5, 1976, abandoned. This application Mar. 30, 1979, Ser. No. 25,595

Claims priority, application Belgium, Dec. 18, 1975, 54726 The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.

Int. Cl.³ A63B 53/04

U.S. Cl. 273-77 A

4 Claims



1. A set of golf clubs, more specifically of irons going from a lowest number iron, each of said clubs being constituted by a shaft and a head, each of said heads comprising a shank and a head proper having a front striking face, a sole curved lengthwise and crosswise, and a curved back, said head and shank being homogeneous and made of metal, the height of the front striking face of each of the heads of said set in a plane perpendicular to the groundline being substantially constant, wherein

the center of gravity of each of said heads lies at no more than 17 mm from the groundline and the ratio of the maximum height of said striking face, measured in the plane of the latter, to the maximum width of said head proper, measured perpendicularly to said plane, is less than 2.5, said heads of said set being shaped so that the distance between the center of gravity and the impact point on the ball will be minimal throughout the set, said heads of said set being differently shaped so that for heads of increasing loft, said ratio increases, said head of the lowest number iron with the smallest loft having the highest impact point, the remaining heads of the set having impact points less than that of said lowest number iron, said heads being shaped in said set so that the head with least loft has its back and sole surfaces of different curvature with distinct intersection whereas the head with maximum loft has its back and sole surfaces smoothly blending, the shape of the other heads of the set varying therebetween.

4,247,106

SYSTEM ARRANGEMENT FOR DISTRIBUTION AND USE OF VIDEO GAMES

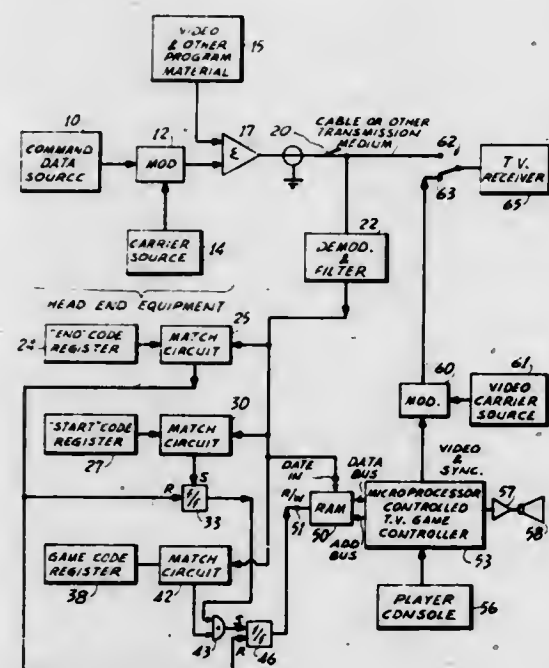
Michael F. Jeffers, Flourtown, Pa.; Jacob Shekel, Brookline, Mass.; Charles L. Dages, Colmar, and Joseph Glaab, New Hope, both of Pa., assignors to Jerrold Electronics Corporation, Hatboro, Pa.

Filed Apr. 12, 1978, Ser. No. 895,809

Int. Cl.³ A63F 9/22

U.S. Cl. 273-85 G

2 Claims



1. In combination, head end apparatus including means for generating an electronic wave including a plurality of multiplexed electronic television game governing program instruction sets, wave distribution means for disseminating said wave, and at least one station means coupled to said wave distribution means, each of said station means including a program instruction set controlled electronic television game including a read and write memory, a program controlled processing unit connected to said memory, and user control means, said program instruction set controlled electronic television game being adapted to execute the television game having its program instruction set then stored in said read and write memory, said station means further comprising user actuated game specifying input means for specifying that one of the multiplexed ensemble of television game governing program instruction sets desired for implementation, and means responsive to said game specifying input means for loading the one of said multiplexed television game governing programs defined by said specifying means into said read and write memory, wherein said memory game governing program instruction set loading means in each of said station means includes selector circuit means for receiving the program instruction set ensemble

supplied by said wave generating means and for receiving an output from said game specifying input means for selecting and entering said selected game program instruction set in said read and write memory.

4,247,107

ELECTRONICALLY CONTROLLED ROADRACE SYSTEM WITH SOUND GENERATOR

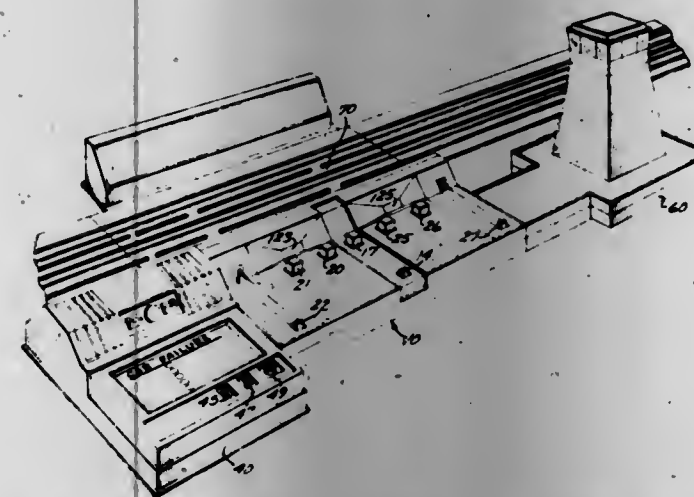
Jay Smith, III, Pacific Palisades; Lawrence T. Jones, Playa Del Rey; Gerald S. Karr, Venice, and Thomas H. Grimm, Manhattan Beach, all of Calif., assignors to California R & D Center, Culver City, Calif.

Filed Jan. 19, 1979, Ser. No. 4,620

Int. Cl.³ A63F 9/14; A63H 30/02

U.S. Cl. 273-86 B

39 Claims



1. A roadrace system for racing toy electrically powered cars over a defined course under operator control, comprising: a track means for defining the path of travel for the toy car and providing it with driving power, said track means having a section thereof that is electrically independent of the remaining track and does not provide power to the toy car, and electronic control means responsive to the toy car contacting the electrically independent section of said track means for causing information to be conveyed to the operator.

4,247,108

TIME LIMITED POWER BOOST PASSING FOR TOY VEHICLES

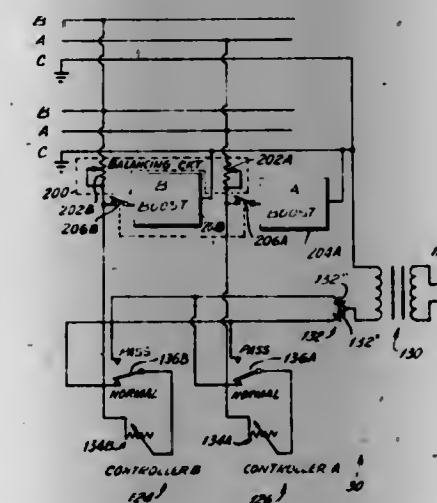
Neil Tilbor, Freeport, and William Rosenhagen, Ossining, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Sep. 10, 1979, Ser. No. 74,172

Int. Cl.³ A63F 9/14; A63H 18/12

U.S. Cl. 273-86 B

19 Claims



1. A toy vehicle system comprising:

a track having at least first and second vehicle lanes; at least one electrically driveable toy vehicle adapted for driving on said track; control means for controlling the amplitude of electric power to said at least one electrically driveable toy vehicle and for selectively providing said electric power in either first or second polarity; means for biasing said vehicle into said first vehicle lane in response to said first polarity and into said second vehicle lane in response to said second polarity; and boost means for boosting the maximum power available to said at least one electrically driveable toy vehicle for a predetermined maximum time after changing said electric power from said first to said second polarity.

4,247,109

PINBALL MACHINE AND FLEXIBLE SHEETS WITH CIRCUIT THEREFOR

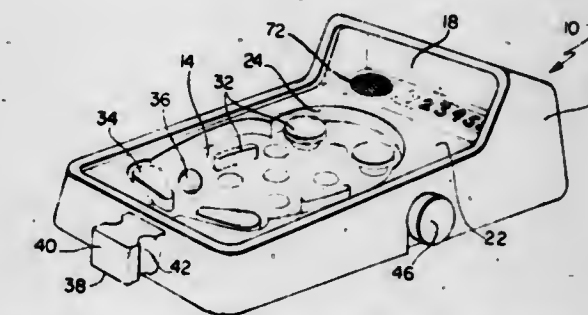
William F. Horan, Middletown; David P. Weindel, East Greenwich; both of R.I.; Paul J. Sullivan, Ker Arvor, Harrison Ave., Newport, R.I. 02840, and Ernest H. Bridge, Jr., Tiverton, R.I., assignors to Sullivan, Paul J., Newport, R.I.

Filed Jul. 28, 1978, Ser. No. 929,161

Int. Cl.³ A63D 3/02

U.S. Cl. 273-121 A

7 Claims



1. A game construction comprising a rigid housing, a game board supported by said housing, said game board having a playing surface formed by the outer surface of a pressure sensitive flexible first sheet, a first partial electrical circuit disposed on the inner surface of said first sheet, a second partial electrical circuit complementary to said first partial circuit disposed on the inner surface of a second sheet positioned in generally parallel opposition and in spaced relation to the inner surface of said first sheet with selected portions of each of said circuits opposed to each other to form a plurality of pairs of opposed contacts, means operatively associated with said circuits for signalling a game event when one of said contact pairs are in contact with each other, an intermediate non-conductive sheet disposed between said first and second sheets for normally maintaining said contact pairs apart from each other, said intermediate sheet having openings in alignment with said opposed contact pairs whereby inward flexing of said first sheet at said contact locations causes closing of said opposed contacts, said first and second sheets being formed from thin, resinous plastic material, and a playing piece adapted to be supported by and to move across said playing surface to inwardly flex areas of said first sheet at said contact locations so as to force said contact pairs into mutual electrical contact whereby a game event is signalled, said game construction being a pinball machine, and said playing piece being a spherical ball adapted to roll about said playing surface.

4,247,110

GRAVITY PROJECTOR AND SLIDING DISC TARGET
GAME APPARATUS

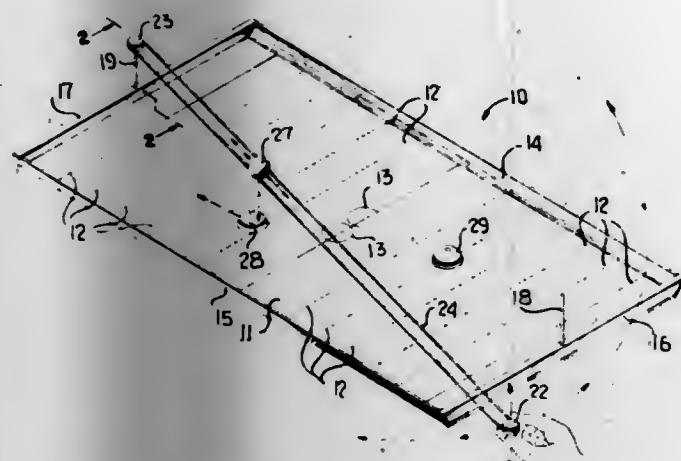
Jose L. P. Mazuela, 105-A Mayer Rd., Singapore 15, Singapore

Filed May 30, 1979, Ser. No. 43,746

Int. Cl.³ A63B 71/00

U.S. Cl. 273-126 R

6 Claims



1. A game comprising:

- a substantially horizontally disposed, relatively low-friction playing surface;
- a playing piece adapted to slide along said playing surface when struck from above at predetermined regions of said playing piece;
- an impact member;
- player-controlled means for selectively moving said impact member above said playing surface, said player-controlled means including further means for selectively dropping said impact member in unguided free fall onto said playing surface;
- whereby, the object of said game is to drop said impact member from said player-controlled means to strike said predetermined regions playing piece and slide it along said playing surface.

4,247,111

GAME DEVICE

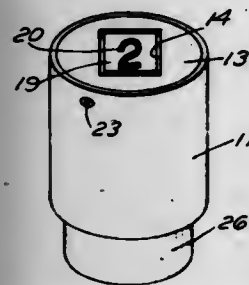
David P. Weindel, 1010 Frenchtown Rd., East Greenwich, R.I. 02818

Filed Mar. 19, 1979, Ser. No. 21,355

Int. Cl.³ A63F 3/00, 9/00

U.S. Cl. 273-148 R

4 Claims



1. A game device displaying a selected one of a plurality of insignia comprising a base including means capable of independently supporting said game device on a surface during operation; and, a sleeve telescopically slidable relative to said base and located substantially above said base during operation of the game device, an indicator rotatably mounted on said sleeve, means comprising a part secured to said indicator and a part secured to said base to rotate said indicator a portion of a revolution upon relative reciprocation of said sleeve and base in each direction.

4,247,112

GOLFING PUTTING GAME APPARATUS

Americo Del Raso, 21858 River Oaks Dr., Rocky River, Ohio 44116

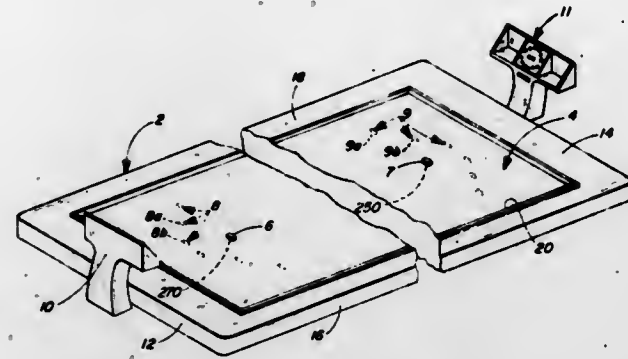
Division of Ser. No. 728,526, Oct. 1, 1976, Pat. No. 4,114,887.

This application Jun. 29, 1978, Ser. No. 920,628

Int. Cl.³ A63B 69/36

U.S. Cl. 273-176 H

11 Claims



1. A miniature golf apparatus comprising:

- supporting means for a putting surface,
- said supporting means including a plurality of flexible cross members spaced from each other,
- grid elements connected to said cross members with adjacent cross members having a plurality of said grid elements pivotally connected thereto to form a movable grid,
- a flexible putting surface operably connected to said grid elements,
- flex means operably connected to at least some of said flexible cross members to flex said members to curve said flex members and the putting surface,
- means to vary the relative height of adjacent of said flexible members to differently curve the putting surface,
- means to vary the relative height of the opposite ends of said flexible cross members to vary the slant of said flexible cross members and putting surface,
- whereby said putting surface is slanted, and is curved in more than one direction.

4,247,113

BOARD GAME APPARATUS

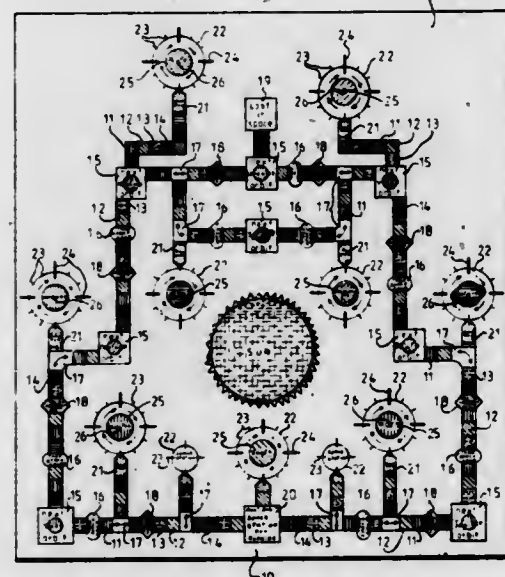
Matthew La Capra, 358 Emory Rd., Mineola, N.Y. 11501

Filed Apr. 23, 1979, Ser. No. 32,040

Int. Cl.³ A63F 3/00

U.S. Cl. 273-250

7 Claims



1. A space exploration board game apparatus, comprising:
- a plurality of player tokens;
 - a random number generator;
 - a board having a playing field and a multiplicity of playing

4,247,115

SHOOTING BOOTH

Joseph Nikoden, Jr., Palatine, Ill., assignor to Detroit Bullet

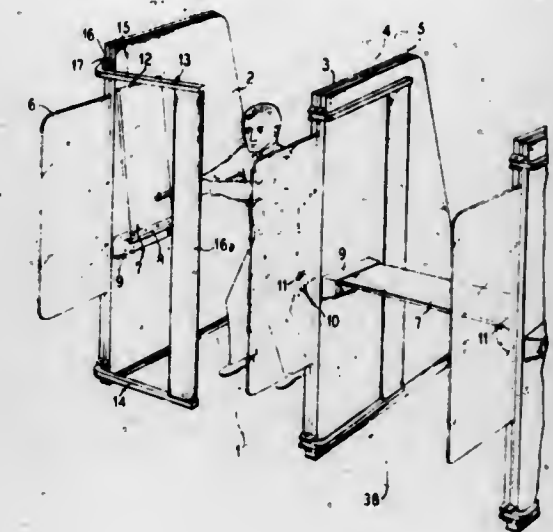
Trap Corporation, Schaumburg, Ill.

Filed Sep. 12, 1977, Ser. No. 832,745

Int. Cl.³ A63B 69/00

U.S. Cl. 273-317

6 Claims



spaces formed on said playing field which cooperatively define one continuous orbital main path and at least nine path branches leading off from said orbital main path, with eight of said branches ending in a circular subpath having a plurality of subspaces which surround an area subject to exclusive player control, each of which represents one of the planets of the solar system except Earth, with certain of said subspaces permitting access of a player's token to said area to permit exclusive appropriation thereof, and with the remaining one of said path branches ending in a circular subpath having a plurality of subspaces which surround an area representing the planet Earth, with certain of said subspaces permitting access of a player's token to said area representing Earth, and wherein said planet Earth represents a starting and finishing space, said multiplicity of playing spaces also including a first set of spaces interspersed along said main path of spaces, each of which is associated with one of said planets and which has printed instructions thereon directing one to orbit the plurality of subspaces which surround the associated planet, wherein each of said branches terminates in a pre-orbit space disposed adjacent to said circular subpath, and wherein said multiplicity of playing spaces includes a second set of spaces interspersed along said main path which is associated with said pre-orbit spaces and which permits a player to move the player's token from one of said spaces of said second set to one of said pre-orbit spaces.

4,247,114

BOARD GAME

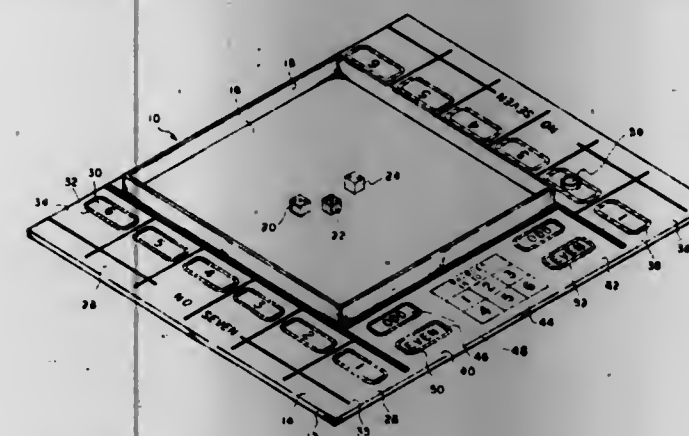
James F. Carroll, 501 Estelle St., Blackwood, N.J. 08012

Filed May 2, 1979, Ser. No. 35,227

Int. Cl.³ A63F 9/04

U.S. Cl. 273-274

3 Claims



1. A board game comprising:

- a game board having a playing surface on the upper surface thereof;
- a center area on said playing surface, at least a substantial portion of the circumference of said center area being bounded by a wall extending upwardly from said surface;
- first and second betting areas on said playing surface, each of said first and second betting areas being divided into six spaces with indicia on each of said spaces representing a different one of the numbers one to six, each of said spaces further being divided into two areas, said first betting area being identified by a first color and said second betting area being identified by a second color different from said first color, and
- three dice, each of said dice having six surfaces with indicia thereon identifying the faces with a different one of the numbers one to six, one of said dice representing said first betting area and being of said first color, the second of said dice representing said second betting area and being of said second color and the third of said dice being of a color different from said first and second colors, said third die not being representative of a betting area but being instrumental in the outcome of play.

- 6. A shooter booth for a shooting range having a target located down-range from said booth comprising:
- first and second spaced apart walls defining a shooter position;
- said spaced apart walls having a rear edge facing down-range;
- a barricade having two vertically spaced apart cantilever support arms each being pivotally attached at one end thereof to a respective stationary pivot point at the shooter booth adjacent to said first wall and a solid barricade member being supported by said arms substantially at their outer ends and horizontally spaced from solid pivot points;
- said solid barricade member being an elongated vertical panel extending between the cantilever support arms so as to be positionable in front of a shooter occupying the shooter booth and so as to have both vertical edges thereof usable by the shooter as barricades and defining in part first and second shooter openings on each side of said panel;
- means for causing said panel to be rigidly positionable against pivotal movement toward the target when the panel is generally placed at right angles to a line between the shooter position and the target;
- said barricade being readily movable by pivoting the same to a storage position where the panel is out of line between the shooter position and the target;
- the vertical edge of said panel closest to said pivot points and the first wall defining in part a first shooter opening, the width of said first shooter opening being substantially greater than the width of said panel;
- the length of the panel being substantially longer than the width of the first shooter opening, said panel when in said right angle position defining in part a second shooter opening between the outward edge of said panel and the second wall, the width of said second shooter opening being substantially greater than the width of said panel.

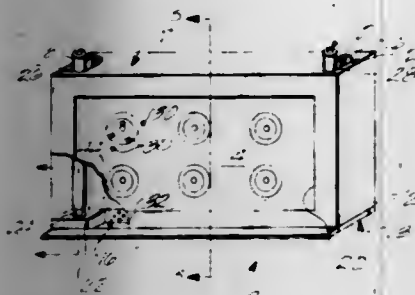
4,247,116 INDICATING TARGET

Kenneth L. McQuary, 15414 Condon Ave., Lawndale, Calif. 90260

Continuation-in-part of Ser. No. 854,021, Nov. 23, 1977, abandoned. This application Jan. 16, 1979, Ser. No. 3,886
Int. Cl.³ F41J 7/00

U.S. Cl. 273—394

13 Claims



1. A target apparatus comprising:
 - a housing having a target opening;
 - a length of perforatable material having target indicia thereon;
 - tubular roller means having the target material coaxially wound thereon;
 - means for supporting the roller means mounted in the housing, the supporting means being located to position a portion of the length of target material at the target opening;
 - a backstop hung interiorly of the housing at a point spaced between the front and back walls of the housing, the backstop being fabricated of a flexible material and of a size commensurate with the target opening; and
 - conically shaped receptacles located at opposite sides of the housing for engaging and releasably locking the roller means with targets supported thereon for accurately and tautly positioning a specific target in registration in the target opening.

4,247,117

TORSO TETHERED TRAINING DEVICE

Paul W. Reichert, Phoenix, Ariz., assignor to Zeppa, Inc., Phoenix, Ariz.

Filed Nov. 13, 1978, Ser. No. 960,480
Int. Cl.³ A63B 69/26

U.S. Cl. 273—411

4 Claims



1. A training device for urging a tethered ball to have a return trajectory directed toward an athlete's torso, said device comprising in combination:
 - (a) a torso mounted harness for anchoring the tethered ball to the athlete's torso, said harness including:
 - i. a pair of shoulder straps, each said shoulder strap including a front section;
 - ii. a plurality of slots disposed in each said front section; and
 - iii. a chest belt for penetrating engagement with one of said slots in each said front section to position and retain

said chest belt at a predetermined height on the athlete's torso, said chest belt including ring means for attaching the tethered ball, whereby, the height of said chest belt is variably positioned in height upon the athlete's torso;

(b) an elastic cord having one end thereof attachable to said ring means; and

(c) means for encapsulating the ball, said encapsulating means including loop means for engaging the other end of said elastic cord;

whereby, a return trajectory of the ball under the force urged by contraction of said cord is directed toward the anchor point on the athlete's torso.

4,247,118

RECORD PLAYERS

Philip H. Evans, Stourbridge, England, assignor to BSR Limited, Warley, England

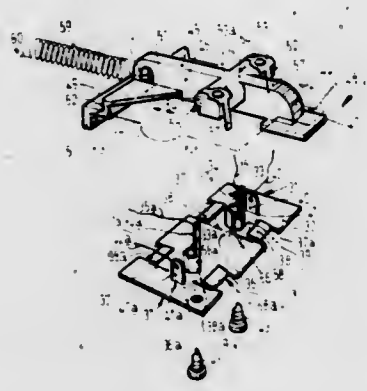
Filed Mar. 15, 1979, Ser. No. 20,705

Claims priority, application United Kingdom, Sep. 2, 1978, 5184/78

U.S. Cl. 369—233

Int. Cl.³ G11B 17/02

3 Claims



1. An improved muting switch for a record player of the type in which a phono socket assembly is mounted to a fixed part of the record player and the phono socket assembly includes at least one phono socket for electrical connection between the record player's transducer and an amplifier, the phono socket having inner and outer electrically separate parts, the improvement comprising:
 - a switch body of insulated material disposed for sliding movement between first and second positions on said fixed part of said record player, said sliding movement being at generally right angles to the axis of said socket assembly;
 - a generally U-shaped metal contact member, said contact member being secured to said switch body at the base of the U, the two arms of said contact member projecting outwardly from said switch body and being resiliently flexible in the direction of movement of said switch body, said arms being constructed and arranged so as to make electrical contact with said inner and outer parts of said socket assembly when said switch body is in said first position and to be out of electrical contact when said switch body is in said second position;
 - a switch operating member moveably mounted on said record player adjacent said switch body for engagement therewith; and
 - means for moving said operating member to cause it to engage with and move said switch body.

4,247,119

RECORD SIDE IDENTIFICATION APPARATUS FOR VIDEO DISC PLAYER

Larry M. Hughes, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,411

Int. Cl.³ G11B 17/04

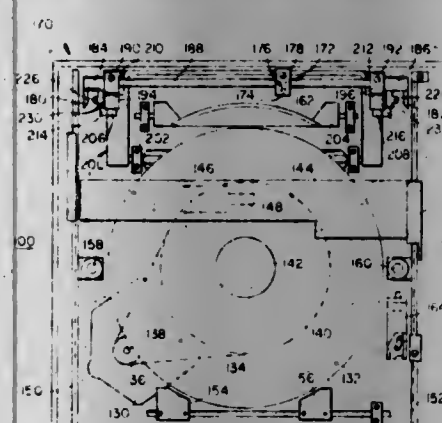
U.S. Cl. 369—77

10 Claims

1. In a player for use with a disc record removably located

within a protective caddy comprising a jacket and a record retaining spine subject to insertion into said jacket; said record being enclosed in said caddy such that the respective sides of said record are associated with the corresponding sides of said spine; said spine and said jacket defining a leading edge; the leading edge of said spine having a recessed portion; said player having an input slot through which an occupied caddy is inserted along a path to load an enclosed record therein; said player additionally including a record extracting mechanism for removing said retaining spine from said jacket during jacket withdrawal subsequent to an occupied caddy arrival at a fully inserted position in said player, thereby retaining said spine and said enclosed record in said player; apparatus comprising:

- (A) a sensing member carrying a pair of spaced sensor elements subject to engagement with said leading edge of said caddy in response to insertion of said caddy to a predetermined position in said player; one of said sensor



elements being arranged to be disposed respectively in and out of the path of said recessed portion of said spine when said caddy is inserted into said player with said recessed portion disposed on the same and opposite side of said caddy insertion path as said sensing member; said engagement between said sensor elements and said leading edge of said caddy during said caddy insertion being effective to dispose said sensing member respectively in a first position and a second position in response to disposition of said one sensor element in and out of the path of said recessed portion of said spine; said sensing member being additionally subject to deflection away from said caddy in response to further insertion of said caddy into said player; and

- (B) means responsive to said deflection of said sensing member during said further insertion of said caddy for providing an indication of the respective position of said sensing member.

4,247,120

SOUND RECORDING

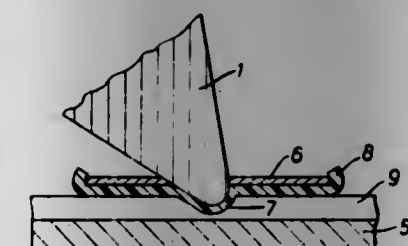
Halbert B. Dunn, 563 Allegra Ave., Bridgewater, N.J. 08807

Continuation of Ser. No. 859,478, Dec. 12, 1977, abandoned. This application Mar. 13, 1979, Ser. No. 20,068

Int. Cl.³ G11B 3/44

U.S. Cl. 369—173

14 Claims



1. A needle for use with the sound box of equipment for the

reproduction of sound from a grooved recording, which needle comprises a shank made from metal or another relatively rigid material, said shank being formed so as to provide a point adapted to conform to the grooves of the recording and to provide a bearing surface which is in the form of a preformed collar which surrounds and is attached to the shank of the needle and which is adapted to ride on the top surface of the recording on each side of a groove but which does not extend to the next adjacent grooves, the point and the bearing surface each being coating with a polymeric material.

4,247,121

PISTON ROD SEAL

Ulf C. Bergman, Vendelfridagatan 6 B, 217 64 Malmö, Sweden

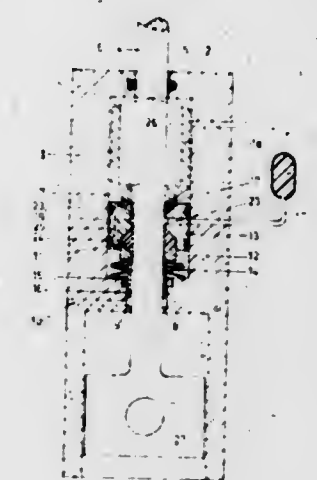
Filed Jan. 19, 1979, Ser. No. 4,834

Claims priority, application United Kingdom, Feb. 2, 1978, 4338/78

Int. Cl.³ F16J 15/56

U.S. Cl. 277—3

4 Claims



1. A construction of the kind having sealing means for preventing gas leakage along a rectilinearly-reciprocating piston rod, a wall through which the piston rod extends, a high pressure gas chamber at one side of said wall, a low pressure gas chamber at the other side of said wall, and a scraper ring which is arranged to prevent transfer of oil along the piston rod into the high pressure gas chamber and is included in the sealing means, the latter being disposed in a part of said wall and surrounding the piston rod, the construction further comprising:

a combination including a stationary housing mounted in said wall and having oil-feed means inducing around said piston rod in the lower pressure gas chamber a film of oil, oil-collecting means including an annular groove extending around said piston rod in a position between said high pressure gas chamber and said lower pressure gas chamber, and biasing means maintaining axially-directed compressing forces on rings and a sealing gland included in said sealing means, the said biasing means and said rings and gland being clamped between a shoulder surface provided in the said stationary housing in the vicinity of the high pressure gas chamber and a further shoulder surface provided in the housing near the low pressure gas chamber, the biasing means abutting said further shoulder surface.

4,247,122

DUST SEALING MECHANISM

Terry L. Turner, and Robert A. Meloni, both of Baltimore, Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 31, 1979, Ser. No. 8,292

Int. Cl.³ B23B 31/04; E21C 7/00

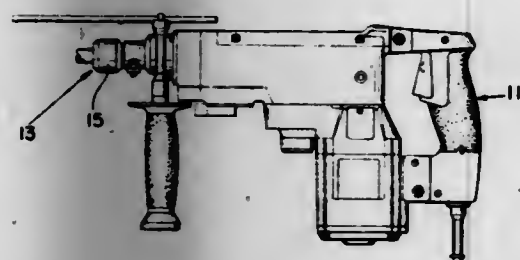
U.S. Cl. 277—33

7 Claims

1. A dust sealing mechanism for a hammering power tool

having a housing in which is mounted a motor connected therein selectively to drive reciprocally and/or rotatingly a tool bit detachably carried by the housing, the dust sealing mechanism comprising:

- (a) a dust seal member having a hollow axial length along which is formed a bit clamping portion, a tool connection portion, and an intermediate space therebetween extending predetermined axial and radial distances to define an interior chamber therein,
- (b) a tool bit receiving end formed on the housing and having an opening for the tool bit to be inserted and retained therein,
- (c) a holding flange formed on said tool end of the housing and adapted to extend into the interior chamber of the dust sealing member,



- (d) the tool connection portion of the dust seal member carried on the tool bit receiving end of the housing inwardly of the holding flange and normally prevented from disengagement therewith by the holding flange, and forming a light interference fit with the tool bit receiving end to permit the dust seal member to partake of the same motion as that of the tool bit relative to the housing whenever the tool bit is connected to the housing, and thereby is adapted to partake of the reciprocal and/or rotary motion of the tool, and
- (e) the bit clamping portion of the dust seal member engaging the tool bit upon insertion thereof into the housing opening and to form a heavy interference fit with the tool bit whereby the dust seal member is substantially clamped to the tool bit normally to move in unison therewith.

4,247,123 SEALS

Charles W. Potter, Manchester, England, assignor to J. H. Fenner & Co., Ltd., England

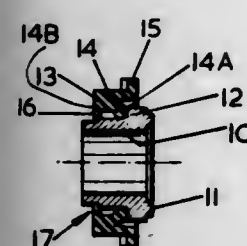
Filed May 22, 1979, Ser. No. 41,450

Claims priority, application United Kingdom, May 24, 1978, 22057/78

Int. Cl.³ F16J 15/34

U.S. Cl. 277—88

8 Claims



1. An end face seal, comprising: a stationary sealing bush (10) having an end running face (11), an external circumferential shoulder (12) integral with the sealing bush adjacent the end running face, and loading means for urging the sealing bush into sealing contact with a complementary sealing bush and comprising an elastomeric loading sleeve (13) having a main portion surrounding the sealing bush, an inwardly-directed, frusto-conical diaphragm (14) integral with the loading sleeve abutting the circumferential shoulder and surface of the bush adjacent thereto to impart loading from the loading

sleeve to the sealing bush, and, at an end of the loading sleeve remote from the circumferential shoulder of the sealing bush, an integral inwardly-directed radial web (14B) in resilient engagement with the sealing bush.

4,247,124 CHUCK

Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rema-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

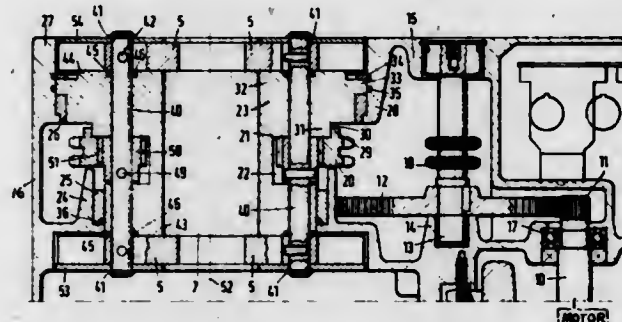
Filed Sep. 1, 1978, Ser. No. 938,833

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739757

Int. Cl.³ B23B 31/18

U.S. Cl. 279—106

6 Claims



1. A chuck especially for use in connection with a device for carrying out machining operations on surfacing of workpieces including pipes, which comprises in combination: chucking jaws pivotally journaled to move accurately and uniformly against the workpiece surfacing, driving motor means, and power transmission means in the manner of a planetary gear transmission having drive parts positively connecting said driving motor means directly with said chucking jaws, said power transmission means being exclusively for rotation of said pivotally journaled chucking jaws, rotatable shaft means connected to said motor means by said power transmission means and comprising a plurality of chucking jaw shafts each having a gear fixedly connected thereto, and gear means drivingly connecting said gears on said chucking jaw shafts with said motor means, said gears fixedly connected to said chucking jaw shafts being arranged on the latter at about the central portion of the length thereof, and each end of said jaw shafts having a chucking jaw connected thereto.

4,247,125 WHEELCHAIR

Ena M. Rayment, 105, Ewhurst Rd., Brockley, London SE4, England

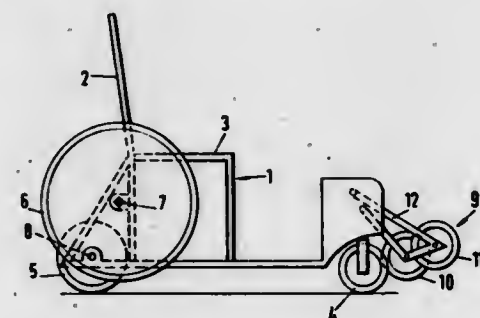
Filed May 7, 1979, Ser. No. 36,444

Claims priority, application United Kingdom, May 8, 1978, 18191/78

Int. Cl.³ B62B 5/02

U.S. Cl. 280—5.24

8 Claims



1. A wheelchair having a plurality of ground-engaging wheels rotatable about respective spaced front and rear axes,

and at least one auxiliary ground wheel associated with each ground-engaging wheel axis, each auxiliary wheel being mounted for rotation about an axis which is parallel to the associated ground-engaging wheel axis, but is positioned in front of the associated ground-engaging wheel axis, as seen in the intended direction of movement of the wheelchair, and arranged so that the auxiliary wheel is normally out of contact with the ground.

5. A wheelchair having a pair of front ground-engaging wheels and a pair of coaxial rear ground-engaging wheels, an auxiliary wheel assembly mounted between the two front wheels, and associated with both front wheels, and an auxiliary wheel associated with each of the rear wheels, each auxiliary wheel being mounted for rotation about an axis which is parallel to the associated ground-engaging wheel axis, but is positioned in front of the associated ground-engaging wheel axis, as seen in the intended direction of movement of the wheelchair, and arranged so that the auxiliary wheels are normally out of contact with the ground, the auxiliary wheels associated with the rear ground-engaging wheels being of larger diameter than the rear ground-engaging wheels, and at least one of the rear ground-engaging wheels being drivingly connected to its associated auxiliary wheel, so that rotation of the auxiliary wheel drives the ground-engaging wheels and the chair.

4,247,126

HYDRAULIC SUSPENSION FOR HARVESTING MACHINES

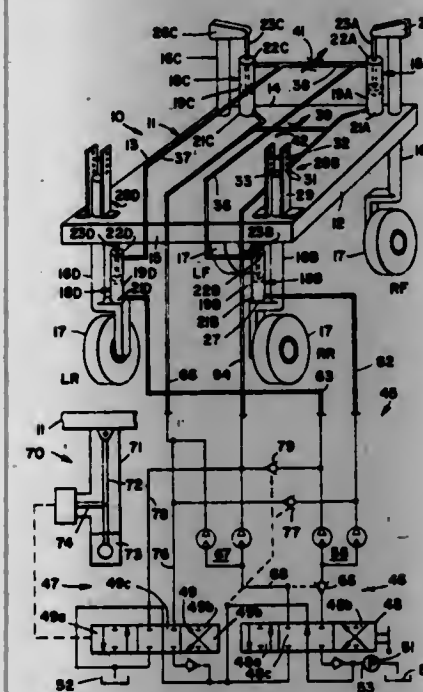
Gerald L. Claxton, Fresno, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Sep. 27, 1979, Ser. No. 79,503

Int. Cl.³ B60S 9/12

U.S. Cl. 280—6 H

20 Claims



1. A hydraulic suspension system for an apparatus having a generally horizontal, rectangular frame, with opposed sides and first and second opposed ends and first, second, third, and fourth vertical support columns, each column being movable vertically relative to the frame and having a ground engaging member at the lower end thereof, said first and second columns being at one side of said frame, said third and fourth columns being at the other side of said frame, said first and third columns being at one end of said frame and said second and fourth columns being at the other end of said frame, said hydraulic suspension system comprising:

first, second, third and fourth double-acting, vertically-disposed, hydraulic rams, said rams having first, second, third, and fourth cylinder members, respectively, each cylinder member having head and rod ends, each ram having a rod member extending from the rod end of the cylinder member thereof, said rams each having equal diameter cylinder members and equal diameter rod mem-

bers, one member of each ram being connected to said frame,

means for connecting the other members of said first and third rams to said first and third columns, respectively, for raising and lowering said frame relative to said first and third columns upon contraction and extension, respectively, of said first and third rams,

means for connecting the other members of said second and fourth rams to said second and fourth columns, respectively for raising and lowering said frame relative to said second and fourth columns upon extension and contraction, respectively, of said second and fourth rams,

a first conduit fluidly connecting one end of said first cylinder member to the corresponding end of said second cylinder member, said first and second cylinder members thereby comprising a first set of interconnected cylinders, a second conduit fluidly connecting one end of said third cylinder member to the corresponding end of said fourth cylinder member, said third and fourth cylinder members thereby comprising a second set of interconnected cylinders,

third and fourth conduits fluidly connecting the rod ends and head ends, respectively, of the two cylinder members at said first end of said frame,

a source of pressurized hydraulic fluid,

a fluid exhaust sump,

elevational control means for selectively:

(a) concurrently connecting the other ends of both of the first and third cylinder members to said fluid source while connecting the other ends of both of the second and fourth cylinder members to said sump,

(b) concurrently connecting the other ends of both of the second and fourth cylinder members to said fluid source while connecting the other ends of both of the first and third cylinder members to said sump,

(c) blocking fluid communication of all of said cylinder members with said fluid source and said sump,

level control means for selectively:

(a) connecting the other end of said first cylinder member to said fluid source while connecting the other end of said third cylinder member to said sump,

(b) connecting the other end of said third cylinder member to said fluid source while connecting the other end of said first cylinder member to said sump,

(c) connecting the other end of said second cylinder member to said fluid source while connecting the other end of said fourth cylinder member to said sump,

(d) connecting the other end of said fourth cylinder member to said fluid source while connecting the other end of said second cylinder member to said sump,

(e) blocking fluid communication of the other ends of said first and third cylinder members with said fluid source and said sump,

(f) blocking fluid communication of the other ends of said second and fourth cylinder members with said fluid source and said sump.

4,247,127

VEHICULAR SUSPENSION SYSTEM

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 23, 1978, Ser. No. 953,843

Int. Cl.³ B62D 57/00

U.S. Cl. 280—28.5

26 Claims

1. A vehicle suspension system comprising:

frame means;

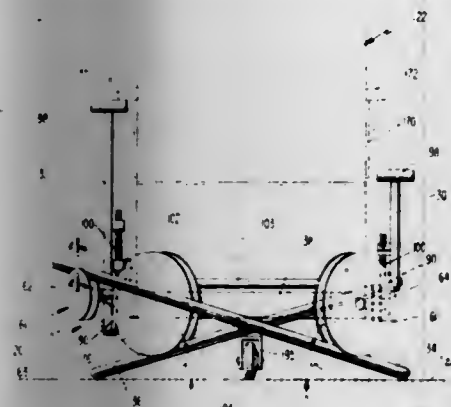
a pair of ground engaging hoops, each hoop having a generally toroidal shape, defining a corresponding plane and being rotatable within that plane;

hoop support means carried by the frame means for rotatably supporting each hoop so that its plane is inclined

relative to a supporting surface and relative to the plane of the other hoop; and
frame support means for supporting the frame means on each of the ground engaging hoops.

15. A wheelchair for disabled persons comprising:
a seat; and

a rolling suspension means for supporting the seat, having ground-engaging rolling supports with an apparent radius of curvature greater than the actual radius of curvature of the rolling supports, the elevation of the center of gravity for the combined seat and suspension means being below



the elevation of the center of the apparent curvature so that the wheelchair is self-righting; and
wherein the rolling suspension means includes:
frame means;

a pair of ground-engaging hoops, each hoop defining a corresponding plane and rotatable within that plane;
hoop support means for rotatably supporting each hoop so that its plane is inclined relative to a supporting surface and relative to the plane of the other hoop; and
frame support means for supporting the frame means on each of the ground-engaging hoops.

4,247,128

BELLOWS CONNECTION BETWEEN FRONT AND REAR SECTION OF A JOINTED BUS

Jost Knapp, and Gerhard Sawall, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

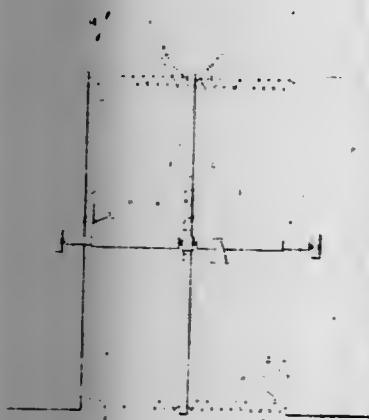
Filed Mar. 14, 1979, Ser. No. 20,347

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1978, 2810900

Int. Cl.³ B60D 5/00

U.S. Cl. 280-403

8 Claims



1. A bellows connection adapted to be disposed between a front body section and a rear body section of an articulated vehicle, the bellows connection including two bellows parts each having a first end operatively connected to a respective body section of the articulated vehicle and a free end, and a portal-like bellows yoke means for connecting the respective free ends of the two bellows parts to each other, means are

provided for guiding and supporting the bellows yoke means including a pair of strut means arranged in a roof area of the articulated vehicle, means are provided for operatively connecting the respective strut means to the respective body sections and to the bellows yoke means, further means are provided for additionally guiding the bellows yoke means, the further means being disposed in a lower area of the bellows yoke means and extending in a direction transverse to a length of the articulated vehicle, and in that means are provided for operatively connecting said further means with one body section of the articulated vehicle and with the bellows yoke means, lemniscate control means are provided including a two-armed lever articulated on the bellows yoke and having free ends, and means for operatively connecting the respective free ends of the two-armed lever to the front body section and the rear body section, whereby the lemniscate control means guides the bellows yoke means in a direction substantially transverse to a length of the articulated vehicle when the front body section and rear body section are disposed in a straight alignment and guides the bellows yoke means on a bisecting line of a bending angle between the front body section and rear body section of the articulated vehicle when the front body section and rear body section are disposed at an angle with respect to each other.

4,247,129

STEERING LINKAGE

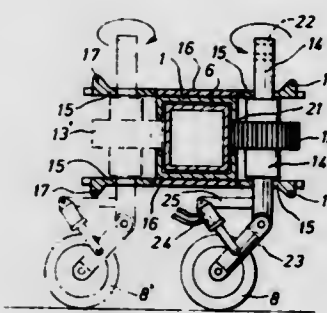
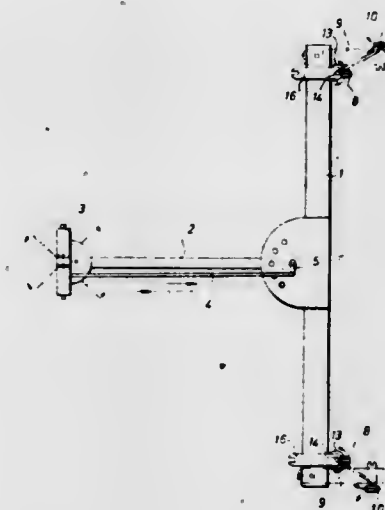
Donald G. M. Whittaker, 6651 Beech Grove, Ballasalla, Isle of Man, England

Filed Apr. 13, 1979, Ser. No. 29,930

Int. Cl.³ B62D 17/00

U.S. Cl. 280-444

3 Claims



1. In a steering arrangement for trailer vehicles or agricultural implements having steerable wheels, comprising a transverse frame member, a slide mounted within the said transverse frame member, a rack on the said slide, a pinion in mesh with the said rack and arranged to receive steering motion as rotation of the pinion to move the rack and slide longitudinally of the transverse frame member; the improvement of further racks on said slide at a forward and rearward face and near

both lateral ends of said slide, and further pinions connected to said steerable wheels to impart steering motion thereto consequent upon longitudinal motion of the said slide whereby said further pinions may be selectively positioned ahead of or behind the transverse frame member in mesh with said further racks.

4,247,130

SHOPPING CART CONSTRUCTION

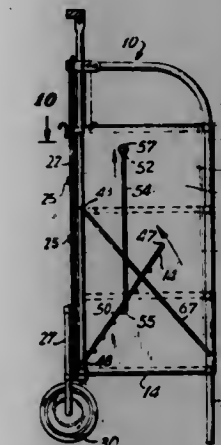
Stephen Paterson, 4 Dartmouth St., Forest Hills Gardens, N.Y. 11375

Filed Mar. 5, 1979, Ser. No. 17,385

Int. Cl.³ B62B 11/00

U.S. Cl. 280-654

4 Claims



1. An improved shopping cart comprising: a rearwardly disposed main panel element of generally rectangular planar configuration, and having manually engageable means disposed substantially at an upper end thereof; first and second side panel elements of generally planar rectangular configuration, said side panel elements being hingedly interconnected at rearward edges thereof to respective first and second longitudinal edges of said main panel element, each of said side panel elements having wheel means adjacent a lower rear corner thereof so as to lie in substantially coplanar relation with said rear panel element when said cart is in folded condition; and a bottom panel element of planar rectangular configuration having means pivotally interconnecting a rear edge thereof to a lower portion of said rear panel element for movement about a horizontal axis through substantially a right angle, said bottom panel element having a manually engageable operating member interconnected at medial points on side edges of said bottom panel element for raising and lowering the same relative to said main panel element; guide rods carried by said side panel elements on the inner surfaces thereof, said guide rods being slidably engaged with said bottom panel element and having means at a lower end thereof supporting a forward edge of said bottom panel element in horizontal position and maintaining said side panel elements in mutually parallel relation.

4,247,131

POSITION-VARIABLE BELT ARTICULATION FOR SAFETY BELTS

Gerd Fiehl, Waiblingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 16, 1979, Ser. No. 12,854

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806532

Int. Cl.³ A62B 35/02; B60R 21/10

U.S. Cl. 280-808

14 Claims

1. A position-variable belt articulation apparatus for a vehicle safety belt, especially for an upper articulation point at a side of a vehicle in a three-point safety belt system, characterized in that the articulation apparatus comprises a guide means, a clamping element displaceable in a longitudinal direction along the guide means, at least one belt mounting connected with said clamping element, said at least one belt mounting is

stressed by the belt in dependence upon a load imposed upon the belt, and in that said clamping element is pivotable about an axis extending at right angles to the displacement direction



upon a stressing of the at least one belt mounting, whereby the clamping element is clamped against the guide means by the load imposed on the belt.

4,247,132

SKI POLE

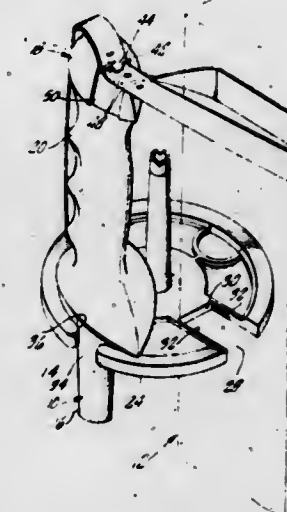
Michael P. Shields, 5977 Reseda Blvd., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 783,170, Mar. 31, 1977, Pat. No. 4,175,683. This application Mar. 15, 1978, Ser. No. 886,931

Int. Cl.³ A45F 3/00; A65D 69/00

U.S. Cl. 280-814

2 Claims



1. A ski pole for use in securing together a pair of skis to facilitate carrying thereof, said ski pole comprising a basket, a ski pole shaft and a grip, said basket being carried by said shaft and having a first recessed area therein, said area defining a curvilinear gripping surface and having an outer opening of reduced transverse dimension for receiving a second ski pole therein and a second recessed area radially positioned within said basket and disposed approximately 90° about said basket with respect to said first recessed area for receiving a transverse portion of a pair of adjacently disposed skis, said grip being secured to the upper end of said shaft and including a handle and an expansible safety strap, one end of said strap being swivelly mounted on said handle, a pin member having an enlarged head portion carried by said handle in the upper portion thereof, said strap having apertures adjacent each end thereof and at least one intermediary aperture disposed therebetween such that upon inserting said pin member through said apertures disposed adjacent the ends of said strap, said strap is detachably mounted on said pole in a skiing mode, said handle having an inverted "V"-shaped channel disposed in the upper end thereof adapted to receive portions of said strap adjacent the ends thereof such that in a skiing mode said portions of said strap lie substantially flush with said handle, whereby upon

disposing said second pole within said first recessed area of said basket and transverse portions of said skis within said second recessed area of said basket and detaching one end of said strap from said pin member, extending said strap about said pair of adjacently disposed skis and inserting said pin member through one of said intermediary apertures, said skis are secured to said basket and ski pole.

4,247,133

DEVICE WITH MOUNTING PLATES FOR A VALVE BATTERY

Rudolf Müller, Gehrden, Fed. Rep. of Germany, assignor to Wabco Steuerungstechnik GmbH & Co., Hanover, Fed. Rep. of Germany

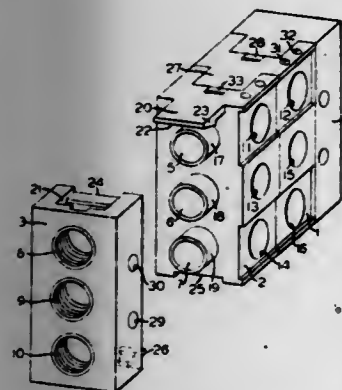
Filed Jul. 20, 1979, Ser. No. 58,987

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852685

Int. Cl.³ F16L 39/00

U.S. Cl. 285—4

9 Claims



1. A valve battery device with mounting plates having at least one fluid pressure passageway therein via which fluid pressure may flow to and from valve connections formed in the mounting plates and fastening means for serially fastening a plurality of said mounting plates in a pressure-tight abutting relationship, said battery device comprising:

- (a) a selected number of mounting plates, each provided with a resilient hook-shaped projection and a recess for accommodating the hook-shaped projection of the adjacent mounting plate,
- (b) said projections and recesses of each mounting plate being arranged thereon so that one abutting end, on opposite sides thereof, is provided with a projection and a recess; and on the other abutting end, on opposite sides thereof, with a recess and projection in opposite relation to those in said one abutting end.

4,247,134

SEALING MEANS SEALING INTERCONNECTED FITTING ASSEMBLIES

Robert F. Yergea, 20355 Wilson River Hwy., Tillamook, Oreg. 97141

Filed Apr. 25, 1979, Ser. No. 33,140

Int. Cl.³ F16L 35/00

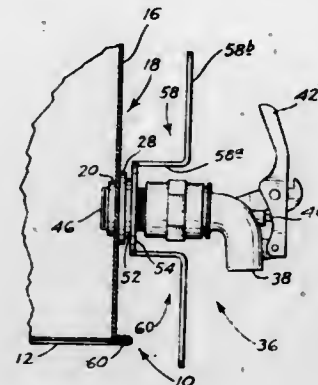
U.S. Cl. 285—38

2 Claims

1. In combination with a drum which includes a cylindrical sidewall and end walls closing off the ends of the drum, one of said end walls including a bunghole assembly providing access to the interior of the drum which includes an internally threaded, non-tapered, annular fitting and an annular collar concentric with the fitting, said collar overlying outer portions of the fitting and being secured to said end wall and securing the fitting in place,

a faucet assembly including a tapered externally threaded stem with threads of largest diameter located inwardly from the free end of the stem, mounted with its threaded stem screwed into the internal threads of the fitting,

a gasket surrounding said stem and bearing against said collar; and
a hand-manipulatable nut having non-tapered internal threads of a diameter sufficient to receive the external threads of largest diameter in the stem, said nut being mounted on said stem and compressing said gasket against said collar with the gasket being effective to inhibit leakage past the threads of said stem and leakage between the fitting and collar,



said stem being tapered from the free end of the stem inwardly on the stem beyond the region where the nut is located, the threads of the nut in reaction to the compression of the gasket jamming against the threads of the stem to inhibit leakage, the faucet assembly being mountable on the fitting through turning of the faucet assembly to advance the stem into the fitting and turning being stopped on the faucet assembly having desired orientation relative to the drum.

4,247,135

HYDRAULIC COUPLING DEVICE

Walter Weirich, Dortmund, and Bernd Peters, Dulmen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalen, Fed. Rep. of Germany

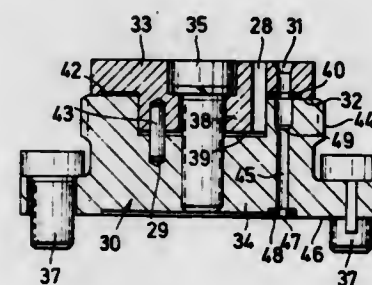
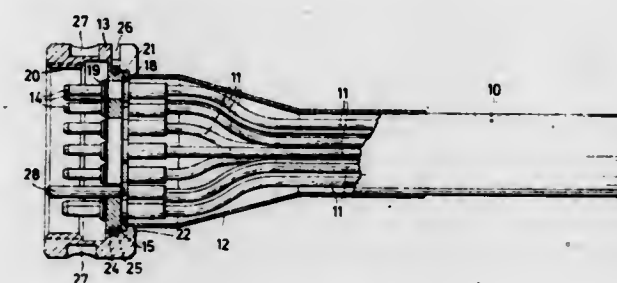
Filed Jan. 5, 1978, Ser. No. 867,044

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1977, 2701212

Int. Cl.³ F16L 39/00

U.S. Cl. 285—137 R

7 Claims



1. A coupling arrangement comprising a coupling device and a connector, the coupling device being constituted by a cylindrical casing, a plurality of plug pins housed within the casing, and a holder within said casing for holding the plug pins, and means for retaining said holder within said casing,

and the connector being provided with a plurality of sockets which, in use, receive and mate with the plug pins of the coupling device, the plug pins each being connectible to a respective one of a plurality of high-pressure hydraulic conduits which are bunched together to form a multi-core duct, the connector being constituted by two detachably interconnected parts which meet in a plane that lies transversely to the axial direction of the sockets and that passes through the sockets axially spaced from the open ends of said sockets, resilient sealing rings located at said plane to constitute a seal between each respective plug pin and socket when the coupling arrangement is mated, and means for rigidly fastening said two detachably interconnected parts of said connector together which applies compression force to said sealing rings when said two parts are assembled, wherein said plug pins enter said sockets and pass through the compressed sealing rings when said coupling device and connector are mated to form said coupling arrangement without requiring application of axial force between said coupling device and connector to compress said sealing rings, and means to retain said coupling device and connector in mating engagement.

4,247,136

INTERNAL COUPLING STRUCTURE AND JOINT FOR PIPE OR TUBING

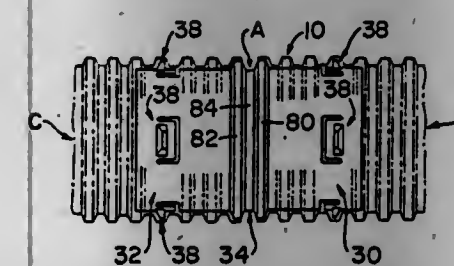
James L. Foush; Donald W. Sting; John J. Parker, and Robert Biango, all of Findlay, Ohio, assignors to Hancor, Inc., Findlay, Ohio

Filed Dec. 22, 1978, Ser. No. 972,520

Int. Cl.³ F16L 21/00

U.S. Cl. 285—319

40 Claims



1. A joint construction for plastic pipe comprising:

first and second lengths of corrugated, hollow plastic tubing or pipe having an internal wall surface defined by adjacent circumferentially extending, longitudinally spaced peaks and valleys, said first and second lengths having end areas thereof disposed adjacent each other;

a coupler member affixed to the end area of said first length with a portion thereof extending outwardly therefrom, said coupler member including a first end portion having a side wall configuration terminating in an outermost end, said first end portion dimensioned to be slidably received in the end area of said second length, said first end portion including a plurality of outwardly extending cleats received in retaining engagement in at least one valley of said second length;

each said cleat including a tube engaging surface and means to allow selective resilient movement thereof generally about a cleat mounting axis disposed generally laterally across a portion of said coupler member first end portion between a first normal position with said engaging surface extending generally outward of said coupler first end portion side wall and a second position with said engaging surface spaced arcuately inward from said first position generally about said cleat mounting axis, each said cleat being forced from said first to said second position by engagement with said second length peaks as said coupler member first end portion is inserted thereinto and each said cleat being resiliently urged back toward said first position when it communicates with a second length valley, at least a portion of said engaging surface of each cleat being placed in retaining engagement with the wall por-

tion of said second length extending between a selected one of said valleys and the next adjacent peak spaced toward said second length end area for retaining said first and second lengths in a coupled relationship with each other, said wall portion exerting force on said engaging surface of each said cleat which tends to urge said cleat outward from said first position under an axial uncoupling force which tends to pull said coupler member and said second length longitudinally apart from each other; and, means for resisting substantial movement outward from said first position generally about said cleat mounting axis of at least selected ones of said cleats under said axial uncoupling force.

4,247,137

SOLDER FEEDER APPARATUS

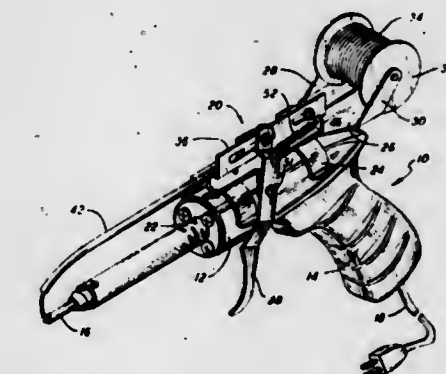
Homer F. St. Clair, Levanna Rd., Aurora, N.Y. 13026

Filed Jul. 5, 1979, Ser. No. 54,899

Int. Cl.³ B23K 3/06

U.S. Cl. 228—52

8 Claims



1. An attachment for a soldering tool having a body portion to be held by an operator and a heated tip, said attachment comprising, in combination:

- (a) means for rotatably holding a spool holding a supply of solder in strip form;
- (b) guide means through which said solder strip is directed from said spool to a terminal end in the vicinity of said heated tip;
- (c) a pair of gripper means through which said solder strip passes intermediate of said spool and said guide means;
- (d) means for mounting both of said gripper means for reciprocating movement along the path of travel in a forward and rearward direction toward and away from said guide means, respectively, and for limiting the maximum extent of travel of one of said gripper means to a fraction of that of the other of said gripper means;
- (e) said gripper means each including engagement members preventing movement of said solder strip in said rearward direction relative to said gripper means and permitting movement of said solder strip in said forward direction relative to said gripper means;
- (f) manual actuating means for movement by the same hand of said operator which holds said tool body portion;
- (g) means coupling said actuating means to said other gripper means for moving the latter in said forward direction in response to operator movement of said actuating means, thereby moving said solder strip and said one gripper means in said forward direction and bringing said terminal end of said solder strip into contact with said heated tip, said solder strip being drawn in the forward direction through said one gripper when the latter reaches the maximum extent of its forward movement as said terminal end of said solder strip is melted by said heated tip; and
- (h) return means for moving said pair of gripper means in said rearward direction upon release of said actuating means, thereby moving said solder strip in said rearward direction and moving said terminal end thereof away from contact with said heated tip, said other gripper means

continuing to move rearwardly after said one gripper means reaches the maximum extent of its rearward travel and holds said solder strip stationary.

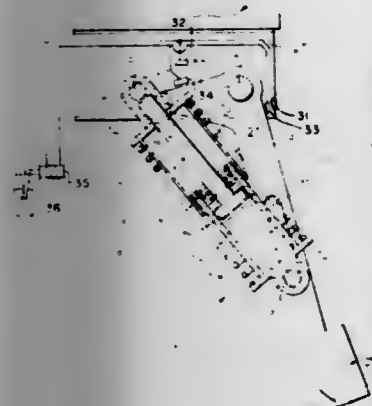
4,247,138

SHOCK ABSORBING APPARATUS FOR VEHICLES
James R. Child, Clwyd, England, assignor to Quinton Hazell Limited, England

Filed Apr. 6, 1979, Ser. No. 28,024
Int. Cl.³ B60R 19/02

U.S. Cl. 293—103

9 Claims



1. A shock absorbing apparatus suitable for use on the structure of a load carrying vehicle comprising an arm extending downwardly from the vehicle structure, a first pivotal connection pivotally connecting said arm to the vehicle structure, a horizontally disposed bumper means supported on the lower end of said arm, a shock absorbing device connected between the vehicle structure and said arm, a second pivotal connection pivotally connecting said shock absorbing device to the vehicle structure at a point spaced along the vehicle structure from said first pivotal connection, a third pivotal connection pivotally connecting said shock absorbing device to said arm between said first pivotal connection and said bumper means, said first, second and third pivotal connections forming the apices of a triangle, lost motion means to vary the configuration of said triangle associated with at least one of said pivotal connections and to permit said arm to swing upwardly away with respect to the vehicle structure, said shock absorbing device including means to restore said arm downwardly to its normal position.

4,247,139

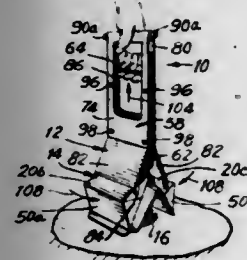
SANITARY WASTE COLLECTOR

Geoffrey E. Grieb, 789 W. End Ave., New York, N.Y. 10025
Filed Oct. 10, 1978, Ser. No. 949,855

Int. Cl.³ A01K 29/00

U.S. Cl. 294—1 BA

22 Claims



1. A sanitary waste collector for picking up waste compris-

ing a disposable container movable from an open condition when said container is placed over the waste to a closed condition for scooping up the waste, and a handle for moving said container from its open condition to its closed condition, said handle including a frame and further including gripping means for releasably engaging said container and movable relative to said frame between a lower position and an upper position, camming means for moving said gripping means between a container-receiving mode, a container-gripping mode and container-releasing mode, and means defined by said frame for causing said container to close as said gripping means moves from its lower position toward its upper position.

4,247,140

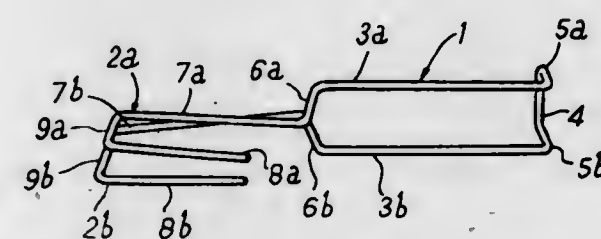
UNIVERSAL TOOL

Jing R. Gordon, 64 Borensvagen, 121 68 Johannessov, Sweden
Filed Aug. 7, 1979, Ser. No. 64,469

Int. Cl.³ B65G 7/12

U.S. Cl. 296—26

5 Claims



1. A tool, for gripping articles, consisting of a piece of resilient metal wire bent to provide:

- a handle portion having two arms lying side by side substantially in a same plane and spaced from each other by the length of a connecting web at one end of the arms,
- two grip legs each forming a continuation of the other end of a respective arm, each grip leg being substantially U-shaped and having its general plane substantially perpendicular to the plane of the arms, one of said grip legs being of lesser dimensions than the other grip leg such that said one grip leg may pass freely through the other grip leg when said other ends of the handle arms are moved towards each other with resilient deformation of said arms and of said web.

4,247,141

SPADES

Charles I. Grint, 265E Eliot Height, New Plymouth, New Zealand

Filed Aug. 2, 1979, Ser. No. 63,265

Claims priority, application New Zealand, Aug. 4, 1978, 188070

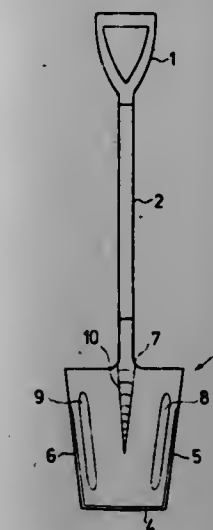
Int. Cl.³ A01B 1/02

U.S. Cl. 294—49

3 Claims

1. A spade for use in planting out seedlings of forest plants comprising a handle, a shaft and a blade, the said blade being four sided, having a base edge, two side edges, a tread edge and being substantially planar, the base edge together with at least half of the length of each of the side edges being sharpened, the two side edges tapering towards the base edge, and the side blade being strengthened by pressing out two raised portions

of the blade to form raised ribs, each of the raised ribs extending in elongate fashion with an axis aligned substantially longi-



tudinally of the blade, and extending for greater than half the length of the blade.

4,247,142

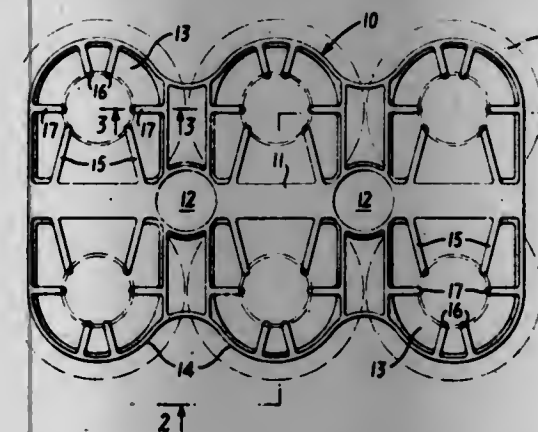
BOTTLE CARRIER

Gerald Erickson, P.O. Box 747, Palm Beach, Fla. 33480
Filed Nov. 16, 1979, Ser. No. 94,780

Int. Cl.³ B65D 71/00

U.S. Cl. 294—87.2

6 Claims



1. An integrally formed bottle carrier comprising a one-piece frame having a plurality of spaced-apart openings therein and a plurality of bottle engaging and supporting ribs integrally connected at their outer ends with the frame, their inner ends defining the shape of the outer perimeter of the bottle which they are adapted to engage and support, at least two of the ribs being longer than the others and extending diagonally to each other with their inner ends more closely spaced apart than their outer ends, said longer ribs being adapted to be spread apart to facilitate the removal of the neck of a bottle, at least two of the ribs being shorter than the longer ribs and extending diagonally to each other from the opposite end of the opening with their inner ends more closely spaced apart than their outer ends, the inner ends of said shorter ribs being unconnected and unsupported except for their connection at their outer ends to the frame so that they are deflectable separately in all directions and relative to each other on the insertion of the neck of a bottle, the shorter ribs serving as a fulcrum against which the neck of a bottle is pivoted to force the upper end between the two longer ribs.

4,247,143

PAYLOAD RELEASE MECHANISM

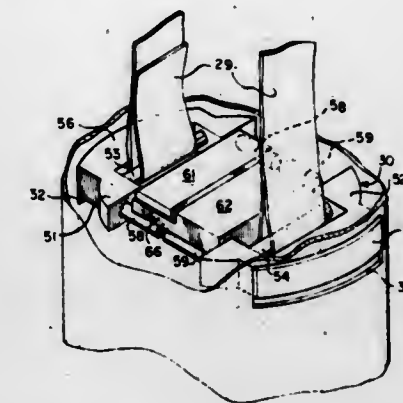
Stephen G. Putman, Fort Wayne, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 26, 1979, Ser. No. 33,651

Int. Cl.³ B64D 17/38

U.S. Cl. 294—83 A

6 Claims



1. A load release mechanism comprising: a pair of opposed coplanar retainer means in a plane normal to the direction of a load, each of said pair including a hinge means in said plane extending toward the other retainer means, a tab in said plane extending from the distal surface of said retainer means formed to engage the load, the attachment means between said hinge means and said tab formed to be attached to a support means; latch means in said plane coupled to said hinge means for maintaining said retainer means coplanar under the load and for releasing said hinge means when a release force is applied thereto; whereby said pair of retainer means are free to disengage from said load.

4,247,144

STORAGE DEVICES FOR SERVICE TRUCK

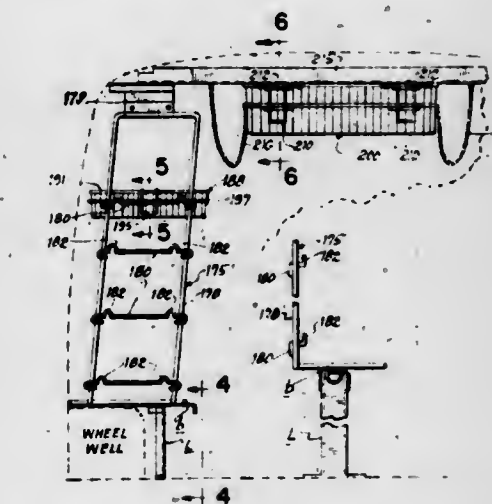
John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

Division of Ser. No. 824,640, Aug. 15, 1977, which is a division of Ser. No. 632,625, Nov. 17, 1975, Pat. No. 4,056,194, which is a division of Ser. No. 418,835, Nov. 26, 1973, Pat. No. 3,957,159, which is a division of Ser. No. 240,163, Mar. 31, 1972, Pat. No. 3,807,788. This application Sep. 10, 1979, Ser. No. 73,696

Int. Cl.³ B60R 11/00

U.S. Cl. 296—24 R

4 Claims



1. Storage equipment for loose articles, comprising a. a pair of horizontally spaced, opposed end frames, each comprising a front post and a back post, b. a plurality of vertically spaced stringers, rigidly connecting each of said front posts with its adjacent back post to

provide pairs of horizontally spaced, opposed stringers, each having container retaining means, and
c. a container carried by each pair of opposed stringers, said container having clamp means cooperating with said retaining means to detachably secure it to said stringers.

4,247,145

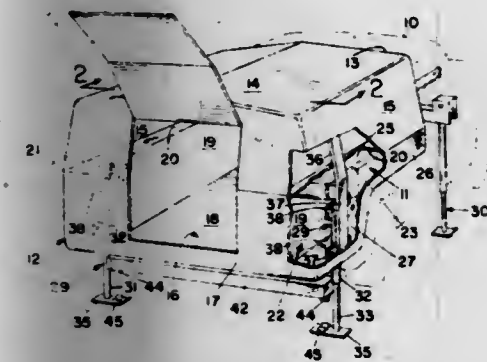
CARGO UNIT WITH SUPPORT JACK ASSEMBLIES
Richard L. Groene, 1800 Fuller Rd., West Des Moines, Iowa 50265

Filed Jul. 23, 1979, Ser. No. 59,577

Int. Cl.³ B60P 3/32

U.S. Cl. 296-164

3 Claims



1. A cargo unit mountable on a vehicle having a body unit with upright opposite side portions comprising:

- (a) a generally rectangular box shape enclosure having:
 - (1) a pair of laterally spaced opposite side walls,
 - (2) a bottom wall of a generally U-shape in transverse cross section, including:
 - (a) a base section, and
 - (b) a pair of upright side sections spaced inwardly of said side walls, each of which has an upper outwardly projected lateral section with a terminal end secured to an adjacent side wall at a position above the lower edge thereof so that each side section, lateral section and adjacent side wall together form a downwardly facing channel shaped portion for receiving a side portion of said vehicle body unit,
- (b) a pair of linearly extendible and retractable rear jack assemblies spaced transversely of said enclosure, each of which has a body member and a lift member arranged in telescoping relation and means for extending and retracting said lift member relative to said body member,
- (c) means for securing each body member of a jack assembly in an upright position on an adjacent one of said side walls and within a channel shaped portion for downward extension of the lift members of said jack assemblies into ground engagement to support the rear end portion of said cargo unit and for retraction within said body member for transport of said cargo unit on said vehicle, and
- (d) means on said enclosure for actuating said extending and retracting means to selectively extend or retract said lift members.

4,247,146

RECLINER CHAIR WHICH MOVES FORWARDLY RELATIVE TO A WALL AS THE BODY SUPPORTING MEANS OF THE CHAIR MOVES FROM UPRIGHT TO RECLINED POSITIONS

Izchak Cycowicz, Brooklyn, and Alfred Frimmet, Larchmont, both of N.Y., assignors to Mohasco Corp., Amsterdam, N.Y. Continuation of Ser. No. 793,862, May 4, 1977, abandoned, which is a continuation of Ser. No. 618,594, Oct. 2, 1975, abandoned. This application Jul. 5, 1979, Ser. No. 54,832

Int. Cl.³ A47C 1/02

U.S. Cl. 297-322

6 Claims

1. In a wall-proximity reclining chair of the type having
 - (A) a stationary base for supporting the chair on a floor;
 - (B) body-supporting means including a seat located gener-

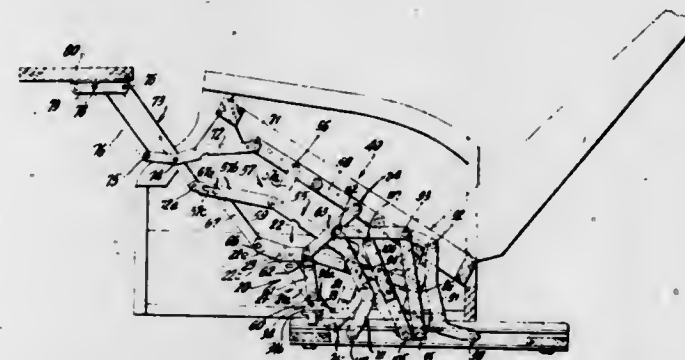
ally above the base, and a backrest located generally rearwardly of the seat; and

(C) a movable armrest assembly including

- (1) a pair of armrests each located at an opposite side of the seat, each armrest having an outer wall which faces away from the seat, and a generally vertically-extending inner wall which faces towards the seat, both inner walls extending downwardly at opposite sides of the seat to thereby bound a lower chair region underneath the seat,
- (2) means for interconnecting the armrests for joint movement, and
- (3) means for mounting the interconnected armrests for longitudinal generally horizontal reciprocating movement relative to the base to thereby forwardly and rearwardly move the armrest assembly relative to the base in response to manual urging on the armrests by a seated user;

the improvement comprising:

- (a) a base-mounting member mounted at each opposite side of the base in the lower chair region;
- (b) a seat-mounting member mounted at each opposite side of the seat;
- (c) an armrest-mounting member mounted only on the inner wall of each armrest in the lower chair region below the seat but above the base; and
- (d) an integrated all-linkage system at each side of the seat and operative for displacing the body-supporting means between



an end-limiting upright position in which the seat and backrest are spaced at a predetermined distance away from a room wall behind the chair, and are oriented at a predetermined orientation relative to the base, and an end-limiting fully reclined position in which the seat is linearly spaced at a greater forward distance away from the room wall such that physical contact of the body-supporting means with the room wall is avoided, and in which the seat and the backrest are oriented at a different inclined orientation relative to the base,

- (i) each all-linkage system constituting a plurality of interconnected links all displaceable in response to said longitudinal movement of the armrest assembly, for simultaneously effecting both the linear and the inclined displacement of the body-supporting means without mechanical interference by any of the links with each other,
- (ii) each plurality of interconnected links being connected at each side of the chair between the seat-mounting member, its respectively-associated base-mounting member and its respectively-associated armrest-mounting member, all of said mounting members and links being located and mounted only on the inner wall of the respectively-associated armrest,
- (iii) all of said interconnected links of each system together with its associated mounting members all constituting a unitary linkage mechanism which, when not mounted on an armrest inner wall, is liftable and movable as a unit and which is positionable as a whole on the

respective inner wall of an armrest for assembly thereof in one assembly operation.

4,247,147

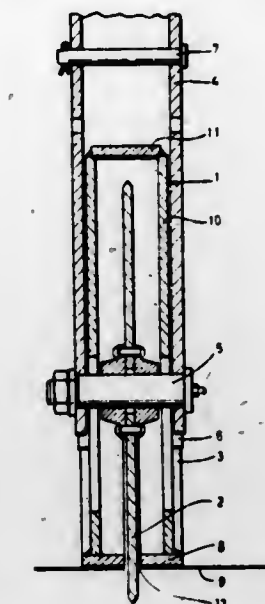
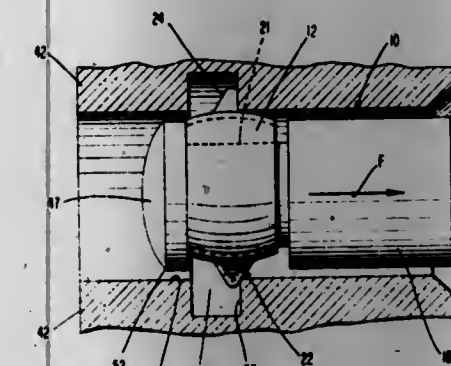
RETAINER CLIP FOR CUTTER BITS
Gary Rettkowski, Mountaintop, Pa., assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Nov. 21, 1979, Ser. No. 96,331

Int. Cl.³ E21C 25/46, 35/18

U.S. Cl. 299-10

27 Claims



is projected outwardly from said chamber and through said slot during the cutting operation. --

26. A method of retaining a cutter bit in a holder comprising the steps of:

- A. inserting a shank portion of the bit into a hole in said holder such that an annular, radially contractible spring clip on said shank portion is radially contracted in response to contact between said hole and at least two proximate radial projections and at least one remote radial projection of said clip;
- B. displacing said shank rearwardly within said hole until said remote and proximate projections become radially aligned with a retaining groove in said hole, whereupon said clip radially expands and said projections enter said groove;
- C. abutting said bit against an earth formation to cut the formation in a manner whereby forwardly directed forces are imposed upon said bit to forwardly displace the latter relative to said hole; and
- D. causing contact between a wall of said groove and positively oriented front surfaces of at least some of said proximate projections in response to such forward displacement of said bit, with a front surface of said remote projection being spaced from said wall, whereupon said clip and its longitudinal axis is shifted radially relative to said shank such that a circumferential gap of said clip disposed between said proximate projections is displaced toward the longitudinal axis of said shank.

4,247,148

ASPHALT CUTTER

Tord E. B. Eriksson, Postlada 5284, S-761 00 Norrtälje, Sweden
Filed Apr. 25, 1979, Ser. No. 33,246

Claims priority, application Sweden, May 8, 1978, 7805233

Int. Cl.³ E01C 23/09

U.S. Cl. 299-40

3 Claims

1. An asphalt cutter comprising a fork, a shaft attached to and extending between the legs of said fork, a cutting disc rotatably supported on said shaft, and a guiding housing for enclosing said disc, said housing comprising a first side and a second side spaced from and attached to each other by a support member which extends about at least a portion of the periphery of said sides to provide a chamber in which said disc is housed, said support member including a slot through which a portion of said disc may extend during the cutting operation, each of said sides including an elongated opening through which said shaft extends such that said housing is continuously shiftable relative to said shaft and said disc in a longitudinal direction relative to said fork between a first position in which

1. An impact mechanism (10) mounted on a support (12), a head assembly (18) including a housing (20,22), a motor (84), a flywheel (76,78), an eccentric (74) turned by the motor, an impact member (82) on said eccentric (74), a pair of shank members (24,26) pivotally mounted to the housing (20,22) at opposite sides thereof for swinging motion inwardly toward and outwardly from the housing (20,22), each of said shank members (24,26) having a first portion (95) adapted for work and a second portion (94) adapted to engage said impact member (82), and said flywheel energy being transmitted through the impact member (82) to one of said shank members (24,26) to intermittently move the shank member (24,26) outwardly from the housing (20,22) whenever the impact member (82) is turned and the shank member (24,26) is in engaged contact with the impact member (82).

4,247,150

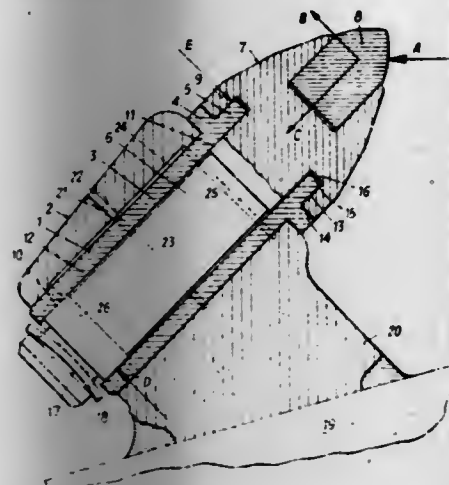
BIT ARRANGEMENT FOR A CUTTING TOOL
Herwig Wrulich; Otto Schetina, and Alfred Zitz, all of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Apr. 17, 1979, Ser. No. 30,754

Claims priority, application Austria, Jun. 15, 1978, 4378/78
Int. Cl.³ E21C 35/18

U.S. Cl. 299—86

8 Claims



1. A bit assembly for a rotary mining tool comprising: a bit holder having a bore therein; a non-rotating bushing fixed in the bore of the bit holder, said bushing having a radial flange thereon, said flange having a first surface facing and abutting said bit holder and a second surface facing away from said bit holder, said bushing also having an annular extension of smaller diameter than said flange projecting axially beyond the flange in a direction away from said bit holder; a bit having a shaft portion rotatably mounted in said bushing and having a bit portion of enlarged diameter, said annular extension on said bushing fitting into a complementary axially facing annular groove in said bit portion so that said bit portion encloses said annular extension, and said bit portion having a surface supported on said second surface of said flange on said bushing.

4,247,151

WHEEL COVER RETENTION

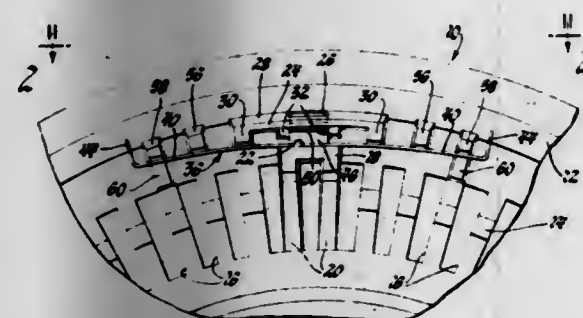
Trevor J. Brown, Rochester, and Neal S. Hakken, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 7, 1979, Ser. No. 101,289

Int. Cl.³ B60B 7/00

U.S. Cl. 301—37 R

4 Claims



1. In combination with a vehicle wheel, a wheel cover comprising, a cover body having a pair of circumferentially extending radially spaced flange means spaced relative to each other, a wheel cover retainer insertable between the flange means and including a body portion seating on one flange means and a locking portion removably engageable with the other flange means, anti-rotation means on one of the flange means engageable with the locking portion to resist rotation of the retainer relative to the cover, the retainer including a pair of cantilever legs, each extending from a circumferentially respective side of the body portion, means on the terminal portion of each leg

engageable with the wheel to retain the cover thereon, locating means on the cover engageable by the legs to deflect the legs radially inwardly to predetermined shape and position the terminal portions of the legs in interfering relationship to the wheel in the uninstalled position of the cover, the engagement of the terminal portions with the wheel upon installation of the cover deflecting the legs further radially inwardly and out of engagement with the locating means to a resilient cantilever position to resiliently retain the cover on the wheel, and means on the cover body axially backing up the legs upon installation of the cover and further radial deflection thereof.

4,247,152

WHEEL COVER RETENTION

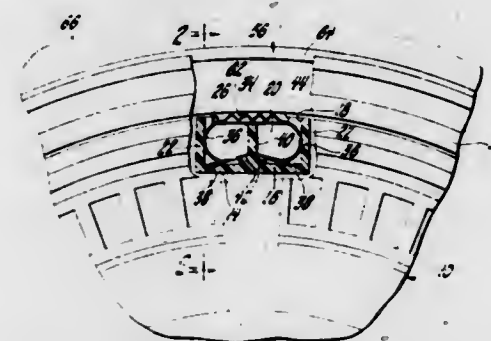
Trevor J. Brown, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1979, Ser. No. 104,320

Int. Cl.³ B60B 7/00

U.S. Cl. 301—37 R

4 Claims



1. In combination with a vehicle wheel including a generally axially extending annular flange joined to a tire bead, a wheel cover for covering the wheel and including a plurality of circumferentially elongated recesses juxtaposed to the wheel flange and tire bead, a generally C-shaped spring clip received in each recess and including a circumferentially elongated body portion facing the wheel flange and tire bead and overlying a pair of return bent flanges, said body portion including at least a pair of axially spaced circumferentially extending rows of teeth, one row of teeth bitingly gripping the axially extending wheel flange to limit axial and radial movement of the cover relative to the wheel and the other of said rows lockingly gripping the tire bead to limit axial movement of the cover relative to the wheel, and cooperating means securing the return bent portions to the cover portion within the recess, the body portion being resiliently supported by the junctures thereof to the return bent portions for movement radially of the wheel flange and tire bead.

4,247,153

DEVICE FOR CONTROLLING HYDRAULIC PRESSURE IN HYDRAULIC BRAKE SYSTEM OF VEHICLE

Harumi Oohori, Toyota; Akira Shirai, Toyoake; Hiroshi Uemura, Okazaki, and Tomoyuki Nogami, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 26, 1978, Ser. No. 972,716

Claims priority, application Japan, Jun. 19, 1978, 53-74045

Int. Cl.³ B60T 8/14

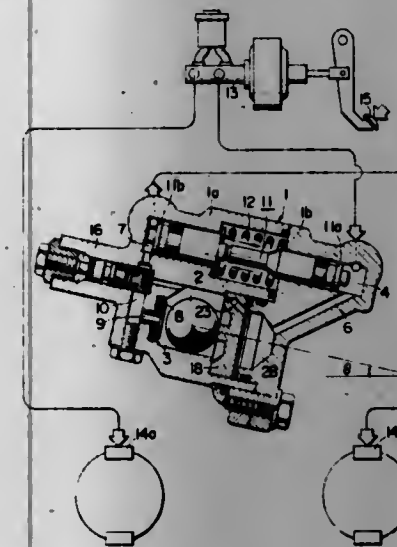
U.S. Cl. 303—6 C

1 Claim

1. A hydraulic pressure controlling device of a hydraulic braking system of a vehicle, said device having an inlet chamber and an outlet chamber which are in communication with a master cylinder and a rear wheel cylinder of said hydraulic braking system, respectively, a valve chamber on one hand communicating with said inlet chamber through a depart plate and on the other hand communicating with said outlet chamber through a valve port, a ball valve disposed in said valve chamber and adapted to close said valve port due to its inertia

when the deceleration of said vehicle has reached a predetermined level, and a differential piston having pressure receiving surfaces exposed in said inlet and outlet chambers, respectively, wherein the improvement resides in said depart plate being stationary under all fluid conditions and facing a vacant space at its upstream side and said valve chamber at its downstream side, said depart plate including a restriction passage formed in the upper portion of said depart plate and disposed in a position so as to communicate at its downstream end with

interconnected to a clutch pedal, said cam shaft having a cam positioned in said brake fluid passage; and
(E) seal rings fitted to the circumferential surface of said cam shaft on opposite sides of said cam portion, said cam shaft being movable upon actuation of said clutch pedal to displace said movable valve member in response to driving action of said cam portion for opening and closing said valve means when said automobile is facing upwardly on said inclined roadway.



an upper portion of said valve chamber and at its upstream end with said vacant space, said restriction passage including: a small diameter bore located at a level higher than said ball valve and having an axis extending in parallel with an axis line passing through the center of said ball valve and the center of said valve port, and a large diameter bore connected to the upstream end of said small diameter bore and inclined with respect to the axis of said small diameter bore in a manner so as to be directed toward a center portion of the vacant space.

4,247,154

BRAKE CONTROL VALVE

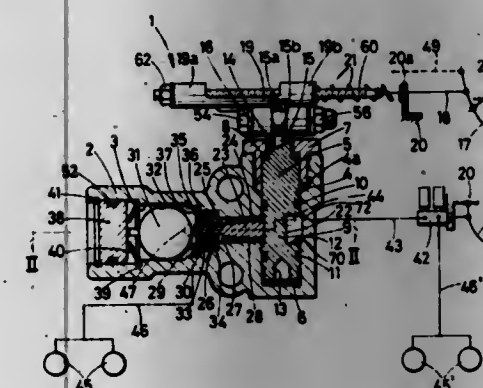
Suzuki Shoji, and Kamemoto Katsuaki, both of Yokosuka, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan
Filed Jul. 20, 1979, Ser. No. 59,248

Claims priority, application Japan, Jul. 24, 1978, 53-101636[U]

Int. Cl.³ B60T 8/00

U.S. Cl. 303—24 A

15 Claims



1. A brake control valve for an automobile having a master cylinder and a wheel cylinder comprising
(A) a main body having first and second bores intersecting with each other, said bores defining a brake fluid passage between said master cylinder and wheel cylinder;
(B) a movable valve member arranged in said first bore, and moved by its weight when the automobile is facing upwardly on an inclined roadway;
(C) valve means arranged in said first bore, and engageable with said movable valve member to check brake fluid flow between said master cylinder and wheel cylinder;
(D) a cam shaft movably fitted into said second bore and

1. In a hydrodynamic fluid foil bearing having a base member with a bearing surface thereon and a second member supported on said base member and having a cooperative bearing surface spaced from said first member bearing surface, said members being relatively movable, the improvement which comprises

a resilient bearing insert assembly positioned between said bearing surfaces, said assembly comprising a plurality of resilient corrugated spring pad supports mounted on said base member bearing surface, said pad supports being separated from each other to provide a series of spaces therebetween, and a compliant unitary foil mounted on said pad supports, said foil having a plurality of perforations aligned across its entire width and over said spaced operative under dynamic conditions both to initiate foil deflection and to cause uniform replenishment of fluid lost through side leakage.

4,247,156

SHAFT BEARING

Anthony P. King, Slidcup, England, assignor to Mono Pumps Limited, Manchester, England

Filed Mar. 12, 1979, Ser. No. 19,555

Claims priority, application United Kingdom, Mar. 14, 1978, 10105/78

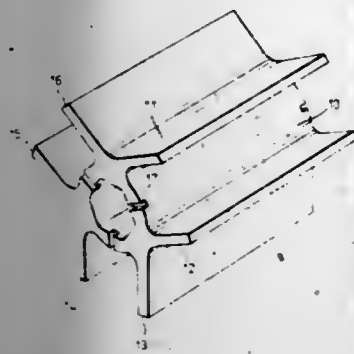
Int. Cl.³ F16C 27/02, 27/06

U.S. Cl. 308—26

9 Claims

1. A shaft bearing for locating a shaft within a tubular member, said bearing comprising a tubular central portion defining an axial bore in said central portion to receive a shaft, and at least two pairs of arms extending tangentially outwardly from the central portion, the two arms in each pair extending gener-

ally in the same direction from the tubular central portion, and on opposite sides of, and generally parallel to, a plane which



includes the axis of the tubular portion, at least some of the arms being resilient.

4,247,157

CANT SEGMENT-RADIAL BEARING FOR HEAVILY LOADED HIGH-SPEED SHAFTS

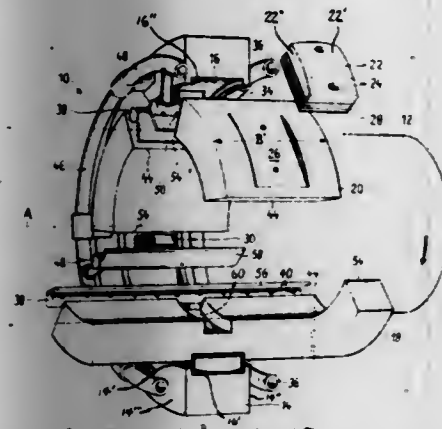
Hans Sigg, Mutschellen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Ltd., Zürich, Switzerland

Filed Oct. 29, 1979, Ser. No. 89,588

Claims priority, application Switzerland, Nov. 10, 1978, 11586/78.

Int. Cl.³ F16C 17/03

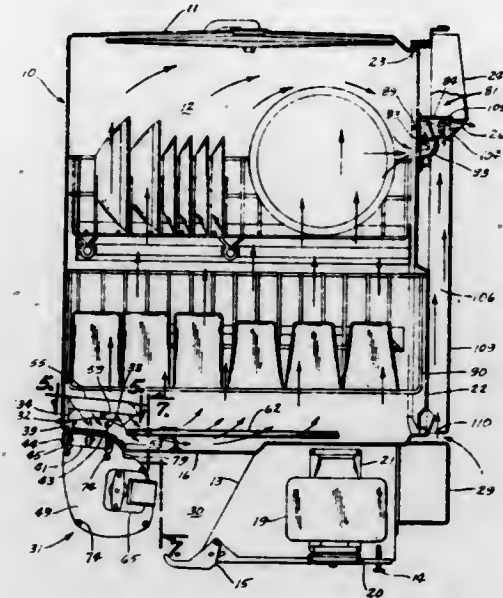
U.S. Cl. 308-73



1. A cant segment-radial bearing for use with heavily loaded high-speed shafts, especially turbine-generator sets and turbo drives, comprising:

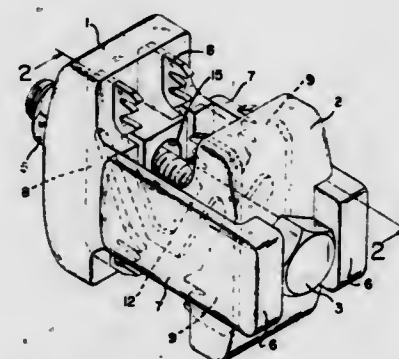
- at least one support segment;
- at least two guide segments;
- means for mounting said at least one support segment to be tiltable in a load direction and said at least two guide segments in the opposite load direction;
- said support and guide segments being arranged in spaced relationship from one another so as to form therebetween intermediate spaces;
- lubricant infeed means including lubricant infeed line means for infeeding cooled lubricant under pressure to said segments;
- nozzle means connected with said lubricant infeed line means and arranged in at least one intermediate space between two of said segments; and
- said nozzle means producing free lubricant jets directed intermediately at the shaft with which the bearing is used.

4,247,158
DISHWASHER AIRFLOW DRYING SYSTEM
Lawrence L. Quayle, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Division of Ser. No. 940,028, Sep. 6, 1978, Pat. No. 4,188,732.
This application Jul. 2, 1979, Ser. No. 54,248
Int. Cl.³ B08H 3/02
U.S. Cl. 312-213 11 Claims



1. An exhaust vent for a dishwashing apparatus having a washing chamber and an access door including inner and outer door panels, the combination comprising: duct means interconnecting a first opening in said inner panel communicating with said washing chamber and a second opening in said outer panel spaced outwardly and upwardly from said first opening and communicating with atmosphere, said duct means including a housing disposed between said panels and mounted on said inner panel, said housing including a combination upwardly-curving and inwardly-extending direction-reversing wall generally facing said inner panel to define with said inner panel an upwardly and outwardly extending serpentine airflow path for exhausting air from said washing chamber and blocking escape of liquid therefrom; and a normally closed valve member within said housing for blocking said airflow path and movable toward an open posture.

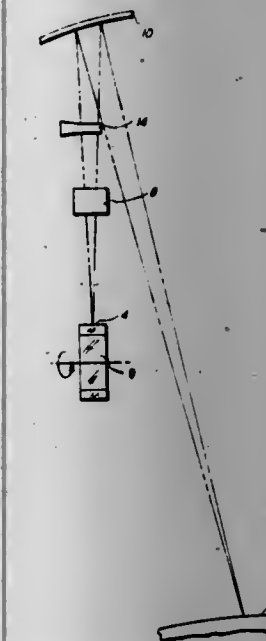
4,247,159
ELECTRICAL CONNECTOR FOR USE IN ESTABLISHING TAP CONNECTIONS
Charles Fruchard, Conflans-Sainte Honorine, France, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 5, 1979, Ser. No. 54,724
Claims priority, application France, Jul. 24, 1978, 78 21877
Int. Cl.³ H01R 4/44
U.S. Cl. 339-95 R 2 Claims



1. An electrical connector comprising a body of electrically insulating material, the body being in two parts secured together by means of a bolt by means of which the two parts of the body can be urged towards each other, and two electrical

contact members carried by the two body parts respectively, each contact member having two contact portions directed towards the contact portions of the other contact member respectively, each contact portion being in the form of a plurality of teeth arranged to bite into a conductor positioned between a contact portion and the associated contact portion of the other contact member as the two parts of the body are urged towards each other by means of the bolt, in which the two contact members are integrally formed connected by a substantially U-shaped connecting portion having one free end connected to one of the contact members adjacent one of the contact portions thereof, and the other free end connected to the other adjacent one of the contact portions thereof, the contact members and the connecting portion all being co-planar; and in which the holes in the two parts of the body through which the bolt passes are elongate in the direction parallel to the plane of the contact members and connecting portion.

4,247,160
SCANNER WITH REFLECTIVE PYRAMID ERROR COMPENSATION
Harry P. Brueggemann, San Marino, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 26, 1979, Ser. No. 23,940
Int. Cl.³ G02B 27/1
U.S. Cl. 350-6.8 2 Claims



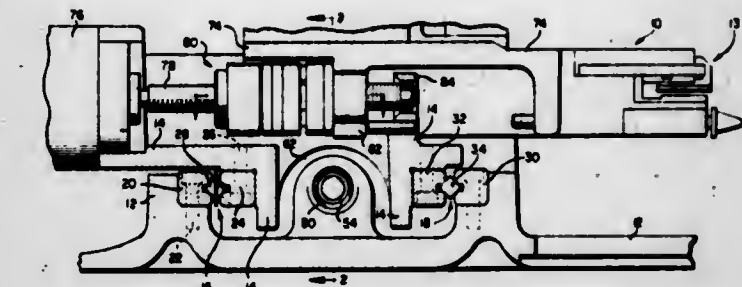
2. An optical scanning system which compensates for alignment errors between adjacent facets of a scanning polygon while controlling sagittal field curvature, comprising, a light source for generating a light beam, a photosensitive surface, a light scanner having a plurality of light reflecting facets interposed in the optical path between said light source and said photosensitive surface for scanning the light beam in a plane such that the light beam scans across said photosensitive surface, a positive cylinder mirror interposed in the optical path between said light scanner and said photosensitive surface, said mirror being oriented such that it has no power in said plane of the scanning light beam and power in a plane normal to said plane of said scanning light beam, and a negative cylinder lens interposed in the optical path between said light scanner and said mirror, said lens being oriented such that it has no power in said plane of the scanning light beam and power in said plane normal to said plane of said scanning light beam.

4,247,161
RIFLE TELESCOPE
John Unertl, Jr., 4679 McKnight Rd., Pittsburgh, Pa. 15237
Filed May 9, 1979, Ser. No. 37,384
Int. Cl.³ G02B 27/32
U.S. Cl. 350-10 11 Claims



1. In a rifle telescope having one of a movable erector lens assembly and a movable reticle assembly carried in a telescope tube, the improvement comprising resilient means in said tube biasing said assembly vertically and horizontally in said tube, an elevation adjustment means in said tube acting on said assembly in opposition to the vertical bias and a windage adjustment means in said tube acting on said assembly in opposition to the horizontal bias, at least one of said elevation adjustment means and windage adjustment means having a coarse and a vernier overrun adjustment means.

4,247,162
RECTILINEAR DRIVE APPARATUS
Willie W. Jordan, Garland, Tex., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Sep. 29, 1978, Ser. No. 946,980
Int. Cl.³ G02B 21/26
U.S. Cl. 350-86 16 Claims



1. A rectilinear drive apparatus for rapidly and accurately moving a driven component along a rectilinear direction to a desired location with a minimum of vibration settling time upon reaching the desired location comprising:

- a frame;
- a pulsed stepping motor mounted to said frame, including a rotating shaft rotated incrementally in response to said pulsed stepping motor;
- drive coupling means interconnecting said rotating shaft to said driven component and rectilinearly moving said driven component in incremental steps in response to said incremental rotation of said shaft; and
- bearing members slidably mounting said driven component to said frame, at least one of said bearing members including,
 - a pair of rail members, each having a respective elongated bearing track,
 - means for rigidly mounting one of said rail members to said driven component and the other to said frame to align said elongated bearing tracks in facing relationship along said rectilinear direction; and
 - an elongated metal bar slidably mounted within said bearing tracks to slidably support said driven component during movement thereof to said desired location.

4,247,163

CLAMP CONSTRUCTION

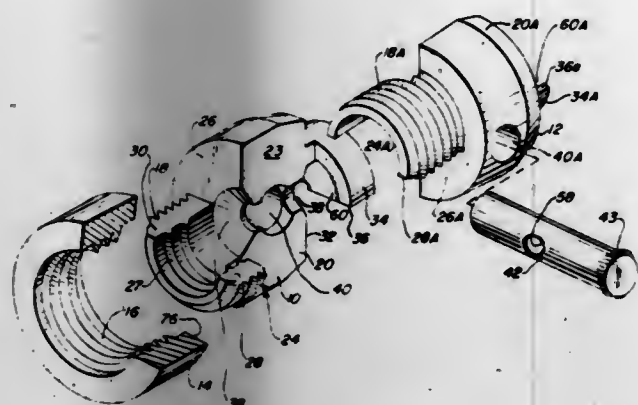
Robert E. Lumpp, Addison, and Mark Margolin, Chicago, both of Ill., assignors to TRW Inc., Elk Grove Village, Ill.

Filed Sep. 18, 1978, Ser. No. 943,336

Int. Cl.³ G02B 5/16; F16G 11/00

U.S. Cl. 350—96.21

26 Claims



1. A clamp particularly adapted for clamping in fixed relation concentric elements of an optical fiber cable or the like, comprising clamp portions pivotally connected to one another in a scissorlike manner; opposed ends of said portions defining pairs of clamping jaws which are simultaneously movable into clamping and release positions relative to one another in the course of pivotal movement of said clamp portions; said clamp portions defining a passageway extending between said clamping jaw pairs.

4,247,164

PLUG AND SOCKET OPTICAL FIBER CONNECTIONS
Lothar P. Mannschke, Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

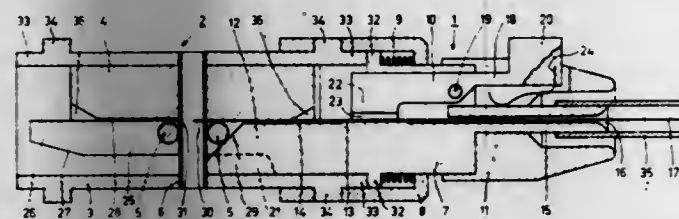
Filed Feb. 21, 1979, Ser. No. 13,586

Claims priority, application Netherlands, Mar. 1, 1978, 7802230

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.21

17 Claims



1. A detachable plug and socket connection, for coupling an optical fiber to another optical fiber or to a light source or detector, comprising:

- a plug and socket with means for detachably connecting the plug and socket, wherein the plug comprises:
- a fiber container having a tenon formed at one end thereof, said tenon having a chamfer at an end remote from the fiber container and a groove therein for accommodating a portion of an optical fiber which is adjacent to an end of the fiber, said groove extending uninterrupted along a side of the tenon; and

wherein the socket comprises:

- an intermediate piece with a recess for accommodating the tenon, said intermediate piece having a groove for accommodating the end of the optical fiber, said intermediate piece having guide walls for orienting the tenon such that when the plug and socket are connected the grooves in each are situated opposite each other over at least part of their length; and
- an elastic cushion, situated adjacent the groove in the intermediate piece and between the guide walls, such that on insertion of the plug into the socket, the chamfered end of the tenon pushes the elastic cushion which in turn lifts the

end of the optical fiber into the groove of the intermediate piece.

4,247,165

FIBER OPTIC PLATE

Johannes W. Versluis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

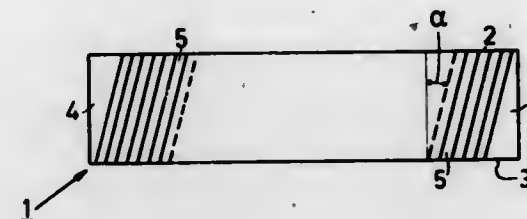
Filed Jun. 18, 1979, Ser. No. 49,529

Claims priority, application Netherlands, Jul. 6, 1978, 7807315

Int. Cl.³ G02B 5/17

U.S. Cl. 350—96.27

5 Claims



1. A fiber optic plate comprising a plurality of optical fibers extending from a first end face to a second end face, said first and second end faces being parallel and having the same surface area, CHARACTERIZED IN THAT at least a portion of substantially all of the fibers is oriented at an acute angle with respect to the normal to the end faces such that the phase relationships between wavelets incident on the plate are disturbed.

4,247,166

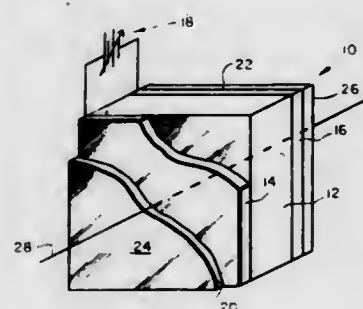
SINGLE PLATE BIREFRINGENT OPTICAL FILTER
Pochi A. Yeh, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 15, 1979, Ser. No. 66,750

Int. Cl.³ G02F 1/03

U.S. Cl. 350—374

10 Claims



1. An optical filter for transmitting light in a narrow bandwidth centered about the wavelength λ , comprising:

- a birefringent half-wave crystal defining an optical path through said crystal and normal to the optic axis of said crystal, the thickness of said crystal effecting a 180° phase change between the fast and slow components of light of wavelength λ along said optical path;
- a first polarizer preceding said crystal in said optical path and having a first polarizing plane rotated 45° about said optical path from the optic axis of said crystal;
- a first reflective surface preceding said first polarizer in said optical path and normal to said optical path;
- a second polarizer following said crystal in said optical path and having a second polarizing plane rotated 90° about said optical path from said first polarizing plane; and
- a second reflective surface following said second polarizer in said optical path and normal to said optical path.

4,247,167

DICHOIC MIRROR WITH AT LEAST TEN LAYERS
Mitsuhiro Tokuhara, Chigasaki, and Mitsuharu Sawamura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

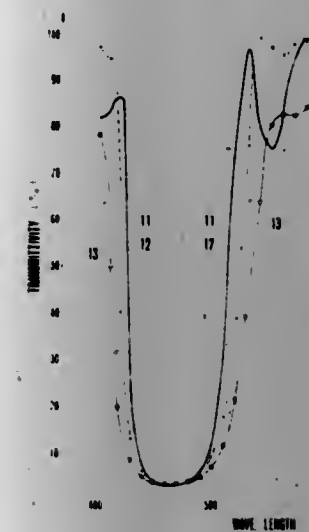
Filed May 19, 1978, Ser. No. 907,818

Claims priority, application Japan, May 27, 1977, 52/61808; Jun. 17, 1977, 52/71896

Int. Cl.³ G02B 5/28

U.S. Cl. 350—166

6 Claims



1. A dichroic mirror comprising at least ten layers said layers being alternate high refractive index layers and low refractive index layers, for a designed wave length λ_0 a plurality of the high refractive index layers having optical film thicknesses of $\frac{1}{4}\lambda_0$ and $\frac{3}{4}\lambda_0$, and a plurality of the low refractive index layers having optical film thicknesses of $\frac{1}{4}\lambda_0$.

4,247,168

ZOOM LENS FOR PHOTOGRAPHIC PRINTERS

Fred Mast, Wil, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

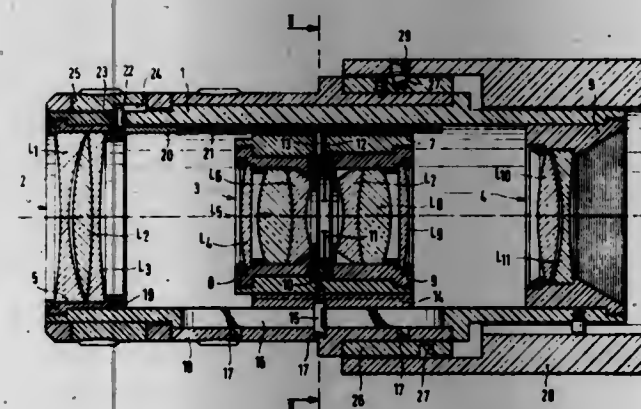
Filed Oct. 27, 1978, Ser. No. 955,250

Claims priority, application Switzerland, Nov. 15, 1977, 13922/77

Int. Cl.³ G02B 7/10, 15/14

U.S. Cl. 350—430

9 Claims



1. A three-component zoom lens for photographic printers comprising:

- a lens mount mounting a front component, a rear component and a middle component, said front and rear components being mounted at a fixed distance from each other;

means for axially adjusting the middle component relative to and between the front and rear components
a diaphragm located within one of said components;
said middle component having a positive refractive power and, in absolute terms, the greatest refractive power.

4,247,169

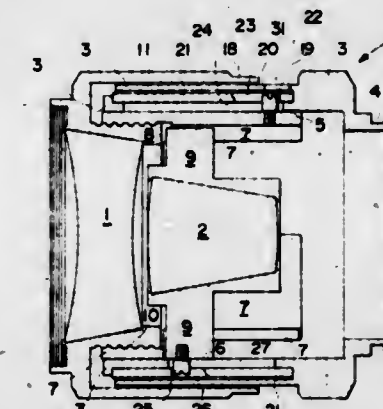
LENS BARREL CAPABLE OF AXIAL ZOOMING
OPERATION AND WITH BARREL WINDOW
Kyoze Uesugi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1979, Ser. No. 90,698

Claims priority, application Japan, Nov. 4, 1978, 53/152166
Int. Cl.³ G02B 7/10, 15/16

U.S. Cl. 350—430

3 Claims



1. A lens barrel for a zoom lens system which includes first and second lens groups and wherein focusing is effected by axial movement of said first lens group whereas zooming is effected by relative axial movement between said first and second lens groups, the lens barrel comprising:

- a stationary barrel having a window and an index lying adjacent said window;
- an operating ring extending about an outer peripheral wall of said stationary barrel and being mounted for axial and rotational movement relative to said barrel, said ring having a rearward end lying forwardly of said window and said index, said first lens group being supported by said ring so as to be axially movable together therewith, and said ring having circumferentially extending distance scale provided on the outer periphery thereof adjacent said rearward end;
- means engaging said operating ring for axially moving said ring upon rotation thereof;
- said stationary barrel having an inner peripheral wall spaced inwardly from said outer peripheral wall, a cam ring being rotatably mounted on said inner wall and having a circumferentially extending focal length or zoom ratio scale provided on the outer periphery thereof, said focal length or zoom ratio scale being disposed beneath said window for viewing therethrough;
- means interconnecting said cam ring with said operating ring for effecting rotation of said cam ring in response to axial movement of said operating ring and for preventing rotation of said cam ring during rotation of said operating ring; and
- means interconnecting said second lens group with said cam ring for axially moving said second lens group in response to rotation of said cam ring.

4,247,170

ZOOMING STRUCTURE OF INTERCHANGEABLE CAMERA LENS

Noboru Yamamoto, Numata, Japan, assignor to Chino Optical Co., Ltd., Tokyo, Japan

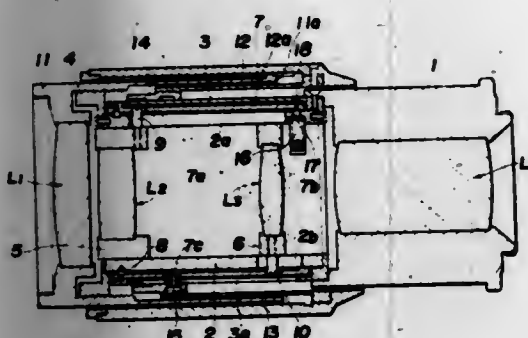
Filed Nov. 13, 1979, Ser. No. 94,310

Claims priority, application Japan, May 19, 1979, 54-67178[U]

Int. Cl.³ G02B 7/10, 15/18

U.S. Cl. 350—430

6 Claims



1. A zooming structure of an interchangeable camera lens comprising a stationary barrel means (1), a cam sleeve member (7) provided to rotate about an axis of said barrel means, an operation ring (12) mounted on said barrel means to slide thereon in the axial direction thereof, means (15) connected with said operation ring and slidably engaged with said cam sleeve member for rotating the latter by the sliding movement of said operation ring, wherein said cam sleeve member comprises a first cam slot (7a), in which a pin (9) mounted to a lens (L₁) for variable magnification is slidably engaged, and a second cam slot (7b), in which a pin (10) mounted to another lens (L₂) for focus compensation is slidably engaged, said first cam slot (7a) having a first rectilinear portion (7a1) inclined at a predetermined angle with respect to the axial direction (A) of the cam sleeve member and a second portion (7a2) angled from the front end of said rectilinear portion toward the circumferential direction (B) thereof, said second cam slot (7b) having a first arc-shaped portion (7b1) curved rearwardly with respect to the circumferential direction of said cam sleeve member and a second portion (7b2) angled rearwardly from the end of the arc-shaped portion, the circumferential lengths of said first and second portions of said first cam slot being equal to those of said first and second portions of said second cam slot, respectively.

4,247,171

COMPACT PHOTOGRAPHIC LENS WITH LARGE APERTURE

Sadahiko Tsuji, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

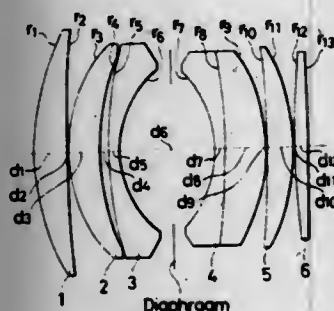
Filed Mar. 28, 1978, Ser. No. 891,024

Claims priority, application Japan, Mar. 31, 1977, 52-37312

Int. Cl.³ G02B 9/62

U.S. Cl. 350—464

8 Claims



1. A compact photographic lens with large aperture comprising: a first positive meniscus lens whose convex surface is directed to the object, a second positive meniscus lens whose convex surface is directed to the object, a third negative meniscus

lens whose convex surface is directed to the object, a fourth negative meniscus lens consisting of a negative and a positive lens cemented on each other, and having a concave surface directed to the object, a fifth positive meniscus lens whose concave surface is directed to the object and a sixth lens and satisfying the conditions:

- (1) $0.29f < r_6 < 0.33f$
- (2) $0.30f < |r_7| < 0.35f$
- (3) $0.65f < r_4 < 0.8f$
- (4) $1.3 < (r_5/r_4) < 1.8$
- (5) $0.14f < d_3 + d_4 + d_5 < 0.18f$
- (6) $0.13f < d_7 + d_8 < 0.17f$

and wherein $1.62 < n_3 < 1.7$ whereby f is the focal length of the photographic lens, r_i the radius of curvature of the i -th lens surface, d_i the i -th distance between the lens vertexes and n_i is the refractive index of the i -th lens.

4,247,172

SETTING OR ADJUSTING MEANS FOR REARVIEW MIRRORS OF MOTOR VEHICLES

Erich Wunsch; Udo Wunsch, and Eckart Wunsch, all of Im Hofrain 12, 7141 Schwieberdingen, Baden-Württemberg, Fed. Rep. of Germany

Division of Ser. No. 725,667, Sep. 22, 1976, Pat. No. 4,159,866.

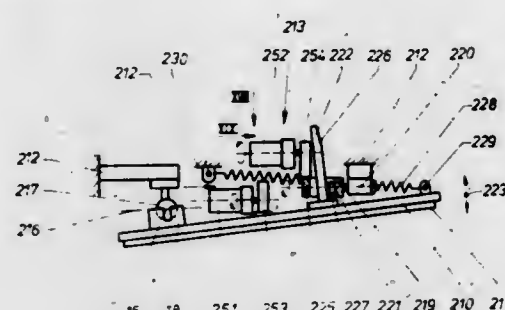
This application Apr. 23, 1979, Ser. No. 32,039

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1975, 2543512; Oct. 15, 1975, 2546091; Dec. 23, 1975, 2558457; Mar. 4, 1976, 2608919; Aug. 25, 1976, 2638143

Int. Cl.³ G02B 5/08

U.S. Cl. 350—289

21 Claims



1. A setting and adjusting device for rearview mirrors mounted on a vehicle body comprising:
a mirror housing adapted to be mounted on the vehicle body,
a mirror plate having a rear surface and a front reflecting surface,
means for adjustably mounting said mirror plate in said housing for pivoting and tilting said mirror plate about a substantially vertical axis and a substantially horizontal axis, respectively,
end stop means for limiting the pivoting and tilting of said mirror plate,
controllable adjusting means upon actuation and release thereof, respectively, for pivoting and tilting said mirror plate about said horizontal and vertical axes into predetermined lateral and vertical positions, respectively, and against said stop means, respectively,
a pivot lever and a bearing head, respectively, being operatively mounted to said mirror plate so as to positively engage said mirror plate in a pivot and tilt direction, respectively, and so as to be freely moveable relative to said mirror plate in a non-pivoting and non-tilting direction, respectively,
frictional slip coupling means for independently connecting said pivot lever and said bearing head to an associated said adjusting means, respectively.

4,247,173

EXTERNAL REAR VIEW MIRROR FOR MOTOR VEHICLES

Alberto Vitaloni, Turin, Italy, assignor to Vitaloni S.p.A., Belnasco, Italy

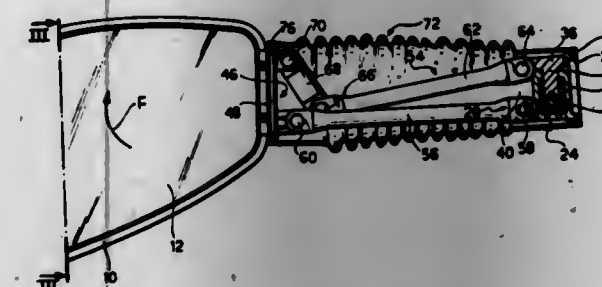
Filed Mar. 14, 1979, Ser. No. 20,395

Claims priority, application Italy, Sep. 28, 1978, 53734 B/78[U]

Int. Cl.³ G02B 5/08

U.S. Cl. 350—307

8 Claims



1. Rear view mirror for motor caravans, commercial vehicles and like vehicles, of the type comprising:
a mirror body;
a reflective element adjustably supported by said mirror body;
an articulated support having a fixed part adapted to be fixed to a side of a vehicle body, and a rotatable part;
an arm structure which interconnects said rotatable part of said support and a side of said mirror body to support said mirror body in a projecting manner with respect to said vehicle body, and
pivot means by which said rotatable part of said support is pivoted, with respect to said fixed part, about an axis which, in a mounted position of said vehicle, is substantially vertical so as to enable an angular movement of said mirror body and said arm structure between a laterally extended position, projecting laterally outwardly with respect to said vehicle body, and a retracted position against said body, wherein the improvement lies in said arm structure comprising:
a linkage having pivot axes which, in said mounted position on said vehicle, are substantially horizontal, said linkage forming a polygon which is capable of expansion at least between an extended position, in which said mirror body is at a maximum distance from said support, and a retracted position in which, said mirror body is raised and drawn near to said vehicle body, and releasable locking means on said linkage for selectively preventing and permitting said expansion of said linkage.

4,247,174

LIQUID CRYSTAL CELL

Karl-Heinz Walter, Grafting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,058

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824798

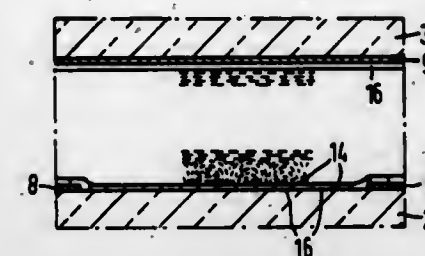
Int. Cl.³ G02F 1/133

U.S. Cl. 350—340

20 Claims

1. In a liquid crystal cell having two carrier plates spaced apart to form a cavity for receiving a liquid crystal layer, said plates on a surface facing the liquid crystal layer being provided with electrodes so that portions of the liquid crystal layer are switchable between different optical states, the improvement comprising means provided on at least one of the facing surfaces for orienting strip-like zones of the liquid crystal

layer adjacent the surface with a different orientation, said strip-like zones having a width of at the most 5 μ m, with said



strip-like zones being alternately substantially homogeneous oriented and substantially homeotropically oriented.

4,247,175

LIGHT VALVE CONTAINING IMPROVED LIGHT VALVE SUSPENSION

Robert L. Saxe, New York, N.Y., assignor to Research Frontiers Incorporated, Plainview, N.Y.

Continuation-in-part of Ser. No. 612,085, Sep. 10, 1975, abandoned, which is a continuation-in-part of Ser. No. 478,634, Jun. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 267,770, Jul. 31, 1972, abandoned. This application Oct. 31, 1978, Ser. No. 956,417

The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.

Int. Cl.³ G02F 1/01

U.S. Cl. 350—362

13 Claims

1. A light valve which comprises a cell, a liquid suspension of small particles selected from the group consisting of halogenated alkaloid acid salts and metal halides in a liquid suspending medium in said cell, a polymeric stabilizer dissolved in said liquid suspending medium to prevent agglomeration of said particles, and means for applying an electric field through said suspension, said liquid suspending medium comprising a liquid, saturated, aliphatic halogenated hydrocarbon having a ratio of halogen atoms to all other atoms therein of greater than 1:1, the halogen atoms of said particles being iodine and/or bromine and the halogen atoms of said halogenated hydrocarbon being of lower atomic weight than the halogen atoms of said particles, and at least 50% the halogen atoms of said halogenated hydrocarbon being selected from the group consisting of fluorine and chlorine.

4,247,176

OPTICAL SYSTEM FOR EYE FUNDUS INSPECTION APPARATUS

Yuji Ito, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1978, Ser. No. 931,254

Claims priority, application Japan, Aug. 9, 1977, 52/95359

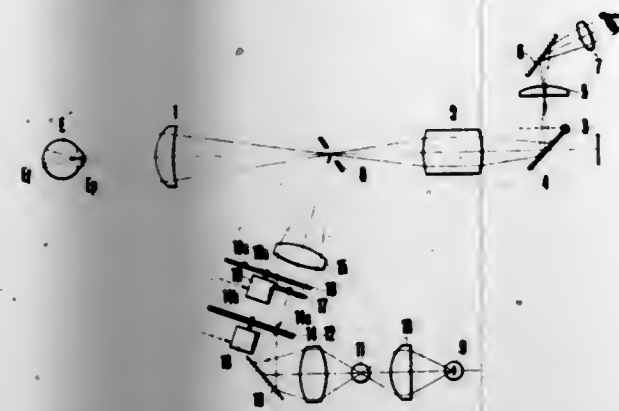
Int. Cl.³ A61B 3/14; G03B 29/00

U.S. Cl. 351—7

14 Claims

1. An optical system for an eye fundus inspection apparatus comprising:
objective lens means facing the eye to be inspected;
an image forming lens provided at a position closer to the image than the objective lens;
an illuminating system including at least one beam source, a beam transmitting system and beam reflecting means;
an attachment lens adjacent said objective lens means, said lens being mountable or dismountable, said lens when mounted having an optical axis corresponding to the optical axis of the objective lens means; and
masking means between the beam source and the reflecting means for forming a shadow in the eye to eliminate unde-

sirable beam reflections, said masking means being variable in size to keep the size of the shadow formed in the



eye to be inspected substantially constant when the attachment lens is mounted and dismounted.

4,247,177

3D MULTICHROME FILTERS FOR SPECTACLE FRAMES

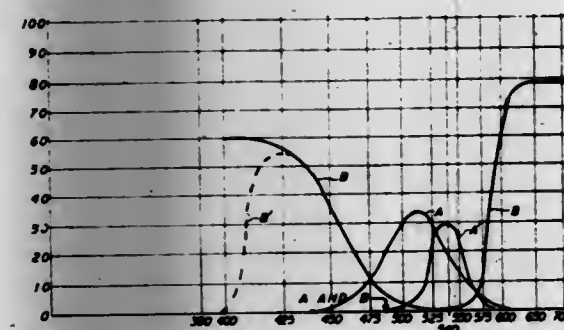
Alvin M. Marks, 166-35 9th Ave., Whitestone, and Mortimer Marks, 166-25 Cryders La., Beechhurst, both of N.Y. 11357
Division of Ser. No. 757,838, Jan. 10, 1977, Pat. No. 4,134,644.
This application Jan. 15, 1979, Ser. No. 3,624

The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.

Int. Cl.³ G02C 7/10

U.S. Cl. 351-44

4 Claims



1. As articles of manufacture a complementary mutually extinguishing filter set of C and D filters, said filters comprising respectively blue and orange colored plastic sheets, said C filter containing dyes having the transmittances of 25 to 80% from 400 nm to 500 nm, decreasing from 435 nm to less than 1% from 500 nm to 700 nm, and said D filter containing dyes having a transmittance of less than 1% from 400 to 500 nm rising to a transmittance at about 515 nm of 30 to 50%, and increasing to about 80% at 700 nm.

4,247,178

CLIP-ON SUNGLASSES

Joseph E. Cook, 1009 Westminster Dr., Greensboro, N.C. 27410

Filed Apr. 30, 1979, Ser. No. 34,339

Int. Cl.³ G02C 9/00, 7/08

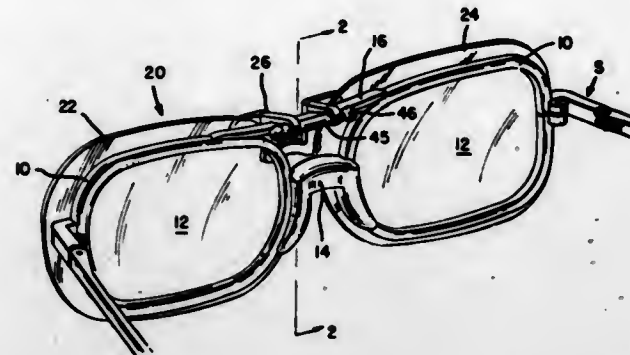
U.S. Cl. 351-47

5 Claims

1. Clip-on sunglasses for use on spectacles of the type including wire frames and a reinforcing wire or bar extending from the upper edge of one spectacle lens to the upper edge of the other spectacle lens, said sunglasses comprising:

- a frame member and a pair of lenses, at least an upper portion of each of said lenses being secured to said frame member;
- an attachment means extending rearwardly from said frame member and including
 - a pair of spaced posts, a slot opening into the rear end of each of said posts for receiving said spectacle reinforcing bar;
 - a locking bar removably received in said slots behind

said spectacle reinforcing bar, said locking bar being of such size with relationship to said slots as to be held



snugly therein to retain said sunglasses and sunglasses in the assembled condition.

4,247,179

MULTIFOCAL SPECTACLE LENS

Erwin J. Daniels, Aalen, and Siegfried Korn, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

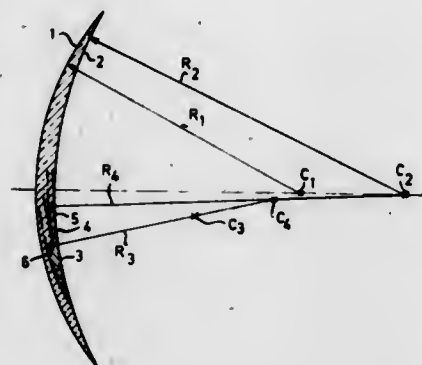
Filed Jan. 16, 1979, Ser. No. 3,982

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803047

Int. Cl.³ G02C 7/06

U.S. Cl. 351-171

7 Claims



1. A multifocal spectacle lens comprising a single-part base lens and at least two adjacent additional parts restricted to an area of smaller diameter than that of said single-part base lens, characterized by the fact that said additional parts (3, 4) are made of the same material, and that said parts are so shaped that imaginary tangential planes lying in the center of separation lines (5, 6) between said additional parts (3, 4) and tangential to curved surfaces (R_2 , R_4 , R_3) which effect changes in power extend in each case in pairs which are parallel to each other, and that said additional parts (3, 4) adjoin each other along lines of the same length (6).

4,247,180

CARD MOTION PICTURE APPARATUS WITH ADJUSTABLE BARREL CAM

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 6, 1979, Ser. No. 63,784

Int. Cl.³ G03B 41/00

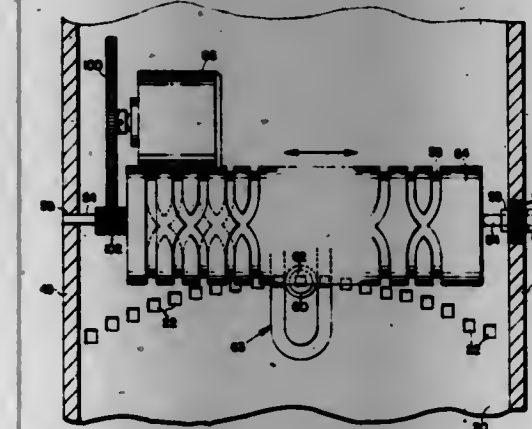
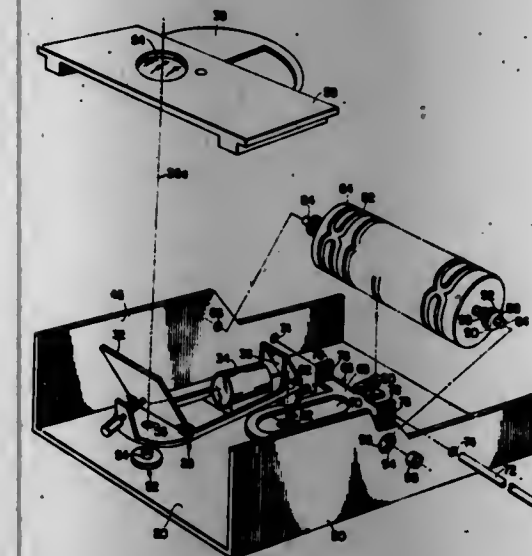
U.S. Cl. 352-82

1 Claim

1. An improved motion picture apparatus for use with a film unit and being of the type including means for supporting the film unit for movement in a given direction at a film plane, a fixed gate for defining a plurality of spaced image positions at said film plane disposed in an arcuate row extending generally laterally of said given direction, optical means for forming an image and including a portion thereof supported on a pivoting boom having a moving gate at an output end thereof movable

along an arcuate path of travel aligned with said row to allow said moving gate to be brought into registered imaging relation with each of said image positions, and means, including a barrel cam and means for coupling said output end of said boom to said barrel cam in cam follower relation, for reciprocally moving said moving gate stepwise along a given locus on said aligned path to sequential imaging locations corresponding in number and spacing to said image positions, said barrel cam including a fixed axial shaft having opposite ends and being configured to be mounted between a pair of laterally spaced support members for rotation about an axis extending generally laterally of said given direction such that the location of said barrel cam along said axis establishes the location of said given locus relative to said image positions, wherein said improvement comprises:

means for mounting said barrel cam on said pair of support members for rotation and axial displacement so that said coupling member causes said boom to pivot in response to



linear axial displacement of said barrel cam to adjust the location of said given locus whereby said moving gate is in registration with a corresponding one of said image positions at each of said image locations;

said mounting means including means for mounting one end of said shaft on one of said support members for rotation and sliding motion relative thereto in the axial direction and a bushing for rotatably supporting the end of said shaft opposite said one end, means for fixing the axial location of said bushing on said opposite end, and means for mounting said bushing on the other of said support members for lateral displacement relative thereto to effect axial displacement of said barrel cam;

said means mounting said bushing for lateral displacement including a threaded peripheral portion of said bushing and a threaded opening in said other support member for receiving said threaded portion so that in response to rotation of said bushing it is displaced laterally relative to said other support member.

4,247,181

KALEIDOSCOPIC PROJECTOR

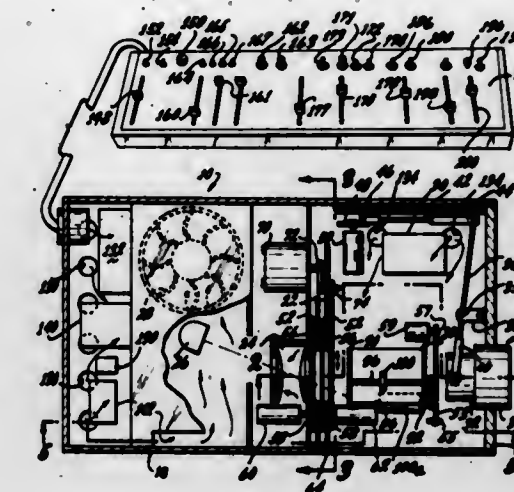
Lee M. Inness-Brown, 7447 Fay Ave., La Jolla, Calif. 92037

Filed Apr. 27, 1979, Ser. No. 33,906

Int. Cl.³ G03B 21/28, 21/00

U.S. Cl. 353-1

8 Claims



1. A projection kaleidoscope capable of producing widely and rapidly varying optical effects which comprises:

- a housing;
- a focusable projection lens mounted on said housing and extending outwardly thereof;
- a kaleidoscope mirror set within said housing adjacent to said projection lens, said mirror set comprising two planar mirrors in hinged contact along one edge and lying in planes substantially parallel to the optical axis of said projection lens;
- a condensing lens assembly adjacent to said mirror set having an optical axis substantially aligned with the optical axis of said projection lens;
- at least two substantially parallel rotatable disks extending between said condensing lens assembly and said mirror set, said disks being at least partially transparent and bearing imageable material;
- means to actuate said projection lamp whereby a kaleidoscopic image of imageable material on said disks is imaged on a surface spaced from said projection lens;
- means for continuously cyclically changing focus of said projection lens during projector operation;
- control means for selecting between said continuous cyclic focus changing and a selected single focus;
- means for selectively varying relative rotational speeds of said at least two disks;
- means for selectively varying the angle between said kaleidoscope mirrors, whereby a wide variety of projected image patterns may be obtained on said surface; and
- aperture means movable between a first position blocking light passage along said optical axis and a second position permitting light passage along said optical axis, drive means for selectively continuously cyclically moving said aperture means between said two positions and control means for selectively stopping said aperture means at any of said two positions and any intermediate position.

4,247,182

HELIOSTAT WITH A PROTECTIVE ENCLOSURE

Otto J. M. Smith, 612 Euclid Ave., Berkeley, Calif. 94708

Continuation-in-part of Ser. No. 916,136, Jan. 16, 1978,

abandoned. This application Apr. 24, 1979, Ser. No. 32,871

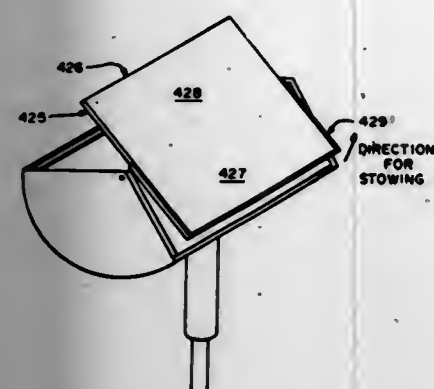
Int. Cl.³ E24J 3/02; G03B 21/00

U.S. Cl. 353-3

24 Claims

1. A heliostat with a protective enclosure comprising: a rigid enclosure; mirror means substantially rectangular in configuration and with one side mirrored and mounted at a midline for rotation in said enclosure from a first position where such

mirrored side is completely protected from the environment to a second position where it is pointed toward the sun, wherein said mirrored side in said second position has an elevation



angle which reflects incident solar illumination toward a power receptor, and wherein the rotation of said mirror toward said first position requires a change in said elevation angle of more than ninety degrees.

4,247,183

MICROFILM CASSETTE

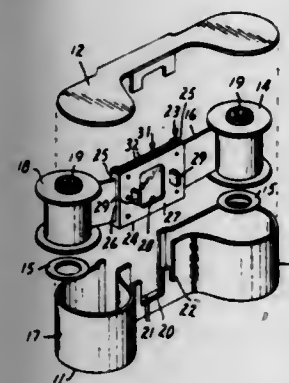
Robert W. Thompson, Pokegama Township, Pine County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 1, 1979, Ser. No. 62,620

Int. Cl.³ G03B 17/26, 23/12

U.S. Cl. 353—26 R

5 Claims



1. A microfilm cassette for use with an optical projection device said cassette comprising

- a housing having wall portions and base portions defining first and second film storage chambers, and a passageway connecting said storage chambers, and a removable cover portion over said storage chambers and said passageway,
- a first and a second spool upon which microfilm can be wound, said spools being adapted for rotation within said first and second storage chambers respectively,
- friction discs positioned between said spools and said base portions of said storage chambers so as to afford a retarding force against the rotation of said spools,
- a film platen assembly positioned within said passageway, said platen assembly including a bracket member having parallel end portions, each of which has a longitudinal slot affording the transition of microfilm through said platen assembly, and an interconnecting side portion having a generally centrally located aperture disposed so as to afford the illumination of a framed segment of microfilm through said side portion, said side portion also having a pair of tab portions projecting outwardly from said bracket member, said platen assembly further including a glass plate assembly affixed to said side portion and extending along said side portion generally perpendicular to said end portions, said glass plate assembly comprising two glass plates spaced apart from each other by spacing means of a predetermined thickness in excess of the thickness of a given microfilm, said glass plate assembly being

disposed between said longitudinal slots to support and position a microfilm transiting said platen assembly between said glass plates thus affording a predetermined film plane within said cassette, and means for supporting said platen assembly in said housing for movement transverse to said passageway.

4,247,184

MAGNETIC INDEXING SYSTEM FOR MICROFILM READER

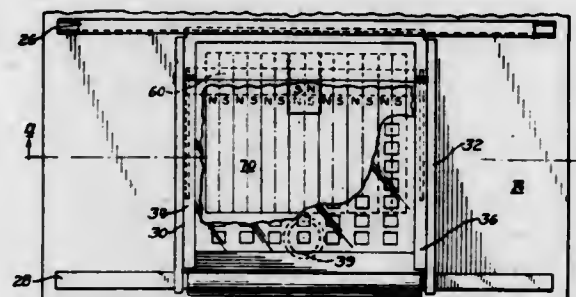
Robert M. Peterson, Hartford, Wis., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 26, 1979, Ser. No. 33,354

Int. Cl.³ G03B 23/08

U.S. Cl. 353—27 A

7 Claims



1. A microfilm reader comprising:

- a base structure having front, back, and opposite side portions,
- a carriage assembly for holding a piece of microfiche thereon, the microfiche having individual images arranged orthogonally in rows and columns,
- the base structure having means to project a beam of light through individual images on the microfiche to a viewing screen,
- the carriage assembly mounted for horizontal movement relative to the base structure,
- first magnetic means mounted on the base structure and second magnetic means mounted on the carriage assembly, each magnetic means having at least one magnetic pole opposite to a magnetic pole of the other, the magnetic means mounted on the carriage assembly in close proximity to the magnetic means mounted on the base structure such that the magnetic forces between the first and second magnetic means causes the carriage assembly to be magnetically held in predetermined positions.

4,247,185

MICROFORM READER

George D. Margolin, 1815 Sherington Pl., Apt. V-203, Newport Beach, Calif. 92663, and Barry G. Broome, 331 N. Humphrey's Way, Glendora, Calif. 91740

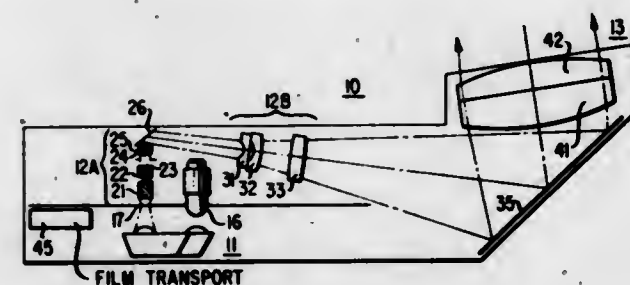
Division of Ser. No. 754,123, Dec. 27, 1976, Pat. No. 4,126,387.

This application Nov. 14, 1978, Ser. No. 960,663

Int. Cl.³ G03B 21/22

U.S. Cl. 353—77

7 Claims



1. A microform reader comprising:

an outer cover member of about three inches by seven inches by one and one-half inches;
a film record holder;
a light source to be driven by a stored energy source;
a plurality of lens assemblies;
said plurality of lens assemblies include first, second and third lens groups;
said first lens group is formed of optical glass;
said second lens group is formed of injection molded material; and,
said third lens group having at two members which have crossed-cylindrical arrays forming a screen with cylinder width of about 0.005 inches.

4,247,187

CAMERA HAVING FOCUS DETECTION DEVICE
Shuichi Tamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

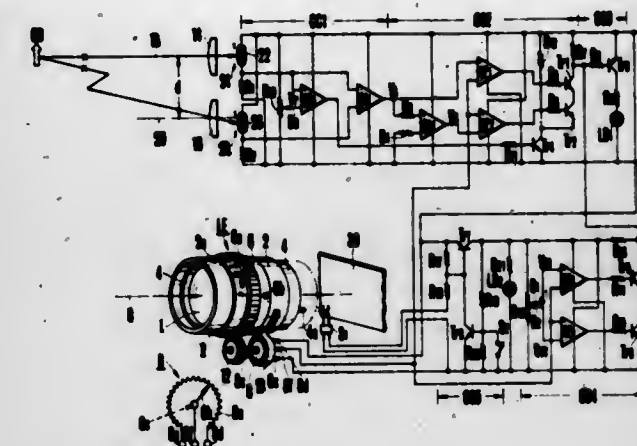
Filed Jul. 7, 1978, Ser. No. 922,647

Claims priority, application Japan, Jul. 14, 1977, 52-84410; Aug. 5, 1977, 52-93998

Int. Cl.³ G03B 3/10

U.S. Cl. 354—25

45 Claims



4,247,186

PHOTOMETRIC CIRCUIT FOR CAMERA

Masanori Uchidoi, Yokohama; Hiroshi Aizawa, Kawasaki; Kazunobu Urushibara, Yokohama; Nobuyuki Suzuki, and Masami Shimizu, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

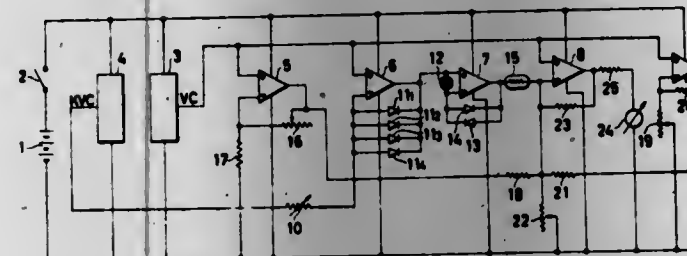
Filed Jun. 19, 1979, Ser. No. 50,124

Claims priority, application Japan, Jun. 27, 1978, 53-88401[U]

Int. Cl.³ G03B 7/083

U.S. Cl. 354—24

7 Claims



- 5. A photometric circuit for a camera, comprising:
a light receiving element for measuring the brightness of an object to be photographed and producing an electrical signal corresponding to the brightness of said object;
a photometric operational amplifier to which the electrical signal is applied from said light receiving element;
a logarithmic compression diode connected to said photometric operational amplifier, said diode cooperating with said light receiving element to produce an electrical voltage corresponding to the logarithmic value of the brightness of the object to be photographed from said photometric operational circuit;
a temperature-compensating operational amplifier having its output applied to said photometric operational amplifier;
a constant voltage generating circuit for applying constant voltage to the non-inverted input terminal of said temperature-compensating operational amplifier;
means for applying a predetermined current to the inverted input terminal of said temperature-compensating operational amplifier; and
at least two temperature compensating commonly polarized diodes connected in parallel between the inverted input terminal and the output terminal of said temperature-compensating operational amplifier, whereby the reference point where the output voltage of said photometric operational amplifier is not subject to the influence of temperature change is shifted.

- 1. A camera comprising:
objective lens means adjustable along an optical axis for focusing on an object;
focus detecting means for detecting the focusing condition of the lens means relative to the object and for providing an output representing the focusing condition of the lens means relative to the object;
supplementary means operable instead of said focus detection means for providing, when operated, an output representing an approximate focusing condition of the lens means relative to the object;
condition detecting means for detecting whether the condition for operation of the focus detection means can insure the proper operation of the focus detection means and providing a characteristic output when detecting that the condition cannot insure the proper operation of the focus detection means;
output control means for controlling the provision of the output of the focus detection means, said output control means being responsive to the characteristic output of the condition detecting means and for prohibiting the output of the focus detection means in response to said characteristic output of the condition detecting means;
manually operable control means adapted for setting said supplementary means to an operative state; and
exposure operation control means for controlling the exposure operation of the camera, said exposure operation control means being responsive to the outputs of said focusing detection means and said supplementary means and enabling the exposure operation of the camera only when said lens means is set to the focused position based on the output of said focus detection means or set to the approximately focused position based on the output of said supplementary means.

4,247,188

AUTOMATIC EXPOSURE CAMERA

Toshio Kobori, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 25, 1977, Ser. No. 818,634

Claims priority, application Japan, Aug. 10, 1976, 51-95696

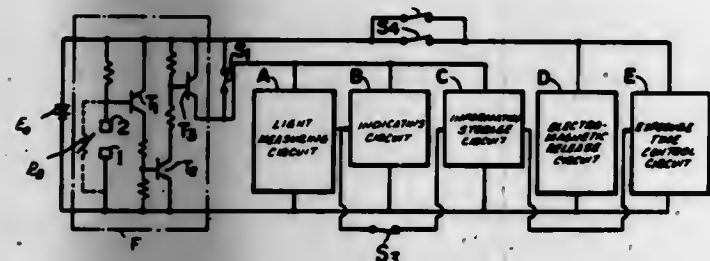
Int. Cl.³ G03B 17/18, 17/38

U.S. Cl. 354—60 E

16 Claims

- 1. In an automatic exposure camera which includes: a release member movable between a retracted position and an advanced position for initiating exposure; a light measuring circuit for measuring the light value of a viewed object; a circuit for indicating exposure information based on the light value derived from said light measuring circuit; and a power source

for supplying energizing current to said light measuring circuit and to said exposure information indicating circuit, whereby exposure may be controlled according to said light measurement; the improvement comprising: a first contacting portion provided as at least part of the top surface of said release member; a second contacting portion provided on the camera at a position manually touched by a photographer upon using said camera; insulating means for mutually electrically insulating said first and second contacting portions; and a switching circuit connecting said power source to said light measuring circuit and to said exposure information indicating circuit, for



controlling the energizing current to said light measuring circuit and exposure information indicating circuit, said switching circuit including two terminals which are independently connected to said first and second contacting portions, respectively, said switching circuit being normally maintained in a relatively open condition interrupting the current to said light measuring circuit and to said exposure information indicating circuit and being actuated in response to a conductor body such as a hand touching both said first and second contacting portions to close and render it conductive, thereby feeding energizing current to said light measuring circuit and to said exposure information indicating circuit.

4,247,189

CAMERA WITH BUILT-IN ELECTRIC WIND-UP MECHANISM

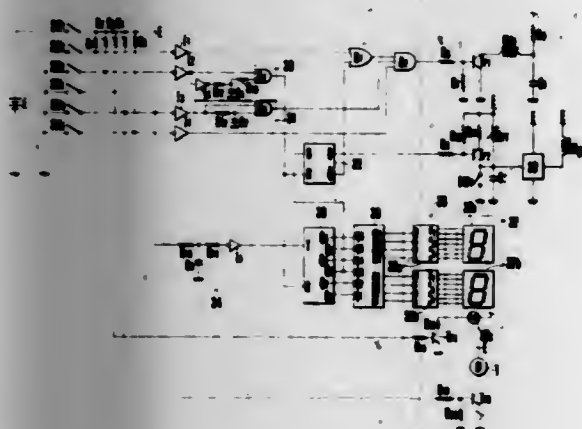
Nobuaki Date, Kawasaki; Nobuaki Sakurada, Yokohama; Masami Shimizu, Tokyo, and Hiroshi Aizawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 18, 1979, Ser. No. 76,583

Claims priority, application Japan, Sep. 22, 1978, 53/117301; Sep. 25, 1978, 53/117662

Int. Cl.³ G03B 1/12, 17/18

U.S. Cl. 354-173

6 Claims



2. A camera with a built-in electric film wind-up mechanism comprising:

- a wind-up mechanism;
- driving means for driving said wind-up mechanism;
- first signal producing means for producing a winding completion signal upon completion of each winding action of said wind-up mechanism and for producing a winding signal upon completion of each exposure action;
- switching means which controls the operation of said driving means, said switching means being arranged to be turned on by said winding signal to actuate said driving

means and to be turned off by said winding completion signal to render said driving means inoperative;

second signal producing means for producing a back cover closing signal in response to closing of a back cover of the camera;

a counter which is brought back into its initial state by said back cover closing signal, said counter being arranged to count said winding completion signals; and

discriminating means for judging whether or not the count value counted by said counter exceeds a predetermined value, said discriminating means being arranged to have the output thereof inverted when the count value of said counter exceeds said predetermined value;

third signal producing means for producing a release start signal in response to a release operation;

gate means which is arranged to have the output of said discriminating means and said release start signal applied thereto; and

release means for causing an exposure action to take place, said release means being arranged to operate when said winding completion signal and the output of said discriminating means which is produced prior to its inversion and coming from said gate means are applied thereto, or when said release start signal is applied thereto.

4,247,190

LENS ASSEMBLY COUPLING DEVICE FOR CAMERA SYSTEM

Shigeru Hashimoto; Taizo Mitani, both of Yokohama; Takashi Isobe, Tokyo; Masao Aoyagi, Kanagawa; Akiyasu Sumi, Kawasaki, and Katsumi Tanaka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

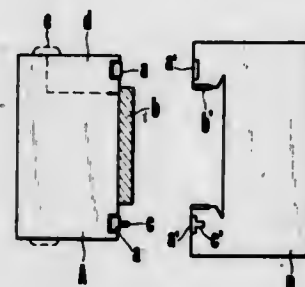
Filed Jan. 25, 1978, Ser. No. 872,102

Claims priority, application Japan, Feb. 4, 1977, 52/11280

Int. Cl.³ G02B 7/14; G03B 17/14

U.S. Cl. 354-286

21 Claims



1. An interchangeable lens assembly for a camera comprising:

- lens barrel means having operative components of said lens assembly mounted therewith;
- coupling means fixed on said lens barrel means adapted to be brought into engagement with complementary coupling means on said camera for releasably mounting said lens assembly in operative position on said camera;
- adapter means mounted on said lens barrel means in rotative relationship relative thereto for establishing predetermined relative positioning between said interchangeable lens assembly and said camera; and
- releasable interlocking means including means for locking said lens barrel means in rotatively fixed engagement with said adapter means when said lens barrel means and said adapter means are in a predetermined position relative to each other and means for releasing said fixed engagement when said interchangeable lens assembly is brought into mounting engagement with said camera;
- said coupling means being configured to enable disengagement of said interchangeable lens assembly from said camera when said lens barrel means is returned to said predetermined position relative to said adapter means.

4,247,191

PROJECTION COLOR COPIER

Archle R. Grace, 115 Avenue Rd., Clarence Garden, and Robert J. Grace, 42 Kintore Ave., Prospect, both of Australia

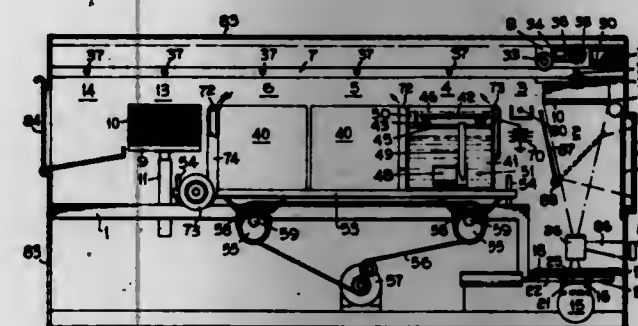
Filed Jun. 21, 1979, Ser. No. 50,545

Claims priority, application Australia, Jun. 28, 1978, PD4895

Int. Cl.³ G03G 15/01

U.S. Cl. 355-4

10 Claims



1. A colour copier comprising:

- (a) a carriage having a platen thereon arranged to engage and hold an electro-photosensitive receptor member having a surface arranged to have a light image selectively modify an electrical pattern thereon;
- (b) means to charge the said surface;
- (c) an exposure station having a set of selectable filters of different colour values and a light source and lens system to project a series of monochromatic images from a multicoloured master on to the said receptor member;
- (d) means to energize the said light source to expose the said receptor member to a monochromatic image of a selected colour;
- (e) a series of developer stations each arranged to contain a developer of a different colour but selected to be complementary to the colours of the said filters, whereby each monochromatic image is developable by a developer of the selected complementary colour;
- (f) a developer plate at each developer station arranged to be wetted by the said developer prior to pressing the developer plate to the said receptor member to develop an image thereon;
- (g) means to move the said carriages between the said stations and to charge the said receptor member before reaching the said exposure station and to remove excess developer from the said receptor member as the said carriage transports the said receptor member from the said developer stations.

4,247,192

COPYING MACHINE

Shigehiro Komori, and Hiroshi Ogawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,597

Claims priority, application Japan, Oct. 26, 1977, 52-128431;

Dec. 9, 1977, 52-148516; Jan. 30, 1978, 53-9165

Int. Cl.³ G03G 15/28

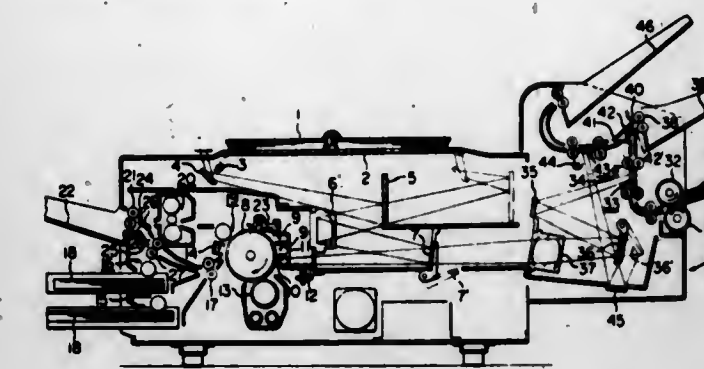
U.S. Cl. 355-8

11 Claims

1. A copying machine comprising:

- a first sheet original illuminating and conveying means for moving sheet originals and exposing the same to light;
- a second sheet original illuminating and conveying means for moving sheet originals disposed at a position which does not interfere with said first sheet original illuminating and conveying means and exposing the same to light;
- means for controlling a sheet original so that one surface of the sheet original is exposed to light by said first sheet original illuminating and conveying means and that the other surface of the sheet original is exposed to light by said second sheet original illuminating and conveying means;
- a main optical means for forming a first and a second optical path so as to enable one of the images of the sheet original

conveyed by said first or second sheet original illuminating and conveying means to be selectively exposed onto a photosensitive medium; and



a first movable mirror change-over means for selecting one of the two optical paths of said optical means.

4,247,193

ELECTROSTATIC COPYING MACHINE COMPRISING JAM SENSORS

Tamaki Kaneko; Kenichi Mizuma; Tugio Okuzawa, and Masao Hosaka, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

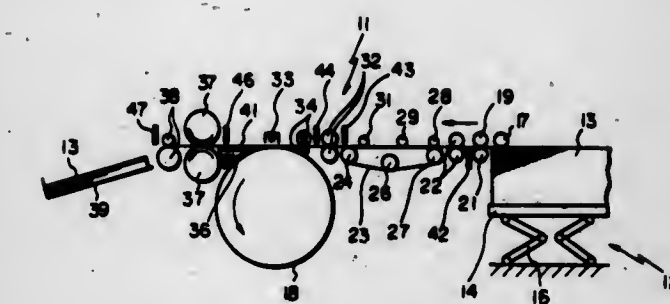
Filed Apr. 10, 1979, Ser. No. 28,905

Claims priority, application Japan, Apr. 21, 1978, 53/46712

Int. Cl.³ G03G 15/00

U.S. Cl. 355-14 R

5 Claims



1. An electrostatic copying apparatus including sheet feed means for feeding copy sheets down a sheet feed path and a plurality of operating units disposed along the sheet feed path for forming toner images on the copy sheets, the feed means including a plurality of individually drivable feed units spaced along the feed path, characterized by comprising:

- sensor means for sensing a copy sheet feed failure in the feed units; and
- control means for causing all of the feed units to be driven when the sensor means does not sense a feed failure and, when the sensor means does sense a feed failure, energizing only feed units downstream of a feed unit in which the feed failure is sensed;
- the operating units comprising a transfer unit for transferring toner images to the copy sheets, a sheet support unit for supporting the copy sheets in a stack prior to feeding by the feed means and a receiving unit for receiving the copy sheets after discharge from the feed means, the feed units comprising a first feed unit for feeding the copy sheets from the support unit to the transfer unit, a second feed unit for feeding the copy sheets through the transfer unit and third feed means for feeding the copy sheets from the transfer unit into the receiving unit.

4,247,194

CONTROL SYSTEM FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Yoichi Kubota, Tokyo; Masao Hosaka, Sagami-hara, and Kiyoshi Ohshima, Kawasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

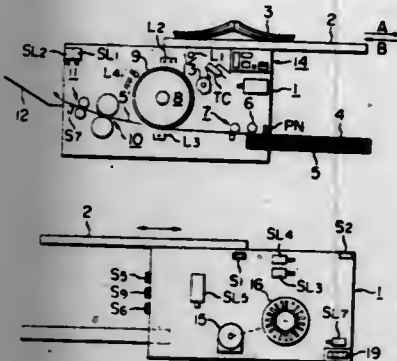
Filed Apr. 25, 1979, Ser. No. 33,262

Claims priority, application Japan, May 8, 1978, 53-53798

Int. Cl.³ G03G 15/00

U.S. Cl. 355-14 R

3 Claims



1. An electrophotographic copying machine comprising a control system, position sensor means for detecting the positions of component parts after a power switch is turned on, forced-return means for forcibly returning the component parts to their predetermined positions when they are detected as being out of said their predetermined positions, means for displaying the failure of any of the component parts returning to said their predetermined positions, means for detecting the positions of the component parts at any time after the copying operations are started, and means for displaying the deviations of the component parts from their predetermined positions and inhibiting the copying operations when a deviation is detected.

4,247,195

BIAS DEVICE FOR A COPYING MACHINE

Toyoo Okamoto, Yokohama, and Masashi Kuno, Tokyo, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

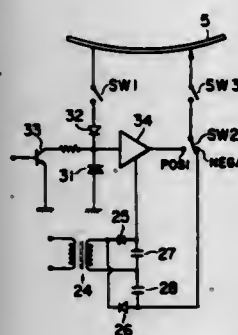
Filed Jun. 20, 1979, Ser. No. 50,227

Claims priority, application Japan, Jun. 21, 1978, 53-75221

Int. Cl.³ G03G 15/00

U.S. Cl. 355-14 D

7 Claims



1. A bias device for a copying machine having a developing electrode confronting a photo-sensitive member, to which electrode a voltage is applied during development, which bias device comprises:

- memory means for storing the potential of the surface of said photo-sensitive member;
- voltage generating means for providing a voltage obtained by superposing a predetermined potential on said potential stored in said memory means;
- means for allowing the potential of the surface of said photo-sensitive member to be stored in said memory means in a non-image period which occurs with said photo-sensitive member; and
- switch circuit means for applying said voltage provided by

said voltage generating means to said electrode in an image period.

4,247,196

CLEANING DEVICE FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINES

Masaya Ogawa, Osaka; Takashi Sugiyama, Sakai, and Hiroshi Mizuno, Ikoma, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 9, 1979, Ser. No. 28,307

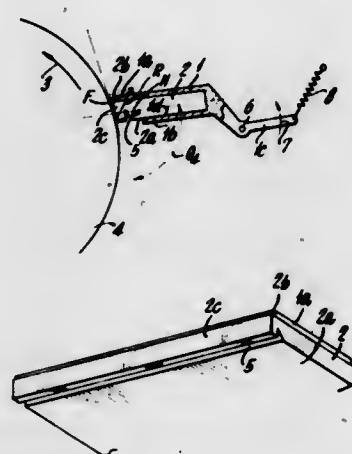
Claims priority, application Japan, Apr. 26, 1978, 53-50602;

Apr. 27, 1978, 53-51428

Int. Cl.³ G03G 21/00

U.S. Cl. 355-15

20 Claims



1. A device for cleaning the surface of a photosensitive member in an electrophotographic copying machine comprising:

- an elastic blade for removing residual developer from the surface of the photosensitive member, said blade having a cleaning side and a noncleaning side;
- a holder for retaining said blade in a lateral position either at a right angle or at an acute angle close to a right angle with respect to the surface of the photosensitive member, said angle being formed between said surface of the photosensitive member and a side of said blade facing toward said cleaning side thereof; and
- biasing means for urging the forward end portion of said blade into pressing contact with the surface of the photosensitive member;
- said holder having a front wall for supporting the surface of said blade facing the noncleaning side thereof, said noncleaning side facing toward the direction of rotation of the photosensitive member, said front wall of said holder extending to a position close to the forward end of said blade;
- whereby the forward end portion of said blade is positioned so as to absorb the elastic strain created by the resultant of a frictional force and a normal reaction force on the end portion, and to absorb the elastic strain resulting from the pressing contact of the end portion with the photosensitive surface.

4,247,197

FILM POSITIONING DEVICE FOR MICROFORM PRINTING SYSTEM

Shigenori Oosaka, and Makoto Murakoshi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 13, 1978, Ser. No. 959,850

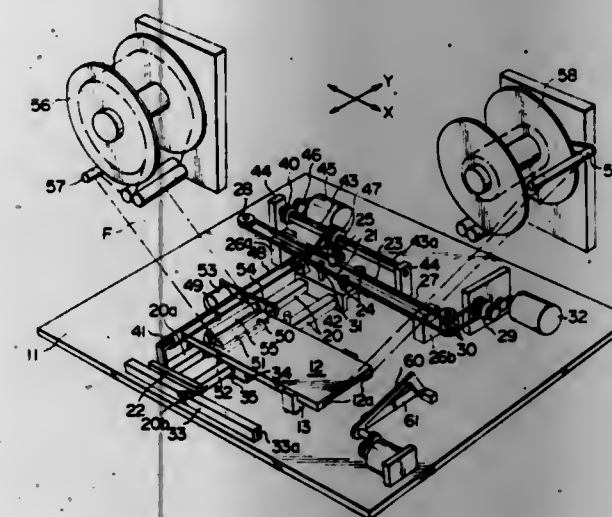
Int. Cl.³ G03B 27/44

U.S. Cl. 355-54

4 Claims

1. A film positioning device for a microform printing system for moving a microfilm in a horizontal plane so that a selected area of the microfilm is presented to a film aperture for recording, comprising a flat base plate, a microfilm carrier slidably disposed on the base plate for holding the microfilm on the

base plate, a sliding spacer fixed to the carrier for supporting the carrier at a predetermined distance above the base plate, a film feed means for feeding the film relative to the carrier and a driving means for moving said carrier in X and Y-directions, said sliding spacer keeping said distance between the base plate and the carrier constant during movement of the carrier in X and Y-directions and where the lower surface of the sliding spacer in contact with the base plate is circular and where said driving means comprises first and second parallel X-directional guide bars extending in X-direction spaced from each other, a main bracket slidable along the first X-directional guide bar, a



sub-bracket slidable along the second X-directional guide bar, first and second parallel Y-directional guide bars extending in Y-direction between the main bracket and the sub-bracket, the opposite ends of each Y-directional guide bar being respectively secured to the main bracket and the sub-bracket, said carrier being operatively connected to the Y-directional guide bars and being slidable therealong, a first electric motor which rotates to move the main bracket back and forth together with said carrier along said first X-directional guide bar and a second electric motor which rotates to move the carrier back and forth along the Y-directional guide bars independent of said main bracket.

4,247,198

DUAL PURPOSE MULTIPRINT EASEL

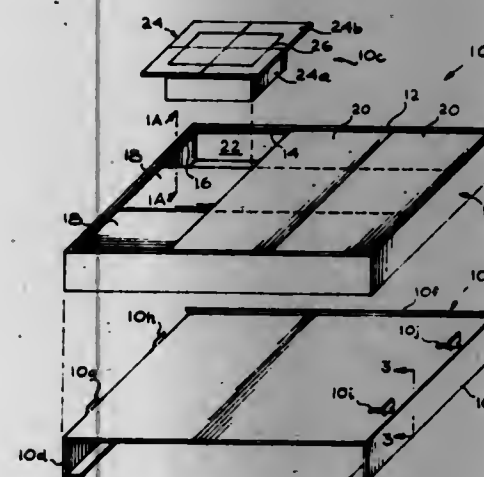
Axel D. Beyreuther, 346 N. Western Ave., Los Angeles, Calif. 90004

Filed Jul. 30, 1979, Ser. No. 62,010

Int. Cl.³ G03B 27/44, 27/58

U.S. Cl. 355-54

4 Claims



2. In an easel for multiprinting on photographic material, comprising:

- (a) photographic material supporting rectangular base, having one raised side and two parallel slots extending perpendicularly adjacent to one of the other sides of the base surface;
- (b) springloaded paper holding means, being respectively,

slidably mounted in the slots, against which the photographic material is pushed to snap in place along the raised side of the base;

- (c) a frame, having grooves along the interior sides thereof, mounted over and covering the base;
- (d) at least two elongated panels fitted horizontally and vertically slidable, respectively within and between the grooves of the frame, to allow openings to sequentially appear at variable locations therein;
- (e) an insert placeable within and respectively covering the sequentially appearing openings in the frame, the top surface of the insert extends to overlap the sides thereof so as to prevent light from penetrating into the openings appearing between the panels.

4,247,199

FRAME FOR PARTIAL ILLUMINATION IN PHOTOCOPYING OF NEGATIVES, DIAPOSITIVES AND THE LIKE

Walter Kremer, Bergneustadt, Fed. Rep. of Germany, assignor to Firma Johannes Bockemuhl, Gummersbach, Fed. Rep. of Germany

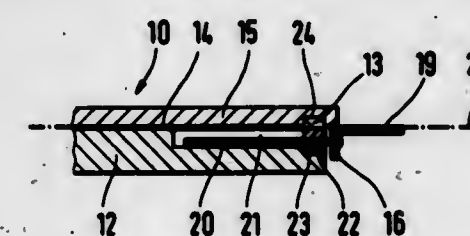
Filed Jul. 26, 1979, Ser. No. 60,847

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 7822903[U]

Int. Cl.³ G03B 27/58

U.S. Cl. 355-72

10 Claims



1. A frame for partial illumination in photographic copying from negatives, diapositives and the like associated with an illuminating device, onto a copying paper, the frame comprising a paper-receiving plate forming a paper-supporting face onto which a copying paper is placed, said paper-supporting face being located at a predetermined height; a transparent cover plate movable relative to said paper-receiving plate between a closed position in which it is placed onto the copying paper received in said paper-receiving plate, and an open position in which it is withdrawn from said paper-receiving plate; and a member mounted on a peripheral portion of one of said plates laterally adjacent to and substantially coplanar with said one plate so as to form together a unit, said member forming a focusing face located at the height of said paper-supporting face of said paper-receiving plate and simultaneously forming a holding face to be held by a user, so that when the copying paper is received in said paper-receiving plate and said cover plate is placed onto the copying paper the illuminating device can be focus-adjusted by focusing onto said focusing face of said member without damaging the copying paper, whereafter said one plate can be displaced by said holding face so as to place the copying paper accommodated between said plates into the region of illumination of the illuminating device.

4,247,200

PROJECTION TYPE LENS METER

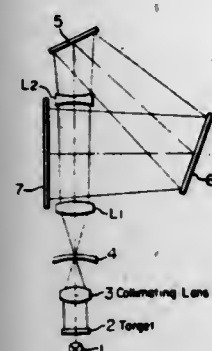
Masao Nohda, and Kazuo Morohashi, both of Yokohama, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,437

Claims priority, application Japan, Dec. 26, 1977, 52-174037[U]

Int. Cl.³ G01B 9/00

U.S. Cl. 356—124



1. A projection lens meter for measuring refractive power and angle of astigmatic axis of an optical system to be tested, comprising:

- a target member;
- light source means for illuminating said target member;
- a collimating lens system for changing the light from said target member into a substantially parallel light beam;
- a projection lens system for focusing the light beam passing through said collimating lens system and said optical system to be tested, said projection lens system comprising a positive lens group and a negative lens group provided on the emerging light side of said positive lens group and separated therefrom by a predetermined large distance;
- reflecting members for guiding the light beam from said projection lens system to traverse a light path from said positive lens group to said negative lens group; and
- a screen member comprising a screen plane on which is focused the light beam reflected by the mirrors and passed through said light path.

4,247,201

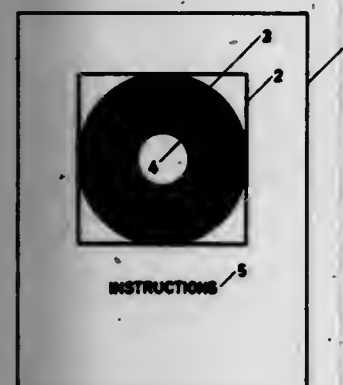
SPECTACLE PRESCRIPT LENS DISTORTION TESTER

Nick Gogniat, Rte. 1, Box 211-A, Altoona, Pa. 32702

Filed Feb. 2, 1979, Ser. No. 9,265

Int. Cl.³ G01B 9/00; A61B 3/00

U.S. Cl. 356—124



1. A test target for detecting distortion introduced by spectacle lenses, said target comprising: two concentric circles within a square wherein the larger circle is tangent to each side of the square, and wherein the area between said concentric circles is imprinted in solid black.

4,247,202

AUTOMATIC COMPUTING COLOR METER

Michael Failes, Mississauga, Canada, assignor to Canadian Instrumentation and Research, Mississauga, Canada

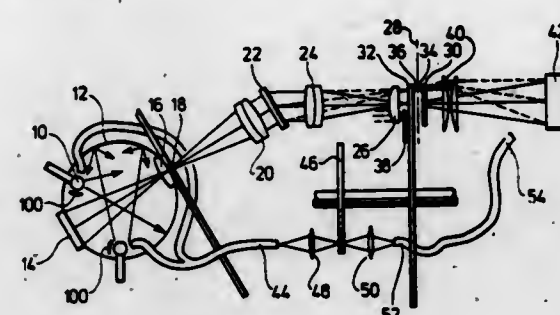
Continuation-in-part of Ser. No. 807,435, Jun. 17, 1977, Pat. No. 4,165,180. This application Jun. 25, 1979, Ser. No. 51,702

The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.

Int. Cl.³ G01J 3/42, 3/50

U.S. Cl. 356—310

10 Claims



1. An apparatus for the measurement of colour of a sample which comprises:

- an illumination means for illumination of said sample with light, the sample reflecting a part of said light;
- an electro-optical sensing head to receive the reflected light from said illuminated sample and to output electronic signals, said electro-optical sensing head comprising:
 - means for dispersing the reflected light from said sample to form a spectrum;
 - a moving spatial filter to modulate said spectrum in time and space;
 - a marking means to selectively mark the light from the modulated spectrum;
 - means for transmitting pulses of light from said illumination means to a photodetector via a reference optical path to produce reference light pulses, wherein said reference optical path is the same optical path as the optical path from the light from said sample, and
 - a photodetector to detect the modulated spectrum and said reference light pulses and to transform said modulated spectrum and said reference light pulses into an electronic signal; and
- an electronic processing unit to process said electronic signals from said electro-optical sensing head.

4,247,203

AUTOMATIC PHOTOMASK INSPECTION SYSTEM AND APPARATUS

Kenneth Levy, Saratoga, and Paul Sandland, San Jose, both of Calif., assignors to KLA Instrument Corporation, Santa Clara, Calif.

Filed Apr. 3, 1978, Ser. No. 892,972

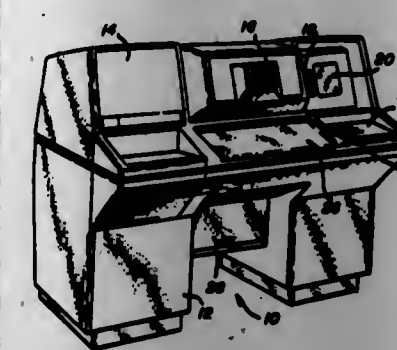
Int. Cl.³ G01B 11/14

U.S. Cl. 356—398

29 Claims

1. Optical inspection apparatus for detecting differences between two like objects, comprising:
- carriage means for supporting the objects to be inspected and for simultaneously moving such objects along an inspection path;
 - illuminator means for illuminating corresponding portions of said objects as they are moved along said path;
 - electro-optical means for individually inspecting said illuminated portions and for developing first and second electrical signals respectively corresponding thereto;
 - memory means for storing said first and second electrical signals;
 - means for scanning said memory means and for electronically

cally aligning a readout of said first signal relative to a readout of said second signal; and



means for comparing the electronically aligned signals and for indicating any differences therebetween.

4,247,204

METHOD AND APPARATUS FOR A WEB EDGE TRACKING FLAW DETECTION SYSTEM

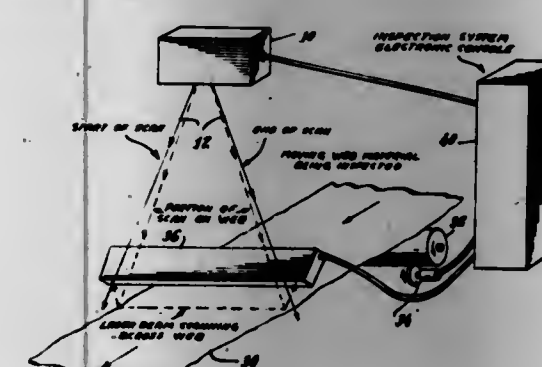
Monty M. Merlen, Stamford, and Frank A. Slaker, Norwalk, both of Conn., assignors to Intec Corporation, Trumbull, Conn.

Filed Feb. 26, 1979, Ser. No. 16,003

Int. Cl.³ G01N 21/01

U.S. Cl. 356—431

9 Claims



1. A method of tracking the edges of a moving web of material in a light scanning, flaw detection system, said system having a light source which is successively scanned over said moving web and a receiver for detecting light reflected, transmitted or scattered by said moving web, comprising the steps of:

- generating a digital reference pulse which is synchronized to occur at a predetermined angular position during each line scanned on the web of material being examined;
- generating a precision analog ramp voltage synchronized with said digital reference pulse, said precision analog ramp voltage corresponding to the angular position of said light source on said material during any given scan line;
- deriving a pedestal signal from the light reflected, transmitted or scattered from said web which exceeds a predetermined amplitude;
- sampling and holding said precision analog ramp voltage during the occurrence of the leading and trailing edges of said pedestal signal for providing analog voltages corresponding to the leading and trailing edge positions of said web;
- adding and subtracting analog voltages representing desired margins to said analog voltages corresponding to the leading and trailing web edge positions, and
- converting said leading and trailing analog edge voltages with margins to digital active scan pulses which accurately follow the light source emanating from said web.

4,247,205

GAS MEASURING APPARATUS WITH STANDARDIZATION MEANS, AND METHOD THEREFOR

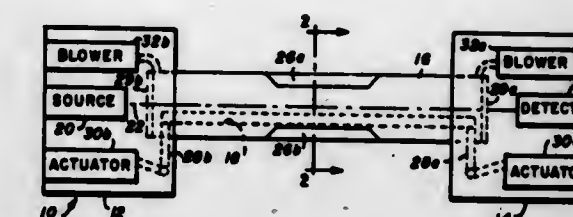
Pekka M. Typpo, Cupertino, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Filed Feb. 2, 1979, Ser. No. 8,865

Int. Cl.³ G01N 21/25, 21/59, 21/85

U.S. Cl. 356/438

7 Claims



1. A gas measuring apparatus, capable of measuring select properties of gas particles, with standardization means, comprising:

- a source, capable of emitting a beam of radiation;
- a detector;
- said beam aligned to impinge said detector, and aligned to impinge said gas particles;
- a standardization means substantially hollow and tubular in shape, positioned immediately adjacent to said beam;
- said means capable of being moved in a direction substantially perpendicular to said beam to enclose said beam, to prevent said gas particles from intercepting said beam, and to transmit substantially all of the radiation from said source to said detector; and
- actuating means for moving said standardization means to enclose said beam.

4,247,206

SCREW EXTRUDER FOR THE PROCESSING OF THERMOPLASTIC RESINS AND SIMILAR MATERIALS

Rudolf Zahradnik, Vienna, Austria, assignor to Maplan Maschinen- und Technische Anlagen Planungs- und Fertigungs-Gesellschaft m.b.H., Vienna, Austria

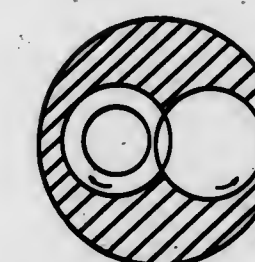
Filed Mar. 6, 1979, Ser. No. 17,834

Claims priority, application Austria, Mar. 7, 1978, 1624/78

Int. Cl.³ B28C 1/16

U.S. Cl. 366—83

3 Claims



1. A screw extruder for processing a thermoplastic resin comprising two conical counter-rotating screws having inter-engaging threads and a thread depth progressively increasing toward the larger end of each screw, each screw having an outer diameter A at its larger end and an outer diameter B at its smaller end, the thread depth of each screw increasing from a depth D at the smaller end to a depth C at its larger end, the dimensions A, B, C and D being in the relationship:

$$m \cdot \frac{A-B}{B} = \frac{C-D}{D}$$

where $m=0.5$ to 0.75 and selected in accordance with the rheological characteristics of the resin that the power conversion by shearing and convective heating is in a substantially

constant ratio to the throughput of the resin over the entire lengths of the screws.

4,247,207

MATRIX PRINTER

Norbert M. Klimmek, Cockfosters, and Manfred A. Huber, New Barnet, both of England, assignors to The Rank Organisation Limited, London, England

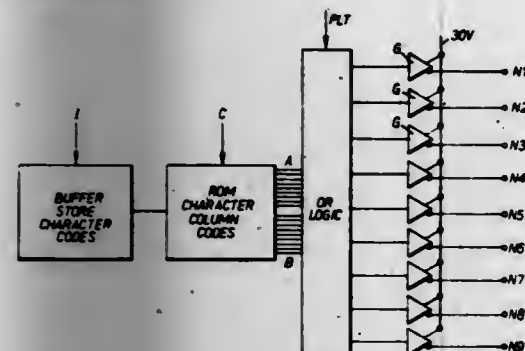
Filed Jan. 9, 1979, Ser. No. 2,177

Claims priority, application United Kingdom, Jan. 9, 1978, 637

Int. Cl.³ B41J 3/12

U.S. Cl. 400—121

1 Claim



1. A matrix printer for printing characters each based upon a five-column, seven-row dot matrix, said printer comprising a print head having a row of selectively energisable needles adapted to cooperate with the surface to be printed, the number of said needles being greater than seven and said row extending in the direction of a dot column of said character dot matrix, needle-energisation means responsive to an eight-bit column code electrical signal fed thereto to energise the said needles selectively whereby to cause the printing of one or more dots in correspondence to a said column of said character matrix, seven bits of said eight-bit column code determining the state of energisation of respective ones of a group of seven of said needles and the eighth bit determining the position of the said group of seven needles in the row of needles whereby characters having elements descendant below the notional base line of a line of print can be printed in a position shifted down said surface as compared to characters without such descending elements, and column-code generating means including permanent memory means storing for each character printable by the printer, five said eight-bit column codes each corresponding to a respective column of that character, the column-code generating means being responsive to a binary character code fed thereto to successively output the corresponding five eight-bit column codes to the said needle-energisation means.

4,247,208

ELECTRICAL STENOGRAPHIC MACHINE

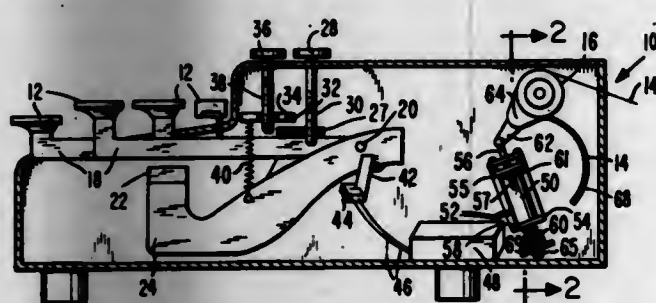
Bennie C. Fulkerson, 810 Franklin Ct., and Michael A. Smith, 3708 Arrowhead Dr., both of Slidell, La. 70458

Continuation-in-part of Ser. No. 973,848, Dec. 28, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 133,080

Int. Cl.³ B41J 3/26

U.S. Cl. 400—194

24 Claims



1. A stenographic machine comprising a platen adapted for

supporting paper; support means adapted for supporting an inked ribbon adjacent said platen; a plurality of print hammers, having a rest position, and operable to mechanically cause said print hammers to impact against an inked ribbon supported by said support means to bring the inked ribbon into contact with paper supported on said platen; first control means for controlling the rest position of said keys and adjustable to adjust the extent of operation required of said keys to cause said print hammers to impact against the inked ribbon; and electrical actuation means responsive to operation of said keys for rotating said platen to feed paper over said platen with the paper feed length being independent of the rest position of said keys.

4,247,209

PRINTER RIBBON CARTRIDGE HAVING LAP SPLICED RIBBON AND REINKING MEANS

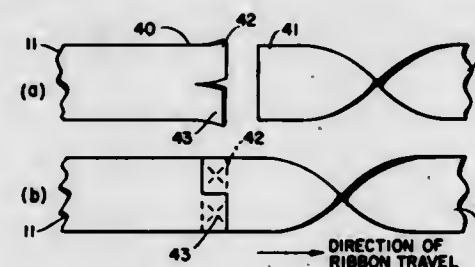
Robert L. Carlson, Chicago, Ill.; Ronald H. Jack, Little Rock, Ark., and Theodore M. Leno, Arlington Heights, Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Apr. 19, 1979, Ser. No. 31,659

Int. Cl.³ B41J 33/10

U.S. Cl. 400—195

6 Claims



1. A printer ribbon cartridge comprising a housing wherein an endless band of ribbon, formed by joining at least first and second ends of ribbon is stored; the cartridge being mountable in a printer and arranged to allow a portion of the ribbon to be extended from away the housing for positioning the extended portion of the ribbon adjacent to a printing position in the printer, characterized in that: the band of ribbon forms a mobius loop enabling different halves of the width of the ribbon to be presented for printing during successive cycles of the ribbon past the printing position, and the first and second ends of the ribbon are joined in a lap splice so that a cut edge of each half of the ribbon being alternately presented for printing is trailing as said ribbon passes the printing position.

4,247,210

RIBBON FEED AND LIFT MECHANISM FOR A TYPEWRITER

Donald J. Kacmarcik; Selahattin A. Okcuoglu, and Jerry W. Raider, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1979, Ser. No. 89,661

Int. Cl.³ B41J 33/54

U.S. Cl. 400—236.1

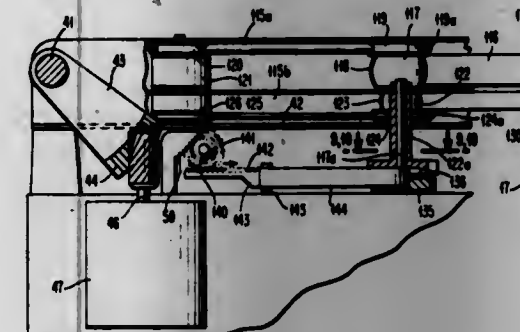
25 Claims

1. In a typewriter having provisions for receiving a typewriter ribbon and a correction ribbon in a cartridge including separate take-up spools; cartridge support means for oscillating said cartridge and presenting different portions of said ribbon to a print point along a print line and selectively presenting correction ribbon to said print point, the improvement comprising: separate typewriter ribbon and correction ribbon drives for feeding respectively typewriter ribbon and correction ribbon, said typewriter ribbon drive comprising;

motor means connected to said cartridge support means for oscillating said support means in an arc about an axis substantially parallel to said print line to present during a first segment of the arc, typewriter ribbon opposite the print point, and during a second segment of the arc correction ribbon opposite the print point;

a first reciprocating drive member coupled to said motor means and having a distance of reciprocation proportional to the segment of arc traversed by said support means during its oscillation;

first and second ratchet members respectively coupled to said



wardly of said external clutch element and outwardly of said boss element

a manual clutch disengaging member mounted for axial movement on said shaft outwardly of said internal clutch member, said clutch disengaging member having on its outer end an actuating knob and on its inner end a pair of axially extending actuating elements extending through said openings toward said external clutch member operating surface, and

a force transmitting disk member interposed between the inner ends of said actuating elements and said clutch member operating surface and having a low friction surface on its inner surface for contact with said operating surface whereby, inboard axial movement of said clutch disengaging member axially moves said external clutch member inwardly to disengage said clutch elements for manual rotation of said platen by said knob.

4,247,213

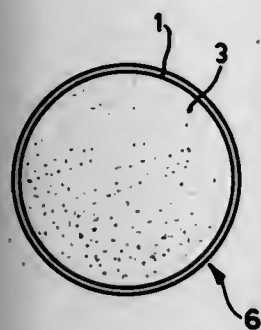
PLATEN FOR PRINTING DEVICES

Horst Würcher, Wilsdorf, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 599,672, Jul. 28, 1975, abandoned. This application May 2, 1977, Ser. No. 792,646
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1974, 2437454

Int. Cl.³ B41J 11/053

U.S. Cl. 400—661

6 Claims



1. A hollow platen for impact printing devices, containing sound-absorbing material for reducing impact noise, wherein the absorbing material consists of a multiplicity of small metal spheres having a high specific gravity, said platen comprises a tube made of hard material and enclosing an interior space, said space being filled with said spheres.

4,247,214

CHARACTER POSITION CONTROL FOR A MATRIX PRINTER

William O. Swan, Jr., Wichita, Kans., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 8, 1978, Ser. No. 958,856

Int. Cl.³ B41J 29/42

U.S. Cl. 400—705.1

16 Claims

1. An apparatus for producing imprints along a line on a recording medium comprising:

a recording means movable along said line relative to said medium and operable in response to first and second signals applied thereto for producing selected said imprints along said line;

first means for generating said first signals whereby successive said first signals define recording frames for said recording means along said line;

second means for generating said second signals which are utilized by said recording means for producing said selected imprints within said recording frames;

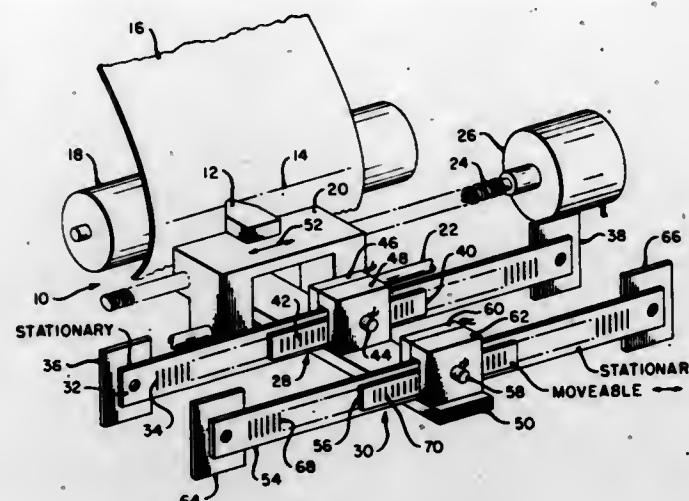
said first and second means each comprising:

a first synchronization track having spaced synchronization marks thereon and being fixed relative to said recording medium;

a second synchronization track having spaced synchroniza-

tion marks thereon and also being movable with said recording means; and

a light source and detector means being positioned in light



coupling relationship with said first and second synchronization tracks to generate the associated said first and second signals as said recording means moves along said line.

4,247,215

MECHANICAL PENCIL

Werner Leuthold, Schwabach; Svatopluk Krumnikl, and Günther Babel, both of Nuremberg, all of Fed. Rep. of Germany, assignors to A. W. Faber-Castell, Nuremberg, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,504

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724317

Int. Cl.³ B43K 21/16

U.S. Cl. 401—85

1 Claim



1. In a mechanical pencil, a combination comprising

a housing having a front end provided with a tip, and a rear end portion;

a lead-containing cartridge removably insertable into said rear end portion, and including a barrel having a leading end, an interior accommodating a plurality of leads, a lead outlet at said leading end and having one end, and coupling portions;

lead feeding means reciprocable in said housing for incrementally advancing leads from said rear end portion to and outwardly beyond said tip, and including an elongated casing having a first end portion provided with an annular collar having an upper end face directed away from said tip and adapted to support said leading end of said cartridge when the latter is installed on said housing and a lower end face directed towards said tip, said casing

further having a throughgoing longitudinal passage operative for passing therethrough leads towards said tip;

resilient means urging said lead feeding means in direction away from said tip, and including a spring having one end supported by said lower end face of said collar and another end;

coupling means on said lead feeding means, engageable with said coupling portions, and operative for coupling with said lead containing cartridge so as to establish a lead supplying passage between the cartridge and said lead feeding means through which passage leads from the cartridge can sequentially pass to said lead feeding means, said coupling means including a part of said first portion of said casing extending beyond said upper end face and operative for engaging said coupling portions of said cartridge, and a recess having a circumferential shoulder, in said leading end of said barrel said recess being adapted to closely receive therein said part of said first end portion of the casing when said barrel is installed on said housing, said one end of said lead outlet of said barrel being so open into said recess that when said barrel is installed onto said housing said passage of the casing is coaxial with said lead outlet thereby establishing said lead supplying passage between the cartridge and the casing;

means for blocking said lead outlet until said coupling portions and said coupling means are in engagement with one another, and including a disc mounted in said recess so as to close the latter to thereby close the lead outlet of said barrel, said disc having at least one weakened portion, said disc being a ring and said weakened portion including at least one inwardly projecting tongue extending across and beyond the center of said ring so as to overlie and close the lead outlet, said ring being received in said circumferential shoulder of said recess, said ring having an outer diameter exceeding the inner diameter of said shoulder so that when said ring is rigidly installed onto said shoulder the ring takes a concave shape in said recess.

4,247,216

QUICK CONNECT HANDLE FOR SWIMMING POOL CLEANING TOOLS

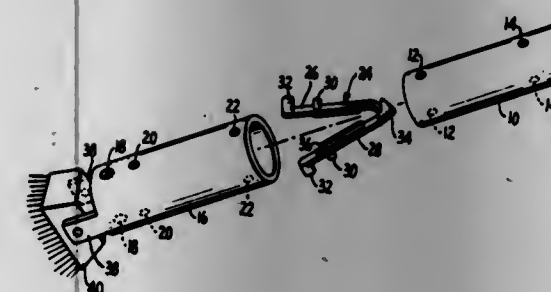
Andrew L. Pansini, 200 Golden Gate Ave., Belvedere, Calif. 94920

Filed Aug. 22, 1979, Ser. No. 68,645

Int. Cl.³ F16D 1/10; F16B 7/10; A43B 5/02

U.S. Cl. 403—109

2 Claims



1. A tool handle adapted to telescope over the end of a pool pole, said handle having adjacent its distal end a pair of diametrically opposed first apertures, and having adjacent thereto and aligned therewith a pair of diametrically opposed second apertures, and a wishbone-like spring member positioned within said handle by a pair of outer opposed thumb buttons carried thereby and extending into said first apertures and by a pair of inner opposed locking buttons carried thereby and extending into said second apertures, said thumb buttons being greater in axial length than said locking buttons whereby a conjoint but partial depressing of said thumb buttons frees said locking buttons from said second apertures while said thumb buttons still extend into said first apertures, said spring member being freeable for removal from said handle by a conjoint and substantially full depressing of said thumb buttons to free the same from said first apertures, said handle being attachable to said

pool pole by means comprising a pair of diametrically opposed third apertures formed in said pole adjacent the distal end thereof and by said locking buttons which are adapted to extend through said third apertures and into said second apertures.

4,247,217

ROPE SWIVEL SOCKET

Mark E. Fulton, 727 Eighth St., Marietta, Ohio 45750

Filed Jun. 28, 1979, Ser. No. 52,863

Int. Cl.³ F16D 1/12, 3/00; B25G 3/02

U.S. Cl. 403—164

3 Claims



1. A rope swivel socket assembly for use in wells comprising a socket body having a side opening extending through one end thereof, the socket body including a reduced top extension having fishing wickers thereon, the reduced extension of the socket body having external screw threads at a point substantially below said wickers and the external screw threads being of a diameter exceeding the outside diameter of the wickers, the socket body having a bore, a swivel insertable in said bore through said side opening of the socket body and being attached to a cable which extends upwardly through and beyond the top end of said assembly, said swivel having an external diameter less than the diameter of said external screw threads, a slide engageable with the socket body to cover said side opening and retain the swivel in said bore and having a top reduced extension provided with wickers at the elevation of the first-named wickers and having external screw threads at the elevation of the first-named external screw threads on the socket body, and a locking nut engageable with the first-named and second-named external screw threads of the socket body and slide substantially below said wickers, the locking nut having an internal diameter of sufficient size to pass over the wickers and also to pass over the swivel.

4,247,218

JOINT FOR THREE-DIMENSIONAL FRAMED STRUCTURES

Jean-Louis Jeannin, 6, Avenue Beauséjour, Enghein, France (95800)

Filed Jan. 30, 1979, Ser. No. 7,829

Claims priority, application France, Feb. 17, 1978, 78 04517

Int. Cl.³ F16D 1/100, 3/00; F16G 11/00

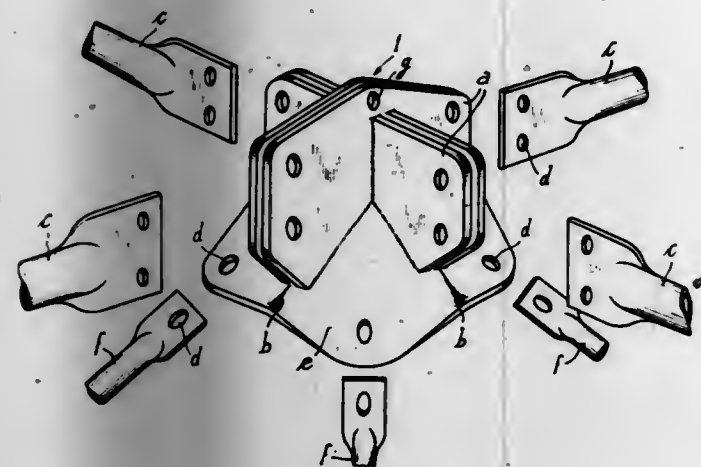
U.S. Cl. 403—217

11 Claims

1. A joint for use in forming a three-dimensional framed structure of the type including plural superposed and parallel spaced planar assemblies, each said planar assembly being

formed of plural of the joints connected by planar longitudinal elements extending in the plane of the assembly, and diagonal longitudinal elements extending between and connecting the joints of adjacent of the planar assemblies, said joint comprising:

a base member having a regular convex polyhedral-shaped surface formed by a plurality of faces which are inclined with respect to each other and which are joined at solid lines of intersection which converge at a vertex of said surface;



a plurality of lugs integral with and extending outwardly from said surface of said base member, each said lug extending substantially in a plane containing an axis of said base member which extends through said vertex of said surface;

said lugs including means for connection to planar longitudinal elements to join a plurality of the joints to form a planar assembly; and

at least a portion of said faces of said surface of said base member including means for connection to diagonal longitudinal elements to join joints of and extend between adjacent planar assemblies.

4,247,219

FASTENING ELEMENT FOR DETACHABLY CONNECTING TWO PLATE-LIKE COMPONENTS

Erich Anspang, Gelsingen, Fed. Rep. of Germany, assignor to Springfix-Befestigungstechnik GmbH, Salach, Fed. Rep. of Germany

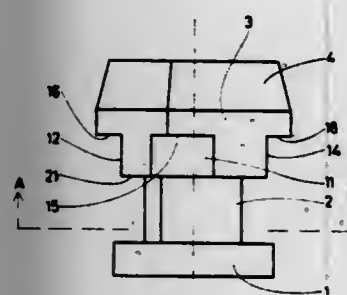
Filed Mar. 20, 1979, Ser. No. 22,352

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820218

Int. Cl.³ F16B 19/00

U.S. Cl. 403—406

5 Claims



1. A fastening element for detachably connecting two plate-like components which are provided with non-circular holes, through which holes the fastening element is passed and secured by rotation, wherein these components are held together by means of a projection which is arranged at each end of the fastening element and which engages behind the relevant component during the rotation, characterized by a headpiece (1) which forms a front projection and which can be passed through the hole (20) in the first component (19) and adjacent to which a rounded collar (2) is provided which passes through

the hole (20) and which can be rotated in one direction in the hole (20) up to a first stop means (7, 9) which is arranged on the collar (2) so that the headpiece (1) engages behind the first component (19), and a non-circular shaft (3) which adjoins the collar (2) and can be inserted into the hole (23) of the second component (22), a portion of the shaft (3) having projections (15, 16, 17, 18) thereon, and that flattened portions of the shaft (3) form a second stop means (11, 12, 13, 14) which is positioned in such manner that when the fastening element is rotated in the opposite direction to the second stop means (11, 12, 13, 14), the projections (15, 16, 17, 18) of the shaft (3) engage behind the second component (22) and the headpiece (1) remains engaged behind the first component (19).

4,247,220

SUBTERRANEAN STORAGE OF LIQUIDS

Vladimir Furman, P.O. Box 339, Safed, Israel

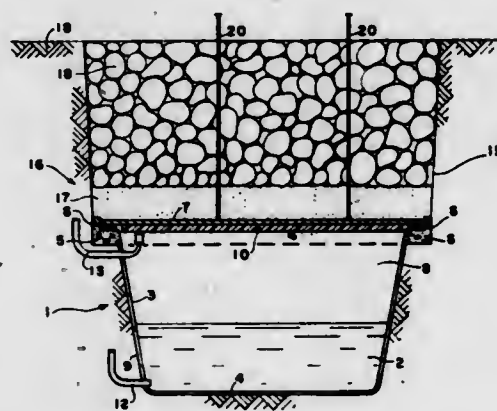
Filed Dec. 1, 1978, Ser. No. 965,383

Claims priority, application Israel, Dec. 5, 1977, 53537

Int. Cl.³ B65G 5/00

U.S. Cl. 405—53

25 Claims



1. A subterranean storage pool for liquids, comprising: a pit whose bottom and side walls are impermeable to the stored liquid; a pressure transmitting cover plate sealingly applied to said pit; a protective body superimposed on said cover plate and bearing thereon, thereby serving for physical protection from above; a quantity of stored liquid within said pit; a quantity of a heavier working liquid within said pit, said stored liquid floating on top of and in direct contact with said heavier working liquid; and pressure means for maintaining a hydraulic pressure within said pit beneath said cover plate and protective body, said pressure means including transfer means for the separate introduction and withdrawal of said stored and working liquids, the pressure being maintained by said pressure means not exceeding the pressure exerted by said protective body on said cover plate from above.

4,247,221

PROCESS FOR LINING TUNNELS

Hans Lewer, Witten-Annen; Dieter Poller, Dortmund, and Günter Seifert, Cologne, all of Fed. Rep. of Germany, assignors to Kali und Salz AG, Kohl, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 1,518

Claims priority, application Fed. Rep. of Germany, May 2, 1978, 281923

Int. Cl.³ E21D 11/00

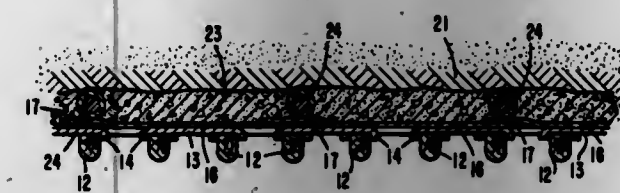
U.S. Cl. 405—150

11 Claims

1. A method for filling the space between the rock face of a tunnel or mine and the structure for supporting the same which comprises:

placing a plurality of lattice sheathing elements on the structure for supporting the rock face of the mine or tunnel such that said sheathing elements define a substantially

continuous covering on the supporting structure adjacent the periphery of the rock face; placing a plurality of flat sheets of plastic film over said sheathing elements such that said sheets of plastic film define a substantially continuous covering over said sheathing elements;



positioning a plurality of plastic hose means over said sheets of plastic film, said hose means being of a length sufficient to extend the entire length of the periphery of the rock face;

filling each of said hose means with a foam material; and filling the remaining hollow space between said plastic sheets of film and the rock face with a settable building material.

4,247,222

STABILIZING MEANS FOR AN UNDERGROUND PIPE INSTALLER DEVICE

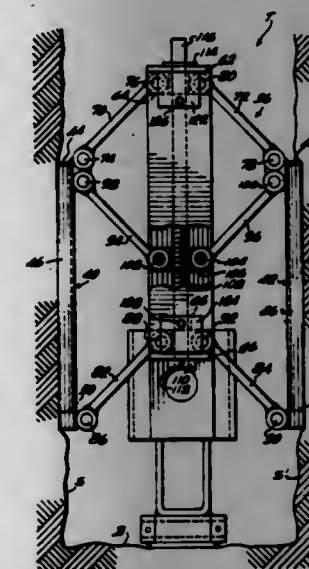
William O. Schossek, 7942 Marx Dr., North Fort Myers, Fla. 33903

Filed Aug. 20, 1979, Ser. No. 68,151

Int. Cl.³ E02F 5/10

U.S. Cl. 405—184

10 Claims



1. A stabilizing means for attachment to an underground pipe installer device of a type normally positioned in an operating trench, and including means for, first, driving a rod assembly, comprised of a plurality of coupled rod lengths, through the ground for penetration into a remote target trench and, second, for withdrawing a pipe or the like, attached to a leading tip end of the rod, rearwardly through a hole formed by the rod, for penetration into the operating trench, the stabilizing means comprising, a support means fixed relative to a main frame of the installer device in a generally vertically centered, transverse relation above the rod, a pair of generally vertically disposed abutment members positioned respectively on opposed sides of said support means, pivotal link means fixed to said abutment members, means to selectively actuate said pivotal link means to cause relative movement of said abutment members toward or away from each other; idler means pivotally connecting between said abutment members and support means.

4,247,223
ROCK BOLT

Toshinari Amakasu; Koetsu Fukui, both of Nara, and Yoshito Seto, Yamato Koriyama, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

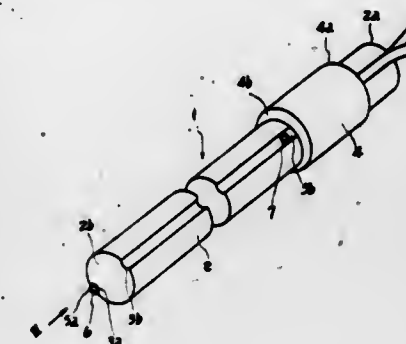
Filed Sep. 26, 1978, Ser. No. 945,817

Claims priority, application Japan, Sep. 20, 1977, 52-118041

Int. Cl.³ E21D 20/02

U.S. Cl. 405—259

3 Claims



1. A rock bolt having an outer end and an inner end adapted to be anchored in a bore in the ground by the injection of grout into the space between the bolt and the bore, the bolt having two longitudinally extending grooves formed in the surface thereof with at least one of said grooves extending between the ends of the bolt, wherein the improvement comprises:

means for fixing the bolt in the bore prior to the injection of grout, said fixing means consisting of an elastic tubular member having concentric inner and outer surfaces; adhesive means securing said inner surface to the rock bolt close to the outer end thereof;

said concentric outer surface being provided with a series of axially spaced outwardly projecting elastic annular ribs adapted to compressively engage the bore as the rock bolt is inserted therein;

said annular ribs having outside diameters which progressively increase toward the outer end of the rock bolt, the smallest of said progressively increasing diameters exceeding the diameter of the bore;

a tube provided within said one of the two grooves and having an opening close to said inner end of the rock bolt; and

another tube provided within the other groove and having an opening close to one end of the tubular member positioned closer to said inner end of the rock bolt, said tubes extending through the tubular member in said grooves.

4,247,224

METHOD FOR INSTALLING A MINE ROOF BOLT

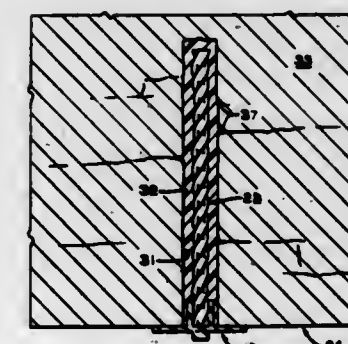
Charles W. Killmeyer, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 14, 1978, Ser. No. 969,528

Int. Cl.³ E21D 20/02, 21/00

U.S. Cl. 405—260

4 Claims



1. A method of installing a mine rock bolt comprising insert-

ing a curable resin composition and catalyst into a drilled hole in the mine rock, inserting a fiber reinforced resinous rod having one or more continuous protrusions and/or grooves on the surface thereof and extending along the length of said resinous rod and wherein the fiber reinforcement in said protrusion and grooves follows the pattern of the protrusions and grooves around the said resinous rod such that at any point along the length of the rod the same fiber reinforcement is located in said protrusion and grooves, affixing the end of said resinous rod with an end cap having a cavity adapted to mate with the protrusion and grooves of said resinous rod, rotating the end cap to thereby rotate the resinous rod affixed thereto so that the end cap is threaded over the end of the resinous rod and the rod is rotated sufficiently to agitate and mix the resin and catalyst contained in the drilled hole.

4,247,225

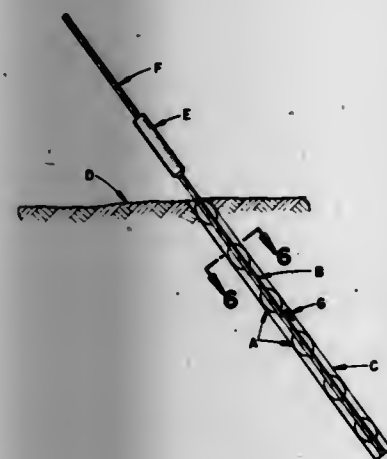
ALIGNMENT DEVICE

Gerald D. Chickini, Jr., Warren; Gordon F. Musch, Novelty; Donald V. Bailey, Hiram, and William E. Bartasevich, Kent, all of Ohio, assignors to Kamak Corporation, Garrettsville, Ohio

Filed Sep. 6, 1979, Ser. No. 72,821
Int. Cl.³ E21D 20/02

U.S. Cl. 405—260

22 Claims



1. An alignment device adapted to position an elongated member in some predetermined manner within the interior of an associated enclosure, said alignment device comprising:

a hollow collar adapted to be placed in a surrounding relationship with an axial section of an elongated member, said collar being generally longitudinally split to define a peripheral space between spaced apart opposed peripheral ends, said ends adapted to be selectively moved apart from each other to assume a collar mounting position allowing said collar to be placed over a desired axial section of the elongated member and to then be moved toward each other into a collar operative position wherein said collar is in a generally close surrounding relationship with the axial section;

locking means disposed adjacent said collar opposed peripheral ends for permitting selective locking of said collar peripheral ends in said operative position; and, a plurality of supporting legs extending outwardly from said collar a distance whereby said device is adapted to be received within the interior of an associated enclosure with the outermost ends of said supporting legs cooperating with the interior walls of the enclosure to establish a predetermined position for the elongated member therein.

4,247,226 HYDRAULIC CONDUIT SYSTEMS FOR MINE INSTALLATIONS

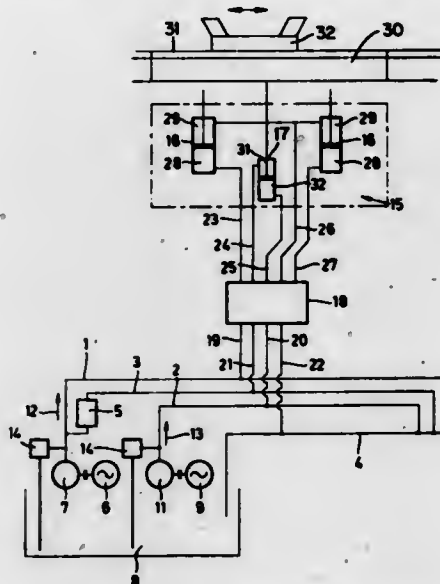
Walter Weirich, Dortmund, and Michael Dettmers, Kamen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalen, Lunen, Fed. Rep. of Germany
Filed Dec. 12, 1978, Ser. No. 968,682

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759223

Int. Cl.³ E21D 23/16

U.S. Cl. 405—302

6 Claims



1. In a mineral winning installation, an improved hydraulic conduit system comprising: a first pressure fluid feed conduit; a second pressure fluid feed conduit; a pressure fluid return conduit providing a common fluid return path for both the first and second pressure conduits, the conduits being selectively connectible to appliances of the installation to operate such appliances; and means, including a pump, for delivering pressure fluid at a substantially constant delivery quantity to the first and second conduits to establish a higher pressure in the first conduit in the range 300 to 400 bars and a lower pressure in the second conduit in the range 100 to 200 bars, wherein:

- the first pressure conduit has a cross-section below an optimum for fluid flow;
- the second pressure conduit has a cross-section equal to or greater than that of the first pressure conduit and produces a pressure drop below about 5 bars at a fluid delivery rate of about 60 liters/minute; and
- the return conduit has a cross-section at least 1.5 times that of the first pressure conduit.

4,247,227

APPARATUS FOR THE CONVEYANCE OF DUST-LIKE OR DUST CONTAINING SOLIDS INTO A PRESSURIZED SYSTEM BY MEANS OF A PRESSURIZED LOCK CHAMBER

Peter Göhler, Horst Kretschmer, and Han-Joachim Schweigel, all of Freiberg, German Democratic Rep., assignors to Brennstoffinstitut Freiberg, Freiberg, German Democratic Rep.

Filed Dec. 19, 1978, Ser. No. 971,078

Claims priority, application German Democratic Rep., Aug. 9, 1977, 200492

Int. Cl.³ B65G 53/66

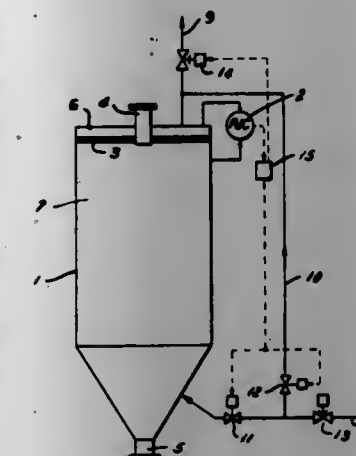
U.S. Cl. 406—15

4 Claims

1. An apparatus for the conveyance of dust-like or dust containing solid material into a pressurized system, the said apparatus comprising a lock chamber; a filter partitioning said chamber into an upper and a lower space; an inlet and outlet from said lower space for said solid material; an inlet duct for introducing a pressurized gas into said lower space to raise the atmospheric pressure in said lock chamber to the pressure in said pressure system; a flow control valve and a shut-off valve disposed in spaced relationship in said inlet duct for said pres-

sure gas; a discharge duct in said upper space for the pressure gas during pressure release and after passing the gas through said filter where it is freed of entrained dust; a branch duct passing from a place intermediate said flow control valve and

the solids upward to a storage facility while the container is tilted; the inside of the container being exposed to atmospheric pressure while dumping by gravity or while conveying by the pneumatic conveyor means.



said shut-off valve and leading into said discharge duct between said upper space and a pressure release valve in said discharge duct; a shut-off valve in said branch duct; and gauge means for measuring the differential between the pressure in said lower space and the pressure in said upper space.

4,247,228

DUMP TRUCK OR TRAILER WITH PNEUMATIC CONVEYOR

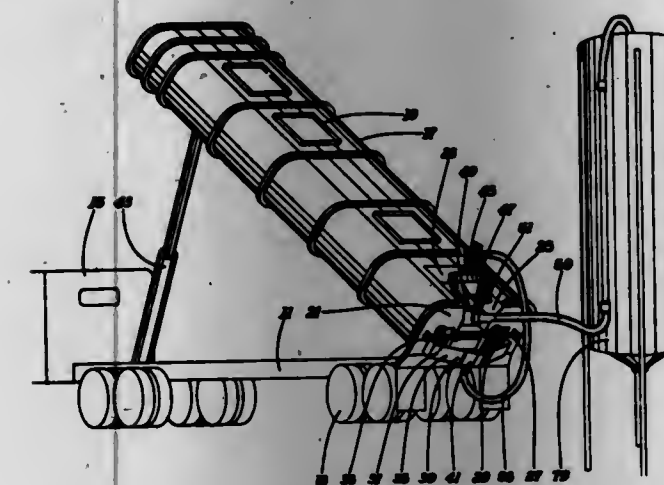
Morton E. Gray, and Carl E. Green, both of Fort Worth, Tex., assignors to Morton E. Gray, Fort Worth, Tex.

Filed Apr. 2, 1979, Ser. No. 26,070

Int. Cl.³ B60P 1/04, 1/60; B65G 53/40

U.S. Cl. 406—39

6 Claims



1. An apparatus for transporting dry bulk solids to a remote site, comprising in combination: a frame mounted on wheels; prime mover means for moving the frame to the remote site; a container mounted to the frame for holding the solids; the container having means for loading and rear outlet means for unloading; means coupled to the frame and container for tilting the front end of the container upward with respect to the frame for discharging solids through the rear outlet means; receptacle means coupled to the rear of the container for receiving solids discharged through the rear outlet means; gate means for opening and closing the rear outlet means; the receptacle means having outlet means for dumping solids behind the container by gravity when the container is tilted; gate means for opening and closing the outlet means of the receptacle means; and pneumatic conveyor means carried by the apparatus and having intake means coupled to the receptacle means for receiving solids from the receptacle means and blowing

4,247,229 MINING METHOD AND APPARATUS

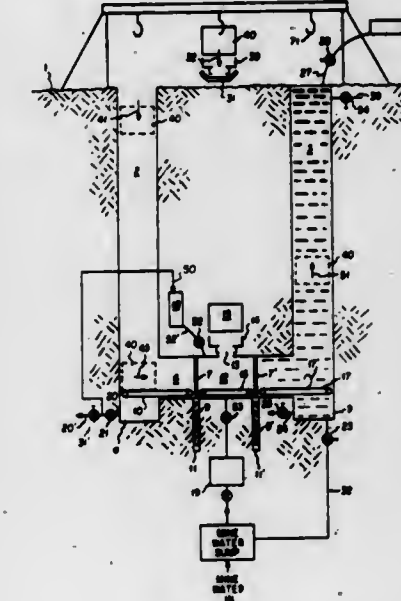
Hugh W. Evans, Denver, Colo., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 25, 1980, Ser. No. 123,876

Int. Cl.³ B65G 51/04

U.S. Cl. 406—79

10 Claims



1. An underground mining method comprising providing at least first and second spaced-apart shafts extending essentially downwardly into the earth and at least one lateral opening connecting said shafts at at least one location below the earth's surface, said second shaft being water full, releasing an empty ore carrier into the top of said first shaft and allowing gravity to pull said carrier toward the bottom of said shaft, controlling the rate of descent of said carrier in said first shaft by regulating the flow of air out of said shaft below said carrier during said carrier's descent, stopping said carrier near said lateral opening, transporting said carrier through said opening into an air/watertight compartment which is initially full of air, filling said carrier with ore in said compartment to such an extent that the loaded ore carrier will float in water, closing said carrier in a watertight manner, filling said compartment with water, transporting said carrier into said second shaft and floating said loaded carrier to the earth's surface.

4,247,230

DEVICE FOR TRANSPORTING AND DELIVERING SLIDE FASTENERS TO A PACKING CASE

Karl-Heinz Forster, Roth, Fed. Rep. of Germany, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,604

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1978, 2801686

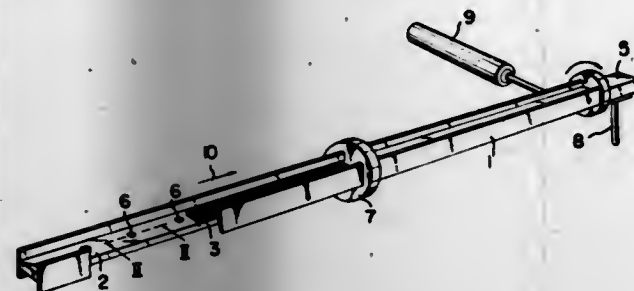
Int. Cl.³ B65G 51/02

U.S. Cl. 406—88

6 Claims

1. A device for transporting and delivering slide fasteners or the like to a packing case comprising: a horizontally supported transporting rail which is rotatable around its longitudinal axis by 180°; and means for longitudinally advancing the slide fasteners, which have successively been fed to one end of said rail, to a rail portion situated above the packing case, said advancing means including a hollow channel provided in the rail and connectable to a compressed air source, said channel

having nozzles which extend toward a slide-fastener supporting surface of said rail, said nozzles being obliquely directed in



the direction of conveyance; and said rail having a cross-section in the form of the letter "H", a central bar thereof including said channel.

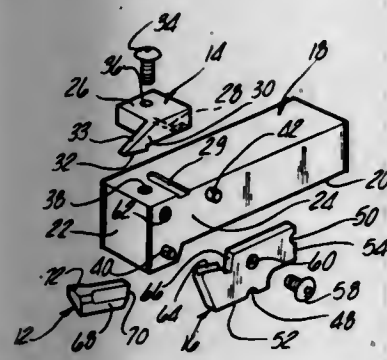
4,247,231 TOOL HOLDER

Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Jan. 8, 1979, Ser. No. 1,705
Int. Cl.³ B26D 1/00

U.S. Cl. 407—101

11 Claims



1. A tool holder for a cutting insert comprising a body having a shank and at least one abutment portion constructed and arranged to bear on a side face of a support plate; a support plate having at least a portion of a side face constructed and arranged to bear on said abutment portion of said body, a portion projecting beyond said body and having a seat constructed and arranged to receive a cutting insert such that the insert is carried solely by said plate with the cutting edge of the insert lying beyond said body, said portion projecting beyond said body having a width which is less than the width of the cutting edge of the cutting insert, and at least first and second recesses therein spaced apart from each other; said body and plate being constructed and arranged so that bottom and rear edges of said plate do not bear on said body; first and second support pins each carried by said body and constructed and arranged to be received in one of said recesses and bear on said support plate through only a portion of the entire periphery of the pin to accurately locate and support said plate on said body and transmit to said body through said pins the rearward and downward thrust produced when the insert is machining a workpiece; and means releasably retaining said support plate on said body in simultaneous engagement with said abutment of said body and said pins.

4,247,232 CUTTING INSERT

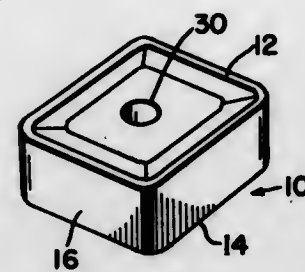
James F. McCreery, Latrobe, Pa., and deceased Jones, late of Greensburg, Pa. (by Dolores H. Jones, executrix), assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 685,111, May 10, 1976, which is a continuation-in-part of Ser. No. 528,211, Nov. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 339,415, Mar. 8, 1973, abandoned. This application Mar. 24, 1980, Ser. No. 133,458

Int. Cl.³ B26D 1/00

U.S. Cl. 407—114

3 Claims



1. A molded insert for use in removing metal chips from a workpiece and comprising; cutting edge means, a land area, descending wall means and a planar floor means; said insert having a polygonal shape comprising a side edge and a corner when viewed in a direction perpendicular to the plane of said cutting edge means; said cutting edge means having at least two angularly related cutting edges defining a plane substantially parallel to said planar floor means and said cutting edge means extending around at least one corner of said insert; said land area extending inwardly toward the center of said tool from said cutting edge means and at an angle ranging from parallel to 10 degrees of parallel with said planar floor means; and said land area being narrower around the corner of said insert than along the side edges; said descending wall means beginning at the inner edge of said land area and extending inwardly and downwardly at an angle of no less than 15 degrees from a plane parallel with said planar floor means and being inclined to the plane of said cutting edges when viewed in side and making a greater included angle with said plane at said corner of said body than along said side edges thereof; said planar floor means extending inwardly toward the center of said tool from the bottom of said descending wall means; the perpendicular distance from the plane containing said cutting edge means to the planar floor means being in the range of from 0.001 to 0.010 inch and said land area being from 0.005 to 0.030 inch in width, and a central island area located on said planar floor.

4,247,233 MICRO-ADJUSTABLE BORING BAR

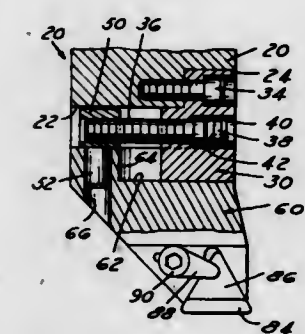
Rolf H. Kraemer, Gurnee, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Apr. 30, 1979, Ser. No. 34,447

Int. Cl.³ B23B 29/03

U.S. Cl. 408—185

7 Claims



1. A boring bar and adjustable head combination which comprises:
(a) a boring bar having an axis of rotation and an L-shaped

recess extending across the working end of said bar transverse to said axis and open at each end to the side walls of said bar,

- (b) a key block in said recess secured in one leg of the L and extending into the other leg and beyond the end of said bar,
 - (c) a boring head having an axis parallel to the axis of rotation of said boring bar and having on one end a transverse slot perpendicular to said axes and dimensioned to slidably receive an end of said key block, and
 - (d) means to lock said boring head in any of a plurality of adjusted positions onto said boring bar.
6. A boring bar combination which comprises:
(a) a boring bar having an axis of rotation and an L-shaped recess extending across the working end of said bar transverse to said axis and open at each end to the side walls of said bar,
- (b) a key block in said recess secured in one leg of the L and extending into the other leg and beyond the end of said bar,
 - (c) an index block slidable in said other leg having a tapped hole,
 - (d) an index screw mounted for rotation in said key block and extending into said other leg through the tapped hole in said index block,
 - (e) a boring head having an axis parallel to the axis of rotation of said boring bar and having on one end a transverse slot perpendicular to said axes and dimensioned to receive in slidable relation an end of said key block,
 - (f) said index block having a projection extending axially of said boring bar into a receiving hole in said boring head, and
 - (g) means to lock said boring head onto said boring bar in an adjusted position.

4,247,234 PIPE GROOVING TOOL

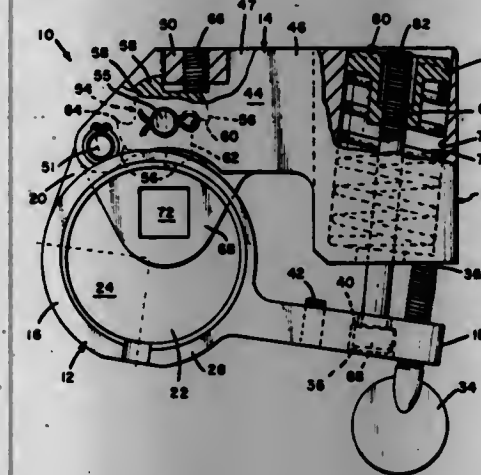
Joseph W. Hoffman, Liverpool, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 2, 1979, Ser. No. 81,305

Int. Cl.³ B23D 43/06, 21/10

U.S. Cl. 409—260

2 Claims



1. A tool for cutting external grooves on a pipe and for sizing its outside diameter, comprising:

- a. a cylindrical housing having a pipe encircling and receiving passage with an eccentric diameter and with a window opening therein and having only a portion thereof corresponding to the diameter of the largest pipe to be grooved and further an elongated platform extending laterally therefrom;
- b. a drive housing pivotally attached to the cylindrical housing and consisting of a pair of parallel arms extending laterally from a generally cylindrical, cavity containing section, the free ends of said arms being adjacent to the win-

dow and the free end of said cavity containing section extending towards the free end of the elongated platform;
c. a cutting blade mounted between the two parallel arms in alignment with the window;
d. a coil spring positioned in the cavity; and
e. connecting means attached to and extending between the coil spring and platform so that the compressive forces of the spring urges the drive housing and the free end of the platform towards the other causing the cutting blade to enter the window and engage a pipe which may be positioned in the pipe-receiving passage.

4,247,235 TENSIONING BAND FASTENING DEVICE

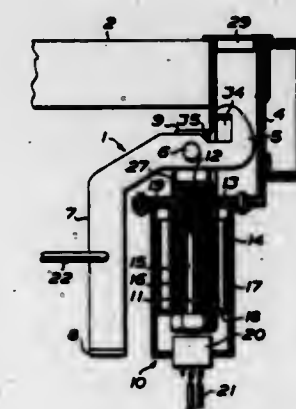
Karl G. Sunesson, Alstervägen 11, S-360 73, Lenhovda, Sweden

Filed Mar. 22, 1978, Ser. No. 889,102

Claims priority, application Sweden, Mar. 21, 1977, 7703189
Int. Cl.³ B60P 7/08, 7/16; B61D 45/00

U.S. Cl. 410—106

9 Claims



1. A fastening device for fastening one end of a load tensioning band, said fastening device comprising:

- a sleeve having a first and second opening, the first opening being arranged to receive an end of the load tensioning band;
- a spring means coupled to said sleeve;
- a hook member pivotally connected to said spring means, said hook member having a movable band-engaging end extending through the second opening in said sleeve and positioned within said sleeve for releasably retaining the end of the load tensioning band, said member being pivotable to move said band-engaging end from a retaining position to a releasing position, said spring means biasing said hook member in a first direction and allowing limited movement of said hook member relative to said sleeve in response to a tension force applied through the load tensioning band; and
- switch means coupled to said sleeve and said hook member, said switch means being actuated as a result of movement of said hook member relative to said sleeve in response to the application of a force greater than a predetermined tension force.

4,247,236 BULKHEAD DOOR LOCKING ARRANGEMENT

Robert B. LaBelle, Spring Valley, N.Y., and James R. Neece, Trumbull, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,531

Int. Cl.³ B60P 7/14; B61D 45/00; B63B 25/24

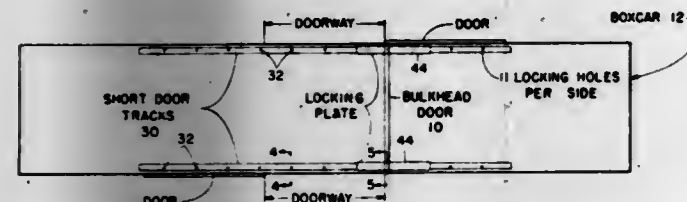
U.S. Cl. 410—129

7 Claims

1. A locking arrangement for securing a bulkhead door in a freight transport vehicle, comprising:

- (a) at least one locking track extending along and securely anchored to an interior surface of at least a portion of the length of the freight transport vehicle and including a plurality of evenly spaced engaging means along its length to serve as a lock; and

(b) at least one locking plate having disposed along one side thereof a plurality of perpendicularly projecting and integral securing means spaced correspondingly and shaped complementally to the engaging means on said track for engaging the same, said plate being adapted to be selectively positioned along the length of and overlying said locking track at a selected locking location with said securing and engaging means being in an interengaging condition to thereby restrain longitudinal movement of said plate along said locking track, said locking plate having a plurality of engaging means formed therein periodically along its length in the same directional orientation as said first mentioned engaging means with the num-



ber of engaging means per unit length in the locking plate being substantially larger than the number of engaging means per unit length in said locking track, the engaging means on the locking plate each defining a separate locking location and being adapted to interengage with securing means perpendicularly projectable relative thereto from the bulkhead door disposed on the opposite side thereof for locking the bulkhead door relative to the locking plate and thereby longitudinally securing the position of the bulkhead door relative to the freight transport vehicle in a locking location selected from a plurality thereof larger in number than the number of engaging means spaced along said locking track.

4,247,237

FREE STANDING HONEYCOMB LOAD SPACER

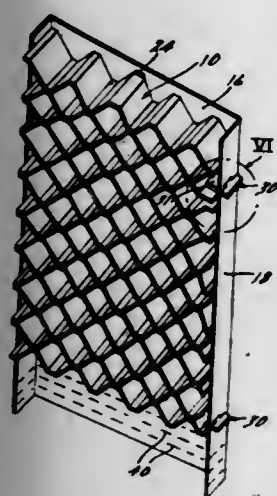
Ronald L. Brown, Sacramento, Calif., assignor to Down River International, Inc., Sacramento, Calif.

Filed Jan. 5, 1979, Ser. No. 45,825

Int. Cl.³ B60P 7/14, 7/16; B61D 45/00

U.S. Cl. 410-154

3 Claims



1. A cargo spacer adapted to be self-supporting when standing on a floor in a vertical position, comprising an expandable honeycomb-type filler formed of stacked flat elongated strips which are more resistant to deformation by forces applied thereto edgewise in a direction perpendicular to the length of the strip than to forces perpendicular to the plane of the strip, the cells defined by said honeycomb having their axes extending in said direction, characterized by the combination which includes a wrapper panel having a flat wall proportioned to overlie the ends of the cells defined by the honeycomb, said panel also having sidewalls bendable to extend perpendicularly from opposite side edges of said flat wall adjacent the sides of the expanded honeycomb filler, whereby the wrapper panel is

of generally U-section when the side walls are so bent, and fastening means for securing each of said side walls of the wrapper panel to the filler when the latter is expanded, whereby the panel holds the filler in the expanded condition and the fastening means holds the side walls of the panel perpendicular to said flat wall.

4,247,238

STACKING AND UNSTACKING APPARATUS

Gerd Imhäuser, Nister, and Gerhard Puderbach, Neuwied, both of Fed. Rep. of Germany, assignors to Winkler & Dunnebler Maschinenfabrik & Eisengießerei GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

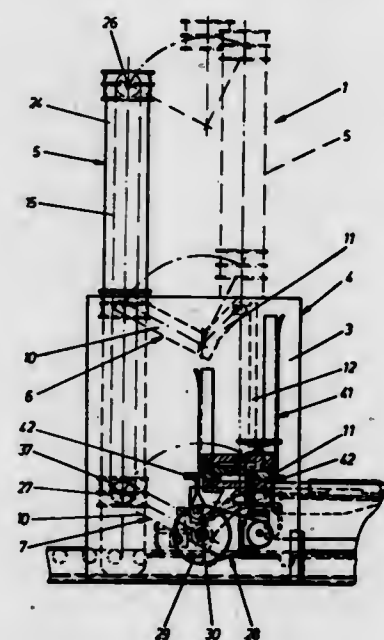
Filed Nov. 20, 1978, Ser. No. 962,531

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755443

Int. Cl.³ A23G 7/00; B65G 61/00

U.S. Cl. 414-43

4 Claims



3. An apparatus for stacking and unstacking trays, comprising:

- a base;
- a plurality of links, each of which comprise a bell crank having two arms and being arranged in generally, vertically spaced-apart pairs, each comprising an upper link and a lower link, said links of each pair of being interconnected via couplings to permit synchronous movement thereof;
- a generally, vertically-disposed elevator frame pivotably mounted on said base by means of said links for reciprocal movement over an arcuate path between two laterally-displaced end positions, said elevator frame having a pair of spaced-apart, vertically reciprocal chains mounted thereon; and
- a gripper device for retaining and releasing trays which is mounted on said pair of chains of said elevator frame for generally, vertical, reciprocal movement between an upper and a lower position.

4,247,239

CARTON PALLETIZING DEVICE

Marvin E. Miguel, 15720 S. Henri Rd., Oregon City, Ore. 97045

Filed Sep. 17, 1975, Ser. No. 614,016

Int. Cl.³ B65G 57/32; A01D 87/12

U.S. Cl. 414-44

11 Claims

1. A mobile carton handling device for retrieving produce cartons from the field and palletizing said cartons in stacks comprising:

- a mobile chassis;

4,247,240

SOLIDS FEEDER HAVING A SOLIDS-LIQUID SEPARATOR

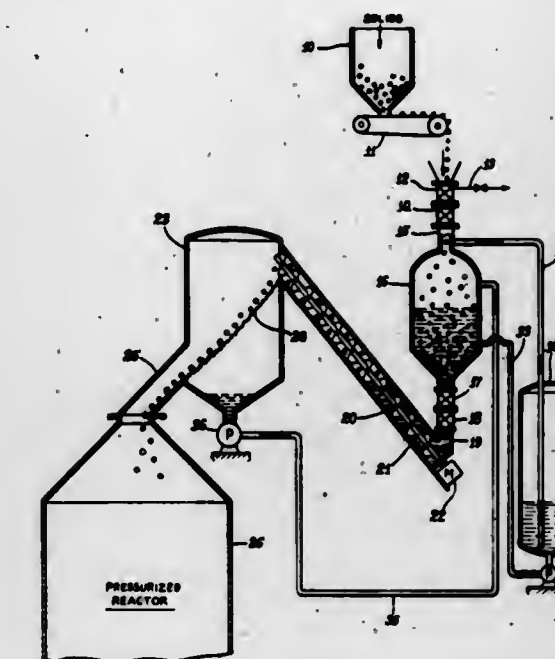
Frank C. Schora, Jr., Palatine, and Kenneth B. Burnham, Jr., Chicago, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Oct. 22, 1979, Ser. No. 86,647

Int. Cl.³ B65G 65/46

U.S. Cl. 414-218

11 Claims



an elongated bed mounted on said chassis having a stack forming end and an off-loading end;

pallet storage compartment on said bed at the stack forming end thereof disposed to store a plurality of pallets;

a tier forming deck mounted on said chassis above the stack forming end of said bed;

pallet elevator means on said chassis adjacent the stack forming end of said bed and disposed to receive pallets from said pallet storage compartment and raise pallets to and lower pallets from said tier forming deck;

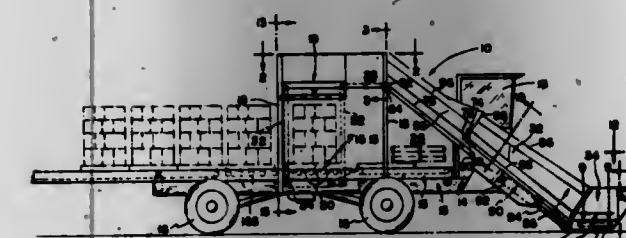
a stack forming compartment on said tier forming deck disposed above said pallet elevator;

a tier forming compartment on said tier forming deck adjacent to and interconnected with said stack forming compartment;

a carton grouping compartment on said tier forming deck adjacent to and interconnected with said tier forming compartment;

carton retrieving means on said chassis for engaging cartons resting in the field and delivering them to said carton grouping compartment;

carton arranging means in said carton grouping compartment for arranging said cartons into groups and transferring said carton groups to said tier forming compartment, said carton arranging means includes a support floor for receiving and supporting cartons delivered from said



carton retrieving means, lateral pusher means for moving cartons on said support floor transversely to their path of travel into said carton grouping compartment, and carton rotating means for rotating cartons on said support floor ninety degrees to said path of said cartons upon entry to said carton grouping compartment, said support floor being a spindle mounted table, said lateral pusher means being a carriage disposed to reciprocate laterally with respect to said chassis and has a carton engaging pusher frame which engages cartons on said table during said reciprocal movement, and said carton rotating means being a power driven crank arm attached to said table which rotates said table ninety degrees and returns it to its original position;

tier forming means in said tier forming compartment for receiving carton groups from said carton grouping compartment, and delivering said groups to said stack forming compartment to form tiers therefrom;

pallet transfer means interconnected with said bed for transferring empty pallets from said pallet storage compartment to said pallet elevator means, and for transferring load pallets from said pallet elevator means to said off-loading end of said bed; and

power means for sequentially operating carton retrieving means, said carton arranging means, said tier forming means, said pallet elevator means and said pallet transfer means.

4,247,241

STUCK EGG RELEASING MACHINE

William H. Warren, 729 S. Main St., Centerville, Mass. 02632

Filed Nov. 25, 1977, Ser. No. 854,614

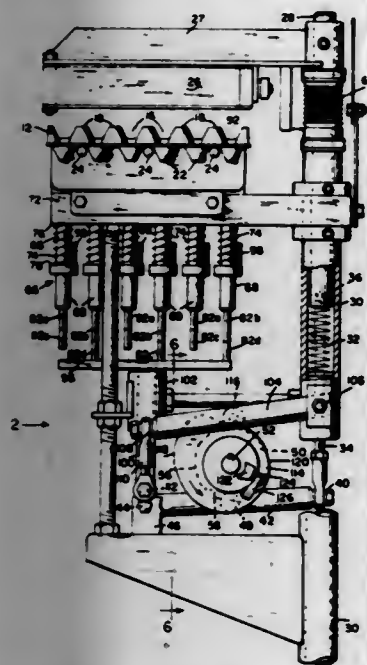
Int. Cl.³ B65G 65/00

U.S. Cl. 414-417

4 Claims

1. Apparatus for removing at least one egg stuck in an egg tray, wherein the egg tray includes substantially continuous depressions of semi-flexible nature for the reception of an egg in a depression, said egg tray also having upwardly extending members rising between the depressions, wherein the apparatus comprises means providing for a line

of advance of said egg tray with at least one stuck egg in a depression therein, an upper clamping plate having downwardly extending projections to coincide with the upwardly extending members of the egg tray, said projections being interspersed with spaces for the reception of portions of the eggs as they are unstuck from the egg tray, and a series of plungers at the opposite side of the egg tray from the egg tray upper clamping plate, means providing for advancing said plungers, said plungers being in alignment with the depressions of the egg tray,



said plungers at least partially inverting said depressions and thereby raising any stuck egg tending to release the same from the stuck condition thereof with respect to the egg tray,

and means for advancing said plungers in a sequential pattern, several spaced plungers being raised at one time and other plungers being raised in timed relation thereto, whereby all plungers are not advanced at the same time.

4,247,242

QUICK ATTACHMENT DEVICE

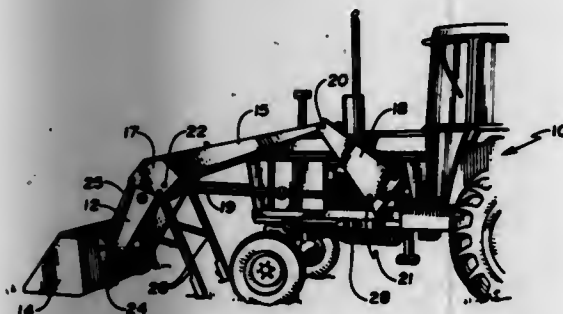
Gerold G. Goertzen, Appleton, Wis., assignor to Farmhand, Inc., Minneapolis, Minn.

Filed Jan. 15, 1979, Ser. No. 3,372

Int. Cl.³ B66F 9/04; E02F 3/72

U.S. Cl. 414—686

10 Claims



1. A quick connect and disconnect device for releasably attaching an implement to a tractor in which said implement includes side frame members adapted to be positioned on opposite sides of said tractor, said device comprising:

side support brackets on opposite sides of said tractor; connection means associated with each of said side support brackets, said connection means including a connection member having a first opening extending horizontally therethrough and being movable relative to said side support bracket, said connection means further including securing means for quickly securing and releasing said connection member relative to said side support bracket; mounting foot portions connected with each of said side

frame members and adapted for mounting to said side support brackets, said foot portions including a second opening for selective alignment with said first opening of said connection member; and pin means for selective extension through said aligned first and second openings.

4,247,243

SAFETY CATCH FOR A MOVABLE BUCKET FORK LIFT ATTACHMENT

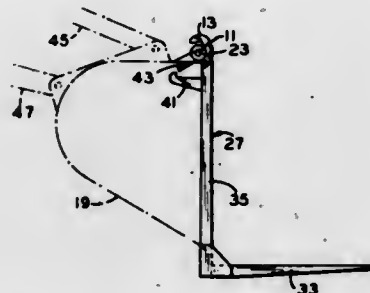
Jack D. Carter, 609 Curdes Ave., Fort Wayne, Ind. 46805

Filed Feb. 21, 1979, Ser. No. 13,135

Int. Cl.³ B66F 9/00

U.S. Cl. 414—724

2 Claims



1. An attachment for use with a movable bucket or the like having a plurality of substantially similar spaced retaining hooks, each of said hooks including an elongated notch having an opening intermediate the ends thereof, and each of said hooks being fastenable to an upper portion of a movable bucket along a substantially horizontal line with the hook notch opening aligned, the attachment comprising:

- (a) an elongated horizontal support having a length greater than the distance between the outer ones of said spaced retaining hooks, said horizontal support having a cross-sectional configuration adapted to be easily picked up but securely held in said notches of said retaining hooks with the ends of said horizontal support positioned outwardly of said outer spaced retaining hooks respectively;
- (b) first and second fork lift elements mounted on said horizontal support, each of said fork lift elements having a rigid, generally L-shaped configuration formed by a vertical portion and a horizontal portion, the upper end of said vertical portion being mounted on said horizontal support with the lower part of said vertical portion adapted to rest against the forward face of said bucket and with the horizontal portion extending forwardly from said bucket with the end of said horizontal portion spaced from said bucket; and
- (c) a latch member mounted on a fork lift element for coupling the fork lift element to the bucket to prevent relative pivotal movement of the fork lift element about the horizontal support relative to the bucket only when the bucket is in certain specified attitudes, the bucket including a locking strip near the upper edge of the forward face, the latch member comprising at least one generally L-shaped hook normally aligned with and spaced from the locking strip, sliding movement of the attachment relative to the bucket engaging the L-shaped hook with the locking strip to prevent relative pivotal movement.

4,247,244

TRANSFER MECHANISM

Terrence W. Coyle, 108 Beach Dr., Prospect, Conn. 06712

Filed Aug. 24, 1978, Ser. No. 936,332

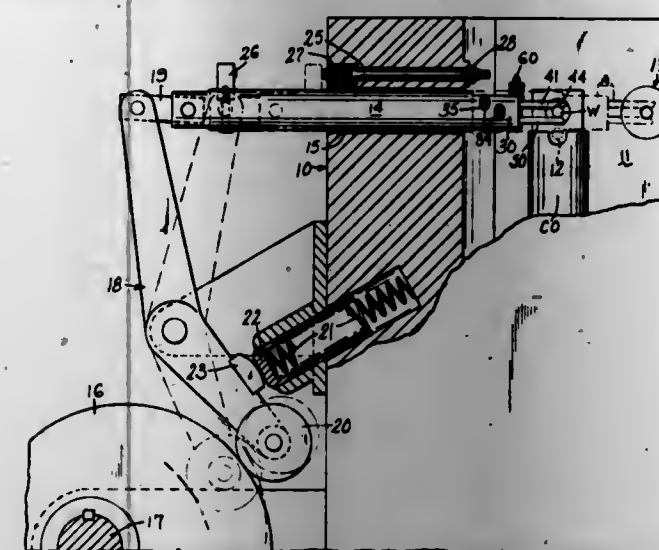
Int. Cl.³ B65G 65/04

U.S. Cl. 414—753

9 Claims

1. In a header, a transfer mechanism comprising, a horizontally slidable transfer bar, drive means for moving said bar in the direction of workpiece transference, a transfer finger head

adjustably mounted on said bar, means for effecting vertical adjustment of the finger head on the bar, upper and lower transfer fingers in pivotal engagement adjacent their rear ends with the transfer finger head, each finger having a work engag-



ing surface adjacent its forward end, a first spring biasing the upper finger downward, a second spring biasing the lower finger upward, said springs being capable of exerting substantially unequal effective biasing forces, and means on the transfer finger head limiting the movement of said fingers.

4,247,245

METHOD FOR STORING AND TRANSPORTING MIXED CARGO

Nils L. Stolt, Gösta Bengtsson, both of Lund, Sweden, and Walter Krieg, Brugg, Switzerland, assignors to Alfa-Laval AB, Tumba, Sweden

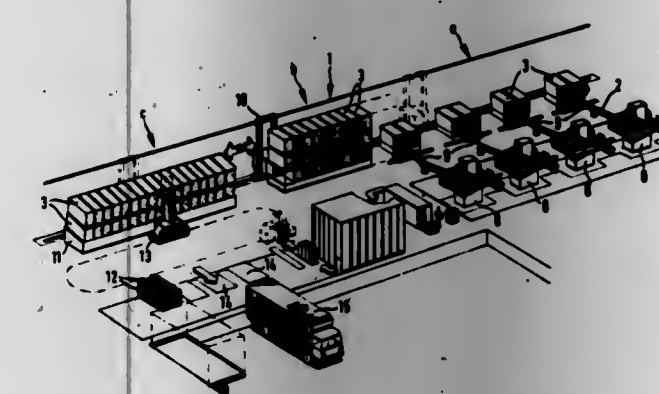
Filed Apr. 13, 1978, Ser. No. 896,089

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2717011

Int. Cl.³ B65B 35/00

U.S. Cl. 414—786

8 Claims



1. A method of handling within a plant several product units of different kinds, which are to be distributed to different places outside the plant, comprising:

- loading the product units through a loading opening in a storing container into parallel storage channels located in a plurality of rows and tiers in said container, which channels lead from said loading opening horizontally into the interior of the storing container;
- transporting said storing containers from the place, where they are loaded with product units, to a storing place where they are oriented with their loading openings all facing in the same direction;
- transporting to said storing place distribution containers which are equipped with loading openings and parallel channels of the same kind as the loading openings and channels of the storing containers, and placing said distribution containers with their loading openings opposite to certain channel openings of the storing containers;
- transferring the product units from channels of the storing

containers into aligned channels of the distribution containers; and thereafter transporting said distribution containers out of the plant.

4,247,246

VORTEX BLOWER

Masahiro Abe, Chiba; Katsuo Motosaka, Narashino, and Toshiaki Sumi, Narita, all of Japan, assignors to Hitachi, Ltd., Japan

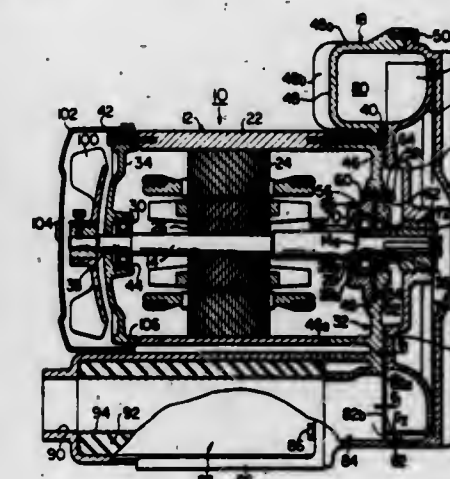
Filed Feb. 14, 1979, Ser. No. 12,030

Claims priority, application Japan, Feb. 15, 1978, 53-15406

Int. Cl.³ F04D 5/00

U.S. Cl. 415—53 T

4 Claims



1. In a vortex blower including a motor having a shaft, an impeller mounted on one end of said shaft for rotation therewith, an impeller housing defining therein a compression chamber in opposite relationship to said impeller, a bearing for said shaft, a part of said impeller housing being made from one of aluminium and aluminium-based alloy and including an integral portion which serves as an end wall of said motor and on which said bearing is mounted, said bearing being of the type that includes inner and outer races, the improvement which comprises:

- a first thrust surface provided on said end wall and being in engagement with one of the end faces of said outer race of said bearing;
- a bearing retainer of a metal having a wear-resistant property higher than that of the metal from which said part of said impeller housing is made, said bearing retainer having an axially extending surface in engagement with the outer peripheral surface of said outer bearing race and a second thrust surface in engagement with the other end face of said outer bearing race; and
- means for mounting said bearing retainer and said bearing on said end wall.

4,247,247

BLADE TIP CLEARANCE CONTROL

Glenn W. Thebert, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 29, 1979, Ser. No. 42,979

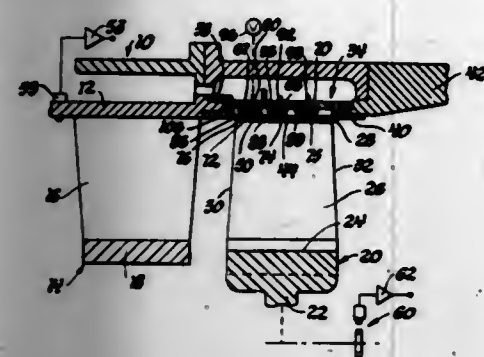
Int. Cl.³ F01D 11/00

U.S. Cl. 415—113

4 Claims

1. A turbine blade tip seal assembly for use in controlling blade tip gas bypass as motive fluid is directed across a turbine blade row comprising: a fixed outer shroud with a deflectable wall, turbine rotor having blades thereon with tips located in spaced relationship to said deflectable wall, means forming a first pressurizable chamber inflatable to a predetermined pressure to deflect said deflectable wall radially inwardly into a controlled radial clearance with said tips to prevent excessive gas bypass between said wall and said blade tips, and means

including a secondary pressurizable chamber responsive to engine operating conditions to apply a secondary pressure on



said wall to produce a further adjustment of said clearance in accordance with engine operating conditions.

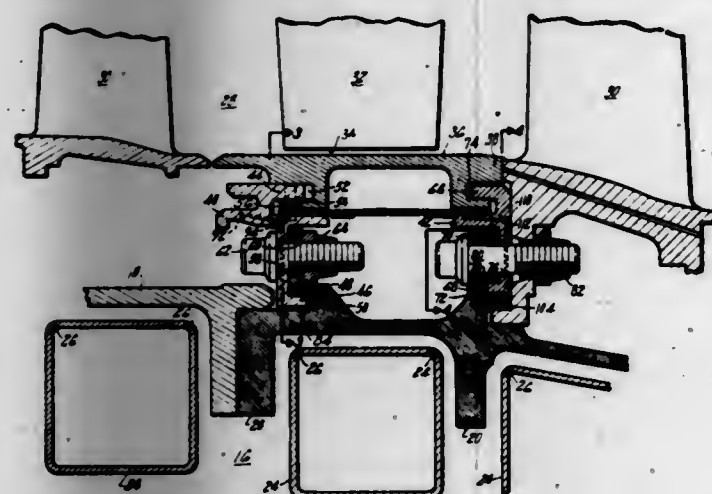
4,247,248 OUTER AIR SEAL SUPPORT STRUCTURE FOR GAS TURBINE ENGINE

Gary F. Chaplin; Francis L. DeTolla, both of Vernon, and James G. Griffin, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1978, Ser. No. 971,289
Int. Cl.³ F01D 25/28

U.S. Cl. 415—136

9 Claims



1. In a gas turbine engine of the type having a segmented outer air seal circumscribing the tips of a row of rotor blades and having a coolable engine case that includes a plurality of external rails extending circumferentially thereabout, the improvement which comprises:

- a means for attaching the outer air seal to the engine case which includes,
- a plurality of arcuate upstream support segments each having a central portion and two end portions and each upstream support segment engaging the upstream end of at least one seal segment,
- a means for attaching each of the upstream support segments to the engine case which affixes only the central portion of the upstream support segment to the engine case with the end portions being free to move circumferentially with respect to the engine case;
- a plurality of arcuate downstream support segments each having a central portion and two end portions and each downstream support segment engaging the downstream end of at least one seal segment; and
- a means for attaching each of the downstream support segments to the engine case which affixes only the central portion of the downstream support segment to the engine case with the end portions being free to move circumferentially with respect to the engine case.

4,247,249 TURBINE ENGINE SHROUD

Paul A. Siemers, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sep. 22, 1978, Ser. No. 944,891
Int. Cl.² F01D 11/08; C04B 35/00, 35/48

U.S. Cl. 415—174

7 Claims

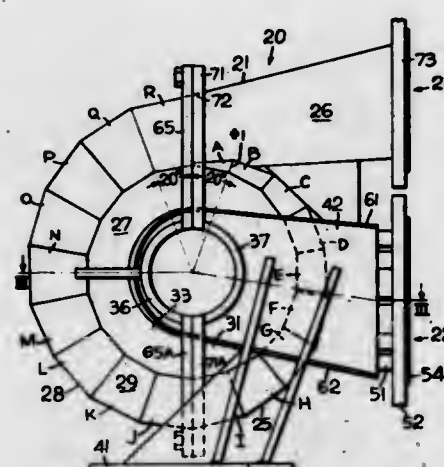
1. In a gas turbine engine, a shroud comprising a plurality of arcuate segments disposed in end to end relationship to surround the tips of the rotor blades of the engine wherein each segment has a sealing surface which opposes the tips of the blades wherein the sealing surface is formed of an amphoteric refractory oxide matrix of material selected from ZrO_2 , Al_2O_3 , Ce_2O_3 , ThO_2 and HfO_2 or mixture, a phosphate binding agent stable above about $1350^\circ C$, and from 0 to 50% by weight of the matrix material of a stabilizer selected from Y_2O_3 , MgO , CaO , rare earth oxide or mixture and from 0 to 25% by weight of the matrix material of a filler.

4,247,250 FABRICATED PUMP CASING

Bruce R. Lipe, and Robert J. Meyer, both of Cincinnati, Ohio, assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Sep. 4, 1979, Ser. No. 72,465
Int. Cl.³ F04D 29/40

U.S. Cl. 415—219 C

5 Claims



1. A fabricated split casing for a pump;
- a first casing section fabricated from sheet steel and defining a suction chamber having an entrance opening for fluid and a discharge chamber having a discharge opening for fluid;
- a first casing section flange means fabricated from sheet steel to which said suction chamber and said discharge chamber are welded;
- a pair of spaced apart semi-circular volute rings each welded to said first casing section flange means;
- a first one-half section of a volute fabricated from sheet steel welded within the first casing section to said flange means, and within said suction chamber;
- a first semi-cylindrical bearing support welded to said suction chamber and to said first casing flange means, and extending outwardly from said suction chamber;
- a second casing section fabricated from sheet steel;
- a second casing section flange means fabricated from sheet steel complementary to said flange means associated with said first casing section for mating engagement to provide a casing parting line;
- a second semi-cylindrical bearing support welded to said suction chamber and to said second casing flange means, and extending outwardly from said suction chamber;
- a pair of spaced apart semi-circular volute rings each welded to said second casing section flange means, said pairs of volute rings associated with said first and second casing section defining volute fluid entry passages when said casing sections are mated;

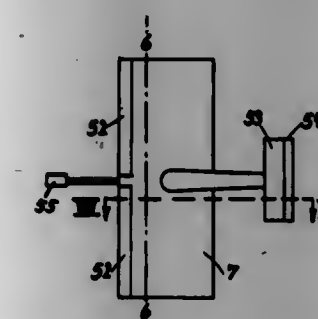
a second one-half section of a volute fabricated from sheet steel welded to the second casing section flange means and adapted to be in communication with said one-half volute associated with said first casing section and said discharge chamber when said first and second casing sections are mated.

4,247,251 CYCLOIDAL FLUID FLOW ENGINE

Hans F. Wuenschel, 2004 Dogwood Ln., Huntsville, Ala. 35810
Continuation-in-part of Ser. No. 767,641, Feb. 10, 1977, abandoned. This application May 17, 1978, Ser. No. 906,879
Int. Cl.³ F03D 7/06

U.S. Cl. 416—24

27 Claims



1. A cycloidal fluid flow engine comprising:
- a mainshaft and a plurality of angularly spaced arms extending radially outward from said mainshaft;
- a like plurality of blade assemblies, each comprising:
- interconnected, but spaced, aerodynamic wing unit and aerodynamic tail unit;
- a said wing unit of each blade assembly being freely rotatable mounted on an end region of one of said arms about a pivot axis upstream of the center of pressure of said blade assembly, quasi parallel with the axis of said mainshaft; and
- each said tail unit consisting of tail surfaces being connected to said wing unit by at least one fuselage, said tail surfaces being fixed stabilizers and movable elevators having the elevator hinge axis quasi parallel with said pivot axis of said wing unit; and
- control means for varying the angle between (1) a plane along the surface of said wing unit, and (2) a plane along an elevator of said tail surfaces, and (3) a plane along a camber control surface of said wing unit, as a function of the relative rotational position between said control means and said blade assemblies.

4,247,252 VERTICAL AXIS WIND TURBINE

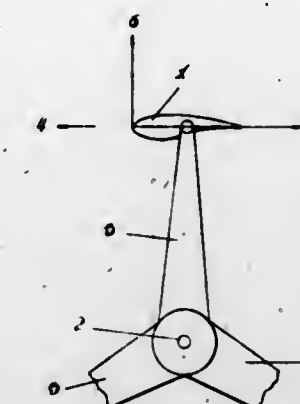
Kazuichi Seki, Isehara; Yoshio Shimizu, Sagami-hara, and Yoshio Kato, Tokyo, all of Japan, assignors to Gakko Hojin Tokai University, Tokyo, Japan
Filed Jul. 6, 1978, Ser. No. 922,281
Claims priority, application Japan, Jul. 7, 1977, 52-81604
Int. Cl.³ F03D 7/06

U.S. Cl. 416—44

1 Claim

1. A vertical axis wind turbine comprising:
- a plurality of main turbine vanes rotatably coupled to a shaft of the turbine; and
- a low speed control turbine rotatably coupled to said shaft of said turbine, said low speed control turbine comprising:
- at least one wind cup pivotally coupled to said shaft, said wind cup being pivotally coupled to said shaft for pivotal movement at least from a first maximally radially extending position to a minimally radially extending position and to a second maximally radially extending position wherein said wind cup faces in a direction opposite to a direction of rotation of said wind turbine; and
- a means for pivotally moving said wind cup from at least said minimally to said first and second maximally radially

extending positions in response to a rotary speed of said wind turbine such that said wind cup is in said maximally extending position when said rotary speed is zero, said minimally extending position when said rotary speed is equal to normal rotary speed of said wind turbine whereby a starting torque of said wind turbine is increased



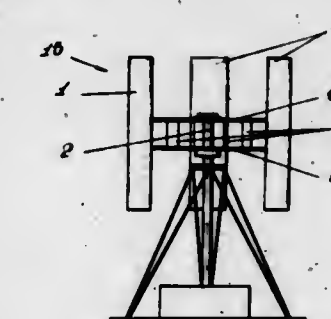
while adverse effects on said wind turbine by said low speed control turbine are prevented when said wind turbine achieves said normal rotary speed and in said second maximally radially extending position when said rotary speed exceeds said normal rotary speed whereby a braking torque is applied to said wind turbine when said rotary speed exceeds said normal rotary speed.

4,247,253 VERTICAL AXIS WIND TURBINE

Kazuichi Seki, Isehara; Yoshio Shimizu, Sagami-hara, and Yoshio Kato, Tokyo, all of Japan, assignors to Gakko Hojin Tokai University, Tokyo, Japan
Filed Jul. 6, 1978, Ser. No. 922,292
Claims priority, application Japan, Jul. 7, 1977, 52-81601; Jul. 7, 1977, 52-81602
Int. Cl.³ F03D 7/06

U.S. Cl. 416—44

3 Claims



1. A vertical axis wind turbine comprising:
- a vertical rotary shaft;
- a plurality of pairs of support arms rotatably coupled to said rotary shaft and extending radially therefrom, each arm of each of said pairs of arms being provided parallel to and vertically displaced from another arm of another of said pairs of arms;
- a plurality of wind turbine blades, each blade being provided between a pair of support arms and being fixed to an end of each of said pair of support arms; and
- a plurality of control blades provided each between a pair of said support arms and being rotatably coupled directly to said pair of support arms, said control blades each further being radially located between said rotary shaft and said turbine blades for controlling the rotational speed of said wind turbine.

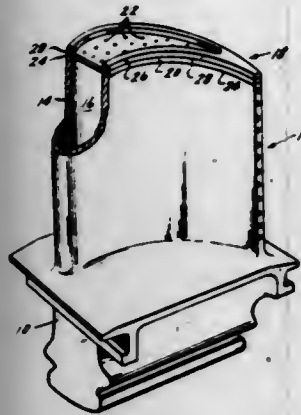
4,247,254

TURBOMACHINERY BLADE WITH IMPROVED TIP CAP

John W. Zelahy, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio
 Division of Ser. No. 862,781, Dec. 21, 1977, Pat. No. 4,214,355.
 This application Dec. 22, 1978, Ser. No. 972,639
 Int. Cl.³ F01D 5/18

U.S. Cl. 416—97 R

3 Claims



1. In a turbomachinery blade including an airfoil-shaped, hollow body having sidewalls defining one portion of an internal cavity and an airfoil-shaped tip cap defining the radially outer boundary of said internal cavity, the improvement wherein:

the tip cap being discrete from the sidewalls and comprising first and second discrete members, one made of an alloy of composition and properties different from the other; said first member being an airfoil-shaped unitary closure plate, including a plurality of openings therethrough, extending across said internal cavity for providing closure of said internal cavity; said first member being of a first alloy selected from the group consisting of nickel-base and cobalt-base superalloys and characterized by high mechanical strength properties at elevated temperatures, said first member being bonded to the sidewalls of said hollow body at the radially outer edges of said sidewalls, and said second member being a rib substantially of the airfoil shape of the first member and being of a second alloy of composition different from that of the first alloy and characterized by resistance to oxidation, sulfidation and thermal fatigue at elevated temperatures, said second member being disposed about the outer periphery radially outwardly from said first member and bonded to said first member to provide a radial outer tip extension of said blade.

4,247,255

COMPOSITE ROTOR BLADE ROOT END

Richard T. De Rosa, Brookhaven, Pa., assignor to The Boeing Company, Seattle, Wash.
 Filed Mar. 15, 1979, Ser. No. 21,042
 Int. Cl.³ B64C 27/48

U.S. Cl. 416—141

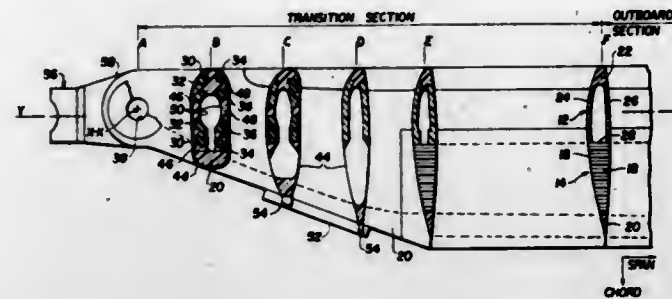
6 Claims

1. A composite helicopter rotor blade for attachment to a rotor hub of a helicopter, comprising:

an elongated composite spar;
 an elongated composite spar nose block attached to the elongated composite spar along a front surface thereof;
 an aft fairing attached to the elongated composite spar along a rear surface thereof;
 an elongated composite trailing edge block attached to the fairing;
 rotor hub attachment means formed by the elongated composite spar, the elongated composite spar nose block and the elongated composite trailing edge block; and
 a blade root extension formed as a monolithic unit by the

elongated composite spar nose block and the elongated composite trailing edge block, wherein:

(i) the elongated composite spar, the elongated composite spar nose block, the aft fairing and the elongated composite trailing edge block form, in assembly and out-



board of the rotor hub attachment means, an airfoil of spanwise varying cross-sectional configuration;
 (ii) the blade root extension monolithic unit extends, spanwise, inboard of the rotor hub attachment means; and
 (iii) the blade root extension transmits chordwise bending moments to the rotor hub.

4,247,256

GAS TURBINE DISC ROTOR

Helmut Maghon, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

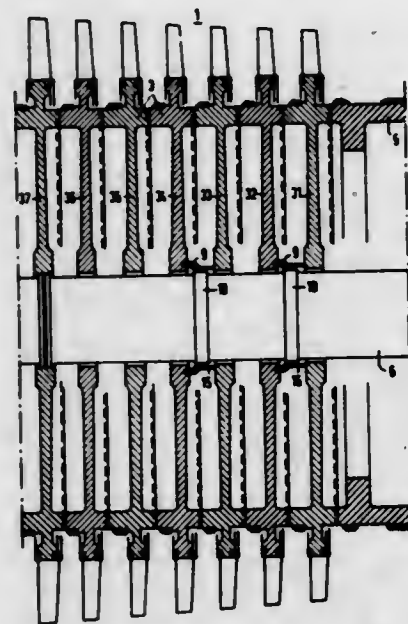
Filed Sep. 26, 1977, Ser. No. 836,476

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643886

Int. Cl.³ F01D 5/06

U.S. Cl. 416—198 A

3 Claims



1. In a gas turbine gas rotor of disc-type construction with a central tie rod having axially disposed rotor discs, shaft stumps disposed at ends of the rotor discs and toothed rim means for centrally fixing the rotor discs and shaft stumps in mutual engagement against rotation with respect to each other, said tie rod being braced at least at one location along the length thereof directly against compressor or turbine discs by ring-shaped intermediate means for directly transferring radial expansion force of the discs to pressure on the tie rod to damp vibration thereof, the intermediate means comprising substantially conically expandable turning rings slid on the tie rod and having a wider diameter end with a cylindrical extension engageable in a circular groove formed in a lateral surface of one of the discs, said turning rings having at the smaller diameter end thereof an inner peripheral surface along substantially the entire axial length thereof with which they are braced on a reinforced shaft collar disposed on the tie rod when not in operation, and said peripheral surface having an edge thereof

closest to said wider diameter end at which said turning rings are pivoted during operation to receive the radial expansion damping force.

4,247,257

ROTOR FLANGES OF TURBINE ENGINES

Joette Benoit, Le Mee sur Seine; Pierre A. Glowacki, Melun, and Gerard M. F. Mandet, Epinay sous Senart, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

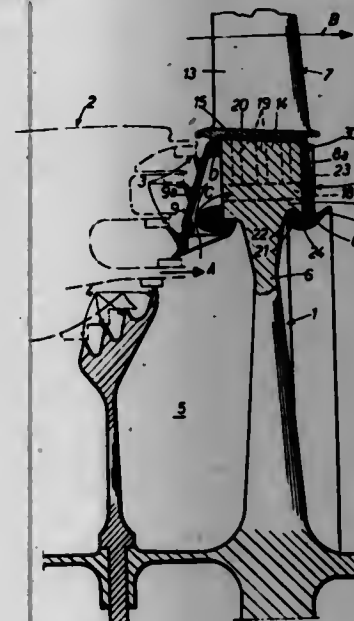
Filed Feb. 28, 1979, Ser. No. 15,937

Claims priority, application France, Mar. 8, 1978, 7706602

Int. Cl.³ F01B 5/32

U.S. Cl. 416—221

10 Claims



1. In an annular turbine engine having a rotor flange cooperating with a frontal face of the rim of a disk wherein said rim is provided with a radial flange defining a collar located between the said frontal face and a circular groove in said disk, said rotor flange being of U-shape in section with arms of unequal length and with its concavity facing radially outward, the short arm of the U forming a hook engaged in said circular groove and the longer arm forming an annular flange extending along said frontal face, the annular flange thus covering said collar, the improvement comprising: the annular flange being divided into two unequal sections forming respectively a principal piece extending over the major portion of its circumference and elastically engaging the said collar, and a smaller piece forming a key completing the flange following the installation of the principal piece, and retention means carried by at least one of said flange pieces to prevent said key from escaping said rim in a radially inward direction.

4,247,258

COMPOSITE WIND TURBINE BLADE

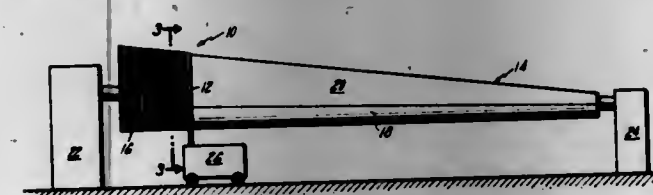
Donald G. Griffie, Jr., Enfield, Conn., and Chester J. Gruska, Jr., Agawam, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 13, 1978, Ser. No. 960,327

Int. Cl.³ F03D 1/06

U.S. Cl. 416—230

3 Claims



1. A wind turbine blade tapering from base to tip including a hollow shell having a wall of nonuniform thickness, said shell wall comprising a plurality of overlapping turns of filament-

reinforced tape of selected tape lead disposed as a single layer, said tape lead varying from said base to said tip to establish said thickness.

4,247,259

COMPOSITE CERAMIC/METALLIC TURBINE BLADE AND METHOD OF MAKING SAME

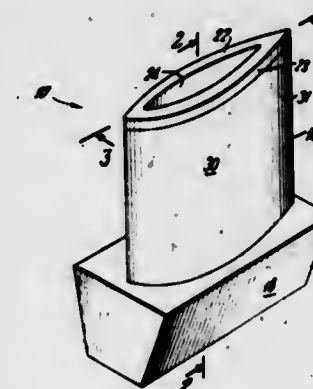
Michael S. Saboe, Trumbull, and Barry Goldblatt, Orange, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Apr. 18, 1979, Ser. No. 31,046

Int. Cl.³ B21K 3/04; F01D 5/14; B05D 3/02

U.S. Cl. 416—241 B

14 Claims



1. A composite, fabricated blade unit for an axial flow rotor comprising:

a metallic support member including an elongated, airfoil-shaped strut having at one end a root portion while the opposite end thereof is an airfoil-shaped end cap, the cross-section of said end cap corresponding in configuration to and being of greater area than the cross-section of the strut, while the cross-sectional area of the surface of the root which is connected to the strut is of greater cross-sectional area than the cross-sectional area of the strut; and

an elongated, airfoil-shaped ceramic member bonded to the outer surface of the elongated airfoil-shaped strut and extending between the end cap and said surface of the root, with the cross-section of the ceramic member substantially corresponding to the airfoil-shaped, cross-section of the end cap such that the fabricated blade has a smooth, exterior airfoil surface.

11. A method of manufacturing a composite ceramic/metallic blade unit for an axial flow rotor comprising the steps of: providing a hollow, metallic support member including an elongated, airfoil-shaped strut having at one end a root portion while the opposite end thereof is an airfoil-shaped end cap, the cross-section of said end cap corresponding in configuration to and being of greater area than the cross-section of the strut, while the cross-sectional area of the surface of the root which is connected to the strut is of greater cross-sectional area than the cross-sectional area of the strut; cooling said metallic support member by passing coolant through the opening extending through the length thereof; and

simultaneously applying and bonding a ceramic material to the outer surface of the elongated airfoil-shaped strut between the end cap and said surface of the root until the cross-sectional configuration of the ceramic member substantially corresponds to the airfoil-shaped configuration of the end cap such that the fabricated blade has a smooth, exterior airfoil surface.

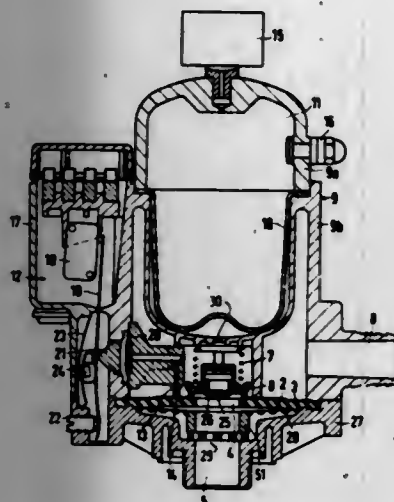
4,247,260

PRESSURE REGULATED WATER SUPPLY SYSTEM
Siegfried Schönwald, and Eberhard Breyer, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 7, 1979, Ser. No. 10,167
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810738

Int. Cl.³ E03B 11/16

U.S. Cl. 417—38

8 Claims



1. A pressure regulated water supply system comprising: an accumulator arranged between an input line and an output line leading to a consumer installation;
- a pressure switch responsive to a pressure difference between the mouth of the input line and the accumulator for switching a feed pump connected to the input line on and off;
- a diaphragm in the path of the input water having a flow opening whose size relative to the delivery of the pump is such that a pressure drop resulting in a pressure difference occurs at the flow opening;
- a check valve for closing the flow opening acted upon by a force directed toward the diaphragm; and
- a duct having a mouth leading to the pressure switch disposed on the side of the diaphragm facing the accumulator, the distance of the mouth from the surface of the diaphragm being such that the diaphragm, when deflected by a pressure difference, rests against the mouth and closes it.

4,247,261

WATER PUMPING DEVICE

Jefferson J. Springston, Pasadena, Md., assignor to Lipman Electric Company, Inc., Baltimore, Md.
Filed Sep. 22, 1978, Ser. No. 944,978
Int. Cl.³ F04B 49/06

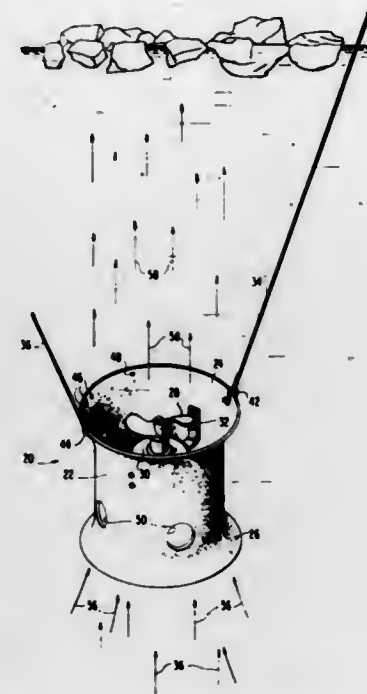
U.S. Cl. 417—44

4 Claims

1. A venturi-type water pumping device adapted to be suspended in a body of water or to rest on the bottom thereof for generating a column of water and directing the column upwardly whereby warmer water adjacent the bottom will be turbulently circulated through the surface of the body of water to keep the surface free of ice when the ambient temperature is below freezing, comprising:

- a hollow cylindrical-shaped housing having outwardly flared, circular in cross-section, open inlet and outlet end portions whereby the central portion of the housing has an internal diameter less than the diameter of the ends; with outwardly flared flanges at the top and bottom ends;
- adjustable suspension means carried by said housing for selectively suspending said housing, submerged, in said body of water beneath the surface thereof whereby the longitudinal axis of said housing is vertical or disposed at a predetermined angle to the vertical with the outlet end

directed upwardly; said means comprising a pair of suspension lines attached to the top flange of said housing; means, mounted within said housing including a propeller disposed adjacent the outlet end thereof and drive means therefor coupled to said propeller and mounted in the central portion of said housing, for drawing water adjacent said housing thereto and for propelling said water in a column from the outlet end thereof so that when said



housing is suspended in a body of water, water adjacent thereto may be drawn in and expelled through said venturi in a column up to and through the surface thereof; said drive means comprising a motor mounted within the central portion of said housing and means for selectively coupling said motor to a source of electrical energy; at least one alternate inlet port extending through said housing adjacent the inlet end so that if said inlet end is closed water may be admitted through said port.

4,247,262

LIQUID FEEDING AND MIXING ARRANGEMENT INCLUDING A FLOW-SHIELDING EJECTOR THERMAL SLEEVE

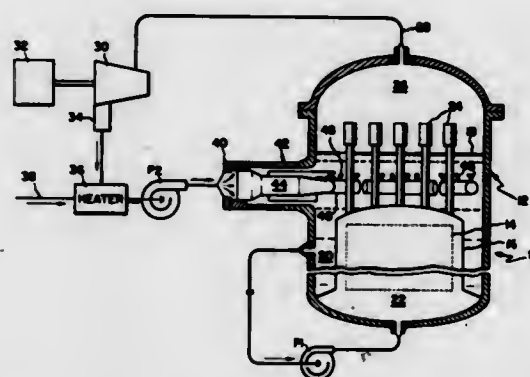
Norman J. Lipstein, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,133

Int. Cl.³ F04F 5/00

U.S. Cl. 417—54

9 Claims



9. In a process for (a) feeding a feed liquid into a pressure vessel containing a body of liquid which is hotter than the feed liquid and (b) mixing the feed liquid with the liquid body, wherein (A) a main flow portion of the feed liquid is conducted in a downstream direction sequentially through (1) a supply line disposed within the cavity of, and provided with an imperfect seal to, an inlet nozzle connected to the vessel and (2) a feed liquid distribution member within the liquid body and

having at least one outlet port spaced from and directed away from said nozzle such that said main flow portion exits through the port as a high-velocity jet into the liquid body, (B) another portion of the feed liquid forms a leakage flow past said imperfect seal and along said nozzle, (C) a member defining a confined leakage flow zone within said cavity is provided, (D) said leakage flow is drawn through said zone by suction created by said jet in a downstream portion of said zone disposed in liquid-ejecting register with said port, and (E) said leakage flow is ejected with the main flow exiting said port,

the improvement comprising (F) said zone-defining member being spaced inwardly from the inner surface of said nozzle to define therebetween a generally annular flow-through space open at both its upstream and downstream ends, said flow-through space being free of means impeding or substantially precluding liquid flow therethrough, said downstream end of said flow-through space being in flow communication with said body of liquid, said upstream end of said flow-through space being in flow communication with the upstream portion of said zone, (G) drawing a flow of liquid from said body of liquid sequentially upstream through said flow-through space and into and downstream through said zone by said jet-created suction, and (H) ejecting the liquid flow drawn in step G with the main and leakage flows exiting through said outlet port.

4,247,263

PUMP ASSEMBLY INCORPORATING VANE PUMP AND IMPELLER

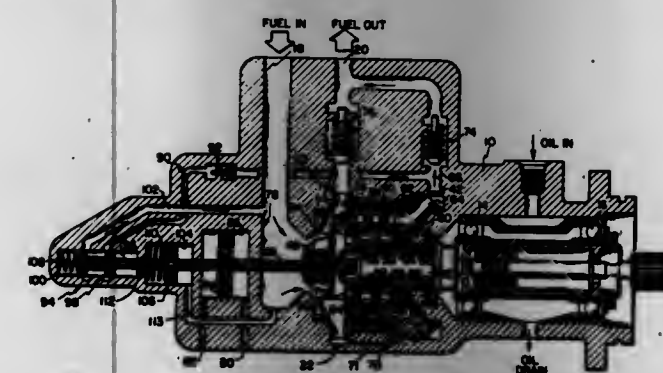
Karl H. Pech, Simsbury, and George W. Jahrstorfer, S. Windsor, both of Conn., assignors to Chandler Evans Inc., W. Hartford, Conn.

Filed Dec. 6, 1976, Ser. No. 747,501

Int. Cl.³ F04B 23/14; F01C 1/00; F04B 49/00

U.S. Cl. 417—203

6 Claims U.S. Cl. 417—393



1. In an improved fluid pump assembly of the type comprising: a housing having a pumping cavity means therein; an impeller mounted for rotation within the pumping cavity means for generating fluid pressure; an annular rotor, having a plurality of inwardly facing radial slots, mounted for rotation within the pumping cavity means and drivingly connected to the impeller; a cam member, having a cam surface on the outer periphery thereof, mounted in the pumping cavity means in fixed angular relationship thereto such that the cam surface is disposed radially inwardly of the inner periphery of the rotor, the cam surface defining in the direction of rotor rotation at least one inlet arc of progressively decreasing radial distance and at least one discharge arc of progressively increasing radial distance with a sealing arc of constant radius therebetween which begins where the inlet arc terminates and terminates where the discharge arc begins; a plurality of vanes respectively mounted in the slots for radial inward and outward movement, the radially inner end of each vane having a contact surface adapted to slidably engage the cam surface during rotation of the rotor;

spring means to urge the vanes radially inwardly toward the cam surface; the improvement comprising: the radially inner and outer ends of each vane being shaped such that each vane is substantially in static hydraulic

balance in a radial direction when the ends thereof are subjected to the same fluid pressure, the vanes being of narrow width when viewed in a cutting plane perpendicular to the axis of rotation of the rotor and being made of a tough light plastic material, whereby the fluid resistance to a vane moving radially inwardly is minimized and the centrifugal force on a vane is reduced which lessens the forces which must be exerted by the spring means to keep the vanes in engagement with the inlet arc and the sealing arc;

means to direct the same fluid pressure to the radially inner and outer ends of each vane while the vane is traversing an inlet arc for effecting static hydraulic balance in a radial direction; and

whereby the lowest rotor speed at which the contact surfaces of the vanes fail to engage the sealing arc immediately prior to traversing a discharge arc is predictable and essentially independent of fluid pressure.

4,247,264

AIR DRIVEN DIAPHRAGM PUMP

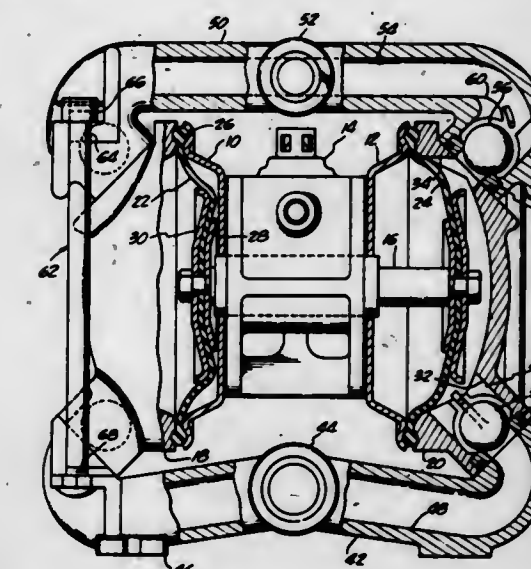
James K. Wilden, Yucaipa, Calif., assignor to Wilden Pump & Engineering Co., Colton, Calif.

Filed Apr. 13, 1979, Ser. No. 29,619

Int. Cl.³ F04B 17/00, 43/06, 21/02

U.S. Cl. 417—393

7 Claims



1. A pump having opposed pump cavities, a pump drive assembly between said cavities forming an inner wall of each of said cavities, pump chamber housings meeting with said pump drive assembly to form the outer wall of each of said cavities, an inlet manifold extending to and in communication with each of said cavities and an outlet manifold extending to and in communication with each of said cavities, said inlet and outlet manifolds being diametrically opposed, wherein the improvement comprises:

means for forcibly drawing said manifolds towards one another;

said manifolds and said pump chamber housings including mating surfaces therebetween lying in planes at an acute angle to the line of force drawing said manifolds toward one another, said manifold mating surfaces each being outwardly of each associated pump chamber housing mating surface.

4,247,265
CENTRIFUGAL PUMP FOR SMALL THROUGHPUTS,
PARTICULARLY FOR WATER CIRCULATION IN
AQUARIUMS AND THE LIKE

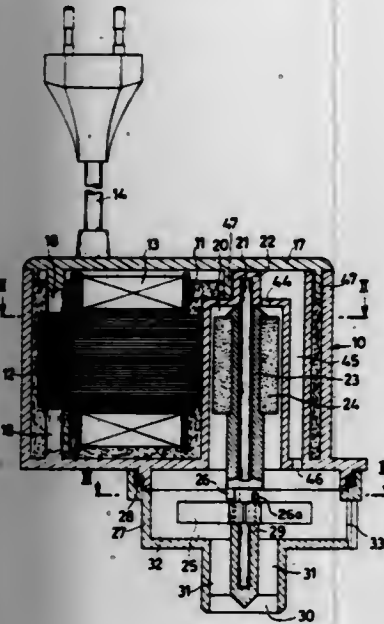
Vittorio Cavalcante, Dueville, Italy, assignor to Askoll s.r.l., Italy

Filed Apr. 20, 1979, Ser. No. 31,855

Claims priority, application Italy, Jun. 2, 1978, 22014/78[U]
 Int. Cl.³ F04B 35/04

U.S. Cl. 417—424

7 Claims



1. A centrifugal pump for small throughputs, comprising a pump casing having fixed to one end thereof a cover, the pump casing being composed of at least two compartments hermetically sealed from each other,
- a pack of U-shaped stator laminations in a first one of said compartments with a coil mounted on one arm thereof and having thereon pole pieces which partly surround a second one of said compartments said second compartment being of cylindrical shape and having an open end facing said cover,
- a shaft fixed in said second compartment coaxially thereof and having a transversely magnetised permanent magnet rotatably supported thereon to be rotated when said coil is energized,
- an impeller mounted to rotate in a chamber in said cover and being coupled to said magnet for rotation thereby, and being arranged to draw in liquid through a first aperture in the cover in front of the impeller, and to deliver it to the outside through a second aperture in the cover.

4,247,266

FLUID PUMP DRIVE SYSTEM

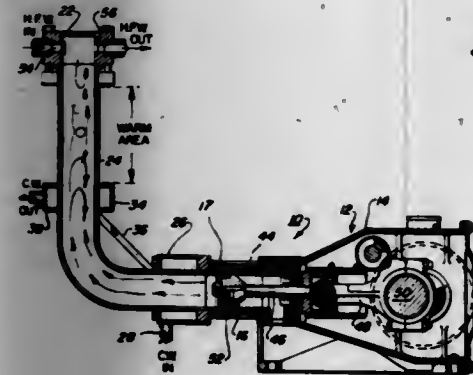
Richard K. Caldwell, Arlington Heights, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Feb. 16, 1979, Ser. No. 12,651

Int. Cl.³ F04B 39/06

U.S. Cl. 417—567

11 Claims



1. A pump drive system for pumping fluid comprising

- a fluid pump including a housing, a fluid plunger in said housing and means for reciprocating said plunger,
- a fluid column including a first inlet in fluid communication with said plunger and a second inlet in fluid communication with said fluid to be pumped and first means for cooling said fluid mounted on said column near said first inlet.

4,247,267

VALVE CONTROLLED REVERSIBLE PUMP

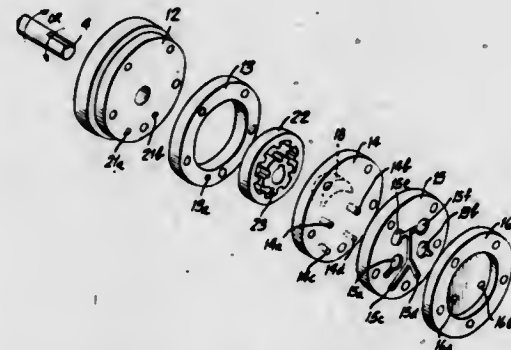
Herbert E. Lindtvelt, Wheaton, Ill., assignor to Sid Harvey, Inc., Valley Stream, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,308

Int. Cl.³ F04C 2/10, 15/02

U.S. Cl. 418—32

12 Claims



1. Rotary pump apparatus adapted to be driven in either direction of rotation and to deliver liquid from the same delivery port for either direction of rotation, comprising:
 - a. a housing including a mounting pad having a receiving port therein communicating with the delivery port;
 - b. a drive shaft journaled in the housing and projecting through the mounting pad;
 - c. a plurality of plates stacked against the mounting pad, said plurality of plates including:
 1. a base plate adapted to engage the mounting pad, apertured to receive the shaft and having a discharge port aligned with the receiving port on the mounting pad;
 2. a pump plate apertured to receive the shaft; and
 3. a cover plate;
 - d. pump rotor means enclosed by the pump plate and adapted to be driven by the shaft, and effective to discharge liquid selectively at one of two points, depending on the direction of rotation of the rotor means;
 - e. first and second passages extending from said two points to the discharge port in the base plate; and
 - f. valve means in one of said plates and controlling said passages in response to the pressure of the liquid discharged by the pump and effective to open the passage from either selected discharge point to the discharge port and to close the passage between the other discharge point and the discharge port, said valve means comprising a cylindrical chamber defined by a recess in a face of one plate, a disk valve trapped in the chamber and movable therein, a lateral opening in a side of the recess, and an opening in one end of the recess and closeable by engagement of the valve with said end.

4,247,268

ROTARY VANE MACHINE WITH RADIAL VANE CONSTRAINING MEMBERS

Maria P. Banolas de Ayala, Calle Templarios, 1, Lerida, Spain

Filed Nov. 21, 1977, Ser. No. 853,537

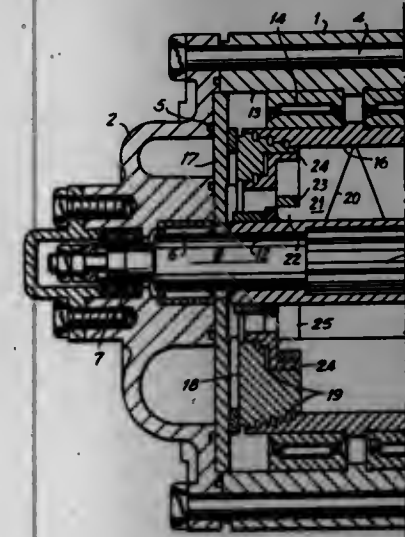
Claims priority, application Spain, Nov. 30, 1976, 453,810
 Int. Cl.³ F01C 1/00, 21/00

U.S. Cl. 418—256

2 Claims

1. A fluid displacement machine having a pair of spaced apart end walls and a substantially cylindrical wall extending between them which walls together forms a substantially cylin-

drical hollow chamber, a rotor mounted for rotation within said chamber about an axis eccentric relative to the latter and being contiguous with said substantially cylindrical chamber wall along a generatrix thereof, said rotor having a pair of spaced apart end pieces sealingly engaging said end walls of said hollow chamber, said rotor also having vanes which extend axially between said end pieces, and which project substantially radially and which are displaceable in a substantially radial direction, said vanes having circumferential edges adapted to directly contact said substantially cylindrical chamber wall and thereby define working spaces which, during rotation of said rotor, move around said chamber while varying in volume, said vanes each having a lug at a radially inward position at both axially opposite ends thereof and projecting axially from said axially opposite ends of said vanes, each of said lugs having an edge facing radially outwardly and providing an abutment surface spaced inwardly from said circumferential edge of said vane, and constraining members displace-



able relative to said rotor and operatively associated with said vanes of said rotor to limit outward radial displacement thereof, said members determining limit positions for the vanes in which said circumferential edges of said vanes make only a desired degree of contact with said substantially cylindrical chamber wall, thereby preventing excessive contact pressure between said chamber wall and said circumferential edges, said constraining members including first and second rings each surrounding the lugs at a respective said end of said vanes, with said abutment surfaces bearing against the internal surfaces of said rings, characterized in that said end pieces form a part of said rotor so as to rotate coaxially therewith and are cup-shaped and each has a cavity in the confronting end faces thereof so that each of said first and second rings and said lugs surrounded thereby are received in said cavity in the adjacent said end pieces, and wherein each of said end pieces surrounds the adjacent said ring and said lug radially outwardly of and in sliding contact with said ring.

4,247,269

CONCRETE PLACING APPARATUS

Tigran V. Bezhanov, ulitsa Galaktions Tabidze, 3/5, kv. 4; Edisher G. Rcheulishvili, ulitsa Tabidze, 39; David G. Gordeziani, ulitsa Galaktions Tabidze, 3/5, all of Tbilisi, and Vladimir A. Bezhanov, ulitsa Papanina, 56, kv. 37, Baku, all of U.S.S.R.

Filed Jan. 21, 1980, Ser. No. 113,473

Int. Cl.³ B28B 13/00, 19/00

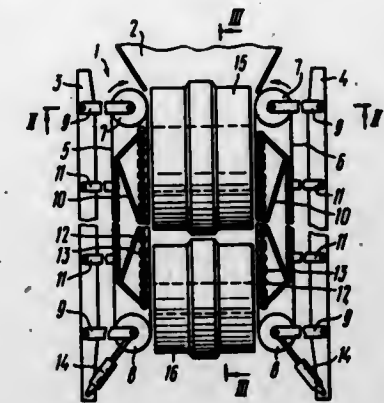
U.S. Cl. 425—63

4 Claims

1. A concrete placing apparatus comprising:
 - a power-operated carriage;
 - a feed hopper mounted on said power-operated carriage;
 - a first and a second endless belts for moulding lateral sides of a concrete layer being formed, and mounted parallel to one another on said power-operated carriage on rolls with a vertical axis of rotation;
 - a concrete compacting mecha-

nism mounted on said power-operated carriage and including:

- a third endless belt adapted for vibrating concrete;
- rolls having horizontal axis of rotation and carrying said third endless belt.



unbalances mounted inside at least one of said rolls on a driving shaft coaxial with this roll;

- a fourth endless belt for damping vibration of a freshly placed concrete, mounted on rolls with a horizontal axis of rotation and disposed behind and in the same plane with said third endless belt.

4,247,270

APPARATUS FOR THE CONTINUED MANUFACTURE OF STAPLE FIBERS FROM THERMOPLASTIC MATERIALS

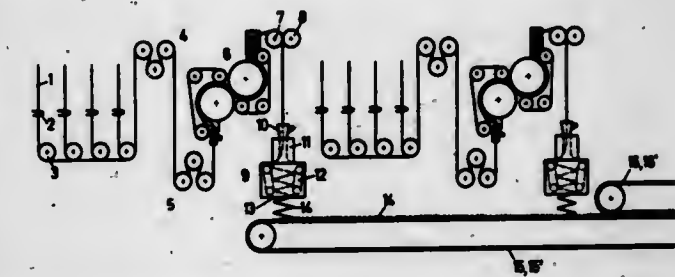
Günter Schubert, Malach, Fed. Rep. of Germany, assignor to IWKA-Industrie-Werke-Karlsruhe Angsburg AG, Fed. Rep. of Germany

Division of Ser. No. 876,233, Feb. 9, 1978, abandoned. This application Jan. 29, 1979, Ser. No. 7,644

Int. Cl.³ B29D 7/02

U.S. Cl. 425—66

11 Claims



1. In an apparatus for the continual manufacture of staple filaments from thermoplastic materials including fully synthetic, filament-forming high polymers, polyethyleneterephthalates and the like, by melt spinning, drawing and cutting in one single operating phase at melt-spinning speeds exceeding 3,000 m/min, the improvement comprising, in combination, stretching roller means operable to draw the filaments, spun as a fused mass; a high-speed texturing device receiving the drawn filaments and subjecting the drawn filaments to a crimping process; a rotary distributor means receiving the crimped filaments from said texturing device and converting the crimped filaments into helical windings; a pair of closely adjacent but laterally spaced conveyor belts receiving the helical winding turns from said rotary distributor means; a cutter device operable, in the lateral space between the two conveyor belts, to cut the helical winding turns longitudinally in half; and pressure roller means operable to clamp the edges of the helical winding turns on the conveyor belts before and during cutting of the helical winding turns.

4,247,271

CONTINUOUS VULCANIZER FOR PRODUCING ELONGATED MEMBER

Shiro Yonekura, Nagano; Tsutomu Matsutani, Ueda, and Yoshiyuki Nishikawa, Nishinomiya, all of Japan, assignors to Daiichi-Nippon Cables, Ltd., Hyogo and Mitsuba Mfg Co., Ltd., Tokyo, both of Japan

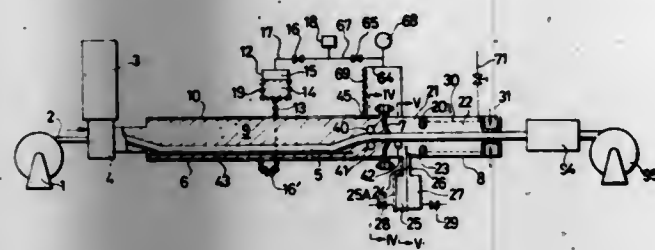
Filed Dec. 28, 1978, Ser. No. 973,996

Claims priority, application Japan, Dec. 30, 1977, 52/157838

Int. Cl.³ B29H 5/28

U.S. Cl. 425—68

12 Claims



1. A continuous extruding and vulcanizing apparatus comprising:

- (a) an extruder for forming an elongated member from a polymer;
- (b) a vulcanizing bath for vulcanizing said polymer of an elongated member, said bath having one end connected to a head of said extruder;
- (c) sealing means disposed at one end of said vulcanizing bath opposite to the end coupled to said extruder, said bath being filled with pressurized liquid heat medium, said liquid heat medium being in contact with said sealing means;
- (d) an intermediate separation portion connected to said sealing means;
- (e) cooling means for providing cooling water connected to said intermediate separation portion to cool said elongated member vulcanized in said vulcanizing bath said intermediate separation portion preventing direct contact of said liquid heat medium having a high temperature with said cooling water; and
- (f) means for balancing inner pressures between said vulcanizing bath and said intermediate separation portion.

4,247,272

METHOD OF AND APPARATUS FOR THE CONTROLLED FEEDING OF A QUANTITY OF MATERIAL INTO THE INTAKE OPENING OF AN EXTRUDER FOR PROCESSING RUBBER OR PLASTICS MATERIAL

Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,592

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758267

Int. Cl.³ B29B 5/04; B29F 3/02

U.S. Cl. 425—147

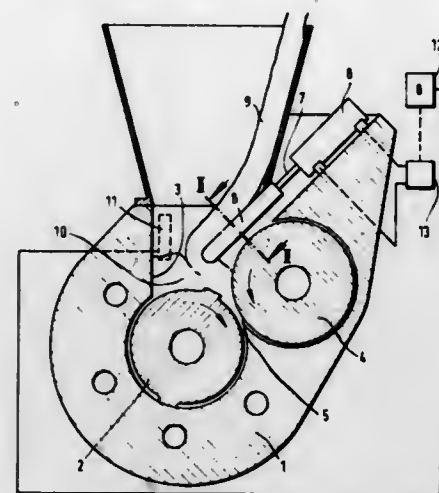
2 Claims

1. Apparatus for the controlled feeding of pieces of extrudable material into an intake opening of an extruder, comprising:

- (a) an extruder screw positioned at the bottom of said intake opening,
- (b) a feed roller disposed in said intake opening and having an effective working surface area exposed to material fed to said extruder through said intake opening, said extruder screw and feed roller being spaced to provide a gap therebetween,
- (c) a reciprocable control slide disposed above said feed roller and adapted to adjustably extend over said effective working surface area of said feed roller so as to vary said effective working surface,
- (d) means for sensing an excess store of material in said intake opening, said sensing means comprising a scanning

means disposed in said intake opening above said extruder screw, said scanning means sensing the presence of a store of material in said intake opening, and thereafter signaling said control means, and

(e) control means operated by said sensing means for controlling the position of said control slide,



whereby the quantity of material drawn into the intake opening and contacting the working surface of said feed roll can be limited to only that amount of material which can be processed without an excessively large buildup of material in the intake opening.

4,247,273

METHOD AND AN APPARATUS FOR CAMBERING THE EDGES OF WEBS OF THERMOPLASTIC MATERIALS ON ONE AND BOTH SIDES USING THE ENERGY OF ULTRASONIC VIBRATION

Gerhard Pogrzeba, Langenfeld; Julius Geiger, Odenthal; Alfred Neworal, Leverkusen; Heinrich Bussmann, Cologne; Roland Houticolen, Leichlingen; Rudolf Hannappel, and Heinz Auweiler, both of Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

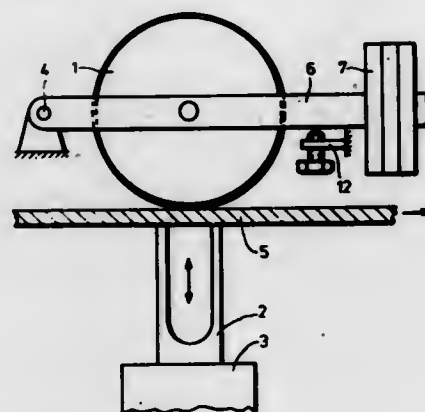
Filed Jul. 25, 1979, Ser. No. 60,826

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832891

Int. Cl.³ B29C 3/00; B29F 5/00; B29C 15/00

U.S. Cl. 425—174.2

7 Claims



1. An apparatus for thickening and roughening the edges of webs of thermoplastic materials on one or both sides, wherein stamping wheels in stamping units shape the edges of a continuously guided web, characterized in that the stamping unit comprises at least a stationary ultrasonic head with a sonotrode and of a pattern wheel, the pattern wheel being pressed onto the edge of the web and the sonotrode beneath it by force-applying means, and the sonotrode of the ultrasonic head having grooves in the direction of travel of the web, whereby

4,247,274

HOLDING DEVICE FOR SURFACE SHEETS OR PLATES IN A PRESS

Gunnar A. Gustafson, Musseronvågen 18, S-141 46 Huddinge, and Ture R. L. Holmqvist, Dalkärrsleden 18, S-162 24 Vällingby, both of Sweden

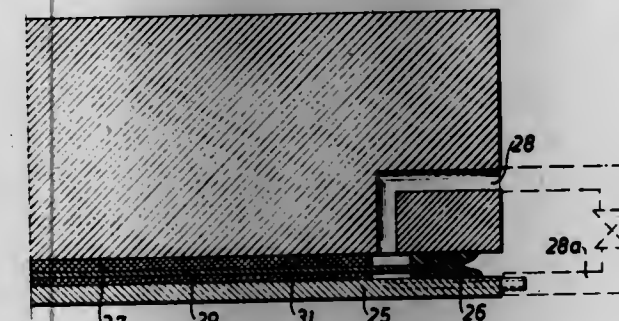
Filed Jan. 30, 1979, Ser. No. 8,182

Claims priority, application Sweden, Feb. 3, 1978, 78012747

Int. Cl.³ B30B 7/02, 15/06

U.S. Cl. 425—193

15 Claims



1. Holding device for surface sheets or surface plates in a press, comprising:

- a press plate (13);
- a surface sheet or plate (25) mounted to said press plate (13) with a surface facing toward said press plate (13);
- means (28, 28a) for supplying vacuum to said surface of said surface sheet or plate (25) which faces towards said press plate (13);
- an air-pervious vacuum-distributing body (27) mounted between said press plate (13) and said surface sheet or plate (25) and in air communication with said vacuum supplying means (28);
- a seal (26) for providing air-tight sealing between said press plate (13) and said surface of said surface sheet or plate (25) which faces toward said press plate (13); and
- a substantially air-impervious sheet (29) disposed between said press plate (13) and said surface sheet or plate (25) and in air sealing communication with said seal (26) to form two essentially closed spaces coupled in air communication with said vacuum supplying means (28, 28a) to either (i) hold both said surface sheet or plate (25) and said seal (26) and said substantially air-impervious sheet (29) and thus said vacuum distributing body (27) in position in relation to said press plate (13), or (ii) hold only said substantially air-impervious sheet (29) and said seal (26) and thus said vacuum distributing body (27) in relation to said press plate (13).

4,247,275

APPARATUS OF FORMING THE MOUNTING PORTION OF A SIDEWALL PROTECTOR

Richard W. Kizer, Morton; Arlynn W. Anderson, Peoria, and Robert W. Untz, Hanna City, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT NO. PCT/US79/01107, 8 371 Date Dec. 17, 1979, 8 102(e) Date Dec. 17, 1979.

This PCT application filed Dec. 17, 1979, Ser. No. 131,729

Int. Cl.³ B29C 11/00, 23/00; B29H 5/02

U.S. Cl. 425—298

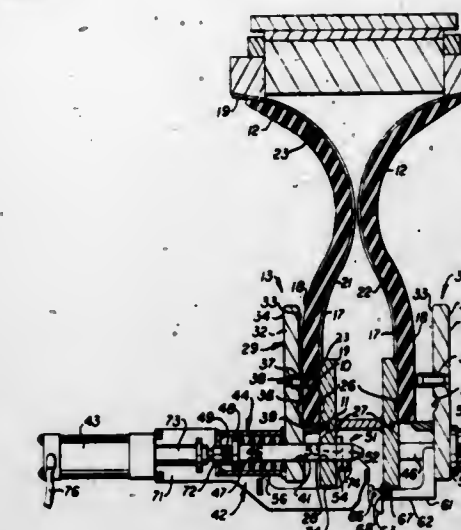
8 Claims

1. An apparatus (13) for forming the mounting portion of an elastomer annular article (12) comprising:

- a rigid mold (19) having a surface (23) matching one side surface (17) of the annular article;
- a plate (32) having opposite sides (33, 34) with one side (33) being shaped to match a portion of the other side surface (18) of the annular article;
- a plurality of punches (37) connected to the plate (32) and extending from the one side (33) thereof;

double-sided thickening and roughening of the edge(s) being achieved in one operation.

means (39) for forming a central opening (11) of the annular article; and



means (42) for moving the plate (32) toward the rigid mold (19) for piercing the annular article with the punches (37).

4,247,276

VACUUM EXTRUSION APPARATUS FOR FORMING FOAMED PLASTIC PRODUCTS

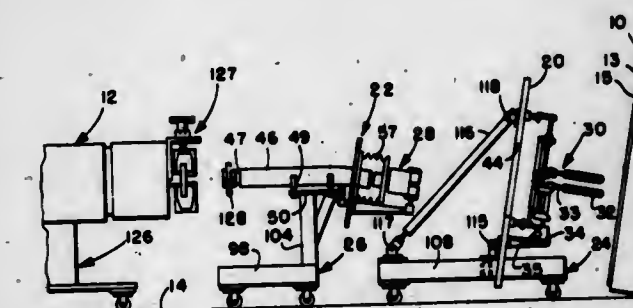
Arthur L. Phipps, Los Osos, Calif., assignor to Condec Corporation, Old Greenwich, Conn.

Filed Aug. 27, 1979, Ser. No. 69,827

Int. Cl.³ B29F 3/04; B29D 27/00

U.S. Cl. 425—325

31 Claims



1. In a vacuum extrusion combination, a vacuum chamber, an end closure for such chamber adapted to support an extrusion die and a shaper downstream of the die; said end closure comprising a first closure adapted to engage the end of the chamber, and a separable second closure adapted to engage and cooperate with the first closure to close the end of the chamber.

4,247,277

CUP BEAD OR FILL LINE FORMER

Thomas E. Marion, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Jan. 25, 1979, Ser. No. 6,879

Int. Cl.³ B29C 1/12

U.S. Cl. 425—393

4 Claims

1. Means for forming an annular fill line groove internally of the sidewall of a paper container, comprising:

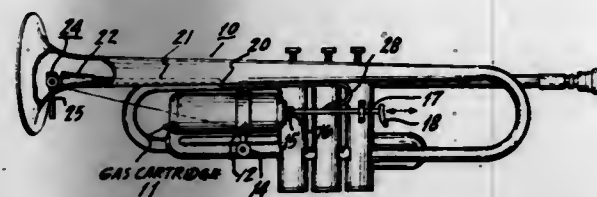
- die means for receiving a container to be grooved, said die means having an annular bead or fill line defining groove formed in an internal surface thereof; and
- header assembly means positioned above said die means for selectively engaging a container sidewall placed in said die means and deforming same into said defining groove, comprising:
 - an annular resilient mass selectively positioned adjacent said defining groove; and
 - compressing means axially compressing said resilient mass

4,247,283

MUSICAL INSTRUMENT ADAPTED TO EMIT A CONTROLLED FLAME

Pat Vidas, 3778 Dunhill Rd., Wantagh, N.Y. 11793
 Filed Jun. 18, 1979, Ser. No. 49,466
 Int. Cl.³ F23Q 2/32; A63J 17/00
 U.S. Cl. 431—253

10 Claims



1. A combination adapted for use with a wind instrument of the type having a flared bell section for emitting

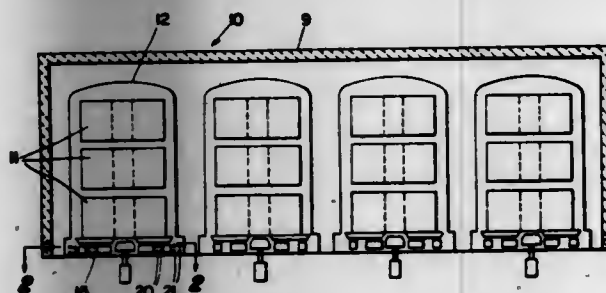
4,247,284

INTERNAL COOLING OF HEAT EXCHANGER TUBES

Richard R. Mayers, Delta; Steven R. Huebner, and Dennis A. Chojnacki, both of Toledo, all of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio
 Division of Ser. No. 969,116, Dec. 13, 1978, Pat. No. 4,211,088.
 This application Dec. 21, 1979, Ser. No. 106,176
 Int. Cl.³ F27D 19/00

U.S. Cl. 432—49

5 Claims



1. An apparatus for cooling a plurality of heat exchanger tubes in a base of a multi-base batch coil annealing furnace comprising:

- a housing sealingly connected to the heat exchanger tube;
- a gas inlet to the housing;
- a liquid inlet to the housing;
- a means to generate mist located within the housing and directed to spray a stream of mist into the heat exchanger tube.

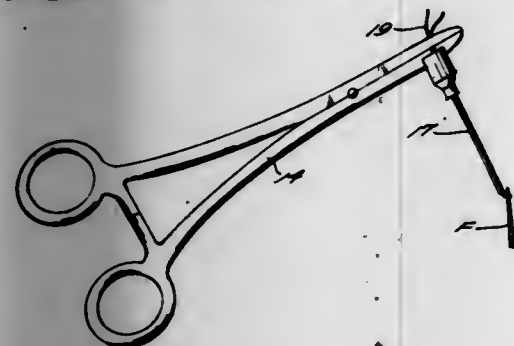
4,247,285

ROOT CANAL WORKING

Jose L. Roig-Greene, Condominio San Vicente, Ste. 408, 43 Concordia St., Ponce, P.R. 00731
 Filed Apr. 23, 1979, Ser. No. 32,265
 Int. Cl.³ A61C 3/00

U.S. Cl. 433—141

13 Claims



1. A retrieving assembly comprising: a wire; a mosquito hemostat having elongated jaws for clamping the wire; and an elongated tube having a cross-sectional area greater than the cross-sectional area of said wire, and having a hub formed at

one end thereof, and said hub having a width dimension extending perpendicular to the dimension of elongation of said tube, and said width being less than the length of said jaws but great enough to support said jaws on said hub for rotation of said jaws with respect to said hub about an axis perpendicular to the dimension of elongation of said tube.

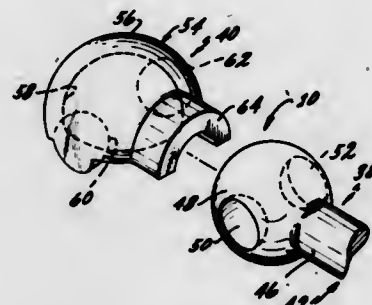
4,247,286

STRESS-RELIEVING HINGE FOR A DENTAL RESTORATION

William R. Herrera, 775 Ernest Dr., Santa Paula, Calif. 93060, and Alex F. Presley, 177 El Pajaro, Vallecito Mobile Home Estates, Newbury Park, Calif. 91320
 Filed Jul. 2, 1979, Ser. No. 53,753
 Int. Cl.³ A61C 13/28

U.S. Cl. 433—170

3 Claims



1. In a dental restoration having a clasp section to engage an abutment tooth, a restoration section to cover an endentalous ridge of the mouth, and a stress-relieving hinge therebetween, the improvement which comprises:

- a first hinge means having a shank affixed to said restoration section and a spherical pivot head at the free end of said shank, said spherical pivot head being provided with an oppositely-oper. pair of axially-aligned bearing cups;
- a second hinge means including a substantially spherical cap affixed to said clasp section encompassing said pivot head and having a pair of axially-aligned, trunnions provided on the inner wall of said cap and positioned in said bearing cups, said bearing cups and said trunnions being hemispherical shaped to limit lateral movement of said restoration section during articulation of said hinge; and
- a stop means affixed to said cap in overlying relationship with said free end of said shank for engagement thereby to limit relative movement between said restoration section and said ridge, said shank having a flat rectangular shape, said pivot head being joined to said shank by a cylindrical-shaft portion, said stop means comprising a downwardly-open, semi-cylindrical member overlying said cylindrically-shaped shaft portion.

4,247,287

DENTURE AND ARTICLE FOR MAKING SAME

John Gigante, 600 Hilltop Ter., Cliffside Park, N.J. 07010
 Division of Ser. No. 840,154, Oct. 7, 1977, Pat. No. 4,161,065.
 This application Feb. 26, 1979, Ser. No. 15,857
 Int. Cl.³ A61C 13/00

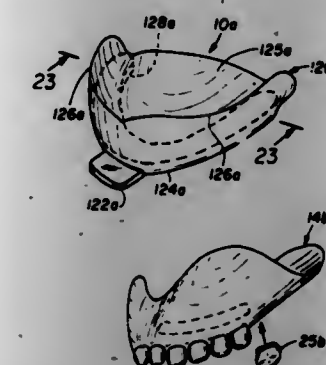
U.S. Cl. 433—199

23 Claims

1. An article for use in producing a prosthetic denture device comprising

- a frame assembly comprised of (A) a rigid hard frame portion formed from a first composition comprising a cured mixture of a first polyacrylic powder and a liquid acrylic monomer and
- (B) an adjustable frame portion integral with said rigid frame portion, said adjustable frame portion formed from a second composition comprising a heat-curing rigid mixture of a second polyacrylic powder and a plasticized liquid acrylic monomer which mixture is rigid but not completely polymerized and therefore capable of being shaped with finger pressure, said plasticized liquid acrylic

monomer comprising from 30% to 90% by weight of liquid acrylic monomer and from 70% to 10% by weight of a plasticizer mixture, wherein



said adjustable frame portion is remoldable and conformable to desired portions of the oral cavity, and said rigid frame portion formed from said first composition concurrently remains fixed as said adjustable frame portion is remolded.

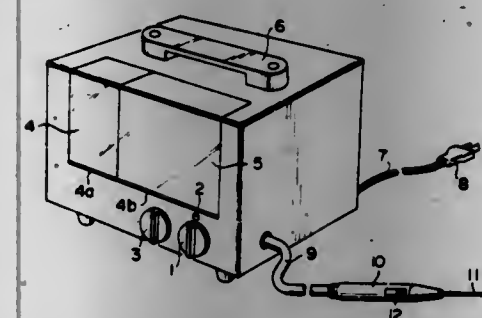
4,247,288

METHOD AND APPARATUS FOR ROOT CANAL IRRIGATION

Eisuke Yoshii, and Hiroshi Kawase, both of Tokyo, Japan, assignors to Ricoh Watch Co., Ltd., Nagoya, Japan
 Continuation of Ser. No. 717,484, Aug. 25, 1979, abandoned.
 This application Jun. 29, 1979, Ser. No. 53,250
 Claims priority, application Japan, Jun. 18, 1976, 51-72052
 Int. Cl.³ A61C 5/02

U.S. Cl. 433—224

2 Claims



1. A method of irrigating a root canal of a decayed tooth for treating said decayed tooth consisting of the steps of: washing a dental focus of said decayed tooth with a pulsat-

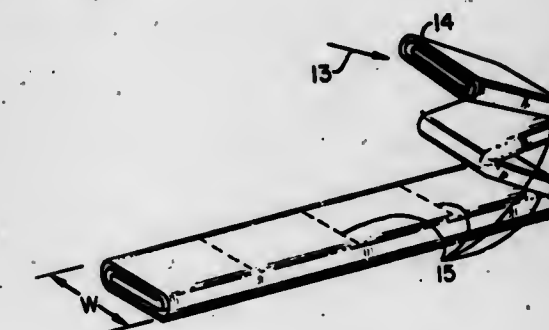
ing liquid selected from a group consisting of water, medical fluid, antiseptic solution and washing fluid which is contained in a detachable cartridge at a pulsating frequency and under some pressure; maintaining said pulsating frequency in the range of 500 to 3,000 cpm; and maintaining said pressure in the range of 0.2 to 1.2 kg/cm²; whereby a washing of said root canal occurs.

4,247,289

PAPER SPRING METHOD

James E. McCabe, 12520 Pacific Ave. Apt. 7, Los Angeles, Calif. 90066
 Division of Ser. No. 869,055, Jan. 13, 1978, Pat. No. 4,189,131.
 This application Nov. 2, 1979, Ser. No. 90,568
 Int. Cl.³ B31D 5/04, 3/02; B65H 45/20
 U.S. Cl. 493—386

4 Claims



1. A method of providing paper springs for cushioning articles to be shipped, including the steps of:

- (a) longitudinally folding a sheet of paper along a plurality of fold lines parallel to one edge in the same direction to provide a strip of folded paper of length equal to the length of said one edge and of a given width, the folded configuration as viewed from one end of the strip defining a flattened spiral; and
- (b) transversely folding said strip in a zigzag accordion manner back and forth in successively opposite directions along a series of parallel fold lines transverse to said length of the strip whereby the end portions of the first and last transverse folds are biased apart by the tendency of the transverse accordion folds to spring apart.

4,247,290
PROCESS FOR DYEING MIXED ELASTOMERIC AND NON-ELASTOMERIC FIBERS
 Walter Knobel, Pratteln, and Karl Zeller, Ettingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
 Filed Mar. 30, 1979, Ser. No. 25,355
 Claims priority, application Switzerland, Apr. 4, 1978, 3600/78

Int. Cl.³ D06P 3/26, 3/40
 U.S. Cl. 8—515 10 Claims
 1. A process for dyeing a textile substrate comprising a mixture of elastomeric and non-elastomeric fibers which comprises a first step of dyeing the elastomeric fiber portion by a cold dwell method wherein the substrate is impregnated with a dye liquor and then stored for 1 to 48 hours at a temperature of from 10° to 80° C., and a second step of dyeing the non-elastomeric fiber portion by an exhaust or continuous dyeing method.

4,247,291
CONDITIONING OF TEXTURIZED FILAMENT YARNS
 Helmut Vautrin, Hattersheim, and Gustav Dollinger, Egelsbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
 Filed May 29, 1979, Ser. No. 42,977
 Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2823982

Int. Cl.³ D06P 5/02; D06M 13/46
 U.S. Cl. 8—493 1 Claim
 1. Process for conditioning texturized filament polyester and polyamide yarns, which comprises treating the yarn, after dyeing, with a fatty acid hydroxyalkylethylene diamine condensation product obtained by condensation of 1 mol of hydroxyethyl- or hydroxypropylethylene diamine with 1.2 to 1.8 mols of one or several C₁₂₋₂₂ fatty acids at 160° to 220° C.

4,247,292
NATURAL TISSUE HEART VALVE FIXATION PROCESS
 William W. Angell, 27385 Deer Springs Way, Los Altos Hills, Calif. 94022
 Filed Jun. 6, 1979, Ser. No. 46,100
 Int. Cl.³ A61L 17/00; C14C 3/00, 15/00; A61C 1/22
 U.S. Cl. 8—94.11 11 Claims

1. Process for fixing a natural tissue heart valve prosthesis comprising:
 (a) contacting the valve with a fixing agent with the valve cusps in a closed position so as to partially fix the valve such that the configuration and dimensions of the valve are substantially set; and
 (b) thereafter contacting the valve with the fixing agent with the valve cusps in an open position whereby the valve is further fixed and the valve cusps are predisposed to an open position.

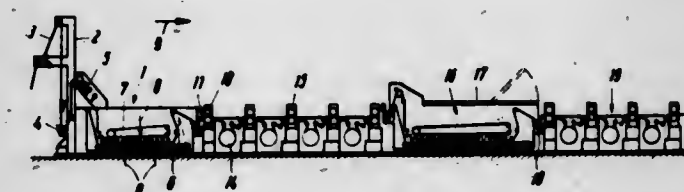
4,247,293
SULPHONATED, AROMATIC REACTION PRODUCTS, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE AS SUBSTANCES HAVING A TANNING ACTION
 Albert Würml, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
 Division of Ser. No. 786,161, Apr. 11, 1977, Pat. No. 4,150,944.
 This application Feb. 12, 1979, Ser. No. 11,452
 Claims priority, application Switzerland, Apr. 22, 1976, 5046/76

Int. Cl.³ C14C 3/20; C08G 8/28
 U.S. Cl. 8—94.24 10 Claims
 1. A sulphonated, aromatic reaction product of
 (1) 100 parts by weight of a sulphonation product of
 (A) 10 to 90 percent by weight of an unsubstituted diphenyl ether or of a diphenyl ether which is substituted by methyl,
 (B) 90 to 10 percent by weight of an unsubstituted phenol,

or of a phenol which is substituted by methyl, the sum of components (A) and (B) being 1 mol, and
 (C) 1 to 2 mols, calculated as sulphonic acid, of a sulphonating agent and
 (2) 1 to 6 parts by weight of formaldehyde or of a formaldehyde-forming agent, said aromatic reaction product being produced by a process, which comprises reacting components (A), (B) and (C) simultaneously at 110° to 180° C. or initially reacting component (A) with component (C) at 110° to 120° C. and then with component (B) at 110° to 180° C. or initially reacting component (B) with component (C) at 110° to 120° C. and then with component (A) at 110° to 180° C. to give the sulphonation product (1), further reacting said sulphonation product (1) at a temperature from 60° to 95° C. with component (2) to give a reaction product, then adding an organic or inorganic base to said reaction product and finally optionally adding an organic acid to said reaction product.

4,247,294
PROCESS AND DEVICE FOR CONTINUOUS WASHING OF TEXTILE WEBS
 Hans Fleissner, Riehen, Switzerland, assignor to Vepa Aktiengesellschaft, Switzerland
 Filed Mar. 5, 1979, Ser. No. 17,277
 Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809433; Mar. 9, 1978, 2810162

Int. Cl.³ D06B 3/24, 5/08; D06L 1/08
 U.S. Cl. 8—137 12 Claims



1. Process for the continuous washing of printed and already dye-fixed, web-shaped textile material, such as woven or knit fabrics of natural and/or synthetic fibers, on full-width washing machines wherein the textile material is first moistened, then dwells in folded condition, is dewatered, and immediately thereafter is subjected, in preferably several washing stages, intensively to a throughflow from the outside toward the inside on rotating sieve drums, characterized in that the textile material, for the swelling of the printing pastes or the like, dwells in a cold liquor, then the film detachable from the textile material, which film covers the textile material, is removed mechanically, and only thereafter the textile material is subjected to a throughflow with hot liquid on the sieve drums, with an addition of auxiliary media.

4,247,295
DISCHARGE PRINTING OF TEXTILES DYED WITH INDIGO BLUE
 Francisco J. Patxot, Badalona, Spain, assignor to Estampados Estil, S.A., Badalona, Spain
 Continuation-in-part of Ser. No. 45,747, Jun. 5, 1979, abandoned. This application Mar. 26, 1980, Ser. No. 134,224
 Claims priority, application Spain, May 14, 1979, 480,522

Int. Cl.³ D06P 5/15
 U.S. Cl. 8—465 3 Claims
 1. A discharge printing process for textile stock dyed with indigo blue, comprising the consecutive steps of (a) applying to the dyed textile stock a printing paste consisting essentially of (1) water, (2) between 12 and 50% of a thickener, (3) a reducing agent or oxidizing agent, (4) a bleaching agent or dye resistant to instant discharge process and (5) as an indigo dye-stuff remover, the disodium or calcium salt of p,p'-di-sulphonated dimethylphenylbenzyl ammonium chloride; (b) drying the printed dyed textile stock at between 100° and 126°; (c) developing the stock in a bath consisting of a second removing

4,247,302

PROCESS FOR GASIFICATION AND PRODUCTION OF BY-PRODUCT SUPERHEATED STEAM

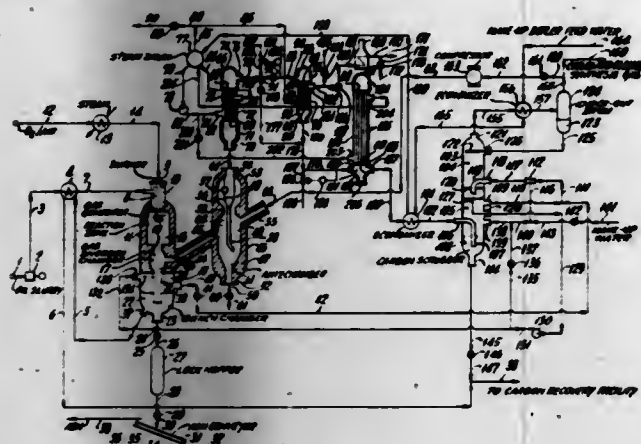
Paul N. Woldy; Harold C. Kaufman; Michael M. Dach, and James F. Beall, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,225

Int. Cl.³ C10J 3/46; C10K 1/02

U.S. Cl. 48—197 R

18 Claims



1. A process for the partial oxidation of an ash-containing solid carbonaceous fuel for producing a cooled cleaned product gas stream of synthesis gas, fuel gas or reducing gas along with by-product saturated and superheated steam comprising:

- (1) reacting particles of said solid fuel with a free-oxygen containing gas and with or without a temperature moderator in a down-flow refractory lined gas generator at a temperature in the range of about 1700° to 3100° F. and a pressure in the range of about 10 to 200 atmospheres to produce a raw gas stream comprising H₂, CO, CO₂, and one or more materials selected from the group consisting of H₂O, H₂S, COS, CH₄, NH₃, N₂, and A, and containing molten slag and/or particulate matter;
- (2) passing the gas stream from (1) down through the central outlet in the bottom of the reaction zone and into a separate thermally insulated gas diversion chamber provided with a side outlet and a bottom outlet; separating by gravity molten slag and/or particulate matter from said gas stream; passing from about 0 to 20 vol. % of said gas stream as bleed gas along with said separated material through the bottom outlet of said diversion chamber and into a pool of quench water in a quench chamber located below said diversion chamber; and passing the remainder of said gas stream through a side exit passage in said diversion chamber directly through a thermally insulated transfer line and inlet passage of a separate thermally insulated gas-gas quench cooling and solids separation zone at substantially the same temperature and pressure as produced in step (1) less ordinary pressure drop in the lines;
- (3) impinging the gas stream from (2) in said gas-gas quench cooling and solids separation zone with a stream of recycle quench gas comprising cooled cleaned and compressed product gas from (7), thereby partially cooling the gas stream from (2) partially solidifying entrained molten slag, and separating from the gas stream a portion of the slag and particulate matter; and passing the partially cooled gas stream up through a separate thermally insulated upper chamber located above and communicating with said gas-gas quench cooling and solids separation zone and removing additional entrained solids from the gas stream;
- (4) cooling the gas stream from (3) in a main gas cooling zone and producing by-product saturated and superheated steam by passing said gas stream in indirect heat exchange with preheated boiler feed water first upward through the tubes in a first upright high temperature shell-and-straight fire tube gas cooler having refractory lined inlet and outlet sections, one pass on the shell and tube sides and having fixed tube sheets, then passing the gas stream in indirect

heat exchange with saturated steam down through the tubes in a second upright shell-and-straight fire tube gas cooler having one pass on the tube-side and shell-side and having fixed tube sheets, and then passing the gas stream in indirect heat exchange with preheated boiler feed water up through the tubes in the first tube-side pass of a third gas cooler comprising an upright low temperature shell-and-straight fire tube gas cooler having two passes on the tube-side and one pass on the shell-side and having fixed tube sheets, and then down through the tubes in the second tube-side pass of said third gas cooler; and wherein saturated steam is produced on the shell-sides of said first and third gas coolers, and at least a portion of which is superheated on the shell-side of said second gas cooler to produce by-product superheated steam while the remainder, if any, is removed as by-product saturated steam and preheating boiler feed water for use in (4) by indirect heat exchange with the gas stream leaving said third gas cooler;

- (5) cooling, and scrubbing the gas stream from (4) with water in gas cooling and scrubbing zones producing a carbon-water dispersion;
- (6) cooling the gas stream from (5) below the dew point and separating condensed water to produce said cooled, cleaned stream of product gas; and
- (7) compressing a portion of said product gas stream from (6) and introducing same into said gas-gas quench cooling and solids separation zone in (3) as said stream of recycle quench gas.

4,247,303

METHOD OF FORMING AN ELECTRICALLY CONDUCTIVE ABRASIVE WHEEL

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Inc., Yokohama, Japan

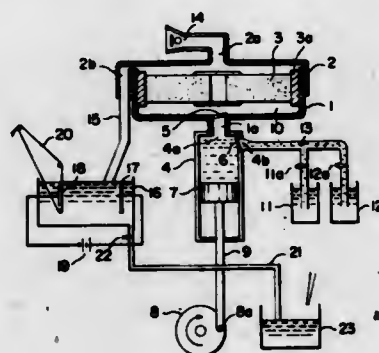
Filed Sep. 4, 1975, Ser. No. 610,378

Claims priority, application Japan, Sep. 4, 1974, 49-102363; Sep. 5, 1974, 49-102688; Oct. 25, 1974, 49-122596

Int. Cl.³ B24D 7/18; B23P 1/00

U.S. Cl. 51—295

4 Claims



1. A method of imparting an electric conductivity to an electrically nonconductive porous abrasive body to form an electrochemical-grinding wheel therefrom with a chemical plating solution comprising a reducing agent and a liquid containing a reducible metal salt, the method comprising the steps of:

- (a) holding said reducing agent and said liquid separately in different reservoirs and mixing said reducing agent and said liquid together immediately prior to impregnation into said body to form said chemical plating solution;
- (b) impregnating a predetermined amount of said chemical plating solution into said porous body immediately upon mixing of said liquid with said agent as an impregnating solution;
- (c) confining said impregnating solution within the interconnected pores of said porous body for a predetermined time period to cause a metallic coating to be chemically deposited from said impregnating solution onto the wall portions of said pores, said predetermined time period being

sufficient for the metal to be deposited and substantially completely depleted from said solution by deposition;

(d) thereafter introducing a substantially equal amount of fresh impregnating solution immediately upon said mixing into said pores and simultaneously discharging the depleted solution in an amount substantially equal to the amount of the fresh solution to again impregnate the latter therewith, followed by the step (c); and

(e) repeating the step (d) a predetermined number of times.

4,247,304

PROCESS FOR PRODUCING A COMPOSITE OF POLYCRYSTALLINE DIAMOND AND/OR CUBIC BORON NITRIDE BODY AND SUBSTRATE PHASES

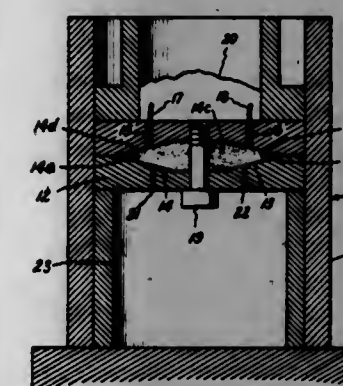
Charles R. Morelock, Ballston Spa, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,496

Int. Cl.³ C04B 35/56, 35/58

U.S. Cl. 51—295

3 Claims



1. A process for producing a self-supporting composite consisting essentially of a polycrystalline body phase integrally bonded to a substrate supporting phase consisting essentially of providing a crystal-containing carbonaceous mass consisting essentially of at least a substantially uniform mixture of diamond and/or cubic boron nitride crystals and a carbonaceous material wherein none of the surfaces of said crystals are exposed significantly and wherein at least a substantial amount of said crystals are enveloped and separated from each other by at least a coherent continuous coating of said carbonaceous material on said crystals, said carbonaceous material being selected from the group consisting of elemental non-diamond carbon, an organic material, and mixtures thereof, said organic material being present in an amount sufficient on decomposition to produce on the crystal surfaces it coats at least a coherent continuous coating of elemental non-diamond carbon, providing a carbonaceous substrate consisting essentially of elemental non-diamond carbon, a solid organic substrate material, and mixtures thereof, providing a mold with a cavity of desired size and shape and means for introducing fluid silicon into said cavity and means for maintaining a partial vacuum in said cavity, filling said cavity with a preform consisting essentially of said crystal-containing carbonaceous mass in contact with said carbonaceous substrate forming an interface therewith and confining said preform therein, said preform being the form desired of said composite, said organic material and said solid organic substrate material decomposing at a temperature below 1400° C. to elemental non-diamond carbon and gaseous product of decomposition and being present in an amount sufficient which on decomposition produces at least sufficient elemental non-diamond carbon to maintain said preform, associating said preform in said filled cavity with a mass of solid silicon via said means for introducing fluid silicon into said cavity, providing the resulting associated structure with a partial vacuum wherein the residual gases have no significant deleterious effect on said associated structure, heating said associated structure in said partial vacuum to a temperature above 1400° C. at which said silicon is fluid and which does not have a significantly deleterious effect on said crystals, introducing said fluid silicon to said confined preform via said

4,247,305

ABRASIVE STRUCTURES AND METHODS OF THEIR PREPARATION

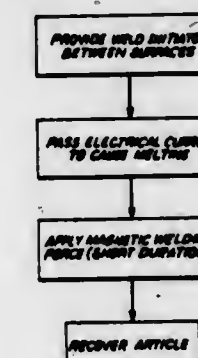
William H. Daniels, Delaware, Ohio; Mahlon D. Dennis, Kingwood, Tex., and Earl Feingold, King of Prussia, Pa., assignors to General Electric Company, Worthington, Ohio

Filed Jul. 27, 1979, Ser. No. 61,195

Int. Cl.³ B24D 3/02

U.S. Cl. 51—307

3 Claims



1. In a method of joining a tool part to a composite compact comprising a layer of bonded abrasive particles selected from diamond, cubic boron nitride and wurtzite boron nitride bonded to a cemented tungsten carbide support, which method normally comprises brazing the composite compact to the tool part, the improvement which comprises the application of an electrical current pulse and magnetic force impaction in the following manner:

- (a) disposing the tool part and the composite compact, having a bond initiator between them with a melting point of at least 700° C. and in such a form that discrete, discontinuous contact with both tool part and the composite compact is provided,
 - (i) in electrical contact with a high current pulse source, and also
 - (ii) between magnetic clamps;
 - (b) passing a single high current pulse, of between about 5,000 and about 30,000 amperes, through the tool part, the bond initiator and the composite compact for a time of from 0.001 to 0.005 seconds; and
 - (c) forcing the composite compact and the tool part together under an applied magnetic force providing from about 100 to about 3,000 pounds per square inch pressure for a duration of about 0.001 to 0.005 seconds while the bond initiator is molten;
- whereby a bond between the composite compact and the tool part having a shear strength of over 28,000 pounds per square inch is obtained.

4,247,306

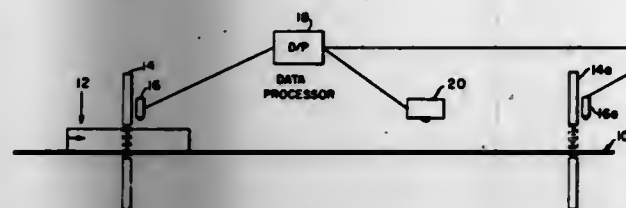
DETECTION OF FLAWS IN METAL MEMBERS

Arnulf Berge, Vågsbygd, Norway, assignor to Elkem Spigerverket A/S, Oslo, Norway

Continuation-in-part of Ser. No. 957,343, Nov. 3, 1978, abandoned. This application Jan. 17, 1979, Ser. No. 1,460 Int. Cl.³ B24B 1/00

U.S. Cl. 51—322

1 Claim



1. A method of detecting surface flaws in a non-magnetic metallic workpiece comprising:

- heating said non-magnetic metallic workpiece by passing said workpiece through an induction heater for induction heating with a high-frequency current;
- scanning said non-magnetic metallic workpiece with an infrared camera to determine a temperature profile of the scanned portion of said non-magnetic metallic workpiece within 3 seconds of the time of heating;
- generating an output signal in said first infrared camera corresponding to said temperature profile;
- feeding said output signal to a data processor which controls a grinding apparatus for automatically grinding said workpiece in accordance with said temperature profile;
- reheating said non-magnetic metallic workpiece by passing it through a second induction heater;
- scanning said non-magnetic workpiece with a second infrared camera to determine a new temperature profile;
- generating a correction signal corresponding to said new temperature profile; and
- feeding said correction signal to said data processor to automatically adjust the grinding apparatus.

4,247,307

HIGH INTENSITY IONIZATION-WET COLLECTION METHOD AND APPARATUS

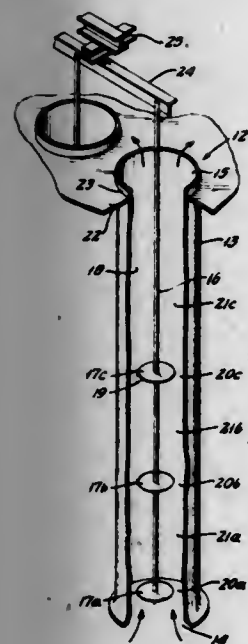
Ching M. Chang, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,849

Int. Cl.³ B03C 3/09, 3/78

U.S. Cl. 55—2

15 Claims



1. Apparatus for removing particles from a feed gas stream comprising: a vertically positioned rod electrode of curvilinear cross-section having at least one disc-shaped discharge elec-

trode secured thereto, an outer collecting electrode tube with a gas inlet end and a gas outlet opposite end longitudinally aligned with the rod electrode such that the outer tube inner wall and the peripheral edge of the at least one disc-shaped discharge electrode are spaced to form a first transverse gap therebetween and a second larger transverse gap between the rod electrode outer surface and said outer tube inner wall, with said rod electrode, said at least one disc-shaped discharge electrode and said outer electrode tube being sized such that:

- at least a major portion of the rod electrode length has an equivalent diameter between 0.05 and 0.2 of the at least one disc-shaped electrode maximum diameter;
- at least a major portion of the rod electrode length has an equivalent diameter between 0.02 and 0.1 of the outer tube inner wall equivalent diameter;
- said peripheral edge of the at least one disc-shaped electrode is formed such that the ratio of the rod electrode equivalent diameter to the equivalent edge radius of said at least one disc-shaped electrode is between 10 and 65; direct current power supply means for imposing electric potential both: (i) between said at least one disc-shaped electrode and said outer tube inner wall such that a relatively high intensity corona field may be established in said first gap, and (ii) between said rod electrode and said outer tube inner wall such that a relatively low intensity corona field may be established in said second gap; and means for introducing liquid at the upper end to said outer tube inner wall for downward flow and particle removal from the bottom end.

14. In a high intensity ionization method for removing particles from a feed gas stream, by flow through an outer electrode tube, in contact with a vertically positioned rod electrode of curvilinear cross-section having a multiplicity of longitudinally spaced disc-shaped discharge electrodes secured thereto with first transverse gaps between the peripheral edge of said disc-shaped electrodes and the outer tube inner wall and larger second transverse gaps between the rod electrode outer surface and said outer tube inner wall, through a series of particulate high intensity corona ionization zones in the first gaps separated by particulate collection zones in the second gaps; the improvement comprising establishing direct current electric potentials across said second gaps in each of said particulate collection zones such that electrostatic field strengths in said particulate collection zones are below the electrostatic field strengths in said ionization zones but sufficient for corona discharge current across said second gaps with the electric field strengths in said particulate collection zones decreasing in the gas flow path direction, but with the corona discharge current in said particulate collection zones increasing in the gas flow path direction.

4,247,308

PREFORMED-SPRAY SCRUBBER

Seymour Calvert, and Ronald G. Patterson, both of San Diego, Calif., assignors to Air Pollution Technology, Inc., San Diego, Calif.

Filed Jun. 11, 1979, Ser. No. 47,212

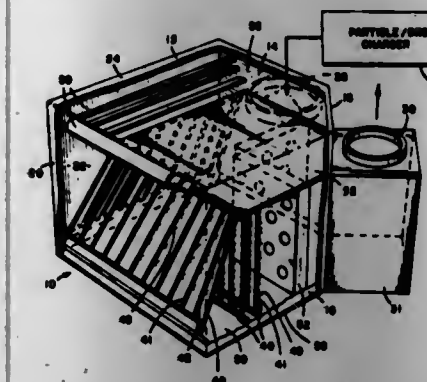
Int. Cl.³ B01D 53/32, 47/06; B03C 3/01

U.S. Cl. 55—8

27 Claims

- A preformed-spray scrubber comprising:
 - a housing defining both a convergent and divergent gas flow path therethrough and having a gas stream inlet and a gas stream outlet, said housing divided into first and second sections by a deck forming a flow-through channel adjacent a first end thereof for gas flow from said first section to said second section, said inlet located on said housing adjacent a second end of said deck such that gas flows into said first section, across said deck, from said second end to said first end thereof, in a divergent flow path, through said flow-through channel into said second section, through said second section in a convergent flow path and out of the housing through said outlet; and

a series of spray nozzle banks disposed in said housing and configured such that the spray from said nozzles aids in



directing the gas stream from said first section into said second section.

4,247,309

PROCESS AND APPARATUS FOR DEGASIFYING A LIQUID

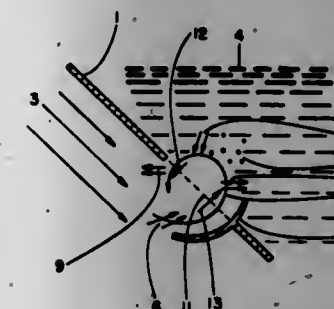
Uwe Buddenhagen, Munich, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 917,294, Jan. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 775,541, Mar. 8, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,780

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1976, 2610109; Mar. 20, 1976, 2611992; Feb. 2, 1977, 2704207 Int. Cl.³ B01D 45/12

U.S. Cl. 55—36

3 Claims



2. A process for degasifying a liquid, comprising: flowing a liquid in a first chamber parallel to and along a wall separating the first chamber from a second chamber; generating a vortex in the flowing liquid by directing the flowing liquid against an arcuate surface at the downstream end of an opening in the wall communicating between said first and second chambers, said arcuate surface extending from both sides of the wall; providing a relatively quiescent liquid in said second chamber into which the generated vortex extends; and separating bubbles from the flowing liquid in the vortex into the quiescent liquid to allow the bubbles to float to the upper surface of the quiescent liquid and effecting their removal.

4,247,310

PNEUMATIC DUST EXTRACTION

Willibald Borst, Uzwil, Switzerland, assignor to Gebrüder Buehler AG, Uzwil, Switzerland

Filed Jul. 10, 1978, Ser. No. 923,145

Claims priority, application Switzerland, Dec. 28, 1977, 008186/77

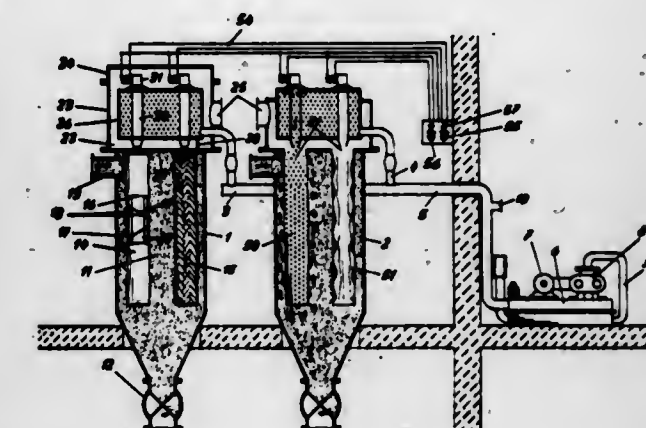
Int. Cl.³ B01D 46/04

U.S. Cl. 55—96

14 Claims

1. Method for cleaning of bag fabric filter elements in a pneumatic dust extraction apparatus by reverse flow of gaseous medium (herein termed "gas") through respective free apertures into each said filter element in a direction the reverse of and upstream with respect to the direction of filtered gas; said method including a shock phase immediately followed by

a rinsing phase; said shock phase including throwing off a layer of accumulated dust from said filter element by the sudden application of reverse gas flow of high intensity for a short duration whereby the fabric of said filter element is abruptly jerked from a filtering position to a modified position upstream with respect to said filtering position; said rinsing phase including removing at least part of remaining dust particles from said filter element by the continued application of reverse gas flow



of reduced but sustained and controlled flow intensity and of longer duration permitting the bag to slowly collapse over its supporting cage, and gently returning said fabric of said filter element from said modified position to said filtering position; said shock phase not exceeding 0.05 second and said rinsing phase being not more than 1 second in duration; cleaning of respective bag elements being alternative in the several elements so as to permit the continued filtering operation in the remaining elements.

4,247,311

DOWNFLOW OR UPFLOW ADSORBENT FRACTIONATOR FLOW CONTROL SYSTEM

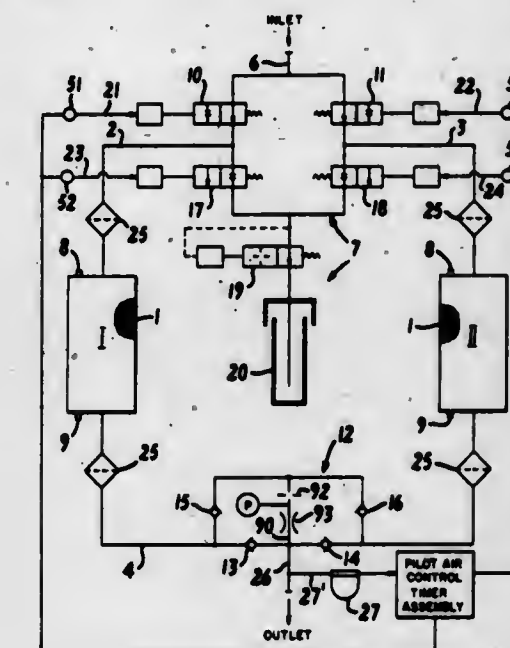
Chesterfield F. Selbert, and Harry Cordes, both of Cortland, N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Oct. 26, 1978, Ser. No. 954,812

Int. Cl.³ B01D 53/04, 53/26

U.S. Cl. 55—162

23 Claims



1. Gas fractionating apparatus for reducing the concentration of one or more first gases in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, by passing the mixture in contact with and from one end to another end of one of two beds of a sorbent having a preferential affinity for the first gas, adsorbing first gas thereon to form a gaseous effluent having a concentration thereof below the maximum, and forming a concentration

gradient of first gas in the bed progressively decreasing from one end to the other end as the adsorption continues and an increasing concentration of first gas in the bed defining a concentration front progressively advancing in the bed from one end to the other end as sorbent capacity therefor decreases; while passing a purge flow of gaseous effluent through the other of the two beds of sorbent to desorb first gas adsorbed thereon, and reverse the advance of the concentration front of first gas in the bed, regenerating the other bed for another cycle of adsorption; and then periodically interchanging the beds so that alternately, one bed is on regeneration and the other on the adsorption portions of the cycle; comprising, as the essential components, at least two vessels for reception of sorbent beds and adapted for alternate periodic adsorption and regeneration of the sorbent beds contained therein so that one vessel is on the adsorption portion of the cycle while the other vessel is on the regeneration portion of the cycle; means for timing the elapse of selected time intervals for determining the cycling interchange of the beds between adsorption and regeneration and giving a signal; at least one pneumatically-operated flow control valve movable between flow-open and flow-closed positions with one of the opening and closing movements of the valve being controlled by gas pressure at a pilot gas port; cycling control means responsive to the signal given by the timing means and including a pilot gas line tapping a source of pressurized gas for controlling one of the opening and closing movements of the valve by application of gas pressure via the pilot gas line to the valve; means biasing the valve in the other of the closed and open positions; opposed sides of the valve being in communication with upstream and downstream gas pressure in the line controlled by the valve and one of these sides being in communication with the pilot gas port; the cycling control means in response to the signal quickly applying a sufficient differential pressure across the valve via the pilot gas line to exceed a predetermined minimum overcoming the prevailing system pressure differential at the valve, so that the valve is moved to one of the flow-open and flow-closed positions, thereby effecting interchange of the beds in response to actuation by the cycling control means and responsive to differential pressure thereacross, and upon interruption of such application of gas pressure via the pilot gas line the valve will move into the other of the closed and open positions under the prevailing system pressure differential across the valve.

15. Gas fractionating apparatus for reducing the concentration of one or more first gases in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, by passing the mixture in contact with and from one end to another end of one of two beds of a sorbent having a preferential affinity for the first gas, adsorbing first gas thereon to form a gaseous effluent having a concentration thereof below the maximum, and forming a concentration gradient of first gas in the bed progressively decreasing from one end to the other end as the adsorption continues and an increasing concentration of first gas in the bed defining a concentration front progressively advancing in the bed from the one end to the other end as sorbent capacity therefor decreases; while passing a purge flow of gaseous effluent through the other of the two beds of sorbent to desorb first gas adsorbed thereon, and reverse the advance of the concentration front of first gas in the bed, regenerating the other bed for another cycle of adsorption; and then periodically interchanging the beds so that, alternately, one bed is on regeneration and the other on the adsorption portions of the cycle; comprising, as the essential components, at least two vessels for reception of sorbent beds and adapted for alternate periodic adsorption and regeneration of the sorbent beds contained therein so that one vessel is on the adsorption portion of the cycle while the other vessel is on the regeneration portion of the cycle; means for controlling and actuating pneumatically at selected time intervals the cycling interchange of the beds between adsorption and regeneration; at least one pneumatically operated flow control valve effecting interchange of the beds in response to actuation by the cycling control means and responsive to differential pressure thereacross, movable whenever so actu-

ated at the selected time between flow-open and flow-closed positions only according to the controlled application thereto of a predetermined pilot gas pressure by the cycling control means, overcoming the prevailing system pressure differential at the valve, whereby upon such controlled application of gas pressure by the control means the valve will move into one of the closed and open positions, and upon interruption of such application the valve will move into the other of the closed and open positions under the prevailing system pressure differential across the valve, thereby effecting interchange of the beds, one of the opening and closing movements of the valve being controlled by gas pressure at a pilot gas port, applied against the face of a spring-biased piston attached to the valve, the spring biasing the valve in the one of the closed and open positions; opposed faces of the piston being in communication with upstream and downstream gas pressure in the line controlled by the valve, and one of these faces being in communication with the pilot gas port, whereby upon a sufficient differential pressure across the piston, supplemented to exceed a predetermined minimum via the pilot gas port under the control of the cycling control means, the piston is moved to one of the open and closed positions; and a dump control exhaust valve that regulates or limits exhaust flow from a sorbent bed during depressurization after adsorption and prior to regeneration, reducing noise and dump flow rate and sorbent bed churning and abrasion during depressurization.

4,247,312

DRILLING FLUID CIRCULATION SYSTEM

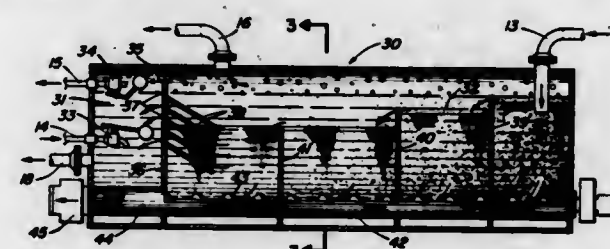
Pramod C. Thakur, Morgantown; Charles E. Mason, Fairmont, both of W. Va.; Stephen D. Laner, Waynesburg, Pa., and Emrys H. Jones, Jr., Westover, W. Va., assignors to Conoco, Inc., Ponca City, Okla.

Filed Feb. 16, 1979, Ser. No. 12,635

Int. Cl.³ B01D 19/00

U.S. Cl. 55—166

6 Claims



1. In a drilling system comprising (1) a drill unit for drilling from an underground room and for providing horizontal thrust to a drill-bit, and (2) a drilling fluid circulation system for providing liquid drilling fluid through a drill string to a drill bit and for returning said fluid, cuttings and produced gas through a borehole to a gas and cuttings separation system, the improvement wherein said gas and cuttings separation system is a closed loop system comprising:

- a first compartment for storing clean liquid drilling fluid;
- a second compartment having an inlet for receiving drilling fluid, drilling cuttings and produced gas from said drilling fluid circulation system and said second compartment including a plurality of baffles therein;
- connecting means between said first and second compartments, said connecting means including fluid passage means allowing liquid drilling fluid to flow from said second compartment to said first compartment;
- liquid level control means for maintaining a minimum liquid level in said compartments;
- liquid level control means for limiting the upper level of liquid in said compartments;
- gas-containing sections in the upper part of said compartments;
- gas communication means providing for free passage of gas between the said gas-containing sections;
- gas exhaust means for removing gas from said gas-con-

taining sections and exhausting it at a location outside said underground room;

- cuttings removal means comprising an auger positioned in the bottom of said second compartment and including a cuttings discharge outlet for removing settled cuttings from said second compartment; and
- outlet means for returning said liquid drilling fluid to said drilling fluid circulation system.

4,247,313

GAS-PARTICULATE SEPARATOR WITH PULSE-JET CLEANABLE FILTER ELEMENTS

Marney D. Perry, Jr., Mineral Wells, Tex., and Robert A. Graff, Live Oak, Fla., assignors to Perry Equipment Corporation, Mineral Wells, Tex.

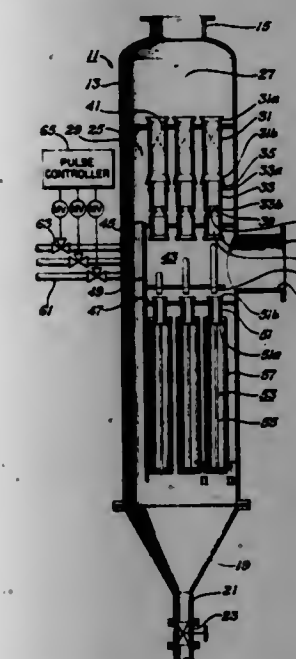
Continuation-in-part of Ser. No. 805,848, Jun. 13, 1977, Pat. No. 4,180,391. This application Aug. 20, 1979, Ser. No. 67,611

The portion of the term of this patent subsequent to Dec. 25, 1996, has been disclaimed.

Int. Cl.³ B01D 46/04, 50/00

U.S. Cl. 55—302

2 Claims



1. A separator for removing from a gas stream suspended particulates present in the gas stream, comprising:

- a scavenging gas plenum defined by wall structure, the wall structure including first and second wall means which face each other and interconnecting wall means extending between the first and second wall means, defining an outlet plenum in fluid communication with an outlet;
- an inlet conduit for receiving the particulate laden gas stream, the inlet conduit extending into the scavenging gas plenum and having a downstream end located in the scavenging gas plenum;
- gas swirl means disposed within the inlet conduit for imparting a swirling motion to the gas entering the inlet conduit; conduit means axially aligned with the inlet conduit and having an upstream end located relative to the downstream end of the inlet conduit so as to define an annular ejection port in the scavenging gas plenum for the removal of suspended particulates that have separated from the gas stream due to the swirling motion imparted to the gas entering the inlet conduit, and for the discharge of a portion of the gas into the scavenging gas plenum, the conduit means having an outlet portion extending out of the scavenging gas plenum through the first wall means to the outlet plenum;
- a conduit having an inlet end in the scavenging gas plenum and extending from the scavenging gas plenum through the second wall means, terminating in an outlet end in the outlet plenum, providing a flow path from the scavenging gas plenum to the outlet plenum for the gas discharged from the annular ejection port;

4,247,314

MECHANICAL FILTER BAG SHAKER ASSEMBLY

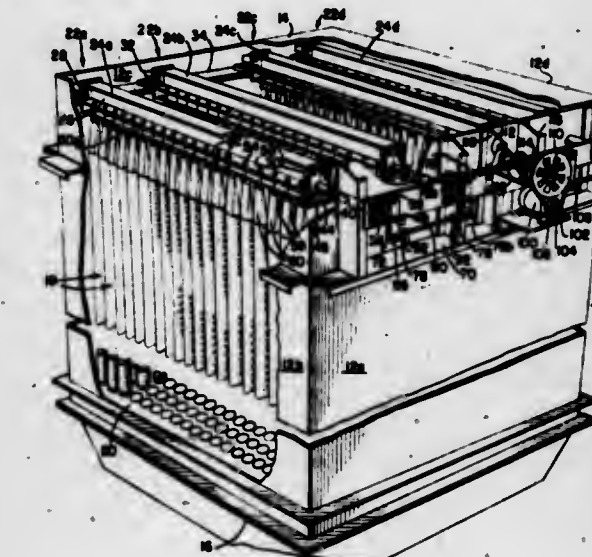
Julian Smoluchowski, Lombard, and Ray Wynn, Jr., Mundelein, both of Ill., assignors to Flex-Kleen Corporation, Chicago, Ill.

Filed Jul. 25, 1979, Ser. No. 60,505

Int. Cl.³ B01D 46/04

U.S. Cl. 55—304

4 Claims



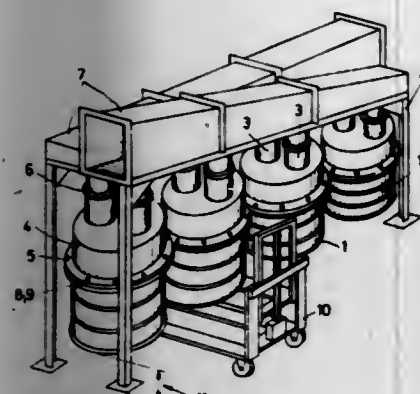
- Filter bag shaking apparatus for use in a bag house wherein the bag house has top, bottom, and sidewalls characterized by a plurality of generally parallel beam members in the upper end of the bag house, each of said beam members having connection to the upper end of a plurality of filter bags; means pivotally mounting one end of each beam member to a sidewall of the bag house;
- a shaft having a free end and an end connected to the other end of each beam member and rotatably mounted in an opposite sidewall of the bag house;
- a lever arm connected to the said free end of each said shaft;
- a plurality of length adjustable tie-rods connecting adjacent pairs of lever arms sequentially such that only one tie-rod connects any two adjacent lever arms and such that one of said tie-rods connects adjacent ends of two adjacent lever arms and other tie-rods connect the opposite ends of these two adjacent lever arms to the adjacent ends of the next adjacent lever arms;
- a rotary actuator having a rotating output shaft; and means for converting the rotating motion of the rotating output shaft from the rotary actuator to reciprocating motion and a further length adjustable tie-rod connecting at least one of said lever arms to the means for converting the rotating motion of the rotating output shaft to reciprocating motion.

4,247,315 FILTER ELEMENT

Gerhard M. Neumann, Berlin, Fed. Rep. of Germany, assignor to Delbag-Lastfilter GmbH, Berlin, Fed. Rep. of Germany
Filed Dec. 4, 1978, Ser. No. 966,006
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755964

Int. Cl.³ B01D 46/14

U.S. Cl. 55—350



1. Filter elements in housings which are equipped with exchange devices and with contamination protection for the precipitation of materials from the breathing air or the process air which could be injurious to health especially for ventilating systems, for example, in the nuclear field, which is concerned with the comminution process and with the removal process of contaminated filter elements for the purpose of storage in preferably subterranean deposit sites by means of special waste containers of round or angular constructional shape characterized by the fact that correspondingly shaped filter elements are received by such housings which consist of internationally commercial, standardized waste containers (1) for nuclear engineering purposes with a capacity of 200 to 400 liters and which housings are equipped with closable standardized lids and which housings are suitable for use with the manipulator and air lock technique and which housings, without changing their outer appearance, are filled with compact filter layers of pocket type folding filter paper, which filter layers are uniformly distributed over the entire inner container cross-section, or which filter layers are offset with reference to each other, or which filter layers are optionally located also one on top of each other, or granular bulk material in the shape of plates, blocks, boards, discs, rings, stars or zig-zags up to an extent of more than 65% of the entire height of the container and the entire volume of the container where during the operating phase of the

filter the waste container (1) is freely suspended some distance from the floor (11) at the filter installation (2) and including a domed lid (4) which is equipped with connecting tubes (3) with flanges at the supply air side and at the exhaust air side, which replaces the standardized lid and which domed lid (4) is equipped with test grooves, and which domed lid (4) is tightly connected to the waste container (1) with the inserted filter element, (16), by means of removable bolt systems or with remote controlled lever systems, and which domed lid (4) is solidly connected by means of a flange (6) with each one dusty-air channel and clean-air channel 7, through which channels an airstream is passed, and which channels are located next to each other or one on top of the other; a transparent protective tube (9) between the container flange (1a) and the domed lid flange (4a); for the contamination free manual exchange of a filter, circumventive, self-squeezing elastic known multiple groove rims (8) attached to the container flange (1a) and lid flange (4a) into which the elastic protective tube connection (9) can be squeezed in a known way by means of strings; so that during the exchange phase the waste container (1) can optionally be removed and lowered from the air duct (7) in the area between the floor and the container (11) or it can be lifted

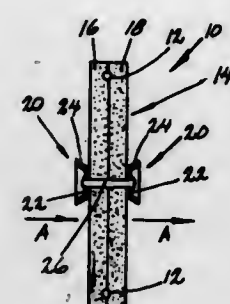
up for the purpose of bolting together by means of a lift truck (10).

4,247,316 GAS SEPARATION FILTER DEVICE HAVING A HANDLE

William A. Putman, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Jul. 9, 1979, Ser. No. 55,709
Int. Cl.³ B01D 46/10

U.S. Cl. 55—357

6 Claims



1. A gas separation filter device for separating particulate from a gas stream passing through the filter device, comprising:

A flow-through frame;

A sheet of gas separation filter media disposed across the flow-through frame and attached to the flow-through frame;

first handle means located on one side of the sheet of gas separation filter media and attached to the sheet of gas separation filter media, the first handle means is substantially geometrically, centrally disposed of the sheet of gas separation filter media and comprises a generally planar base member lying in the plane of and in abutment with the sheet of gas separation filter media and a finger grasping flange integrally formed with and projecting outwardly from the base member in a direction generally away from the gas separation filter media for grasping by the fingers of a hand while installing and removing the gas separation filter device from an installation; and,

second handle means disposed on the other side of the sheet of gas separation filter media from the first handle means and attached to the sheet of gas separation filter media, the second handle means is substantially geometrically, centrally disposed of the sheet of gas separation filter media and comprises a generally planar base member lying in the plane of and in abutment with the sheet of gas separation filter media and a finger grasping flange integrally formed with and projecting outwardly from the base member in a direction generally away from the gas separation filter media for grasping by the fingers of a hand while installing and removing the gas separation filter device from an installation.

4,247,317 GLASSWARE FORMING MACHINE COMPUTER-RAM-CONTROLLER SYSTEM

Charles L. Wood, and Stephen W. Daudt, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Apr. 20, 1978, Ser. No. 898,212

Int. Cl.³ C03B 9/40

U.S. Cl. 65—29

18 Claims

1. A programmable automatic controller for controlling at least one section of a glassware forming machine, said at least one section including a plurality of movable components which operate in timed relationship with respect to one another, said at least one section forming rigid glassware articles from gobs of molten glass, wherein said movable components

4,247,318 PROCESS FOR MAKING SECURITY PAPER FROM FILM-FIBRIL SHEETS

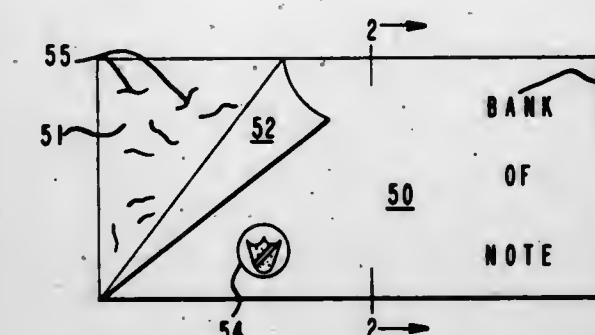
Chi C. Lee, Richmond, Va., and Richard E. Ludwig, Newtown Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 30, 1979, Ser. No. 7,707

Int. Cl.³ B32B 31/06, 31/10, 31/12

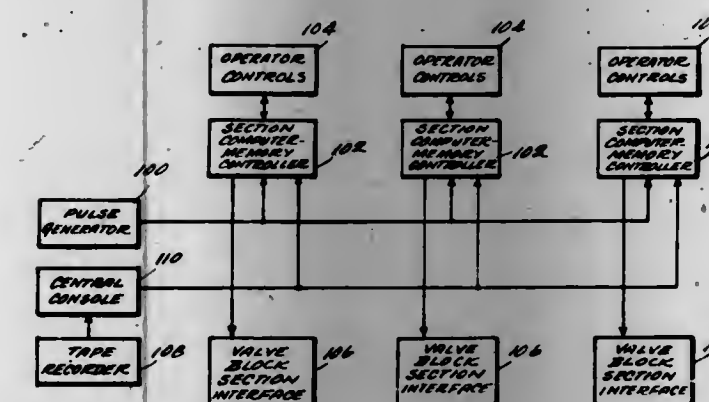
U.S. Cl. 156—163

3 Claims



are each actuated at respective relative times in each of a plurality of machine cycles, said controller comprising: timing means for generating a digital signal, said digital signal providing an indication of the time elapsed in each cycle of operation of said machine; storage means, having an address input and a data output, for storing signals corresponding to the on/off statuses of said plurality of components for each of a plurality of increments of time in each cycle of operation of said machine, each of said increments of time being uniquely indicated by said digital signal; means for applying said digital signal to said address input; means for transferring to said data output of said storage means the signals corresponding to the on/off statuses of each of said plurality of components for the cycle time increment defined by the digital signal applied to said address input; and a plurality of component actuating means connected to said data output, each of said component actuating means being associated with at least one on/off status signal in each time increment and being responsive to each of said status signals at each time increment for controlling the operation of said components.

16. A method for controlling at least one section of a glassware forming machine, said at least one section including a plurality of movable components which operate in timed relationship with respect to one another, said at least one section



forming rigid glassware articles from gobs of molten glass, wherein said movable components are each actuated at respective relative times in each of a plurality of machine cycles, said method comprising the steps of:

generating a digital signal, said digital signal providing an indication of the time elapsed in each cycle of operation of said machine; storing signals corresponding to the on/off statuses of said plurality of components for each of a plurality of increments of time in each cycle of operation of said machine in a storage, each of said increments of time being uniquely indicated by said digital signal; coupling said signals corresponding to the on/off statuses to component actuating means, each of said component actuating means being associated with at least one on/off status signal in each time increment; selectively varying the signals corresponding to said on/off statuses stored in said storage to thereby change the relative times in each machine cycle during which said selected components are to be actuated; reading out from said storage the signals corresponding to the on/off statuses of each of said plurality of components for the cycle time increment indicated by said digital signal; and generating in each of said component actuating means a component operating command to components having an "on" status as indicated by said reading out step.

1. In an improved process for preparing security paper, the process being of the type wherein webs containing bondable thermoplastic fibers are assembled with a discontinuous intercalary layer of identifying material and are then bonded, the improvement comprising the following steps in sequence:

- (1) assembling the intercalary layer of identifying material with a first and a second unbonded, lightly consolidated, nonwoven, polyethylene film-fibril sheet, each sheet having a basis weight in the range of 25 to 75 grams per square meter and a density in the range of 0.15 to 0.3 grams per cubic centimeter;
- (2) passing the sheet assembly through an unheated nip which applies a compression in the range of 17 to 85 kilograms per centimeter width of sheet assembly to form a lightly laminated sheet assembly;
- (3) self-bonding the lightly laminated assembly by passing the assembly, while under compressive restraint, through a heating zone and raising the temperature of one face of the assembly sufficiently to cause fusion of surface film fibrils so as to obtain an abrasion resistance of at least five cycles and cooling the assembly, while under restraint, to a temperature below that at which the assembly distorts or shrinks substantially and then repeating the procedure of this step to treat the other face of the sheet assembly and to obtain a self-bonded sheet assembly having an opacity of at least 70% and a delamination resistance of at least 60 grams per centimeter.

4,247,319 PROCESS AND APPARATUS FOR CALIBRATING OF GLASS TUBE SECTIONS

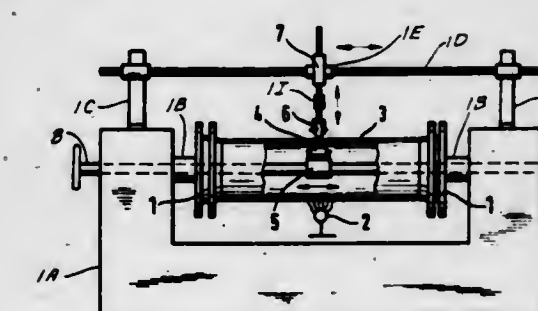
Herbert Hofmann, Wiesbaden, Fed. Rep. of Germany, assignor to OVf Glasstechnik GmbH, Schlierstein, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,015

Int. Cl.² C03B 23/08

U.S. Cl. 65—109

7 Claims



1. A process for calibrating glass tubing sections, in which a

glass tubing section is heated to a softening temperature, shaped to the calibration dimension and allowed to cool, comprising,

in that the softened glass, in the particular area of deformation of the glass tubing section clamped at both ends; in the case of outside calibration is pressed against an outside calibrating surface by means of a shaping element guided inside and in helical manner with respect to said glass tubing section,

and in the case of inside calibration is pressed against an inside calibration surface by a shaping element guided outside and in helical manner with respect to said glass tubing section,

rotatably supporting said calibrating surface in the form of a cylinder along an axis generally parallel to and radially offset from the axis of said glass tubing section.

6. A device for calibrating of glass tube sections, comprising, frame means,

two opposite coaxially mounted and synchronously rotating clamping means on said frame means and adapted to engage the ends of the glass tubing section,

means on said frame means for rotating said clamping means, axially displaceable holding means mounted both inside and outside the glass tubing section and comprising a shaping element and a calibration surface oppositely disposed to each other,

an axially displaceable heater on said frame means, and means operatively connected to said holding means, said shaping element, said calibration surface, and said heater for simultaneous movement thereof in a direction parallel to the longitudinal axis of a glass tubing section held in said clamping means,

said shaping element and said calibrating surface each comprising a rotating roller mounted generally axially parallel to the glass tubing section along respective axes offset from the axis of said glass tubing.

4,247,320

GLASS CONDITIONING

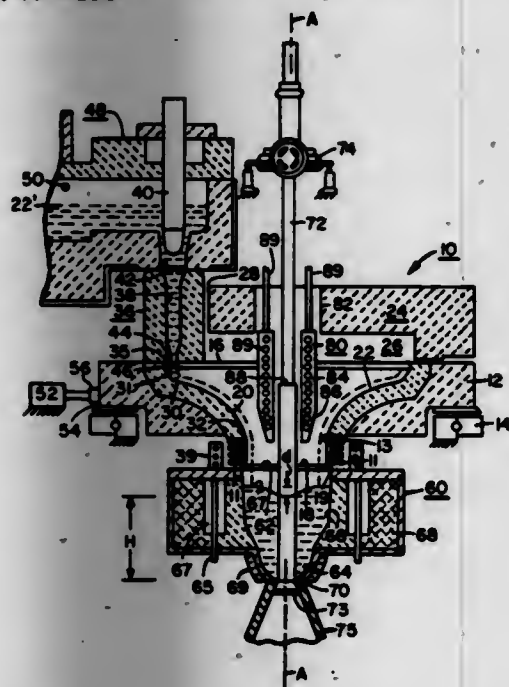
Bihari Bansal, Wellboro, Pa., and George B. Boettner, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,650

Int. Cl.³ C03B 7/04

U.S. Cl. 65—136

25 Claims



1. Apparatus for conditioning a supply of molten viscous material to at least one of a plurality of desired temperature and viscosity characteristics, wherein a delivery means conveys a stream of said material from the supply comprising: a chamber in flow communication with the delivery means being mounted for rotation about an axis and having an inlet for receiving said stream of material therein; an outlet remotely located from and in flow communication with

the inlet for allowing the material to flow from said chamber at a relatively uniform temperature and viscosity; and a flow control surface having a profile including at least two regions, each uniquely oriented for influencing the flow of material therealong such that in one region the material experiences delayed flow to enable it to give up heat to ambient and in the other region the material experiences accelerated flow to enable it to counteract changes in viscosity resulting from heat loss in the first mentioned region; and

means operatively coupled to the chamber for rotating same, such that, a fresh supply of material at an elevated temperature is deposited circumferentially on the flow control surface, said fresh supply of material being relatively evenly distributed about the inlet to the chamber in order to moderate the heat loss in respect to the material under the influence of the flow control surface, whereby the material reaches the outlet at a desired temperature and viscosity.

22. A method for conditioning molten viscous material from one of a plurality of selected temperature and viscosity conditions to a desired temperature and viscosity condition comprising the steps of delivering said material to a formed surface, dwelling said material on said formed surface to delay flow thereof, allowing said material to thereafter accelerate towards an outlet, heat exchanging said material as it flows from the dwell to the outlet, rotating said surface about an axis, continuously supplying additional material at an elevated temperature as said surface is rotated and moderating the temperature of said flowing material by virtue of the continuously supplied material.

4,247,321

METHOD AND APPARATUS FOR OBTAINING FERTILIZING SOLUTION FROM FOSSIL FUELED STATIONARY ENGINES

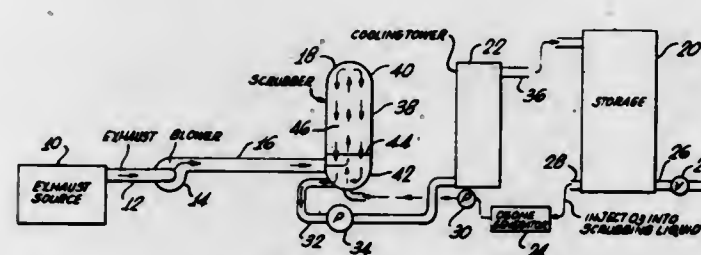
James G. Persinger, Box 477, Hugoton, Kans. 67951

Continuation-in-part of Ser. No. 33,028, Apr. 24, 1979. This application May 21, 1979, Ser. No. 40,926

Int. Cl.³ C05C 11/00

U.S. Cl. 71—59

17 Claims



1. A method for obtaining fertilizing solution from fossil fueled stationary engines by scrubbing exhaust gases from a combustion source with water containing ozone gas, the method comprising the steps of:

operating a combustion source, to produce an exhaust gas having carbon dioxide and nitrogen oxide gases; flowing said exhaust gas to a direct contact liquid-gas scrubber;

injecting ozone gas derived from an ozone generator into a water stream to said scrubber;

absorbing said carbon dioxide and nitrogen oxide gases in water containing ozone gas by direct contact with the water stream in said scrubber;

treating by continuous direct contact the enriched solution from said scrubber with from about 20 to about 30 percent by weight of an agent selected from the group consisting of lime, limestone, calcium phosphate and mixtures thereof;

cooling the enriched solution from said scrubber; recycling the cooled enriched solution through said scrubber to achieve a concentration of between about 170,000

to 500,000 ppm nitrogen compounds and between about 15,000 to 50,000 ppm carbon dioxide; and collecting the treated enriched solution.

4,247,322

3-(M-TRIFLUOROMETHYLPHENYL)-5-HALOMETHYL ISOXAZOLES AS SAFENING AGENTS

Robert K. Howe, Bridgeton, and Len F. Lee, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

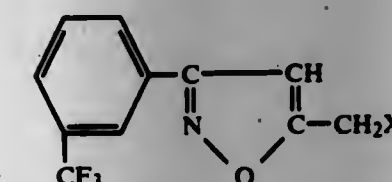
Filed Oct. 1, 1979, Ser. No. 80,748

Int. Cl.³ A01N 43/00, 37/18

U.S. Cl. 71—88

5 Claims

1. A method of reducing injury to direct seeded rice injured by butachlor herbicide which comprises applying a non-phytotoxic, antidotal effective amount of a compound of the formula



where X is chloro or bromo, to the soil surface or by pre-plant incorporation into the soil.

4,247,323

PROCESS OF DIRECTLY REDUCING IRON OXIDE-CONTAINING MATERIALS

Harry Serbent, Hanau; Wolfram Schnabel, Hattersheim, and Gerhard Reuter, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,976

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835866

Int. Cl.³ C21B 13/08

U.S. Cl. 75—36

13 Claims

1. In a process of directly reducing iron oxide-containing materials, preferably iron ores, to produce sponge iron in a rotary kiln below the softening and melting point of the charge by charging solid carbonaceous reducing agents having a high content of volatile constituents into a rotary kiln at its charging end, feeding oxygen-containing gases through shell tubes at controlled rates into the free kiln space, and moving the charge and the gas atmosphere in the rotary kiln countercurrently to each other, the improvement which comprises feeding a reducing gas and/or liquid hydrocarbon through at least one tubular air nozzle into the final portion of the reduction zone, said final portion beginning at a point where at least 75 percent of the iron has been metallized, at least part of said reducing gas and/or liquid hydrocarbon being fed into the charge disposed over said tubular air nozzle.

4,247,324

METHOD AND APPARATUS FOR INTRODUCING SOLID SUBSTANCES INTO LIQUID METALS

Giovanni Guarino, Via Posidippo, 9 - AXA, Acilia, Roma, and Alberto Praltoni, Via Cincinnato, 7 (Pal. 2), Pomezia, Roma, both of Italy

Filed May 11, 1979, Ser. No. 38,179

Claims priority, application Italy, May 12, 1978, 49327 A/78

Int. Cl.³ C21C 7/00

U.S. Cl. 75—83

15 Claims

1. A method for the introduction of deoxy-desulfurizing substances into metal baths, comprising forming in a hollow tube a plurality of discrete quantities of a said substance separated by material inert to the bath, and immersing the tube in



oxide of the same alkali or alkaline earth metal on the other hand.

4,247,325

PH CONTROL DURING LEACHING OF ALUMINUM SLAGS

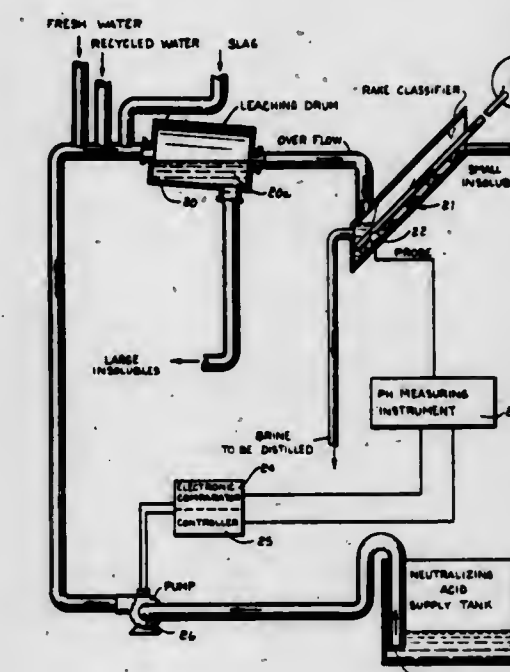
Ronald E. Beese, Barrington, Ill.; Niranjan M. Parikh, Winnetka, and Carl F. Bauer, Chicago, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Jul. 30, 1979, Ser. No. 61,606

Int. Cl.³ C22B 21/00

U.S. Cl. 75—97 A

3 Claims



1. A method of controlling the chemical reaction in the leaching drum during the processing of secondary metallic aluminum slags, to reduce exothermic reactions and gaseous byproducts including the following steps:

(a) treating secondary aluminum slags with water in order to dissolve entrained salts and separate same from metallic particulates;

(b) measuring the pH of the dissolved salts slurry in order to establish the condition of the process;

(c) comparing the measuring pH with a preferred datum and emitting a control signal in accordance with the difference therebetween for actuating the pumping of a neutralizing acid into the leaching operation to maintain a pH of about 8, and

(d) adding a neutralizing acid to the mixture of water and aluminum slag in order to maintain said pH.

4,247,326

FREE MACHINING STEEL WITH BISMUTH

Dennis T. Quinto, St. John, Ind., and Debanshu Bhattacharya, Matteson, Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed Aug. 29, 1979, Ser. No. 70,829
Int. Cl.³ C22C 38/60

U.S. Cl. 75—123 AA

5 Claims

1. In a free machining cast steel shape consisting essentially of, in wt.%,

carbon	0.06-1.0
manganese	0.3-1.6
silicon	0.30 max.
sulfur	0.03-0.50
phosphorous	0.12 max.
bismuth	0.05-0.40
iron	essentially the balance.

the improvement wherein:

said bismuth is present in bismuth-containing inclusions having a mean size less than 5 microns, to increase the number of locations in the microstructure of said steel where bismuth is available for immediate transport to the tip of a microcrack during a machining operation, compared to a steel having the same amount of bismuth in inclusions of larger size.

4,247,327

ALLOY STRENGTHENING BY HYDRIDATION

John T. Plewes, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 1, 1979, Ser. No. 62,705
Int. Cl.³ C01G 25/00

U.S. Cl. 75—153

3 Claims

1. Method for producing a shaped metallic article, said method comprising the steps of (1) preparing a body of an alloy comprising a first and a second metallic element and (2) exposing said body to a gaseous ambient while said body is heated CHARACTERIZED in that (a) said alloy is an essentially oxygen-free, face-centered cubic alloy, (b) said first element is Cu and said second element is Li, (c) said gaseous ambient comprises a substantial amount of hydrogen, and (d) said body is heated in said gaseous ambient at a temperature in a range from 400 degrees C. to 700 degrees C., whereby said alloy is strengthened and hardened.

4,247,328

LITHOGRAPHIC FOUNTAIN CONCENTRATES CONTAINING A DESENSITIZING MATERIAL IN AN ORGANIC SOLVENT LIQUIDLeslie E. Lawson, Sarbiton, and Frank E. Smith, London, both of England, assignors to Vickers Limited, London, England
Filed Jan. 15, 1979, Ser. No. 3,524

Claims priority, application United Kingdom, Jan. 18, 1978, 02111/78; May 31, 1978, 02111/78

Int. Cl.³ C09D 11/02

U.S. Cl. 106—2

10 Claims

1. A fountain solution concentrate for dilution with water to form a fountain solution for use in lithographic printing, which concentrate consists essentially of lithographic desensitizing material in solution in a liquid vehicle comprising at least 50% by volume of a water soluble organic solvent liquid and from 0 to 50% by volume of water, the lithographic desensitizing material being selected from the group consisting of trisodium citrate, butyl acid phosphate, alkyl group substituted ammonium salts of acids, ethanolamine salts of phosphoric acid, ethanolamine salts of alginic acid, ethylene diamine tetra-acetic acid, and salts of ethylene diamine tetra-acetic acid.

4,247,329

WATER REPELLENT AQUEOUS WOOD CONCENTRATES

George B. Mills, St. Louis, Mo., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Mar. 27, 1980, Ser. No. 134,506
Int. Cl.³ C09K 3/18

U.S. Cl. 106—2

7 Claims

1. An aqueous cellulosic concentrate comprising in an acid medium a chromium additive, a copper additive and an arsenic additive wherein the active ingredient is CrO₃, CuO and As₂O₃ respectively with a total from 5 to 45% of oxides, and sulfamic acid wherein said copper additive is present in an amount greater than will react with said chromium additive and said sulfamic acid is present in an amount that will inhibit the reaction of the excess copper additive with said arsenic additive.

4,247,330

PROTECTIVE COATINGS

Albert J. Sanders, Jr., Toledo, Ohio, assignor to SWS Silicones Corporation, Adrian, Mich.

Filed Jun. 20, 1979, Ser. No. 50,389
Int. Cl.³ C09G 1/18

U.S. Cl. 106—3

7 Claims

1. An aqueous emulsion consisting essentially of (1) a mixture of silicone compounds comprising (a) an aminofunctional silicone fluid and (b) a cyclic siloxane, in which the silicone compounds are present in an amount of from 0.02 to 95 percent by weight based on the weight of the emulsion, and the weight ratio of aminofunctional silicone fluid to cyclic siloxane is from 1:4 to 4:1, (2) from 1 to 20 percent by weight based on the weight of the emulsion of an aliphatic alcohol having from 1 to 4 carbon atoms, (3) sufficient monocarboxylic acid having up to 10 carbon atoms to substantially neutralize the amine groups bonded to the aminofunctional silicone fluid and (4) from 0 to 30 percent by weight based on the weight of the emulsion of a cationic emulsifying agent, said aminofunctional silicone fluid (a) is obtained from the equilibration of an organopolysiloxane and an aminofunctional silane or siloxane in the presence of a basic catalyst.

4,247,331

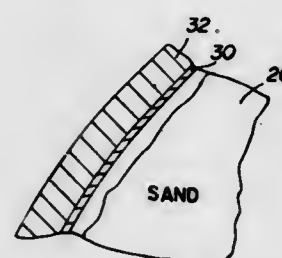
METHOD FOR PRODUCING AND STORING SAND COATED WITH CALCIUM CHLORIDE

Richard S. Hamlin, South Lyon, and Wayne L. Higgins, Walled Lake, both of Mich., assignors to South Lyon Trucking Company, Inc., Brighton, Mich.

Filed Oct. 5, 1978, Ser. No. 948,706
Int. Cl.³ C09K 3/18

U.S. Cl. 106—13

5 Claims



1. A method for producing and storing sand coated with calcium chloride for treating ice covered highways comprising the steps of:

- (a) loading the sand into a hopper located over a feeder;
- (b) feeding and agitating the sand;
- (c) coating the agitating sand with a solution of calcium chloride and water;
- (d) conveying and weighing the coated sand;
- (e) piling the sand on the ground for storage;

4,247,333

ALUMINA SHELL MOLDS USED FOR INVESTMENT CASTING IN DIRECTIONAL SOLIDIFICATION OF EUTECTIC SUPERALLOYS

Glenn W. Ledder, Buffalo; Wayne D. Pasco, Ballston Spa, and Paul S. Svec, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,876
Int. Cl.³ B28B 7/34

U.S. Cl. 106—38.9

1 Claim



1. An alumina shell mold formed in situ by firing a silica-bonded alumina shell mold in a controlled atmosphere of dry hydrogen gas having a dewpoint of less than 35° F. at a temperature of at least 1700° C. wherein said mold has a microstructure characterized by the porous nature of the interconnecting alumina grains.

4,247,334

HYDRAULIC CEMENT COMPOSITIONS

Pierre Falcoz, Champagne au Mont d'Or; Raymond Filhol, Lyon, and Jean-Noel Communal, Villeurbanne, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 27, 1978, Ser. No. 955,510

Claims priority, application France, Oct. 28, 1977, 77 33343
Int. Cl.³ C04B 7/35

U.S. Cl. 106—90

25 Claims

1. A composition of matter, comprising (i) a member selected from the group which comprises (ia) a water-soluble salt of the condensation product of an aromatic sulfonic acid with formaldehyde, said salt having a mean molecular weight between 1,500 and 10,000, and (ib) the admixture of such salt (ia) with a water-soluble salt of an aromatic sulfonic acid itself; (ii) lithium hydroxide; and (iii) a hydroxide of an alkali metal other than lithium or of an alkaline earth metal.

4,247,335

ASPHALT COMPOSITION RESISTANT TO WEATHERING

Rodney D. Beckham, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 19, 1976, Ser. No. 733,965

Int. Cl.³ C08L 95/00

U.S. Cl. 106—273 R

4 Claims

1. A paving-grade asphalt composition having improved resistance to weathering comprising an asphalt having a penetration value in the range from 30 to 400 at 77° F. and having incorporated therein an amount sufficient to render said asphalt composition resistant to weathering of an additive consisting of the dialkylated product obtained by heating together phenol and resin oil, said resin oil comprising primarily C₉ aromatic compounds exhibiting olefinic unsaturation, at a temperature from about 70° to about 100° C. in contact with an acid catalyst employing a mole ratio of resin oil unsaturates to phenol of at least 2:1, neutralizing said reaction mixture, dilut-

- (f) covering the coated sand with a plastic sheet having a roughened outer surface; and
- (g) covering the roughened surface of said plastic sheet with a layer of polyurethane foam.

4,247,332

FLAME RETARDER HAVING ANTI-BLOOMING PROPERTY

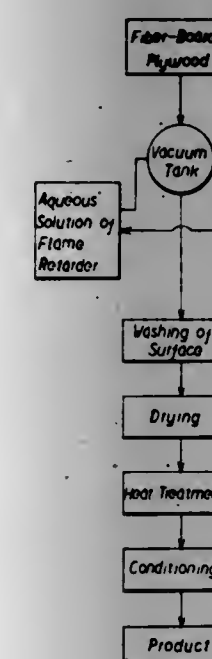
Tsukuru Kinoshita; Shuji Masuda, both of Tokushima, and Tetuo Hasegawa, Naruto, all of Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Mar. 3, 1979, Ser. No. 18,878

Claims priority, application Japan, Mar. 18, 1978, 53-31246
Int. Cl.³ C09D 5/18

U.S. Cl. 106—18.16

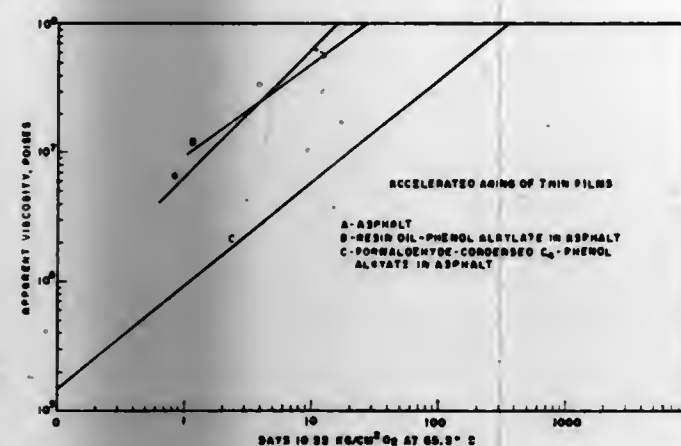
6 Claims



1. A flame retarder aqueous solution consisting of a water-soluble flame retardant agent and 0.01% to 1% by weight of a water-soluble polymer based on the weight of said water-soluble flame retardant agent, said water-soluble polymer being changeable by heat treatment to have a water resistance sufficient to prevent the migration of said water-soluble flame retardant agent and being at least one member selected from the group consisting of polyacrylic acid, polyacrylamide, polyacrylic hydrazide, alkali metal salts of polyacrylic acid and polyvinyl alcohol, and said water-soluble flame retardant agent being at least one member selected from the group consisting of ammonium dihydrogenphosphate, diammonium hydrogenphosphate, condensed ammonium polyphosphate, ammonium bromide and alum.

2. A method of imparting flame retardancy to improved woods which comprises impregnating a woody material with an aqueous solution consisting of a water-soluble flame retardant agent and 0.01% to 1% by weight of a water-soluble polymer based on the weight of said water-soluble flame retardant agent, drying the impregnated woody material and heat-treating the dried woody material at a temperature of 100° to 160° C. for 15 to 60 minutes, said water-soluble polymer being at least one member selected from the group consisting of polyacrylic acid, polyacrylamide, polyacrylic hydrazide, alkali metal salts of polyacrylic acid and polyvinyl alcohol, and said water-soluble flame retardant agent being at least one member selected from the group consisting of ammonium dihydrogenphosphate, diammonium hydrogenphosphate, condensed ammonium polyphosphate, ammonium bromide and alum.

ing with an organic solvent, separating the two-phases formed, flash-distilling the diluted organic phase at a pot temperature of from 1-4 carbon atoms in the alkyl moiety thereof, arylcarboxyarylamido, arylcarbamoyl, nitro or halo.



about 350° C. at atmospheric pressure and recovering the dialkylated product as the pot residue.

4,247,336

CRAZE-RESISTANT PLASTICIZED SULFUR COMPOSITIONS

Milutin Simic, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 832,854, Sep. 13, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 13,714
Int. Cl.³ C09K 3/00

U.S. Cl. 106—287.23

10 Claims

1. A plasticized sulfur composition resistant to crazing comprising (1) at least 50% sulfur, (2) at least 0.1% aromatic polymeric sulfide sulfur plasticizer formed by reacting at least two mols of sulfur with one mol of an aromatic carbocyclic or heterocyclic compound substituted by at least one functional group of the class —OH or —NHK in which R is hydrogen or a lower alkyl group, (3) mica filler, and (4) at least 0.5% triarylphosphate.

4,247,337

COPPER PHTHALOCYANINE DERIVATIVES

Alexander M. Irvine, Dean Park, and John B. Blackburn, Beith, both of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 855,500, Nov. 28, 1977, Pat. No. 4,199,509. This application Oct. 22, 1979, Ser. No. 87,132

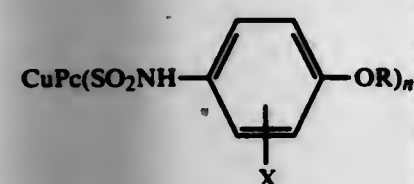
Claims priority, application United Kingdom, Dec. 1, 1976, 50054/76

Int. Cl.³ C09B 47/04

U.S. Cl. 106—288 Q

3 Claims

1. A flocculation stabilized pigment composition comprising a phthalocyanine pigment susceptible to flocculation and 2-25% by weight, based on said phthalocyanine pigment, of a copper phthalocyanine of the formula (I)



or a mixture thereof, wherein CuPc represents the residue of a copper phthalocyanine molecule, n is 1-4, X is hydrogen, C₁-4 alkyl, C₁-4 alkoxy or halo, and R is straight or branched chain alkyl of 1-22 carbon atoms, which is unsubstituted or substituted by one or more alkoxy, dialkylamino or alkylthio, the alkyl groups of which are straight or branched chain alkyl of 1-22 carbon atoms, and the alkyl groups in dialkylamino moiety are the same or different; or R is arylalkyl having 1-4 carbon atoms in the alkyl moiety thereof and the aryl moiety thereof being unsubstituted or substituted by one or more alkyl, alkoxy, carboxyalkyl or alkylcarbamoyl each having

4,247,338
METAL CHROMATE PIGMENT COMPOSITIONS
Bernard G. Ziobrowski, Glens Falls, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 21, 1978, Ser. No. 962,597

Int. Cl.³ C09C 1/20

U.S. Cl. 106—298

9 Claims

1. A metal chromate-containing pigment composition in the form of a fine powder having particles of a size less than about 100 microns, improved heat stability in plastics and reduced tendency to dusting said composition consisting essentially of, by weight, from 50 to 85% of a metal chromate-containing pigment selected from the group consisting of chrome yellow, basic lead chromate, lead sulfo-chromate, molybdate orange and molybdate red; from 7.5 to 30% of at least one water-insoluble zinc, aluminum, magnesium or calcium salt of a fatty acid containing at least 12 carbon atoms; and from 7.5 to 20% of at least one normally liquid ester plasticizer selected from the group consisting of esters of fatty acids and saturated monohydric alcohols, diesters of dicarboxylic acids and saturated monohydric alcohols, fatty acid esters of polyols, benzoic acid esters of polyols and phosphoric acid esters.

9. A process for producing a metal chromate-containing composition in the form of a fine powder having particles of a size less than about 100 microns, improved heat stability in plastics and a reduced tendency to dusting, said process comprising intimately blending dry particles of a metal chromate-containing pigment selected from the group consisting of chrome yellow, basic lead chromate, lead sulfo-chromate, molybdate orange and molybdate red with, based on the total weight of the composition, from 7.5 to 30% of at least one water-insoluble zinc, aluminum, magnesium or calcium salt of a fatty acid containing at least 12 carbon atoms; and from 7.5 to 20% of at least one normally liquid ester plasticizer selected from the group consisting of esters of fatty acids and saturated monohydric alcohols, diesters of dicarboxylic acids and saturated monohydric alcohols, fatty acid esters of polyols, benzoic acid esters of polyols and phosphoric acid esters.

4,247,339

PAINT COMPOSITIONS

Terence W. Bolton, Worthing; John A. Eggleston, Storrington, and David A. Alexander, Twickenham, all of England, assignors to Magic Brush Limited, Worthing, England

Filed Dec. 27, 1978, Ser. No. 973,632

Claims priority, application United Kingdom, Jan. 6, 1978, 542/78

Int. Cl.³ C09D 1/00, 5/04

U.S. Cl. 106—308 B

11 Claims

1. A paint suitable for use in a fountain brush consisting essentially of up to 5% by weight of a pigment dispersed in an aqueous medium containing a thixotropic suspending agent, which gives said paint a weak gel structure, and an amount of a surfactant dispersing agent sufficient to disperse any hydrophobic pigments in said paint.

4,247,340

PURIFICATION OF SUGARS USING EMULSION ANION EXCHANGE RESINS

Peter G. Cartier, Glenside, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 19, 1978, Ser. No. 944,051

Int. Cl.³ C13D 3/14; B01J 41/06

U.S. Cl. 127—48

11 Claims

1. A process for purifying impure sugar solutions, including simultaneous decolorization and clarification, comprising the steps of:

(a) contacting the impure sugar solution with previously

isolated, submicroscopic ion exchange resin particles in the form of approximately spherical beads of crosslinked copolymer having diameters within the range from about 0.01 to about 1.5 micrometers and bearing from about 0.7



to about 1.5 anion exchange functional groups per monomer unit, and
(b) separating the ion exchange resin particles from the sugar solution.

4,247,341

CONTINUOUS MASSECUITE VACUUM FILTERING SYSTEM

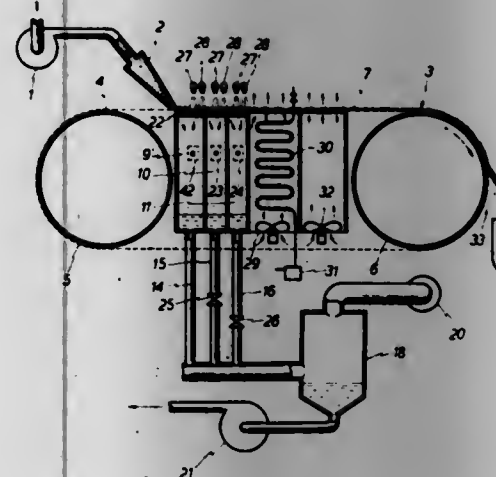
Chen Zep-Pey, No. 99-3, Kuo-San Rd., Sect. 1, Kaohsiung, Taiwan

Filed Jun. 18, 1979, Ser. No. 49,508

Int. Cl.³ C13F 1/04

U.S. Cl. 127—9

5 Claims



1. In a system for the continuous separation of sugar crystal from molasses of massecuites obtained from the operation of vacuum pans in sugar factories;

a belt conveyor with perforated conveyor belt having openings smaller than sugar crystals, with means of metering and spreading an even and regular layer of massecuite over the conveyor belt, a rigid perforate surface, means of applying a vacuum under the conveyor belt and under said rigid perforate surface to aspirate the molasses from the massecuite, means of collecting and pumping the separated molasses to the plant molasses storage tanks and means of scraping the sugar crystals from the conveyor belt.

4,247,342

METHOD AND COMPOSITION FOR REMOVING ETHYLENE GLYCOL TEREPHTHALATE OLIGOMER DEPOSITS AND DYESTUFF RESIDUE FROM TEXTILE DYEING EQUIPMENT

Hans H. Kuhn, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 24, 1978, Ser. No. 909,227

Int. Cl.³ B08B 3/08

U.S. Cl. 134—2

12 Claims

1. A method for removing ethylene glycol terephthalate oligomer deposits and dyestuff residue from textile dyeing equipment which comprises introducing into the textile dyeing equipment an aqueous admixture consisting essentially of water, an effective amount of a base component to provide said aqueous admixture with a pH of at least about 11.5, an effective minor amount of a phase transfer agent to sufficiently catalytically hydrolyze said oligomer deposits present within the textile dyeing equipment, and an effective minor amount of a nonionic surfactant to solubilize said dyestuff residue, heating said aqueous admixture to a temperature of from about 90° C. to about 140° C., maintaining said heated aqueous admixture within the textile dyeing equipment for a period of time effective to hydrolyze said oligomer deposits and solubilize said dyestuff residue and withdrawing the contaminated aqueous admixture from the textile dyeing equipment.

4,247,343

METHOD OF MAKING SEMICONDUCTOR INTEGRATED CIRCUITS

Jury V. Kruzhanov, 103498, korpus 431, kv. 112; Viktor P. Dubinin, 103498, korpus 445, kv. 120; Viktor I. Ovchinnikov, 103527, korpus 839, kv. 11, and Vladimir E. Safronov, 103527, korpus 811, kv. 146, all of Moscow, U.S.S.R.

Filed Oct. 25, 1978, Ser. No. 954,574

Claims priority, application U.S.S.R., Nov. 2, 1977, 2540035

Int. Cl.³ H01L 27/04, 29/08, 21/265

U.S. Cl. 148—1.5

2 Claims



1. A method of making semiconductor integrated circuits, comprising

forming in the surface layer of a p conductivity type semiconductor substrate a first layer including a plurality of n conductivity type layers;
depositing on the surface of said substrate an epitaxial layer of p conductivity type;
forming in said epitaxial layer a second layer including a plurality of regions of n conductivity type, with an oxide layer being formed on the surface;
forming in the surface layer a third layer including a plurality of p conductivity type and n conductivity type regions, including the steps of opening holes in said oxide layer to form regions of a first conductivity type, implanting a dopant of a first type, opening holes in the same oxide layer to form regions of a second conductivity type, implanting a dopant of a second type in a concentration insufficient for inverting the conductivity type in said regions of the first conductivity type, and depth diffusing said dopants of both types in an inert medium; and
applying metal conductors.

4,247,344

RUST PREVENTING TREATMENT OF METAL-PLATED STEEL MATERIALS

Seizo Tsuda, Tokyo; Eiichi Tarumi; Hironobu Kawaskai, both of Machida, and Takashi Watanabe, Kanagawa, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Continuation of Ser. No. 884,846, Mar. 9, 1978, abandoned, which is a continuation of Ser. No. 730,973, Oct. 8, 1976, abandoned. This application Jun. 5, 1979, Ser. No. 45,659
Claims priority, application Japan, Oct. 15, 1975, 50-123930; Oct. 15, 1975, 50-123931.

Int. Cl.³ C23F 7/00

U.S. Cl. 148—6.14 R

5 Claims

1. A rust preventing treatment for zinc-plated and zinc-alloy-plated steel products which comprises treating the zinc-plated and zinc-alloy-plated steel products with an aqueous solution containing 0.01% to 10% by weight of tannic acid on the basis of the aqueous solution and 0.001% to 10% by weight of a water soluble or water dispersible polymer selected from the group consisting of aluminum bisphosphate, magnesium biphosphate, polyvinyl pyrrolidones, polyacrylamides, polyacrylic acids, sodium alginate, polyacrylic acid esters and polyvinyl acetates, which are stable when mixed with the tannic acid, to form a corrosion resistant film on the surface of the zinc-plated and zinc-alloy-plated steel products.

4,247,345

METHOD FOR JOINING SYNTHETIC MATERIALS

Igor V. Kadija; Kenneth E. Woodard, Jr., both of Cleveland, Tenn., and Paul M. Waxelbaum, West Haven, Conn., assignors to Olin Corporation, New Haven, Conn.
Filed Nov. 30, 1978, Ser. No. 965,123

Int. Cl.³ B29C 27/08; B32B 7/08; H01M 2/14

U.S. Cl. 156—73.4

29 Claims



1. A process for joining at least two sections of at least one sheet of synthetic material selected from the group consisting of sulfonic acid substituted perfluorocarbon polymers, amine substituted perfluorocarbon polymers, carboxylic acid substituted polymers, polytetrafluoroethylene felts, fluorinated ethylene-propylene (FEP), polychlorotrifluoroethylene felts, and polyarylene compounds, which comprises:

- positioning said sections to be joined adjacent to but spaced apart from each other to form a gap between said sections;
- placing a thermoplastic sealing composition in said gap, wherein said thermoplastic sealing composition is selected from the group consisting of fluorinated ethylene-propylene (FEP), perfluoro-alkoxy resins, and polytetrafluoroethylene;
- sewing said sections and said thermoplastic sealing composition together with thread to form a seam which provides a preliminary joining of said sections and to form perforations in said synthetic material adjacent to said threads;
- heating said seam by application of ultrasonic energy having a frequency in the range from about 20,000 hertz to about 50,000 hertz to a temperature sufficient to melt said thermoplastic sealing composition without melting said synthetic material or said thread;
- whereby said melted thermoplastic sealing composition flows to and fills said perforations; and
- cooling said seam to solidify said thermoplastic sealing composition, whereby a liquidtight reinforced seam suit-

able for use in a chlorine environment is formed to join said sections of synthetic material.

4,247,346

FRICITION WELDING APPARATUS

Kazuo Maehara, and Isao Sato, both of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

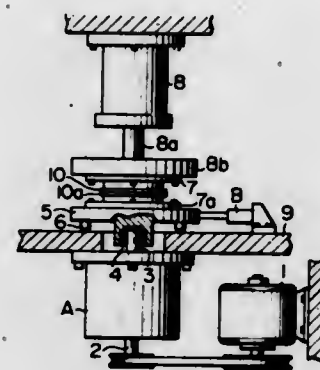
Filed May 11, 1978, Ser. No. 905,018

Claims priority, application Japan, May 12, 1977, 52/54606

Int. Cl.³ B29C 27/08; B06B 1/16; B32B 31/20

U.S. Cl. 156—73.5

21 Claims



1. A friction welding apparatus for welding a pair of members in which the welding surfaces of said members are contacted under pressure with each other, relative circular orbit motion of the members causing friction therebetween thereby heating and melting said welding surfaces and the relative circular orbit motion being stopped so that said welding surfaces are positioned in a predetermined position, said apparatus comprising eccentric means including a rotary driving shaft, a cylindrical inertia member disposed around the periphery of said rotary driving shaft and coaxially supported thereon, said inertia member being capable of producing an angular movement relative to said driving shaft and an eccentric shaft rotated by said rotary driving shaft and engaged with said inertia member so as to be moved by the relative angular movement of said inertia member relative to said rotary driving shaft between a co-axial position with the axis of said rotary driving shaft and an eccentric position spaced at a predetermined distance apart therefrom, a movable table engaged through bearing means with said eccentric shaft for supporting the member to be welded, said movable table being connected by motion restricting means to a fixed frame, means for causing a substantial relative circular orbit motion in a plane perpendicular to the axis of said rotary driving shaft, said inertia member being adapted to be angularly moved by rapid increase in the speed of said rotary driving shaft relative thereto from a first position to a second position such that said eccentric shaft is moved from said co-axial position to said eccentric position and said movable table is placed in a relative circular orbit motion, said inertia member being returned by rapid stoppage of said rotary driving shaft from the second position to the first position such that the eccentric shaft is returned to the co-axial position and the movable table is stopped at said predetermined position.

4,247,347

PROCESS FOR MOLDING CLOTH INCLUDING A FABRIC LAYER BY HEATING TO AT LEAST THE GREATER OF THE SET OR SOFTENING TEMPERATURE THE STITCHES THEREOF HAVING NEVER BEEN SET, AND MOLDING A CLOTH COVERED FOAM FILLED PRODUCT

James F. Lischer, Box F, Pleasant Valley, Iowa 52767, and Raoul Quertain, Avenue Ar. Schettler 15, B 1150, Brussels, Belgium

Filed Mar. 19, 1979, Ser. No. 22,591

Int. Cl.³ B32B 5/20; B29D 27/04

U.S. Cl. 156—79

22 Claims

including heating the cloth, cooling the cloth, and pouring foam into the mold.

4,247,349

METHOD AND APPARATUS FOR CUTTING PLASTIC FILM WINDOWS FOR CARTONS

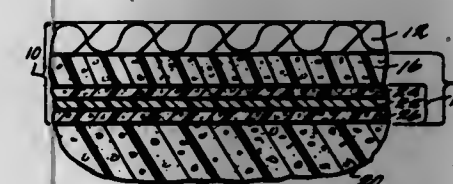
Robert M. Detert, Menasha; Hubert J. Germinet, and William M. Kelly, Jr., both of Appleton, all of Wis., assignors to American Can Company, Greenwiche, Conn.

Filed May 14, 1979, Ser. No. 38,568

Int. Cl.³ B31B 1/24, 1/82

U.S. Cl. 156—108

10 Claims



21. A process for forming a cloth-covered foam filled item comprising the steps of:
bonding a flexible foam layer to a thermoplastic film layer, the foam layer and film layer forming an elastic composition layer;
bonding the foam layer to a fabric layer having a heat-fixable fiber, the stitches of the fabric having never been thermally set, the cloth comprising the foam layer, film layer and the fabric layer;
preheating the cloth to a temperature of at least the greater of the set temperature of the heat-fixable fiber and the softening temperature of the film layer;
drawing the cloth into a mold;
heating the cloth to at least the greater of the set temperature of the heat-fixable fiber and the softening temperature of the film layer;
cooling the cloth; and
pouring foam into the mold, the process heat-fixing the heat-fixable fiber of the fabric layer and the film layer to the shape of the mold and filling the back side of the molded cloth with foam.

4,247,348

PROCESS FOR MOLDING CLOTH INCLUDING A FABRIC LAYER, THE STITCHES THEREOF HAVING NEVER BEEN THERMALLY SET AND MOLDING A CLOTH-COVERED FOAM FILLED PRODUCT

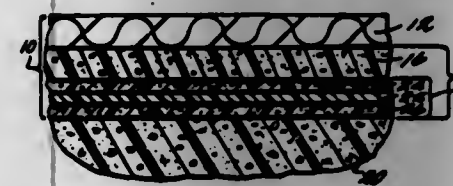
James F. Lischer, Pleasant Valley, Iowa, assignor to Sears Manufacturing Company, Davenport, Iowa

Filed Mar. 19, 1979, Ser. No. 22,593

Int. Cl.³ B32B 5/20; B29D 27/04

U.S. Cl. 156—79

21 Claims



21. A process for forming a cloth-covered item comprising the steps of:
bonding a flexible foam layer to a film layer, the foam layer and film layer forming an elastic composition layer;
bonding the foam layer to a fabric layer having a heat-fixable fiber, the stitches of the fabric having never been thermally set, the cloth comprising the foam layer, the film layer and the fabric layer;
preheating the cloth;
drawing the cloth into a mold; and
fixing the shape of the cloth to maintain the mold contours,

1. Improved apparatus for mounting plastic film windows on cut-out carton blanks, of the type having a perforated surfaced vacuum drum, a film panel feeding station for laying film panels individually on the surface of the vacuum drum whereupon they are held to the drum surface by vacuum suction, a carton blank feeding conveyor which delivers adhesive coated carton blanks to a position adjacent to the vacuum drum in registry with film panels on the vacuum drum, whereupon the film panels are released from the vacuum drum and remain adhered to the carton blank, the improvement comprising:

- a knife edged die mounted to and protruding above the surface of said drum which is adapted to cut each individual film panel laid over said die in a pattern defined by the knife edge of said die;
- an anvil roll having a cylindrical surface;
- means for mounting said anvil roll for rotation with the surface of said vacuum drum and for urging said anvil roll toward said drum surface such that the surface of said anvil roll makes firm rolling contact with the knife edge of said knife edged die, whereby plastic film panels fed to the surface of said drum to lie over said die will be held firmly over the same by the vacuum suction applied to the perforations on said drum surface, and, as said drum rotates, the panels will be cut at the knife edge of said die in the pattern of the knife edge as the film panel is engaged between said die and said anvil roll.

8. A method of slitting a pattern into panels of plastic film and applying such panels to carton blanks, comprising the steps of:

- providing a rotating cylindrical surfaced drum having vacuum applied to perforations distributed over the surface thereof;
- providing a knife edged cutting die mounted on and protruding above the surface of the drum which is adapted to cut individual film panels laid over the die in a pattern defined by the knife edge of the die;
- laying an individual panel of plastic film over the knife edged die to allow the film panel to rotate with the surface of the vacuum drum;
- pressing the film panel between the knife edged die and a hard surfaced anvil roll which rotates with the vacuum drum to cut the film panel therebetween in the pattern defined by the edge of the die; and

(e) placing a carton blank having a glue applied thereto in a position to register with the individual film panel after the pattern has been cut therein and to have the same pressed upon the glued portions of the blank as the drum rotates into contact with the carton blank.

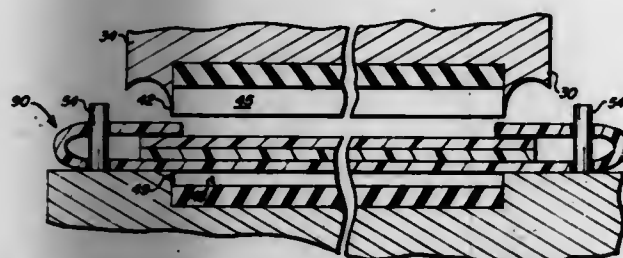
4,247,350

SIMULATED LEATHER ACCESSORY AND METHOD OF MAKING SAME

Donald E. McIntyre, 11835 Blackheath Rd., Scottsdale, Ariz. 85254; David J. Vero, 3924 S. Bonarden La., and Duane W. Vero, 1033 E. Riveria Dr., both of Tempe, Ariz. 85282
Filed Apr. 10, 1975, Ser. No. 566,943
Int. Cl.³ B32B 3/04

U.S. Cl. 156—216

5 Claims



1. A method of producing an edge on a thermoplastic item having the appearance of turned-edge leather construction comprising:

- (a) forming a blank of thermoplastic material having a body portion and a projecting flap, said flap being joined to said body portion along a score line;
- (b) positioning said blank in a fixture, said fixture having,
 - (i) a first die member having a recess of predetermined depth defining the shape of the item to be produced;
 - (ii) a second die member having a projecting edge in alignment with said recess; and
 - (iii) aligning and retaining means associated with said fixture;
- (c) folding said flap along said score line to overlie the body portion of said blank forming an assembly with said assembly engaged by said aligning and retaining means; and
- (d) bringing said die members together with said projecting edge and contacting said flap and applying pressure and thermal energy to said blank in the projected flap area along a line substantially parallel to said score line and along a plane substantially perpendicular to said blank thereby fusing said blank flap and body and causing said assembly to at least partially compress into said recess in said first die member fusing the layers along a generally perpendicular edge thereby forming a thin separable tear seal intermediate of the upper and lower faces of said assembly leaving a turned edge having a surface devoid of fusion lines.

4,247,351

PROCESS FOR MANUFACTURING ARTIFICIAL BREASTS

Cornelius Rechenberg, Weidach 22, 8204 Brannenburg, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,167

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737321

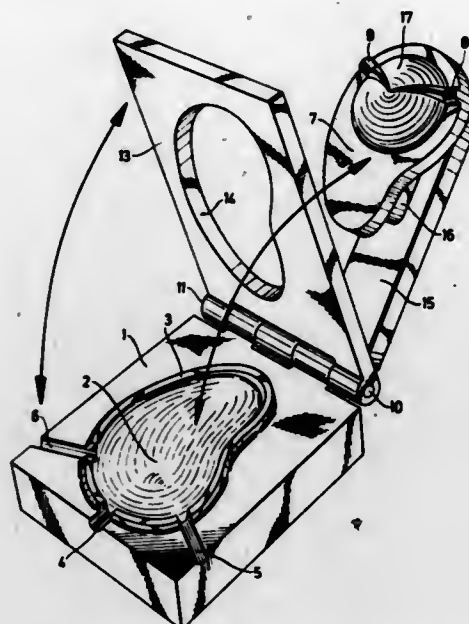
Int. Cl.³ B29F 1/00; A61F 1/00; A41C 3/14

U.S. Cl. 156—221

3 Claims

1. A process of manufacturing artificial breasts comprising breast-shaped cups made from a two-component silicone rubber composition capable of a cross-linking addition reaction, which cups are sheathed by plastic sheeting layers joined by welding, in which process the flat-lying sheeting layers are superimposed and secured to a mold base part having a cavity which conforms to the breast, the mold base part is closed by a cover which has a rear surface which adjacent to said cavity

conforms to the contour of the rear side of the artificial breast, the two-component silicone rubber composition is charged under pressure into the region between the sheeting layers until the composition solely under the influence of said charging pressure has forced the sheeting layers against the surfaces



4,247,352

METHOD OF BONDING CRYSTAL LAYERS TO INSULATING SUBSTRATES

Edward H. Stupp, Spring Valley, N.Y., and Andrew A. Turnbull, Reigate, England, assignors to North American Phillips Corporation, New York, N.Y.

Filed Nov. 29, 1976, Ser. No. 745,960

Int. Cl.³ H01J 29/45

U.S. Cl. 156—272

8 Claims

1. A method of attaching a water soluble single crystal of pyroelectric material to a wettable insulating substrate, comprising the steps of forming a thin film of water on the substrate, placing the crystal on the substrate with the film of water thereon, and removing the excess water to produce the bond.

4,247,353

MANUFACTURE OF A COMPOSITE COVERING

Jean-Francois Courtoy, Wiltz, Luxembourg, assignor to Euro-floor S.A., Wiltz, Luxembourg

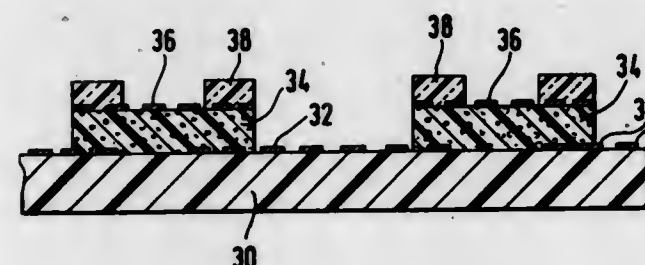
Filed Mar. 6, 1979, Ser. No. 17,857

Claims priority, application Luxembourg, Mar. 7, 1978, 79184

Int. Cl.³ B05D 3/02

U.S. Cl. 156—277

10 Claims



1. A process for the manufacture of decorative sheet material characterized by a textured surface comprising the steps of: printing an ornamental pattern on a substrate;

serigraphically applying a discontinuous layer of plastisol in a thickness of at least 100μ over the printed pattern; causing the discontinuous layer of plastisol to gel by passing the substrate through an oven and maintaining the oven temperature at a level which will cause the plastisol to coagulate but will not result in fusing of the plastisol; cooling the substrate subsequent to removal from the gelling oven; printing a second pattern on the gelled plastisol in at least two colors; and passing the substrate through a further oven to fuse the plastisol.

4,247,354

BONDING THERMOPLASTIC OR THERMOSETTING RESINS

Robert J. Ward, Bridgewater; James H. Kawakami, Piscataway, and Neil J. McCarthy, Jr., Warrenville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 947,437, Oct. 2, 1978, Pat. No. 4,181,687.

This application Aug. 8, 1979, Ser. No. 64,536

Int. Cl.³ C09J 3/14, 5/00; C08L 43/04

U.S. Cl. 156—329

8 Claims

1. A method of improving the adhesion between a thermoplastic or thermosetting resin and an inorganic oxide substrate which comprises providing to the interface between said thermoplastic or thermosetting resin and said inorganic oxide substrate:

- (A) a copolymer having copolymerized therein (i) from 75 to 95 mole percent of at least one ethylenically unsaturated organic monomer and (ii) from 5 to 25 mole percent of an unsaturated organosilane monomer of the formula $RSiX_nR'(3-n)$ wherein R is a monovalent organic radical containing a vinyl group, R' is a monovalent hydrocarbon radical containing up to 10 carbon atoms, n is an integer from 1 to 3, and X is a hydrolyzable group chosen from the group consisting of alkoxy of 1 to 4 carbon atoms, alkoxyalkoxy containing up to about 6 carbon atoms, acyloxy of 2 to 4 carbon atoms, phenoxy, and oxime; and
- (B) a monomeric hydrolytically reactive organosilane of the formula $R''(4-x)SiX_x$, wherein X is a hydrolyzable group as previously defined, R'' is a monovalent organic radical of from 1 to 12 carbon atoms and x is an integer having a value of from 1 to 4.

4,247,355

APPARATUS FOR MANUFACTURE OF LAMINATED GLAZING

Hans-Georg Friedrich, Wuerzburg; Friedrich Halberschmidt, Merksteil, and Rudolf Pelzer, Herzogenrath, all of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation of Ser. No. 694,449, Jun. 9, 1976, abandoned, which is a continuation of Ser. No. 471,753, May 20, 1974, abandoned. This application Aug. 4, 1978, Ser. No. 930,998

Claims priority, application France, May 25, 1973, 73 19035

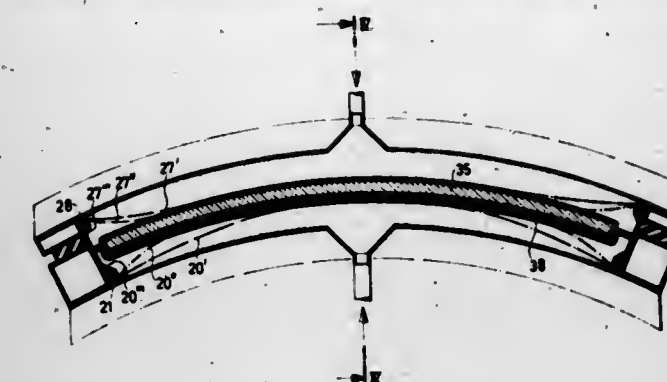
Int. Cl.³ B32B 31/20

U.S. Cl. 156—382

3 Claims

1. Apparatus for laminating flexible film onto a smooth surface of a rigid body, comprising an enclosure having a top wall, a bottom wall, and laterally opposed side walls, the enclosure being formed of upper and lower separable sections to allow access to the interior of the enclosure, releasable support means in the enclosure for supporting the body at edge portions thereof with the smooth surface facing the bottom wall of the enclosure, a first extensible membrane mounted on the lower section of the enclosure between the bottom wall and the support means and adapted to freely receive a sheet of the flexible film thereon, the first membrane extending across the

floor of the enclosure between laterally opposed side-walls, a second extensible membrane mounted in the upper section of the enclosure between the top wall and the support means and having a side thereof facing the sheet, means for establishing a fluid-tight space between the first and second membranes, means for establishing a fluid pressure differential between the side of the first extensible membrane facing the smooth surface of the body and the bottom wall of the enclosure



4,247,356

EXPANDABLE TIRE BUILDING DRUM WITH IMPROVED BLADDER

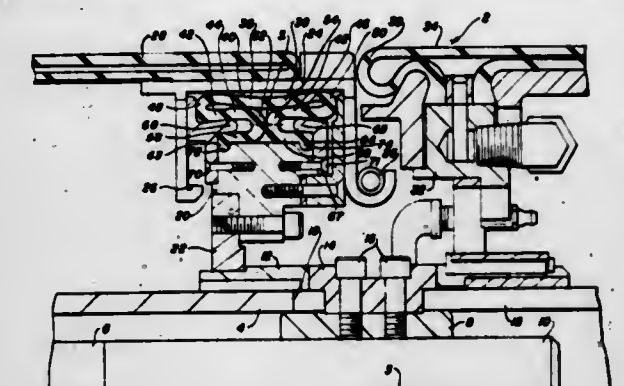
Richard N. Spach, Louisville, and Steve J. Kovalchik, Jr., Akron, both of Ohio, assignors to The General Tire & Rubber Co., Akron, Ohio

Filed Oct. 16, 1978, Ser. No. 951,901

Int. Cl.³ B29H 17/16

U.S. Cl. 156—416

3 Claims



1. An expandable tire building drum having a hub, a plurality of drum segments connect to said hub and movable radially outwardly and radially inwardly to expand and contract respectively the diameter of said drum at least one bladder support mounted on said hub, and an annular bladder mounted on said bladder support and positioned immediately beneath said drum segments, said bladder support having a passageway for conveying an inflating medium to said bladder, said annular bladder being inflatable move said drum segments radially outwardly and deflatable to allow said drum segments to move radially inwardly, wherein the improvement comprises:

- (a) annular bladder when deflated being folded upon itself in three layers,

- (1) the radially outermost of said layers lying beneath the underside surfaces of said drum segments,
- (2) the intermediate of said three layers including two intermediate bladder portions each having a first edge merging with the opposite lateral edges of said outermost layer, said intermediate bladder portions extending from said first edges toward each other and having second edges that face each other, and
- (3) the radially innermost of said layers including two innermost bladder portions each merging with one of said second edges of said intermediate bladder portions, said innermost bladder portions extending from said second edges of said intermediate bladder portions away from each other and terminating in axially spaced edge portions of said bladder;
- (b) said bladder support having axially spaced portions to which said edge portions of said bladder are secured, said passageway that conveys said inflating medium opening into said bladder at a location between said axially spaced portions of said bladder support; and
- (c) two bladder clamp rings secured to said bladder support, each of said bladder clamp rings clamping one of said edge portions of said bladder to said axially spaced portions of said bladder support.

4,247,357

CONTAINER-BASE ASSEMBLY MACHINE

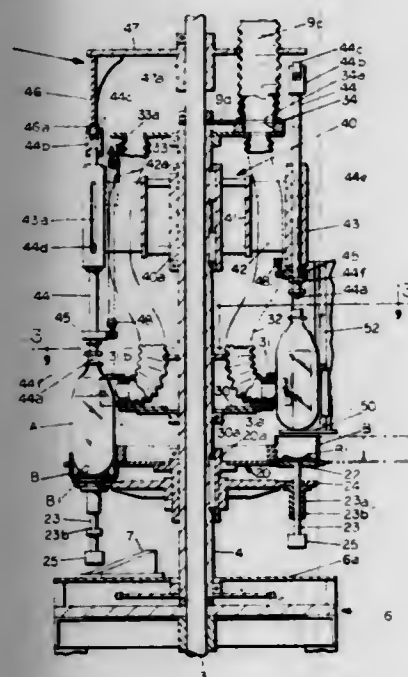
Robert F. Koutz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 20, 1979, Ser. No. 68,232

Int. Cl.³ B65C 9/00, 11/04

U.S. Cl. 156-567

10 Claims



1. Machine for assembling containers into a cup shaped base comprising, in combination:

- (1) a vertically disposed continuously rotating support column;
- (2) a first table secured to said support column; means on the periphery of said first table defining a plurality of pockets respectively constructed and arranged to receive and move a cup shaped base along a rotary path;
- (3) a second table secured to said support column in overlying relationship to said first table, a plurality of vacuum actuated container grasping chucks peripherally mounted on said second table in vertically aligned relation with said pockets, each chuck being constructed and arranged to grasp the side wall of a container to hold and rotationally move same in vertically spaced, concentric relationship with a base on said first table, but permit axial sliding movement of the grasped container and
- (4) means operable by rotation of said support column for successively moving the chuck held containers respec-

tively axially downwardly into inserted relationship in said cup shaped bases.

4,247,358

METHOD OF GROWING SINGLE CRYSTALS OF ALPHA ALUMINUM PHOSPHATE

Thomas R. AuCoin, Ocean; Abraham Schwartz, Oakhurst; Melvin J. Wade, Tinton Falls, and Roger J. Malik, Eatontown, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 8, 1979, Ser. No. 46,961

Int. Cl.³ C30B 7/10

U.S. Cl. 156-601

11 Claims

1. Method of growing single crystals of alpha aluminum phosphate of high crystal perfection from seeded solutions of aluminum orthophosphate and orthophosphoric acid in such a manner as to provide direct visual observation of the crystal growth process and allow precise determination of nucleation and growth kinetics, said method including the steps of:

- (A) sealing the seeded solution in clear quartz ampules,
- (B) inserting the ampules into a precisely temperature controlled silicone oil bath,
- (C) increasing the temperature of the silicone oil bath from ambient temperature to approximately 150 degrees C. over a three hour period,
- (D) programming the temperature of the bath upward at the rate of 0.1 to 2.0 degrees C. per day for about thirty days, and
- (E) removing the quartz ampules from the silicone oil bath and quickly cooling and removing the crystals.

4,247,359

PREPARATION OF EPITAXIAL RARE EARTH THIN FILMS

Hanumanthiya V. Venkatesetty, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 801,986, May 31, 1977, abandoned.

This application Oct. 30, 1978, Ser. No. 955,741

Int. Cl.³ C30B 23/06

U.S. Cl. 156-613

2 Claims

1. In a method of preparing epitaxial thin films of metallic rare earth garnets by chemical vapor deposition in an inert atmosphere, the improvement comprising the step of depositing said rare earth metals in an epitaxial layer on a substrate from organic ligand compound forms which include at least one element from the group consisting of scandium, yttrium, lanthanum, and the lanthanide series combined with the compound selected from the group consisting of acetylacetone, thenoyl trifluoroacetone, benzoylacetone, fluorinated benzoylacetone, sodium cyclopentadienide, tri-n-butylphosphate, tri-n-octylphosphine oxide, and 2,2,6,6-tetramethyl 3,5-heptanedione.

4,247,360

CRYSTALLINE LAYER GROWTH METHOD

Lucien C. De Brouckere, Blankenberge, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 15, 1978, Ser. No. 916,335

Claims priority, application Belgium, Jun. 17, 1977, 56006

Int. Cl.³ B01D 9/00; C30B 15/00

U.S. Cl. 156-618

8 Claims

1. A method for growing a crystalline layer on a substrate from a liquid medium comprising the step of: moving said substrate with respect to said liquid medium during layer growth, said step of moving causing the direction of rotation of said substrate with respect to a fixed point to be reversed and causing at least one point of said substrate to move in a loop-shaped path.

4,247,361

METHOD OF ETCHING A SURFACE OF A BODY

Joseph M. Shaheen, La Habra, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 18, 1979, Ser. No. 49,698

Int. Cl.³ B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 156-630

3 Claims



1. A method of etching a surface of a body including the steps of:

- applying a suitably flexible thermo-setting nylon epoxy resin adhesive coating to a relatively thin etchant resisting masking film composed of a copolymer of tetrafluoroethylene and hexafluoro-propylene;
- subsequently punching said masking film in a predetermined pattern corresponding to the pattern to be etched on the body;
- applying said masking film to a major surface of the body to be etched, thereby exposing a portion of the major surface corresponding to the predetermined pattern;
- setting said adhesive coating by applying heat so that said masking film is securely attached to said body; and
- subsequently applying an etchant to the body covered by said masking film so that said predetermined pattern is etched in said major surface of the body.

4,247,362

HIGH YIELD FIBER SHEETS

James C. Williams, Memphis, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed May 21, 1979, Ser. No. 41,043

Int. Cl.³ D21C 3/06; D21H 5/14; D04H 1/20

U.S. Cl. 162-13

18 Claims

1. A process for preparing sheets of high yield wood pulp fibers comprising the steps of:

- (A) providing substantially non-delignified and relatively undamaged softwood high yield fibers having a Canadian standard freeness value greater than about 700 ml;
 - (B) providing hardwood high yield fibers wherein said hardwood fibers:
 - (i) have a Canadian standard freeness value of from about 50 ml to about 400 ml;
 - (ii) have been prepared separately from said softwood fibers; and
 - (iii) have been prepared by a process comprising the steps of:
 - (a) treating hardwood with an aqueous solution comprising from about 2% to about 40% by weight of a treating agent selected from the group consisting of alkali metal sulfite, alkali metal bisulfite, sulphur dioxide with alkali metal hydroxide, and mixtures thereof at a temperature of from about 130° C. to about 190° C. for from about 1 minute to about 60 minutes; and
 - (b) defibrating said treated hardwood;
 - (C) mixing said softwood and hardwood fibers to form a papermaking furnish comprising at least about 75% by weight said softwood and hardwood fibers and wherein the weight ratio of said softwood fibers to said hardwood fibers is from about 2.33:1 to about 19:1; and
 - (D) wet forming said sheets from said papermaking furnish.
3. The process of claim 1 or 2 wherein the power input during said defibrating step is from about 155 to about 500 kilowatt hours per metric ton of treated hardwood.
10. A process for preparing airfelts comprising the steps of:

(A) comminuting sheets of high yield wood pulp fibers; and (B) airlaying said comminuted high yield wood pulp fibers wherein:

- (i) said sheets of high yield wood pulp fibers comprise at least about 75% by weight substantially non-delignified and relatively undamaged softwood high yield fibers and hardwood high yield fibers and wherein the weight ratio of said softwood fibers to said hardwood fibers is from about 2.33:1 to about 19:1;
- (ii) said softwood high yield fibers have a Canadian standard freeness value greater than about 700 ml;
- (iii) said hardwood high yield fibers:
 - (a) have a Canadian standard freeness value of from about 50 ml to about 400 ml; and
 - (b) have been prepared by a process comprising the steps of:
 - (aa) treating hardwood with an aqueous solution comprising from about 2% to about 40% by weight of a treating agent selected from the group consisting of alkali metal sulfite, alkali metal bisulfite, sulphur dioxide with alkali metal hydroxide, and mixtures thereof at a temperature of from about 130° C. to about 190° C. for from about 1 minute to about 60 minutes; and
 - (bb) defibrating said treated hardwood.

4,247,363

PROCESS FOR PRODUCING STONE GROUNDWOOD PULP FROM WOOD CHIPS BY USING A STONE GRINDER

Shigeharu Soma; Tadao Onodera, and Yoshio Onodera, all of Tomakomai, Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

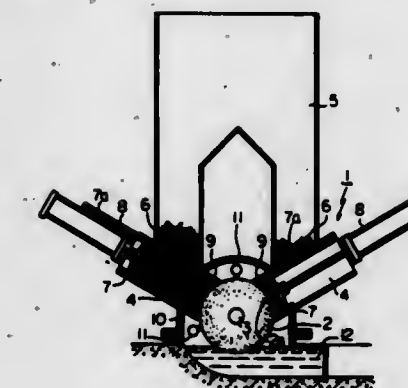
Filed Oct. 4, 1978, Ser. No. 948,416

Claims priority, application Japan, Oct. 17, 1977, 52-123599

Int. Cl.³ B21B 1/14; B27L 11/08

U.S. Cl. 162-28

8 Claims



1. A process for producing stone groundwood pulp from wood chips by using a stone grinder of the type having at least one pocket for containing wood chips, which process comprises the steps of:

- placing a mass of wood chips into said at least one pocket; compressing said mass of wood chips within said at least one pocket under a pressure of from 1.5 to 10 kg/cm² until the apparent volume of the compressed wood chip mass reaches a value corresponding to 70% or less of the original apparent volume of the wood chip mass, and the fibers of the wood chips become substantially parallel to the bottom surface of the compressed mass, and;
- grinding said compressed wood chip mass by bringing a bottom surface of said compressed wood chip mass into contact with a peripheral grinding surface of a grinding stone of a stone grinder, wherein the fibers of the compressed wood chip mass is substantially parallel to either the shaft of the grinding stone around which the stone rotates, or a line tangent to the peripheral grinding surface of the grinding stone, and by maintaining the pressure

applied to said compressed wood chip mass at a level of from 1.5 to 5 kg/cm², while rotating said grinding stone.

4,247,364

METHOD OF MAKING A SMOOTH, DIMENSIONALLY STABLE, MICA-FILLED, GLASS FIBER SHEET

Charles R. Culp, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation of Ser. No. 921,459, Jul. 3, 1978, abandoned. This application Jul. 2, 1979, Ser. No. 53,957

Int. Cl.³ B32B 5/16; D21F 11/00

U.S. Cl. 162—136

8 Claims

1. A method of making a smooth, dimensionally stable mica-filled, glass fiber sheet having low porosity comprising:

- preparing without prepulping an aqueous slurry having a pH below about 4.0 consisting essentially of glass fibers and, based on 100 parts by weight glass fibers, from 3 to 15 parts by weight organic fibers, 30 to 100 parts by weight mica flakes, and 5 to 20 parts by weight binder;
- diluting the slurry to a consistency between about 0.01% and 0.05% by weight solids; and
- depositing said slurry onto a moving screen, removing the excess of water to form a water laid sheet, and drying the sheet to set the binder.

6. A mica filled glass fiber web of low porosity consisting essentially of 100 parts by weight of low alkali content glass fibers having diameters in the range of 3–15 microns and an average length of $\frac{1}{4}$ to $\frac{1}{2}$ inch; from 3–15 parts by weight synthetic organic fibers of an average length of $\frac{1}{4}$ to $\frac{1}{2}$ inch and deniers between about 1 and 6; 30 to 100 parts by weight mica flakes of a size range between about 20 and 100 mesh; and 5 to 20 parts by weight binder.

4,247,365

METHOD FOR COOLING AND DEDUSTING DEGASIFICATION GASES ESCAPING FROM COAL DEGASIFICATION CHAMBERS

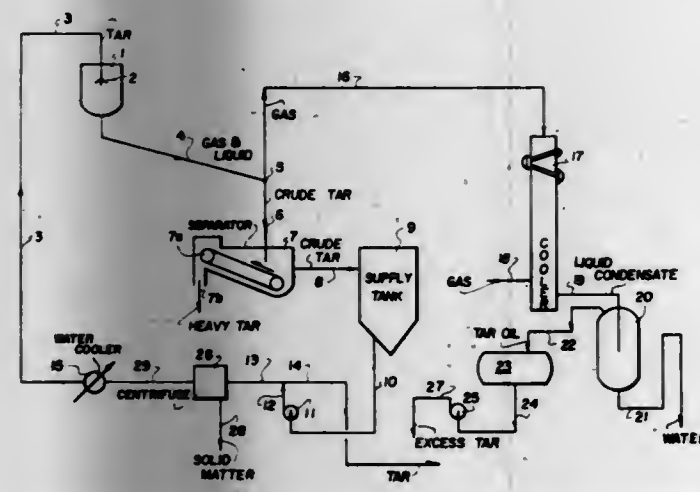
Heinrich Weber, Recklinghausen; Horst Dungs, Herne; Franz Beckmann, Alsdorf; Hugo Schmauch, Merchweiler, Saar, and Karl-Heinz Flasche, Bonn, Saar, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed Dec. 16, 1977, Ser. No. 856,039

Int. Cl.³ C10B 27/04

U.S. Cl. 201—41

11 Claims



1. An improved method of cooling and dedusting degasification gases escaping from coal degasification chambers, particularly degasification gases of the type which are obtained in high temperature or low temperature carbonization of bituminous and sub-bituminous coals and which pass from the degasification chambers through rises and bends into collecting mains, wherein the degasification gases are subjected to contact with a liquid scavenging and cooling in the bends or collecting mains or both, the improvement comprising directing liquid crude tar having a temperature in excess of 50° C. and lower than 170° C. into one of the bends and the collecting

mains into contact with the degasification gases in an amount relative to the degasification gases so as to completely evaporate any water in the collecting main, so as to cool and scavenge the degasification gases thereby producing a waterless tar and a cooled and dedusted degasification gas.

4,247,366

METHOD OF OPERATING A COAL PREDRYING AND HEATING PLANT IN CONNECTION WITH A COKING PLANT

Johannes Knappstein; Dieter Stalherm, and Janos Bocsanczy, all of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still, Fed. Rep. of Germany

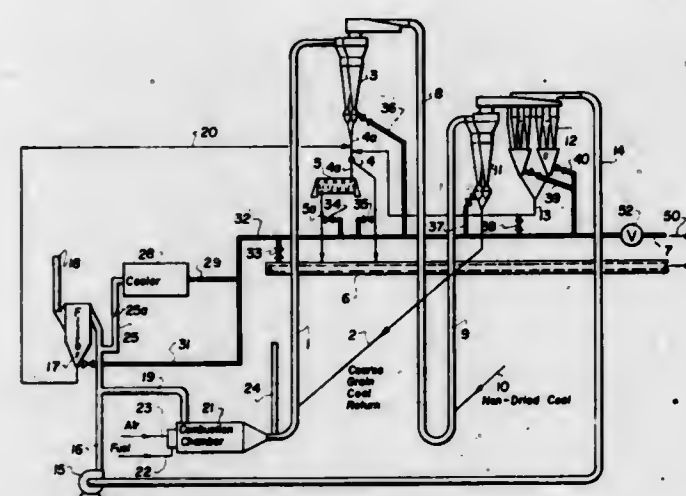
Filed Apr. 18, 1978, Ser. No. 897,375

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1977, 2719189

Int. Cl.³ C01B 57/10

U.S. Cl. 201—41

8 Claims



1. A method of preparing and delivering coal to a coking plant comprising the steps of: generating hot inert combustion gases by burning a fuel in the presence of air, circulating said hot inert combustion gases over coal whereby said coal is dried and preheated; cooling a portion of said inert combustion gases subsequent to the drying and preheating of said coal to substantially remove moisture absorbed by said hot inert gases in preheating the coal and to lower the temperature thereof, and directing the substantially moisture reduced cooled inert combustion gases over the preheated coal being conveyed for further processing to the coking unit.

4,247,367

APPARATUS FOR SOLID WASTE PYROLYSIS

Bertram B. Reilly, 9 Choctaw Trail, Ormond Beach, Fla. 32074

Division of Ser. No. 900,983, Apr. 28, 1978. This application Nov. 16, 1979, Ser. No. 95,150

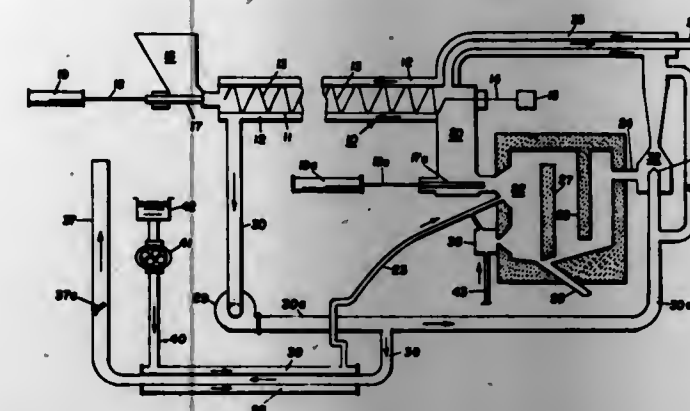
Int. Cl.³ C10B 47/18, 7/10

U.S. Cl. 202—105

6 Claims

1. A municipal waste pyrolysis system for the production of pyrolysis oil comprised of a pyrolysis retort having a jacket for indirectly heating said retort, char-recovering means directly connected at its top to the discharge outlet of said retort to separate by gravity the solid char component of the pyrolysis products discharged therein from the fluid pyrolysis products, a furnace fueled by said char component having a char inlet directly connected to said char-recovering means adjacent the bottom thereof, means for injecting said char component through said inlet into said furnace in sealing relation to said char-recovering means, a jet condenser for said fluid pyrolysis products combined with a gravity separating vessel for recovering the pyrolysis oil and gas fractions thereof, a fluid-component conduit between the top of said char-recovering means and said jet condenser, vented means for recycling heating gas through said retort jacket from the pyrolyzed product dis-

charge end of said retort to the municipal waste feed end thereof, and means for injecting the flue gas from said furnace into the recycled heating gas stream returning from the waste



inlet end of said jacket thereby restoring said stream to the temperature for return to the pyrolysis product discharge end of said retort jacket.

4,247,368

APPARATUS FOR DISTILLATION COLUMN SIDE STREAM WITHDRAWAL

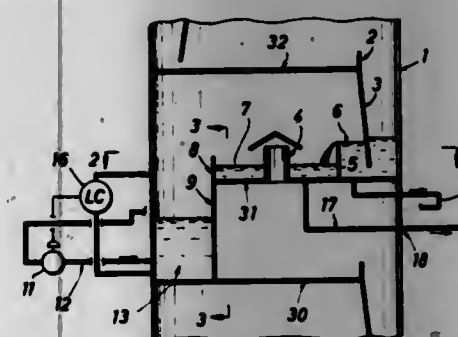
Robert P. Bannon, Houston, Tex., and Johan H. DeBle, Alphen aan de Rijn, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 946,886, Sep. 28, 1978, abandoned. This application Nov. 23, 1979, Ser. No. 97,023

Int. Cl.³ B01D 3/42

U.S. Cl. 202—158

9 Claims



1. In combination with a multi-stage countercurrent distillation column having an upper fractionation stage above a withdrawal outlet for use in withdrawing a liquid side draw from the column and a lower fractionation stage below said withdrawal outlet,

an apparatus, for dividing a liquid source into a reflux portion of measured and controlled flowrate that passes by gravity flow to the lower fractionation stage, and a side stream portion that is withdrawn from the distillation column through said withdrawal outlet, which apparatus comprises

- a liquid reflux reservoir adapted to collect said liquid source, said reservoir positioned at an elevation intermediate to that of the upper and the lower fractionation stages, said reflux reservoir having in association therewith (b) means for maintaining a liquid level within the reflux reservoir, said reflux reservoir being in liquid communication with said withdrawal outlet via (c) flow passage means adapted to direct the side stream portion of the liquid source to the withdrawal outlet, and said reflux reservoir being in liquid communication, through (d) first liquid conduit means, with
- (e) control valve means adapted to pass a controlled flowrate of said reflux portion of the liquid source, via (f) second liquid conduit means, to
- (g) a metering chamber positioned at an elevation below the reflux reservoir, said chamber having (h) at least one flow orifice through which passes the reflux portion to

the lower fractionation stage, and said chamber having in association therewith (i) liquid level measuring means for monitoring of liquid level in the chamber.

4,247,369

APPARATUS FOR CONTINUOUS DISTILLATION

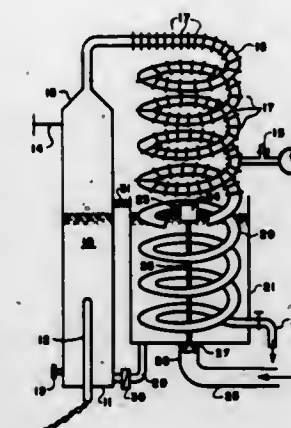
Roy E. Bean, 23429 N. 89th Dr., Peoria, Ariz. 85345

Filed Jan. 11, 1979, Ser. No. 47,439

Int. Cl.³ B01D 3/02; C02F 1/04

U.S. Cl. 202—176

4 Claims



1. Apparatus for the continuous automatic distillation of water comprising:

- (a) an elongated vertically disposed cylindrical boiling vessel having heating means positioned adjacent the bottom thereof,
- (b) a vented reservoir vessel adapted to hold water awaiting distillation and transfer said water by gravity flow to said boiling vessel,
- (c) a float valve associated with said reservoir vessel adapted to control the admission of water from a water supply conduit in a manner to maintain a substantially constant water level in said reservoir vessel,
- (d) a transfer conduit communicating between said reservoir vessel and said boiling vessel in a manner whereby equal levels of water are established in said intercommunicating vessels,
- (e) a vapor condensation tube having an entrance end and exit end, said entrance end communicating with an upper portion of said boiling vessel,
- (f) a water cooling tube disposed below said vapor condensation tube as a continuous extension thereof, having an exit end associated with valve means for the controlled removal of water, said water cooling tube being positioned within said reservoir vessel below the normal water level therein, whereby water within said reservoir is raised to an elevated temperature which, in conjunction with the vented nature of said reservoir vessel, effects evaporative removal from said water of species dissolved therein more volatile than water,
- (g) the various aforesaid components of said apparatus being interconnected in a manner causing said apparatus to have a structurally integral nature permitting attachment to a support structure by mounting means associated with said boiling vessel.

4,247,370

COKE OVEN FUMES CONTROL SYSTEM

Pramodh Nijhawan, Indianapolis, and Joseph M. Duckworth, Zionville, both of Ind., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Mar. 12, 1979, Ser. No. 19,440

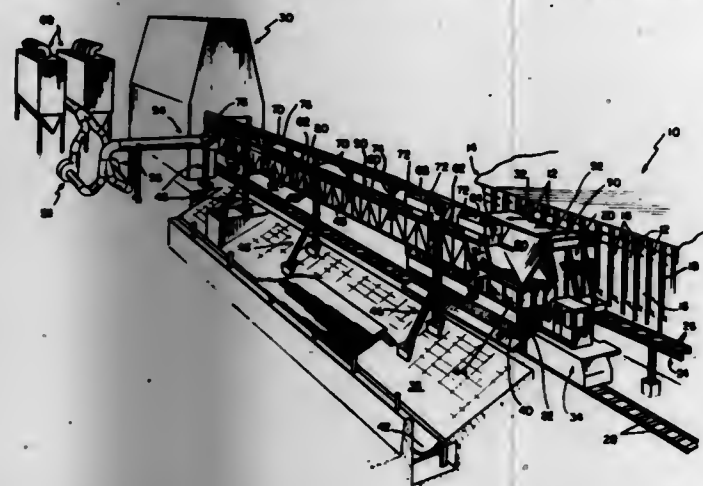
Int. Cl.³ C10B 27/04

U.S. Cl. 202—263

12 Claims

1. A contaminant capture system for a coke oven pushing operation for a coke oven battery having a coke side provided with guide means movable along the battery for guiding coke

from a selected oven of the battery during the push and a conveyor means movable along the battery to receive the coke pushed through the guide means and convey it to a quenching station, the system including suction means, a first duct extending along the battery and coupled to the suction means for evacuation thereby, the first duct including a wall portion closed by a flexible web, a car disposed for movement on the first duct to raise the web to couple the interior of the car to the interior of the first duct, mobile first hood means including means for coupling the first hood means to the interior of the car, means for moving the car to dispose the first hood means and overlying relation to a selected portion of the conveyor



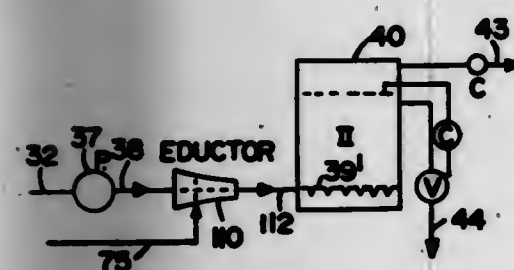
means to draw into the first hood means contaminants evolved as hot coke is transported on said conveyor means, mobile second hood means mounted on the guide means to draw into the second hood means contaminants evolved as hot coke is pushed from said selected oven to the conveyor means, a second duct for coupling the second hood means to the first hood means and thus to the first duct, a third duct provided internally of the first hood means and connected at one of its ends to the means for coupling the first hood means to the interior of the car, the third duct engaging the second duct when the first and second hood means are in a selected relative orientation to couple the second duct to the first duct.

4,247,371

PRECIPITATING SCALE-FORMING COMPOUNDS FROM WATER, AND FORMING FRESH WATER

Paul S. Roller, 1440 N St., N.W., Washington, D.C. 20005
Continuation-in-part of Ser. No. 749,227, Dec. 10, 1976, abandoned, and a continuation-in-part of Ser. No. 701,999, Jul. 1, 1976, Pat. No. 4,054,493, and a continuation-in-part of Ser. No. 678,037, Apr. 19, 1976, abandoned, and a continuation-in-part of Ser. No. 531,278, Mar. 15, 1966, abandoned, and a continuation-in-part of Ser. No. 834,203, Jun. 3, 1969, abandoned, and a continuation-in-part of Ser. No. 387,585, Aug. 13, 1973, Pat. No. 3,951,752, and a continuation-in-part of Ser. No. 444,789, Feb. 22, 1974, Pat. No. 3,951,753. This application Dec. 20, 1978, Ser. No. 971,181
Int. Cl.³ C02F 1/10; B01D 1/28
U.S. Cl. 203—7

30 Claims



1. A process for removing from water containing dissolved compounds the scale-forming part thereof, which comprises preheating the water; pressurizing the water, which has been preheated, in stages of water pressure; passing a quantum of steam into the pressurized water in each said stage, and con-

densing the quantum of steam, forming in each stage further heated water, while thermoprecipitating scale-forming compounds in suspension in the water; from the last stage of water pressure, issuing further heated water containing a successively accumulated precipitate of scale compounds in suspension; separating said precipitate and forming post-thermal water; flash vaporizing, while flash cooling, said post-thermal water in flash vaporization stages corresponding to said stages of water pressure; at each said stage of flash vaporization, compressing the flashed vapor, the compressed vapor comprising said quantum of steam; and from the last stage of flash vaporization, issuing flash-cooled, post-thermal water containing dissolved compounds substantially removed of scale-forming compounds.

4,247,372

SILVER PLATING

Fred I. Nobel, Sands Point, and William Brasch, Commack, both of N.Y., assignors to LeaRonol, Inc., Freeport, N.Y.
Filed Aug. 29, 1978, Ser. No. 937,849
Int. Cl.³ C25D 3/46, 5/02, 5/08

U.S. Cl. 204—15

7 Claims

1. Process for the electrodeposition of silver on a copper or copper alloy substrate comprising electroplating such substrate with an alkali silver cyanide electroplating bath containing about 10 g/l of free cyanide or less and a mercaptan compound in sufficient amount to eliminate or retard silver immersion deposition on such substrate, and maintaining the free cyanide content below that which will cause immersion plating in the presence of the mercaptan compound.

7. A process for the electrodeposition of silver utilizing the high-speed or selective plating process which comprises continuously spraying an alkali silver cyanide plating bath at high velocity against a plating surface in which the plating bath comprises at least about 15 g/l of silver as an alkali silver cyanide, 10 g/l of free cyanide or less, and a mercaptan compound in sufficient amount to eliminate or retard silver immersion deposition on the surface, and maintaining the free cyanide content below that which will cause immersion plating in the presence of the mercaptan compound.

4,247,373

METHOD OF MAKING SEMICONDUCTOR DEVICE

Akio Shimano, Takatsuki, and Hiromitsu Takagi, Mako, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

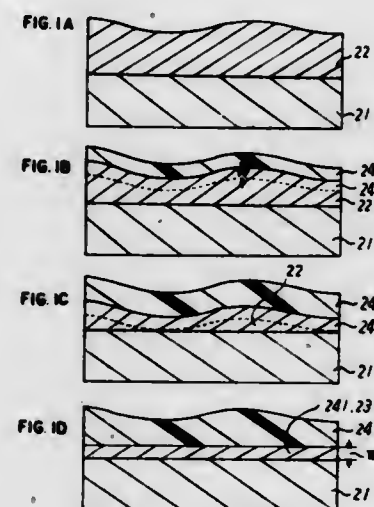
Filed Jun. 12, 1979, Ser. No. 47,931

Claims priority, application Japan, Jun. 20, 1978, 53-75104; Jan. 12, 1979, 54-3130; Jan. 12, 1979, 54-3131; Mar. 20, 1979, 54-32747

Int. Cl.³ C25D 11/02, 11/32

U.S. Cl. 204—15

40 Claims



1. A method of making a semiconductor device comprising

the anodic oxidation of an n-conductivity type semiconductor layer formed on a substrate selected from the group consisting of a semi-insulative substrate, a high resistivity semiconductor substrate and an insulative substrate, said method characterized in that the anodic oxidation includes the steps of:

maintaining an electrolytic current for the anodic oxidation in an electrolyte at a predetermined constant value, illuminating the face of the semiconductor layer to be anodically oxidized with a light of a predetermined intensity and forming a depletion layer of a specified thickness therein, and continuing said anodic oxidation until the bottom face of said depletion layer reaches an interface between said n-conductivity type semiconductor layer and said substrate and a uniform anodic oxidation layer is produced.

4,247,374

METHOD OF FORMING BLANKS FOR COINS

Michael J. H. Rascoe, St. Albert; Kahitandra M. Sarkar, Saskatoon, and Maurice A. Clegg, Fort Saskatchewan, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Apr. 20, 1979, Ser. No. 31,709

Int. Cl.³ C25D 7/00

U.S. Cl. 204—23

1 Claim

1. A method for producing blanks suitable for minting into coins or similarly disc-shaped articles, comprising loading a plurality of appropriately disc-shaped steel cores into a perforated container, placing the container in an intermediate metal electroplating bath, said intermediate metal being selected from the group consisting of nickel and zinc, electroplating an intermediate metal coating onto the cores while moving the container angularly about a horizontal axis until the intermediate metal coating has a thickness of at least about 0.005 mm on each opposed face of each core and a thickness on the peripheral edge of each core measured radially in the range of from about 2 to about 4 times the face thickness, placing the container in a copper electroplating bath, electroplating a copper coating onto the cores while moving the container angularly about a horizontal axis until the copper coating has a thickness of at least about 0.05 mm on each opposed face of each core and a thickness on the peripheral edge of each core measured radially in the range of from about 2 to about 4 times the face thickness, removing the plated cores from the container, and heating the plated cores to form a layer of interdiffused copper and intermediate metal and a layer of interdiffused intermediate metal and steel with consequent metallurgical bonding of the copper coating to the intermediate metal coating and of the intermediate metal coating to each steel core and to decrease the hardness of each steel core to less than about 65 on the Rockwell 30T hardness scale.

4,247,375

PROCESS OF ELECTROLYZING AQUEOUS SOLUTION OF ALKALI HALIDES

Karl Lohrberg, Heusenstamm, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 62,270

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837313

Int. Cl.³ C25B 1/34

U.S. Cl. 204—96

10 Claims

1. In a process of electrolyzing an aqueous solution of an alkali metal halide in a membrane cell where halogen oxyacids and/or their salts are formed, and in which a pH value above 1.0 is maintained in the anode chamber and the alkali metal halide solution is moved through the anode chamber and, thereafter, through at least one zone in which its concentration and pH are increased the improvement wherein the pH of at least a portion of the alkali metal halide solution whose concentration has been increased is thereafter adjusted to a pH value below 1.0 and said solution is subsequently adjusted to a

pH value in the range of 1.0 to 6.0 and thereafter fed to the anode chamber.

4,247,376

CURRENT COLLECTING/FLOW DISTRIBUTING, SEPARATOR PLATE FOR CHLORIDE ELECTROLYSIS CELLS UTILIZING ION-TRANSPORTING BARRIER MEMBRANES

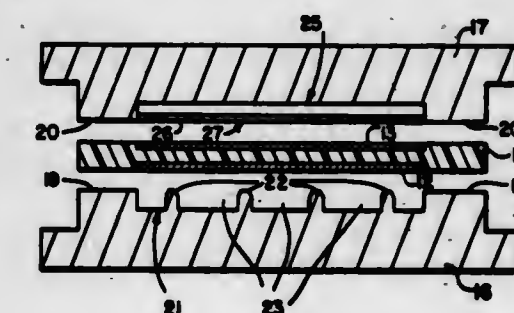
Russell M. Dempsey, Hamilton, and Anthony B. LaConti, Lynnfield, both of Mass., assignors to General Electric Company, Wilmington, Mass.

Division of Ser. No. 866,299, Jan. 3, 1978, abandoned. This application Jan. 2, 1979, Ser. No. 491

Int. Cl.³ C25B 1/26, 11/02, 11/06

U.S. Cl. 204—128

31 Claims



1. A process of generating chlorine which comprises electrolyzing an aqueous chloride between an anode and a cathode separated by an ion transporting membrane, the anode and the cathode each comprising a mass of electroconductive catalytically active particles bonded to said membrane, and having a current distributor in contact with the anode at a plurality of contact areas distributed over the surface of the anode.

4,247,377

METHOD FOR ELECTROLYTIC ETCHING

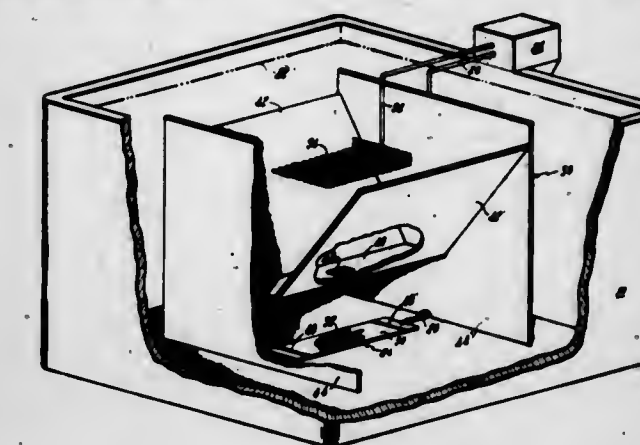
Thomas A. Eckler, and Brian A. Manty, both of Lake Park, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,762

Int. Cl.³ C25F 3/02, 3/14

U.S. Cl. 204—129.65

3 Claims



1. The method of electrolytically etching depressions in a metal workpiece using an electrode and electrolyte, comprising:

- applying to the workpiece a resist configured to define an area to be etched;
- immersing the electrode and workpiece in an electrolyte;
- providing a shield interposed between the workpiece and the electrode, the shield containing an aperture substantially smaller than the area of the workpiece, being shaped to prevent passage toward the electrode of

gases liberated from the workpiece excepting those which might pass through the aperture, being further adapted and located to allow circulation of electrolyte through the aperture and about the electrode during electrolytic etching;

(d) applying an alternating electrical potential between the workpiece and the electrode and maintaining the application of alternating potential until depressions of the desired depth are achieved.

4,247,378 ELECTROBRIGHTENING OF ALUMINIUM AND ALUMINIUM-BASE ALLOYS

Peter G. Harris, High Wycombe, England, assignor to The British Aluminum Company Limited, England
Filed Sep. 7, 1979, Ser. No. 73,586
Int. Cl.³ C25F 3/16, 3/20

U.S. Cl. 204—129.95

15 Claims

1. A process for the direct current electrobrightening of a component of aluminium or an aluminium base alloy in which the component constitutes an anode in an electrolyte comprising an aqueous solution containing carbonates and phosphates in which the solution contains at least one member selected from the group consisting of the carbonates, hydrogen carbonates and sesquicarbonates of the alkali metals and ammonia; and at least one member selected from the group consisting of the mono-, di-, and tribasic orthophosphates of the alkali metals and ammonia; characterised in that the pH value of the solution measured by glass electrode as at 70° C., is from 9.0 to 10.7; and in which local products of reaction and depleted solution are continuously dispersed from the surface of the component at a rate that enables the current density automatically to increase by a factor of 2 to 4 over its value in the absence of such continuous dispersion.

4,247,379 METHOD FOR CHEMICAL REACTIONS USING HIGH INTENSITY RADIANT ENERGY AND SYSTEM THEREFOR

Sam L. Leach, P.O. Box 2536, Palos Verdes Peninsula, Calif. 90274

Continuation-in-part of Ser. No. 879,226, Feb. 21, 1978, Pat. No. 4,193,879. This application Aug. 9, 1979, Ser. No. 65,188. The portion of the term of this patent subsequent to Mar. 18, 1997, has been disclaimed.

Int. Cl.³ B01J 19/12

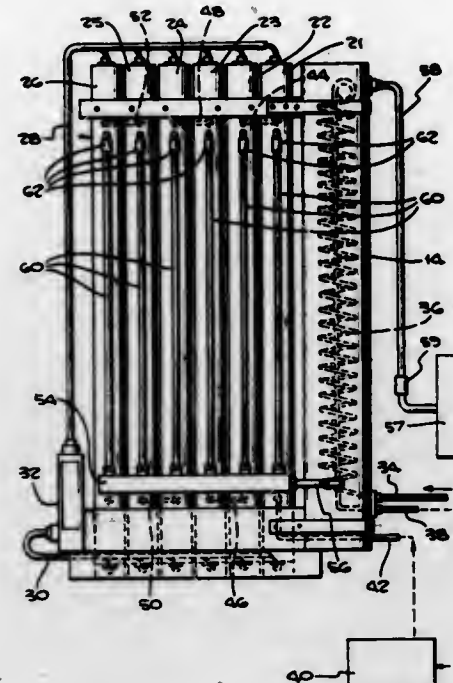
U.S. Cl. 204—157.1 R

41 Claims

22. A method for ionizing or dissociating gas comprising the steps of:

- initiating a gas discharge having relatively low frequency output radiation;
- supplying a gas to be ionized or dissociated to a reaction chamber adjacent said gas discharge, said gas having strong absorption bands at higher frequencies than the lower frequency gas discharge output radiation;
- intercoupling the gas discharge radiation and the reaction chamber by a resonant cavity and a filtering layer of material which blocks lower frequency radiation and transmits higher frequency radiation within said absorption bands;
- compressing the gas discharge radiation to shorter wavelengths within said cavity, the shorter wavelength radiation

tion being within the absorption bands of said gas to be ionized; and



dumping the higher frequency radiation into said reaction chamber to precipitate chain ionization and dissociation reactions.

4,247,380 TECHNIQUE FOR IN SITU CALIBRATION OF A GAS DETECTOR

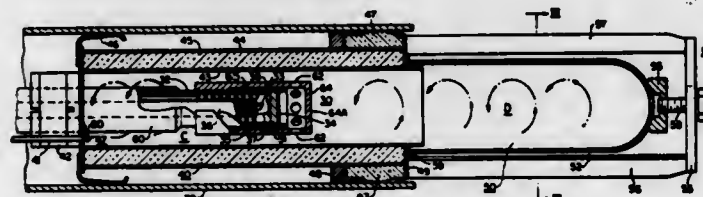
William H. McIntyre, Orrville, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 25, 1975, Ser. No. 616,712

Int. Cl.³ G01N 27/46

U.S. Cl. 204—195 S

2 Claims



1. In a gas measuring probe assembly having a solid electrolyte gas sensing device located within a tubular housing to generate electrical signals indicative of the gas constituents of a monitored gas entering the tubular housing, the combination of,

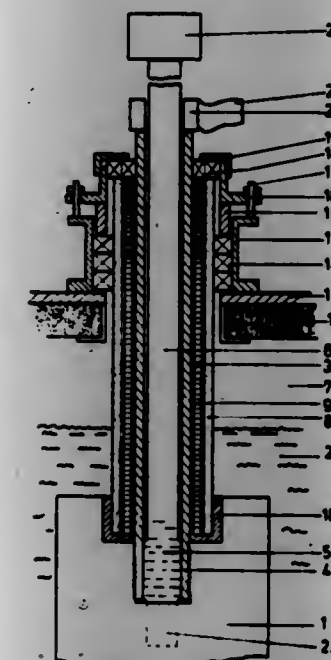
a calibration gas director means including a calibration gas manifold ring positioned within said tubular housing and having apertures therein, means for introducing calibration gas into said calibration gas manifold ring, said calibration gas manifold ring directing calibration gas flow through said apertures to produce a tubular calibration gas flow pattern within said tubular housing to sweep said monitored gas from said solid electrolyte gas sensing device and expose said solid electrolyte gas sensing device to said calibration gas, said solid electrolyte gas sensing device generating an electrical signal in response to said calibration gas.

4,247,381 FACILITY FOR CONDUCTING ELECTRICAL POWER TO ELECTRODES

Joachim Schirrag, Rheinfelden; Hanspeter Alder, Flurlingen, and Jobst Weber, Rheinfelden, all of Fed. Rep. of Germany, assignors to Swiss Aluminum Ltd., Chippis, Switzerland
Filed Feb. 4, 1980, Ser. No. 117,875
Int. Cl.³ C25C 3/16, 3/04, 0/6, 7/02

U.S. Cl. 204—225

12 Claims



1. Electrical conductor facility for electrodes immersed in a corrosive molten salt charge in a smelting furnace or electrolytic cell for the production of metals having a furnace or cell wall or roof, including:

- (a) a graphite pipe or tube open at both ends, fitting tightly into a recess in said electrode and passing through the wall or roof;
- (b) a metallic electrical conductor positioned inside the graphite pipe, wherein said conductor is made of a metal with a melting point lower than the temperature of the molten salt charge and makes contact with the electrode in the liquid state at the operating temperature of the furnace or cell, and
- (c) a protective pipe surrounding the graphite pipe made of a dense, electrically insulating ceramic material having one end tightly embedded in the electrode and the other end passing through the wall or roof, wherein said protective pipe is stable under the operating conditions of the furnace or cell.

4,247,382 CATHODE ASSEMBLY FOR ELECTRO-CHEMICAL APPARATUS

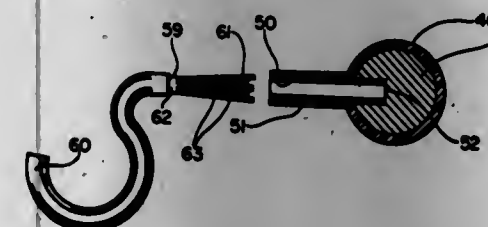
Noel E. Smith, and Christopher J. Smith, both of 1099 Tillinghast Rd., East, Greenwich, R.I. 02818

Continuation-in-part of Ser. No. 916,828, Jun. 19, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,513

Int. Cl.³ C25D 17/08, 17/10

U.S. Cl. 204—297 R

3 Claims



1. A cathode assembly for electro-chemical apparatus comprising:

- (a) an electrically conductive cathode frame having oppos-

ing parallel sides and at least one cross member having opposite first and second ends, said first end of said cross member being fastened to a first of said parallel sides and said second end of said cross member being fastened to a second of said parallel sides,

- (b) electrical insulation covering generally the entire surface of said cathode frame,
- (c) at least one electrically conductive cathode auxiliary extension having an outer surface, said extension being generally circular in cross-section and having a bore therethrough,
- (d) said extension being connected at one of its ends to said cross member and projecting outwardly therefrom and having an outer terminus formed as a flat end,
- (e) a layer of insulation covering said outer surface of said extension, said layer of insulation being in fluid tight contact with electrical insulation covering said cross member,
- (f) said layer of insulation covering said extension being coterminous with said extension and having an outer flat end residing in the same plane as said flat end of said extension,
- (g) the flat ends of said extension and said layer of insulation presenting a common flat face,
- (h) an electrically conductive contactor having first and second ends, the first end of said contactor being formed as a flat face and being generally circular in cross-section,
- (i) the cross-sectional dimensions of the first end of said contactor and said common flat face being generally equal whereby said first end of said contactor facially engages the full surface of said common flat face when said first end of said contactor is in facial engagement with said common flat face while overlapping engagement of said contactor with said extension is precluded, and
- (j) electrically conductive gripping means connected with said first contactor end and engageable with the major length of the interior of the bore of said extension and operable to secure said contactor with said extension and permit flow of electricity through said frame and to said contactor,
- (k) said gripping means being arranged to hold said first end of said contactor in facial engagement with said common flat face.

4,247,383 CATHODIC SYSTEM WITH TARGET, FOR VACUUM SPUTTERING APPARATUS FOR THE APPLICATION OF DIELECTRIC OR NONMAGNETIC COATINGS TO SUBSTRATES

Walter Greve, Bruchköbel; Edgar Kaiser, Seligenstadt; Dieter Grüne, Bruchköbel, and Ulrich Patz, Hörstein, all of Fed. Rep. of Germany, assignors to Leybold Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,436

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735525

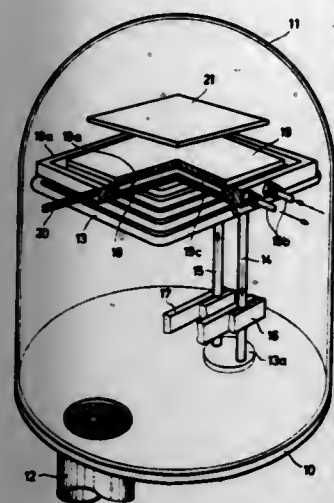
Int. Cl.³ C23C 15/00

U.S. Cl. 204—298

14 Claims

1. In a cathodic system having a planar target for use in an atomizing apparatus for the sputtering of a dielectric or non-magnetic coating onto a circular substrate, the cathodic system including a magnetic field generator disposed on the side of the target opposite from that of the substrate, the improvement wherein the magnetic field generator comprises a single Archimedean circular spiral pancake coil electrically connected at both ends thereof to a source of current and disposed parallel to the target and having an area which corresponds substan-

tially to the area of the target for developing a magnetic field wherein field lines are produced which are parallel to the



planar surface of the target, means insulating the coil from the target and cooling means for cooling the coil.

4,247,384

LIQUEFACTION OF CARBONACEOUS MATERIALS

Nai Y. Chen, Titusville, N.J.; Dennis E. Walsh, Richboro; Tsoung Y. Yan, Philadelphia, both of Pa., and Darrell D. Whitcomb, Titusville, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 15, 1979, Ser. No. 20,601

Int. Cl.³ C10G 1/00

U.S. Cl. 208—8 LE

7 Claims

1. A process for the conversion of solid carbonaceous material to a hydrocarbon-rich product which comprises:

- slurrying said material in a thermally stable aromatic petroleum or coal-derived solvent, and
- heating said slurry at elevated temperature in the presence of a hydrogen donor and alkali and in the absence of added carbon monoxide and added water to evolve carbon oxides therefrom.

4,247,385

METHOD FOR HYDROCRACKING A HEAVY POLYNUCLEAR HYDROCARBONACEOUS FEEDSTOCK IN THE PRESENCE OF A MOLTEN METAL HALIDE CATALYST

Everett Gorin, San Rafael, Calif., assignor to Conoco, Inc., Stamford, Conn.

Filed Sep. 26, 1979, Ser. No. 78,639

Int. Cl.³ C10G 1/00, 1/06, 65/00

U.S. Cl. 208—10

9 Claims

1. A method for hydrocracking a heavy polynuclear carbonaceous feedstock to produce lighter hydrocarbon fuels by contacting said heavy feedstock with hydrogen in the presence of a molten metal halide catalyst, said method consisting essentially of:

- mixing said feedstock with a heavy naphtha fraction to produce a mixture, said heavy naphtha fraction having an initial boiling point from about 100° to about 160° C. and a boiling point difference between its initial boiling point and its final boiling point of no more than about 50° C.;
- contacting said mixture in an extractor zone with a partially spent molten metal halide and hydrogen under temperature and pressure conditions so that said temperature is within 35° C. of the critical temperature of said heavy naphtha fraction for an effective period of time to extract at least a portion of the lighter hydrocarbon fuels having a boiling point above about 475° C. contained in said partially spent molten metal halide and in said feedstock;
- separating at least a portion of said heavy naphtha fraction and at least a portion of said lighter hydrocarbon fuels having a boiling point above about 475° C. from said

partially spent molten metal halide, unreacted feedstock and reaction products;

- contacting said partially spent molten metal halide, said unreacted feedstock and said reaction products with hydrogen and fresh molten metal halide in a hydrocracking zone to produce additional lighter hydrocarbon fuels; and,
- separating at least a major portion of said lighter hydrocarbon fuels and at least a major portion of the unreacted hydrogen from the spent molten metal halide.

4,247,386

CONVERSION OF HYDROCARBONS TO OLEFINS

Rene B. LaPierre, Moorisville, Pa., and Vern W. Weekman, Cherry Hill, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Aug. 6, 1979, Ser. No. 64,461

Int. Cl.³ C10G 47/18, 69/06

U.S. Cl. 208—61

7 Claims



GAS OIL HYDROCRACKING SELECTIVITIES 3% Pt/Al₂O₃ ZSM-20
600 PSIG, 10000 SCF H₂/BBL, 11/15N, 425-525°C

1. A process for the production of an ethylene-propylene product which comprises:

- hydrocracking a crude oil fraction boiling in the range from 200° to 1000° F. by contacting a mixture of said fraction and hydrogen with a highly active sulfided hydrocracking catalyst under a pressure greater than about 400 psig wherein
 - the molar ratio of hydrogen to said fraction is in the range from about 4:1 to about 50:1;
 - the temperature range is from about 300° to about 565° C.; and
 - the residence time is from about one to about 180 seconds;
- the catalyst comprises a hydrogenation function/Group IIA or IIIB-containing zeolite ZSM-20;
- separating the hydrocracked product of step (A) to recover a C₂-C₃ alkane product;
- thermally cracking the C₂-C₃ product and
- recovering ethylene and propylene as coproducts.

4,247,387

PROCESS FOR THE CONTINUOUS THERMAL CRACKING OF HYDROCARBON OILS

Mohammed Akbar, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

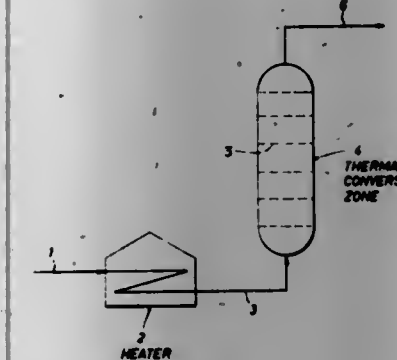
Filed Jul. 6, 1979, Ser. No. 55,440

Claims priority, application United Kingdom, Jul. 11, 1978, 29432/78

Int. Cl.³ C10G 9/14

U.S. Cl. 208—106

9 Claims



- A process for the continuous thermal cracking of residual hydrocarbon oils, which comprises heating the residual hydrocarbon oil feed and passing the total hot feed at a temperature in the range from 400° to 500° C. upwardly through an upright thermal conversion zone having at least 2 mixing stages, said zone comprising an unheated soaking vessel containing at least one of: (a) from 1 to 20 horizontal perforated plates, and (b) vertical sections with a hydraulic diameter in the range from 5 to 100 mm in which conversion zone the feed has an average residence time of between 5 to 60 minutes, and withdrawing cracked product from said conversion zone.

4,247,388

HYDRODEWAXING CATALYST PERFORMANCE

Frederick Banta, Elmer; Henry R. Ireland, Woodbury; Thomas R. Stein, Cherry Hill, and Robert C. Wilson, Jr., Woodbury, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 27, 1979, Ser. No. 52,718

Int. Cl.³ C10G 35/095, 45/54, 47/20

U.S. Cl. 208—111

26 Claims

- In the process of hydrode waxing a petroleum or synthetic hydrocarbon charge by contact of said charge and hydrogen at elevated temperatures and pressures with an acidic crystalline aluminosilicate zeolite having a pore diameter greater than about 5 Angstroms, a silica-to-alumina ratio of at least 12, and a constraint index within the range of 1-12 at elevated temperatures, the improvement which comprises treating said zeolite prior to use so as to adjust its alpha activity from a value in excess of 150 to within the range of 55-150 in order to enhance its catalytic properties.

4,247,389

DE-ASHING LUBRICATING OILS

Marvin M. Johnson; Gerhard P. Nowack, and Donald C. Tabler, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 7, 1979, Ser. No. 92,138

Int. Cl.³ C10G 29/00; C10M 11/00

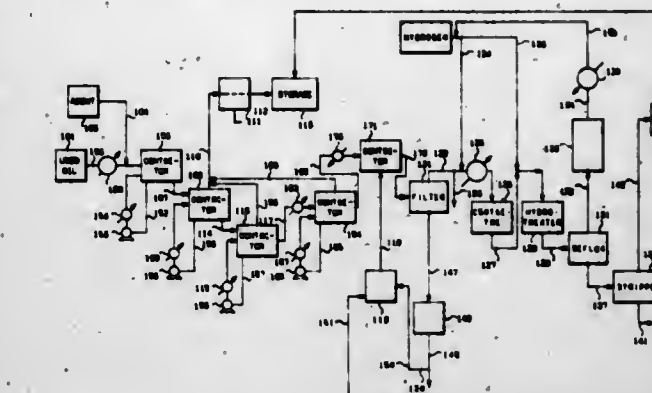
U.S. Cl. 208—181

25 Claims

- A process for the production of an essentially ash-free oil stock from a lubricating oil containing ash-forming components, said process comprising:
 - contacting said lubricating oil with an aqueous solution of a treating agent comprising a suitable ammonium salt under conditions sufficient to disperse said agent in said lubricating oil and to react said agent with ash-forming components of said lubricating oil;
 - removing a major portion of the water from the mixture

resulting from combining said aqueous solution and said lubricating oil;

- heating at least a portion of the product resulting from step (b) in the temperature range of about 320° to about 420° C. for a period of time sufficient to decompose at



- least a portion of any ammonium salts of sulfonic acid and dialkylthiophosphoric acid that are contained therein;
- cooling the product from step (c) to a temperature in the range of about 100° to about 180° C.; and
- separating solids from the product of step (d).

4,247,390

METHOD OF SEPARATING VERMICULITE FROM THE ASSOCIATED GANGUE

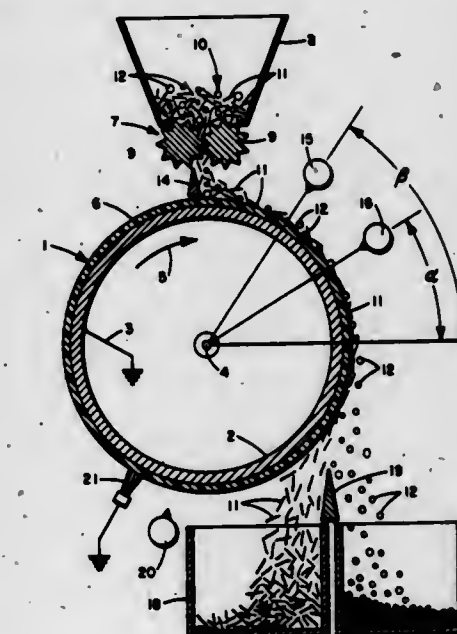
Frank S. Knoll, 4120 Haines St., Jacksonville, Fla. 32206

Continuation-in-part of Ser. No. 852,740, Nov. 18, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 953,882

Int. Cl.³ B03C 7/00

U.S. Cl. 209—129

30 Claims



- A method of treating a particulate ore to separate relatively flat crystalline mineral particles from the associated gangue comprising the steps of:
 - feeding to a rotating support comprising a grounded, conductive underlayer and a nonconductive overlayer, an ore containing such components and having a moisture content not exceeding about 20% by weight, a minimum particle size of at least about 6 millimeters and a ratio of the average flatness coefficient of the relatively flat particles to that of the remaining particles of at least about 2;
 - pinning the ore particles to the rotating support by bombarding the particles on the support in a first zone along the path of rotation of the support with ions from at least one ionizing electrode; and
 - collecting a tailings fraction comparatively poor in relatively flat crystalline mineral particles and a product frac-

tion comparatively rich in relatively flat crystalline mineral particles in second and third zones respectively along the path of rotation of the support as the particles separate from the rotating support.

4,247,391

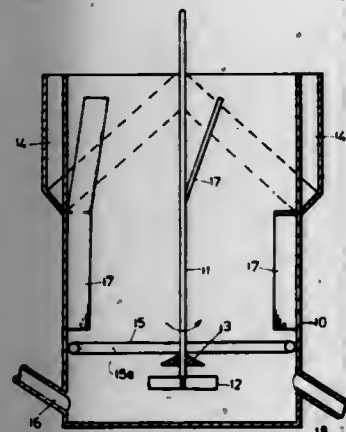
FROTH FLOTATION CELL AND METHOD OF OPERATION

Philip J. D. Lloyd, 5 Erlswold Way, Saxonwold, Johannesburg, South Africa

Filed Mar. 9, 1979, Ser. No. 19,782
Int. Cl.³ B03D 1/02, 1/16

U.S. Cl. 209-164

5 Claims



1. A method of recovering coarse particles from pulp by froth flotation, comprising establishing a quantity of said pulp in a froth flotation tank, agitating said pulp by means of an agitator disposed centrally of and at a low level in said tank, baffling the pulp flow at a central location of said tank above said agitator, injecting air bubbles into the tank about the periphery of the tank inwardly toward the body of pulp in the tank at a level above the level of said baffling, collecting froth from an upper portion of said tank, and introducing pulp into the tank and withdrawing from the tank pulp from which coarse particles have been removed, at levels no higher than the level of said agitator.

4,247,392

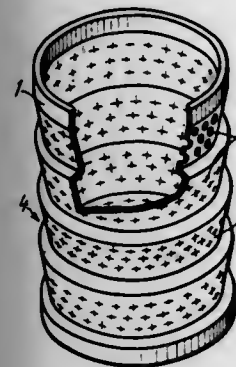
SCREEN FOR VIBRATING CENTRIFUGAL SEPARATION MACHINES

Evgeny S. Goncharov, ulitsa Lomonosova, 30/1, kv. 46, Kiev, U.S.S.R.

Filed Jun. 27, 1979, Ser. No. 52,360
Int. Cl.³ B04B 7/18

U.S. Cl. 209-301

3 Claims



1. In a vibrating centrifugal particle separation machine, a foraminated screen in the form of a solid of revolution having a stepped shape and exhibiting symmetry about the axis of revolution thereof, said screen being adapted for simultaneous rotational motion about said axis and reciprocating motion along said axis, said screen comprising a series of hollow truncated cones, each cone having an imperforate base at the larger diameter end thereof adjacent a material inlet of said machine, so that particle-containing material flows through the interior of said screen from the base toward the smaller diameter end of each cone thereof, a major surface portion of each cone having

a multiplicity of screening holes therein, each imperforate base being adapted to be secured to a bearing component of said machine.

4,247,393

HEMODIALYSIS ASSIST DEVICE

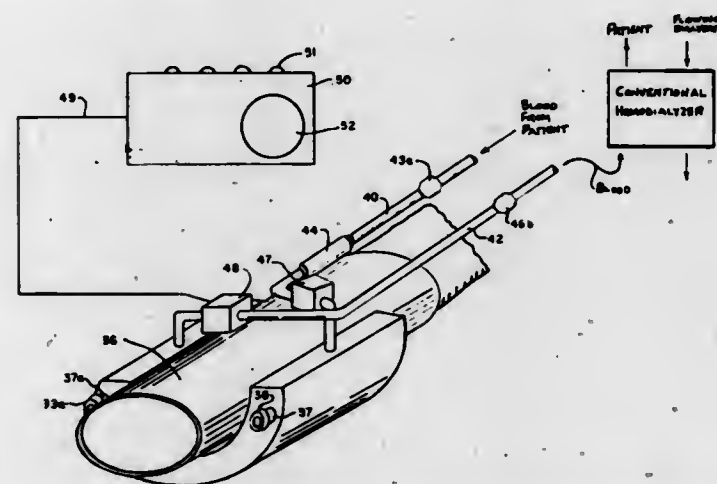
Richard A. Wallace, 7304 SW. 53 Ave., Portland, Oreg. 97219

Continuation-in-part of Ser. No. 875,223, Feb. 10, 1978, abandoned, and a continuation-in-part of Ser. No. 779,985, Mar. 3, 1977, abandoned, and a continuation-in-part of Ser. No. 558,171, Mar. 13, 1975, abandoned. This application Jan. 11, 1979, Ser. No. 2,759

U.S. Cl. 210-638

Int. Cl.³ B01D 31/00, 13/00

13 Claims



8. In a method for removing selected components including urea of a patient's blood using a hemodialysis assist device enclosing at least one blood flowthrough passage and at least one semipermeable membrane separating the passage from a fluid containing chamber which contains a normally non-flowing sorbent medium or fine sorbent particles selected from the group consisting of charcoal powder capable of sorbing metabolic toxic wastes and phosphate ion-binding particles and mixtures thereof, said sorbent particles having an average diameter of less than 150 microns and forming an open thixotropic network slurry structure of interconnecting chain-like aggregates of sorbent particles, a portion of said chain-like aggregates being adhered to the fluid containing means side of said membrane forming a concentrated network of sorbent particles on the membrane surface, said sorbents medium including microcrystalline cellulose flour-based binder of a thixotropic character of an average particle size less than 3 microns, said cellulose-based binder forming chain-like aggregates in the fluid sorbents medium interlocked in the open thixotropic network slurry structure of sorbent particles and serving to assist the adherence of sorbent particles to said membrane to thereby retard loss of sorbent particles at high ultrafiltration flow rates, said thixotropic network being of sufficient structural integrity to be retained substantially in place during ultrafiltration of excess body fluids from the blood through the same, the steps of continuously directing blood from a patient through said blood flowthrough passage, and diffusing toxic substances from the blood across the membrane through the aqueous thixotropic network sorbents slurry to bind said sorbents.

4,247,394

FILTER ELEMENT AND METHOD OF USE

Henry Schmidt, Jr., Hinsdale, Ill., assignor to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

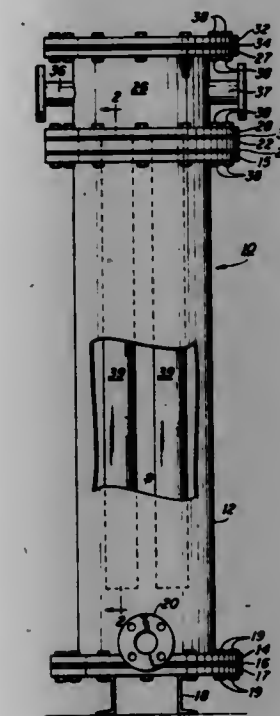
Filed Aug. 2, 1979, Ser. No. 63,116
Int. Cl.³ B01D 46/02, 29/14

U.S. Cl. 210-767

11 Claims

1. A filter element for use in a filter of the type having a tube sheet separating a filter tank into two compartments, said sheet

having a number of holes for receiving a like number of tubular filter elements, said filter element comprising a cylindrical, woven textile support sock open at one end and closed at the other end, a cylindrical, flexible, perforate filter sock open at one end and closed at the other end, said filter sock being fitted within said support sock with said open ends in proximity to one another,



means for providing a sealed interlock between said socks and said tube sheet with said socks partially positioned within one of said holes, and the length of said filter sock between said interlock and its closed end being substantially greater than the length of said support sock between said interlock and its closed end.

4,247,395

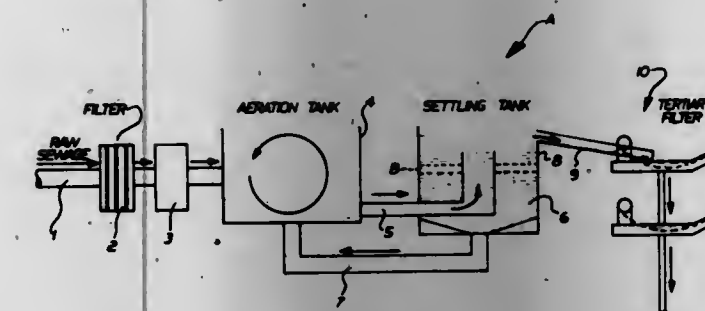
SEWAGE TREATMENT PROCESS AND APPARATUS

William V. Halishak, 3520 Lenwood Rd., Broadview Heights, Ohio 44147

U.S. Cl. 210-73 S

Int. Cl.³ B01D 37/04

5 Claims



1. In a sewage treatment process in which organic waste is separated from the liquid content of sewage, the improvement consisting essentially of,

(a) providing a sewage treatment apparatus in which organic waste is separated from the liquid content of sewage, said apparatus comprising means for directing the sewage onto a first disposable sheetlike filter from a system which periodically bulks, said first disposable sheetlike filter collecting solids above a predetermined size thereon, solids of less than the predetermined size remaining in the liquid flowing through said first disposable sheetlike filter,

means for sensing the level of the sewage pool on the first disposable sheetlike filter, means for indexing the first disposable sheetlike filter when a predetermined pool level has been achieved to present a new area of the first disposable sheetlike filter to said pool and for moving the first disposable sheetlike filter with the sewage layer thereon to a first storage area, means for directing the solids of less than said predetermined size and the liquid which flowed through said first disposable sheetlike filter onto at least a second disposable sheetlike filter, means for sensing the level of the sewage pool on said second disposable sheetlike filter, means for indexing said second disposable sheetlike filter when a predetermined pool level has been achieved thereon and for moving said second disposable sheetlike filter with the sewage layer thereon to a second storage area, and means for directing the substantially pure fluid from said second disposable sheetlike filter,

(b) feeding sewage effluent from a secondary step of said process to said apparatus,
(c) withdrawing substantially pure water from said apparatus.

4,247,396

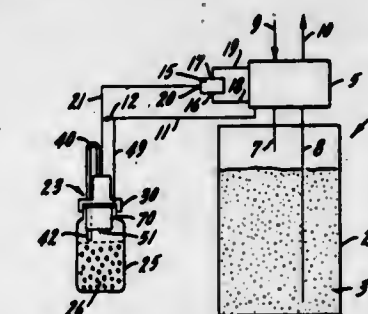
CHEMICAL SOLUTION DISPENSER

Jonathan P. Buesing, St. Paul, Minn., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Dec. 7, 1979, Ser. No. 101,356
Int. Cl.³ B01D 23/24

U.S. Cl. 210-126

10 Claims



6. A filter for removing iron from water comprising:
A. a tank containing a bed of iron removing particles and having an inlet and an outlet;
B. an aspirator having a pair of ports and a suction inlet, said aspirator producing suction at said suction inlet when water flows between said pair of ports in one direction and producing a pressurized flow of water from said suction inlet when water flows in the opposite direction between said ports;
C. a master control valve connecting said tank inlet to a source of pressurized untreated water, said control valve connecting said tank outlet to a treated water conduit, said control valve being connected to a drain conduit and to said aspirator ports; and
D. means for regenerating said iron removing particles comprising:

1. an open-topped container enclosing a supply of solid regenerant chemical, said container having threads around its open top;
2. a regenerant solution dispenser valve body, the open end of said container being screwed into mating threads in a cap defined by the lower end of said valve body, said valve body having a port communicating with said suction inlet, means defining a passage in said body connecting said port to the open end of said container and providing a flow path for liquid into and out of said container, and a vent passage in said body connecting the open end of said container to a drain and providing an air escape and over flow path from said container;
3. valve means comprising:
a. stem means having one of its ends passing through

said passage and its other end extending into said container;

- b. a diaphragm attached to said stem means adjacent said one end, one surface of said diaphragm being exposed to said passage and the opposite surface of said diaphragm being exposed to the atmosphere;
- c. a tube defining a part of said passage and passing into said container through an aperture in said cap, said tube being slidable through said aperture so that the position of its end in said container determines the quantity of regenerant solution withdrawn from said dispenser;
- d. a float attached to the other end of said stem means, said float being in contact with regenerant solution in said container above said solid chemical, said float having a hole therethrough, said stem passing through said hole, said tube and float being vertically moveable independently of each other;
- e. an enlarged annular projection on said stem means in said passage between said diaphragm and float;
- f. valve seat means surrounding said passage;
- g. said float moving said annular projection into contact with said valve seat means to close said passage when the regenerant solution in said container reaches a predetermined level, and said diaphragm moving said annular projection against the bias caused by said float out of contact with said valve seat means when suction is applied to said port, whereby regenerant solution is withdrawn from said dispenser by such suction.

4,247,397

EAVES TROUGH SHIELD

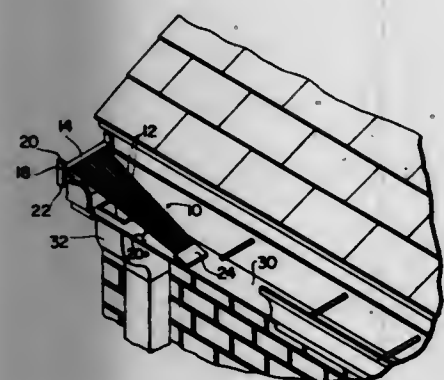
Laszlo J. Dobosi, 4317 Markwood, La., Fairfax, Va. 22030

Filed Nov. 9, 1979, Ser. No. 92,837

Int. Cl.³ B01D 39/10

U.S. Cl. 210-162

7 Claims



1. An eaves trough shield for use in a substantially horizontal eaves trough having a downspout comprising:
 - a bridge-plate;
 - means for securing said bridge-plate to a trough;
 - a plurality of spaced apart elongate finger members with their upper ends connected to said bridge plate;
 - a lower bottom plate with its upper edge connected to the lower ends of said elongate finger members and constructed and arranged to be trimmable to fit the bottom of a trough and to produce an imperforate ramp for permitting debris to be forced onto the upwardly inclined surface defined by said elongate finger members, said finger members being spaced closer together at said bottom plate than at said bridge-plate so as to form a fan shaped shield; such that in use said bridge-plate extends across the top of the trough from one side to the other, said bottom plate rests on the bottom of the trough, and said elongate finger members lie above the downspout and prevent debris from entering the downspout whereby the debris moved onto said finger members is later dried and blown up along

the upwardly inclined finger members and out of the trough by the wind.

4,247,398

HIGH GRADIENT MAGNETIC SEPARATION APPARATUS

Kaneo Mohri, Fukuoka, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

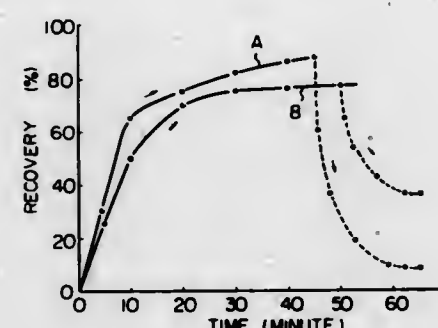
Continuation of Ser. No. 893,680, Apr. 5, 1978, abandoned. This application Oct. 29, 1979, Ser. No. 88,937

Claims priority, application Japan, Apr. 5, 1977, 52-38692

Int. Cl.³ B01D 35/06

U.S. Cl. 210-222

6 Claims



1. In a high gradient magnetic separation apparatus comprising:
 - a vessel having an inlet for introducing thereinto a fluid, which contains particles of at least one member selected from the group consisting of ferromagnetic fine particles and paramagnetic fine particles, and also having an outlet for the fluid essentially free from said particles of at least one member;
 - a means for filtering ferromagnetic and paramagnetic particles, said means providing for passage of said fluid there-through and separating said particles of at least one member from said fluid, said means being positioned within said vessel;
 - a magnetizing means for applying a magnetic field to said filter means, positioned outside of said vessel;
 - a switching means for de-energizing said magnetizing means;
 - a means for supplying said fluid into said vessel;
 - a means for supplying a washing fluid for washing said filter means after it has adsorbed said particles of at least one member; and
 - an improvement which comprises employing as said filter means a metal which is essentially an amorphous metal alloy of the general formula:



wherein M is iron, and N is at least one metalloid element selected from the group consisting of phosphorous, boron, carbon and silicon, and wherein the percentages represented by atomic percentages in X and Y are defined by the relationships:

$$X + Y = 100; \text{ and}$$

$$5 \leq Y \leq 35.$$

4,247,399

FILTERING AND PARTICULATE WASHING DEVICE

Isadore Pitesky, 4001 Linden Ave., Long Beach, Calif. 90807

Filed Mar. 12, 1979, Ser. No. 19,449

Int. Cl.³ B01D 23/26

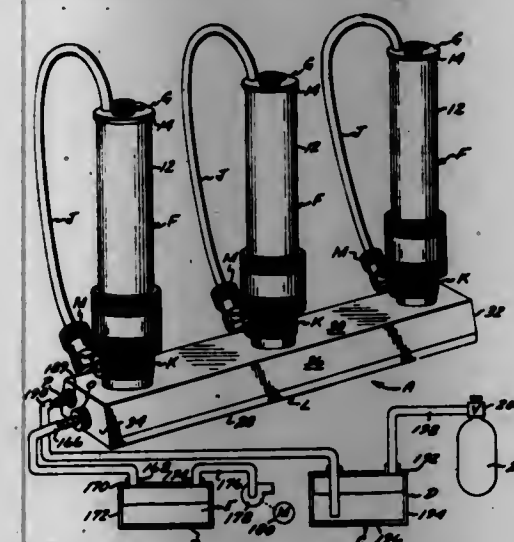
U.S. Cl. 210-341

11 Claims

1. In combination with a vacuum creating source and a pressurized source of a first liquid, a device for selectively carrying out either a single filtering operation or multiple filtering operation on said second liquids to separate particu-

lates therefrom and subject said particulates to washing with said first liquid prior to said particulates being removed from said device, said device including:

- a. a plurality of assemblies for holding said second liquids prior to the latter being subjected to said filtering operation, each of said assemblies including an elongate vertically positionable cylinder having an upper end and a lower end; a cover that removably engages said upper end, said cover having first, second and third spaced openings therein, said first opening serving to introduce one of said second liquids into said cylinder; a stopper that removably engages said first opening; a length of pliable tubing in communication with said second opening; rotatable first valve means that removably engage said lower end of said cylinder and that has a longitudinal passage therein, said first valve means including a lower end portion on which external threads are defined; a resilient seal supported on said lower end portion below said threads, and filter means so disposed in said valve means that liquid in said cylinder associated with said valve means must flow through said filter means prior to discharging from said valve means;
- b. an elongate rigid manifold block that has a flat lower surface, a top, first and second end walls, and a pair of first and second side walls, first and second passages that extend longitudinally through said manifold block to terminate at said first and second end walls; a plurality of longi-



tudinally spaced first bores that extend downwardly in said manifold block from said top to said first passage, each of said first bores including a tapped portion and a circular body shoulder situated therebelow, with each of said tapped portions being rotatably engaged by one of said threaded portions of one of said first valve means; and a plurality of longitudinally spaced second bores that extend inwardly from said first side wall to said second passage;

- c. a plurality of second valve means connected to said second bores and to said pliable hose, each of said second valve means capable of occupying first and second positions in which communication is blocked and effected between said pliable hose and said second passage;
- d. first and second plug means for removably sealing said first and second passages at said first end wall of said manifold block;
- e. first and second tubular means that connect said vacuum creating source to said first passage and said pressurized source of said first liquid to said second passage at said second end wall of said manifold block;
- f. a plurality of air vent assemblies removably disposed in said third openings in said covers, each of said air vent assemblies including a porous member that prevents air borne material entering said cylinder with which it is associated but allows air to escape from said cylinder when said first liquid is being discharged into said cylinder

to wash said particulate on said filter means associated with said cylinder.

4,247,400

ROTARY RAKE STRUCTURE FOR A SETTLING TANK

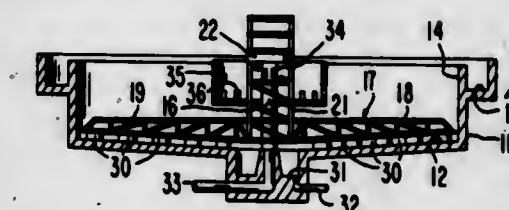
Donald L. King, Bountiful, and Gerald S. Glanville, Salt Lake City, both of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Apr. 16, 1979, Ser. No. 30,673

Int. Cl.³ B01D 21/18

U.S. Cl. 210-531

20 Claims



1. A rotary rake structure for use in a settling tank, said rake structure comprising a torque transmitting member and a pair of rake arms, said torque transmitting member being mounted within said tank for rotary motion, each rake arm comprising an upper chord and a lower chord, said upper and lower chords of each rake arm being rigidly positioned with respect to each other, said upper chord of each rake arm being coupled to said torque transmitting member, said lower chord of each rake arm being spaced apart from said torque transmitting member, the lower chords of said rake arms being without mechanical connection to said torque transmitting member except through the upper chords of said rake arms and wherein an end of the lower chord of each of said rake arms terminates in a flange, the flanged end of the chord of one rake arm being spaced apart by shim means from the flanged end of the lower chord of the other rake arm.

4,247,401

REVERSE OSMOSIS SEPARATION PROCESS USING POROUS ASYMMETRIC ACETYL CELLULOSE MEMBRANE

Rene Bloch, and Jacov Yonath, both of Rehovot, Israel, assignors to Allgea A.G., Basel, Switzerland

Continuation of Ser. No. 651,593, Jan. 22, 1976, abandoned. This application Aug. 31, 1978, Ser. No. 938,496

Int. Cl.³ B01D 13/00

U.S. Cl. 210-638

5 Claims

1. A method for the separation of organic or metallo-organic ionogenic substances from salts by reverse osmosis which comprises applying pressure on an aqueous composition containing the said organic or metallo-organic ionogenic substances and salts dissolved therein, the said aqueous composition being in contact with a porous asymmetric membrane substantially consisting of acetyl cellulose material modified by covalently bonded residues of reactive dyestuffs containing ionizable groups, said membrane having been subjected to a heat treatment at a temperature of from 60° to 90° C. for from 1 to 30 minutes and having on its surface uniform pores with a diameter of 5-50 Å.

4,247,402

CLAY-FREE, THIXOTROPIC WELLBORE FLUID

Arlynn H. Hartfel, Houston, Tex., assignor to Brinadd Company, Houston, Tex.
Division of Ser. No. 616,561, Sep. 25, 1975, Pat. No. 4,098,700, which is a division of Ser. No. 472,982, May 24, 1974, Pat. No. 3,988,246. This application Mar. 13, 1978, Ser. No. 886,298
The portion of the term of this patent subsequent to Oct. 26, 1993, has been disclaimed.

Int. Cl.³ C09K 7/02

U.S. Cl. 252—8.5 A

5 Claims

1. An aqueous clay-free thixotropic wellbore fluid for use in subterranean formations in the earth comprising water, at least 1% by weight of a brine forming soluble salt or mixture of salts of potassium sodium or calcium, a stabilizing amount of MgO and a viscosifying amount of heteropolysaccharide prepared by the action of bacteria of the genus *Xanthomonas* on carbohydrates.

4,247,403

METHOD OF SEALING PORES, AND LOST CIRCULATION ADDITIVE THEREFOR

Kevin M. Foley; David I. B. VanderHooen, both of Maumee, Ohio, and Jerry D. Hull, Tulsa, Okla., assignors to The Andersons and Rotary Drilling Services, Inc., both of Maumee, Ohio

Filed Jan. 21, 1979, Ser. No. 50,872

Int. Cl.³ C09K 7/02

U.S. Cl. 252—8.5 LC

25 Claims

1. A sealing material for slurries comprising: a gradation of particulate matter having sizes above and below 420 micron in which a substantial amount of the sizes above 420 micron are particle of a ground predominantly woody ring containing fraction of corn cobs essentially free of the chaff and pith portions of the cob and having a bulk density greater than approximately 20 lbs./ft.³.

4,247,404

GLYOXAL-POLYAMINE-POLYBUTENYL SUCCINIC ANHYDRIDE REACTION PRODUCTS, PROCESS FOR THEIR PREPARATION AND LUBRICANTS AND FUELS CONTAINING SAME

Theodore C. Shields, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jan. 9, 1979, Ser. No. 2,171

Int. Cl.³ C07D 207/12; C10L 1/22; C10M 1/20, 1/32

U.S. Cl. 252—51.5 A

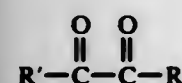
23 Claims

1. A process for preparing oil soluble compositions useful as dispersants in lubricating oil compositions comprising the steps of:

(a) reacting at a temperature of between about -30° C. and about 120° C. an alkylamino substituted ethylene diamine or a homolog thereof having the structural formula:



with a dione or mixture of diones of the structural formula:



where m+n is between 2 and about 6 and R and R' are each either hydrogen or an alkyl radical of 1 to 4 carbon atoms thereby obtaining a first reaction product; and
(b) reacting said first reaction product with a polyalkenyl succinic anhydride having a molecular weight between about 500 and about 1600 at a temperature between about 25° C. and about 200° C.

4,247,405

VISCOSITY-STABILIZED AQUEOUS SOLUTIONS

Donald R. Wier, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 740,273, Nov. 9, 1976, Pat. No. 4,124,073.
This application Jun. 30, 1978, Ser. No. 920,884
Int. Cl.³ E21B 43/22, 43/24, 43/26

U.S. Cl. 252—8.55 D

7 Claims

1. An aqueous solution exhibiting a relatively stable solution viscosity at ambient temperature and after heating at 70° C. consisting essentially of, based on the total weight of the solution:

- (a) 0.001 to 2 weight percent of a nonionic polyalkylene oxide polymeric component which is a polyethylene oxide or a polypropylene oxide having an average molecular weight in the range of 100,000 to 10,000,000,
- (b) 0.5 to 10 weight percent of an ionic surfactant,
- (c) 0.1 to 9 weight percent thioruea, and
- (d) the balance water.

4,247,406

INTRAVASCULARLY-ADMINISTRABLE, MAGNETICALLY-LOCALIZABLE BIODEGRADABLE CARRIER

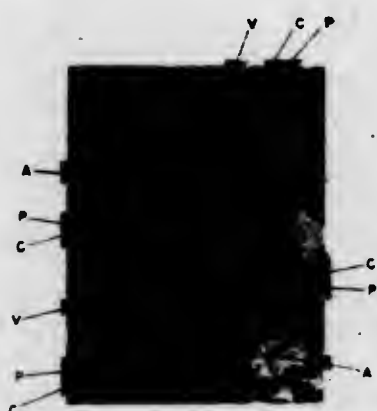
Kenneth J. Widder, and Andrew E. Senyei, both of 8 E. Pearson St., Chicago, Ill. 60611

Continuation-in-part of Ser. No. 820,812, Aug. 1, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,399

Int. Cl.² A61K 9/50, 9/38; G01N 33/16; A61K 43/00

U.S. Cl. 252—62.53

12 Claims



1. An intravascularly-administrable, magnetically-localizable biodegradable carrier, comprising microspheres formed from an amino acid polymer matrix with magnetic particles embedded therein, said microspheres having an average size of less than 1.5 microns and said magnetic particles having an average size of not over 1,000 Angstroms, said microspheres containing from 5 to 350 parts by weight of said magnetic particles per 100 parts of said amino acid polymer, at least 90% of said microspheres being immobilized by a magnetic induction of 8,000 gauss when an aqueous suspension of said microspheres is pumped at a rate of 0.05 centimeters per second through a conduit of 0.168 centimeter internal diameter but not over 10% of said microspheres being immobilized by said magnetic induction when pumped through said conduit at a flow rate of 10 centimeters per second, said magnetic induction being applied by a bipolar magnet with its poles equidistant from the centerline of said tube, said 8,000 gauss being referenced to a plane intersecting said tube at right angles to the direction of flow and extending for at least 1.0 centimeter in the direction of flow.

4,247,407

MAGNETIC RECORDING COMPOSITION

Tunehide Naruse; Manabu Habu, and Makoto Kato, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 23, 1979, Ser. No. 32,230

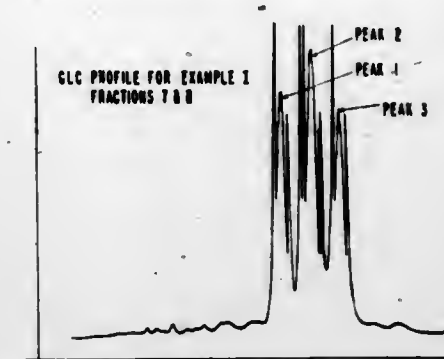
Claims priority, application Japan, Apr. 24, 1978, 53-47874

Int. Cl.³ B05D 5/12; B32B 9/04; C04B 35/04

U.S. Cl. 252—62.54

13 Claims

1. A magnetic recording composition comprising, in solvent, 15 to 90 wt% of a magnetic powder, correspondingly 35 to 10 wt% of a resinous binder, and a lubricant selected from the group consisting of an ester of isostearyl alcohol and a mono-basic fatty acid having 6 to 16 carbon atoms and cetyl isooctanoate, the lubricant being contained in an amount of 0.5 to 20 wt% of the binder.



oxide or dihydro caryophyllene oxide in the reaction mass varying from about 0.25 molar up to about 1.00 molar.

4,247,408

ACIDIC LIQUID DETERGENT COMPOSITION FOR CLEANING HARD SURFACES CONTAINING POLYOXYALKYLENE ALKYL ETHER SOLVENT

Tetsuya Imamura, Tokyo, and Ryoji Shiozaki, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,799

Claims priority, application Japan, Jun. 5, 1978, 53/67531

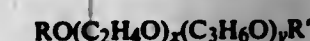
Int. Cl.³ C11D 7/08, 3/43, 3/20, 7/50

U.S. Cl. 252—143

4 Claims

1. A weakly acidic or acidic liquid detergent composition consisting essentially of:

(A) 0.1 to 20% by weight of one or a mixture of two or more water-soluble solvents having the formula:



wherein R and R' are hydrogen, methyl or ethyl, with the proviso that both of R and R' are not hydrogen simultaneously, the mean value of x plus y is from 3.5 to 6.0 and $0.0 \leq x \leq 0.25y$.

- (B) 0.1 to 10% by weight of water-soluble, synthetic, anionic, organic surfactant, water-soluble, synthetic, non-ionic, organic surfactant, or mixture thereof,
- (C) 0.1 to 20% by weight of water-soluble acidic substance or a mixture of water-soluble acidic substance and water-soluble salt thereof, and
- (D) the balance is essentially water.

4,247,409

USE OF MIXTURE CONTAINING CARYOPHYLLENE ALCOHOLS IN AUGMENTING OR ENHANCING THE AROMA OF A SOLID OR LIQUID ANIONIC, CATIONIC OR NONIONIC DETERGENT

Cynthia J. Massinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 947,186, Sep. 29, 1978, Pat. No. 4,229,599.

This application Dec. 21, 1979, Ser. No. 105,886

Int. Cl.³ C11D 3/50, 9/44

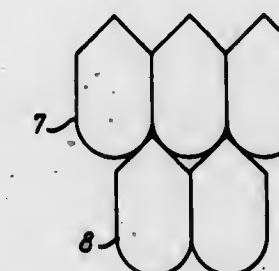
U.S. Cl. 252—174.11

1 Claim

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic or nonionic detergent comprising the step of intimately admixing with a solid or liquid anionic, cationic or nonionic detergent base, a product prepared by a process comprising the steps of (i) intimately admixing aluminum isopropylate, toluene and a caryophyllene derivative selected from the group consisting of caryophyllene oxide and dihydro caryophyllene oxide to form a mixture; (ii) heating the resulting mixture at a temperature of from 100° C. up to 150° C. for a period of time from about one up to about five hours; and (iii) recovering the rearranged caryophyllene oxide or dihydro caryophyllene oxide, a mixture of alcohols, from the reaction mass; the concentration of aluminum isopropylate

21. A pressurizing catalyst which comprises an activated aluminum complex containing minor amounts of halogen, silicon, oxygen and hydrogen, the total of said halogen, silicon, oxygen and hydrogen not exceeding about 5% by weight of the aluminum; the silicon being present in from trace to about 2% by weight of the aluminum and having an hexagonal structured shape; the halogen being present in those amounts originally sufficient to activate the silicon; the ratio of oxygen to hydrogen being 14:16, 16:18 or 18:20 or mixtures thereof.

23. A composition capable of being dispensed under pressure from a confined container in the form of a foam, liquid, gas or solid in the manner of an aerosol, which comprises an aerosol-type composition, minus propellant, which includes at least some ingredient containing hydrogen and oxygen, which aerosol composition minus propellant has been pressurized by an activated aluminum complex containing minor amounts of halogen, silicon, oxygen and hydrogen, the total of said halogen, silicon, oxygen and hydrogen not exceeding about 5% by weight of the aluminum; the silicon being present in from trace to about 2% by weight of the aluminum and having an hexagonal structured shape; the chlorine being present in those amounts originally sufficient to activate the silicon, the ratio of oxygen to hydrogen being 14:16, 16:18 or 18:20 or mixtures thereof.



4,247,411

STORAGE STABILITY OF AQUEOUS DISPERSIONS OF SPHERULES

Guy Vanlerberghe, Commune de Villevaude, and Rose-Marie J. Handjani, Paris, both of France, assignors to L'Oreal, Paris, France

Filed Jan. 31, 1979, Ser. No. 8,115

Claims priority, application France, Feb. 2, 1978, 78 02927
Int. Cl.³ B01J 13/02; A01N 25/28; A61K 9/50, 9/64

U.S. Cl. 252—316

14 Claims

1. A process for preserving an aqueous dispersion of spherules in the form of organized molecular layers between which is encapsulated an aqueous phase containing at least one active substance, these layers consisting of at least one lipid having the formula $X-Y$ wherein Y represents a lipophilic group and X represents an ionic or non-ionic group, the diameter of the spherules being from 100 to 50,000 Å, which comprises lowering the temperature of the dispersion to below about -30°C . and evaporating it at a temperature from about 15° to about 60°C . under reduced pressure thereby producing a lyophilized product as a paste or a solid.

4,247,412

BLOWING COMPOSITION

Shigeaki Ohno, Naruto; Nobuyuki Aburatani, Tokushima, and Nobuyuki Ueda, Naruto, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Filed Apr. 17, 1979, Ser. No. 30,943

Int. Cl.³ C09K 3/00

U.S. Cl. 252—350

6 Claims

1. A blowing composition comprising azodicarbonamide, a zinc peroxide and a decomposition inhibitor for azodicarbonamide selected from the group consisting of an acid hydrazide, an organic acid, an organic acid anhydride and a triazole.

4,247,413

PHENOLIC FOAM AND SURFACTANT USEFUL THEREIN

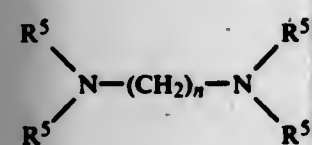
John H. Beale, Dedham, Mass., and Ernest K. Moss, St. Petersburg, Fla., assignors to The Celotex Corporation, Tampa, Fla. Division of Ser. No. 935,846, Aug. 22, 1978, Pat. No. 4,204,020, which is a division of Ser. No. 837,875, Sep. 29, 1977, Pat. No. 4,140,842. This application Dec. 3, 1979, Ser. No. 99,941

Int. Cl.³ C08J 9/14

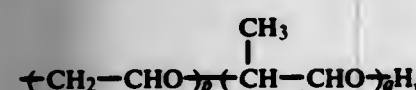
U.S. Cl. 252—356

18 Claims

1. A surfactant which is the reaction product of:
I. an alkoxyated amine of the formula



wherein:

(a) R^5 is an alkoxyated chain of the formula

(b) n is an integer from 2 to 10 inclusive,
(c) the ratio p:q is 15:85 to 85:15 with

II. a copolymerizable mixture of dialkyl maleate and a member selected from the group consisting of N-vinyl-2-pyrrolidone and N-vinyl caprolactam, wherein the molar ratio of dibutyl maleate to said N-vinyl member is 1:1, and
III. a capping agent for the terminal hydroxyl groups which eliminates the active hydrogen of said groups.

4,247,414

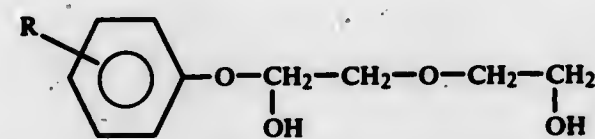
RUST INHIBITORS AND COMPOSITIONS OF SAME

Shoji Kimura, Chigasaki, and Noboru Ishida, Sagami-hara, both of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan
Division of Ser. No. 958,750, Nov. 8, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,733
Claims priority, application Japan, Nov. 30, 1977, 52-142601
Int. Cl.³ C23F 11/12

U.S. Cl. 252—396

4 Claims

1. A composition having rust preventing ability which comprises (A) a glycerol-1-alkylphenoxy-3-ethyleneglycol ether of the formula



wherein R is an alkyl radical with 9, 12 or 15 carbon atoms and (B) a mineral oil in a weight ratio of 0.01–20 parts of (A) per 100 parts of (B).

4,247,415

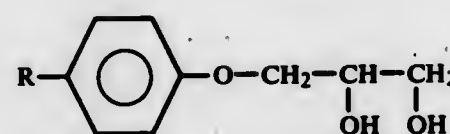
RUST INHIBITORS AND COMPOSITIONS OF SAME

Shoji Kimura, Chigasaki, and Noboru Ishida, Sagami-hara, both of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan
Division of Ser. No. 958,631, Nov. 8, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,853
Claims priority, application Japan, Nov. 30, 1977, 52-142600
Int. Cl.³ C23F 11/12

U.S. Cl. 252—396

4 Claims

1. A composition having rust preventing ability which comprises (A) a glycerol-p-alkylphenyl ether of the formula



wherein R is an alkyl radical with 9 or 12 carbon atoms and (B) a mineral oil in a weight ratio of 0.01–20 parts of (A) per 100 parts of (B).

4,247,416

CRYSTALLINE ZEOLITE ZSM-25

Harry G. Doherty, Pitman; Charles J. Plank, Woodbury, and Edward J. Rosinski, Pedricktown, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

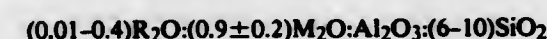
Filed Feb. 28, 1979, Ser. No. 16,248

Int. Cl.³ C01B 33/28; B01J 31/14

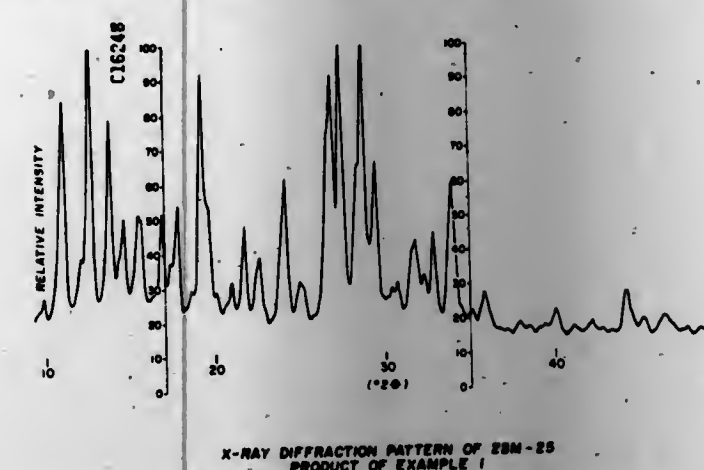
U.S. Cl. 252—428

14 Claims

1. A crystalline zeolite having a composition in the anhydrous form, expressed in terms of mole ratios of oxides as follows:



wherein R is an organic nitrogen-containing cation and M is an alkali metal cation, said zeolite being characterized by an X-ray



powder diffraction pattern as set forth in TABLE I of the specification.

4,247,417

CATALYST FOR OLEFIN DISPROPORTIONATION

Dennis S. Banasiak, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 11, 1979, Ser. No. 57,246

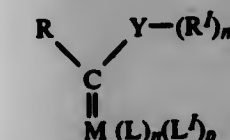
Int. Cl.³ B01J 31/02, 31/12

U.S. Cl. 252—429 R

10 Claims

1. A catalyst composition consisting essentially of

(1) at least one neutral carbene complex having the general formula



wherein R is an aryl or substituted aryl radical containing 6 to 30 carbon atoms per radical wherein the substituted aryl radical can have one or more substituents each of which can be the same or different and selected from the group consisting of halides, alkoxides and alkyl radicals containing 1 to 20 carbon atoms per radical; R' is selected from the group consisting of alkyl, cycloalkyl, aryl, substituted aryl, trialkylsilyl, and triarylsilyl radicals containing 1 to 30 carbon atoms per radical with the aryl substituents being the same as for the substituted aryl of R; Y is O, Se, S, N, or P; m is 1 when Y is O, Se, or S and 2 when Y is N or P; M is tungsten or rhenium; each L is individually selected from CO, NO, PF_3 , PCl_3 , or pyridine; L' is cyclopentadienyl or allyl; p is 0 or 1; and n is 5 when p is 0 or 2 when p is 1, and

(2) at least one activator selected from chlorinated or chlorobrominated saturated organic compound having 1 to 20 carbon atoms per molecule and containing only carbon and chlorine or carbon, chlorine, and bromine, wherein said neutral carbene complex and said activator are present in such amounts as to have a catalytic effect upon the disproportionation of 1-pentene.

4,247,418

POLYMERIZATION CATALYST AND PROCESS FOR POLYMERIZING DIENES THEREWITH

Adel F. Halasa, Bath, and James E. Hall, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

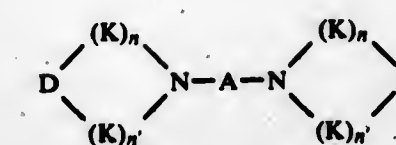
Filed Oct. 18, 1979, Ser. No. 86,222

Int. Cl.³ C08F 4/56

U.S. Cl. 252—431 N

15 Claims

1. A polymerization catalyst comprising: (a) an RLi organometal compound in which R is a monovalent hydrocarbyl



wherein D represents RN, O, S or PR; R represents a hydrocarbyl group of 1–20 carbon atoms; A represents a divalent hydrocarbon group having 1–4 carbon atoms between said two valencies; K represents a hydrocarbon group of the formula $—CH_2—$ or $—CH=$; n represents an integer having a value of 1 to 5; and n' represents an integer having a value of 0 to 4 with the sum of n and n' totaling 3–5; the proportion of said bicyclic amine being 0.25 to 10 moles per mole of said organometal compound.

4,247,419

SINGLE PHASE

VANADIUM(IV)BIS(METAPHOSPHATE) OXIDATION CATALYST WITH IMPROVED INTRINSIC SURFACE AREA

James C. Vartuli, West Chester, Pa., and Lee R. Zehner, Dublin, Ohio, assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 13, 1979, Ser. No. 102,818

Int. Cl.³ B01J 27/14, 31/02, 27/02; C01B 15/16

U.S. Cl. 252—435

11 Claims

1. A method for the preparation of a single phase crystalline vanadium(IV)bis(metaphosphate) oxidation catalyst for preparing maleic anhydride by oxidation of unsaturated aliphatic hydrocarbons, which catalyst has an intrinsic surface area of from about 5.0 to 15.0 m^2/g ., which comprises the steps of:
forming a slurry of vanadyl sulfate, acetic anhydride and phosphorus pentoxide with the liberation of exothermic heat;
introducing said slurry into a heating zone and maintaining said zone at a temperature of at least about 325°C . for a period sufficient for the liberation of gases and forming a vanadium phosphorus reaction product;
cooling the reaction product and washing with water to essentially remove any soluble residue;
drying the washed product and calcining in air to obtain a single phase crystalline vanadium(IV)bis(metaphosphate) catalyst having an intrinsic surface area of from about 5.0 to 15.0 m^2/g .

4,247,420

HYDROCARBON CONVERSION CATALYST PREPARATION

Joseph S. C. Dumoulin, Valleyfield, Canada; Mark A. Seese, Ellicott City, and Edwin W. Albers, Annapolis, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 23, 1979, Ser. No. 23,429

Int. Cl.³ B01J 21/12, 21/16, 29/08

U.S. Cl. 252—453

7 Claims

1. A process for preparing a silica-alumina hydrogel catalyst which comprises:

- preparing a silica-alumina cogel by reacting sodium silicate, aluminum sulfate and water to obtain a cogel slurry having a pH of about 9.0 to 9.6;
- reacting said cogel slurry of step (a) with sodium aluminate to obtain a silica-alumina gel slurry having a pH of about 11.8 to 12.3;
- reacting the gel slurry of step (b) with aluminum sulfate to produce an acid gel slurry having a pH of about 3.5 to 3.9;
- reacting the acid gel slurry of step (c) with a sodium silicate containing mother liquor obtained from synthesis of sodium Y zeolite to obtain silica-alumina hydrogel catalyst slurry having a pH of about 3.8 to 4.5; and

(e) recovering the catalyst obtained in step (d).
4. The process of claim 1 wherein said catalyst contains from about 5 to 50 percent by weight NaY zeolite added with the mother liquor at step (d).

4,247,421

ACTIVATION OF SUPPORTED CHROMIUM OXIDE CATALYSTS

Max P. McDaniel, and Melvin B. Welch, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 3, 1979, Ser. No. 35,581

Int. Cl.³ B01J 21/08, 23/26

U.S. Cl. 252—458

7 Claims

1. A method for activating either a dry, raw or a calcined catalyst of inorganic or organic chromium compound dispersed on a silica-containing substrate comprising two, distinct treatments which can be performed in any order, said treatments comprising:

- (1) contacting said catalyst with a normally liquid organic, aliphatic hydroxy compound; and
- (2) reducing said catalyst at an elevated temperature in a carbon monoxide containing environment to produce a reduced treated composition, and then oxidizing said reduced catalyst in an oxygen-containing environment at elevated temperature.

4,247,422

METALLIC SUPPORTED CATALYTIC SYSTEM AND A METHOD OF MAKING IT

Richard G. Davies, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 26, 1979, Ser. No. 9,332

Int. Cl.³ B01J 21/04, 23/86

U.S. Cl. 252—465

10 Claims

1. The method of making a catalyst system, comprising:
 - (a) preparing a plain carbon steel foil having a thickness of 0.002 inches or less, the steel having a carbon content of 0.08% or less, said preparation being carried out with cold rolling and substantially reduced annealing;
 - (b) forming said steel foil into a matrix defining a plurality of aligned passages;
 - (c) immersing said steel foil matrix in a high heat transfer medium containing chromium and aluminum for a period of 2-4 hours at a temperature of about 1100° C., said chromium and aluminum atoms migrating and diffusing into the steel foil surface in exchange for iron atoms, said diffusion penetrating to the core of the foil;
 - (d) subjecting said matrix to heated flowing air in the temperature range of about 1100° C. for a period of about 1-5 hours, whereby a thin alumina film is heat grown from the aluminum atoms within said metal substrate and oxygen in said flowing air;
 - (e) coating the surfaces of the heat treated matrix with a refractory wash which is then dried to form a porous film on said surfaces;
 - (f) depositing a catalytic ingredient onto the coating of said heat treated matrix for impregnation and coating thereof;
 - (g) placing said coated and heat treated matrix in a suitable housing through which automotive exhaust gas emissions are passed, said gases having a temperature of about 600°-1000° C.

4,247,423

CYCLOHEXENEMETHANOLS AND THEIR LOWER ESTERS IN PERFUME COMPOSITIONS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

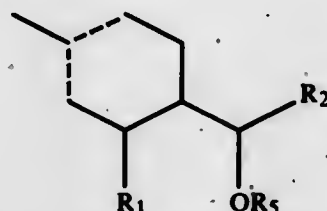
Division of Ser. No. 46,368, Jun. 7, 1979, which is a division of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Oct. 17, 1979, Ser. No. 85,891

Int. Cl.³ C11B 9/00; A61K 7/46

U.S. Cl. 252—522 R

18 Claims

1. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of intimately admixing with a perfume base, an organoleptic property augmenting or enhancing quantity of a cyclic chemical compound having the structure:



wherein R₁ is selected from the group consisting of hydrogen and methyl R₂ is C₃-C₅ alkyl or alkenyl; and R₅ is hydrogen or C₁-C₄ acyl and wherein one of the dashed lines is a carbon-carbon single bond and other of the dashed lines is a carbon-carbon double bond.

4,247,424

STABLE LIQUID DETERGENT COMPOSITIONS

Maryann Kuzel; John W. Leikhim; James M. Gajewski, and Malcolm L. Allen, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio.

Filed Oct. 11, 1979, Ser. No. 83,908

Int. Cl.³ C11D 1/72, 1/75, 10/02, 17/08

U.S. Cl. 252—528

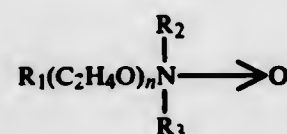
8 Claims

1. A stable liquid detergent composition comprising:
(a) from about 5% to about 25% of an ethoxylated alcohol or ethoxylated alkyl phenol nonionic surfactant of the formula:



wherein R is selected from the group consisting of aliphatic hydrocarbyl radicals containing from about 8 to about 18 carbon atoms, alkyl phenyl radicals wherein the alkyl group contains from about 8 to about 15 carbon atoms and mixtures thereof wherein n is from about 3 to about 12;

(b) from about 2% to about 15% of an amine oxide surfactant having the formula

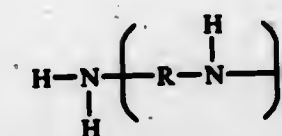


wherein R¹ is an alkyl, 2-hydroxyalkyl, 3-hydroxyalkyl, or 3-alkoxy-2-hydroxypropyl radical in which the alkyl and alkoxy contain from about 8 to about 18 carbon atoms, R₂ and R₃ are methyl, ethyl, propyl, isopropyl, 2-hydroxyethyl, 2-hydroxypropyl, or 3-hydroxypropyl and n is from 0 to about 10;

(c) from about 5% to about 25% of a water-soluble detergent builder capable of sequestering calcium and magnesium ions in water solution selected from the group consisting of water-soluble polycarboxylates, polyacetates, phosphonates, pyrophosphates and mixtures thereof;

- (d) from about 5% to about 25% of a hydrophobic emulsifier having an HLB value below about 7; and
- (e) from about 20% to about 83% water, said liquid detergent composition being a stable water-in-oil emulsion and having a pH of from about 8 to about 13.

from 5 to 600 and 75° C. viscosity from 0.05 to 25 Pa s and comprising the reaction product of (a) a polycarboxylic acid constituent consisting of a polymeric fatty acid and from 0 to 80 mol percent C₄₋₂₄ other dicarboxylic acid with (b) a polyamine constituent consisting of a polyalkylene polyamine of the general formula



where n is an integer from 2 to 6 and R is a C₁₋₅ alkylene radical, with the proviso that at least two different C₁₋₅ alkylene groups are present, and from 0 to 50 mol percent other aliphatic, cycloaliphatic or aromatic polyamine.

4,247,425 LIGHT DUTY NON-IRRITATING DETERGENT COMPOSITIONS

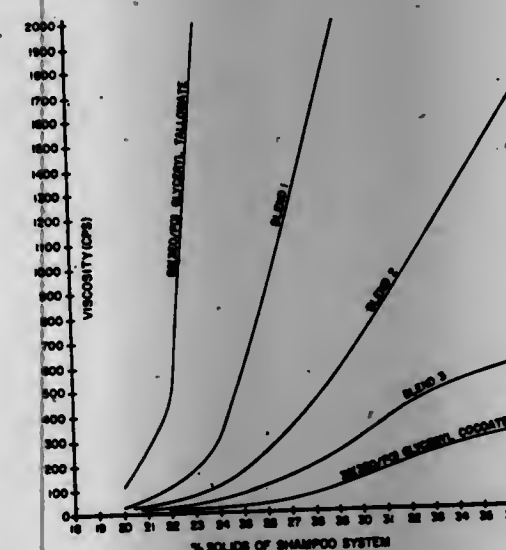
Richard R. Egan, Worthington, and Phillip L. Cotrell, Urbana, both of Ohio, assignors to Sherex Chemical Company, Inc., Dublin, Ohio

Continuation of Ser. No. 942,075, Sep. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 848,978, Nov. 7, 1977, abandoned. This application May 7, 1979, Ser. No. 36,706

Int. Cl.³ C11D 1/12, 1/83

U.S. Cl. 252—548

8 Claims



Blend	Blend 1	Blend 2	Blend 3
Surfactant	5%	5%	5%
Alcohol	5%	5%	5%
Water	90%	90%	90%

2. A low eye and skin irritant detergent composition comprising:

- (a) an alkylene oxide adduct of a partial glycerol ester of a C₁₀-C₁₈ fatty acid having a monoglyceride content of from about 15 to 45 wt. % with diglycerides essentially constituting the balance, said adduct prepared by reacting one mole of the partial glycerol ester per 15 to 100 moles of ethylene oxide and propylene oxide in a molar ratio of 2:1 to 4.5:1, respectively;
 - (b) anionic surface-active agent selected from the group of salt of higher alkyl sulfate or salt of higher alkyl ether surface or salt of higher alkyl benzene sulfonate; and
 - (c) an alkanolamide foam stabilizing agent;
- wherein the weight ratio of (b) to (c) is about 4:1 to 5:1, respectively, and wherein the weight ratio of (a) to (b) is about 2:1 to 5:1, respectively.

4,247,426

POLYAMIDES

Adrien G. Hinze, Dordrecht, and Hendrik G. Stigter, Berkenwoude, both of Netherlands, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Dec. 29, 1978, Ser. No. 974,469

Claims priority, application United Kingdom, Dec. 29, 1977, 54116/77

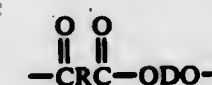
Int. Cl.³ C08G 59/44

U.S. Cl. 260—18 PN

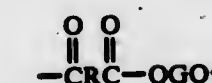
9 Claims

1. A polyamide having an acid value less than 2, amine value

wherein R is the divalent radical remaining after removal of the carboxyl groups from a dicarboxylic acid having a molecular weight of less than 350, D is the divalent radical remaining after removal of the hydroxyl groups from organic diol having a molecular weight of less than 250, and G is the divalent radical remaining after removal of the terminal hydroxyl groups from long chain glycol having an average molecular weight of 350 to 6000, said copolyester having a melt index of less than 150 and a melting point of at least 90° C.; (B) 1 to 99 percent by weight of at least one solid low molecular weight thermoplastic resin which forms compatible mixtures with the segmented copolyester, is thermally stable at 150° C., and has a melt viscosity of less than 10,000 centipoises at 200° C. modi-



and said long chain ester units amounting to 25 to 85 percent by weight of said copolyester and being of the formula



fied with (C) 0.3 to 9.0 parts by weight, per 100 parts by weight of elastomer (A) and resin (B), of a multi-functional carboxylic compound taken from the group consisting of aromatic and aliphatic anhydrides having at least two anhydride groups.

4,247,428

ADHESIVE FOR POLYESTERS AND POLYOLEFINS
Mohan V. Kulkarni, Ashland, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 16, 1979, Ser. No. 67,077

Int. Cl.³ C08L 91/06

U.S. Cl. 260—28.5 AV

8 Claims

1. A hot melt adhesive comprised on a percent by weight basis of about 35 to 45 percent of a copolymer of ethylene and vinyl acetate, about 5 to 15 percent by weight of a copolymer of ethylene and ethyl acrylate, about 35 to 45 percent of a resin modifier, about 5 to 10 percent of paraffin rich processing oil, and 0 to 5 percent of microcrystalline wax.

4,247,429

COATING COMPOSITIONS

Denis R. Pauze, and Richard J. Jablonski, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 538,078, Jan. 2, 1975, abandoned. This application Jul. 11, 1978, Ser. No. 923,727

Int. Cl.³ C08L 67/00, 75/00, 77/00

U.S. Cl. 260—29.2 TN

6 Claims

1. A coating composition containing essentially no free carboxyl groups and selected from the group consisting of polyesterimide hydantoins, polyesterimide urethanes and mixtures thereof, at least part of the imide rings being cleaved with a compound selected from the group consisting of an amine, ammonia and ammonium hydroxide, said composition containing water as a solvent.

4,247,430

AQUEOUS BASED SLURRY AND METHOD OF FORMING A CONSOLIDATED GRAVEL PACK

Vernon G. Constien, Owasso, Okla., assignor to The Dow Chemical Company, Midland, Mich.

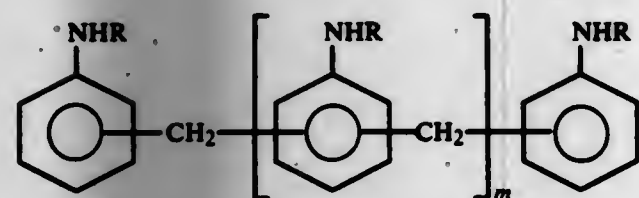
Filed Apr. 11, 1979, Ser. No. 28,960

Int. Cl.³ C08G 59/14; E21B 43/04, 33/138; C07C 7/18

U.S. Cl. 260—29.2 EP

13 Claims

1. A compound corresponding to the formula



wherein m is from 0 to about 10; each R independently is H or Y provided that at least one R is Y; and Y is



and each R' independently is hydrogen or lower alkyl.

4,247,431 COMPOSITION AND PROCESS FOR MAKING PRECIPITATED NYLON

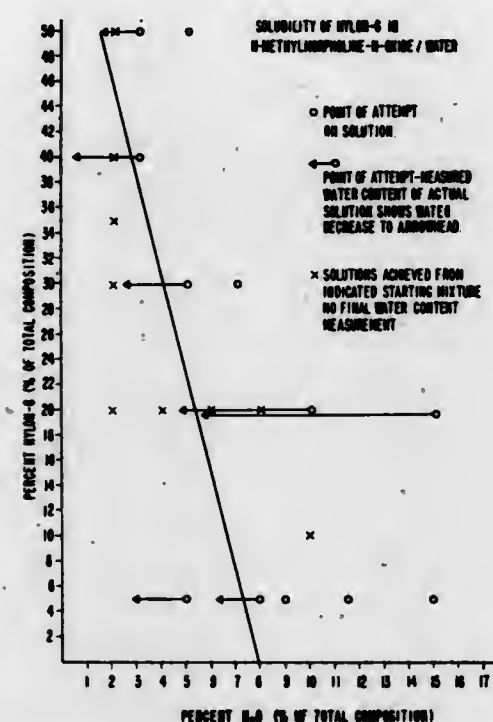
Neal E. Franks, Suffern, N.Y., and Julianna K. Varga, Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 938,907, Sep. 1, 1978, Pat. No. 4,196,282, which is a continuation-in-part of Ser. No. 854,957, Nov. 25, 1977, Pat. No. 4,145,532. This application Jul. 2, 1979, Ser. No. 54,358

Int. Cl.³ C08L 77/06

U.S. Cl. 260—29.2 N

21 Claims



1. A solution comprising

- a nylon having an amide group index of less than about 145,
- a tertiary amine oxide nylon solvent which has a N-methylamine oxide group endo or exo to an aromatic or saturated or unsaturated ring and which has substantial stability at 125°, and
- a nylon solubility enhancing amount of water between about 1.5 to about 11% by weight based upon the weight of the solution.

4,247,432

WATER PURIFICATION EMPLOYING POLY(BETA-ALANINE)

Sun Y. Huang, Stamford, and Michael M. Fisher, Ridgefield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 25, 1979, Ser. No. 60,534

Int. Cl.³ C08L 77/00

U.S. Cl. 260—29.2 N

12 Claims

1. A flocculation process for use in water purification and clarification systems that comprises adding to an aqueous dispersion of flocculatable material an effective amount of a solution that consists essentially of:

- 0.1 to 0.5 percent by weight of poly(beta-alanine) wherein said poly(beta-alanine) is of the general structure:



wherein n is of such a magnitude such that the inherent viscosity (η_{inh}) is greater than about 0.2;

- 2 to 6 percent by weight of either calcium chloride or zinc chloride;
- 0 to 7.7 percent by weight of an acid selected from the group consisting of hydrochloric acid, formic acid, sulfuric acid, nitric acid and trifluoroacetic acid; and
- 97.9 to 85.8 percent by weight water, settling the flocculation material and thereafter recovering the purified and clarified water.

culatable material and thereafter recovering the purified and clarified water.

4,247,433

PROCESS FOR THE PREPARATION OF THERMOSETTABLE UREA-FORMALDEHYDE RESINS AND METHOD FOR USE THEREOF

Eckehard Schamberg; Ulrich Holtschmidt, both of Essen, and Dieter Hellwig, Bochum, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,202

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825590

Int. Cl.³ C08L 61/24; C08G 12/12

U.S. Cl. 260—29.4 R

10 Claims

1. A process for the preparation of thermosettable urea-formaldehyde resins with a molar ratio of urea to formaldehyde of 1:1 to 1:1.5, comprising the steps of:

- reacting urea and formaldehyde for 5 to 120 minutes at 40° to 95° C. in an aqueous solution at a molar ratio of 1:1.5 to 1:4 and in the pH range of ≥ 7.5 to 10; and then
- further reacting the mixture to effect condensation while maintaining the pH in the range of ≥ 4 to 6 at 40° C. to 95° C. for 1 to 60 minutes until a precipitation number of 1:1.5 to 1:10 is achieved; and then
- adjusting the pH to a value from ≥ 7.0 to 10, and adding the remaining amount of urea required for achieving a molar ratio of 1:1 to 1:1.5 and then continuing the reaction at 70° to 95° C. for 1 to 45 minutes, until a precipitation number of 1:0.5 to 1:3 is reached; and then cooling the solution obtained at room temperature.

4,247,434

PROCESS FOR PREPARATION OF LARGE-PARTICLE-SIZE MONODISPERSE

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John W. Vanderhoff, Bethlehem, Pa.; Fortunato J. Micale, Bethlehem, Pa.; Mohamed S. El-Anasser, Bethlehem, Pa., and Dale M. Kornfeld, Huntsville, Ala.

Filed Dec. 29, 1978, Ser. No. 974,474

Int. Cl.³ C08F 2/22

U.S. Cl. 260—29.6 RB

10 Claims

1. The method of preparing a monodisperse latex having a particle size over 2 microns which comprises:

- combining monodisperse seed particles of a polymer prepared by emulsion polymerization, predetermined amounts of monomer, an emulsifier, at least one inhibitor, a heat-decomposable initiator and water in a closed reaction vessel;
- disposing the reaction vessel containing the resulting mixture in a microgravity environment;
- heating the mixture above the decomposition temperature of said initiator; and
- maintaining the mixture in microgravity at an effective polymerization temperature under mild agitation until growth of seed particles is completed.

4,247,435

INTUMESCENT FIRE RETARDANT COATING COMPOSITIONS

Nelson H. Kasten, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 2, 1978, Ser. No. 947,681

Int. Cl.³ C09D 5/16, 5/18; C08L 31/04

U.S. Cl. 260—29.6 MP

7 Claims

1. In an aqueous fire retardant coating composition which comprises:

- a carbonific;
- a film-forming binder; and
- a substantially water-insoluble phosphorus-containing material having at least one P—O—P linkage selected from the group consisting of ammonium polyphosphates,

substituted ammonium polyphosphates, amide polyphosphate condensates, melamine pyrophosphates and mixtures thereof;

wherein (A), (B) and (C) constitute from about 20 to about 90 percent by weight of the total composition, the improvement wherein said composition is further composed of a chelating agent selected from the group consisting of aminocarboxylic acids, aminophosphonic acids, alkylene and alkylidene diphosphonic acids, α -hydroxy carboxylic acids, ethanolamines and substituted ethanolamines, carboxylic ethers, polymeric polycarboxylic acids and salts of said acids; said chelating agent composing from about 0.1 percent to about 10 percent by weight of the total composition.

4,247,436

AQUEOUS SOLUTION OF MIXTURES OF SILICON-ORGANIC COMPOUNDS

Robert Büning, Troisdorf, Siegf. Horst Hanisch, Rheidt; Hans-Jürgen Haas, and Karl-Martin Rüdiger, both of Troisdorf, Spich, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 814,807, Jul. 11, 1977, Pat. No. 4,195,141, which is a continuation-in-part of Ser. No. 802,219, May 31, 1977, abandoned. This application Aug. 27, 1979, Ser. No. 69,692

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624888

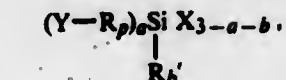
Int. Cl.³ C08L 43/04

U.S. Cl. 260—29.6 H

13 Claims

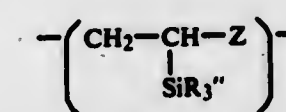
1. An aqueous solution of organosilicon compounds comprising water; and

A. a silane of the general formula

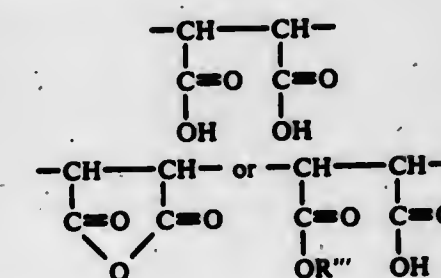


wherein a is 1 or 2, b is 0 or 1 or 2, p is 0 or 1 and a+b is equal to or less than 3, R represents the alkylene moiety of 1 to 8 carbon atoms or an arylene moiety, R' represents an alkyl moiety of 1 to 4 carbon atoms or a phenyl moiety, X represents a hydrolyzable moiety, and Y represents a functional group with a CH₃ or CH₂=CH— moiety, and

B. a copolymer having a recurrent unit of the formula



wherein R'' represent OH and/or [O]—[NH₄]⁺ and/or [O]—[Me]⁺ wherein Me is an alkali or alkaline earth metal and Z represents at least one moiety of the formula



wherein R''' represents an alkyl moiety of 1 to 20 carbon atoms.

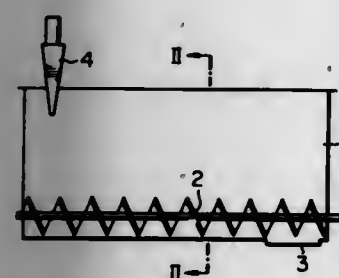
4,247,437 METHOD FOR COOLING POLYMERIC HYDROGEL BLOCKS

Iwao Ohshima, and Yasutaka Nakashima, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan
Filed Jan. 27, 1979, Ser. No. 52,662

Claims priority, application Japan, Jan. 29, 1978, 53/78092
Int. Cl.³ C08L 33/26

U.S. Cl. 260—29.6 H

17 Claims



1. A method for cooling polymeric hydrogel blocks, which comprises feeding the polymeric hydrogel blocks on a screw conveyor with a screw provided in a horizontal or inclined trough, one end of which is blind and which trough has a discharge opening at the bottom or the side near to the other end, conveying said blocks by the screw to said blind end and thereby pressing said conveyed blocks against said blind end and lifting the pressed blocks upward along the blind wall, and blowing air for cooling against the hydrogel blocks which are being lifted upward along the blind wall and are falling backward on the screw by gravity.

4,247,438 PROCESS FOR THE MANUFACTURE OF AQUEOUS ETHYLENE/VINYL CHLORIDE/VINYL ALKANOATE AND/OR ALKYL ACRYLATE COPOLYMER DISPERSIONS HAVING A NON-UNIFORM PARTICLE SIZE DISTRIBUTION

Herbert Eck, Klaus Höffner, and Hubert Wiest, all of Burg-hausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,082

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837992

Int. Cl.³ C08L 27/06

U.S. Cl. 260—29.6 T

13 Claims

1. Aqueous ethylene/vinyl chloride/vinyl alkanolate and/or alkyl acrylate copolymer dispersions having a non-uniform particle size, in which one particle size distribution maximum is at 0.03 to 0.2 μ and a second maximum is at 0.15 to 1 μ where said second maximum particle size range differs from the first by at least 0.1 μ and wherein the mass of particles in the particle size distribution curve of the second maximum is from 5% to 60% of the total mass of particles; said dispersion having a solids content of between 20% and 70% by weight and an emulsifier content of from 0.5% to 10% by weight, based on the total amount of monomers, said copolymer consisting of: from 20% to 92% by weight of vinyl chloride units, from 5% to 60% by weight of ethylene units, from 3% to 75% by weight of monomer units selected from the group consisting of:

- (1) vinyl esters of unbranched alkanolic acids having from 1 to 18 carbon atoms,
- (2) vinyl esters of branched alkanolic acids having from 4 to 18 carbon atoms,
- (3) acrylic acid esters of unbranched alkanols having from 1 to 12 carbon atoms,
- (4) acrylic acid esters of branched alkanols having from 3 to 12 carbon atoms, and
- (5) mixtures thereof, and

from 0 to 15% by weight of other monomer units copolymerizable with ethylene and vinyl chloride.

4,247,439 WATER-BORNE COATING COMPOSITION MADE FROM EPOXY RESIN, POLYMERIC ACID AND TERTIARY AMINE

James F. Matthews, Levittown, and Eugene G. Sommerfeld, Penn Valley, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 941,540, Sep. 15, 1978, abandoned, which is a continuation-in-part of Ser. No. 767,388, Feb. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 581,094, May 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 413,372, Nov. 6, 1973, abandoned. This application Sep. 14, 1979, Ser. No. 74,122

Int. Cl.³ C08L 33/00

U.S. Cl. 260—29.6 NR

41 Claims

1. A water-borne coating composition consisting essentially of liquid carrier and the reaction product of:

(A) not less than 50% by weight, based on the weight of (A) plus (B), of an epoxy resin containing, on the average, two terminal 1,2-epoxy groups per molecule and having an epoxy equivalent weight of 750-5000;

(B) a carboxyl-functional polymer in an amount sufficient to provide at least 1.25 equivalents of carboxyl groups, when the source of the carboxyl group is a mono-protic acid, and at least 2.0 equivalents of carboxyl groups, when the source of such groups is a diprotic acid, per equivalent of 1,2-epoxy groups in the epoxy resin, said polymer having a weight average molecular weight (determined by light scattering) of about 10000-160000 and an acid number of 100-500;

(C) an aqueous solution of at least 1.25 equivalents of a tertiary amine per equivalent of 1,2-epoxy groups in the epoxy resin, said tertiary amine being selected from the group consisting of $R_1R_2R_3N$, pyridine, N-methylpyrrolidine, N-methyl piperidine, N-methyl pyrrolidine, N-methyl morpholine, and mixtures thereof and wherein R_1 and R_2 are substituted or unsubstituted monovalent alkyl groups containing one or two carbon atoms in the alkyl portion and R_3 is a substituted or unsubstituted monovalent alkyl group containing 1-4 carbon atoms; and

(D) optionally, 10-90% of the amount required for stoichiometric reaction with the carboxyl-functional polymer of (B) of at least one primary, secondary or tertiary amine or monofunctional quaternary ammonium hydroxide;

wherein Y is at least about $6+0.75(2^X)$ wherein Y is the milliequivalent of carboxyl groups neutralized with primary, secondary or tertiary amine or monofunctional quaternary ammonium hydroxide per 100 grams of acid polymer plus epoxy, and X is the epoxy equivalent weight divided by 1000; and wherein for increasing ratios of carboxyl groups to 1,2-epoxy groups, the amount of amine is increased to keep the carboxyl-functional polymer water dispersible.

4,247,440 METHOD FOR PREVENTING PLASTICIZER BLEEDING ON POLYVINYL CHLORIDE SHAPED ARTICLES

Michihiko Asai, Fujisawa; Yoshio Suda, Hachioji; Kiyoshi Imada, Omiya; Susumu Ueno, and Hirokazu Nomura, both of Ibaragi, all of Japan, assignors to Agency of Industrial Science and Technology and Shin-Etsu Chemical Co., Ltd., both of Japan

Filed Jul. 23, 1979, Ser. No. 59,756

Claims priority, application Japan, Jul. 27, 1978, 53-91905

Int. Cl.³ C08J 3/28; C08K 5/09; C08J 3/18

U.S. Cl. 260—31.8 R

12 Claims

1. A method for preventing bleeding of a plasticizer on the surface of a shaped article of a polyvinyl chloride resin plasticized with at least 20 parts by weight, per 100 parts by weight of the polyvinyl chloride resin, of a plasticizer which is a

compound having at least one aromatic nucleus in a molecule, which method comprises exposing the surface of the shaped article to be treated to a low temperature plasma of an inorganic gas at a pressure in the range from 0.001 to 10 Torr.

4,247,441 PROCESS FOR PREPARING A SILICONE MOLDING COMPOSITION

William T. Sand, Burnt Hills, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,876

Int. Cl.³ C08K 5/07

U.S. Cl. 260—32.8 SB

15 Claims

1. A process for preparing and mixing a silicone molding composition comprising (a) mixing a silicone resin compound of $R\text{SiO}_{3/2}$ units and $R_2\text{SiO}$ units where R is a monovalent hydrocarbon radical and the R to Si ratio varies from 1.0 to 1.9 with an organic solvent selected from the class consisting of aliphatic alcohol solvents, ketone solvents, toluene, xylene, chlorinated hydrocarbon solvents and mixtures thereof to form a solution of 10 to 50% by weight solids; (b) adding to the solution in a kneading vessel various types of fillers, a silicone plasticizer, a pigment and a catalyst to form a paste of 75 to 95% by weight solids; (c) kneading the paste to thoroughly mix the ingredients; (d) removing at least most of the remaining solvent to leave behind a silicone molding composition in which the ingredients are thoroughly mixed and (e) reducing the silicone molding composition to particles of the appropriate size.

4,247,442 MOLD AND MILDEW RESISTANT ORGANOPOLYSILOXANE COMPOSITIONS

Koji Shimizu, Ichihara, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 8,666

Claims priority, application Japan, Mar. 29, 1978, 53-35439

Int. Cl.³ C08K 5/06, 5/47

U.S. Cl. 260—33.2 SB

8 Claims

1. An organopolysiloxane composition which is curable to a solid elastic state which consists essentially of

(A) an organopolysiloxane having the general formula



wherein R is a substituted or unsubstituted monovalent hydrocarbon radical, where y has an average value of 1.99-2.01 and x has a value such that the organopolysiloxane has a viscosity of at least 0.05 poise at 25° C.;

(B) an organosilicon compound which has at least three hydrolyzable groups per molecule;

(C) 2-(4-thiazolyl)benzimidazole and,

(D) an organic surfactant.

4,247,443 AROMATIC POLYIMIDE RESIN COMPOSITION

Ichiro Sasaki; Hiroshi Itatani; Mikito Kashima, all of Chiba; Hataaki Yoshimoto, Ichihara; Shuji Yamamoto, Chiba, and Yoshikazu Sasaki, Takatsuki, all of Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Aug. 16, 1979, Ser. No. 67,166

Claims priority, application Japan, Aug. 17, 1978, 53-99554; Aug. 23, 1978, 53-101848

Int. Cl.³ C08K 5/13

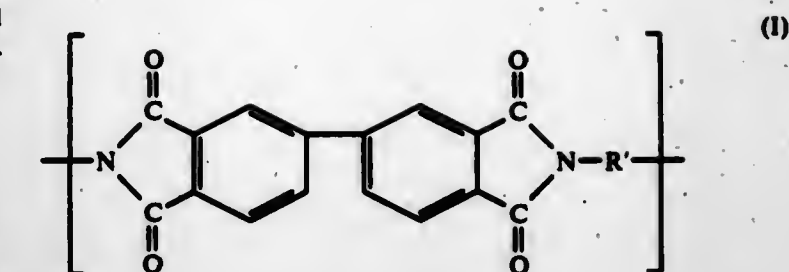
U.S. Cl. 260—33.4 P

12 Claims

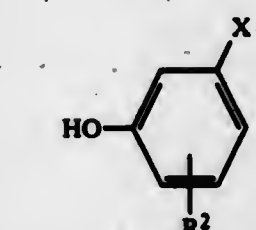
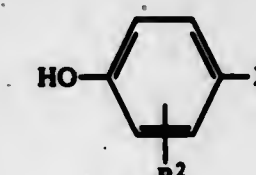
1. An aromatic polyimide resin composition comprising:

at least 2% by weight of at least one imide polymer having

at least 90 molar % of a recurring unit of the formula (I):



wherein R' represents a divalent aromatic radical, and; the balance consisting of an organic polar solvent consisting essentially of at least one halogenated phenol compound having a melting point of 100° C. or less and a boiling point of 300° C. or less, and selected from the group consisting of those of the formulae (II) and (III):



wherein R² represents a member selected from the group consisting of a hydrogen atom and alkyl radicals having 1 to 3 carbon atoms, and X represents a halogen atom, said imide polymer being dissolved in said organic polar solvent.

4,247,444 ACRYLIC GRAFT COPOLYMERS AND COATING COMPOSITIONS THEREOF

John A. Simms, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

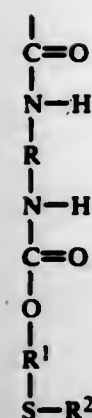
Division of Ser. No. 972,426, Dec. 22, 1978, which is a division of Ser. No. 820,879, Aug. 1, 1977, Pat. No. 4,151,227. This application Nov. 7, 1979, Ser. No. 91,890

Int. Cl.³ C08L 29/08

U.S. Cl. 260—33.6 UA

9 Claims

1. A coating composition comprising 5-60% by weight of a film forming constituent of a graft copolymer and 50-95% by weight of a liquid, wherein the graft copolymer consisting essentially of about 25-95% by weight of a styrene/allyl alcohol polymeric backbone and about 5-75% by weight of acrylic side chains; wherein the backbone contains pendent hydroxyl groups before the attachment of side chains by replacement of the hydrogen of at least one of the hydroxyl groups by the formula



where R is an aliphatic group, a cycloaliphatic group or an aromatic group; R¹ is an alkylene group having 2-6 carbon atoms, R², which forms a side chain, is an acrylic polymer segment.

4,247,445

PAINTABLE ONE-COMPONENT RTV SYSTEMS
Alfred H. Smith, Jr., Ballston Lake, and M. Dale Beers, Schenectady, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,255
Int. Cl.³ C08L 83/06

U.S. Cl. 260—37 SB

22 Claims

1. A paintable one-component room temperature vulcanizable silicone rubber composition comprising (A) 100 parts by weight of a silanol end-stopped diorganopolysiloxane polymer where the organo groups are monovalent hydrocarbon radicals and the polymer has a viscosity that varies from 50 to 1,000,000 centipoise at 25° C.; (B) from 200 to 500 parts by weight of calcium carbonate; (C) from 1 to 10 parts by weight of a cross-linking agent of the formula,



where R is a monovalent hydrocarbon radical of 1 to 8 carbon atoms and R¹ is a monovalent hydrocarbon radical of 5 to 30 carbon atoms and m is 0 or 1; and (D) from 0.01 to 5 parts by weight of a curing catalyst comprising an organic tin salt of an organic acid or a tin salt of an organic acid.

4,247,446

FLAME-RESISTANT COMPOSITION, AND ELECTRICAL PRODUCT THEREOF
Joseph E. Betts, Westport, Conn., and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company, New York, N.Y.

Continuation of Ser. No. 931,700, Aug. 7, 1978, abandoned, which is a division of Ser. No. 816,857, Jul. 18, 1977, Pat. No. 4,123,586, which is a continuation-in-part of Ser. No. 554,471, Mar. 3, 1975, abandoned. This application Jun. 1, 1979, Ser. No. 44,818

Int. Cl.³ C08K 3/10

U.S. Cl. 260—42.42

12 Claims

1. A flame-resistant, cross-link cured polyolefin compound essentially comprising the following, in the approximate relative parts by weight of:

Polyolefin	100
Decabromodiphenyl ether	15-50
Silicone gum	3-10
Organic lead salt	3-10
Antimony oxide	5-25
Fumed silica	3-10

4,247,447

FLAME RETARDANTS CONTAINING TWO OR MORE 2-CYANOETHYL GROUPS FOR POLYPHENYLENE ETHER RESINS

Albrecht H. Granzow, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 951,202, Oct. 13, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 68,249
Int. Cl.³ C08L 71/04

U.S. Cl. 260—45.7 P

10 Claims

1. A flame retardant composition comprising a homogeneous blend of polymers containing about 10 to 90 parts by weight polyphenylene ether resin, about 90 to 10 parts by weight polystyrene, and a flame retarding effective amount of a compound represented by the formula:



wherein R is alkyl of about 1 to 12 carbon atoms, hydroxyalkyl wherein the alkyl portion contains about 1 to 8 carbon atoms, benzyl, alkylbenzyl wherein the benzyl ring contains at least two alkyl groups each containing about 1 to 4 carbon atoms, and ω -cyanoalkyl wherein the alkyl portion contains about 1 to 4 carbon atoms.

4,247,448

THERMALLY STABLE POLYCARBONATE COMPOSITIONS COMPRISING OXETANE PHOSPHONITES

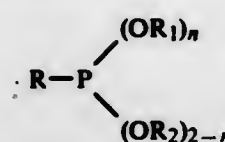
Ronald L. Markezich, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 2, 1978, Ser. No. 957,426
Int. Cl.³ C07F 9/28; C08K 5/15, 5/50

U.S. Cl. 260—45.8 A

23 Claims

7. A thermally and hydrolytically stabilized thermoplastic composition comprising an admixture of a thermoplastic resin polymer selected from the group consisting of aromatic polycarbonates, polyolefins, polyvinyl chlorides and polyesters, and a stabilizing amount of a phosphonite oxetane stabilizer represented by the structure:



wherein n is 1 or 2; R and R₂ can each independently be an alkyl of about C₁-C₃₀ or an aryl of about C₆-C₃₀; and R₁ is an oxetane represented by the structure:



wherein R₃ can independently be an alkyl, aryl, aralkyl, halo-methyl, cyanomethyl, alkoxy-methyl, aryloxy-methyl, aralkoxy-methyl, or acyloxy-methyl.

4,247,449

UREA DERIVATIVES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS LIGHT PROTECTING AGENTS FOR POLYMERS
Hartmut Wierzer, Gersthofen; Norbert Mayer, Gablingen, and Harald Knorr, Gersthofen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Jul. 31, 1979, Ser. No. 62,468

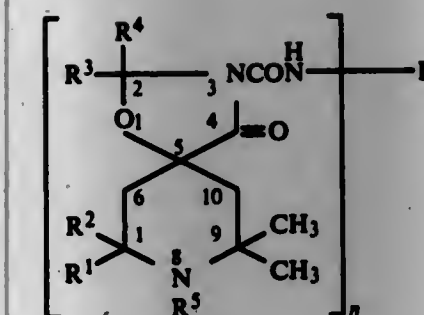
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834455

Int. Cl.³ C08K 5/35; C07D 491/10, 491/20

U.S. Cl. 260—45.8 NZ

5 Claims

1. Urea derivatives of the formula (I)



in which

R¹ and R² denote identical or different straight chain or branched alkyl radicals having from 1 to 12 carbon atoms, or R¹ and R² together with the carbon atom to which they are linked denote a cyclopentane or cyclohexane ring which may be methylsubstituted or a 2,2,6,6-tetramethyl-piperidine ring carbon atom 4 of which is identical with carbon atom 7 of the spirodecane system;

R³ denotes hydrogen, alkyl or isoalkyl having from 1 to 30 carbon atoms, or aralkyl having from 7 to 10 carbon atoms;

R⁴ denotes hydrogen, alkyl having from 1 to 30 carbon atoms, phenyl or naphthyl which may be substituted by a halogen atom, or alkyl having from 1 to 4 carbon atoms, or denotes aralkyl with 7 to 10 carbon atoms, or

R³ and R⁴ may also be together with the carbon atom by which they are linked a cycloalkane ring having from 4 to 20 carbon atoms which may be substituted by C₁ to C₄ alkyl radicals;

R⁵ denotes hydrogen, oxygen or C₁-C₄ alkyl; n is 1 or 2 depending on the valence of R⁶;

R⁶, with n being 1, denotes alkyl having from 1 to 20 carbon atoms, alkenyl having from 2 to 18 carbon atoms, cycloalkyl having from 5 to 12 carbon atoms which may be substituted by a C₁-C₄-alkyl radical; phenyl or naphthyl which may be substituted by a chlorine atom or alkyl having from 1 to 18 carbon atoms; or phenylalkyl having from 7 to 18 carbon atoms, or

R₆, with n being 2, denotes a straight chain or branched alkylene group having from 2 to 20 carbon atoms, or phenylene or naphthylene which may be substituted by C₁-C₄ alkyl, or a diphenylenealkane radical having from 13 to 18 carbon atoms.

4. Synthetic polymers stabilized against UV decomposition containing from 0.01 to 5 parts by weight, calculated on the polymer, of a compound as claimed in claim 1 or 2, either per se or in the form of a salt with a non oxidizing inorganic or organic acid.

4,247,450

COMPOSITIONS BASED ON FLAMEPROOFED POLYAMIDE

Jacqueline Cerny, Lyons, and Robert Troncy, Oullins, both of France, assignors to Rhone-Poulenc Industries, Paris, France
Continuation of Ser. No. 840,633, Oct. 11, 1977, abandoned. This application May 7, 1979, Ser. No. 36,697
Int. Cl.³ C08K 5/13, 5/06, 5/03

U.S. Cl. 260—45.75 W

5 Claims

1. A composition of matter comprising a polyamide, an amount of a halogenated derivative compound selected from the group consisting of brominated and chlorinated derivatives of aliphatic and aromatic mono- and polycyclic organic compounds which is sufficient to flameproof said polyamide, and an amount of cadmium oxide sufficient to improve the arcing resistance of said polyamide.

4,247,451

DICYCLOHEXYLAMMONIUM ALPHA-OCTAMOLYBDATE AND COMPOSITION CONTAINING SAME

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 18, 1979, Ser. No. 49,257
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.³ C08K 5/56; C07C 87/34

U.S. Cl. 260—45.75 R

4 Claims

1. Dicyclohexylammonium alpha-octamolybdate characterized by major x-ray diffraction peaks at "d" spacings of 12.8 Å, 9.68 Å and 9.15 Å.

4,247,452

PURIFICATION OF PERTUSSIS HAEMAGGLUTININS
Laurence I. Irons, Salisbury, and Alastair P. MacLennan, Amesbury, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 26, 1979, Ser. No. 15,467
Claims priority, application United Kingdom, Mar. 1, 1978, 8069/78

Int. Cl.³ A61K 39/10; C07G 7/00

U.S. Cl. 260—112 R

17 Claims

1. A process for the separation of LPF-HG from a liquid preparation derived from bacterial cells of the genus Bordetella, said process consisting of, preparing a column of a stationary phase comprising an insoluble polymeric support and, bound thereto, a substance rich in sialic acid, applying said liquid preparation to said stationary phase to cause said LPF-HG to bind thereto, and washing said stationary phase to obtain a liquid preparation substantially free of LPF-HG.

4,247,453

FOLIC ACID DERIVATIVES FOR USE IN RADIOIMMUNOASSAY

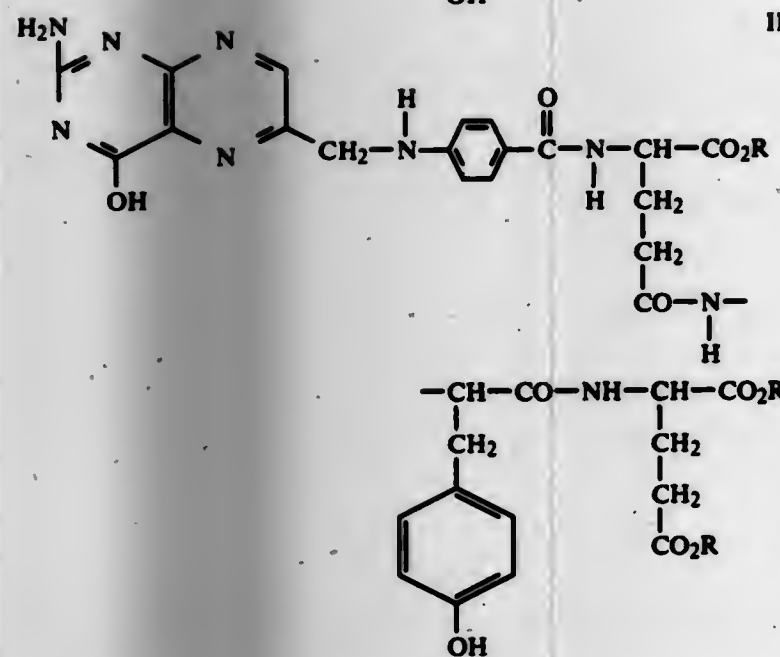
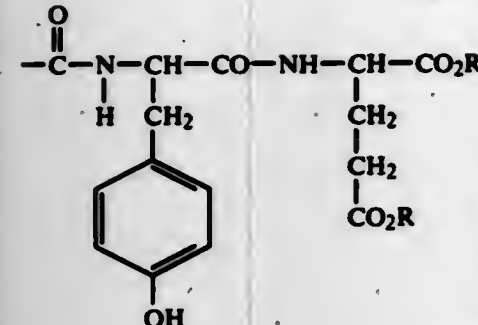
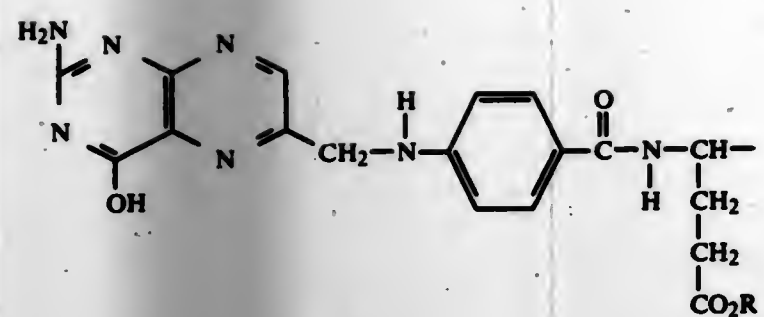
Akhtar Ali, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 13, 1978, Ser. No. 942,002
Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R

2 Claims

1. A compound of the formula I or II,



and acid addition salts thereof wherein R is hydrogen and wherein the phenol ring is labeled with ^{125}I or ^{131}I .

4,247,454

NOVEL CHROMOGENIC THROMBIN SUBSTRATES

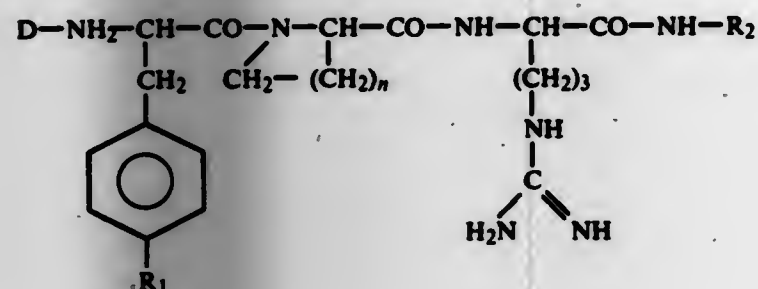
Bo T. af Ekenstam, Moindal; Leif E. Aurell; Karl G. Claesson, both of Sero, and Birgitta G. Karlsson, Moindal, all of Sweden, assignors to AB Kabi, Stockholm, Sweden. Division of Ser. No. 826,594, Aug. 22, 1977, Pat. No. 4,169,015, which is a division of Ser. No. 697,003, Jan. 17, 1976, Pat. No. 4,061,625. This application Jul. 9, 1979, Ser. No. 55,664. The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.

Int. Cl.³ C07C 103/52; C12Q 1/56

U.S. Cl. 260—112.5 R

11 Claims

1. A diagnostically active chromogenic substrate with a high specificity to thrombin and thrombin-like enzymes having the formula:



and salts thereof, wherein R₁ is hydrogen or hydroxy, R₂ is a chromophoric group, and n is 1, 2 or 3.

4,247,455

YELLOW 2:1 AZO-AZO OR AZO-AZOMETHINE CHROME COMPLEXED DYE DEVELOPERS

Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

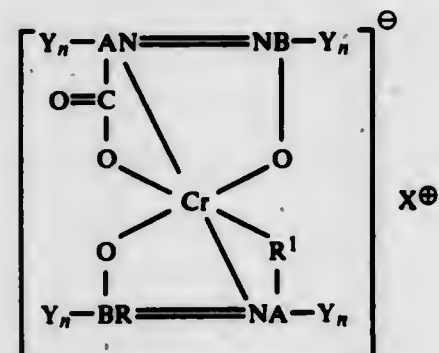
Division of Ser. No. 836,076, Sep. 23, 1977, Pat. No. 4,174,221. This application Aug. 2, 1978, Ser. No. 930,152

Int. Cl.³ C07C 107/04; C09B 45/06, 45/16; G03C 5/54

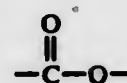
U.S. Cl. 260—145 B

13 Claims

1. A 2:1 chrome-complexed yellow dye developer of two ortho carboxy, ortho' hydroxy azo dyes or a 2:1 chrome-complexed yellow dye developer of an ortho carboxy, ortho' hydroxy azo dye and an ortho, ortho' dihydroxy azomethine dye, said dye developer being represented by the structural formula



where each A is a phenyl radical; each B is a phenyl radical or a pyrazolone radical or a pyrimidine radical; Y is a silver halide developing substituent; each n is 0 or 1 but at least one n must be 1: R is N or CH; R' is



if R is N but R' is —O— if R is CH; and X is a cation.

4,247,456

WATER-INSOLUBLE MONOAZO PYRIDONE DYE

Hanswilli von Brachel, Leopoldshöhe; Ernst Heinrich, Frankfurt am Main; Otto Grawinger, Frankfurt am Main; Karl Hintermeier, Frankfurt am Main, and Horst Kindler, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany.

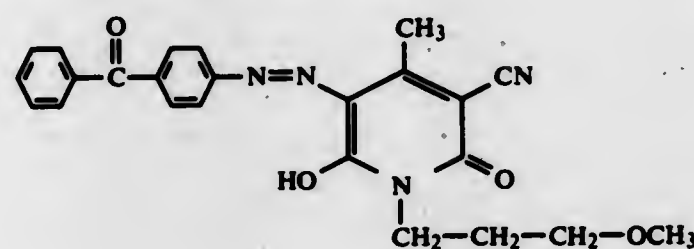
Continuation-in-part of Ser. No. 625,328, Oct. 23, 1975, abandoned, which is a division of Ser. No. 259,781, Jun. 5, 1972, Pat. No. 3,957,749, which is a continuation of Ser. No. 882,285, Dec. 4, 1969, abandoned. This application Nov. 19, 1976, Ser. No. 743,283

Int. Cl.³ B09B 29/36; D06P 1/18, 3/24, 3/54

U.S. Cl. 260—156

1 Claim

1. A monoazo dye of the formula



4,247,457

CATIONIC DYES CONTAINING AN ARYLOXY GROUP LINKED THROUGH A BRIDGING RADICAL TO A QUATERNIZED NITROGEN ATOM

Beat Henzi, Neuchâtel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

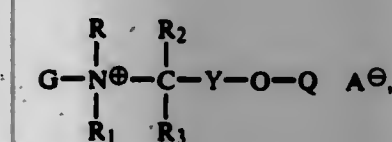
Division of Ser. No. 635,600, Nov. 28, 1975, Pat. No. 4,072,672, which is a continuation of Ser. No. 383,878, Jul. 30, 1973, abandoned. This application Nov. 7, 1977, Ser. No. 848,886. Claims priority, application Switzerland, Jul. 31, 1972, 11354/72; Dec. 7, 1972, 17824/72; Feb. 5, 1973, 1618/73; Feb. 21, 1973, 2523/73

Int. Cl.³ C07C 103/75; C09B 29/36, 29/38, 31/04

U.S. Cl. 260—158

60 Claims

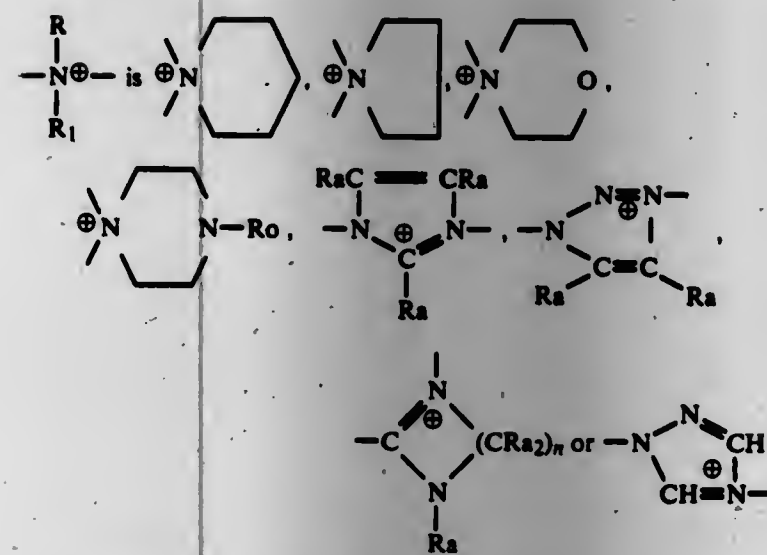
1. A basic dye of the formula



wherein G is the residue of a dye other than a carbocyclic monoazo dye,

R is C₁₋₄alkyl; C₁₋₄alkyl substituted by hydroxy or phenyl; amino or C₁₋₄alkoxy,

R₁ is C₁₋₄alkyl or C₁₋₄alkyl substituted by hydroxy or phenyl, or

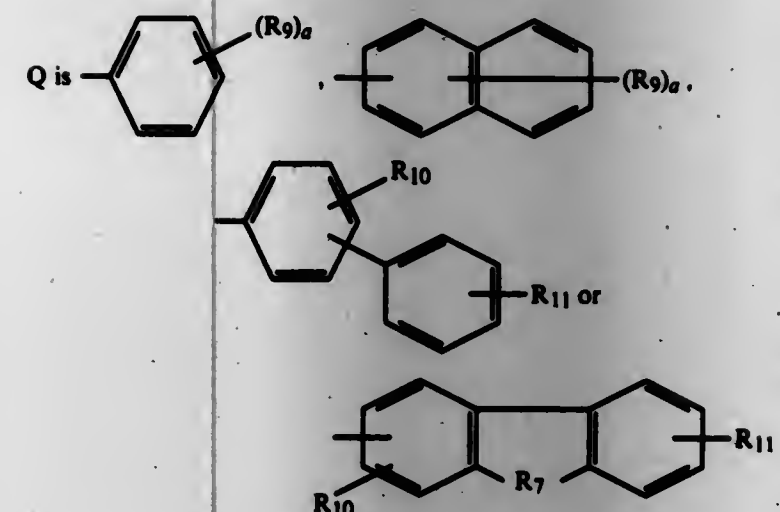


wherein each R_a is independently hydrogen or C₁₋₄alkyl, R_o is C₁₋₄alkyl or phenyl, and

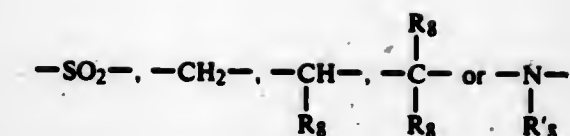
n is 1 or 2,

R₂ is hydrogen or C₁₋₄alkyl,

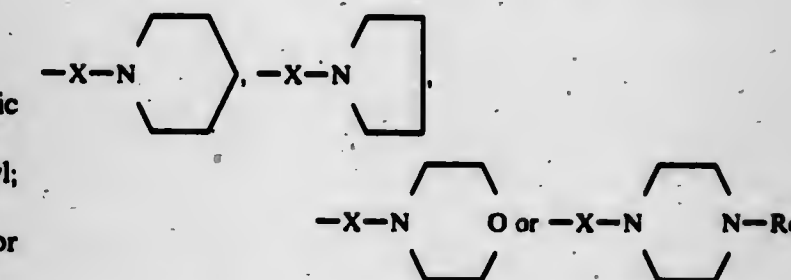
R₃ is hydrogen or C₁₋₄alkyl,



wherein R₇ is —S—, —O—, —CO—, —SO—,



wherein each R₈ is independently C₁₋₄alkyl, and R₈' is hydrogen or C₁₋₄alkyl, each R₉ is independently hydroxy; halo; C₁₋₄alkyl; C₁₋₄alkyl substituted by halo, hydroxy, cyano, phenyl or phenoxy; C₁₋₄alkoxy; C₁₋₄alkoxy substituted by halo, hydroxy, cyano, phenyl or phenoxy; C₅₋₆cycloalkyl; C₅₋₆cycloalkyl substituted by C₁₋₄alkyl; trifluoromethyl; cyano; nitro; phenoxy; naphthyl; phenylazo; —CO—R_o; —CO—O—R_o; —O—CO—R_o; —CO—NH—R_o; —CO—N(R_o)₂; —O—CO—N(R_o)₂; —NH—CO—R_o; —SO₂—R_o; —SO₂—NH—R_o; —O—SO₂—N(R_o)₂;

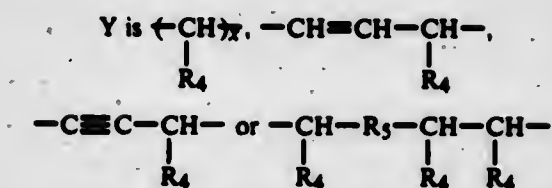


wherein each R_o is independently C₁₋₄alkyl or phenyl, and X is —CO— or —SO₂—,

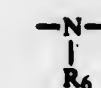
R₁₀ is hydrogen, halo or C₁₋₄alkyl,

R₁₁ is hydrogen, C₁₋₄alkyl, C₁₋₄alkoxy, phenyl, phenoxy, halo, trifluoromethyl, nitro, cyano, —CO—R_o, —CO—O—R_o, —O—CO—R_o, —CO—NH—R_o, —NH—CO—R_o, —SO₂—R_o, —SO₂—NH—R_o or —SO₂—N(R_o)₂;

wherein each R_o is independently C₁₋₄alkyl or phenyl, and a is 0, 1, 2, 3, 4 or 5, with the proviso that each R₉ must be halo when a is 4 or 5,



wherein each R₄ is independently hydrogen or C₁₋₄alkyl, R₅ is —O—, —S—,



—SO—, —SO₂— or —CO—,

wherein R₆ is hydrogen or C₁₋₄alkyl, and

x is 1 to 6, and

A⁺ is an anion,

wherein each halo is independently chloro, bromo or iodo, with the proviso that the molecule is free of sulfo groups.

4,247,458

PROCESS FOR PREPARING AZO DYES

Leslie Shuttleworth, Ormakirk, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,348

Claims priority, application United Kingdom, Nov. 30, 1978, 46612/78

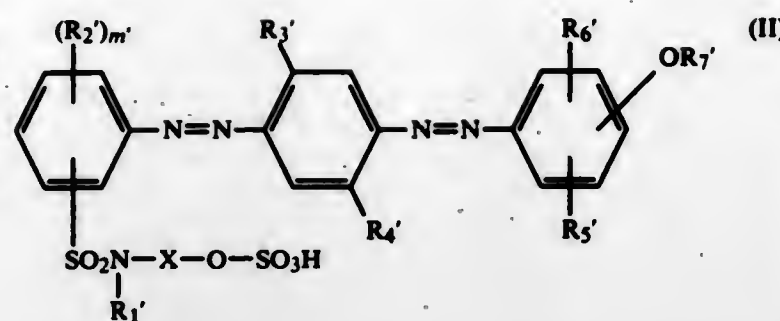
Int. Cl.³ C09B 29/22, 29/36

U.S. Cl. 260—158

6 Claims

1. The process for coupling a disperse dye diazo component

selected from substituted and unsubstituted phenyl, 2-thiazolyl, 2-benzothiazolyl, 1,3,4-thiadiazol-2-yl, 1,2,4-thiadiazol-5-yl, 2,1-benzisothiazol-3-yl, isothiazol-5-yl, 1,3,4-triazol-2-yl, pyrazol-5-yl, imidazol-2-yl, phthalimid-3 or 4-yl, 1-naphthyl, and 2-thienyl diazonium salts with disperse dye couplers comprising carrying out the coupling with a disperse dye coupler having in the coupling position on the ring a displaceable substituent other than hydrogen.



wherein

R₁ denotes hydrogen, alkyl, alkyl substituted by fluorine, chlorine, cyano, hydroxyl, C₁-C₄-alkoxy, phenoxy, C₁-C₄-alkylcarbonyloxy or phenyl, phenyl substituted by C₁-C₄-alkoxy, chlorine, cyano, nitro or C₁-C₄-alkyl or cyclohexyl,

R₂ denotes chlorine, bromine, alkoxy, alkoxy substituted by fluorine, chlorine, cyano, hydroxyl, C₁-C₄-alkoxy, phenoxy, C₁-C₄-alkylcarbonyloxy or phenyl, alkyl, alkyl substituted by fluorine, chlorine, cyano, hydroxyl, C₁-C₄-alkoxy, phenoxy, C₁-C₄-alkylcarbonyloxy or phenyl, acetyl amino or benzoyl amino,

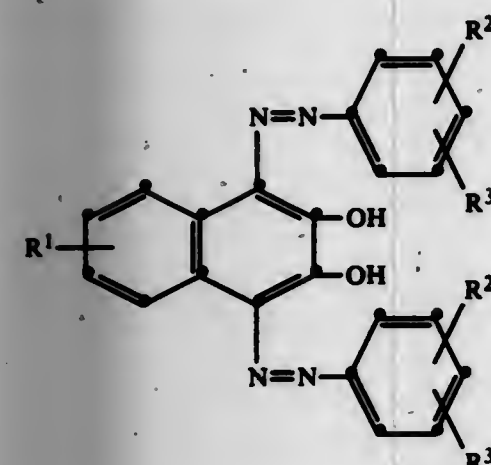
R₃ and R₄ denote hydrogen, chlorine, bromine, alkoxy or alkyl, which alkoxy or alkyl can be unsubstituted or is substituted by fluorine, chlorine, cyano, hydroxyl, C₁-C₄-alkoxy, phenoxy, C₁-C₄-alkylcarbonyloxy or phenyl,

R₅ and R₆ denote hydrogen, alkyl, alkoxy, chlorine or phenyl, which alkyl or alkoxy can be unsubstituted or is substituted by fluorine, chlorine, cyano, hydroxyl, C₁-C₄-alkoxy, phenoxy, C₁-C₄-alkylcarbonyloxy or phenyl and which phenyl can be substituted by C₁-C₄ alkoxy, chlorine, cyano, nitro or C₁-C₄-alkyl,

R₇ denotes alkyl, alkylcarbonyl, phenylcarbonyl, alkylsulphonyl or phenylsulphonyl, which alkyl can be unsubstituted or is substituted by fluorine, chlorine, cyano, hydroxyl, C₁-C₄-alkoxy, phenoxy, C₁-C₄-alkylcarbonyloxy or phenyl and which phenyl can be substituted by C₁-C₄ alkoxy, chlorine, cyano, nitro or C₁-C₄-alkyl,

X denotes branched or unbranched C₂-C₄-alkylene, B denotes 1,4-phenylene, 1,4-naphthylene or tetrahydro-1,4-naphthylene and

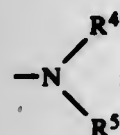
m denotes a number from 0-2.



wherein:

R¹ is hydrogen, -COOH, -CONH₂, -SO₂NH₂ or -SO₃M and M is a cation;

R² is a lower alkoxy radical, -OCH₂CONH₂, or



R³ is hydrogen or nitro; and

R⁴ and R⁵ are the same or different lower alkyl or lower hydroxyalkyl radicals.

4,247,460

DISAZO DYESTUFF SULPHURIC ACID ESTER

Herbert Hugel, and Gerhard Wolfrum, both of Leverkusen, Fed. Rep. of Germany, assigns to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 941,978

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741926

Int. Cl.³ C09B 31/06, 33/02; D06P 3/06, 3/24

U.S. Cl. 260-186

3 Claims

1. A disazo dyestuff which, in the form of the free acid corresponds to the formula

4,247,461
ESTERIFICATION PROCESS USING
METHOXYMETHYL-P-TOLUENESULFONATE
Jeng S. Lin, Clay, and Paul D. Sleezer, DeWitt, both of N.Y., assigns to Bristol-Myers Company, New York, N.Y.
Division of Ser. No. 16,453, Feb. 28, 1979. This application Nov. 16, 1979, Ser. No. 95,018

Int. Cl.³ C07D 499/08, 501/02

U.S. Cl. 260-239.1

4 Claims

1. In the process for esterifying the 3-carboxyl group of a penicillin or the 4-carboxyl group of a cephalosporin to form a methoxymethyl ester group, the improvement of carrying out the esterification by reaction of the penicillin or cephalosporin free acid or a carboxylic acid salt thereof with methoxymethyl p-toluenesulfonate as the esterifying agent in a substantially anhydrous inert organic solvent in the presence of base and at a temperature of from about -20° C. to about +50° C.

4,247,462

ANSAMYCIN ANTIBIOTIC

Walter D. Calmer, New London; Walter P. Cullen, East Lyme; John R. Oscarson, Pawcatuck; Liang H. Huang, East Lyme, all of Conn.; Riichiro Shibakawa, Honda, and Junsuke Tone, Chita, both of Japan, assigns to Pfizer Inc., New York, N.Y.
Division of Ser. No. 34,408, Apr. 30, 1979. This application Jan. 3, 1980, Ser. No. 109,253

Int. Cl.³ C07D 491/08

U.S. Cl. 260-239.3 P

1 Claim

1. 21-hydroxy,25-demethyl,25-methylthioprotostreptovarin I.

4,247,464

LIQUID EXTRACTION METHOD FOR RECOVERING AROMATIC BISIMIDES

Howard M. Relles, Rexford, and Frank J. Williams, III, Scotia, both of N.Y., assigns to General Electric Company, Schenectady, N.Y.

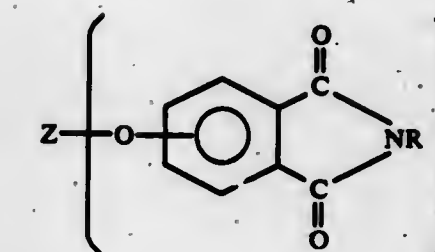
Filed Oct. 1, 1979, Ser. No. 80,541

Int. Cl.³ C07D 209/48

U.S. Cl. 260-326 N

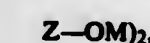
6 Claims

1. A method of making an aromatic bisimide of the formula,

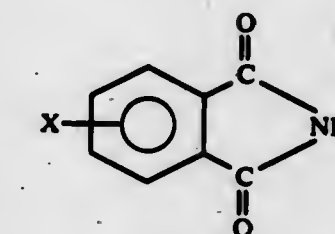


which comprises

(1) effecting the reaction of an alkali metal bisphenoxide of the formula,



and a substituted phthalimide of the formula,



in the presence of a dipolar aprotic organic solvent, where there is used about 2 moles of the substituted phthalimide, per mole of the alkali metal bisphenoxide,

(2) adding a solubilizing organic solvent to the dipolar aprotic organic solvent reaction mixture of (1), and extracting the resulting mixture with water to produce an organic solvent phase free of the dipolar aprotic solvent, (3) treating the solubilizing organic solvent phase of (2) with an aqueous solution of an alkali metal hydroxide and (4) stripping the resulting organic solvent solution of (3) to recover the aromatic bisimide,

where Z is a C₆₋₃₀ divalent aromatic organic radical, R is a monovalent C₍₁₋₁₃₎ organic radical, X is selected from a nitro or halo radical, and M is an ion of an alkali metal.

4,247,465

PREPARATION OF ALKYLENE CARBONATES FROM OLEFINS

Jar-Lin Kao, Cherry Hill; Gregory A. Wheaton, Swedesboro, both of N.J.; Harold Shalit, Bala Cynwyd, Pa., and Ming N. Sheng, Cherry Hill, N.J., assigns to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 23, 1979, Ser. No. 68,996

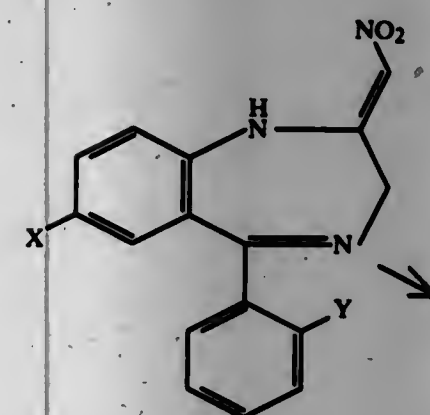
Int. Cl.³ C07D 317/36, 317/38

U.S. Cl. 260-340.2

5 Claims

1. A process for the preparation of a cyclic alkylene carbonate ester which comprises reacting in a liquid phase a cyclic or linear olefin having from 2 to 15 carbon atoms with carbon dioxide at a temperature of from 30° to 160° C., at a total pressure of from 100 to about 2,000 psig and a pH value of between about 5 and 7 in the presence of oxygen or an oxygen-containing gas and a catalytic amount of a mixture of

(a) from about 0.5 to 90 mole percent of said olefin reactant of an alkali metal or an alkaline earth metal iodide,



wherein X and Y are as above with a nitrosating agent (B) reacting the product of (A) with sodium borohydride (C) reacting the product of (B) with an aliphatic or aromatic aldehyde in the presence of an acid catalyst.

- (b) from about 5 to 50 mole percent of said olefin reactant of a cupric carbonate dihydroxide or calcium carbonate;
- (c) an iron compound selected from the group consisting of ferrous iodide, ferrous and ferric chlorides, ferrous and ferric bromides, ferrous and ferric nitrates, ferrous and ferric sulfates, ferrous and ferric oxides and hydrous ferric oxide in an amount of from about 1 to 35 mole percent of said olefin reactant and
- (d) from about 0.5 to 25 mole percent of the olefin reactant of a soluble cupric salt and recovering the desired cyclic alkylene carbonate ester.

4,247,466

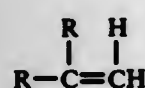
LACTONE METABOLITES OF 3-(4-BIPHENYLYLCARBONYL)PROPIONIC ACID
Fortunato S. Chiacarelli, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Jul. 5, 1979, Ser. No. 54,748
Int. Cl.³ C07D 307/32

U.S. Cl. 260—343.6 5 Claims
1. The compound, 5-(4'-hydroxy-4-biphenyl)dihydro-2(3H)-furanone.

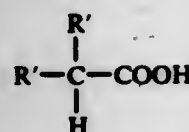
4,247,467

PREPARATION OF GAMMA-LACTONES
Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.
Filed Dec. 26, 1978, Ser. No. 972,857
Int. Cl.³ C07D 307/32

U.S. Cl. 260—343.6 7 Claims
1. A process for preparing gamma-lactones which comprises contacting oxygen, an alpha-olefin represented by the formula:



and a carboxylic acid containing an alpha-hydrogen atom represented by the formula:



wherein R and R' are independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkenyl and aryl groups of 1-6 carbon atoms; in the vapor phase at an elevated temperature and a pressure up to about 40 psig in the presence of a catalytically effective amount of a catalyst consisting essentially of an oxide of uranium and at least one oxide selected from the group consisting of arsenic, antimony and bismuth oxides.

4,247,468

LACTONE PREPARATION BY CYCLIZATION
James D. Cleveland, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 891,431, Mar. 29, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,369
Int. Cl.³ C07D 307/32

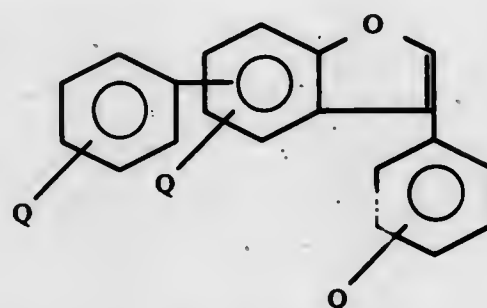
U.S. Cl. 260—343.6 9 Claims
1. A process for cyclizing 2,4-dibromobutyric acid to alpha-bromo-gamma-butyrolactone which comprises contacting the dibromobutyric acid with an alkali metal carbonate in a reaction zone at a temperature between 20° C. and 100° C. wherein sufficient of said alkali metal carbonate is added to the reaction zone to maintain a pH between 0.1 and 4.0 in the reaction zone during the cyclization.

4,247,469 CERTAIN MONO-BROMO BIS-PHENYL BENZOFURANS

Walton J. Hammar, and Mark A. Rustad, both of St. Paul, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 13,543, Feb. 21, 1979, Pat. No. 4,208,337, which is a division of Ser. No. 862,014, Dec. 19, 1977, Pat. No. 4,153,721. This application Jan. 21, 1980, Ser. No. 113,541
Int. Cl.³ C07D 307/79

U.S. Cl. 260—346.22 4 Claims
1. A compound of the formula



whereon one of the Q groups is bromine and two of the Q groups are hydrogen.

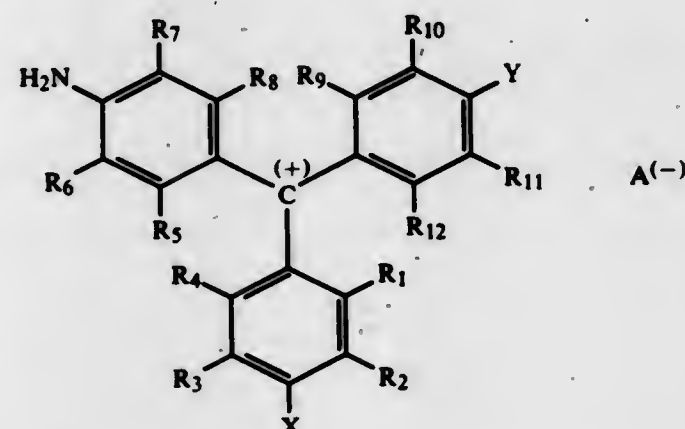
4,247,470

PROCESS FOR ISOLATING TRIARYLMETHANE DYESTUFFS

Karl-Heinz Hermann, Leverkusen, and Hans-Lothar Dorach, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 8, 1976, Ser. No. 748,480
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1975, 2555747

Int. Cl.³ C09B 11/10 7 Claims
U.S. Cl. 260—391

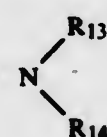
1. A process for purifying a crude dyestuff salt of the formula



wherein

R₁-R₁₂ independently of one another denote hydrogen, alkyl, halogenoalkyl, halogen, alkoxy, alkylmercapto, alkylsulphonyl, alkoxysulphonyl, alkylcarbonyl, alkoxy-carbonyl, nitro or cyano;

X and Y independently of one another denote



and

R₁₃ and R₁₄ independently of one another denote hydrogen, alkyl, halogenoalkyl, cyanoalkyl, cycloalkyl, aryl or aralkyl; and wherein

X and R₂, Y and R₁₀, R₁ and R₂, R₅ and R₆, and R₉ and R₁₀ can form a 5-membered or 6-membered ring; and A(-) denotes an anion; consisting essentially of adding to an acid aqueous solution of the dyestuff salt an organic solvent immiscible with water or of limited miscibility with water or a mixture of such solvents and then recovering the dyestuff salt in purified form from the solution.

4,247,471

PROCESS FOR THE PRODUCTION OF A PLURALITY OF EDIBLE FRACTIONS FROM NATURAL FATTY SUBSTANCES, AND THE FRACTIONS PRODUCED IN THIS WAY

Jean M. Klein, Conderou-Branche, and Albert Lacome, Dunkerque, both of France, assignors to Lesieur-Cotelle & Associés S.A., Hauts de Sene, France
Filed May 31, 1979, Ser. No. 43,936
Claims priority, application France, May 31, 1978, 78 16181
Int. Cl.³ C11C 3/02

U.S. Cl. 260—410.7 20 Claims

1. A process for the treatment of natural fatty substances for the production of edible fractions, comprising primary stages of fractionation of the oil to be treated by means of suitable fat-fractionating solvents, which are present in an amount from 0.5 to 7 times the weight of the oil, at temperatures of from +35° C. to -20° C., to produce one or two solid fractions, which are washed with fresh solvent, and an intermediate fluid fraction, and a stage of interesterification of the intermediate fluid fraction, which is carried out in the presence of a suitable interesterification catalyst at a temperature of from 20° to 80° C., said primary fractionation stages being associated with a complementary stage of fractionation of the intermediate interesterified fluid fraction and optionally being associated with complementary stages of fractionation of the solid fraction or fractions, the complementary fractionating stages using a suitable fat-fractionating solvent in order to produce four fractions that have properties of edible fats, namely: a fluid fraction with an iodine number of higher than 80, containing more than 20% of unsaturated triglycerides, and free of trans isomers; a solid fraction having an iodine number of from 31 to 43, that essentially contains 2-oleo-1,3-dipalmitin (POP); a solid fraction (SSI/SII) with an iodine number of from 33 to 43, that contains mixed triglycerides; and a solid fraction (SSS) with an iodine number of lower than 20 and essentially containing saturated triglycerides, whereby all fractions retain their properties as edible oils and solids.

4,247,472

METHOD FOR PRODUCING BIS-[4-(DIPHENYLSULFONIO)PHENYL] SULFIDE BIS-M. x6 PHOTOINITIATOR

William R. Watt, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.
Division of Ser. No. 20,340, Mar. 14, 1979, Pat. No. 4,201,640.
This application Jul. 19, 1979, Ser. No. 59,188
Int. Cl.³ C07F 9/66

U.S. Cl. 260—440 9 Claims

1. In the method of making a photoinitiator, the steps comprising:

A. admixing a first reactant comprising bis-[4-(diphenylsulfonio) phenyl] sulfide bis-halide wherein halide is chloride or bromide in aqueous solution with a second reactant having the formula T.MF₆ wherein M is one of phosphorus, antimony or arsenic, T is hydrogen or a metal whose halide salt is water soluble, said reactants reacting to produce a precipitate substantially comprising bis-[4-(diphenylsulfonio) phenyl] sulfide bis-MF₆, said second reactant being present in an amount of at least about 2 moles per mole of said solution providing about 0.5-2.0 moles water per mole of said second reactant, said reactants being admixed in said aqueous solution at a temperature of about 0°-50° C. for a period of time sufficient to permit said precipitate to form;

B. recovering said precipitate by separation from said solution; and

C. drying said precipitate at a temperature below about 50° C. for at least an initial period to dewater said precipitate and recover a frangible product containing at least 50 percent by weight bis-[4-(diphenylsulfonio) phenyl] sulfide bis-MF₆ based upon solids.

4,247,473

METHOD FOR PRODUCING BIS-[4-(DIPHENYLSULFONIO)PHENYL] SULFIDE BIS-M. x6 PHOTOINITIATOR

Kin-Tai Chang, Princeton, N.J., assignor to American Can Company, Greenwich, Conn.
Division of Ser. No. 20,514, Mar. 14, 1979, Pat. No. 4,197,174.
This application Jul. 19, 1979, Ser. No. 59,189
Int. Cl.³ C07F 9/66

U.S. Cl. 260—440 10 Claims

1. In the method of making a photoinitiator, the steps comprising:

A. forming a first reactant by admixing diphenyl sulfide and chlorine gas in an organic Friedel-Crafts solvent in the presence of a Friedel-Crafts catalyst to react the chlorine gas with the diphenyl sulfide and form bis-[4-(diphenylsulfonio) phenyl] sulfide dichloride as said first reactant, said chlorine gas being present in an amount of 0.7-1.4 moles per mole of diphenyl sulfide and said solvent being present in an amount of 2-10 parts by weight per part of said diphenyl sulfide, said reaction being conducted at ambient temperature or therebelow;

B. adding water thereto to hydrolyze the reaction mixture;

C. recovering said bis-[4-(diphenylsulfonio) phenyl] sulfide dichloride from said reaction mixture by extraction from the organic layer resulting from the hydrolysis;

D. admixing said bis-[4-(diphenylsulfonio) phenyl] sulfide dichloride in an aqueous solution with a second reactant having the formula T.MF₆ wherein M is one of phosphorus, antimony or arsenic, T is hydrogen or a metal whose halide salt is water soluble, said reactants reacting to produce a precipitate substantially comprising bis-[4-(diphenylsulfonio) phenyl] sulfide bis-MF₆, said second reactant being present in an amount of at least about 2 moles per mole of said solution providing about 0.5-2.0 moles water per mole of said second reactant, said reactants being admixed in said aqueous solution at a temperature of about 0°-50° C. for a period of time sufficient to permit said precipitate to form;

E. recovering said precipitate by separation from said solution; and

F. drying said precipitate at a temperature below about 50° C. for at least an initial period to dewater said precipitate and recover a frangible product containing at least 50 percent by weight bis-[4-(diphenylsulfonio) phenyl] sulfide bis-MF₆ based upon solids.

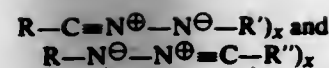
4,247,474

NITRILE IMINES

David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Continuation of Ser. No. 453,664, Mar. 21, 1974, abandoned, which is a division of Ser. No. 131,824, Apr. 6, 1971, Pat. No. 3,832,399, which is a continuation-in-part of Ser. No. 720,430, Feb. 2, 1968, abandoned, which is a division of Ser. No. 447,887, Apr. 13, 1965, Pat. No. 3,418,285. This application Jan. 2, 1976, Ser. No. 646,309
Int. Cl.³ C07C 121/00, 121/46, 121/14, 121/50

U.S. Cl. 260—465 E 3 Claims

1. A compound selected from the group consisting of a polyfunctional nitrile imine having the formula selected from the group consisting of



wherein R is a radical selected from the group consisting of alkylene radicals selected from methylene, dimethylene, trimethylene, tetramethylene, pentamethylene, hexamethylene, octamethylene, dodecamethylene, and octadecamethylene radicals; cycloalkylene radicals selected from cyclobutylene, cyclopentylene, cyclohexylene, and cyclooctylene; arylene radicals selected from o-phenylene, m-phenylene, p-phenylene, biphenylene, and naphthylene; arylene-dialkylene radicals selected from o-xylylene, m-xylylene, p-xylylene, o-phenylene-diethylene, m-phenylene-diethylene and p-phenylene-diethylene; alkylene-diarylene radicals selected from methylene bis(o-phenyl), methylene bis(m-phenyl), methylene bis(p-phenyl), dimethylene bis(o-phenyl), dimethylene bis(m-phenyl) and dimethylene bis(p-phenyl); and cycloalkylene-dialkylene radicals selected from 1,2-cyclohexane-dimethylene, 1,3-cyclohexane-dimethylene, 1,4-cyclohexane-dimethylene, 1,2-dicyclopentane-dimethylene and 1,3-cyclopentane-dimethylene; R' is a radical selected from the group consisting of hydrogen, C₁-C₂₀ alkyl radicals, C₃-C₁₂ cycloalkyl radicals, aryl radicals having 1 to 3 rings, alkaryl radicals having C₁-C₂₀ alkyl groups and 1 to 3 rings and aralkyl radicals having 1 to 3 rings and C₁-C₂₀ alkyl groups; R'' is a radical selected from the group consisting of C₁-C₂₀ alkyl radicals, C₃-C₁₂ cycloalkyl radicals, aryl radicals having 1 to 3 rings, alkaryl radicals having C₁-C₂₀ alkyl groups and 1 to 3 rings and aralkyl radicals having 1 to 3 rings and C₁-C₂₀ alkyl groups; and x is an integer from 2 to 10.

4,247,475

CHLOROFORMATES OF CYANOACRYLATES

Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

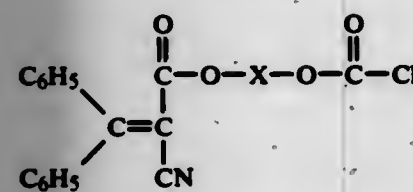
Filed Mar. 17, 1980, Ser. No. 131,157

Int. Cl.³ C07C 121/70

U.S. Cl. 260-465 D

6 Claims

1. A composition of matter having the general formula



where X is a divalent saturated alkylene group of the C₂-10 series.

4,247,476

POLYMERIC QUATERNARY AMMONIUM SALTS CONTAINING SPECIFIC CATIONIC RECURRING UNITS
Jaroslav Hane, Riehen, Switzerland; Ulrich Horn, Greenville, S.C., and Hans-Ulrich Berendt, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 1, 1978, Ser. No. 911,725

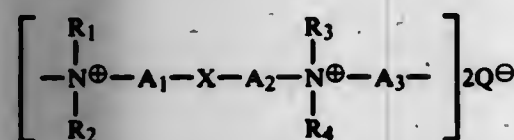
Claims priority, application Switzerland, Jun. 10, 1977, 7178/77

Int. Cl.³ C07C 101/26, 101/68, 103/54, 127/15

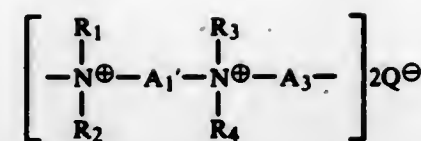
U.S. Cl. 564-51

15 Claims

1. A polymeric quaternary ammonium salt which contains recurring units of the formula



alone, or in combination with units of the formula



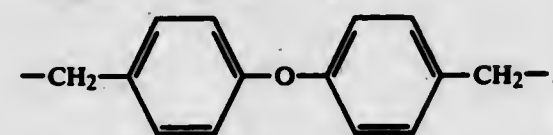
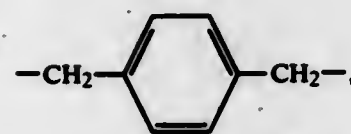
wherein

R₁, R₂, R₃ and R₄ are identical or different and are alkyl, hydroxyalkyl, cyanoalkyl, alkoxyalkyl, alkylthioalkyl or alkylcarbonylalkyl having 1 to 10 carbon atoms; alkylsulphonylalkyl having 1 to 4 carbon atoms in the alkyl moiety; alkylcarboxylic acid having 1 to 4 carbon atoms in the alkyl moiety; carbalkoxyalkyl and di-(carbalkoxy)-alkyl each having 1 to 4 carbon atoms in the alkoxy moiety and in the alkyl moiety; carboxylic acid amide-alkyl which has 1 to 10 carbon atoms in the alkyl moiety and is unsubstituted or N-substituted by lower alkyl; cycloalkyl or alkenyl having at most 20 carbon atoms; or phenyl or benzyl, which are unsubstituted by hydroxyl, cyano, fluoro, chloro, bromo, alkyl, hydroxyalkyl, cyanoalkyl, alkoxy or alkylthio having 1 or 2 carbon atoms;

A₁ and A₂ are —C_nH_{2n}—, in which n is 1 to 12, and the sum of n in A₁ and A₂ is at least 3, and when n is 1 the bond to the bridge member X is not via a nitrogen or oxygen atom; or are phenylene; and A₁ and A₂ are identical or different from one another;

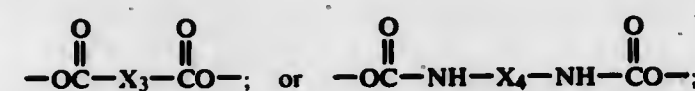
A₁' is —CH₂— in which i is 2 to 12;

A₃ is —C_mH_{2m}—, —CH₂O—R₅OOCH₂—, —CH₂(OR₆)_pOCH₂—, —CH₂COCH₂—,



in which R₅ is straight-chain or branched alkylene having 2 to 12 carbon atoms, which is unsubstituted or substituted by halogen, R₆ is —CH₂CH₂—, —CH₂CH(CH₃)—, or —(CH₂)₄—, m is 2 to 12 and p is 2 to 15;

X is a divalent bridge member of the formula —NH—CONH—; —NHCOX₁CONH—; —CONH—; —OCONH—; —COO—; —COX₂CO—;



in which X₁ is a direct bond, alkylene, alkylene, arylene, diaminoalkylene, diaminoarylene, dioxyalkylene, polyoxyalkylene, or dioxyarylene, X₂ is a direct bond, diaminoalkylene, dioxyalkylene, polyoxyalkylene or dithioalkylene, X₃ is arylene and X₄ is alkylene or arylene, and Q is halo, sulphate, methyl sulphate, ethyl sulphate, toluene sulphonate or nitrate.

4,247,477
COPOLYMERIZABLE, ULTRAVIOLET LIGHT
ABSORBER

Bruce A. Gruber, Worthington, Ohio, and Donald H. Lorenz, Basking Ridge, N.J., assignors to GAF Corporation, New York, N.Y.

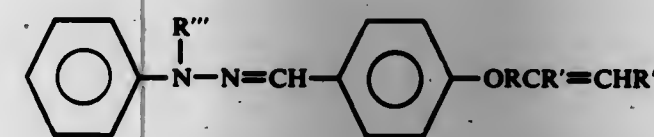
Filed Feb. 27, 1980, Ser. No. 125,017

Int. Cl.³ C07C 119/10

U.S. Cl. 564-251

10 Claims

1. Copolymerizable ultraviolet light absorber compounds having the formula:



where R is alkylene, C₁-C₁₀, hydroxyalkylene, C₁-C₁₀ alkyleneoxyalkylene, C₁-C₁₀, phenylene, C₁-C₁₀, unsubstituted or substituted with hydroxy; R' and R'' are independently hydrogen or alkyl, C₁-C₆; and R''' is hydrogen or alkyl C₁-C₆.

4,247,478

PROCESS AND CATALYST FOR HYDROGENATION OF
AROMATIC DINITRILES

Howard P. Angstadt, Media, Pa., assignor to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 16, 1979, Ser. No. 95,189

Int. Cl.³ C07C 85/12

U.S. Cl. 564-422

11 Claims

1. In the process of hydrogenating an aromatic dinitrile to the corresponding di-primary amine in the presence of a catalyst, the improvement of using as catalyst a cobalt catalyst promoted with rhodium where the weight ratio of rhodium to cobalt is 1.0 or less.

4,247,479

PROCESS FOR THE MANUFACTURE OF AROMATIC
AMINES FROM α , β -UNSATURATED
CYCLOALIPHATIC KETOXIMES

Rüdiger Berthold, Bad Soden am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 856,739, Dec. 1, 1979, abandoned. This application Jun. 5, 1979, Ser. No. 45,833
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654852; Switzerland, Nov. 30, 1977, 14664/77; Japan, Dec. 2, 1977, 52-144096; United Kingdom, Dec. 2, 1977, 50341/77; France, Dec. 5, 1977, 77

Int. Cl.³ C07C 85/11

U.S. Cl. 564-436

9 Claims

1. In a process for preparing an aromatic amine from the corresponding cyclohex-2-en-1-one oxime by treating it with agents capable of splitting off water the improvement comprising reacting the hydrochloride of said oxime with at least three mols of acetic anhydride per mol of oxime hydrochloride.

4,247,480

PROCESS FOR PRODUCING AMINEOXIDE

Atsuo Murata, Syuji Tsuchiya, Akihiko Konno, Fumiyoshi Arima, and Hisao Ikeda, all of Fushashi, Japan, assignors to Nissan Chemical Industries Limited, Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,338

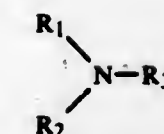
Claims priority, application Japan, Aug. 24, 1978, 53-103231

Int. Cl.³ C07C 135/02

U.S. Cl. 564-298

10 Claims

1. A process for producing an amineoxide which comprises oxidizing a tertiary amine having the formula



wherein R₁ and R₂ respectively represent methyl or ethyl group; R₃ represents a C₈-C₁₄ alkyl or alkenyl group in the presence of carbon dioxide, with hydrogen peroxide; wherein 0.01 to 2 weight % of carbon dioxide based on the tertiary amine is incorporated in the reaction system.

4,247,481

CATALYST PASSIVATION IN PRODUCTION OF
AMINES

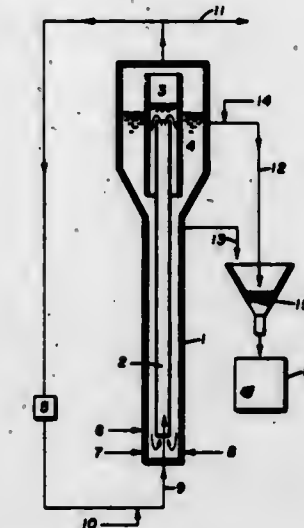
Charles R. Campbell, Pensacola, Fla., and Charles E. Catches, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1979, Ser. No. 106,587

Int. Cl.³ C07C 85/12, 85/11, 85/26

U.S. Cl. 564-492

16 Claims



1. In a process for the production of an amine from a nitrile where the nitrile is hydrogenated under pressure in the presence of a Raney nickel catalyst continuously in a reactor thereby to produce the amine which is discharged in a stream from which is recovered both the amine and Raney nickel catalyst, the improvement comprising charging to the process discharge stream comprising the product amine and Raney nickel catalyst a nitroaromatic compound whereby the Raney nickel catalyst is passivated and catalytic decomposition of the amine is substantially decreased.

4,247,482

PROCESS FOR PRODUCING
BIS(N,N-DIALKYLAMINO)ALKYL ETHERS
EMPLOYING SULFUR TRIOXIDE VAPOR

Fedor Poppelsdorf, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 025,659, Mar. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 864,753, Dec. 27, 1977, abandoned. This application Dec. 13, 1979, Ser. No. 103,210.

Int. Cl.³ C07C 85/24, 89/00

U.S. Cl. 564-508

14 Claims

13. A process for producing a compound of the formula (R₂NR')₂O, wherein R is a methyl or ethyl group and R' is a divalent alkylene group having from 2 to 3 carbon atoms, which comprises

first, reacting a compound of the formula R₂NR'OH, wherein R and R' are as defined above, with SO₃ vapor and a sodium or potassium base to produce a compound of the formula R₂NR'OSO₃X, wherein R and R' are as defined above and X is sodium or potassium, and

subsequently, heating the resulting compound of the formula $R_2NR'OSO_3X$ wherein R, R' and X are as defined above in the presence of a compound of the formula $R_2NR'OX$ wherein R, R' and X are as defined above to produce a compound of the formula $(R_2NR')_2O$ wherein R and R' are as defined above.

4,247,483

PRODUCTION OF ISO- α -ACIDS

Charles D. Baker, Uttroeter, and Derek R. J. Laws, Bexleyheath, both of England, assignors to Brewing Patents Ltd., England

Filed May 24, 1979, Ser. No. 42,051

Claims priority, application United Kingdom, May 26, 1978, 23220/78

Int. Cl.³ C07C 45/67

U.S. Cl. 568—341

10 Claims

1. In a method of making an aqueous composition containing iso- α -acids by isomerizing α -acids in an aqueous alkaline medium,

the improvement which consists in providing an isomerized reaction mixture containing iso- α -acids at a concentration of 25 g/l to 250 g/l and containing also one or more stable, non-toxic non-oxidizing salts in solution at a molar equivalent concentration greater than that of the iso- α -acids, whereby the reaction mixture separates into an oily phase and an aqueous phase, the oily phase containing a higher concentration of iso- α -acids than the aqueous phase, and recovering an aqueous composition containing iso- α -acids by separating the oily phase from the aqueous phase.

4,247,484

KETO-DIPHENOL COMPOUNDS

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

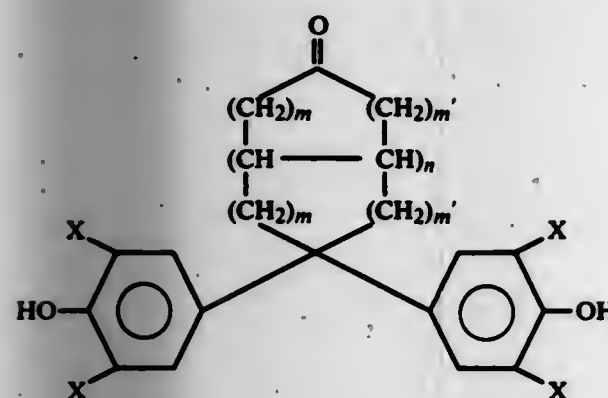
Filed Sep. 20, 1979, Ser. No. 76,974

Int. Cl.³ C07C 49/22, 49/237, 49/252

U.S. Cl. 568—326

5 Claims

1. A keto-diphenol compound of the formula



wherein each X substituent is independently selected from phenyl, H, Cl, Br, and C_1 - C_3 alkyl; each m and m' are integers selected independently from 0, 1, 2 and 3; and n is an integer of either 0 or 1, with the proviso that the sum of all the m and m' integers and n is at least 2, and with the further proviso that, if n is 0, at least one of the m integers is greater than 0 and at least one of the m' integers is greater than 0.

4,247,485

PROCESS FOR THE PREPARATION OF 2,2-DIMETHYLOLALKANALS

Otto Immel; Hans-Helmut Schwarz, and Hein Quast, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 22,009

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813201

Int. Cl.³ C07C 47/19

U.S. Cl. 568—464

11 Claims

1. A process for the preparation of 2,2-dimethylolalkanal which consists essentially of contacting formaldehyde with an aldehyde of the formula



wherein

R denotes a straight-chain or branched alkyl radical with up to 12 carbon atoms where the radical can be substituted by an alkyl or alkoxy group with 1 to 3 carbon atoms in each case, employing a molar ratio of formaldehyde to aldehyde of the formula (I) of 8-20:1 by carrying out the reaction at a temperature in the range of 5° to 100° C. in the presence of 0.01 to 0.5 mols (per mol of aldehyde of formula (I)) of a catalyst consisting essentially of a hydroxide or carbonate of an alkali metal or alkaline earth metal or an unbranched tertiary aliphatic amine or a tetraalkylammonium hydroxide.

4,247,486

CYCLIC HYDROFORMYLATION PROCESS

Everard A. V. Brewster, Reading, England, and Roy L. Pruett, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

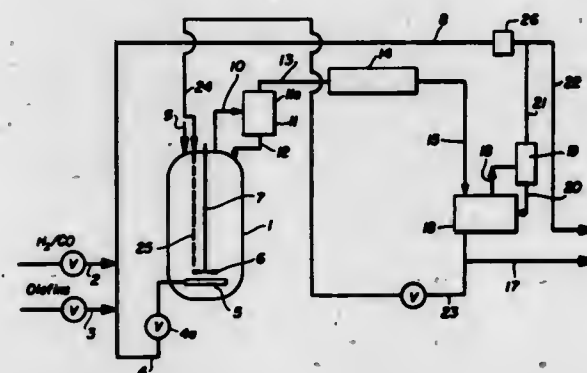
Continuation-in-part of Ser. No. 674,823, Apr. 8, 1976. This

application Mar. 11, 1977, Ser. No. 776,934

Int. Cl.³ C07C 45/50, 47/02

U.S. Cl. 568—454

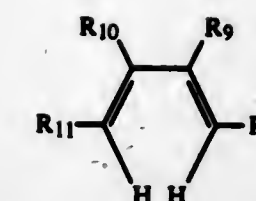
10 Claims



1. The continuous process of producing aldehydes by the hydroformylation of alpha-olefins containing 2 to about 5 carbon atoms comprising:

establishing a liquid body of a homogeneous mixture containing olefin, aldehyde products and higher boiling aldehyde condensation products continuously formed therein, a soluble rhodium catalyst complexed with carbon monoxide and a triarylphosphine, and at least ten moles of free triarylphosphine for each mole of rhodium metal; supplying to the liquid body a gaseous recycle stream comprising hydrogen and the olefin; supplying make-up quantities of carbon monoxide, hydrogen and olefin to the liquid body; maintaining the temperature of the liquid body at about 50° C. to about 140° C., the total pressure at less than about 400 psia, the carbon monoxide partial pressure at less than about 50 psia and the hydrogen partial pressure at less than about 200 psia; removing from said liquid body an amount of vaporous mixture comprising said olefin, hydrogen, vaporized alde-

hyde product, and an amount of vaporized aldehyde condensation products essentially equal to the rate of their formation in said body whereby the size of said body is maintained at a predetermined value; and recovering aldehyde product and aldehyde condensation product from said vaporous mixture and forming said gaseous recycle stream.



(XI)

in which R_8 - R_{11} are, independently of one another, H or (C_1-C_{12}) -alkyl, which is optionally substituted by chlorine and/or bromine, or cyclopentyl, cyclohexyl, phenyl or naphthyl, which are optionally substituted by Cl, Br, (C_1-C_4) -alkyl and/or (C_1-C_4) -alkoxy, or Cl or Br; wherein said dichlorophosphane, 2-N-acylaminophenol, organic nitrogen base which binds hydrogen chloride and a diene are reacted, at a temperature between 50° to 200° C., in the molar ratio of about 1:1: at least about 2:(1-2) in a one-stage process in an inert solvent, without isolating an intermediate stage and at a pressure corresponding to in-situ pressure corresponding at said temperature.

4,247,487

STABILIZED FORMALDEHYDE SOLUTIONS

James S. Percy, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 26, 1972, Ser. No. 318,462

Int. Cl.³ C07C 47/04

U.S. Cl. 568—422

7 Claims

1. A stabilized solution of over 30% by weight of formaldehyde in water containing a stabilizing amount of a formaldehyde-soluble polymer having a number average molecular weight of 300-5000 prepared by acetalization of polyvinyl alcohol with a C_{1-4} alkyl aldehyde, the polymer containing along the polymer chain 30-90% acetal groups, 1-40% hydroxyl groups and 0-30% acetate groups.

4,247,488

PROCESS FOR THE PREPARATION OF 1-OXOPHOSPHOL- Δ^3 -ENES

Utz-Hellmuth Felcht, Bruchmühlbach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 18, 1979, Ser. No. 49,120

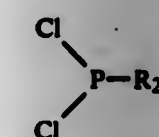
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826621

Int. Cl.³ C07F 9/53

U.S. Cl. 568—12

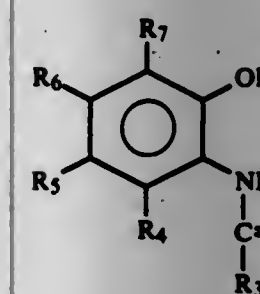
7 Claims

1. A process for the preparation of a 1-oxophosphol- Δ^3 -ene, starting from a dichlorophosphane of the formula IX



(IX)

in which $R_2 = (C_1-C_{12})$ -alkyl, which is optionally substituted by Cl and/or Br, or R_2 is cyclopentyl, cyclohexyl, phenyl or naphthyl, which are optionally substituted by Cl, Br, (C_1-C_4) -alkyl and/or (C_1-C_4) -alkoxy; 2-N-acylaminophenol of the formula X



(X)

4,247,490

PROCESS FOR THE PURIFICATION OF DIALKYLPHOSPHOROCHLORIDOTHIOATES

Charles R. Bergeron, Baton Rouge; Alfred P. Anderson, Gonzales, and Thomas J. Walter, Baton Rouge, all of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Sep. 10, 1979, Ser. No. 73,684

Int. Cl.³ C07F 9/20

U.S. Cl. 260—990

18 Claims

1. A process for purifying C_{1-8} dialkyl phosphorochloridothioate compounds comprising treating a crude mixture of said C_{1-8} dialkyl phosphorochloridothioate and a corresponding C_{1-8} dialkyl phosphate impurity associated therewith with an alcohol so that said impurity and said alcohol form a reaction product having sufficiently different physical properties to permit distillation of said C_{1-8} dialkyl phosphorochloridothioate and distilling said C_{1-8} dialkyl phosphorochloridothioate from the resulting mixture.

4,247,491

ACCELERATOR PUMP FOR CARBURETOR

Sigeo Tamaki, and Tohru Nakagawa, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

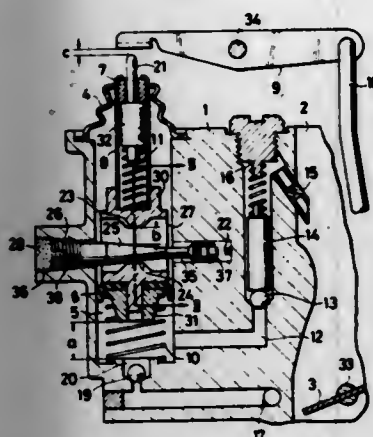
Filed Jan. 5, 1979, Ser. No. 1,313

Claims priority, application Japan, Jan. 17, 1978, 53-3571

Int. Cl.³ F02M 7/08

U.S. Cl. 261—34 A

9 Claims



8. An accelerator pump for a carburetor having a fuel-air induction passage formed in a carburetor body and a throttle valve disposed in the fuel-air induction passage comprising: pumping means provided in the carburetor body and having piston means for supplying fuel from a float chamber into the fuel-air induction passage by a stroke of said piston means in response to movement of a link means mechanically connected to the throttle valve during acceleration; and an abutment element mounted in association with said piston means and independent of said link means for setting both the upper and lower limits of the stroke of the piston means, whereby the stroke of said piston means cannot be increased by adjustments made to said link means, wherein said abutment means is adjustably mounted internally of said carburetor body, and further comprising means for preventing unauthorized access to said abutment element.

4,247,492

METHOD OF CONTROLLING THE ADHESION OF CAST LENSES TO THE MOLD

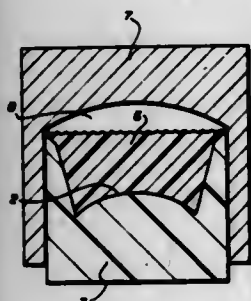
Charles W. Neefe, Big Spring, Tex., assignor to Neefe Optical Laboratory, Inc., Big Spring, Tex.

Continuation-in-part of Ser. No. 945,459, Sep. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 793,388, May 25, 1977, abandoned. This application Jun. 28, 1979, Ser. No. 53,039

Int. Cl.³ B29D 11/00

U.S. Cl. 264—2.3

4 Claims



1. A method of increasing the adhesion of cast plastic lenses to a resinous lens mold, comprising the steps of: providing a heat softening resinous mold material, subjecting the said mold material to internal shear force, which alters the polymeric structure by cleavage of molecular polymeric chains, thereby increasing the bonding between the cast lens material and the resinous mold, providing a positive lens mold, having a first optical surface curvature, forming a negative optical mold

from the positive optical mold by applying said heat softened resinous mold material against the first surface curvature, covering the resinous optical negative mold with a liquid monomer lens material, allowing the said lens material to polymerize to thereby form a lens having a finished optical surface.

4,247,493

PROCESS FOR REMOVING DEFECTS FROM LENS SURFACES

Terrence M. Brown, 2429 New York Ave., Great Lakes, Ill. 60088

Filed Nov. 29, 1979, Ser. No. 98,658

Int. Cl.³ B29D 11/00

U.S. Cl. 264—1.4

8 Claims

6. In a method for forming a lens wherein a lens blank is molded and machined to form a lens, the improvement in said method comprising:

- selecting a molded lens blank;
- coating a surface of the lens blank with a protective material;
- molding a low melting point alloy block to the coated surface;
- machining or working the lens blank to form a lens;
- removing the low melting point alloy block from the coated surface;
- removing the protective material from the lens surface;
- inspecting the lens to determine if there are any aberrations, distortions, or warping of the surface caused by the application of the low melting point alloy block; and
- subjecting the lens having aberrations, distortions, or warping to microwave radiation until the distortion, aberration, or warping is removed.

4,247,494

CASE PRIMING

George B. Carter, Lichfield, England, assignor to IMI Kynoch Limited, Birmingham, England

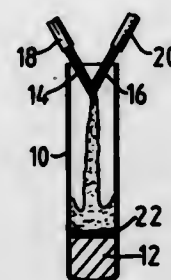
Filed Aug. 8, 1978, Ser. No. 932,293

Claims priority, application United Kingdom, Aug. 16, 1977, 34413/77; Aug. 16, 1977, 34414/77; Mar. 22, 1978, 11492/78

Int. Cl.³ C06B 21/00

U.S. Cl. 264—3 R

12 Claims



1. In a method of priming a plurality of explosive devices by incorporating a body of priming explosive comprising a primary explosive compound with an element of each device the improvement comprising dosing into each device a quantity of a substantially premix containing relatively insensitive components that will, in the presence of a liquid reaction medium, chemically react together forming said primary explosive compound and dosing into each element a quantity of said liquid reaction medium so as to cause said components to chemically react together thereby forming said primary explosive compound.

4,247,495

METHOD OF PRODUCING PUO₂/UO₂-NUCLEAR FUELS

Karl Ennerst, Kleinstheim; Peter Funke, Rodenbach, and Rainer Löh, Karlsruhe, all of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

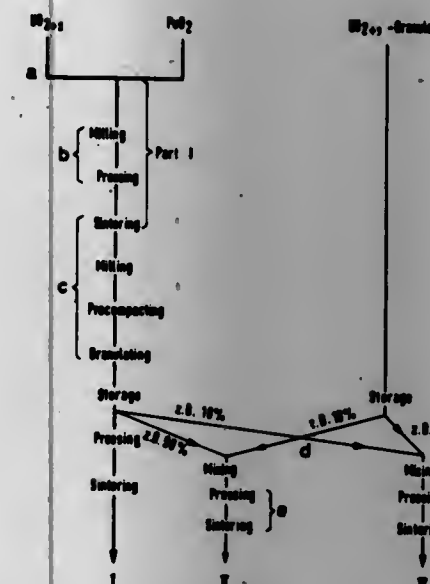
Filed Sep. 12, 1978, Ser. No. 941,453

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2741620; Jul. 27, 1978, 2833054

Int. Cl.³ G21C 21/00

U.S. Cl. 264—0.5

4 Claims



1. Method for the manufacture of UO₂ nuclear fuel pellets containing PuO₂ in set amounts, which pellets are soluble in nitric acid, which comprises

- (a) mixing uranium oxide powder having oxygen in stoichiometric excess of the dioxide, with plutonium dioxide powder in an amount of 15 to 50% plutonium dioxide by weight of the mixture of uranium oxide and plutonium dioxide,
- (b) milling the mixture of uranium oxide powder and plutonium dioxide powder and pressing the milled mixture to form pellets or granules
- (c) sintering the pellets in a reducing atmosphere in a furnace, comminuting the sintered pellets to primary grain sizes of less than 2 μm by milling, pressing the comminuted grains to form pellets, and comminuting the pellets to free-flowing granules,
- (d) mixing the free-flowing granules with uranium oxide granules in an amount to obtain a desired UO₂/PuO₂ ratio in the resultant mixture, and
- (e) pressing the resultant mixture into pellets and sintering the pellets to form UO₂ nuclear fuel pellets containing PuO₂ soluble in nitric acid.

4,247,496

METHOD FOR IMPROVING THE SURFACE OF PLASTIC MATERIALS

Ken-ichi Kawakami, Otsu; Shoji Saito, Kusatsu, and Shizuo Tognaki, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,885

Claims priority, application Japan, Apr. 19, 1978, 53-45328

Int. Cl.³ B29C 17/02, 25/00

U.S. Cl. 264—22

15 Claims

1. A method of imparting a slippery surface to a film of polypropylene or polyethylene terephthalate which comprises both stretching said film and subjecting said film to ultraviolet light of an irradiation energy of about 1 to 10 Joule per cm² in the case of polypropylene and 5 to 50 Joule per cm² in the case of polyethylene terephthalate whereby said film becomes slippery.

6. A method of providing a film of polyethylene terephthalate or polypropylene with a delustered, moist and oil-impregnable surface which comprises both stretching said film and

subjecting said film to ultraviolet light irradiation, of an irradiation energy of about 5 to 50 Joule per cm² in the case of polypropylene and 50 to 500 Joule per cm² in the case of polyethylene terephthalate, whereby said film becomes delustered, moist and oil-impregnable.



11. A method of enhancing the drawability of a film of polyethylene terephthalate or polypropylene which comprises both stretching said film and subjecting said film to ultraviolet light of an irradiation energy of about 10 to 100 Joule per cm² in the case of polypropylene and 500 to 5000 Joule per cm² in the case of polyethylene terephthalate, whereby the drawability of said film is enhanced.

4,247,497

METHOD FOR PRODUCING A MAT ESPECIALLY IN THE MANUFACTURE OF PARTICLE BOARDS

Lutz Wolf, Darmstadt, Fed. Rep. of Germany, assignor to Firma Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

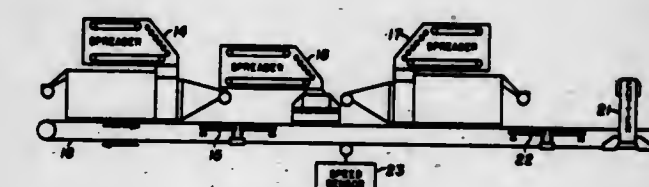
Division of Ser. No. 751,397, Dec. 17, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,747

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557352

Int. Cl.³ B29J 5/08

U.S. Cl. 264—40.4

5 Claims



1. A method for producing a multi-layered mat having a uniform weight distribution of deposited wood particles, for subsequently forming particle boards, comprising:

- (a) depositing from a plurality of controlled spreaders in series a plurality of layers of wood particles upon a moving conveyor to form a continuous multi-layered mat,
- (b) weighing said moving mat at a tared weighing station beneath said conveyor downstream of said first spreader to measure the output of wood particles from said first spreader, and producing at said weighing station an electrical signal representing the weight of said mat formed by said first spreader,
- (c) comparing said produced signal to a reference signal to produce a control signal, and
- (d) directing said control signal to said first spreader and to the last spreader to control, in response thereto, the output of wood particles deposited as the first layer from said first spreader and from the last spreader to form a multi-layered mat having a uniform weight distribution.

4,247,498

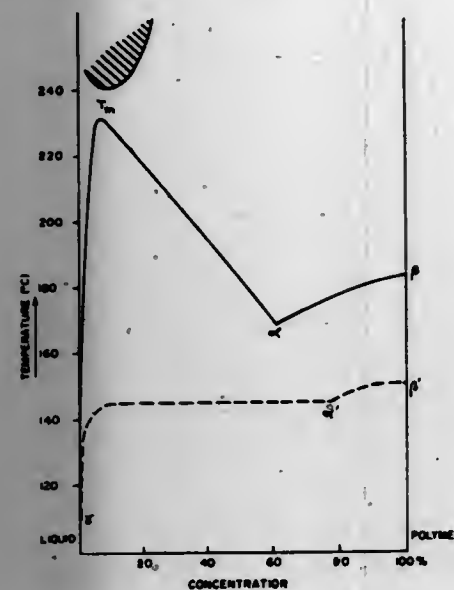
METHODS FOR MAKING MICROPOROUS PRODUCTS

Anthony J. Castro, Oak Park, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 814,351, Jul. 11, 1977, which is a continuation-in-part of Ser. No. 718,549, Aug. 30, 1976, abandoned. This application Nov. 24, 1978, Ser. No. 963,628
Int. Cl.³ B29D 27/04

U.S. Cl. 264-41

37 Claims



1. A method of preparing a relatively homogeneous, isotropic, three-dimensional microporous polymer structure comprising heating a mixture of a synthetic thermoplastic polymer selected from the group consisting of olefinic polymers, condensation polymers, oxidation polymers, and blends thereof, and a compatible liquid to a temperature and for a time sufficient to form a homogeneous solution, allowing said solution to assume a desired shape, cooling said solution in said desired shape at a rate and to a temperature sufficient to initiate thermodynamic, non-equilibrium liquid-liquid phase separation, continuing cooling to form a solid, and removing at least a substantial portion of the liquid from the resulting solid to form the microporous polymer structure.

4,247,499

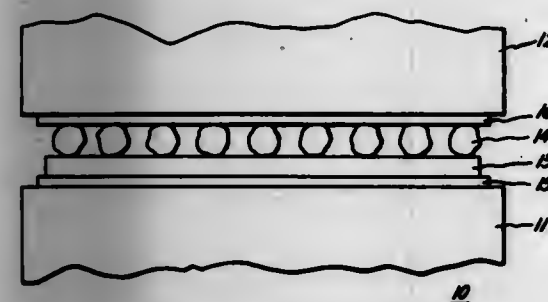
METHODS OF FORMING A SOLID ION-CONDUCTIVE ELECTROLYTE

Paul G. Giuglia; Jacqueline L. Briant, both of Schenectady, and Robert R. Gallucci, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 968,456, Dec. 11, 1978, abandoned. This application May 18, 1979, Ser. No. 40,298
Int. Cl.³ B29C 23/00; B29D 3/00

U.S. Cl. 264-104

9 Claims



1. A method of forming a solid ion-conductive electrolyte comprises providing a preformed thermoplastic polymer film, positioning a plurality of solid ion-conductive particles against one surface of the polymer film, positioning a deformable sheet against one surface of the film, positioning a deformable sheet against the particles and the opposite surface of the film, hot pressing the particles into the film and deforming the deformable sheets, cooling the film, and removing the deformed

sheets, thereby forming a polymer film having ion-conductive particles exposed on opposite surfaces of the film.

4,247,500

FABRICATION OF FERRITE MATERIAL

Melvyn Dixon; Bhaskar B. Ghate, both of Bethlehem; Ronald J. A. Holmes, Northampton, and Curtis E. Pass, Bethlehem, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1979, Ser. No. 101,162

Int. Cl.³ C04B 35/26

U.S. Cl. 264-63

7 Claims



1. A method for fabricating a ferrite body comprising the steps of mixing component powders of the ferrite, calcining to form a ferrite spinel compound, converting said compound into a slurry, adding a binder system to said slurry, converting said slurry into a dry powder, pressing the powder into the desired shape of the body, heating the body to burn out the binder, and further heating the body to establish a desired permeability for the ferrite body, wherein the improvement is that said binder system comprises a mixture of polyvinyl alcohol, polyvinyl pyrrolidone, and methyl cellulose.

4,247,501

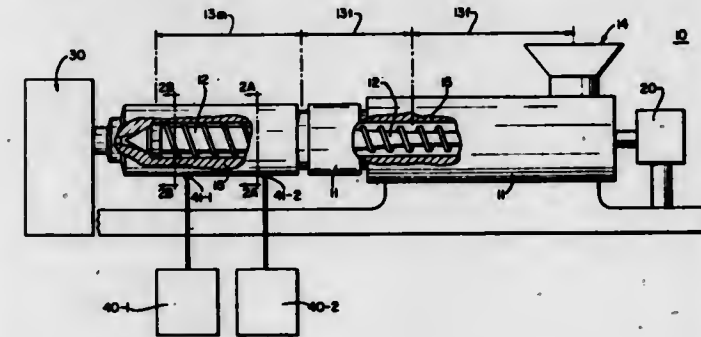
MARBLEIZATION OF PLASTIC MATERIALS

Wiley L. Easley, Lancaster; Richard J. Hoeske, Leominster, and Silvio Petrucci, Fitchburg, all of Mass., assignors to Gillette Company, Boston, Mass.

Division of Ser. No. 660,006, Feb. 23, 1976, abandoned. This application Nov. 6, 1978, Ser. No. 957,759
Int. Cl.³ B29F 3/12

U.S. Cl. 264-77

7 Claims



1. The method of marbleizing the melt of a screw injection machine, which comprises the steps of:

4,247,504

METHOD OF MANUFACTURING PLASTIC COVERED HIGH-VOLTAGE CABLES

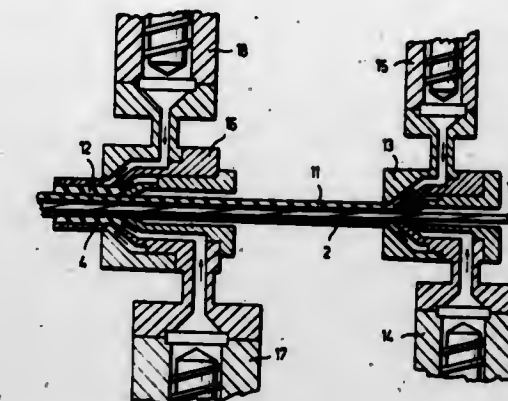
Jukka S. Karppa, Helsinki, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Filed Oct. 7, 1977, Ser. No. 840,418

Claims priority, application Finland, Oct. 18, 1976, 762964
Int. Cl.³ B29F 3/10

U.S. Cl. 264-174

8 Claims



1. A method of manufacturing multilayered high voltage cables comprising the steps of:

extruding in a single operation in a first extrusion means a concentric semiconductive conductor shield layer around a conductor core and a relatively thin concentric auxiliary insulation layer over said semiconductive conductor shield layer to avoid the formation of points of discontinuity at the interface of said semiconductive conductor shield layer and said auxiliary insulation layer, the thickness of said auxiliary insulation layer being such that the quality of the interface between said shield layer and said auxiliary insulation layer can be readily maintained; and extruding in a separate operation in a second extrusion means a concentric main insulation layer, electrically equivalent to said auxiliary insulation layer, over said auxiliary insulation layer, said main insulation layer being relatively thick as to said auxiliary insulation layer.

4,247,502

CUTTING OF HIGH SURFACE-TACK HOT MELT ADHESIVES

Cari C. Loeschell, Glen Ellyn, Ill., assignor to Unitech Chemical Inc., Chicago, Ill.

Filed Jul. 3, 1979, Ser. No. 54,660

Int. Cl.³ B29C 25/00

U.S. Cl. 264-130

5 Claims

1. A method of cutting high surface-tack hot melt adhesives which comprises heating the hot melt adhesive to a temperature of between about 225° F. and about 600° F., extruding the adhesive in the form of narrow strips of about one inch wide and less than about 1/4 inch in thickness onto a cooling belt, dusting the adhesive with a compatible powder in an amount to form a monomolecular coating thereon so that the subsequent performance of the adhesive properties is not impaired, and subdividing the dusted adhesive strips when they obtain a temperature of about 85° F. to about 115° F.

4,247,503

PROCESS FOR PRODUCTION OF CRIMPABLE CHEMICAL YARNS

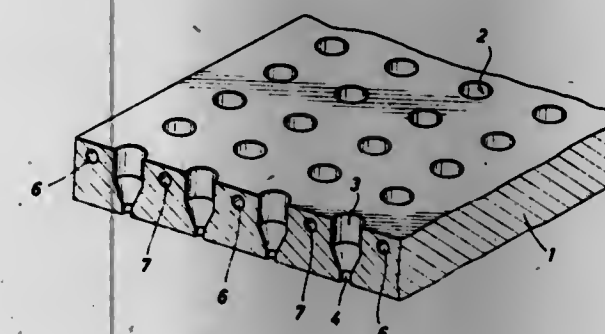
Jean Venot, Roanne, and Andre Mottet, Lyons, both of France, assignors to ASA S.A., Roanne, France

Filed Nov. 22, 1978, Ser. No. 962,975

Claims priority, application France, Nov. 25, 1977, 77 36457
Int. Cl.³ D01D 5/22

U.S. Cl. 264-168

5 Claims



1. In a process for the manufacture of potentially crimpable yarn so as to form actual crimps therein simultaneously with production, wherein said process comprises, in combination extruding a chemical yarn material through a plurality of adjacent extrusion orifices, and asymmetrically temperature-treating the material during extrusion thereof, the improvement comprising providing each of said extrusion orifices with a lead-in generatrix portion, the internal peripheral surface of which is divided into a first segment and a second segment as determined by an extrusion plane therethrough, and providing the asymmetrical temperature by treating one side of the extrusion plane at a first level such that this side is at a temperature slightly higher than the melting point of the material, and the other side of the plane is at a second level such that said other side is at a slightly lower temperature than the decomposition point of the material.

4,247,505

MELT SPINNING OF POLYMERS

Henry G. Jackson, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 5, 1978, Ser. No. 903,261

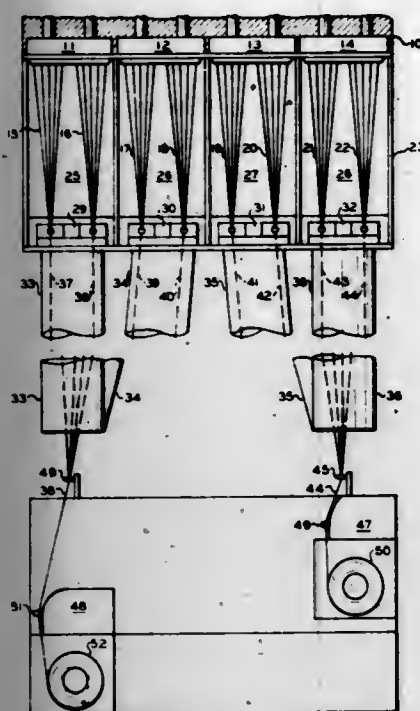
Int. Cl.³ D01D 5/08

U.S. Cl. 264-176 F

13 Claims

1. A method of forming at least one strand of filaments from a plurality of polymeric filaments comprising: extruding at least one threadline of filaments from a molten polymer; passing said threadline of filaments to a quenching zone and quenching the same; reducing the tension on said threadline of filaments, by converging said threadline of filaments against a stationary guide to form a single strand at a point immediately adjacent the downstream end of said quenching zone while simultaneously applying a lubricant to the surfaces of said

guide which are in contact with said, said filaments and said optical distortion (δ) of from 0.03 to 0.06, which process comprises extruding a sheet-form extrudate from an extruder and



take-up speed of at least about 1800 meters per minute and at a tension substantially equal to said reduced tension.

4,247,506

PROCESSING EXTRUDED ELASTOMERS

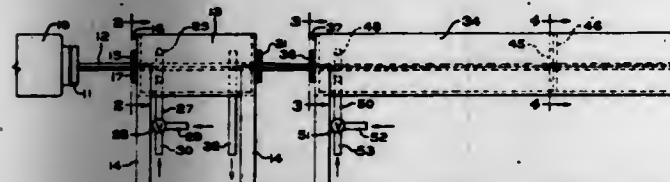
James W. Sammers, Bay Village, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 757,702, Jan. 7, 1977, Pat. No. 4,110,062. This application May 19, 1978, Ser. No. 907,540

Int. Cl.³ B28B 21/54

U.S. Cl. 264—177 R

4 Claims



1. A method of sizing a vinyl siding extrudate comprising the steps of extruding a vinyl thermoplastic material through an extruder of the type containing a vinyl chloride polymer at a temperature higher than 380° F., simultaneously sizing and cooling the extrudate from said extruder, thence heating the entire extrudate to remove the stresses therefrom, and thence quenching said extrudate.

4,247,507

EXTRUDED RIGID THERMOPLASTIC SHEET HAVING OPTICALLY SMOOTH SURFACES

Tsuneyuki Katoh; Keishiro Hiraga, both of Yokohama; Junji Seki, Tokyo, and Makoto Suzuki, Kamakura, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 10, 1979, Ser. No. 2,253

Int. Cl.³ D01D 5/16

U.S. Cl. 264—210.2

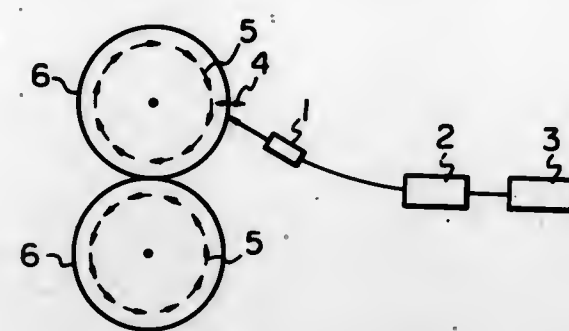
6 Claims

1. A process for producing an extruded rigid thermoplastic sheet of a thermoplastic material which possesses a heat distortion temperature of at least 70° C., as measured according to ASTM-648 at a fiber stress of 18.5 kgf/cm², said thermoplastic sheet having optically smooth surfaces exhibiting a degree of

optical distortion (δ) of from 0.03 to 0.06, which process comprises extruding a sheet-form extrudate from an extruder and

1. A molding process for forming a three-dimensional article out of casting material comprising the steps of:

- (a) sequentially depositing the casting material and a mold material in unsolidified form in planar layers,
- (b) in a first layer depositing the casting material to fill an area which defines that portion of the article to be formed in that layer,
- (c) in said first layer, depositing the mold material next to said area such that the mold material holds the casting material in place,
- (d) in each adjacent layer repeating steps (b) and (c) until the article is formed from the casting material in unsolidified form held in place by the mold material,
- (e) solidifying the casting material, and
- (f) removing the mold material.



polishing said sheet-form extrudate using polishing rolls driven via a continuous driving force transmission.

4,247,508

MOLDING PROCESS

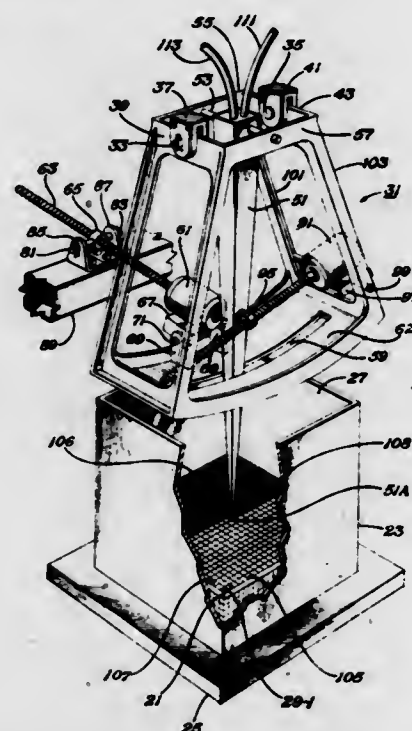
Ross F. Housholder, Arlington, Tex., assignor to Hico Western Products Co., Mesa, Ariz.

Filed Dec. 3, 1979, Ser. No. 99,333

Int. Cl.³ B29C 1/02

U.S. Cl. 264—219

3 Claims



4,247,509

BOAT WEATHERIZATION WITH HEAT-SHRUNK PLASTIC FILM

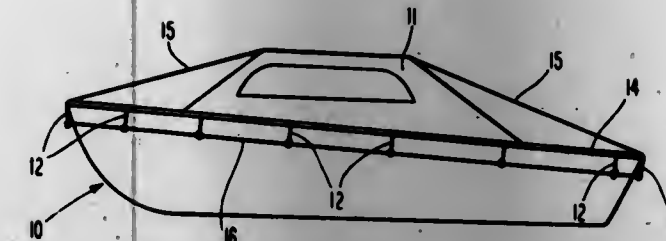
James E. Talbot, Wynnewood, Pa., assignor to Talpak, Inc., Wynnewood, Pa.

Filed Mar. 5, 1979, Ser. No. 17,351

Int. Cl.³ B29C 17/00; B63B 35/72; B63C 15/00

U.S. Cl. 264—230

10 Claims



1. A method for weatherizing a boat which comprises: attaching a plurality of tie lines to the boat at or near the deck surface, said tie lines terminating in loops at a level intermediate the deck and water line; installing at least one bridging strap, said strap extending generally from bow to stern and passing over the boat superstructure; draping a unitary, heat shrinkable, plastic film over the entire boat, said film extending to a level below the loops of said tie lines; piercing the film at each loop and passing each loop through the opening thereby formed; passing a tie-down strap through said loops around the perimeter of the boat and external to said film whereby the film is securely pressed against the boat hull; folding the plastic film skirt extending below the tie-down strap upwardly about the tie-down strap and fastening it to the plastic film above the tie-down strap, and shrinking the plastic film by application of heat beginning at the perimeter along the tie-down strap and finishing at the top center of the boat.

4,247,510

PROCESS FOR DEPOSITING AN ELASTOMERIC OR THERMOSETTING BANK ON A SUPPORT

Jean Desverchere, Lyons, France, assignor to Cefilac, Paris, France

Continuation of Ser. No. 778,336, Mar. 17, 1977, abandoned.

This application Dec. 10, 1979, Ser. No. 102,269

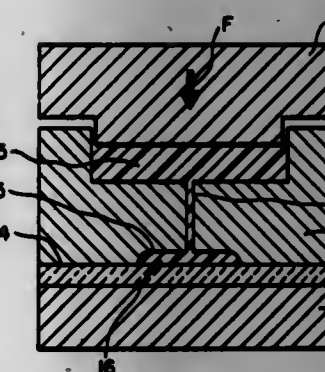
Claims priority, application France, Apr. 2, 1976, 76 10172;

Nov. 24, 1976, 76 36153

Int. Cl.³ B29C 5/00, 25/00; B29G 3/00; B29H 9/10

U.S. Cl. 264—236

12 Claims



1. A process for providing a sealing band or similar shape of vulcanizable elastomeric or polymerizable thermosetting material upon a workpiece support, said material having a Mooney viscosity between 20 and 90 (measured at 100° C.), comprising the steps for:

A. providing a mold and a workpiece support adjacent said

mold which together define a molding cavity, said support having a greater adherence to said material than said mold;

B. depositing said material into said molding cavity at ambient temperature and a temperature below which curing takes place and in the viscous state and so that substantially no curing takes place while the mold defines a portion of the molding cavity;

C. separating the mold from the support, said deposited material adhering to said support; and

D. curing the deposited material by heat after separating the mold from the support to form the desired band.

4,247,511

EDGE TREATMENT FOR FIBREBOARD PANELS AND THE LIKE

Roger F. Sutton, St. Charles; Robert O. Blomquist, Mt. Prospect, and Allan J. Luck, Marengo, all of Ill., assignors to Masonite Corporation, Chicago, Ill.

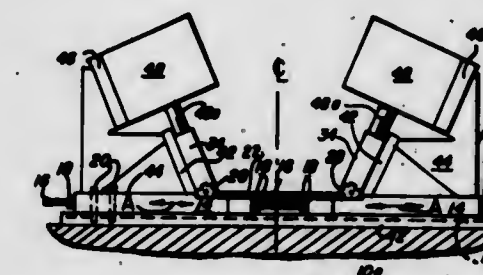
Division of Ser. No. 848,142, Nov. 3, 1977, Pat. No. 4,197,078.

This application Mar. 15, 1979, Ser. No. 21,246

Int. Cl.³ B29D 5/00

U.S. Cl. 264—252

12 Claims



1. A method of sealing a porous cut edge of a pre-formed fiberboard blank to substantially eliminate wicking and non-uniform liquid absorption in said cut edge, comprising:

- (a) cutting to re-shape the edge of a pre-formed fiberboard blank, rendering said cut edge porous and therein a more liquid absorbent and less uniform liquid absorbent condition than in the prior un-cut condition,
- (b) pressing against said cut edge a heated die to heat and to sear said cut edge surface to form on said edge a sealed surface condition having a reduced liquid absorption and more uniform capacity for liquid absorption therein, and
- (c) removing said heated die from said cut and seared edge to render said fiberboard blank edge with a non-wicking condition.

4,247,512

METHOD OF FORMING BALL BUSHING WITH PLASTIC BALL

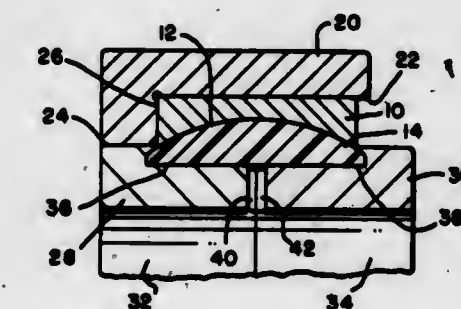
John H. Lobeck, and Richard D. Allen, both of South Bend, Ind., assignors to The Torrington Company, Torrington, Conn.

Filed Sep. 28, 1979, Ser. No. 79,971

Int. Cl.³ B29F 1/10

U.S. Cl. 264—242

2 Claims



1. A method of forming a ball bushing comprising: fitting

into an outer mold body an annular metal outer race with a concave bore; inserting a pair of coaxial annular inner molds into said outer mold body, the coaxial annular inner molds having the same outside diameters, the outside of each inner mold having an annular recess extending from one end thereof so that the inner mold recesses and the concave bore of the outer race provide an annular space corresponding in shape to the shape of the desired plastic ball; flowing liquid plastic through a longitudinal bore in at least one of the inner molds and then radially outwardly through a passage in at least one of the inner molds and into said annular space to fill said annular space with liquid plastic; and allowing the liquid plastic to solidify and shrink by cooling whereby clearance between the plastic ball outside surface and the metal outer race is provided.

4,247,513

METHOD OF MAKING LAMINATED SOLE

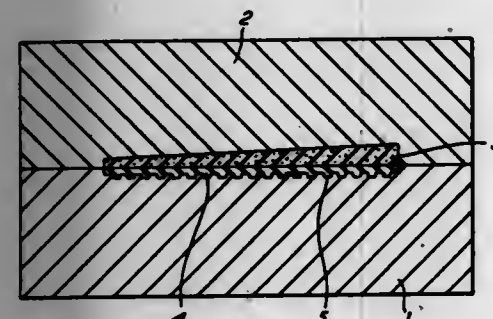
Chia-Lien Liu, 6F-1, No. 236 Yen-Pin South Road, Taipei, Taiwan

Filed Mar. 14, 1979, Ser. No. 20,297

Int. Cl.³ B29C 17/00; B29H 5/00, 8/00

U.S. Cl. 264-249

4 Claims



1. A method, of making a laminated sole, which comprises the steps of:

- (i) providing a sheet of cured foamed rubber
- (ii) providing a sheet of unvulcanized solid rubber
- (iii) disposing the foamed rubber sheet and the solid rubber sheet in a multi-part openable and closable mold in which a plurality of blind holes open at a major face bounding the cavity of the mold, the solid rubber sheet being placed in contact with said major face
- (iv) closing said mold to apply pressure forcing said sponge rubber sheet and said solid rubber sheet together, and at the same time applying heating to vulcanize the solid rubber,

whereby as a result of said pressure and heating the solid rubber is forced into the interstices of the sponge rubber to form a bond therewith, and into the blind holes of the mold.

4,247,514

PROCESS FOR STRENGTHENING A SHAPED ARTICLE OF A POLYESTER

Robert R. Laise, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 683,395, May 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 625,133, Oct. 23, 1975, abandoned. This application Jan. 30, 1978, Ser. No. 873,658

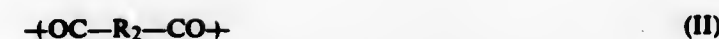
Claims priority, application Sweden, May 5, 1975, 7551896

Int. Cl.³ B29C 25/00

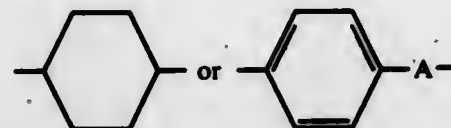
U.S. Cl. 264-345

17 Claims

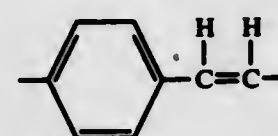
1. A process for strengthening a shaped article formed by longitudinal flow of a melt of an anisotropic-melt-forming linear condensation polymer wherein the article is larger than a fiber or a film and in which the polymer is a (co)polyester consisting essentially of recurring structural units selected from the group



wherein units I and II, if present, are present in substantially equimolar amounts; R_1 , R_2 and R_3 are radicals selected from the group of (1) single and fused six-membered aromatic carbocyclic ring systems wherein the chain-extending bonds of the ring system, if attached to the same ring, are positioned 1,4- to each other, and if attached to different rings, are in positions parallel and oppositely directed, and (2) multiple six-membered aromatic carbocyclic rings systems in which the chain-extending bonds of each ring are in the 1,4-positions and in which the individual rings are joined by a chemical bond or a divalent radical containing no more than 4 acyclic in-chain atoms; R_2 may also be



wherein A is a divalent radical containing one or two acyclic in-chain atoms; and R_3 may also be



wherein the aliphatic portion is attached to the carbonyl group comprising heating said shaped article at a temperature from above 140° C. to below the flow temperature of the polymer for a period of time sufficient to increase energy to break in flexure by at least 25% in at least one direction of measurement.

4,247,515

PROCESS FOR MOLDING OF PLASTIC STRUCTURAL WEB ARTICLES

Olagoke Olabisi, Plainfield, N.J., assignor to Union Carbide Corporation, New York, N.Y.

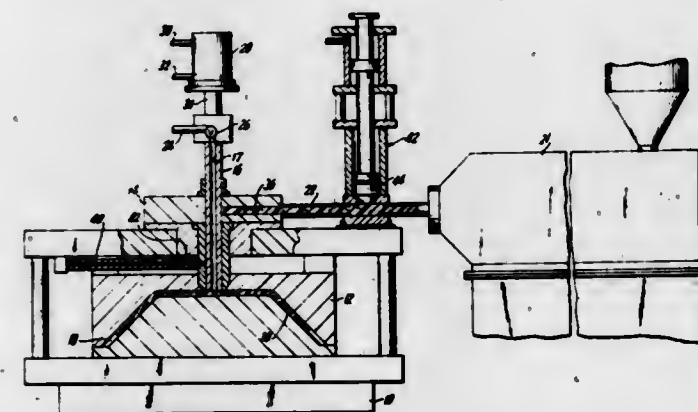
Division of Ser. No. 705,101, Jul. 14, 1976, Pat. No. 4,136,220.

This application Aug. 23, 1978, Ser. No. 936,056

Int. Cl.³ B29C 17/04; B29D 27/00

U.S. Cl. 264-500

4 Claims



1. A process for the product of a molded plastic structural web article comprising: introducing a volume less than the volume of the mold of a molten plastic material, having a high shear viscosity and elasticity, into a mold cavity having a contour which provides the desired flow length-to-thickness ratio; injecting low viscosity pressurizing fluid into said molten plastic material in said mold cavity through at least one injection opening and at a fluid flow rate and fluid pressure to cause

(i)

(i) said pressurizing fluid to penetrate into said molten plastic

material so that the fluid-plastic interface is first deformed into a wave-like corrugation of finite lengths and (ii) the formation of a generally continuously hollow center with sufficient fluid-plastic interface distortion(s) to produce at least one skin-connecting web therein for each distortion and capable of growth with time whereby the outer portion of said plastic material is forced to assume the contour of said mold cavity, thereby forming a molten structural web article without causing said low viscosity pressurizing fluid to break through the plastic material flow front and prevent the plastic material from substantially completely assuming the contour of said mold cavity; and maintaining said pressure of said pressurizing fluid in said article in said mold until said article is self-supporting.

4,247,516

METHOD OF MAKING PRESTRESSED CONCRETE POLES, TUBES, AND SUPPORT COLUMNS

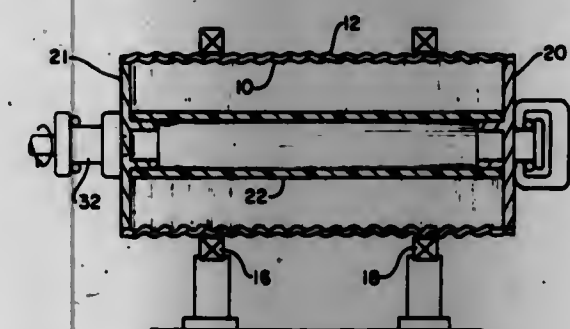
Burton D. Morgan, Hudson, Ohio, assignor to Top Roc Precast Corporation, Hudson, Ohio

Filed Mar. 3, 1980, Ser. No. 126,906

Int. Cl.³ B28B 21/34, 1/20, 1/30

U.S. Cl. 264-503

7 Claims



1. A method of making a prestressed concrete pole comprising the steps of coating the inner wall of metal tube with a liquid epoxy plastic material,

- placing a heat softenable plastic pipe in a concentric position in the metal pipe and filling the space between the pipes with concrete,
- rotating the metal pipe rapidly to center the plastic pipe therein and compact the concrete,
- applying hot fluid pressure to the plastic pipe interior to soften and expand such plastic pipe and to place expanding pressure on the metal pipe, and to further compact the concrete,
- longitudinally prestressing the concrete-pipe assembly for several hours while the concrete sets, and
- releasing the fluid pressure and prestressing pressure to obtain a prestressed concrete pole.

4,247,517

STERILIZED STORAGE CONTAINER

Roger S. Sanderson, 24772 Santa Clara, Dana Point, Calif. 92629, and Robert C. Wheelchel, Newport Beach, Calif., assignors to Roger S. Sanderson, Dana Point, Calif.

Continuation-in-part of Ser. No. 821,042, Aug. 1, 1977, which is a continuation-in-part of Ser. No. 734,228, Oct. 20, 1976,

abandoned, which is a continuation-in-part of Ser. No. 703,044, Jul. 6, 1976, Pat. No. 4,196,166, which is a continuation-in-part of Ser. No. 640,824, Dec. 15, 1975, abandoned. This application

Apr. 10, 1978, Ser. No. 895,239

The portion of the term of this patent subsequent to Apr. 17, 1979, has been disclaimed.

Int. Cl.³ A61L 2/06, 2/26; B65D 81/20; F16K 31/126

U.S. Cl. 422-26

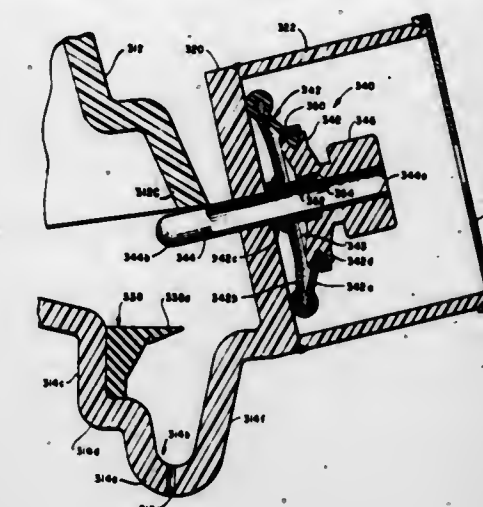
22 Claims

4. Apparatus for containing items while being sterilized or stored comprising:

- means defining a closed container;
- means for permitting access to the container interior;

means mounted on said container holding said access means in an open position; and

expandable chamber means for capturing a quantity of a sterilizing environment applied to said container, said chamber means with its captured environment being re-



sponsive to a subsequent environment applied to said container for moving said holding means to release said access means and allow the access means to close at a predetermined point in a sterilizing cycle applied to the container.

4,247,518

APPARATUS FOR THE THERMAL CONVERSION OF GYPSUM

Alain Charlet, Plaisir; Jean-Paul Coquery, Saint-Dider Au Mont d'Or, and Francois Mounier, Maisons-Laffitte, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 812,326, Jul. 1, 1977, abandoned, which is a division of Ser. No. 688,772, May 21, 1976, abandoned. This

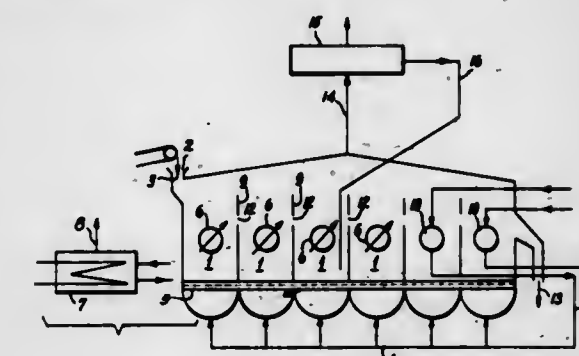
application Apr. 16, 1979, Ser. No. 30,514

Claims priority, application France, May 23, 1975, 75 16119

Int. Cl.³ B01J 8/18; F27B 15/00; C01F 11/46; C04B 11/02

U.S. Cl. 422-142

5 Claims



5. Apparatus for thermally treating gypsum to dehydrate it into calcium sulfate hemihydrate, comprising:

- a reactor having an inlet end and an outlet end;
- a plurality of partitions defining a series of compartments within said reactor between the inlet and outlet ends thereof;
- means for introducing gypsum into the compartment adjacent the inlet end of said reactor;
- means for continuously introducing a fluidization gas into each of said compartments at a rate such that gypsum located therein is continuously fluidized;
- a heating element disposed in at least some of said compartments so as to be immersed within the fluidized gypsum in its respective compartment;
- an opening disposed in each of said partitions, said openings being dimensioned and located such that a continuous, substantially horizontal movement of homogeneous fluid-

ized gypsum, from the input to the output end of said reactor, is established and the flow of fluidized gypsum between two compartments in the other direction is inhibited; and means for heating said heating elements to temperatures such that the temperature of fluidized gypsum progressively increases in each compartment having a heating element from the input to the output ends of said reactor.

4,247,519

EXHAUST GAS TREATMENT DEVICE FOR INJECTION MOLDING MACHINES

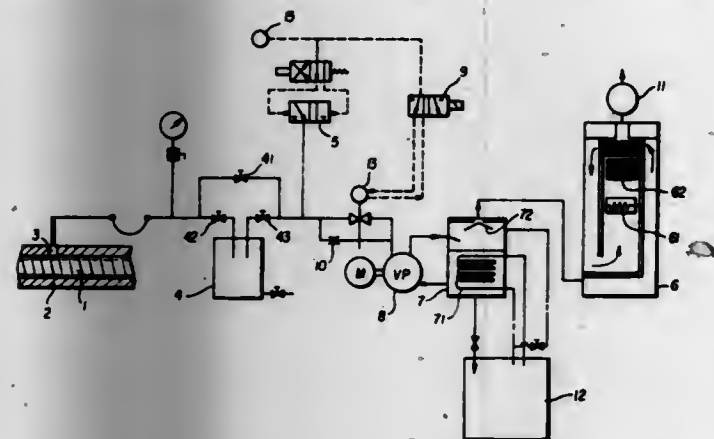
Tsutomu Sano, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan

Filed Nov. 30, 1979, Ser. No. 98,805

Int. Cl.³ B01D 50/00

U.S. Cl. 422-169

4 Claims



1. A waste gas discharging device for use with an injection molding machine including a vent hole which comprises: a mist separator communicating with said vent hole; a first blower; a control valve communicating said first blower with said mist separator, said control valve operating to selectively communicate said blower to said vent hole through said mist separator; a vacuum pump; ball valve means communicating said vacuum pump with said mist separator, said ball valve means operating to selectively communicate said vacuum pump with said vent hole through said mist separator; air-water separator means communicating with the output of said vacuum pump for receiving waste gas from said vent hole and for separating water therefrom; deodorizer means communicating with said air-water separator means for purifying the waste gas discharge of said vent hole; and a second blower communicating with said deodorizer means, said second blower acting to remove the purified waste gas from said deodorizer means.

4,247,520

EXHAUST MUFFLER WITH CATALYST

Siegfried Wörner, Esslingen am Neckar, Fed. Rep. of Germany, assignor to J. Eberspächer, Esslingen, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,727

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811651

Int. Cl.³ F01N 3/20, 3/28, 3/30, 7/08

U.S. Cl. 422-176

8 Claims

1. In an exhaust muffler construction comprising an axially elongated tubular casing of oval shaped transverse cross-section and having an inlet at one end thereof and an outlet at the opposite end thereof, the transverse cross-section has a major axis and a minor axis, a monolithic honeycomb catalyst is mounted in said casing extending between the inlet and outlet thereof so that flow of exhaust gases can pass from the inlet to the outlet through said catalyst, an axially elongated tubular

shaped inlet section having a first end and a second end with the second end being connected to the inlet to said casing and having a transverse cross section corresponding to the transverse cross section of said casing, said inlet section having an axis extending between the first and second ends thereof in general alignment with the axis of said tubular casing, said first end having a transverse cross section significantly smaller than said second end, the inlet section having first side surfaces extending generally in the direction of said minor axis and tapering outwardly from the first end to the second end so that said side surfaces provide a smooth transition from the first end of said inlet section to the inlet to said casing, and second side surfaces extending generally transversely of said first side surfaces, wherein the improvement comprises a gas flow dividing member for providing a more uniform distribution of the gas flow across the entire transverse cross section of said catalyst, said dividing member located within said inlet section



centrally between and spaced from both the first and second ends thereof and said first side surfaces and extending completely across the flow path through said inlet section in the direction of said minor axis between said second side surfaces of said casing and dividing the flow path generally symmetrically into a first section extending from the first end of said inlet section to the surface of said flow dividing member closer to the first end of said inlet section, a second section extending along the dimension of said flow dividing member on both sides thereof in the direction between the first and second ends of said inlet section and a third section extending from the surface of said flow dividing member closer to the second end of said inlet section to the second end of said inlet section with the first and third sections each forming a single flow passage connected by two flow passages formed in the second section, and said dividing member having a width dimension in the direction of said major axis which varies in the direction from the first end toward the second end of said inlet section.

4,247,521

LIQUID-LIQUID CONTACTING SYSTEM

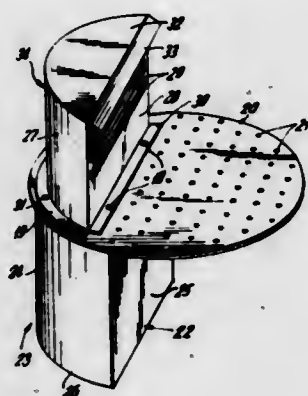
Paulino Forte, Yonkers, and George S. Somekh, New Rochelle, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 862,223, Dec. 19, 1977, abandoned, which is a continuation of Ser. No. 651,854, Jan. 23, 1976, abandoned. This application Aug. 15, 1979, Ser. No. 66,853

Int. Cl.³ B01D 12/00

U.S. Cl. 422-256

22 Claims



1. A liquid-liquid contacting tray for use in a contacting column including a casing in which a plurality of such trays are

disposed, vertically spaced apart from one another to form contacting zones between adjacent trays, comprising a horizontally disposed perforated deck having main top and bottom sides providing a major portion of the tray surface area for discharge of coalesced discontinuous phase liquid at one of said sides of said deck through the perforations therein from a layer of coalescent discontinuous phase liquid supported on the other said sides of said deck, at least one channelized liquid transfer means extending through said deck as the sole means for transfer of continuous phase liquid from a contacting zone on one side of said tray to a contacting zone on the other side thereof, each liquid transfer means comprising: a settling section formed by imperforate enclosing wall means, distinct from said contacting column casing, extending vertically outwardly from said tray deck one side, terminating in said contacting zone on said tray deck one side and open at the vertically outermost end to provide an inlet to said settling section, for disengagement of the discontinuous phase liquid from the transferred continuous phase liquid; a pressure drop section vertically aligned with said settling section, formed by enclosing wall means, distinct from said contacting column casing, extending vertically outwardly from said tray deck other side, terminating in said contacting zone on said tray deck other side and imperforate on the base part thereof adjacent said perforated deck, with said pressure drop section having a smaller cross-sectional area than said settling section and joined in closed flow communication therewith to provide a sudden contraction in cross-sectional area from said settling section to said pressure drop section substantially in the plane of said perforated deck for reduction of pressure in the liquid flowed therethrough; at least one fixedly positioned liquid discharge opening in the enclosing wall means at the vertically outer part of said pressure-drop section, arranged to provide generally horizontally directed passage of transferred liquid from said pressure drop section to the contacting zone on said other side of said tray; and imperforate cover means, not including any imperforate portion of an adjacent tray deck, leak-tightly joined to the vertically outer end of said pressure-drop section for vertical sealing thereof against discontinuous phase liquid in the contacting zone on said other side of said tray.

4,247,522

METHOD OF PURIFYING URANIUM TETRAFLUORIDE HYDRATE AND PREPARING URANIUM (VI) PEROXIDE HYDRATE USING A FLUORIDE PRECIPITATING AGENT

Ronald L. Pyman, Tampa, and JoAnne LeFever, Brandon, both of Fla., assignors to Gardiner, Inc., Tampa, Fla.

Filed Jan. 27, 1978, Ser. No. 919,557

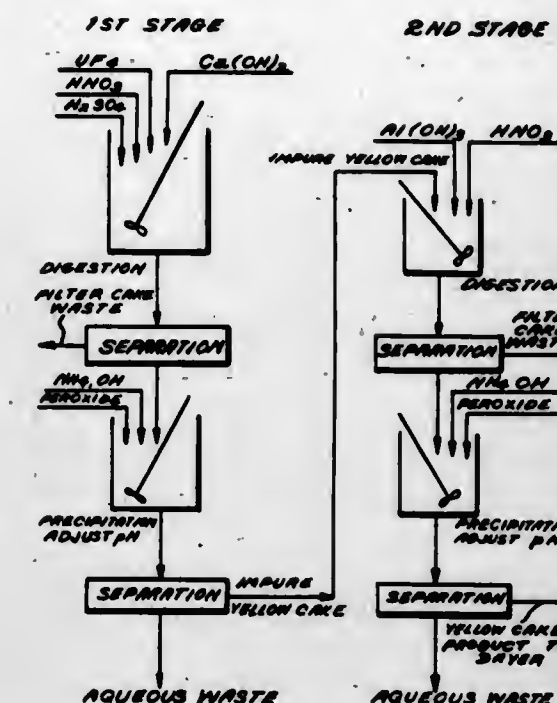
Int. Cl.³ C01G 43/01

U.S. Cl. 423-8

24 Claims

1. A method of preparing uranium (VI) peroxide hydrate from uranium tetrafluoride hydrate, comprising the steps of: (a) digesting uranium tetrafluoride hydrate in an aqueous acid in the presence of a fluoride precipitating agent to precipitate fluoride ions and produce an aqueous uranium solution; (b) filtering the aqueous uranium solution of step (a) to remove precipitated fluorides and undissolved material; (c) adjusting the aqueous uranium solution of step (b) to a pH between 1 and 3; (d) reacting the aqueous uranium solution of step (c) with peroxide to precipitate uranium (VI) peroxide hydrate; (e) separating the precipitated uranium (VI) peroxide hydrate of step (d); (f) digesting the uranium (VI) peroxide hydrate of step (e) in an aqueous acid in the presence of a fluoride complexing agent to produce an aqueous uranium solution; (g) adjusting the aqueous uranium solution of step (f) to a pH between about 1 to about 3; (h) reacting the aqueous uranium solution of step (g) with

peroxide to precipitate uranium (VI) peroxide hydrate, and



(i) separating the precipitated uranium (VI) peroxide hydrate of step (h).

4,247,523

PELLETIZING SULFATION OF TITANIUM CONCENTRATES

Rotrou A. Hall, Mississauga, and Gerald V. Glaus, Oakville, both of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,857

Claims priority, application Canada, Jan. 14, 1979, 329747

Int. Cl.³ C01G 23/00

U.S. Cl. 423-82

6 Claims

1. In a process for treating particulate material comprising a titaniferous ore concentrate or slag with sulfuric acid to recover water-soluble titanium compounds in solid form, the improvement which comprises introducing the particulate material and concentrated sulfuric acid into a heated pelletizing apparatus, maintaining the material at a temperature between about 180° and 240° C. while forming pellets thereof, and withdrawing formed pellets at such a rate as to provide a residence time of between about 0.5 and 4 hours for the material in the pelletizing apparatus, whereby reaction between the sulfuric acid and material to solubilize at least part of the titanium present takes place simultaneously with formation of the pellets.

4,247,524

PREPARATION OF ZEOLITE A BY HYDROTHERMAL TREATMENT OF CLINOPTILOLITE

John J. Leonard, Springfield, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 1, 1979, Ser. No. 80,609

Int. Cl.³ C01B 33/28

U.S. Cl. 423-118

7 Claims

1. A process for producing zeolite A of the formula



wherein $x=10$ to 14 , $y/x=0.8$ to 1.2 and $Z=1$ to 30 , which comprises heating at a temperature of 60° to 150° C. an aqueous slurry comprising

(a) from about 1 to 32 grams of natural clinoptilolite of the formula



wherein $x=5$ to 7 , $y/x=4.5$ to 5.5 and $Z=1$ to 30 , per 100 cc of slurry,

- (b) a stoichiometric amount of sodium aluminate, and
(c) from about 1 to 25% by weight of sodium hydroxide in water until zeolite A forms and recovering zeolite A.

4,247,525

METHOD OF AND APPARATUS FOR REMOVING SULFUR OXIDES FROM EXHAUST GASES FORMED BY COMBUSTION

Theodor Voeste, Frankfurt am Main, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,683

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820357

Int. Cl.³ C01B 17/00

U.S. Cl. 423—242

11 Claims

1. A method of removing sulfur oxides from a combustion-process exhaust gas which comprises the steps of:

- said exhaust gas, which also contains chloride impurities, is fed at a temperature of at least 110° C. into a reaction zone;
- spraying into the exhaust gas traversing said zone an aqueous cleaning solution of a compound selected from the group which consists of sodium carbonate and sodium bicarbonate;
- maintaining in said zone a temperature of said exhaust gas, a rate of spraying of said aqueous cleaning solution and a concentration of said compound in said aqueous cleaning solution such that the sprayed aqueous cleaning solution is substantially completely evaporated in said zone, and solids are formed which withdraw the sulfur oxides from the exhaust gas;
- filtering said solids from the gas and recovering the filtered solids in a substantially anhydrous state with at least 75% by weight of the solids consisting of sodium sulfite, sodium sulfate and sodium chloride;
- dissolving the solids recovered in step (d) in water or dilute sulfuric acid;
- oxidizing the sulfite in the solution produced in step (e) with an oxygen-containing gas to form sulfate to produce a sulfite-free solution;
- mixing the sulfite-free solution with a calcium chloride solution obtained from a SOLVAY process;
- precipitating and withdrawing calcium sulfate from the mixture and leaving behind a sodium chloride solution; and
- subjecting said sodium chloride solution to said SOLVAY process to produce sodium carbonate or sodium bicarbonate to be recycled into said aqueous cleaning solution sprayed during step (b) and to produce calcium chloride to be recycled to step (g).

4,247,526

METHOD FOR PREPARING DICALCIUM PHOSPHATE DIHYDRATE WITH IMPROVED STABILITY

William M. Jarvis, Webster Groves, and Keun Y. Kim, Clayton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 29, 1979, Ser. No. 43,412

Int. Cl.³ C01B 00/00, 15/16, 25/26

U.S. Cl. 423—266

10 Claims

1. A method which comprises:
- providing dicalcium phosphate dihydrate containing a sufficient amount of pyrophosphate complex to provide at least some hydrolytic stability to the DCPD;
 - adding to the dicalcium phosphate dihydrate from about 0.1 weight percent to about 5 weight percent trimagnesium phosphate, based on the weight of the dicalcium phosphate dihydrate; and
 - adding to the dicalcium phosphate dihydrate from about 0.1 weight percent to about 3 weight percent of a pharma-

ceutically acceptable condensed phosphate salt, based on the weight of the dicalcium phosphate dihydrate.

4,247,527

PROCESS OF PRODUCING ZEOLITE

Isao Miyahara, Kudamatsu; Hiroshi Miyazaki, and Shinichi Hashimoto, both of Shin Nanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin Nanyo, Japan

Filed Jun. 18, 1979, Ser. No. 49,408

Claims priority, application Japan, Jun. 19, 1978, 53/73277

Int. Cl.³ C01B 33/28

U.S. Cl. 423—329

4 Claims

1. In a process of producing zeolite substantially free from a free alkali ingredient wherein a silica source and an alumina source are reacted in an aqueous reaction medium containing an excessive amount of an alkali ingredient to form zeolite; the so formed zeolite is separated from the aqueous alkaline reaction medium; and then, the separated zeolite is washed at least one time with an aqueous medium which is either free from or contains an alkali metal or alkaline earth metal salt of aluminic acid; the improvement comprising:

- washing the separated zeolite at least one time with an aqueous medium by incorporating the zeolite in the aqueous medium to prepare an aqueous zeolite slurry;
- incorporating in the aqueous zeolite slurry an alkali metal or alkaline earth metal salt of aluminic acid and an acid, the amount of the acid being sufficient to reduce the pH of the aqueous zeolite slurry to a value between approximately 8 and approximately 11; and separating the zeolite from the so neutralized aqueous medium.

4,247,528

METHOD FOR PRODUCING SOLAR-CELL-GRADE SILICON

Vishu D. Dosaj, and Lee P. Hunt, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 11, 1979, Ser. No. 28,947

Int. Cl.³ C01B 33/02

U.S. Cl. 423—350

7 Claims

1. In a method for producing silicon wherein silica is reduced in a high temperature furnace by a carbonaceous reducing agent mixed with the silica, the improvements comprising: employing silica having a boron content of no greater than 10 parts per million by weight and a phosphorous content no greater than 20 parts per million by weight, employing a carbonaceous reducing agent selected from the group consisting of activated carbon and carbon black and having a boron content no greater than 10 parts per million by weight and a phosphorous content no greater than 10 parts per million by weight, and the carbonaceous reducing element being in the form of pellets whereby a solar grade of silicon is produced.

4,247,529

PROCESS FOR PRODUCING TITANIUM CARBONITRIDE

Tadaaki Mori, Tokyo; Takaaki Tsukidate, Shin Nanyo, and Junji Arika, Tokuyama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin Nanyo, Japan

Filed Mar. 13, 1979, Ser. No. 20,046

Claims priority, application Japan, Mar. 17, 1978, 53/29880

Int. Cl.³ C01C 3/08

U.S. Cl. 423—371

3 Claims

1. A process for producing titanium carbonitride in powder form and in the form of a substantially completely homogeneous solid solution; said titanium carbonitride being expressed by the formula:



wherein m is a positive number in the range of from 0.1 to 0.98

and n is (1—m), which process comprises heating a substantially uniform mixture of titanium halide powder and carbon in powder form to a temperature of from 700° to 1,800° C. in the presence of a reducing substance in powder form in a nitrogen-containing gaseous atmosphere; said titanium halide being at



least one compound selected from the group consisting of titanium trichloride, titanium dichloride, titanium tribromide and titanium dibromide; and said reducing substance being at least one substance selected from the group consisting of aluminum and an aluminum-titanium alloy.

4,247,530

APPARATUS AND METHOD FOR PRODUCING CARBON BLACK

Paul J. Cheng, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 19, 1978, Ser. No. 897,883

Int. Cl.³ C01B 31/02; C09C 1/48

U.S. Cl. 423—450

10 Claims

1. A method of producing carbon black: introducing feed hydrocarbon into a reaction zone; introducing hot combustion gases into said reaction zone and heating said feed hydrocarbon to a carbon black producing temperature thereby producing combustion products containing particulate carbon black; firstly cooling said combustion products to lower the temperature of the combustion products below a carbon black producing temperature to produce effluent; secondly cooling the thus produced effluent in an indirect heat exchange means; producing a signal representative of the rate of heat transfer from the effluent in the indirect heat exchange means; intervallically substantially terminating introduction of feed hydrocarbon into the reaction zone in response to said signal reaching a predetermined level indicating a relative low level of heat transfer rate in the indirect heat exchange means; removing carbon black deposits in said heat exchange means during the termination by contact of the deposits with the hot combustion gases from the reaction zone and free oxygen; and separating the effluent into a gas portion and a carbon black portion after the second cooling.

4,247,531

CHLORINE DIOXIDE GENERATION APPARATUS AND PROCESS

Bruce Hicks, Rio Linda, Calif., assignor to Rio Linda Chemical, Rio Linda, Calif.

Filed Aug. 13, 1979, Ser. No. 65,927

Int. Cl.³ C01B 11/02

U.S. Cl. 423—477

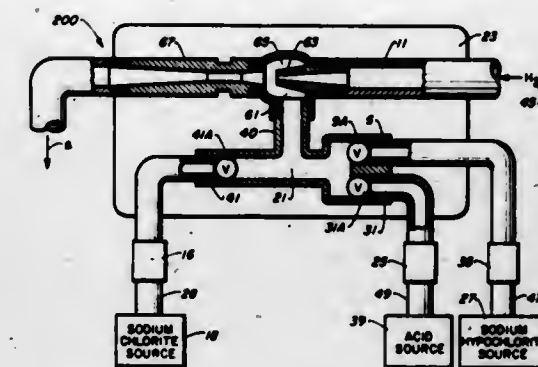
9 Claims

1. A process for the preparation of chlorine dioxide which comprises:

- substantially instantaneously reacting compounds, which when reacted together yield chlorine dioxide, in the absence of dilution water, in a reaction zone sized to permit only substantially instantaneous contact of said compounds;
- transferring the generated chlorine dioxide from the reaction zone to another location by immediately educting

the chlorine dioxide by suction generated by the movement of a diluting fluid through a venturi, the flow rate of said diluting fluid being correlated to the flow rate of the reacting compounds to avoid any buildup of chlorine dioxide in the reaction zone.

6. The process of preparing chlorine dioxide which comprises:



- introducing an aqueous alkaline chlorite and gaseous chlorine into opposite ends of a tee shaped reaction chamber in the absence of dilution water;
- reacting said chlorite and chlorine momentarily;
- educting the formed chlorine dioxide from said chamber by moving a diluting fluid through a venturi;
- diluting the concentration of said chlorine dioxide with said fluid.

4,247,532

PURIFICATION OF ELECTROLYTICALLY-PRODUCED CHLORINE

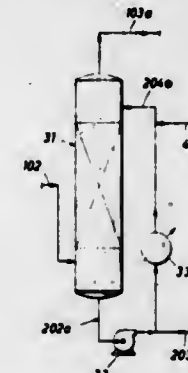
David I. Saletan, La Porte, and Heungwoo W. Chun, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 13, 1979, Ser. No. 66,270

Int. Cl.³ C01B 7/07, 7/075; C01C 21/067; C25B 1/34

U.S. Cl. 570—234

20 Claims



1. A process for improving the quality of a chlorine product of brine electrolysis by removal of impurities contained therein which comprises contacting the chlorine with a liquid contact solution comprising an inert solvent and between about 0.2 and 8 percent by weight of hydrogen chloride or an equivalent combination of hydrogen and chloride ions, calculated on the weight of the solution.

4,247,533

HEMOGLOBIN A_{1c} RADIOIMMUNOASSAY

Anthony Cerami; Ronald J. Koenig, both of New York, N.Y.; Jamshid Javid, Old Tappan, N.J., and Penelope K. Pettis, Norwalk, Conn., assignors to The Rockefeller University, New York, N.Y.

Filed May 1, 1978, Ser. No. 901,618

Int. Cl.³ G01N 33/48; G01T 1/00; B65D 71/00

U.S. Cl. 424—1

11 Claims

1. Antibodies against human hemoglobin A_{1c} which are

substantially free of cross-reactivity against the human hemoglobins A₀, A₁₀ and A₁₆.

4,247,534

RADIOGRAPHIC SCANNING AGENT

John A. Bevan, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 31, 1978, Ser. No. 929,472

Int. Cl.³ A61K 49/00, 43/00; G01T 1/00

U.S. Cl. 424—1

27 Claims

1. A composition of matter for the preparation of a technetium-based bone mineral or infarct scanning agent, comprising: (1) a water-soluble reducing agent for radioactive pertechnetate in an amount sufficient to reduce a unit dose of pertechnetate to a lower valence state; and (2) a methanhydroxydiphosphonate bone material-seeking agent which is selected from methanhydroxydiphosphonic acid, and the water-soluble salts and esters thereof, in an amount sufficient to carry a unit dose of tri-, tetra-, or pentavalent radioactive technetium to bone mineral in the body of a human or lower animal with minimal absorption of technetium in uncalcified tissue and wherein said amount of methanhydroxydiphosphonic acid or water-soluble salt or ester thereof, sufficient to carry said unit dose is less than about 0.1 mg./kg. body weight of said human or lower animal.

4,247,535

MODIFIED CYCLODEXTRIN SULFATE SALTS AS COMPLEMENT INHIBITORS

Arthur J. Lewis, Nanuet, and Seymour Bernstein, New York, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

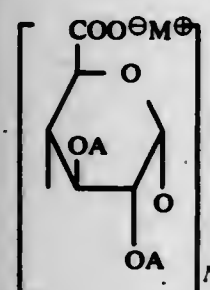
Filed Nov. 5, 1979, Ser. No. 91,213

Int. Cl.³ A61K 31/70; C08B 37/02

U.S. Cl. 424—180

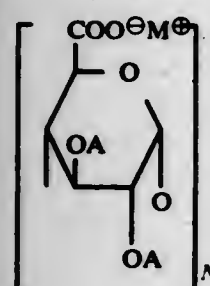
15 Claims

1. A compound of the formula:



wherein M is a pharmaceutically acceptable salt cation; A is selected from the group consisting of hydrogen and SO₃⁻M⁺; and N is an integer from 6-8.

9. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said animal an effective complement inhibiting amount of a compound of the formula:



wherein M is a pharmaceutically acceptable salt cation; A is selected from the group consisting of hydrogen and SO₃⁻M⁺; and N is an integer from 6-8.

4,247,536

METHOD OF PREPARING C3-SENSITIZED ERYTHROCYTES

Mitchell J. Fruitstone, Jose Carro, and Betty G. Pixton, all of Miami, Fla., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 20, 1978, Ser. No. 890,558

Int. Cl.³ G01N 33/48, 33/68

U.S. Cl. 424—12

11 Claims

1. A method of preparing C3-sensitized erythrocytes comprising: (A) to a solution containing: (1) 8.0 to 10.0 w./v. percent sucrose; (2) a buffer in a concentration of about 0.1 to 25 millimolar; and (3) EDTA in a predetermined concentration within the range of about 0.10 to 50.0 millimolar, said solution having a pH of about 5.1 and a temperature of about 0° C., adding a predetermined amount of freshly collected erythrocyte-containing, anticoagulated, defibrinated or unclotted, fresh whole blood; (B) incubating said solution with said erythrocytes at about 0° C., thereby forming C3 sensitized erythrocytes; (C) after the step of incubating, removing said C3 sensitized erythrocytes from the solution in which they were incubated; (D) after the step of removing said C3 sensitized erythrocytes, washing said C3 sensitized erythrocytes; and (E) resuspending said washed C3 sensitized erythrocytes in a red cell preservative medium.

4,247,537

BLEACHING SYSTEMS COMPRISING PERCARBONATE, PERSULFATE, AND PYROGENIC SILICA

Peter F. R. Lunn, Hoon Hay Rd., Christchurch, and Joyce Grainger, 95 Dunns Ave., Kaiapoi, both of New Zealand

Continuation of Ser. No. 959,148, Nov. 9, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,803

Claims priority, application New Zealand, Nov. 9, 1977, 185654

Int. Cl.³ A61K 7/135; D06L 3/00, 3/02

U.S. Cl. 424—62

16 Claims

1. In a vapor proof enclosure, a marketable premixed dry bleaching powder capable upon aqueous activation of bleaching hair or keratinous fibre, said powder comprising at least 25% by weight of ammonium persulfate, at least 25% by weight of a percarbonate compound selected from sodium percarbonate and potassium percarbonate, the ratio of ammonium persulfate to the percarbonate compound being such as to provide in the absence of other pH adjusting compounds a pH in aqueous solution of from about 8.5 to about 11, and at least 4% by weight of pyrogenic silica.

4,247,538

CONDITIONING SHAMPOO

Graham Barker, Fair Lawn, N.J., assignor to Witco Chemical Corporation, New York, N.Y.

Filed Sep. 5, 1978, Ser. No. 939,543

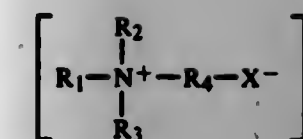
Int. Cl.³ A61K 7/06

U.S. Cl. 424—70

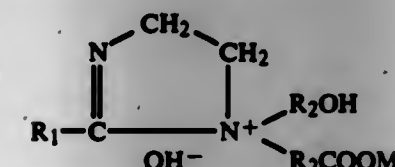
10 Claims

1. An aqueous conditioning shampoo composition which comprises, percentages given being by weight based upon the total weight of the composition:

(i) from about 5.0 to about 20.0 percent of a foamy amphoteric shampoo base detergent selected from the group consisting of (1) sultaine and betaine compounds having the following general structural formula:

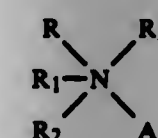


wherein R₁ is an alkyl group having from about 8 to about 18 carbon atoms, R₂ and R₃ each represent a lower alkyl having 1 to 3 carbon atoms, R₄ represents alkylene and hydroxy-substituted alkylene group having from about 1 to about 3 carbon atoms, and X is an anion selected from SO₃⁻, sultaine, and COO⁻, betaine; (2) alkyl beta-aminopropionate, R₁N(H)C₂H₄COOM; (3) alkyl beta-iminopropionate, R₁N(C₂H₄COOM)₂; and (4) long chain imidazole derivatives having the following structural formula:

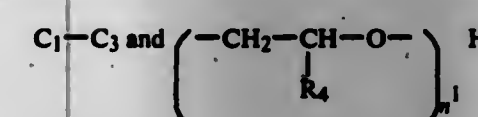


in the last 3 formulae, supra, R₁ is alkyl having about 12 to about 18 carbon atoms, R₂ is an alkylene or hydroxyalkylene group having 1 to 4 carbon atoms, and M is a water-soluble cation;

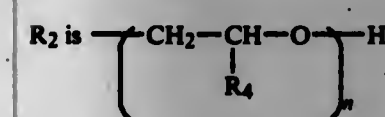
(ii) from about 1.0 to about 15.0 percent of a polypropoxylated quaternary ammonium chloride cationic surfactant having the following structural formula:



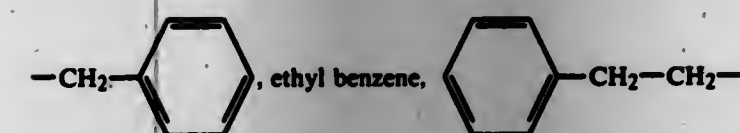
wherein R is alkyl C₁-C₃; R₁ is selected from



wherein R₄ is alkyl C₁₄ C₄; and compounds wherein R and R₁ are joined together to form, with the N atom of formula (I), supra, a member of the group consisting of piperidine, methyl piperidine, and pyrrolidine;



in which R₄ is alkyl C₁₄ C₄, and the total number of carbon atoms in R₂ is at least 18; R₃ is a member of the group consisting of alkyl C₁-C₄, alkenyl C₁₄ C₄, benzene, methyl benzene,



and their methyl and ethyl nuclearly-substituted derivatives, and the mono-halo mono-nitro nuclearly-substituted derivatives of the foregoing; A is an anion; and n and n' are numbers of the sum of which does not exceed 60;

(iii) from about 0.20 to about 5.0 percent gum arabic; and (iv) the balance water.

4,247,539

HEMAGGLUTININ OF HAEMOPHILUS GALLINARUM

Yoshikazu Iritani, 151, Manjojiki-cho, Okamodani, Fukakusa, Fushimi-ku, Kyoto-shi, Kyoto Pref.; Ken Katagiri, 5-1-25, Satsukigaoka, Ikeda-shi, Osaka Pref.; Hitoshi Arita, 1-5-4, Suimoldai, Kawanishi-shi, Hyogo Pref., all of Japan; Jun'ichi Kawanami, deceased, late of Kawanishi, Japan; by Emiko Kawanami, heir, 4-11-10, Daiwahigashi, Kawanishi-shi, Hyogo Pref., Japan; Akira Kawanami, heir, 4-11-10, Daiwahigashi, Kawanishi-shi, Hyogo Pref., Japan, and Mariko Kawanami, heir, 4-11-10, Daiwahigashi, Kawanishi-shi, Hyogo Pref., Japan

Filed Feb. 22, 1979, Ser. No. 14,158

Claims priority, application Japan, Feb. 22, 1978, 53-20021

Int. Cl.³ A61K 39/02, 39/40

U.S. Cl. 424—92

1 Claim

1. Substantially pure hemagglutinin of *Haemophilus gallinarum*, which is obtained by a process which comprises treating cells of *Haemophilus gallinarum* with trypsin, and which has the following physicochemical properties and antigenicity:

(1) the molecular weight of the subunit is about 39,000 as measured by SDS-polyacrylamide gel electrophoresis, (2) protein is filamentous in structure, (3) eluted at or near the V_O value of Sepharose 6B, (4) loss of antigenicity and hemagglutination activity by heating at 100° C. for 5 minutes, (5) maintenance of hemagglutination activity by heating at 70° C. for less than 5 minutes, (6) constituent amino acids (ratio): lysine (0.73), histidine (0.22), arginine (0.31), aspartic acid (1.00), threonine (0.53), serine (1.09), glutamic acid (1.20), glycine (2.30), alanine (1.02), valine (0.71), isoleucine (0.37), leucine (0.68), tyrosine (0.18), phenylalanine (0.31).

4,247,540

THERAPEUTIC AGENT

Gunter Holzmann, Casilla 391, Santa Cruz, Bolivia

Continuation-in-part of Ser. No. 855,714, Nov. 29, 1977,

abandoned, which is a continuation-in-part of Ser. No. 653,356,

Jan. 29, 1976, abandoned, which is a continuation-in-part of Ser.

No. 434,107, Jan. 17, 1974, abandoned, which is a

continuation-in-part of Ser. No. 298,573, Oct. 18, 1972,

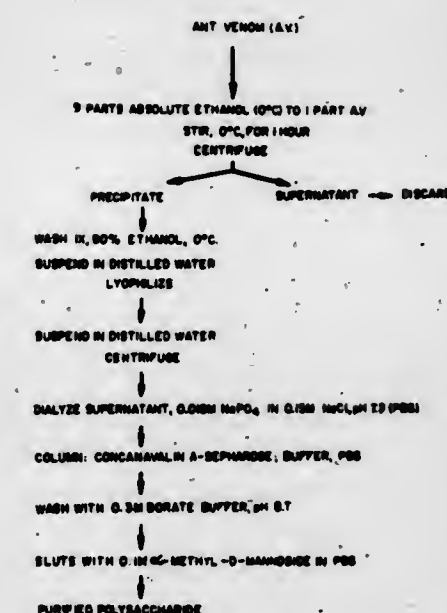
abandoned. This application Jan. 31, 1979, Ser. No. 7,936

Int. Cl.³ A61K 35/12, 35/56

U.S. Cl. 424—95

4 Claims

PURIFICATION OF POLYSACCHARIDES FROM NATIVE ANT VENOM



1. A product for the treatment of rheumatoid arthritis, characterized by:

(a) a negative stain test for proteins with Amido Black 10B; (b) a positive stain test for glycoprotein and polysaccharide with periodic acid Schiff reagent (PAS), the combination

- of tests (a) and (b) leading to the conclusion that the composition is of a polysaccharide nature;
- (c) the consumption of C₄ (human blood complement system) upon incubation with human blood serum at 375° C. for 4 hours;
- (d) a positive test for neutral sugars with anthrone reagent;
- (e) a positive test for hexuronic acids by carbazole method of Bitter and Muir;
- (f) not being precipitated from aqueous solution by barium salts, indicating the apparent absence of sulfate groups;
- (g) a negative phosphate test by the method of Ames and Dubin;
- (h) substantial solubility in propylene glycol, glycerol, water, phosphate buffers (aqueous) pH 3 to 11, and acetate buffers (aqueous) pH 3 to 11;
- (i) substantial insolubility in ethyl alcohol, acetone, benzene, chloroform and ethyl ether;
- (j) approximate sugar molar ratios:

Sugar	Molar Ratio Range
Fucose	approximately 1-2
Mannose	approximately 8-9
Galactose	approximately 1-15
Glucose	approximately 1
N-acetyl glucosamine	approximately 1
N-acetyl galactosamine	approximately 1-2

- (k) an approximate elemental analysis (CHO) of 35-45% carbon, 6-7% hydrogen and 35-43% oxygen; and
- (l) an infrared spectrograph showing three major peaks approximately centered about 3460 cm⁻¹, 2100 cm⁻¹ and 1640 cm⁻¹ as defined in FIG. 5.

4,247,541 KS-2-B

Nakao Ishida, Sendai; Hiroshi Maeda, Kumamoto; Fujio Suzuki, Sendai; Toshikatsu Fujii, Yokohama, and Ituro Mizutani, Numazu, all of Japan, assignors to Kirin Brewery Company Limited, Tokyo, Japan

Filed May 11, 1979, Ser. No. 38,263

Claims priority, application Japan, May 12, 1978, 53-55460
Int. Cl.³ A61K 35/00

U.S. Cl. 424-116 4 Claims

1. KS-2-B having the following physicochemical properties:
- (1) Elemental analysis: C: 43.98%, H: 6.77%, N: 1.37%, Ash: trace
- (2) Molecular weight: 75,000±15,000 (by ultrafiltration method)
- (3) Appearance: White amorphous powder
- (4) Decomposition point: Approx. 185° C.
- (5) UV spectrum As shown in FIG. 1.
- (6) IR spectrum As shown in FIG. 2.
- (7) pH: 5.92 (in aqueous solution)
- (8) Solubility: Soluble in water, insoluble in organic solvents such as ethanol, acetone, n-hexane, n-butanol, phenol and so forth
- (9) Specific optical rotation: $[\alpha]_D^{25} = +61.8^\circ$ (0.788% aqueous solution)
- (10) Homogeneity: a. Homogeneous in equilibrium density gradient centrifugation (120,000 g×72 hours, CsCl) b. Homogeneous in electrophoresis on cellulose acetate c. Homogeneous in gel filtration using "Sephadex G-100"
- (11) Specific gravity: $\rho = 1.623$ by equilibrium density gradient centrifugation (120,000 G×72 hours, CsCl)
- (12) Color reaction:
- Phenol-H₂SO₄ reaction: positive
- Anthrone reaction: positive
- Molisch's reaction: positive
- Elson-Morgan reaction: negative
- Carbazole-H₂SO₄ reaction: positive
- Folin-Ciocalteu reaction: positive
- Biuret reaction: positive

Toluidine blue O staining: negative
Ninhydrin reaction: positive

- (13) Sugar composition: It is almost mannose
- (14) Amino acid composition: It is mainly serine, threonine and alanine, and minutely glutamic acid, valine, proline, aspartic acid, glycine and isoleucine. Furthermore, although other amino acids are found in a very small quantity from time to time, histidine, arginine, cystine and methionine are absent
- (15) Linkage mode of mannan: From a result of enzymatic digestion with α -mannosidase, this substance is estimated to contain α -linked mannan in the molecule.

4,247,542

A-40104 ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

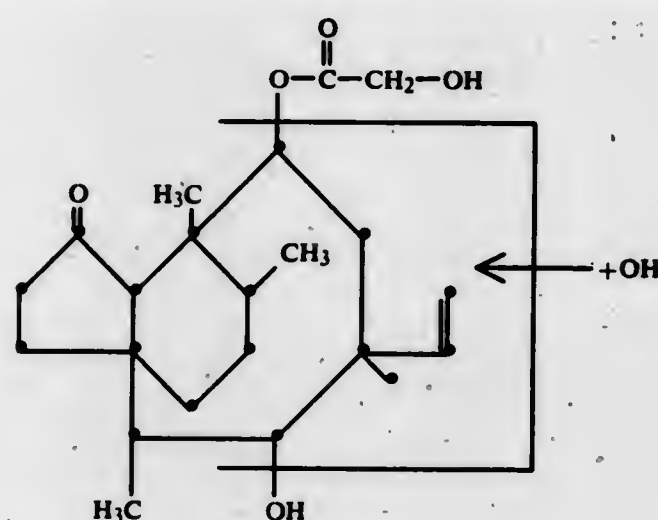
Karl H. Michel, and Calvin E. Higgins, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 858,505, Dec. 8, 1977. This application Jun. 22, 1978, Ser. No. 918,112
Int. Cl.³ A61K 35/00

U.S. Cl. 424-122

5 Claims

1. A-40104 factor B which is a white amorphous compound having these characteristics:

- (a) a molecular weight of 394 as determined by electron-impact mass spectrometry;
- (b) an empirical formula of about C₂₂H₃₄O₆;
- (c) an infrared absorption spectrum, run in KBr disc, with significant absorption maxima at the following frequencies (cm⁻¹): 3430 (broad), 2940, 2880, 1735, 1660, 1452, 1385, 1375, 1305, 1280, 1233, 1152, 1094, 1020, 997, 967, 933, 912, 888, 752 and 660;
- (d) three hydroxyl groups which are capable of acylation; and
- (e) a tentative structure as shown in following formula:



4,247,543

ORGANIC COMPOUNDS

Janos Pless, Basel, and Edmond Sandrin, Rhine, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
Continuation of Ser. No. 816,825, Jul. 18, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,603
Int. Cl.³ A61K 37/00; C07C 103/52

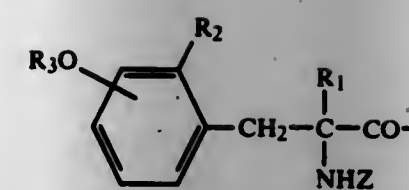
U.S. Cl. 424-177

16 Claims

1. A compound of the formula

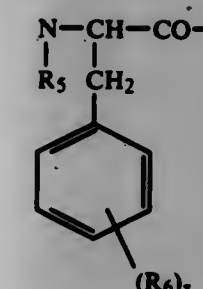


in which A is



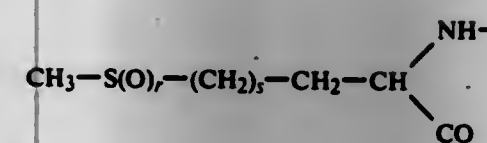
wherein

R₁ is hydrogen or methyl,
R₂ is hydrogen,
R₃ is hydrogen or methyl,
Z is hydrogen or methyl,
B is -(D)-Ala,
D is a residue of formula

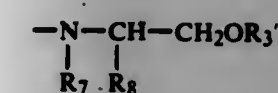


wherein

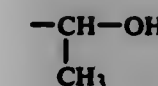
R₅ is hydrogen or methyl,
R₆ is hydrogen, chlorine, or nitro
E is -Leu- and Z is 1 or 2,



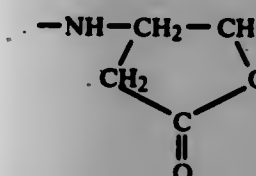
wherein
r is 0, 1 or 2 and
s is 1, and
F is



wherein
R₇ is hydrogen
R₈ is hydrogen, and
R₉ is
(a) -CH₂OH
(b)



(c) -(CH₂)_n-CONH₂, wherein n is 1 or 2, or
(d)



whereby the A, D and E residues possess either the L- or D,L-configuration and the residue F possesses the L-, D- or D,L-configuration, or a pharmaceutically acceptable salt or complex form thereof.

4,247,544

C-5 SUBSTITUTED URACIL NUCLEOSIDES

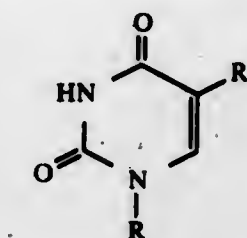
Donald E. Bergstrom, Davis, and Jerry L. Ruth, Encinitas, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 2, 1979, Ser. No. 53,925
Int. Cl.³ A61K 31/70; C07H 17/00

U.S. Cl. 424-180

7 Claims

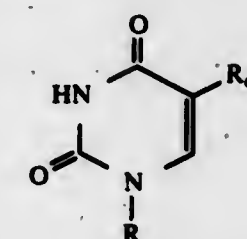
1. A compound of the formula:



(I)

wherein R₀ is -CH=CH-CH₃ or -CH=CH-CF₃ and R is β -D-ribofuranosyl, β -D-2-deoxyribofuranosyl or β -D-arabinofuranosyl.

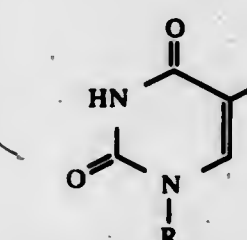
6. A composition useful for treating HSV-1 virus infections in mammals which comprises an effective amount of compound of the formula



(I)

wherein R₀ is CH=CH-CH₃ or -CH=CH-CF₃ and R is β -D-ribofuranosyl, β -D-2-deoxyribofuranosyl or β -D-arabinofuranosyl.

7. A method of treating a HSV-1 virus infection in a host mammal afflicted with such infection which comprises administering to said host an effective amount of the compound of the formula



wherein R₀ is -CH=CH-CH₃ or -CH=CH-CF₃ and R is β -D-ribofuranosyl, β -D-2-deoxyribofuranosyl or β -D-arabinofuranosyl.

4,247,545

11-DEOXY ANTHRACYCLINE ANTIBIOTICS, THEIR PREPARATION AND USE

Giuseppe Cassinelli, Via G. Matteotti n. 13, Voghera, Pavia; Arpad Grein, Via Moncalvo n. 31, Milan; Sergio Meril, Via De Gasperi n. 12, Bernareggio, Milan, and Giovanni Rivola, Via Panfilo Castaldi n. 38, Milan, all of Italy

Filed Feb. 5, 1979, Ser. No. 9,650

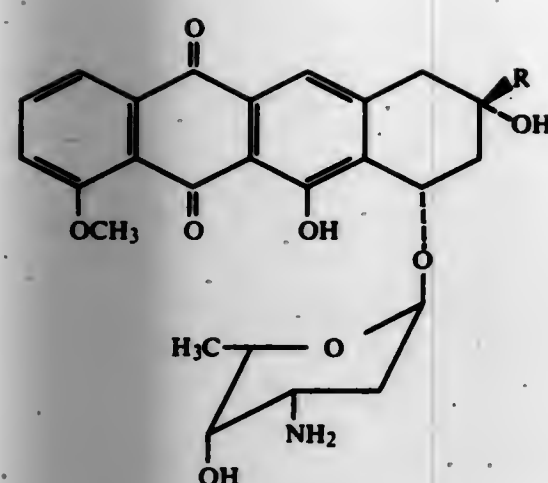
Claims priority, application United Kingdom, Feb. 9, 1978, 5246/78

Int. Cl.³ A61K 31/71; C07H 15/24

U.S. Cl. 424-181

6 Claims

1. A compound having the formula:



wherein R is $-\text{CO}-\text{CH}_2\text{OH}$, $-\text{CHOH}-\text{CH}_3$, $-\text{CO}-\text{CH}_3$ or $-\text{CH}_2-\text{CH}_3$ and a salt thereof with a pharmaceutically acceptable acid or metallic cation.

6. A pharmaceutical composition comprising a therapeutically effective amount of a compound as claimed in claim 1 and an inert carrier therefor.

4,247,546

PHOSPHONYLUREIDOBENZENE DERIVATIVES AND THEIR MEDICINAL USE

Hartmud Wollweber, Herbert Thomas, and Peter Andrews, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 6, 1978, Ser. No. 967,035

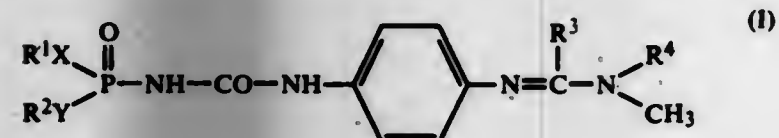
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758005

Int. Cl.³ A01N 57/32; C07F 9/24; A01N 57/22

U.S. Cl. 424-200

13 Claims

1. A compound which is a phosphonylureidobenzene derivative of the general formula



or its salts in which

R¹ and R² are identical or different and represent a C₁ to C₄ alkyl group, or
R¹ and R² together represent a dimethylene group, a trimethylene group or a tetramethylene group,
X and Y are identical or different and represent an oxygen atom or a sulphur atom and
R³ and R⁴ are identical or different and represent a C₁ to C₄ alkyl group, or
R³ and R⁴ together represent a trimethylene group or a tetramethylene group, or
R³ and R⁴, together with the carbon atom and nitrogen atom between them, form a thiazolidine ring system.

2. A method of combating helminthiasis in human and warm-blooded non-human animals which comprises administering to the animals an anthelmintically effective amount of an active compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,247,547 TRETINOIN IN A GEL VEHICLE FOR ACNE TREATMENT

Alan M. Marks, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 541,906, Jan. 17, 1975, abandoned. This application Mar. 19, 1979, Ser. No. 22,022

Int. Cl.³ A61K 31/20, 31/56

U.S. Cl. 424-240

10 Claims

1. A gel formulation for topical application comprising from about 0.01% to about 0.025% by weight of said formulation of tretinoin; and a vehicle system consisting essentially of (a) from about 84 to about 99% by weight of said formulation of an organic solvent selected from the group consisting of ethanol, isopropanol, and propylene glycol; (b) an effective amount to inhibit oxidation of said tretinoin of a pharmaceutically acceptable antioxidant soluble in said organic solvent; and (c) an effective amount to cause gelling of hydroxypropyl cellulose.

4,247,548

7α-METHOXYCEPHALOSPORIN DERIVATIVES AND THEIR PHARMACEUTICAL COMPOSITIONS HAVING ANTIBACTERIAL ACTIVITY

Masafumi Yoshimoto, Hachio Miyazawa, Takuzo Nishimura, Akiko Ando, Norio Nakamura, and Hideo Nakao, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,707

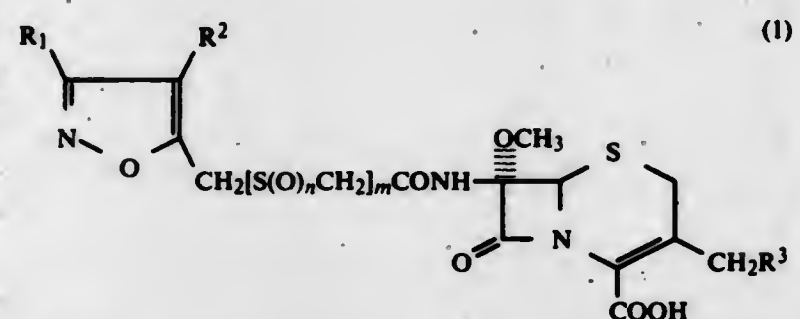
Claims priority, application Japan, Apr. 11, 1978, 53-42360

Int. Cl.³ A61K 31/545; C07D 501/57

U.S. Cl. 424-246

17 Claims

1. 7α-Methoxycephalosporin derivatives of general formula (I):



wherein:

R¹ represents a hydroxy group; a C₁-C₄ alkoxy group; a C₂-C₃ aliphatic acyloxy group; a benzoyloxy group which is unsubstituted or has one or more C₁-C₄ alkyl, C₁-C₄ alkoxy, nitro or halogen substituents; a benzenesulphonyloxy group which is unsubstituted or has one or more C₁-C₄ alkyl substituents; or a C₁-C₃ alkanesulphonyloxy group which is unsubstituted or has one or more C₁-C₃ alkoxy, cyano, nitro, halogen or C₂-C₄ alkoxy carbonyl substituents;

R² represents a hydrogen atom; a C₁-C₄ alkyl group; a halogen atom; a carboxyl group; a C₂-C₃ alkoxy carbonyl group; a carbamoyl group; a (C₁-C₃ alkyl)-substituted carbamoyl group; a di(C₁-C₃ alkyl)carbamoyl group; or a cyano group;

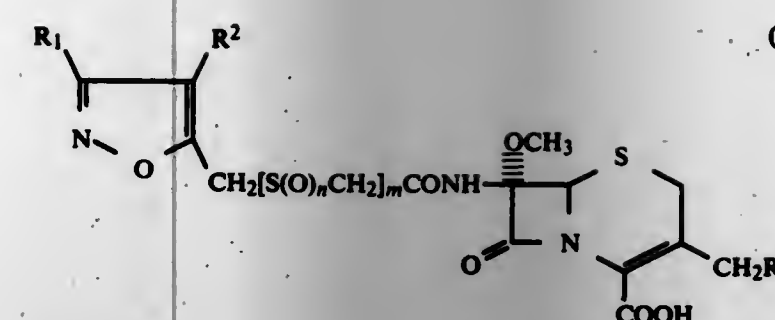
R³ represents a hydrogen atom; an acetoxy group; a carbamoyloxy group; or a tetrazolylthio, thiazolylthio or oxadiazolylthio group which is unsubstituted or has one or more C₁-C₃ alkyl, sulphomethyl or di(C₁ or C₂ alkyl)-amino(C₁-C₃ alkyl) substituents

m is 0 or 1; and

n is 0 or 2;

and pharmaceutically acceptable salts and esters thereof.

16. A pharmaceutical composition having antibacterial activity comprising a pharmaceutically acceptable carrier or diluent and, as active ingredient, a 7α-methoxycephalosporin derivative of general formula (I):



wherein:

R¹ represents a hydroxy group; a C₁-C₄ alkoxy group; a C₂-C₃ aliphatic acyloxy group; a benzoyloxy group which is unsubstituted or has one or more C₁-C₄ alkyl, C₁-C₄ alkoxy, nitro or halogen substituents; a benzenesulphonyloxy group which is unsubstituted or has one or more C₁-C₄ alkyl substituents; or a C₁-C₃ alkanesulphonyloxy group which is unsubstituted or has one or more C₁-C₃ alkoxy, cyano, nitro, halogen or C₂-C₄ alkoxy carbonyl substituents;

R² represents a hydrogen atom; a C₁-C₄ alkyl group; a halogen atom; a carboxyl group; a C₂-C₃ alkoxy carbonyl group; a carbamoyl group; a (C₁-C₃ alkyl)-substituted carbamoyl group; a di(C₁-C₃ alkyl)carbamoyl group; or a cyano group;

R³ represents a hydrogen atom; an acetoxy group; a carbamoyloxy group; or a tetrazolylthio, thiazolylthio or oxadiazolylthio group which is unsubstituted or has one or more C₁-C₃ alkyl, sulphomethyl or di(C₁ or C₂ alkyl)-amino(C₁-C₃ alkyl) substituents;

m is 0 or 1; and

n is 0 or 2;

or a pharmaceutically acceptable salt or ester thereof.

4,247,549

PIPERAZINE-1-CARBOXYLIC ACID ESTERS POSSESSING ANTIDEPRESSANT OR ANALGESIC ACTIVITY

Cyrus J. Ohnmacht, and Jeffrey B. Mallick, both of Wilmington, Del., assignors to ICI Americas Inc., Wilmington, Del.

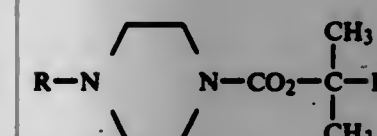
Filed Dec. 27, 1978, Ser. No. 974,146

Int. Cl.³ A61K 31/215; C07D 241/04

U.S. Cl. 424-250

21 Claims

1. A method for obtaining an anti-depressant or analgesic effect in a host in need of such effect which comprises administering to said host an effective anti-depressant or analgesic amount of a compound of formula (I)



wherein R is an aminocarbonylalkyl wherein the alkyl contains 1 to 4 carbon atoms, and R₁ is $-\text{CH}_3$, $-\text{CH}=\text{CH}_2$ or $-\text{C}=\text{CH}$, or a pharmaceutically acceptable acid-addition salt thereof.

4,247,550

COMPOSITIONS AND METHODS FOR THE TREATMENT OF HYPERTENSION OR OEDEMAS

Peter W. Felt, Gentofte; Ole B. T. Nielsen, Vanlose; Herta Bruun, Malov, and Claus A. S. Bretting, Copenhagen, all of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Løvens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

Division of Ser. No. 696,547, Jun. 16, 1976, Pat. No. 4,082,851. This application Dec. 21, 1977, Ser. No. 862,976

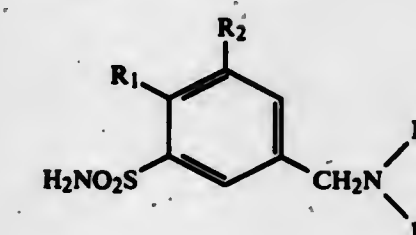
Claims priority, application United Kingdom, Jul. 8, 1975, 28770/75; Jul. 8, 1975, 28772/75; Jul. 8, 1975, 28773/75; Jul. 8, 1975, 28774/75; Jul. 8, 1975, 28775/75

Int. Cl.³ A61K 31/44; C07D 213/16, 307/38, 333/04, 237/08, 207/335, 211/72, 231/12, 409/12, 211/12, 237/06, 413/12

U.S. Cl. 424-244

22 Claims

1. A compound of the formula I



in which

R₁ stands for an unsubstituted or substituted phenoxy, phenylthio, benzyl, phenylsulfinyl, or anilino radical;

R₂ stands for a $-\text{YR}_2'$ radical, in which Y represents $-\text{O}-$, $-\text{S}-$, or $-\text{NH}-$, and R_{2'}, which may be unsubstituted or substituted, represents C₁-C₆ alkyl, C₂-C₆ alkenyl or -alkynyl; or methyl or ethyl substituted with phenyl, furyl, thienyl or pyridyl;

R₃ and R₄ which can be the same or different, and unsubstituted or substituted; stand for hydrogen or for a straight or branched C₁-C₈ alkyl, C₂-C₈ alkenyl or -alkynyl radical, a C₃-C₇ cycloalkyl, a phenyl, or a 5-, 6- or 7-membered heterocyclic ring system containing not more than two heteroatoms selected from the group consisting of oxygen, sulphur and nitrogen, or for a C₁-C₃ alkyl radical substituted with phenyl or with a 5-, 6- or 7-membered heterocyclic ring system containing not more than two heteroatoms selected from the group consisting of oxygen, sulphur and nitrogen; and

R₄ furthermore stands for a lower carbalkoxy radical, a C₁-C₆ alkanoyl radical, or a benzoyl radical; and salts thereof with pharmaceutically acceptable acids provided further that at least one of R₂, R₃ or R₄ contains a heterocyclic moiety as defined above.

4,247,551

(I) N-PYRROLYL-PYRIDAZINEAMINES AND THEIR USE AS ANTIHYPERTENSIVE AGENTS

Elvio Bellasio, Como; Nunzio Di Mola, Milan; Ambrogio Campi, Monza, and Emiliana Baldoli, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

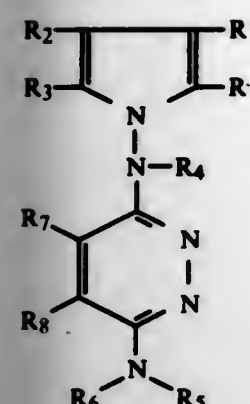
Filed Sep. 17, 1979, Ser. No. 76,114

Int. Cl.³ A61K 31/50, 31/535; C07D 403/12, 413/14

U.S. Cl. 424-248.56

11 Claims

1. A novel pyrrolyl-pyridazineamine derivative of the formula



wherein R, R₁, R₂, R₃, may be the same or different and are independently selected from hydrogen and lower alkyl; R₄ represents hydrogen, lower alkyl, lower alkylamino-lower alkyl, di-lower alkylamino-lower alkyl, lower alkanoyl, halo-lower alkanoyl, carbo(lower alkoxy) or carbobenzyloxy; R₅ and R₆ each independently represent lower alkyl, hydroxy-lower alkyl, lower alkoxy-lower alkyl, lower alkanoyloxy-lower alkyl, lower alkenyl, phenyl, substituted phenyl, phenyl-lower alkyl and substituted phenyl-lower alkyl or taken together with the adjacent nitrogen atom represent a saturated 5-6 membered heterocyclic ring which may contain a further heteroatom selected from O, N and S, and which may bear 1 to 2 substituents selected from lower alkyl, phenyl, substituted phenyl, phenyl-lower alkyl, substituted phenyl-lower alkyl, hydroxy, hydroxy-lower alkyl and lower alkanoyloxy; R₇ and R₈ represent hydrogen atoms or, taken together, a 1,3-butadienylene radical forming a benzo system fused with the pyridazine ring; and its pharmaceutically acceptable acid addition salts.

8. A method of treating hypertension in mammals which comprises administering to said mammals an antihypertensive effective amount of a compound of claim 1.

4,247,552

CONTRACEPTIVE COMPOSITIONS AND METHODS EMPLOYING 1-SUBSTITUTED IMIDAZOLE DERIVATIVES

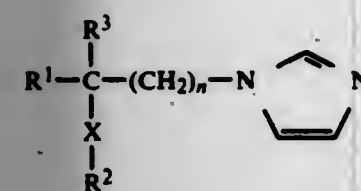
Duane W. Hallesy, Palo Alto; Richard E. Jones, Woodside; Brian H. Vickery, Cupertino, and Keith A. M. Walker, Los Altos Hills, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jan. 11, 1979, Ser. No. 2,637
Int. Cl.³ A61K 31/415, 31/495

U.S. Cl. 424-250

19 Claims

1. A method of contraception in a female mammal comprising administering intravaginally, to a subject clinically asymptomatic of vaginal microbial infection, prior to coitus, a spermatostatically effective amount of a 1-substituted imidazole of the formula



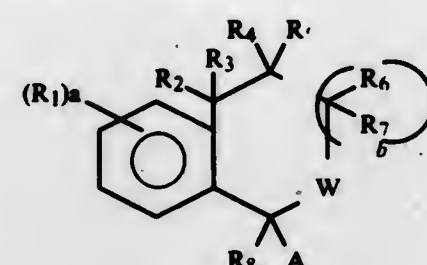
wherein R¹ and R² are each independently alkyl (1-12), alkenyl (1-12), substituted or unsubstituted phenyl, substituted or unsubstituted phenyl lower alkyl (1-4), or substituted or unsubstituted phenyl lower alkenyl (1-4), wherein substituted with reference to phenyl refers to phenyl substituted by one or more lower alkyl (1-4), halo, lower alkoxy (1-4), trifluoromethyl, nitro or cyano groups; R³ is hydrogen or lower alkyl (1-4); X is oxygen or sulfur; n is an integer of from 1 to 4; or a pharmaceutically acceptable acid addition salt thereof.

4,247,553
METHODS OF TREATING PSYCHOSIS
John M. McCall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 847,371, Oct. 31, 1977, Pat. No. 4,179,510.
This application Sep. 5, 1979, Ser. No. 72,658
Int. Cl.³ A61K 31/34, 31/44, 31/47, 31/495

U.S. Cl. 424-250

13 Claims

1. A method of treating psychosis in humans which comprises administering systemically to humans an antipsychotic dose of a compound selected from the group consisting of compounds having the formula



wherein

R₁ is the same or different and is selected from the group consisting of alkyl of one through three carbons, inclusive, alkoxy of one through three carbons, inclusive, trihaloalkyl of one or two carbons, hydroxy, halo, trihaloalkoxy of one or two carbons and o-methylenedioxy with the proviso that at least one R₁ is hydroxy, alkoxy or o-methylenedioxy;

a is one through three;

b is zero or one;

R₂ through R₇ are the same or different and are selected from the group consisting of hydrogen, alkyl of one through three carbons, inclusive, hydroxy, alkoxy of one through three carbons, phenyl; halo; cycloalkyl of three through six carbons when R₂ and R₃, R₄ and R₅, or R₆ and R₇ are taken together with the carbon to which they are attached; cycloalkyl of four through seven carbons when R₂ and R₄ or R₄ and R₆ are taken together with the carbons to which they are attached; and cycloalkyl of five or six carbons, with the overall provisos that no more than one ring may be attached to any one carbon and that at least two of R₂ through R₇ are hydrogen;

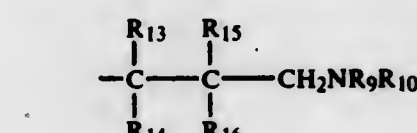
R₈ is alkyl of one through three carbons, hydrogen, or phenyl unsubstituted or substituted with a maximum of three substituents selected from the group consisting of alkyl of one through three carbons, halo, alkoxy of one through three carbons, and trihaloalkyl of one to two carbons;

W is oxygen; and

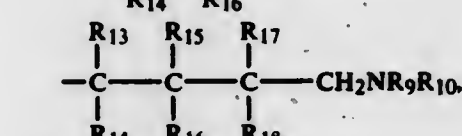
A is selected from the group consisting of:

- (i) $-(CH_2)_nNR_9R_{10}$, wherein n is one to five with the proviso that when b is zero, and n is one or two, R₂ through R₅ cannot all be hydrogen at the same time;
- (ii) $-(CH_2)_m-(OCH_2CH_2)_q-NR_{21}R_{22}$, wherein m and q are each one to three, and NR₂₁R₂₂ is NR₉R₁₀.

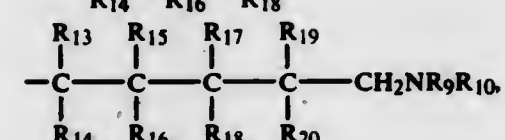
(iii)



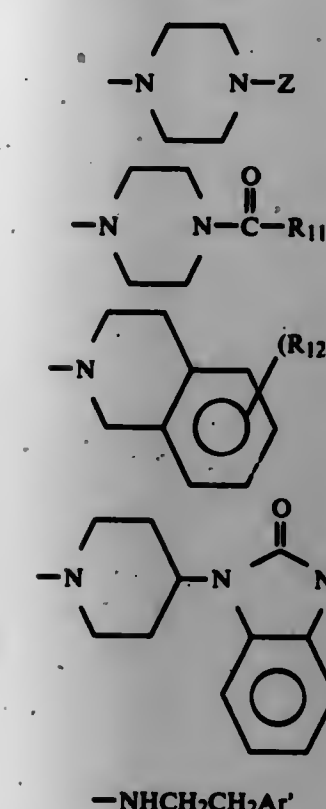
(iv)



(v)



wherein NR₉R₁₀ is a heterocyclic amine selected from the group consisting of



and

wherein R₁₁ is alkyl of one through four carbons, 2-furyl, Ar, alkoxy of one to three carbon atoms, inclusive, Z is selected from the group consisting of pyridyl, pyrimidinyl, triazinyl, pyrazinyl, pyridazinyl, pyrrolyl, imidazolyl, pyrazolyl, furyl, tetrazyl, oxazolyl, quinoxalyl, and quinazolyl, wherein each member of the group can be unsubstituted or substituted with one or two substituents selected from the group consisting of alkyl of one through three carbons, inclusive, alkoxy of one through three carbons, inclusive, hydroxy, halo, and haloalkyl of one through three carbons, inclusive;

R₁₂ is alkyl or alkoxy of one through three carbons, hydroxy, halo, or trihalomethyl, R₁₃ through R₂₀ may be the same or different and are selected from the group hydrogen and alkyl of from 1 to 2 carbon atoms, inclusive; c is zero through two;

Ar and Ar' are phenyl unsubstituted or substituted with one through three substituents selected from the group consisting of alkyl or alkoxy of one through three carbons, hydroxy, halo, and trihaloalkyl or trihaloalkoxy of one or two carbons and pharmaceutically acceptable acid addition salts thereof.

4,247,554

METHOD FOR THE PREVENTION OF GASTRO-INTESTINAL ULCER CAUSED BY A NON-STEROIDAL ANTI-INFLAMMATORY AGENT

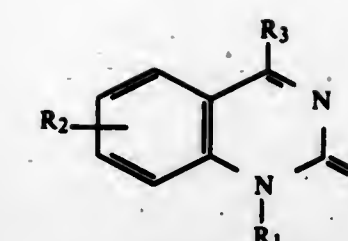
Hisao Yamamoto, Osaka; Toshiaki Komatsu, Takarazuka, and Hiroshi Awata, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 589,573, Jun. 23, 1975, abandoned.
This application May 11, 1977, Ser. No. 795,887
Int. Cl.³ A61K 31/505

U.S. Cl. 424-251

29 Claims

1. A method for preventing gastro-intestinal ulcer in mammals undergoing anti-inflammatory treatment with a non-steroidal anti-inflammatory agent, which comprises orally administering a gastro-intestinal ulcer preventing effective amount of a quinazolinone of the formula,



wherein R₁ is C₁₋₃ alkyl, cyclopropylmethyl or 2,2,2-trifluoroethyl, R₂ is halogen, C₁₋₃ alkyl or C₁₋₃ alkoxy, and R₃ is phenyl or thienyl, or a non-toxic pharmaceutically acceptable salt thereof, in combination with an anti-inflammatorily effective amount of the anti-inflammatory agent.

4,247,555

4,9-DIHYDRO-9-OXO-N-1H-TETRAZOL-5-YL-PYRAZOLO[5,1-b]QUINAZOLINE-2-CARBOXAMIDES AND ANTIALLERGIC COMPOSITIONS AND METHODS USING THEM

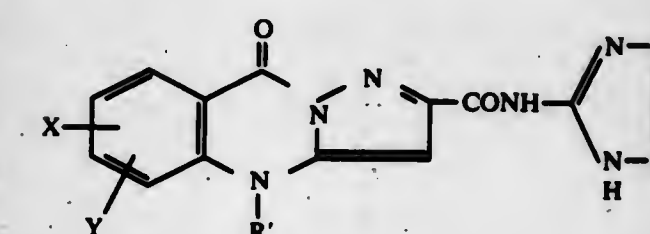
Jagdish C. Sircar, Ann Arbor, and Thomas Capiris, Plymouth, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 6,046, Jan. 24, 1979, abandoned. This application Jan. 11, 1980, Ser. No. 111,147
Int. Cl.³ A61K 31/505; C07D 487/14

U.S. Cl. 424-251

12 Claims

1. A compound of the formula I:



wherein X is hydrogen, hydroxy, alkyl of from 1 to 6 carbon atoms, alkoxy of from 1 to 6 carbon atoms, halo, trifluoromethyl, or SO₂R wherein R is alkyl of from 1 to 6 carbon atoms and n is 0, 1 or 2; Y is hydrogen, hydroxy, alkyl of from 1 to 6 carbon atoms, alkoxy of from 1 to 6 carbon atoms, or 2-tetrahydrothienyl; R' is hydrogen or alkyl of from 1 to 6 carbon atoms and the pharmaceutically acceptable salts thereof.

11. A pharmaceutical composition comprising an anti-allergic effective amount of a compound as defined in claim 1 and the pharmaceutically acceptable salts thereof.

12. A method of preventing the allergic response in a mammal which comprises administering to said mammal an anti-allergic effective amount of a composition as claimed in claim 11.

4,247,556

7-AZABENZIMIDAZOLES WITH BASIC SIDE CHAINS AND USE THEREOF

Walter von Bebenburg, Dreieich; Istvan Szelenyi, Worfelden, and Klaus Thieme, Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 947,528, Oct. 2, 1978, abandoned, and a continuation-in-part of Ser. No. 942,813, Sep. 15, 1978, abandoned. This application Jan. 15, 1979, Ser. No. 3,385

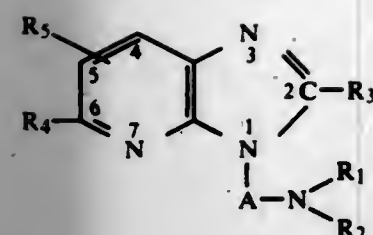
Claims priority, application United Kingdom, Sep. 26, 1977, 39919/77

Int. Cl.³ A61K 31/44; C07D 471/04

U.S. Cl. 424-256

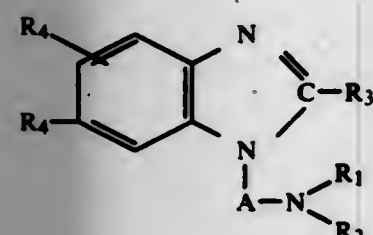
25 Claims

1. 7-azabenzimidazole of the formula



where R_1 is hydrogen or C_1 - C_6 alkyl and R_2 is C_1 - C_6 alkyl or C_2 - C_6 alkanoyl, R_3 is hydroxy, a mono C_1 - C_6 -alkylamino group, or a di- C_1 - C_6 -alkylamino group, R_4 is halogen, amino, mono C_1 - C_6 alkylamino, di- C_1 - C_6 alkylamino, mercapto, C_1 - C_6 -alkylmercapto, hydroxy or C_1 - C_6 -alkoxy, R_5 is hydrogen or halogen and A is a C_2 - C_6 alkylene group or a salt of such compound.

24. A method of combatting ulcers in a mammal comprising administering to the mammal an amount of a compound having the formula



where R_1 is hydrogen or C_1 - C_6 -alkyl and R_2 is C_1 - C_6 -alkyl or C_2 - C_6 alkanoyl, R_3 is hydroxy, an amino group, a mono C_1 - C_6 -alkylamino group, a di- C_1 - C_6 -alkylamino group or a C_2 - C_6 -alkanoylamino group, R_4 is halogen, amino, mono C_1 - C_6 alkylamino, di- C_1 - C_6 alkylamino, mercapto, C_1 - C_6 -alkylmercapto, hydroxy or C_1 - C_6 -alkoxy, R_5 is hydrogen or halogen and A is a C_2 - C_6 alkylene group or a salt of such compound effective to protect against ulcers.

4,247,557

BENZOPYRANOPYRIDINES AS ANTIGLAUCOMA AGENTS

Anthony T. Dren, Waukegan, Ill., and Barbara A. Bopp, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

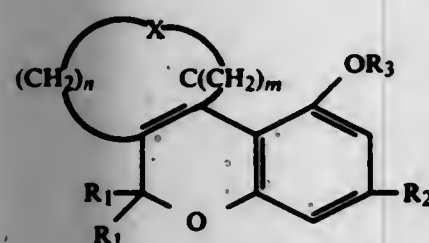
Division of Ser. No. 948,058, Oct. 2, 1978, which is a division of Ser. No. 711,749, Aug. 4, 1976, Pat. No. 4,136,183. This application Jan. 17, 1980, Ser. No. 112,987

Int. Cl.³ A61K 31/435, 31/33, 31/44, 31/42

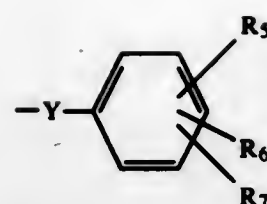
U.S. Cl. 424-256

3 Claims

1. A method of reducing intra-ocular pressure in mammalian patients comprising administering to a glaucoma patient a therapeutically effective amount of a compound of the formula



wherein, in the C ring, X is NR_4 where R_4 is H, loweralkyl, loweralkenyl, loweralkynyl or lower alkanoyl; n is an integer of 0 to 3 and m is an integer of 0 to 3; each R_1 is loweralkyl and when taken together the substituents R_1R_1 form oxygen; R_2 is a C_1 - C_{20} straight or branched chain alkyl, cycloalkyl, or



wherein Y is a straight or branched chain alkylene group having from 1 to 10 carbon atoms, and each R_5 , R_6 and R_7 are the same or different and are H, halo or loweralkyl; and R_3 is H.

4,247,558

PYRIDYL ALKYLGUANIDINES

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City; Geoffrey R. Owen, High Wycombe, and Rodney C. Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 892,231, Mar. 31, 1978, Pat. No. 4,166,856, which is a division of Ser. No. 686,185, May 13, 1976, Pat. No. 4,098,898. This application May 2, 1979, Ser. No. 35,152

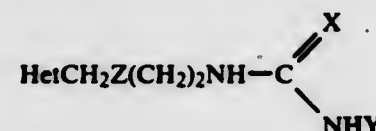
Claims priority, application United Kingdom, May 21, 1975, 21817/75; Nov. 20, 1975, 47782/75

Int. Cl.³ C07D 213/53; A61K 31/44

U.S. Cl. 424-263

8 Claims

1. A compound of the formula:



wherein X is N.CN or NH; Y is di(lower alkyl)amino, lower alkoxy, phenylethyl, allyl, 2,2,2-trifluoroethyl, or $(CH_2)_nR$; Z is sulphur or methylene; Het is a pyridine ring which ring is optionally substituted by lower alkyl, hydroxy, halogen or amino; n is an integer from 1 to 12; and R is hydroxy, lower alkoxy, amino or lower alkylamino; provided that when X is NH, Y is 2,2,2-trifluoroethyl or $(CH_2)_nR$, or a pharmaceutically acceptable acid addition salt thereof.

8. A method of blocking histamine H_2 -receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

4,247,559

N-SUBSTITUTED MALEIMIDES IN LIQUID CONCENTRATES

Frank C. Becker, Gurnee, and Jorge P. Li, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

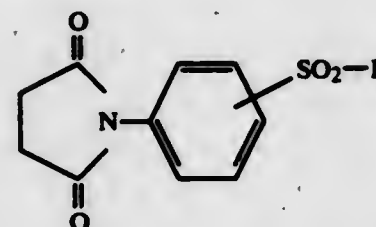
Filed Mar. 23, 1979, Ser. No. 23,070

Int. Cl.³ C07D 207/452; A61K 31/40

U.S. Cl. 424-274

7 Claims

1. A liquid concentrate for addition to industrial solutions, emulsions, liquids or dispersions to protect such industrial fluids from deterioration by micro-organisms, containing a compound of the formula



wherein R is CH_2 -hal or CH -hal₂, wherein hal stands for iodine or chlorine, together with an industrially acceptable diluent.

4,247,560

6,7-METHYLENEDIOXY-ISOCHROMANE ARTHROPODICIDE SYNERGIZING AGENTS

Volker Mues, Wuppertal, and Wolfgang Behrenz, Overath, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 24,746

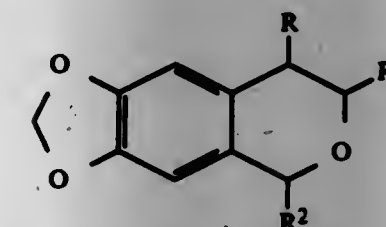
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816475

Int. Cl.³ A01N 9/28; C07D 317/44

U.S. Cl. 424-282

4 Claims

1. An arthropodicide composition containing as active ingredients an arthropodically effective amount of (1) at least one compound of the formula



in which R, R^1 and R^2 each independently is hydrogen or alkyl, and (2) at least one compound selected from the group consisting of (A) carbamates, (B) carboxylic acid esters, (C) phosphoric acid esters and (D) halogenoalkanes.

3. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodically effective amount of a composition according to claim 1.

4,247,561

PROCESS AND METHOD OF USE FOR A STABLE EMULSIFIED EDIBLE LIQUID STARCH PRODUCT

Roland W. Nelson, 2104 Maury St., Des Moines, Iowa 50301

Continuation-in-part of Ser. No. 867,809, Jan. 9, 1978, Pat. No. 4,167,584. This application Apr. 16, 1979, Ser. No. 30,223

Int. Cl.³ A23K 1/00

U.S. Cl. 426-53

10 Claims

1. A method of making a stable liquid starch emulsion animal feed product, said method consisting essentially of size reducing a whole starch material which is substantially free of non-protein nitrogen additives to a particle size which is sufficiently small to allow effective enzyme digestion of said material,

slurrying said size reduced material with water to provide a slurry having a solids content within the range of from about 15% to about 55% by weight, hydrothermally cooking said slurried mixture in a cooker at a temperature sufficiently high to at least partially gelatinize the starch of said starch material, passing said hydrothermally cooked material after it exits from said cooker through an insulated transfer means at the temperatures at which cooking is completed for from about one minutes to about four minutes to a cooked slurry hold tank, adding to said cooked slurry a small but effective amount of a starch digesting enzyme, to at least partially enzymatically hydrolyze said starch to sugars, and mixing the cooked slurry to which the enzyme has been added at a temperature below boiling for period of time of from 5 to 15 minutes to provide a stable emulsion and thereafter treating said cooked product with a mineral acid enzyme deactivating agent.

4,247,562

MOIST PET FOOD WITH BLOOD CHUNKS AND A FLUID GRAVY SYSTEM

John W. Bernotavicz, Hanover Park, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 788,416, Apr. 18, 1977, abandoned, which is a continuation-in-part of Ser. No. 654,932, Feb. 3, 1976, abandoned. This application Dec. 21, 1978, Ser. No. 971,648

Int. Cl.³ A23L 1/31; A23K 1/04

U.S. Cl. 426-72

9 Claims

1. A moist pet food comprising retortable blood-based, meat-like chunks and a fluid gravy system wherein:

I. the blood-based, meat-like chunks consist essentially of from 0.1 to about 3 percent gum selected from the group consisting of xanthan gum, locust bean gum, carboxy methylcellulose and a carrageenan product based on the weight of the chunk, the balance of the chunk being blood;

II. the gravy system consisting essentially of:

(a) from a trace to 5.0 percent of a modified or unmodified starch or flour, or mixtures thereof;

(b) from 1 to 50 percent of a flavoring agent;

(c) a nutritional amount of vitamins and minerals;

(d) from a trace to 7 percent of an edible oil or animal fat source;

(e) the balance of the gravy system being water in an amount from a trace to 90 percent of water—all percentages of II. being based on the weight of the gravy mix;

said moist pet food comprising 10 percent to 50 percent by weight of the blood-based, meat-like chunks and from 50 percent to 90 percent of the gravy system said pet food being readily pourable.

4,247,563

LABELLED PACKAGE FOR LOW TEMPERATURE USE

Paul E. Sample, Wilmington, Del., assignor to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 927,049, Jul. 24, 1978, abandoned. This application Oct. 23, 1979, Ser. No. 87,474

Int. Cl.³ B65C 1/00

U.S. Cl. 426-87

5 Claims

1. A labelled package comprising a package containing a product at a low temperature, having a wrapping of ionomer film and a label including a paper label face and an ionomer adhesive layer

wherein the ionomer adhesive layer is fused to the wrapping with said wrapping at said temperature to yield a single layer of ionomer, the adhesion forces being such that, when the label is pulled from the package while the package contents are at a temperature of about -30° Centigrade, there is fiber tear over at least 50 percent of the area of the label face.

4,247,564

PACKAGE FOR LAVER-WRAPPED RICE-BALL

Akitomi Tezuka, 15-10, Kinuta 3-Chome, Setagaya-ku, Tokyo, Japan

Filed Mar. 9, 1979, Ser. No. 18,860

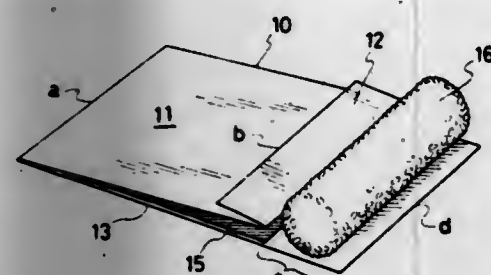
Int. Cl.³ B65D 75/02; B65B 25/08, 11/00

U.S. Cl. 426-115

3 Claims

1. A package for wrapping a moist comestible with a dry laver and substantially isolating the comestible from the laver comprising a long sheet of moisture-proof material folded at a central region thereof to form first and second juxtaposed portions, said first juxtaposed portion being below said second juxtaposed portion and longer than said second juxtaposed portion as measured from said central region toward the respective remote ends of said first and second portions to form an end region on said first portion, side edges of said first and second portions being sealed together to form, with said fold, a pocket substantially closed on three sides and open at a fourth

side adjacent said remote ends; a dry layer within said pocket and extending from said open side to overlap at least part of said end region of said first portion extending beyond said remote end of said second portion; a transversely elongated moist comestible on said end region of said first portion, the extent of said end region of said first portion beyond said remote end of said second portion being substantially equal to



the width of said comestible, the length of said comestible being substantially equal to the width of said sheet, said juxtaposed portions of said sheet with the portion of said layer therebetween being wrapped around said elongated comestible to substantially enclose said comestible with only the end portion of said layer extending from said pocket being in contact with said comestible.

4,247,565

DRAWABLE SULPHUR RESISTANT CAN COATING

Henry W. Raich, Crystal Lake, and Kenneth E. Carlson, Des Plaines, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Jun. 15, 1979, Ser. No. 48,882

Int. Cl.³ B65D 25/14; B05D 1/38, 1/40; B32B 15/08

U.S. Cl. 426—126

10 Claims

1. A coating system for the inside of a drawn container for carrying sulphur bearing foods including a blank to be drawn into a container having applied thereover an epoxy phenolic primer base coat containing aluminum pigmentation being a relatively small fraction by weight of resinous solids therein and

a top coating applied thereover being an oleo resinous material having zinc oxide powder being a relatively small fraction by weight of solids therein.

4,247,566

METHOD OF PRODUCING DEODORIZED TEXTURED PROTEIN AND TEXTURED PROTEIN PRODUCED THEREBY

Kaoru Inagami, Tokyo; Takeshi Terabayashi, Hino; Kazutaka Ohmura, Kashiwa; Masao Haruna, Tokyo, and Tetsuji Yuda, Yokohama, all of Japan, assignors to The Calpis Food Industry Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1979, Ser. No. 51,059

Claims priority, application Japan, Dec. 26, 1978, 53-159277

Int. Cl.³ A23J 3/00

U.S. Cl. 426—276

13 Claims

5. A method of continuously producing granular or fibrous textured vegetable protein comprising:

providing a hydrostatic aqueous liquid capable of absorbing unsatisfactory components from the vegetable protein and having a hot zone at a temperature of 110°–200° C. of height between 15 and 150 cm;

providing aqueous liquid slurry containing said vegetable protein in an amount of 0.4–30 W/W%, the protein content of solids in said slurry being at least 40 W/W%, and the total solids in said slurry being in the range of 1–35 W/W%;

gently injecting said aqueous liquid slurry through an orifice into said hydrostatic aqueous liquid at a location at the bottom of said heated zone of height 15–150 cm, and under conditions such as to prevent substantial distur-

bance of the injected slurry in said hot zone, and wherein the pH is maintained at 4.0–6.5; and texturizing the protein into granular or fibrous structure while it floats upwardly through said hot zone of said hydrostatic aqueous liquid while denaturation occurs.

4,247,567

METHOD FOR MAKING A RICE-CRACKER OR SENBEI

Denji Momiyama, Toyohashi, Japan, assignor to Yamashiro Seika Kabushiki Kaisha, Aichi and Sakata Beika Kabushiki Kaisha, Yamagata, both of Japan

Filed Jan. 24, 1979, Ser. No. 6,551

Claims priority, application Japan, Jan. 30, 1978, 53-9123

Int. Cl.³ A21D 6/00

U.S. Cl. 426—302

1 Claim



1. A method of making a non-planar rice cracker comprising the steps of providing a thin plate-like planar blank of conventional rice paste having a thickness in the range of 0.2 mm to 2.0 mm and a water content of at least 4%, applying a coating of salt water having a salt content of not less than 5% or more than 20% to one surface of said planar blank of rice paste to form a saline coating film and baking said planar blank of rice paste under a condition so that the water in the saline coating film does not substantially permeate inwardly so that the water content of the coated surface is different from that of the other non-coated surface to effect a curling of the planar blank into a curved shape.

4,247,568

PREPARATION OF LOW-CALORIE FOOD INGREDIENTS FROM STARCH

Roy Carrington, and George Halek, both of Cliftonville, England, assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 703,629, Jul. 8, 1976, abandoned. This application Jul. 25, 1978, Ser. No. 927,858

Claims priority, application United Kingdom, Jul. 21, 1975, 30401/75

Int. Cl.³ A21D 2/16

U.S. Cl. 426—321

14 Claims

1. A process for preparing a non-digestible food additive which comprises heating a mixture of starch with a member selected from the group consisting of edible di- and tribasic carboxylic acids and anhydrides thereof at a temperature of from about 140° to 220° C. under reduced pressure for a period sufficient to form a non-digestible product as determined by its resistance to the action of amylolytic enzymes, said mixture having prior to and during said heating a moisture content of less than 5% by weight of water and containing from 1 to 25% by weight of said edible acid or an equivalent amount of anhydride thereof based on the total weight of said mixture before said heating.

4,247,569

ANTIBACTERIAL AGENTS

Kunio Hata, Soka; Motoo Matsukura, Tokyo; Satoshi Hatano, Tokyo; Kihachiro Ohshima, Tokyo; Isao Kano, Tokyo; Hiroaki Umeda, Tokyo, and Haruo Awaji, Tokyo, all of Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 969,532, Dec. 14, 1978, abandoned, which is a division of Ser. No. 893,450, Apr. 4, 1978, abandoned. This application Oct. 2, 1979, Ser. No. 81,189

Claims priority, application Japan, Apr. 7, 1977, 52-39761

Int. Cl.³ A23L 3/34

U.S. Cl. 426—335

6 Claims

1. A food containing an antibacterial agent of the formula



wherein R and R' are hydrogen or an element of the alkali metal group and n is an integer ranging from 11 to 14 inclusive in a quantity of from 0.005 to 0.1% by weight.

4,247,570

PROCESS FOR THE DECAFFEINATION OF COFFEE

Kurt Zosel, Oberhausen, Fed. Rep. of Germany, assignor to Studiengesellschaft Kohle mbH, Kaiser-Wilhelm Platz, Fed. Rep. of Germany

Filed May 19, 1977, Ser. No. 798,744

Claims priority, application Austria, Aug. 4, 1976, 5769/76; Oct. 20, 1976, 7806/76; Dec. 14, 1976, 9248/76

Int. Cl.³ A23F 5/20

U.S. Cl. 426—481

18 Claims

1. In the process for the decaffeination of coffee which comprises contacting the coffee with water-moist carbon dioxide above its critical temperature and critical pressure to effect removal of caffeine therefrom, the improvement which comprises during said contacting maintaining the coffee admixed with an adsorbent for caffeine for take-up of caffeine from the carbon dioxide by the adsorbent.

4,247,571

3-METHYL-1,2,4-TRITHIANE AS A FLAVORING INGREDIENT

Ivon Flament, Petit-Lancy, Switzerland, assignor to Firmenich SA, Geneva, Switzerland

Filed Nov. 22, 1978, Ser. No. 963,127

Claims priority, application Switzerland, Dec. 6, 1977, 14890/77

Int. Cl.³ A23L 1/226

U.S. Cl. 426—535

4 Claims

1. A method for the aromatization of foodstuffs, animal feeds, and beverages, which method comprises adding a small but flavoring effective amount of 3-methyl-1,2,4-trithiane to impart a roasted and grilled note thereto.

4,247,572

FLAVORING WITH MIXTURES OF IONONES

Wilhelm Pickenhagen, Chavannes-des-Bois, and Alistair Y. Smith, Geneva, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Jun. 8, 1979, Ser. No. 46,658

Claims priority, application Switzerland, Jun. 15, 1978, 6527/78

Int. Cl.³ A23L 1/235

U.S. Cl. 426—538

4 Claims

1. A method for imparting, improving or enhancing the fruit flavour character of foodstuffs or beverages which method comprises incorporating in said foodstuffs or beverages a composition consisting essentially of α-dihydroionone in admixture with α-ionone and β-ionone, in which composition the respective proportions of the three constituents are about 1:1:1 to 4:2:0.1 by weight of α-ionone:β-ionone:α-dihydroionone.

4,247,573

PROTEIN BINDER IN FOOD COMPOSITIONS

E. Donald Murray, Winnipeg; Terrence J. Maurice, Colborne, and Larry D. Barker, Cobourg, all of Canada, assignors to General Foods, Limited, Toronto, Canada

Filed Mar. 20, 1979, Ser. No. 22,097

Claims priority, application Canada, Mar. 23, 1978, 299713

Int. Cl.³ A23L 1/32; A23J 3/00

U.S. Cl. 426—656

9 Claims

1. In a food composition comprising a foodstuff and egg white as a food component binder, the improvement which comprises substituting at least a binding-effective amount of at least one protein micellar mass for at least part of said egg white, said protein micellar mass being formed by a process which comprises:

(a) extracting protein from proteinaceous material with an aqueous food grade salt solution at a temperature of about 15° to about 35° C., a salt concentration of about 0.2 to about 0.8 ionic strength and a pH of about 5.5 to about 6.3 to form a protein solution,

(b) diluting said protein solution to an ionic strength less than about 0.1 to cause precipitation of a protein isolate in the form of said protein micellar mass, and

(c) collecting the precipitated protein micellar mass.

4,247,574

METHOD OF PRODUCING TEXTURED PROTEIN AND TEXTURED PROTEIN PRODUCED THEREBY

Makoto Utsa, Niiza; Kazuhisa Yamada, Tokyo; Hidemoto Kamada, Tokyo, and Kaoru Inagami, Tokyo, all of Japan, assignors to The Calpis Food Industry Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 51,060

Int. Cl.³ A23J 3/00

U.S. Cl. 426—656

22 Claims

1. Method of producing an accumulated textured protein which comprises: injecting an aqueous liquid containing a vegetable protein content of 1–30 W/W% through an orifice into a treating area where an interface is formed by a lower aqueous liquid layer and an upper layer of one selected from the group consisting of gas, non-aqueous liquid and solid, and the protein is caused to be denatured under the condition of pH 4.0–6.5 and at a temperature of 110°–200° C., while allowing the protein to accumulate at the interface, thereby texturizing the protein into accumulated structure.

4,247,575

METHOD OF SILVER PLATING A TOOTH STRUCTURE

John J. O'Connell, and William R. Pike, both of Tustin, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Oct. 29, 1979, Ser. No. 89,182

Int. Cl.³ A61K 5/02; C23L 3/02

U.S. Cl. 427—2

13 Claims

1. A method for plating silver onto a dentin surface, comprising the steps of coating a dentin surface with an aqueous solution of a silver salt to produce a silver-protein complex upon said surface, photoreducing the silver of said complex to form a blackened discontinuous base layer of complexed metallic silver bonded to said surface, and thereafter electrolessly plating a continuous silver sealing layer upon said base layer by utilizing the silver of said silver-protein complex to catalyze the chemical reduction of the silver ions of said plating solution.

4,247,576

PROCESS FOR PREPARING SILICATE COATED POLYPROPYLENE FILM

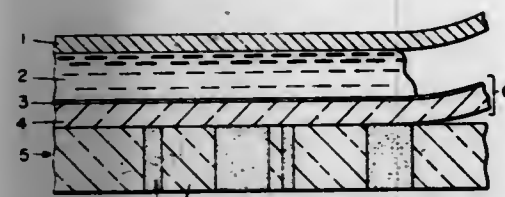
Abraham Kutner, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 9, 1979, Ser. No. 19,942

Int. Cl.³ B05D 3/06

U.S. Cl. 427-40

7 Claims



1. The process of preparing cover film used to separate the negative from the liquid photopolymer when preparing plastic printing plates comprising oriented polypropylene film coated with a submicron coating of an alkali metal silicate, which silicate coating preferentially adheres to the hardened photopolymer when the cover film is separated from the hardened photopolymer, which comprises coating oriented polypropylene film having a thickness of from about 0.25 to about 2.0 mils with an aqueous colloidal solution of an alkali metal silicate containing from about 1% to about 20% by weight of alkali metal silicate having an average particle size of no more than 2 millimicrons and from about 0.1% to about 5% by weight of at least one anionic or nonionic type surfactant and drying the thus coated film.

4,247,578

INTERPENETRATING DUAL CURE RESIN COMPOSITIONS

Earl Skinner, Wayzata; Marvin Emeott, Lake Elmo, and Allan Jevne, Anoka, all of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Continuation of Ser. No. 759,311, Jan. 14, 1977, Pat. No. 4,128,600. This application Sep. 25, 1978, Ser. No. 945,373

Int. Cl.³ C08L 75/06

U.S. Cl. 427-44

13 Claims

1. A method for forming an interpenetrated urethane linked coating composition on a substrate involving the steps of radiation and thermal curing by:

(a) preparing a mixture containing:

(1) from about 40% to about 90% by weight of a saturated polyol; and

(2) from about 10% to about 60% by weight of a reactive diluent selected from the group consisting of the fully substituted polyacrylates and polymethacrylates of poly-functional alcohols, 2-ethylhexyl acrylate, isodecyl acrylate, N-vinyl-2-pyrrolidone, styrene, divinylbenzene and vinyl acetate, diallyl maleate, and mixtures thereof; and

(3) from about 80% to about 120% on a hydroxyl-isocyanate equivalent basis of a polyisocyanate;

(b) applying the mixture to a substrate subjecting the coating so formed to sufficient radiation to polymerize the reactive diluent thereby partially curing the coating; and

(c) then exposing the partially cured coating of (b) to sufficient thermal energy to form the urethane link, thereby forming the interpenetrated cured coating on the substrate.

4,247,579

METHOD FOR METALLIZING A SEMICONDUCTOR ELEMENT

Bernard R. Tuft, Scipio Center, N.Y., assignor to General Electric Company, Auburn, N.Y.

Filed Nov. 30, 1979, Ser. No. 98,907

Int. Cl.³ B05D 5/12; H01L 21/306

U.S. Cl. 427-91

9 Claims

1. In a method for making a semiconductor device having a metal electrode thereon, the steps of:

mechanically abrading the surface of the semiconductor device;

plasma etching said surface; and

applying said metal electrode.

4,247,580

REFINISHING OF THE SURFACES OF BODIES OF A THERMOPLASTIC RESIN

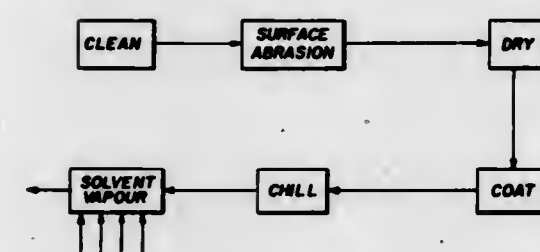
Andy P. Chao, New Westminster, Canada, assignor to Stuart Plastics Ltd., New Westminster, Canada

Filed Feb. 6, 1978, Ser. No. 875,243

Int. Cl.³ B32B 35/00

U.S. Cl. 427-140

9 Claims



1. A process for applying a new finish to the surface of a body made from acrylo-butadiene-styrene (ABS) polymer, the process comprising coating the body with a layer of ABS, cooling at least the surface of the coated body to a temperature

4,247,577

METHOD FOR PREPARING SHAPED ARTICLES OF A VINYL CHLORIDE RESIN HAVING IMPROVED SURFACE PROPERTIES

Kiyoshi Imada, Omiya; Susumu Ueno, and Osamu Sodeyama, both of Ibaragi, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed May 23, 1979, Ser. No. 41,625

Claims priority, application Japan, May 31, 1978, 53-65423

Int. Cl.³ B05D 3/14

U.S. Cl. 427-40

9 Claims

1. Method of making a shaped polymeric article composed of a homopolymer of vinyl chloride or a copolymer of vinyl chloride and vinyl acetate having a covering layer of a cured organopolysiloxane composition which comprises: (a) subjecting the shaped polymeric article to a treatment with low temperature plasma of a gas, having no polymerizability in the plasma condition, selected from the group consisting of argon, carbon monoxide, oxygen and nitrogen and mixtures thereof, the pressure of the gas being in the range of 0.001 Torr to 10 Torr, for a time of about 1 minute to about 10 minutes; (b) providing a covering layer of a curable organopolysiloxane composition onto the surface of the shaped article having been subjected to the treatment with low temperature plasma, said organopolysiloxane composition being curable at a temperature at which vinyl chloride resin undergoes no thermal degradation, and (c) subjecting the shaped article with the covering layer of the curable organopolysiloxane composition to curing at room temperature of the curable organopolysiloxane composition.

in the range about 32° F. to about 40° F. then contacting the surface of the body with a solvent vapor for a time sufficient to flow the surface but not to warm appreciably the inner layer of the body.

4,247,581

METHOD OF COATING WITH FILM-FORMING SOLIDS

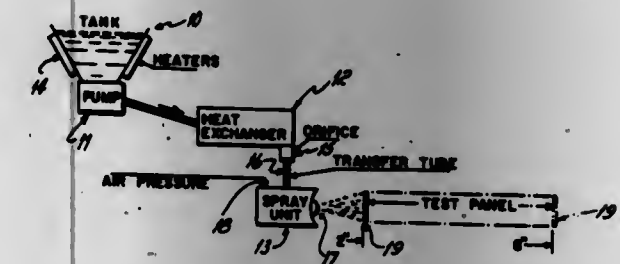
Walter H. Cobbe, Jr., Amherst; Robert G. Shong, Avon Lake, and William R. Rehman, Vermillion, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 14, 1977, Ser. No. 842,265

Int. Cl.³ B05D 3/02, 1/02

U.S. Cl. 427-373

39 Claims



35. A method for coating a surface with film-forming solids comprising: providing a liquid composition containing thermosetting film-forming solids and a liquid foaming agent, heating said composition to a flowable solubilized state, conveying said composition, forming a stream of relatively stable liquid foam composition wherein the ratio of volume of said composition occupied after foaming to volume occupied before foaming of said liquid ranges up to about 50:1 by volume, then applying an external atomizing force to said stream to disintegrate said foam into atomized particles of said solids composition, spraying said atomized composition towards said surface, disintegrating said foam during said conveyance, and collecting said solids on said surface for the formation of a film of said solids on said surface.

4,247,582

ADHESIVE SPLICING TAPE

Rudolf Hanke, Monheim, Fed. Rep. of Germany, assignor to Hama Hamaphot K.G. Hanke & Thomas, Monheim, Fed. Rep. of Germany

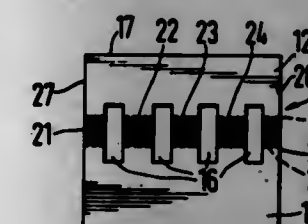
Filed Aug. 16, 1976, Ser. No. 714,766

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1975, 2550259

Int. Cl.² A61F 13/02; B65D 65/28; G09F 3/00

U.S. Cl. 428-43

1 Claim



1. A splicing tape for splicing together a pair of film sections arranged in end-to-end aligned butting relationship with each section having a row of regularly-spaced sprocket holes and a longitudinally-extending sound track comprising:

a unitary blank including oppositely-facing upper and lower leaves each having an adhesive coating on one face thereof for adherence to the opposite respective gloss and coat sides of the to-be-spliced film sections adjacent butting ends thereof, and a connecting tearable leaf disposed

between the upper and lower leaves with a tear line serving as the line of connection between the tearable leaf and each adjacent of the upper and lower leaves, each of the leaves having apertures for registering with the film sprocket holes, the blank being first foldable in hairpin fashion around the butting ends of and with the apertures in register with the sprocket holes of the to-be-spliced film sections for effecting adherence of the upper and lower leaves to the adjacent end portions of the gloss and coat sides of the to-be-spliced film sections, and the tearable leaf being then removable by tearing along the tear lines with the leaves remaining in adhered positions and exposing the aligned end portions of the sound tracks.

4,247,583

INSULATING STRUCTURE WITH POLYGONAL CELLS

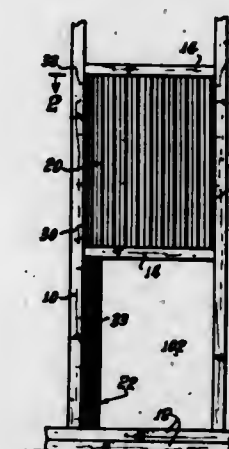
Paul D. Roy, 2365 Hearietta Ave., La Crescenta, Calif. 91214

Filed Oct. 30, 1978, Ser. No. 956,064

Int. Cl.³ B32B 3/12

U.S. Cl. 428-116

9 Claims



1. An insulating structure for positioning between a heat source and a sink for same, comprising: a plurality of cell-defining sheets of flexible laminated material, each said sheet comprising a layer of a first membranous material of low thermal conductivity and a layer of a second membranous material of high radiant reflectivity, said sheets being arrayed in an aligned stack closely spaced when in a contracted configuration of the structure, a pair of relatively rigid flange elements attached at the limit ends of said stack, and adhesive means in parallel strips spaced apart on the sheets and joining each adjacent pair of laminated sheets, whereby upon relative displacement of the flange elements said sheets are spread to an expanded condition of the structure to define cells of substantially polygonal cross-section in a honeycomb-like structure with the adjacent sheets secured together along seams defined by the adhesive means to provide successive thermal barriers between the heat source and the heat sink.

4,247,584

COMPOSITION COMPRISING A BLEND OF EVA POLYMERS HAVING DIFFERING VA CONTENTS; FILMS AND LAMINATES MADE THEREFROM BY EXTRUSION; AND HEAT-SEALED FOOD BAGS MADE FROM THE LAMINATES

Almar T. Widiger, Parma, Ohio; Charles C. Hwo, Appleton, Wis.; Norman G. Gaylord, New Providence, N.J., and Pang-Chia Lu, Appleton, Wis., assignors to American Can Company, Greenwich, Conn.

Filed May 22, 1979, Ser. No. 41,306

Int. Cl.³ B65D 65/40, 75/06, 75/12, 85/50

U.S. Cl. 428-35

49 Claims

1. A bag for packaging meat, comprising a laminated film

fabricated into a bag by heat sealing together confronting portions of an outer layer, said film being a laminate comprised of: a molecularly oriented base layer of a vinylidene chloride-vinyl chloride copolymer containing about 90 to 70 weight percent of vinylidene chloride and about 10 to 30 weight percent of vinyl chloride; and a molecularly oriented outer layer of an EVA blend, said blend being comprised of about 10 to 90 weight percent of a low EVA random copolymer containing about 2 to 12 percent of vinyl acetate and having a melt index of about 0.2 to 10, and about 90 to 10 weight percent of a high EVA random copolymer containing about 8 to 30 percent of vinyl acetate and having a melt index of about 0.2 to 5, the percent of vinyl acetate in said low copolymer being below that in said high copolymer, and said blend having a weight average vinyl acetate content of about 4 to 15 percent.

4,247,585

AUTOMOTIVE BODY ASSEMBLY (FASCIA SUPPORT WIRE)

Richard E. Hulten, Lake Orion, Mich., assignor to McCord Corporation, Detroit, Mich.

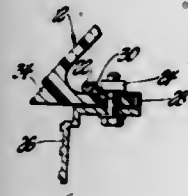
Continuation of Ser. No. 960,878, Nov. 15, 1978, abandoned.

This application Jun. 4, 1979, Ser. No. 44,919

Int. Cl.³ B60R 13/04

U.S. Cl. 428—131

7 Claims



1. A flexible panel subassembly for installation on an automotive vehicle body comprising: a flexible plastic component defining a fascia portion of the exterior of an automotive vehicle, said component having an exterior surface and an interior hidden surface, an elongated rod-like stiffening means disposed in a stiffening position along said interior surface for stiffening said component, said component including retaining means for allowing said stiffening means to be snapped into and retained in said stiffening position, said stiffening means being flexible in a direction transverse to its length but less flexible than said component and wherein said retaining means allows relative movement between said stiffening means and said component in a direction longitudinally of said stiffening means.

4,247,586

NOISE REDUCING LINER PANELS FOR VEHICLES

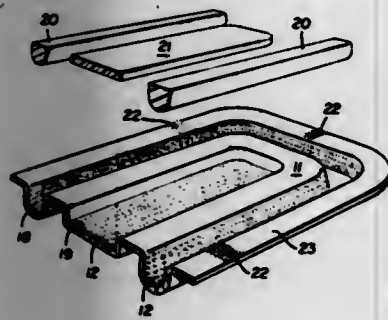
Morris Rochlin, 1220 Morse St., Royal Oak, Mich. 48068

Filed Jul. 16, 1979, Ser. No. 57,907

Int. Cl.³ B32B 5/18

U.S. Cl. 428—138

7 Claims



5. A noise reduction liner panel for applying upon a support

surface, such as a headliner and an interior panel for application upon interior surfaces of a motor vehicle, comprising: a substantially rigid, relatively thin sheet of plastic material which is surface contoured to pre-determined cross-sectional shapes and whose peripheral edge is of pre-determined shape for application upon a support surface, with the sheet having an outer face arranged at the support surface, and an inner face; numerous perforations formed through the sheet in predetermined areas, for sound absorption; said sheet inner face being covered with a relatively thin layer of a flexible foam plastic material which in turn is covered with a thin, flexible fabric, with the fabric being bonded to the foam plastic layer, which is bonded to said sheet inner face, so that the fabric forms the interior, exposed surface of the panel; said panel being permanently deformed in pre-selected shapes including areas of depressions which extend inwardly of the panel relative to the rigid sheet outer face; with the depressions formed in said perforated areas; and said depressions being filled with separate sound absorbing material members; whereby the fabric covered inner surface of the panel presents a pleasing aesthetic appearance, while the holes in the sheet, particularly where any of such holes are distorted in shape, relative to other of such holes, are concealed from view, and the sound absorbing characteristics of the panel are increased in the perforated areas.

4,247,587

FLOOR COVERING

Michel Cherault, Garges-Les Gonesse, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

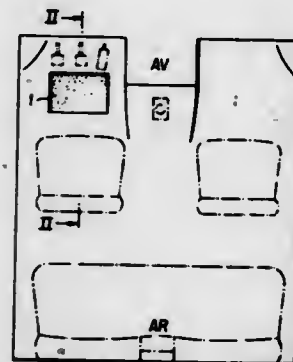
Filed Jan. 10, 1979, Ser. No. 2,409

Claims priority, application France, Jan. 10, 1978, 78 00489

Int. Cl.³ C25D 13/00; D06N 7/04

U.S. Cl. 428—155

8 Claims



1. A process for providing a plastisol covering on a metal surface so as to form, in situ, a floor covering in the passenger space of an automotive vehicle comprises: dispersing polyvinyl chloride powder in a liquid solvent of an ester type, virtually uncharged, so as to form said plastisol; applying a priming coating by electrophoresis and firing said floor; spraying said plastisol by means of a spray-gun on the floor of the vehicle at the time of its passage into a painting conveyor to form said covering, imparting a crackled appearance to said covering as a function of the choice of spray nozzle and gas pressure employed during spraying, and baking said covering at a temperature of 155° to 170° C. for approximately 30 minutes.

2. A floor covering made by the process of claim 1.

4,247,588

IMPROVED THERMOPLASTIC COATED PAPERBOARD WEB

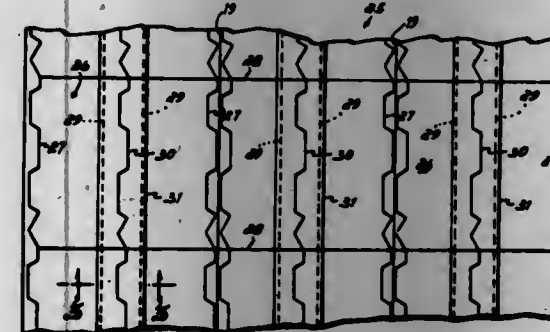
Kenneth Thompson, Waynesville, N.C., and Richard C. Ihde, Parma Heights, Ohio, assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 756,354, Jan. 3, 1977, abandoned, which is a continuation of Ser. No. 229,350, Feb. 25, 1972, abandoned, which is a division of Ser. No. 856,360, Sep. 9, 1969, abandoned, which is a division of Ser. No. 530,119, Feb. 25, 1966, Pat. No. 3,482,278. This application Jun. 23, 1978, Ser. No. 918,689

Int. Cl.² B05D 5/00; B32B 3/02; B29B 5/00; B29F 2/06

U.S. Cl. 428—157

19 Claims



1. An article adapted for the manufacture of thermoplastic coated paperboard carton blanks from which cartons can be formed, said cartons having a bottom structure formed by folding panels on a major horizontal bottom score line, the article consisting of:

a. an elongated paperboard web of indeterminate length having a predetermined width which is sufficient to accommodate a plurality of longitudinally extending adjacent rows of unformed carton blanks thereacross,

at least one longitudinally extending area in said web including portions of unformed blanks in two of said adjacent rows, and within which area the entire bottom structure including the major horizontal score lines and folding panels for each of the blanks in said two adjacent rows are to be formed,

a unitary extruded polyethylene film coating one said of said web, said film having a plurality of longitudinally extending strips of varying thickness, a strip of greater thickness covering said longitudinally extending area of said web such that said strip of greater thickness is of a width to cover the entire to be formed bottom structures including the major horizontal score lines and folding panels of said unformed blanks in said two adjacent rows, and at least one strip of lesser thickness covering the remainder of said web,

a coating on another side of said web, and said coated web being rolled upon itself to form a generally cylindrical roll.

4,247,589

DECORATIVE OXIDATION PROCESS AND ARTICLE

Donald J. Greenspan, 235 Pavilion Ave., Riverside, N.J. 08075

Filed Dec. 16, 1977, Ser. No. 861,245

Int. Cl.³ B32B 15/04; B05D 1/36

U.S. Cl. 428—209

34 Claims

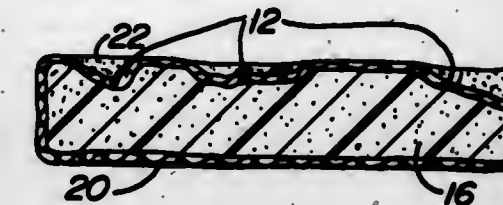
1. A method for making a decorative article comprising the steps of:

a. providing a base on which said decorative article is formed,

b. securing a layer of particles of an oxidizable metal to said base,

c. selectively oxidizing said metal at least while said particles are in position in said layer, said oxidizing comprising wetting the metal particles with a liquid corrosive to said metal to cause formation of oxides on at least portions of said particles to produce color changes in the layer and to

cause bridging by oxide formation between adjacent particles, and
d. selectively terminating the oxidizing of said metal by removing said liquid to set the color in the layer with the desired decorative effect having zones of different colors.



29. A decorative article comprising a base, a layer of metal particles secured to said base, said metal particles being in various stages of oxidation, whereby the layer exhibits predetermined color patterns characteristic of the stages of oxidation, said particles forming a lattice by bridging of the oxides of the metal between adjacent particles, and said metal particles and the oxides thereof are sealed against further oxidation.

4,247,590

CERAMIC PLATE FOR SUPPORTING A SEMICONDUCTOR WAFER

Massao Hayakawa, Kyoto; Takamichi Maeda, Yamatokoriyama; Teruo Horii; Masao Kumura, both of Nara, and Yasunori Chikawa, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

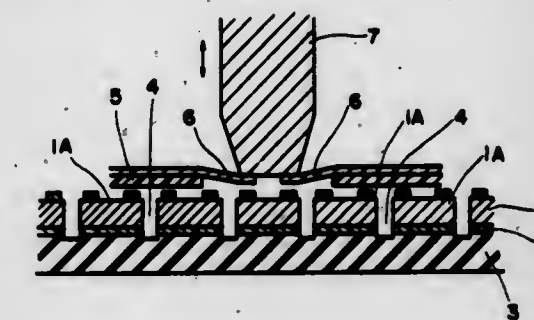
Filed Dec. 8, 1977, Ser. No. 858,636

Claims priority, application Japan, Dec. 8, 1976, 51-165080[U]

Int. Cl.³ B32B 3/00, 3/26

U.S. Cl. 428—210

5 Claims



1. A supporting plate supporting a semiconductor wafer during the fabrication of a semiconductor device in at least the thermal bonding and the dicing sections of the device wherein said semiconductor wafer is fixed to said supporting plate by a heat-melting adhesive disposed therebetween, said semiconductor wafer being diced into a plurality of semiconductor chips, said supporting plate comprising a porous ceramic plate having a low thermal conductivity to prevent melting of said heat-melting adhesive between said semiconductor chips and supporting plate where said thermal bonding operation is not applied, said porous ceramic plate also being impregnated with or painted with a resinous material, said resinous material exhibiting a low thermal conductivity and functioning to prevent permeation of said adhesive into said plate.

4,247,591

FUSIBLE COMPOSITE BINDING STRAP

Russell J. Gould, Mount Prospect, Ill., assignor to Signode Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 788,119, Apr. 18, 1977, abandoned. This application Mar. 27, 1978, Ser. No. 889,513

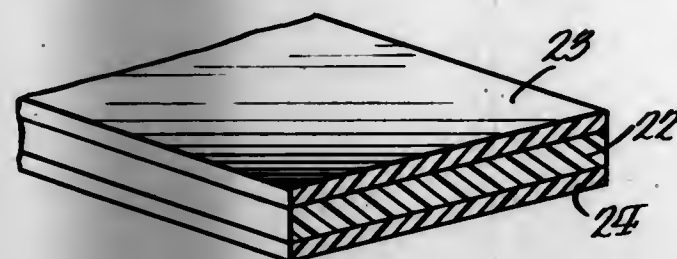
Int. Cl.² B32B 7/02

U.S. Cl. 428—212

27 Claims

1. A sheetform, crystalline thermoplastic polymer article of

substantially uniform cross-section and having improved heat-weldability consisting essentially of a laminar composite in which a major thickness portion is constituted by said polymer having a predetermined average molecular weight and a minor thickness portion is constituted by the same polymer having a substantially higher average molecular weight than the polymer in said major thickness portion; said minor thickness portion



tion being unitary with said major portion and defining a heat-weldable face of said article, said thickness portions having similar planar crystalline orientation and the average molecular weight of the polymer constituting said minor thickness portion being at least about 20 percent higher than the average molecular weight of the polymer constituting said major thickness portion.

4,247,592

METHOD FOR TREATING SYNTHETIC TEXTILES WITH AMINOALKYL-CONTAINING POLYDIORGANOSILOXANES

Robert E. Kalinowski, Auburn, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 764,674, Feb. 2, 1977, abandoned. This application Mar. 12, 1980, Ser. No. 129,539
Int. Cl.³ B32B 27/28; B05D 3/02

U.S. Cl. 428-266

5 Claims

1. A method for treating a fire-retardant synthetic textile without decreasing its fire-retardancy rating, said method comprising applying to the surface of said textile a liquid composition consisting essentially of a triorganosiloxane-endblocked polydiorganosiloxane containing an average of up to 100 dimethylsiloxane units and two nitrogen-containing siloxane units per molecule, said nitrogen-containing siloxane units each bearing one amino radical of the formula $-R'(NHCH_2CH_2)_nNHR''$ wherein n is 0 or 1, R' denotes a lower alkylene radical and R'' denotes a hydrogen radical or a lower alkyl radical, all other organic radicals in the polydiorganosiloxane being methyl radicals, and heating the applied triorganosiloxane-endblocked polydiorganosiloxane, thereby providing a fire-retardant synthetic textile having durably affixed to the surface thereof a crosslinked polydiorganosiloxane.

5. A synthetic textile produced by the method of claim 1.

4,247,593

MAGNETIC RECORDING MEDIUM AND METHOD OF PREPARING THE SAME

Junetsu Seto, Yokohama, and Toru Nagai, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1977, Ser. No. 808,620

Claims priority, application Japan, Jan. 22, 1976, 51-73424

Int. Cl.³ B32B 5/16, 9/00, 15/00

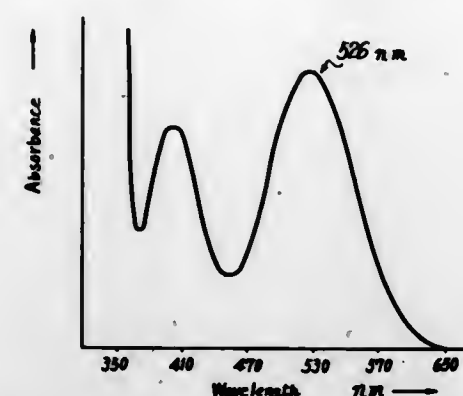
U.S. Cl. 428-328

8 Claims

2. A method of preparing a magnetic recording medium comprising the steps of:

- mixing magnetic powder in an organic solvent with a purified lecithin composition having a purity of at least 30% in an amount sufficient to cover substantially the entire surface of the magnetic powder particles with a monomolecular layer consisting substantially of lecithin;
- mixing the thus treated magnetic powder with a synthetic resin binder to form a magnetic paint, and

(c) applying said magnetic paint to a non-magnetic base to form a magnetic layer.



3. The method of claim 2 in which the lecithin composition has a purity of at least 50%.

4,247,594

ELECTRICALLY CONDUCTIVE RESINOUS COMPOSITION

Madilyn R. Shea, Lowell, Mass., and Earl A. Pike, Salem, N.H., assignors to Marshall & Pike Enterprises Inc., Salem, N.H.

Filed Apr. 30, 1979, Ser. No. 34,374

Int. Cl.³ B23P 1/04; C25F 1/00; B32B 15/08

U.S. Cl. 428-328

10 Claims

1. A composite comprising an insulating substrate base, and a layer of electrically conductive cured resinous composition on said base, said composition consisting essentially of an admixture of 25 to 70 weight percent, based on total resinous composition, copper flakes evenly distributed in a matrix of 100 parts epoxy resin containing from about 1 to 10 parts of a curing agent selected from the group consisting of dicyandiamide, a boron trifluoride-amine complex, a boron trichloride-amine complex, and mixtures thereof, wherein said resinous composition has been subjected to a momentary electrical potential between about 3 and 110 volts before becoming electrically conductive.

2. A method of preparing an electrically conductive resin composition on a substrate comprising the steps of admixing from about 25 to 70 percent by weight based upon resin composition of copper flakes with 100 parts epoxy resin and from about 1 to 10 parts of a curing agent, layering the admixture on an insulating substrate, curing the resin composition at a temperature above about 300° F. producing a non-conductive cured resin composition on the substrate, the improvement wherein the non-conductive cured resin composition on the substrate is subjected to a momentary electrical potential between about 3 and about 110 volts whereby an electrically conductive composition on an insulating substrate results.

4,247,595

THERMOSENSITIVE RECORDING MATERIAL

Minoru Nomura, Mishima; Susumu Iwata, Shizuoka, and Mituo Ono, Gotenba, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1979, Ser. No. 61,457

Claims priority, application Japan, Aug. 3, 1978, 53/94913

Int. Cl.³ B41M 5/18

U.S. Cl. 428-329

9 Claims

1. In a thermosensitive recording material comprising a support and a thermosensitive color-developing layer on said support, said thermosensitive color-developing layer comprising chromogenic substance, developing substance reactive with said chromogenic substance to develop a color, binder and inorganic filler, the improvement which comprises: said inorganic filler comprises hexagonal thin plate kaolin.

4,247,596

ELECTRICAL FIBER CONDUCTOR

Tin B. Yee, 719 Erskine St., NW., Huntsville, Ala. 35805

Filed May 10, 1979, Ser. No. 38,027

Int. Cl.³ B32B 15/00; B05D 5/12; D02G 3/00

U.S. Cl. 428-380

7 Claims

1. A process for preparing an electrical conductor of about 1 mil diameter for use in microelectronic circuitry, said process which employs a mirror forming solution from which a coating of metallic silver is deposited on a flexible fiber to render said flexible fiber conductive with a measured resistivity of about one ohm per centimeter of length comprising:

- providing a flexible, polymeric fiber selected from the group of flexible, polymeric fibers consisting of silk, polyacrylonitrile, regenerated cellulose, polyester, and polyamide which has a diameter of about 1 mil and which functions as a support for a silver coating that renders said flexible, polymeric fiber conductive;
- preparing a mirror forming solution from which a coating of metallic silver is deposited on said flexible, polymeric fiber, said coating being the metallic silver product deposited from the mirror forming solution prepared by combining an equal volume of a first silver nitrate solution with an equal volume of a second silver nitrate solution, said first silver nitrate solution prepared by dissolving about 5 grams of silver nitrate in a volume of about 300 milliliters of distilled water to which is added dilute aqueous ammonia to form a dark brown color which gradually disappears as additional aqueous ammonia is added, said volume of first silver nitrate solution filtered and combined with the required volume of distilled water to make a final volume of about 500 milliliters, said second silver nitrate solution prepared by dissolving about one gram of silver nitrate in a small volume of distilled water which is added to about 500 milliliters of boiling distilled water in a container, and then by dissolving about 0.83 grams of potassium-sodium tartrate in a small quantity of distilled water which is also added to said boiling water, said boiling water with the added volumes of solutions allowed to continue boiling until a gray precipitate collects as a powder on bottom of said container, then filtering said second silver nitrate solution while hot, adding distilled water to make a final volume of about 500 milliliters, and allowing said second silver nitrate solution to cool to room temperature prior to use;
- coating said flexible, polymeric fiber which is first suspended between support means, placed in a container, and covered with said mirror forming solution, said coating being deposited while said flexible, polymeric fiber is allowed to remain covered with said mirror forming solution in said container for a predetermined time period from about one half hour to about one hour, said container with said mirror forming solution being shaken several times per minute while coating is being perfected to yield a metallic silver coated fiber;
- removing said metallic silver coated fiber from said container and rinsing with distilled water to remove excess mirror forming solution;
- drying said metallic silver coated fiber in air or low temperature oven at about 50° C.;
- cutting said metallic silver coated fiber in required lengths for use as electrical conductor when connected in a microelectronic circuitry; and,
- measuring resistivity value of said length of said metallic silver coated fiber which should be near one ohm per centimeter of length.

4,247,597

ELECTROSCOPIC CARRIER PARTICLES HAVING A CARBOXYLIC ACID SURFACE TREATMENT

John J. Russell, Jr., Woodbury, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 811,773, Jun. 30, 1977, abandoned. This application Jun. 28, 1978, Ser. No. 920,208
Int. Cl.³ G03G 13/08, 13/09

U.S. Cl. 428-403

3 Claims

1. A carrier for use in a magnetic brush development unit for the electrophotographic development of latent electro-static images consisting of ferromagnetic particles having adhered to the surface thereof a monomolecular layer of a non-halogenated carboxylic acid.

4,247,598

APPLYING POWDER ARYLENE SULFIDE POLYMER COATINGS TO SUBSTRATES

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 29, 1979, Ser. No. 43,073

Int. Cl.³ B05D 3/02

U.S. Cl. 428-419

10 Claims

1. A method for coating arylene sulfide polymer onto a substrate comprising:

- preparing a powdered mixture of poly(arylene sulfide) with about 0.5 to about 10 parts by weight of a normally solid, resinous polymer of aliphatic mono-olefin per 100 parts by weight poly(arylene sulfide);
- applying a coating of said powdered mixture to the surface of said substrate; and
- curing said applied coating at a temperature in the range of about 400° F. to about 900° F.

4,247,599

COMPOSITE SHEET MATERIAL HAVING LOW EMITTANCE CHARACTERISTICS

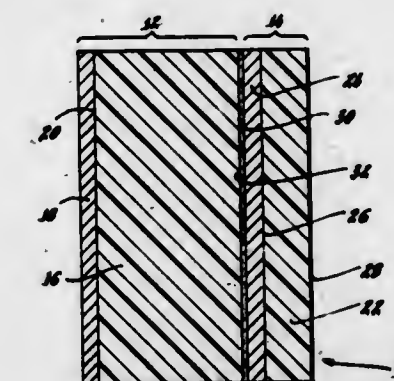
Thomas P. Hopper, Durham, Conn., assignor to Insulating Shade, Branford, Conn.

Filed Dec. 26, 1978, Ser. No. 972,734

Int. Cl.³ E06B 9/08; E04B 1/62; G02B 5/20; B32B 15/08

U.S. Cl. 428-458

23 Claims



1. A composite flexible, rollable sheet material having a low emittance characteristic at both of its outer surfaces for limiting radiant energy transmission therethrough comprising: a base layer of flexible, rollable, high strength, tear resistant material, an outer layer, disposed in intimate contact with one surface of said base layer, having a low emittance characteristic; a protective layer of flexible, rollable material dissimilar from said base layer material and substantially transparent to radiant energy in the infrared range of the energy spectrum; an intermediate layer disposed in intimate contact with one surface of said protective layer, also having a low emittance characteristic; and

bonding means for intimately joining said intermediate layer to said base layer.

4,247,600 METALLIZED PLASTIC CAMERA HOUSING AND METHOD

Iwao P. Adachi, Westminster, Calif., assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1978, Ser. No. 928,802

Int. Cl.³ B21C 37/00; C25D 7/04

U.S. Cl. 428—607

11 Claims



1. An improved fiber reinforced plastic article having an exterior decorative metal coating formed by a process of preliminary preparation of the plastic surface with a gas plasma etching comprising:

an article substrate having at least one portion formed from a molded plastic material having a gas plasma etched surface, the surface configuration being characteristic of gas plasma etching for a sufficient period of time to deteriorate the cross linkage of bonds between the plastic polymers adjacent the surface without outgassing any significant material to effect the subsequent metal coating, and an exterior metallized coating on the gas plasma etched surface including a first layer adjacent the plastic material of a first metal transitional element and a second exterior layer on the first metal transitional element layer of a second metal transitional element.

10. In an improved plastic camera housing of fiber reinforced plastic material such as a glass fiber filled polycarbonate plastic formed by a process of preliminary preparation of the plastic surface with plasma etching, the improvement comprising:

at least one portion of the camera housing having a plasma etched surface with a metallized coating, the coating including a first layer adjacent the plastic housing of approximately 1 to 3 microns of thickness of sputtered copper deposited in an inert subatmospheric environment and a second exterior layer of chromium of at least approximately 0.2 to 0.5 microns deposited in an inert subatmospheric environment onto the copper layer, the plastic housing portion surface has been plasma etched preparatory to receiving the first layer, the plasma etching was done for approximately two minutes at approximately 13.6 megahertz at about 500 watts in an environment of argon gas at approximately 10^{-2} torr.

4,247,601

SWITCHABLE MAGNETIC DEVICE

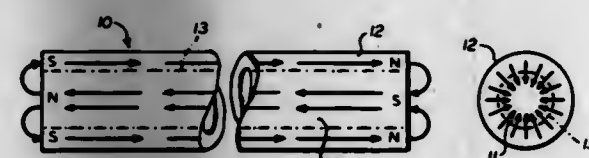
John R. Wiegand, Valley Stream, N.Y., assignor to The Echlin Manufacturing Company, Branford, Conn.

Continuation-in-part of Ser. No. 793,394, May 3, 1977, abandoned. This application Apr. 18, 1978, Ser. No. 897,483

Int. Cl.³ H01F 1/04

U.S. Cl. 428—611

19 Claims



1. A unitary magnetic device having first and second magnetic portions, both of said magnetic portions being capable of

retaining net magnetization after being subjected to a magnetic field, the net coercivity of said first portion being substantially greater than the net coercivity of said second portion, said first and second portions having substantially the same chemical alloy composition, said device having a reverse state wherein said first and said second portions have the opposite direction of magnetization and a confluent state wherein said first and said second portions have the same direction of magnetization, said first and second portions being separated solely by a magnetic interface when in said reverse state, said second portion having a coercivity sufficiently great so that when said device is in said confluent state, the magnetization of said first portion is inadequate to switch said device into said reverse state.

8. A unitary magnetic wire device having shell and core magnetic portions, both of said magnetic portions being capable of retaining net magnetism after being subjected to a magnetic field, the net coercivity of said shell portion being substantially greater than the net coercivity of said core portion, said shell and core portions having substantially the same chemical alloy composition, said device having a reverse state wherein said shell and said core portions have the opposite direction of magnetization and a confluent state wherein said shell and said core portions have the same direction of magnetization, said shell and core portions being separated solely by a magnetic interface when in said reverse state, said core portion having a coercivity sufficiently great so that when said device is in said confluent state, the magnetization of said shell portion is inadequate to switch said device into said reverse state.

15. A unitary magnetic wire device having a substantially uniform chemical composition comprising: an alloy of vanadium, cobalt and iron in amounts to provide, as a result of cyclical torsional cold working and subsequent heat treatment, shell and core magnetic portions, said shell and core portions being capable of retaining net magnetization after being subjected to a magnetic field, the net coercivity of said shell portion being substantially greater than the net coercivity of said core portion, said device having a reverse state wherein said shell and said core portions have the opposite direction of magnetization and a confluent state wherein said shell and said core portions have the same direction of magnetization, said shell and core portions being separated solely by a magnetic interface when in said reverse state, said core portion having a coercivity sufficiently great so that when said device is in said confluent state, the magnetization of said shell portion is inadequate to switch said device into said reverse state, an external field being required to switch said device to said reverse state.

4,247,602

SILVER ALLOY WIRE FOR JEWELRY CHAINS

Hans Krug, Pforzheim, and Kurt Heilmann, Eislingen, both of Fed. Rep. of Germany, assignors to Ferd. Wagner, Pforzheim, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 48,588

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826813

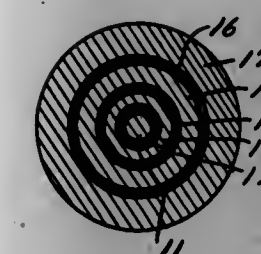
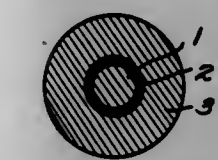
Int. Cl.³ B32B 15/02; B23K 35/28

U.S. Cl. 428—671

12 Claims

1. In a silver alloy wire suitable for the production of jew-

elry, especially jewelry chains consisting essentially of a solder containing nucleus and a jacket of silver of a silver alloy, the



improvement comprising said nucleus having a core of silver or silver alloy surrounded by an adjacent layer of brass.

4,247,603

PLUG-IN RECHARGEABLE BATTERY AND SOCKET THEREFOR

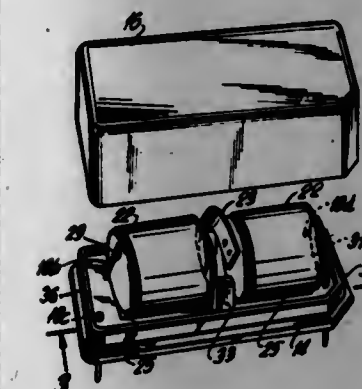
Edward A. Leffingwell, Gainesville, Fla., and Billy E. Stillwell, Portsmouth, Va., assignors to General Electric Company, Gainesville, Fla.

Filed Jan. 17, 1979, Ser. No. 4,202

Int. Cl.³ H01M 2/02, 2/10

U.S. Cl. 429—1

12 Claims



1. A battery compatible with printed circuit boards and the like comprising:

at least one electrochemical sealed, rechargeable storage cell having positive and negative terminals;

a battery case encasing said storage cell, said case having a base portion supporting said cell so as to expose the terminals thereof, and a cover portion dimensioned to control and position said cell within said case, when joined to the base portion, with the axis of said cell generally parallel to said base portion;

at least two terminal pins electrically connected to respective cell terminals extending from the battery case through said base portion, said terminal pins being directly affixed to the cell terminals so as to restrain said cell terminals against movement relative to said base portion prior to joining said cover portion to said base portion, said terminal pins projecting from said case through said base for affixing said case and said storage cell therein to a printed circuit board and for electrically connecting said storage cell to the circuit of said board.

1002 O.G.—64

4,247,604

CARBONATE FUEL CELL ANODES

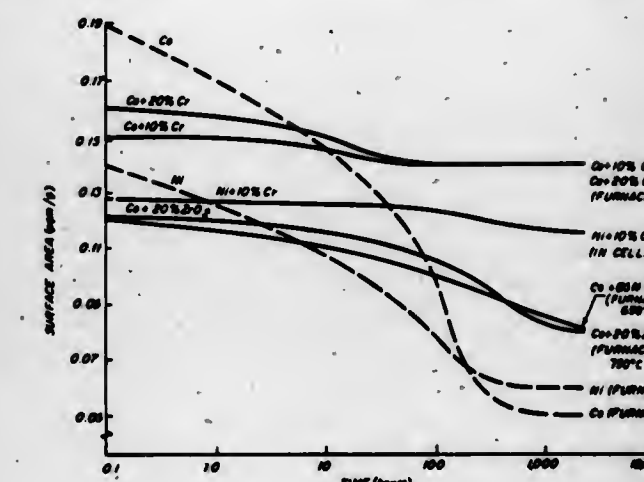
Leonard G. Marianowski, South Holland; Rafael A. Donado, Chicago, both of Ill., and Hansraj C. Maru, Brookfield Center, Conn., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Nov. 20, 1978, Ser. No. 962,017

Int. Cl.³ H01M 4/86

U.S. Cl. 429—40

33 Claims



1. A molten alkali metal carbonates fuel cell porous anode having mean pore diameters of about 2 to 20 microns and surface area about 0.09 to 0.16 square meters per gram having improved surface area stability under carbonate fuel cell operating conditions at about 500° to 700° C. comprising about 0.5 to about 20 weight percent, based upon the metal, of a surface area stabilizing agent selected from the group consisting of chromium, zirconium and aluminum in metal, oxide or alkali metal salt forms and mixtures thereof and the remainder being substantially a metal selected from the group consisting of nickel, cobalt and mixtures thereof.

16. In a molten alkali metal carbonates fuel cell of the type having an anode and a cathode with their respective current collectors, an electrolyte tile making contact with said anode and cathode, and a cell housing to physically retain the cell components, said electrolyte tile comprising alkali metal carbonates and an inert support material which upon cell operation at temperatures of about 500° to about 700° C. forms a paste in direct contact with a porous anode, the improvement of said porous anode having mean pore diameters of about 2 to 20 microns and surface area about 0.09 to 0.16 square meters per gram having improved surface area stability under carbonate fuel cell operating conditions comprising about 0.5 to about 20 weight percent, based upon the metal, of a surface area stabilizing agent selected from the group consisting of chromium, zirconium and aluminum in oxide or alkali metal salt forms and mixtures thereof under cell operating conditions and the remainder being substantially a metal selected from the group consisting of nickel, cobalt and mixtures thereof.

4,247,605

METHOD OF FORMING AND STARTING A SODIUM SULFUR BATTERY

David G. Paquette, Costa Mesa, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 7, 1980, Ser. No. 137,349

Int. Cl.³ H01M 10/44

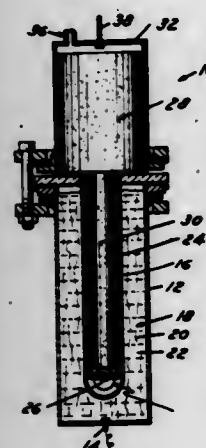
U.S. Cl. 429—52

8 Claims

1. A method of forming a sodium-sulfur battery and of starting the reactive capability of that battery when heated to a temperature suitable for battery operation, which method comprises the steps of:

forming an anodic reaction zone of a gas impermeable material, said reaction zone being substantially enclosed except for opening means extending therethrough in a portion of

said anodic reaction zone for metering anodic reactant to a reaction zone of the battery;
plugging said opening means of said anodic reaction zone with a gas impermeable material which is fusible below the operating temperature of the battery;
filling said anodic reaction zone in an inert atmosphere with sodium which will be the anodic material of the battery under battery operating condition;
sealing said anodic reaction zone so that said filled anodic reaction zone is hermetically sealed;
assembling said hermetically sealed anodic reaction zone with a cathodic reaction zone and a cation-permeable barrier in a manner that a sodium sulfur battery is formed



in which said cation-permeable barrier lies between said cathodic reaction zone and said portion of said anodic reaction zone having said opening means therethrough; and
heating said assembled components of said battery to a battery operating temperature whereby said fusible material plugging said opening means of said anodic reaction zone is fused, said sodium achieves a liquid phase and, at least in part, flows through said opening means to a location adjacent said cation-permeable barrier so that battery operating conditions can be established when an electrical connection is made between said anodic reaction zone and said cathodic reaction zone.

4,247,606

SILVER OXIDE CELL AND ITS MANUFACTURE

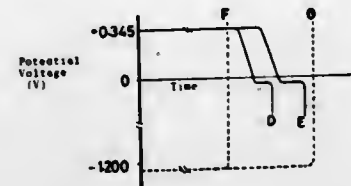
Yoshio Uetani, Akio Shimizu, Kozo Kajita, Osamu Yumimoto, and Satoru Kuwano, all of Osaka, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan
Continuation of Ser. No. 887,325, Mar. 16, 1978, abandoned.
This application Nov. 15, 1979, Ser. No. 94,550
Int. Cl.³ H01M 6/06

U.S. Cl. 429-91

7 Claims

1. A primary silver oxide cell which comprises a positive electrode comprising a shaped body of silver oxide as a positive active material, a negative electrode comprising a negative active material and an alkaline electrolyte, characterized in that the shaped body is a molded product of a composition comprising particles of silver oxide and particles of manganese dioxide, the particle size distribution of both of said particles being not less than 90% of particles of not more than 10μ in particle size and not less than 60% of particles of not more than

5μ in particle size, and said shaped body having a packing density of not less than 4.5 g/cm³, whereby a detectable volt-



age difference is produced prior to complete consumption of the discharge capacity of the cell.

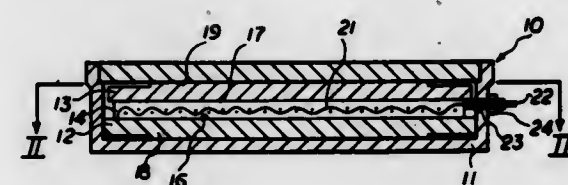
4,247,607

LITHIUM HALIDE PRIMARY CELL HAVING END OF LIFE INDICATOR MEANS

Matthew O'Boyle, Timonium, Md., assignor to Catalyst Research Corporation, Baltimore, Md.
Filed Apr. 28, 1980, Ser. No. 144,329
Int. Cl.³ H01M 4/36

U.S. Cl. 429-101

4 Claims



1. A lithium halide primary cell comprising an encasement member; at least one lithium anode positioned within and in contact with said encasement member, said anode having two major surfaces one of which is adapted to be in contact with a cathode, said other major surface having a stepped portion comprising from 15 to 5% of the total thickness of said anode and from 40 to 60% of the area of said major surface; a cathode positioned in contact with said major surface of said anode but not in electrical contact with said encasement means; and a terminal in electrical contact with said cathode.

4,247,608

ELECTROLYTIC CELL OF HIGH VOLTAGE

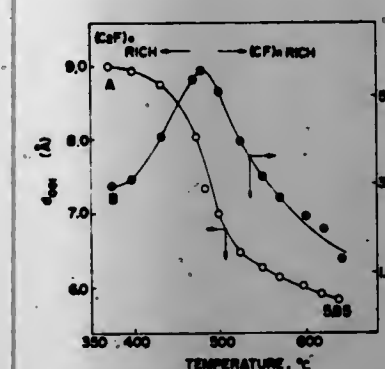
Nobuatsu Watanabe, No. 136, Uguisu-dai, Nagaokakyo-shi, Kyoto, and Kenichi Morigaki, Kobe, both of Japan, assignors to Nobuatsu Watanabe, Nagaokakyo and Applied Science Research Institute, Kyoto, both of Japan
Filed Aug. 20, 1979, Ser. No. 67,822
Claims priority, application Japan, Aug. 21, 1978, 53-100911
Int. Cl.³ H01M 4/58

U.S. Cl. 429-194

16 Claims

1. An electrolytic cell comprising a negative electrode having as the active material a light metal, an electrolyte and a positive electrode having as the main active material a polycarbon monofluoride represented by the formula (C₂F)_n wherein n is an integer and having a crystalline structure in

which a layer structure is stacked with an interlayer spacing of about 9.0 Å to form a packing structure, said crystalline structure comprising potassium hydroxide wherein the total dissolved content is within a range from 20 to 45 percent.



ture exhibiting a peak at about 10° in terms of an angle of 2θ in the X-ray diffraction powder pattern.

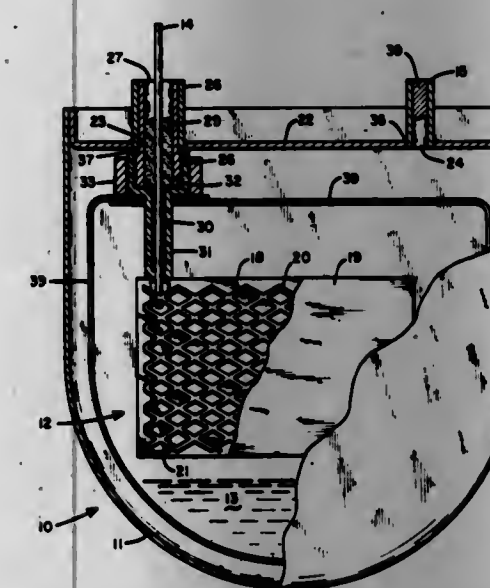
4,247,609

LITHIUM CHLORINE BATTERY CONTAINING IODINE TRICHLORIDE CATHODE AND IODINE MONOCHLORIDE ELECTROLYTE

Vladimir Feiman, Roseville, and Eugene Luksha, Golden Valley, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.
Continuation-in-part of Ser. No. 106,867, Dec. 26, 1979, abandoned. This application Apr. 2, 1980, Ser. No. 136,439
Int. Cl.³ H01M 6/14

U.S. Cl. 429-194

3 Claims



1. In a primary electrochemical cell comprising a receptacle containing an anode, a cathode, and a non-aqueous electrolyte, and having means for delivering an electrical current flow therefrom;

- (a) said anode consisting essentially of lithium;
- (b) said cathode consisting essentially of iodine trichloride; and
- (c) said non-aqueous electrolyte consisting of iodine monochloride.

4,247,610

AQUEOUS ELECTROLYTE FOR SECONDARY ELECTROCHEMICAL CELLS

Roy F. Thornton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 20, 1979, Ser. No. 67,695
Int. Cl.³ H01M 10/26

U.S. Cl. 429-199

4 Claims

1. In a secondary electrochemical cell with a zinc electrode, an aqueous electrolyte comprising an aqueous solution of from 18 to 30 percent potassium fluoride and from 15 to 2 percent

4,247,611

POSITIVE-WORKING RADIATION-SENSITIVE COPYING COMPOSITION AND METHOD OF USING TO FORM RELIEF IMAGES

Jürgen Sander, Kelkheim; Gerhard Buhr, Königstein, and Hans Ruckert, Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany
Filed Apr. 24, 1978, Ser. No. 899,271

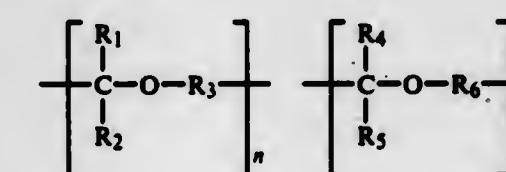
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1977, 2718254

Int. Cl.³ G03C 1/68, 1/70, 1/52; G03F 7/00

U.S. Cl. 430-286

14 Claims

1. A positive-working radiation-sensitive copying composition which comprises
(a) from about 0.1 to 10 percent by weight, based on the weight of the solids of the composition of a compound which forms an acid under the influence of actinic radiation, and
(b) an organic polymeric compound which contains recurrent units corresponding to the general formula I:



wherein

n—is an integer between 1 and 40,

R₁ and R₄ are H, alkyl or aryl groups,R₃ and R₆ are alkylene oxy groups with at least two carbon atoms, andR₂ and R₅ are alkyl or aryl groups, two of the groups R₁, R₂, and R₃, and two of the groups R₄, R₅, and R₆ may be combined to form a substituted or unsubstituted ring;

or

R₃ and R₆ are alkylene groups with at least two carbon atoms, andR₂ and R₅ are alkoxy group which formed a substituted or unsubstituted ring with R₃ or R₆, and whereinR₃—may be combined with R₄ and R₁ may be combined with R₆ of the neighboring unit to form substituted or unsubstituted rings.

14. A process for the production of relief images which comprises imagewise exposing a positive-working recording layer, of a radiation-sensitive recording material comprising a support and a recording layer, to actinic radiation to an extent such that the solubility of the layer in an aqueous developer solution is increased, and removing the irradiated portions of the layer by means of an aqueous developer solution, said recording layer comprising

(a) from about 0.1 to 10 percent by weight, based on the weight of the solids of the composition of a compound which forms an acid under the influence of actinic radiation, and

(b) an organic polymeric compound which contains recurrent units corresponding to the general formula I:



wherein

n—is an integer between 1 and 40,

R₁ and R₄ are H, alkyl or aryl groups,

atoms; R_3 is hydrogen, alkyl of 1 to 4 carbon atoms in the ortho, meta or para positions, alkoxy of 1 to 4 carbon atoms in the ortho, meta or para positions, chloro, fluoro or bromo in the meta or para positions, sulfo in the para position, substituted alkyl, aralkoxy, and aryloxy; and R_4 is hydrogen and alkyl of 1 to 4 carbon atoms.

4,247,619

NEGATIVE-WORKING MULTILAYER PHOTOSENSITIVE TONABLE ELEMENT

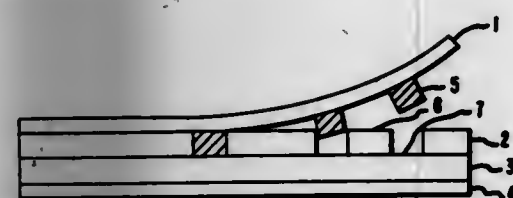
Abraham B. Cohen, Springfield, and Roxy N. Fan, East Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 747,025, Dec. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,456, Jan. 3, 1975, abandoned. This application Dec. 20, 1979, Ser. No. 105,648

Int. Cl.³ G03C 11/12

U.S. Cl. 430-253

32 Claims



1. A peel apart photosensitive element comprising in order from top to bottom, (1) a strippable cover sheet comprised of a polymeric film which is transparent to actinic radiation, (2) a photoadherent layer comprising a photohardenable material with ethylenically unsaturated or benzophenone type groups, and (3) a tacky, nonphotosensitive organic contiguous layer which is tonable by embedding of particulate material, and (4) a sheet support, the exposed areas (5) of said photoadherent layer, after imagewise exposure of said element to actinic radiation, having greater adhesion to said cover sheet than to said contiguous layer, and are removable with said cover sheet, and the unexposed areas (6) of said photoadherent layer having greater adhesion to said contiguous layer than to said cover sheet and are not removable with said cover sheet, said photoadherent layer being nontenable under a condition under which the contiguous layer is tonable.

4,247,620

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD FOR PROCESSING THE SAME

Toshio Nagatani; Kazuo Takahashi, and Takeshi Habu, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1979, Ser. No. 49,132

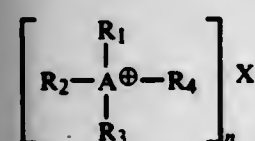
Claims priority, application Japan, Jun. 23, 1978, 53-76157

Int. Cl.³ G03C 1/06, 5/30

U.S. Cl. 430-264

17 Claims

1. A photographic material comprising a lightsensitive silver halide emulsion layer coated on a support which material comprises a compound represented by general formula:



wherein A represents a phosphorus atom, a nitrogen atom or an arsenic atom; R_1 , R_2 , R_3 and R_4 each represent an aryl group or a substituted aryl group wherein the substituent is selected from the group consisting of a halogen atom, a nitro group, a hydroxyl group, an acyl group, an alkyl group, an amino group, a carboxyl group, a sulfonyl group, an aryl group, an alkoxy group, an alkoxy-carbonyl group and a cyano

group; X represents a metal complex anion which is a complex of at least one metal selected from iron, cobalt, nickel, chromium, vanadium, manganese and copper, and an organic polybasic carboxylic acid; and n is an integer of 1 to 4.

4,247,621

ORIGINAL PATTERN PLATE OBTAINED BY USE OF PHOTO-SENSITIVE RESIN COMPOSITION

Takezo Sano, Takatsuki; Tadanori Inoue, Ibaraki; Yukikazu Uemura, Amagasaki, and Akihiro Furuta, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 26, 1976, Ser. No. 670,956

Claims priority, application Japan, Mar. 26, 1975, 50/37258

Int. Cl.³ G03C 1/70

U.S. Cl. 430-269

11 Claims

1. A process for preparing an original pattern plate which comprises exposing a photo-sensitive resin plate comprising a support material and a layer of a photo-sensitive resin composition consisting essentially of:

- (A) an unsaturated polyester having an acid value of from 10 to 40 and having not less than 50% by mole of unsaturated acids in the acid component;
- (B) a photo-polymerizable, ethylenically unsaturated compound which essentially contains a compound having a photo-polymerizable, ethylenically unsaturated linkage and at least one hydroxyl group;
- (C) a melamine compound of the formula:



wherein R is an alkyl group having 1 to 4 carbon atoms, m is from 0 to 6, n is from 0 to 6, and m+n is from 1.5 to 6, or its condensate having an average condensation degree of not more than 4;

- (D) a photo-polymerization initiator; and
- (E) a thermal polymerization inhibitor, the weight proportions of the components (A), (B), and (C) satisfying the relationships of the following equations:

$$1/5 \leq B/(A+B) \leq 3/5 \text{ and}$$

$$1/50 \leq C/(A+B+C) \leq 1/5,$$

to actinic light through a negative, removing the non-exposed part therefrom to develop an image, followed by keeping the resultant plate at a temperature under which heat-hardening proceeds.

4,247,622

PHOTODEFORMABLE POLYMERIC COMPOSITIONS

Ari Aviram, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,931

Int. Cl.³ G03C 1/68

U.S. Cl. 430-270

8 Claims

1. A photodeformable polymeric composition comprising a polymer backbone having at least one photoionizable group attached thereto, a halogenated hydrocarbon and a crosslinking agent, wherein said polymeric backbone is selected from the group consisting of polyacrylics, polyglutamate, polyvinyl amines, polyvinyl alcohols and polystyrenes, and wherein said

photoionizable group is selected from the group consisting of N,N-dimethyl-p-phenylenediamine, tetrathiafulvalene, tet-

30 ≤ y ≤ 60

1 ≤ z ≤ 5;

and

(ii) polymethylmethacrylate in an amount of from 0 to about 75 weight percent of the mixture; said binder having a glass transition temperature between about 50 and about 100° C.;

said monomer portion being a compound selected from the group consisting of triethylene glycol diacrylate, tetraethylene glycol diacrylate, and a mixture of pentaerythritol tetraacrylate and either 1,6-hexanediol diacrylate or tripropylene glycol diacrylate.

4,247,624

PHOTOPOLYMERIZABLE ELASTOMERIC COMPOSITIONS WITH CARBAMATED POLY(VINYL ALCOHOL) BINDER

Robert P. Foss, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1979, Ser. No. 42,943

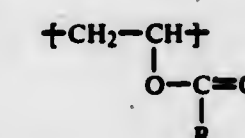
Int. Cl.³ G03C 1/68

U.S. Cl. 430-281

6 Claims

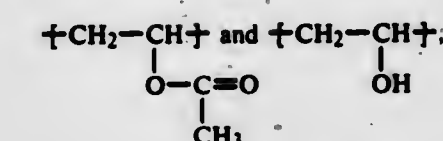
1. A photopolymerizable elastomeric composition which comprises, based on the total composition:

- (1) 15 to 89 percent by weight of a carbamated poly(vinyl alcohol) polymeric binder wherein
- (a) 15 to 100 mole percent of the recurring units in said binder have the formula

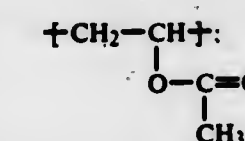


wherein R is NH_2 in some recurring units and at least one of OR^1 and NHR^1 in the remaining recurring units wherein OR^1 is the residue remaining after removal of a hydrogen atom from an alcohol which has a boiling point of greater than 100° C. at normal atmospheric pressure, with the proviso that said alcohol is compatible with said polymeric binder, and the ratio of $(\text{OR}^1 + \text{NHR}^1)/\text{NH}_2$ is within the range of 0.05 to 1.0, and

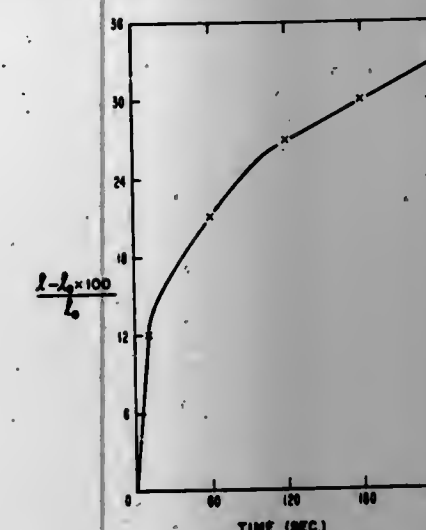
- (b) 0 to 85 mole percent of the recurring units in said binder have a formula selected from the group consisting of



with the proviso that no more than 12 mole percent of the recurring units in said binder have the formula



- (2) 10 to 70 percent by weight of a nongaseous, ethylenically unsaturated compound containing at least one terminal ethylenic group, said compound being capable of forming a high polymer by radical initiated chain-propagating addition polymerization, and being compatible with polymeric binder (1); and
- (3) 0.1 to 10 percent by weight of a thermally stable, radia-



raselenafulvalenes, ferrocene, tetrathiatetracene and leuco dyes.

4,247,623

BLANK BEAM LEADS FOR IC CHIP BONDING

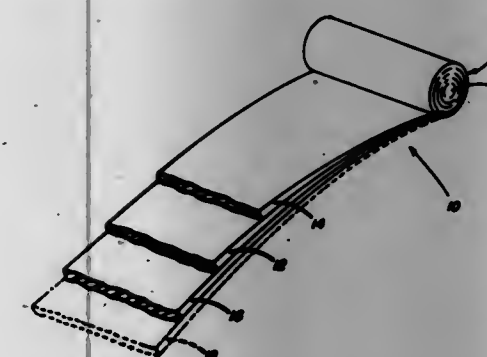
John R. Guild, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,662

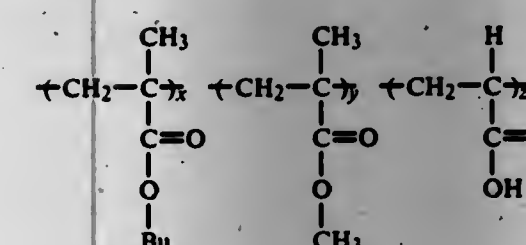
Int. Cl.³ G03C 1/94

U.S. Cl. 430-275

5 Claims



1. In a blank for manufacturing an integrated circuit component lead frame, said blank comprising a flexible strip of electrically conductive metal, a layer of positive-working resist adhered to a portion of one surface of said metal strip, and a layer of negative-working resist adhered to a portion of the opposite surface of said metal strip said negative-working layer having a thickness sufficient to support leads formed from said metal strip the improvement wherein said negative-working resist comprises a binder, a photopolymerizable monomer portion, and a photoinitiator composition said binder comprising a mixture of at least (i) a polymer having recurring units with the structure



wherein each Bu is butyl, and x, y and z are mole percents and are about

30 ≤ x ≤ 70

tion-sensitive, radical generating system, activatable by actinic radiation, which initiates polymerization of the unsaturated compound.

4,247,625

IMAGING PROCESSES, ELEMENTS AND COMPOSITIONS FEATURING DYE-RETAINING BINDERS FOR REACTION PRODUCTS OF COBALT COMPLEXES AND AROMATIC DIALDEHYDE

George L. Fletcher; Wojciech M. Przewdzicki, both of Pittsburgh; John C. Wilson, Rochester; Paul D. Yacobucci, Rochester, and Richard C. Van Hanchem, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,464

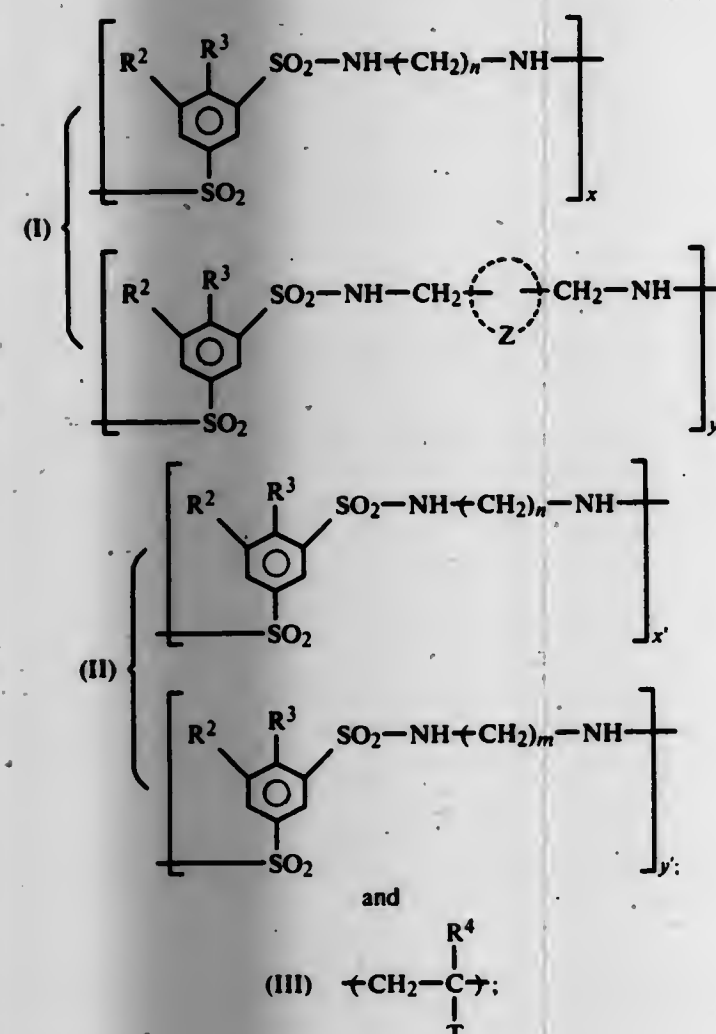
Int. Cl.³ G03C 1/72, 3/06; C03C 7/26

U.S. Cl. 430-336

16 Claims

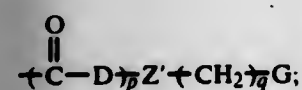
1. In a dye imaging composition comprising, in admixture, a material capable of generating amines in response to activating radiation, said material comprising a reducible cobalt(III) complex containing releasable amine ligands a binder, and an aromatic dialdehyde capable of reacting with said amines to form a dye;

the improvement wherein said binder is a polymer having recurring units with a structure selected from the group consisting of



wherein

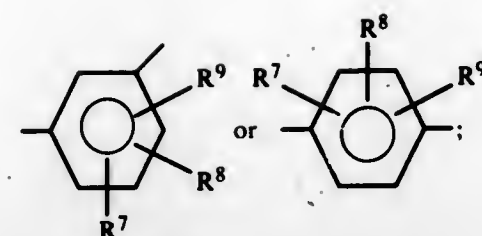
R² and R³ are the same or different, and are each hydrogen, halogen or alkyl from 1 to 4 carbon atoms; T is either cyano or



D is —O— or —NH—;

Z' is a covalent bond between carbon and D, or is the moiety

wherein

G is either —NR¹—SO₂R⁵ or —SO₂—NR¹R⁶;R¹ is hydrogen or methyl;

R⁴ is hydrogen or alkyl containing from 1 to 4 carbon atoms; R⁵ and R⁶ are each alkyl containing from 1 to 4 carbon atoms, aralkyl, or aryl or substituted aryl containing from 6 to 10 carbon ring atoms;

R⁷, R⁸ and R⁹ are the same or different and are each hydrogen, alkyl containing from 1 to 3 carbon atoms, or G; n and m are different and are each an integer of from 2 through 12;

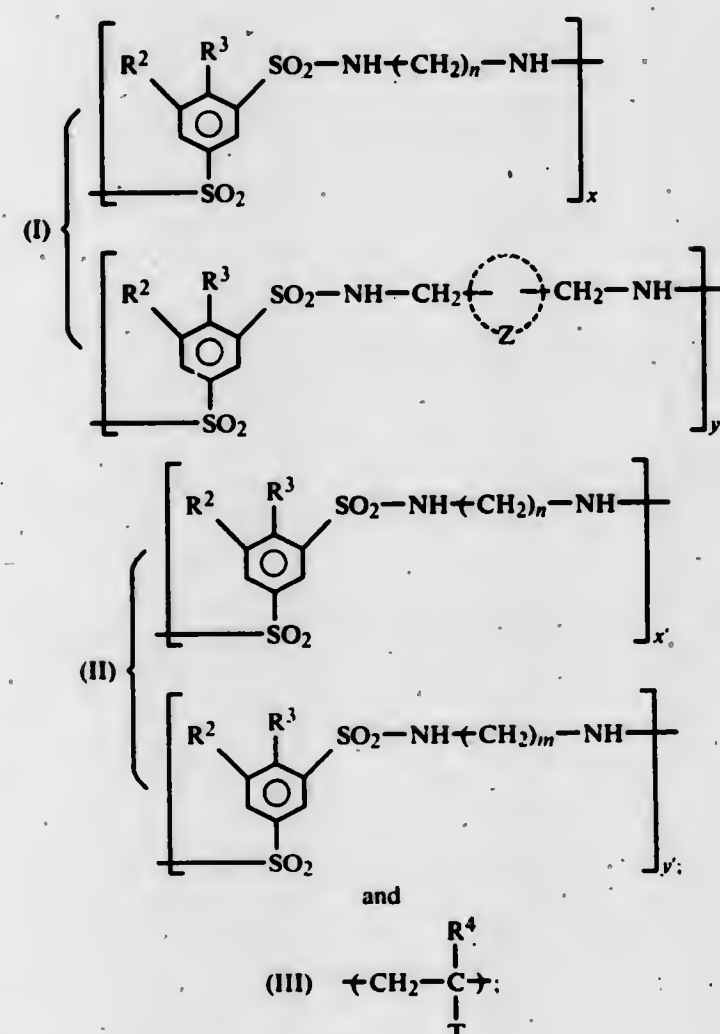
p is 0 or 1;

q is 0, 1, 2 or 3 except that it is 0 or 1 if Z' is phenylene;

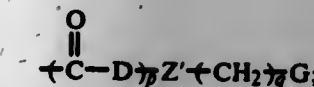
x, x', y and y' are mole percentage amounts of the respective recurring units, x ranging from 0 to about 90%, y being at least about 10%, and x' and y' being from 0 to 100%; and Z represents the atoms necessary to form a saturated or unsaturated carbocyclic ring having from 5 to 7 carbon ring atoms.

8. In a dye imaging element comprising a support bearing a composition comprising a binder and, in admixture with said binder, and aromatic dialdehyde capable of reacting with an amine to form a dye, and, associated with said composition, a material capable of generating amines in response to activating radiation and comprising a reducible cobalt(III) complex containing releasable amine ligands;

the improvement wherein said binder is a polymer having recurring units with a structure selected from the group consisting of

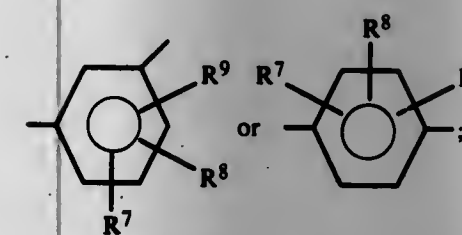


R² and R³ are the same or different, and are each hydrogen, halogen or alkyl from 1 to 4 carbon atoms; T is either cyano or



D is —O— or —NH—;

Z' is a covalent bond between carbon and D, or is the moiety

G is either —NR¹—SO₂R⁵ or —SO₂—NR¹R⁶;R¹ is hydrogen or methyl;

R⁴ is hydrogen or alkyl containing from 1 to 4 carbon atoms; R⁵ and R⁶ are each alkyl containing from 1 to 4 carbon atoms, aralkyl, or aryl or substituted aryl containing from 6 to 10 carbon ring atoms;

R⁷, R⁸ and R⁹ are the same or different and are each hydrogen, alkyl containing from 1 to 3 carbon atoms, or G; n and m are different and are each an integer of from 2 through 12;

p is 0 or 1;

q is 0, 1, 2 or 3 except that it is 0 or 1 if Z' is phenylene;

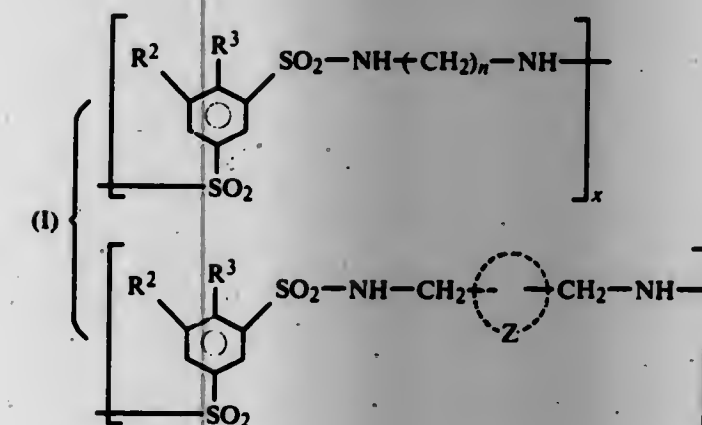
x, x', y and y' are mole percentage amounts of the respective recurring units, x ranging from 0 to about 90%, y being at least about 10%, and x' and y' being from 0 to 100%; and Z represents the atoms necessary to form a saturated or unsaturated carbocyclic ring having from 5 to 7 carbon ring atoms.

16. A method for the formation of a dye image, comprising the steps of

(a) exposing to activating radiation a composition comprising a material capable of generating amines in response to activating radiation, said material comprising a reducible cobalt(III) complex containing releasable amine ligands; and

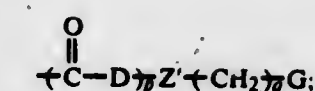
(b) thereafter developing an image in response to the generated amines while said composition is in association with a composition comprising

(i) an admixture of an aromatic dialdehyde capable of reacting with said generated amines to form a dye, and (ii) a polymeric binder having recurring units with a structure selected from the group consisting of



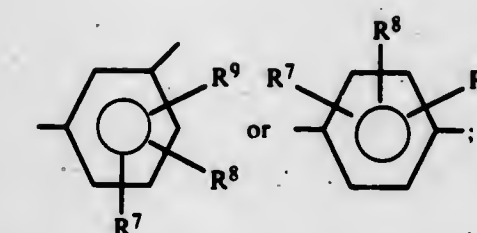
wherein

R² and R³ are the same or different, and are each hydrogen, halogen or alkyl from 1 to 4 carbon atoms; T is either cyano or



D is —O— or —NH—;

Z' is a covalent bond between carbon and D, or is the moiety

G is either —NR¹—SO₂R⁵ or —SO₂—NR¹R⁶;R¹ is hydrogen or methyl;

R⁴ is hydrogen or alkyl containing from 1 to 4 carbon atoms; R⁵ and R⁶ are each alkyl containing from 1 to 4 carbon atoms, aralkyl, or aryl or substituted aryl containing from 6 to 10 carbon ring atoms;

R⁷, R⁸ and R⁹ are the same or different and are each hydrogen, alkyl containing from 1 to 3 carbon atoms, or G; n and m are different and are each an integer of from 2 through 12;

p is 0 or 1;

q is 0, 1, 2 or 3 except that it is 0 or 1 if Z' is phenylene;

x, x', y and y' are mole percentage amounts of the respective recurring units, x ranging from 0 to about 90%, y being at least about 10%, and x' and y' being from 0 to 100%; and Z represents the atoms necessary to form a saturated or unsaturated carbocyclic ring having from 5 to 7 carbon ring atoms.

4,247,626

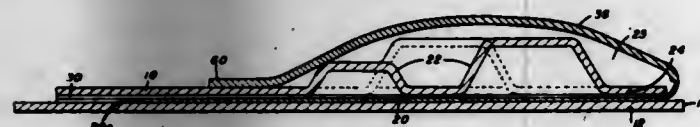
FLUID RECEIVING TRAP

Gerald M. Poshkus, Rochester; Dennis E. Whitney, Fairport; James N. Cope, Rochester, all of N.Y., and Robert J. Borel, Columbus, Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 808,011, Jan. 20, 1977, abandoned, which is a continuation of Ser. No. 570,904, Apr. 23, 1975, abandoned. This application Jan. 23, 1978, Ser. No. 871,731
Claims priority, application United Kingdom, May 9, 1974, 20580/74

Int. Cl.³ G03C 1/48; G03D 9/02

U.S. Cl. 430—498

13 Claims



1. In a film unit comprising a photosensitive first sheet and a second sheet, a container for processing composition disposed at one end of the film unit, a trap for excess processing composition disposed at the other end of the film unit, a coupling member permanently securing the sheets together along their lateral edges in superposed relationship, said coupling member extending from between the two sheets at said other end thereof and forming a trap cover folded around said other end of one of the sheets, the improvement comprising trap spacing means including a plurality of protuberances in the end portion of said one sheet at said other end which protuberances extend away from the other of the sheets, the protuberances having a convexity on the side of the one sheet away from the other sheet and corresponding concavity facing the other sheet, said trap cover overlying the protuberances and bounding, with the end portion of said one sheet, a first trapping space to which excess processing composition may flow from between the sheets, the trap including a second trapping space between the sheets at least partially formed by the concavities of the protuberances, and flow passage means including at least one slit through said end portion of said one sheet between said other end and said protuberances to permit flow of said excess processing composition from between said sheets to said first trapping space.

4,247,627

PHOTOGRAPHIC ELEMENTS HAVING HYDROPHILIC COLLOID LAYERS CONTAINING HYDROPHOBIC ULTRAVIOLET ABSORBERS UNIFORMLY LOADED IN LATEX POLYMER PARTICLES

Tsang J. Chen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

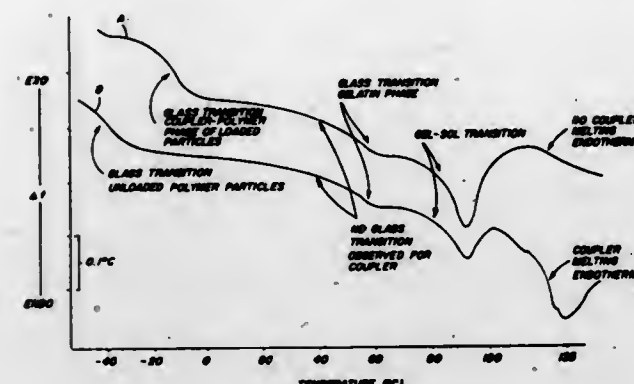
Division of Ser. No. 36,262, May 4, 1979, and a continuation of Ser. No. 778,184, Mar. 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 744,842, Nov. 24, 1976, abandoned, and Ser. No. 653,816, Jan. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 575,680, May 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 506,919, Sep. 17, 1974, abandoned, said Ser. No. 774,842, is a continuation-in-part of Ser. No. 653,816, said Ser. No. 36,262, is a division of Ser. No. 936,155, Aug. 23, 1978, Pat. No. 4,203,716, which is a continuation of Ser. No. 880,684, Feb. 23, 1978, which is a continuation of Ser. No. 774,680, Nov. 24, 1976, abandoned, and Ser. No. 778,182, Mar. 16, 1977, abandoned, said Ser. No. 774,680, and Ser. No. 778,182, each is a continuation-in-part of Ser. No. 653,816. This application Oct. 10, 1979, Ser. No. 94,391
Int. Cl.³ G03C 1/84

U.S. Cl. 430—512

32 Claims

1. In a photographic element comprised of a support and, coated on the support, one or more hydrophilic colloid layers, at least one of which is a silver halide emulsion layer, the improvement in which at least one of the hydrophilic

colloid layers contains in a photographically useful amount loaded polymer particles of from 0.02 to 0.2 micron in average diameter consisting essentially of a loadable polymer, with greater than 2 percent by weight of the polymer being derived from monomers



capable of forming water soluble homopolymers, and, loaded into and distributed through said particles, a hydrophobic ultraviolet absorbing compound, the weight ratio of the ultraviolet absorbing compound to said loaded polymer being from about 1:4 to 3:1.

4,247,628

COLOR PHOTOGRAPHIC MATERIAL IMPROVED IN FADING PROPERTIES

Takashi Uchida; Shoji Kikuchi, both of Hachioji; Takashi Sasaki, Hino, and Mikio Sato, Ebina, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi-Muro, Japan

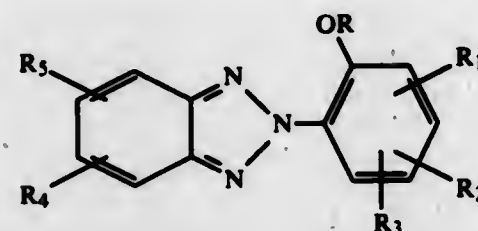
Continuation of Ser. No. 883,942, Mar. 6, 1978, abandoned. This application Jan. 3, 1980, Ser. No. 109,273

Claims priority, application Japan, Mar. 8, 1977, 52/25064

Int. Cl.³ G03C 1/40, 7/00

2 Claims

1. A silver halide color photographic material comprising a support and a silver halide light-sensitive layer containing a phenol or naphthol cyan coupler and a 2-phenyl benzotriazole compound having in the 2'-position an —OR group wherein R is an organic residue wherein said 2-phenyl benzotriazole compound is represented by the formula:



wherein R represents an alkyl, alkenyl, cycloalkyl, aryl, aralkyl, acyl, alkylsulfonyl, or arylsulfonyl group, an N-substituted carbamoyl or sulfamoyl group, or a oxalyl, oxamoyl, oxycarbonyl or oxaacetyl group having an alkyl, aryl or aryloxy group; R₁, R₂, R₃, R₄ and R₅ each represent hydrogen, halogen, an alkyl, alkenyl, aryl, aralkyl, alkoxy, aryloxy, acyloxy, alkylthio, arylthio, monoalkylamino, dialkylamino, acylamino, sulfonamido, or nitro group, the residue of a sulfonic acid or the ester or salt thereof, the residue of a carboxylic acid or the ester or salt thereof; and R₄ and R₅ can cooperatively form a 5- or 6-membered carbocyclic ring.

4,247,629

LIGHT-SENSITIVE PHOTOGRAPHIC ELEMENT COMPRISING A CYAN IMAGE DYE-PROVIDING COMPOUND

Masaru Kanbe; Kazumasa Watanabe; Morito Uemura; Jiro Takahashi; Ryulchiro Kobayashi, and Tatsuhiko Kobayashi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,517

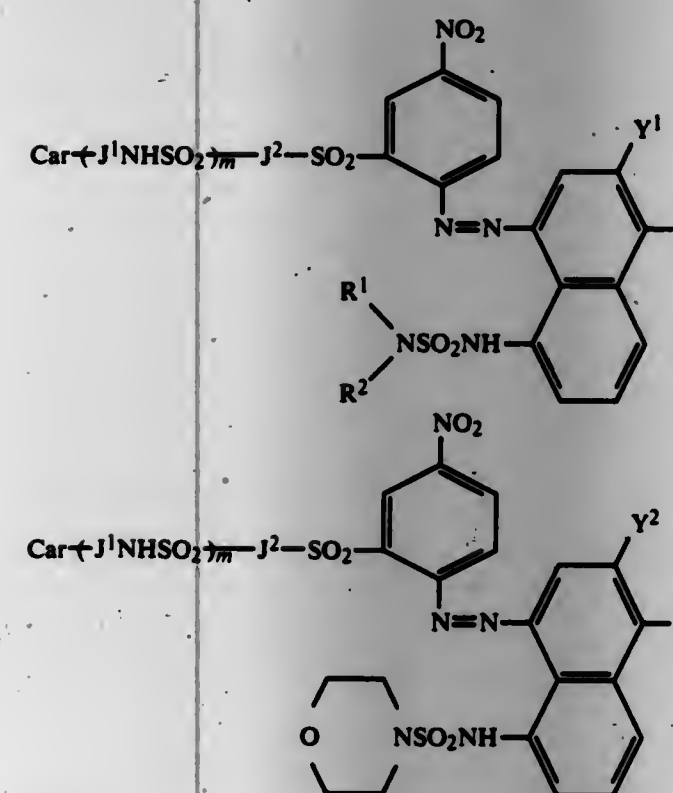
Claims priority, application Japan, Aug. 31, 1978, 53-106462

Int. Cl.³ G03C 1/40, 1/10

U.S. Cl. 430—562

17 Claims

1. A light-sensitive photographic element comprising a support and at least one light-sensitive silver halide emulsion layer coated thereon and having associated therewith a cyan image dye-providing compound represented by formula [I] or [II]:

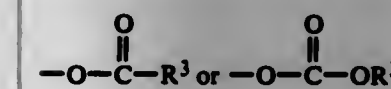


wherein

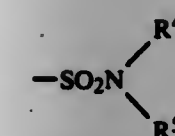
Car represents a carrier moiety having an organic ballast group containing sufficient carbon atoms to render the compound nondiffusible during processing in an alkaline processing composition, which can be oxidized under alkaline conditions to release a diffusible dye or a precursor thereof from said compound;

R¹ and R², which may be the same or different, independently represent a hydrogen atom or an alkyl group having 1 to 3 carbon atoms (provided that the total sum of carbon atoms in R¹ and R² does not exceed 4);

X represents a hydroxyl group or a salt thereof or a group which can be converted into a hydroxyl group by hydrolysis and having the following formulae:

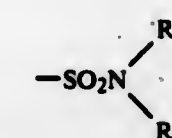


in which R³ represents an alkyl or haloalkyl group having 1 to 18 carbon atoms or a phenyl group which may be substituted;

Y¹ represents

group in which R⁴ and R⁵ may be the same or different and independently represent a hydrogen atom or an alkyl

group having 1 to 4 carbon atoms (provided that the total sum of carbon atoms in R⁴ and R⁵ does not exceed 6); Y² represents a hydrogen atom or a group



in which R⁴ and R⁵ are the same as defined above;

m represents 0 or 1; and

J¹ and J² may be the same or different and independently bivalent linking group having the formula —R⁶— (O)—R⁷— in which R⁶ and R⁷, which may be the same or different, independently represent an alkylene group having 1 to 8 carbon atoms or a phenylene group which may be substituted;

n represents 0 or 1;

p represents 1 when n is 1 and 0 when n is 0 (provided that, when p is 1, the total sum of carbon atoms in R⁶ and R⁷ does not exceed 13).

4,247,630

METHOD AND REAGENT FOR THE DETERMINATION OF URIC ACID

Joachim Ziegenhorn, Unterpfaffenhofen; Eberhard Munz, Polling; Brigitte Draeger; Alexander Hagen, both of Tutzing, and Wolfgang Gruber, Tutzing-Unterzeisern, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Mar. 31, 1978, Ser. No. 892,360

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1977, 2718588

Int. Cl.³ C12Q 1/30, 1/62

U.S. Cl. 435—10

19 Claims

1. In a process for the determination of uric acid by the uricase/catalase/aldehyde dehydrogenase method wherein the formation of reduced NAD(P)H is taken as a measure of the amount of uric acid present, the improvement comprising adding to the reagents, in an amount sufficient to suppress creep reactions in said method, at least one compound selected from the group consisting of trihaloethanols, pyrazole, pyridine, substituted pyrazole and pyridine wherein the substituents are selected from the group consisting of lower alkyl and halogen, pyridine carboxylic acids, pyridine carboxylic acids substituted with a lower alkyl radical, pyridine carboxylic acid amides and pyridine carboxylic acid lower alkyl esters, thio-urea and isobutyramide.

4,247,631

REAGENT AND METHOD FOR THE ANALYTIC DETERMINATION OF HYDROGEN PEROXIDE

Paul T. Nix, Jackson, and Spencer Fields, Red Bank, both of N.J., assignors to Millipore Corporation, Bedford, Mass.

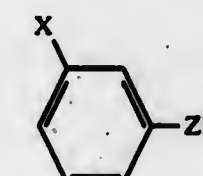
Filed Jan. 31, 1979, Ser. No. 8,154

Int. Cl.³ C12Q 1/62, 1/28

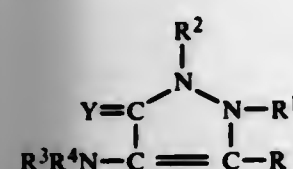
U.S. Cl. 435—10

37 Claims

8. A method for detecting the presence of hydrogen peroxide in an aqueous medium at a temperature of from about 20° C. to about 45° C. and having a pH of from about 3 to about 9.5, which comprises: (a) adding to said aqueous medium (1) peroxidase, (2) an aminoaromatic acid represented by the formula:



wherein X is a mono- or dialkylamine group and ZH is the carboxyl group or the sulfo group, and (3) a 4-aminoantipyrine represented by the formula:



wherein each of R and R¹, when taken separately, is alkyl, R² is an aromatic moiety, each of R³ and R⁴, when taken separately, is hydrogen or alkyl, and Y is oxygen or sulfur, wherein the molar ratio of said aminoaromatic acid to said aminoantipyrine is in the range of from about 0.1:1 to about 25:1; and (b) thereafter measuring any resulting color change photometrically.

4,247,632

METHYLGUANIDINE-DECOMPOSING ENZYME AND PROCESS FOR ITS PRODUCTION

Motoo Nakajima; Kiyoshi Mizusawa, and Yoshio Shirokane, all of Noda, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Japan

Filed May 8, 1979, Ser. No. 37,028

Claims priority, application Japan, May 16, 1978, 53-57217; Dec. 26, 1978, 53-159296; Feb. 28, 1979, 54-21967; Mar. 19, 1979, 54-31171

Int. Cl.³ C12Q 1/58; C12N 9/78

U.S. Cl. 435—12

11 Claims

1. A methylguanidine-decomposing enzyme which has an ability to decompose methylguanidine into methylamine and urea, has an optimum pH range of 10.9–12.3 and has a stable pH range of 5.0–10.6.

4,247,633

REAGENT FOR COLORIMETRIC DETERMINATION OF CREATIVE PHOSPHOKINASE

Richard V. Case, Milwaukee; Louis M. Mezel, Grafton, and Jack M. Siegel, Milwaukee, all of Wis., assignors to Pabst Brewing Company, Milwaukee, Wis.

Continuation of Ser. No. 731,577, Oct. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 666,462, Mar. 13, 1976, abandoned. This application Apr. 5, 1979, Ser. No. 27,254

Int. Cl.³ C12Q 1/50; C12N 9/96

U.S. Cl. 435—17

14 Claims

1. An all-in-one reagent for the quantitative colorimetric determination of creatine phosphokinase (CPK) in blood serum or plasma, or other liquid consisting essentially of the following ingredients:

- adenosine 5'-diphosphate (ADP), creatine phosphate and a source of magnesium ions in sufficient amount to convert creatine phosphate and ADP to creatine and adenosine 5'-triphosphate (ATP) in the presence of CPK,
- glucose and hexokinase in sufficient amount to convert ATP to glucose-6-phosphate and ADP,
- nicotinamide-adenine dinucleotide (NAD) or nicotinamide-adenine dinucleotide phosphate (NADP) and glucose-6-phosphate dehydrogenase in sufficient amount to convert said glucose-6-phosphate and said NAD or NADP to 6-phosphogluconate and NADH or NADPH,
- 2-(p-iodophenyl)-3-(p-nitro-phenyl)-5-phenyl tetrazolium chloride (INT) and a diaphorase in sufficient amount to produce NAD or NADP and reduced INT,
- a buffer which maintains the pH of said reagent between 5.5 and 6.5 when all ingredients are dissolved in water,
- reduced glutathione in sufficient amount to maintain enzyme activity, and
- adenosine 5'-phosphate in sufficient amount to inhibit side reactions.

4,247,634

CULTURE CUP AND METHOD FOR SAMPLING AND MICROBIAL-COUNT DETERMINATION

Mohamed Abdou, Hausen, Fed. Rep. of Germany, assignor to Biotest-Serum-Institut GmbH, Frankfurt, Fed. Rep. of Germany

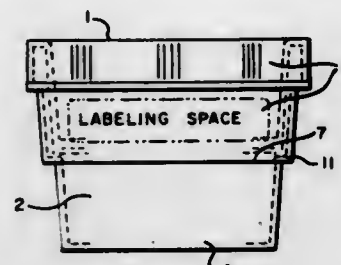
Filed May 21, 1979, Ser. No. 41,223

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 7815774[U]

Int. Cl.³ C12Q 1/08

U.S. Cl. 435—40

8 Claims



1. A culture cup for sampling and microbial-count determination, comprising a body and a tightly closing removable lid, the lid being provided on its underside with a recess for accommodation of a condensate absorbent and the body of the cup being provided with an internal annular shoulder which serves as a seat for the recessed bottom of the lid, the bottom of the body being provided with depressions for accommodation of at least one culture medium.

4,247,635

MICROBIOLOGICAL REDUCTION OF 15-KETOPROSTAGLANDIN INTERMEDIATES

Klaus Kieslich; Bernd Raduchel; Werner Skuballa; Helmut Vorbruggen, and Helmut Dahl, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,571

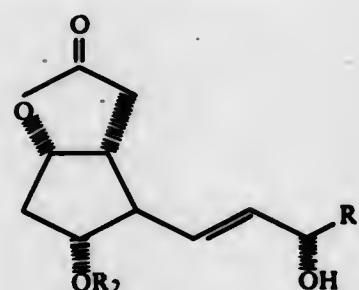
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 2853637

Int. Cl.³ C12P 31/00

U.S. Cl. 435—63

7 Claims

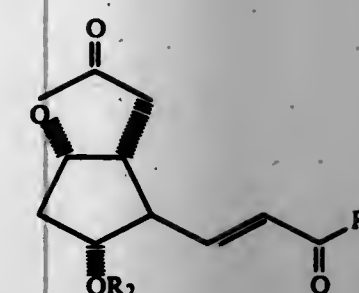
1. A process for the preparation of a 15 α -hydroxyprostaglandin intermediate of the formula



wherein

R₁ is phenoxyethyl, phenoxyethyl substituted on the phenyl moiety by halogen or trifluoromethyl, or alkyl of 1–5 carbon atoms, and

R₂ is hydrogen, acetyl, benzoyl or p-phenylbenzoyl, comprising stereospecifically, microbiologically reducing a corresponding 15-ketone of the formula



with a strain of the microorganism *Kloeckera*, *Saccharomyces* or *Hansenula*.

4,247,636

PROCESS FOR PRODUCING A HIGH FRUCTOSE SWEETENER, HIGH PROTEIN MEAL, AND CEREAL GERM OILS

Karlheinz W. R. Schoenrock, Ogden, Utah; Thomas H. Henschel, Twin Falls, Id., and Hugh G. Rounds, Ogden, Utah, assignors to The Amalgamated Sugar Company, Ogden, Utah

Filed Oct. 26, 1978, Ser. No. 955,092

Int. Cl.³ C12P 19/24

U.S. Cl. 435—94

21 Claims

17. In the process for producing a high fructose sweetener from an impure flour produced by milling barley grain by the enzymatic hydrolysis of the starch content of said flour, the improvement which comprises:

slurrying said impure flour with a fluidizing amount of water in the presence of an effective amount of beta-glucanase enzyme under temperature and pH conditions compatible with said enzyme until the viscosity of the resulting slurry is below about 1000 centipoise.

20. In the process for converting a purified dextrose liquor into a high fructose sweetener by reacting said liquor with glucose isomerase enzyme, the improvement which comprises adding active magnesium oxide to said liquor until its pH is adjusted to the range of about 8 to about 8.5 and thereafter treating said liquor with an effective amount of said enzyme to convert at least 40 percent by weight of the glucose therein to fructose.

4,247,637

HIGHLY THERMOSTABLE GLUCOAMYLASE AND PROCESS FOR ITS PRODUCTION

Masaki Tamura, Kamakura; Mizuho Shimizu, Hino, and Minoru Tago, Tokyo, all of Japan, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jul. 9, 1979, Ser. No. 55,723

Claims priority, application Japan, Sep. 1, 1978, 53-106354

Int. Cl.³ C12P 19/20; C12N 9/34

U.S. Cl. 435—96

8 Claims

1. A process for producing a glucoamylase enzyme preparation which comprises culturing cells of a strain of *Talaromyces dupontii* in a nutrient medium and isolating the glucoamylase enzyme preparation from the culture medium.

4,247,638

RECOVERY OF STARCH FROM AMYLACEOUS ROOTS AS AN AQUEOUS SLURRY

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed May 29, 1979, Ser. No. 43,192

Int. Cl.³ C12P 19/16, 7/06

U.S. Cl. 435—99

9 Claims

1. A process for the recovery of starch from amylaceous root as an aqueous slurry, the starch being present in the root in adherent association with root fiber, which comprises: (a) milling the fragmented root containing substantially the entire amount of water soluble components originally present therein at least once in the presence of water to separate starch from

root fiber thus providing an aqueous slurry of starch particles and fiber particles; (b) separating the starch particles from the fiber particles to provide an initial substantially fiber-free aqueous starch slurry; and, (c) removing water from said initial starch slurry, with all of said removed water containing components of the root soluble therein being recycled to step (a) as process water for use in milling fragmented root in a subsequent starch recovery sequence to provide a concentrated aqueous starch slurry.

4,247,639

BACTERIAL POLYSACCHARIDE

Kenneth S. Kang, La Jolla, and George T. Veeder, III, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 889,163, Mar. 23, 1978, which is a continuation-in-part of Ser. No. 842,646, Oct. 17, 1977, abandoned. This application Sep. 11, 1979, Ser. No. 74,282

Int. Cl.³ C12P 19/04

U.S. Cl. 435—101

4 Claims

1. A process for producing Heteropolysaccharide S-21 containing from about 30% to about 37% mannose, from about 26% to about 32% glucose, from about 19% to about 23% galactose and from about 15.3% to about 18.8% glucuronic acid and having an acetyl content of from about 5.1% to about 6.3% and a pyruvate content of from about 4.5% to about 5.4% that comprises growing the organism ATCC 31314 in an aqueous nutrient medium under submerged aerobic conditions and recovering said Heteropolysaccharide S-21.

4,247,640

FERMENTATION PROCESS FOR 6-HYDROXYMETHYL-2-(2-AMINOETHYLTHIO)-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACID

August J. Kempf, Staten Island, N.Y., and Kenneth E. Wilson, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

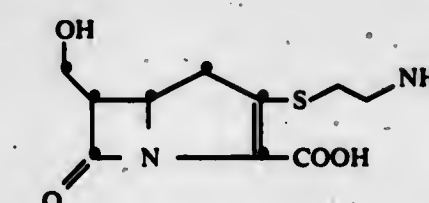
Filed Jul. 23, 1979, Ser. No. 59,811

Int. Cl.³ C12P 17/18

U.S. Cl. 435—119

2 Claims

1. A process for the production of northienamycin having the structure:



which comprises cultivating a thienamycin-producing strain of *Streptomyces cattleya* in an aqueous nutrient medium containing assimilable sources of carbohydrate, nitrogen and inorganic salts under submerged aerobic conditions and recovering the northienamycin so produced in substantially pure form.

4,247,641

METHOD FOR PRODUCING EPOXIDES AND GLYCOLS FROM ALKENES

Saul L. Neideman, Oakland; William F. Amon, Jr., Danville, and John Geigert, Concord, all of Calif., assignors to Cetus Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 940,638, Sep. 8, 1978, abandoned. This application May 29, 1979, Ser. No. 42,219

Int. Cl.³ C12P 17/02

U.S. Cl. 435—123

31 Claims

1. A method for the manufacture of epoxides or glycols from olefins comprising, providing a reaction mixture of a halogenating enzyme, an oxidizing agent and a halide ion source in a reaction vessel, introducing an olefin into said reaction vessel and maintaining said olefin in contact with said reaction mix-

ture for a sufficient period of time to convert said olefin to a halohydrin, and converting said halohydrin to an epoxide or glycol.

4,247,642

ENZYME IMMOBILIZATION WITH PULLULAN GEL
Hideo Hirohara; Shigeyasu Nabeshima; Masanori Fujimoto, all of Ibaraki, and Tsuneyuki Nagase, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 16, 1978, Ser. No. 878,572

Claims priority, application Japan, Feb. 17, 1977, 52-16835; Aug. 26, 1977, 52-102999

Int. Cl.³ C12N 11/10

U.S. Cl. 435—178 25 Claims
1. An immobilized enzyme prepared by a process which comprises covalently bonding an enzyme on an enzyme-immobilizing carrier by utilizing the reactivity of hydroxyl groups in said enzyme-immobilizing carrier which is a hydrophilic pullulan gel in spherical bead form of 10 to 500 μ in diameter having a water regain of 1 to 50 g/g which is obtained by crosslinking pullulan with epichlorohydrin.

4,247,643

PREPARATION OF STABILIZED CARRIER-BOUND PROTEINS

Dieter Krümer, Mainz, and Klaus Sauber, Bad Soden, both of Fed. Rep. of Germany, assignors to Röhm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,346

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732301

Int. Cl.³ C12N 11/10, 11/08, 9/96

U.S. Cl. 435—178 14 Claims
1. A method for the preparation of a stabilized carrier-bound protein which comprises:

- reacting a protein in an aqueous solution with a portion of the oxirane groups of an oxirane group-containing water insoluble carrier which contains no mercapto groups, to form a protein-containing complex;
- reacting said protein-containing complex with hydrogen sulfide or a compound having a molecular weight less than 5000 which contains at least two mercapto groups; thereby
- attaching to the remaining oxirane groups of said carrier at least 0.3% by weight of free mercapto groups with respect to the moist weight of the end product.

4,247,644

FOAM FLOTATION PROCESS FOR SEPARATING BACILLUS THURINGIENSIS SPORULATION PRODUCTS
Eugene S. Sharpe, Eureka; Alberta I. Herman, Peoria, both of Ill., and Suzanne C. Toolan, New Brunswick, N.J., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 8, 1979, Ser. No. 64,678

Int. Cl.³ C12N 3/00

U.S. Cl. 435—242 3 Claims

1. In a method for purifying parasporal crystals from a sporulated culture of *Bacillus thuringiensis*, wherein said method comprises removing spores by foam flotation from a suspension containing both said spores and said crystals, the improvement comprising:

- adding gelatin to said suspension in an amount which, upon agitation, is sufficient to cause the formation of a stable foam and promote the selective removal of spores from said suspension;
- agitating said suspension in the presence of said gelatin, thereby producing a substantially crystal-free, spore-bearing foam and a crystal-enriched suspension;
- separating said foam from said crystal-enriched suspension; and

d. recovering said crystal-enriched suspension.

4,247,645

PROCESS FOR REMOVING MELAMINE FROM MELAMINE-CONTAINING LIQUIDS

Lucia R. M. Meijer-Hoffman, and Pieter H. de Jonge, both of Geleen, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 19, 1979, Ser. No. 22,598

Claims priority, application Netherlands, Mar. 22, 1978, 7803073

Int. Cl.³ C02F 3/00

U.S. Cl. 435—262 12 Claims
1. A process for removing melamine from melamine-containing liquids essentially comprising bringing an aqueous solution or suspension of melamine into contact with a medium having melaminase activity, selected from the group consisting of microorganisms and enzyme preparations having melaminase activity, or a combination thereof, and maintaining the resulting mixture under anaerobic conditions, with a molecular oxygen concentration of less than about 0.1 ppm, and maintaining the nitrate ion concentration of said mixture at less than about 10 ppm, whereby at least a portion of said melamine is biodegraded.

4,247,646

LABORATORY APPARATUS FOR CLONING MAMMALIAN CELLS

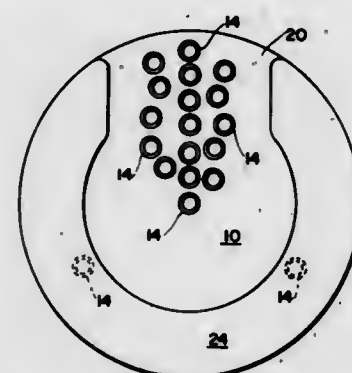
John J. Berky, Little Rock; John Hunziker, Jr., Pine Bluff, and Laurence A. Zolotor, Little Rock, all of Ark., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Sep. 12, 1978, Ser. No. 941,666

Int. Cl.³ C12M 3/00, 1/00

U.S. Cl. 435—284

13 Claims



1. Laboratory apparatus for cloning mammalian cells developing upon the surface of a Petri dish, comprising:

- a support plate; and
- a plurality of tubular cylinders fixedly secured within said support plate and projecting from one surface thereof so as to be capable of surrounding and isolating particular mammalian cells developing upon a Petri dish, said plurality of tubular cylinders being concentrated within a sector of said support plate so as to define a predetermined distribution pattern with two remote tubular cylinders disposed away from said sector for insuring said isolation of particular mammalian cells.

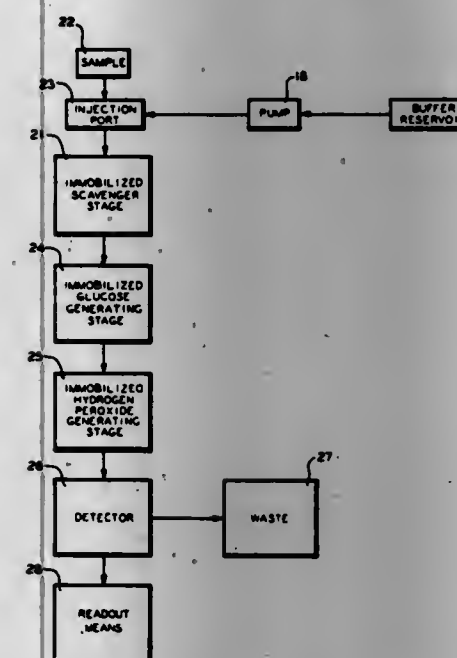
4,247,647
APPARATUS FOR THE QUANTITATIVE DETERMINATION OF SACCHARIDES
Raymond C. Barabino, Toledo, and Melvin H. Keyes, Sylvania, both of Ohio, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Mar. 14, 1978, Ser. No. 886,503

Int. Cl.³ C12M 1/34

U.S. Cl. 435—291

6 Claims



1. An apparatus for the quantitative determination of sugars contained in a fluid sample containing free glucose as a contaminant which comprises, in combination, a reservoir containing a buffer diluent solution and means for flowing said buffer solution as a stream, means for injecting said fluid sample into said flowing stream of buffer solution, first means for passing said flowing stream and including a scavenger enzymatic reagent comprising glucose oxidase and catalase immobilized upon a first solid support for concurrently reacting said free glucose and also hydrogen peroxide resulting from the reaction of said free glucose, the respective quantities of said glucose oxidase and said catalase immobilized on said first solid support being at least sufficient to substantially completely react said free glucose and said resulting hydrogen peroxide, second means for receiving said flowing stream directly from said first means and comprising a glucose generating enzymatic reagent immobilized on a second solid support for reacting with sugars remaining in said flowing stream to produce glucose reaction products, third means for receiving said flowing stream from said second means and comprising a hydrogen peroxide generating enzymatic reagent to react with certain ones of said glucose reaction products to generate hydrogen peroxide, and polarographic detection means for measuring said hydrogen peroxide generated in said flowing stream.

4,247,648

METHYLQUINOLINE ANION EXCHANGE RESIN BASED ON HALOALKYL VINYL AROMATIC POLYMERS

Hiroshi Kambara, Abiko, Japan, assignor to Rohm and Haas Company, Philadelphia, Pa.

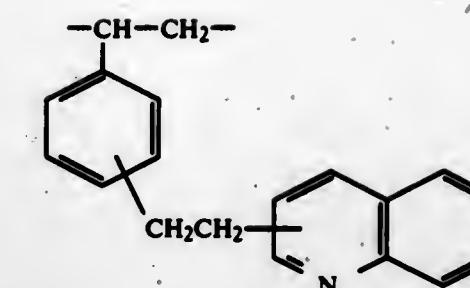
Filed Jan. 8, 1979, Ser. No. 47,181

Int. Cl.³ B01J 41/04; C08F 226/06, 8/30

U.S. Cl. 521—32

7 Claims

1. A crosslinked basic polymer predominating in repeating units of the formula:



4,247,649

METHOD OF MAKING A LIGHTWEIGHT PLASTER FROM GRANULES OF EXPANDED THERMOPLASTICS

Gerard Damiani, Chatel-St-Denis, Switzerland, assignor to Frese S.A., Switzerland

Continuation of Ser. No. 908,799, May 23, 1978, abandoned.

This application Dec. 28, 1979, Ser. No. 108,172

Claims priority, application Switzerland, May 23, 1977, 6305/77

Int. Cl.³ C08J 9/22

U.S. Cl. 521—55

8 Claims

1. A method of manufacture of a molded mass containing granules of expanded thermoplastic resin mixed with a mineral binder, comprising preparing a molding mass in a single operation by mixing said expanded thermoplastic resin granules directly with water, a homogenizing agent consisting essentially of polyvinyl alcohol and a mineral binder and then pouring said mixture into a mold where said mixture solidifies into said molded mass.

4,247,650

EXPANDED PARTICULATE MATERIAL OF POLYOLEFIN RESIN

Hiroshi Shimizu; Hiroshi Sato; Nobuo Miura, all of Suzuka, and Shuzo Inada, Yokkaichi, all of Japan, assignors to Ashi-Dow Limited, Tokyo, Japan

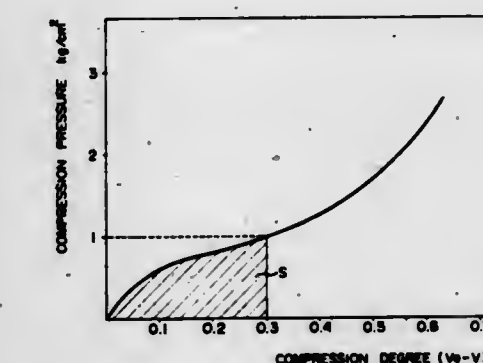
Continuation of Ser. No. 931,946, Aug. 8, 1978, abandoned. This application Mar. 5, 1980, Ser. No. 127,301

Claims priority, application Japan, Aug. 15, 1977, 52/97588; Oct. 4, 1977, 52/117894

Int. Cl.³ C08J 9/16, 9/22

U.S. Cl. 521—56

5 Claims



1. A particulate resin material comprising expanded cross-linked polyolefin resin particles which are substantially spherical, resilient, free-flowing, uniform in particle size and moldable in a cavity, each particle having a structure substantially constituted of closed cells without void, and which have an average particle size ranging from 1.4 to 5.5 millimeters, an average expansion ratio ranging from 18 to 37 based on the original volume of unexpanded resin particles and a compression coefficient ranging from 1.6×10^{-3} to 4.0×10^{-3} as determined from the following formula: $S/(R \times F)$ wherein S represents total energy for compression under pressure of 1 kg/cm², R average expansion ratio and F flowability, respectively, of the expanded crosslinked polyolefin resin particles.

4,247,651

PROCESS FOR PREPARING FOAMED SYNTHETIC RESIN PRODUCTS

Shigeaki Ohno, Naruto; Nobuyuki Aburatani, Tokushima, and Nobuyuki Ueda, Naruto, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Japan

Continuation of Ser. No. 27,059, Apr. 4, 1979, abandoned. This application Sep. 12, 1979, Ser. No. 75,005
Int. Cl.³ C08J 9/06

U.S. Cl. 521—92

5 Claims

1. A process for preparing a foamed product comprising the steps of:

- incorporating a blowing agent within a high-melting synthetic resin, said blowing agent consisting of a zinc peroxide represented by the formula: $ZnO_m(H_2O)_n/2$ wherein 1 is an integer of from 1 to 10, m is an integer of from 2 to 20 and n is an integer of from 0 to 5;
- decomposing said blowing agent by heating to obtain a foamed product; and
- allowing said foamed product to cool.

4,247,652

THERMOPLASTIC ELASTOMER BLENDS WITH OLEFIN PLASTIC, AND FOAMED PRODUCTS OF THE BLENDS

Akira Matsuda; Shizuo Shimizu, and Shunji Abe, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 910,086, May 26, 1978. This application Jul. 17, 1979, Ser. No. 58,134

Claims priority, application Japan, May 26, 1977, 52-60399; Jun. 1, 1977, 52-63353; Jun. 2, 1977, 52-63937; Jun. 8, 1977, 52-81026; Feb. 24, 1978, 53-19912; Mar. 14, 1978, 53-28201
Int. Cl.³ C08J 9/06

U.S. Cl. 521—95

23 Claims

1. A method of producing a foamed product of a thermoplastic elastomer comprising:

heating to melt a foamable composition comprising:

- 100 to 5 parts by weight of a partially cured elastomer composition obtained by dynamic heat-treatment, in the presence of an organic peroxide, of a mixture of 100 to 50 parts by weight of (a) a peroxide-curable olefin copolymer rubber selected from the group consisting of ethylene-propylene copolymer rubber and ethylene-propylene-non conjugated diene terpolymer rubber, 0 to 50 parts by weight of (b) a peroxide-decomposing olefin plastic selected from the group consisting of isotactic polypropylene and propylene-alpha olefin copolymer, wherein the sum of the component (a) and the component (b) is 100 parts by weight, and 5 to 100 parts by weight of (c) at least one member of a peroxide-non-curable hydrocarbon rubbery material selected from the group consisting of polyisobutylene and butyl rubber, and (d) a mineral oil softener, and
- 0 to 95 parts by weight of an olefin plastic selected from the group consisting of homopolymers of an alpha olefin selected from the group consisting of ethylene, propylene, 1-butene, 1-pentene, 3-methyl-1-butene, 1-hexene, 3-methyl-1-pentene, 4-methyl-1-pentene and 1-octene; copolymers there between; and copolymers thereof with 15 mole % or less of another copolymerizable monomer; the sum of the component (b) and the component (B) account for not less than 5 parts by weight among 100 parts by weight of the blend of the component (A) and the component (B); and
- a decomposition type foaming agent, and molding the molten composition while foaming.

4,247,653

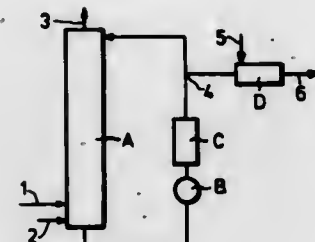
PROCESS FOR THE PREPARATION OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

Kuno Wagner, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Aug. 30, 1977, Ser. No. 829,167

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714104; May 11, 1977, 2721093
Int. Cl.³ C08G 18/14, 18/54; C07C 47/19

U.S. Cl. 521—158

15 Claims



1. In a process for the preparation of a mixture of low molecular weight polyhydroxyl compounds and optionally hydroxy aldehydes and hydroxy ketones by the condensation of formaldehyde hydrate, in the presence of from 0.01–10% by weight, based on formaldehyde, of metal compounds as catalyst, and from 0–10% by weight, based on formaldehyde, of co-catalysts which are based on compounds capable of enediol formation, the improvement which comprises condensing formaldehyde hydrate at a reaction temperature of from 10°–150° C. in the presence of

- a soluble or insoluble compound of a metal of the first to eighth sub-group or second to fourth main group of the Periodic System of Elements, optionally bound to a high molecular weight carrier, and
- more than 10% by weight, based on formaldehyde, of one or more dihydric or higher hydric low molecular weight alcohols and/or higher molecular weight polyhydroxyl compounds,

maintaining the pH of the reaction solution between 5.5 and 9.0 by controlled addition of one or more inorganic and/or organic bases up to a conversion rate of 5–40% by weight, lowering the pH of from 0.5 to 3 units and thereafter maintaining the pH at from 4.0–8.5 until the termination of the condensation reaction;

then stopping the reaction in known manner by inactivation of the catalyst when the residual formaldehyde content is from 0–10% by weight; removing the catalyst and, optionally, reducing the aldehyde and keto groups present in the reaction product to hydroxyl groups.

15. In a process for the production of polyurethane resins comprising reacting

- Polyisocyanates with
- low molecular weight polyhydroxyl compounds and optionally higher molecular weight polyhydroxyl compounds and, optionally,
- other chain-lengthening agents, optionally in the presence of
- blowing agents, catalysts and other known additives, the improvement which comprises using as component (b), mixtures of polyols prepared according to claim 1.

4,247,654

ALKOXYLATED FORMOSE POLYOLS AND THEIR USE IN POLYURETHANE PLASTICS

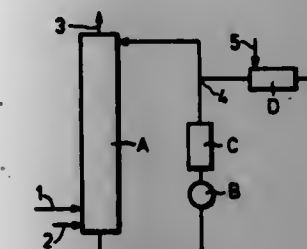
Kuno Wagner, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 829,170, Aug. 30, 1977, abandoned.

This application Feb. 26, 1979, Ser. No. 15,082

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1976, 2639083
Int. Cl.³ C08G 18/14, 18/32, 18/48

U.S. Cl. 521—158

10 Claims



1. A process for the production of polyether polyols having an average molecular weight of from 200 to 10,000 and an average hydroxyl functionality of from 2.0 to 7.0, comprising reacting one or more alkylene oxides, optionally successively, with a mixture of polyhydric alcohols which mixture has been produced by reduction of the condensation products obtained from the condensation of formaldehyde hydrate.

4,247,655

RIGID AND SEMIFLEXIBLE POLYURETHANE FOAMS PRODUCED WITH PHENOL-ALDEHYDE-AMINE RESINS

Raymond A. Dunleavy, and James A. McClanahan, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 18, 1979, Ser. No. 76,626

Int. Cl.³ C08G 18/14

U.S. Cl. 521—164

6 Claims

1. A process for producing a rigid or semiflexible polyurethane foam which comprises forming and curing reaction mixture consisting essentially of

- a polyether polyol, or blend of polyether polyols, having a hydroxyl number of greater than 100 and a functionality of at least 3 and less than 8,
- the reaction product of:
 - a phenol which has at least one unsubstituted reactive position on the aromatic nucleus,
 - an aldehyde, and
 - an aromatic amine,
- an aromatic polyisocyanate in an amount which provides from 0.8 to 1.6 isocyanate groups per active hydrogen group in the reaction mixture,
- a blowing agent,
- a surfactant, and
- a flame retardant additive.

4,247,656

POLY(URETHANE-ISOCYANURATE) FOAMS

Edward W. Janssen, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

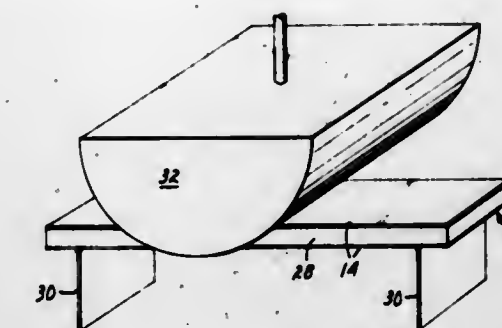
Continuation of Ser. No. 783,178, Mar. 31, 1977, abandoned, which is a continuation of Ser. No. 380,703, Jul. 19, 1973, abandoned, which is a continuation of Ser. No. 178,311, Sep. 7, 1971, abandoned. This application Mar. 14, 1979, Ser. No. 20,311
Int. Cl.³ C08G 18/14, 18/48; B32B 5/20

U.S. Cl. 521—174

8 Claims

1. A low density, non-friable, foamed polymeric reaction product formed by the reaction of organic polyisocyanate and polyoxyalkylene polyol in the presence of isocyanate trimerization catalyst, water as the blowing agent and surfac-

tant, the NCO/OH equivalent ratio being 1.3/1 to 3/1, wherein more than half of the oxyalkylene units of said polyol are oxypropylene units and wherein the average molecular weight of said polyol is in the range of 700 to 1,500; said polymeric reaction product having isocyanate-derived linkages



selected from the group consisting essentially of isocyanurate, urethane and urea linkages; the crosslink density of said product being in the range of about one crosslink per 400 to 600 atomic weight units, and wherein said polymeric reaction product exhibits a beam flexure characteristic of at least 100 pounds with at least one inch deflection.

4,247,657

PROCESS FOR THE PRODUCTION OF ALKALI METAL-CELLULOSE-SILICATES AND THEIR REACTION PRODUCTS

David Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 29,202, Apr. 12, 1979, Pat. No. 4,220,757.

This application Jan. 16, 1980, Ser. No. 112,626

Int. Cl.³ C08J 9/00; C08G 77/00

U.S. Cl. 521—175

33 Claims

1. The process for the production of polyisocyanate-cellulose-silicate products by the following steps:

- mixing 3 parts by weight of a cellulose-containing plant with 1 to 2 parts by weight of an oxidized silicon compound and 2 to 5 parts by weight of an alkali metal hydroxide;
- heating the mixture at 150° C. to 270° C. while agitating for 5 to 60 minutes, thereby;
- producing a water-soluble alkali metal-cellulose-silicate condensation product;
- mixing 2 parts by weight of the alkali metal-cellulose-silicate condensation product as produced in step (c) and 1 to 4 parts by weight of an organic polyisocyanate, then;
- agitating for 10 to 60 minutes at a temperature between 20° C. to 70° C., thereby;
- producing a polyisocyanate-alkali meal-cellulose prepolymer; then
- adding 10% to 100% by weight of a curing agent, based on the weight of the prepolymer, and selected from the group consisting of water, water containing 1% to 10% by weight of an amine catalyst, water containing 10% to 60% by weight of a polyhydroxyl compound, water containing 10% to 60% by weight of silica sol, water containing up to 5% by weight of an emulsifying agent, water containing 10% to 50% by weight of sodium silicate and mixtures thereof, is added to the said prepolymer while agitating at 20° C. to 80° C. for 5 to 20 minutes, thereby producing a cellular solid or solid polyisocyanate-cellulose-silicate product.

4,247,658

SURFACE TREATED POLYESTER SUBSTRATES

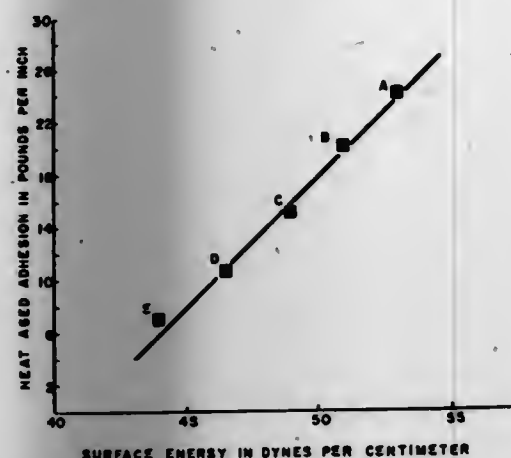
Robert J. Arrowsmith, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Continuation of Ser. No. 802,607, Jun. 2, 1977, abandoned, which is a division of Ser. No. 287,123, Sep. 7, 1972, Pat. No. 4,044,189. This application Jan. 22, 1979, Ser. No. 4,967

Int. Cl.² C08J 9/26

U.S. Cl. 521-182

1 Claim



1. A saturated polyester filament having a porous layer on the surface thereof, said surface being chemically unmodified and exhibiting a surface energy greater than 45 dynes per centimeter and having a generally porous surface characterized in that said pores intersect with said surface and are predominantly less than about 200 Angstroms in major dimensions.

4,247,659

EPOXY ESTER COPOLYMER SOLUBLE IN WATER WITH THE AID OF AN AMINE

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 885,036, Mar. 9, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 18,887

Int. Cl.³ C08L 67/00

U.S. Cl. 525-43

14 Claims

1. Epoxy ester copolymer soluble in water with the aid of an amine comprising the hydroxy functional epoxy ester of a polyepoxide having an average molecular weight of about 300 to about 1100 and a 1,2-epoxy equivalency of about 1.4 to about 2.0, esterified with an at least approximately stoichiometric proportion, based on epoxide functionality, of monocarboxylic acid selected from benzoic acid, C₁-C₈ alkyl substituted benzoic acid, and C₆-C₁₀ alkanolic acid, the esterification reaction being continued to provide an acid number of less than 20, said hydroxy functional epoxy ester being polyesterified with from 1.5-8%, based on the weight of the epoxy ester, of a monoethylenically unsaturated dicarboxylic acid which resists homopolymerization to an acid number of less than 20, and said polyester being copolymerized with from 15% to 70% of monoethylenic monomers, based on the copolymer, said monoethylenic monomers including carboxyl functional monomer providing an acid number of from 20-100 in the copolymer.

4,247,660

PHOTO-CROSSLINKABLE POLYMERS HAVING AZIDOPHTHALIMIDYL SIDE GROUPS

Hans Zweifel, Basel; Vratislav Kvita, Muttentz, and Joseph Berger, Marly, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 5, 1978, Ser. No. 948,858

Claims priority, application Switzerland, Oct. 14, 1977, 12578/77

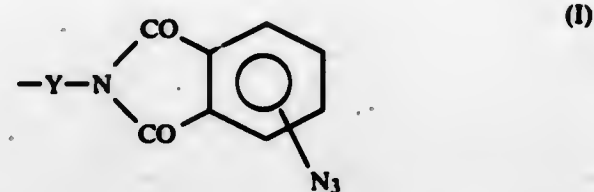
Int. Cl.³ C08F 8/00, 26/06

U.S. Cl. 525-61

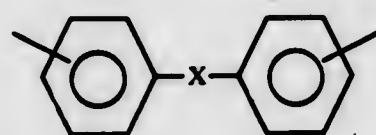
15 Claims

1. A photocrosslinkable polymer, having a molecular weight

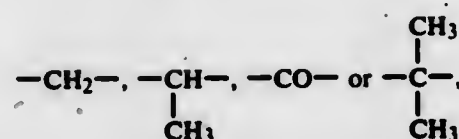
between about 1000 and 200,000, as measured by viscometry of a 0.5% by weight solution in N,N-dimethylformamide at 25° C., which polymer is derived from the polymerization of a monomer having a reactive C=C double bond, said polymer having azidophthalimidyl side groups of the formula I



in which Y is unsubstituted or substituted alkylene having 2-18 C atoms, an unsubstituted or substituted phenylene, naphthylene, biphenylene, cyclohexylene or dicyclohexylmethane group or an unsubstituted or substituted



group and X is -O-, -S-, -SO₂-,



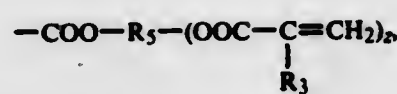
said polymer being either a homopolymer having recurring structural units containing an azidophthalimidyl side group of formula I and being derived and selected from the group consisting of the acrylic monomers, the methacrylic monomers, maleic anhydride and vinyl alcohol, or a copolymer having additionally recurring structural units of the formula VIa



in which X₄ and X₆ are each hydrogen, X₅ is hydrogen, chlorine or methyl and X₇ is hydrogen, methyl, chlorine, -CN, -COOH, -CONH₂, phenyl, methylphenyl, methoxyphenyl, cyclohexyl, pyridyl, imidazolyl, pyrrolidonyl, -COO-alkyl having 1-12 C atoms in the alkyl moiety, -COO-phenyl,



-COO-alkyl-OH having 1-3 C atoms in the alkyl moiety,



(in which R₅ is a straight-chain or branched saturated aliphatic radical having 1-10 C atoms, R₃ is hydrogen or methyl and z is an integer from 1 to 3), -OCO-alkyl having 1-4 C atoms in the alkyl moiety, -OCO-phenyl, -CO-alkyl having 1-3 C atoms in the alkyl moiety, alkoxy having 1-6 C atoms, phenoxy, -CH=CH₂ or

4,247,661

THERMOPLASTIC POLYMER BLENDS COMPRISING EP OR EPDM POLYMERS AND HIGHLY CRYSTALLINE POLYALLOMERS

Richard M. Herman, Elyria, and Martin Batluk, Grafton, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 218, Jan. 2, 1979, abandoned. This application Dec. 26, 1979, Ser. No. 106,624

Int. Cl.³ C08L 23/16

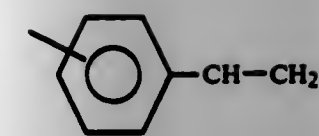
U.S. Cl. 525-88

7 Claims

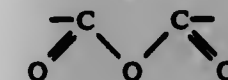
1. A polymer blend having excellent hot strength comprising

(1) A major proportion of at least one EP polymer consisting essentially of interpolymerized units of about 63 weight percent to about 85 weight percent ethylene and about 15 weight percent to about 37 weight percent propylene, or at least one EPDM polymer consisting essentially of interpolymerized units of about 63 weight percent to about 85 weight percent ethylene, about 5 weight percent to about 36.8 weight percent propylene, and about 15 weight percent of a diene monomer, said polymers having unstretched crystallinity from about 1% to about 25% and melt endotherms from about 1 to about 15 calories/gm, and

(2) at least one polyallomer having at least 70 percent crystallinity (determined by solubility in refluxing hexane) and consisting essentially of interpolymerized units of (2) straight and branched chain aliphatic alpha-monoolefins containing 3 to 10 carbon atoms and (b) from about 1 to about 20 weight percent ethylene.

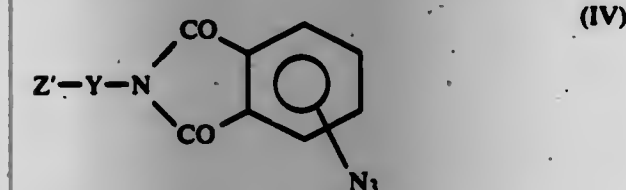


or X₄ and X₅ are each hydrogen and X₆ and X₇ together are the

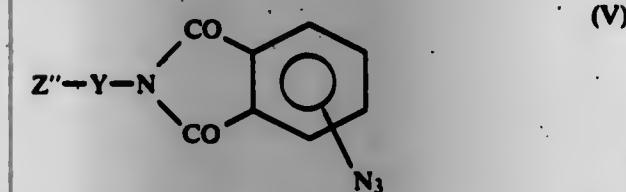


group or are each -COOH or -COO-alkyl having 1-6 C atoms in the alkyl moiety; with the proportion of structural units having azidophthalimidyl groups of the formula I being at least 10 percent, relative to the total number of recurring structural units of the polymer.

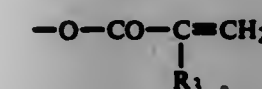
10. A process for the preparation of a polymer having azidophthalimidyl side groups of the formula I according to claim 1, which comprises reacting a compound of the formula IV



in which Y is as defined under formula I, and Z' is -OH, -COOH, -COCl, -NH₂ or -NH-alkyl having 1-4 C atoms, with a preformed or existing polymer having functional groups selected from the group consisting of anhydride, hydroxyl and oxirane, in a ratio of 1:10 to 1:1, relative to the number of recurring structural units in the polymer, or polymerizing a compound of formula V



in which Y is as defined under formula I and Z'' is -O-CH=CH₂,



or -COO-CH=CH₂ and R₃ is hydrogen or methyl, in the presence or absence of ethylenically unsaturated comonomers of formula VI



wherein X₄, X₅, X₆ and X₇ are defined under formula VIa in claim 1, the molar ratio of the compound of the formula V to the comonomer of formula VI being from 1:10 to 1:0 and the polymerisation being carried out as a free radical polymerisation in solution.

4,247,662

NOVEL HALOBISPHENOETHYLENE POLYCARBONATE-VINYL AROMATIC RESIN BLENDS

Douglas P. Thomas, Louisville, Ky., assignor to General Electric Company, Schenectady, N.Y.

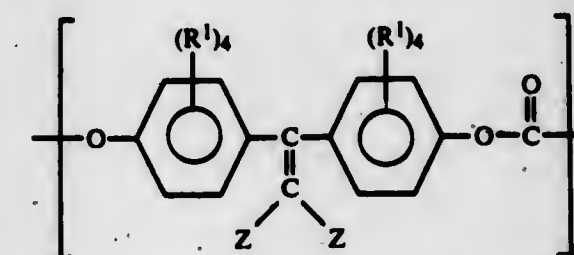
Filed Jun. 25, 1979, Ser. No. 51,766

Int. Cl.³ C08L 69/00

U.S. Cl. 525-147

11 Claims

1. A polymer blend comprising:
(I) about 1-99 parts by weight of a polycarbonate containing halobis(phenyl)ethylene carbonate units of formula (A):



where independently each R¹ is hydrogen, chlorine, bromine or a C₁₋₃₀ monovalent hydrocarbon or hydrocarbonoxy group, each Z is hydrogen, chlorine or bromine, subject to the proviso that at least one Z is chlorine or bromine, and m is an integer of at least 2, and

(II) about 99-1 parts by weight of a vinyl aromatic resin.

4,247,663

HEAT SHRINKABLE POLYVINYL CHLORIDE FILM WITH METHYL METHACRYLATE POLYMER ADDITIVE

Norio Yoshiga, Hiroshi Nakamura, and Mototaka Ohmura, all of Nagahama, Japan, assignors to Mitsubishi Plastics Industries Limited, Tokyo, Japan

Filed Feb. 14, 1979, Ser. No. 11,997

Claims priority, application Japan, Mar. 14, 1978, 53-29147; Mar. 14, 1978, 53-29148

Int. Cl.³ C08L 33/10, 33/8, 33/12

U.S. Cl. 525—227

9 Claims

1. A highly heat shrinkable polyvinyl chloride film which shrinks more than 60% in one direction prepared by uniaxially stretching a film comprising 5 to 25 wt. parts of a methyl methacrylate copolymer comprising 60 to 85 weight percent of methyl methacrylate component and 100 parts of polyvinyl chloride, wherein said film has been stretched at a stretch ratio of 3.5 to 6 times in one direction and at a stretch ratio of less than 1.5 times in the perpendicular direction.

4,247,664

POLYMERIC ALKYLATED 1,2 DIHYDROQUINOLINES

Richard G. Parker, Hudson, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

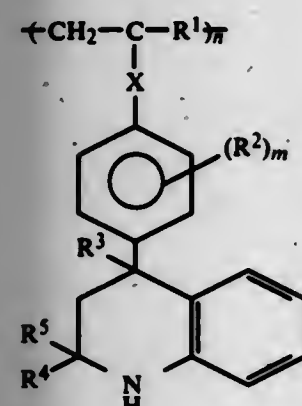
Filed Oct. 2, 1978, Ser. No. 947,784

Int. Cl.³ C08F 126/06

U.S. Cl. 525—334

2 Claims

1. A compound of the formula



wherein,

n is an integer in the range from 1 to 20,
X is alkylene of from 1 to 5 carbon atoms, or a bond,
R¹ to R⁵ is hydrogen or alkyl having from 1 to 20 carbon atoms,
R² is a substituent selected from hydrogen and lower alkyl having from 1 to 5 carbon atoms,
m is an integer in the range from 0 to 4, and
R⁴ and R⁵ is alkyl having from 1 to 20 carbon atoms and wherein the R¹-R⁵ alkyl groups are non-sterically hindered and stable under the reaction conditions employed.

4,247,665

THERMOPLASTICS POLYMER COMPOSITIONS

Terry Daniels, Oldbury; Frederick J. Parker, Sutton Coldfield, and Alan G. Eades, Sedgley, all of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed May 21, 1979, Ser. No. 41,065

Claims priority, application United Kingdom, May 25, 1978, 22248/78

Int. Cl.³ C08L 77/02, 77/06

U.S. Cl. 525—421

12 Claims

1. A thermoplastic polymer composition consisting essentially of a mixture of a thermoplastic aliphatic polyamide and, as a modifier, from 0.5 to 50 percent by weight of a copolymer of nylon 6 and an acrylic polymer in which the proportion of the acrylic polymer in the copolymer is not more than 25 percent and in which the acrylic polymer comprises molecular chains derived from acrylonitrile or from a major proportion

of an alkyl ester of an acrylic or methacrylic acid and a minor proportion of a copolymerizable unsaturated carboxylic acid, said copolymer being the co-condensate of said nylon 6 and said acrylic polymer, carboxylic acid groups of the acrylic polymer having been reacted with amide groups of the nylon 6 to form carbonamide linkages.

4,247,666

POWDER COATING COMPRISING BLOCKED ISOCYANATE

Kazutaka Mochizuki, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Japan

Division of Ser. No. 868,061, Jan. 9, 1978, Pat. No. 4,171,305.

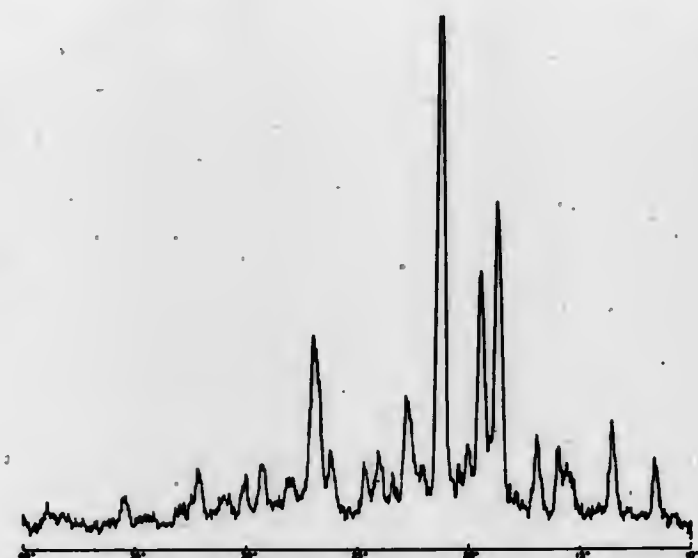
This application May 29, 1979, Ser. No. 43,101

Claims priority, application Japan, Jan. 14, 1977, 52-3200

Int. Cl.³ C08G 18/80

U.S. Cl. 525—528

4 Claims



3. In a powder coating composition comprising a blocked polyisocyanate and a polyol resin having a melting point not less than 40° C., the improvement which comprises using as a blocked polyisocyanate substantially pure crystals of ε-caprolactam diblocked ω,ω'-diisocyanato-1,3-dimethylbenzene, said crystals melting at 110° C. or higher.

4,247,667

METHOD OF CROSSLINKING POLY-α-OLEFIN SERIES RESINS

Akio Nojiri, Yokohama; Takashi Sawasaki, and Toshio Koreeda, both of Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,859

Claims priority, application Japan, Mar. 3, 1978, 53-23602

Int. Cl.³ C08F 8/00, 8/42; C08C 19/00

U.S. Cl. 525—254

15 Claims

1. A method of crosslinking poly-α-olefin series resins, comprising the steps of

subjecting a resin composition to graft reaction under a volume ratio of oxygen to the resin composition set at less than 0.1 and at temperatures ranging between the thermal decomposition temperature of the radical generating agent and 230° C., said composition comprising at least one kind of poly-α-olefin series resin selected from the group consisting of polypropylene series resin, poly(butene-1) series resin and poly(4-methyl pentene-1) series resin; a radical generating agent selected from the group consisting of dibenzoyl peroxide and t-butyl perbenzoate; and a silane compound having the general formula of RR'SiY₂, where "R" is a monovalent olefinically unsaturated (i) hydrocarbon group or (ii) hydrocarbonoxy group, "Y" is an organic group capable of hydrolysis, and "R'" is a monovalent hydrocarbon group except aliphatic

unsaturated hydrocarbon groups, or the group "Y" or "R" defined above, and
bringing the resultant graft polymer into contact with water so as to cause crosslinking reaction under the action of a silanol condensation catalyst added to the reaction system before or after the graft reaction step.

4,247,668

PROCESS FOR PREPARING STYRENIC RESINS

William J. I. Bracke, Hamme, and Emmanuel Lanza, Brussels, both of Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed Mar. 27, 1980, Ser. No. 134,472

Int. Cl.³ C08F 257/02

U.S. Cl. 525—313

15 Claims

1. A process for preparing rubber reinforced styrenic resins wherein the rubbery copolymer is formed in situ by suspension polymerization, which comprises the steps of
introducing into a suspension of styrenic resin beads, under an oxygen free atmosphere, a polymerization inhibitor for the acrylic monomer, said inhibitor easily generating nitrogen oxides,
introducing into said suspension an acrylic monomer, carrying out the absorption of the acrylic monomer by the styrenic resin, at a temperature ranging from about 110° to about 130° C., over a period of time sufficient to obtain a homogeneous distribution of the monomer in the styrenic resin,
cooling the said suspension to a temperature ranging between about 80° and about 100° C.,
introducing into said suspension, during the cooling period, a decomposing agent of the polymerization inhibitor of the acrylic monomer,
introducing into said suspension, after the cooling period, a free radical polymerization catalyst together with from about 20 to about 50% of a monomer capable of crosslinking the rubbery polymer, said introduction being carried out over a period of time ranging from about 1/2 to about 2 hours,
introducing into said suspension the rest of the monomer capable of crosslinking the rubbery polymer, said introduction being carried out over a period from about 4 to about 10 hours,
completing the suspension polymerization.

4,247,669

PROCESS FOR THE POLYMERIZATION OF OLEFINS

Luigi Reginato, Brussels; Charles Bienfait, Vilvorde, and Jacques Stevens, Braine-l'Alleud, all of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Continuation of Ser. No. 681,576, Apr. 29, 1976, abandoned, which is a continuation of Ser. No. 153,788, Jun. 16, 1971, abandoned. This application Dec. 26, 1979, Ser. No. 106,711

Claims priority, application Luxembourg, Jun. 18, 1970, 61150; Aug. 10, 1970, 61839

Int. Cl.³ C08F 4/02, 10/02

U.S. Cl. 526—156

7 Claims

1. A process for the polymerization of ethylene which comprises contacting ethylene, at a temperature and at a pressure sufficient to initiate the polymerization reaction, with a catalytic amount of
(a) a tri(C₄-C₁₈alkyl) aluminum compound; and
(b) a supported cocatalyst prepared by reacting, under substantially anhydrous conditions,
(1) titanium tetrachloride together with
(2) an activated alumina having a high surface area and an internal pore volume greater than 0.8 cc/g., to form a supported cocatalyst in which (a) the TiCl₄ is chemically bound to and supported by the activated alumina, (b) the concentration of the titanium compound is greater than 10 grams of titanium metal per kilogram of activated alumina, and (c) the ratio of chlorine to tita-

nium metal in the supported cocatalyst is higher than that of the TiCl₄.

4,247,670

CURABLE MIXTURES BASED ON MALEIMIDE AND 2,2,4-TRIMETHYL-1,2-DIHYDROQUINOLINE

Alfred Renner, Münchenstein, and Sheik Abdul-Cader Zahir, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 783,571, Apr. 1, 1977, Pat. No. 4,160,859. This application Mar. 30, 1979, Ser. No. 25,311

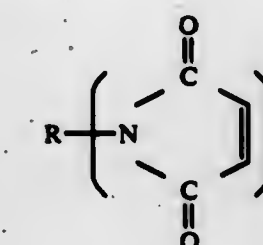
Claims priority, application Switzerland, Apr. 8, 1976, 4441/76

Int. Cl.³ C08G 69/26, 73/10; C08F 222/40

U.S. Cl. 526—259

7 Claims

1. A curable composition which consists essentially of:
(a) a maleimide of formula I



wherein R denotes an n-valent aliphatic or aromatic radical and n denotes the number 2;

(b) 2,2,4-trimethyl-1,2-dihydroquinoline; in such ratio that for 1 imido group equivalent of component (a) is used 0.05 to 1 mole of 2,2,4-trimethyl-1,2-dihydroquinoline (b); and
(c) a copolymerizable compound having at least one polymerizable, olefinic double bond, in an amount up to 50% by weight, relative to the total weight of components (a) plus (b).

4,247,671

HYDROCUREABLE COMPOSITIONS CONTAINING OXAZOLINE GROUPS

R. Larry Reitz, Salem, Conn.; Thomas W. Hutton, Doylestown, and Sheldon N. Lewis, Willow Grove, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

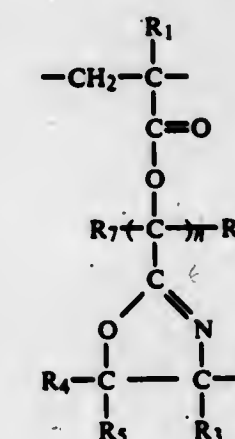
Division of Ser. No. 809,742, Jun. 24, 1977. This application Apr. 11, 1979, Ser. No. 29,225

Int. Cl.³ C08F 26/06

U.S. Cl. 526—260

14 Claims

1. An addition polymer having at least five mers and a molecular weight of up to about 2,000,000 and containing in the backbone of said polymer a plurality of units derived from the group consisting of corresponding acrylic, and methacrylic, acid esters represented by the formula



wherein:

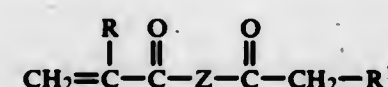
n is an integer of from 1 through 20;
R₁ is selected from the group consisting of hydrogen and methyl; and

R₂, R₃, R₄, R₅, R₆ and R₇ are independently selected from the group consisting of hydrogen and alkyl of from 1 through 20 carbon atoms.

4,247,673 CROSSLINKABLE POLYMERS DERIVED FROM AMIDE COMPOUNDS

Ignazio S. Ponticello, Rochester; Kenneth R. Hollister, Pittsford, and Richard C. Tuites, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 971,463, Dec. 20, 1978. This application Oct. 15, 1979, Ser. No. 85,138
Int. Cl.³ C08F 26/08

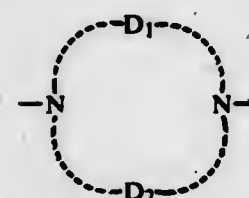
U.S. Cl. 526—263 10 Claims
1. A crosslinkable polymer of at least one polymerizable compound of formula (I):



wherein R is hydrogen or methyl; R¹ is cyano or



wherein R² is alkyl; Z is —X—R³—X— or



(I) wherein each —X₄— is —O— or —NR⁴—, provided at least one —X— is —NR⁴—, wherein R⁴ is hydrogen or alkyl, R³ is divalent hydrocarbon and D₁ and D₂ together are the carbon atoms necessary to complete a 5 to 7 membered ring.

4,247,674 USE OF BIS(FLUOROALIPHATICSULFONYL)IMIDES IN POLYMERIZATION OF ORGANOCYCLOSILOXANES

Robert J. Kosher, Mahtomedi, and Stephen W. Bany, North Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Aug. 13, 1979, Ser. No. 65,988
Int. Cl.³ C08G 77/04

U.S. Cl. 528—21 16 Claims
1. The process comprising the steps of mixing an organocyclosiloxane with from about 0.05 to 10 weight percent, based on the weight of the organocyclosiloxane, of a bis(fluoroaliphaticsulfonyl)imide as a catalyst for polymerization thereof and polymerizing said organocyclosiloxane.

4,247,675 POLYURETHANE RESINS AND POLYURETHANE RESIN COATING COMPOSITIONS

Tadanori Fukuda, Otsu; Sadayuki Sakamoto, Shiga, and Masami Saito, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Aug. 14, 1979, Ser. No. 66,407
Int. Cl.³ C08G 18/00

U.S. Cl. 528—44 12 Claims
1. A polyurethane resin having an excellent weather resistance, which is a reaction product obtained by causing (A) a polyol to react with (B) a trifunctional isocyanate which is expressed by the following general formula:

4,247,672

HEAT-CURABLE MIXTURES BASED ON POLYIMIDES AND POLY-β-IMINOCROTONONITRILES

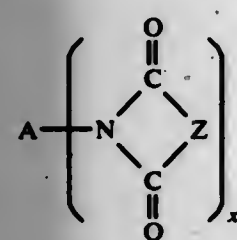
Theobald Haug, Frenkendorf, and Jürg Kiefer, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,223

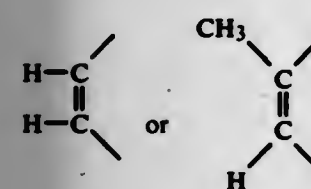
Claims priority, application Switzerland, Jul. 27, 1978, 8083/78

Int. Cl.³ C08F 22/40; C08G 73/12

U.S. Cl. 526—262 10 Claims
1. A heat-curable mixture which is stable on storage, which contains (a) at least one polyimide of the formula I

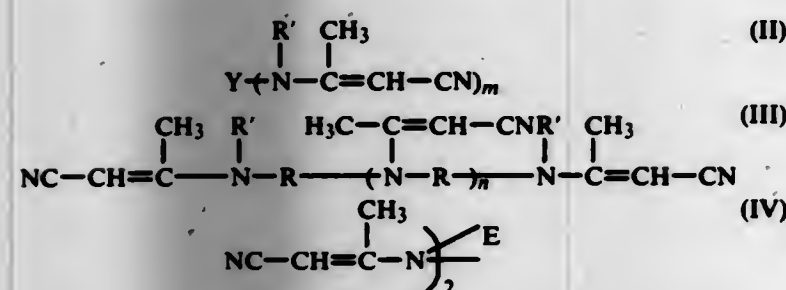


in which A is a x-valent organic radical having at least 2 and not more than 30 carbon atoms, Z is a radical of the formulae



and x is the number 2 or 3, and

(b) at least one poly-β-iminocrotononitrile of the formula II, III or IV



in which Y is a m-valent organic radical having at least 2 and not more than 30 carbon atoms, R' is a hydrogen atom or an alkyl having 1 to 6 carbon atoms, cycloalkyl having 5 or 6 carbon atoms or aryl having 6 to 10 carbon atoms, R is an aliphatic or aromatic radical having not more than 30 carbon atoms, E, together with the two nitrogen atoms, is a five-membered or six-membered ring, m is 2 or 3 and n is 1 or 2.

molecular weight of about 100 to 15000, with a polyisocyanate.

4,247,678 POLYURETHANE DERIVED FROM BOTH AN ALIPHATIC DICARBOXYLIC ACID AND AN AROMATIC DICARBOXYLIC ACID AND FUEL CONTAINER MADE THEREFROM

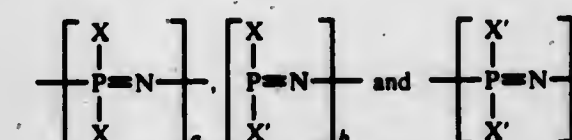
Daniel A. Chung, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 17, 1979, Ser. No. 67,265
Int. Cl.³ C08G 18/42

U.S. Cl. 528—83 9 Claims
1. A polyurethane comprising the reaction product of an aliphatic or alicyclic polyisocyanate with a mixed polyester selected from the class consisting of (1) a copolyester having the structure obtained by condensation of a polyol of less than 900 molecular weight with an aliphatic dicarboxylic acid and an aromatic dicarboxylic acid and (2) a blend of an aliphatic polyester and an aromatic polyester and cured with a curative containing at least two groups selected from the class of amine and hydroxyl.

4,247,679 POLYPHOSPHAZENE COPOLYMERS CONTAINING ACETYLENIC SUBSTITUENTS

William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sep. 8, 1978, Ser. No. 941,103
Int. Cl.³ C08G 83/00

U.S. Cl. 528—168 10 Claims
1. A soluble polyphosphazene copolymer containing units represented by the formulas:

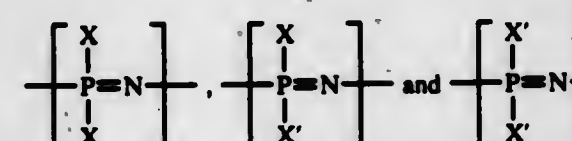


wherein X is —OR'RC—CH in which R and R' are hydrogen or alkyl groups containing from 1 to 6 carbon atoms; wherein X' is selected from the group consisting of substituted and unsubstituted alkoxy, aryloxy, amino and mercapto groups, and wherein 20 ≤ (a+b+c) ≤ 50,000 per polymer.

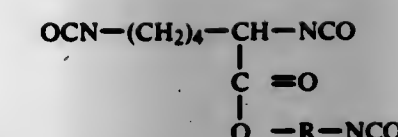
4,247,680 POLYPHOSPHAZENE COPOLYMERS CONTAINING ALKYL BORATE SUBSTITUENTS

William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sep. 8, 1978, Ser. No. 941,118
Int. Cl.³ C08G 83/00

U.S. Cl. 528—168 15 Claims
1. A polyphosphazene copolymer containing randomly distributed units represented by the formulas:



wherein X is —OB(OR)₂ in which R is a branched, straight chain or cyclic alkyl group containing 1 to 12 carbon atoms or mixtures thereof, and wherein X' is selected from the group consisting of substituted and unsubstituted alkoxy, aryloxy, amino and mercapto groups and wherein said copolymer contains from 20 to 50,000 of said units.



(R=a remnant of divalent hydrocarbon group with the carbon number of 2 or 3 (at an NCO/OH mole percentage of 0.5 to 2.0: and of which the concentration of carbamid group is 5 × 10⁻⁴ to 50 × 10⁻⁴ moles per gram of said reaction product, and the bridging parameter 150 to 1,500.

4,247,676 STORABLE FLOWABLE POLYURETHANE ADHESIVE COMPOSITION

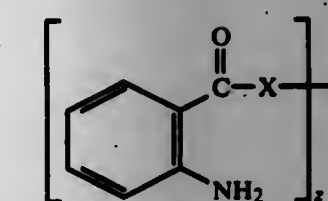
Michael E. Kimball, Ashland, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 13, 1979, Ser. No. 66,153
Int. Cl.³ C08G 18/16, 18/32

U.S. Cl. 528—49 10 Claims
1. A storable liquid polyurethane composition comprising an equivalent of a prepolymer formed by reacting a liquid material having 2 to 5 hydroxyls and characterized by the ability to dissolve at 80° C. more than 0.13 gram of a 50/50 mixture of sodium chloride-4,4'-diphenylene diamine complex and tetraethylene di(2-ethyl-hexanoate) in 100 grams of said liquid material with sufficient organic polyisocyanate to give an excess of 3 to 15 percent free NCO in said prepolymer, said organic polyisocyanate being selected from the class consisting of methane di(phenyl isocyanate) and a mixture of a toluene diisocyanate and a polyaryl methane polyisocyanate with 0.85 to 1.15 equivalents of a complex of an alkali metal salt with 4,4'-diphenylmethane diamine, said alkali metal being selected from the class consisting of sodium, potassium and lithium.

4,247,677 NOVEL POLYETHERS HAVING TERMINAL AMINO GROUPS AND PLASTIC MATERIALS MADE THEREFROM

Oskar Schmidt, Kittsee, and Walter Sibrat, Tulla, both of Austria, assignors to Lim-Holding S.A., Luxembourg, Luxembourg
Continuation-in-part of Ser. No. 964,841, Nov. 29, 1978, which is a division of Ser. No. 735,291, Oct. 26, 1976, Pat. No. 4,129,741.
This application Apr. 13, 1979, Ser. No. 29,960
Int. Cl.³ C08G 18/32, 18/14

U.S. Cl. 528—68 21 Claims
1. Plastic materials produced according to the isocyanate polyaddition process by reacting compounds having terminal amino groups, said compounds being of the general formula



wherein z is an integer of 2 to 4, X is oxygen or sulfur and R is a group of the formula



wherein k stands for an integer of 1 to 4, Ar is an aromatic group, Y when k=1 is B and when k=2 is an alkylidene group having 1 to 5 carbon atoms and

B represents a divalent polyalkylene ether group or polyalkylene thioether group such as it is obtained by the removal of the hydroxyl or mercapto groups from a polyalkylene ether diol or a polyalkylene thioether dithiol, of a

4,247,681

AROMATIC POLYESTERS OF 9,9-BIS-(4-HYDROXYPHENYL)-FLUORENE, PHTHALIC ACIDS AND PHOSPHORUS HALIDES

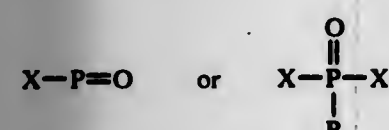
Hermann Mark, Brooklyn, N.Y., and Otto Szabo, Vienna, Austria, assignors to Isorolta Österreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria
Filed Jul. 17, 1979, Ser. No. 58,272

Claims priority, application Austria, Jul. 17, 1978, 5137/78
Int. Cl.³ C08G 63/68

U.S. Cl. 528—169

8 Claims

1. An aromatic polyester composition prepared by the polycondensation of a mixture comprised of
 - (a) a phenol component comprised of 50 to 100% of 9,9-bis-(4-hydroxyphenyl)-fluorene,
 - (b) from about 50 to 92 mol percent, based on the number of moles of component (a), of an acid halide of isophthalic acid and/or terephthalic acid; and
 - (c) from about 8 to 50 mol percent, based on the number of moles of component (a), of one or more compounds of the formula



wherein X is a halogen atom and R is a halogen atom or an alkyl or alkoxy radical having from 1 to 6 carbon atoms or an aryl or phenoxy group having from 6 to 8 carbon atoms.

4,247,682

AROMATIC KETONE AND SULFONE POLYMERS AND PROCESS FOR THE PREPARATION THEREOF

Klaus J. Dahl, Atherton, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 629,887, Nov. 11, 1975, abandoned. This application May 7, 1979, Ser. No. 36,544

The portion of the term of this patent subsequent to Apr. 27, 1993, has been disclaimed.

Int. Cl.³ C08G 67/00, 75/23

U.S. Cl. 528—175

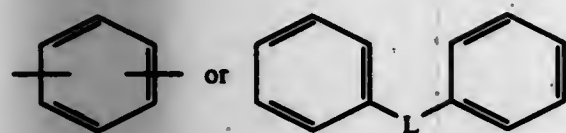
37 Claims

1. A polymer which comprises repeating units of the general formula:

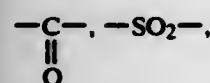
$$-\text{M}-\text{Ar}-\text{D}-\text{Ar}'-$$
 wherein each of M and D, which may be the same or different, is



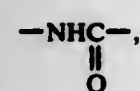
or $-\text{SO}_2-$, Ar is a group of the formula



wherein L is

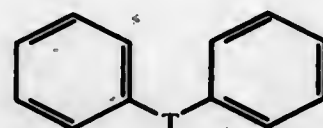


phenyleneoxy,

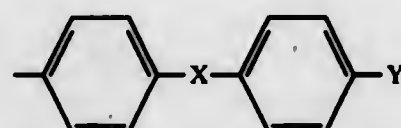


a covalent bond, $-\text{O}-$, $-\text{S}-$, a group of the formula

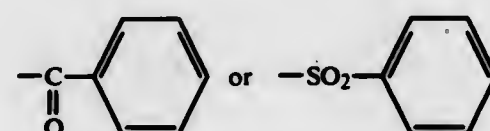
$-\text{CR}_2-$ wherein each of the R groups, which may be the same or different, is $-\text{H}$, alkyl, fluoroalkyl, phenyl or phenyl substituted by an electron-withdrawing group, or a group of the formula $-\text{O}-\text{Ar}-\text{O}-$ wherein Ar is as defined above; and Ar' is a group of the formula



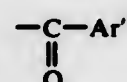
wherein T is $-\text{O}-$, $-\text{S}-$, phenyleneoxy, a group of the formula $-\text{CR}_2-$ as defined above or a group of the formula $-\text{O}-\text{Ar}-\text{O}-$ as defined above; the polymer molecules being capped at each end by a capping group, each of the capping groups, which may be the same or different, being a group of the formula



wherein X is a covalent bond $-\text{O}-$, $-\text{S}-$, or a group of the formula $-\text{CR}_2-$ as defined above, and Y is $-\text{CN}$, $-\text{NO}_2$,



or, if X is a covalent bond, hydrogen; a group of the formula



wherein Ar' is a phenyl, naphthyl, biphenyl or terphenyl group which is unsubstituted or substituted by at least one electron-withdrawing group which is substituted on the phenoxyphenyl group which is substituted on the phenoxy moiety by at least one electron-withdrawing group; or a group of the formula $-\text{SO}_2-\text{Ar}''$ wherein Ar'' is as defined above.

4,247,683

POLYMERIZATION OF 2-PYRROLIDONE WITH QUATERNARY AMMONIUM ACCELERATOR BY RECOVERING AND REUSING SAME

Carl E. Barnes, 482 Trinity Pass Rd., New Canaan, Conn. 06840, and Arthur C. Barnes, 320 Stamford Ave., Stamford, Conn. 06902

Division of Ser. No. 39,773, May 17, 1979, which is a continuation-in-part of Ser. No. 899,066, Apr. 24, 1978, abandoned. This application Oct. 15, 1979, Ser. No. 84,814
Int. Cl.³ C08G 69/24

U.S. Cl. 528—313

3 Claims

1. In the polymerization of 2-pyrrolidone utilizing an alkali metal pyrrolidonate, a quaternary ammonium accelerator and a polymerization activator to form a melt extrudable polymer of 2-pyrrolidone, a method of recovering and re-using both the unpolymerized 2-pyrrolidone and the quaternary ammonium accelerator comprising the steps of:

- (1) extracting the polymer formed with a solvent for both the 2-pyrrolidone and the quaternary ammonium accelerator,
- (2) neutralizing the extract,
- (3) removing the solvent,
- (4) drying the mixture by adding 2-pyrrolidone and distilling

over under vacuum sufficient 2-pyrrolidone to remove substantially all of the water,

- (5) adding an anhydrous alkali metal pyrrolidonate plus a quantity of dry 2-pyrrolidone sufficient to make the total amount added and remaining in the mixture equal to that removed from the original mixture in the form of polymer, and
- (6) contacting the resulting mixture with a polymerization activator to again effect polymerization.

4,247,684

POLYMERIZATION OF 2-PYRROLIDONE WITH CESIUM OR RUBIDIUM CATALYST

Carl E. Barnes, 482 Trinity Pass Rd., New Canaan, Conn. 06840, and Arthur C. Barnes, 320 Stamford Ave., Stamford, Conn. 06902

Division of Ser. No. 39,773, May 17, 1979, which is a continuation-in-part of Ser. No. 899,066, Apr. 24, 1978, abandoned. This application Oct. 15, 1979, Ser. No. 84,815
Int. Cl.³ C08G 69/24

U.S. Cl. 528—313

2 Claims

1. The method of polymerizing 2-pyrrolidone comprising contacting a substantially anhydrous mixture of monomeric 2-pyrrolidone, a catalyst embodying an alkali metal salt of 2-pyrrolidone the alkali metal being selected from the group consisting of rubidium and cesium, with an activator consisting of sulfur dioxide at a temperature of from 20° to 60° C. whereby a white polymer of 2-pyrrolidone is formed having thermal characteristics suitable for melt extrusion.

4,247,685

CONTINUOUS BULK POLYMERIZATION OF 2-PYRROLIDONE

Carl E. Barnes, 482 Trinity Pass, New Canaan, Conn. 06840, and Arthur C. Barnes, 320 Stamford Ave., Stamford, Conn. 06902

Continuation-in-part of Ser. No. 839,773, May 17, 1979, which is a continuation-in-part of Ser. No. 899,066, Apr. 24, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 114,229
Int. Cl.³ C08G 69/20, 69/46

U.S. Cl. 528—313

8 Claims

1. A continuous process for polymerizing 2-pyrrolidone via the bulk polymerization method to form pellets comprising the steps of:

- (1) preparing an anhydrous catalyst solution of an alkali metal pyrrolidonate in 2-pyrrolidone, and
- (2) preparing an anhydrous accelerator solution of a quaternary ammonium salt the anion of which is selected from the group consisting of sulfate and bisulfate, and
- (3) mixing these two solutions and adding a polymerization initiator selected from the group consisting of CO_2 and SO_2 , and
- (4) pumping the mixed solutions containing the initiator under pressure at a metered rate to a manifold to which are connected polymerization tubes maintained at a slightly elevated temperature, and
- (5) applying sufficient pressure by pumping to force the polymerizing mixture through the tubes, and
- (6) providing sufficient residence time in the tubes so that solid rods of polymer emerge from the open ends of the tubes, and
- (7) cutting the rods of polymerized 2-pyrrolidone thus formed into pellets.

4,247,686

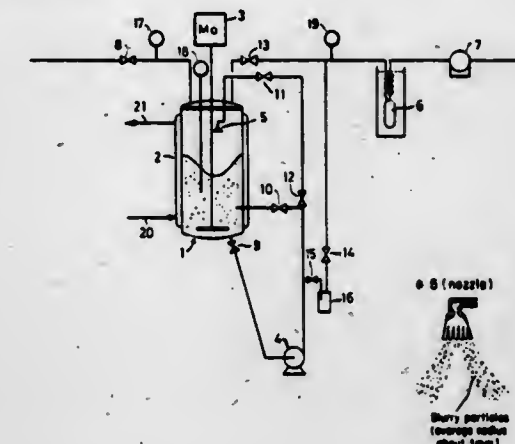
PROCESS FOR REMOVING VCM FROM POLYVINYL CHLORIDE

Yutaka Takemoto, Chiba; Syozo Senguro, and Masayoshi Nitta, both of Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 683,801, May 6, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 897,156
Claims priority, application Japan, May 4, 1975, 50-58074
Int. Cl.³ C08F 6/24

U.S. Cl. 528—501

13 Claims



1. In a process for reducing the concentration of vinyl chloride monomer in a polymerized slurry obtained by the suspension-polymerization, in an aqueous medium, of vinyl chloride alone or a mixture of vinyl chloride with a monomer copolymerizable therewith, the improvement wherein the polymerized slurry, at a temperature between 40° C. and 100° C., is jetted into a gas phase portion of a vessel maintained at a pressure of higher than 55.4 mmHg abs. and lower than atmospheric pressure while circulating the polymerized slurry through the gas phase portion of the vessel until the concentration of vinyl chloride monomer in the polymerized slurry is reduced to less than 500 ppm.

4,247,687

AMINOGLYCOSIDE ANTIBIOTIC DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Stephen Hanessian, Beaconsfield, Canada, assignor to Farmila Carlo Erba S.p.A., Milan, Italy

Filed Jun. 12, 1979, Ser. No. 47,911
Int. Cl.³ C07H 15/22

U.S. Cl. 536—12

6 Claims

6. A process for preparing 4'-deoxyneomycin B, comprising the following steps:

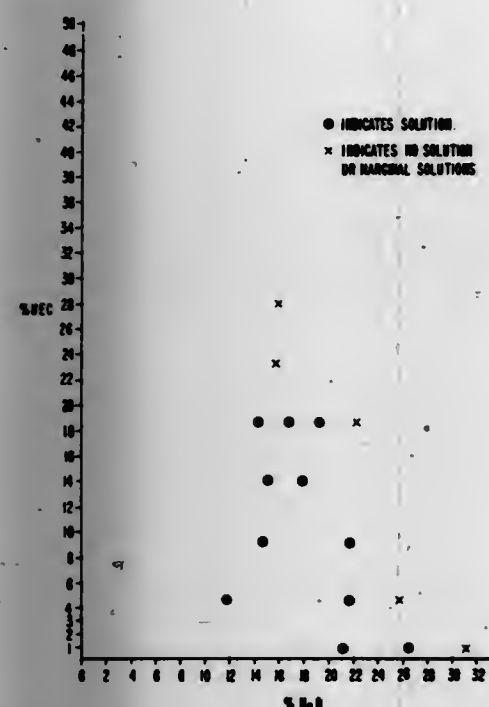
- (a) subjecting paromomycin (1) to O-benzoylation with benzoyl chloride to give the corresponding hexa-O-benzoyl derivative (2);
- (b) subjecting (2) to hydrolysis by heating in the presence of glacial acetic acid to give the intermediate (3) having two free hydroxyl groups at C-4' and C-6';
- (c) chlorinating (3) with sulfur chloride to give the corresponding 4',6'-dichloro-di-deoxy analog (4);
- (d) selectively dechlorinating (4) at C-4' with tributyl tin hydride in the presence of azobisisobutyronitrile to give the 4'-deoxy derivative (5);
- (e) subjecting (5) to azidolysis with sodium azide to convert the 6'-chloro group to the 6'-azido compound (6);
- (f) subjecting (6) to de-O-benzoylation with sodium methoxide to give compound (7);
- (g) subjecting (7) to catalytic hydrogenolysis in the presence of palladium to give 4'-deoxy-neomycin B (8); and
- (h) recovering and purifying the product of the catalytic hydrogenolysis as substantially pure 4'-deoxy-neomycin B.

4,247,688

COMPOSITION AND PROCESS FOR MAKING
PRECIPITATED HYDROXYETHYLCELLULOSE

Neal E. Franks, Suffern, N.Y., and Julianna K. Varga, Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.
Continuation-in-part of Ser. No. 938,907, Sep. 1, 1978, which is a continuation-in-part of Ser. No. 854,957, Nov. 25, 1977, Pat. No. 4,145,532. This application Jul. 2, 1979, Ser. No. 54,356
Int. Cl.³ C08B 11/22; C08L 1/28
U.S. Cl. 536—96

12 Claims



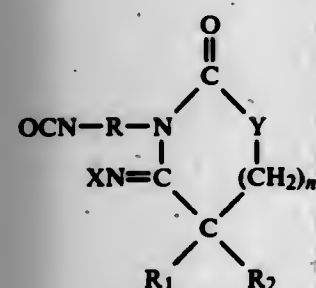
6. In a process for precipitating hydroxyethylcellulose from a solution thereof which comprises dissolving the hydroxyethylcellulose in a solvent for the hydroxyethylcellulose containing a tertiary amine oxide and thereafter shaping the solution and separating the hydroxyethylcellulose from the tertiary amine oxide, the improvement wherein the solution is prepared by dissolving at least about 1% by weight of hydroxyethylcellulose having a molar substitution of less than 1.0 and a degree of substitution of less than 0.64 in a tertiary amine oxide solvent which contains a hydroxyethylcellulose solubility enhancing amount of water.

4,247,689

PREPARATION OF ISOCYANATE DERIVATIVES OF
1,3[OXAZOLES, OXAZINES, DIAZOLES AND DIAZINES]

Kurt Findeisen, Kuno Wagner, and Walter Uerdingen, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 656,909, Feb. 10, 1976, Pat. No. 4,173,567.
This application Jun. 11, 1979, Ser. No. 47,515
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1975, 2507682

Int. Cl.³ C07D 265/04, 263/04, 233/70, 239/22
U.S. Cl. 544—97 2 Claims
1. A process for the production of isocyanates corresponding to the formula



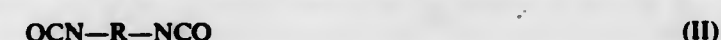
in which
R represents a substituted or unsubstituted aliphatic hydro-

carbon group having 2 to 12 carbon atoms, a substituted or unsubstituted cycloaliphatic hydrocarbon group having 4 to 15 carbon atoms, a substituted or unsubstituted aromatic hydrocarbon group having 6 to 15 carbon atoms or a substituted or unsubstituted araliphatic hydrocarbon group having 7 to 15 carbon atoms, said hydrocarbon group having at most three substituents selected from the group consisting of halogen, C₁-C₄-alkyl, methoxy, nitro and C₁-C₄-carbalkoxy groups,

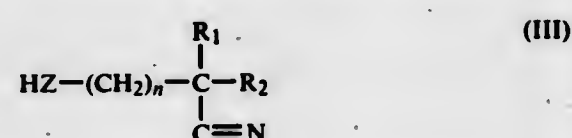
Y represents —O— or —N(R₃)—, where R₃ represents hydrogen, an aliphatic hydrocarbon group having 1 to 4 carbon atoms, a cycloaliphatic hydrocarbon group having 5 to 6 carbon atoms, a phenyl group or —CO—N—H—R—NCO,

n=0 or 1,
R₁ and R₂ are the same or different and represent hydrogen, a substituted or unsubstituted aliphatic hydrocarbon group having 1 to 17 carbon atoms, a substituted or unsubstituted cycloaliphatic hydrocarbon group having 4 to 15 carbon atoms, a substituted or unsubstituted aromatic hydrocarbon group having 6 to 15 carbon atoms or a substituted or unsubstituted araliphatic hydrocarbon group having 7 to 15 carbon atoms, said hydrocarbon group having at most three substituents selected from the group consisting of halogen, C₁-C₄-alkyl, methoxy, nitro and C₁-C₄-carbalkoxy groups or R₁ or R₂ together with the ring carbon atom form a cycloaliphatic ring having 4 to 15 carbon atoms, and

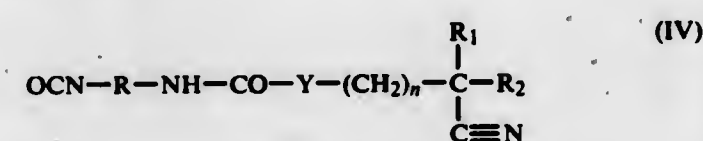
X represents hydrogen or —CO—NH—R—NCO, wherein an organic diisocyanate corresponding to the formula



is reacted with a compound corresponding to the formula



under reaction conditions sufficient to form an adduct corresponding to the formula



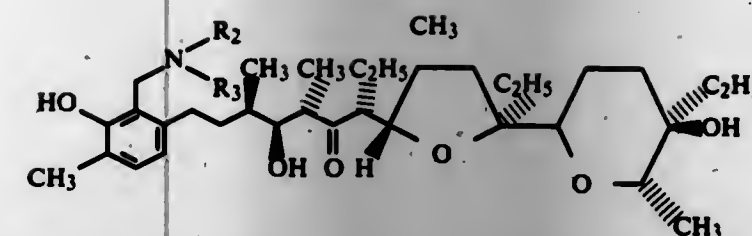
and the adduct thus formed is subsequently converted by heating in the presence of excess quantities of the diisocyanate of formula (II) into the required end product (I) where R, n, R₁ and R₂ are as defined above and Z represents —O— or N(R₄)—, where R₄ represents hydrogen, an aliphatic hydrocarbon radical having 1 to 4 carbon atoms, a cycloaliphatic hydrocarbon radical having 5 to 6 carbon atoms or a phenyl radical.

4,247,690

LASALOCID DERIVATIVES

David Coffen, Glen Ridge, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 921,645, Jul. 3, 1978, Pat. No. 4,193,928, which is a continuation-in-part of Ser. No. 836,350, Sep. 26, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,870
Int. Cl.³ C07D 309/06, 295/08

U.S. Cl. 544—149 1 Claim
1. A compound of the formula



wherein R₂ and R₃ are selected from the group consisting of lower alkyl, cycloalkyl or wherein R₂ and R₃ together with the nitrogen atom may form a 5 or 6 membered heterocyclic ring selected from the group consisting of morpholino, piperazino, piperidino and pyrrolidino.

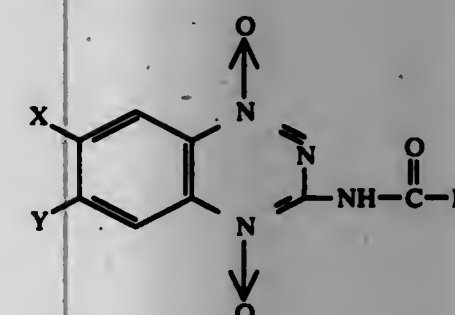
4,247,691

1,2,4-BENZOTRIAZINE-1,4-DI-N-OXIDES

Peter J. Die, Muttentz, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 17, 1978, Ser. No. 878,636
Claims priority, application Switzerland, Feb. 22, 1977, 2184/77

Int. Cl.³ C07D 253/08 3 Claims
U.S. Cl. 544—183
1. A compound of the formula I



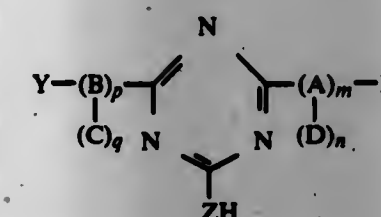
wherein
X and Y, each independently of the other, represent hydrogen, halogen, C₁-C₄ alkyl, C₁-C₄ alkoxy, and R represents C₂-C₈ alkenyl which is unsubstituted or substituted by C₁-C₄ alkyl or halogen.

4,247,692

TRIAZINE DERIVATIVES

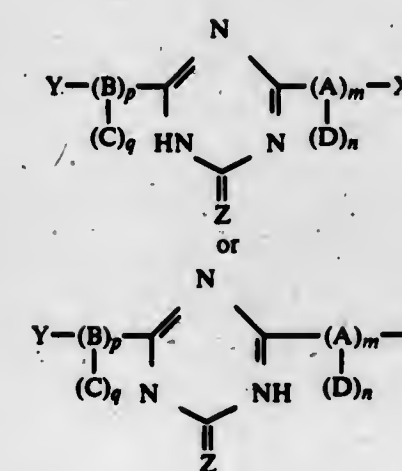
Hermannus J. M. Sinnige, Apeldoorn; Hendrik J. Hageman; Willem J. Mijs, both of Rozendaal; Stephanus A. G. de Graaf, Renkum, all of Netherlands, and Vincent Oakes, St. Helens, England, assignors to Akzona Incorporated, Asheville, N.C.
Continuation of Ser. No. 651,087, Jan. 21, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 916,432
Claims priority, application Netherlands, Jan. 25, 1975, 7500890

Int. Cl.³ C07D 251/16, 251/18, 251/22, 251/24 28 Claims
U.S. Cl. 544—194
1. A compound of the formula:

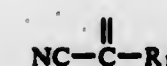


wherein m, n, p, and q are independently 0 or 1, provided that n=0 if m=0 and q=0 if p=0; when m=0, X is selected from the group consisting of chlorine, ZH, alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and phenyl; when m=1 and n=0, X is selected from the group consisting of alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl

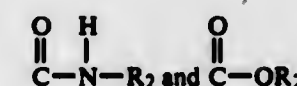
having 3 to 6 carbon atoms, and phenyl; when m=1 and n=1, X is selected from the group consisting of hydrogen, alkanoyl having 2 to 20 carbon atoms, benzoyl, benzene sulphonyl, amino, monoalkylamino having 2 to 8 carbon atoms, dialkylamino having 2 to 8 carbon atoms, phenylamino, alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and phenyl; when p=0, Y is selected from the group consisting of ZH, alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and phenyl; when p=1 and q=0, Y is selected from the group consisting of alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and phenyl; when p=1 and q=1, Y is selected from the group consisting of hydrogen, alkanoyl having 2 to 20 carbon atoms, benzoyl, benzene sulphonyl, amino, monoalkylamino having 2 to 8 carbon atoms, dialkylamino having 2 to 8 carbon atoms, phenylamino, alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and phenyl; when m=1 and n=1, A is nitrogen; when p=1 and q=1, B is nitrogen; when m=1 and n=0, A is oxygen or sulfur; when p=1 and q=0, B is oxygen or sulfur; when p=1 and q=1, C is selected from the group consisting of hydrogen, alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and phenyl; when n=1 and m=1, D is selected from the group consisting of hydrogen, alkyl having 1 to 20 carbon atoms, alkenyl having 2 to 20 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and phenyl; the groups Y, B, and C being capable of forming a heterocyclic ring having 2 to 5 carbon atoms in which B represents the hetero nitrogen atom; the groups X, A, and D being capable of forming a heterocyclic ring having 2 to 5 carbon atoms in which A represents the hetero nitrogen atom; in all instances ZH represents a group which may lose a hydrogen atom in favor of an adjacent nitrogen atom of the triazine ring to form a desmotropic structure of the formula:



Z is in all instances a group of the formula



in which R₁ is selected from the group consisting of CN,



wherein R₂ is selected from the group consisting of hydrogen, alkyl, aralkyl, and cycloalkyl.

4,247,693

PROCESS FOR PREPARING

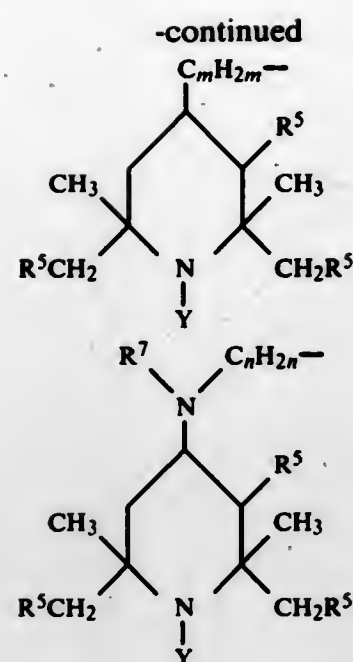
2,4,5,6-TETRAAMINOPYRIMIDINE SULFATE

Patrick F. O'Brien, Piscataway; John Kazan, Bridgewater, and John R. Andrade, Bound Brook, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Filed Sep. 28, 1979, Ser. No. 79,664
Int. Cl.³ C07D 239/50

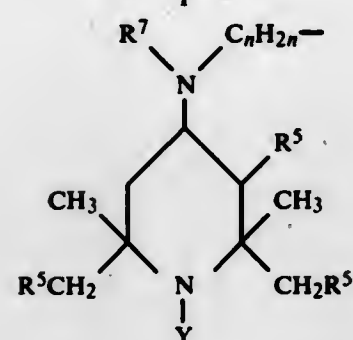
U.S. Cl. 544—323

7 Claims

1. A process for preparing 2,4,5,6-tetraaminopyrimidine sulfate (TAPS) comprising (1) reacting about one molecular proportion of 5-nitroso-2,4,6-triaminopyrimidine (NTAP) in water with about 2.0 to 2.5 molecular proportions of zinc dust and about 4.0 to 4.7 molecular proportions of a suitable acid to provide a reaction mixture having a pH below 7; (2) reacting said reaction mixture at a temperature of about 20° to 65° C. to form the acid salt of 2,4,5,6-tetraaminopyrimidine; (3) adjusting the pH to about 2.0 to 2.5 by adding said acid to form a solution of said salt; (4) separating the insoluble materials from step (3) to obtain a wet cake and a mother liquor; (5) adding sulfuric acid to said mother liquor to adjust the pH to about 0.2 to 0.5 while maintaining the temperature at about 20° to 60° C.; (6) cooling the reaction mixture of step (5) to about 0° to 10° C. the precipitate 2,4,5,6-tetraaminopyrimidine sulfate; and (7) recovering said precipitate.

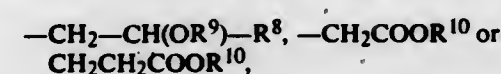


III

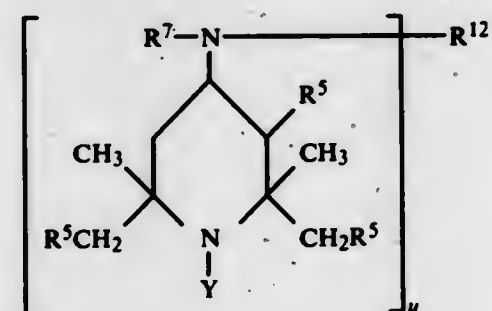


IV

Y represents hydrogen, oxyl, C₁-C₁₂-alkyl, C₃-C₆-alkenyl, propargyl, benzyl, 2,3-epoxypropyl, C₂-C₁₂-alkanoyl, C₃-C₄-alkenoyl or a group of the formulae

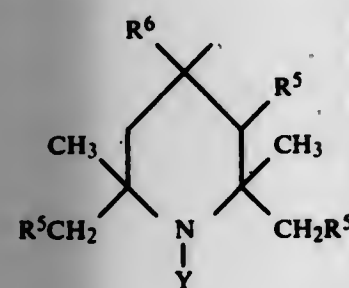


in which R⁸ denotes, hydrogen, methyl or phenyl, R⁹ denotes hydrogen, C₁-C₁₈-alkyl, C₃-C₆-alkenyl, C₅-C₁₂-cycloalkyl, C₇-C₁₄-aralkyl, C₁-C₁₈-alkanoyl, C₃-C₄-alkenoyl or benzoyl and R¹⁰ denotes C₁-C₁₂-alkyl, allyl, cyclohexyl, phenyl or benzyl, m denotes a number from 1 to 5, n denotes a number from 1 to 12, R⁵ is hydrogen or C₁-C₄-alkyl, R⁶ is OH, OC(O)R¹¹, NH₂ or NHC(O)R¹¹, wherein R¹¹ is a monovalent aliphatic, aromatic or araliphatic radical having up to 18 C atoms or a monovalent OH—, Cl—, C₁-C₄-alkyl- or C₁-C₄-alkoxy-substituted aromatic or araliphatic radical having up to 18 C atoms, and R⁷ represents hydrogen, C₁-C₁₈-alkyl, C₃-C₆-alkenyl, C₃-C₆-alkinyl, C₃-C₂₀-alkoxyalkyl, C₇-C₁₄-aralkyl or -hydroxy-aralkyl, 2,3-epoxypropyl, cyanoethyl, C₁-C₁₂-alkanoyl, benzoyl or one of the groups —CH₂—CH(OR⁹)—R⁸, —CH₂—COOR¹⁰ or —CH₂CH₂COOR¹⁰, p is 1, 2 or 3, v is 2 or 3, q is zero, 1 or 2, q is being equal to v-p, r is zero or r is a value of 1 to 2, s has a value of 0 to 2 and L is a ligand of the formula V



V

in which R⁵, R⁷ and Y have the meanings indicated above, u is 1 or 2 and, when u is 1, R¹² represents C₁-C₁₈-alkyl, C₁-C₁₈-alkyl substituted by one or two of the groups OR⁹, COOR¹³ or N(R¹³)₂, in which R¹³ is C₁-C₄-alkyl, C₁-C₁₈-alkyl substituted by morpholino, piperidino, pyrrolidino or tetrahydrofurfuryl, C₃-C₁₂-alkoxyalkyl, cyanoethyl, C₃-C₆-alkenyl, C₃-C₄-alkinyl, C₅-C₁₂-cycloalkyl, C₆-C₁₄-aryl, halogen-, hydroxyl- or C₁-C₄-alkoxy, C₁-C₆-alkyl- or C₂-C₅-alkoxy-carbonyl substituted C₆-C₁₂-aryl, C₇-C₁₆-aralkyl,



II

4,247,694

COMPLEXES OF METAL SALTS OF HYDROXYBENZOIC ACIDS AND PIPERIDINES

Michael Rasberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 876,980, Feb. 13, 1978, abandoned.

This application Oct. 10, 1978, Ser. No. 949,828

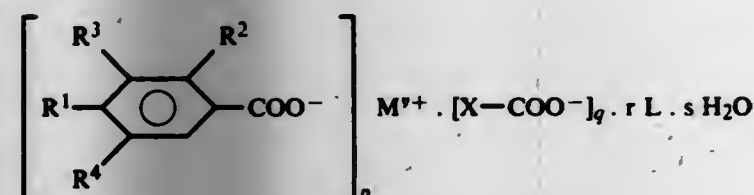
Claims priority, application Switzerland, Feb. 23, 1977, 2219/77

Int. Cl.³ C07F 15/04, 15/06, 3/06

U.S. Cl. 546—11

7 Claims

1. A compound of the formula I

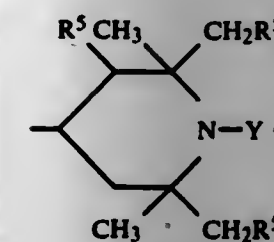


in which either R¹ is hydroxyl and R² is hydrogen or R¹ is hydrogen and R² is hydroxyl, R³ and R⁴ are hydrogen or C₁-C₅-alkyl.

M⁺⁺ represents the v-valent cation of a metal selected from the group of Ni, Co, Al, Zn, Sn, Ca, Mg or Cu or a divalent radical R₂ Sn, in which R denotes C₁-C₈-alkyl or C₃-C₂₁-alkoxycarbonylalkyl

X represents C₁-C₂₀-alkyl or OH- or NH₂-substituted C₁-C₂₀-alkyl, C₅-C₁₂-cycloalkyl or phenyl, or C₁-C₈-alkyl-substituted C₅-C₁₂-cycloalkyl or phenyl, C₇-C₁₆-aralkyl, C₇-C₁₆-aralkyl substituted by OH- or a group of the formula II, III or IV,

C₇-C₁₆-aralkyl substituted in the aryl moiety by C₁-C₄-alkyl- and/or hydroxy, or a group of the formula VI



when u is 2, R¹² represents C₂-C₁₂-alkylene, C₂-C₁₂ alkylene substituted by 1 or 2 OH- or —COOR¹³ groups, —NR¹⁴—, interrupted C₂-C₁₂-alkylene wherein R¹⁴ represents hydrogen, C₁-C₁₈-alkyl, cyclohexyl, allyl or benzyl, C₃-C₆-alkenylene, C₆-C₁₀-arylene, C₅-C₈-cycloalkylene, xylylene or a group of the formula —A-Z-A, in which A denotes C₆-C₁₀-arylene or C₅-C₈-cycloalkylene and Z denotes oxygen, CH₂ or SO₂, with the proviso that r is zero only when X represents a group of the formulae II, III or IV.

4,247,695

PROCESS FOR PREPARATION OF QUINACRIDONE PIGMENTS USING MODERATELY CONCENTRATED ACID

Patrick H. Fitzgerald, Edison, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

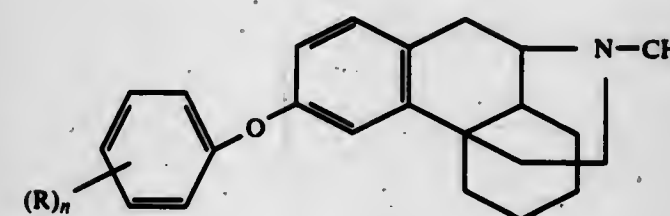
Filed Feb. 26, 1979, Ser. No. 15,535

Int. Cl.³ C09B 48/00

U.S. Cl. 546—49

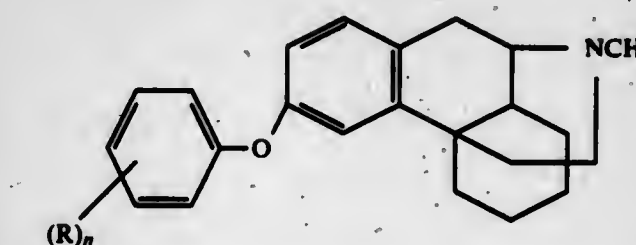
17 Claims

1. A process for preparing beta or gamma linear quinacridone pigments, substituted quinacridone pigments and solid solutions thereof which comprises dry milling linear quinacridone, substituted quinacridone or mixtures thereof until the particle size is less than the desired size, mixing the dry milled product with 0-10% by weight of a surfactant based on the pigment and 45-60% by weight sulfuric acid at a weight ratio of said acid solution to quinacridone of 3:1-6:1 to form a quinacridone slurry at a temperature of 40°-75° C., agitating the slurry for at least 30 minutes, adding at least an equal volume of water to the slurry to form a dilute slurry, agitating the dilute slurry for at least 30 minutes at a temperature of 75°-95° C. and separating the quinacridone pigment and the liquid of the dilute slurry.



wherein R is halo, lower alkyl, nitro, lower alkoxy, hydroxy or hydrogen; and n is an integer from 1 to 15 or pharmaceutically acceptable salts thereof.

3. A compound of the formula



wherein R is halo, lower alkyl, nitro, lower alkoxy, hydroxy or hydrogen, and n is an integer from 1 to 5.

4,247,696

PROCESS FOR PREPARING GAMMA PHASE QUINACRIDONE

Katusya Shibata, Shinnanyo; Motohiro Hamada, Tokuyama, and Eiji Iwamoto, Shinnanyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Nanyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,368

Claims priority, application Japan, Apr. 1, 1978, 53-37467; Apr. 5, 1978, 53-39261

Int. Cl.³ C09B 48/00

U.S. Cl. 546—49

9 Claims

1. A process for preparing a gamma phase quinacridone from a crude quinacridone of an arbitrary crystal phase, which comprises the steps of: dissolving the crude quinacridone in dimethyl sulfoxide in the presence of a caustic alkali and water, and; then incorporating in the solution, so formed, sulfuric acid or a mixture of sulfuric acid with a diluent selected from water, dimethyl sulfoxide and a monohydric alcohol having 1 to 3 carbon atoms at a temperature of from 10° to 80° C., thereby neutralizing the caustic alkali present in the solution to precipitate a finely divided gamma phase quinacridone.

4,247,698

RED COLORING COMPOSITE AND THE METHOD FOR ITS PRODUCTION

Ryosuke Toyama, Kobe; Hiroyuki Inoue, Kyoto; Tetsuro Shingu, Nishinomiya; Yoshio Takeda, Tokushima; Takeshi Ikumoto, Kobe; Hidetoshi Okuyama, Kobe, and Osamu Yamamoto, Kobe, all of Japan, assignors to Taito Co., Ltd., Tokyo, Japan
PCT NO. PCT/JP78/00054, 8371 Date Aug. 9, 1979, 8102(e)
Date Aug. 9, 1979, PCT Pub No. WO 79/00394, PCT Pub. Date Jul. 12, 1979.

This PCT application filed Aug. 9, 1979, Ser. No. 88,725

Claims priority, application Japan, Dec. 15, 1977, 52-151145

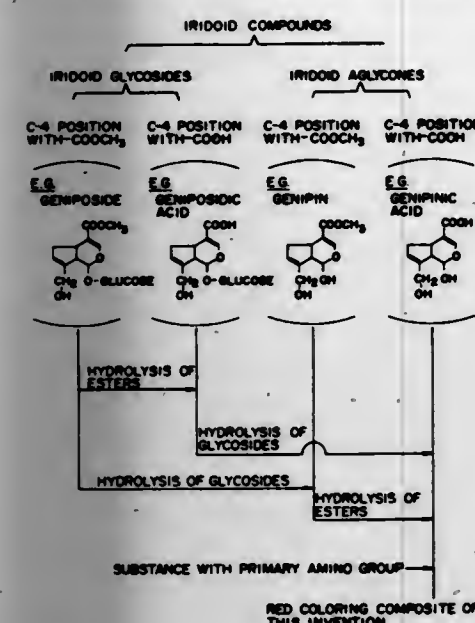
Int. Cl.³ C07D 221/02

U.S. Cl. 546—112

4 Claims

1. Red coloring composite characterized by being obtained by application of a substance possessing a primary amino group to iridoid compounds possessing —COOH group at the C-4 position of the iridoid skeleton, or to iridoid compounds ob-

tained by hydrolysis of substances possessing $-\text{COOCH}_3$ group at the C-4 position, or to the substances containing such



mixed compounds as final structure of $-\text{COOH}$ at the C-4 position.

4,247,699

PROCESS FOR MAKING 2-AMINO-4-HYDROXYQUINOLINES

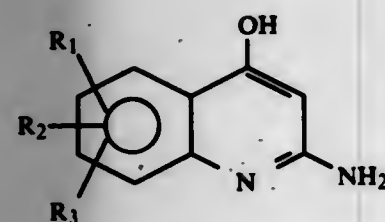
Saul B. Kadis, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 890,738, Mar. 27, 1978, and a continuation-in-part of Ser. No. 759,295, Jan. 14, 1977, abandoned. This application Mar. 14, 1979, Ser. No. 20,290 Int. Cl.³ C07D 215/56, 221/04

U.S. Cl. 546—153

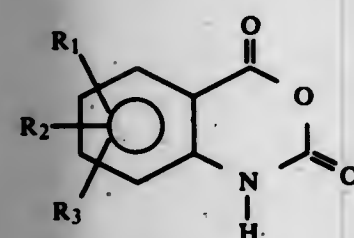
6 Claims

1. A process for production of 2-amino-4-hydroxyquinolines having the formula



wherein each of R_1 , R_2 and R_3 is selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 4 carbon atoms, chloro, bromo, fluoro, hydroxy, methylthio and methylsulfinyl, and R_2 and R_3 when taken together are selected from the group consisting of 1,3-butadienyl and alkylendioxy having from 1 to 2 carbon atoms; which comprises the steps of

(a) reacting an isatoic anhydride of the formula



wherein R_1 , R_2 and R_3 are as defined above, in a reaction-inert solvent with malononitrile in the presence of a base selected from the group consisting of trialkylamines having from 3 to 12 carbon atoms, N,N-dimethylaniline, N-methylmorpholine, alkali metal amides, alkali metal alkoxides, alkali metal hydrides, alkali metal hydroxides, triphenylmethyl sodium, sodium and potassium, at a temperature of from about 20° C. to about 150° C.; and

(b) treating the reaction product of step (a) with (i) a strong

acid selected from the group consisting of hydrobromic acid, hydrobromic acid-acetic acid, hydrochloric acid and sulfuric acid, or (ii) a strong base selected from the group consisting of sodium hydroxide and potassium hydroxide at a temperature of from about 80° C. to about 150° C.

4,247,700

2-(SUBSTITUTEDPIPERIDYLMETHYL)PROPENE AND PROPANE NITRILES

Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

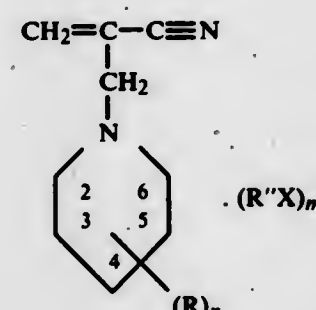
Continuation-in-part of Ser. No. 795,693, May 11, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 8,985

Int. Cl.³ C07D 211/26, 211/40

U.S. Cl. 546—242

4 Claims

1. A compound of the formula:



where

R is hydroxy or hydroxyalkyl; where R'' is hydrogen, C_1 - C_{18} alkyl, benzyl and X is a suitably charged anion; n is the integer of 1 to 4; m is the integer 0 or at least 1.

2. 2-(3-Hydroxypiperidinomethyl)propenenitrile.

4,247,701

CERTAIN PESTICIDAL SUBSTITUTED AMINO LOWER-ALKANOATES OR LOWER-ALKANO-THIOATES CONTAINING PYRIDYL IN THE ESTER PORTION

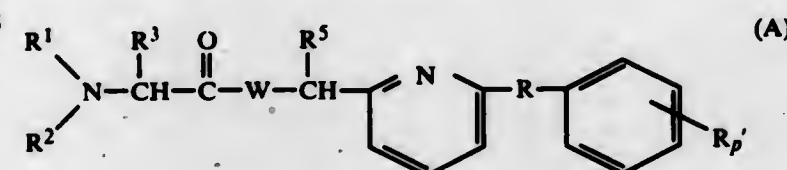
Clive A. Henrick, Palo Alto, Calif., assignor to Zeecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 69,445, Aug. 24, 1979, which is a continuation-in-part of Ser. No. 16,775, Mar. 2, 1979, abandoned. This application Sep. 24, 1979, Ser. No. 78,525 Int. Cl.³ C07D 213/55

U.S. Cl. 546—300

14 Claims

1. A compound of the formula (A):



wherein,

W is oxygen or sulfur;

p is zero, one or two;

R is oxygen, sulfur, methylene or carbonyl;

R^1 is lower alkyl, lower alkenyl, lower alkynyl, lower haloalkyl, lower haloalkenyl, or;

R^2 is selected from the values of R^1 or hydrogen;

R^3 is lower alkyl of 2 to 5 carbon atoms, lower alkenyl of 2 to 5 carbon atoms or lower cycloalkyl of 3 to 4 carbon atoms;

R^5 is hydrogen, cyano, methyl, ethyl, ethynyl, or trifluoromethyl;

R^6 is fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio; and

the salt thereof of a strong organic acid or inorganic acid.

4,247,702

METHOD OF STABILIZING

4-METHYL-5-(2'-CHLOROETHYL)-THIAZOL

Horst Felsch, Fleberbrunn, and Gerhard Hantich, Kitzbühel, both of Austria, assignors to Pharmaceutical Licences Company Ltd., Prangins, Switzerland

Filed Apr. 10, 1979, Ser. No. 28,914

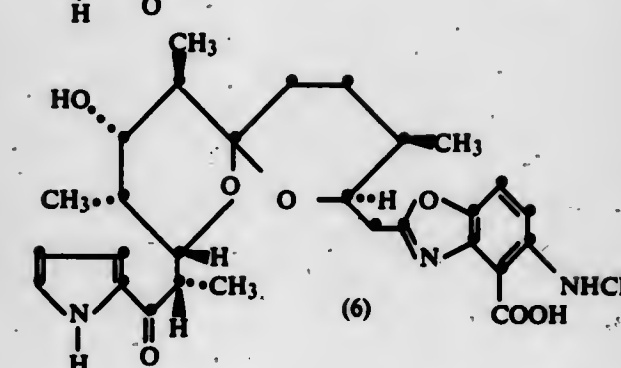
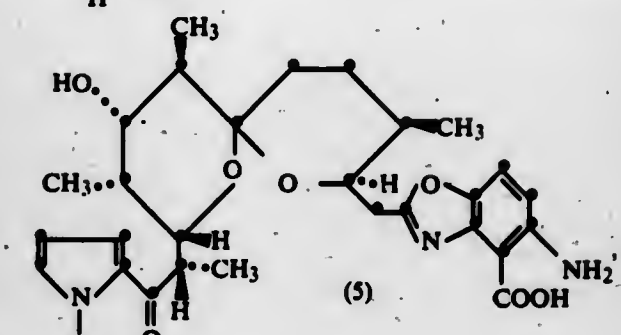
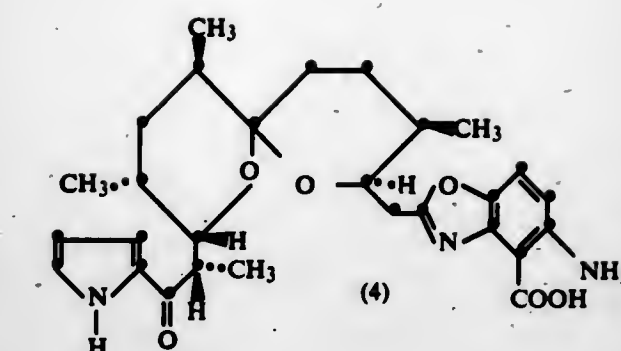
Claims priority, application Austria, Apr. 25, 1978, 2961/78

Int. Cl.³ C07D 277/20

U.S. Cl. 548—146

5 Claims

1. A method for stabilizing 4-methyl-5-(2'-chloroethyl)-thiazol, comprising admixing said thiazol in the absence of oxygen with a non-toxic carrier consisting essentially of at least one triglyceride of at least one saturated fatty acid of a chain length of 8 to 12 carbon atoms which is substantially free of heavy metal ions and double bonds, the amount of said carrier being between about 20% and about 80% by weight of said thiazol.



4,247,703

MICROBIOLOGICAL MODIFICATION OF ANTIBIOTIC A23187 ESTERS

Bernard J. Abbott, Greenwood, and David S. Fukuda, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

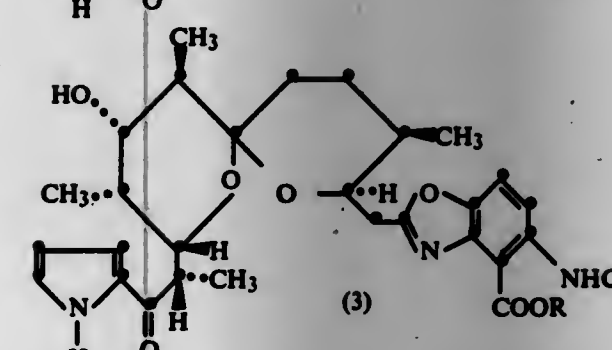
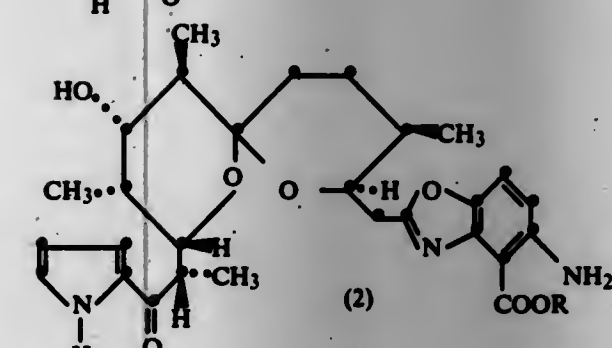
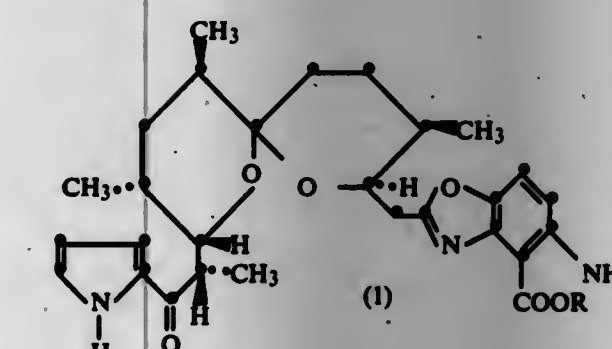
Filed Dec. 20, 1978, Ser. No. 971,616

Int. Cl.³ C07D 493/10

U.S. Cl. 548—216

2 Claims

1. A compound of the formula:



wherein R is methyl, ethyl, n-propyl, i-propyl, n-butyl, i-butyl, or t-butyl.

2. A compound of the formula:

or a sodium, potassium, or lithium salt thereof; or a dimeric complex thereof with a divalent cation selected from the group consisting of beryllium, magnesium, calcium, strontium, barium, manganese, cadmium, iron, zinc, lead, and mercury.

4,247,704

HEXAHYDRO THIENO IMADAZOLE INTERMEDIATES FOR THE SYNTHESIS OF BIOTIN

Enrico G. Baggolini, Bloomfield; Hai L. Lee, West Paterson, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

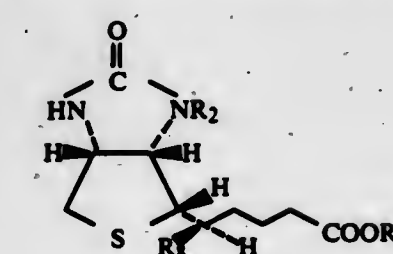
Continuation-in-part of Ser. No. 965,660, Dec. 1, 1978, which is a continuation-in-part of Ser. No. 822,119, Aug. 5, 1977, Pat. No. 4,130,713. This application May 29, 1979, Ser. No. 43,282

Int. Cl.³ C07D 495/04

U.S. Cl. 548—303

9 Claims

1. An optically active compound of the formula:

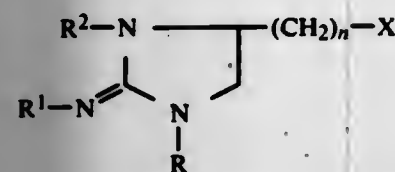


wherein R_2 is benzyl or alpha-lower alkyl substituted benzyl, R_7 is hydrogen, lower alkyl, benzyl, alpha-lower alkyl substituted benzyl, alkali metal or alkaline earth metal; and R_8 is hydroxy or halide, or the racemate thereof.

4,247,705

4-SUBSTITUTED 2-IMINOIMIDAZOLIDINE COMPOUNDS

Albert D. Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Feb. 6, 1979, Ser. No. 9,899
Int. Cl.³ C07D 233/50, 233/48, 233/46U.S. Cl. 548—315 31 Claims
1. A 2-iminoimidazolidine compound corresponding to the formula:

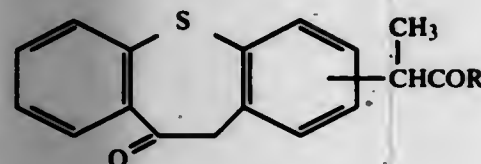
wherein R is an alkyl radical containing between 1 and 4 carbon atoms; R¹ is a member selected from hydrogen, an alkyl radical containing between 1 and 4 carbon atoms, phenyl and phenyl substituted with one or more members selected from halogen and an alkyl radical containing between 1 and 4 carbon atoms; R² is a member selected from an alkyl radical containing between 1 and 4 carbon atoms, phenyl and phenyl substituted with one or more members selected from an alkyl radical containing between 1 and 4 carbon atoms and halogen; X is halogen; and n is the integer 1 or 2, or a pharmaceutically acceptable acid addition salt thereof.

4,247,706

DIBENZOTHIPIEPIN DERIVATIVES AND A PROCESS FOR PRODUCING THE SAME

Yasuo Fujimoto, Tokyo, and Shigeru Yamabe, Kobe, both of Japan, assignors to Nippon Chemphar Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,163

Claims priority, application Japan, Oct. 17, 1978, 53-126846
Int. Cl.³ C07D 337/14U.S. Cl. 549—12 3 Claims
1. A compound of the formula,

wherein R represents a hydroxy or amino group.

4,247,707

METHOD OF MAKING 5,6-DIHYDRO-2-METHYL-N-PHENYL-1,4-OXATHIIN-3-CARBOXAMIDE

Andrew A. Zaitins, 57 Burns Dr., Guelph, Ontario, Canada (N1H 6V8), and Arthur D. Brewer, R.R. 1, Puslinch, Ontario, Canada (N0B 2J0)

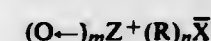
Filed Aug. 31, 1979, Ser. No. 71,628

Claims priority, application Canada, Aug. 27, 1978, 334458
Int. Cl.³ C07D 327/06U.S. Cl. 549—22 24 Claims
1. A method of making 5,6-dihydro-2-methyl-N-phenyl-1,4-oxathiin-3-carboxamide comprising the steps of:

- providing 2-methyl-N-phenyl-1,3-oxathiolane-2-acetamide;
- bringing together the 2-methyl-N-phenyl-1,3-oxathiolane-2-acetamide and hydrogen peroxide under basic conditions, in the presence of a catalytic quantity of a suitable heavy metal compound oxidation catalyst effective of catalyze the oxidation of said 2-methyl-N-phenyl-1,3-oxathiolane-2-acetamide by the said hydrogen peroxide, in a liquid medium comprising water, or water plus at least

one nonprotic organic liquid selected from the group consisting of (a) aromatic hydrocarbon solvent having a boiling point not greater than 145° C., (b) chlorinated hydrocarbon solvent having a boiling point not greater than 130° C., and, (c) a solvent having a boiling point not greater than 130° C. which is an alkyl ester of an aliphatic carboxylic acid, and subjecting the resulting mixture while agitating to a temperature of from 0° to 25° C., whereby 2-methyl-N-phenyl-1,3-oxathiolane-2-acetamide 3-oxide is formed;

(C) bringing together the 2-methyl-N-phenyl-1,3-oxathiolane-2-acetamide 3-oxide and a catalytic quantity of a sulfonium, sulfoxonium or phosphonium compound under acidic conditions in a nonprotic organic liquid as defined in step (B) above, and heating the mixture at a temperature of 45° to 80° C. while removing evolved water of reaction, and thereafter recovering from the reaction mixture the thus formed 5,6-dihydro-2-methyl-N-phenyl-1,4-oxathiin-3-carboxamide, the said sulfonium, sulfoxonium or phosphonium catalyst being an onium compound of the formula



where X is a halogen or the anion of methanesulfonic or p-toluenesulfonic acids, the R's are chosen from the group consisting of C₁-C₁₆ alkyl, phenyl and benzyl, Z is phosphorus or sulfur, m is zero when Z is phosphorus and zero or 1 when Z is sulfur, and n is 4 when Z is phosphorus and 3 when Z is sulfur.

4,247,708

METHOD FOR RENDERING FINE OXIDE POWDER HYDROPHOBIC

Yukihiro Tsutsumi; Yutaka Fukuda, both of Tokuyama, and Kenichi Matsubara, Yokohama, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinanano, Japan

Filed Jan. 24, 1979, Ser. No. 6,162

Claims priority, application Japan, Jan. 30, 1978, 53/8377
Int. Cl.³ C07F 7/08U.S. Cl. 556—456 5 Claims
1. A method for manufacturing a hydrophobic fine oxide powder comprising:

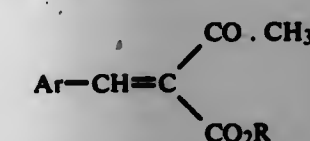
- adding to a fine inorganic oxide powder having surface hydroxyl groups, at least 1.5% by weight based on a dry weight of said fine oxide powder said dry weight being measured after removal of a water content by adsorption under reduced pressure not exceeding 5 mm Hg at 100° to 110° C., of a linear-chain dimethyl organo-polysiloxane having a molecular weight not exceeding 10,000 which shows a viscosity value within a range of 1 to 100 centistokes at 25° C.;
- adding at least 0.5% by weight, based on said dry weight of said fine oxide powder, of a compound selected from the group consisting of ammonia and an aliphatic amine having a boiling point of lower than 100° C., wherein said compound is added at a temperature below 60° C.;
- aging the resulting mixture for at least fifteen minutes at atmospheric pressure in the presence of water in a quantity of at least 1.5% by weight based on said dry weight of said fine powder; wherein essentially no solvent is used in said mixture, and
- heating said mixture to a temperature between 60° and 150° C. at atmospheric pressure whereby the surface hydroxyl groups of the fine powder react with the organopolysiloxane.

4,247,709

CHEMICAL PROCESS

Carl J. Rose, London, and David Miller, Bishops Cleeve, both of England, assignors to Beecham Group Limited, England
Filed Dec. 26, 1978, Ser. No. 973,748

Claims priority, application United Kingdom, Jan. 7, 1978, 00602/78

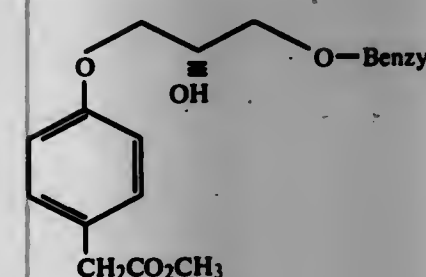
Int. Cl.³ C07C 69/76U.S. Cl. 560—53 3 Claims
1. A compound of the formula (IV):

wherein Ar is a 6-methoxy-2-naphthyl group and R is a group such that —CO₂R represents an ester group convertible by hydrogenation to a CO₂H group.

4,247,710

INTERMEDIATE IN THE PRODUCTION OF ADRENERGIC BLOCKING AGENTS

Kenneth E. Fahrenholtz, Bloomfield, N.J.; Robert W. Guthrie, Saddle Brook, N.J.; Richard W. Kierstead, North Caldwell, N.J.; Jefferson W. Tilley, North Caldwell, N.J.; assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 875,966, Feb. 8, 1978, Pat. No. 4,202,978.
This application Sep. 6, 1979, Ser. No. 73,051Int. Cl.³ A61K 31/495; C07D 295/08U.S. Cl. 560—55 3 Claims
1. The compound of the formula

4,247,711

PREPARATION OF 2-FORMYL-3,3-DIMETHYLCYCLOPROPANECARBOXYLIC ACID

Pieter A. Verbrugge, and Petrus A. Kramer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 24, 1979, Ser. No. 32,848

Claims priority, application United Kingdom, May 2, 1978, 17268/78; May 2, 1978, 17269/78

Int. Cl.³ C07C 69/67, 59/147, 49/553, 49/583U.S. Cl. 560—124 43 Claims
1. A process for the preparation of 3-acetyl-6,6-dimethylbicyclo[3.1.0]-2-hexene, which comprises contacting 2-(2-acetyl-3-oxobutyl)-3,3-dimethylcyclopropanecarbaldehyde with a base selected from alkali metal hydroxides, alkali metal alkoxides, alkaline earth metal hydroxides, tertiary amines, quaternary ammonium bases and basic ion exchangers in the presence of a solvent.

20. A process for the preparation of 2-formyl-3,3-dimethylcyclopropylacetic acid, which comprises ozonolysis of 3-acetyl-6,6-dimethylbicyclo[3.1.0]-2-hexene followed by reductive cleavage in the presence of a reducing agent of the ozonolysis product thus formed.

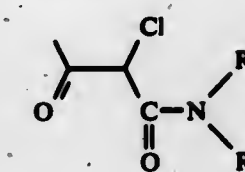
40. A 2-formyl-3,3-dimethylcyclopropylacetic acid, or an alkyl ester thereof.

1002 O.G.—65

4,247,712

PRESERVATION OF AQUEOUS SYSTEMS WITH 2-CHLORO-3-OXOBUTYRAMIDE DERIVATIVES

Harold A. Brandman, Glen Ridge; Milton Manowitz, Wayne, and David L. Coffea, Glen Ridge, all of N.J., assignors to Givaudan Corporation, Clifton and Hoffmann-La Roche Inc., Nutley, both of, N.J.

Division of Ser. No. 934,309, Aug. 17, 1978. This application Nov. 8, 1979, Ser. No. 92,599
Int. Cl.³ C07C 125/04, 103/42U.S. Cl. 560—161 5 Claims
1. A compound of the structure

wherein:

R₁ is hydrogen or methyl
R₂ is chosen from the group consisting of acetyl, propionyl, butyryl, carbomethoxy, carbethoxy, carbopropionoxy and carbobutoxy.

4,247,713

ALKYL PERFLUORO-α-FLUOROPRFORMYL ESTERS AND THEIR PREPARATION

David C. England, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 789,724, Apr. 20, 1977, Pat. No. 4,131,740.
This application Aug. 17, 1978, Ser. No. 934,615Int. Cl.³ C07C 69/38, 69/63U.S. Cl. 560—192 6 Claims
1. A compound of the formula ROOCCF₂COF

wherein R is alkyl of 1-6 carbon atoms.

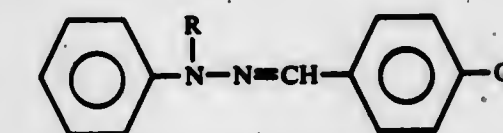
4. A process of preparing ROOCCF₂COF comprising: contacting SO₂ with a compound of the formula ROOC—CF₂—CF₂—OR¹ wherein R and R¹, alike or different, are alkyl of 1-6 carbon atoms at a temperature of —30° C. to 250° C. in molecular proportions from 1:20 to 20:1 while dissipating the heat of reaction.

4,247,714

COPOLYMERIZABLE, ULTRAVIOLET LIGHT ABSORBER 4-ACRYLOYLOXYBENZAL-1-ALKYL-1-PHENYLHYDRAZONE

Bruce A. Gruber, Worthington, Ohio, and Donald H. Lorenz, Basking Ridge, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Feb. 27, 1980, Ser. No. 125,019

Int. Cl.³ C07C 69/54U.S. Cl. 560—221 7 Claims
1. Copolymerizable ultraviolet light absorber compounds having the formula:

where R is hydrogen or alkyl C₁-C₆; and Y is a copolymerizable radical selected from acryloyl C₃-C₁₂, alkylacryloyl C₃-C₁₂, and alkylacryloyloxyhydroxyalkyl C₃-C₁₂, and alkylacryloyloxyhydroxyalkyl C₃-C₁₂.

4,247,715

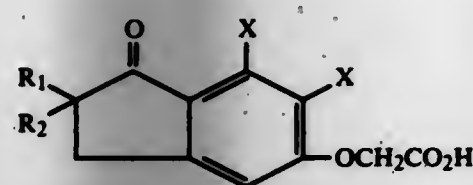
2-ALKYNYL-5-INDANYLOXYACETIC ACIDS

Porter C. Johnson, and William L. Matier, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.
Filed Apr. 9, 1979, Ser. No. 27,961
Int. Cl.³ C07C 59/90

U.S. Cl. 562—462

1. An indanyloxy compound in Formula I

6 Claims



Formula I

wherein

X is halo;

R1 is phenyl or p-halophenyl;

R2 is propargyl or 3-butynyl, and a pharmaceutically acceptable salt thereof.

4,247,716

PROCESS FOR PRODUCING PYRUVIC ACID

Tadamitsu Kiyoura, Kamakura, Japan, assignor to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Filed Aug. 11, 1978, Ser. No. 932,938
Claims priority, application Japan, Sep. 2, 1977, 52-104765; Nov. 25, 1977, 52-140599; Apr. 4, 1978, 53-38758; Apr. 4, 1978, 53-38757

Int. Cl.³ C07C 51/235, 59/19

U.S. Cl. 562—513

1. A process for producing pyruvic acid comprising oxidizing at room temperature to 100° C. hydroxyacetone with a molecular oxygen-containing gas in a solvent containing water in the presence of a catalyst composed of either (a) at least one element selected from the group consisting of platinum, palladium, rhodium, ruthenium and rhenium or (b) a mixture of (a) with at least one element selected from the group consisting of silver, tellurium, tin, bismuth, lead and indium or a compound thereof.

16 Claims

4,247,717

ORGANO-SELENYL COMPOUND AND METHOD FOR ITS PREPARATION

Martin Petrzilka, Puplinge, Geneva, Switzerland, assignor to Firmenich SA, Geneva, Switzerland
Filed Sep. 7, 1979, Ser. No. 73,329

Claims priority, application Switzerland, Sep. 21, 1978, 9658/78

Int. Cl.³ C07C 47/228

U.S. Cl. 568—425

1. Phenyl-seleno-acetaldehyde of formula

1 Claim



(1).

4,247,718

PROCESS FOR THE PREPARATION OF α - β UNSATURATED ALCOHOLS

Jozef M. A. Dautzenberg; Joannes M. C. A. Mulders, and Petrus A. M. J. Stijfs, all of Geleen, Netherlands, assignors to Stamcarbon, B.V., Geleen, Netherlands
Filed Mar. 13, 1979, Ser. No. 20,044

Claims priority, application Netherlands, Mar. 13, 1978, 7802694

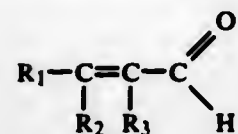
Int. Cl.³ C07C 29/14

U.S. Cl. 568—654

1. An improved process for the preparation of α - β unsaturated alcohols by the liquid phase hydrogenation, in the presence of a platinum metal containing catalyst, of the aldehyde corresponding to the desired alcohol, said improvement essentially comprising:

9 Claims

selecting an aldehyde having the general formula



wherein at least one of R₁, R₂ and R₃ represents a member of the class consisting of an unsubstituted phenyl group and a phenyl group substituted with at least one substituent selected from the group consisting of alkyl and alkoxy groups wherein the carbon atoms of the substituents on any said phenyl group total no more than five, and the remainder of said R₁, R₂ and R₃ independently represents a member of the group consisting of hydrogen or an alkyl group having from 1 to 10 carbon atoms; and

hydrogenating said selected aldehyde in a liquid reaction medium consisting essentially of water and a water-immiscible organic solvent, wherein a promoter selected from the group consisting of an alkali metal hydroxide, and alkali metal alkoxide and combinations thereof is dissolved in said water, resulting in the formation of an organic phase containing hydrogenated reaction product and an aqueous phase containing said catalyst and promoter; separating said aqueous phase containing catalyst and promoter from said organic phase; and utilizing said separated aqueous phase for the hydrogenation of a further amount of said aldehyde.

4,247,719

PROCESS FOR OBTAINING 2,5-XYLENOL FROM A 2,4-/2,5-XYLENOL MIXTURE

William R. Buck, and John R. Dodd, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Jul. 5, 1979, Ser. No. 55,087

Int. Cl.³ C07C 37/68, 37/14

U.S. Cl. 568—750

1. A method for increasing the content of 2,5-xyleneol in a 2,4-/2,5-xyleneol mixture which comprises continuously passing the 2,4-xyleneol/2,5-xyleneol mixture over a polymer supported sulfonic acid catalyst in the presence of an olefin providing tertiary alkylation and selected from the group consisting of 2-methyl-1-butene, 2-methyl-1-pentene, 2-methyl-1-heptene, and 2-methyl-1-propene at a liquid hourly space velocity of from about 0.4 to about 2.5 and recovering a product mixture containing t-alkyl-2,4-xyleneol; and t-alkyl-2,5-xyleneol together with non-alkylated, 2,4-xyleneol and 2,5-xyleneol, then fractionating the product mixture to remove tertiary alkylated phenols and recover a 2,4-xyleneol/2,5-xyleneol mixture having an increased 2,5-xyleneol content, the improvement comprising carrying out the reaction at a temperature of from about 60° C. to about 95° C.

8 Claims

4,247,720

PROCESS FOR PREPARING -TRIMETHYLHYDROQUINONE

Michel M. Baudouin, Saint-Fons, and Robert M. Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 12, 1976, Ser. No. 731,353

Claims priority, application France, Oct. 14, 1975, 75 31950

Int. Cl.³ C07C 37/07

U.S. Cl. 568—772

1. A process for the preparation of trimethylhydroquinone which comprises conjointly isomerizing, aromatizing and reducing 3,5,5-trimethyl-2-cyclohexene-1,4-dione in the vapor phase with an acid catalyst at a reaction temperature between 200° and 600° C., wherein said acid catalyst is selected from the group consisting of metal oxides of Group IIa, IIb, IIIa, IIIb, IVb, Vb, VIIb and VIII of the Periodic Table of Elements, and metal oxides mixed with metalloid oxides, natural alumina

8 Claims

silicates, natural zeolites and synthetic zeolites and mixtures thereof.

4,247,721

PROCESS FOR PURIFICATION OF P-ISOPROPYL PHENOL

Donald F. Rugen, Wilmington, Del., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Nov. 5, 1979, Ser. No. 91,639

Int. Cl.³ C07C 37/74, 39/06

U.S. Cl. 568—756

1. A process for recovering high purity p-isopropyl phenol from its admixture with by-products obtained in the oxidation of 1,4-diisopropylbenzene to hydroquinone which comprises vacuum distilling said by-product mixture below a pot temperature of about 475° F. to obtain a heart cut distillate fraction and washing said heart cut with a liquid aliphatic hydrocarbon containing from about five to about ten carbon atoms.

8 Claims

4,247,722

HYDROGENATION OF BUTADIENEPOLYPEROXIDE WITH ACTIVATED PHASE-PURE NIAL₃ CATALYST

Michael J. Kelley, Kennett Square, Pa., and William W. Prichard, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 33,438, Apr. 26, 1979,

abandoned. This application Mar. 5, 1980, Ser. No. 127,456

Int. Cl.³ C07C 31/20

U.S. Cl. 568—861

1. A process for hydrogenation of butadienepolyperoxide to 1,2-butanediol and 1,4-butanediol which comprises hydrogenating 1 to 20% by weight of butadienepolyperoxide at a temperature of from 75°–120° C. and a pressure of at least 1000 psi in the presence of a catalyst comprising an alkali activated 42% nickel-58% aluminum alloy wherein at least 98% by weight of the nickel in the alloy is present as NiAl₃ and in a solvent which is inert under the process conditions employed.

8 Claims

4,247,723

PREPARATION OF DIHYDROMYRCENOL

Aaldert J. de Jong, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 21, 1977, Ser. No. 761,082

Claims priority, application United Kingdom, Feb. 4, 1976, 4371/76

Int. Cl.³ C07C 29/00

U.S. Cl. 568—875

1. A process for the preparation of 3,7-dimethylocta-1-en-7-ol or a carboxylic acid ester thereof from a dimethylcyclooctene starting material made up of a mixture of dimethylcyclooctene isomers comprising 1,5-dimethylcyclooctene in admixture of 1,6-dimethylcyclooctene and/or 1,4-dimethylcyclooctene by the process steps which comprise:

6 Claims

(a) thermally isomerizing the dimethylcyclooctene isomer mixture to afford a mixed open-chain octadiene product comprising 2,6-dimethylocta-1,7-diene in admixture with 2,7-and/or 2,5-dimethylocta-1,7-diene,

(b) contacting the mixed octadiene product with a carboxylic acid whereby the 2,6-dimethylocta-1,7-diene selectively reacts to form an ester of 3,7-dimethylocta-1-en-7-ol, and

(c) optionally hydrolyzing the ester of 3,7-dimethylocta-1-en-7-ol thus formed under basic conditions to yield 3,7-dimethylocta-1-en-7-ol.

4,247,724

PROCESS FOR PREPARING HEXANITROBIBENZYL

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 26, 1979, Ser. No. 79,128

Int. Cl.³ C07C 79/10

U.S. Cl. 568—931

1. A process for preparing 2,2',4,4',6,6'-hexanitrobibenzyl comprising the steps of adding an aqueous solution of an alkali metal or alkaline earth metal hypochlorite containing an alkali metal or alkaline earth metal hydroxide to a trinitrotoluene solution in a solvent system comprising a water-immiscible solvent and an aliphatic alcohol and then recovering said hexanitrobibenzyl from the reaction mixture, said solvent system being capable of dissolving TNT at temperatures up to 60° C. and not reacting preferentially with the alkaline metal hypochlorite.

9 Claims

4,247,725

METHOD OF REMOVING ACETYLENES FROM C₄-HYDROCARBON MIXTURE CONTAINING BUTADIENE

Tadashi Ohmori, and Katuhiko Ishikawa, both of Yokohama, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,253

Claims priority, application Japan, Apr. 21, 1978, 53-46681

Int. Cl.³ C07C 7/167

U.S. Cl. 585—259

1. In a method of selectively hydrogenating acetylenes in a C₄-hydrocarbon mixture containing butadiene for removing said acetylenes, an improved method wherein a hydrogen containing gas and the liquid C₄-hydrocarbon mixture are continuously fed through the upper portion of a reactor filled with catalyst particles carrying one or more precious metals selected from the Group VIII elements of the Periodic Table, the hydrogen containing gas is present in the reactor forming a substantially continuous phase at the hydrogen partial pressure of less than 1.5 kg/cm²a, while the C₄-hydrocarbon mixture is allowed to flow down over the surfaces of the catalyst particles in the liquid form and to react at 5° to 80° C., and the reaction mixture is withdrawn through the bottom of the reactor.

10 Claims

4,247,726

PARA-XYLENE PROCESS AND CATALYST

Lynn H. Slauch, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 5,653, Jan. 22, 1979. This application Feb. 21, 1980, Ser. No. 123,140

Int. Cl.³ C07C 15/08, 2/10; B01J 23/16

U.S. Cl. 585—407

1. A process for the selective conversion of isobutylene to para-xylene which comprises reacting isobutylene over a coupling catalyst consisting essentially of a neutral or weakly acidic support impregnated with a non-halogen containing water soluble rhenium compound and an alkali metal hydroxide or stannate and then reduced with hydrogen at elevated temperatures.

10 Claims

4,247,727

DEHYDROCOUPLING OF TOLUENE

Samuel J. Tremont, Manchester, Mo., and Alex N. Williamson, Greensboro, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,942

Int. Cl.³ C07C 2/72

U.S. Cl. 585—428

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 450° C. and 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:

18 Claims



where M^1 is bismuth and M^2 is at least one element selected from indium, silver, Group 2a of the Periodic Table of the Elements, and mixtures thereof, and wherein a is 1, b , is 0.01 to 100, and x is a number taken to satisfy the average valences of M^1 and M^2 in the oxidation states in which they exist in the composition to yield the dehydrocoupled toluene product.

4,247,728

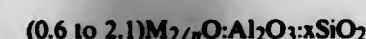
CRYSTALLINE ZEOLITE, SYNTHESIS AND USE THEREOF

Mae K. Rubin, Bala Cynwyd, Pa.; Edward J. Rosinski, Pedricktown, and Charles J. Plank, Woodbury, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Division of Ser. No. 844,168, Oct. 21, 1977, Pat. No. 4,209,499.
This application Nov. 8, 1979, Ser. No. 92,311
Int. Cl.³ C07C 2/68

U.S. Cl. 585—467

17 Claims

1. A process for effecting conversion of a hydrocarbon charge which comprises contacting said charge under conversion conditions with a catalyst comprising a synthetic crystalline aluminosilicate zeolite having a composition in the anhydrous state, expressed in terms of mole ratios of oxides, as follows:



wherein M is at least one cation having a valence n and x is at least 5, said zeolite having the X-ray diffraction lines substantially as shown in Table I of the specification.

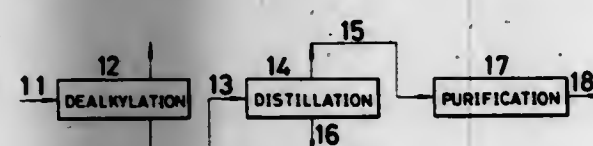
4,247,729

PROCESS FOR PRODUCING HIGH PURITY BENZENE

Hideyuki Takahashi, Yoshiyuki Matsuoka, and Susumu Hamanishi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo, Japan
Filed Apr. 5, 1979, Ser. No. 27,305
Claims priority, application Japan, Apr. 10, 1978, 53-41170
Int. Cl.³ C07C 4/12, 7/00

U.S. Cl. 585—483

7 Claims



1. A process for producing high purity benzene, comprising:
(a) hydrodealkylating a hydrocarbon fraction containing aromatic hydrocarbons and stabilizing said hydrodealkylated fraction by separating a light fraction having a boiling point less than that of benzene therefrom;
(b) distilling said stabilized fraction thereby obtaining a

substantially pure benzene fraction which contains a very small amount of olefins and thiophene; and
(c) treating said substantially pure benzene with an active clay substance at a temperature from room temperature to 120° C. thereby obtaining said high purity benzene product.

4,247,730

HYDRODEALKYLATION OF ALKYLAROMATIC HYDROCARBONS

Jean-Pierre Brunelle, Fresnes, France, assignor to Procatalyse, Rueil Malmaison, France
Continuation of Ser. No. 840,635, Oct. 11, 1977, abandoned.
This application May 15, 1979, Ser. No. 39,136
Claims priority, application France, Oct. 11, 1976, 76 30533
Int. Cl.³ C07C 4/12

U.S. Cl. 585—489

43 Claims

1. A process for hydrodealkylating alkyl-substituted aromatic hydrocarbons, which comprises the step of reacting an alkyl-substituted aromatic hydrocarbon, in the absence of water vapor with an amount of hydrogen which is equivalent to a molar ratio between the alkyl-substituted aromatic hydrocarbon and the hydrogen of between about 1:10 to about 1:1, at a temperature of between about 450° and about 650° C., and under a pressure of about 1 to about 30 bars and a space velocity of between about 1 to about 10 volumes of the liquid per volume of the catalyst, per hour, in the presence of a catalyst which comprises a noble metal component comprising rhodium and a support comprising a metal aluminate having a spinel structure and corresponding to the empirical formula $MAl_2O_4 \cdot XAl_2O_3$, wherein X represents a value from 0 to about 200 and M represents a metal selected from the group consisting of nickel, cobalt, copper, zinc, iron and magnesium.

4,247,731

PROCESS FOR THE MANUFACTURE OF LOWER ALKENES FROM METHANOL AND/OR DIMETHYL ETHER

Friedrich Wunder, Flörsheim am Main; Hans-Jürgen Arpe, Kelkheim; Horst Hachenberg, Walluf, and Ernst I. Leupold, Neu-Anspach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Continuation of Ser. No. 967,375, Dec. 7, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 75,983
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755229

Int. Cl.³ C07C 1/00

U.S. Cl. 585—640

6 Claims

1. Process for the manufacture of lower alkenes which comprises reacting methanol and/or dimethyl ether on aluminum silicate catalysts containing from 0.1 to 10% by weight of manganese, calculated on the aluminum silicate.

ELECTRICAL

4,247,732

METHOD AND APPARATUS FOR ELECTRICALLY FIRING AN IRON BLAST FURNACE

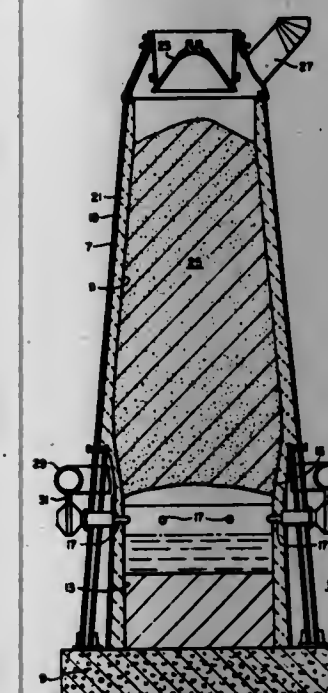
Maurice G. Fey, Plum, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 21, 1979, Ser. No. 68,855

Int. Cl.³ H05H 1/24; H05B 7/00

U.S. Cl. 13—2 P

12 Claims



1. A blast furnace for reducing metal ore to a metal, comprising:
(a) a vertical tubular refractory shell forming an upper reduction zone and a lower hearth, the shell being adapted to contain a charge metal ore and ore reactants;
(b) means for injecting a gaseous mixture into the zone and comprising at least one arc heater;
(c) the arc heater having axially spaced, generally cylindrical electrodes forming a narrow gap therebetween and adapted to be connected to a source potential to produce an arc therein;
(d) the electrodes forming an arc chamber and one of the electrodes extending through the refractory shell and communicating the arc chamber with said zone;
(e) gas inlet means communicating with the gap for introducing through the gap a reducing gas selected from the group consisting of hydrocarbon gas, liquid petroleum gas, and mixtures thereof into the arc chamber to form an arc-heated gas stream; and
(f) second gas inlet means for introducing a quantity of oxygen-containing gas into the arc-heated gas stream in an amount generally equal to a stoichiometric mixture with reducing gas and the ore reactants to produce a maximum amount of carbon monoxide to effect reduction of the metal ore to elemental metal.

4,247,733

ELECTRICALLY HEATED GLASS FOREHEARTH

James F. Stevenson, West Hartford, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Aug. 27, 1979, Ser. No. 69,938

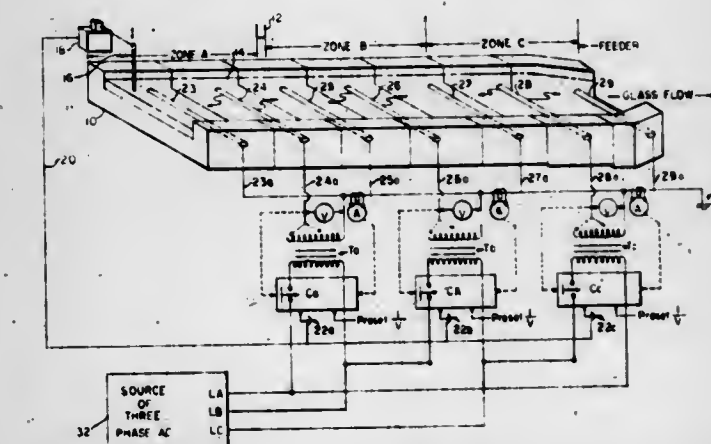
Int. Cl.³ C03B 5/02

U.S. Cl. 13—6

6 Claims

1. In a glassware furnace of the forehearth type wherein molten glass flows from a batch tank through a channel to a feeder bowl where the glass is discharged, the improvement comprising at least three electrodes disposed centrally of first, second and third zones in the forehearth which zones are to be kept at discrete glass temperatures, at least four common electrodes at a common electrical potential, two of the four common electrodes located between the three electrodes and the other two common electrodes spaced upstream and downstream from said first and third electrodes respectively, control

circuit means to provide one phase A.C. electrical power to said three electrodes at potentials which may vary with respect to one another from a source of three phase A.C. line power, said control circuit means including transformer means for each of said three electrodes, each transformer means having a secondary winding coupled in series circuit to one of said three electrodes and in parallel circuit to two of said common electrodes so that current can flow from one of the three electrodes through the molten glass to two of the common electrodes and through said secondary, each transformer means including a primary winding energized by one of the three phases of said A.C. line power source, said control circuit means further including at least three electrical current sensing means provid-



ing output signals related to said electrode parallel circuit current, and control circuit means also including at least three electrical potential measuring means to provide outputs proportional to said secondary winding voltage, and said control circuit means having controller means including means to preset a desired ratio of electrode current to secondary voltage for each secondary, and means to compare the actual quotient of said output signal current for each of said three parallel circuits and said corresponding secondary winding voltage with said preset ratio, said controller means switching said each of the three primary transformer windings on or off individually in each A.C. cycle as said comparison shows the actual quotient to be less than or more than said preset ratio for each forehearth furnace zone.

4,247,734

FLEXIBLE THERMOCOUPLE FOR VACUUM ELECTRIC FURNACES

Rush B. Gunther, Abington, and Prem C. Jindal, Feasterville, both of Pa., assignors to Abar Corporation, Feasterville, Pa.
Filed Mar. 5, 1979, Ser. No. 17,379
Int. Cl.³ F27D 21/00

U.S. Cl. 13—24

7 Claims



1. A flexible thermocouple assembly for vacuum electric furnaces having a hostile environment therein comprising a flexible thermocouple enclosing tube having thermocouple wires therein and a closed inner terminal end with the wires terminating therein,

information on said transmission facility or establishing communication paths between said network and said transmission facility; and
said semiautonomous control circuit (200) is further responsive to one of said sets of state signals for generating said signaling pulses.

4,247,741

REPRODUCING TRANSDUCER FEEDING DEVICE IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Kazuo Tatsuguchi, Yokohama; Atsumi Hirata, Yamato; Tetsushi Akasaka, Ebetsu, and Kanji Kawanuma, Hadano, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

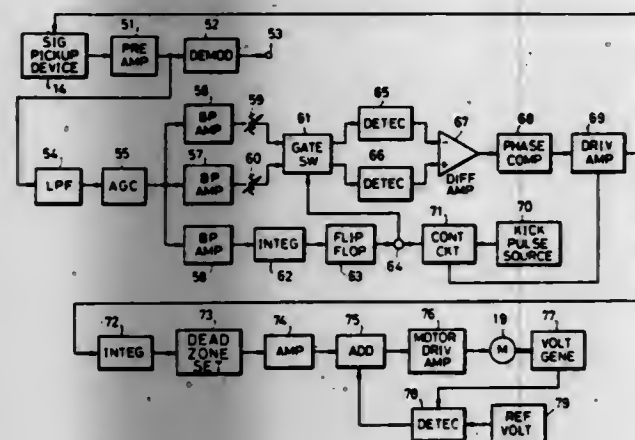
Filed Dec. 27, 1978, Ser. No. 973,688

Claims priority, application Japan, Dec. 28, 1977, 52-158787

Int. Cl.³ G11B 21/10

U.S. Cl. 369—43

4 Claims



1. In an apparatus for reproducing signals from a rotary recording medium having an information signal recorded in the track formed thereon in a spiral path or a concentric circular form and having reference signals recorded thereon interrelatedly with the information signal track, the combination therewith of a feeding device for feeding a reproducing transducer means having a reproducing element for reproducing the information signal and the reference signals recorded on the rotary recording medium, and tracking control means for accomplishing tracking control so that the reproducing element traces the information signal track, the feeding device comprising:

- a driving power source means for driving the reproducing transducer means in a feeding travel over the rotary recording medium, with transducer movement in the radial direction thereof;
- means for producing a tracking control signal in response to the reference signals reproduced by the reproducing transducer means and for supplying the tracking control signal to the tracking control means;
- means including an integrating circuit for providing a DC component signal of the tracking control signal thus produced; and
- dead zone setting means for supplying the DC component signal thus provided to the driving power source means only if the level of the DC component signal is outside a specific predetermined level dead zone range, said driving power source means being controlled in response to the DC component signal supplied through said dead zone setting means.

4,247,742

TRUNK TEST CIRCUIT

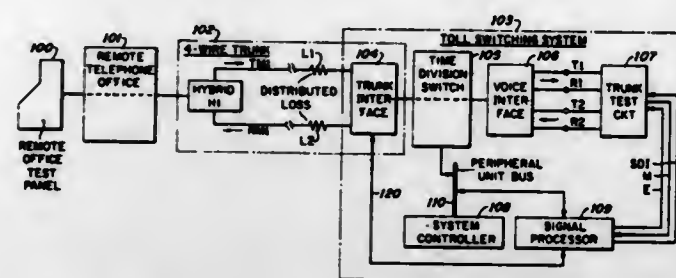
William Thelen, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 26, 1979, Ser. No. 79,100

Int. Cl.³ H04B 3/46

U.S. Cl. 179—175.3 R

14 Claims



1. A trunk test circuit (107) having test circuit input and output terminals (T1, R1, T2, R2) connectable to a communications trunk (102) for measuring transmission characteristics thereof and comprising circuit means (200) connected to said input and output terminals (T1, R1, T2, R2) for generating on said output terminals (T2, R2) outgoing test signal having an amplitude corresponding to the amplitude of an incoming test signal occurring on said input terminals (T1, R1) at a time subsequent to the time of occurrence of said incoming test signal characterized in that said circuit means (200) comprises: variable amplitude signal generating means (230, 309, 315, 316) having a control terminal and an output terminal for generating a continuous stream of test signals; comparison means (308) having input terminals connected to said output terminal of said variable amplitude signal generating means and to said test circuit input terminals (T1, R1) and having an output terminal connected to said control terminal for generating a comparator signal indicative of the difference in amplitude between said incoming test signal and said signals of said continuous stream of test signals; said signal generating means being responsive to said comparator signal to adjust the amplitude of said signals of said continuous stream of test signals to reduce said difference in amplitude; means (201, 306, 324) for disconnecting said comparison means from said signal generating means when said incoming test signal is substantially equal in amplitude to said adjusted test signal; and means (201, RLY1) for connecting said output terminal of said signal generating means (309, 316) to said test circuit output terminals (T2, R2).

4,247,743

DEVICE FOR PREVENTING UNAUTHORIZED USAGE OF APPLIANCE

David O. Hinton, 4700 Hiddenbrook Dr., Raleigh, N.C. 27609, and David T. Mage, 2012 S. Lakeshore Dr., Chapel Hill, N.C. 27514

Filed Oct. 10, 1979, Ser. No. 83,472

Int. Cl.³ H01H 9/28

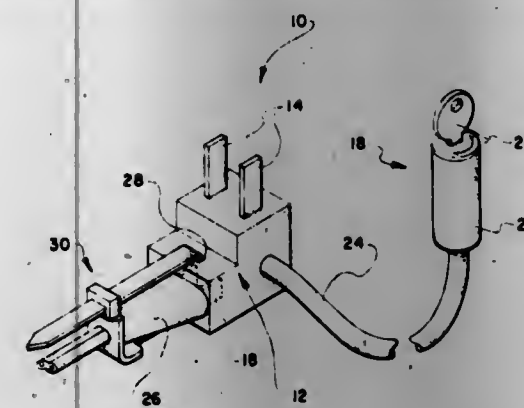
U.S. Cl. 200—44

6 Claims

1. A means for detecting the unauthorized use of an appliance having an AC male plug associated therewith, comprising: electrical coupling means for plugging into a conventional wall outlet and including male plug means adapted to be connected into said wall outlet and female receiving means for receiving the male plug of said appliance, said electrical coupling means including an electrical circuit operatively interconnected between said male plug means and said female receiving means thereof; switch means operatively connected between said male plug means and said female receiving means of said electrical coupling means for selectively opening and closing the circuit therebetween, said switch means having locking means associated therewith for selectively locking said switch means in an open position so as to prevent the conduc-

tion of current between said male plug means and said female receiving means of said electrical coupling means; and flexible tie coupling means operatively engaged with said appliance male plug and said electrical coupling means and generally bound therearound for maintaining said male plug of said

operation between a first switch position and a second switch position in response to selective engagement with and disengagement from said control means; and whereby said control means and said switching means are independently adjustable to permit a wide range of operation for the limit switch.



appliance in locked engagement with said electrical coupling means, said tie coupling means including irreversible tie means that may not be disengaged and reengaged without destroying the integrity of the tie coupling means, whereby the actuating of said appliance is controlled by the switch and lock means associated with said electrical coupling means.

4,247,744

LIMIT SWITCH

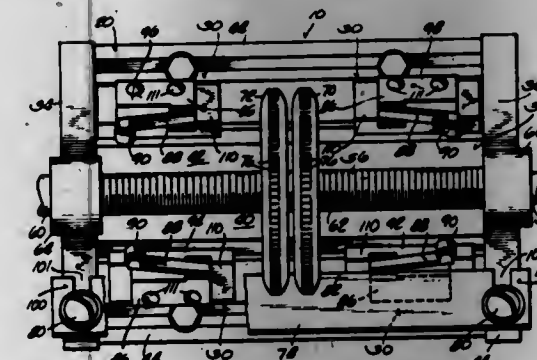
Paul G. Birkle, 4201 S. 78th St., Milwaukee, Wis. 53220

Filed Jan. 31, 1979, Ser. No. 7,892

Int. Cl.³ H01H 3/16

U.S. Cl. 200—47

15 Claims



1. A limit switch comprising: a frame member including a base portion and oppositely spaced sidewalls extending from said base portion; lead screw means transversely supported by said sidewalls and rotatable relative to said frame member; coupling means for connecting said lead screw means to a drive source for rotating said lead screw means; control means threadably engaged upon said lead screw means; retaining means operatively engageable with said control means and including adjusting means selectively operatively engaging and disengaging said retaining means with said control means for preventing rotation of said control means with said lead screw means while permitting axial advancement of said control means along said lead screw means in response to rotation of said lead screw means and for freeing said control means for rotation and selective positioning thereof along said lead screw means; groove means integral with said base portion; runner means for sliding engagement within said groove means; locking means for selectively preventing sliding movement of said runner means within said groove means and for freeing said runner means for the sliding movement; switching means carried by said runner means and located in the path of axial advancement of said control means for

4,247,745

VACUUM-TYPE CONTACTOR ASSEMBLY

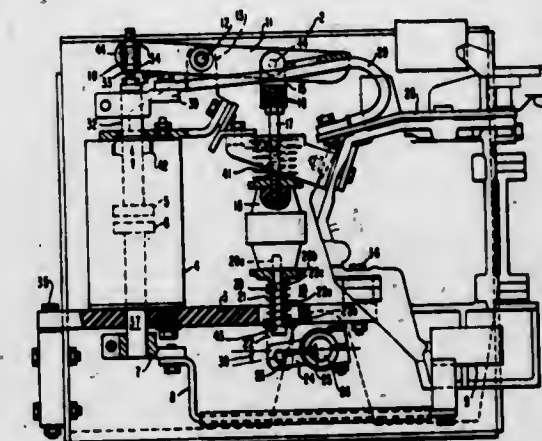
John R. Wilson, Darien, Ill., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 13, 1978, Ser. No. 941,888

Int. Cl.³ H01H 3/48, 33/42

U.S. Cl. 200—144 B

2 Claims



1. A contactor assembly comprising, in combination: switch means including a pair of separable contacts at least one of which is movable; power means for actuating the movable contact between open and closed positions; mechanical linkage means between the power means and the movable contact and comprising a motion-transfer link; the motion transfer link having a lost-motion coupling including a pair of members movable longitudinally in the direction of motion of the motion-transfer link and with respect to each other between extended and unextended positions; one of the pair of members being connected at one end to the power means and the other of the members being connected at one end to the motion-transfer link; each member having a protrusion extending in the path of travel of each other; guide-support means for said link; first biasing means between the guide-support means and said link for initiating opening of the contacts when the power means moves to a contact-open position; second biasing means on the lost-motion coupling for retaining the coupling in the extended position to effect closing of the contacts; the second biasing means being less resilient than the first biasing means and being operative to actuate the motion-transfer link to the extended position when the power means moves to a contact-open position, and the second biasing means being operable when the power means moves to the contact-open position to drive said members to their extended position to cause one protrusion to impart a hammer blow to the other protrusion to thereby break any welding between the contacts.

4,247,746

ELECTRIC CIRCUIT BREAKER

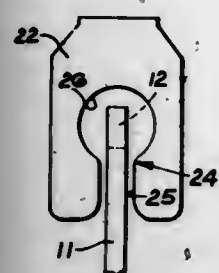
Alan L. Kidd, Southport, England, assignor to Dorman Smith Switchgear Limited, Preston, England

Filed Apr. 30, 1979, Ser. No. 34,441

Int. Cl.³ H01N 33/10

U.S. Cl. 200—147 R

9 Claims



1. An electric circuit breaker comprising, for each current-conducting pole thereof, a fixed contact, a movable contact arm carrying said movable contact and swingable about a swinging axis between an "on" position, in which said movable contact engages with said fixed contact, and an "off" position in which said movable contact is separated from said fixed contact, said movable arm being adapted to perform tripping movement from said "on" position to said "off" position upon passage through said pole of current in excess of the rated current of said breaker, and said movable arm also being spring-loaded towards said fixed contact so as to be capable of limited movement independently of said tripping movement, and an array of arc-quenching plates each generally of U-shaped configuration providing a respective air gap between the limbs of the U for said moving contact arm to move there-through, characterised in that each said arc-quenching plate has its limbs so dimensioned as to extend past said movable contact carried at the free end of said movable contact arm to a termination the position of which is spaced away from said movable contact by a distance which is not less than 30% of the spacing between said swinging axis of said movable contact arm and said movable contact, and is not greater than 70% of said spacing, and in that said gap in each said arc-quenching plate is shaped to have an enlarged inner end, wider than the mouth of said gap where the latter meets the edge of said plate.

4,247,747

ILLUMINATED PANELS

Royston W. Swatten, Hanworth, England, assignor to Decca Limited, London, England

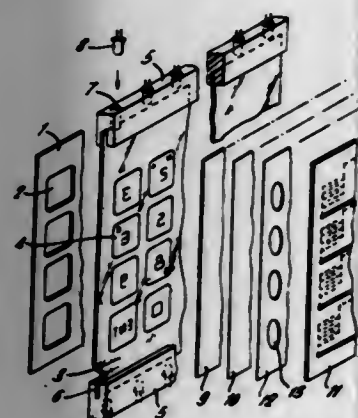
Filed Mar. 7, 1979, Ser. No. 18,422

Claims priority, application United Kingdom, Mar. 15, 1978, 10350/78

Int. Cl.³ H01H 9/18, 13/50

U.S. Cl. 200—314

6 Claims



1. A self-illuminating panel comprising:
(a) a transparent flexible lamina, said lamina bearing mark-

ings which constitute optical discontinuities that define visible characters;

- (b) an optical source which projects light into the lamina through a narrow face thereof;
(c) an opaque flexible screen which is disposed behind the lamina and spaced therefrom; and
(d) an array of pressure-operable switches disposed behind said screen, said switches being in register with said characters and each operable by the application of pressure on the lamina.

4,247,748

METHOD FOR ELECTRICAL DISCHARGE MACHINING OF A WORK IN ROLL FORM

Kunihiko Sato, Owari-Asahi; Tetsuro Urata, Nagoya; Kobun Asakawa; Haruo Taguchi, both of Fukuyama; Yukio Kato, Kasugai, and Takeo Uebayashi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

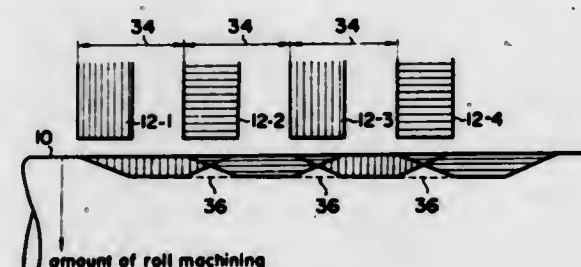
Filed Oct. 25, 1978, Ser. No. 954,643

Claims priority, application Japan, Oct. 29, 1977, 52-129240

Int. Cl.³ B23 1/08

U.S. Cl. 219—69 M

2 Claims



1. A method for electrical discharge machining of a work in roll form, said work in roll form having a roll axis and an axis of rotation, said method comprising the steps of:
providing a plurality of electrodes divided and arranged at a predetermined mounting pitch parallel to said roll axis of said work;
rotating said work in roll form at a constant speed;
simultaneously and continuously moving said plurality of electrodes at a predetermined constant speed along said axis of rotation of said work;
selecting the amount of movement for each of said plurality of electrodes to be a distance equal to said mounting pitch of said electrodes along said roll axis; and
producing discharges across a working gap formed between said plurality of electrodes and an outer surface of said work to give a satin finish to the outer surface of said work;
wherein said providing step includes providing each of said plurality of electrodes with a rectangular discharge end surface, whereby to insure further uniform discharge efficiency.

4,247,749

ELECTRICAL DISCHARGE MACHINING APPARATUS AND PROCESS WITH CONTROLLED VARIABLE SPEED ELECTRODE ORBITING

Alain Wavre, Geneva, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Continuation-in-part of Ser. No. 787,757, Apr. 15, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,292

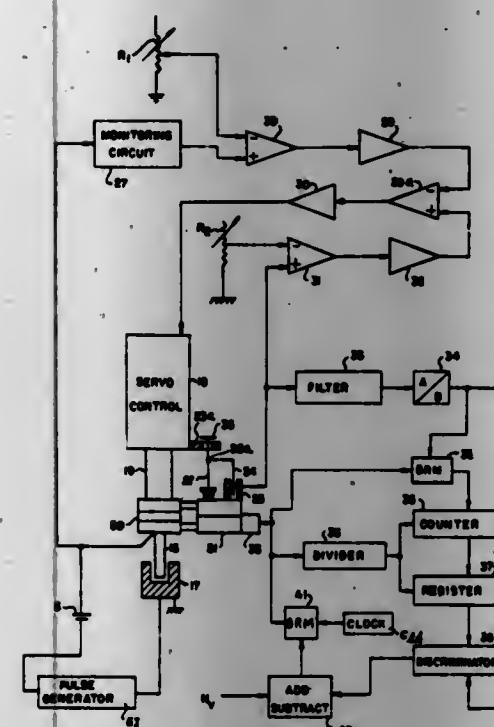
Int. Cl.³ B23P 1/12

U.S. Cl. 219—69 V

6 Claims

1. In an EDM process for machining by means of electrical discharges occurring across a machining gap between an electrode tool and an electrode workpiece, wherein the electrodes are relatively displaced according to an orbital translational motion such as to provide a cyclical displacement of the ma-

chining zone, the amplitude of the orbiting motion being controllably adjusted such as to maintain predetermined electrical discharge conditions within the machining zone, the method comprising comparing the actual orbiting path thus obtained



with a reference orbiting path, and varying the speed of the orbiting motion as a function of the difference between said two paths such as to maintain said difference within predetermined limits.

4,247,750

VERTICALLY POSITIONED SUBMERGED ARC FLUX DAM

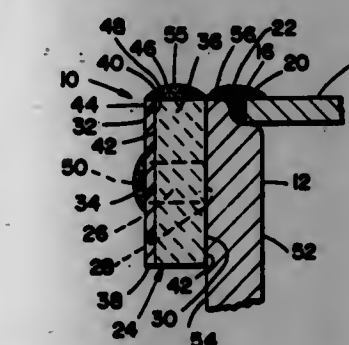
Robert F. Hupe, Somonauk, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 2, 1977, Ser. No. 807,943

Int. Cl.³ B23K 9/18, 9/32

U.S. Cl. 219—73

5 Claims



1. As an article of manufacture a generally vertically positioned flux dam, comprising:
a sheet of high temperature stable non-metallic material;
a high temperature resistant coating affixed along a top edge of said sheet;
permanent magnet means aligned with first pole means thereof substantially at a first surface of said sheet magnetically attaching said sheet to a generally vertical workpiece generally parallel to and spaced by the thickness of said vertical workpiece from a generally horizontal weld groove of said vertical workpiece to an abutting workpiece, said magnet means extending generally towards a second surface of said sheet; and
means affixing said magnet means in said alignment thereof.

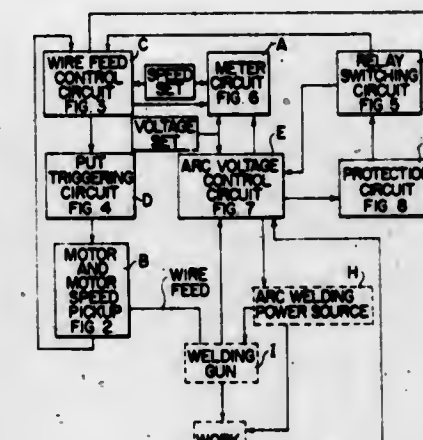
4,247,751

AUTOMATIC PRESETTABLE WELDING SYSTEM
Theodore Ashton, Lyndhurst; William E. Klinger, Lakewood, and Ralph M. Samodell, Cleveland Heights, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio
Filed Aug. 28, 1978, Ser. No. 937,124

Int. Cl.³ B23K 9/10

U.S. Cl. 219—130.31

14 Claims



1. In an arc welding system:

- (a) a welding power source capable of supplying a controllable output voltage to a welding electrode, including control-signal sensitive means which vary the voltage of said power source in amounts proportional to a power source control signal applied to said means;
(b) a welding electrode wire feeder including a motor driving feed rolls adapted to be in driving engagement with a welding electrode of indeterminate length;
(c) first switch means;
(d) first means operable when said first switch means is actuated to supply a signal to said power source control-signal sensitive means to cause said power source to energize said welding electrode;
(e) second means operable when said first switch means is actuated to energize said motor to drive said feed rolls in an electrode feed direction;
(f) first manually adjustable means providing a first reference signal for presetting a desired welding electrode voltage parameter for said power source;
(g) visual means for setting said first manually adjustable means;
(h) means sensing the actual value of said welding electrode voltage parameter and providing a signal proportional to said actual value;
(i) first comparative means for comparing said signal proportional to said actual value and said first reference signal, generating a power source control signal and supplying said power source control signal to said control sensitive means;
the improvement which comprises:
(j) said visual means being a precise visual read-out electric meter precisely calibrated to display welding procedure parameters; and
(k) said first manually adjustable means being a non-calibrated, non-precision type potentiometer providing said first reference signal to said meter proportional to said desired welding electrode voltage parameter such that said meter displays said desired parameter and enables the precise manual setting of said first reference signal with said non-precision potentiometer whereby said welding voltage parameter may be precisely present.

4,247,752

CONSTANT CURRENT ARC WELDER

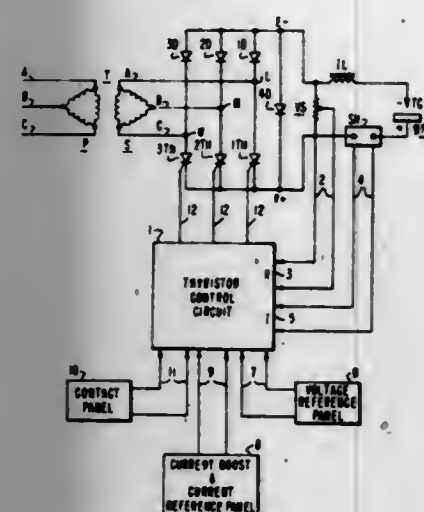
Loren F. Stringer, Clarence, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1978, Ser. No. 946,223

Int. Cl. B23K 9/06

U.S. Cl. 219—130.33

1 Claim



1. In a direct current arc welder having an arc-gap supplied with power through SCR devices and saturating reactor means, a controller for said SCR device including voltage feedback control means operative to establish a predetermined constant voltage between said arc-gap and current feedback control means operating with a predetermined gain and under a predetermined reference signal to establish a predetermined constant current through said arc-gap; the combination of: timer means initiated at start-up by a predetermined buildup of arc current under said constant voltage for establishing a time interval; with said current feedback control means having a first operative mode under a reference signal substantially reduced from said predetermined reference signal and a gain reduced from said predetermined gain; a second operative mode under said predetermined reference signal and with said predetermined gain; means responsive to initiation of said time interval for disabling said voltage feedback control means and for enabling said current feedback control means in the first mode, whereby arc-gap current is limited, by said current feedback control means and by said saturable reactor means concurrently, at the end of said time interval to a current level higher than said constant current level; means responsive to expiration of said time interval for transferring said current feedback control means into the second mode; and feedback loop means associated with said current feedback control means and operative at the end of said time interval for smoothly lowering the arc-current from said higher level to said predetermined constant current level as a function of time.

4,247,753

BATTERY OPERATED ELECTRIC HEATING DEVICE FOR THAWING FROZEN LOCKS

Niilo Jaronen, Lammassaari 3 D 79, 01710 Vantaa 71, Finland

Filed Oct. 16, 1978, Ser. No. 951,834

Claims priority, application Finland, Oct. 20, 1977, 773109; Nov. 21, 1977, 773509

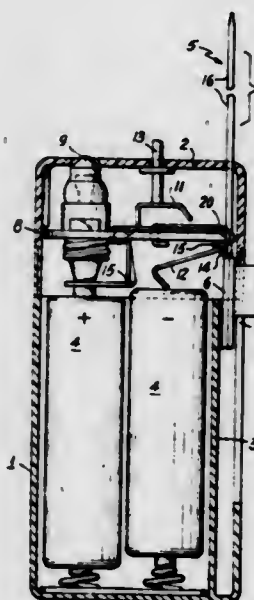
Int. Cl. E05B 17/00; H05B 3/40; F21V 33/00

U.S. Cl. 219—201

2 Claims

1. A battery operated electrically heated thawing device for insertion into the keyhole of frozen locks comprising: a thawing stick in the form of a thin hollow flattened elongated metal body having a height and width which is less

than the thickness of the key fitting into the keyhole thereby adapting said stick for insertion into the keyhole; a thin electrical heating resistance wire fitted into the hollow interior portion of said metal body and extending from the longitudinal center of said body to the tip of said stick adapted to be inserted into the keyhole, the heating wire and metal body being in electrical contact with each other at said tip; the remainder of said resistance wire being electrically insulated from said metal body by means of a layer of insulation interposed between said wire and the inner surface of said body; at least one battery for supplying electric power to said resistance wire in said thawing stick; a common protective housing open at the top and of generally rectangular shape and of a size to be gripped in the hand, said open to being closed by a cover member, said housing encasing said at least one battery and said thawing stick in side by side relation; said common housing provided with a vertical partition defining a well between a wall of said housing and said partition, said thawing stick being slideably mounted for vertical displacement into and out of said well and said at least one battery being located between the other side of said vertical partition and the opposite wall of said housing;



said cover member having an opening above said well allowing for vertical displacement of said stick from said well through said opening for insertion of the tip of said stick into a keyhole; a horizontal plate within said casing over said at least one battery having a pair of spring contacts on the under side to make electrical contact with the poles of said at least one battery and having an opening for retaining a bulb serving as a light to illuminate the key hole, said cover member having an opening in registry with the lamp; a displacement means within said well connected to said thawing stick for slidingly moving said thawing stick through said opening in said cover member above said well; said protective housing having an opening in the side thereof in communication with said well; said displacement means having a knurled outer portion exposed through said side opening and serving as a handle for vertically sliding said thawing stick in the well of said housing along said partition with said stick is pressed against said vertical partition during the sliding movement of said stick; said displacement means having an exposed contact member electrically connected to the end of said resistance wire means at the longitudinal center of said body, said spring contacts each terminating in electrical contact strip, one strip being in constant sliding engagement with said metal

4,247,755

HIGH PRESSURE AUTOCLAVE

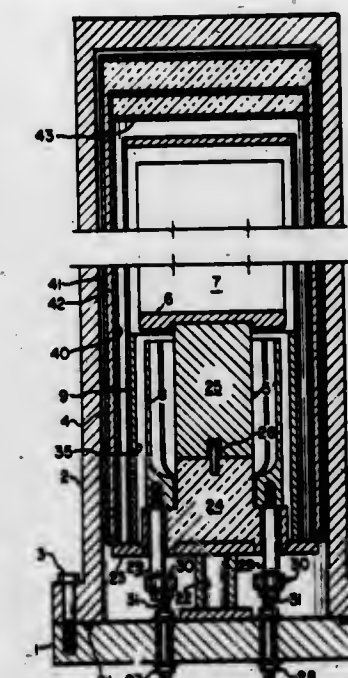
Charles W. Smith, Jr., Fairview; William H. Walker, and Franz X. Zimmerman, both of Erie, Pa., assignors to Autoclave Engineers, Inc., Erie, Pa.

Continuation-in-part of Ser. No. 780,718, Mar. 24, 1977, abandoned. This application Jan. 16, 1978, Ser. No. 869,828. The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.

Int. Cl. H05B 3/00

U.S. Cl. 219—400

12 Claims



1. An apparatus for gas pressure bonding, hot isostatic pressing or the like in which a workpiece may be treated at elevated temperatures and pressures, said apparatus comprising an elongate cylindrical pressure vessel, an insulating hood for enclosing the workpiece and a hearth upon which the workpiece rests, the improvement comprising said hearth set upon and substantially entirely supported by an elongate refractory pedestal, a cylindrical heating element selected from the group carbon, graphite and a silicon carbide defining an electrical resistance path, said heating element being disposed about and spaced from said pedestal below the hearth extending substantially entirely along the length of the pedestal, a cylindrical insulating heat reflecting shield disposed about the pedestal and heating element vented near the base thereof, said hearth being a disc-like structure having a diameter greater than the diameter of the top of the pedestal and shielding any workpiece upon the hearth from direct radiation from the heating element, said pedestal, hearth, heating element and shield arranged to permit convection to transfer heat from the heating element to a workpiece placed upon the hearth and to minimize transfer of heat to the workpiece by radiation.

4,247,756

HEATED FLOOR MAT

Victor Cucinotta, 11 George St., Stoneham, Mass. 02180, and George Flores, 402 Stephen Rd., San Mateo, Calif. 94403

Filed Jan. 29, 1979, Ser. No. 53,708

Int. Cl. H05B 3/34

U.S. Cl. 219—528

2 Claims

1. An integral electrically heated floor mat comprised of outer conductive and electrically non-conductive layers and an inner electrically resistive layer, said inner layer having parallel spaced flexible electrodes enclosed therein and conductively bonded thereto, the outer layers each consisting essentially of styrene butadiene rubber and inert materials in an amount of 1 part rubber to 2 to 4 parts by weight inert material, and a thermosetting resin, 1 part rubber to 0.3 to 0.5 parts by weight thermosetting resin; the inner layer consisting essentially of a rubber selected from the group consisting of epi-

4,247,754
APPARATUS FOR PERFORATING WEBS OF WRAPPING MATERIAL FOR ROD-SHAPED SMOKERS' PRODUCTS

Anton Baier, Wentorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

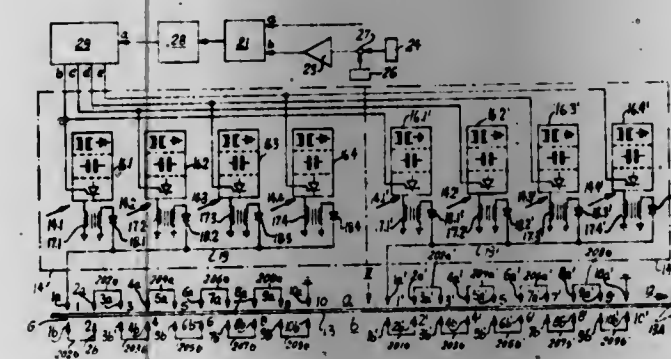
Filed Jan. 15, 1979, Ser. No. 3,364

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802315

Int. Cl. H05B 7/18

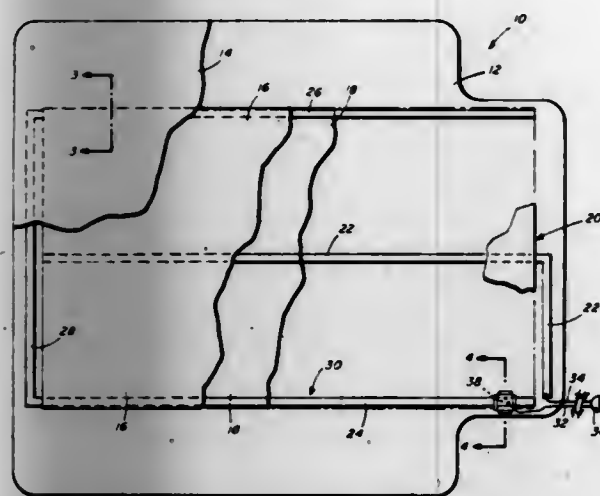
U.S. Cl. 219—384

14 Claims



chlorohydrin-ethylene oxide copolymer rubber, butyl rubber, neoprene rubber and silicone rubber and combinations thereof, a plasticizer and carbon black, 1 part rubber to 0.7 to 1.3 parts by weight carbon black, 1 part rubber to 0.7 to 1.3 parts by weight plasticizer;

the inner and outer layers being sealed to each other and the inner layer being sealed inside the outer layer; and



a thermostatically controlled current receiving means in electrical communication with the electrodes, said means having a switch in a normally closed position to conduct electrical current to the electrodes, the switch adapted to move to an open position when a predetermined temperature is reached whereby current may be transmitted through portions of the inner electrically resistive layer lying between the said electrodes to generate heat.

4,247,757

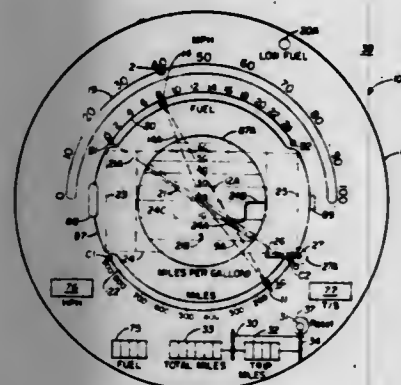
VEHICLE FUEL ECONOMY ENERGY CONSERVATION INDICATING DEVICE AND PROCESS FOR USE
John M. Crump, Jr., 1018 Parkridge Circle West, Jacksonville, Fla. 32211

Continuation-in-part of Ser. No. 861,965, Dec. 19, 1977, Pat. No. 4,186,296. This application May 22, 1978, Ser. No. 908,016

Int. Cl.³ G01M 15/00; G06G 1/14

U.S. Cl. 235-615

12 Claims



1. A vehicle fuel economy and energy conservation indicating device comprising in combination a first and second concentrically disposed generally parallel positioned cooperable computing elements rotating about a common axis, a third computing element operatively connected to each of said first and second computing elements, said operative connections providing generally oppositely disposed pivotal means between said first and second computing elements and said third computing element, said operative connections providing independent translative movement to said oppositely disposed pivotal means, calibrated graphic display scales embodied on the face surface of said device, said face surface juxtapositioned parallel to said computing elements, registering means provided on said face surface adjacent to said scales thereby allowing simultaneous viewing of said elements with said

scales, the consequential operation of said first and second computing element together with said third computing element relate to said calibrated scales according to a mathematical relationship for vehicle fuel economy thereby indicating the average miles per gallon at any related total trip distance and total fuel consumed setting.

4,247,758

ANIMAL IDENTIFICATION AND ESTRUS DETECTION SYSTEM

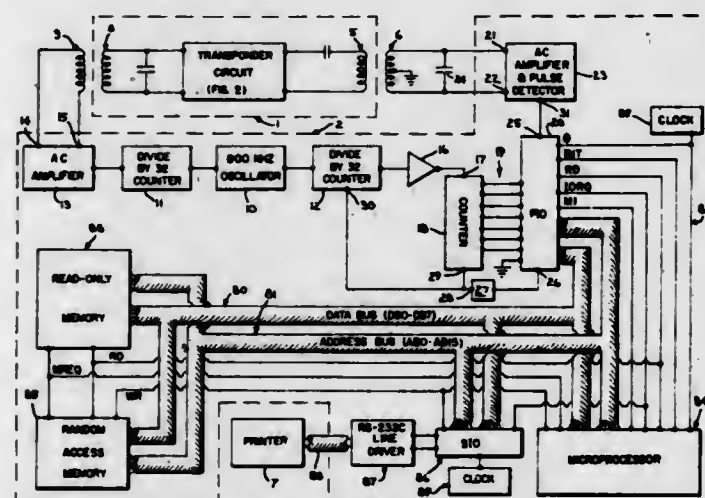
James A. Rodrian, 1123 Lake Shore Rd., Grafton, Wis. 53024
Continuation of Ser. No. 963,456, Nov. 24, 1978, abandoned.

This application Nov. 15, 1979, Ser. No. 94,750

Int. Cl.³ G07C 11/00; H04Q 9/00

U.S. Cl. 235-92 MS

10 Claims



1. An estrus detection system for an animal, the combination comprising:

- (a) a motion sensing device which provides an electrical signal in response to animal movement,
- (b) a counter coupled to said motion sensing device to receive said electrical signals and store a number which is indicative of the number of animal movements, and
- (c) means responsive to an interrogation signal for transmitting data indicative of the number stored in said counter;
- (d) a transceiver unit positioned near a location which the animal frequents, said transceiver unit including
- (e) means for generating an interrogation signal to said transponder unit,
- (f) means for receiving the data transmitted by said transceiver unit,
- (g) means coupled to said receiving means for converting said received data into an activity number which is indicative of the number of animal movements, and
- (h) means coupled to said converting means for displaying information which incorporates said activity number.

4,247,759

SELF-SERVICE PASSENGER TICKETING SYSTEM
Yaris Nora, Del Mar; Eugene J. Cekander; Masaru Kazaoka, both of San Diego, and Jim P. Chuang, Escondido, all of Calif., assignors to Cubic Western Data, San Diego, Calif.

Filed Oct. 10, 1978, Ser. No. 949,975

Int. Cl.³ G07F 7/08; H04Q 1/52; G06K 19/06

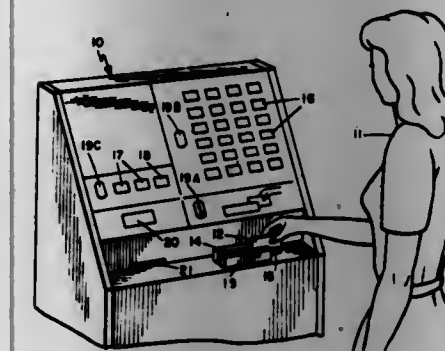
U.S. Cl. 235-381

4 Claims

1. An automated system for issuing airline tickets in response to purchases by credit card without the intervention of any ticket agent, the system being comprised of a plurality of electro-mechanical ticket terminals which communicate with a central computer adapted to determine whether a cardholder's credit is good or bad, wherein each of the ticket terminals includes:

credit card reader means for reading data from a credit card inserted therein by a ticket purchaser;

destination selection means for enabling the ticket purchaser to manually select a destination from a predetermined set of destinations, including a visual display for directing the ticket purchaser through a sequence of selection steps; means for performing a predetermined sequence of status checks based on the data read by the credit card reader means, the status checks being performed without communicating with the central computer, and including a parity check, a check on the type of card, a check as to whether the card has expired, and check on the number of purchases made with the card at the ticket terminal;



modern means for transmitting signals identifying the credit card to the central computer conditional on the status checking means indicating passage of all of the status checks, and for receiving signals from the central computer indicating whether the cardholder's credit is good or bad; means for calculating a fare based on the selected destination; vending means for printing and dispensing a ticket to the selected destination conditional on the signals received from the central computer indicating good credit; and means for recording data representative of each ticket dispensing transaction on a removable storage medium.

4,247,760

METHOD AND CIRCUIT ARRANGEMENT FOR GENERATING AND PROCESSING TWO SEPARATE PULSE TRAINS BEARING INFORMATION

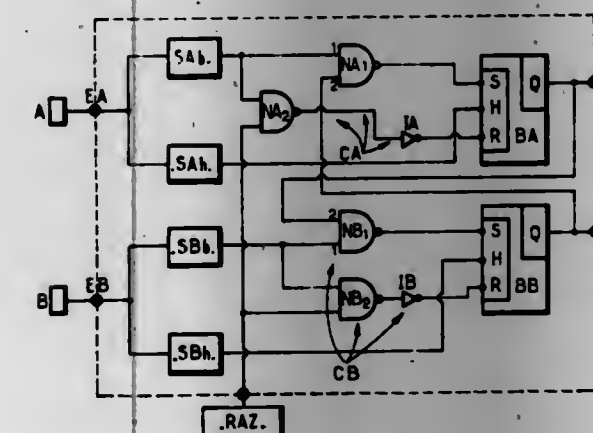
Daniel Maussion, Angers, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France

Filed Nov. 8, 1979, Ser. No. 92,561

Claims priority, application France, Nov. 22, 1978, 78 32934
Int. Cl.³ G06K 7/08, 7/14

U.S. Cl. 235-449

5 Claims



3. In a circuit arrangement for generating and processing pulses representing information, said circuit arrangement having two inputs connected to two separate sources of pseudoperiodic analog signals and two outputs adapted to be connected to two digital processing channels to apply rules for comparison and/or coincidence between the pulses which are transmitted along two channels, the improvement comprising two threshold switching circuits for each channel, means con-

necting one of the inputs to a corresponding one of said two threshold switching circuits of one channel and the other of said inputs to a corresponding one of said two threshold switching circuits of the other channel, each of said threshold switching circuits for each channel including a high threshold circuit and a low threshold circuit, the output of the low threshold switching circuit for each channel being connected to a first input of a combining circuit in said channel, said combining circuit having two outputs, one of said outputs of the said combining circuit being connected to at least one driving input of an associated bistable flip-flop means, the output of said bistable flip-flop means being connected to the output for the associated channel and being cross-connected to the other input of said gate in the combining circuit of the other channel, the output of the high threshold circuit of each channel being connected to the clock input of the associated bistable flip-flop means.

4,247,761

ARRANGEMENT FOR FOCUSING THE IMAGE OF AN OBJECT ONTO AN IMAGE PLANE

Karl-Ulrich Stein, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

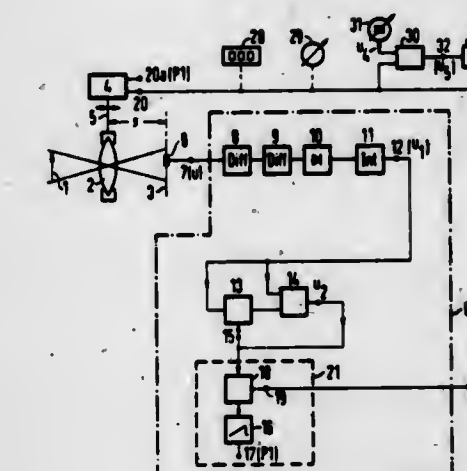
Filed Mar. 16, 1979, Ser. No. 21,077

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813915

Int. Cl.³ G01J 1/20

U.S. Cl. 250-201

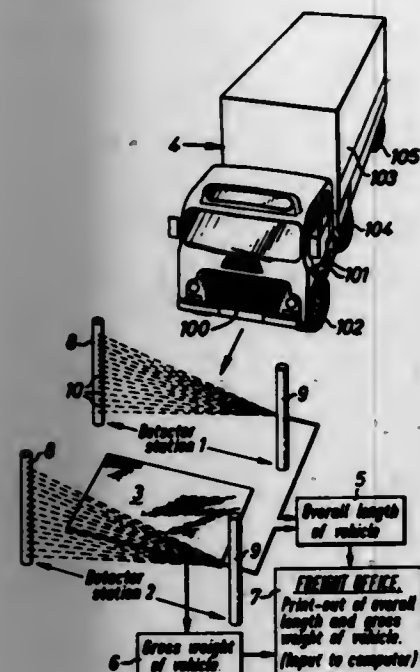
14 Claims



1. In an arrangement for focusing the image of an object into an image plane, wherein the image is derived by means of an objective lens system, and a cooperable setting device which varies the distance between at least a portion of the lens system and the image plane, the combination of a CTD image sensor having a plurality of image points aligned with a part of the image plane, means forming an output for said sensor for providing a sequential read-out of the image point values, an evaluating circuit to which the output of said sensor is supplied, means in said evaluating circuit for forming integrated signals corresponding to the mutual contrast of the read-out image points for a sequence of discrete values of the distance x, between the objective lens system and the image sensor, and means in said evaluating circuit responsive to said integrated read-out signals for forming an adjusting signal in correspondence to such integrated read-out signals, which is usable as a criterion for the control of such setting means for said objective lens system to adjust the same to a distance x which provides an integrated read-out signal of greatest amplitude.

1. A measuring system comprising:
 - (a) a pair of detector stations spaced a predetermined distance apart along a path of movement of vehicles moving at varying velocities, each detector station comprising a vertically extending series of electromagnetic radiation emitters disposed on one side of said path, each emitter producing a directional beam of radiation, and at least one electromagnetic radiation detector means for producing an electrical output signal related to the quantity or intensity of radiation incident upon it, said detector means

being disposed on the other side of said path and said emitters or a group of said emitters being arranged to direct their beams at it, whereby said quantity or intensity of incident electromagnetic radiation registered by said detector means is characteristic of the point along the



- length of a passing vehicle which is intercepting said beams at a given time; and
- (b) data processing means for processing the output signals from said detector means on a time basis and utilising the known predetermined spacing of said detector stations to provide a velocity related vehicle measurement.

4,247,769

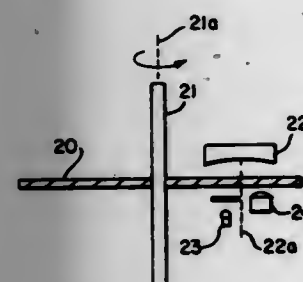
APPARATUS FOR MEASURING ANGULAR AND LINEAR DISPLACEMENTS

David A. Warner, Cambridge, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed Dec. 21, 1978, Ser. No. 971,653

Int. Cl.³ G01D 5/34

U.S. Cl. 250—231 SE

15 Claims



1. Apparatus for measuring angular displacement of a reference element about a reference axis, comprising:
- (A) a planar element coupled to said reference element and having a pattern of sectors characterized by different optical transmission coefficients alternating in the direction of said displacement, wherein said pattern is an annular pattern of radial sectors, and said pattern has an odd number of radial sectors characterized by each of said optical transmission coefficients, and wherein said planar element is coupled to said reference element so that said pattern rotates about said reference axis with said radial sectors lying in a plane perpendicular to said reference axis as said reference element rotates about said axis, and
- (B) two or more optical means for generating real images of a portion of said pattern passing an associated reference point, and for superimposing said real images on said portions of said pattern, whereby said superimposed im-

ages and said portions move in opposite directions as said planar element moves,

(C) detecting means associated with each of said optical means for detecting the optical density of regions of said superimposed image and said portions of said pattern at the respective reference points.

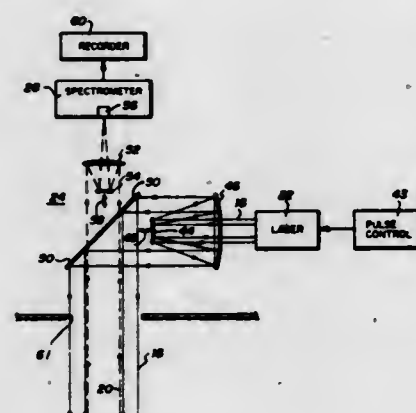
4,247,770

AERIAL MINERAL SURVEY METHOD AND APPARATUS USING PULSED LASER BEAM TO VAPORIZE SURFACE MATERIAL

Albert B. Welch, 3920 Centenary Dr., Dallas, Tex. 75225
Filed Sep. 7, 1978, Ser. No. 940,290

Int. Cl.³ G01V 5/00; G01J 1/58; G01N 21/00; G01J 3/44
U.S. Cl. 250—253

16 Claims



1. A method for conducting a survey to determine the mineral content of the earth's surface in a selected region, comprising the steps of:
- (a) from an aircraft traversing said region, directing laser beam energy downward to a sample area on the surface with energy of such intensity that the laser beam energy causes surface material in said sample area to be vaporized thereby exposing underlying material such that the laser beam energy is directed to said underlying material with energy of such intensity to generate at least one of atomic emission radiation, Raman scattering radiation or fluorescence radiation characteristic of said underlying material,
- (b) collecting a portion of said radiation by optical apparatus carried by the aircraft, and
- (c) applying said collected radiation to a spectrometer for measuring the spectra characteristics of said radiation.

4,247,771

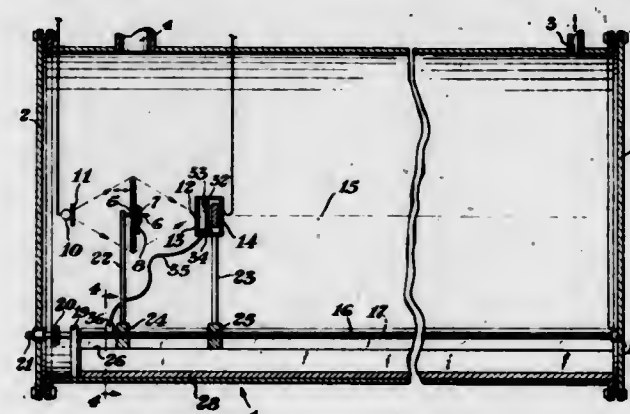
PARAFOCUSING DIFFRACTOMETER

Ludo K. Frevel, Midland, Mich., assignor to Karl M. Kadish; Linus K. Frevel and Gordon H. Frevel, all of Midland, Mich.
Filed Oct. 9, 1979, Ser. No. 82,872

Int. Cl.³ G01N 23/20

U.S. Cl. 250—273

6 Claims



1. A parafocusing X-ray diffractometer comprising the elements:

- (a) a point source of essentially monochromatic X-rays,
- (b) a circular thin-edged sample disk, said circular disk rotatably mounted at its center on an axle member,
- (c) a flat plate having a pinhole aperture near its center,
- (d) an X-ray sensor, said flat plate and said sensor fixed in spaced apart relationship in an assembly member,
- (e) an essentially cylindrical hollow housing having closed ends and having a sample access port and a flushing port, said point source, axle member, pinhole aperture in the flat shield, and X-ray sensor linearly aligned in that order within said housing and along or parallel to its longitudinal axis, said sample disk perpendicular to said axis and equidistant between said point source and said pinhole aperture, at least two of the elements consisting of said point source, said sample disk, and said assembly member moveable along the said axis of the housing, and
- (f) calibrated means for moving said movable elements along said axis while maintaining said sample disk equidistant between said point source and said pinhole aperture.

4,247,772

MULTI-DIMENSIONAL CORRECTIVE SYSTEM FOR LONG RADIATION BEAMS

Joseph E. Lavelle, Wellesley, and James L. Munroe, Nonantum, both of Mass., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Division of Ser. No. 696,693, Jun. 16, 1976, Pat. No. 4,111,531.

This application Jun. 22, 1978, Ser. No. 918,044

Int. Cl.² H01J 37/00

U.S. Cl. 250—423 P

3 Claims



1. In a system for isotope separation wherein a propagating beam of radiation is tuned for isotopically selective photoexcitation and is directed through a plurality of chambers along axes thereof for the propagation of radiation, said chambers containing an environment of isotopes, one of which is to be photoexcited, at least one system for redirecting the radiation in the propagating beam placed at predetermined intervals throughout the path of said propagating beam through said plurality of chambers, said system comprising:

- a first plane reflecting surface positioned to receive the propagating beam of radiation from one of said plurality of chambers along the axis thereof and operative to redirect the received beam;
- the received beam exiting said one chamber with a divergence characteristic;
- a concave reflecting surface positioned to receive the beam from said first plane reflecting surface and redirect it, said concave reflecting surface having a radius of curvature which converges the redirected beam received from said one chamber to thereby correct the divergence of said beam;
- a second plane reflecting surface positioned to receive the radiation redirected by said concave reflecting surface and operative to redirect it for passage along the axis of a further one of said plurality of chambers;
- the axis of said further chamber having a predetermined displacement and angular orientation with respect to the axis of said one chamber with said first and second plane reflecting surfaces operative to transfer said beam from alignment along the axis of said one chamber to alignment along the axis of said further chamber.

4,247,773

METHOD FOR QUANTITATIVELY DETERMINING FAT IN A FAT-CONTAINING SAMPLE

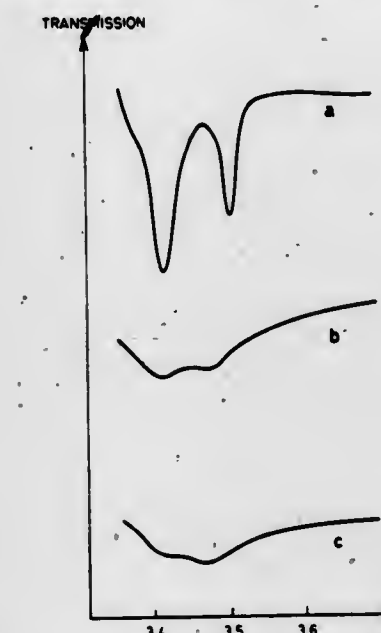
Sten A. Nexø, Birkerød, and Henrik R. Andersen, Kastrup, both of Denmark, assignors to A/S N. Foss Electric, Denmark
Filed Jul. 25, 1979, Ser. No. 60,411

Claims priority, application Denmark, Dec. 6, 1978, 5516/78; Jul. 3, 1979, 2814/79

Int. Cl.³ G01J 1/00

U.S. Cl. 250—339

15 Claims



1. A method for quantitative measurement of fat in a fat-containing sample by an infrared absorption technique, comprising transmitting infrared light through the sample, determining the infrared absorption of the sample in a waveband characteristic of saturated carbon-hydrogen bonds, and selectively, quantitatively assessing the fat content of the sample on the basis of said determination.

4,247,774

SIMULTANEOUS DUAL-ENERGY COMPUTER ASSISTED TOMOGRAPHY

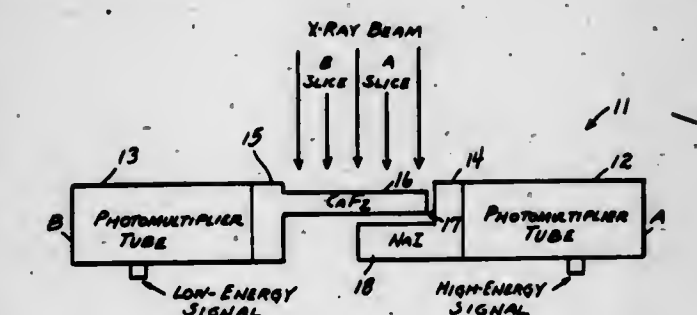
Rodney A. Brooks, Bethesda, Md., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jun. 26, 1978, Ser. No. 918,804

Int. Cl.² G01T 1/10

U.S. Cl. 250—367

13 Claims



8. In a method of computer assisted tomography including employing a polychromatic X-ray scanning beam directed through material under examination and obtaining energy-dependent attenuation data, the improvement wherein the obtaining step comprises simultaneously intercepting selected different energy ranges of photons in the exit X-ray beam leaving the material by first passing the X-ray beam through crystalline calcium fluoride to capture low-energy photons and then passing the remainder of said exit beam into crystalline sodium iodide to capture the remaining high-energy photons, and converting the selected different-energy photons into

respective two output electrical signals which are in accordance with the attenuation characteristics of the material at the selected different photon energy ranges.

4,247,775

PIEZOELECTRIC DOSIMETER CHARGER

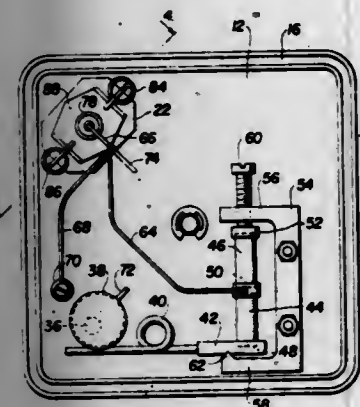
Stanley Kronenberg, Skillman, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 5, 1979, Ser. No. 100,666

Int. Cl.³ G01T 1/18

U.S. Cl. 250-437

17 Claims



1. Apparatus for charging an electrometer type dosimeter, comprising in combination:

- a housing;
- means on said housing for receiving a dosimeter and establishing electrical contact therewith;
- a movable element exterior to said housing for operating a charging circuit; and
- a charging circuit located in said housing, said circuit being coupled to said movable element and including at least one substantially immovable piezoelectric element adapted to generate an electrical charge in response to a mechanical force being applied thereto, means including lever means coupled to said movable element and being responsive to a charging motion imparted to said movable element to convert said charging motion of said movable element into a mechanical force applied to said piezoelectric member which thereby produces an electrical charge, and electrical circuit means coupling said electrical charge from said piezoelectric member to said means establishing electrical contact with said dosimeter.

4,247,776

X-RAY DIAGNOSTIC GENERATOR WITH AN INVERTER FEEDING THE HIGH VOLTAGE TRANSFORMER

Gerd Seifert, Spardorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

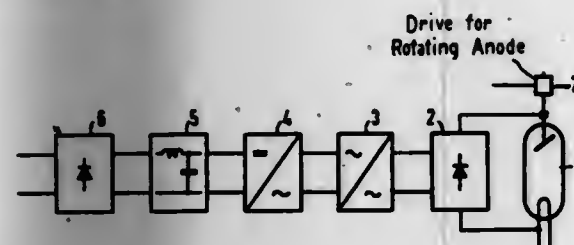
Filed Feb. 26, 1979, Ser. No. 15,285

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1978, 28158932

Int. Cl.³ H05G 1/70

U.S. Cl. 250-406

9 Claims



1. An X-ray diagnostic generator with a high voltage transformer, a power rectifier, an inverter fed by the rectifier, said inverter having its output voltage supplied to the high voltage

transformer, an X-ray tube with a rotating anode connected to the output of the high voltage transformer, and a drive circuit for the rotating anode motor designed as an asynchronous motor, characterized in that the rotating anode motor (7) is likewise fed by the inverter (4), control means connected with said inverter whereby the power supplied by the inverter to the anode motor has a frequency suitable for driving said anode motor, means whereby the power supplied by the inverter to said high voltage transformer is in the kilohertz range and is appropriate for driving said high voltage transformer, and means whereby the voltage supplied by the inverter to said anode motor has a magnitude appropriate for operating said anode motor.

4,247,777

OPERATING CONSOLE FOR AN X-RAY DIAGNOSTIC INSTALLATION

Rolf Pfeifer, and Eike Matura, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

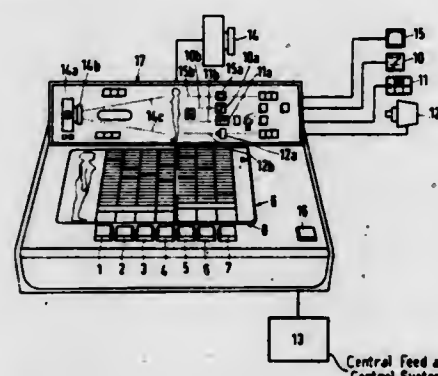
Filed May 4, 1978, Ser. No. 902,807

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 7719261[U]

Int. Cl.³ H05G 1/00, 1/70

U.S. Cl. 250-416 R

2 Claims



1. In an x-ray diagnostic installation comprising an x-ray tube, a plurality of x-ray radiographic systems, and a central feed and control system for supplying the x-ray tube and controlling the x-ray radiographic systems, a unitary common operating console common to all of said x-ray radiographic systems, said common operating console including a manually actuatable switching arrangement for selectively connecting any one of said x-ray radiographic systems with said central feed and control system, and switching means for adjusting the radiographic exposure values for the selected x-ray radiographic system,

said operating console having a display panel providing respective distinctive representations (10a, 11a, 12a) for identifying the respective x-ray radiographic systems, and having means comprising respective individual signal lamps (10d, 11d, 12d) for providing selective illumination of the respective distinctive representations on said display panel, and a monitoring device (FIG. 2) having means controlling the selective energization of the respective individual signal lamps (10d, 11d, 12d) in response to selection of the respective corresponding x-ray radiographic system by said manually actuatable switching arrangement, whereby the corresponding distinctive representation (10a, 11a, 12a) on the display panel is illuminated to visually signify which of the x-ray radiographic systems has been selected.

4,247,778

MOUNTING DEVICE FOR AN X-RAY FILM CASSETTE

Hans Waerve, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

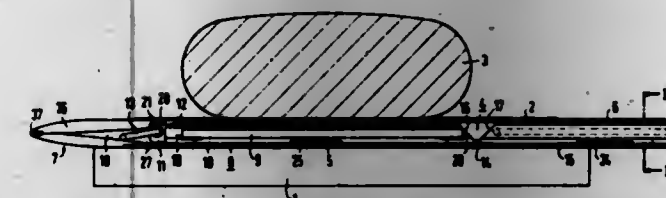
Filed Feb. 28, 1979, Ser. No. 16,293

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811765

Int. Cl.³ G03B 41/16

U.S. Cl. 250-439 R

10 Claims



1. A cassette mounting device comprising a housing (5, 6) with a cassette chamber defining means (8) providing a cassette chamber in which an x-ray film cassette can be inserted and which can be arranged under a patient, the cassette chamber defining means (8) being arranged in the housing (5, 6) in such manner that it can be brought into two defined positions relative to said housing (5, 6) displaced by about 90° with respect to one another, the cassette chamber defining means (8) in its one final position lying in said housing (5, 6) and being provided with a handle (13), by means of which it can be pulled out of the housing (5, 6) and be rotated into its other final position wherein the end of the cassette chamber defining means (8) facing away from the handle (13) is flexibly connected to a movable carriage (15) in the housing (5, 6), wherein stopping means (27) are provided which allow the cassette chamber defining means (8) to be pulled out of the housing (5, 6) until the joint (14) between the cassette chamber (8) and the carriage (15) lies at the end of the housing (5, 6), and wherein further stopping means (16, 17) are present for affixing the cassette chamber defining means (8) which has been rotated by 90°.

4,247,779

LINK-CLUTCH FILM DRIVE MECHANISM FOR PANORAMIC DENTAL X-RAY MACHINE

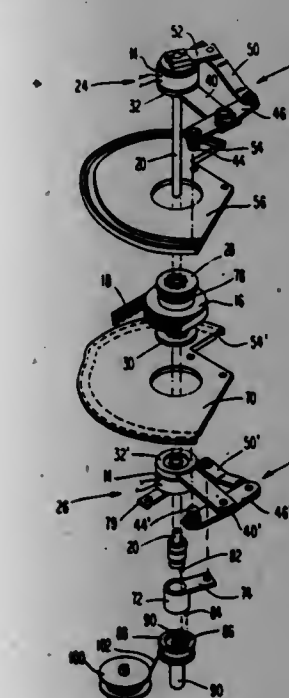
Anthony Clavattoni, Staten Island, N.Y.; Jack Flynn, Monmouth, and Josef Ujvary, Kingston, both of N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 29, 1979, Ser. No. 25,127

Int. Cl.³ A61B 6/14

U.S. Cl. 250-439 P

12 Claims



1. In a panoramic dental X-ray machine for providing con-

tinuous and discontinuous radiographic images of dental arch areas of a patient seated in a chair which travels during at least a portion of said continuous and discontinuous modes of radiographing, said X-ray machine comprising

- (a) a tubehead containing an X-ray source and means to power said source,
- (b) a camera assembly comprising a rotating drum including X-ray film disposed therearound for activation by said X-ray source, said tubehead and said camera assembly rotating as a unit about said patient, the combination therewith of the improvement comprising film drive means mounted within said camera assembly for rotating said drum and film at controlled rates of drive in accordance with travel of said chair and selected mode of radiographing while said tubehead and camera assembly circularly orbit said patient, said film drive means comprising
- a pair of stationary cams, one of said cams having a groove disposed therein for providing said continuous image and other of said cams having another groove disposed therein for providing said discontinuous image,
- a pair of linking arrangements, each including a cam follower for riding in respective groove of respective cam, means for separably rotating each of said pair of linking arrangements and cam follower associated therewith, independently rotatable shaft means rotating in accordance with rotation of each of said pair of linking arrangements,
- a film drive shaft in operable alignment with said shaft means and responsive to rotation thereof whereby means for holding said X-ray film rotates in accordance with rotation of said film drive shaft to thereby rotate said film.

4,247,780

FEEDBACK CONTROLLED GEOMETRY REGISTRATION SYSTEM FOR RADIOGRAPHS

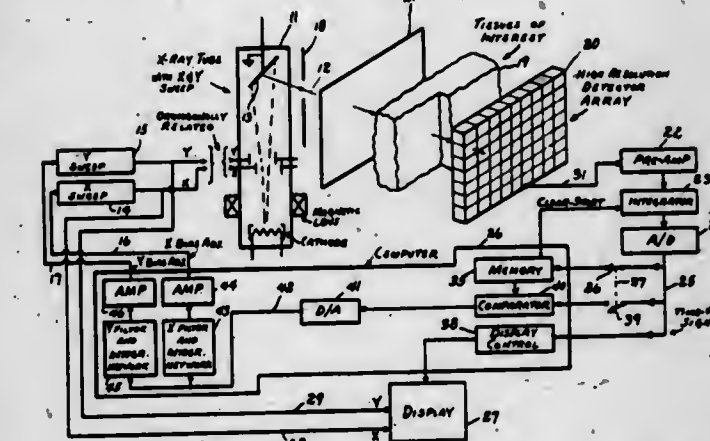
Richard L. Webber, Rockville, and Roger N. Nagel, Silver Spring, both of Md., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jun. 8, 1979, Ser. No. 46,826

Int. Cl.³ A61B 6/00, 6/08

U.S. Cl. 250-491

10 Claims



1. A radiographic tissue study apparatus comprising X-ray generating means defining selectively positioned X-ray point sources which can be shifted in space relative to a tissue sample of interest, a detector array spaced from said X-ray generating means and located in the path of radiation from said point sources and having spatial and temporal resolution consistent with the radiation from said point sources, said detector array being arranged to generate multiple radiographic image signals respectively in accordance with X-ray transmission from said point sources through such tissue sample, means to store original signals so produced, means to subsequently compare said original signals with characteristic later signals formed by the

detector array by irradiation through the same tissue sample by said point sources, and means to directionally shift said point sources in accordance with such comparison so as to substantially modify the effective projection geometry if there is a difference as compared with the original projection geometry.

4,247,781

COOLED TARGET DISC FOR HIGH CURRENT ION IMPLANTATION METHOD AND APPARATUS

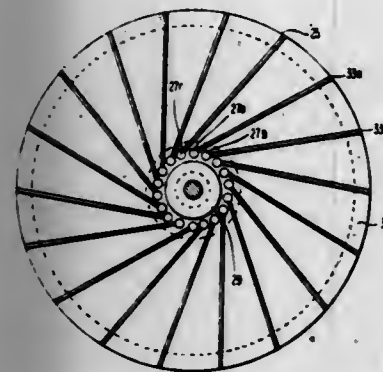
Erich H. Bayer, Mahopac; John R. Kranik, Poughkeepsie, and Wolfgang F. Mueller, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,443

Int. Cl.³ H01J 37/00

U.S. Cl. 250—492 A

10 Claims



1. Cooled target apparatus for holding workpieces for ion bombardment and implantation comprising:
a disc having a target surface and back surface and having an inner hub region and an outer target surface region with said inner hub region and outer target surface region being divided by a pattern of holes generally concentric to the hub region for reducing the conductive cross-section between hub region and target region and for allowing fluid to pass from the target surface side of said disc to the back surface side thereof, said back surface side of said disc including a pattern of fins extending from said inner hub region outwardly toward the periphery of said disc so as to cause said fluid to be drawn through said holes when said disc is rotating.

4,247,782

X-RAY TUBE UNIT

Takeshi Muraki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

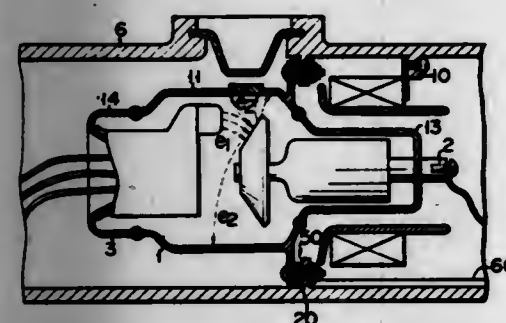
Filed Nov. 9, 1978, Ser. No. 959,367

Claims priority, application Japan, Nov. 21, 1977, 52/155356[U]

Int. Cl.³ H01J 35/16, 35/02

U.S. Cl. 250—523

8 Claims



1. An X-ray tube unit for neutralgrounded use comprising an X-ray tube having an envelope with the central portion formed of a metal cylinder, a housing containing said X-ray tube, means for electrically insulating said metal cylinder of the envelope from said housing and retaining said metal cylinder in a fixed position in said housing including a projection on the

inside wall of said housing, a fixing member composed of an extending strip outwardly extending from said metal cylinder of said envelope and an insulator interposed between said extending strip and said projection of said housing and means for fixing said fixing member to said projection, and a lead wire connected to said cylinder and extending to the outside of said housing for connection to ground said metal cylinder of the envelope outside said housing.

4,247,783

PHOTOELECTRIC CONVERTER OF SIZES OF PARTICLES EMPLOYING CALIBRATION LIGHT PULSES WITH INCREASED STABILITY

Viktor A. Berber, ulitsa Shelkovichnaya, 184, kv. 65; Vladimir A. Zolotenko, 2 Detsky proezd, 2, kv. 18, both of Saratov; Evgeny N. Nagnev, ulitsa Shevchenko, 62, kv. 55, Smolensk; Vladimir V. Pavlov, ulitsa Sovetskaya, 21, kv. 56, Saratov; Viktor E. Sokolov, ulitsa Shelkovichnaya, 194, kv. 49, Saratov; Alexei N. Syromyatnikov, ulitsa Pushkina, 17/25, kv. 66, Saratov, and Anatoly I. Eremenko, 2 Sadovaya, 98, kv. 19, Saratov, all of U.S.S.R.

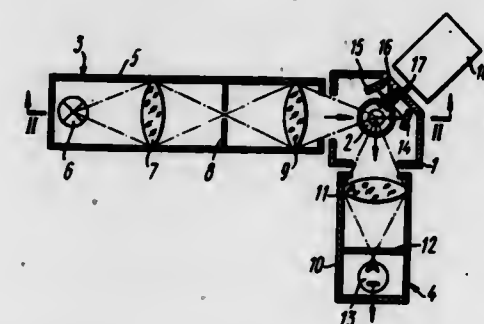
Filed Nov. 9, 1978, Ser. No. 959,248

Claims priority, application U.S.S.R., Jan. 24, 1978, 2564801

Int. Cl.³ G01N 15/02

U.S. Cl. 250—574

1 Claim



1. A photoelectric converter of sizes of particles contained in a flow of gas to electric pulses, comprising:
a chamber;
a means for directing an aerosol flow into and from said chamber, mounted on said chamber;
an illumination means having an optical axis, optically connected to said chamber and intended to form a convergent light flux to illuminate the aerosol flow;
a photoreceiver having an optical axis, optically connected to said chamber and arranged so that its optical axis, that of said illumination means and the axis of the aerosol flow all intersect at a right angle inside said chamber;
a first mirror arranged in said chamber across said optical axis of said illumination means beyond the point of intersection of that axis with said optical axis of said photoreceiver;
a second mirror arranged in said chamber across said optical axis of said photoreceiver beyond the point of intersection of that axis with said optical axis of said illumination means;
said first and second mirrors comprising a channel for transmitting part of the light flux of said illumination means; and
a calibration light pulse former, accommodated in said channel for transmitting part of the light flux of said illumination means;
said calibration light pulse former comprising:
a mechanical shutter constructed as a rod and interposed between said first and second mirrors across the path of the light flux,
a diaphragm interposed between said first and second mirrors across the path of the light flux, and
a reciprocating drive for driving said mechanical shutter.

4,247,784

MEASUREMENT OF MATERIAL LEVEL IN VESSELS

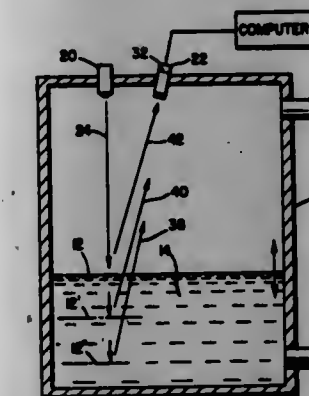
James W. Henry, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,401

Int. Cl.³ G01N 15/06

U.S. Cl. 250—577

12 Claims



1. Method of determining the level of a substance in relation to a reference point comprising the steps of
(a) directing a substantially stationary beam of light at said substance,
(b) receiving the diffuse reflected light on an arrangement of photoelectric sensor elements connected in a manner such that displacement of the reflected light from a predetermined position on said element arrangement is sensed electronically by counting the number of sensor elements between the original and displacement positions,
(c) generating an electrical signal which is proportional to the number of sensor elements counted, and
(d) using said electrical signal to determine the amount of deviation of the level of said substance from a predetermined reference point.

4,247,785

FREEWAY POWER GENERATOR

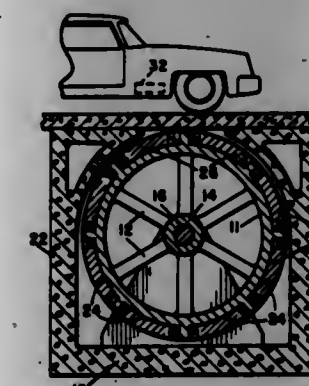
James W. Apper, 3529 Van Dyke, San Diego, Calif. 92105

Filed Nov. 23, 1979, Ser. No. 96,736

Int. Cl.³ H04R 23/00

U.S. Cl. 290—1 R

10 Claims



1. A power generator for converting the motion of vehicles over a road into useful energy comprising:
at least one transverse channel under said road extending across at least one lane of said road;
a magnetized rotary device in said channel, said magnetized rotary device being positioned with its rotary axis transverse to the road and extending across at least one lane of said road; and
energy transducer means coupled to said magnetized rotary device for changing its rotational energy into a form of energy that can be transmitted to locations that are remote from said road,

whereby the motion of vehicles over said magnetized rotary device causes it to rotate and to generate useful energy.

4,247,786

ENERGY MANAGEMENT METHOD USING UTILITY-GENERATED SIGNALS

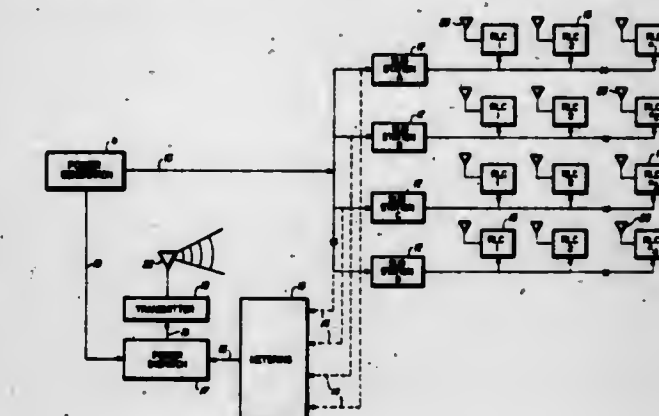
Walter P. Hedges, Laveen, Ariz., assignor to Cyborex Laboratories, Inc., Phoenix, Ariz.

Filed Mar. 15, 1979, Ser. No. 20,810

Int. Cl.³ H02J 4/00, 3/00

U.S. Cl. 307—35

3 Claims



1. In an energy management method for controlling electrical power consumption in each of a plurality of residential circuits having a plurality of loads including non-thermal loads having unpredictable demands, each said circuit having a controller for shedding and restoring certain ones of the loads in said residential circuit and including means for receiving utility-generated shed-restore signals from a remote location, and controlling the use by the residential consumer of certain of the loads in his residence by utility-generated shed-restore signals, the improvement in said method comprising the steps of:

- providing each residential circuit with a variable-limit controller which limits the total demand imposed by said plurality of loads, including (i) means for receiving utility-generated demand-limit signals from a remote location; and (ii) means whereby each said consumer can optionally override said demand-limit signals;
- establishing a total demand limit for each of said residential circuits which is independent of which of the specific loads in said residential circuit are responsible for said demand;
- generating signals from said remote location to reduce said total demand limit by an equal percentage in all of said residential circuits;
- measuring the total load on said utility imposed by said plurality of residential circuits; and
- generating successive demand-limiting signals until said total load on said utility is reduced to a value preselected by said utility.

4,247,787

POWER SWITCHING APPARATUS

Ronald Page, 3750 Edgemont Blvd., #22, Vancouver, British Columbia, Canada (V7R 2P8)

Filed Feb. 16, 1978, Ser. No. 878,310

Claims priority, application Canada, Jul. 15, 1977, 282878

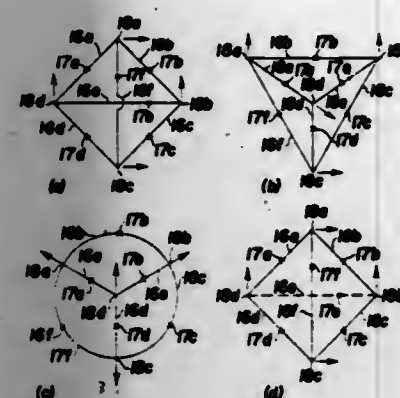
Int. Cl.³ H02B 1/24; H02J 4/00

U.S. Cl. 307—112

8 Claims

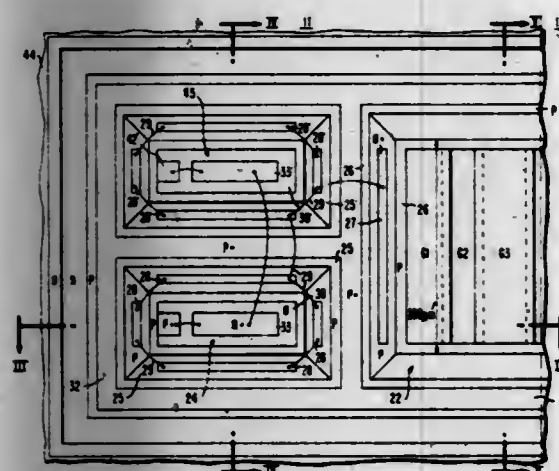
1. A switching network consisting of six conducting branches, each branch containing at least one switching means, the branching being connected at their ends so as to form four 3-sided rings, each branch forming a side of and being shared by two of said rings, whereby four triple connected nodes are

formed at the end connection points of the branches for connection thereto of source/load elements, each node being



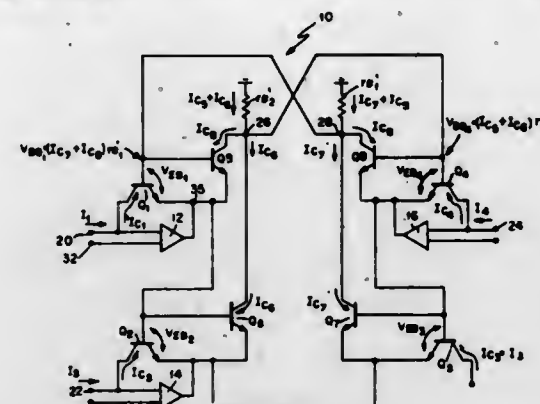
isolatable from the other nodes by the opening of a maximum of three of said switching means.

4,247,788
CHARGE TRANSFER DEVICE WITH TRANSISTOR INPUT SIGNAL DIVIDER
Nathan Blazer, Silver Spring, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Oct. 23, 1978, Ser. No. 953,809
Int. Cl.³ G11C 19/28; H01L 29/78, 27/02, 29/80
U.S. Cl. 307-221 D 17 Claims



1. A charge transfer device, comprising:
 - a body of semiconductor material of one type of conductivity with an elongated channel and a plurality of gate electrodes overlying said channel for storing and transferring individual charge packets at predetermined positions along said channel;
 - a signal input portion including an injection transistor and at least one partitioning transistor adjacent said channel and being an integral part of said device for creating an individual charge packet in one of said predetermined positions in response to an injected electrical signal;
 - said injection and partitioning transistors being structured relative to each other to cause a charge packet to be directed into said channel having a magnitude representative of a predetermined fraction of the magnitude of said electrical signal applied to said signal input portion.

4,247,789
ELECTRONIC CIRCUITRY FOR MULTIPLYING/DIVIDING ANALOG INPUT SIGNALS
Thomas M. Cate, Cupertino, and James C. Schmoock, San Jose, both of Calif., assignors to Raytheon Company, Lexington, Mass.
Filed Apr. 7, 1978, Ser. No. 894,459
Int. Cl.³ G06G 7/12; H03F 3/45
U.S. Cl. 307-230 17 Claims

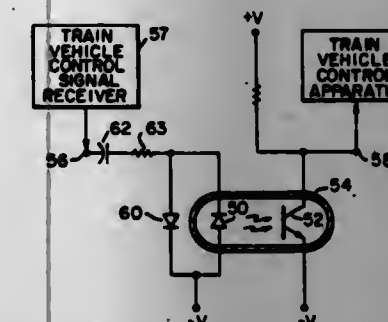


1. An electronic circuit comprising:
 - (a) a first set of four transistors having serially coupled base-emitter junctions, each one of such transistors having an ohmic emitter resistance;
 - (b) means, including a second set of four transistors, each one having a base electrode and an emitter electrode connected to the base electrode and emitter electrode, respectively, of a corresponding one of the first set of transistors, for producing current in the collector electrode of each one of the second set of transistors related to the current flow through the ohmic emitter resistance of the corresponding one of the transistors in the first set of transistors coupled thereto, a first pair of the first set of transistors having the base and emitter electrodes thereof connected to the base and emitter electrodes, respectively, of a first pair of the second set of transistors and a second pair of the first set of transistors having the base and emitter electrodes thereof connected to the base and emitter electrodes, respectively, of a second pair of the second set of transistors;
 - (c) means responsive to the current flow through the collector electrodes of the first pair of the second set of transistors for producing a first voltage in series with the serially coupled base-emitter junctions of the first pair of the first set of transistors, such first series produced voltage having a polarity opposite to the polarity of voltages developed across the ohmic emitter resistances of the first pair of the first set of transistors; and
 - (d) means, responsive to the current flow through the collector electrodes of the second pair of the second set of transistors, for producing a second voltage in series with the base-emitter junctions of the second pair of the first set of transistors, such second series produced voltage having a polarity opposite to the polarity of voltages developed across the ohmic emitter resistances of the second pair of the first set of transistors.

4,247,790
FAILSAFE TRAIN VEHICLE CONTROL SIGNAL THRESHOLD DETECTOR APPARATUS
Arun P. Sahasrabudhe, Monroeville, and Thomas C. Matty, North Huntingdon Township, Irwin County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 22, 1976, Ser. No. 651,304
Int. Cl.³ H03K 5/153; B61L 21/06
U.S. Cl. 307-350 4 Claims

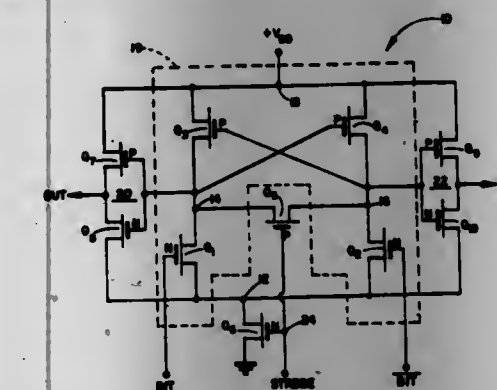
1. In train vehicle control signal threshold detector apparatus operative with a source of an offset voltage, the combination of:

means for providing a train vehicle alternating current input control signal;
means responsive to said alternating current input control signal for providing a photon energy output when the voltage of said input signal is above a predetermined threshold voltage reference, and



means responsive to said photon energy output for providing an output signal proportional to said photon energy output, with each of said photon energy output providing means and said output signal providing means being coupled to said offset voltage source for preventing direct current reduction of said predetermined threshold voltage reference.

4,247,791
CMOS MEMORY SENSE AMPLIFIER
Alexander Rovell, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 3, 1978, Ser. No. 892,817
Int. Cl.³ H03K 5/24; G11C 7/00
U.S. Cl. 307-355 5 Claims



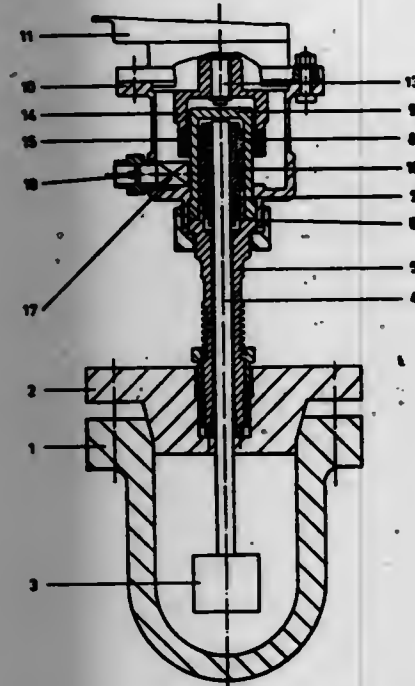
1. A sense amplifier connected to an array of memory cells by means of a pair of data bus lines so as to sense information signals contained in selected ones of the memory cells, said sense amplifier comprising:
 - first and second pairs of multi-terminal transistor devices having respective conduction paths and control electrodes,
 - first transistor devices from each of said first and second pairs thereof connected in electrical series with one another between first and second electrical junctions,
 - second transistor devices from each of said first and second pairs thereof connected in electrical series with one another between third and fourth electrical junctions,
 - the control electrode of the first transistor device of said first pair thereof connected to a conduction path electrode of the second transistor device of said first pair thereof, and the control electrode of the second transistor device of said first pair thereof connected to a conduction path electrode of said first transistor device of said first pair thereof,
 - each of the respective control electrodes of the transistor devices of said second pair thereof connected to a corresponding data bus line, whereby a relatively high input impedance is achieved for said sense amplifier,

each of the multi-terminal transistor devices of the first pair thereof being a p-channel field effect transistor, each of the multi-terminal transistor devices of the second pair thereof being a n-channel field effect transistor, said first and third electrical junctions being common electrical junctions, said second and fourth electrical junctions being common electrical junctions,
a source of recurring strobe input signals to control the conductivity of said sense amplifier,
a first source of supply voltage,
a first additional multi-terminal transistor device having a conduction path and a control electrode, the control electrode of said first additional transistor device connected to said source of strobe signals, and the conduction path of said first additional transistor device selectively connecting each of the second and fourth electrical junctions to said first source of supply voltage to thereby enable said sense amplifier,
a second source of supply voltage wherein the first and third electrical junctions are connected to said second source of supply voltage,
a second additional multi-terminal transistor device having a conduction path and a control electrode, the control electrode of said second additional transistor device connected to said source of strobe signals, and the conduction path of said second additional transistor device connected between the connection of the control electrode of the first transistor device of said first pair thereof to the conduction path electrode of the second transistor device of said first pair thereof and the connection of the control electrode of the second transistor device of said first pair thereof to the conduction path electrode of the first transistor device of said first pair thereof,
said first and second additional multi-terminal transistor devices being field effect transistors having an opposite conductivity type relative to one another,
the interconnection of said first and second pairs of multi-terminal transistor devices forms a data latch,
the control electrodes of each of said second pair of transistor devices corresponding to data latch input terminals, the connection of the control electrode of the first transistor device of said first pair thereof to the conduction path electrode of the second transistor device of said first pair thereof and the connection of the control electrode of the second transistor device of said first pair thereof to the conduction path electrode of the first transistor device of said first pair thereof corresponding to data latch output terminals,
first and second amplifier stages, each of said stages having input and output terminals,
the data latch output terminals respectively connected to the input terminals of said first and second amplifier stages, each of said first and second amplifier stages being comprised of a pair of series connected field effect transistors having an opposite conductivity type relative to one another, and
said data bus lines being precharged to reduce amplifier access time to data stored in said cells and to preserve said data in a radiation environment.

4,247,792
PERMANENT MAGNET TYPE STIRRER DRIVE
Berhard Klicke, Hagen-Haase, and Jürg-Peter Körner, Hagen, both of Fed. Rep. of Germany, assignors to Uhde, GmbH, Dortmund, Fed. Rep. of Germany
Filed Jul. 25, 1977, Ser. No. 818,437
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 7625599
Int. Cl.³ H02K 5/10 2 Claims

1. Permanent magnet type stirrer drive for a high pressure autoclave comprising

- a. a stirrer shaft having a stirrer at its outer end,
 b. a high pressure tube in which said stirrer shaft rotates,
 c. a sleeve-like magnet shaft fixed to the inner end of said stirrer shaft,
 d. segmented permanent magnets on the outer side of said magnet shaft,
 e. a hood closed at its inner end and open at its outer end hermetically enclosing said magnets and magnet shaft,
 f. a sleeve bearing below said magnets and between said magnet shaft and pressure hood,



- g. a magnet bell enclosing a portion of said hood at its closed inner end,
 h. permanent magnets inside said bell at the level of said segmented magnets,
 i. a cage enclosing said bell and hood,
 j. means for securing together said cage, pressure hood and pressure tube for holding same stationary, and
 k. means for rotating said magnet bell.

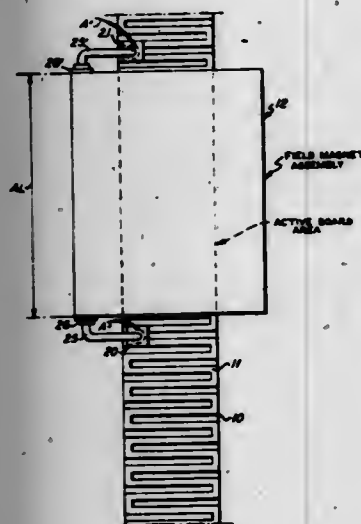
4,247,793

ELECTRIC MOTOR

J. Kirkwood H. Rough, Toledo, Ohio, assignor to Jim Zeeger, Arlington, Va., a part interest

Filed May 2, 1975, Ser. No. 574,146
 Int. Cl.³ H02K 41/00

U.S. Cl. 310-12



1. In an electric motor having magnetic means forming at least one polarized magnetic field having an elongated dimension transverse to a selected direction of drive, a pair of conductor arrays, each conductor array including a plurality of parallel, elongated conductor elements spaced apart with respect to each other along said selected direction of drive, and

a thin flat non-magnetic carrier for said conductor arrays and means maintaining said carrier for movement along a path defined by said selected direction, the improvement comprising each elongated conductor element in said arrays being constituted by a conductive path formed on said non-magnetic carrier and having means constituting current input ends, each said conductor array being separate from the other, respectively, and printed on said thin flat carrier,

brush means for applying electrical energy to a selected number of said elongated conductor elements in each of said arrays via said current input ends to energize said selected conductor elements, the remaining of said elongated conductor elements in each array remaining unenergized and not having any energizing current flow therein and, wherein each said conductor array is constituted by a parallel conductors transverse to said direction of drive and alternate ones of said lateral end terminations are connected to each other to form a serpentine conductor, and said brush means has a length in the direction of drive to span the space between a pair of parallel conductors.

4,247,794

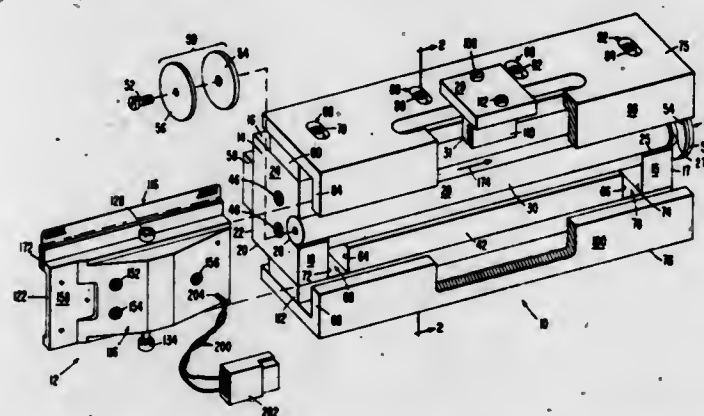
LINEAR ACTUATOR

Karl Jooss, and Richard E. Norwood, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,880
 Int. Cl.³ H02K 41/00

U.S. Cl. 310-13

10 Claims



1. In a direct access storage system including one or more data storage disks mounted for rotation about a common axis, a linear actuator positioning a transducer relative to a data track on a selected one of said disks, said linear actuator comprising in combination:

a pair of end plates mounted in spaced alignment;
 a channel-shaped elongated member fastened between said end plates;
 an elongated precision rod supported along its length within the channel of said member and defining the stroke of the linear actuator;
 at least one elongated bar-shaped permanent magnet placed adjacent said channel member and defining an air gap between said bar magnet and said channel member at a side of said channel member other than that defining the channel;

L-shaped guide rails, one placed in spaced relationship alongside of said rod and at least partially encompassing said rod;

a platform used to support the transducer;
 a bearing suspension means supporting said platform in operable suspension along the stroke of the linear actuator defined by said rod and said guide rails; and

a self-supporting electromagnet coil fastened at one side of its conductors to said platform and extending from said platform to surround said rod and channel member combination in the magnetic air gap defined by said bar permanent magnet; and

means for supplying electrical current to said coil.

4,247,795

COMMUTATOR

Michael J. Stafford, Lichfield, England, assignor to Lucas Industries, Limited, Birmingham, England

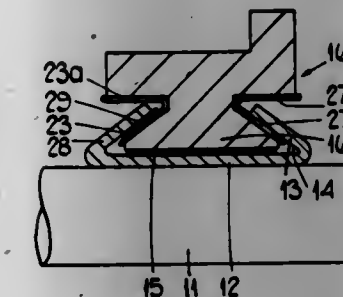
Filed Feb. 9, 1977, Ser. No. 767,034

Claims priority, application United Kingdom, Feb. 20, 1976, 6721/76

Int. Cl.³ H02K 13/10

U.S. Cl. 310-233

1 Claim



1. A commutator including a support sleeve having two axial ends, a plurality of commutator segments equi-angularly spaced around the support sleeve, means for electrically insulating segments from one another, each of said segments having a base region of dove-tail form having its widest end presented to said sleeve, a first retaining flange integral with the sleeve and adjacent one of said axial ends thereof, said flange including means defining a first internal frusto-conical surface co-acting with a first inclined face of the base region of each of said segments for locating the segments axially and radially relative to the sleeve, and, the other axial end of said sleeve including means defining a second integral retaining flange, said second integral retaining flange defining a second internal frusto-conical surface co-acting with a second inclined face of the base region of each of said segments whereby both the first integral retaining flange and the second integral retaining flange comprise means for locating said segments axially and radially relative to the sleeve wherein the sleeve is metallic and the commutator includes a frusto-conical insulating means for insulating each of said first and second integral retaining flanges from said segment base regions, wherein a frusto-conical washer is interposed between the insulating means and the second integral retaining flange, said frusto-conical washer comprising means for protecting the insulating member during deformation of the sleeve to form the second flange.

4,247,796

ELECTROSTATIC TRANSDUCER FOR GENERATING STROBE SIGNALS

Guido Fiorentino, Ivrea, and Lino Sella, Banchette, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Mar. 29, 1979, Ser. No. 24,987

Claims priority, application Italy, Apr. 3, 1978, 67719 A/78
 Int. Cl.³ H02N 1/00

U.S. Cl. 310-308

12 Claims

1. A transducer for generating strobe signals in response to a relative movement of a pair of facing members along a predetermined direction, comprising a printed circuit secured to a first one of said members to face the other of said members, said printed circuit being formed with a common conductor parallel to the direction of said relative movement and connected to a plurality of substantially rectangular conductors extending transverse to said direction and indicating a plurality of relative positions of said members,

a sheet of conductive material secured to said other member to face said printed circuit,

at least a substantially rectangular electret element secured to said conductive sheet parallel to said conductors and permanently electrostatically polarized to generate a flux

pattern perpendicular to said direction, and means for relatively moving said members one with respect to the other in said direction, whereby said conductors intermit-



tently cooperate with the flux pattern of said electret element to generate by electrostatic induction on said sheet strobe signals indicative of said relative positions.

4,247,797

RECTANGULAR AT-CUT QUARTZ RESONATOR

Naoyuki Echigo, Shiro Yamashita, Tsuneo Kuwabara, Kunihiko Takahashi, and Shunichi Motte, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

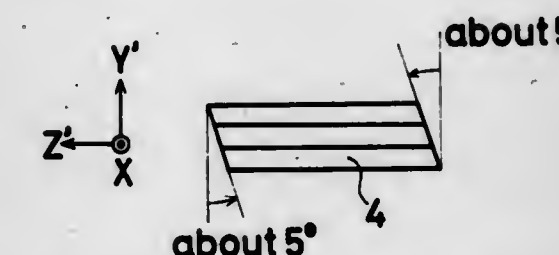
Filed Apr. 25, 1979, Ser. No. 33,229

Claims priority, application Japan, May 19, 1978, 53/60284; May 19, 1978, 53/60285

Int. Cl.³ H01L 41/08

U.S. Cl. 310-361

4 Claims



1. A rectangular AT-cut quartz resonator rotating a quartz crystal plate counterclockwise at about 35 degrees around the X-axis, wherein the length l, the width w and the thickness t of the quartz crystal plate are respectively along the X-axis, Z'-axis and Y'-axis, and dimensional ratios w/t and l/t are respectively chosen from the range of 3.1 to 3.7 and the range of 14.5 to 16.2.

4,247,798

MERCURY-METAL HALIDE DISCHARGE LAMP

Stephen H. Howe, Barry Preston, and Robert B. Page, all of London, England, assignors to Thorn Emi Limited, London, England

Continuation-in-part of Ser. No. 825,750, Aug. 18, 1977, abandoned. This application Apr. 3, 1979, Ser. No. 26,562

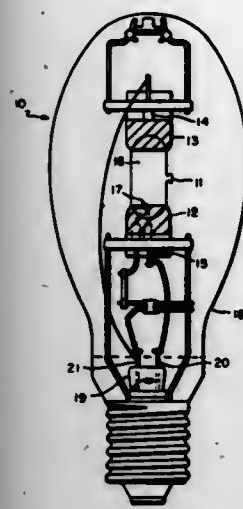
Int. Cl.³ H01J 61/22

U.S. Cl. 313-225

5 Claims

1. In a metal halide electrical discharge lamp comprising a sealed light-transmitting envelope, electrodes therein, current leads for said electrodes and a fill within said envelope comprising mercury, an inert gas, thorium, the iodides of and sodium and scandium, the improvement comprising the inclu-

sion in the fill of a molar proportion of lithium iodide in the range of 10 to 50% of the total of sodium, lithium and scan-



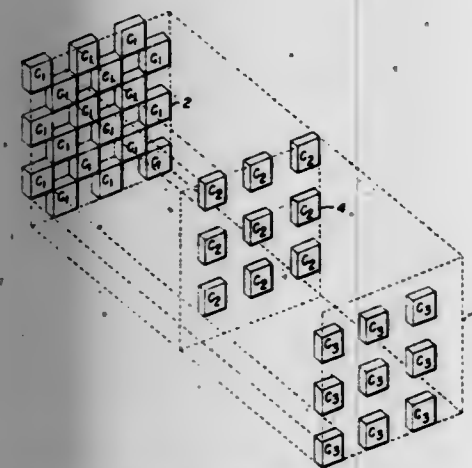
dium iodides, and the molar ratio of the total alkali metal iodides present to scandium iodide is between 5.4:1 and 57.5:1.

4,247,799
COLOR IMAGING DEVICES AND COLOR FILTER ARRAYS USING PHOTO-BLEACHABLE DYES
Karl H. Drexhage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,441
Int. Cl.³ H01J 29/45, 31/38

U.S. Cl. 313-367

9 Claims



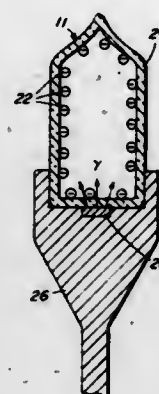
1. In a color imaging device comprising:
 - (i) a radiation-sensitive surface and, superimposed thereon,
 - (ii) a single layer of a transparent binder containing a planar array of filter elements, the improvement wherein at least some of said filter elements contain at least two cationic photo-bleachable dyes which selectively absorb radiation in at least one portion of the spectrum, wherein the first of said dyes absorbs radiation in a first portion of the spectrum and the second of said dyes absorbs radiation in a second portion of the spectrum corresponding to a wavelength shorter than that to which said first portion corresponds, and wherein said second dye has a bleaching efficiency higher than said first dye.

4,247,800
RADIOACTIVE STARTING AIDS FOR ELECTRODELESS LIGHT SOURCES

Joseph M. Proud, Wellesley; Robert J. Regan, Needham; Paul O. Haugajaa, Acton, and Donald H. Baird, Waban, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Feb. 2, 1979, Ser. No. 8,807
Int. Cl.³ H05B 41/233; H01J 7/40, 65/06
U.S. Cl. 315-39

19 Claims



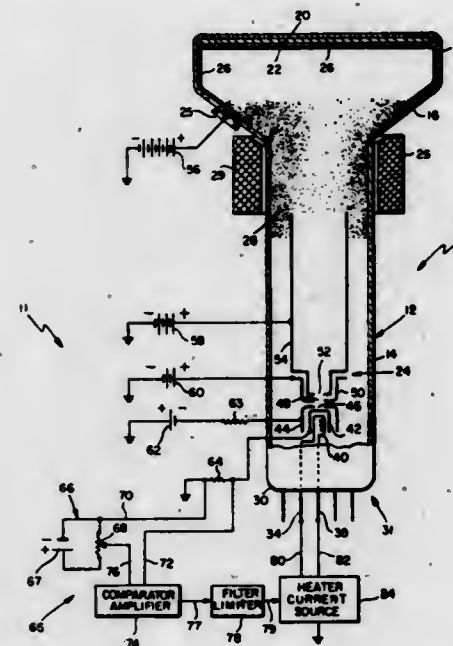
11. The electromagnetic discharge apparatus as defined in claim 10 wherein said radioactive material has an activity level of about 10^{-8} curie.

4,247,801
CATHODE CURRENT CONTROL SYSTEM
Andras Dallos, Lincoln; John A. Buckbee, Wellesley, and Gordon R. Spencer, Westwood, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 2, 1979, Ser. No. 16,860
Int. Cl.³ H01J 29/98

U.S. Cl. 315-107

10 Claims



1. A cathode current control system comprised of an electron discharge device including:
 - a tubular envelope,
 - an anode electrode supported within the envelope, and
 - electron gun means including an electrically heatable cathode and an aligned control grid electrode spaced from the anode electrode within the envelope for beaming a cathode current of electrons to the anode electrode; and
 - control circuitry disposed externally of the tube and including
- fixed voltage source means electrically connected between the anode electrode, the control grid electrode, and the cathode for maintaining the anode and the control grid at

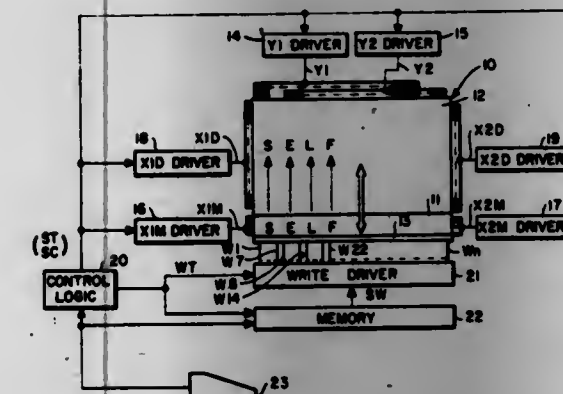
respective predetermined constant electrical potentials with respect to the cathode; and
current sensing means electrically connected to the cathode for automatically maintaining the cathode current at a predetermined constant level associated with the predetermined electrical potential of the control grid.

4,247,802
SELF SHIFT TYPE GAS DISCHARGE PANEL AND SYSTEM FOR DRIVING THE SAME
Kaneyuki Kurokawa, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 21, 1978, Ser. No. 971,694
Claims priority, application Japan, Dec. 27, 1977, 52-159574
Int. Cl.³ H05B 41/36

U.S. Cl. 315-169.2

14 Claims



1. A self shift type gas discharge panel having a display screen comprising shift channels arranged in parallel, each said shift channel being defined by a periodic arrangement of groups of discharge cells in a gas discharge space, said groups of discharge cells being selectively defined by groups of electrodes having a periodic arrangement on two substrates separated by said gas discharge space, said panel comprising:
 - means for dividing said display screen into at least two areas for selective operation in each of said areas, said at least two areas having at least one common boundary crossing said parallel lines of shift channels at right angles, said dividing means comprising said selective definition of said discharge cell groups by said periodic arrangement of electrode groups being such that said electrode groups on one of said substrates extend in common over each said divided display area and such that at least two of said electrode groups on the other of said substrates are limited to extend selectively over a respective one of said divided display areas, and
 - write electrodes defining write discharge cells provided at at least one end of each said shift channel.

4,247,803
TRIGGER PULSE GENERATOR FOR GAS DISCHARGE LAMPS

Alfred Walz, Am Kurzar 7, Emmendingen, Fed. Rep. of Germany (D-7830)

Filed Apr. 16, 1979, Ser. No. 30,466

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816753

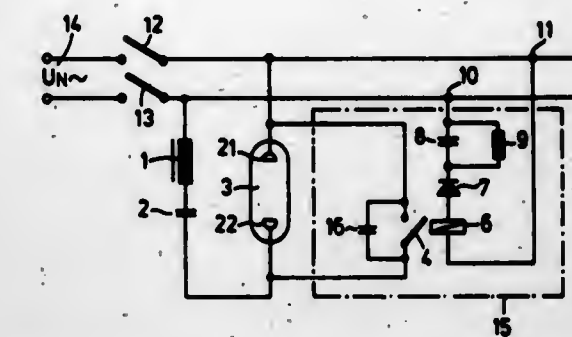
Int. Cl.³ H05B 37/00, 41/14, 41/18

U.S. Cl. 315-289

11 Claims

1. An improved arrangement for starting a low and high pressure gas discharge tube which includes inductive current stabilizing means in series with the gas discharge tube and a trigger circuit for the gas discharge tube, the improvement wherein said trigger circuit comprises:
 - a switch having its contact electrically connected directly across said gas discharge tube for selectively short-circuiting said tube; and
 - relay means including a winding parallel to said gas discharge tube and said stabilizing means for actuating said

switch, said winding of said relay means being in series connection with a rectifier and a capacitor and said series



connection being connected directly to a source of alternating electrical current.

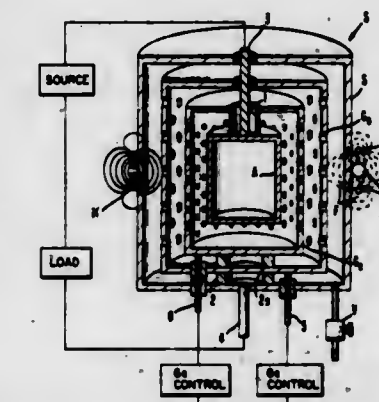
4,247,804
COLD CATHODE DISCHARGE DEVICE WITH GRID CONTROL
Robin J. Harvey, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 4, 1979, Ser. No. 45,460

Int. Cl.³ H01J 15/02, 17/14

U.S. Cl. 315-344

8 Claims



1. A crossed-field discharge device comprising:
 - at least three electrodes comprising an anode electrode, a cathode electrode and a source electrode, one of said cathode and source electrodes having open spaces therein to provide transparency to electrons;
 - electrical insulating means supporting said electrodes in spaced relation, with said source electrode adjacent said cathode electrode, providing two interelectrode gaps among the three electrodes;
 - means for maintaining gas under a predetermined pressure in said inter-electrode gaps so that the gas can be ionized for electric conduction between at least two of said electrodes;
 - means for coupling an electrical circuit to said anode electrode and said cathode electrode whereby an electrical field is produced which extends across said inter-electrode gaps;
 - means for producing a magnetic field which penetrates the inter-electrode gap between said source electrode and said cathode electrode, but which magnetic field has no functionally significant penetration into the remaining inter-electrode gap, said magnetic field interacting with said electrical field in the gaseous environment in said inter-electrode gap between said source electrode and cathode electrode, to produce a plasma which is a source of electron and ion charge carriers; and
 - means for applying a voltage to said source electrode to produce an electrostatic field to cause charge carrier generation and hence migration from said plasma to said anode to initiate conduction of said crossed-field discharge device.

4,247,805

CIRCUIT FOR DRIVING SAW-TOOTH CURRENT IN A COIL

Giuseppe Zappala, Turin, Italy, assignor to Indesit Industria Elettrodomestici Italiana, Italy

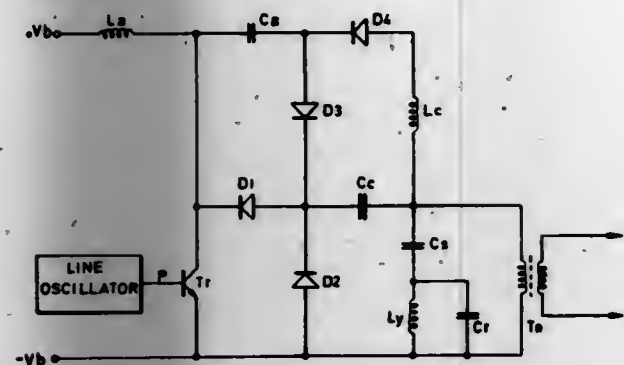
Filed May 23, 1979, Ser. No. 41,912

Claims priority, application Italy, Jun. 8, 1978, 68328 A/78

Int. Cl.³ H01J 29/70

U.S. Cl. 315—408

6 Claims



1. A circuit arrangement for driving a saw-tooth current, having a trace and retrace interval, in a coil, the arrangement comprising: a retrace capacitor and a trace capacitor connected to said coil so as to form a deflection circuit operative to oscillate freely during the retrace interval; a first diode connected in parallel with said deflection circuit and having such polarity as to be rendered conductive by the saw-tooth current during a first part of the trace interval; a series combination formed of a second diode and a semiconductor switch connected in parallel with said deflection circuit, the second diode being of such polarity as to be rendered conductive by the saw-tooth current during a second part of the trace interval; a periodic control signal source connected to the control electrode of the semiconductor switch to render the latter switch conductive during part of the trace interval; a first inductor connected in series with the semiconductor switch across a current supply source so that, during the part of said trace interval in which said switch is conductive, energy is stored in said first inductor; and first means including a third diode for transferring said energy stored in the first inductor partly to said deflection circuit and partly to a storage capacitor during the part of the saw-tooth cycle in which said switch is not conductive; and second means for transferring substantially all of the energy stored in said storage capacitor to said deflection circuit at a subsequent stage in the saw-tooth cycle.

4,247,806

GARAGE DOOR OPENER

Carl E. Mercier, Oconomowoc, Wis., assignor to Holmes-Hally Industries, Los Angeles, Calif.

Filed Apr. 6, 1978, Ser. No. 893,957

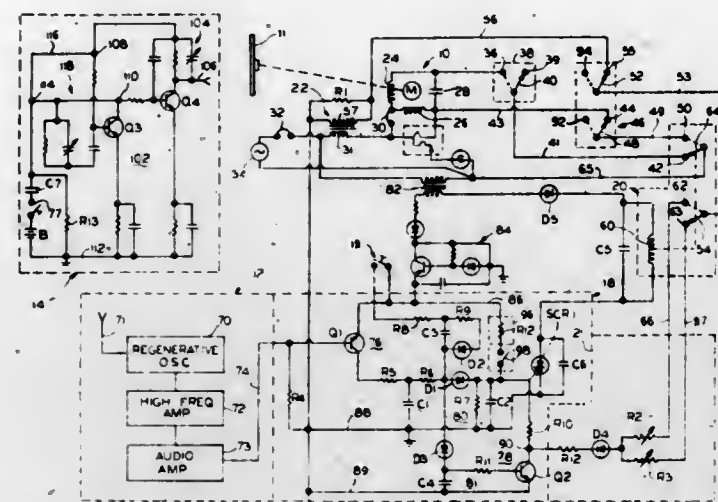
Int. Cl.³ G05D 3/08

U.S. Cl. 318—267

18 Claims

1. A garage door opening and closing apparatus including a reversible motor means adapted to be coupled to a garage door, a power source, first switching means in circuit between said motor means and said power source and having a first position for completing an energizing circuit to said motor means for operation in a first direction whereby said door is operated in a door closing direction and a second position for completing an energizing circuit to said motor means for operation in a second direction whereby said door is operated in a door opening direction, second switching means operative to actuate said first switching means for operation between said first and second positions, actuating means for actuating said second switching means, time delay means coupled to said actuating means and to said second switching means for resetting said second switch-

ing means in preparation for a subsequent operation of said first switching means after a predetermined time delay, safety means operatively associated with said motor means and operable to actuate said second switching means in the event the door to which said motor means is coupled



engages an obstacle while said motor means is operating in a door closing direction and a door opening direction, and clamp means for disabling said safety means for a second predetermined time delay after said second switching means is operated by said actuating means.

4,247,807

METHOD AND APPARATUS FOR OPERATING DC MOTORS AT HIGH EFFICIENCY

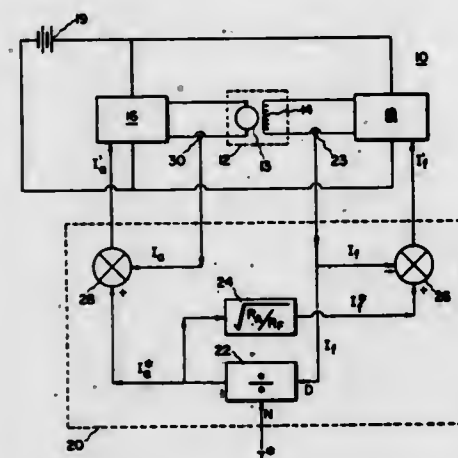
James W. A. Wilson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,145

Int. Cl.³ H02P 5/16

U.S. Cl. 318—338

9 Claims



1. A method for operating a separately excited DC motor at maximum motor efficiency in response to an operator-commanded motor torque amplitude signal, irrespective of motor torque and speed, comprising the steps of:

- generating an armature current command signal in accordance with a predetermined relationship between said operator-commanded motor torque amplitude signal and field current;
- generating a field current command signal proportional to the magnitude of said armature current command signal;
- varying armature current in accordance with the difference in magnitude between said armature current command signal and armature current; and
- varying field current supplied to said DC motor in accordance with the difference in magnitude between said field current command signal and field current.

4,247,808

METHOD AND APPARATUS FOR VARYING THE SPEED OF DC MOTORS

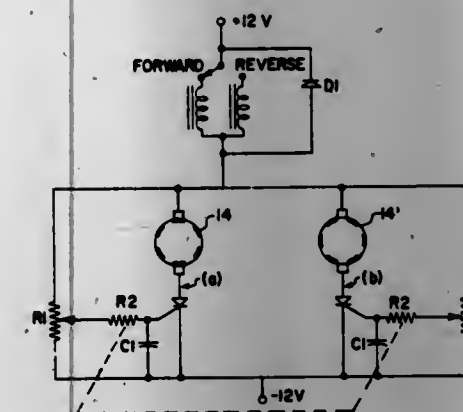
John C. Hanner, 407 Transylvania Ave., Raleigh, N.C. 27609

Filed Jan. 11, 1978, Ser. No. 868,520

Int. Cl.³ H02P 7/24

U.S. Cl. 318—345 G

2 Claims



1. An electrical device comprising: a speed control for a DC electric motor of the type having an armature with the rotor windings thereof electrically connected to a commutator, a set of brushes for applying current to the commutator segments, and the entire motor powered by a source of DC voltage; a plurality of peripherally spaced, electrically conducting commutator segments separated by a plurality of electrically dead spaces therebetween, the space between each successive ones of said segments being at least as great as the corresponding width dimension of one of said brushes whereby as a conducting segment leaves a brush, current is interrupted; electronic switching means of the silicon controlled rectifier type in the electrical circuit between said source and said commutator for maintaining said current interruption from the DC voltage source to the brushes until reactivation of said switching means; and variable gating means in the form of a variable resistor and capacitor in parallel with each other positioned in the circuit between said source of DC voltage and the cathode of said silicon controlled rectifier for reactivating said electronic switching means after a preset time delay whereby the speed of said DC electric motor may be varied without a constant drain of power from the source of DC voltage.

4,247,809

ELECTRICAL LEVELLING SYSTEM FOR LASER BEAM

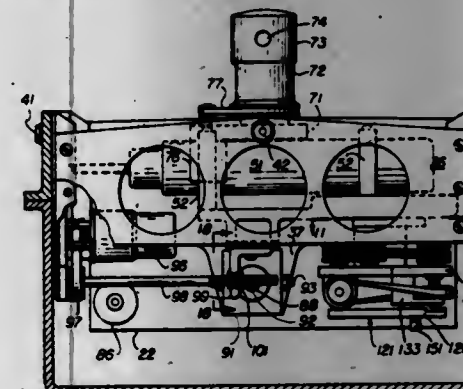
Jiri M. Nessel, Palo Alto, Calif., assignor to AGL Corporation, Jacksonville, Ark.

Filed Jan. 23, 1979, Ser. No. 5,906

Int. Cl.³ G05B 11/01

U.S. Cl. 318—630

12 Claims



1. A levelling system for positioning and maintaining a device at a predetermined slope from the horizontal in a first plane perpendicular to a first axis comprising: a frame; a support having said device thereon; first pivot means mounting said support in said frame for

pivotal motion relative to said frame about at least a second axis parallel to said first axis; first drive means for adjusting the position of said support relative to said frame about said second axis; a first plate secured to said support and parallel to said device in said first plane; a second plate; second pivot means mounting said second plate on said first plate for pivotal motion relative to said first plate about at least a third axis parallel to said first axis; means sensing the slope of said second plate relative to said first plate in said first plane; second drive means for adjusting the position of said second plate relative to said first plate about said third axis; selector switch means being set to said predetermined slope; means comparing the slope set by said selector switch means and sensed by said sensing means and activating said second drive means to pivot said second plate to a slope relative to said first plate corresponding to said set slope, said means further maintaining said correspondence; at least one transducer mounted to said second plate, said transducer emitting a signal depending upon the slope of said second plate to the horizontal in said first plane; means activating said first drive means in response to said signal from said transducer to position the second plate horizontally in said first plane, said activating means maintaining said second plate horizontal in said first plane; and said device being positioned and maintained at said predetermined slope by the action of said comparing means and said activating means.

4,247,810

ANGLE TO BIPOLAR ANALOG CONVERTER

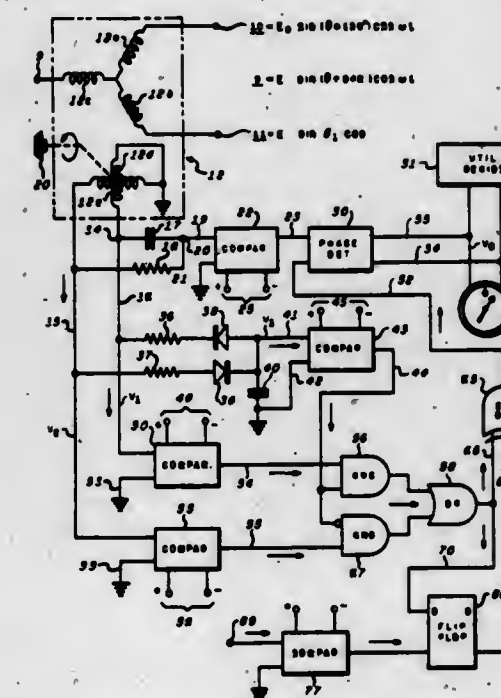
Donald C. Hicks, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 55,140

Int. Cl.³ G05B 1/06

U.S. Cl. 318—661

11 Claims



1. Apparatus responsive to first and second outputs of a carrier frequency signal excited selsyn resolver, said first and second outputs being respectively proportional to sine and cosine values of a variable angle and to a non-constant peak carrier frequency voltage level, for generating a bipolar signal accurately proportional to the amplitude of said variable angle, said apparatus comprising: signal combining means for converting said first and second outputs into an equivalent single, variably phase shifted, constant amplitude signal representative of said variable angle.

first comparator means responsive to said selsyn resolver first output for producing a first pulse train having pulse width distortions when said resolver first output passes through zero;
 second comparator means responsive to said resolver second output for producing a second pulse train having pulse width distortions when said resolver second output passes through zero;
 multiplexer means alternately sampling said first and second pulse trains only in regions spaced from said pulse width distortions, for forming a combined pulse train;
 inverter means for ensuring that said samples of said first and second pulse trains have the same polarity for forming, when combined, a phase reference signal, and
 phase detector means responsive to said phase reference signal and to said variably phase-shifted, constant amplitude signal for providing said bipolar signal independent of said non-constant peak carrier frequency voltage level.

4,247,811

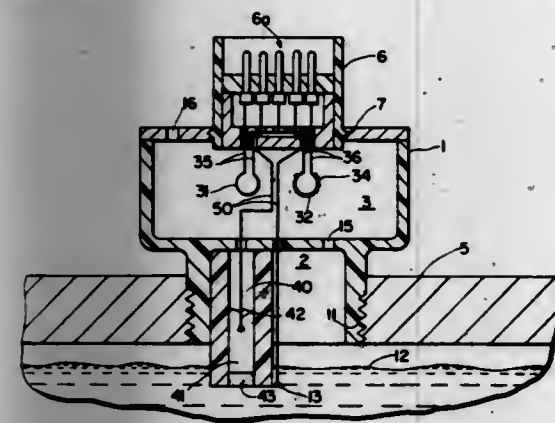
BATTERY SENSOR

Eugene Findl, Amityville, N.Y., assignor to Bioresearch Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 860,067, Dec. 13, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,554
 Int. Cl.³ H02J 7/04; G08B 21/00

U.S. Cl. 320—35

10 Claims



1. A battery sensor for measuring the state of charge, temperature, and electrolyte level of a battery comprising:
 a first electrode positioned at a minimum safety level in the electrolyte of the battery;
 an ionic fluid of known concentration in a reservoir;
 a second electrode immersed in the ionic fluid;
 an ionically porous plug positioned at a minimum safety level in the electrolyte, said porous plug separating the electrolyte and the ionic fluid and being in contact with both fluids and a voltage being generated between said electrodes which is a function of the difference in concentration between the electrolyte and ionic fluid so as to determine the state of charge of the battery;
 a first thermistor positioned above the electrolyte adapted to measure the temperature of the battery; and
 a second thermistor connected to the first thermistor to form a thermistor pair, one of said thermistors being in contact with a catalyst, used as a reaction surface, for promoting the heat-producing recombination of gaseous hydrogen and oxygen evolved by recharging a full or nearly fully charged battery, whereby a temperature differential between the first and second thermistors produces an electrical output signal.

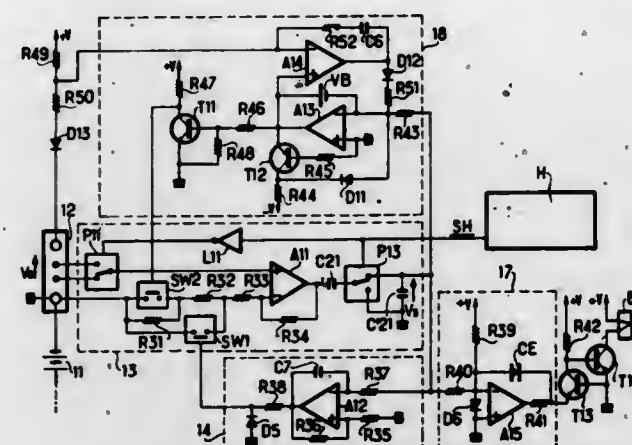
4,247,812
 METHOD OF CONTROLLING THE RECHARGING OF STORAGE CELLS, AND MONITORING THEIR STATE OF CHARGE

Eric Patry, Nogent sur Marne, and Pierre Belot, Pavillons sous Bois, both of France, assignors to Saft-Société des Accumulateurs Fixes et de Traction, Romainville, France
 Filed Oct. 10, 1978, Ser. No. 949,539

Claims priority, application France, Oct. 18, 1977, 77 31273
 Int. Cl.³ H02J 7/04

U.S. Cl. 320—44

8 Claims



1. A method of controlling the recharging of a storage cell comprising determining the quantity of electricity Q_0 supplied by the cell during a period of discharge; measuring the quantity of electricity which is supplied to it during recharging following said discharge period; and stopping the charging when the quantity reaches kQ_0 , k being a recharging factor greater than 1, wherein the recharging factor k is varied as an increasing function of the quantity Q_0 of electricity supplied by the discharging storage cell.

4,247,813

ON-BOARD VEHICULAR ELECTRICAL POWER SUPPLY SYSTEM

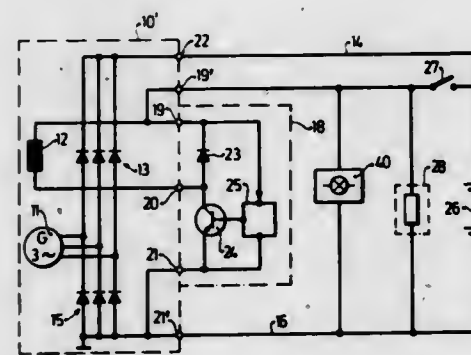
Willi Gansert, Kornwestheim; Edgar Kuhn, Gerlingen; Harry Slansky, Mühlacker, and Walter Kohl, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,538
 Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744499

Int. Cl.³ H02J 7/14

U.S. Cl. 320—48

4 Claims



1. On-board vehicular electrical power supply system having a separately excited dynamo electric generator system furnishing a d-c output,
 the dynamo electric generator system including a dynamo electric generator (11) having a field winding (12) and a voltage regulator (18) controlling current flow through the field winding,
 a storage battery (26) connected to the output of the dynamo electric system,

and a switch (27) interconnecting the dynamo electric system and the battery,
 connection means connecting the switch (27) between the battery (26) and the voltage regulator (18) to supply the control voltage thereto and additionally provide power to the field when the voltage regulator commands current flow through the field (12),
 two-terminal indicator means (40) connected in parallel to the battery and providing an indication when the voltage of the battery varies from a predetermined voltage level range and indicating either high-voltage or low-voltage condition of the battery beyond said range;
 said indicator means comprising
 a two-terminal lamp socket (41, 42);
 a luminous indicator (43) in the lamp socket;
 a dual voltage sensing circuit connected to the terminals of the lamp socket and deriving operating power from said lamp socket terminal, retained in the lamp socket, and providing two discrete "off-voltage" signals, one signal being indicative of over-voltage and the other signal indicative of under-voltage condition, including
 a switching transistor (54) having its emitter-collector path connected in series with the luminous indicator (43), said series circuit being connected across the two terminals of the socket;
 a "low" sensing branch circuit (64-65; 62, 63, 61; 59; 56) including an inverting transistor (59) connected across the two terminals of the socket; a "high" sensing branch circuit (66, 67, 58; 57) connected across the two terminals of the socket;
 and coupling means (56, 57) independently coupling both said branch circuits, disjunctively, to the control electrode of the switching transistor controlling illumination of said luminous indicator.

4,247,814

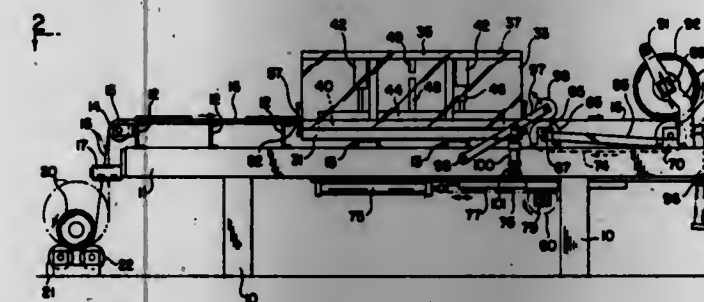
MAT TESTING APPARATUS

Clifford A. Landmann, Akron, and Henry K. Schmitt, Uniontown, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 5, 1979, Ser. No. 9,707
 Int. Cl.³ G01R 31/12

U.S. Cl. 324—54

6 Claims



1. An apparatus for the testing of the electrical non-conductivity of a rubberized mat comprising support means having a forward portion and a rearward portion, a stationary flat electrode plate mounted on said support means intermediate of said forward and rearward portion, a flat moveable electrode plate in vertical alignment with said stationary plate, power operated means mounted on said support means and interconnected to said moveable plate for moving said moveable plate from a vertical storage position downwardly into a closely adjacent position to said stationary plate to provide a small gap therebetween for contact with a thin mat resting on said stationary plate, means for applying a voltage to said upper electrode plate, means on said support means for feeding mat material along the surface thereof and through said spaced electrode plates, a take-up roll mounted adjacent to said rearward portion of said support means for winding up said mat as it is advanced between said spaced electrode plates, said means for feeding said mat includes a pair of spaced rollers with an endless belt thereon, said belt having an upper conveying run and

1002 O.G.—66

a lower return run, said conveying run being in line with the top surface of said stationary electrode plate, and power operated means connected to one of said spaced rollers for rotating said one roller a predetermined rotation to advance said mat.

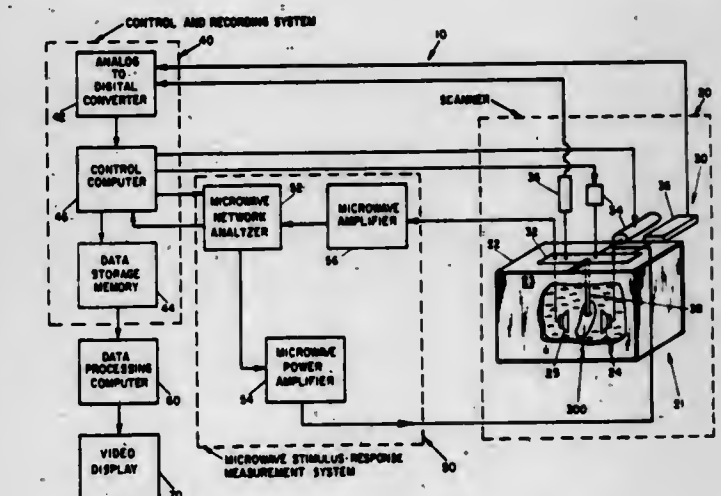
4,247,815

METHOD AND APPARATUS FOR PHYSIOLOGIC FACSIMILE IMAGING OF BIOLOGIC TARGETS BASED ON COMPLEX PERMITTIVITY MEASUREMENTS USING REMOTE MICROWAVE INTERROGATION

Lawrence E. Larsen, Silver Spring, and John H. Jacobl, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
 Continuation-in-part of Ser. No. 891,256, Oct. 14, 1977, Pat. No. 4,162,500, which is a continuation-in-part of Ser. No. 842,137, Oct. 14, 1977, Pat. No. 4,135,131. This application May 22, 1979, Ser. No. 41,374
 Int. Cl.³ G01R 27/04

U.S. Cl. 324—58.5 A

16 Claims



1. A microwave imaging method of producing a physiologic facsimile image of a biological target on an image display device comprising the steps of:

- scanning the target by transmitting a microwave signal through the target and measuring at least one of the amplitude and phase components of the complex microwave power transmission coefficient at each one of a plurality of sample locations which are spaced so as to define a two-dimensional array such that a set of data for each of the measured components is obtained, and for at least one of said sets of data;
- processing said at least one of said sets of data to obtain a corresponding set of control signals for the display device; and
- producing a two-dimensional image array on the display device using said set of control signals, and thereby obtaining the facsimile image.

4,247,816

POTENTIOMETER WITH DIGITAL DISPLAY

Josef B. Harrer, Dietramszell; Anton Jäger; Roland Petach, both of Munich, and Ernst Pracher, Oberhaching, all of Fed. Rep. of Germany, assignors to Litton Systems, Inc., Mount Vernon, N.Y.

Filed Oct. 5, 1978, Ser. No. 948,730
 Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2745055

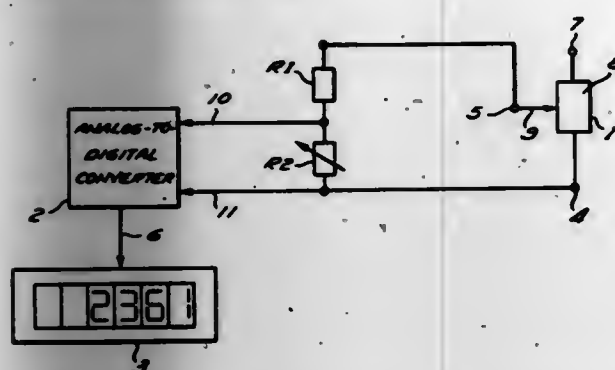
Int. Cl.³ G01R 27/02

U.S. Cl. 324—62

3 Claims

1. In a variable potentiometer device having an electronically driven digital output display, the combination comprising:
 a potentiometer resistor,
 means for applying a voltage to the potentiometer resistor,
 a slider for picking off a variable voltage from the potentiometer resistor,

ometer resistor as a function of the position of the slider on the potentiometer resistor, a voltage divider comprising a fixed resistance element and a variable resistance element, means for coupling said variable voltage to the voltage divider, a digital output display, and



an analog-to-digital converter connected in parallel with the variable resistance element of the voltage divider and driving the digital output display, whereby the variable resistance element adjusts the input to the analog-to-digital converter to provide an electronically driven output of a selected value on the digital output display when the slider terminal is in a known position on the potentiometer resistor.

4,247,817

TRANSMITTING ELECTRICAL SIGNALS WITH A TRANSMISSION TIME INDEPENDENT OF DISTANCE BETWEEN TRANSMITTER AND RECEIVER

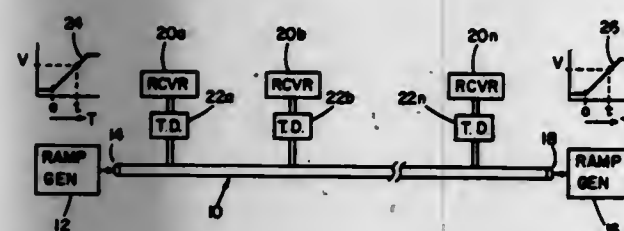
Lawrence D. Heller, Watertown, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed May 15, 1978, Ser. No. 905,732

Int. Cl.³ G01R 31/28; H03K 5/159; H04B 3/00

U.S. Cl. 324—73 R

15 Claims



1. A signal transmission system comprising: transmission line means, at least one receiver connected to said line means, and signal generator means connected to said line means for transmitting first and second ramp-shaped electrical signals to said receiver along respective first and second, oppositely-directed paths, the maximum distance along said line means between a said receiver and signal generator means defining a full length for said line means, said receiver comprising means for sensing when the combination of said first and second signals arriving at said receiver reaches a predetermined trigger state, each of said first and second ramp-shaped signals varying progressively with time through a range of levels between a first level and a second level, said variation initiating at a leading edge, and the rate of said progressive variation being selected so that said variation continues over a time period greater than the time required for the leading edge of the respective signal to propagate along said full length of said line,

and so as to cause said signal combination to reach said trigger state at a time independent of the relative positions of said receiver and said signal generator means along said line means.

4,247,818

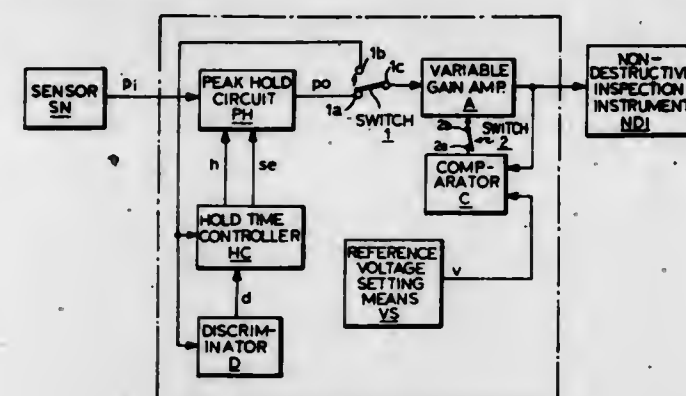
AUTOMATIC SENSITIVITY ADJUSTMENT APPARATUS FOR CALIBRATION OF A NON-DESTRUCTIVE INSPECTION INSTRUMENT

Tatsuo Hiroshima, and Tetsuya Hirota, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Inc., Osaka, Japan

Continuation-in-part of Ser. No. 802,974, Jun. 2, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 971,067 Claims priority, application Japan, Jun. 18, 1976, 51-072611 Int. Cl.³ G01R 35/00, 33/00

U.S. Cl. 324—202

1 Claim



1. An automatic sensitivity adjustment apparatus for use in calibration of a nondestructive inspection instrument having at least one sensor, said automatic sensitivity adjustment apparatus comprising:

- a discriminator circuit connected to said sensor for producing a discrimination signal when the output of said sensor exceeds a predetermined level;
- a peak hold circuit connected to said sensor having a sampling enable input and a hold input for sampling the output of said sensor upon receipt of a signal on said sampling enable input and for holding the sampled value upon receipt of a signal on said hold input;
- a hold time controller connected to said discriminator circuit and to said peak hold circuit for detecting the peak of the output of said sensor, for providing a sampling enable signal to said peak hold circuit from the receipt of said discrimination signal until the detection of the peak of the output of said sensor and for providing a hold signal to said peak hold circuit upon detection of the peak of the output of said sensor;
- a first switch means having a first terminal connected to said sensor, a second terminal coupled to the output of said peak hold circuit and a common terminal, for selectively coupling one of said first and second terminals to said common terminal under manual control;
- a reference voltage setting means for producing a predetermined reference voltage;
- a variable gain amplifier having an input coupled to said common terminal of said first switch means, an output terminal and a gain control terminal, for amplifying the signal applied to said input terminal by a factor dependent upon the signal applied to said gain control terminal;
- a second switch means having a first terminal connected to said gain control terminal of said variable gain amplifier and a second terminal, for selectively coupling or decoupling said first and second terminals; and
- a comparator having a first input terminal coupled to said output terminal of said variable gain amplifier, a second input terminal coupled to said reference voltage setting means and an output terminal coupled to said second terminal of said second switch means, for producing an

output signal which corresponds to the difference between the signal applied to said first input terminal and the signal applied to said second input terminal, whereby the gain of said variable gain amplifier is set so that the amplitude of the output of said variable gain amplifier equals the predetermined reference voltage when said first switch means couples the output of said peak hold circuit to said input of said variable gain amplifier and said second switch means couples the output of said comparator to the gain control terminal of said variable gain amplifier.

4,247,819

APPARATUS FOR SURFACE FLAW DETECTION ON ELECTRICALLY CONDUCTIVE CYLINDRICAL MATERIAL

Katsuhiko Shimada, Yokohama; Isamu Komine, Yokosuka, and Hideya Tanabe, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

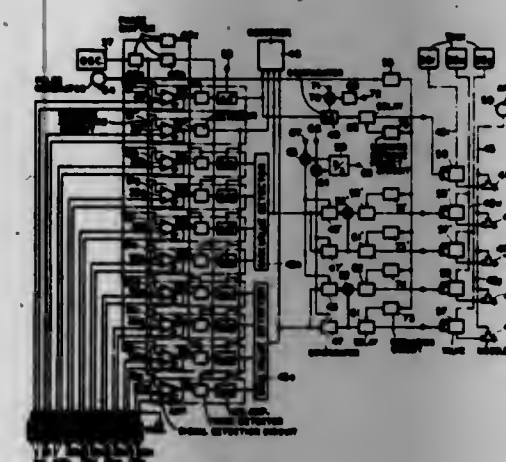
Filed Sep. 19, 1978, Ser. No. 943,865

Claims priority, application Japan, Sep. 22, 1977, 52/113200; Sep. 22, 1977, 52/113201; Sep. 22, 1977, 52/113202

Int. Cl.³ G01N 27/82; G01R 33/12

U.S. Cl. 324—233

5 Claims



1. In a surface defect detecting apparatus having at least one sensor block adapted to be moved in a lengthwise direction of a rotating cylindrically shaped electrically conductive metallic material to be inspected, said material being rotated at a predetermined peripheral speed whereby said detecting apparatus spirally scans an outer portion of the surface of said material, said sensor block being supported by a carriage movable in the lengthwise direction of said material, said sensor block including a pair of guide wheels at each of the front and rear parts thereof disposed in the direction of movement, said pair of guide wheels being directed in said spiral scanning direction in a spaced relation and rotate in response to the rotation of said material in contact with the outer surface thereof, said sensor block further including a coil holder supporting a plurality of eddy-current flaw detecting coils arranged in a row longitudinal to the direction of movement, intermediate between said pairs of guide wheels at said front and rear parts so as to be opposite to the outer surface of said material with a predetermined gap therebetween, said coil holder including a turning wheel at each of the front and rear parts thereof in the direction of said movement, each of said turning wheels being directed in said spiral scanning direction and rotatable in contact with the outer surface of said material so as to maintain said predetermined gap, the improvement comprising: means whereby an AC signal of a predetermined frequency is applied from an oscillator to said plurality of flaw detecting coils arranged in a row, to cause each of said coils to produce corresponding eddy currents in said material to be inspected disposed opposite to said coils; said coils are divided into at least a first group and a second group, said first group of coils being defined by coils alternating with the coils of said second group in said row, the oscillator providing the AC signal to said first group of coils and to phase shifter means, said phase shifter means providing a first phase shifted AC signal shifted in phase by a predetermined amount for delivery to a first plurality of phase detectors associated with said first group of coils, said phase shifter means further providing a second phase shifted AC signal to said second group of coils, shifted in phase a predetermined amount from the phase of the AC signal provided to the first group of coils and different in phase from the phase of the first phase shifted AC signal, said phase shifter means further providing a third phase shifted AC signal to a second plurality of phase detectors associated with said second group of coils, the third phase shifted AC signal being shifted in phase a predetermined amount from the second phase shifted AC signal and different in phase from the first phase shifted AC signal and the AC signal provided to the first group of coils.

means providing a first phase shifted AC signal shifted in phase by a predetermined amount for delivery to a first plurality of phase detectors associated with said first group of coils, said phase shifter means further providing a second phase shifted AC signal to said second group of coils, shifted in phase a predetermined amount from the phase of the AC signal provided to the first group of coils and different in phase from the phase of the first phase shifted AC signal, said phase shifter means further providing a third phase shifted AC signal to a second plurality of phase detectors associated with said second group of coils, the third phase shifted AC signal being shifted in phase a predetermined amount from the second phase shifted AC signal and different in phase from the first phase shifted AC signal and the AC signal provided to the first group of coils.

4,247,820

SPIN RESONANCE SPECTROMETER

Toni Keller, Rheinstetten-Forchheim, Fed. Rep. of Germany; Werner Tschopp, Zürich-Fällanden, Switzerland, and Günther R. Laukien, Rheinstetten-Forchheim, Fed. Rep. of Germany, assignors to Spectrospin AG, Switzerland

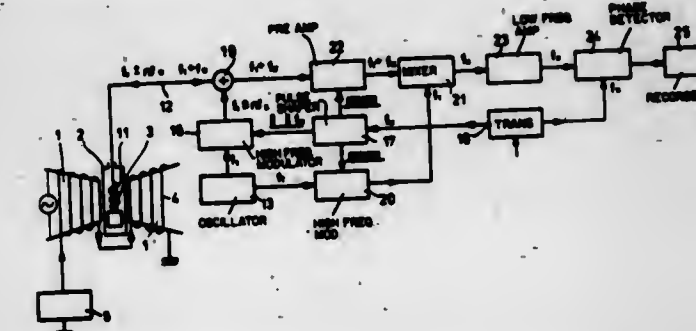
Filed Nov. 7, 1978, Ser. No. 958,570

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 2751521

Int. Cl.³ G01N 27/00

U.S. Cl. 324—321

9 Claims



1. A spin resonance spectrometer comprising a tubular sample vessel open at each end for receiving substances to be investigated, a driving device having a rotor in which the sample vessel is located and rotatable about a central axis, and a pipe for the supply and discharge of said substances through one end of said sample vessel, said pipe being mounted along the axis of rotation in a fluid tight slide bearing, said bearing sealing the one end of said vessel.

4,247,821

TRANSIENT ELECTROMAGNETIC PROSPECTING APPARATUS POSSESSING NOISE SUPPRESSION FEATURES

Gioachino Buselli, Hornsby Heights, and Brian M. O'Neill, Ryde, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Canberra, Australia

Filed Jul. 20, 1978, Ser. No. 926,565

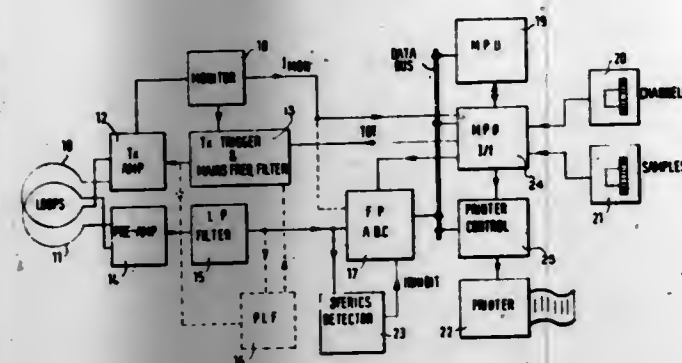
Int. Cl.³ G01V 3/10

U.S. Cl. 324—336

14 Claims

- 1. A TEM signal transceiver comprising:
 - (a) a DC transmitter connected to a field inducing loop, said transmitter periodically connecting a direct current to said loop to establish a magnetic field in the vicinity thereof and disconnecting the direct current to induce a TEM signal in conducting material underlying said loop;
 - (b) a TEM signal receiver including means for detecting an AC mains frequency interference signal; and
 - (c) control means responsive to detection of said AC interference signal for controlling the operation of the DC transmitter to cause said disconnecting of the direct current.

rent to occur at intervals such that the mains frequency interference signal at any instant of said disconnection is



180° out of phase with the mains frequency interference signal at the last preceding said disconnection.

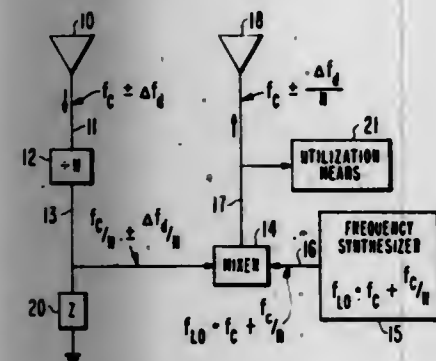
4,247,822

FREQUENCY TRANSLATION MEANS

Markus Newogrodzki, Sussex, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 4, 1979, Ser. No. 812
Int. Cl.³ H03B 21/01

U.S. Cl. 328—15



1. A method for translating the frequency of a plurality of original signals having frequencies $(f_c + \Delta f_{d1})$, $(f_c + \Delta f_{d2})$, ..., $(f_c + \Delta f_{dn})$ to resultant signals having frequencies $(f_c/N + f_0 + \Delta f_{d1}/N)$, $(f_c/N + f_0 + \Delta f_{d2}/N)$, ..., $(f_c/N + f_0 + \Delta f_{dn}/N)$ comprising the steps of: dividing the frequencies of said original signals by N; and heterodyning the divided-down frequencies of the original signals by a signal of frequency f_0 .

4,247,823

LOW NOISE, LOW PHASE SHIFT ANALOG SIGNAL MULTIPLIER

Robert S. Van Kannon, Jr., Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

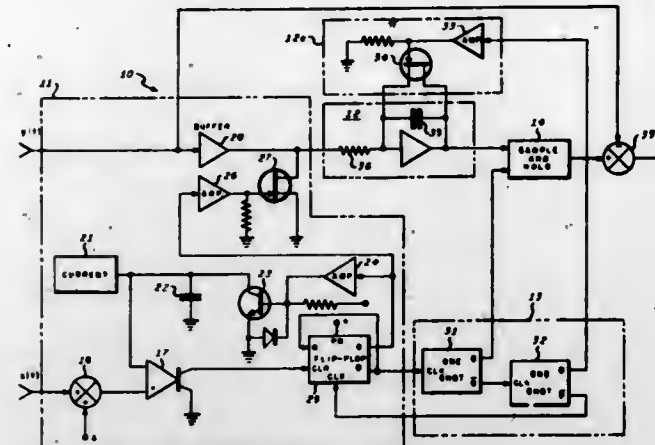
Filed Mar. 23, 1979, Ser. No. 23,356
Int. Cl.³ G06G 7/18, 7/12

U.S. Cl. 328—160

8 Claims

1. A signal multiplier comprising: means for forming pulses at an output terminal having heights proportional to signals coupled to a first input means and widths proportional to signals coupled to a second input means; means coupled to said output terminal of said pulse former means for integrating pulses; means for sampling and holding integrated values obtained by said integrator means; and means for resetting said integration means; and

means responsive to signals received from said pulse former means for generating sample and hold commands to said



sample and hold means and reset signals to said integrator reset means and said pulse former means.

4,247,824

LINEAR AMPLIFIER

Robert A. Hilbourne, Eastleigh, England, assignor to U.S. Philips Corporation, New York, N.Y.

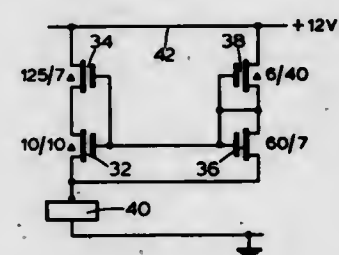
Filed Dec. 19, 1978, Ser. No. 970,888
Claims priority, application United Kingdom, Dec. 30, 1977, 54306/77

4 Claims

U.S. Cl. 330—253

Int. Cl.³ H03F 3/16, 3/45

11 Claims



1. A linear amplifier comprising an MOS transistor amplifying stage having a signal input and a signal output circuit, a load circuit connected in the signal output circuit, comprising first and second MOS transistors connected in cascode, and compensation means for biasing the gate electrodes of the first and second transistors in response to the voltage across the cascode connection in a sense so as to maintain the apparent differential resistance of the cascode connection.

4,247,825

TRANSISTOR AMPLIFIER

Hermann Berger, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

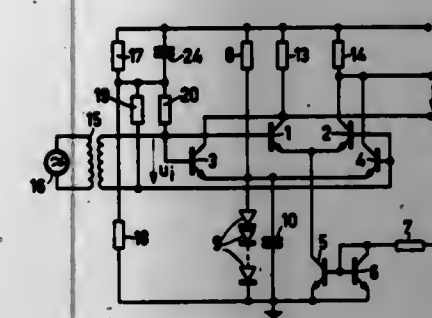
Filed Mar. 7, 1979, Ser. No. 17,983
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810167

U.S. Cl. 330—261

16 Claims

1. A transistor amplifier comprising, a first transistor pair which comprises first and second transistors each having emitter, base and collector electrodes, means interconnecting the emitter electrodes to provide a common emitter line, a constant current source included in said common emitter line, a second transistor pair which comprises third and fourth transistors each having emitter, base and collector electrodes, means interconnecting the emitter electrodes of the third and fourth transistors to a source of constant potential, means connecting the base and the collector electrodes of the first transistor to the corresponding base and collector electrodes of the third transistor and the base and collector electrodes of the second transistor to the corresponding base and collector

electrodes of the fourth transistor, and a pair of input terminals coupled to the base electrodes of the transistors for receiving



an input signal to be amplified from a low-resistance signal source whereby an amplified signal becomes available at the collectors of the transistors.

4,247,826

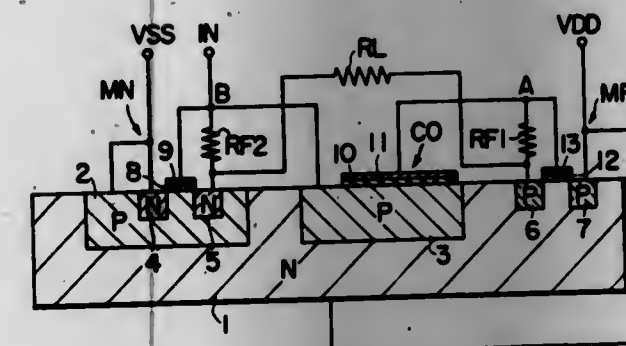
SEMICONDUCTOR INTEGRATED AMPLIFIER

Takeshi Gappa, Hino, and Osamu Yamashiro, Ohmiya, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 4, 1978, Ser. No. 902,852
Claims priority, application Japan, May 13, 1977, 52-54282
Int. Cl.³ H03F 3/185, 3/187

U.S. Cl. 330—264

9 Claims



1. An amplifier circuit having a p-channel type MISFET and an n-channel type MISFET which are integrated in a single semiconductor substrate, a load resistance connected between the drain regions of said MISFETs, a power source to which said MISFETs are connected in series, and a capacitance through which the gates of said MISFETs are connected to each other, characterized by comprising said capacitance having one terminal constituted by a well formed in said semiconductor substrate and another electrode constituted by a gate electrode formed on the surface of said well, said gate electrode and said semiconductor substrate being connected to the high voltage side of the power supply while said well is connected to the low voltage side of the power supply.

4,247,827

SURFACE ACOUSTIC WAVE FILTER ARRANGEMENT

Rodney J. Lawton, Shaw, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jan. 23, 1979, Ser. No. 5,681
Claims priority, application United Kingdom, Jan. 24, 1978, 2882/78

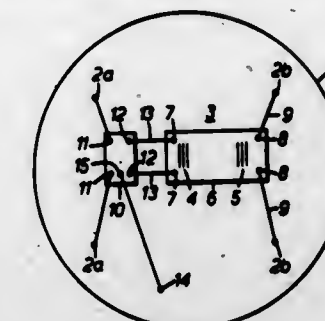
U.S. Cl. 330—306

Int. Cl.³ H03F 3/191

3 Claims

1. A surface acoustic wave filter arrangement comprising an integrated circuit package having an input terminal for receiving input signals and an output terminal for providing output signals, said arrangement including: driving amplifier means for amplifying said input signals received by said input terminal to provide amplified signals; a surface acoustic wave filter having a signal-to-noise ratio, and including an input transducer formed by first and

second interdigital electrodes, and an output transducer; and balanced interconnection means disposed between the driving amplifier means and the input transducer of said surface acoustic wave filter for applying said amplified signals to the input transducer in such a manner that said



amplified signals applied to the first interdigital electrode of the input transducer are in anti-phase to said amplified signals applied to the second interdigital electrode, whereby to reduce direct coupling between the input and output transducers, and to improve the signal-to-noise ratio of the filter.

4,247,828

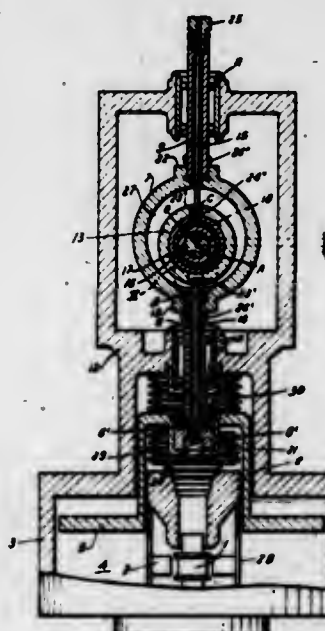
RECIPROCATING PISTON TUNING MECHANISM FOR A MICROWAVE OSCILLATOR

Guido Busacca, Vincenzo Meli, and Arcangelo Passaglia, all of Palermo, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Jun. 29, 1979, Ser. No. 53,275
Claims priority, application Italy, Jul. 3, 1978, 25267 A/78
Int. Cl.³ H03B 9/10

U.S. Cl. 331—90

6 Claims



1. In a generator of microwaves of variable frequency provided with a resonant cavity and a tuning element in said cavity, said tuning element being linearly displaceable between two terminal positions corresponding to respective limiting frequencies,

the combination therewith of:

a rotatable crankshaft provided with an eccentric portion offset by a distance e from its axis of rotation;
a follower ring surrounding said eccentric portion in operative engagement therewith for radial displacement thereby with a stroke 2e in the direction of motion of said tuning element and with lateral excursions of like magnitude in a direction transverse thereto;
a yoke spacedly surrounding said ring, said yoke being provided with two arms extending generally in said direction

of motion on opposite sides of said axis of rotation, one of said arms being rigid with said tuning element; and a pair of tensioned flexible members having first ends anchored to said ring at diametrically opposite points and having second ends anchored to respective extremities of said arms remote from said axis of rotation for translating the displacement of said ring by said crankshaft into a reciprocation of said tuning element.

4,247,829

SILENT DISCHARGE TYPE GAS LASER DEVICE
Shigenori Yagi, Norikazu Tabata, and Shuji Ogawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

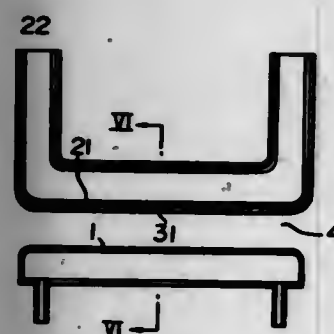
Filed Sep. 27, 1978, Ser. No. 946,329

Claims priority, application Japan, May 29, 1978, 53-63987

Int. Cl.³ H01S 3/097

U.S. Cl. 331-94.5 PE

7 Claims



1. In a silent discharge type gas laser device comprising a high voltage side electrode and a low voltage side electrode with the space therebetween forming a discharging space, the improvement being that all of the surface area of at least one of the electrodes is covered with a dielectric and an equivalent diameter of the electrode covered with said dielectric is in a range up to 3 times the length of the discharge space.

4,247,830

PLASMA SPRAYED WICKS FOR PULSED METAL VAPOR LASERS

Thomas W. Karras, Berwyn, and Carl E. Anderson, Wayne, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Nov. 8, 1978, Ser. No. 959,035

Int. Cl.³ H01S 3/02

U.S. Cl. 331-94.5 D

8 Claims



1. In a metal vapor laser having a central discharge zone defined by a longitudinally extending, non-electrically conducting wall with an electrode at each end, the improvement comprising:

a longitudinally extending wick element at each end of said discharge zone; and
each of said wick elements configured to have its outer surface in contact with said wall and having at least a porous inner surface layer.

4,247,831
RING LASERS

Anthony J. Lindop, Farnborough, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

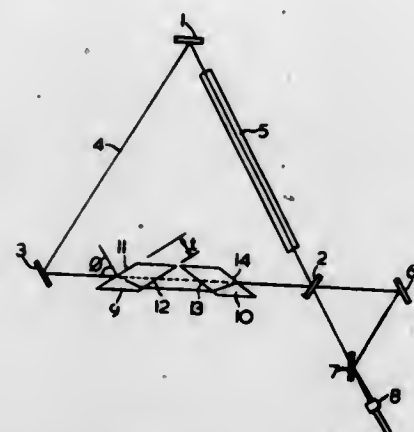
Filed Nov. 29, 1978, Ser. No. 964,394

Claims priority, application United Kingdom, Dec. 12, 1978, 49891/77

Int. Cl.³ H01S 3/083

U.S. Cl. 331-94.5 C

4 Claims



1. A ring laser having a resonant cavity, said laser including at least one parallel-sided isotropic light refracting device arranged with the parallel sides thereof at an oblique angle to a part of the light path which intersects said sides, and means for applying an oscillatory translational motion to said refracting device wherein the motion has a component parallel to said part of the light path.

4,247,832

ISOTROPIC NONPLANAR RING LASER

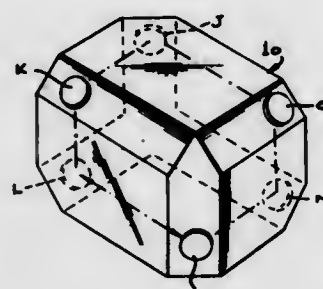
Virgil E. Sanders, Newbury Park, Calif., and Dana Z. Anderson, Tucson, Ariz., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 26, 1978, Ser. No. 973,096

Int. Cl.³ H01S 3/101

U.S. Cl. 331-94.5 C

6 Claims



1. In combination:

at least three selected pairs of resonator mirrors positioned to define a nonplanar ring laser path, each resonator mirror of each said pair of resonator mirrors having matched reflection anisotropies which are substantially the same as the reflection anisotropies of the other resonator mirror in its said pair of resonator mirrors;

each resonator mirror having its plane of incidence along said laser path substantially orthogonal to the plane of incidence along said laser path of at least one of the two next consecutive resonator mirrors along said laser path; the angles of incidence along said laser path being substantially the same for both said resonator mirrors in each of said matched pairs of resonator mirrors.

4,247,833

MINIMUM LENGTH DIFFUSER FOR CHEMICAL LASERS

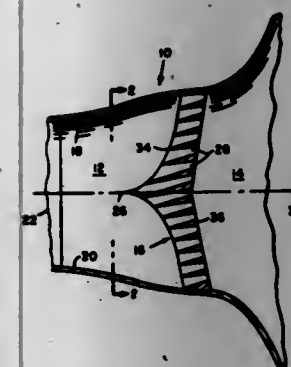
Garry F. Morr, Huntsville, and Stanley L. Pruett, Arab, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 12, 1979, Ser. No. 19,539

Int. Cl.³ H01S 3/08

U.S. Cl. 331-94.5 G

12 Claims



1. A diffuser comprising a conduit structure with an inlet and an outlet, said conduit structure being defined by two streamlined side walls that are streamlined for flow by the side walls being tapered outwardly from the inlet to the outlet and being interconnected by two other side walls, a shock formation and stabilization device mounted in said conduit intermediate said inlet and said outlet, said shock formation and stabilization device having a knife edge at the inlet side with a curved surface on each side of said knife edge that curves towards its respective streamlined side wall, said shock formation and stabilization device having a plurality of passages therethrough, and the total area of the openings of said passages on the inlet side of said shock formation and stabilization device being up to as great as the area at said inlet.

4,247,834

CONTROL CIRCUIT FOR ESTABLISHING VOLTAGE-CONTROLLED OR INJECTION-LOCKED OPERATION OF A SYNTHESIZER REFERENCE OSCILLATOR

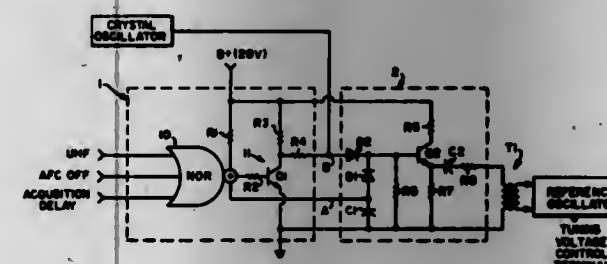
Craig W. Brus, Honeoye Falls, and Wilfred L. Hand, Clarence, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 15, 1979, Ser. No. 12,258

Int. Cl.³ H03L 7/00, 7/24

U.S. Cl. 331-172

18 Claims



1. In a reference oscillator for a frequency synthesizer, the oscillator selectively capable of operation either in an injection-locked mode wherein oscillator operating frequency is determined by the frequency of a crystal-controlled oscillator or in a voltage-controlled mode wherein the oscillator operating frequency is determined by the voltage applied to the oscillator tuning voltage control terminal, the improvement comprising:

a control circuit for selectively effecting reference oscillator operation in either the injection-locked or voltage-controlled mode, the circuit comprising:
a logic element having an input coupled to a signal source

determinative of the desired reference oscillator mode of operation, and
an analog gate coupled to the crystal-controlled oscillator and driven by the logic element for selectively coupling the crystal-controlled oscillator to the reference oscillator to establish the injection-locked mode and for isolating the crystal-controlled oscillator from the reference oscillator to establish the voltage-controlled mode.

4,247,835

SURFACE ACOUSTIC WAVE DEVICES

Meiron F. Lewis, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

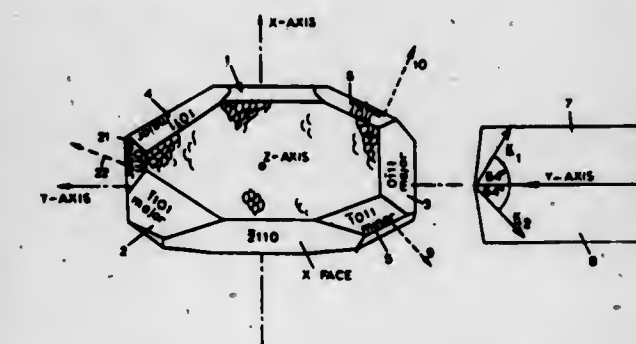
Filed May 24, 1979, Ser. No. 41,852

Claims priority, application United Kingdom, May 24, 1978, 22075/78

Int. Cl.³ H03H 9/25, 9/42; H01L 41/18

U.S. Cl. 333-155

5 Claims



1. A surface acoustic wave device comprising a quartz substrate having a flat surface, and transducer means for launching and receiving acoustic waves along a track in the flat surface wherein the improvement comprises a flat surface which is in a crystalline plane rotated about a Y axis by a value in the range, plus 41° to 47° inclusive and minus 41° to 47° inclusive from the Z plane, and the track is aligned in the range 61° to 67° inclusive from the Y axis, the sense of this alignment being such that the track is approximately perpendicular to a minor rhombohedral crystalline face of the quartz substrate.

4,247,836

ACOUSTIC WAVE DEVICES

Martin Redwood, Sevenoaks; Frederick W. Smith, Sutton, and Richard F. Mitchell, Merstham, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

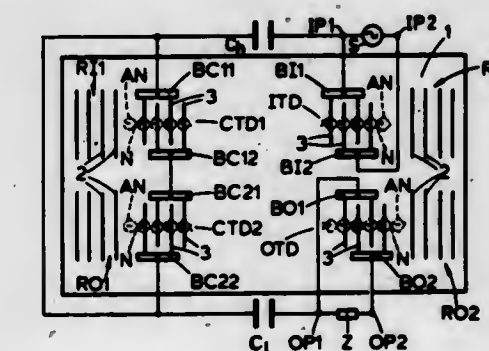
Filed Feb. 22, 1979, Ser. No. 13,951

Claims priority, application United Kingdom, Feb. 23, 1978, 07263/78

Int. Cl.³ H03H 9/25, 9/64, 9/145; H01L 41/04

U.S. Cl. 333-195

12 Claims



1. A coupled acoustic wave resonator device having a filter passband centred on a predetermined frequency comprising, a substrate able to propagate acoustic waves, two pairs of spaced apart reflectors with each pair of reflectors forming one of two

resonant cavities each capable of supporting an acoustic standing wave in the substrate at said predetermined frequency at which that cavity exhibits a series resonant equivalent circuit, two interdigital transducers disposed on a surface of the substrate in each cavity for coupling with acoustic standing wave energy, means connecting one of said transducers in one cavity with one of said transducers in the other cavity to thereby couple the two cavities, each transducer including two sets of electrodes with the electrodes of each set being electrically connected in common and the two sets of electrodes of each transducer being disposed for coupling to opposite phases of acoustic standing wave energy at said predetermined frequency, a capacitance having a selected capacitance value provided between a selected pair of said sets of electrodes in the same one of said cavities, one set of said pair being selected from each transducer in that cavity, for forming an attenuation pole at a selected pole frequency on one side of said predetermined frequency, in the case where the selected pole frequency is on the high frequency side of said predetermined frequency the selected pair of sets of electrodes is coupled to the same phase of acoustic standing wave energy at said predetermined frequency whereby said capacitance forms a parallel resonant circuit with the equivalent circuit inductance of that cavity at that pole frequency, and in the case where the selected pole frequency is on the low frequency side of said predetermined frequency the selected pair of sets of electrodes is coupled to opposite phases of acoustic standing wave energy at said predetermined frequency whereby the equivalent resonant inductance of said capacitance at that pole frequency forms a parallel resonant circuit with the equivalent circuit capacitance of that cavity at that pole frequency.

4,247,837

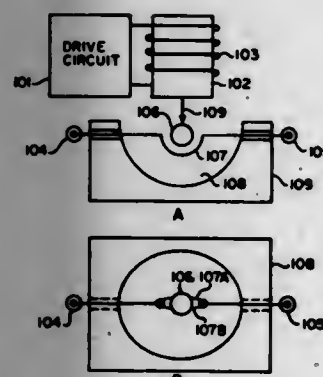
MULTI-CONDUCTOR FERROMAGNETIC RESONANT COUPLING STRUCTURE

John A. Mezak, and Ronald A. Parrott, both of San Jose, Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 17, 1979, Ser. No. 39,907
Int. Cl.³ H01P 1/217, 1/218, 7/10

U.S. Cl. 333-202

7 Claims



1. A ferromagnetic resonant device of the type having a ferromagnetic resonance material subjected to an applied magnetic field and including a line with a loop passing adjacent but not in contact with the ferromagnetic material to couple to said material, characterized in that said loop is comprised of multiple conductors which are spaced apart from one another by at least one conductor diameter, and all of which remain generally parallel to one another.

4,247,838
EXPANSION JOINT FOR WAVE GUIDES
Michel Sirel, Paris, France, assignor to Les Cables de Lyon, Lyons, France

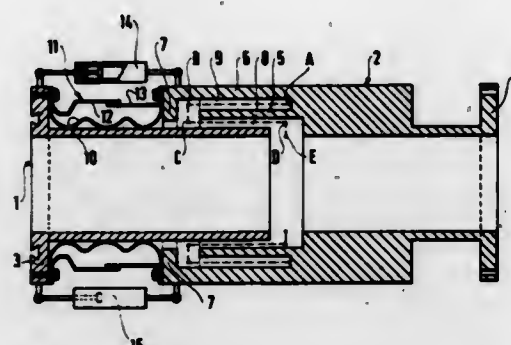
Filed Mar. 26, 1979, Ser. No. 24,143

Claims priority, application France, Apr. 7, 1978, 78 10480

Int. Cl.³ H01P 1/06, 1/30

U.S. Cl. 333-254

6 Claims



1. An expansion joint for wave guides, said expansion joint including first and second aligned components which have the same inside dimensions as the wave guide and which are free to move longitudinally with respect to each other, the improvement wherein said first component comprises a tube, said second component includes a trap positioned at least partially between said components and radially outside the first component, the electric length of said trap being equal to half the wavelength of the central frequency transmitted by the wave guide, and means for separating said components longitudinally at the trap by a distance which varies as the length of the wave guide varies, and wherein said trap is folded so as to obtain two transmission lines which have the same electric length, and said trap includes a first transmission line constituted by a space comprised between the first component and the first longitudinal branch of the second component, a second transmission line constituted by a space comprised between said first branch and said second longitudinal branch, one of whose ends has a radially inwardly turned lip facing said other surface of said first component and covering one end of said first branch, and wherein said second transmission line is wider than that of the first transmission line and having therefore a greater impedance.

4,247,839

ELECTROGRAPHIC APPARATUS HAVING AN IMPROVED EXIT OPENING PORTION

Tatsuo Takizawa, Sagami-hara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,362

Claims priority, application Japan, Jun. 1, 1978, 53-73492[U]

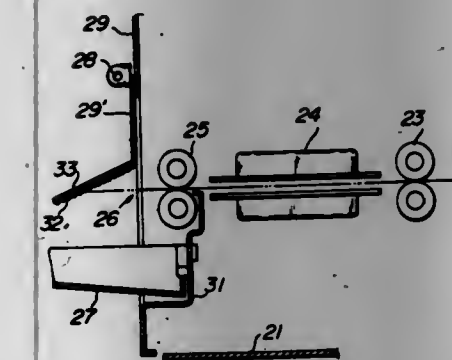
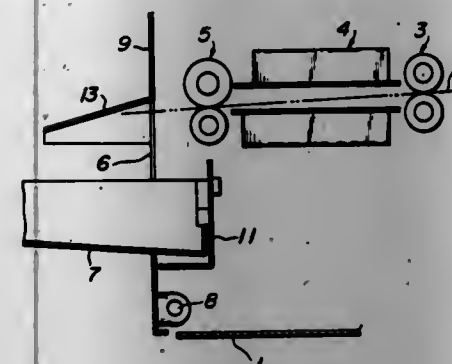
Int. Cl.³ G03G 15/00

U.S. Cl. 355-3 R

4 Claims

1. An electrographic apparatus comprising: a main body; a cover plate rotatably mounted on a side plate of said main body and provided with an exit opening; a photosensitive body for producing an electrostatic latent image thereon for obtaining a plurality of copies; a rectilinear record sheet feeding path extending from said exit opening to said photosensitive body; a pair of feed rollers partly engaged with each other and feeding a record sheet along said rectilinear record feeding path; a pair of outlet rollers spaced apart from said feed rollers and partly engaged with each other, for delivering said record sheet along said rectilinear record feeding path; a heat fixing device formed of a pair of containers each enclosing therein a heat

supply source, being arranged on both sides of said rectilinear record feeding path; and light shielding eaves integral with



said cover plate and extending transversely and inclined to said rectilinear record feeding path.

4,247,840

GROUND FAULT RECEPTACLE REVERSIBLE CONDUCTORS

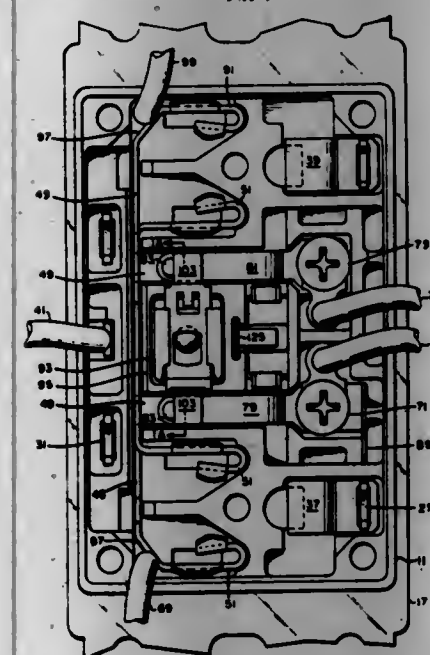
David A. Cooper, Loganton; William T. Monoski, and Edward J. Vibert, both of Muncy, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 27, 1979, Ser. No. 33,920

Int. Cl.³ H01H 83/02

U.S. Cl. 335-18

6 Claims



1. In a duplex electrical receptacle formed for mounting in a wall outlet box and providing ground fault protection and electrically connecting a load to the conductors of a power source and including a container of electrical insulating material formed to receive a pair of bus-bar conductors and a ground fault electrical circuit interrupting apparatus connected to the power source, the improvement comprising: a pair of substantially identical bus-bar conductors disposed

in inverse relationship within said container with each of said bus-bar conductor including: an interconnecting member extending along a horizontal axis and having first and second longitudinally connected portions vertically spaced with respect to one another; and dual female receiving portions at opposite ends of said interconnecting member, each of said dual female receiving portions having upper and lower prong receiving portions formed to provide reception of a male plug prong member directed normal to said horizontal axis.

4,247,841

THREE WINDING TRANSFORMER

Ryozi Nakatake; Tetsuo Fukuda, and Yoshitake Kashima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

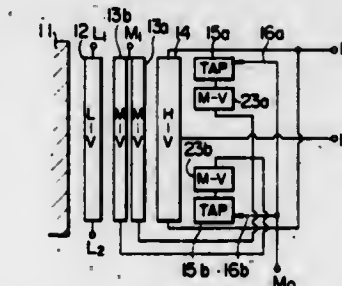
Filed Oct. 30, 1979, Ser. No. 89,379

Claims priority, application Japan, Nov. 6, 1978, 53-135810

Int. Cl.³ H01F 21/12

U.S. Cl. 336-150

5 Claims



1. A three winding transformer comprising:

- (a) a magnetic core;
- (b) low, middle and high voltage windings each inductively coupled to said magnetic core and which are coaxially wound on said magnetic core in that order; and
- (c) two tap changers constituting a parallel circuit each including a tapped winding for tap changeover upon loading and which each have one end connected to said middle voltage winding and the other ends connected together;

wherein further comprising middle voltage partial windings which are each connected in series between said middle voltage winding and said tap winding, and which are wound separately on the outside of said high voltage winding so that a circulating current in said parallel circuit will induce magnetic flux of opposite direction through each of the middle voltage partial windings of which one ends are connected to said middle voltage winding and of which the other ends are connected to said tap windings in said two tap changers.

4,247,842

CUT-IN RESISTANCE FOR MOTOR VEHICLE HEATING FANS

Helmut Bengsch, Pulheim, and Alfons Link, Erftstadt, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 6, 1979, Ser. No. 72,874

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843967

Int. Cl.³ H01C 3/20, 7/22

U.S. Cl. 338-302

3 Claims

1. A cut-in resistance for electrical heating fan motors, such as for motor vehicles, includes: a first winding and a second winding each winding made of resistance wire and each having a pair of flat plug contacts, said first winding being adapted to be cut into an electric fan motor either alone or in series with said second winding a ceramic tube and an associated, spaced ceramic plate supporting said flat plug contacts;

said first winding being mounted on the interior surface of said ceramic tube and said second winding being mounted on the outer circumference surface of said ceramic tube, being coupled thereto by a circumferential winding; a perforated, U-shape metal cage means closed by said ceramic plate, said metal case means securing said ceramic

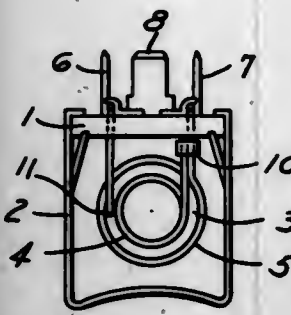
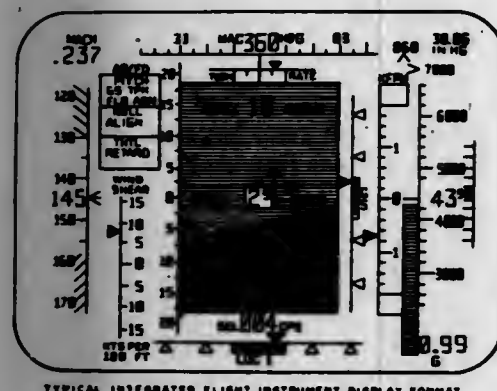


plate and circumferentially, spacially surrounding said ceramic tube and said windings thereby shielding said first and second windings; and said ceramic tube being retained solely by the ends of the resistance wires which are passed toward said ceramic plate and firmly clamped by said flat plug contacts.

4,247,843

AIRCRAFT FLIGHT INSTRUMENT DISPLAY SYSTEM
Harry Miller, Scottsdale; Parm L. Narveson, Phoenix; William R. Hancock, Phoenix, and Joseph P. Hsu, Phoenix, all of Ariz., assigns to Sperry Corporation, New York, N.Y.
Division of Ser. No. 788,702, Apr. 19, 1977, Pat. No. 4,149,148.
This application Aug. 23, 1978, Ser. No. 936,275
Int. Cl.³ G01C 23/00; G06K 15/20; G01C 21/00
U.S. Cl. 340—27 NA 19 Claims



TYPICAL INTEGRATED FLIGHT INSTRUMENT DISPLAY FORMAT

1. Display apparatus for aircraft for indicating to the pilot the pitch and roll attitude of the aircraft comprising:

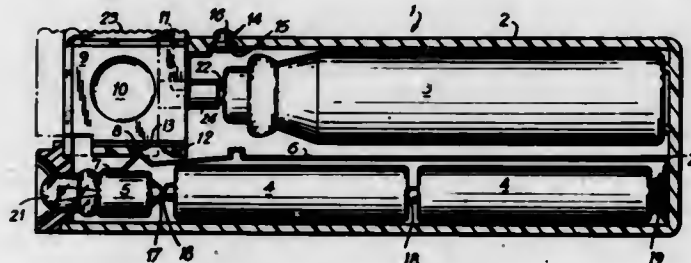
- (a) means defining a display field of view including a reference index generally in the center of said field and having the general shape of an aircraft and comprising a fuselage portion and wing portions laterally extending therefrom;
- (b) means for providing a horizon defining line in said field and including means responsive to the pitch and roll attitude of said craft for correspondingly positioning said horizon line relative to said reference index;
- (c) means for providing a roll attitude reference scale comprising a zero roll attitude pointer and plurality of roll attitude graduation marks extending in predetermined spaced relation vertically above and below said zero roll attitude pointer for representing predetermined angles of roll attitude of said craft by the position of said horizon defining line relative to said roll graduation marks, said scale being located generally adjacent a wing tip of said reference index; and
- (d) means responsive to a predetermined function of the pitch and roll attitude of said craft for moving said zero roll attitude pointer vertically relative to said index wing tip and simultaneously varying the relative spacing be-

tween said roll attitude graduation marks, whereby said horizon defining line will be aligned with said roll graduation marks at corresponding pitch and roll attitudes of said aircraft.

4,247,844

ALARM LIGHT

Bronislaw Zapolski, Princeton, N.J.; Arthur Eisenkramer, Port Washington, and Noel E. Zeller, Mt. Vernon, both of N.Y., assigns to Zelco Industries, Inc., Mount Vernon, N.Y.
Filed Apr. 27, 1979, Ser. No. 34,125
Int. Cl.³ G08B 23/00, 7/00; F21V 33/00
U.S. Cl. 340—321 10 Claims



1. An alarm light comprising a lighting means, an alarm means, and an actuator therefor, all substantially within a case, said lighting means comprising a light bulb in electrical contact with at least one battery, said alarm means comprising a tank which contains a source of pressurized gas, said tank including an outlet for the gas and a valve actuated by movement of the outlet to open the valve and release the pressurized gas from said tank through its outlet, said actuator being adjacent said tank and said bulb, and comprising a passage in communication with the tank outlet and leading from the outlet to a chamber releasably sealed by a disc in said actuator so that when the valve is open the gas flows through the outlet and said passage and into said chamber causing said disc to vibrate and emit a piercing alarm sound as the gas flows thereover, and a switch for said light bulb comprising a conductor in electrical contact with one terminal of said battery and extending to a contact point adjacent said bulb, said point being normally biased away from said bulb and adapted to be urged into contact therewith for completing an electrical circuit and lighting said bulb, at least a portion of said actuator being moveable between a first position in which said contact point is moved by a knob on said actuator into circuit-completing contact with said bulb, a second position in which the tank outlet is moved by said actuator to open the valve, and a neutral position.

4,247,845

CONTROL DATA INPUT DEVICE FOR THE ELECTRONIC CONTROL UNIT OF AN ELECTRICAL HOUSEHOLD APPLIANCE

Ulrich Schmidt, Rothenberg, and Klaus Fischer, Nuremberg, both of Fed. Rep. of Germany, assigns to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 22, 1977, Ser. No. 863,157

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1976, 2658436

Int. Cl.³ G08G 9/00

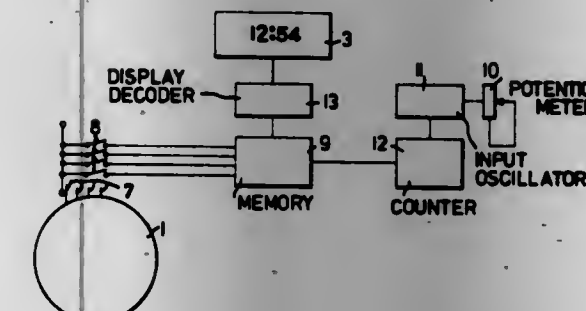
U.S. Cl. 340—365 R

3 Claims

1. A device for introducing predetermined input data into the electronic control unit of an electrical household appliance comprising digital display means for displaying the magnitude of said input data, addressable data storage means having a plurality of ad-

dresses and an output coupled to said digital display means, code selector means for selecting the type of input data to be stored in said storage means, said code selector means including

a rotatable dial having a plurality of characters on the face thereof for identifying codes corresponding to addresses in said data storage means, a display window in said dial located opposite said digital display means for displaying an indicator corresponding to a selected code, and a switching cam for each type of input data, a control knob affixed to said dial for rotation thereof for selection of said codes, and



a lamp associated with each of said plurality of characters to indicate which of the codes in said data storage means has been selected,

switching means including a plurality of contacts each associated with one of said switching cams for coupling said code selector means to a corresponding address in said storage means, and

variable oscillator means including a variable frequency oscillator and a counter coupled to said data storage means for generating clock pulses at a rate proportional to the frequency of said oscillator and corresponding to the magnitude of the selected type of input data to be stored at said corresponding address of said data storage means.

4,247,846

ALARM NOTIFICATION APPARATUS

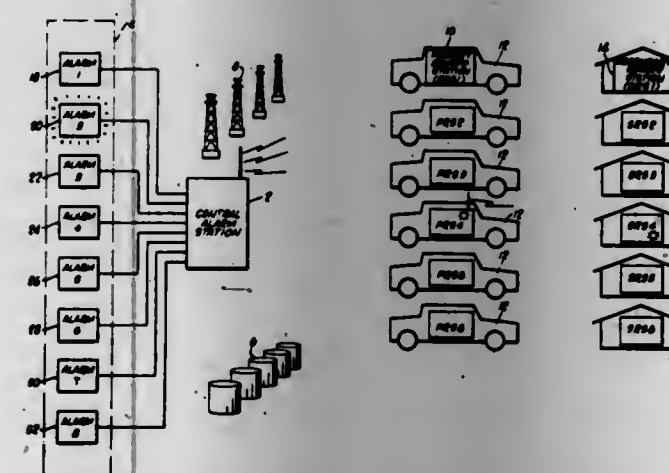
Martin R. Zedler, Lake Charles, La., assignor to Conoco, Inc., Ponca City, Okla.

Filed Apr. 11, 1979, Ser. No. 29,224

Int. Cl.³ G08B 3/00

U.S. Cl. 340—523

21 Claims



1. An alarm system for notifying personnel in an adjustably set priority sequence of an alarm condition, comprising: an alarm means;

- a plurality of primary remote stations, each having a different predetermined address and each including: first receiver means for receiving a primary notification signal;
- first transmitter means for transmitting an acknowledgement signal when said received primary notification

signal has a format including the predetermined address of a respective one of said primary remote stations; and a central alarm station associated with said alarm means and said primary remote stations, including: means for adjustably setting a priority sequence of said remote station addresses;

means connected to said alarm means and to said setting means for establishing said primary notification signal when said alarm means indicates an alarm condition has occurred, said establishing means providing said primary notification signal with a format having the address of that respective one of said plurality of primary remote stations having the highest priority as set by said setting means and establishing subsequent primary notification signals addressing others of said primary remote stations having successive lower priorities when said establishing means does not receive said acknowledgement signal from the last addressed primary remote station within a predetermined amount of time;

second transmitter means for transmitting said primary notification signal to said primary remote stations; and second receiver means for receiving said acknowledgement signal from the primary remote station detecting the primary notification signal having its predetermined address, and for communicating said acknowledgement signal to said establishing means to prevent said establishing means from establishing said subsequent primary notification signals having formats with addresses of remote stations having successively lower priorities.

4,247,847

VIBRATION-DETECTING INTRUSION ALARM

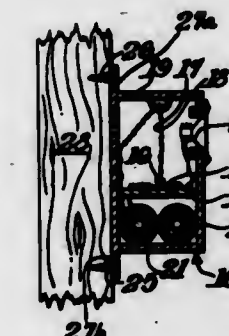
Walter S. Gontowski, Jr., Thompson, Conn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 16, 1978, Ser. No. 934,154

Int. Cl.³ G08B 13/08

U.S. Cl. 340—566

5 Claims



1. An integral vibration-detecting intrusion alarm for mounting on a door or a window to sound an alarm when an attempt is made to open said door or window comprising:

- (a) an opaque enclosure for preventing the admission of light from outside of said enclosure into the interior chamber thereof;
- (b) an electrically powered light source within said enclosure;
- (c) a light change detector means being within said enclosure for detecting change in the incident light from said light source and for providing an output signal when said light change exceeds a predetermined percentage of the normal ambient light level existing prior to a vibration, said detector means being comprised of an integrated silicon circuit having a photo-diode and a noise immune voltage regulator circuit that is connected to said photo-diode for providing essentially noise free DC voltage thereto;
- (d) an acoustic alarm generator being electrically connected to the output of said detector means and being mounted to said enclosure;
- (e) a vibration sensitive light coupling means being connected to said enclosure for coupling the light from said

light source to said light-change detector means and for varying the intensity of said coupled light in response to mechanical vibrations experienced by said enclosure;

(f) an energy storage means being attached to said enclosure for supplying electrical energy to said light source, said detector means and said alarm generator; and

(g) an enclosure mounting means for attaching said enclosure to a barrier by which an entry may be closed, such as said window or door.

4,247,848

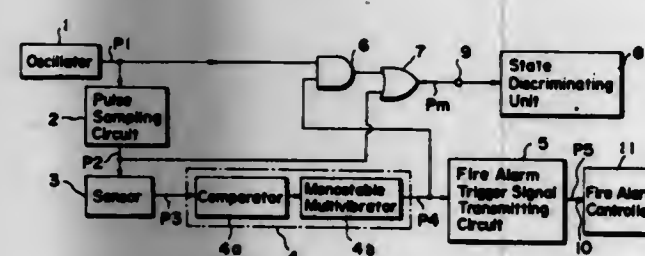
FIRE DETECTOR WITH A MONITOR CIRCUIT

Hiroiyuki Kitta, Yamato, and Yukio Yamauchi, Kawasaki, both of Japan, assignors to C. Hochiki Corporation, Tokyo, Japan
Filed Feb. 5, 1979, Ser. No. 9,446

Claims priority, application Japan, Feb. 16, 1978, 53-17701[U]
Int. Cl.³ G08B 17/00, 29/00

U.S. Cl. 340—584

9 Claims



1. A fire detector having an oscillator circuit for generating an oscillator circuit output pulse, a sampling pulse generating circuit for generating a sampling pulse in response to said oscillator circuit output pulse, a fire sensor circuit for producing a fire sensing signal in response to said sampling pulse, a judging circuit for producing a judging pulse in response to said fire sensing signal's exceeding a predetermined level, said judging pulse having a longer pulse duration than said oscillator circuit output pulse, a fire alarm trigger signal transmitting circuit for generating a fire alarm trigger signal in response to said judging pulse, a fire alarm controller circuit for generating an alarm signal in response to said fire alarm trigger signal, and a monitor circuit, having an output terminal and being responsive to said oscillator circuit output pulse, said sampling pulse and said judging pulse, for producing at said output terminal no monitor output pulse in response to the absence of said oscillator circuit output pulse, for producing at said output terminal a monitor output pulse having the same waveform as said sampling pulse in response to the absence of said judging pulse and the presence of said oscillator circuit output pulse, and for producing at said output terminal a monitor output pulse having the same waveform as said oscillator circuit output pulse in response to the presence of both said oscillator circuit output pulse and said judging pulse.

4,247,849

CONSTANT CURRENT VOLTAGE SENSING CIRCUIT
Phillip D. Morris, Flower Mound, and John H. Alford, Dallas, both of Tex., assignors to Beta Products, Inc., Carrollton, Tex.

Filed Mar. 19, 1979, Ser. No. 22,090

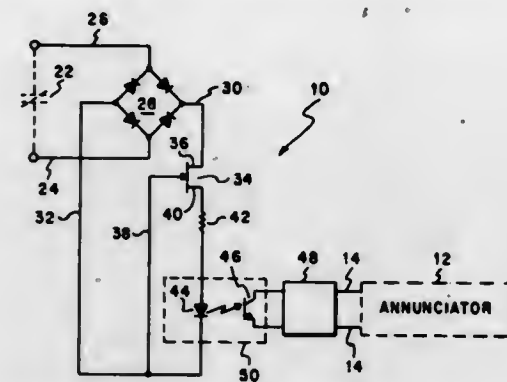
Int. Cl.³ G06B 21/00

U.S. Cl. 340—660

5 Claims

1. A voltage sensing circuit comprising in combination: a radiation emitting device circuit including a device which emits radiation when current above a certain threshold level passes through it; an impedance circuit; an electronic device with at least a first terminal and a second terminal forming a current path therebetween in series with the impedance circuit and the radiation emitting device circuit, and a control terminal to control the effective resistance between the first terminal and the second terminal, and the control terminal is connected to

a point on the side of the impedance circuit remote from the electronic device wherein the impedance circuit and the electronic device act together as a current limiting circuit for limiting the current supplied to the voltage sensing circuit to a substantially predetermined value and supplying current above the threshold level to the radiation emitting device when the voltage to be sensed is present across the series combination of radiation emitting



device, impedance circuit and electronic device whereby a radiation signal is emitted from the radiation emitting device corresponding to the presence or absence of the voltage to be sensed; and

a radiation sensitive device circuit coupled to the radiation emitting device and electrically isolated from the radiation emitting device circuit for converting from the radiation signal emitted from the radiation emitting device into an electrical signal.

4,247,850

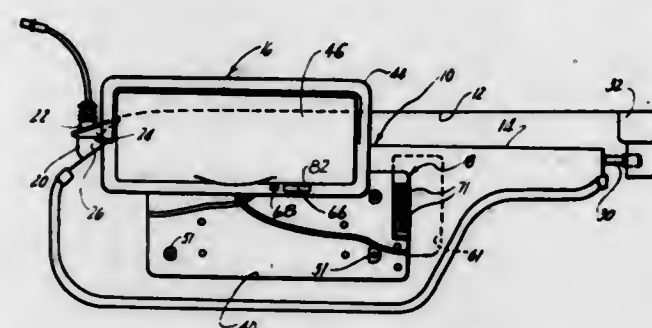
VISOR AND GARAGE DOOR OPERATOR ASSEMBLY
Konrad H. Marcus, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Aug. 5, 1977, Ser. No. 822,055

Int. Cl.³ H04B 7/00, 1/03; B60R 7/00

U.S. Cl. 340—694

12 Claims



1. A visor assembly for a vehicle or the like comprising: a visor having a recess formed therein; a mirror unit having a frame mounted over said recess and a mirror mounted within said frame; transmitter means mounted in said recess for transmitting a signal to a receiver for operating a garage door opening system; means adapted for connection to the power source of the vehicle, said means being connected to the transmitter means through an actuator switch which is adapted for coupling the transmitter means to the power source of the vehicle so as to energize said transmitter means; said switch including an actuator element mounted on said frame.

4,247,851

DISPLAY SYSTEM

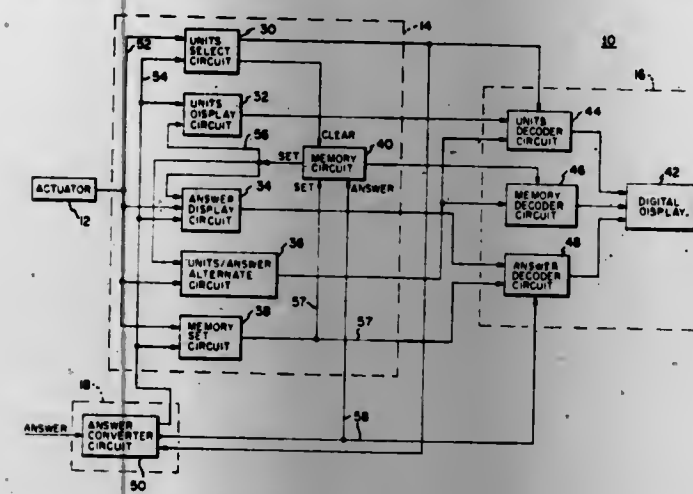
David S. Hall, 238 Calvary St., Waltham, Mass. 02154

Filed May 21, 1979, Ser. No. 40,552

Int. Cl.³ G06F 3/14

U.S. Cl. 340—706

11 Claims



1. A display system for selectively displaying a given value and associated units comprising: a value input circuit for providing values to be displayed; actuator means for selecting the values and/or units to be displayed; a units select circuit, responsive to operation of said actuator means and a predetermined value from said input circuit, for selecting the units to be displayed; display means; a units display circuit for enabling said display means to display the units chosen by said units select circuit when said input circuit provides a value other than said predetermined value; and a value display circuit for enabling said display means to display the value from the input circuit when that value is other than said predetermined value and said actuator means is unactuated.

4,247,852

MONITORING SYSTEM FOR INDICATORS UTILIZING INDIVIDUALLY ENERGIZABLE SEGMENTS

Diethelm Utzinger, Zurich, Switzerland, assignor to Mettler Instrumente AG, Greifensee-Zurich, Switzerland

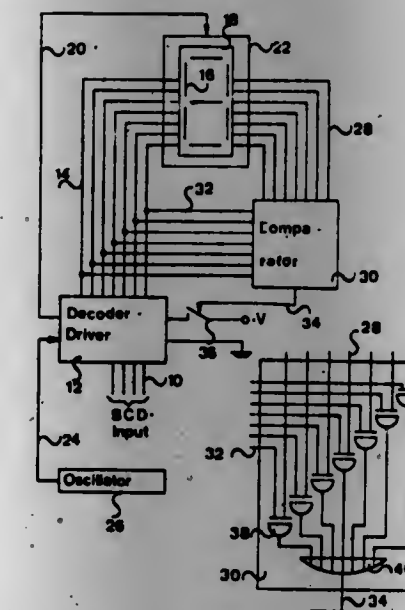
Filed May 10, 1979, Ser. No. 37,704

Claims priority, application Switzerland, Jul. 18, 1978, 7754/78

Int. Cl.³ G08B 5/22

U.S. Cl. 340—715

10 Claims



1. In an indicator device having a plurality of selectively energizable segments, and means for selectively energizing said plurality of segments, said means including a plurality of energizing leads each connected to one of said segments:

means for monitoring the operation of said indicator device, said monitoring means comprising a plurality of test leads connected to at least selected ones of said plurality of segments; and comparator means connected to said energizing leads and said test leads for comparing signals on said energizing lead and said test lead of each of said selected ones of said segments and furnishing an error signal in the absence of correspondence therebetween.

4,247,853

ALPHANUMERIC CRT DISPLAY SYSTEM WITH MEANS FOR STORING POSITIONAL DATA CALCULATED DURING AN INITIAL SCAN

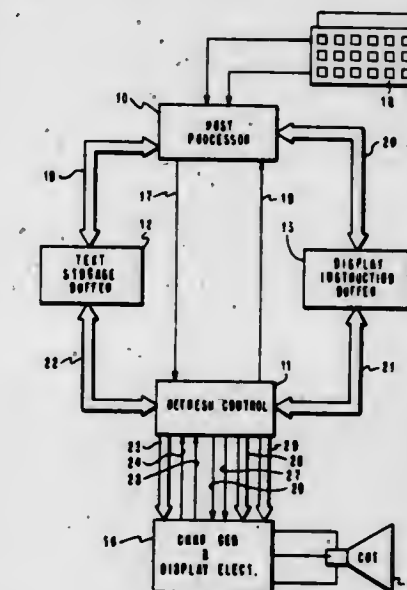
Douglas A. Hamilton, and Paul R. Herrold, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,435

Int. Cl.³ G06F 3/153

U.S. Cl. 340—723

5 Claims



1. In a cathode ray tube display system wherein alphanumeric characters are formed and cyclically refreshed in a sequence of selected positions along a plurality of lines comprising:

positioning deflection means for moving the cathode ray tube beam through said sequence of selected positions with reference to first and second coordinate axes in response to position signals; means for generating said position signals; character defining means for deflecting said beam at each selected position in a pattern within which a selected character may be defined and, in response signals representative of said selected character, for modulating the beam intensity along said pattern to define said character; and

means for generating signals representative of a selected character and for applying said signals to said character defining means;

the improvement wherein said system includes storage means for sequentially storing the coded representations of the characters selected to be displayed and tab codes and carrier return codes for said display characters, and

said means for generating said position signals includes means responsive to an accessed tab code for calculating the tab position of the next character to be displayed with respect to said first coordinate axis only in the initial cycle during which each of said selected characters is formed, means for storing each of said calculated tab positions, and means operable only during refresh cycles responsive to a tab code for accessing the stored previously calculated tab position corresponding to said code.

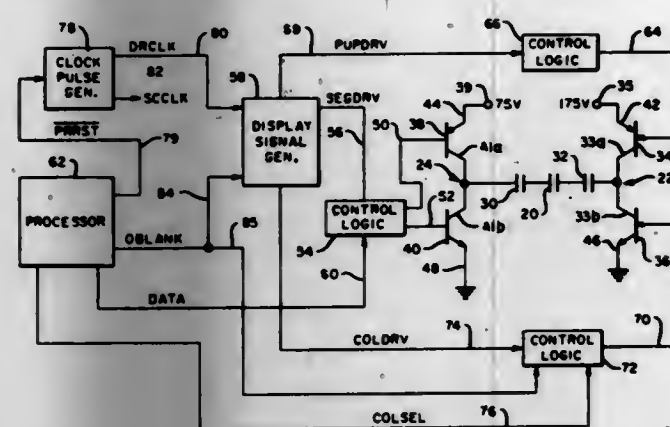
4,247,854

GAS PANEL WITH IMPROVED CIRCUIT FOR DISPLAY OPERATION

Kim H. Carpenter, and Robert R. O'Dell, both of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio
Filed May 9, 1979, Ser. No. 37,546
Int. Cl.³ H05B 37/00

U.S. Cl. 340—758

14 Claims



1. A control circuit arrangement for a gas-discharge device of the type having a pair of insulated electrodes positioned within the device comprising in combination:

first means for applying a first predetermined potential source means across said electrodes of insufficient magnitude to effect discharge therebetween when enabled; second means for applying a second predetermined potential source means across said electrodes of insufficient magnitude to effect discharge therebetween in the absence of said first potential source means across said electrodes and of sufficient magnitude to effect discharge therebetween during presence of said first potential source means when enabled;

first means for generating a first control signal during the time said discharge device is operational and no discharge is present between said electrodes and a second control signal when the device is to be discharged;

second means for generating a plurality of clock signals; and third means coupled to said first and second generating means for generating, in response to the generation of said first and second control signals and said clock signals, fourth, fifth and sixth control signals for enabling said first and second applying means whereby said first potential is applied across said electrode in response to the generation of said first control signal and said first and second potentials are cyclically applied across said electrodes in response to the generation of said second control signals and said clock signals.

4,247,855

SEGMENTED BARGRAPH DISPLAY BY AN ELECTROCHROMIC DISPLAY DEVICE

Hiroshi Ueda, Yamatokoriyama; Hiroshi Take, Teiri; Katubumi Koyanagi, Teiri, and Yasuhiko Inami, Teiri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 28, 1978, Ser. No. 928,917

Claims priority, application Japan, Jul. 29, 1977, 52-92414; Oct. 19, 1977, 52-126159; Nov. 4, 1977, 52-132953

Int. Cl.³ G06F 3/14

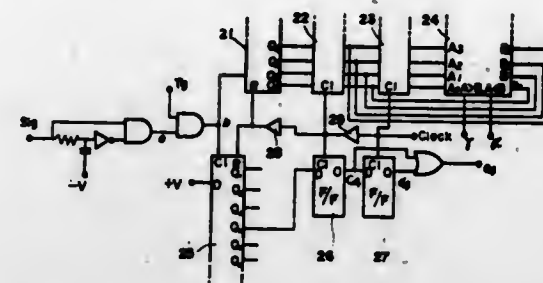
U.S. Cl. 340—753

13 Claims

1. A driver circuit for a bargraph electrochromic display device including a plurality of aligned segments for displaying an analog value comprising:

analog value generating means for generating said analog value for each of said plurality of aligned segments; first detection means for detecting whether the analog value for each of said plurality of segments increases or decreases and developing first and second control signals,

respectively, in response to said increases and decreases; and coloration/bleaching signal generator means responsive to



said first and second control signals for developing a coloration drive signal in response to said first control signal and a bleaching drive signal in response to said second control signal.

4,247,856

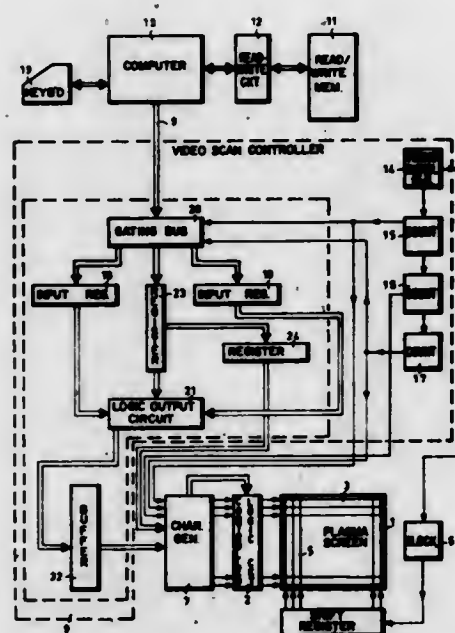
SEQUENTIALLY SCANNED PLASMA DISPLAY FOR ALPHANUMERIC CHARACTERS

Joël Fumeron, Saint-Ouen, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France
Filed Aug. 8, 1978, Ser. No. 932,007

Claims priority, application France, Aug. 11, 1977, 77 24782
Int. Cl.³ G06F 3/14

U.S. Cl. 340—771

8 Claims



1. A system for displaying information in alphanumeric form on a screen of a gas discharge tube having row and column electrodes with intersections, the gas being ionized in response to a predetermined ionizing voltage existing between the rows and columns at selected intersections to cause a visible signal to be derived at the intersections, comprising (a) logic means for applying ionizing voltages to column electrodes of the screen in a sequential scan, (b) a video scan controller having one input responsive to signals representing coded characters to be displayed in sequential character columns, (c) a character generator responsive to signals derived from said video scan controller, and (d) controlled logic means responsive to signals derived from the character generator for applying ionizing voltages to a predetermined group of row electrodes of the screen, to activate the selected intersections to display the coded characters, said predetermined group of row electrodes corresponding to a character row.

4,247,857

METHOD FOR CONTROLLING AN ANTENNA OF AN EARTH STATION FOR TELECOMMUNICATION VIA SATELLITES

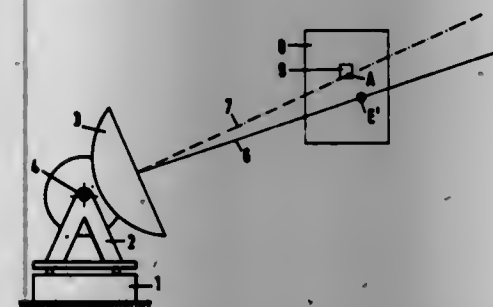
Robert Wilcke, Leiden, and Antoon A. J. Otten, Zoeterwoude, both of Netherlands, assignors to De Staat der Nederlanden, te dezen vertegenwoordigd door de directeur-generaal der Post-erijen, Telegrafie en Telefonie, The Hague, Netherlands
Filed Aug. 21, 1978, Ser. No. 935,269

Claims priority, application Netherlands, Aug. 22, 1977, 7709242

Int. Cl.³ G01S 5/02

U.S. Cl. 343—117 R

3 Claims



1. Method for controlling an antenna of an earth station for telecommunication via satellites, the antenna being provided with means to determine the position of the antenna and with means to ascertain the strength of a received signal, the method comprising:

orienting an antenna to a controlled predetermined position relative to a satellite and maintaining said antenna at said predetermined position for a predetermined period of time, the antenna being subjected to and being capable of assuming a plurality of uncontrolled small changes of position with respect to said predetermined position; measuring the signal strength of the signal received by said antenna at a plurality of given positions of said antenna within the range of said uncontrolled position changes of said antenna for said predetermined period of time and while antenna is at said controlled predetermined position; determining the direction of maximum received signal strength as a function of said measured received signal for said predetermined period of time at said plurality of given positions within the range of said uncontrolled position changes; and then controllably moving said antenna to a new predetermined position in the direction of said maximum received signal strength with a determined during said direction determining step.

4,247,858

ANTENNAS FOR USE WITH OPTICAL AND HIGH-FREQUENCY RADIATION

Kurt Eichweber, Holsteiner Chaussee 379/381, 2000 Hamburg 61, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,700

Int. Cl.³ H01Q 13/10; G02B 5/14

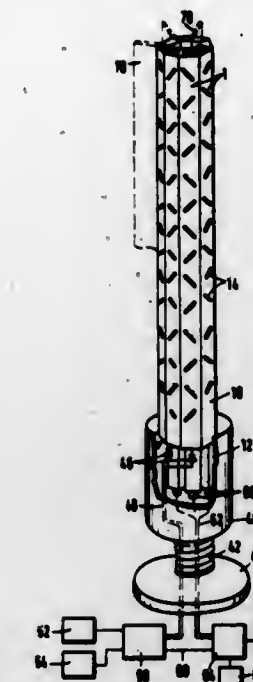
U.S. Cl. 343—729

14 Claims

1. A rod-type antenna, for use in transmitting and/or receiving optical and high-frequency electro-magnetic radiation, comprising:

an elongated hollow conductor, having formed in its wall at least one slot-shaped opening as an input and/or output coupling opening for high-frequency electro-magnetic radiation; at least one elongated dielectric light conductor extending within and along the interior space of the hollow conductor and being optically coupled to the slot-shaped opening for transmitting and/or receiving optical radiation; a first coupling means at one end of the hollow conductor for operably coupling the hollow conductor to a transmit-

ter and/or receiver for high-frequency electro-magnetic radiation; and



a second coupling means at one end of the hollow conductor for optically coupling the light conductor to a transmitter and/or receiver for optical radiation.

4,247,859

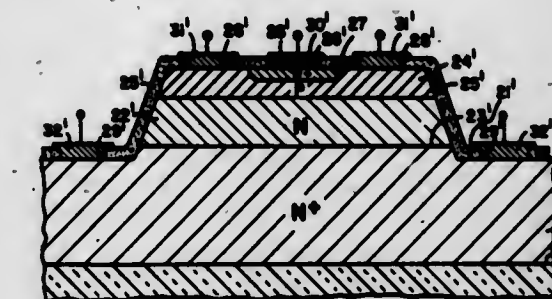
EPITAXIALLY GROWN SILICON LAYERS WITH RELATIVELY LONG MINORITY CARRIER LIFETIMES

Prosenjit Rai-Choudhury, Murrysville, and Dieter K. Schroder, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Division of Ser. No. 321,406, Jan. 5, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,956

Int. Cl.³ H01L 27/12

U.S. Cl. 357—4

3 Claims



3. A silicon-on-sapphire semiconductor device having a region with a relatively long minority carrier lifetime comprised of:

(a) a sapphire substrate with a major surface; (b) a heavily doped epitaxial silicon layer with a surface impurity concentration greater than about 1×10^{19} per cm^3 of boron impurity over the major surface of the sapphire substrate; and (c) a relatively lightly doped epitaxial silicon layer with an impurity concentration less than about 1×10^{17} per cm^3 adjoining the heavily doped epitaxial silicon layer, said lightly doped epitaxial silicon layer having a relatively long minority carrier lifetime of greater than 50 nanoseconds.

4,247,860

MIS FIELD EFFECT TRANSISTOR FOR HIGH SOURCE-DRAIN VOLTAGES

Jenoe Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

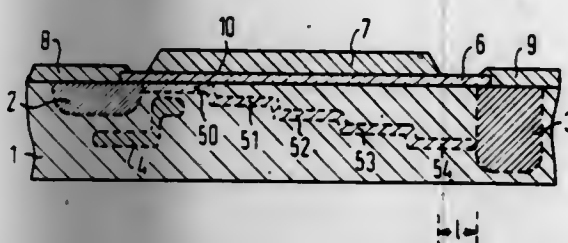
Filed Jan. 30, 1978, Ser. No. 873,234

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1977, 2706623

Int. Cl.³ H01L 29/78

U.S. Cl. 357-23

19 Claims



1. MIS field effect transistor for high drain voltages comprising a semiconductor substrate of the second conductivity type, a source zone of the first conductivity type in the semiconductor substrate adjacent one surface thereof, a drain zone of the first conductivity type in said substrate adjacent said one surface, a channel zone of the first conductivity type lying between said source and drain zones, an insulating layer on said one surface over said channel zone, a gate electrode on said insulating layer, said substrate having a buried zone of the same conductivity type as said substrate but more heavily doped, said buried zone being spaced below said one surface which lies close beside said source zone and beneath said channel zone, the distance between said gate electrode and said channel zone increases in the direction towards the drain zone.

4,247,861

HIGH PERFORMANCE ELECTRICALLY ALTERABLE READ-ONLY MEMORY (EAROM)

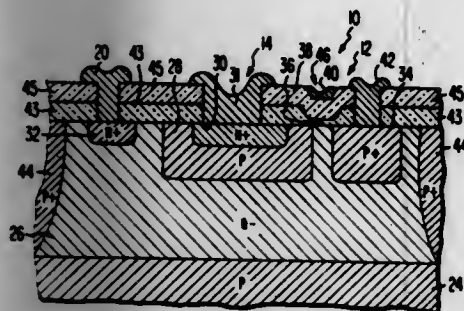
Sheng T. Hsu, Lawrenceville, and Richard J. Hollingsworth, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 18,859

Int. Cl.³ H01L 27/02, 29/34; H03K 5/00; G11C 11/34

U.S. Cl. 357-43

10 Claims



1. An integrated circuit memory cell comprising:
- a metal-nitride-oxide-semiconductor (MNOS) transistor comprising:
 - a semiconductor layer of a first conductivity type having a pair of spaced regions of opposite conductivity type formed therein, said spaced regions extending to a surface of said semiconductor layer;
 - a first insulating layer on the surface of said semiconductor layer extending at least between said pair of spaced regions, said first insulating layer being comprised of silicon dioxide having a thickness of from 20 angstroms to 60 angstroms;
 - a second insulating layer on the surface of said first insulating layer; and
 - a conductive gate on the surface of said second insulating layer; and

(b) a bipolar transistor comprising:

- an emitter region of said first conductivity type, said emitter region being formed within one of said spaced regions, said one of said spaced regions comprising the base of said bipolar transistor;
 - means for contacting said emitter; and
 - means for contacting said semiconductor layer, which semiconductor layer comprises the collector of said bipolar transistor; and
- (c) means for connecting said gate of said MNOS transistor to said emitter of said bipolar transistor.

4,247,862

IONIZATION RESISTANT MOS STRUCTURE

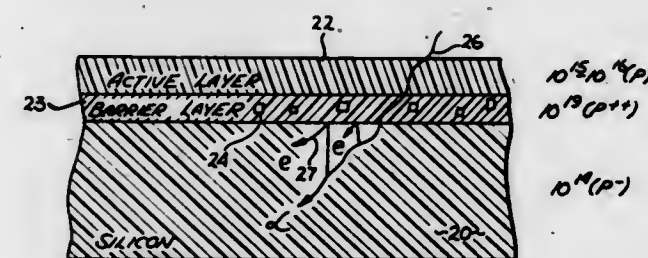
Raphael Klein, Los Altos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 828,253, Aug. 26, 1977, abandoned. This application Jul. 5, 1978, Ser. No. 922,225

Int. Cl.³ H01L 27/04

U.S. Cl. 357-48

10 Claims



1. In an MOS integrated circuit where a plurality of field-effect devices are formed on the upper surface of a semiconductor body, a structure for preventing failures from ionization within said body comprising:
- nonuniform doping within the upper regions of said body below said upper surface, said nonuniform doping providing a gradient with a lower dopant concentration towards the interior of said body and a higher dopant concentration towards said upper surface, such that an electric field is established which repels minority carriers generated in said body so as to prevent them from entering said upper surface, whereby minority carriers will not drift into the active circuit devices.

4,247,863

SEMICONDUCTOR MEMORY DEVICE

Ryoiku Togei, Machida, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

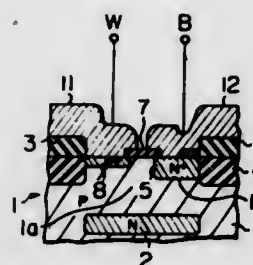
Filed Aug. 30, 1978, Ser. No. 937,937

Claims priority, application Japan, Sep. 2, 1977, 52-105607

Int. Cl.³ H01L 27/12

U.S. Cl. 357-49

9 Claims

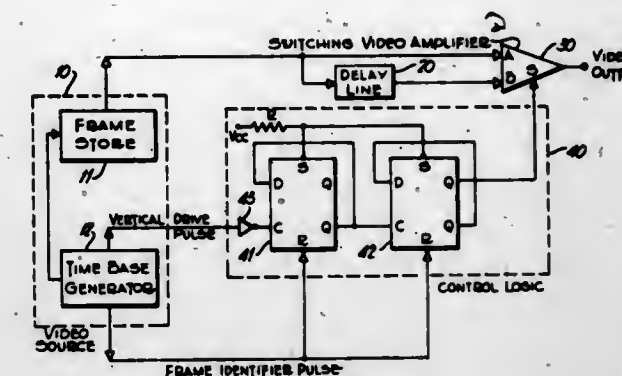


1. A semiconductor memory device comprising:
- a semiconductor material substrate having a first conductivity type; and
- first regions for dividing said semiconductor material sub-

strate into a plurality of second regions isolated one from another;

- wherein each of said second isolated regions comprises:
- an input-output region having a second conductivity type opposite to said first conductivity type, each said input-output region being situated at a respective first portion of the surface of said semiconductor material substrate;
- a control electrode in ohmic contact with a respective control portion of said surface of the semiconductor material substrate of the respective isolated region, said control portion comprising a region of said substrate being spaced from the input-output region of said isolation region; and
- a buried layer having said second conductivity type, said layer lying within said semiconductor material substrate at such a depth that a depletion layer spreads, depending upon the magnitude of an electrical potential established by said control electrode, from the position below said input-output region to the interior of said semiconductor material substrate, wherein said depletion layer can come into contact with said buried layer.

to delay said NTSC colour signal by a predetermined time interval and video signal switching means controllable to



alternately switch to an output said NTSC colour signal output by one of said video source and said delay means.

4,247,864

LIGHT EMITTING DIODE ASSEMBLY

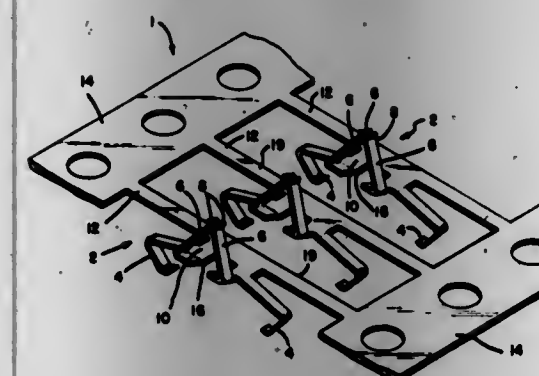
Joseph L. Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 816,423, Jul. 18, 1977, abandoned. This application Mar. 6, 1978, Ser. No. 883,559

Int. Cl.³ H01L 23/42

U.S. Cl. 357-79

6 Claims



1. A diode mounting assembly, comprising:
- first and second conductive carrier strips, each having a projecting series of electrically conducting contacts bent outwardly of the plane of a respective carrier strip, with portions of the series of said contacts overlapping corresponding portions of the series of said contacts on the other carrier strip to define cooperating pairs of resilient gripping fingers adapted for engaging and gripping opposite sides of miniature electronic circuit devices, and with said devices being supported by cooperating pairs of said fingers in positions outwardly of the plane of each said carrier strip and in alignment with clearance spaces defined between said carrier strip and between cooperating pairs of said fingers, so that said devices are exposed for access thereto from directions across the plane of each said carrier strips.

4,247,865

ALTERNATE FRAME SHIFT COLOR VIDEO DISPLAY TECHNIQUE

James A. Mastronardi, Verdun, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 4, 1979, Ser. No. 44,860

Int. Cl.³ H04N 9/491, 9/535

U.S. Cl. 358-4

10 Claims

1. Apparatus for continuously displaying on an NTSC television monitor a single video frame NTSC colour signal stored in a video signal source, characterized by delay means adapted

1. In a video disc player of the kind which includes a nested loop servo system comprising an error detector for producing a composite error signal and an active filter for separating the composite error signal into two portions, one portion for application to a principal feedback loop which provides velocity error correction, the other portion for application to a nested auxiliary feedback loop which provides video signal frequency correction, the improvement, comprising:
- transient detection and suppression means having an input coupled to a selected point in one of said feedback loops for detecting a transient signal disturbance and having an output coupled to supply a gain reducing signal to said active filter during the time said transient disturbance is present.

4,247,867

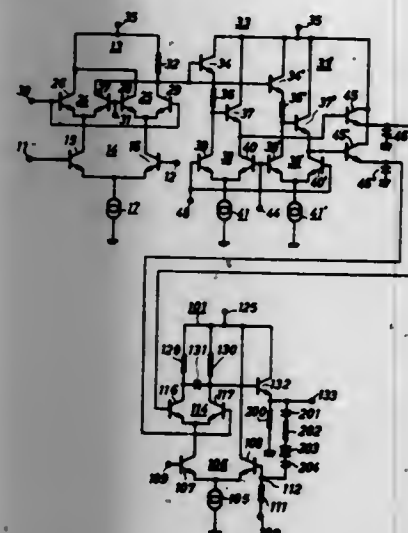
APPARATUS FOR PROCESSING THE OUTPUT VOLTAGE OF A DETECTION CIRCUIT

Hiroshi Gomi, and Shinichiro Taguchi, both of Fukaya, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 775,584, Mar. 8, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,366

Claims priority, application Japan, Mar. 9, 1976, 51-24649; Mar. 9, 1976, 51-27064

Int. Cl.³ H04N 9/46, 9/49; H03B 3/06; H03D 3/18
U.S. Cl. 358—19 10 Claims



1. An apparatus for processing electronic signals, comprising:

a single resistor load;
differential detection means having a first output terminal connected to said single resistor, said detection means for detecting the phase difference between two signals and producing a single output related to said phase difference at said first output terminal;

gate means connected to said first output terminal, for selectively transferring said single output in response to the application of a gate signal to a second output terminal, said gate means including a first transistor through which said single output is transferred to said second output terminal, said first transistor having a control electrode responsive to said single output, one current conducting electrode connected directly to a voltage source and another current carrying electrode connected directly to said second output terminal;

a capacitor having a first terminal directly connected to said second output terminal and a second terminal connected directly to ground;

a differential load circuit with one of its control terminals connected to a junction between said first capacitor and said gate means; and

a bias circuit having a third output terminal connected to the other control terminal of said differential load circuit.

4,247,868

PRE-AMPLIFIERS FOR COLOR TELEVISION CAMERAS

Hideo Onodera, Kodaira, Japan, assignor to Hitachi Denchi Kabushiki Kaisha, Tokyo, Japan

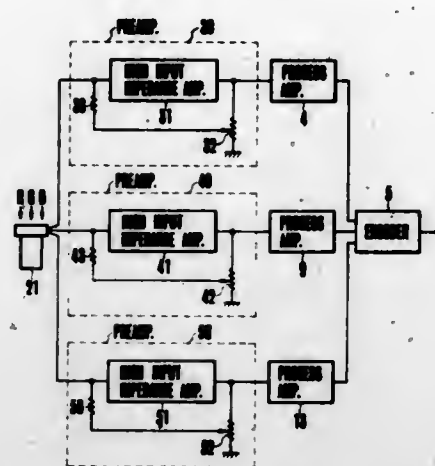
Filed Mar. 19, 1979, Ser. No. 22,204

Claims priority, application Japan, Mar. 20, 1978, 53-32178
Int. Cl.³ H04N 9/08 4 Claims

U.S. Cl. 358—29

1. In a pre-amplifier for use in a three electrode single tube type color television camera wherein color signals delivered from respective electrodes are processed by output signal processing circuits, the improvements wherein each processing circuit comprises a high input impedance amplifier for amplifying a color signal produced by the image pick-up tube of said television camera, a feedback circuit connected be-

tween the input and output of said high input impedance amplifier, and means connected in said feedback circuit for varying



the amount of feedback to adjust the gain of said amplifier, said feedback varying means comprising variable resistance means for varying the gains for respective color signals.

4,247,869

METHOD AND APPARATUS FOR IMPROVING RESOLUTION AND LINEARITY IN A BEAM-INDEX DISPLAY SYSTEM

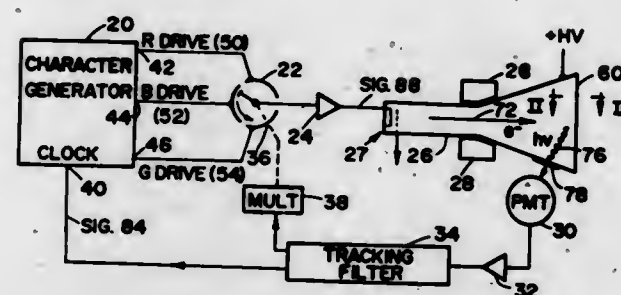
Robert G. Culter, Seattle, Wash., and Charles S. Osborne, Jr., Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 16, 1979, Ser. No. 30,261

Int. Cl.³ H04N 9/22

U.S. Cl. 358—67

6 Claims



1. A beam-index color display system comprising:

(a) A beam-index cathode-ray tube including a display medium, means for producing an electron beam, and means for directing said beam toward said medium;

(b) deflection means for causing said beam to sweep across said display medium;

(c) means responsive to the presence of said electron beam for producing a beam-index signal representative of the position of said beam within said tube;

(d) means responsive to said index signal for generating a digital bit stream defining an image to be displayed; and

(e) means also responsive to said index signal for sequentially selecting successive bits of said bit stream in continuous timed synchrony with their generation and for transmitting said selected bits to said cathode-ray tube for conversion into a visual display representative of said image.

4,247,870

HIGHWAY PREMARKING GUIDANCE SYSTEM

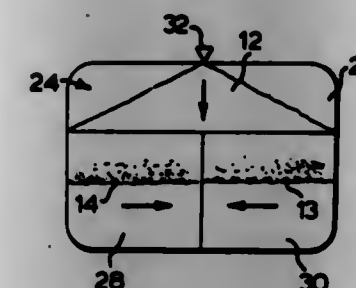
Lorne G. Gabel, Garry E. Paulson, and Thomas G. Kirk, all of Saskatoon, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Highways and Transportation, Regina, Canada

Division of Ser. No. 802,502, Jun. 1, 1977, Pat. No. 4,167,592. This application Nov. 6, 1978, Ser. No. 958,135

Int. Cl.³ H04N 7/18

U.S. Cl. 358—93

4 Claims



1. Apparatus for use in marking a line along a roadway using a vehicle carrying paint marking apparatus, comprising:

a first set of at least two television cameras mounted on the vehicle and arranged to monitor the edges of the roadway;

a television screen mounted on the vehicle; and

means to arrange the images of the edges of the roadway on the screen in a predetermined relationship when the vehicle is in a predetermined location with respect to the edges of the roadway, said images being oriented to converge at a point, and

a further television camera mounted centrally on the vehicle and arranged to monitor the vanishing point of the roadway, and means to arrange the image of the vanishing point centrally on the screen when the roadway is straight and the vehicle is located centrally thereon.

4,247,871

FILTER ARRANGEMENT FOR CATHODE RAY TUBE

Ulrich Hirsch, and Walter Hardt, both of Paderborn, Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

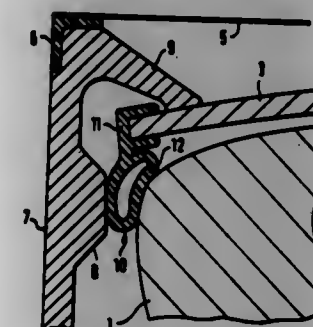
Filed Sep. 28, 1978, Ser. No. 947,172

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 7730200[U]; Aug. 10, 1978, 7823905[U]

Int. Cl.³ H04N 5/645, 5/72; G02B 7/00

U.S. Cl. 358—248

5 Claims



1. An apparatus for mounting a cathode ray display tube (1) and a rigid color filter pane (2) in spaced relation within a case (7) having structural elements (3) and (4), respectively, both laterally of and circumferentially forwardly of the tube face and comprising:

an integral sealing gasket (10) having a first portion (11) being approximately 96° Shore A durometer hardness, grippingly disposed about the peripheral edge of the pane (2), and a second portion (12), being approximately 60° Shore A durometer hardness, of hollow tubular construction spaced from said first portion yieldingly disposed

against the periphery of the tube (1), and between the tube and the lateral structural element (3) of the case (7); the pane (2) bearing directly against the circumferentially forward element (9) of the case (7) inwardly of the first portion (11) of the sealing gasket (10) and being urged into such bearing relation by said sealing gasket (10) wherein the second portion (12) of said sealing gasket is moveable independent of the first portion (11) when in the operative arrangement.

4,247,872

FACSIMILE SIGNAL CONVERTER

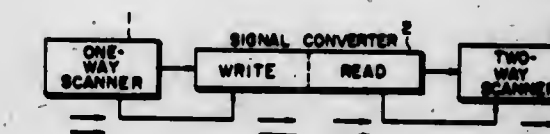
Tasaku Wada, Naritaniishi, Tohru Asami, and Kouzou Nakao, both of Hoya, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 875,759, Feb. 7, 1978, abandoned. This application Apr. 11, 1979, Ser. No. 29,130

Claims priority, application Japan, Feb. 7, 1977, 52/12278
Int. Cl.³ H04N 1/40

U.S. Cl. 358—256

5 Claims



1. A facsimile signal converter for mutually converting to each other one of a facsimile signal of one-way scanning and a facsimile signal of two-way scanning for each scanning line, comprising:

a first drive mechanism for driving a first read head and a second read head to reciprocate for scanning in opposite directions along two spaced but parallel travel paths, respectively, and for driving a write head to move together with the first read head along a travel path developed at the midway between the two travel paths and to be positioned on the same line perpendicular to each of the two parallel travel lines;

a second drive mechanism for driving a recording medium to shift by a certain length in a direction perpendicular to the travel paths for each scanning of the first read head and the second read head;

means for applying an input signal to said write head for recording the input signal on the recording medium; and means for reading out the recorded signal by the first read head and the second read head only when the first read head and the second read head alternately scan in the corresponding one of two opposite directions.

4,247,873

SELF-ADAPTIVE, ALL-OR-NOTHING CONVERTER OF AN ANALOG IMAGE ANALYSIS SIGNAL

Jean-Claude Decuyper, Elancourt, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed May 11, 1979, Ser. No. 38,142

Claims priority, application France, May 12, 1978, 78 14216
Int. Cl.³ H04N 1/40

U.S. Cl. 358—282

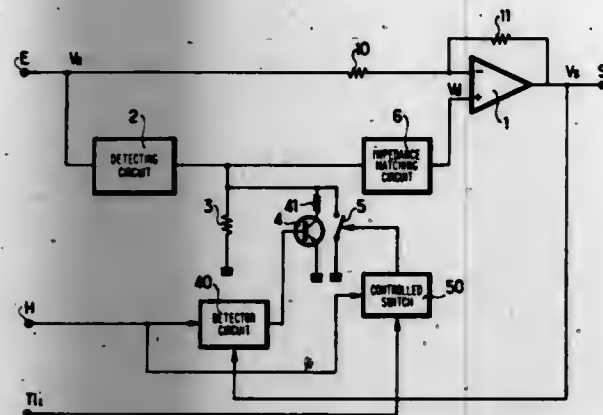
8 Claims

1. A self-adaptive all-or-nothing converter for converting an analog image analysis signal into a two-valued signal, the converter comprising:

a comparator for comparing the analog image analysis signal with a decision threshold to produce a two-valued output signal taking one value when the analog image analysis signal is above the decision threshold, and the other value when it is below the threshold; and

correction means responsive to the modulation level of the analog image analysis signal to adjust the relative levels, as applied to the comparator, of the analog image analysis signal and the decision threshold, said correction means

comprising a peak detector for detecting successive modulation peaks significant of the locally palest of the successive elements of the image as represented by the analog analysis signal, a store for storing the value of the most recently detected peak, first processing means for applying a slow decay to the stored peak value, second processing means for applying a rapid decay to the stored peak value, and a control circuit for controlling said second



processing means, the control circuit being arranged, in operation to detect whenever the modulation signal has remained below the threshold for at least ten elementary points of the image represented by the analog image analysis signal, and then to cause the second processing means to apply said rapid decay to the stored peak value to bring said stored peak value rapidly to a value close the palest image level then present in the image analysis signal.

4,247,874

PHOTOCONDUCTOR DEVICE FOR IMAGING A LINEAR OBJECT

Steven Kos, Hazeldean, and David R. Baraff, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 28, 1978, Ser. No. 946,559
Int. Cl.³ H04N 1/02, 3/14; H01J 40/14

U.S. Cl. 358-294

4 Claims



1. A photoconductor device for imaging a linear object, said photoconductor device comprising:

- an insulating substrate;
- an elongate bar of photoconductive material;
- a first plurality of parallel closely-packed equispaced thin film conductors extending from the bar in a first direction and having end contact regions overlain by one side edge of the bar;
- a second plurality of parallel, closely-packed, equispaced thin film conductors extending from the bar in a direction opposite to said first direction and having end contact regions overlain by the opposite side edge of the bar, the end contact regions of said first plurality of conductors being opposed to respective end contact regions of said second plurality of conductors whereby to produce a series of spaced pairs of contact regions extending, equispaced, along the photoconductive bar and wherein the junction between the bar and one contact region of each

pair is an ohmic contact and the junction between the bar and the other contact region of each pair is a rectifying junction.

4,247,875

CIRCUITRY FOR ADJUSTMENT OF BIASING CURRENT FOR RECORDING SOUND BY TWO-HEAD TYPE TAPE-RECORDER

Satoshi Takahashi, Toyonaka, Japan, assignor to Onkyo Kabushiki Kaisha, Osaka, Japan

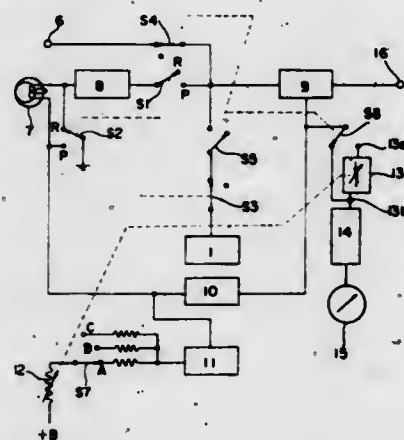
Filed Apr. 12, 1979, Ser. No. 29,511

Claims priority, application Japan, Apr. 28, 1978, 53-58207[U]

Int. Cl.³ G11B 5/47, 5/02

U.S. Cl. 360-66

7 Claims



1. Recording bias current adjusting circuitry adapted for use in a two-head type tape recorder having an eraser head and a recording/reproduction head (7) comprising:

- a calibration signal generator (1) adapted to alternately and continuously give to a recording input stage two kinds of calibration signals of higher and lower frequencies but of the same input level,
- a variable resistor (12) for adjusting intensity of a recording bias current,
- an indicator (15) for indicating output levels of reproduced signals,
- an output level adjusting circuit (13) adapted to adjust only higher-frequency reproduction output levels out of various-frequency reproduction output levels indicated at the indicator (15), and
- said variable resistor (12) being operatively connected to the output level adjusting circuit (13) for adjusting the output level adjusting circuit (13) and adapted to be settable to a resistance value to provide an optimal intensity of the recording bias current to realize a flat frequency characteristic when the output level adjusting circuit (13) is adjusted to cause the reproduced output level of the higher-frequency calibration signal to coincide with the reproduced output level of the lower-frequency calibration signal shown at the indicator (15).

4,247,876

DICTIONATION RECORDING AND TRANSCRIBING SYSTEM UTILIZING A MULTIPLE MEDIA CARTRIDGE APPARATUS

Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Filed Dec. 18, 1978, Ser. No. 970,357

Int. Cl.³ G11B 15/68

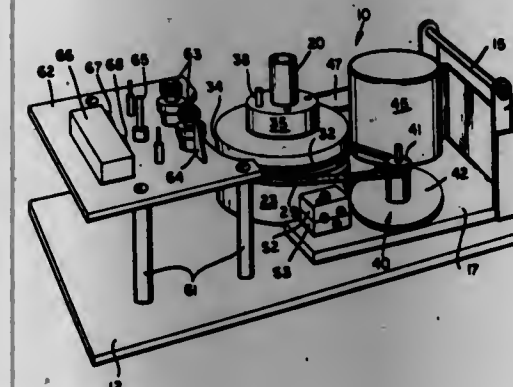
U.S. Cl. 360-92

5 Claims

- 1. In a dictation recording system,
- a removable cartridge means for carrying a first recording medium and a second recording medium, said cartridge means comprising a housing including a central drive member engaging means and a first and second means

radially disposed about said central drive member engaging means equidistant therefrom in a single plane for slidably receiving said first and second recording media;

- a means for selectively positioning said cartridge means to place either said first recording medium or said second recording medium in a recording position relative to a transducer for recording on said one of said recording media in said recording position; said cartridge positioning means comprising:
- a drive member mounted on a frame for rotation about a vertical axis, engaging said housing at the center thereof;
- a cam rotatably mounted coaxially with and beneath said drive member and separated therefrom by a clutch, said cam having a cam surface defined by the edge of a cylinder of varying length about the circumference thereof;



- a cam follower mounted on a base beneath said cam and passing through an opening in said frame to engage said cam surface;
- a means for rotating said cam;
- a brake means for preventing rotation of said drive member when one of said recording media is in said recording position; and
- a means for releasing said brake means to allow said drive member and cartridge to rotate with said cam until said other of said recording media is in said recording position, said cam lifting said frame and said cartridge to raise said medium out of engagement with said transducer means, and said brake means being released only when said cartridge is raised by said cam.

4,247,877

HEAD LOADING CARRIAGE ASSEMBLY FOR A FLOPPY DISK DRIVE

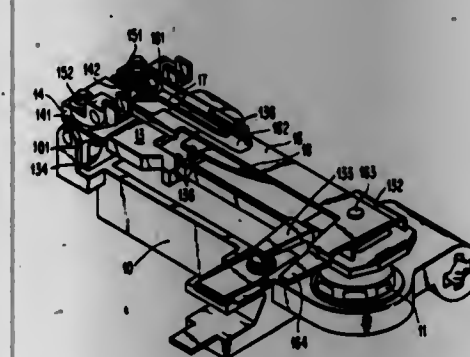
Jacob P. Keller, Buena Park, and Lawrence W. Fay, El Toro, both of Calif., assignors to Siemens Corporation, Iselin, N.J.

Filed Aug. 6, 1979, Ser. No. 64,064

Int. Cl.³ G11B 5/48, 5/58

U.S. Cl. 360-105

12 Claims



- 1. A head loading carriage assembly for a data storage device for use with a flexible, rotatable magnetic recording medium, said carriage assembly having a base and being movable in a radial direction relative to the recording medium, and said carriage assembly comprising, in combination:
- (a) a head support arm pivoted with respect to said base and

- movable in a direction normal to the plane of the recording medium, said support arm carrying at least one magnetic head;
- (b) an auxiliary load arm pivoted with respect to said base and movable in a direction normal to the plane of the recording medium toward and away from said support arm between a first load position in which the magnetic head contacting the plane of said medium is in an operative relationship with said medium for performing read/write operations and a second load position in which the magnetic head, still in contact with said medium, is idling along a track of said medium in a nonoperative relationship, said auxiliary arm being movable from the first load position into the second load position;
- (c) first spring means urging the auxiliary load arm into the first load position towards said support arm, as to engage the magnetic head attached to said support arm with said medium; and
- (d) second spring means arranged between said support arm and said auxiliary load arm and operative in the second load position of the auxiliary load arm to apply a force to said support arm which is less than that of said auxiliary load arm in its first load position, whereby said magnetic head remains in contact with the recording medium when in an operative as well as nonoperative relationship therewith.

4,247,878

MULTI-CHANNEL MAGNETIC HEAD WITH A PLURALITY OF CORES AND METHOD FOR MANUFACTURING THE CORES

Misao Shimoda, Tokyo, and Satachi Saitou, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

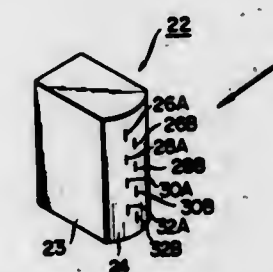
Filed Feb. 14, 1979, Ser. No. 12,199

Claims priority, application Japan, Feb. 27, 1978, 53-21785; Feb. 27, 1978, 53-21786

Int. Cl.³ G11B 5/22

U.S. Cl. 360-125

2 Claims



- 1. A multi-channel magnetic head for contacting a magnetic tape, comprising: a core housing having a head face, and a plurality of U-shaped cores arranged in said housing, each core being wound by an exciting coil and the free ends of each said core defining a pair of spaced legs, said cores extending in a row such that each of the legs of said cores defines a separate row along the head face, said cores being inclined with respect to a direction which extends perpendicular to said row and essentially parallel to said head face, at an angle such that each of said pair of spaced legs defines a distinct head face tip portion and is adapted to engage a different track of a contacting magnetic tape when moving in said direction.

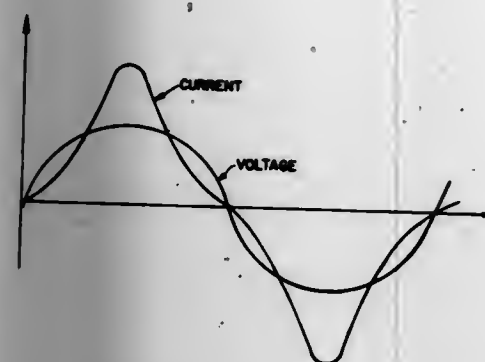
4,247,879

PEOPLE PROTECTING GROUND FAULT CIRCUIT BREAKER UTILIZING WAVEFORM CHARACTERISTICS

Robert T. Elms, and Joseph C. Engel, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Apr. 19, 1978, Ser. No. 897,885
Int. Cl.³ H02H 3/33, 3/44

U.S. Cl. 361-45

2 Claims



1. People-protecting ground fault circuit breaker apparatus, comprising:
 - separable contacts;
 - means operable upon actuation to automatically separate said contacts to trip said apparatus;
 - means for sensing ground fault current through said contacts; and,
 - means for analyzing the shape of the waveform of said ground fault current comprising means responsive to peak ground fault current and average ground fault current, and means for comparing the ratio of peak-to-average ground fault current to a predetermined reference value corresponding to a peak-to-average ratio produced by human ground fault current of a specified tripping level, said analyzing means actuating said separating means whenever the detected ratio of peak-to-average ground fault current exceeds said predetermined reference value.

4,247,880

IGNITION DEVICE FOR OIL BURNERS

Shuji Morio, Yokohama, Japan, assignor to Yamatake-Honeywell Company Limited, Tokyo, Japan

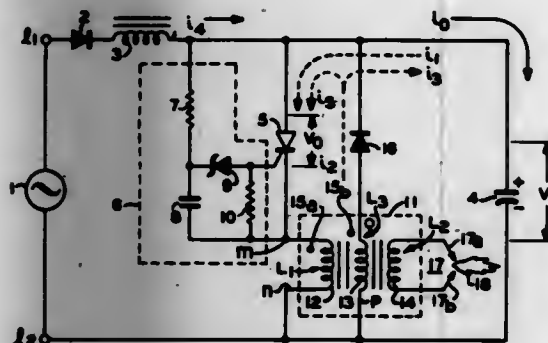
Filed Feb. 12, 1979, Ser. No. 11,278

Claims priority, application Japan, Feb. 28, 1978, 53-231401

Int. Cl.³ F23Q 3/00

U.S. Cl. 361-256

3 Claims



1. An ignition device for oil burners, comprising: a capacitor adapted to be connected to a source of alternating current through a choke coil to allow for the storage of electrical energy in said capacitor; transformer means having a primary winding, a step-up secondary winding, and a tertiary winding with the same magnetic polarity as said primary winding and which is magnetically coupled to said primary winding; said tertiary winding being coupled to said primary winding so that an electromotive force mutually induced in said tertiary winding is higher than and counter balanced with an electromotive

force induced in said primary winding; a silicon controlled rectifier connected to said capacitor and in series circuit with said primary winding to control the discharge of said stored energy through said primary winding to induce a high voltage in said secondary winding which is in turn adapted to produce oil ignition sparks across a pair of electrodes; said silicon controlled rectifier including gate means to periodically gate said silicon controlled rectifier into conduction; and said tertiary winding being connected through a commutating diode to said capacitor with an output from said tertiary winding being supplied to said silicon controlled rectifier and said primary winding.

4,247,881

DISCOIDAL MONOLITHIC CERAMIC CAPACITOR

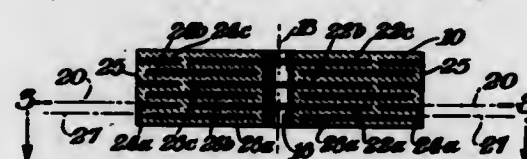
James H. Coleman, Wichita Falls, Tex., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 2, 1979, Ser. No. 26,113

Int. Cl.³ H01G 4/42

U.S. Cl. 361-302

4 Claims



1. A discoidal monolithic ceramic capacitor comprising a cylindrical ceramic dielectric body having a hole that is concentric with respect to the axis of said cylindrical body; and first, second and third sets of circularly annular metal film electrodes being buried in said body, each of said first and third set electrodes consisting of one less electrode than the number of said second set electrodes, said second set electrodes comprising at least two electrodes, said electrodes being arranged concentrically about said hole, said first and third set electrodes lying in a first and third plane, respectively, and said second set electrodes lying in a second plane that is parallel to and spaced from said first plane on one side and from second plane on the opposite side, said electrodes having increasingly greater outer diameters taken in order of their increasing outer positions relative to said hole, the innermost and the outermost electrodes extending to said hole and to the periphery of said cylindrical body, respectively, said first and third set electrodes extending radially less than to said hole and to said periphery, an area of overlapping existing between each second set electrode and an adjacent of said first and second set electrodes, said areas being substantially the same as that of each other overlapping adjacent pair of said electrodes.

4,247,882

UNIVERSAL INPUT/OUTPUT SYSTEM CONSTRUCTION FOR PROGRAMMABLE CONTROLLERS

Jay M. Prager, Nashua, N.H.; Joseph F. Sadlow, North Reading; John K. Nitzsche, Concord; Thomas A. Nikonchuk, Tewksbury, all of Mass.; John E. Farrand, Nashua, N.H.; Roman Gonzales, Andover, Mass., and Hiroshi Matsumoto, Jruma, Japan, assignors to Gould Inc., Rolling Meadows, Ill.
Filed Apr. 17, 1979, Ser. No. 30,849

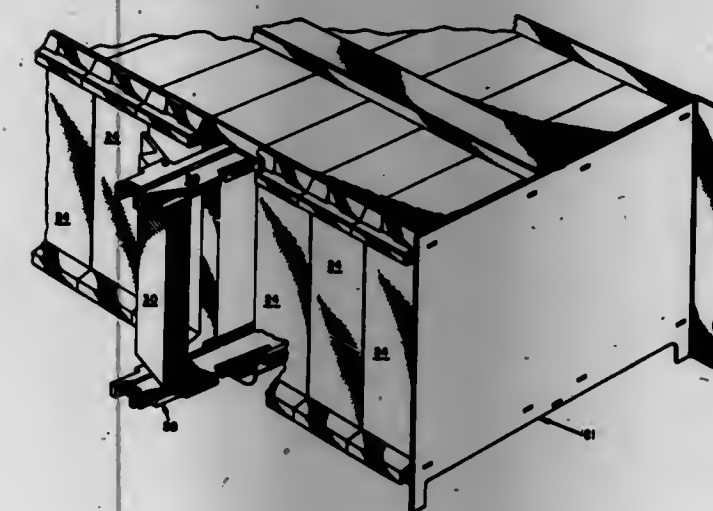
Int. Cl.³ H05K 7/02

U.S. Cl. 361-380

18 Claims

1. An expandable, multi-purpose input/output system interconnected with a central processor to form a machine controller interconnected with and operating external devices, comprising

- A. a housing incorporating means for communicating with the central processor;
- B. a printed circuit board incorporating
 - a. means for disengageably interconnecting said printed circuit board with the communicating means of the housing, and
 - b. a plurality of electrically independent contacts for communicating with the external equipment;
- C. a slider system
 - a. mounted in the housing,
 - b. movable from a first, locked, housing-inserted position to a second, locked, partially withdrawn position, and
 - c. incorporating means for supportingly holding the printed circuit board in the housing in disconnectable communication with the central processor;
- D. a terminal connector block mounted to the slider assembly and comprising
 - a. a plurality of wire connection points for electrically connecting the external equipment to the input/output system, and



- b. a plurality of quick disconnect contacts, with each of said contacts being independently conductively associated with one wire connection point; and
 - E. a connector panel incorporating a plurality of conductively independent contacts for electrically interconnecting the quick disconnect contacts of the terminal connector block with the plurality of electrically independent contacts of the printed circuit board;
- whereby an input/output system is achieved wherein the external equipment wires are easily connected to the terminal connector block by supportingly extending the connector block to a position outside of the housing, wherein the printed circuit board is quickly and easily disengageably inserted and interconnected with the central processor, and wherein complete electrical interconnection of the external equipment through the printed circuit board to the central processor is made quickly and easily without requiring disassembly of the external equipment wires for removal, replacement or repair of the printed circuit board.

4,247,883

ENCAPSULATED CAPACITOR

David G. Thompson, Williamstown, Mass., and John T. Ogilvie, Bennington, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jul. 31, 1978, Ser. No. 929,760

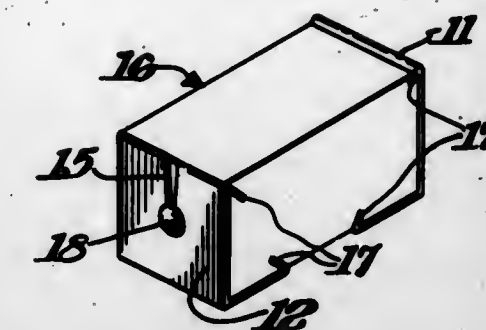
Int. Cl.³ H01G 9/00

U.S. Cl. 361-433

5 Claims

1. An encapsulated chip capacitor comprising a pair of terminals with a substantially L-shaped cross-section and each having a vertical plate and a horizontal plate meeting in a right angle along a common edge, a capacitor body with an anode and a cathode encapsulated in an insulating material and having an anode lead extending from one end thereof, one of said terminals electrically connected to said cathode and the other to said anode, said horizontal plate of each of said terminals

facing each other and extending partway along the same side of said encapsulated body on the outside thereof contiguous therewith and spaced from each other, said vertical plates extending along the outside of opposite ends of said body and



contiguous therewith, said vertical plate connected to said anode having a slot partway down said vertical plate from the top thereof toward the horizontal plate and receiving said anode lead.

4,247,884

FLUORESCENT MINE LIGHTING FIXTURE

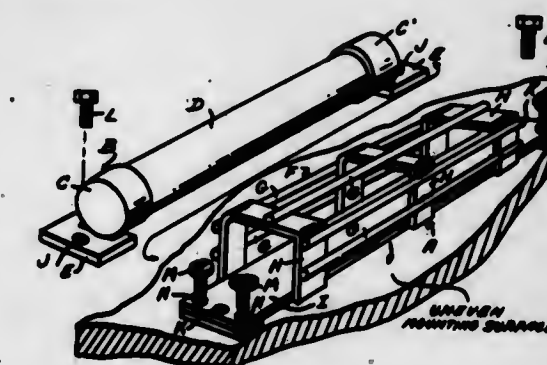
H. P. McJunkin, Jr., Charleston, and L. W. Rowley, Sissonville, both of W. Va., assignors to McJunkin Corporation, Charleston, W. Va.

Filed Oct. 27, 1976, Ser. No. 736,204

Int. Cl.³ F21L 23/00; F21S 3/00

U.S. Cl. 362-164

10 Claims



1. A fluorescent mine lighting fixture, comprising:
 - a mount assembly including two coaxially alignable tubular end supports having respective throughbores and means for securing each end support to a structure to support said fixture from that structure;
 - a bar;
 - two lamp holders mounted in longitudinally spaced, opposing relation on the bar, for mounting a fluorescent lamp tube therebetween;
 - an electrical cable; circuit means electrically connecting the electrical cable to the respective lamp holders;
 - a tubular body of transparent, shatterproof material surrounding the bar;
 - a first end cap secured on one end of said tubular body; means defining an opening through said first end cap, said electrical cable passing out of said tubular body through this opening;
 - packing means between the cable and the last-mentioned opening providing sealing therebetween;
 - a first elastomeric mechanical shock isolator interposed between the first end cap and one of said end supports; the tubular body being inserted in the throughbores of the end supports, said one end support first, until the first elastomeric mechanical shock isolator is compressed between the first end cap and the one end support;
 - a second end cap removably secured on the other end of said tubular body; and

a second elastomeric mechanical shock isolator interposed between the second end cap and the other end support.

4,247,885

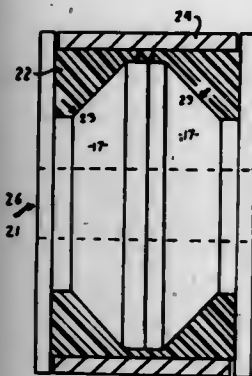
LIMITED MOTION ROTATION JOINT

Arthur W. Hopkins, Stone Bridge Rd., Cornwall, N.Y. 12518
Filed Mar. 23, 1978, Ser. No. 889,386

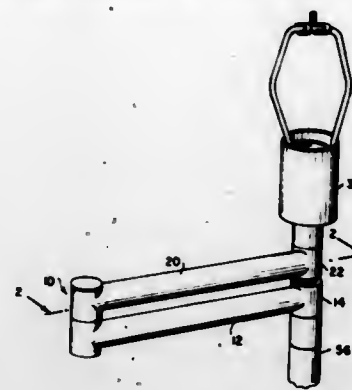
Int. Cl.³ F21V 21/20

U.S. Cl. 362-401

3 Claims



second end faces to each other, so that said stop means protrudes into said arcuate groove and said stop shoulder



on said arcuate groove co-acting with said stop means limits rotational movement of said swivel joint.

4,247,887

AC-AC CONVERTER DEVICE

Tunghai Chin, No. 90-9, Yamate-cho, Naka-ku, Yokohama City, Kanagawa-Prefecture, Japan

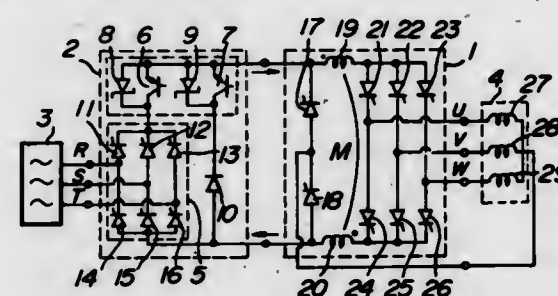
Filed Jul. 28, 1978, Ser. No. 929,291

Claims priority, application Japan, Jul. 28, 1977, 52-89764

Int. Cl.³ H02M 5/458

U.S. Cl. 363-37

7 Claims



1. An AC-AC converter device comprising:
a converter circuit for connection to a source of polyphase alternating current capable of instantaneously varying an output voltage to a positive voltage, a negative voltage or zero; and a coupled reactor commutating inverter circuit cascade-connected to said converter circuit, said inverter circuit consisting of only coupled reactors and a plurality of thyristors which are rendered conductive in a predetermined sequence, whereby said output voltage of said converter circuit is rendered positive, negative or zero instantaneously as necessary to effect commutation and current control in said inverter circuit.

4,247,888

STATIC CONVERTOR APPARATUS

Lennart Ångquist, Enköping, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Jul. 2, 1979, Ser. No. 54,053

Claims priority, application Sweden, Jul. 3, 1978, 7807466

Int. Cl.³ H02M 1/14

U.S. Cl. 363-47

4 Claims

1. Improved convertor apparatus of a type wherein energy is transmitted between an alternating voltage network and a direct voltage network by means of a convertor with forced commutation and having a characteristic pulse number, the convertor being connected on an AC side to the alternating voltage network through an inductance element and the convertor being connected on a DC side to a smoothing capacitor and a filter connected in parallel with the smoothing capacitor, the filter having an inductor connected in series with a filter capacitor, the improved convertor apparatus comprising:
means for defining a natural frequency for said filter that is

4,247,886

SWIVEL JOINT FOR A LIGHT

Jerome Warshawsky, Baldwin Harbor, N.Y., assignor to I.W. Industries Inc., Melville, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,102

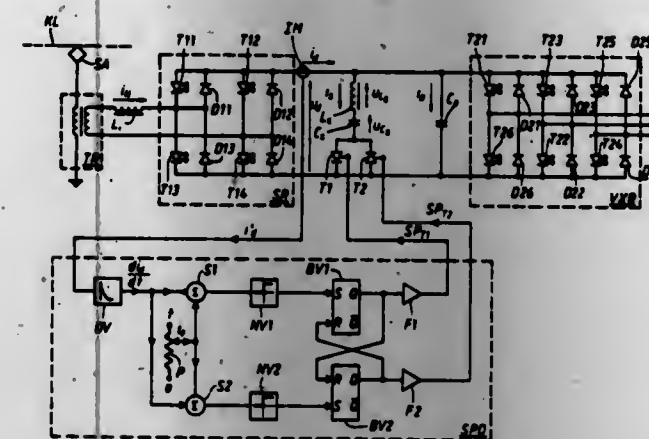
Int. Cl.³ F21M 3/18

U.S. Cl. 362-427

15 Claims

1. A swivel joint assembly comprising:
(a) a first arm member having a first end joint on one end, said first end joint having a first end face being formed so as to have an arcuate groove thereon, and a stop shoulder in said groove;
(b) a second arm member having a second end joint on one end, said second end joint having a second end face having stop means depending from the second end face for limiting rotational movement of said swivel joint to approximately 360°; and
(c) swivel means for providing rotational movement between said first and second end joints, including fastener means engaging said end faces for securing said first and

higher than the product of the frequency of the alternating voltage network and the pulse number of the convertor; at least two controllable semiconductor valves connected together in parallel in opposing relation and connected in series to said filter; and



control means connected to said at least two controllable semiconductor valves for alternately making the semiconductor valves current-carrying synchronously with the fundamental tone of an AC component in a direct output current of said convertor.

4,247,889

HIGH-VOLTAGE-SECONDARY TRANSFORMER, PARTICULARLY TELEVISION LINE TRANSFORMER

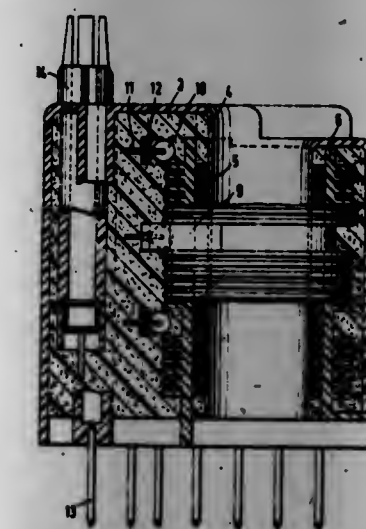
Werner Riechmann, Sibbesse, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,473

Int. Cl.³ H04N 3/18; H02M 7/10

U.S. Cl. 363-126

7 Claims



1. High-voltage secondary transformer, particularly television line transformer, having
a primary winding (5) and a secondary winding (7a, 7b, 7c) in which the secondary winding is subdivided into a plurality of windings sections (7a-7b-7c), and a plurality of rectifier diodes (10) connecting said secondary winding sections together,
wherein, in accordance with the invention, the secondary winding sections (7a, 7b, 7c) are physically positioned with respect to the primary winding to form spatially separated winding sections, each having individual inductance and capacity values and with respect to the primary, and each other, said positioning on the primary winding being effected to result in current flow in the respective sections (7a, 7b, 7c) of the secondary at respectively different instants of time.

4,247,890

REVERSIBLE INVERTER SYSTEM HAVING IMPROVED CONTROL SCHEME

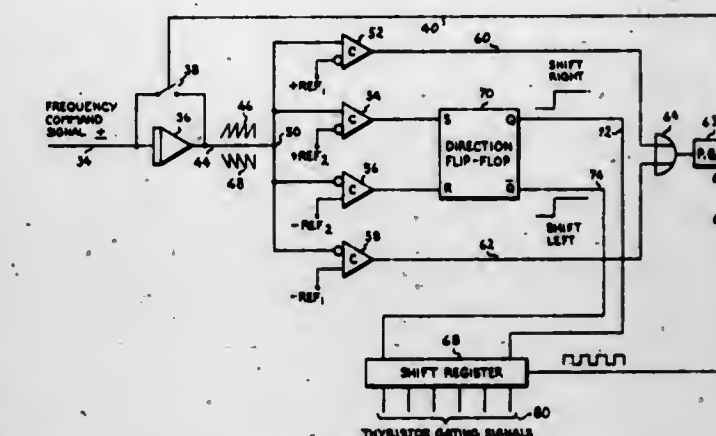
John H. Cutler, Roanoke, and Loren H. Walker, Salem, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,853

Int. Cl.³ H02M 7/515, 7/757

U.S. Cl. 363-137

12 Claims



1. A reversible inverter system for converting direct current power to alternating current power of variable frequency in response to a generally direct current input command signal having a magnitude proportional to the desired output frequency of the system and a relative polarity indicative of the direction of system operation, said system comprising:

- (a) a power conversion bridge having a plurality of controlled rectifiers for converting said direct current power to variable frequency alternating power in response to gating signals applied thereto;
- (b) means for generating timing pulses and direction signals in response to said input command signal comprising,
 - (1) means to generate a generally saw-tooth wave shape signal of substantially constant peak amplitude having a frequency proportional to the magnitude of said input command signal and a relative polarity dependent upon the relative polarity of said command signal,
 - (2) first comparator means responsive to said saw-tooth wave shape to produce said timing pulses at approximately the time of peak amplitude of said wave shape signal, and
 - (3) second comparator means responsive to said saw-tooth wave shape signal to effect the production of said direction signals in response to a wave shape signal amplitude less than said peak and at a time earlier than said peak amplitude is reached; and
- (c) means responsive to said timing pulses and said direction signals for generating the gating signals for controlling the operation of the controlled rectifiers of the bridge.

4,247,891

LEADING ZERO COUNT FORMATION

Richard T. Flynn, Peoria, and Jerry L. Kindell, Glendale, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1979, Ser. No. 232

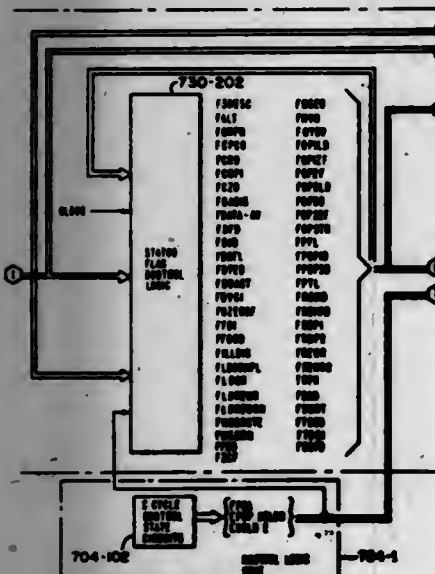
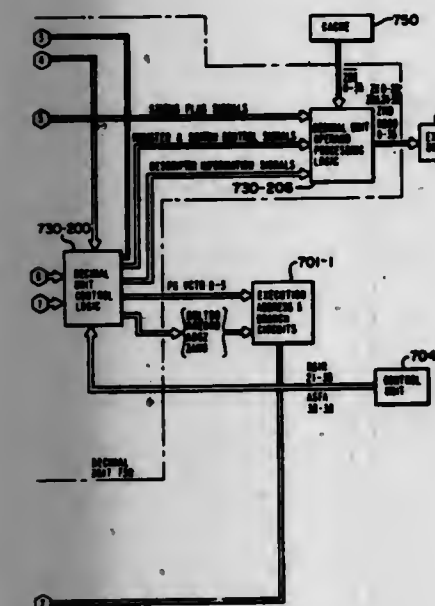
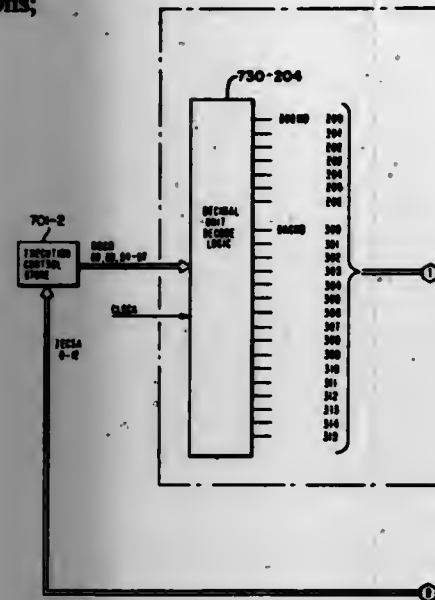
Int. Cl.³ G06F 7/38

U.S. Cl. 364-200

5 Claims

1. A data processing system comprising:
a cache memory for storing operand words and instructions including descriptors for defining the characteristics of said operands, said operand word includes a first predetermined number of decimal digits;
a decimal unit coupled to said cache memory for receiving said operands for assembly into significant digit words in accordance with said descriptors by stripping zone bits, sign characters and exponent characters from said operands and for counting the number of leading zero digits of

an operand on the same operational cycle in which the operand word is processed through the decimal unit; an execution unit coupled to said decimal unit for receiving said significant decimal digit words for performing a decimal numeric operation in accordance with said instructions;



said decimal unit comprising:

first means responsive to said descriptors for generating a plurality of adjusted length signals indicative of the number of words in said operand;
second means coupled to said first means for complementing selected ones of said plurality of adjusted length signals for generating complemented signals indicative of a count

of the number of words containing all leading zero digits, wherein the number of words in said operand and the number of words containing all of said leading zero digits equal a second predetermined number;

a leading zero register having at least a first portion coupled to said second means for storing said complemented signals, and a second portion;

third means coupled to said cache memory and responsive to said operands for generating decimal digit words by stripping zone bits, sign characters and exponent characters from said operands;

fourth means coupled to said third means and said first portion for detecting all leading zeros in said decimal digit words, and generating a first signal in a first state, for incrementing the contents of said first portion by a third predetermined number, and said fourth means being coupled to said second portion and generating said first signal in said second state, and a plurality of second signals indicative of the number of leading zero digits in said decimal digit word containing a most significant digit, said leading zero register storing said leading zero count signals and is available to said execution unit in response to a microword command;

Fifth means coupled to said third means and fourth means, and responsive to said first signal in said second state for generating and transferring said significant decimal digit words to said execution unit.

4,247,892

ARRAYS OF MACHINES SUCH AS COMPUTERS

Patrick N. Lawrence, P.O. Box 9212, Austin, Tex. 78766

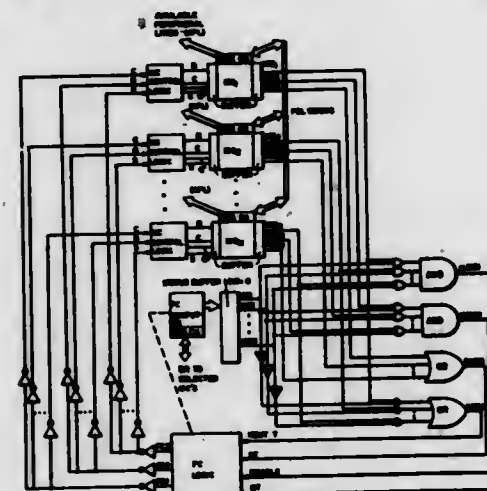
Continuation of Ser. No. 686,944, May 17, 1976, abandoned.

This application Oct. 12, 1978, Ser. No. 950,569

Int. Cl.³ G06F 15/16, 13/00

U.S. Cl. 364-200

29 Claims



1. A set of at least five data handling machines in which each machine has means for communicating with respect to the other machines of the set, said set having means including a system of one-way inter-machine communication channels interconnecting the machines in the set so that any machine in the set may communicate with any other machine in the set, each inter-machine communication channel extending between a single pair of machines of the set and permitting a data transmitting machine at one end of the channel to communicate data directly to a data receiving machine at the opposite end of that channel, a root machine of the set being connected only to each of a first subset of machines of the set for direct communication therewith by corresponding outgoing inter-machine communication channels of the system, each machine of the first subset being connected only to machines of a second subset of machines of the set for direct communication therewith by corresponding outgoing inter-machine communication channels of the system, with the number of outgoing inter-machine communication channels from each machine of the

first subset being equal to the number of outgoing inter-machine communication channels from the root machine, the machines of the second subset also being connected to machines of the set by outgoing inter-machine communication channels of the system, each of said subsets including at least two machines, the maximum number of inter-machine communication channels required for any machine in the set to communicate with any other machine of the set being equal to the maximum number of inter-machine communication channels required for communication between the root machine and a machine of the set that is most distant therefrom, the number of outgoing inter-machine communication channels from each machine being substantially smaller than the total number of machines in the set, each machine of the set having connected thereto as inputs outgoing inter-machine communication channels from other machines of the set so that each machine of the set may communicate with certain machines of the set directly and with the remaining machines of the set only via intermediate machines.

4,247,893

MEMORY INTERFACE DEVICE WITH PROCESSING CAPABILITY

Jack L. Anderson, Scottsdale, and Thomas J. Ralph, Tempe,

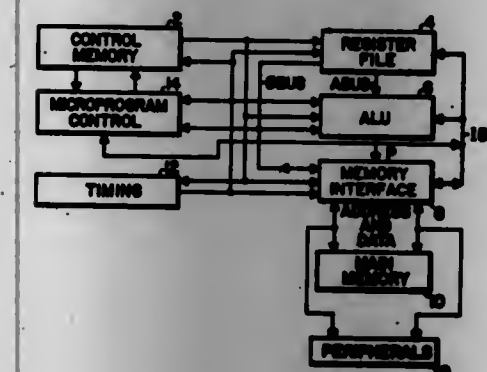
both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1977, Ser. No. 756,170

Int. Cl.³ G06F 9/32, 13/00

U.S. Cl. 364-200

4 Claims



1. In a system having a central processor including an arithmetic logic unit (ALU), and a memory unit (MU), a memory interface device between said central processor and said memory unit comprising:

- means coupling said central processor and said memory interface device for transmitting memory address information between said central processor and said memory interface device;
- means coupling said memory interface device and said memory unit for transmitting memory address information between said memory interface device and said memory unit;
- arithmetic and logic means within said memory interface device for arithmetically or logically operating on said address information, in response to control signals from other system elements, to generate an address to be transmitted to said memory unit;
- a register file within said memory interface device, said register file including a plurality of registers;
- means coupled to said arithmetic and logic means and to said register file for alternatively, selectively, providing an address to be transmitted to said memory unit from either a register within said register file, or a generated address from said arithmetic and logic means;
- means coupled to said means for providing an address for transmitting a selected one of the provided addresses from said memory interface device to said memory unit, and
- means for transmitting data between said memory interface device and said memory unit for storage or retrieval of such data in said memory unit at a location defined by

the address transmitted thereto from said memory interface device.

4,247,894

ARRANGEMENT FOR PROGRAM INTERRUPTION

Walter F. Beismann, Altdorf; Hans H. Lampe, Herrenberg, and Werner H. Pohle, Grafenau, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

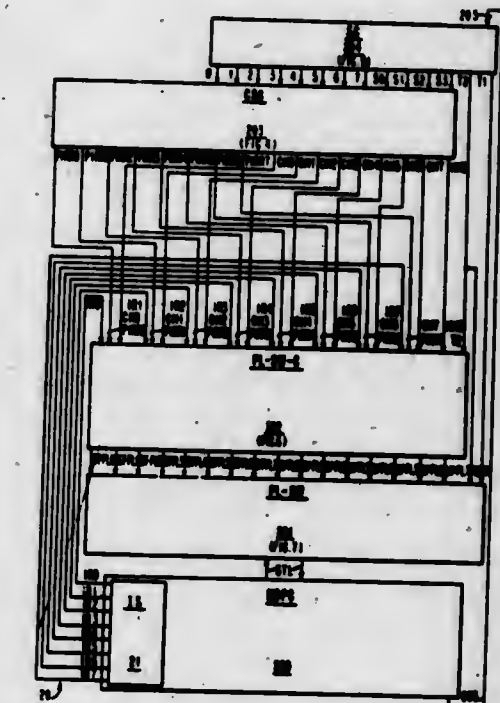
Filed Nov. 20, 1978, Ser. No. 962,549

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2754890

Int. Cl.³ G06F 9/46

U.S. Cl. 364-200

15 Claims



1. In a data processing system adapted for processing instructions in a plurality of different program levels having respectively different assigned priorities—wherein said system includes means for defining repetitive microcycles of predetermined duration, means for processing instructions in any selected one of said program levels characterized in that the processing of each instruction spans a plurality of consecutive ones of said microcycles, means for manifesting interruption request conditions in association with each of said program levels characterized in that the request conditions associated with any level have a priority relative to request conditions associated with other levels corresponding to the priority of the associated level relative to the priorities of the other levels, and means conditionally responsive to said manifested request conditions for performing a program level switching operation relative to a selected one of said request conditions, each said switching operation characterized in that it preserves status information relative to the program level in which instructions are currently being processed by said instruction processing means and conditions said instruction processing means for initiating processing of instructions in the program level associated with the selected interruption request condition—the improvement comprising:

means enabling said program level switching means to perform each one of its program level switching operations in a time interval coinciding with a single one of said microcycles during which said instruction processing means may be coincidentally performing a processing operation on any instruction in any of said levels;
means associated with said instruction processing means for generating a master mask signal in association with the processing of any instruction by said processing means, said master mask signal having a duration coinciding with the duration of any selectively predetermined one of the

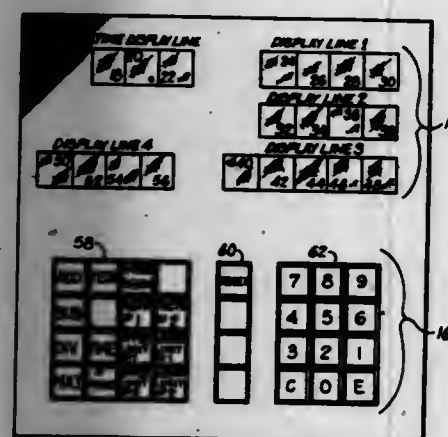
microcycles spanned by the processing of the respective instruction; and
means responsive to said master mask signals and said manifested interruption request conditions, for conditioning said program level switching means to be able to perform a said program level switching operation only during the generation of a said master mask signal.

4,247,895

DUAL MODE ARITHMETIC TEACHING APPARATUS
Randy C. Weber, 13012 St. Thomas Dr., Santa Ana, Calif. 92705
Filed Mar. 9, 1979, Ser. No. 18,924
Int. Cl.³ G09B 7/02

U.S. Cl. 364-419

9 Claims



7. An electronic arithmetic teaching apparatus comprising:
a keyboard having numerical value keys for entering numerical parameters of arithmetic problems to be presented to a student and for entering proposed solutions to problems presented to the student, said keyboard also having keys numerical value;
a display for indicating the parameters and numerical values of problems presented to the student and the proposed solution entered by the student by means of said keyboard;
a programmed computer connected to said keyboard and to said display for generating arithmetic problems for presentation for processing proposed solutions, and for indicating by means of said display whether or not such proposed solutions are correct; and
means on said keyboard, including at least two of said keys without numerical value, for selecting either of two modes of operation said two modes comprising a first mode in which a selected number of problems are presented to the student for solution without a time limit and a second mode in which problems are presented to the student for solution within a selected time limit.

4,247,896

GUIDANCE CONTROL SYSTEM FOR A STEERABLE, TRACKLESS VEHICLE
Eberhard Schnabel, Hemmingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,566
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810664

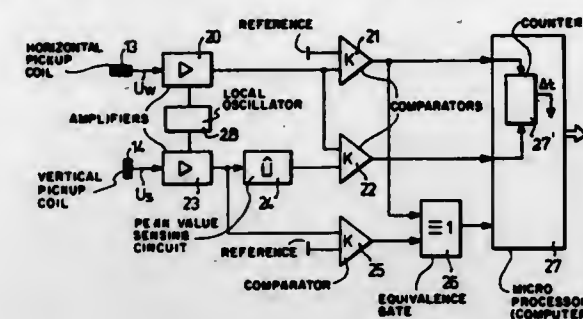
Int. Cl.³ G06F 15/50; G06G 7/78

U.S. Cl. 364-436

10 Claims

1. Guidance control system for a steerable, trackless vehicle having
a guidance cable (12) positioned in a guidance path, energized by an a-c alternating signal;
at least two pick-up coils (13, 14) in electromagnetic coupling with the field from the guidance cable, said coils being positioned on the vehicle at predetermined height from the cable and having, respectively, horizontal (13) and vertical (14) coil axes,

and comprising, in accordance with the invention,
means (21) sensing when the signal (U_w) induced in the horizontal coil (13) passes through zero;
means (24) determining the peak value (U_z) of the signal (U_z) induced in the vertical coil (14);
means (22) generating an equality signal when said peak value and said horizontal coil signal are equal;



means (27, 30) determining the time interval (Δt) between the sensed passage through zero of the signal (U_w) induced in the first coil and the occurrence (T_0) of the equality signal, and providing an output signal, said output signal being available as an output for the steering control system of the vehicle as a steering command signal therefor.

4,247,897

TRAIN VEHICLE CONTROL MICROPROCESSOR POWER RESET

Michael P. McDonald, Pittsburgh, and Larry W. Anderson, West Mifflin, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

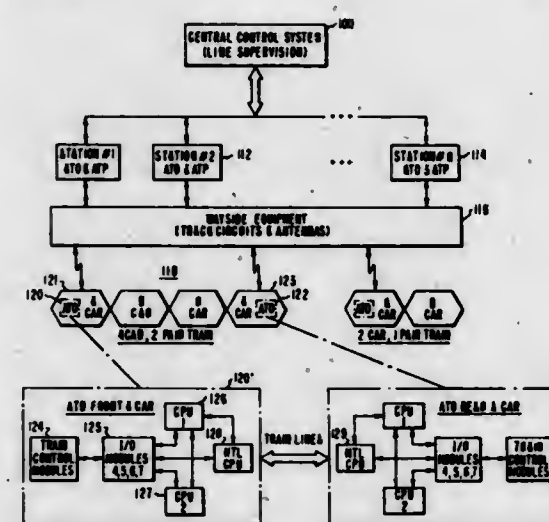
Continuation of Ser. No. 920,316, Jun. 28, 1978, abandoned.

This application Oct. 25, 1979, Ser. No. 88,246

Int. Cl.³ B61L 27/00

U.S. Cl. 364-436

8 Claims



1. In apparatus for determining the desired performance of a vehicle, the combination of
means for providing a first operation periodically executing a sequence of steps in relation to said desired performance of the vehicle and developing an output signal for each periodic completion of the sequence of steps and for providing a second operation effecting a predetermined reinitialization of said first operation,
means responsive to the respective output signals being developed at an actual repetition rate in accordance with each periodic completion of the sequence of steps for selecting one of the first operation and the second operation by a comparison of said actual repetition rate with a predetermined reference repetition rate, and
means responsive to each periodic execution of the sequence of steps for providing said desired performance of the vehicle.

4,247,898

APPARATUS FOR COMPUTING THE CHANGE IN BEARING OF AN OBJECT

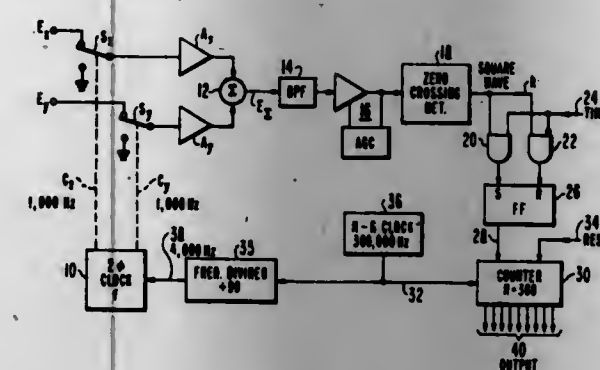
Robert J. Bosselaers, Winchester, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 27, 1978, Ser. No. 946,214

Int. Cl.³ G01R 25/00

U.S. Cl. 364-460

3 Claims



1. Means to compute the change in bearing of an object during a time period T from continuously-received signals E_x and E_y having amplitudes proportional to x and y components of the bearing of the object, comprising
a two-phase clock,
a summer,
switch means operated under control of the two outputs in different phases of said clock to apply said signals E_x and E_y in respective phases to said summer,
a filter to derive a sine wave from the output of said summer, means to translate the sine wave from said filter to a square wave, whereby the phase difference between said square wave and an output of said clock is a measure of the bearing of the object, and
means to determine the change in phase of said square wave during said time period T to provide a measure of the change in bearing of the object, said means to determine the change in phase of said square wave including a counter operated for an integral number of cycles of said square wave during the time period T , and said means to determine the change in phase of said square wave including a high-speed clock having an output coupled to the input of said counter, and coupled through a frequency divider to control said two-phase clock.

4,247,899

FUEL DELIVERY CONTROL AND REGISTRATION SYSTEM

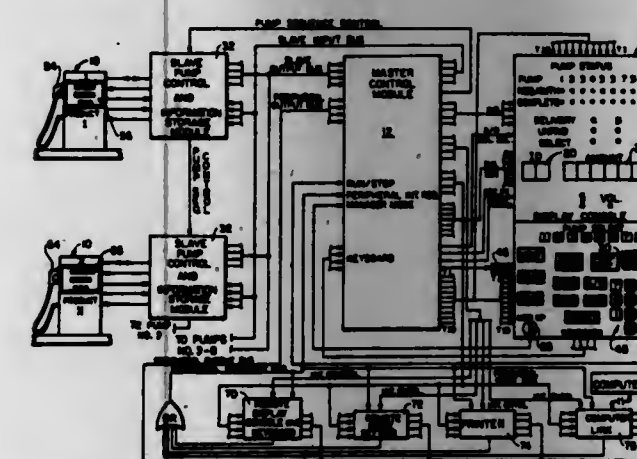
Robert J. Schiller, Simsbury, and Neal M. Alderman, Manchester, both of Conn., assignors to Veeder Industries Inc., Hartford, Conn.

Filed Jan. 10, 1979, Ser. No. 2,310

Int. Cl.³ G06F 15/56; B67D 3/00

U.S. Cl. 364-465

11 Claims



11. In a fuel delivery control and registration system for

retrofitting a plurality of separate independently operable fuel delivery dispensers, each independently settable to establish the unit volume price of fuel delivered therefrom and adapted to be independently activated for delivering fuel and registering the cost amount of fuel delivered in accordance with the unit volume price established by the dispenser, comprising a cost pulse generator for each dispenser connected to the dispenser for generating a cost pulse for each predetermined cost amount of fuel delivered thereby in accordance with the unit volume price established by the dispenser, register means operable for independently registering the cost amount of fuel delivered by each dispenser in accordance with the number of cost pulses generated by the corresponding cost pulse generator and control means comprising a keyboard having a plurality of manually operable switches and electronic computer means operatively connected to the register means, keyboard switches and each dispenser and corresponding cost pulse generator and selectively operable by selective manual operation of the keyboard switches to independently activate each dispenser for delivering fuel and to accumulate the cost amount of fuel delivered thereby and selectively operable by selective manual operation of the keyboard switches to operate the register means to independently register the accumulated cost amount of fuel delivered by each dispenser in accordance with the number of cost pulses generated by the corresponding cost pulse generator, the improvement wherein the electronic computer means comprises a master electronic microprocessor module operatively connected to the register means and keyboard switches, and a plurality of dedicated slave electronic microprocessor modules operatively connected to the plurality of fuel dispensers and corresponding cost pulse generators respectively and to the master module for communications therebetween, each slave module being independently operable by selective manual operation of the keyboard switches and through communication between the master module and the slave module to activate the respective dispenser for delivering fuel and to accumulate the cost amount of fuel delivered thereby in accordance with the number of cost pulses generated by the corresponding cost pulse generator, the master module being selectively operable by selective manual operation of the keyboard switches to operate the register means to independently register the accumulated cost amount of fuel delivered by each dispenser and communicated to the master module from the respective slave module, the electronic computer means being operable to condition the plurality of separate dispensers to be independently activated for delivering fuel and for registering the cost amount of fuel delivered thereby independently of the electronic computer means and in accordance with the unit volume price established by the dispenser.

4,247,900

SIGNAL COMBINER WITH PERMUTED ADDRESSING
Walter J. Martin, Portsmouth, and John Furtado, Tiverton, both of R.I., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 746,276, Dec. 1, 1976, Pat. No. 4,107,685.

This application Jun. 23, 1978, Ser. No. 918,614

The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.

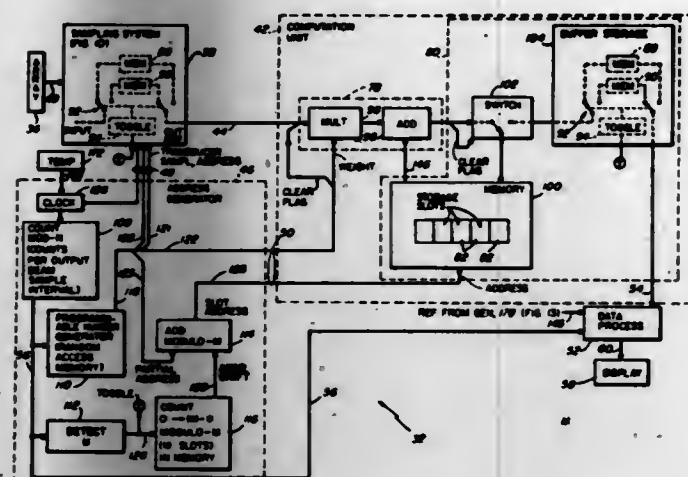
Int. Cl.³ G01S 3/80; H04B 11/00

U.S. Cl. 364-581

7 Claims

1. A signal processor for processing a set of input signals to a set of output signals comprising:
means for sampling said set of input signals at a predetermined output sample rate;
means for storing sampled signals of said set of input signals, said storing means containing locations for storing individual ones representing partial sums of said set of input signals, individual ones of said locations being identified by addresses;
means coupled to said storing means for combining, by a sequence of operations, signals of said set of input signals with signals stored in locations of said storing means at said predetermined output sample rate; and

means coupled to said storing means for providing addresses, said addressing means including means coupled to said combining means for permuting said addresses between sequential ones of said combining operations at the



predetermined sample rate of one section of said storing means per output sample interval, said permuted addresses being coupled to said storing means to produce output signals at said output sample rate.

4,247,901

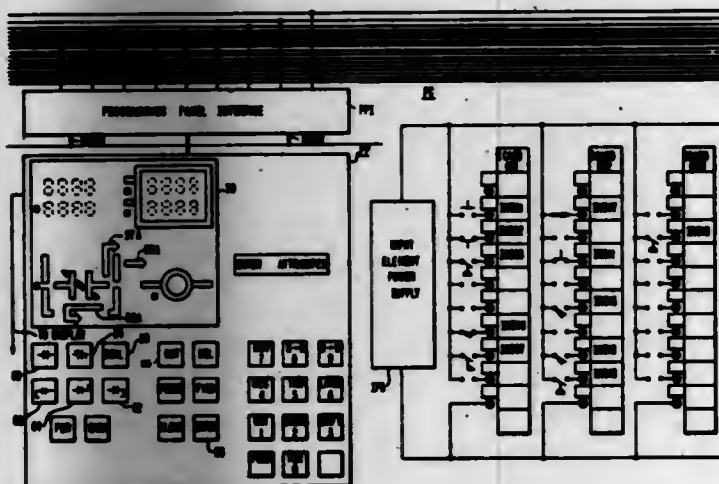
PROGRAMMABLE DUAL STACK RELAY LADDER DIAGRAM LINE SOLVER AND PROGRAMMING PANEL THEREFOR WITH PROMPTER

Jonathan F. Martin, Clinton Township, Hunterdon County, and David M. Charba, Pontiac, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1979, Ser. No. 2,141
Int. Cl.³ G06F 9/00, 15/46

U.S. Cl. 364-900

12 Claims



1. A programmable controller, comprising:
 - (a) operating means for operating on data in a predetermined sequence, said sequence being implicit in the interrelationship of subportions of said data, said operating means providing an output related to said sequence and said data;
 - (b) sequence sensitive entry means interconnected with said operating means for providing said data to said operating means one subportion thereof at a time with a sequence attribute for each said subportion, said sequence attribute being indicative of the place of entry in said sequence of a later subportion; and
 - (c) prompting means interconnected with said entry means for identifying the next subportion of said data to be entered to maintain said sequence as a function of the sequence attribute of the present subportion.

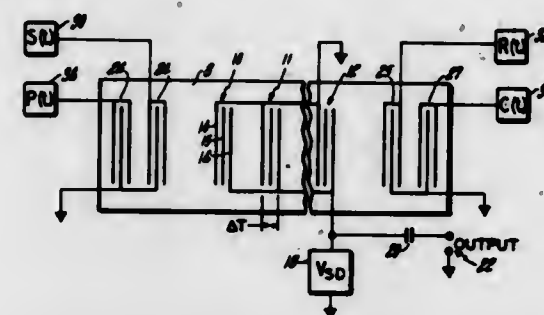
4,247,902
DISPLAY FOR ELECTRONIC CALCULATOR
Ichiro Sado, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 8, 1979, Ser. No. 18,634
Claims priority, application Japan, Mar. 9, 1978, 53-27053
Int. Cl.³ G06F 3/14
U.S. Cl. 364-710 2 Claims

ROWS	COLUMNS	SYMBOLS	NUMBERS
1	1	—	1.2
1	2	—	3.0
1	3	7	4.5
2	1	—	6.7
2	2	—	8.9
2	3	—	0.1
3	1	L	2.3
3	2	—	4.0
3	3	J	5.6

DISPLAY DS

1. A display device for use in electronic calculators comprising:
 - first display means for displaying numerical data of a determinant; and
 - second display means for displaying data of a position in row and in column of the determinant associated with the numerical data.

4,247,903
MONOLITHIC ISOLATED GATE FET SAW SIGNAL PROCESSOR
Thomas W. Gradkowski, Glastonbury, Conn., and Thomas M. Reeder, Portland, Oreg., assignors to United Technologies Corporation, Hartford, Conn.
Filed Jan. 8, 1979, Ser. No. 1,628
Int. Cl.³ G06G 7/195; H01L 41/08
U.S. Cl. 364-821 2 Claims



2. In a method of correlating amplitude and/or phase coded signals by means employing a surface acoustic wave module in which the temporal extent of the coded waves is much greater than the propagation delay time of the surface acoustic wave module, the steps of:
 - launching a pair of waves into a surface acoustic wave module comprising a piezoelectric and semiconductive substrate having a plurality of taps disposed on the surface along a propagation path between wave launching transducers, each of said taps including at least one drain electrode having an ohmic contact with said substrate, the drain electrodes of all of the taps being connected together, a gate electrode having a rectifying contact with said substrate, the gate electrode of each tap being totally ohmically isolated, and at least one source electrode having an ohmic contact with said substrate, the source electrodes of all the taps being connected together, said wave being launched in relation with each other so as to achieve coincidence of like coding at one tap within said substrate, one of said waves being a signal to be correlated with the

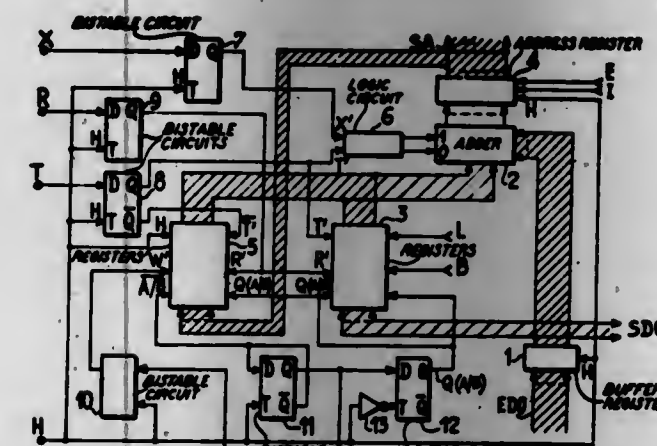
other of said waves which comprises a reference wave having the desired coding and the same frequency as the signal to be correlated;

biasing said taps by providing a bias voltage between said common sources and said common drains, said bias voltage being applied during the time that said waves are interacting in said module, said bias voltage being such as will provide an electric field beneath each of the taps to induce a significant amount of nonlinear product mixing of said waves, one of the components of which is a standing wave, consisting of a steady state electric field at each tap corresponding with each component of the waves being correlated, such that only a tap having components of both waves thereat continuously in code coincidence as the two waves pass beneath said tap are additive;

after the two launched signal and reference waves have subsided in said substrate, launching a carrier wave in said substrate at a first frequency, and thereafter launching an RF pulse in said substrate at a second frequency, said pulse having a duration substantially related to the propagation delay of waves across a single tap of said substrate, said carrier wave having a duration at least twice as great as the total propagation delay of waves through said substrate, said pulse being launched in timed relationship with said carrier wave so that said pulse will mix with said carrier wave at substantially all of said taps with mixing strength at any of the taps determined by the charge buildup occurring during said launching and biasing steps; and

extracting from all of said common sources and drains a signal which indicates the mixer efficiency at each of said taps by the amplitude of such signal at a third frequency which is selected from the sum and difference of the frequencies of said carrier and said pulse.

4,247,904
ADDRESSING UNIT FOR A MICROPROGRAMMED MEMORY
Duyet N. Huu, Jean-Claude Ballegoer, and Richard Good, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Jan. 14, 1977, Ser. No. 806,478
Claims priority, application France, Jun. 18, 1976, 76 18599
Int. Cl.³ G06F 9/26
U.S. Cl. 364-900 6 Claims



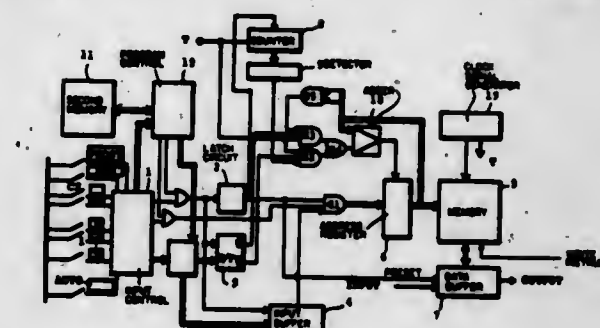
1. An addressing unit for use with a microprogrammed memory in which first and second instruction sequences have been recorded; each instruction sequence including at least first and second instructions, each instruction including a data field including data specifying the address of the next instruction to be executed, said first and second sequences respectively relating to the exchange of data from a first unit to a second unit of a data processing system and from the second unit to the first unit of the data processing system, said addressing unit comprising:
 - a first means for addressing said instructions of said sequences, said addressing means addressing said first instruction of said first sequence;

second means for reading said instructions of said sequences from said memory, said reading means reading said first instruction of said first sequence;

third means for storing the data from the data field associated with said instructions the data from said data field for use in calculating the address of the next instruction to be executed, said storing means storing the data from the data field associated with said first instruction for use in calculating the address of the next instruction to be executed, the next instruction belonging to said second sequence;

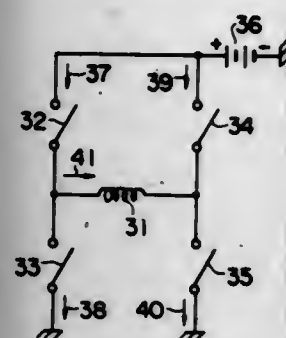
a single calculating circuit for receiving data from said data field of said first instruction including data specifying the address of the next instruction to be executed and calculating from said data the address of the next instruction to be addressed and read, and supplying said calculated address to said means for addressing, said next instruction belonging to the second sequence, said single calculating circuit and the combination of said first, second, and third means operating simultaneously and at the same clock rate and both alternately, from one clock period to the next, respectively on the first and on the second of said two sequences and then vice versa at a fixed clock rate.

4,247,905
MEMORY CLEAR SYSTEM
Yukihiro Yoshida, Ikoma; Toru Izaki, Nara; Toshiyuki Maegawa, Higashiosaka, and Satoshi Tomimaga, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 26, 1977, Ser. No. 828,174
Int. Cl.³ G06F 3/02, 13/00, 13/06
U.S. Cl. 364-900 8 Claims



1. A system for automatically and selectively clearing all or a portion of a memory means having a capacity to store a plurality of words comprising:
 - first means for instructing said system to begin a memory clear operation;
 - second means for designating a starting address within said plurality of the words for the purpose of said memory clear operation;
 - means responsive to said second means for setting a memory address register at said designated starting address;
 - third means for entering a value n into said system representing the number of said plurality of words in said memory means undergoing clearing;
 - fourth means for instructing start of the clear operation; and
 - control means for automatically and sequentially advancing the starting address in the address register a number of times equal to said value n entered into said system via said third means in response to instructing the clear operation via said fourth means, thereby automatically and selectively clearing a predetermined number n of said plurality of words in said memory means extending from said designated address to an end address in response to said first, second and fourth means, said control means including circuit means responsive to the presence and absence of actuation of said second means prior in sequence to said fourth means to automatically and selectively clear a portion or all, respectively, of said memory means.

circuit to provide direct current voltage to each of said series circuits;
one or more drive coils connected between a connection point of the first and second bi-directional switches of said first series circuit and a connection point of the third and fourth bi-directional switches of said second series circuit; and
a switch control circuit for controlling the opening and closing operation of said first, second, third, and fourth bi-directional switches to produce an alternating current flow into said one or more drive coils;



wherein said switch control circuit controls the opening and closing operation of said first, second, third, and fourth bi-directional switches so that the waveform of said alternating current has a time region of a predetermined length in which a time-differentiated value of said waveform is zero when the current going from the positive polarity to the negative polarity or going from the negative polarity to the positive polarity crosses a zero value on the time axis.

4,247,912

MAGNETIC BUBBLE DOMAIN CHIP WITH ENHANCED PROPAGATION MARGINS

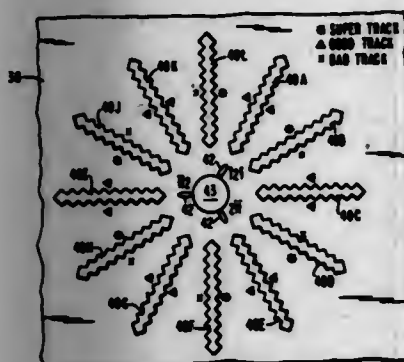
Clifton D. Callum, Jr., Putnam Valley; George E. Keefe, Montrose, both of N.Y.; Mark H. Kryder, Bradford Woods, Pa., and Yeong-Shou Lin, Mount Kisco, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,960

Int. Cl. G11C 19/08

U.S. Cl. 365-15

36 Claims



1. A magnetic bubble domain chip, comprising:
a magnetic medium in which bubble domains can be moved, at least one crystalline layer having its magnetization substantially in the plane of said layer and exhibiting multi-directional crystalline symmetry in the plane of said layer, there being at least two directions along which a bubble domain will easily strip-out;
a plurality of registers for moving said bubble domains in said magnetic medium along preferred directions having an orientation relationship to said crystalline symmetry in the plane of said layer to define propagation tracks which provide good propagation margins for movement of bubbles therealong, at least one of said propagation tracks

being along one of said directions of easy strip-out of a bubble domain.

4,247,913

PROTECTION CIRCUIT FOR STORAGE OF VOLATILE DATA

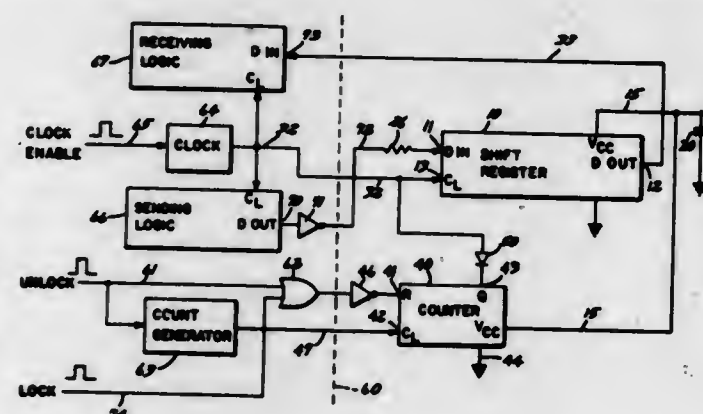
Thomas K. Hinkler, Mankato, and Vincent N. Bush, Madison Lake, both of Minn., assignors to Hinkler Company, Mankato, Minn.

Filed May 10, 1979, Ser. No. 37,743

Int. Cl. G11C 7/02

U.S. Cl. 365-228

10 Claims



1. A protected memory circuit for use with an electronic data system, comprising:

memory means for storage of electronic data, including input and output means for connection to said system for transfer of data between said memory means and said system;

means for selectively inhibiting and enabling said memory means with respect to the input or output of data; and
memory control means connected to said inhibiting and enabling means and adapted to receive control pulses from said system, said memory control means responsive to the receipt of a predetermined plurality of control pulses to enable said memory means for the input or output of data, and operative in the absence of said predetermined number of control pulses to inhibit said memory means.

4,247,914

OPTICAL MEMORY WITH FIBER OPTIC LIGHT GUIDE

Philip S. Brody, Brookmont, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 12, 1979, Ser. No. 47,675

Int. Cl. G11C 11/42

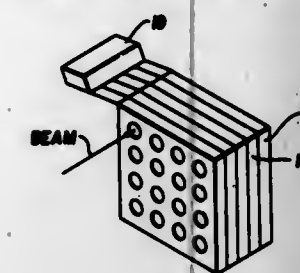
U.S. Cl. 365-109

9 Claims

1. A memory comprised of a solid three-dimensional block of material having a plurality of individual cavities disposed therein for admitting light to the interior of said block for optical writing and reading of information at selected internal positions of said block, the improvement wherein each of said cavities has an elongated cylindrical insert disposed therein and wherein each insert is comprised of a cylindrical fiber optic light guide means for facilitating transmission of light

through the entire length of said cavity and having means at spaced intervals for allowing illumination to leak out laterally

a different one of said drain regions on the driver transistors.



of said guide means to thereby illuminate the interior of the entire length of said cavity.

4,247,915

PUNCH-THROUGH LOAD DEVICES IN HIGH DENSITY STATIC MEMORY CELL

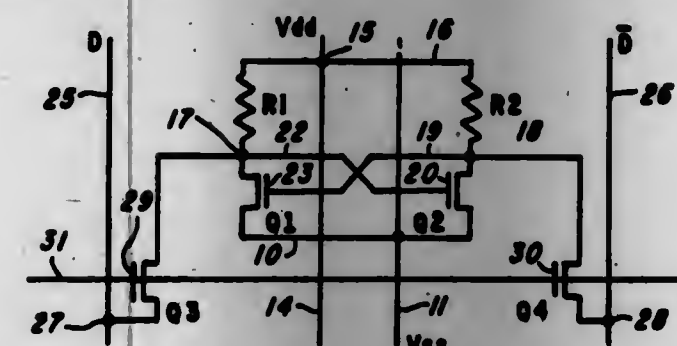
Keith G. Bartlett, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1979, Ser. No. 622

Int. Cl. G11C 11/40

U.S. Cl. 365-154

10 Claims



1. A static memory cell of the type formed in a face of a semiconductor body and having:

a pair of driver transistors each having source and drain regions, a channel, and a gate, the source and drain regions being formed by heavily doped regions in the face of the semiconductor body, the gates overlying the channels and separated therefrom by a gate oxide layer;

conductive means separately connecting the drain regions of each of the driver transistors to the gate of the other driver transistor to provide a cross-coupled bistable circuit, the conductive means overlying said layer of field oxide;

a pair of access transistors each having a source to drain path and a gate; p1 a pair of data lines on said face with means coupling each data line separately through the source to drain path of a different one of the access transistors to the drain region of a different one of the driver transistors; and an address line on said face connected to the gate of both of the access transistors;

the improvement comprising:

a pair of load devices at said face of the body with each load device being a punch-through MOS short channel transistor having one electrode coupled to a voltage supply line on said face and a second electrode coupled separately to

1. A random access memory capable of writing and storing data in and reading data out, formed by an array of semiconductor switches responsive to electrical control signals for redistributing carriers of one polarity type during writing as a function of data in, which redistributed carriers at least partially determine the data out current of the opposite polarity type carriers during reading, comprising:

a semiconductor substrate means of the one polarity type formed by a bulk portion and a processed portion;

a plurality of spaced source means and drain means of the opposite polarity type within the processed portion of the substrate means, and extending thereacross defining the array of semiconductor switches;

read path means within the processed portion of the substrate means between the source means and the drain means of each semiconductor switch for conducting the data out current during read;

memory storage means within the processed portion of the substrate means switch proximate the read path of each semiconductor switch, which receives a controlled quantity of carriers of the one polarity type from the bulk portion of the substrate means during writing as a function of the data in for determining the data out current between the source means and the drain means during read;

isolation means at least a portion of which is dynamic for storing carriers of the one polarity type in the memory storage means.

write path means within the processed portion of the substrate means, one for each semiconductor switch communicating between the memory storage means and the bulk portion of the substrate means for conducting the one polarity type carrier redistributed during writing; and

control means proximate the path means within each semiconductor switch, responsive to the electrical control signals for establishing electrical fields which control the dynamic portion of the isolation means permitting control of the redistribution of the one polarity type carriers as a function of data in, and which promote data out current of the opposite polarity type carriers during read as a function of the one polarity type carriers stored in the memory storage means.

path upon the basis of the time interval between transmission and reception of said sonic signal; and, said vehicle further carries means for providing an indication that the position of said vehicle is to be determined, and for causing said second transmitter means to transmit a third signal in response to said indication, and wherein said first transmitter means is actuated to transmit said first signal when said third signal is received by said second receiving means.

4,247,923

METHOD AND APPARATUS FOR DETECTING THE LOCATION OF A MARINE PIPELINE OR CABLE
Robbert J. De Kok, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

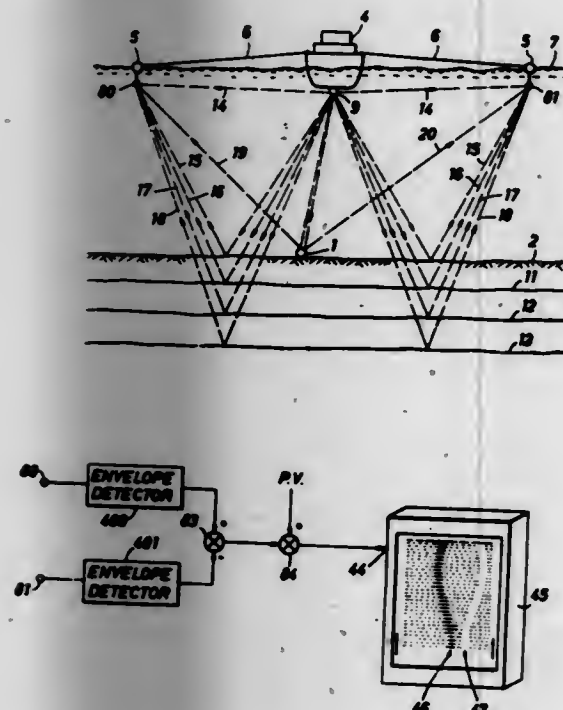
Filed May 25, 1979, Ser. No. 42,398

Claims priority, application United Kingdom, Oct. 23, 1978, 41648/78

Int. Cl.³ G01S 15/06

U.S. Cl. 367—88

16 Claims



1. Method for detecting the location of a marine pipeline or a cable by means of a sequence of acoustic wave pulses received by a first and a second submarine wave receiving means situated at substantially equal depth below the water level and generated by submarine wave transmitting means symmetrically arranged with respect to the plane of symmetry of said first and said second wave receiving means, wherein said wave pulses pass from said transmitting means to said first and said second receiving means directly as well as indirectly, by being reflected by submarine bottom layers and by said pipeline or said cable, said method comprising the steps of:

obtaining after each transmittal of an acoustic pulse a first and a second signal as a function of time of the amplitudes of said acoustic waves received by said first and said second receiving means, respectively, said first and said second signal forming a pair of signals, each signal of said pair of signals including a first part representing the wave pulse reflections by said pipeline, and both signals of a pair further including second parts substantially identical to each other and representing direct wave pulses and wave pulse reflections other than those originating from said pipeline;

combining the signals of each pair and displaying a separate record of said combined signals; distinguishing in said separate record of said combined signals said first parts from each other as well as from said

substantially identical second parts when said pipeline or cable is outside the plane of symmetry; and, displaying said separate records in the same sequence as the sequence of the transmitted acoustic pulses from which they originate.

4,247,924

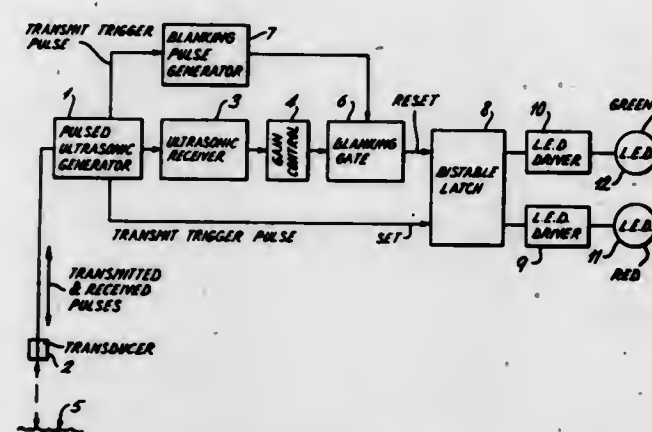
PROXIMITY INDICATING EQUIPMENT
Albert A. Baird, Southampton, England, assignor to National Research Development Corporation, London, England
Filed Mar. 2, 1979, Ser. No. 17,145

Claims priority, application United Kingdom, Mar. 8, 1978, 09188/78

Int. Cl.³ G01S 15/14

U.S. Cl. 367—110

1 Claim



1. Proximity indicating equipment comprising a pulsed sonar transmitter, a sonar receiver, a gain control circuit included in said receiver for passing only received signals above a predetermined level corresponding to echoes from less than a predetermined distance, a bistable circuit set by trigger pulses from the transmitter and reset by pulses that pass through said gain control circuit, and means indicating the state of the bistable circuit comprising differently colored light emitting diodes which are respectively energized in the set and reset states thereof so as to indicate when only one color is visible a distance greater than said predetermined distance and when only the other color is visible a distance less than the said predetermined distance and when both colors alternate a distance substantially equal to the said predetermined distance.

4,247,925

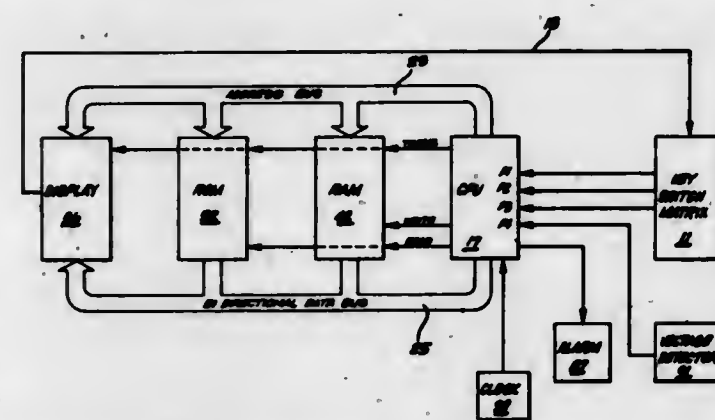
GAME MICROCOMPUTER
Joseph Meshi, 2268 Golden Cir., Newport Beach, Calif. 92660, and Jeffrey R. Ponsor, 11230 Calle Dario, San Diego, Calif. 92126

Filed Jul. 13, 1978, Ser. No. 924,181

Int. Cl.³ G04F 8/00

U.S. Cl. 368—3

9 Claims



1. A game clock, comprising: display means for displaying a plurality of digits of decimal numbers;

memory means coupled to said display means and operable for receiving and storing at least one pre-determined programmed time period, said display means operable for counting and displaying the count from said at least one pre-determined programmed time period stored in said memory means; and

control means coupled to said memory means and to said display means for instructing said display means to display said at least one pre-determined programmed time period and for starting and stopping said counting of said display means, said memory means operable to receive and separately store each and every one of the decimal number displayed each time said control means stops said counting of said display means, said control means operable to change each and every one of said decimal numbers separately stored in said memory thereby adjusting said count displayed by said display means.

4,247,926

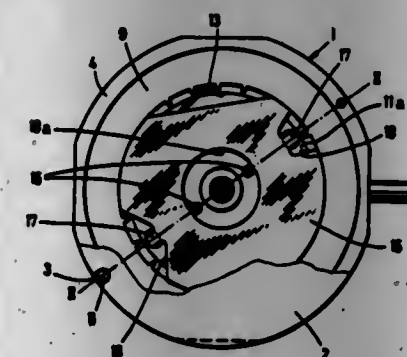
WATCH MOVEMENT
Peter Bachmann, Bettlach, Switzerland, assignor to Etsches Bettloch, S.A., Bettlach, Switzerland
Continuation of Ser. No. 817,717, Jul. 21, 1977, abandoned. This application Jan. 27, 1979, Ser. No. 52,461

Claims priority, application Switzerland, Aug. 9, 1976, 10133/76

Int. Cl.³ G04B 19/24, 19/06, 37/00

U.S. Cl. 368—28

6 Claims



1. A watch movement having a frame comprising a bottom plate provided with a plane upper face, with one or more holes in said face, with a peripheral rim portion and with an annular recess inwardly of said rim, said movement further comprising a dial secured to said rim portion, a date-ring lodged in said recess and a holding plate located between said dial and said bottom plate for holding said date-ring, said holding plate being made of a thin sheet of material, of generally plane configuration having a peripheral plane portion which extends above said date-ring and including one or more bent portions directed toward the bottom plate, received within said holes of said bottom plate, and forming positioning elements for said holding plate, and one or more raised support tongues cooperating with said dial for causing said dial to press said thin sheet of metal against said plane face.

4,247,927

DIGITAL ELECTRONIC TIMEPIECE
Mituo Oooka; Makoto Yoshida, both of Tokorozawa; Masami-chi Yamachi, Ichikawa, and Choken Suzuki, Tokyo, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Continuation of Ser. No. 784,742, Apr. 5, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,251

Claims priority, application Japan, Apr. 7, 1976, 51-39007; Apr. 7, 1976, 51-39008; Dec. 27, 1976, 51-157769

Int. Cl.³ G04G 9/06, 9/12

U.S. Cl. 368—30

7 Claims

1. A digital electronic timepiece comprising: circuit means for producing a signal having a period of

one-tenth second and a signal having a period of one seconds;

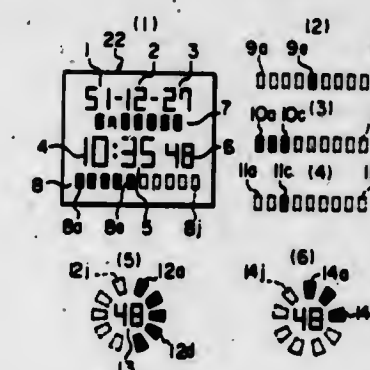
externally actuated switch means for producing switching signals;

control circuit means responsive to said switching signals for selectively producing a start signal, a stop signal, a reset signal and a chronograph display enable signal, said chronograph display enable signal going to a first logic level potential upon an initiation of said start signal and going to a second logic level potential upon a subsequent initiation of said stop signal;

timekeeping circuit means responsive to said one second signal for computing current time information and for producing timekeeping signals indicative thereof;

chronograph counter circuit means responsive to said one-tenth second signal and said start signal for computing elapsed time information in one-tenth second increments and for producing chronograph information signals indicative thereof, responsive to said stop signal for terminating said computation of elapsed time, and responsive to said reset signal for being reset to a count of zero;

liquid crystal display means having a first display section for displaying said timekeeping information in digital form, a second display section for displaying a portion of said chronograph information exceeding a value of one second, in digital form, and a third display section for displaying a portion of said chronograph information of value less than one second, said third display section comprising a



4,247,928

INTEGRAL LIGHTPIPE AND DISPLAY HOLDER FOR A TIMEPIECE

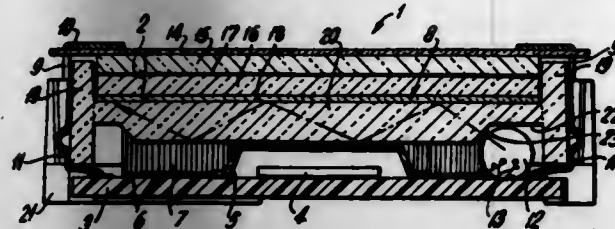
Leonard M. Dorfman, Santa Clara, Calif., assignor to Timex Corporation, Middlebury, Conn.

Filed Oct. 17, 1979, Ser. No. 86,009

Int. Cl.³ G04B 19/30

U.S. Cl. 368-67

8 Claims



1. In a timepiece having components including an electro-optic display, a substrate board having an integrated circuit adapted to actuate the display, and a light source for illuminating the display, the improvement comprising:

a pod molded of transparent light-transmitting material, said pod having recess-forming peripheral portions adapted to receive the display and substrate board and having a central integral flat portion interposed between the display and substrate board, said light source being disposed adjacent an edge defined by said flat portion in a lamp recess defined in the pod on the substrate side thereof, whereby said pod central flat portion transmits the light from said light source throughout said portion for illuminating the back of the display.

4,247,929

SWITCHING MECHANISM FOR ELECTRONIC WRISTWATCH

Takehiko Sasaki, Yamakoriyama, and Hidetoshi Maeda, Tezari, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 575,731, May 8, 1975, abandoned. This application Mar. 31, 1977, Ser. No. 783,405

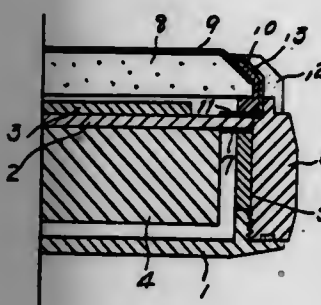
Claims priority, application Japan, May 8, 1974, 49-51456; Jul. 4, 1974, 49-77029

The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.

Int. Cl.³ G04C 17/00

U.S. Cl. 368-69

2 Claims



1. A touch-sensitive electronic switching system for an electronic wristwatch comprising:

a conductive rear cover on said electronic wristwatch normally engaged with the body skin of a wearer;
a front casing for said electronic wristwatch which is selectively engageable by the wearer with the hand of the wearer opposite to that on which the electronic wristwatch is being worn;
an electrode formed on said front casing of said electronic wristwatch;
insulating means for electrically isolating said electrode from said conductive rear cover; and
electronic switching means including first and second terminals connected to said electrode and said conductive rear

cover, respectively, said electronic switching means being actuated in response to interconnection of said first and second terminals through the resistance of the body of the wearer upon engagement of said electrode by said opposite hand of said wearer.

4,247,930

TIMEPIECE WITH HYBRID DISPLAY

Wolfram Martin, Darmstadt, Fed. Rep. of Germany, assignor to Gebrüder Junghans GmbH, Schramberg, Fed. Rep. of Germany

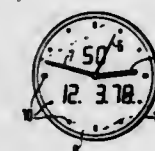
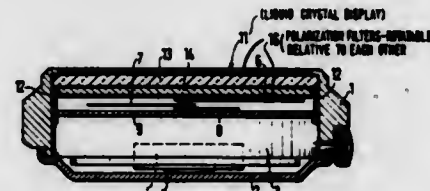
Filed May 11, 1979, Ser. No. 39,336

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821619

Int. Cl.³ G04C 19/00, 17/00

U.S. Cl. 368-84

4 Claims



1. In an electronic timepiece, particularly a battery-operated quartz wristwatch, including a housing; an analog display mechanism and a liquid crystal display unit being arranged in said housing to facilitate the display of different time magnitudes; the improvement comprising: said liquid crystal display unit being arranged in said housing in front of and superimposed on said analog display mechanism and said liquid crystal display unit having a transparent construction and forming the housing cover on the viewed side of said timepiece.

4,247,931

SLIP MECHANISM FOR A TIMEPIECE

Masuo Ogihara, Kozo Chimura, and Nobuo Shinozaki, all of Shikawatahi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

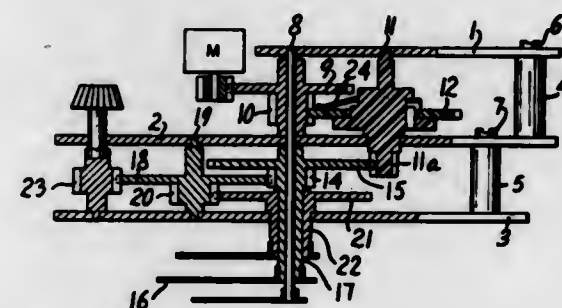
Filed Jun. 1, 1978, Ser. No. 911,320

Claims priority, application Japan, Jun. 14, 1977, 52-77335

Int. Cl.³ G04B 21/00, 13/00

U.S. Cl. 368-185

6 Claims



1. A slip mechanism for a timepiece having a gear train comprising: a rotatable shaft having axially disposed therealong and fixedly connected thereto a pinion, a flange for rotatable supporting thereon a gear wheel of the gear train during use of the slip mechanism, a mounting portion adjacent said flange for rotatably mounting the gear wheel, and two diametrically spaced apart slots each of which has an inner wall; and spring means resiliently urging the gear wheel into

frictional contact with said flange to form therebetween a frictional drive connection which can be overridden to permit rotational slipping of the gear wheel and flange relative to one another, said spring means comprising a generally U-shaped spring having two spring arms connected at one end by a base portion, the two spring arms engaging the inner walls of said two diametrically spaced apart slots to prevent relative rotation between said shaft and spring means.

4,247,932

ELECTRONIC TIMEPIECE

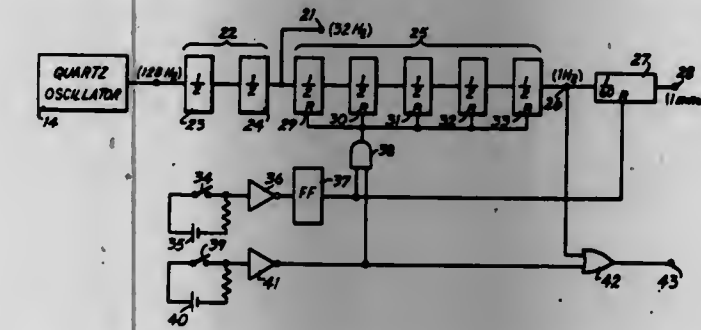
Yukio Kodama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 603,710, Aug. 11, 1975. This application Aug. 27, 1979, Ser. No. 70,416

Int. Cl.³ G04C 9/00; G04B 17/12

U.S. Cl. 368-187

16 Claims



1. A quick advancing signal generator for adjusting an electronic timepiece comprising frequency dividing means for generating a first signal of at least 1 Hz from a signal of a predetermined frequency, a "second" counter for counting said 1 Hz signal and including a reset terminal, an output terminal, a first input switch having a first and a second state, a second input switch having a first and a second state, means for generating a reset signal during the first state of said first input switch, means for applying said reset signal to the reset terminal of said "second" counter; first gating means for transferring said first signal from said frequency dividing means to said output terminal as a quick advancing signal in response to the first state of said second input switch, and second gating means for transferring said reset signal to said frequency dividing means in response to the second state of said second input switch to reset said frequency dividing means, said first gating means comprising, an OR gate having two inputs, said inputs being supplied with said first signal and a signal representing one of said first and second states of said second input switch, respectively, and an output of said first gating means being applied to said output terminal.

4,247,933

TIME STRIKING DEVICE FOR TIMEPIECE

Norihiko Nakamura, Tokyo, Japan, assignor to Rhythm Watch Company Limited, Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,468

Claims priority, application Japan, Jul. 20, 1978, 53-99976[U]; Mar. 30, 1979, 54-36979

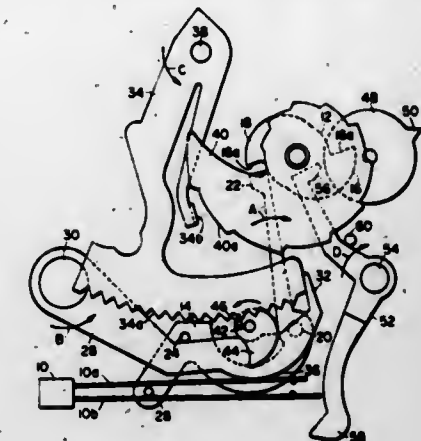
Int. Cl.³ G04B 21/04; G04C 21/08

U.S. Cl. 368-269

5 Claims

1. A time striking device for a timepiece comprising:
an electric time striking means;
an electric contact means electrically controlling the operation of said time striking means;
a time striking selecting cam plate synchronously rotating with a time indicating gear train to control said electric contact means in a state capable of closing circuit action at the striking time;
a time striking control cam plate synchronously rotating with the time indicating gear train to control said electric contact means in a state capable of closing circuit action at shorter interval than said time striking selecting cam plate;

a switching control lever, one end of which is engaged with said time striking control cam plate and the other end of which is engaged with an end portion of a moving contact plate of said electric contact means, to control switching on and off action of said electric contact means; and



a closing circuit action of said electric contact means in a state capable of closing circuit action by said time striking selecting cam plate and said time striking control cam plate performing a time striking operation of said electric time striking means.

4,247,934

TESTING SYSTEM FOR DATA TRANSMISSION PATHS

Karlheinz Pallas, Nuremberg, Fed. Rep. of Germany, assignor to Te Ka De Felten & Guilleume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

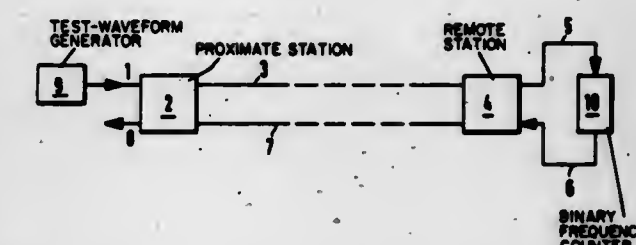
Filed Jun. 28, 1979, Ser. No. 52,979

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2829076

Int. Cl.³ H04J 15/00; H04B 3/46

U.S. Cl. 370-15

1 Claim



1. In combination with an asynchronously operating fully duplex data transmission path comprising a first and a second station, a first data transmission channel for transmitting data from the first to the second station at a respective first maximum data transmission rate, and a second data transmission channel for transmitting data from the second to the first station at a respective second maximum data transmission rate, the first maximum data transmission rate being at least several times higher than the second maximum data transmission rate, a novel testing system which comprises: means applying to the first station a test waveform for transmission to the second station along said first data transmission channel, the test waveform presenting a data transmission rate at least approximately equal to said first maximum data transmission rate; loopback means at the second station connected to receive the test waveform and applying a return waveform to the second station for transmission to the first station along said second data transmission channel, the loopback means including a binary frequency divider for reducing the waveform-element transmission rate of the test waveform to such a level that the waveform-element duration of the test waveform transmitted back along said second channel at least approximately corresponds to said second maximum data transmission rate.

4,247,935

ARRANGEMENT FOR CONVERTING START-STOP SIGNALS INTO AN ISOCRONOUS SIGNAL

Robert Bodart, and Jean P. A. R. J. Werts, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

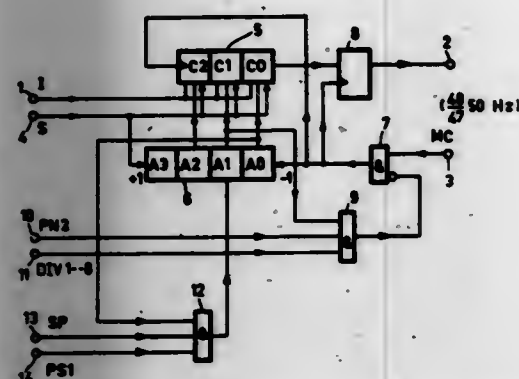
Filed Jan. 8, 1979, Ser. No. 47,183

Claims priority, application Netherlands, Jun. 16, 1978, 7806505

Int. Cl.³ H04L 5/00

U.S. Cl. 370-43

2 Claims



1. An arrangement for converting start-stop signals in a telex signal into an isochronous signal, comprising an elastic store in which sampling values, obtained by sampling the start-stop signal at sampling moments which have a given position with respect to given signal transitions, are stored and from which the sampling values are read consecutively at isochronous instants for forming the isochronous signal, wherein said arrangement further comprises a first means for preventing said reading of said elastic store for a period of at least one isochronous instant, whereby when, at the first sampling moment subsequent to a given stop-start transition, the elastic store does not contain a sampling value which has not yet been read and, furthermore, the next isochronous instant occurs within a predetermined interval which is less than the spacing between two consecutive isochronous instants after the sampling moment, a new sampling value is prevented from being read at the said isochronous instant and is not enabled until the next isochronous instant.

4,247,936

DIGITAL COMMUNICATIONS SYSTEM WITH AUTOMATIC FRAME SYNCHRONIZATION AND DETECTOR CIRCUITRY

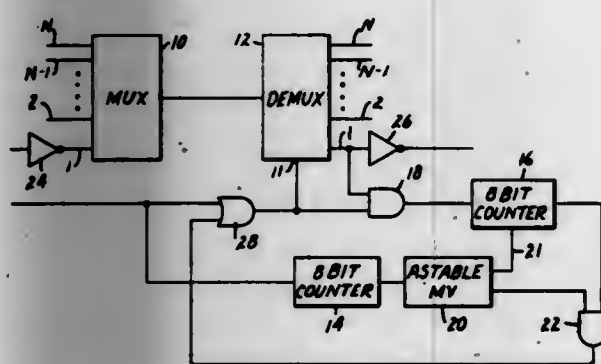
Charles H. Hustig, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 6, 1979, Ser. No. 45,860

Int. Cl.³ H04J 3/06

U.S. Cl. 370-100

15 Claims



12. Automatic frame synchronization circuitry including a first means having a digital signal input and operatively connected for establishing repetitive time periods, providing a measure of the time only one type of logic signal is presented to said input during each of said time periods

and providing a signal whenever said measure exceeds a predetermined amount; and a second means operatively connected to said first means and in response to each of said signals from said first means providing a signal usable as a demultiplexer strobe signal.

4,247,937

SYNTHESIS ARRANGEMENTS FOR USE IN DIGITAL DATA TRANSMISSION SYSTEMS

Martin R. A. Paesler, Burgham, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

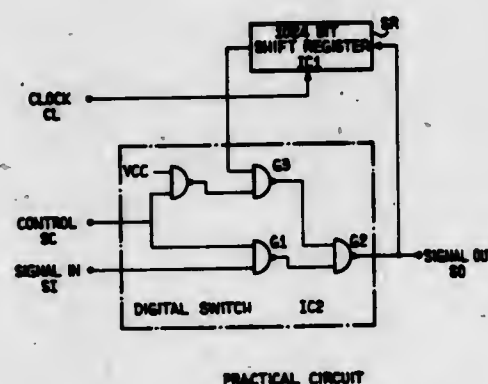
Filed Nov. 20, 1978, Ser. No. 961,969

Claims priority, application United Kingdom, Nov. 24, 1977, 48884/77

Int. Cl.³ H04J 3/07, 3/14

U.S. Cl. 370-102

4 Claims



1. A justification control signal synthesizer for use in a digital data transmission system employing justification control arrangements, the synthesizer comprising storage means arranged to receive and store the justification control signals of a tributary data stream passing over a data path and upon interruption of the tributary data stream the synthesizer includes means for injecting into the interrupted data stream justification control signals by injecting those signals stored in the storage means on a repetition basis into the data path until the interruption of the tributary data stream ends.

4,247,938

METHOD FOR GENERATING A PSEUDO-SIGNAL IN AN ERROR RATE SUPERVISORY UNIT AND CIRCUIT FOR CARRYING OUT THE SAME

Hiroshi Kurihara, Tokyo; Tadayoshi Katoh, Kawasaki, and Sadao Takenaka, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

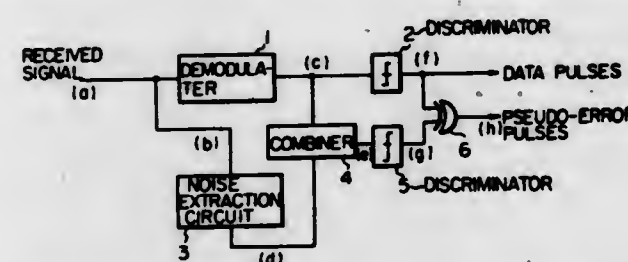
Filed May 18, 1979, Ser. No. 40,408

Claims priority, application Japan, May 23, 1978, 53-61835

Int. Cl.³ H04B 17/00; G06F 11/00

U.S. Cl. 371-5

19 Claims



1. A method for generating a pseudo-error signal from a received input signal comprising the steps of: demodulating the input signal to obtain a demodulated input signal; extracting a noise component from said input signal; adding said noise component and said demodulated input signal to obtain an added signal; providing a pseudo-error signal in dependence upon

whether or not said demodulated input signal coincides with said added signal.

4,247,939

SPREAD SPECTRUM DETECTOR

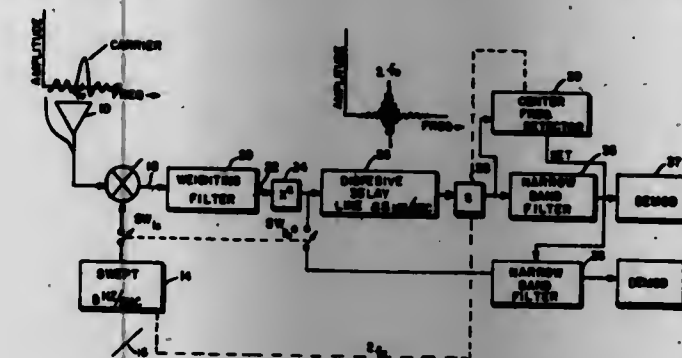
Chester E. Stromswold, Nashua, and John T. Apostolos, Manchester, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 9, 1978, Ser. No. 959,397

Int. Cl.³ H04B 1/10, 12/00, 15/02

U.S. Cl. 375-1

14 Claims



1. Apparatus for detecting spread spectrum signals comprising:

an antenna; a swept local oscillator; means for heterodyning the output of said local oscillator with a signal at said antenna; means for squaring the output signal from said heterodyning means; a dispersive filter having a rate twice that of said local oscillator, said filter being coupled to the output of said squaring means, and means for gating the output from said filter in timed relationship to the sweep of said local oscillator, whereby the presence and center frequency of a direct sequence spread spectrum signal may be ascertained.

14. Apparatus for ascertaining the presence and center frequency of a direct sequence spread spectrum signal comprising:

an antenna, a swept local oscillator, means for heterodyning the output of said local oscillator with a signal at said antenna, means for raising the output signal from said heterodyning means to the fourth power; dispersive filter means having a rate four times that of said swept local oscillator, said filter being coupled to the output of said fourth power means, and means for gating the output signal from said filter means in timed relationship to the sweep of said local oscillator.

4,247,940

EQUALIZER FOR COMPLEX DATA SIGNALS

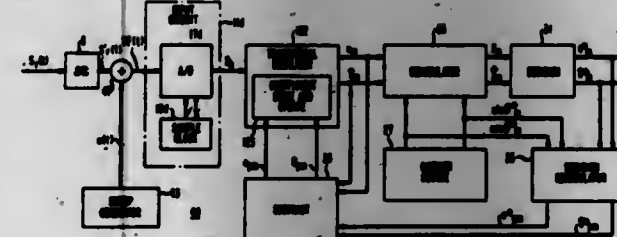
Kurt H. Mueller, Wallisellen, Switzerland, and Jean J. Werner, Easton, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1979, Ser. No. 84,803

Int. Cl.³ H04L 25/08

U.S. Cl. 375-14

14 Claims



1. Apparatus for processing a received quadrature-amplitude-modulated (QAM) signal comprised of first and second trains of data symbol components having predetermined val-

ues, said components being modulated onto respective carriers which are in quadrature relation, said apparatus comprising, means (11d) for forming a succession of line samples of said QAM signal at a predetermined sampling frequency which is equal to at least twice the highest frequency component of said QAM signal, means (122) for forming first and second passband equalizer output components in response to said line samples, means (25) for demodulating said first and second passband equalizer output components to form first and second passband equalizer output components, and means (31) for identifying as the value of a first data symbol component which is in said first train the one of a plurality of predetermined reference values which is closest to the value of said first baseband equalizer output component and for identifying as the value of a second data symbol component which is in said second train the one of said reference values which is closest to the value of said second baseband equalizer output component, characterized in that

said first passband equalizer output component is equal to the sum of the products of at least individual ones of a predetermined number of the most recently formed ones of said line samples with respective ones of a first ensemble of coefficients and said second passband equalizer output component is equal to the sum of the products of said ones of said line samples with respective ones of a second ensemble of coefficients.

4,247,941

SIMULATOR FOR BIT AND BYTE SYNCHRONIZED DATA NETWORK

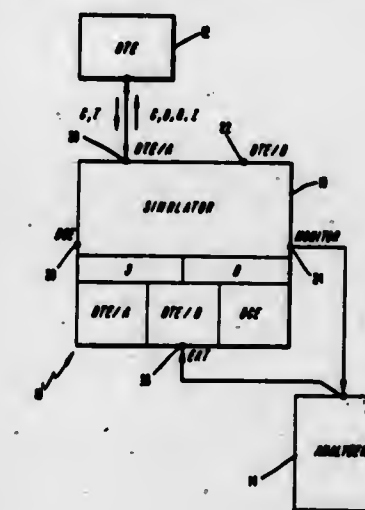
James C. Raymond, Framingham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 28, 1979, Ser. No. 53,109

Int. Cl.³ G06F 11/30

U.S. Cl. 371-15

2 Claims



1. Apparatus for simulating data communication signal conditions comprising:

an oscillator for generating a clock signal; means for gating said clock signal to a communication terminal device, said gating means including a control switch and first timing means actuated by said control switch and responsive to a single cycle of said clock signal to transmit to said terminal device a positive-going signal transition followed by a negative-going signal transition; means for transmitting to said communication terminal device additional control signals synchronized with the positive-going transition of said gated clock signal; and means for receiving and displaying response signals transmitted from said terminal device in response to the negative-going transition of said gated clock signal.

acknowledge signal and a cancellation signal in response to first, second and third control signals;
 means for generating a plurality of first timing signals in response to said first, second and third control signals;
 means for modulating said first preamble signal, a first analog speech signal, said acknowledge signal and said cancellation signal with said first timing signals to generate first, second, third and fourth modulated waves, respectively;
 means for receiving fifth and sixth modulated waves and demodulating them into first and second digital signals, respectively;
 means for detecting first digital signal to generate a first detection signal;
 means for storing said second digital signal in response to said first detection signal; and
 means for displaying the information stored in said means for storing said second digital signal, and wherein said radio unit includes:
 means for receiving said first, second, third and fourth modulated waves and demodulating them into a third digital signal, a second analog speech signal and fourth and fifth digital signals, respectively;
 means for detecting said third, fourth and fifth digital signals to generate second, third and fourth detection signals, respectively;
 means for recognizing said second analog speech signal to generate sixth digital signals;
 means for generating fourth, fifth and sixth control signals in response to said second detection signal, a seventh control signal in response to said third detection signal, and an eighth control signal in response to said fourth detection signal;
 means for storing, reading out and canceling said sixth digital signal respectively in accordance with said fourth, fifth and eighth control signals;
 means for generating a second preamble signal in response to said sixth control signal;
 means for processing the information stored in said means for storing, reading out and canceling in accordance with said seventh control signal; and
 means for successively modulating said second preamble signal and a read-out signal from said means for storing, reading out and canceling into said fifth and sixth modulated waves, respectively, to transmit them.

4,247,948

AUTOMATIC MODULATION CONTROL IN TRANSMITTER

Hideo Okada, Neyagawa, and Yukihiko Kawamoto, Osaka, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Dec. 12, 1978, Ser. No. 968,797

Claims priority, application Japan, Dec. 29, 1977, 52-157810
 Int. Cl.³ H04B 1/04

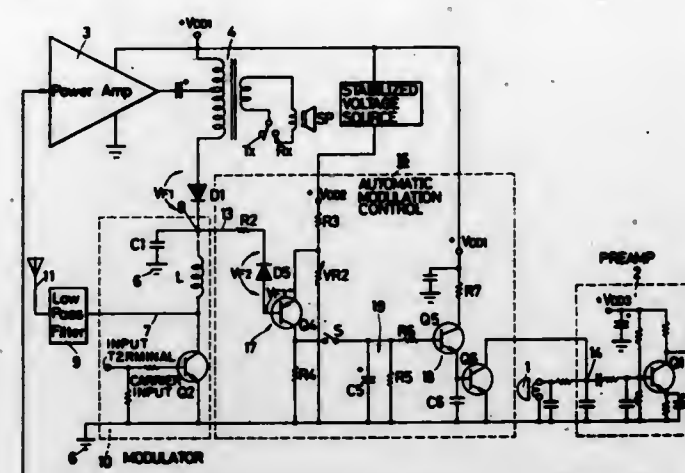
U.S. Cl. 455-116

13 Claims

1. An automatic modulation control in a transmitter comprising:

- a source of direct current operating voltage, means for providing an alternating current modulation signal,
- means coupled to said modulation signal providing means for amplifying said modulation signal,
- a modulation signal output transformer means coupled to said amplifying means and to said source to produce a composite signal of said modulation signal with a direct current voltage component,
- means for generating a carrier wave signal,
- means coupled to said modulation signal output transformer means for modulating said carrier wave signal with said modulation signal as a function of the output of said modulation signal amplifying means,
- means connected in a direct current manner to said modulation signal output transformer means for threshold detecting said composite signal at a predetermined threshold

level of the alternating current modulation signal output as established by the direct current voltage component, and



control means coupled to said detecting means and responsive to said threshold detected output for controlling the amplitude of said modulation signal applied to said modulation signal amplifying means by said modulation signal providing means.

4,247,949

SIGNAL STRENGTH DETECTING CIRCUIT

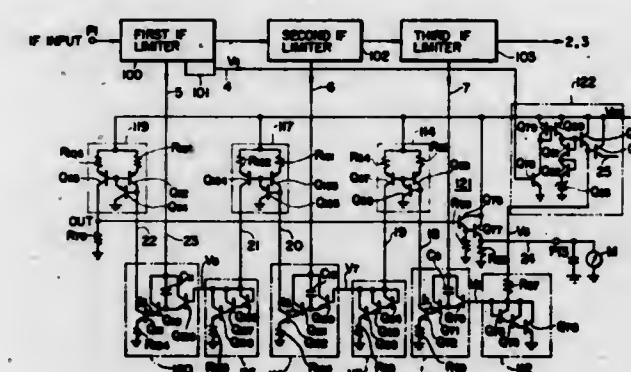
Kazuo Watanabe, Kokubunji; Masamori Ienaka, Kodaira; Yasuo Kominami, Kokubunji, and Makoto Homma, Hamura, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 6, 1979, Ser. No. 10,018

Claims priority, application Japan, Mar. 29, 1978, 53-35517
 Int. Cl.³ H04B 1/16; H03J 3/12

U.S. Cl. 455-154

3 Claims



1. A signal strength detecting circuit comprising:
 - a plurality of cascaded signal amplifying stages;
 - a plurality of detecting circuits including at least a first stage detecting circuit and a final stage detecting circuit, each one of the detecting circuits being coupled to each one of said amplifying stages;
 - a bias circuit connected to the final stage detecting circuit;
 - a current mirror circuit, the input of which is coupled to the output of said final stage detecting circuit;
 - a current-voltage converter circuit, the input of which is coupled to the output of said current mirror circuit, a bias voltage generated at the output of the current-voltage converter being transmitted to the first stage detecting circuit;
 - another current mirror circuit, the input of which is coupled to the output of said first stage detecting circuit;
 - an additional current-voltage converter means coupled to the output of said other current mirror circuit; and
 - means responsive to the output of said additional current-voltage converter means to provide an indication of received signal strength.

4,247,950

DISPLAY FOR FREQUENCY RECEIVED BY RADIO RECEIVER

Yasuhiko Okayama, and Takeshi Takiya, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd., Oora, both of Japan

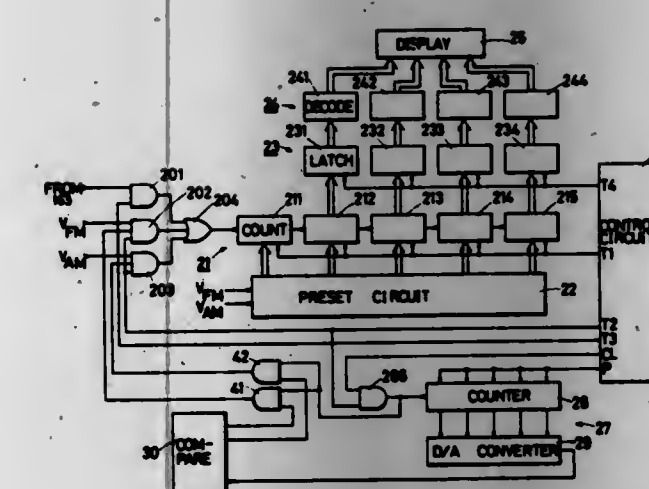
Filed Mar. 2, 1979, Ser. No. 17,061

Claims priority, application Japan, Mar. 13, 1978, 53-29693;
 Mar. 13, 1978, 53-33164[U]

Int. Cl.³ H04B 1/26

U.S. Cl. 455-158

20 Claims



1. A display for displaying in a digital manner a frequency received by a superheterodyne receiver including high frequency signal receiving means for receiving a high frequency signal, local oscillating means for generating a local oscillation frequency signal the frequency of which is different by a given frequency difference from that of said high frequency signal, mixing means responsive to said high frequency signal receiving means and said local oscillating means for mixing said high frequency signal with said local oscillation frequency signal for providing an intermediate frequency signal, and intermediate frequency signal amplifying means having a given resonance frequency characteristic and responsive to said mixing means for amplifying said intermediate frequency signal, said display comprising

gate means coupled to said local oscillating means for gating said local oscillation frequency signal,
 counter means responsive to said gate means for counting the number of cycles of said local oscillation frequency signal obtained from said gate means,
 digital display means coupled to said counter means for displaying in a digital manner the data in said counter means,
 means for generating numerical data representing a prescribed intermediate frequency,
 means responsive to said numerical data obtained from said means for generating numerical data representing a prescribed intermediate frequency for modifying the data fed from said counter means to said digital display means, and
 means compensating for the difference between the resonance frequency of said intermediate frequency amplifying means and said prescribed intermediate frequency by correcting said count data fed from said counter means to said digital display means.

4,247,951

FREQUENCY SYNTHESIZER WITH UNAUTHORIZED FREQUENCY INHIBITING MEANS

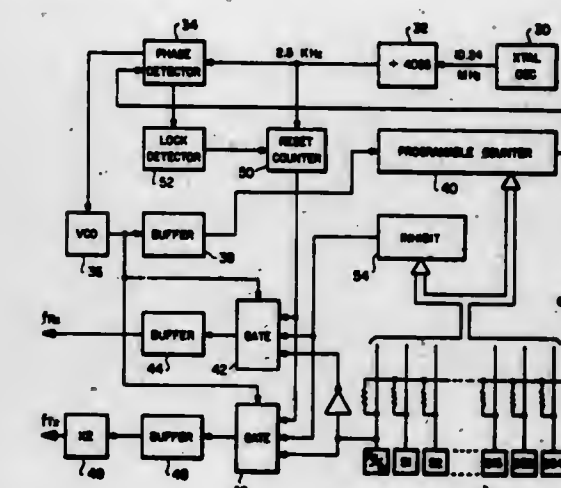
Keisuke Hattori, Sunnyvale, and Alexander R. Sabo, San Carlos, both of Calif., assignors to Micro Power Systems, Inc., Santa Clara, Calif.

Filed Oct. 31, 1978, Ser. No. 956,279

Int. Cl.³ H04B 1/26; H03L 7/18

U.S. Cl. 455-183

4 Claims



1. A frequency synthesizer for generating authorized signals and inhibiting unauthorized signals comprising:
 - a reference frequency source,
 - a voltage controlled oscillator,
 - a phase detector,
 - means connecting said reference frequency source to an input to said phase detector,
 - means including a programmable counter connecting said voltage controlled oscillator to an input to said phase detector,
 - means connecting an output signal from said phase detector to a control terminal of said voltage controlled oscillator, frequency selector means operably connected to said programmable counter for controlling the oscillation frequency of said voltage controlled oscillator,
 - output gate means connected to said voltage controlled oscillator; and
 - means for inhibiting said output gate means when said frequency selector means selects an unauthorized frequency, said means comprising a read only memory which provides a first inhibit signal when said frequency selector means indicates an unauthorized frequency.

4,247,952

SIGNAL RECEIVING APPARATUS

Michio Shibuya, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 31, 1978, Ser. No. 938,384

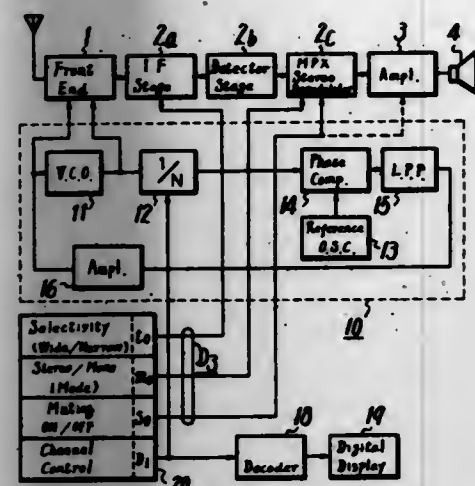
Claims priority, application Japan, Aug. 31, 1977, 52-104534
 Int. Cl.³ H04B 1/16

U.S. Cl. 455-186

11 Claims

6. In signal receiving apparatus of the type including a tuning stage having presettable channel selecting storage means for storing selected channel identity signals representing predetermined channels to which said tuning stage is tunable, any of said stored channel identity signals being selectively read out to control the tuning condition of said tuning stage to be tuned to the channel represented by the read out channel identity signal, the improvement comprising presettable memory means for storing control signals associated with said respective predetermined channels, said control signals including at least selectivity control signals controlling the selectivity of said signal receiving apparatus, and representing the selectivity condition of said apparatus for respective ones of said predetermined channels; selectively operable present means to generate at least one said selectivity control signal to be stored

in said memory means when said turning stage is turned to an associated channel during a preset operation; and read-out means selectively operable to read out a particular stored



channel identity signal from said storage means and also to read out said one selectivity control signal stored in said memory means and associated with the channel represented by said particular channel identity signal.

4,247,953

TUNABLE HIGH-FREQUENCY INPUT CIRCUIT

Mitsuhisa Shinagawa, Fujisawa; Shigeo Matsuura, and Toshinori Murata, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

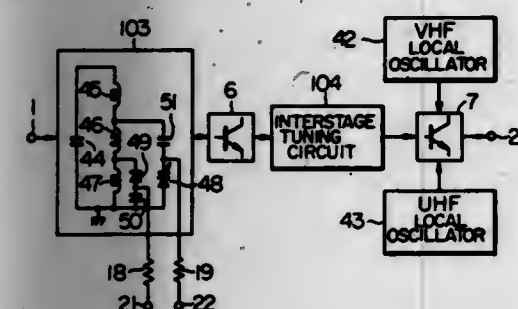
Filed Jan. 30, 1978, Ser. No. 920,698

Claims priority, application Japan, Jul. 1, 1977, 52-77936; Jul. 1, 1977, 52-77937; Jul. 1, 1977, 52-77938

Int. Cl.³ H04B 1/18, 1/26; H03J 5/00

U.S. Cl. 455-191

7 Claims



DESIGN PATENTS

GRANTED JAN. 27, 1981

ERRATA

For
CLASS

D99-047

See
PATENT NO.

258,050

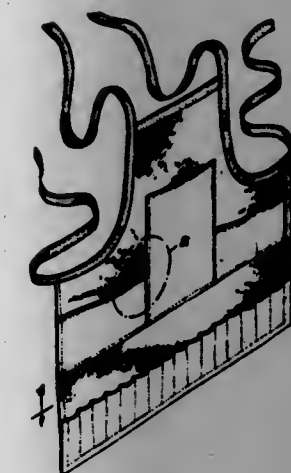
DESIGNS

JANUARY 27, 1981

258,020
APRON

Linda M. Bryce, Glendale, Ariz., assignor to Amba Marketing
Systems, Inc., Tempe, Ariz.
Filed Oct. 2, 1978, Ser. No. 947,950
Term of patent 14 years
Int. Cl. D2-02

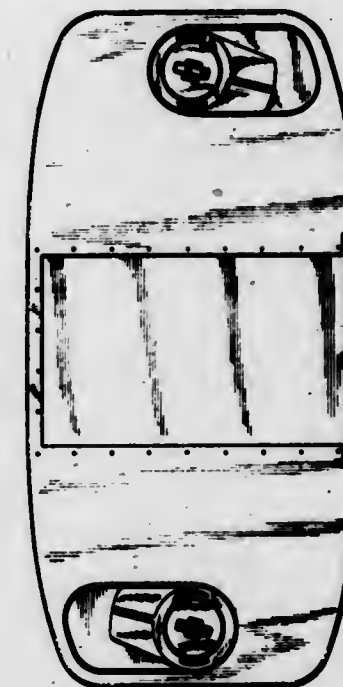
U.S. Cl. D2-229



258,022

COMBINED STORAGE AND SHIPPING CASE FOR
VIDEO CASSETTES OR THE LIKE
Peter B. McDermott, Irvington, N.J., assignor to Plastic Reel
Corporation of America, Carlstadt, N.J.
Filed Jul. 28, 1977, Ser. No. 820,080
Term of patent 14 years
Int. Cl. D3-02

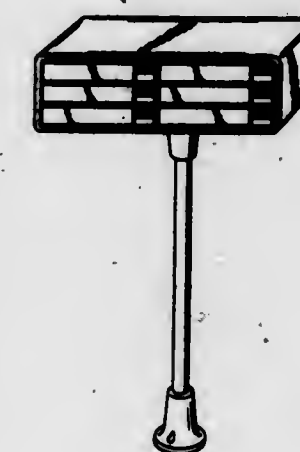
U.S. Cl. D3-35



258,023

CONTAINER FOR TAPE CASSETTES
Peter Akeret, Kilsnacht, Switzerland, assignor to IISI Products
AG, Chur, Switzerland
Filed Apr. 7, 1978, Ser. No. 894,635
Term of patent 14 years
Int. Cl. D3-02

U.S. Cl. D3-35



258,021

GOLF ACCESSORY HOLDER
Thomas C. Bonaventura, 10762 Garfield Ave., Culver City,
Calif. 90230

Filed Dec. 8, 1978, Ser. No. 967,617
Term of patent 14 years
Int. Cl. D02-99

U.S. Cl. D2-400



258,024

CONTAINER FOR TAPE CASSETTES

Peter Ackereit, Küssnacht, Switzerland, assignor to IISI Products AG, Chur, Switzerland

Filed Apr. 7, 1978, Ser. No. 894,636

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-35



258,025

CONTAINER FOR TAPE CASSETTES

Peter Ackereit, Küssnacht, Switzerland, assignor to IISI Products AG, Chur, Switzerland

Filed Apr. 7, 1978, Ser. No. 894,637

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-35



258,026

CONTAINER FOR TAPE CASSETTES

Peter Ackereit, Küssnacht, Switzerland, assignor to IISI Products AG, Chur, Switzerland

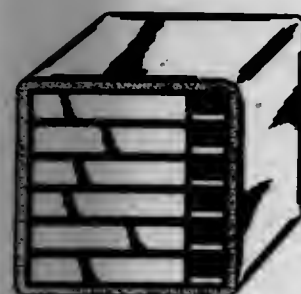
Filed Apr. 7, 1978, Ser. No. 894,638

Claims priority, application Switzerland, Feb. 7, 1978, 66403

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-35



258,027

STORAGE AND DISPLAY CONTAINER FOR PHOTOGRAPHS OR LIKE ARTICLES

Charles Rache, 28 Chomley St., and Henri J. Rache, 26 Chomley St., both of Prahran, Victoria, Australia

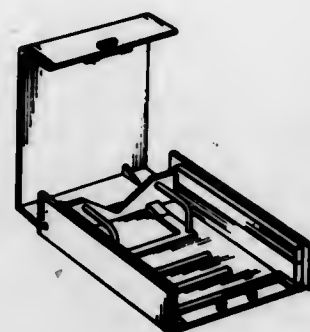
Filed Nov. 15, 1978, Ser. No. 961,001

Claims priority, application Australia, May 15, 1978, 74749

Term of patent 3 1/2 years

Int. Cl. D3-02

U.S. Cl. D3-35



258,028

INFLATABLE CHAIR

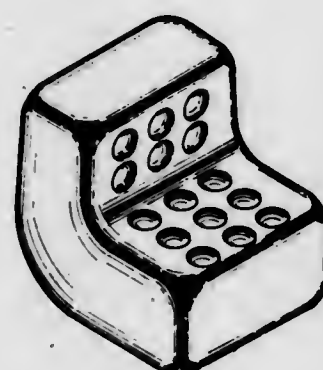
Richard Dessert, 2016 Euclid, #1, Santa Monica, Calif. 90405

Filed Aug. 28, 1978, Ser. No. 937,154

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-47



258,029

OCTAGONAL GAME TABLE

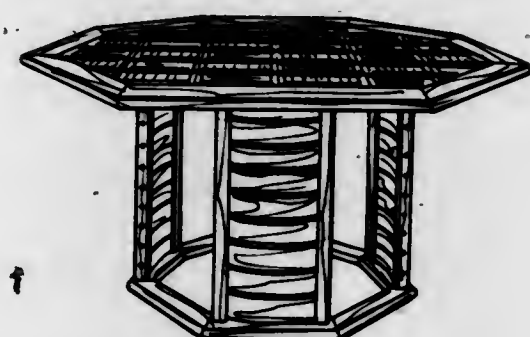
Jobie G. Redmond, P.O. Box 1133, High Point, N.C. 27260

Filed Nov. 8, 1978, Ser. No. 958,852

Term of patent 14 years

Int. Cl. D6-03

U.S. Cl. D6-146



258,030

DISPLAY STAND

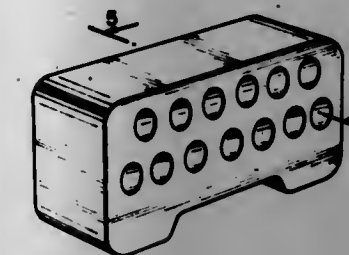
H. Mary Davis, 4800 Woodley Ave., Apt. 16, Encino, Calif. 91436

Filed Dec. 17, 1979, Ser. No. 104,103

Term of patent 14 years

Int. Cl. D20-02; D19-06; D24-02

U.S. Cl. D6-157



258,033

TABLE

Marcello Mioni, 114 N. Robertson Blvd., Los Angeles, Calif. 90048

Filed Nov. 30, 1978, Ser. No. 965,189

Term of patent 14 years

Int. Cl. D6-03

U.S. Cl. D6-177



258,031

WET BAR

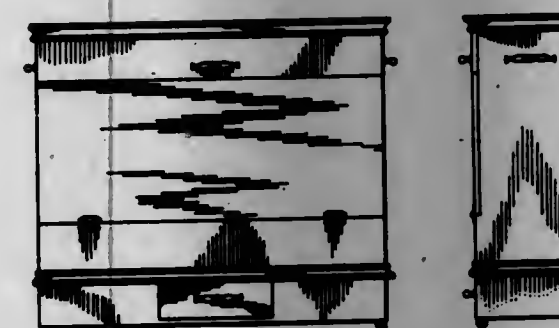
Robert R. Robins, 721 N. Woodland, Minneapolis, Kans. 67467

Filed Nov. 8, 1979, Ser. No. 92,593

Term of patent 14 years

Int. Cl. D06-04

U.S. Cl. D6-144



258,034

PICTURE FRAME

Maureen Mara, 319 Avenue C, New York, N.Y. 10009, assignor to Maureen Mara, Rego Park, N.Y.

Filed Oct. 12, 1978, Ser. No. 951,004

Term of patent 14 years

Int. Cl. D6-07

U.S. Cl. D6-236



258,032

CABINET

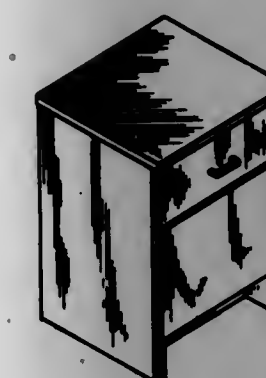
David L. Tobbe, and Eugene E. Klund, both of St. Clair, Mo., assignors to Lam Craft Industries, Inc., St. Clair, Mo.

Division of Ser. No. 772,993, Feb. 28, 1977. This application Jan. 17, 1979, Ser. No. 4,203

Term of patent 14 years

Int. Cl. D6-04

U.S. Cl. D6-158



258,035

BEACH BLANKET WITH STORAGE POCKET

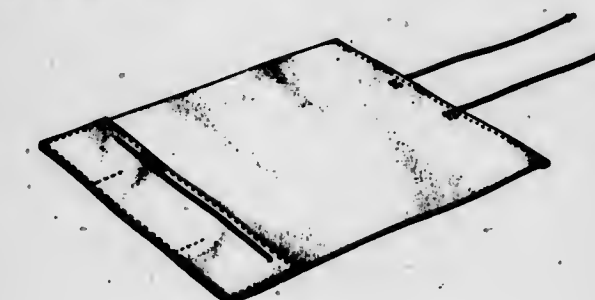
Anita R. Fenwick, 1953 Hamer Dr., Placentia, Calif. 92670

Filed Jul. 17, 1978, Ser. No. 925,442

Term of patent 14 years

Int. Cl. D6-13

U.S. Cl. D6-267

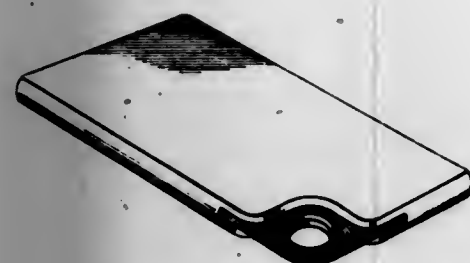


258,036

CUTTING BOARD

Christopher E. Sabin, 46 Birch St., Greenfield, Mass. 01301
 Filed Apr. 30, 1979, Ser. No. 34,594
 Term of patent 14 years
 Int. Cl. D07-04

U.S. Cl. D7-46

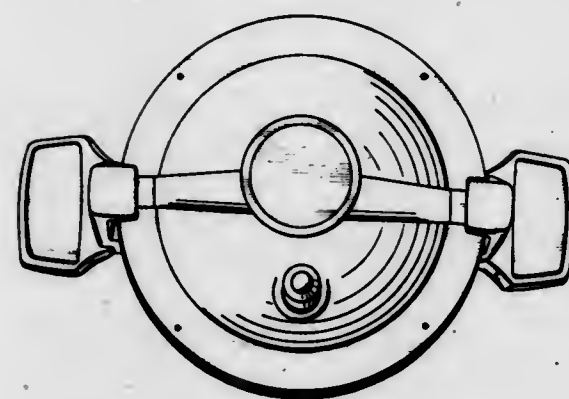
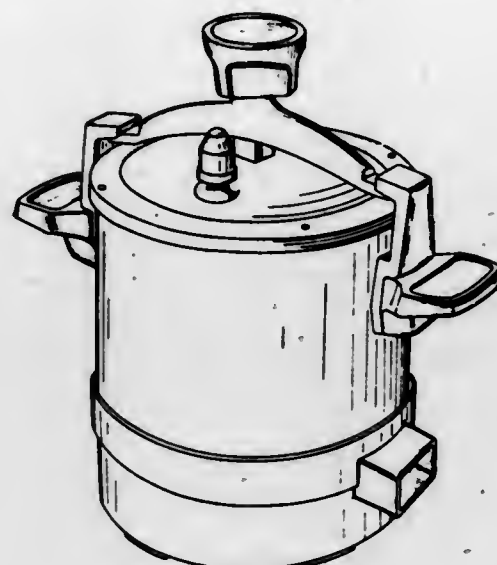


258,038

ELECTRIC PRESSURE COOKER

Marshall B. Johnson, Chillicothe, Ohio, assignor to Wear-Ever Aluminum, Inc.
 Filed Sep. 13, 1978, Ser. No. 942,080
 Term of patent 14 years
 Int. Cl. D07-02

U.S. Cl. D7-86

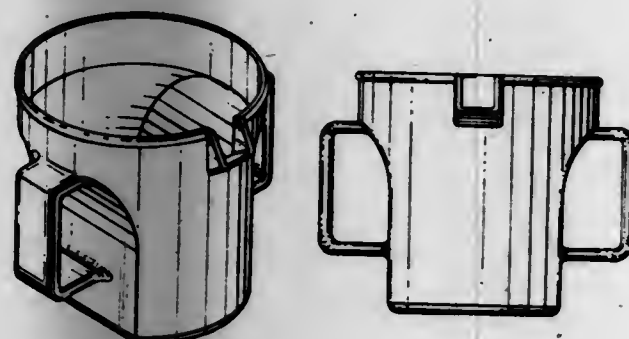


258,037

SUGAR BOWL OR THE LIKE

Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.
 Filed May 16, 1979, Ser. No. 39,535
 Term of patent 14 years
 Int. Cl. D07-06

U.S. Cl. D7-64



258,039

COMBINED NUTCRACKER AND NUT BOWL

Donald A. Kaufmann, Bloomfield, Mich., assignor to Florists' Transworld Delivery Association, Southfield, Mich.
 Continuation-in-part of Ser. No. 9,128, Feb. 5, 1979, abandoned.
 This application Apr. 16, 1979, Ser. No. 30,276
 Term of patent 7 years
 Int. Cl. D07-06

U.S. Cl. D7-98

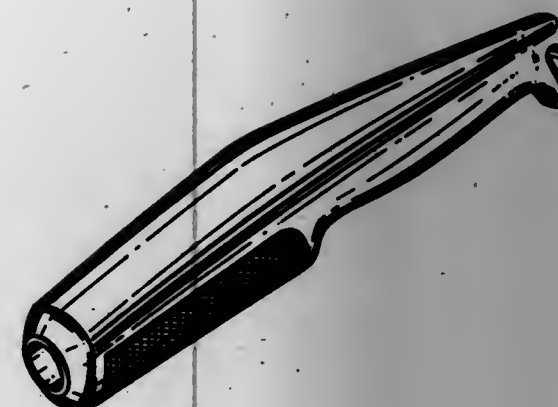


258,040

HANDLE FOR A GARDEN HEDGE SHEAR OR THE LIKE

Edward A. Irelan, 2303 Ridgemont, Columbia, Mo. 65201
 Filed Apr. 20, 1978, Ser. No. 898,378
 Term of patent 14 years
 Int. Cl. D08-07

U.S. Cl. D8-5

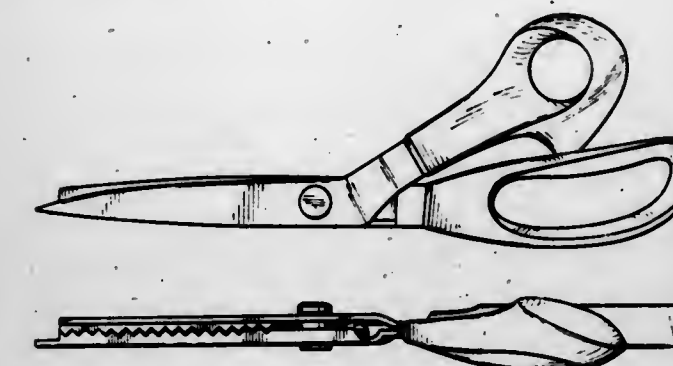


258,042

PINKING SHEARS

Olof F. Bäckström, Tammenari, Finland, assignor to Oy Fiskars AB, Helsinki, Finland
 Filed Aug. 23, 1978, Ser. No. 936,660
 Claims priority, application Finland, Aug. 17, 1978, 78489
 The portion of the term of this patent subsequent to Dec. 30, 1989, has been disclaimed.
 Term of patent 14 years
 Int. Cl. D08-03

U.S. Cl. D8-57

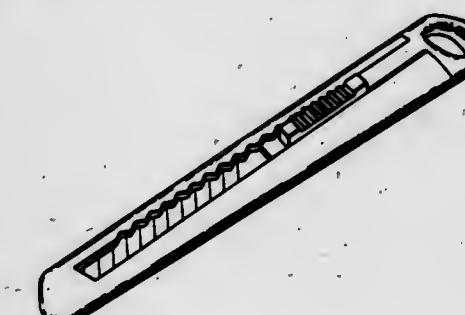


258,043

KNIFE WITH BREAKABLE BLADES

Bernard Grégoire, Berthierville, Canada, assignor to A. Richard Ltee, Berthierville, Canada
 Filed Jun. 1, 1978, Ser. No. 911,675
 Term of patent 14 years
 Int. Cl. D08-03

U.S. Cl. D8-99

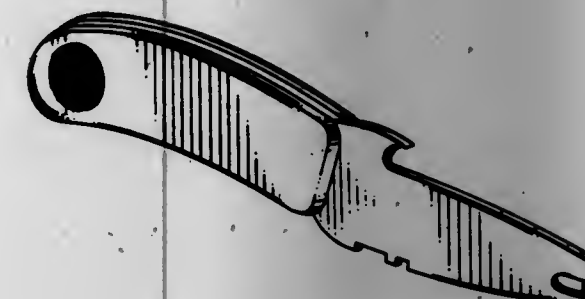


258,041

COMBINED CAN AND PULL TAB OPENER

Bobby Anderson, 2434 S. Conway Rd., Orlando, Fla. 32806
 Filed Nov. 15, 1978, Ser. No. 961,029
 Term of patent 14 years
 Int. Cl. D07-99

U.S. Cl. D8-40

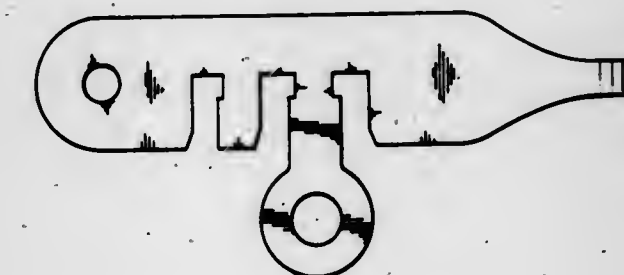


258,044

DEVICE FOR SECURING TRUCK TIE DOWN ROPES

James F. Kimball, 83617 Rattlesnake Rd., Dexter, Oreg. 97431
 Filed Sep. 22, 1978, Ser. No. 945,136
 Term of patent 14 years
 Int. Cl. D08-08

U.S. Cl. D8-356



258,045

COMBINED BOTTLE AND CUP

Herbert Collins, Fort Lee, N.J., assignor to Schenley Industries, Inc., New York, N.Y.

Filed Jul. 13, 1977, Ser. No. 815,344

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-337

258,046
BOTTLE

Edwin M. Richmond, P.O. Box 2656, San Rafael, Calif. 94901

Filed Nov. 13, 1978, Ser. No. 959,654

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-36

258,047
DECANTER

Gordon A. Strand, Waterville, Ohio, assignor to Owens-Illinois, Inc.

Filed May 1, 1978, Ser. No. 902,022

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-385



258,048

COMBINED DECANTER AND STOPPER

Gordon A. Strand, Waterville, Ohio, assignor to Owens-Illinois, Inc.

Filed May 1, 1978, Ser. No. 902,023

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-385

258,049
BOX BLANK

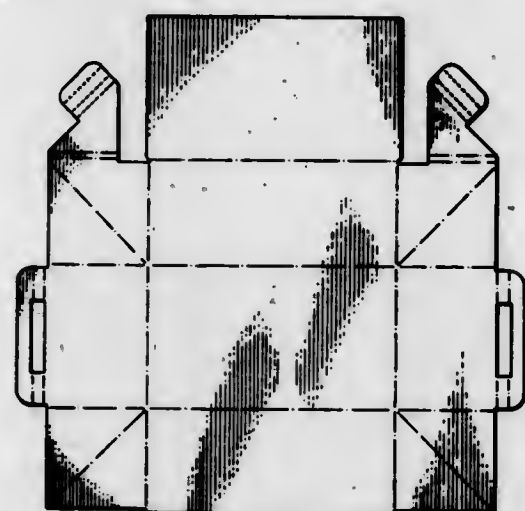
Robert A. Bamberg, Hebert; Farris N. Duncan, West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., Denver, Colo.

Filed Oct. 23, 1978, Ser. No. 953,396

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-432



258,050

OYSTER CONTAINER

Jean Cornou, 15, clos Verrieres, Verrieres-le-Buisson (Essone), France

Filed Feb. 8, 1979, Ser. No. 10,845

Term of patent 14 years

Int. Cl. D9-04

U.S. Cl. D99-47



258,051

COMBINED DISPENSING CLOSURE AND OVERCAP

Steven L. Bakus; Vernon Hills, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed Dec. 8, 1978, Ser. No. 967,890

Term of patent 14 years

Int. Cl. D09-07

U.S. Cl. D9-449



258,052

CAN STACKER

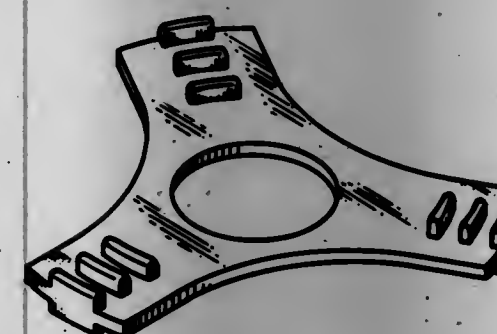
Jack H. Firanzi, P.O. Box 4202, State Line, Nev. 89449

Filed Jun. 3, 1977, Ser. No. 803,395

Term of patent 14 years

Int. Cl. D9-99

U.S. Cl. D9-499



258,053

CAGE NOVELTY

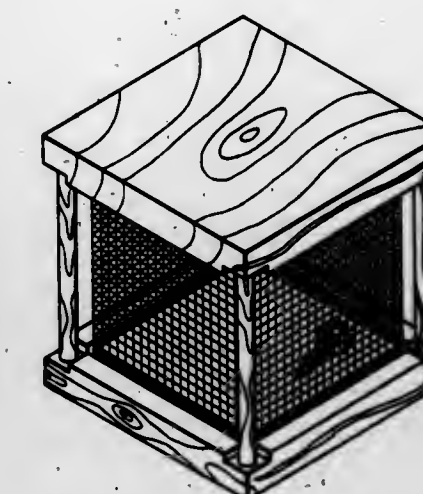
Ronald B. Roberts, Fort Wayne, Ind., assignor to Max E. Smith, Sr.

Filed Oct. 10, 1978, Ser. No. 949,427

Term of patent 14 years

Int. Cl. D11-02

U.S. Cl. D11-157



258,054

AUTO ROOF HOIST

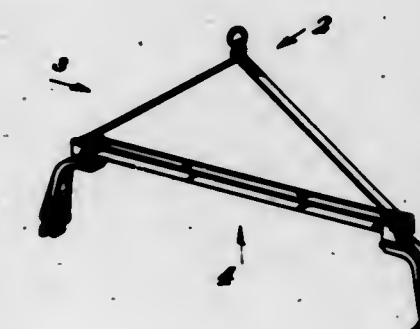
Mark L. Ellis, 7618 De Soto, Canoga Park, Calif.

Filed Oct. 30, 1978, Ser. No. 955,806

Term of patent 14 years

Int. Cl. D12-05

U.S. Cl. D12-54



258,055

FISHING BOAT

Clarence L. Moody, Jr., Rte. 3, Box 58-B, Altus, Okla. 73521

Filed Dec. 1, 1977, Ser. No. 856,217

Term of patent 14 years

Int. Cl. D12-06

U.S. Cl. D12-62

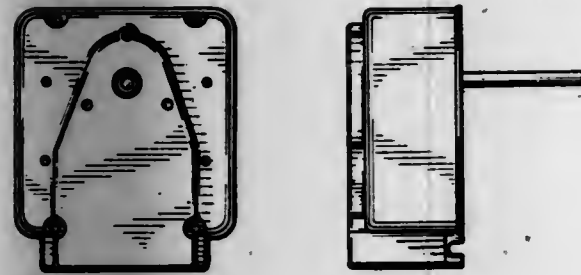


258,056
FAN MOTOR

Eugene T. McKinnon, 16536 Chattanooga Pl., Pacific Palisades, Calif. 90272; Alvin S. Drutz, 11613 Clover Ave., Los Angeles, Calif. 90031; James B. Nelson, deceased, late of Fullerton, Calif., and by Lorraine Nelson, executrix, 1118 E. Glenwood, Fullerton, Calif. 92631

Filed Oct. 5, 1978, Ser. No. 948,951
Term of patent 14 years
Int. Cl. D13-01

U.S. Cl. D13-01

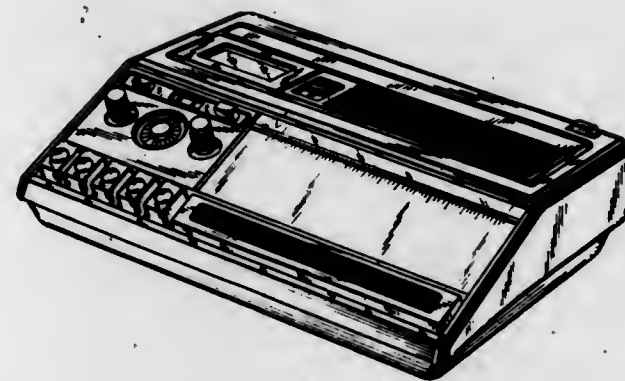


258,058
DICTATING APPARATUS

Gerhard Dietrich, Nuremberg, Fed. Rep. of Germany, assignor to Grundig Aktiengesellschaft, Fed. Rep. of Germany
Filed Aug. 31, 1978, Ser. No. 938,529
Claims priority, application Fed. Rep. of Germany, May 23, 1978, 7472

Term of patent 14 years
Int. Cl. D14-01

U.S. Cl. D14-3

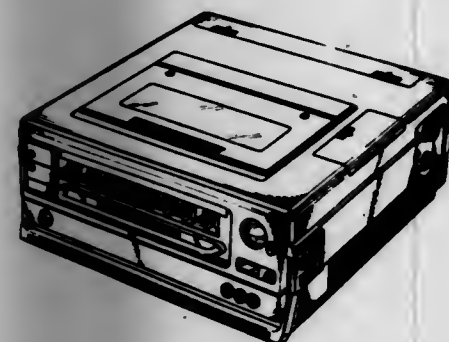


258,057
VIDEO TAPE RECORDER

Mitsuo Takanaga, Kyoto; Yasunobu Nakamura, Minou; Kazuhiko Nagata, Katano, and Kenji Nishiyama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 25, 1978, Ser. No. 954,720
Claims priority, application Japan, Apr. 28, 1978, 53-17436
Term of patent 14 years
Int. Cl. D14-01

U.S. Cl. D14-02

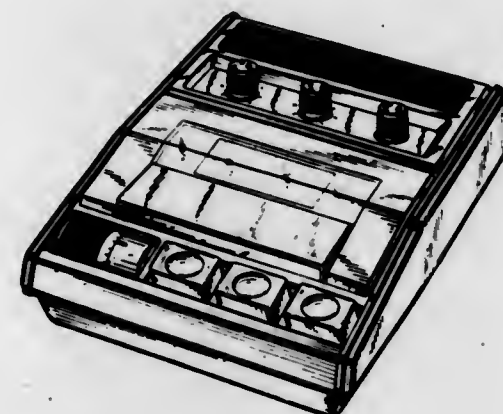


258,059
DICTATING APPARATUS

Gerhard Dietrich, Nuremberg, Fed. Rep. of Germany, assignor to Grundig Aktiengesellschaft, Fed. Rep. of Germany
Filed Aug. 31, 1978, Ser. No. 938,530
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 7448

Term of patent 14 years
Int. Cl. D14-01

U.S. Cl. D14-3

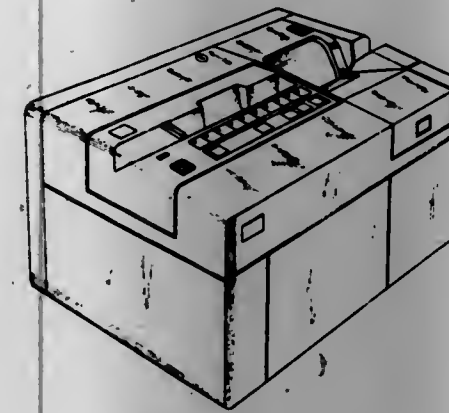


258,060
PASSBOOK PRINTER

Owen P. Shea, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,820
Term of patent 14 years
Int. Cl. D14-02

U.S. Cl. D14-50

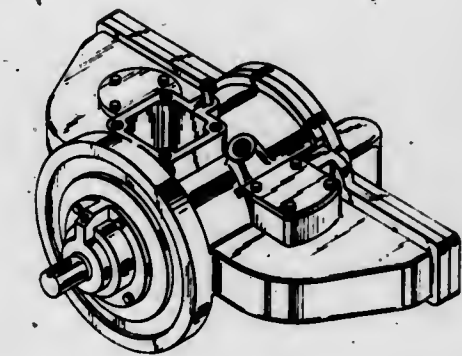


258,063
GLOBOID-WORM COMPRESSOR

Cassius F. Whitehill, Hudson; Ghanashyam C. Patel, Solon, both of Ohio, and Robert D. Whitehill, Franklin, Pa., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,905
Term of patent 14 years
Int. Cl. D15-02

U.S. Cl. D15-9

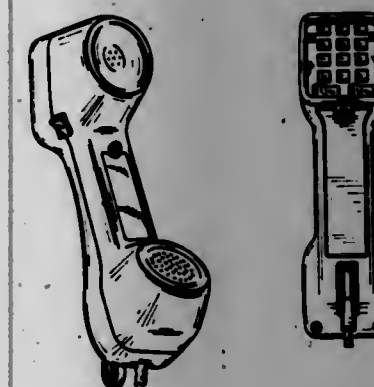


258,061
TELEPHONE TRANSMITTER AND RECEIVER

Arthur L. Foreman, Chatsworth, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Filed Sep. 28, 1978, Ser. No. 946,825
Term of patent 14 years
Int. Cl. D14-03

U.S. Cl. D14-64

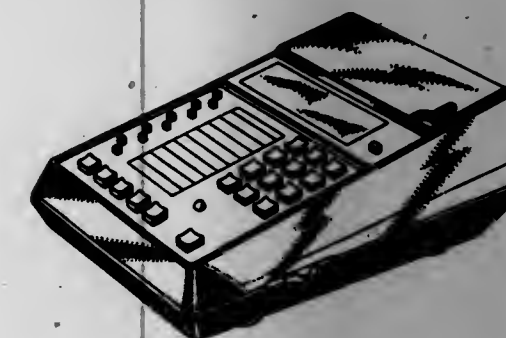


258,062
TELEPHONE DIALER

Richard J. Casimano, Jamestown, N.Y.; John C. Van Arsdell, Jr., Edinboro, Pa.; Gordon W. Cromwell, Waterford, Pa.; Elmer J. Seppala, Fairview, Pa.; Quentin R. Ball, Westmount, Canada; Gregory Fossella, Boston, and Michael J. Mercadante, North Quincy, both of Mass., assignors to Basic Incorporated, Cleveland, Ohio

Filed Sep. 13, 1978, Ser. No. 942,171
Term of patent 14 years
Int. Cl. D14-03; D18-01

U.S. Cl. D14-66

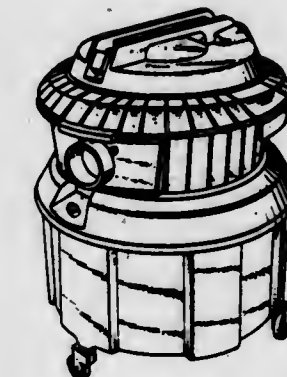


258,064
CARPET CLEANING MACHINE

Fred E. Pearman, Jr., Anderson, S.C., assignor to The Singer Company

Filed Jan. 19, 1978, Ser. No. 870,954
Term of patent 14 years
Int. Cl. D15-05

U.S. Cl. D15-54

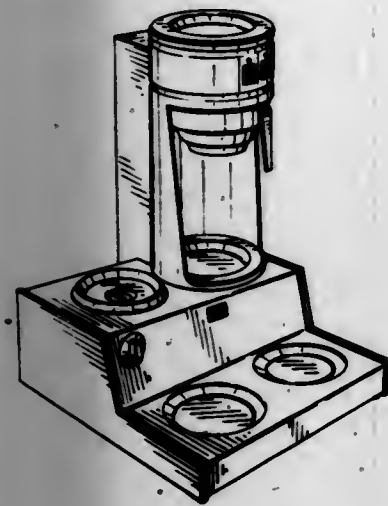


258,065

COMBINED COFFEE BREWER AND WARMER
William M. Bardon, 33 Harbour Sq., Suite 3218, Toronto, Ontario, Canada (MSJ 2G2)

Filed Apr. 25, 1978, Ser. No. 900,059
Term of patent 14 years
Int. Cl. D15—08

U.S. Cl. D15—113



258,066

PAPER HOLDING CASSETTE
James V. DeGregorio, 34 Park St., Wakefield, Mass. 01880

Filed Apr. 7, 1978, Ser. No. 894,587
Term of patent 14 years
Int. Cl. D16—03; D19—99

U.S. Cl. D16—32



258,067

HOLDER FOR CAMERA AND FLASH
Robert M. Bogart, Jr., Chattanooga, Tenn., assignor to Kalt Corporation, Santa Monica, Calif.

Filed Jan. 16, 1978, Ser. No. 869,938
Term of patent 14 years
Int. Cl. D16—05

U.S. Cl. D16—47

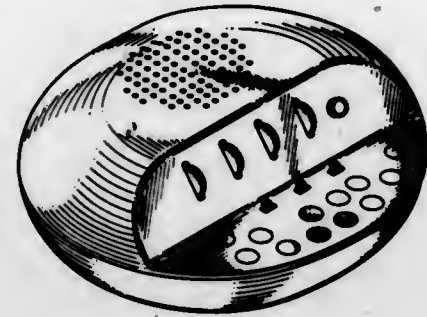


258,068

SYNTHESIZER ORGAN OR SIMILAR ARTICLE
David E. Ostrom, Walnut Creek, Calif., assignor to O/R, Inc., Walnut Creek, Calif.

Filed Jan. 19, 1979, Ser. No. 4,806
Term of patent 14 years
Int. Cl. D17—01

U.S. Cl. D17—5



258,069

WRITING INSTRUMENT
Jean G. Malamoud, Saint-Jorioz, France, assignor to S. T. Dupont, Paris, France

Filed Apr. 23, 1979, Ser. No. 32,194
Claims priority, application France, Oct. 24, 1978, 78 41844
Term of patent 14 years
Int. Cl. D19—06

U.S. Cl. D19—48



258,070

NEWSPAPER VENDOR
Peter Ostermann, Sunnyvale, Calif., assignor to Hickey-Mitchell Company, St. Louis, Mo.

Filed Apr. 2, 1979, Ser. No. 25,991
Term of patent 14 years
Int. Cl. D20—01

U.S. Cl. D20—6

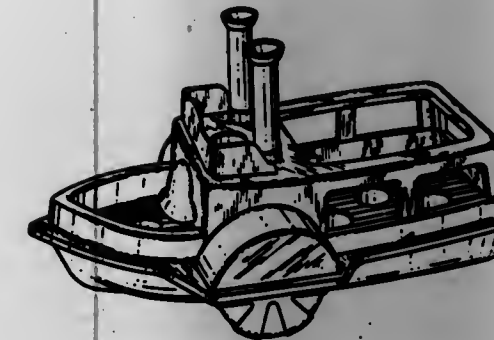


258,071

TOY BOAT
Norman Walker, London, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England

Filed Jan. 24, 1978, Ser. No. 872,349
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D21—130



258,073

INSECT TRAP

James B. Brown, Long Grove, and Dean Peterson, Antioch, both of Ill., assignors to Beatrice Foods Co., Bristol, Wis.

Filed Nov. 24, 1978, Ser. No. 963,507
Term of patent 14 years
Int. Cl. D22—06

U.S. Cl. D22—19



258,072

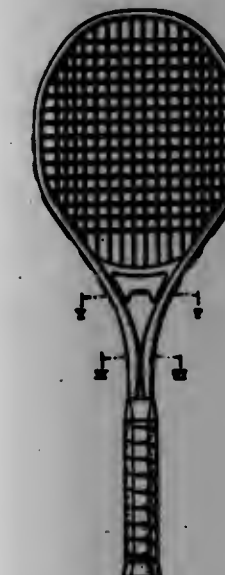
TENNIS RACKET

Minoru Yoneyama, Koshiji, Japan, assignor to Yonex Sports Kabushiki Kaisha, Koshiji, Japan

Filed Aug. 4, 1978, Ser. No. 931,838
Claims priority, application Japan, Feb. 6, 1978, 53-3562; Mar. 10, 1978, 53-8757

Term of patent 14 years
Int. Cl. D21—02

U.S. Cl. D21—212



258,074

FISH HOOK REMOVER

John H. Leane, 7110 E. 13th St., Indianapolis, Ind. 46219

Filed Feb. 7, 1979, Ser. No. 10,009
Term of patent 14 years
Int. Cl. D22—05

U.S. Cl. D22—31



258,075

GAS PRESSURE REGULATOR

David O. Mann, Marshall, Mich., assignor to Marshall Brass Company, Marshall, Mich.

Filed Mar. 31, 1978, Ser. No. 892,218

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—21



258,076

ROTARY JOINT

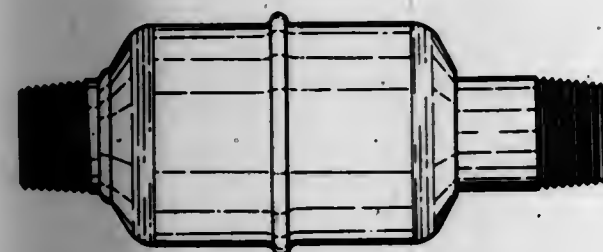
Roger D. Wiedenbeck; Kenneth W. Boughton, and Richard Maurer, all of Three Rivers, Mich., assignors to The Johnson Corporation, Three Rivers, Mich.

Filed Dec. 18, 1978, Ser. No. 970,101

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—40



258,077

BLANK FOR AN ELBOW FITTING

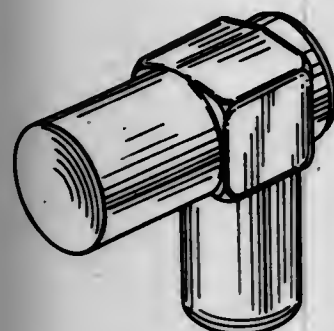
Bernard J. Gallagher, Mayfield; Erling G. Wennerstrom; Mark R. Houdek, both of Cleveland, and Laszlo Aliczky, Solon, all of Ohio, assignors to Cajon Company, Solon, Ohio

Filed Mar. 26, 1979, Ser. No. 23,826

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—43



258,078

ELBOW FITTING

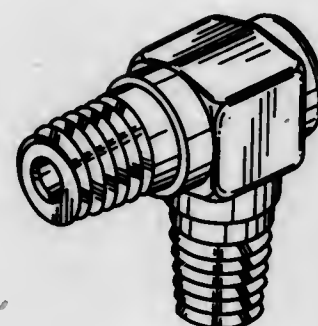
Bernard J. Gallagher, Mayfield; Erling G. Wennerstrom; Mark R. Houdek, both of Cleveland, and Laszlo Aliczky, Solon, all of Ohio, assignors to Cajon Company, Solon, Ohio

Filed Mar. 26, 1979, Ser. No. 23,661

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—43



258,079

WASHSTAND

Andre Primault, Garches, France, assignor to Societe Generale de Fonderie, Paris, France

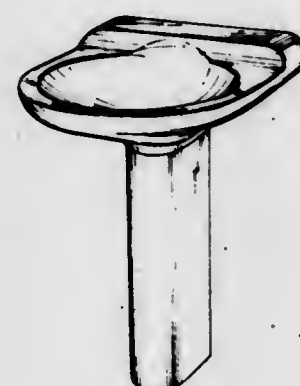
Filed Oct. 23, 1978, Ser. No. 953,543

Claims priority, application France, Apr. 21, 1978, 78 76506

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—61



258,080

HUMIDIFIER FOR A GREENHOUSE

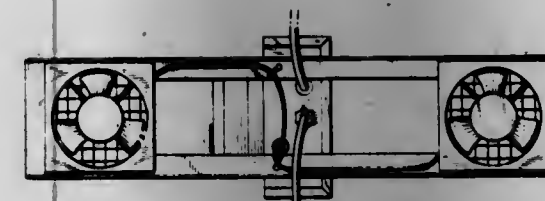
Cyrus D'Amato, 8 Parkway Dr., Roslyn Heights, N.Y. 11577

Filed Jun. 28, 1978, Ser. No. 919,989

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—146



258,082

DISPENSER FOR AIR TREATING MATERIAL

Georg Schimanski, Buhrener Weg 41, Rummenohl, Fed. Rep. of Germany (D-5801)

Filed Oct. 19, 1978, Ser. No. 952,834

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 349

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—150



258,083

COVER FOR AN INLET GRILL ON AN AIR CONDITIONER

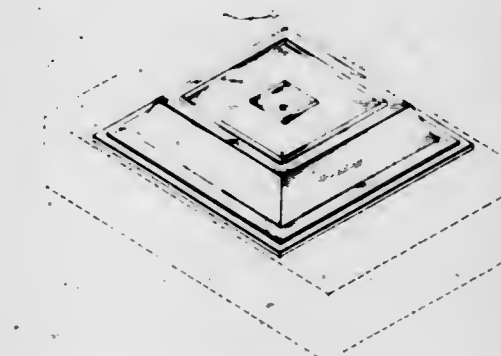
John S. Gammell, Sparks, Nev., assignor to Gammell Enterprises, Reno, Nev.

Filed May 15, 1978, Ser. No. 906,148

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—163



258,081

REFRIGERATOR AIR FRESHENER

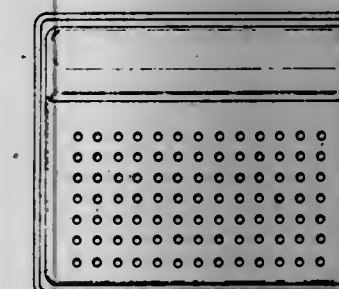
William J. Britt, Greenville, and Daniel C. Wilson, Taylors, both of S.C., assignors to Morton-Norwich Products, Inc., Greenville, S.C.

Filed Aug. 31, 1978, Ser. No. 938,556

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—150



258,084

PORTABLE RESPIRATOR

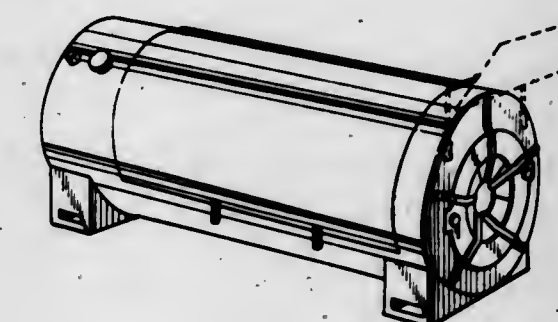
Walter W. Weingarten, 401 E. 80th Ave., Denver, Colo. 80229

Filed Jan. 30, 1978, Ser. No. 873,725

Term of patent 14 years

Int. Cl. D24—01

U.S. Cl. D24—1.1

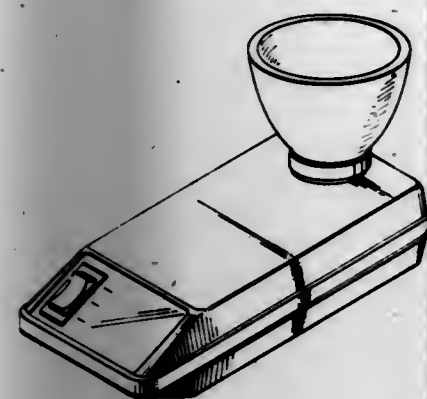


258,085

ELECTRIC DENTAL MATERIAL MIXER

Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90024
 Filed Mar. 17, 1978, Ser. No. 887,520
 Term of patent 14 years
 Int. Cl. D24—99

U.S. Cl. D24—22



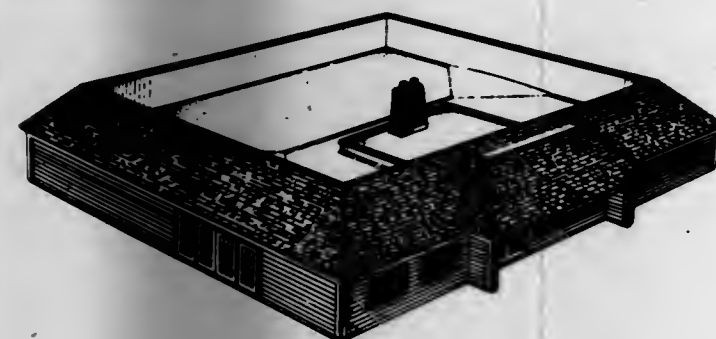
258,086

RESTAURANT

Ann R. Pokorny, 6231 Bluff Dr., Minneapolis, Minn. 55431; C. Ray Sims, 17610 Breckonwood Dr., Wayzata, Minn. 55391; Dennis B. Behrendt, 5039 Overlook Cir., Bloomington, Minn. 55437; Robert B. Burt, 3300 W. 55th St., Edina, Minn. 55436; Herman Crawford, 4745 N. Shore Dr., Mound, Minn. 55364, and Wm. A. McKeag, 1228 E. Woodley St., Northfield, Minn. 55057

Filed Jan. 17, 1979, Ser. No. 4,069
 Term of patent 14 years
 Int. Cl. D25—03

U.S. Cl. D25—25

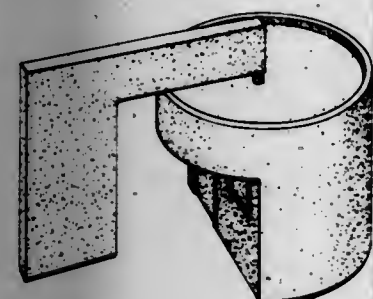


258,087

BUILDING STRUCTURE

Edward F. Bavis, Cincinnati, Ohio, assignor to E. F. Bavis & Associates, Inc., Cincinnati, Ohio
 Filed Aug. 28, 1978, Ser. No. 937,519
 Term of patent 14 years
 Int. Cl. D25—03

U.S. Cl. D25—31

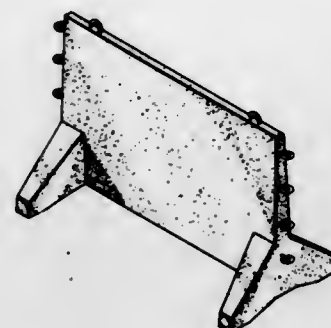


258,088

PORTABLE CONCRETE FENCE SUPPORT

Harold D. Koch, Star Rte. 2, Box 15, Gann Valley, S. Dak. 57341
 Filed Nov. 6, 1978, Ser. No. 958,151
 Term of patent 14 years
 Int. Cl. D25—02

U.S. Cl. D25—38

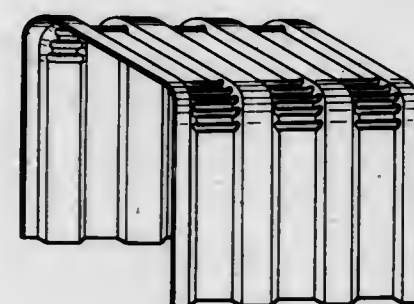


258,089

HUMP PLATE

Gustav Näslund, Pl. 687, S-942 00 Älvsbyn, Sweden
 Filed Jun. 29, 1978, Ser. No. 920,252
 Term of patent 14 years
 Int. Cl. D25—01

U.S. Cl. D25—70

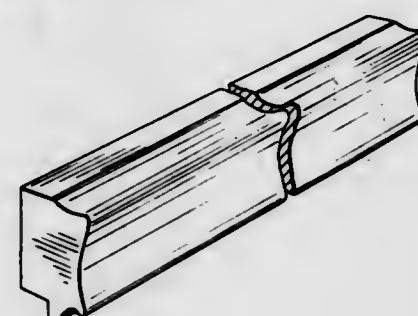


258,090

PICTURE FRAME MOULDING

Johannes Vihma, Toronto, Canada, assignor to Artistic Woodwork Co. Limited, Downsview, Canada
 Filed Apr. 2, 1979, Ser. No. 27,376
 Term of patent 14 years
 Int. Cl. D25—01

U.S. Cl. D25—74



258,091

PHARMACEUTICAL TABLET

Thomas F. Reed, Lenexa, and Angel B. Casillan, Overland Park, both of Kans., assignors to Marion Laboratories, Inc.
 Filed Aug. 31, 1978, Ser. No. 938,568
 Term of patent 14 years
 Int. Cl. D28—01; D1—02

U.S. Cl. D28—02



258,093

FARROWING CRATE

Gary F. Pinkelman, Hartington, Nebr. 68739
 Filed Mar. 16, 1979, Ser. No. 21,148
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258,094

LIVESTOCK DIP VAT

Jim H. Bowman, East Highway 275, Rte. 5, Fremont, Nebr. 68025

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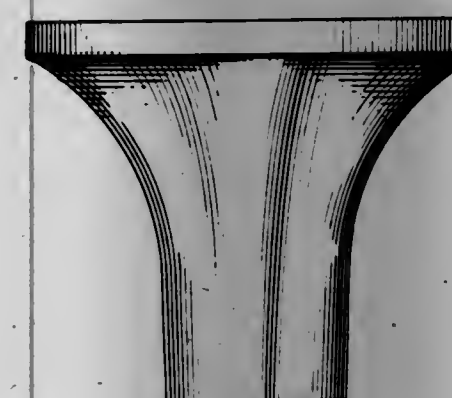
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258,092

HAIR DRYER ATTACHMENT

John R. Forsberg, Arlington Heights, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.
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TO WHOM

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Banasik, Dennis S., to Phillips Petroleum Company. Catalyst for olefin disproportionation. 4,247,417, Cl. 252-429.00R.

Baneck, Elmer W.: See—
Sandy, Julius W.; Peplow, Marvin J.; and Baneck, Elmer W., 4,246,808, Cl. 81-9.50R.

Banick, Gerard S.; and Van Seggern, Peter W., to Automatic Switch Company. Slow-opening valve operated by a solenoid pump. 4,247,077, Cl. 251-25.000.

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Banolas de Ayala, Maria P. Rotary vane machine with radial vane constraining members. 4,247,268, Cl. 418-256.000.

Bansal, Bihari; and Boettner, George B., to Corning Glass Works. Glass conditioning. 4,247,320, Cl. 65-136.000.

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Barker, Edison D., to General Motors Corporation. Burnishing tool. 4,246,684, Cl. 29-90.00R.

Barker, Graham, to Witco Chemical Corporation. Conditioning shampoo. 4,247,538, Cl. 424-70.000.

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Barnes, Arthur C.: See—
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Bartlett, Keith G., to Texas Instruments Incorporated. Punch-through load devices in high density static memory cell. 4,247,915, Cl. 365-154.000.

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Liedeck, Egon; Ruff, Wolfgang; Berger, Gerhard; and Reiter, Peter, 4,247,296, Cl. 8-506.000.

Bass, Robert H.: See—
Lockhart, Robert K., Jr.; Macko, William J.; Bass, Robert H.; Wallace, Craig S.; and Moore, Morris A., 4,247,908, Cl. 364-900.000.

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Battelle Development Corporation: See—
Fairand, Barry P.; and Golis, Matthew J., 4,246,793, Cl. 73-628.000.

Baudouin, Michel M.; and Perron, Robert M., to Rhone-Poulenc Industries. Process for preparing trimethylhydroquinone. 4,247,720, Cl. 568-772.000.

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Henke, Ulrich; Marusiak, Wojciech; and Baumler, Hermann, 4,246,880, Cl. 123-549.000.

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Hermann, Karl-Heinz; and Dorsch, Hans-Lothar, 4,247,470, Cl. 260-391.000.

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Immel, Otto; Schwarz, Hans-Helmut; and Quast, Hein, 4,247,485, Cl. 568-464.000.

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Bayer, Erich H.; Kranik, John R.; and Mueller, Wolfgang F., to International Business Machines Corporation. Cooled target disc for high

current ion implantation method and apparatus. 4,247,781, Cl. 250-492.00A.

Beale, John H.; and Moss, Ernest K., to Celotex Corporation, The. Phenolic foam and surfactant useful therein. 4,247,413, Cl. 252-356.000.

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Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., 4,247,302, Cl. 48-197.00R.

Bean, Roy E. Apparatus for continuous distillation. 4,247,369, Cl. 202-176.000.

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Becker, Frank C.; and Li, Jorge P., to Abbott Laboratories. N-substituted maleimides in liquid concentrates. 4,247,559, Cl. 424-274.000.

Becker, Frank S., Jr. Cover plate construction for boat decks. 4,246,859, Cl. 114-201.00R.

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Belot, Pierre: See—
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Stidt, Nils L.; Bengtsson, Gosta; and Krieg, Walter, 4,247,245, Cl. 414-786.000.

Benoist, Josette; Glowacki, Pierre A.; and Mandet, Gerard M. F., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Rotor flanges of turbine engines. 4,247,257, Cl. 416-221.000.

Berber, Viktor A.; Zolotenko, Vladimir A.; Naguev, Evgeny N.; Pavlov, Vladimir V.; Sokolov, Viktor E.; Syromyatnikov, Alexei N.; and Eremenko, Anatoly I. Photoelectric converter of sizes of particles employing calibration light pulses with increased stability. 4,247,783, Cl. 250-574.000.

Berendt, Hans-Ulrich: See—
Haase, Jaroslav; Horn, Ulrich; and Berendt, Hans-Ulrich, 4,247,476, Cl. 564-51.000.

Berge, Arnulf, to Elkem Spigerverket A/S. Detection of flaws in metal members. 4,247,306, Cl. 51-322.000.

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Berger, Hermann, to U.S. Philips Corporation. Transistor amplifier. 4,247,825, Cl. 330-261.000.

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Bergeron, Charles R.; Anderson, Alfred P.; and Walter, Thomas J., to Ethyl Corporation. Process for the purification of dialkylphosphorochloridothioates. 4,247,490, Cl. 260-990.000.

Bergh, John C., to Wheelabrator-Frye Inc. Furnace grating. 4,246,851, Cl. 110-281.000.

Bergman, Ulf C. Piston rod seal. 4,247,121, Cl. 277-3.000.

Bergstrom, Arne. Pulsed feedback circuit for an optoelectronic detector. 4,247,765, Cl. 250-214.00R.

Bergstrom, Donald E.; and Ruth, Jerry L., to University of California, The Regents of the. C-5 Substituted uracil nucleosides. 4,247,544, Cl. 424-180.000.

Berky, John J.; Hunziker, John, Jr.; and Zolotor, Laurence A., to United States of America, Health, Education and Welfare. Laboratory apparatus for cloning mammalian cells. 4,247,646, Cl. 435-284.000.

Bernat, Fred B., to Humatec Resources, Inc. Composition for dispensing in manner of aerosol, pressurizing catalyst useful therein, precursors thereof, and their preparation. 4,247,410, Cl. 252-305.000.

Bernotavicz, John W., to Quaker Oats Company. The Moist pet food with blood chunks and a fluid gravy system. 4,247,562, Cl. 426-72.000.

Bernstein, Seymour: See—
Lewis, Arthur J.; and Bernstein, Seymour, 4,247,535, Cl. 424-180.000.

Berson, Daniel. Inflatable gastric device for treating obesity. 4,246,893, Cl. 128-1.00R.

Berthold, Rudiger, to Hoechst Aktiengesellschaft. Process for the manufacture of aromatic amines from α , β -unsaturated cycloaliphatic ketoximes. 4,247,479, Cl. 564-436.000.

Berti, Giovanni; White, William I.; and White-Stevens, Rodric H., to Miles Laboratories, Inc. Test means and method for interference resistant determination of oxidizing substances. 4,247,297, Cl. 23-230.00B.

Beta Products, Inc.: See—
Morris, Phillip D.; and Alford, John H., 4,247,849, Cl. 340-660.000.

Betschart, Alois J. Downhill sledding system. 4,246,846, Cl. 104-69.000.

Betts, Joseph E.; and Holub, Fred F., to General Electric Company. Flame-resistant composition, and electrical product thereof. 4,247,446, Cl. 260-42.420.

Bevan, John A., to Procter & Gamble Company. The Radiographic scanning agent. 4,247,534, Cl. 424-1.000.

Beyrenther, Axel D. Dual purpose multiprint easel. 4,247,198, Cl. 355-54.000.

Bezhanov, Tigran V.; Rcheulishvili, Edisher G.; Gordeziani, David G.; and Bezhanov, Vladimir A. Concrete placing apparatus. 4,247,269, Cl. 425-63.000.

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Bezold, Helmut: See—
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Biango, Robert: See—
Fouss, James L.; Sting, Donald W.; Parker, John J.; and Biango, Robert, 4,247,136, Cl. 285-319.000.

Bidgood, William E.; and Klarin, John D., to Envirotech Corporation. Strobed power supply for an ultrasonic measuring instrument. 4,246,800, Cl. 73-861.270.

Bienfait, Charles: See—
Reginato, Luigi; Bienfait, Charles; and Stevens, Jacques, 4,247,669, Cl. 526-156.000.

Bier, Kenneth C.; and Miller, Robert J., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine. 4,246,875, Cl. 123-440.000.

Bioresearch Inc.: See—
Findl, Eugene, 4,247,811, Cl. 320-35.000.

Biotest-Serum-Institut GmbH: See—
Abdou, Mohamed, 4,247,634, Cl. 435-40.000.

Bird, William C., to Commonwealth Moulding Pty., Ltd. Stackable containers. 4,247,004, Cl. 206-506.000.

Birkle, Paul G. Limit switch. 4,247,744, Cl. 200-47.000.

Birner, Richard A.; and Einfalt, Arthur C., to Owens-Illinois, Inc. Test device for containers. 4,246,777, Cl. 73-83.000.

Bishop, William V.; and Richards, Donald L., to Eaton Corporation. Relief valve. 4,246,930, Cl. 137-493.900.

Black & Decker Inc.: See—
Turner, Terry L.; and Meloni, Robert A., 4,247,122, Cl. 277-33.000.

Blackburn, John B.: See—
Irvine, Alexander M.; and Blackburn, John B., 4,247,337, Cl. 106-288.00Q.

Blackwell, Jennings P., to Phillips Petroleum Company. Applying powder arylene sulfide polymer coatings to substrates. 4,247,598, Cl. 428-419.000.

Blaupunkt-Werke GmbH: See—
Riechmann, Werner, 4,247,889, Cl. 363-126.000.

Weidemann, Kurt, 4,247,955, Cl. 455-245.000.

Bloch, Rene; and Yonath, Jacob, to Aligena A.G. Reverse osmosis separation process using porous asymmetric acetyl cellulose membrane. 4,247,401, Cl. 210-638.000.

Blomquist, Robert O.: See—
Sutton, Roger F.; Blomquist, Robert O.; and Luck, Allan J., 4,247,511, Cl. 264-252.000.

Blount, David. Process for the production of alkali metal-cellulose-silicates and their reaction products. 4,247,657, Cl. 521-175.000.

Bluzer, Nathan, to Westinghouse Electric Corp. Charge transfer device with transistor input signal divider. 4,247,788, Cl. 307-221.00D.

Bocksruker, Ronald W.; and Schachter, Zvi H. Steam generator. 4,246,871, Cl. 122-4.00A.

Bocsanczy, Janos: See—
Knappstein, Johannes; Stalherm, Dieter; and Bocsanczy, Janos, 4,247,366, Cl. 201-41.000.

Bodart, Robert; and Werts, Jean P. A. R. J., to U.S. Philips Corporation. Arrangement for converting start-stop signals into an isochronous signal. 4,247,935, Cl. 370-43.000.

Bodenmann, Hans U.; Van Herle, Louis P.; and Martens, Winand H., to Capsugel AG. Capsule body, in particular for use with a joined capsule for a pharmaceutical preparation, and method of and apparatus for producing it. 4,247,006, Cl. 206-528.000.

Bodig, Bernd, to Robert Bosch GmbH. System for decreasing the power consumption in the output transistor of an ignition system. 4,246,881, Cl. 123-644.000.

Boegel, Gerhard, to SFS Stadler AG. Automatic screw driving apparatus. 4,246,939, Cl. 29-771.000.

Boehringer Mannheim GmbH: See—
Ziegenhorn, Joachim; Munz, Eberhard; Draeger, Brigitte; Hagen, Alexander; and Gruber, Wolfgang, 4,247,630, Cl. 435-10.000.

Boeing Company, The: See—
De Rosa, Richard T., 4,247,255, Cl. 416-141.000.

Pinson, George T., 4,246,661, Cl. 3-1.100.

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Bohnhage, Detlef: See—
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Boittin, Jean-Pierre: See—
Flesselles, Jacques; Buisson, Jean; Morin, Michel; Boittin, Jean-Pierre; Triplot, Pierre; and Vallee, Claude, 4,246,774, Cl. 73-38.000.

Bolick, Fred C., Jr., to Lanier Business Products, Inc. Dictation recording and transcribing system utilizing a multiple media cartridge apparatus. 4,247,876, Cl. 360-92.000.

Boll, Jürgen: See—
Raschbichler, Hans-Georg; Breitenbach, Otto; Boll, Jürgen; and Uttenreuther, Josef, 4,246,694, Cl. 29-596.000.

Bolton, Terence W.; Eggleston, John A.; and Alexander, David A., to Magic Brush Limited. Paint compositions. 4,247,339, Cl. 106-308.00B.

Bolton, William E.: See—
Edwards, Paul O.; Bolton, William E.; Hunter, Larry C.; and Horner, Amos A., 4,246,940, Cl. 144-209.00A.

Bonato, Marcellino. Flush-mounting electrical box assembly having switch and socket holder frame for electrical building installations. 4,247,738, Cl. 174-53.000.

Bonazza, Benedict R.; and Holtz, Hans D., deceased (by Holtz, Marilyn T., executrix), to Phillips Petroleum Company. Imidazoline fuel detergents. 4,247,300, Cl. 44-63.000.

Bondhus Corporation: See—
Bondhus, John R.; and Heim, Fred L., 4,246,811, Cl. 81-436.000.

Bondhus, John R.; and Heim, Fred L., to Bondhus Corporation. Ball head polygonal wrench. 4,246,811, Cl. 81-436.000.

Boogers, Wilhelmus P. L., to B.V. Areenco, P.M.B. Device for storing substantially similar tobacco leaf portions in a tape reel or bobbin. 4,246,911, Cl. 131-149.000.

Bopp, Barbara A.: See—
Dren, Anthony T.; and Bopp, Barbara A., 4,247,557, Cl. 424-256.000.

Borel, Robert J.: See—
Poskus, Gerald M.; Whitney, Dennis E.; Cope, James N.; and Borel, Robert J., 4,247,626, Cl. 430-498.000.

Borg-Warner Corporation: See—
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McIntosh, Arthur M., 4,246,996, Cl. 192-94.000.

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Borst, Willibard, to Gebrüder Buehler AG. Pneumatic dust extraction. 4,247,310, Cl. 55-96.000.

Bosselaers, Robert J., to RCA Corporation. Apparatus for computing the change in bearing of an object. 4,247,898, Cl. 364-460.000.

Bostrom, Herbert G.: See—
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Bourne, Joseph R., to Carrier Corporation. Absorption refrigeration system. 4,246,762, Cl. 62-148.000.

Bouwkamp, Gerald R.; and Overfield, Norbert W., to Stanadyne, Inc. Fuel injection system snubber valve assembly. 4,246,876, Cl. 123-467.000.

Bowen, Theodore. Passive remote temperature sensor system. 4,246,784, Cl. 73-339.00A.

Bowers, Louis. Aerial toy. 4,246,721, Cl. 46-79.000.

Bown, Herbert G.: See—
O'Brien, C. Douglas; Bown, Herbert G.; and Green, Thomas E., 4,247,767, Cl. 250-221.000.

BPR Grouting and Engineering, Inc.: See—
Rothrock, Richard L., 4,246,974, Cl. 173-38.000.

Bracke, William J. I.; and Lanza, Emmanuel, to Labofina S.A. Process for preparing styrenic resins. 4,247,668, Cl. 525-313.000.

Bradley, John C.; and Cherba, David M., to Westinghouse Electric Corp. Programmable dual stack relay ladder diagram line solver with shift register. 4,247,909, Cl. 364-900.000.

Brandell, John T., to Halliburton Company. Down hole pump and testing apparatus. 4,246,964, Cl. 166-106.000.

Brandman, Harold A.; Manowitz, Milton; and Coffin, David L., to Givaudan Corporation; and Hoffmann-La Roche Inc. Preservation of aqueous systems with 2-chloro-3-oxobutylamide derivatives. 4,247,712, Cl. 560-161.000.

Brannman, Alan, to Northway Marketing Ltd. Plant transplanting device. 4,246,725, Cl. 47-73.000.

Brasch, William: See—
Nobel, Fred I.; and Brasch, William, 4,247,372, Cl. 204-15.000.

Braun, Ewald: See—
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Breaz, Corneli; and Kazewych, Bohdan, to General Motors Corporation. Window guide arrangement. 4,246,726, Cl. 49-227.000.

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Raschbichler, Hans-Georg; Breitenbach, Otto; Boll, Jürgen; and Uttenreuther, Josef, 4,246,694, Cl. 29-596.000.

Brennan, William E.: See—
Fogle, Alva E., Jr.; Brennan, William E.; and Passino, Jacques, 4,246,734, Cl. 52-309.160.

Brennstoffinstitut Freiberg: See—
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Brentham, Jerry D. Dual cylinder hip exercising device. 4,247,098, Cl. 272-130.000.

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Bretting, Ekkehard: See—
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Bretts, Gerald R.: See—
Sellers, Gregory J.; and Bretts, Gerald R., 4,246,785, Cl. 73-356.000.

Brewer, Arthur D.: See—
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Brewster, Everard A. V.; and Pruett, Roy L., to Union Carbide Corporation. Cyclic hydroformylation process. 4,247,486, Cl. 568-454.000.

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Breyer, Eberhard: See—
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Briant, Jacqueline L.: See—
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Bridge, Ernest H., Jr.: See—
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Bril, John M., to Montgomery Elevator Company. Elevator control. 4,246,983, Cl. 187-29.00R.

Brinad Company: See—
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Bristol-Myers Company: See—
Lin, Jeng S.; and Sleezer, Paul D., 4,247,461, Cl. 260-239.100.

British Aluminum Company Limited, The: See—
Harris, Peter G., 4,247,378, Cl. 204-129.950.

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Daniels, Terry; Parker, Frederick J.; and Eades, Alan G., 4,247,665, Cl. 525-421.000.

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Eiloart, Nigel C.; and Webster, Gordon A., 4,246,737, Cl. 52-729.000.

Brody, Philip S., to United States of America, Army. Optical memory with fiber optic light guide. 4,247,914, Cl. 365-109.000.

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Broome, Barry G.: See—
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Gonnai, Tohru, 4,246,857, Cl. 112-254.000.

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Brown, Ronald L., to Down River International, Inc. Free standing honeycomb load spacer. 4,247,237, Cl. 410-154.000.

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- Brown, Trevor J.; and Hakken, Neal S., to General Motors Corporation. Wheel cover retention. 4,247,151, Cl. 301-37.00R.
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- Brueckner, Hartmut, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung. High efficiency vertical tail assembly combined with a variable wing geometry. 4,247,062, Cl. 244-91.000.
- Brueggemann, Harry P., to Xerox Corporation. Scanner with reflective pyramid error compensation. 4,247,160, Cl. 350-6.800.
- Brun, Craig W.; and Hand, Wilfred L., to GTE Products Corporation. Control circuit for establishing voltage-controlled or injection-locked operation of a synthesizer reference oscillator. 4,247,834, Cl. 331-172.000.
- Brunelle, Jean-Pierre, to Procatylse. Hydrodealkylation of alkylaromatic hydrocarbons. 4,247,730, Cl. 585-489.000.
- Bruno, Gualberto: See—
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- Bruun, Herta: See—
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- Bryant, James G.; and Taylor, Edmund P., to Bryant Poff Inc. Grain cup. 4,246,999, Cl. 198-713.000.
- Bryant Poff Inc.: See—
Bryant, James G.; and Taylor, Edmund P., 4,246,999, Cl. 198-713.000.
- BSR Limited: See—
Evans, Philip H., 4,247,118, Cl. 369-233.000.
- Buck, William R.; and Dodd, John R., to Conoco, Inc. Process for obtaining 2,5-xyleneol from a 2,4-/2,5-xyleneol mixture. 4,247,719, Cl. 568-750.000.
- Buckbee, John A.: See—
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- Buckeye Cellulose Corporation, The: See—
Williams, James C., 4,247,362, Cl. 162-13.000.
- Buddenhagen, Uwe, to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft. Process and apparatus for degasifying a liquid. 4,247,309, Cl. 55-36.000.
- Budzych, Tadeusz. Remotely controlled load responsive valves. 4,246,934, Cl. 137-596.130.
- Buesing, Jonathan P., to Ecodyne Corporation. Chemical solution dispenser. 4,247,396, Cl. 210-126.000.
- Buhr, Gerhard: See—
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- Buisson, Jean: See—
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- Bullock, Russel F. Method for identifying an ovulation phase within a menstrual cycle of a woman. 4,246,907, Cl. 128-738.000.
- Buning, Robert; Hanisch, Horst; Hass, Hansjürgen; and Rodder, Karl-Martin, to Dynamit Nobel Aktiengesellschaft. Aqueous solution of mixtures of silicon-organic compounds. 4,247,436, Cl. 260-29.60H.
- Burdette, Stephen D.: See—
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- Bureau BBR Ltd.: See—
Muller, Hans R., 4,246,937, Cl. 138-108.000.
- Burkart, Klaus; and Wintzer, Manfred, to Siemens Aktiengesellschaft. Method of indirectly connecting two parts. 4,247,034, Cl. 228-116.000.
- Burklund, Vernon D., to United States of America, Navy. High pressure spherical piston. 4,246,833, Cl. 92-155.000.
- Burnham, Kenneth B., Jr.: See—
Schora, Frank C., Jr.; and Burnham, Kenneth B., Jr., 4,247,240, Cl. 414-218.000.
- Burns, Ivan A.; and Hochmuth, William R., to ACF Industries, Incorporated. Restricted movement valve seats for an expanding gate valve. 4,246,928, Cl. 137-315.000.
- Burton Medical, Inc.: See—
Raines, Kenneth, 4,246,932, Cl. 137-512.000.
- Burt, Frank R. Apparatus for use in drawing designs. 4,246,702, Cl. 33-174.00B.
- Burysek, Frantisek: See—
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- Busacca, Guido; Meli, Vincenzo; and Passaglia, Arcangelo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Reciprocating piston tuning mechanism for a microwave oscillator. 4,247,828, Cl. 331-90.000.
- Buselli, Gioacchino; and O'Neill, Brian M., to Commonwealth Scientific and Industrial Research Organization. Transient electromagnetic prospecting apparatus possessing noise suppression features. 4,247,821, Cl. 324-336.000.
- Bush, Vincent N.: See—
Hiniker, Thomas A.K.; and Bush, Vincent N., 4,247,913, Cl. 365-228.000.
- Bussmann, Heinrich: See—
Pogrzeba, Gerhard; Geiger, Julius; Neworal, Alfred; Bussmann, Heinrich; Houricolon, Roland; Hannappel, Rudolf; and Auweiler, Heinz, 4,247,273, Cl. 425-174.200.
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- Buxton, Larry E., to Bemis Company, Inc. Package and packaging method. 4,247,005, Cl. 206-525.000.
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Boogers, Wilhelmus P. L., 4,246,911, Cl. 131-149.000.
- Byrne, John P., to Garrett Corporation, The. Method and apparatus for isolation of external loads in a heat exchanger manifold system. 4,246,959, Cl. 165-83.000.
- C. Hochiki Corporation: See—
Kitta, Hiroyuki; and Yamauchi, Yukio, 4,247,848, Cl. 340-584.000.
- Cackley, George W.: See—
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- Cafarelli, Ralph J. High-speed stabilization of molded parts. 4,246,917, Cl. 134-105.000.
- Cage, David E.: See—
Glowacki, Gerald A.; and Cage, David E., 4,247,091, Cl. 269-325.000.
- Caldwell, Richard K., to Vapor Corporation. Fluid pump drive system. 4,247,266, Cl. 417-567.000.
- Cale, Albert D., Jr., to A. H. Robins Company, Inc. 4-Substituted 2-iminoimidazolidine compounds. 4,247,705, Cl. 548-315.000.
- California R & D Center: See—
Smith, Jay, III; Jones, Lawrence T.; Karr, Gerald S.; and Grimm, Thomas H., 4,247,107, Cl. 273-86.00B.
- Calpis Food Industry Co., Ltd., The: See—
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- Utena, Makoto; Yamada, Kazuhisa; Kamada, Hidemoto; and Inagami, Kaoru, 4,247,574, Cl. 426-656.000.
- Calvert, Seymour; and Patterson, Ronald G., to Air Pollution Technology, Inc. Preformed-spray scrubber. 4,247,308, Cl. 55-8.000.
- Campbell, A. C. Wood splitter apparatus. 4,246,941, Cl. 144-193.00B.
- Campbell, Charles R.; and Cutchens, Charles E., to Monsanto Company. Catalyst passivation in production of amines. 4,247,481, Cl. 364-492.000.
- Campi, Ambrogio: See—
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- Canada, Her Majesty the Queen in right of, as represented by the Minister of Highways and Transportation: See—
Gabel, Lorne G.; Paulson, Garry E.; and Kirk, Thomas G., 4,247,870, Cl. 358-93.000.
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O'Brien, C. Douglas; Bown, Herbert G.; and Green, Thomas E., 4,247,767, Cl. 250-221.000.
- Canadian Instrumentation and Research: See—
Failes, Michael, 4,247,202, Cl. 356-310.000.
- Cann, Peter L.; Duell, Richard J.; and Casler, Donald J., to Carrier Corporation. Non-reverse hot gas defrost system. 4,246,760, Cl. 62-81.000.
- Canon Kabushiki Kaisha: See—
Date, Nobuaki; Sakurada, Nobuaki; Shimizu, Masami; and Aizawa, Hiroshi, 4,247,189, Cl. 354-173.000.
- Hashimoto, Shigeru; Mitani, Taizo; Isobe, Takashi; Aoyagi, Masao; Sumi, Akiyasu; and Tanaka, Katsumi, 4,247,190, Cl. 354-286.000.
- Ito, Yuji, 4,247,176, Cl. 351-7.000.
- Komori, Shigehiro; and Ogawa, Hiroshi, 4,247,192, Cl. 355-8.000.
- Sado, Ichiro, 4,247,902, Cl. 364-710.000.
- Tamura, Shuichi, 4,247,187, Cl. 354-25.000.
- Tokuhara, Mitsuhiro; and Sawamura, Mitsuharu, 4,247,167, Cl. 350-166.000.
- Tsuji, Sadahiko, 4,247,171, Cl. 350-464.000.
- Uchidoi, Masanori; Aizawa, Hiroshi; Urushibara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,247,186, Cl. 354-24.000.
- Capiris, Thomas: See—
Sircar, Jagadish C.; and Capiris, Thomas, 4,247,555, Cl. 424-251.000.
- Capsugel AG: See—
Bodenmann, Hans U.; Van Herle, Louis P.; and Martens, Winand H., 4,247,006, Cl. 206-528.000.
- Cardiac Pacemakers, Inc.: See—
Feiman, Vladimir; and Luksha, Eugene, 4,247,609, Cl. 429-194.000.
- Carella, Richard F.; and Perry, Thomas W., to General Motors Corporation. Seat height adjuster. 4,247,071, Cl. 248-396.000.
- Carl Schenck AG, Firma: See—
Wolf, Lutz, 4,247,497, Cl. 264-40.400.
- Carl Still, Firma: See—
Knappstein, Johannes; Stalherm, Dieter; and Bocsanczy, Janos, 4,247,366, Cl. 201-41.000.
- Carl Still GmbH & Co. KG, Firma: See—
Weber, Heinrich; Dungs, Horst; Bockmann, Franz; Schmauch, Hugo; and Flasche, Karl-Heinz, 4,247,365, Cl. 201-41.000.
- Carl Zeiss-Stiftung: See—
Daniels, Erwin J.; and Korn, Siegfried, 4,247,179, Cl. 351-171.000.
- Carlson, Kenneth E.: See—
Raisch, Henry W.; and Carlson, Kenneth E., 4,247,565, Cl. 426-126.000.
- Carlson, Robert L.; Jack, Ronald H.; and Leno, Theodore M., to Teletype Corporation. Printer ribbon cartridge having lap spliced ribbon and reinking means. 4,247,209, Cl. 400-195.000.

- Carpenter, Kim H.; and O'Dell, Robert R., to NCR Corporation. Gas panel with improved circuit for display operation. 4,247,854, Cl. 340-758.000.
- Carrier Corporation: See—
Bourne, Joseph R., 4,246,762, Cl. 62-148.000.
- Cann, Peter L.; Duell, Richard J.; and Casler, Donald J., 4,246,760, Cl. 62-81.000.
- Drucker, Alan S., 4,246,956, Cl. 165-29.000.
- Carrington, Roy; and Halek, George, to Pfizer Inc. Preparation of low-calorie food ingredients from starch. 4,247,568, Cl. 426-321.000.
- Carro, Jose: See—
Fruitstone, Mitchell J.; Carro, Jose; and Pixton, Betty G., 4,247,536, Cl. 424-12.000.
- Carroll, James F. Board game. 4,247,114, Cl. 273-274.000.
- Carter, George B., to IMI Kynoch Limited. Case priming. 4,247,494, Cl. 264-3.00R.
- Carter, Jack D. Safety catch for a movable bucket fork lift attachment. 4,247,243, Cl. 414-724.000.
- Cartier, Peter G., to Rohm and Haas Company. Purification of sugars using emulsion anion exchange resins. 4,247,340, Cl. 127-48.000.
- Carton-Craft Corp.: See—
Wagner, Kenneth E., 4,246,711, Cl. 40-312.000.
- Caruel, Jacques E. J.; and Gastebois, Philippe M. D., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Antipollution combustion chamber. 4,246,758, Cl. 60-747.000.
- Case, Richard V.; Mezei, Louis M.; and Siegel, Jack M., to Pabst Brewing Company. Reagent for colorimetric determination of creatine phosphokinase. 4,247,633, Cl. 435-17.000.
- Casler, Donald J.: See—
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- Cassella Aktiengesellschaft: See—
von Brachel, Hanswilli; Heinrich, Ernst; Grawinger, Otto; Hintermeier, Karl; and Kindler, Horst, 4,247,456, Cl. 260-156.000.
- Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni. 11-Deoxy anthracycline antibiotics, their preparation and use. 4,247,545, Cl. 424-181.000.
- Castro, Anthony J., to Akzona Incorporated. Methods for making microporous products. 4,247,498, Cl. 264-41.000.
- Catalyst Research Corporation: See—
O'Boyle, Matthew, 4,247,607, Cl. 429-101.000.
- Cate, Thomas M.; and Schmooch, James C., to Raytheon Company. Electronic circuitry for multiplying/dividing analog input signals. 4,247,789, Cl. 307-230.000.
- Caterpillar Tractor Co.: See—
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,246,992, Cl. 192-13.00R.
- Hupe, Robert F., 4,247,750, Cl. 219-73.000.
- Keke, Frank E., 4,246,810, Cl. 81-37.380.
- Kizer, Richard W.; Anderson, Arlynn W.; and Untz, Robert W., 4,247,275, Cl. 425-298.000.
- Kohler, Ramon C., 4,246,989, Cl. 192-4.00A.
- Livesay, Richard E., 4,247,149, Cl. 299-70.000.
- Cavalcante, Vittorio, to Askoll s.r.l. Centrifugal pump for small throughputs, particularly for water circulation in aquariums and the like. 4,247,265, Cl. 417-424.000.
- Cefilac: See—
Desverchere, Jean, 4,247,510, Cl. 264-236.000.
- Cekander, Eugene J.: See—
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- Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Toney, Junsuke, to Pfizer Inc. Ansamycin antibiotic. 4,247,462, Cl. 260-239.30P.
- Celotex Corporation, The: See—
Beale, John H.; and Moss, Ernest K., 4,247,413, Cl. 252-356.000.
- Century International Corp.: See—
Ingermann, Donald E.; Sauer, Eldon G.; and Smith, Ronald L., 4,246,674, Cl. 15-4.000.
- Cerami, Anthony; Koenig, Ronald J.; Javid, Jamshid; and Pettis, Penelope K., to Rockefeller University, The. Hemoglobin A_{1c} radioimmunoassay. 4,247,533, Cl. 424-1.000.
- Cerny, Jacqueline; and Troncy, Robert, to Rhone-Poulenc Industries. Compositions based on flameproofed polyamide. 4,247,450, Cl. 260-45.75W.
- Cerrone, Robert A.: See—
Skinner, David R.; Clemens, Ralph S.; and Cerrone, Robert A., 4,246,872, Cl. 122-510.000.
- Cetus Corporation: See—
Neideman, Saul L.; Amon, William F.; Jr.; and Geigert, John, 4,247,641, Cl. 435-123.000.
- Cha, Chang Y., to Occidental Oil Shale, Inc. Method for operating an in situ oil shale retort having channelling. 4,246,965, Cl. 166-251.000.
- Chaix, Jean E.; Chlique, Bernard; and Fajeau, Maurice, to Commissariat a l'Energie Atomique; and Fives-Cail Babcock. Plate heat exchanger. 4,246,961, Cl. 165-145.000.
- Chambley, Phillip W.: See—
Norris, Alan H.; and Chambley, Phillip W., 4,246,750, Cl. 57-293.000.
- Champion International Corporation: See—
Lyons, Russell J., 4,246,659, Cl. 2-175.000.
- Thompson, Kenneth; and Ihde, Richard C., 4,247,588, Cl. 428-157.000.
- Chan, Kwok S.: See—
Winton, Murray T.; Beezley, Dale L.; and Chan, Kwok S., 4,246,845, Cl. 102-206.000.
- Chandler Evans Inc.: See—
Pech, Karl H.; and Jahrstorfer, George W., 4,247,263, Cl. 417-203.000.
- Chang, Ching M., to Union Carbide Corporation. High intensity ionization-wet collection method and apparatus. 4,247,507, Cl. 55-2.000.
- Chang, Kin-Tai, to American Can Company. Method for producing bis-[4-(diphenylsulfonio)phenyl] sulfide bis-MX₆ photoinitiator. 4,247,473, Cl. 260-440.000.
- Chao, Andy P., to Stuart Plastics Ltd. Refinishing of the surfaces of bodies of a thermoplastic resin. 4,247,580, Cl. 427-140.000.
- Chaplin, Gary F.; DeTolla, Francis L.; and Griffin, James G., to United Technologies Corporation. Outer air seal support structure for gas turbine engine. 4,247,248, Cl. 415-136.000.
- Chapman, Walter H.; Hiland, David E.; and Knies, Erwin B., to Du Pont de Nemours, E. I., and Company. Bumper assisted for cart accumulator. 4,246,847, Cl. 104-172.08T.
- Charles Stark Draper Laboratory, Inc., The: See—
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- Charlet, Alain; Coquery, Jean-Paul; and Mounier, Francois, to Rhone-Poulenc Industries. Apparatus for the thermal conversion of gypsum. 4,247,518, Cl. 422-142.000.
- Chatani, Yasushi, to Kawada Co., Ltd. Interconnecting toy block arrangement. 4,246,718, Cl. 46-25.000.
- Chen, Nai Y.; Walsh, Dennis E.; Yan, Tsoung Y.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Liquefaction of carbonaceous materials. 4,247,384, Cl. 208-8.0LE.
- Chen, Tsang J., to Eastman Kodak Company. Photographic elements having hydrophilic colloid layers containing hydrophobic ultraviolet absorbers uniformly loaded in latex polymer particles. 4,247,627, Cl. 430-512.000.
- Chenery, Brian R., to Haverhill Meat Products Limited. Meat cutting apparatus. 4,246,837, Cl. 99-486.000.
- Chenevard, Alexis, to Sapal Societe Anonyme des Plieuses Automatiques. Method and apparatus for filling a box with objects. 4,246,740, Cl. 53-448.000.
- Cheng, Paul J.; and Mills, King L., to Phillips Petroleum Company. Apparatus and method for producing carbon black. 4,247,530, Cl. 423-450.000.
- Cherault, Michel, to Regie Nationale des Usines Renault. Floor covering. 4,247,587, Cl. 428-155.000.
- Cherba, David M.: See—
Bradley, John C.; and Cherba, David M., 4,247,909, Cl. 364-900.000.
- Martin, Jonathan F.; and Cherba, David M., 4,247,901, Cl. 364-900.000.
- Chevron Research Company: See—
Cleveland, James D., 4,247,468, Cl. 260-343.600.
- Honnen, Lewis R., 4,247,301, Cl. 44-63.000.
- Simic, Milutin, 4,247,336, Cl. 106-287.230.
- Chiba, Shinsaku: See—
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- Chiccarelli, Fortunato S., to American Cyanamid Company. Lactone metabolites of 3-(4-biphenylcarbonyl)propionic acid. 4,247,466, Cl. 260-343.600.
- Chickini, Gerald D., Jr.; Musch, Gordon F.; Bailey, Donald V.; and Bartashevich, William E., to Kamak Corporation. Alignment device. 4,247,225, Cl. 405-260.000.
- Chikawa, Yasunori: See—
Hayakawa, Masao; Maeda, Takamichi; Horii, Teruo; Kumura, Masao; and Chikawa, Yasunori, 4,247,590, Cl. 428-210.000.
- Child, James R., to Quinton Hazell Limited. Shock absorbing apparatus for vehicles. 4,247,138, Cl. 293-103.000.
- Chimura, Kozo: See—
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,247,931, Cl. 368-185.000.
- Chin, Tunghai. AC-AC Converter device. 4,247,887, Cl. 363-37.000.
- Ching, Ta-Yen, to General Electric Company. Chloroformates of cyanoacrylates. 4,247,475, Cl. 260-465.00D.
- Chino Optical Co., Ltd.: See—
Yamamoto, Noboru, 4,247,170, Cl. 350-430.000.
- Chivari, Ilie. Coupling for the vibration-damping transmission of torques. 4,246,767, Cl. 64-11.00R.
- Chlique, Bernard: See—
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- Chojnacki, Dennis A.: See—
Mayer, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., 4,247,284, Cl. 432-49.000.
- Christiansen, Hans; and Braun, Ewald, to Siemens Aktiengesellschaft. Installation for the monitoring of message transmission systems with lightwave conductors. 4,247,956, Cl. 455-606.000.
- Christiansen, Marion W. Heat recovery and solar assist heating system. 4,246,887, Cl. 126-427.000.
- Christopher, Todd J.: See—
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- Chuang, Jim P.: See—
Yuris, Nora; Cekander, Eugene J.; Kazaoka, Masaru; and Chuang, Jim P., 4,247,759, Cl. 235-381.000.
- Chun, Heungwoo W.: See—
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- Chung, Daniel A., to Goodyear Tire & Rubber Company, The. Polyurethane derived from both an aliphatic dicarboxylic acid and an

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Ciavattini, Anthony; Flynn, Jack; and Ujvary, Josef, to Pennwalt Corporation. Link-clutch film drive mechanism for panoramic dental X-ray machine. 4,247,779, Cl. 250-439.00P.

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Diel, Peter J., 4,247,691, Cl. 544-183.000.

Haase, Jaroslav; Horn, Ulrich; and Berendt, Hans-Ulrich, 4,247,476, Cl. 564-51.000.

Haug, Theobald; and Kiefer, Jurg, 4,247,672, Cl. 526-262.000.

Irvine, Alexander M.; and Blackburn, John B., 4,247,337, Cl. 106-288.00Q.

Perrin, Pierre; Hegar, Gert; Siegrist, Gerald; Seiler, Herbert; and Horn, Ulrich, 4,246,670, Cl. 8-566.000.

Rasberger, Michael, 4,247,694, Cl. 546-11.000.

Renner, Alfred; and Zahir, Abdul-Cader, 4,247,670, Cl. 526-259.000.

Wurmli, Albert, 4,247,293, Cl. 8-94.240.

Ziobrowski, Bernard G., 4,247,338, Cl. 106-298.000.

Zweifel, Hans; Kvita, Vratislav; and Berger, Joseph, 4,247,660, Cl. 525-61.000.

Citizen Watch Company Limited: See—

Oooka, Mituo; Yoshida, Makoto; Yamauchi, Masamichi; and Suzuki, Choken, 4,247,927, Cl. 368-30.000.

Claeson, Karl G.: See—

af Ekenstam, Bo T.; Aurell, Leif E.; Claeson, Karl G.; and Karlsson, Birgitta G., 4,247,454, Cl. 260-112.50R.

Clark, Stanley R.; and Lohrentz, Howard R., to Hession Corporation. Double sickle mechanism. 4,246,742, Cl. 56-259.000.

Claxton, Gerald L., to Up-Right, Inc. Hydraulic suspension for harvesting machines. 4,247,126, Cl. 280-6.00H.

Clegg, Maurice A.: See—

Ruscoc, Michael J. H.; Sarkar, Kshitindra M.; and Clegg, Maurice A., 4,247,374, Cl. 204-23.000.

Clemens, Ralph S.: See—

Skinner, David R.; Clemens, Ralph S.; and Cerrone, Robert A., 4,246,872, Cl. 122-510.000.

Cleveland, James D., to Chevron Research Company. Lactone preparation by cyclization. 4,247,468, Cl. 260-343.600.

Cobbs, Walter H., Jr.; Shong, Robert G.; and Rehman, William R., to Nordson Corporation. Method of coating with film-forming solids. 4,247,581, Cl. 427-373.000.

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Credle, William S., 4,247,018, Cl. 222-1.000.

Coffen, David, to Hoffmann-La Roche Inc. Lasalocid derivatives. 4,247,690, Cl. 544-149.000.

Coffen, David L.: See—

Brandman, Harold A.; Manowitz, Milton; and Coffen, David L., 4,247,712, Cl. 560-161.000.

Cohen, Abraham B.; and Fan, Roxy N., to Du Pont de Nemours, E. I., and Company. Negative-working multilayer photosensitive tonable element. 4,247,619, Cl. 430-253.000.

Cohen, Abraham M.; and James, Henry L., to Wasko Gold Products Corp. Casting tree for tandem mold preparation and method of use thereof. 4,246,954, Cl. 164-35.000.

Cohen, Hyman L.: See—

McGuckin, Hugh G.; and Cohen, Hyman L., 4,247,615, Cl. 430-145.000.

Coleman, James H., to Sprague Electric Company. Discoidal monolithic ceramic capacitor. 4,247,881, Cl. 361-302.000.

Colson Company, The: See—

Downing, Joe R.; and Williams, Leslie G., 4,246,677, Cl. 16-35.00R.

Colt Industries Operating Corp.: See—

Bier, Kenneth C.; and Miller, Robert J., 4,246,875, Cl. 123-440.000.

Wakeman, Russell J., 4,246,929, Cl. 137-382.000.

Combustion Engineering, Inc.: See—

Mehta, Arun K., 4,246,853, Cl. 110-347.000.

Commissariat à l'Energie Atomique: See—

Chaix, Jean E.; Chlique, Bernard; and Fajeau, Maurice, 4,246,961, Cl. 165-145.000.

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Bird, William C., 4,247,004, Cl. 206-506.000.

Commonwealth Scientific and Industrial Research Organization: See—

Buselli, Gioacchino; and O'Neill, Brian M., 4,247,821, Cl. 324-336.000.

Communal, Jean-Noël: See—

Falcoz, Pierre; Filhol, Raymond; and Communal, Jean-Noël, 4,247,334, Cl. 106-90.000.

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Vechot, Bernard, 4,246,724, Cl. 46-249.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: See—

Decuyper, Jean-Claude, 4,247,873, Cl. 358-282.000.

Compagnie Internationale pour l'Informatique: See—

Fumeron, Joel, 4,247,856, Cl. 340-771.000.

Maussion, Daniel, 4,247,760, Cl. 235-449.000.

Condec Corporation: See—

Phipps, Arthur L., 4,247,276, Cl. 425-325.000.

Conoco, Inc.: See—

Buck, William R.; and Dodd, John R., 4,247,719, Cl. 568-750.000.

Gorin, Everett, 4,247,385, Cl. 208-10.000.

McClaffin, Gifford G., 4,246,919, Cl. 137-13.000.

McClaffin, Gifford G., 4,246,920, Cl. 137-13.000.

Thakur, Pramod C.; Mason, Charles E.; Lauer, Stephen D.; and Jones, Emrys H., Jr., 4,247,312, Cl. 55-166.000.

Zedler, Martin R., 4,247,846, Cl. 340-523.000.

Constien, Vernon G., to Dow Chemical Company. The. Aqueous based slurry and method of forming a consolidated gravel pack. 4,247,430, Cl. 260-29.2EP.

Cook, Joseph E. Clip-on sunglasses. 4,247,178, Cl. 351-47.000.

Cooper, David A.; Monoski, William T.; and Vibert, Edward J., to GTE Products Corporation. Ground fault receptacle reversible conductors. 4,247,840, Cl. 335-18.000.

Cooper Industries, Inc.: See—

Mayer, James R., 4,246,973, Cl. 173-8.000.

Cooper, William J., to International Telephone and Telegraph Corporation. Overrange valve or the like. 4,247,078, Cl. 251-86.000.

Cope, James N.: See—

Poskus, Gerald M.; Whitney, Dennis E.; Cope, James N.; and Borel, Robert J., 4,247,626, Cl. 430-498.000.

Coquery, Jean-Paul: See—

Charlet, Alain; Coquery, Jean-Paul; and Mounier, Francois, 4,247,518, Cl. 422-142.000.

Cordes, Harry: See—

Seibert, Chesterfield F.; and Cordes, Harry, 4,247,311, Cl. 55-162.000.

Cornell, Ronald G.; and Haben, Dale E., to Bell Telephone Laboratories, Incorporated. Arrangement for deleting leading message portions. 4,247,910, Cl. 364-900.000.

Corning Glass Works: See—

Bansal, Bihari; and Boettner, George B., 4,247,320, Cl. 65-136.000.

Cornwell, Alexander M., Jr., to Jackes-Evans Manufacturing Company. Mailbox signal and door handle device. 4,247,039, Cl. 232-35.000.

Corth, Richard, to Westinghouse Electric Corp. Low-pressure mercury-vapor discharge lamp for treatment of hyperbilirubinemia and method. 4,246,905, Cl. 128-395.000.

Corwin, Daniel W.; Koplowl, Harold S.; Moros, David; and Anagnostopoulos, Paul, to Wang Laboratories, Inc. Text editing system having flexible repetitive operation capability. 4,247,906, Cl. 364-900.000.

Cory, George J. Attitude recovery device for hang glider. 4,247,060, Cl. 244-16.000.

Costanzo, Dean V. Industrial vacuum apparatus. 4,246,675, Cl. 15-315.000.

Cotrell, Phillip L.: See—

Egan, Richard R.; and Cotrell, Phillip L., 4,247,425, Cl. 252-548.000.

Coulon, Serge; and Amour, Louis. Apparatus for cutting out and extracting the pulp of a fruit or vegetable without ruining its peel or rind. 4,246,700, Cl. 30-300.000.

Courtoy, Jean-Francois, to Eurofloor S.A. Manufacture of a composite covering. 4,247,353, Cl. 156-277.000.

Covill, John W.; and Larson, Henry, Jr. Crimping tool having dual purpose ram. 4,246,771, Cl. 72-326.000.

Coyle, Terrence W. Transfer mechanism. 4,247,244, Cl. 414-753.000.

CPC International Inc.: See—

Tamura, Masaki; Shimizu, Mizuho; and Tago, Minoru, 4,247,637, Cl. 435-96.000.

Credle, William S., to Coca-Cola Company. The. Non-pressurized fluid transfer system. 4,247,018, Cl. 222-1.000.

Cromeens, Gary L., to Industrial Woodworking Machine Co. Inc. Infeed assembly for random length end shaping machines. 4,246,943, Cl. 144-245.00R.

Crosby, Lawton H.; Ferris, M. P.; and Melzer, Kurt, to Morley Furniture Spring Construction. Spring construction. 4,247,089, Cl. 267-105.000.

Crown Recreation, Inc.: See—

Goldsmith, Eli D., 4,247,104, Cl. 273-73.00C.

Crump, John M., Jr. Vehicle fuel economy energy conservation indicating device and process for use. 4,247,757, Cl. 235-615.000.

Cubic Western Data: See—

Yuris, Nora; Cekander, Eugene J.; Kazaoka, Masaru; and Chuang, Jim P., 4,247,759, Cl. 235-381.000.

Cucinotta, Victor; and Florea, George. Heated floor mat. 4,247,756, Cl. 219-528.000.

Cullen, Walter P.: See—

Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,247,462, Cl. 260-239.30P.

Cullum, Clifton D., Jr.; Keefe, George E.; Kryder, Mark H.; and Lin, Yeong-Show, to International Business Machines Corporation. Magnetic bubble domain chip with enhanced propagation margins. 4,247,912, Cl. 365-15.000.

Culp, Charles R., to Armstrong Cork Company. Method of making a smooth, dimensionally stable, mica-filled, glass fiber sheet. 4,247,364, Cl. 162-136.000.

Culter, Robert G.; and Osborne, Charles S., Jr., to Tektronix, Inc. Method and apparatus for improving resolution and linearity in a beam-index display system. 4,247,869, Cl. 358-67.000.

Cunningham, Anna E.: See—

Cunningham, Gordon R., 4,246,678, Cl. 119-54.000.

Cunningham, Gordon R., to Cunningham, Anna E., a part interest. Animal feeder. 4,246,678, Cl. 119-54.000.

Cutchens, Charles E.: See—

Campbell, Charles R.; and Cutchens, Charles E., 4,247,481, Cl. 564-492.000.

Cutler, John H.; and Walker, Loren H., to General Electric Company. Reversible inverter system having improved control scheme. 4,247,890, Cl. 363-137.000.

Cutter Laboratories, Inc.: See—

Travalent, Louis J.; and Arenson, Herbert, 4,246,898, Cl. 128-218.00P.

Cyborex Laboratories, Inc.: See—

Hedges, Walter P., 4,247,786, Cl. 307-35.000.

Cycowicz, Izchak; and Frimmet, Alfred, to Mohasco Corp. Recliner chair which moves forwardly relative to a wall as the body supporting means of the chair moves from upright to reclined positions. 4,247,146, Cl. 297-322.000.

D. W. Zimmerman Mfg. Inc.: See—

Dwyer, Robert E., 4,247,092, Cl. 270-54.000.

Dach, Michael M.: See—

Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., 4,247,302, Cl. 48-197.00R.

Dages, Charles L.: See—

Jeffers, Michael F.; Shekel, Jacob; Dages, Charles L.; and Glaab, Joseph, 4,247,106, Cl. 273-85.00G.

Dahl, Helmut: See—

Kieslich, Klaus; Raduchel, Bernd; Skubalia, Werner; Vorbruggen, Helmut; and Dahl, Helmut, 4,247,635, Cl. 435-63.000.

Dahl, Klaus J., to Raychem Corporation. Aromatic ketone and sulfone polymers and process for the preparation thereof. 4,247,682, Cl. 528-175.000.

Dahmen, Karl; Engel, Jurgen; Gross, Heinz; Henning, Martin; and Wennemann, Werner, to Hoesch Werke Aktiengesellschaft. Method of and device for producing multi-layer pipes. 4,247,033, Cl. 228-102.000.

Dahms, Francis A., to Emhart Industries, Inc. Adjustable shear blade for a straight line shears. 4,246,819, Cl. 83-582.000.

Dahms, Francis A., to Emhart Industries, Inc. Apparatus for straight line shearing. 4,246,820, Cl. 83-617.000.

Daiichi-Nippon Cables, Ltd.: See—

Yonekura, Shiro; Matsutani, Tsutomu; and Nishikawa, Yoshiyuki, 4,247,271, Cl. 425-68.000.

Daimler-Benz Aktiengesellschaft: See—

Fiehl, Gerd, 4,247,131, Cl. 280-808.000.

Knapp, Jost; and Sawall, Gerhard, 4,247,128, Cl. 280-403.000.

Dallos, Andras; Buckbee, John A.; and Spencer, Gordon R., to Raytheon Company. Cathode current control system. 4,247,801, Cl. 315-107.000.

Damiens, Gerard, to Fresse S.A. Method of making a lightweight plaster from granules of expanded thermoplastics. 4,247,649, Cl. 521-55.000.

Daniels, Erwin J.; and Korn, Siegfried, to Carl Zeiss-Stiftung. Multifocal spectacle lens. 4,247,179, Cl. 351-171.000.

Daniels, Terry; Parker, Frederick J.; and Eades, Alan G., to British Industrial Plastics Limited. Thermoplastics polymer compositions. 4,247,665, Cl. 525-421.000.

Daniels, William H.; Dennis, Mahlon D.; and Feingold, Earl, to General Electric Company. Abrasive structures and methods of their preparation. 4,247,303, Cl. 51-307.000.

Danly Machine Corporation: See—

Hugo, Harding R., 4,246,815, Cl. 83-139.000.

Date, Nobuaki; Sakurada, Nobuaki; Shimizu, Masami; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Camera with built-in electric wind-up mechanism. 4,247,189, Cl. 354-173.000.

Daudt, Stephen W.: See—

Wood, Charles L.; and Daudt, Stephen W., 4,247,317, Cl. 65-29.000.

Dautenberg, Jozef M. A.; Mulders, Joannes M. C. A.; and Stijfs, Petrus A. M. J., to Stamicarbon, B.V. Process for the preparation of α - β unsaturated alcohols. 4,247,718, Cl. 568-654.000.

Davey, William E., to A & T Burt Limited. Method and mechanism for switching heat generating equipment. 4,247,040, Cl. 236-46.00R.

Davies, Richard G., to Ford Motor Company. Metallic supported catalytic system and a method of making it. 4,247,422, Cl. 252-465.000.

Davis, George L., to U.S. Philips Corporation. Method of making cathode support nickel strip. 4,246,682, Cl. 29-25.110.

Davis, Steven S., to Envirotech Corporation. Dual belt pulp washer. 4,246,669, Cl. 8-156.000.

Dayco Corporation: See—

Williams, Leland E.; and Griffith, James O., 4,246,842, Cl. 101-367.000.

Dayet, Jacques, to Societe Anonyme dite: Delle-Alsthom. Safety device for a pneumo-hydraulic control circuit. 4,246,923, Cl. 137-116.000.

De Staat der Nederlanden, te dezen vertegenwoordigd door de directeur-generaal der Posterijen, Telegrafie en Telefonie: See—

Wilcke, Robert; and Otten, Antoon A. J., 4,247,857, Cl. 343-117.00R.

Deal, Troy M. Self-cleaning weedless propeller. 4,246,862, Cl. 440-73.000.

Dean, Raymond H., to Tempmaster Corporation. Method and apparatus for forced air balancing of damper blades. 4,246,918, Cl. 137-1.000.

DeBie, Johan H.: See—

Bannon, Robert P.; and DeBie, Johan H., 4,247,368, Cl. 202-158.000.

De Brouckere, Lucien C., to International Standard Electric Corporation. Crystalline layer growth method. 4,247,360, Cl. 156-618.000.

Debruyne, Frank E., Jr.; Scott, Kenneth G.; and Weed, Lucretia J., to Polaroid Corporation. Silver diffusion transfer film unit transparency. 4,247,617, Cl. 430-228.000.

Decca Limited: See—

Swatten, Royston W., 4,247,747, Cl. 200-314.000.

Decuyper, Jean-Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Self-adaptive, all-or-nothing converter of an analog image analysis signal. 4,247,873, Cl. 358-282.000.

de Graaf, Stephanus A. G.: See—

Sinnige, Hermannus J. M.; Hageman, Hendrik J.; Mijs, Willem J.; de Graaf, Stephanus A. G.; and Oakes, Vincent, 4,247,692, Cl. 544-194.000.

de Jong, Aaldert J., to Shell Oil Company. Preparation of dihydromyrcenol. 4,247,723, Cl. 568-875.000.

de Jonge, Pieter H.: See—

Meijer-Hoffman, Lucia R. M.; and de Jonge, Pieter H., 4,247,645, Cl. 435-262.000.

De Kok, Robbert J., to Shell Oil Company. Method and apparatus for detecting the location of a marine pipeline or cable. 4,247,923, Cl. 367-88.000.

Delbag-Luftfilter GmbH: See—

Neumann, Gerhard M., 4,247,315, Cl. 55-350.000.

Deli, Jack M., to International Harvester Company. Method of press assembly of track links on track pins. 4,246,689, Cl. 29-436.000.

Dellinger, Thomas B., to Mobil Oil Corporation. Wellbore drilling technique using eccentric tool joints to mitigate pressure-differential sticking. 4,246,975, Cl. 175-61.000.

Del Raso, Americo. Golfing putting game apparatus. 4,247,112, Cl. 273-176.00H.

Dempsey, Russell M.; and LaConti, Anthony B., to General Electric Company. Current collecting/flow distributing, separator plate for chloride electrolysis cells utilizing ion transporting barrier membranes. 4,247,376, Cl. 204-128.000.

Dennis, Mahlon D.: See—

Daniels, William H.; Dennis, Mahlon D.; and Feingold, Earl, 4,247,305, Cl. 51-307.000.

De Rosa, Richard T., to Boeing Company, The. Composite rotor blade root end. 4,247,255, Cl. 416-141.000.

Descrovi, Mario; Bruno, Gualberto; Giusti, Lino; Milani, Marco; and Giorgetti, Aldo, to Europsess S.a.s. di Giusti Lino & C. Pressing machine arrangement. 4,247,278, Cl. 425-408.000.

Desjardins, Bernard. Liquid containing and dispensing device. 4,247,020, Cl. 222-83.500.

DeSoto, Inc.: See—

Sekmakas, Kazys; and Shah, Raj, 4,247,659, Cl. 525-43.000.

Dessauer, Rolf; and Firmani, Raymond A., to Du Pont de Nemours, E. I., and Company. Photoimaging systems with cyclic hydrazides. 4,247,618, Cl. 430-342.000.

Desverchere, Jean, to Cefilac. Process for depositing an elastomeric or thermosetting bank on a support. 4,247,510, Cl. 264-236.000.

Detert, Robert M.; Germain, Hubert J.; and Kelly, William M., Jr., to American Can Company. Method and apparatus for cutting plastic film windows for cartons. 4,247,349, Cl. 156-108.000.

DeTolla, Francis L.: See—

Chaplin, Gary F.; DeTolla, Francis L.; and Griffin, James G., 4,247,248, Cl. 415-136.000.

Detroit Bullet Trap Corporation: See—

Nikoden, Joseph, Jr., 4,247,115, Cl. 273-317.000.

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Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co. Ltd. Data transfer apparatus for digital polyphonic tone synthesizer. 4,246,822, Cl. 84-1.010.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: See—

von Bebenburg, Walter; Szelenyi, Istvan; and Thieme, Klaus, 4,247,536, Cl. 424-256.000.

Diel, Peter J., to Ciba-Geigy Corporation. 1,2,4-Benzotriazine-1,4-di-N-oxides. 4,247,691, Cl. 544-183.000.

Di Mola, Nunzio: See—

Bellasio, Elvio; Di Mola, Nunzio; Campi, Ambrogio; and Baldoli, Emiliana, 4,247,551, Cl. 424-248.560.

Dirksing, Robert S., to Procter & Gamble Company. The. Tilt compensating hanger for toilet tank dispensing apparatus. 4,247,070, Cl. 248-226.500.

Disko, Harry: See—

Kulesza, Ralph J.; Schoenfeld, Palmer J.; and Disko, Harry, 4,246,719, Cl. 46-41.000.

Diver, James J.: See—

Pulver, W. Clark; Pulver, William O.; Heide, Henry A.; and Diver, James J., 4,246,838, Cl. 99-516.000.

Dixie, Grahame B. R. Harvesting bag. 4,246,944, Cl. 150-2.000.

Dixon, Melvyn; Ghate, Bhaskar B.; Holmes, Ronald J. A.; and Pass, Curtis E., to Bell Telephone Laboratories, Incorporated. Fabrication of ferrite material. 4,247,500, Cl. 264-63.000.

DLM, Inc.: See—

Eckert, Ronald P., 4,247,010, Cl. 211-131.000.

Dobbs, William G., to Stephens Industries, Inc. Method and system for sorting envelopes. 4,247,008, Cl. 209-569.000.

Dobosi, Laszlo J. Eaves trough shield. 4,247,397, Cl. 210-162.000.

Dodd, John R.: See—

Buck, William R.; and Dodd, John R., 4,247,719, Cl. 568-750.000.

Doherty, Harry G.; Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Crystalline zeolite ZSM-25. 4,247,416, Cl. 252-428.000.

Dollinger, Gustav: See—

Vautrin, Helmut; and Dollinger, Gustav, 4,247,291, Cl. 8-495.000.

Domoto, Gerald A.: See—

Schulz, Helmut W.; and Domoto, Gerald A., 4,246,978, Cl. 180-165.000.

Domtar Inc.: See—
Lapointe, Joseph A., 4,247,053, Cl. 241-57.000.
Donado, Rafael A.: See—
Marianowski, Leonard G.; Donado, Rafael A.; and Maru, Hansraj C., 4,247,604, Cl. 429-40.000.
Dorfman, Leonard M., to Timex Corporation. Integral lightpipe and display holder for a timepiece. 4,247,928, Cl. 368-67.000.
Dorman Smith Switchgear Limited: See—
Kidd, Alan L., 4,247,746, Cl. 200-147.00R.
Dorsch, Hans-Lothar: See—
Hermann, Karl-Heinz; and Dorsch, Hans-Lothar, 4,247,470, Cl. 260-391.000.
Dosaj, Vishu D.; and Hunt, Lee P., to Dow Corning Corporation. Method for producing solar-cell-grade silicon. 4,247,528, Cl. 423-350.000.
Douglas, Raymond J.: See—
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Dow Chemical Company, The: See—
Constien, Vernon G., 4,247,430, Cl. 260-29.2EP.
Garrett, Walter L., 4,246,843, Cl. 101-451.000.
Harris, Monty E., 4,246,967, Cl. 166-291.000.
Dow Corning Corporation: See—
Dosaj, Vishu D.; and Hunt, Lee P., 4,247,528, Cl. 423-350.000.
Kalinowski, Robert E., 4,247,592, Cl. 428-266.000.
Dowa Co., Ltd.: See—
Miyahara, Kingo, 4,247,282, Cl. 431-168.000.
Down River International, Inc.: See—
Brown, Ronald L., 4,247,237, Cl. 410-154.000.
Downing, Joe R.; and Williams, Leslie G., to Colson Company, The. Cart caster. 4,246,677, Cl. 16-35.00R.
Dräger, Brigitte: See—
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Drägerwerk Aktiengesellschaft: See—
Pasternack, Adalbert, 4,246,864, Cl. 116-4.000.
Dren, Anthony T.; and Bopp, Barbara A., to Abbott Laboratories. Benzopyranopyridines as antiglaucoma agents. 4,247,557, Cl. 424-256.000.
Dresser Industries, Inc.: See—
Wetterhorn, Richard H., 4,246,796, Cl. 73-732.000.
Drexhage, Karl H., to Eastman Kodak Company. Color imaging devices and color filter arrays using photo-bleachable dyes. 4,247,799, Cl. 313-367.000.
Droitsch, Lutz; and Wolff, Horst, to Speck Kolbenpumpenfabrik Otto Speck KG. Valve arrangement. 4,246,924, Cl. 137-116.000.
Drucker, Alan S., to Carrier Corporation. Control scheme for a solar assisted heat pump. 4,246,956, Cl. 165-29.000.
Dubinin, Viktor P.: See—
Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor I.; and Safronov, Vladimir M., 4,247,343, Cl. 148-1.500.
Duckworth, Joseph M.: See—
Nijhawan, Pramodh; and Duckworth, Joseph M., 4,247,370, Cl. 202-263.000.
Duell, Richard J.: See—
Cann, Peter L.; Duell, Richard J.; and Casler, Donald J., 4,246,760, Cl. 62-81.000.
Duke, Jimmy R.; Miller, Walter E., Jr.; Kilbourn, Dorwin L.; Mangus, Nicholas J., Jr.; Sitton, Robert L.; and Fountain, Walter F., to United States of America, Army. Light emitting diode beacons for command guidance missile track links. 4,247,059, Cl. 244-3.160.
Dumoulin, Joseph S. C.; Seese, Mark A.; and Albers, Edwin W., to W. R. Grace & Co. Hydrocarbon conversion catalyst preparation. 4,247,420, Cl. 252-453.000.
Dungs, Horst: See—
Weber, Heinrich; Dungs, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl-Heinz, 4,247,365, Cl. 201-41.000.
Dunleavy, Raymond A.; and McClanahan, James A., to Union Carbide Corporation. Rigid and semiflexible polyurethane foams produced with phenol-aldehyde-amine resins. 4,247,655, Cl. 521-164.000.
Dunn, Halbert B. Sound recording. 4,247,120, Cl. 369-173.000.
Du Pont de Nemours, E. I., and Company: See—
Chapman, Walter H.; Hiland, David E.; and Knies, Erwin B., 4,246,847, Cl. 104-172.00T.
Cohen, Abraham B.; and Fan, Roxy N., 4,247,619, Cl. 430-253.000.
Dessauer, Rolf; and Firmani, Raymond A., 4,247,618, Cl. 430-342.000.
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England, David C., 4,247,713, Cl. 560-192.000.
Fitzgerald, Patrick H., 4,247,695, Cl. 546-49.000.
Foss, Robert P., 4,247,624, Cl. 430-281.000.
Kelley, Michael J.; and Prichard, William W., 4,247,722, Cl. 568-861.000.
Lee, Chi C.; and Ludwig, Richard E., 4,247,318, Cl. 156-163.000.
Luise, Robert R., 4,247,514, Cl. 264-345.000.
Matthews, James F.; and Sommerfeld, Eugene G., 4,247,439, Cl. 260-29.6NR.
Percy, James S., 4,247,487, Cl. 568-422.000.
Simms, John A., 4,247,444, Cl. 260-33.6UA.
Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Pyridyl alkylguanidines. 4,247,558, Cl. 424-263.000.
Durbeck, Robert C.; and Eswaran, Kapali P., to International Business Machines Corporation. Method and apparatus for typing characters and optically readable binary representations thereof on same page. 4,247,907, Cl. 364-900.000.

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Jones, Robert C., 4,247,003, Cl. 206-486.000.
Dwyer, Robert E., to D. W. Zimmerman Mfg., Inc. Apparatus for handling a plurality of signature bundles. 4,247,092, Cl. 270-54.000.
Dybas, Richard A.: See—
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,247,700, Cl. 546-242.000.
Dynamit Nobel Aktiengesellschaft: See—
Buning, Robert; Hanisch, Horst; Hass, Hansjürgen; and Rodder, Karl-Martin, 4,247,436, Cl. 260-29.60H.
Dynatech Corp.: See—
Horne, Herbert W., Jr.; and Gresser, Joseph D., 4,246,896, Cl. 128-130.000.
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Schulz, Helmut W.; and Domoto, Gerald A., 4,246,978, Cl. 180-165.000.
Eades, Alan G.: See—
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Chen, Tsang J., 4,247,627, Cl. 430-512.000.
Drexhage, Karl H., 4,247,799, Cl. 313-367.000.
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Ford, John A., Jr.; and Rossi, Louis J., 4,247,459, Cl. 260-185.000.
Guild, John R., 4,247,623, Cl. 430-275.000.
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Ponticello, Ignazio S.; Hollister, Kenneth R.; and Tuites, Richard C., 4,247,673, Cl. 526-263.000.
Poskus, Gerald M.; Whitney, Dennis E.; Cope, James N.; and Borel, Robert J., 4,247,626, Cl. 430-498.000.
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Eaton Corporation: See—
Bishop, William V.; and Richards, Donald L., 4,246,930, Cl. 137-493.900.
Gee, Thomas A., 4,246,995, Cl. 192-58.00B.
Hopple, Lyle O., 4,246,988, Cl. 192-2.000.
Mezak, John A.; and Parrott, Ronald A., 4,247,837, Cl. 333-202.000.
Morscheck, Timothy J., 4,246,993, Cl. 192-53.00F.
Eberle, Kelly L., to General Battery Corporation. Battery formation apparatus. 4,246,927, Cl. 137-269.000.
Echigo, Naoyuki; Yamashita, Shiro; Kuwabara, Tsuneo; Takahashi, Kunihiko; and Motte, Shunichi, to Kabushiki Kaisha Daini Seikoshu. Rectangular AT-cut quartz resonator. 4,247,797, Cl. 310-361.000.
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Wiegand, John R., 4,247,601, Cl. 428-611.000.
Eck, Herbert; Hafener, Klaus; and Wiest, Hubert, to Wacker-Chemie GmbH. Process for the manufacture of aqueous ethylene/vinyl chloride/vinyl alkanoate and/or alkyl acrylate copolymer dispersions having a non-uniform particle size distribution. 4,247,438, Cl. 260-29.60T.
Eckert, Ronald P., to Thomas A. Schutz Co., Inc. Illuminated advertising display device with changing visual effects. 4,246,713, Cl. 40-437.000.
Eckert, Ronald P., to DLM, Inc. Display stand and method of making same. 4,247,010, Cl. 211-131.000.
Eckler, Thomas A.; and Manty, Brian A., to United Technologies Corporation. Method for electrolytic etching. 4,247,377, Cl. 204-129.650.
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Buesing, Jonathan P., 4,247,396, Cl. 210-126.000.
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Edelson, Leo; Oddsden, Trygve R.; and Oddsden, Gustav A., to G.L.R. Corporation. Extensible support apparatus. 4,247,068, Cl. 248-162.100.
Edinger, John M., to Du Pont de Nemours, E. I., and Company. Adhesion promoted block copolyester composition with multi-functional carboxylic compound. 4,247,427, Cl. 260-26.000.
Edwards, Paul O.; Bolton, William E.; Hunter, Larry C.; and Horner, Amos A., to Applied Theory Associates, Inc. Veneer lathe charging apparatus and method for determining log spin axis. 4,246,940, Cl. 144-209.00A.
Egan, Richard R.; and Cotrell, Phillip L., to Sherex Chemical Company, Inc. Light duty non-irritating detergent compositions. 4,247,425, Cl. 252-548.000.
Egbers, Gerhard: See—
Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,246,748, Cl. 57-265.000.
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Ehrlich, Joseph R.: See—
Wachtel, Jack S., 4,246,717, Cl. 46-6.000.
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Eiloart, Nigel C.; and Webster, Gordon A., to Brookhouse Canada Limited. Metal structural members. 4,246,737, Cl. 52-729.000.

Einfalt, Arthur C.: See—
Birner, Richard A.; and Einfalt, Arthur C., 4,246,777, Cl. 73-83.000.
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Zapolski, Bronislaw; Eisenkramer, Arthur; and Zeller, Noel E., 4,247,844, Cl. 340-321.000.
El-Aasser, Mohamed S.: See—
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Elektro-Thermit GmbH: See—
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Abbott, Bernard J.; and Fukuda, David S., 4,247,703, Cl. 548-216.000.
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Berge, Arnulf, 4,247,306, Cl. 51-322.000.
Elmer, James W. Ice fishing apparatus. 4,246,716, Cl. 43-17.000.
Elmer, Peter J.; Kimmit, Maurice F.; Matheson, William S.; and Roberts, Arthur, to British Railways Board. Vehicle velocity related measuring systems. 4,247,768, Cl. 250-222.00R.
Elms, Robert T.; and Engel, Joseph C., to Westinghouse Electric Corp. People protecting ground fault circuit breaker utilizing waveform characteristics. 4,247,879, Cl. 361-45.000.
Eltzroth, James L. Crane conversion method. 4,247,035, Cl. 228-170.000.
Emeott, Marvin: See—
Skinner, Earl; Emeott, Marvin; and Jevne, Allan, 4,247,578, Cl. 427-44.000.
Emery Industries, Inc.: See—
Hinze, Adrien G.; and Stigter, Hendrik G., 4,247,426, Cl. 260-18.0PN.
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Dahms, Francis A., 4,246,819, Cl. 83-582.000.
Dahms, Francis A., 4,246,820, Cl. 83-617.000.
Stevenson, James F., 4,247,733, Cl. 13-6.000.
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Elms, Robert T.; and Engel, Joseph C., 4,247,879, Cl. 361-45.000.
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Dahmen, Karl; Engel, Jürgen; Gross, Heinz; Henning, Martin; and Wennemann, Werner, 4,247,033, Cl. 228-102.000.
England, David C., to Du Pont de Nemours, E. I., and Company. Alkyl perfluoro- α -fluoroformyl esters and their preparation. 4,247,713, Cl. 560-192.000.
Ennerst, Karl; Funke, Peter; and Lob, Rainer, to Alkem GmbH. Method of producing PuO_2/UO_2 -nuclear fuels. 4,247,495, Cl. 264-0.500.
Envirotech Corporation: See—
Bidgood, William E.; and Klarin, John D., 4,246,800, Cl. 73-861.270.
Davis, Steven S., 4,246,669, Cl. 8-156.000.
King, Donald L.; and Glanville, Gerald S., 4,247,400, Cl. 210-531.000.
McMordie, James R.; and Sloan, Donald A., 4,246,987, Cl. 191-32.000.
Nijhawan, Pramodh; and Duckworth, Joseph M., 4,247,370, Cl. 202-263.000.
Erb, Darrell M. Memory device in which one type carrier stored during write controls the flow of the other type carrier during read. 4,247,916, Cl. 365-182.000.
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Wu, Yeongchi; and Erber, Roger A., 4,246,909, Cl. 128-762.000.
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Berber, Viktor A.; Zolotenko, Vladimir A.; Naguev, Evgeny N.; Pavlov, Vladimir V.; Sokolov, Viktor E.; Syromyatnikov, Alexei N.; and Eremenko, Anatoly I., 4,247,783, Cl. 250-574.000.
Erickson, Gerald. Bottle carrier. 4,247,142, Cl. 294-87.200.
Eriksson, Tord E. B. Asphalt cutter. 4,247,148, Cl. 299-40.000.
Escher Wyss Limited: See—
Spillmann, Werner; and Lehmann, Rolf, 4,246,668, Cl. 8-149.000.
Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,246,685, Cl. 29-407.000.
Esner, Stanislav: See—
Mikulecky, Karel; Elias, Jiri; Burysek, Frantisek; Esner, Stanislav; Skoda, Stanislav; Tyl, Miloslav; and Janousek, Jan, 4,246,749, Cl. 57-263.000.
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Ethyl Corporation: See—
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Etoh, Yukihiro: See—
Nakagawa, Yasuhiko; Etoh, Yukihiro; Nakai, Meroji; and Nakajima, Ryoji, 4,246,874, Cl. 123-308.000.

Eurofloor S.A.: See—
Courtroy, Jean-Francois, 4,247,353, Cl. 156-277.000.
Europress S.a.s. di Giusti Lino & C.: See—
Descrovi, Mario; Bruno, Gualberto; Giusti, Lino; Milani, Marco; and Giordetti, Aldo, 4,247,278, Cl. 425-408.000.
Evans, Hugh W., to Atlantic Richfield Company. Mining method and apparatus. 4,247,229, Cl. 406-79.000.
Evans, Philip H., to BSR Limited. Record players. 4,247,118, Cl. 369-233.000.
Ewing, Michael D. Vehicle tire. 4,246,947, Cl. 152-330.0RF.
Eykamp, Roy D. Implement for gathering hay, windrowed crops and other strewn material. 4,246,741, Cl. 56-13.200.
Fabrique National Herstal S.A.: See—
Jeghers, Philippe M., 4,247,105, Cl. 273-77.00A.
Failes, Michael, to Canadian Instrumentation and Research. Automatic computing color meter. 4,247,202, Cl. 356-310.000.
Fairand, Barry P.; and Golis, Matthew J., to Battelle Development Corporation. Nondestructive testing. 4,246,793, Cl. 73-628.000.
Fajau, Maurice: See—
Chais, Jean E.; Chlique, Bernard; and Fajau, Maurice, 4,246,961, Cl. 165-145.000.
Falcoz, Pierre; Filhol, Raymond; and Communal, Jean-Noel, to Rhone-Poulenc Industries. Hydraulic cement compositions. 4,247,334, Cl. 106-90.000.
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Cohen, Abraham B.; and Fan, Roxy N., 4,247,619, Cl. 430-253.000.
Fansteel Inc.: See—
Kraemer, Rolf H., 4,247,231, Cl. 407-101.000.
Kraemer, Rolf H., 4,247,233, Cl. 408-185.000.
Farmhand, Inc.: See—
Goertzen, Gerold G., 4,247,242, Cl. 414-686.000.
Farmitalia Carlo Erba S.p.A.: See—
Hanesian, Stephen, 4,247,687, Cl. 536-12.000.
Farr, Glyn P. R., to Girling Limited. Fluid-pressure operated servo-motor assemblies. 4,246,831, Cl. 91-372.000.
Farrand, John E.: See—
Prager, Jay M.; Sadlow, Joseph F.; Nitzsche, John K.; Nikonchuk, Thomas A.; Farrand, John E.; Gonzales, Roman; and Matsumoto, Hiroshi, 4,247,882, Cl. 361-380.000.
Fay, John A.; Walsh, Cyril M.; and Ko, Venancio P., to Norris Industries, Inc. Dishwasher with steam generating heater and cold water input. 4,246,916, Cl. 134-105.000.
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Feiman, Vladimir; and Luksha, Eugene, to Cardiac Pacemakers, Inc. Lithium chlorine battery containing iodine trichloride cathode and iodine monochloride electrolyte. 4,247,609, Cl. 429-194.000.
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Daniels, William H.; Dennis, Mahlon D.; and Feingold, Earl, 4,247,305, Cl. 51-307.000.
Feit, Peter W.; Nielsen, Ole B. T.; Bruun, Herta; and Bretting, Claus A. S., to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). Compositions and methods for the treatment of hypertension or oedemas. 4,247,550, Cl. 424-244.000.
Feicht, Ute-Hellmuth, to Hoechst Aktiengesellschaft. Process for the preparation of 1-oxophosphol- α -enes. 4,247,488, Cl. 568-12.000.
Felsch, Horst; and Hantich, Gerhard, to Pharmaceutical Licences Company Ltd. Method of stabilizing 4-methyl-5-(2-chloroethyl)-thiazol. 4,247,702, Cl. 548-146.000.
Ferd, Wagner: See—
Krug, Hans; and Heilmann, Kurt, 4,247,602, Cl. 428-671.000.
Ferris, M. P.: See—
Crosby, Lawton H.; Ferris, M. P.; and Melzer, Kurt, 4,247,089, Cl. 267-105.000.
Fey, Maurice G., to Westinghouse Electric Corp. Method and apparatus for electrically firing an iron blast furnace. 4,247,732, Cl. 13-2.00P.
Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Fuel consumption indicating instrument. 4,246,778, Cl. 73-114.000.
Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Fuel injection apparatus. 4,246,879, Cl. 123-533.000.
Fiat Societa per Azioni: See—
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Fiber Industries, Inc.: See—
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Fichtner, Rudi, to USM Corporation. Band for operating on shoes. 4,246,673, Cl. 12-14.400.
Fiehl, Gerd, to Daimler-Benz Aktiengesellschaft. Position-variable belt articulation for safety belts. 4,247,131, Cl. 280-808.000.
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Nix, Paul T.; and Fields, Spencer, 4,247,631, Cl. 435-10.000.
Filhol, Raymond: See—
Falcoz, Pierre; Filhol, Raymond; and Communal, Jean-Noel, 4,247,334, Cl. 106-90.000.
Findeisen, Kurt; Wagner, Kuno; and Uerdingen, Walter, to Bayer Aktiengesellschaft. Preparation of isocyanate derivatives of 1,3-oxazoles, oxazines, diazoles and diazines. 4,247,689, Cl. 544-97.000.
Findl, Eugene, to Bioresearch Inc. Battery sensor. 4,247,811, Cl. 320-35.000.
Fiorentino, Guido; and Sella, Lino, to Ing. C. Olivetti & C., S.p.A. Electrostatic transducer for generating strobe signals. 4,247,796, Cl. 310-308.000.
Firestone Tire & Rubber Company, The: See—
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- Hergenrother, William L.; and Halasa, Adel F., 4,247,679, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,247,680, Cl. 528-168.000.
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Pickenhagen, Wilhelm; and Smith, Alistair Y., 4,247,572, Cl. 426-538.000.
Fischer, Klaus: See—
Schmidt, Ulrich; and Fischer, Klaus, 4,247,845, Cl. 340-365.00R.
Fisher, Harland S.: See—
Brown, Richard C.; Fisher, Harland S.; Kosciuszky, Theodore E.; and Murphy, Joseph M., 4,246,868, Cl. 118-694.000.
Fisher, Michael M.: See—
Huang, Sun Y.; and Fisher, Michael M., 4,247,432, Cl. 260-29.20N.
Fitzgerald, Patrick H., to Du Pont de Nemours, E. I., and Company. Process for preparation of quinoxaline pigments using moderately concentrated acid, 4,247,695, Cl. 546-49.000.
Fives-Cail Babcock: See—
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Flament, Ivon, to Firmenich SA. 3-Methyl-1,2,4-trithiane as a flavoring ingredient, 4,247,571, Cl. 426-535.000.
Flasche, Karl-Heinz: See—
Weber, Heinrich; Dungs, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl-Heinz, 4,247,365, Cl. 201-41.000.
Fleissner, Hans, to Vepa Aktiengesellschaft. Process and device for continuous washing of textile webs, 4,247,294, Cl. 8-137.000.
Flesselles, Jacques; Buisson, Jean; Morin, Michel; Boittin, Jean-Pierre; Tripot, Pierre; and Vallee, Claude, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Device for measuring the draft of smoking articles such as cigarettes and combined measuring apparatus including such a device, 4,246,774, Cl. 73-38.000.
Fletcher, George L.; Przedziecki, Wojciech M.; Wilson, John C.; Yacobucci, Paul D.; and Van Hanehem, Richard C., to Eastman Kodak Company. Imaging processes, elements and compositions featuring dye-retaining binders for reaction products of cobalt complexes and aromatic dialdehyde, 4,247,625, Cl. 430-336.000.
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Smoluchowski, Julian; and Wynn, Ray, Jr., 4,247,314, Cl. 55-304.000.
Florea, George: See—
Cucinotta, Victor; and Florea, George, 4,247,756, Cl. 219-528.000.
Flynn, Jack: See—
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Flynn, Richard T.; and Kindell, Jerry L., to Honeywell Information Systems Inc. Leading zero count formation, 4,247,891, Cl. 364-200.000.
Fogle, Alva E., Jr.; Brennan, William E.; and Passino, Jacque, to K & M Plastics Inc. Fold down multi-purpose vehicle seat back core with imbedded metal reinforcing member, 4,246,734, Cl. 52-309.160.
Foley, Kevin M.; VanderHooven, David I. B.; and Hull, Jerry D., to Andersons, The; and Rotary Drilling Services, Inc. Method of sealing pores, and lost circulation additive therefor, 4,247,403, Cl. 252-8.5LC.
Forbes, Hampton E., Jr., to Westvaco Corporation. Bake-in-tray, 4,247,038, Cl. 229-32.000.
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Ford, John A., Jr.; and Rossi, Louis J., to Eastman Kodak Company. Azo dye derivatives of 2,3-naphthalenediols, 4,247,459, Cl. 260-185.000.
Ford Motor Company: See—
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Davies, Richard G., 4,247,422, Cl. 252-465.000.
Paquette, David G., 4,247,605, Cl. 429-52.000.
Vivian, Lloyd R., Jr., 4,246,804, Cl. 74-552.000.
Forster, Karl-Heinz, to Yoshida Kogyo K.K. Device for transporting and delivering slide fasteners to a packing case, 4,247,230, Cl. 406-88.000.
Forte, Paulino; and Somekh, George S., to Union Carbide Corporation. Liquid-liquid contacting system, 4,247,521, Cl. 422-256.000.
Fortmann, William E., to United Technologies Corporation. Resilient foil bearings, 4,247,155, Cl. 308-9.000.
Foss, Robert P., to Du Pont de Nemours, E. I., and Company. Photopolymerizable elastomeric compositions with carbamated poly(vinyl alcohol) binder, 4,247,624, Cl. 430-281.000.
Fountain, Walter F.: See—
Duke, Jimmy R.; Miller, Walter E., Jr.; Kilbourn, Dorwin L.; Mangus, Nicholas J., Jr.; Sitten, Robert L.; and Fountain, Walter F., 4,247,059, Cl. 244-3.160.
Fouss, James L.; Sting, Donald W.; Parker, John J.; and Biango, Robert, to Hanco, Inc. Internal coupling structure and joint for pipe or tubing, 4,247,136, Cl. 285-319.000.
Frank, Jozef T.; and Porucznik, Paul, to Metal Box Limited. Apparatus for operating on hollow workpieces, 4,246,770, Cl. 72-92.000.
Frank, Gordon R. Tiller with automatically adjusted angle of attack, 4,246,970, Cl. 172-372.000.
Franks, Neal E.; and Varga, Julianna K., to Akzona Incorporated. Composition and process for making precipitated nylon, 4,247,431, Cl. 260-29.20N.
Franks, Neal E.; and Varga, Julianna K., to Akzona Incorporated. Composition and process for making precipitated hydroxyethylcellulose, 4,247,688, Cl. 536-96.000.
Frederick, Gary L.; and Mohr, Paul R., to Garrett Corporation, The. Fluid flow control apparatus, 4,246,922, Cl. 137-110.000.
Frehner, Roland. Pole, in particular for electric lines, 4,246,732, Cl. 52-309.100.
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Damien, Gerard, 4,247,649, Cl. 521-55.000.
Frevel, Gordon H.: See—
Frevel, Ludo K., 4,247,771, Cl. 250-273.000.
Frevel, Linus K.: See—
Frevel, Ludo K., 4,247,771, Cl. 250-273.000.
Frevel, Ludo K., to Kadish, Karl M.; Frevel, Linus K.; and Frevel, Gordon H. Parafocusing diffractometer, 4,247,771, Cl. 250-273.000.
Friedemann, Peter: See—
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Friedrich, Hans-Georg; Halberschmidt, Friedrich; and Pelzer, Rudolf, to Saint-Gobain Industries. Apparatus for manufacture of laminated glazing, 4,247,355, Cl. 156-382.000.
Friess, Jean, to Societe Meusienne de Realisations Mecaniques "Realme". Annular valve seating, 4,247,079, Cl. 251-174.000.
Frimmet, Alfred: See—
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Frolich, Bernhard: See—
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Frost, Richard C.; Gomez, Eduardo W.; and McAnally, Robert W., to General Dynamics Corporation. Airfoil variable cambering device and method, 4,247,066, Cl. 244-219.000.
Fruchard, Charles, to AMP Incorporated. Electrical connector for use in establishing tap connections, 4,247,159, Cl. 339-95.00R.
Fruitstone, Mitchell J.; Carro, Jose; and Pixton, Betty G., to American Hospital Supply Corporation. Method of preparing C3-sensitized erythrocytes, 4,247,536, Cl. 424-12.000.
Fuji Heavy Industries Co., Ltd.: See—
Umezawa, Mitsuo, 4,246,805, Cl. 74-851.000.
Fuji Photo Film Co., Ltd.: See—
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Fujii, Toshikatsu: See—
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Fujimoto, Masanori: See—
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Fujimoto, Yasuo; and Yamabe, Shigeru, to Nippon Chemipharm Co., Ltd. Dibenzothiepin derivatives and a process for producing the same, 4,247,706, Cl. 549-12.000.
Fujitsu Limited: See—
Itoh, Hideo; Agatsuma, Kenji; and Noguchi, Eiji, 4,247,921, Cl. 365-233.000.
Kurihara, Hiroshi; Katoh, Tadayoshi; and Takenaka, Sadao, 4,247,938, Cl. 371-5.000.
Kurokawa, Kaneyuki, 4,247,802, Cl. 315-169.200.
Togei, Ryoiku, 4,247,863, Cl. 357-49.000.
Fujiyama, Hikaru; and Shimada, Masayoshi, to Nippon Oil and Fats Company, Limited; and Fujikura Rubber Works, Limited. Automatic inflatable safety work vest, 4,246,672, Cl. 9-321.000.
Fukuda, David S.: See—
Abbott, Bernard J.; and Fukuda, David S., 4,247,703, Cl. 548-216.000.
Fukuda, Tadanori; Sakamoto, Sada-yuki; and Saito, Masami, to Toray Industries, Inc. Polyurethane resins and polyurethane resin coating compositions, 4,247,675, Cl. 528-44.000.
Fukuda, Teruo: See—
Nakatake, Ryozi; Fukuda, Teruo; and Kashima, Yoshitake, 4,247,841, Cl. 336-150.000.
Fukuda, Yutaka: See—
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- Furman, Vladimir. Subterranean storage of liquids, 4,247,220, Cl. 405-53.000.
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- Glaab, Joseph: See—
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- Gladek, Janez, to "Montana-Research" Muller and Co. Sport shoe, especially for cross-country skiing and tennis. 4,246,708, Cl. 36-107.000.
- Gladwin Corporation: See—
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- Gladwin, Floyd R., deceased (by Gladwin, Yvonne J., executrix); and Grzincic, Joseph, to Gladwin Corporation. Method and apparatus for boring a tapered, curved I.D. tubular casting mold. 4,246,812, Cl. 82-1.00C.
- Gladwin, Yvonne J., executrix: See—
Gladwin, Floyd R., deceased; and Grzincic, Joseph, 4,246,812, Cl. 82-1.00C.
- Glanville, Gerald S.: See—
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- Glaum, Gerald V.: See—
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- Glenn, William E., to New York Institute of Technology. Ultrasonic imaging apparatus. 4,246,791, Cl. 73-620.000.
- Globol-Werk GmbH: See—
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- Glowacki, Gerald A.; and Cage, David E., to Borg-Warner Corporation. Adjustable labor-delivery-recovery hospital bed. 4,247,091, Cl. 269-325.000.
- Glowacki, Pierre A.: See—
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- Glugla, Paul G.; Briant, Jacqueline L.; and Gallucci, Robert R., to General Electric Company. Methods of forming a solid ion-conductive electrolyte. 4,247,499, Cl. 264-104.000.
- Goertzen, Gerold G., to Farmhand, Inc. Quick attachment device. 4,247,242, Cl. 414-686.000.
- Gogniat, Nick. Spectacle prescript lens distortion tester. 4,247,201, Cl. 356-124.000.
- Gohler, Peter; Kretschmer, Horst; and Schweigel, Han-Joachim, to Brennstoffinstitut Freiberg. Apparatus for the conveyance of dust-like or dust containing solids into a pressurized system by means of a pressurized lock chamber. 4,247,227, Cl. 406-15.000.
- Goldblatt, Barry: See—
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- Goldsmith, Eli D., to Crown Recreation, Inc. Tennis racquet. 4,247,104, Cl. 273-73.00C.
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- Gomi, Hiroshi; and Taguchi, Shinichiro, to Tokyo Shibaura Electric Co., Ltd. Apparatus for processing the output voltage of a detection circuit. 4,247,867, Cl. 358-19.000.
- Goncharov, Evgeny S. Screen for vibrating centrifugal separation machines. 4,247,392, Cl. 209-301.000.
- Gonnai, Tohru, to Brother Kogyo Kabushiki Kaisha. Thread tensioning device for a sewing machine. 4,246,857, Cl. 112-254.000.
- Gontowski, Walter S., Jr., to Sprague Electric Company. Vibration-detecting intrusion alarm. 4,247,847, Cl. 340-566.000.
- Gonzales, Roman: See—
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- Kulkarni, Mohan V., 4,247,428, Cl. 260-28.5AV.
- Welter, Thomas N. H., 4,246,950, Cl. 152-381.400.
- Gordeziani, David G.: See—
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- Gordon, Jing R. Universal tool. 4,247,140, Cl. 296-26.000.
- Gorin, Everett, to Conoco, Inc. Method for hydrocracking a heavy polynuclear hydrocarbonaceous feedstock in the presence of a molten metal halide catalyst. 4,247,385, Cl. 208-10.000.
- Gottschalk, Robert E., to Panavision, Incorporated. Vibration-dampening flexible coupling. 4,246,766, Cl. 64-11.00R.
- Gould Inc.: See—
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- Gould, Russell J., to Signode Corporation. Fusible composite binding strap. 4,247,591, Cl. 428-212.000.
- Grace, Archie R.; and Grace, Robert J. Projection color copier. 4,247,191, Cl. 355-4.000.
- Grace, Robert J.: See—
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- Grachev, Konstantin A.; Sulie, Jury N.; and Tverskoi, David N. Straight turning automatic lathe. 4,246,813, Cl. 82-2.500.
- Graff, Robert A.: See—
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- Grainger, Joyce: See—
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- Granzow, Albrecht H., to American Cyanamid Company. Flame retardants containing two or more 2-cyanoethyl groups for polyphenylene ether resins. 4,247,447, Cl. 260-45.70P.
- Gravel, Jean J. O.; and Lombard, William K., to Trecan Limited. Incinerator. 4,246,850, Cl. 110-235.000.
- Grawinger, Otto: See—
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- Gray, Ernest F. Jewelry clasp. 4,246,680, Cl. 24-230.00R.
- Gray, Leo A., to General Motors Corporation. Electromagnetic fuel injector. 4,247,052, Cl. 239-585.000.
- Gray, Morton E.; and Green, Carl E., to Gray, Morton E. Dump truck or trailer with pneumatic conveyor. 4,247,228, Cl. 406-39.000.
- Green, Carl E.: See—
Gray, Morton E.; and Green, Carl E., 4,247,228, Cl. 406-39.000.
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- Greenspan, Donald J. Decorative oxidation process and article. 4,247,589, Cl. 428-209.000.
- Grein, Arpad: See—
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- Gresser, Joseph D.: See—
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- Greve, Walter; Kaiser, Edgar; Grone, Dieter; and Patz, Ulrich, to Leybold Heraeus GmbH. Cathodic system with target, for vacuum sputtering apparatus for the application of dielectric or nonmagnetic coatings to substrates. 4,247,383, Cl. 204-298.000.
- Grieb, Geoffrey E. Sanitary waste collector. 4,247,139, Cl. 294-1.0BA.
- Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., to Merck & Co., Inc. 2-(Substitutedpiperidylmethyl)propene and propane nitriles. 4,247,700, Cl. 546-242.000.
- Griffee, Donald G., Jr.; and Gruska, Chester J., Jr., to United Technologies Corporation. Composite wind turbine blade. 4,247,258, Cl. 416-230.000.
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- Griffith, James O.: See—
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- Grigoriev, Valentin A.; Brodyansky, Viktor M.; Sokolov, Mikhail M.; and Kuvaldin, Alexandr B. Induction heater having a cryoresistive induction coil. 4,247,736, Cl. 13-27.000.
- Grimm, Thomas H.: See—
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- Grimsrud, Chris. Combined bumper, jack and hoist. 4,247,085, Cl. 254-86.00R.
- Grint, Charles I. Spades. 4,247,141, Cl. 294-49.000.
- Grob, Burkhard; Gegenhuber, Ernst; and Bretting, Ekkehard. Carrying wing with moving flap. 4,247,065, Cl. 244-215.000.
- Groene, Richard L. Cargo unit with support jack assemblies. 4,247,145, Cl. 296-164.000.
- Grone, Dieter: See—
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- Gross, Heinz: See—
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- Grow, Ralph S.: See—
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- Gruber, Bruce A.; and Lorenz, Donald H., to GAF Corporation. Copolymerizable, ultraviolet light absorber 4-allyloxybenzal-1-phenylhydrazones. 4,247,477, Cl. 564-251.000.
- Gruber, Bruce A.; and Lorenz, Donald H., to GAF Corporation. Copolymerizable, ultraviolet light absorber 4-acryloyloxybenzal-1-alkyl-1-phenylhydrazones. 4,247,714, Cl. 560-221.000.
- Gruber, Wolfgang: See—
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- Grudkowski, Thomas W.; and Reeder, Thomas M., to United Technologies Corporation. Monolithic isolated gate FET saw signal processor. 4,247,903, Cl. 364-821.000.
- Gruppo Lepetit S.p.A.: See—
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- Gruska, Chester J., Jr.: See—
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- Grzincic, Joseph: See—
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- GTE Laboratories Incorporated: See—
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- GTE Products Corporation: See—
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- Cooper, David A.; Monoki, William T.; and Vibert, Edward J., 4,247,840, Cl. 335-18.000.
- Guarino, Giovanni; and Praitoni, Alberto. Method and apparatus for introducing solid substances into liquid metals. 4,247,324, Cl. 75-53.000.
- Guedj, Richard: See—
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- Guigan, Jean. Automatic dispensing machine for dispensing stacked objects. 4,247,017, Cl. 221-227.000.
- Guild, John R., to Eastman Kodak Company. Blank beam leads for IC chip bonding. 4,247,623, Cl. 430-275.000.
- Gunther, Rush B.; and Jindal, Prem C., to Abar Corporation. Flexible thermocouple for vacuum electric furnaces. 4,247,734, Cl. 13-24.000.
- Guse, Rolf: See—
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- Gustafson, Gunnar A.; and Holmqvist, Ture R. L. Holding device for surface sheets or plates in a press. 4,247,274, Cl. 425-193.000.
- Gustin, Jean-Pierre R., to La Buvette S.A. Automatic drinking-troughs. 4,246,870, Cl. 119-75.000.
- Haase, Jaroslav; Horn, Ulrich; and Berendt, Hans-Ulrich, to Ciba-Geigy Corporation. Polymeric quaternary ammonium salts containing specific cationic recurring units. 4,247,476, Cl. 564-51.000.
- Haben, Dale E.: See—
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- Haber, Terry M., to Thompson, William L. Pre-fabricated wall assembly. 4,246,733, Cl. 52-309.110.
- Habu, Manabu: See—
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- Habu, Takeshi: See—
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- Hachenberg, Horst: See—
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- Hafener, Klaus: See—
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- Hageman, Hendrik J.: See—
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- Hagen, Alexander: See—
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- Hahn, Ronald R.: See—
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- Hahn, Roy C.; and Hahn, Ronald R. Combined corner clamp and support. 4,247,090, Cl. 269-41.000.
- Hajok, Dieter: See—
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- Harris, Monty E., to Dow Chemical Company, The. Cementing head apparatus and method of operation. 4,246,967, Cl. 166-291.000.
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- Hartfel, Arlynn H., to Brinadd Company. Clay-free, thixotropic well-bore fluid. 4,247,402, Cl. 252-8.50A.
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 Edwards, Paul O.; Bolton, William E.; Hunter, Larry C.; and Horner, Amos A., 4,246,940, Cl. 144-209.00A.
 Horton, Herbert D.: See—
 Keast, Larry G.; and Horton, Herbert D., 4,246,809, Cl. 81-57.160.
 Hosaka, Masao: See—
 Kaneko, Tamaki; Mizuma, Kenichi; Okuzawa, Tugio; and Hosaka, Masao, 4,247,193, Cl. 355-14.00R.
 Kubota, Yoichi; Hosaka, Masao; and Ohshima, Kiyoshi, 4,247,194, Cl. 355-14.00R.
 Houricollon, Roland: See—
 Pogrzeba, Gerhard; Geiger, Julius; Neworal, Alfred; Bussmann, Heinrich; Houricollon, Roland; Hannappel, Rudolf; and Auweiler, Heinz, 4,247,273, Cl. 425-174.200.
 Housholder, Ross F., to Hico Western Products Co. Molding process. 4,247,508, Cl. 264-219.000.
 Howe, Robert K.; and Lee, Len F., to Monsanto Company. 3-(m-Tri-fluoromethylphenyl)-5-halomethyl isoxazoles as safing agents. 4,247,322, Cl. 71-88.000.
 Howe, Stephen H.; Preston, Barry; and Page, Robert B., to Thorn Emi Limited. Mercury-metal halide discharge lamp. 4,247,798, Cl. 313-225.000.
 Hsu, Joseph P.: See—
 Miller, Harry; Narveson, Parm L.; Hancock, William R.; and Hsu, Joseph P., 4,247,843, Cl. 340-27.00A.
 Hsu, Sheng T.; and Hollingsworth, Richard J., to RCA Corporation. High performance electrically alterable read-only memory (EA-ROM). 4,247,861, Cl. 357-43.000.
 Huang, Liang H.: See—
 Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichi; and Tone, Junzuke, 4,247,462, Cl. 260-239.30P.
 Huang, Sun Y.; and Fisher, Michael M., to American Cyanamid Company. Water purification employing poly(beta-alanine). 4,247,432, Cl. 260-29.20N.
 Huber, Manfred A.: See—
 Klimek, Norbert M.; and Huber, Manfred A., 4,247,207, Cl. 400-121.000.
 Hudson, Frederick W., to Xerox Corporation. Xerographic developing system rolls having magnets of different widths. 4,246,867, Cl. 118-655.000.
 Huebner, Steven R.: See—
 Mayers, Richard R.; Huebner, Steven R.; and Chojnacki, Dennis A., 4,247,284, Cl. 432-49.000.
 Hughes Aircraft Company: See—
 Harvey, Robin J., 4,247,804, Cl. 315-344.000.
 Hughes, Larry M., to RCA Corporation. Record side identification apparatus for video disc player. 4,247,119, Cl. 369-77.000.
 Hugl, Herbert; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. Disazo dyestuff sulphuric acid ester. 4,247,460, Cl. 260-186.000.
 Hugo, Harding R., to Danly Machine Corporation. Volumetrically deformed polymeric support for punches. 4,246,815, Cl. 83-139.000.
 Hull, Jerry D.: See—
 Foley, Kevin M.; VanderHooven, David I. B.; and Hull, Jerry D., 4,247,403, Cl. 252-8.5LC.
 Hulscher, Alphonsus J., to Handelsonderneming Priva B.V. Support structure for a roof of an accommodation for cultivation. 4,246,730, Cl. 52-90.000.
 Hulten, Richard E., to McCord Corporation. Automotive body assembly (fascia support wire). 4,247,585, Cl. 428-31.000.
 Humatec Resources, Inc.: See—
 Bernat, Fred B., 4,247,410, Cl. 252-305.000.
 Hunt, Lee P.: See—
 Dosaj, Vishu D.; and Hunt, Lee P., 4,247,528, Cl. 423-350.000.

Hunter, Larry C.: See—
Edwards, Paul O.; Bolton, William E.; Hunter, Larry C.; and Horner, Amos A., 4,246,940, Cl. 144-209.00A.

Huntington Alloys, Inc.: See—
Sheets, Harold L.; and Rowsey, James H., 4,246,794, Cl. 73-637.000.

Hunziker, John, Jr.: See—
Berky, John J.; Hunziker, John, Jr.; and Zolotor, Laurence A., 4,247,646, Cl. 435-284.000.

Hupe, Robert F., to Caterpillar Tractor Co. Vertically positioned submerged arc flux dam, 4,247,750, Cl. 219-73.000.

Hustig, Charles H., to Minnesota Mining and Manufacturing Company. Digital communications system with automatic frame synchronization and detector circuitry, 4,247,936, Cl. 370-100.000.

Hutton, Thomas W.: See—
Reitz, R. Larry; Hutton, Thomas W.; and Lewis, Sheldon N., 4,247,671, Cl. 526-260.000.

Huu, Duyet N.; Baileger, Jean-Claude; and Guedj, Richard, to Thomson-CSF. Addressing unit for a microprogrammed memory, 4,247,904, Cl. 364-900.000.

Hwo, Charles C.: See—
Widiger, Almar T.; Hwo, Charles C.; Gaylord, Norman G.; and Lu, Pang-Chia, 4,247,584, Cl. 428-35.000.

I.W. Industries Inc.: See—
Warshawsky, Jerome, 4,247,886, Cl. 362-427.000.

ICI Americas Inc.: See—
Ohnmacht, Cyrus J.; and Malick, Jeffrey B., 4,247,549, Cl. 424-250.000.

Ideal Industries, Inc.: See—
Sandy, Julius W.; Peplow, Marvin J.; and Baneck, Elmer W., 4,246,808, Cl. 81-9.50R.

Ideal Toy Corporation: See—
Tilbor, Neil; and Rosenhagen, William, 4,247,108, Cl. 273-86.00B.

Idelson, Elbert M., to Polaroid Corporation. Yellow 2:1 azo-azo or azo-azomethine chrome complexed dye developers, 4,247,455, Cl. 260-145.00B.

Ienaka, Masanori: See—
Watanabe, Kazuo; Ienaka, Masanori; Kominami, Yasuo; and Homma, Makoto, 4,247,949, Cl. 455-154.000.

Igarashi, Iseki: See—
Inagaki, Hazime; Mizuno, Masakazu; and Igarashi, Iseki, 4,246,908, Cl. 128-748.000.

Ihde, Richard C.: See—
Thompson, Kenneth; and Ihde, Richard C., 4,247,588, Cl. 428-157.000.

Ikedo, Hisao: See—
Murata, Atsuo; Tsuchiya, Syuji; Konno, Akihiro; Arima, Fumiyo-shi; and Ikeda, Hisao, 4,247,480, Cl. 564-298.000.

Ikumoto, Takeshi: See—
Toyama, Ryosuki; Inoue, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,247,698, Cl. 546-112.000.

Illinois Tool Works Inc.: See—
Wu, Yeongchi; and Erber, Roger A., 4,246,909, Cl. 128-762.000.

Imada, Kiyoshi; Ueno, Susumu; and Sodeyama, Osamu, to Shin-Etsu Chemical Co., Ltd. Method for preparing shaped articles of a vinyl chloride resin having improved surface properties, 4,247,577, Cl. 427-40.000.

Imada, Kiyoshi: See—
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,247,440, Cl. 260-31.80R.

Imamura, Tetsuya; and Shiozaki, Ryoji, to Kao Soap Co., Ltd. Acidic liquid detergent composition for cleaning hard surfaces containing polyoxyalkylene alkyl ether solvent, 4,247,408, Cl. 252-143.000.

Imhauser, Gerd; and Puderbach, Gerhard, to Winkler & Dunnebler Maschinenfabrik & Eisengieserei GmbH & Co. KG. Stacking and unstacking apparatus, 4,247,238, Cl. 414-43.000.

IMI Kynoch Limited: See—
Carter, George B., 4,247,494, Cl. 264-3.00R.

Imler, Vaughn R.: See—
Marriott, William H., Jr.; and Imler, Vaughn R., 4,247,000, Cl. 198-780.000.

Immel, Otto; Schwarz, Hans-Helmut; and Quast, Hein, to Bayer Aktiengesellschaft. Process for the preparation of 2,2-dimethylalkanals, 4,247,485, Cl. 568-464.000.

Inada, Shuzo: See—
Shimizu, Hiroshi; Sato, Hiroshi; Miura, Nobuo; and Inada, Shuzo, 4,247,650, Cl. 521-56.000.

Inagaki, Hazime; Mizuno, Masakazu; and Igarashi, Iseki, to Kabushiki Kaisha Toyota Kenkyusho. Intracranial pressure transducer, 4,246,908, Cl. 128-748.000.

Inagami, Kaoru; Terabayashi, Takeshi; Ohmura, Kazutaka; Haruna, Masao; and Yuda, Tetsuji, to Calpis Food Industry Co., Ltd., The. Method of producing deodorized textured protein and textured protein produced thereby, 4,247,566, Cl. 426-276.000.

Inagami, Kaoru: See—
Utena, Makoto; Yamada, Kazuhisa; Kamada, Hidemoto; and Inagami, Kaoru, 4,247,574, Cl. 426-656.000.

Inami, Yasuhiko: See—
Ueda, Hisashi; Take, Hiroshi; Koyanagi, Katubumi; and Inami, Yasuhiko, 4,247,853, Cl. 340-753.000.

Indesit Industria Elettrodomestici Italiana: See—
Zappala, Giuseppe, 4,247,805, Cl. 315-408.000.

Industrial Filter & Pump Mfg. Co.: See—
Schmidt, Henry, Jr., 4,247,394, Cl. 210-767.000.

Industrial Woodworking Machine Co. Inc.: See—
Cromeens, Gary L., 4,246,943, Cl. 144-245.00R.

Industrie Pirelli Societa per Azioni: See—
Sarracino, Marcello, 4,247,280, Cl. 425-445.000.

Ing. C. Olivetti & C., S.p.A.: See—
Fiorentino, Guido; and Sella, Lino, 4,247,796, Cl. 310-308.000.

Ingermann, Donald E.; Sauer, Eldon G.; and Smith, Ronald L., to Century International Corp. Automatic bowling lane stripper, 4,246,674, Cl. 15-4.000.

Inland Steel Company: See—
Quinto, Dennis T.; and Bhattacharya, Debanshu, 4,247,326, Cl. 75-123.00A.

Inness-Brown, Lee M. Kaleidoscopic projector, 4,247,181, Cl. 353-1.000.

Inoue, Hiroyuki: See—
Toyama, Ryosuki; Inoue, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,247,698, Cl. 546-112.000.

Inoue-Japax Research Inc.: See—
Inoue, Kiyoshi, 4,247,303, Cl. 51-295.000.

Inoue, Kiyoshi, to Inoue-Japax Research Inc. Method of forming an electrically conductive abrasive wheel, 4,247,303, Cl. 51-295.000.

Inoue, Tadanori: See—
Sano, Takezo; Inoue, Tadanori; Uemura, Yukikazu; and Furuta, Akihiro, 4,247,621, Cl. 430-269.000.

Institute of Gas Technology: See—
Marianowski, Leonard G.; Donado, Rafael A.; and Maru, Hansraj C., 4,247,604, Cl. 429-40.000.

Schora, Frank C., Jr.; and Burnham, Kenneth B., Jr., 4,247,240, Cl. 414-218.000.

Insulating Shade: See—
Hopper, Thomas P., 4,247,599, Cl. 428-458.000.

Intec Corporation: See—
Merlen, Monty M.; and Slaker, Frank A., 4,247,204, Cl. 356-431.000.

Intel Corporation: See—
Klein, Raphael, 4,247,862, Cl. 357-48.000.

Tsang, Siu K.; Simonsen, Carl J.; and Holt, William M., 4,247,917, Cl. 365-205.000.

International Business Machines Corporation: See—
Aviram, Ari, 4,247,622, Cl. 430-270.000.

Bayer, Erich H.; Kranik, John R.; and Mueller, Wolfgang F., 4,247,781, Cl. 250-492.00A.

Beismann, Walter F.; Lampe, Hans H.; and Pohle, Werner H., 4,247,894, Cl. 364-200.000.

Cullum, Clifton D., Jr.; Keefe, George E.; Kryder, Mark H.; and Lin, Yeong-Show, 4,247,912, Cl. 365-15.000.

Durbeck, Robert C.; and Eswaran, Kapali P., 4,247,907, Cl. 364-900.000.

Hamilton, Douglas A.; and Herrold, Paul R., 4,247,853, Cl. 340-723.000.

Jooss, Karl; and Norwood, Richard E., 4,247,794, Cl. 310-13.000.

Kacmarcik, Donald J.; Okcuoglu, Selahattin A.; and Raider, Jerry W., 4,247,210, Cl. 400-236.100.

International Flavors & Fragrances Inc.: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,247,409, Cl. 252-174.110.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,247,423, Cl. 252-522.00R.

International Harvester Company: See—
Deli, Jack M., 4,246,689, Cl. 29-436.000.

International Nickel Company, Inc.: See—
Hall, Rotrou A.; and Glaum, Gerald V., 4,247,523, Cl. 423-82.000.

International Standard Electric Corporation: See—
De Brouckere, Lucien C., 4,247,360, Cl. 156-618.000.

International Telephone and Telegraph Corporation: See—
Cooper, William J., 4,247,078, Cl. 251-86.000.

International Water Saving Systems, Inc.: See—
Albertassi, James H.; Heinze, Walter O.; and Landsman, Aaron, 4,246,665, Cl. 4-318.000.

Ireland, Henry R.: See—
Banta, Frederick; Ireland, Henry R.; Stein, Thomas R.; and Wilson, Robert C., Jr., 4,247,388, Cl. 208-111.000.

Iritani, Yoshikazu; Katagiri, Ken; Arita, Hitoshi; Kawanami, Jun'ichi, deceased; by Kawanami, Emiko, heir; Kawanami, Akira, heir; and Kawanami, Mariko, heir. Hemagglutinin of *Haemophilus gallinarum*, 4,247,539, Cl. 424-92.000.

Irons, Laurence I.; and MacLennan, Alastair P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the Purification of pertussis haemagglutinins, 4,247,452, Cl. 260-112.00R.

Irvine, Alexander M.; and Blackburn, John B., to Ciba-Geigy Corporation. Copper phthalocyanine derivatives, 4,247,337, Cl. 106-288.00Q.

Ishida, Nakao; Maeda, Hiroshi; Suzuki, Fujio; Fujii, Toshikatsu; and Mizutani, Ituro, to Kirin Brewery Company Limited. Ks-2-b, 4,247,541, Cl. 424-116.000.

Ishida, Noboru: See—
Kimura, Shoji; and Ishida, Noboru, 4,247,414, Cl. 252-396.000.

Kimura, Shoji; and Ishida, Noboru, 4,247,415, Cl. 252-396.000.

Ishikawa, Katuhiko: See—
Ohmori, Tadashi; and Ishikawa, Katuhiko, 4,247,725, Cl. 585-259.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: See—
Ueno, Masayuki; Sano, Fumiaki; Sagae, Makoto; and Kayama, Tateo, 4,247,088, Cl. 266-273.000.

Isobe, Takashi: See—
Hashimoto, Shigeru; Mitani, Taizo; Isobe, Takashi; Aoyagi, Masao; Sumi, Akiyasu; and Tanaka, Katsumi, 4,247,190, Cl. 354-286.000.

Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: See—
Mark, Hermann; and Szabolcs, Otto, 4,247,681, Cl. 528-169.000.

Itatani, Hiroshi: See—
Sasaki, Ichiro; Itatani, Hiroshi; Kashima, Mikito; Yoshimoto, Hataaki; Yamamoto, Shuji; and Sasaki, Yoshikazu, 4,247,443, Cl. 260-33.40P.

Ito, Yuji, to Canon Kabushiki Kaisha. Optical system for eye fundus inspection apparatus, 4,247,176, Cl. 351-7.000.

Itoh, Hideo; Agatsuma, Kenji; and Noguchi, Eiji, to Fujitsu Limited. Decoder, 4,247,921, Cl. 365-233.000.

ITT Industries, Inc.: See—
Weiler, Rolf, 4,246,753, Cl. 60-547.00R.

Ivanoff, Osmo O. Sheet cutting apparatus, 4,246,816, Cl. 83-157.000.

Iwahashi, Hiroshi; and Arizumi, Shoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrically alterable nonvolatile memory, 4,247,918, Cl. 365-218.000.

Iwamoto, Eiji: See—
Shibata, Katsuya; Hamada, Motohiro; and Iwamoto, Eiji, 4,247,696, Cl. 546-49.000.

Iwata, Susumu: See—
Nomura, Minoru; Iwata, Susumu; and Ono, Mithuo, 4,247,595, Cl. 428-329.000.

IWKA-Industrie-Werke-Karlsruhe Augsburg AG: See—
Schubert, Gunter, 4,247,270, Cl. 425-66.000.

Izaki, Toru: See—
Yoshida, Yukihiro; Izaki, Toru; Maegawa, Toshiyuki; and Tominaga, Satoshi, 4,247,905, Cl. 364-900.000.

Izumi Denki Corporation: See—
Yoshino, Masaharu; and Hirabayashi, Michio, 4,246,840, Cl. 101-37.000.

J. E. Myles, Inc.: See—
Myles, J. Edgar, 4,246,797, Cl. 73-744.000.

Myles, J. Edgar, 4,246,798, Cl. 73-744.000.

Myles, J. Edgar, 4,246,799, Cl. 73-744.000.

J. Eberspacher: See—
Worner, Siegfried, 4,247,520, Cl. 422-176.000.

J. H. Fenner & Co., Ltd.: See—
Potter, Charles W., 4,247,123, Cl. 277-88.000.

Jablonski, Richard J.: See—
Pauze, Denis R.; and Jablonski, Richard J., 4,247,429, Cl. 260-29.2TN.

Jack, Ronald H.: See—
Carlson, Robert L.; Jack, Ronald H.; and Leno, Theodore M., 4,247,209, Cl. 400-195.000.

Jacks-Evans Manufacturing Company: See—
Cornwell, Alexander M., Jr., 4,247,039, Cl. 232-35.000.

Jackson, Dale H.; and Murray, Robert R., to Harris Corporation. Object position and condition detection system, 4,247,922, Cl. 367-6.000.

Jackson, Henry G., to Phillips Petroleum Company. Melt spinning of polymers, 4,247,505, Cl. 264-176.00F.

Jacobi, John H.: See—
Larsen, Lawrence E.; and Jacobi, John H., 4,247,815, Cl. 324-58.50A.

Jacobsson, Kurt A. G., to Aktiebolaget IRO. Thread-storage and delivery device, 4,247,057, Cl. 242-47.010.

Jagers, Anton: See—
Harrer, Josef B.; Jagers, Anton; Petsch, Roland; and Pracher, Ernst, 4,247,816, Cl. 324-62.000.

Jahrstorfer, George W.: See—
Pech, Karl H.; and Jahrstorfer, George W., 4,247,263, Cl. 417-203.000.

James, Henry L.: See—
Cohen, Abraham M.; and James, Henry L., 4,246,954, Cl. 164-35.000.

Janousek, Jan: See—
Mikulecky, Karel; Elias, Jiri; Burysek, Frantisek; Esner, Stanislav; Skoda, Stanislav; Tyl, Miloslav; and Janousek, Jan, 4,246,749, Cl. 57-263.000.

Janssen, Edward W., to Minnesota Mining and Manufacturing Company. Poly(urethane-isocyanate) foams, 4,247,656, Cl. 521-174.000.

Japan Air Line Co., Ltd.: See—
Shuto, Masamoto, 4,246,986, Cl. 191-29.00R.

Jaronen, Niilo. Battery operated electric heating device for thawing frozen locks, 4,247,753, Cl. 219-201.000.

Jarvis, William M.; and Kim, Keun Y., to Monsanto Company. Method for preparing dicalcium phosphate dihydrate with improved stability, 4,247,526, Cl. 423-266.000.

Jarzenbeck, Jerome F., Sr. Solar heat collecting apparatus, 4,246,888, Cl. 126-429.000.

Javid, Jamshid: See—
Cerami, Anthony; Koenig, Ronald J.; Javid, Jamshid; and Pettis, Penelope K., 4,247,533, Cl. 424-1.000.

Jeannin, Jean-Louis. Joint for three-dimensional framed structures, 4,247,218, Cl. 403-217.000.

Jeffers, Michael F.; Shekel, Jacob; Dages, Charles L.; and Glaab, Joseph, to Jerrold Electronics Corporation. System arrangement for distribution and use of video games, 4,247,106, Cl. 273-85.00G.

Jeghers, Philippe M., to Fabrique National Herstal S.A. Set of golf clubs, 4,247,105, Cl. 273-77.00A.

Jenkins, Michael W., to Lockheed Corporation. Flight control mechanism for airplanes, 4,247,063, Cl. 244-91.000.

Jerrold Electronics Corporation: See—
Jeffers, Michael F.; Shekel, Jacob; Dages, Charles L.; and Glaab, Joseph, 4,247,106, Cl. 273-85.00G.

Jersey Nuclear-Avco Isotopes, Inc.: See—
Lavelle, Joseph E.; and Munroe, James L., 4,247,772, Cl. 250-423.00P.

Jessup, Robert L.; and Baker, Eugene E., to Halliburton Company. Cementing tool with protective sleeve, 4,246,968, Cl. 166-334.000.

Jevne, Allan: See—
Skinner, Earl; Emeott, Marvin; and Jevne, Allan, 4,247,578, Cl. 427-44.000.

Jindal, Prem C.: See—
Gunther, Rush B.; and Jindal, Prem C., 4,247,734, Cl. 13-24.000.

Johannes Bockemuhl, Firma: See—
Kremer, Walter, 4,247,199, Cl. 355-72.000.

Johansson, Rolf A. G., to Jonsers AB. Safety braking device for a portable power saw, 4,246,701, Cl. 30-382.000.

Johnson, Arthur J.; and Bostrom, Herbert G., to Spectrum Control, Inc. Electromagnetically shielded viewing window, 4,247,737, Cl. 174-35.00S.

Johnson Controls, Inc.: See—
Klein, Carl F.; and Thoma, Paul E., 4,247,299, Cl. 23-232.00E.

Johnson & Johnson: See—
Marks, Alan M., 4,247,547, Cl. 424-240.000.

Johnson, Lloyd M. Adjustable filler means for molds and method thereof, 4,246,953, Cl. 164-7.000.

Johnson, Marvin M.; Nowack, Gerhard P.; and Tabler, Donald C., to Phillips Petroleum Company. De-ashing lubricating oils, 4,247,389, Cl. 208-181.000.

Johnson, Porter C.; and Matier, William L., to Mead Johnson & Company. 2-Alkynyl-5-indanyloxyacetic acids, 4,247,715, Cl. 562-462.000.

Johnson, Ralph E., to Singer Company, The. Compensating needle bar connecting linkage for a sewing machine, 4,246,855, Cl. 112-158.00R.

Johnson, William M., to Ralph McKay Limited. Tillage discs, 4,246,971, Cl. 172-535.000.

Johnston, Roy C.: See—
Thomson, John T.; and Johnston, Roy C., 4,246,979, Cl. 181-120.000.

Jones, deceased; Dennis G.: See—
McCreery, James F.; and Jones, deceased; Dennis G., 4,247,232, Cl. 407-114.000.

Jones, Emrys H., Jr.: See—
Thakur, Pramod C.; Mason, Charles E.; Lauer, Stephen D.; and Jones, Emrys H., Jr., 4,247,312, Cl. 55-166.000.

Jones, Lawrence T.: See—
Smith, Jay, III; Jones, Lawrence T.; Karr, Gerald S.; and Grimm, Thomas H., 4,247,107, Cl. 273-86.00B.

Jones, Richard E.: See—
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,247,552, Cl. 424-250.000.

Jones, Robert C., to Dutton-Lainson Company. Product display card, 4,247,003, Cl. 206-486.000.

Jonsers AB: See—
Johansson, Rolf A. G., 4,246,701, Cl. 30-382.000.

Jooss, Karl; and Norwood, Richard E., to International Business Machines Corporation. Linear actuator, 4,247,794, Cl. 310-13.000.

Jordan, Willie W., to Abbott Laboratories. Rectilinear drive apparatus, 4,247,162, Cl. 350-86.000.

Jujo Paper Co., Ltd.: See—
Hata, Kunio; Matsukura, Motoo; Hatano, Satoshi; Ohsima, Kiha-chiro; Kano, Isao; Umeda, Hiroaki; and Awaji, Haruo, 4,247,569, Cl. 426-335.000.

Jullien, Jackie: See—
Renier, Georges; and Jullien, Jackie, 4,247,021, Cl. 222-143.000.

Just, Walter. Band stamp, 4,246,841, Cl. 101-111.000.

K & M Plastics Inc.: See—
Fogle, Alva E., Jr.; Brennan, William E.; and Passino, Jacques, 4,246,734, Cl. 52-309.160.

Kaarts Mek. Verksted A/S: See—
Moe, Magne, 4,246,781, Cl. 73-143.000.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: See—
Raschbichler, Hans-Georg; Breitenbach, Otto; Boll, Jürgen; and Uttenreuther, Josef, 4,246,694, Cl. 29-596.000.

Kabushiki Kaisha Daini Seikosha: See—
Echigo, Naoyuki; Yamashita, Shiro; Kuwabara, Tsuneo; Takahashi, Kunihiro; and Motte, Shunichi, 4,247,797, Cl. 310-361.000.

Kabushiki Kaisha Komatsu Seisakusho: See—
Tarumizu, Yasumasa, 4,246,997, Cl. 192-3.270.

Kabushiki Kaisha Toyota Kenkyusho: See—
Inagaki, Hazime; Mizuno, Masakazu; and Igarashi, Iseki, 4,246,908, Cl. 128-748.000.

Kabushikikaisha Aichidenkikoakusho: See—
Fuse, Michio, 4,246,821, Cl. 83-707.000.

Kacmarcik, Donald J.; Okcuoglu, Selahattin A.; and Raider, Jerry W., to International Business Machines Corporation. Ribbon feed and lift mechanism for a typewriter, 4,247,210, Cl. 400-236.100.

Kaczmarek, Al. Device for comminuting waste material, 4,247,056, Cl. 241-167.000.

Kadija, Igor V.; Woodard, Kenneth E., Jr.; and Wazelbaum, Paul M., to Olin Corporation. Method for joining synthetic materials, 4,247,345, Cl. 156-73.400.

Kadin, Saul B., to Pfizer Inc. Process for making 2-amino-4-hydroxyquinolines, 4,247,699, Cl. 546-153.000.

Kadish, Karl M.: See—
Frevel, Ludo K., 4,247,771, Cl. 250-273.000.
Kai, Yuriko. Strands and netting and screens made thereof. 4,247,007, Cl. 209-392.000.
Kaiser, Edgar: See—
Greve, Walter; Kaiser, Edgar; Grone, Dieter; and Patz, Ulrich, 4,247,383, Cl. 204-298.000.
Kaiser Steel Corporation: See—
Hepler, John G., Jr., 4,247,086, Cl. 266-86.000.
Kajita, Kozo: See—
Uetani, Yoshio; Shimizu, Akio; Kajita, Kozo; Yumimoto, Osamu; and Kuwano, Satoru, 4,247,606, Cl. 429-91.000.
Kali und Salz AG: See—
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Kalinowski, Robert E., to Dow Corning Corporation. Method for treating synthetic textiles with aminoalkyl-containing polydiorganosiloxanes. 4,247,592, Cl. 428-266.000.
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Kamak Corporation: See—
Chickini, Gerald D., Jr.; Musch, Gordon F.; Bailey, Donald V.; and Bartsevich, William E., 4,247,225, Cl. 405-260.000.
Kambara, Hiroshi, to Rohm and Haas Company. Methylquinoline anion exchange resin based on haloalkyl vinyl aromatic polymers. 4,247,648, Cl. 521-32.000.
Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiko, to Konishiroku Photo Industry Co., Ltd. Light-sensitive photographic element comprising a cyan image dye-providing compound. 4,247,629, Cl. 430-562.000.
Kaneko, Tamaki; Mizuma, Kenichi; Okuzawa, Tugio; and Hosaka, Masao, to Ricoh Co., Ltd. Electrostatic copying machine comprising jam sensors. 4,247,193, Cl. 355-14.00R.
Kang, Kenneth S., and Veeder, George T., III, to Merck & Co., Inc. Bacterial polysaccharide. 4,247,639, Cl. 435-101.000.
Kano, Isao: See—
Hata, Kunio; Matsukura, Motoo; Hatano, Satoshi; Ohsima, Kihachiro; Kano, Isao; Umeda, Hiroaki; and Awaji, Haruo, 4,247,569, Cl. 426-335.000.
Kao, Jar-Lin; Wheaton, Gregory A.; Shalit, Harold; and Sheng, Ming N., to Atlantic Richfield Company. Preparation of alkylene carbonates from olefins. 4,247,465, Cl. 260-340.200.
Kao Soap Co., Ltd.: See—
Imamura, Tetsuya; and Shiozaki, Ryooji, 4,247,408, Cl. 252-143.000.
Kaplan, Donald S., to American Cyanamid Company. Surgical suture derived from segmented polyether-ester block copolymers. 4,246,904, Cl. 128-335.500.
Karlin, Richard A.: See—
Winberg, Jack S.; and Karlin, Richard A., 4,246,906, Cl. 128-736.000.
Karlsson, Birgitta G.: See—
af Ekenstam, Bo T.; Aurell, Leif E.; Claesson, Karl G.; and Karlsson, Birgitta G., 4,247,454, Cl. 260-112.50R.
Karpoo, Jukka S., to Oy Nokia AB. Method of manufacturing plastic covered highvoltage cables. 4,247,504, Cl. 264-174.000.
Karr, Gerald S.: See—
Smith, Jay, III; Jones, Lawrence T.; Karr, Gerald S.; and Grimm, Thomas H., 4,247,107, Cl. 273-86.00B.
Karras, Thomas W., and Anderson, Carl E., to General Electric Company. Plasma sprayed wicks for pulsed metal vapor lasers. 4,247,830, Cl. 331-94.50D.
Kashima, Mikito: See—
Sasaki, Ichiro; Itatani, Hiroshi; Kashima, Mikito; Yoshimoto, Hataaki; Yamamoto, Shuji; and Sasaki, Yoshikazu, 4,247,443, Cl. 260-33.40P.
Kashima, Yoshitake: See—
Nakatake, Ryozi; Fukuda, Teruo; and Kashima, Yoshitake, 4,247,841, Cl. 336-150.000.
Kasten, Nelson H., to Monsanto Company. Intumescent fire retardant coating compositions. 4,247,435, Cl. 260-29.6MP.
Katagiri, Ken: See—
Iritani, Yoshikazu; Katagiri, Ken; Arita, Hitoshi; Kawanami, Jun'ichi, deceased; Kawanami, Emiko, heir; Kawanami, Akira, heir; and Kawanami, Mariko, heir, 4,247,539, Cl. 424-92.000.
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Naruse, Tunchide; Haba, Manabu; and Kato, Makoto, 4,247,407, Cl. 252-62.54D.
Kato, Yoshio: See—
Seki, Kazuichi; Shimizu, Yoshio; and Kato, Yoshio, 4,247,252, Cl. 416-44.000.
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Kato, Yukio: See—
Sato, Kunihiko; Umeta, Tetsuo; Kobayashi, Taguchi, Haruo; Kato, Yukio; and Uchida, Takashi, 4,247,748, Cl. 219-69.00M.
Katoh, Mitsumi: See—
Wachi, Masataka; Katoh, Mitsumi; and Nishi, Koji, 4,246,823, Cl. 84-1.22D.
Katoh, Tadayoshi: See—
Kurihara, Hiroshi; Katoh, Tadayoshi; and Takenaka, Sadao, 4,247,938, Cl. 371-5.000.
Katoh, Tsuneyuki; Hiraga, Keiichi; Seki, Junji; and Suzuki, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Extruded rigid thermoplastic sheet having optically smooth surfaces. 4,247,507, Cl. 264-210.200.

Katsuaki, Kamemoto: See—
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Kauffman, Harold C.: See—
Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., 4,247,302, Cl. 48-197.00R.
Kawada Co., Ltd.: See—
Chatani, Yasushi, 4,246,718, Cl. 46-25.000.
Kawai Musical Instrument Mfg. Co. Ltd.: See—
Deutsch, Ralph, 4,246,822, Cl. 84-1.01D.
Kawakami, James H.: See—
Ward, Robert J.; Kawakami, James H.; and McCarthy, Neil J., Jr., 4,247,354, Cl. 156-329.000.
Kawakami, Ken-Ichi; Saito, Shoji; and Togashi, Shizuo, to Toray Industries, Inc. Method for improving the surface of plastic materials. 4,247,496, Cl. 264-22.000.
Kawakami, Tomiko: See—
Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masaomi; and Kawakami, Tomiko, 4,247,614, Cl. 430-79.000.
Kawamoto, Yukihiro: See—
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Kawanami, Akira, heir: See—
Iritani, Yoshikazu; Katagiri, Ken; Arita, Hitoshi; Kawanami, Jun'ichi, deceased; Kawanami, Emiko, heir; Kawanami, Akira, heir; and Kawanami, Mariko, heir, 4,247,539, Cl. 424-92.000.
Kawanami, Emiko, heir: See—
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Kawanami, Mariko, heir: See—
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Kawasaki, Takemi; and Sasaki, Tetsuro, to Sumitomo Ru-Ber Industries, Ltd. Tubeless bias-ply tire with at least one carcass ply ending near bead core without being wrapped therearound. 4,246,949, Cl. 152-354.00R.
Kawase, Hiroshi: See—
Yoshii, Eisuke; and Kawase, Hiroshi, 4,247,288, Cl. 433-224.000.
Kawaskai, Hironobu: See—
Tsuda, Seizo; Tarumi, Eiichi; Kawaskai, Hironobu; and Watanabe, Takashi, 4,247,344, Cl. 148-6.14R.
Kayama, Tateso: See—
Ueno, Masayuki; Sano, Fumiaki; Sagae, Makoto; and Kayama, Tateso, 4,247,088, Cl. 266-273.000.
Kayanuma, Kanji: See—
Tatsuguchi, Kazuo; Hirata, Atsumi; Akasaka, Tetsushi; and Kayanuma, Kanji, 4,247,741, Cl. 369-43.000.
Kazan, John: See—
O'Brien, Patrick F.; Kazan, John; and Andrade, John R., 4,247,693, Cl. 544-323.000.
Kazaoka, Masaru: See—
Yuris, Nora; Cekander, Eugene J.; Kazaoka, Masaru; and Chuang, Jim P., 4,247,759, Cl. 235-381.000.
Kazewych, Bohdan: See—
Braz, Cornell; and Kazewych, Bohdan, 4,246,726, Cl. 49-227.000.
Keast, Larry G.; and Horton, Herbert D., to World Wide Oil Tools, Inc. Power tong apparatus for making and breaking connections between lengths of small diameter tubing. 4,246,809, Cl. 81-57.16D.
Keefe, George E.: See—
Cullum, Clifton D., Jr.; Keefe, George E.; Kryder, Mark H.; and Lin, Yeong-Shou, 4,247,912, Cl. 365-15.000.
Keller, Jacob P.; and Fay, Lawrence W., to Siemens Corporation. Head loading carriage assembly for a floppy disk drive. 4,247,877, Cl. 360-105.000.
Keller, Toni; Tschopp, Werner; and Laukien, Gunther R., to Spectrospin AG. Spin resonance spectrometer. 4,247,820, Cl. 324-321.000.
Kelley, Michael J.; and Prichard, William W., to Du Pont de Nemours, E. I., and Company. Hydrogenation of butadienepolyperoxide with activated phase-pure NiAl₃ catalyst. 4,247,722, Cl. 568-861.000.
Kelly, William M., Jr.: See—
Detert, Robert M.; Germitat, Hubert J.; and Kelly, William M., Jr., 4,247,349, Cl. 156-108.000.
Kempf, August J.; and Wilson, Kenneth E., to Merck & Co., Inc. Fermentation process for 6-hydroxymethyl-2-(2-aminoethylthio)-1-carbadethiapen-2-em-3-carboxylic acid. 4,247,640, Cl. 435-119.000.
Kennametal Inc.: See—
McCreery, James F.; and Jones, deceased; Dennis G., 4,247,232, Cl. 407-114.000.
Kennedy, Lawrence C., to General Motors Corporation. Notched injector hold-down clamp. 4,246,877, Cl. 123-470.000.
Keske, Frank E., to Caterpillar Tractor Co. Tool for pretensioning a fastener. 4,246,810, Cl. 81-57.38D.
Keyes, Melvin H.: See—
Barabino, Raymond C.; and Keyes, Melvin H., 4,247,647, Cl. 435-291.000.
Keyser, Earl W. Abrasive relief device for the foot. 4,246,914, Cl. 132-76.400.
Kidd, Alan L., to Dorman Smith Switchgear Limited. Electric circuit breaker. 4,247,746, Cl. 200-147.00R.
Kiefer, Jurg: See—
Haug, Theobald; and Kiefer, Jurg, 4,247,672, Cl. 526-262.000.

Kieslich, Klaus; Raduchel, Bernd; Skubalia, Werner; Vorbruggen, Helmut; and Dahl, Helmut, to Schering Aktiengesellschaft. Microbiological reduction of 15-ketoprostaglandin intermediates. 4,247,635, Cl. 435-63.000.
Kikkoman Shoyu Co., Ltd.: See—
Nakajima, Motoo; Mizusawa, Kiyoshi; and Shirokane, Yoshio, 4,247,632, Cl. 435-12.000.
Kikuchi, Shoji: See—
Uchida, Takashi; Kikuchi, Shoji; Sasaki, Takashi; and Sato, Mikio, 4,247,628, Cl. 430-551.000.
Kikuta, Kojiro; Kurihara, Katsumi; Suzuki, Shohei; and Sasaki, Teruaki, to Mitsubishi Jukogyo Kabushiki Kaisha. Combustion chamber for side-valve type internal-combustion engine. 4,246,882, Cl. 123-658.000.
Kilbourn, Dorwin L.: See—
Duke, Jimmy R.; Miller, Walter E., Jr.; Kilbourn, Dorwin L.; Mangus, Nicholas J., Jr.; Sitton, Robert L.; and Fountain, Walter F., 4,247,059, Cl. 244-3.16D.
Killmeyer, Charles W., to PPG Industries, Inc. Method for installing a mine roof bolt. 4,247,224, Cl. 405-260.000.
Kim, Keun Y.: See—
Jarvis, William M.; and Kim, Keun Y., 4,247,526, Cl. 423-266.000.
Kimball, Michael E., to Goodyear Tire & Rubber Company. The. Storable flowable polyurethane adhesive composition. 4,247,676, Cl. 528-49.000.
Kimmitt, Maurice F.: See—
Elmer, Peter J.; Kimmitt, Maurice F.; Matheson, William S.; and Roberts, Arthur, 4,247,768, Cl. 250-222.00R.
Kimura, Shoji; and Ishida, Noboru, to Nippon Oil Company, Ltd. Rust inhibitors and compositions of same. 4,247,414, Cl. 252-396.000.
Kimura, Shoji; and Ishida, Noboru, to Nippon Oil Company, Ltd. Rust inhibitors and compositions of same. 4,247,415, Cl. 252-396.000.
Kindell, Jerry L.: See—
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Kindler, Horst: See—
von Brachel, Hanswilli; Heinrich, Ernst; Grawinger, Otto; Hintermeier, Karl; and Kindler, Horst, 4,247,456, Cl. 260-156.000.
King, Anthony P., to Mono Pumps Limited. Shaft bearing. 4,247,156, Cl. 308-26.000.
King, Donald L., and Gianville, Gerald S., to Envirotech Corporation. Rotary rake structure for a settling tank. 4,247,400, Cl. 210-531.000.
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, to Otsuka Chemical Co., Ltd. Flame retarder having anti-blooming property. 4,247,332, Cl. 106-18.16D.
Kirin Brewery Company Limited: See—
Ishida, Nakao; Maeda, Hiroshi; Suzuki, Fujio; Fujii, Toshikatsu; and Mizutani, Ituro, 4,247,541, Cl. 424-116.000.
Kirk, Thomas G.: See—
Gabel, Lorne G.; Paulson, Garry E.; and Kirk, Thomas G., 4,247,870, Cl. 358-93.000.
Kissinger, Curtis D., to Mechanical Technology Incorporated. Fiber optic proximity instrument having automatic surface reflectivity compensation. 4,247,764, Cl. 250-205.000.
Kistner, Hermann, deceased; and Kistner, Werner, executor, to Maschinenbau Oppenweiler GmbH. Method and apparatus for loading a circular sheet pile feeder. 4,247,093, Cl. 271-3.100.
Kistner, Werner, executor: See—
Kistner, Hermann, deceased; and Kistner, Werner, executor, 4,247,093, Cl. 271-3.100.
Kitamura, Kazuhiko; and Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Thermally responsive valve device. 4,247,041, Cl. 236-48.00R.
Kitta, Hiroyuki; and Yamauchi, Yukio, to C. Hochiki Corporation. Fire detector with a monitor circuit. 4,247,848, Cl. 340-584.000.
Kiwala, Jacob: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,247,409, Cl. 252-174.11D.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,247,423, Cl. 252-522.00R.
Kiyoura, Tadami, to Mitsui Toatsu Chemicals, Inc. Process for producing pyruvic acid. 4,247,716, Cl. 562-513.000.
Kizer, Richard W.; Anderson, Arlynn W.; and Untz, Robert W., to Caterpillar Tractor Co. Apparatus of forming the mounting portion of a sidewall protector. 4,247,275, Cl. 425-298.000.
KLA Instrument Corporation: See—
Levy, Kenneth; and Sandland, Paul, 4,247,203, Cl. 356-398.000.
Klarin, John D.: See—
Bidgood, William E.; and Klarin, John D., 4,246,800, Cl. 73-861.27D.
Klein, Carl F.; and Thoma, Paul E., to Johnson Controls, Inc. Non-conductive polar gas sensing element and detection system. 4,247,299, Cl. 23-232.00E.
Klein, Dominique: See—
Sallese, Marc; and Klein, Dominique, 4,247,036, Cl. 228-194.000.
Klein, Jean M.; and Lacombe, Albert, to Lesieur-Cotelle & Associes S.A. Process for the production of a plurality of edible fractions from natural fatty substances, and the fractions produced in this way. 4,247,471, Cl. 260-410.700.
Klein, Raphael, to Intel Corporation. Ionization resistant MOS structure. 4,247,862, Cl. 357-48.000.
Klicks, Bernhard; and Komer, Jorg-Peter, to Uhde, GmbH. Permanent magnet type stirrer drive. 4,247,792, Cl. 310-104.000.

Klimek, Norbert M.; and Huber, Manfred A., to Rank Organisation Limited, The. Matrix printer. 4,247,207, Cl. 400-121.000.
Klinger, William E.: See—
Ashton, Theodore; Klinger, William E.; and Samodell, Ralph M., 4,247,751, Cl. 219-130.31D.
Klis, David S.; and Petersen, Walter J. Traction control mechanism for hydrostatic transmission. 4,246,803, Cl. 74-513.000.
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Suprunov, Vladimir, 4,247,087, Cl. 266-212.000.
Knapp, Jost; and Sawall, Gerhard, to Daimler-Benz Aktiengesellschaft. Bellows connection between front and rear section of a jointed bus. 4,247,128, Cl. 280-403.000.
Knappstein, Johannes; Stalherm, Dieter; and Bocsanczy, Janos, to Carl Still, Firma. Method of operating a coal predrying and heating plant in connection with a coking plant. 4,247,366, Cl. 201-41.000.
Knies, Erwin B.: See—
Chapman, Walter H.; Hiland, David E.; and Knies, Erwin B., 4,246,847, Cl. 104-172.00T.
Knobel, Walter; and Zeller, Karl, to Sandoz Ltd. Process for dyeing mixed elastomeric and non-elastomeric fibers. 4,247,290, Cl. 8-515.000.
Knoll, Frank S. Method of separating vermiculite from the associated gangue. 4,247,390, Cl. 209-129.000.
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Wieser, Hartmut; Mayer, Norbert; and Knorr, Harald, 4,247,449, Cl. 260-45.8NZ.
Knutrud, Leif B., to Norsk Cerealinstitut ved Statens Teknologiske Institut. Apparatus for reducing the temperature of bakery products. 4,246,835, Cl. 99-472.000.
Ko, Venancio P.: See—
Fay, John A.; Walsh, Cyril M.; and Ko, Venancio P., 4,246,916, Cl. 134-105.000.
Kobayashi, Ryuichiro: See—
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Kobayashi, Tatsuhiko: See—
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Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Automatic exposure camera. 4,247,188, Cl. 354-60.00E.
Kodama, Yukuo, to Nippon Electric Co., Ltd. Electronic timepiece. 4,247,932, Cl. 368-187.000.
Koehler, Erich, to Rheinmetall GmbH. Repeating firing system for guns. 4,246,829, Cl. 89-27.00F.
Koenig, Ronald J.: See—
Cerami, Anthony; Koenig, Ronald J.; Javid, Jamshid; and Pettis, Penelope K., 4,247,533, Cl. 424-1.000.
Koffski, Leonard E. Wall lifter. 4,247,083, Cl. 254-107.000.
Kofink, Wolfgang, to Robert Bosch GmbH. Apparatus for control of a continuously variable belt drive for operating a vehicle. 4,246,807, Cl. 74-872.000.
Kohl, Walter: See—
Gansert, Willi; Kuhn, Edgar; Slansky, Harry; and Kohl, Walter, 4,247,813, Cl. 320-48.000.
Kohler, Ramon C., to Caterpillar Tractor Co. Parking brake and transmission interlock system. 4,246,989, Cl. 192-4.00A.
Kokusai Denzsin Denwa Kabushiki Kaisha: See—
Wada, Tasaku; Asami, Tohru; and Nakao, Kouzou, 4,247,872, Cl. 358-256.000.
Komatsu, Toshiaki: See—
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Kominami, Yasuo: See—
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Komine, Isamu: See—
Shimada, Katsuhiko; Komine, Isamu; and Tanabe, Hideya, 4,247,819, Cl. 324-233.000.
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Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiko, 4,247,629, Cl. 430-562.000.
Nagatani, Toshio; Takahashi, Kazuo; and Haba, Takeshi, 4,247,620, Cl. 430-264.000.
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Konno, Akihiro: See—
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Koplow, Harold S.: See—
Corwin, Daniel W.; Koplow, Harold S.; Moros, David; and Anagnostopoulos, Paul, 4,247,906, Cl. 364-900.000.
Koppers Company, Inc.: See—
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Koreeda, Toshio: See—
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- Korn, Siegfried: See—
Daniels, Erwin J.; and Korn, Siegfried, 4,247,179, Cl. 351-171.000.
- Korner, Jorg-Peter: See—
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- Kornfeld, Dale M.: See—
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- Kos, Steven; and Baraff, David R., to Northern Telecom Limited. Photoconductor device for imaging a linear object. 4,247,874, Cl. 358-294.000.
- Kosciuczyk, Theodore E.: See—
Brown, Richard C.; Fisher, Harland S.; Kosciuczyk, Theodore E.; and Murphy, Joseph M., 4,246,868, Cl. 118-694.000.
- Koshar, Robert J.; and Bany, Stephen W., to Minnesota Mining and Manufacturing Company. Use of bis(fluoroaliphatic)sulfonylimides in polymerization of organocyclosiloxanes. 4,247,674, Cl. 528-21.000.
- Kotter, Wolfgang: See—
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- Kovalchik, Steve J., Jr.: See—
Spach, Richard N.; and Kovalchik, Steve J., Jr., 4,247,356, Cl. 156-416.000.
- Kovar, Paul J.; and Southerton, Marvin D. Joist bridging member. 4,246,736, Cl. 52-696.000.
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Uede, Hisashi; Take, Hiroshi; Koyanagi, Katubumi; and Inami, Yasuhiko, 4,247,855, Cl. 340-753.000.
- Kraemer, Rolf H., to Fansteel Inc. Tool holder. 4,247,231, Cl. 407-101.000.
- Kraemer, Rolf H., to Fansteel Inc. Micro-adjustable boring bar. 4,247,233, Cl. 408-185.000.
- Kraftwerk Union Aktiengesellschaft: See—
Maghon, Helmut, 4,247,256, Cl. 416-198.00A.
- Steven, Josef; and Bezold, Helmut, 4,246,783, Cl. 73-161.000.
- Kramer, Dieter; and Sauber, Klaus, to Rohm GmbH Chemische Fabrik. Preparation of stabilized carrier-bound proteins. 4,247,643, Cl. 435-178.000.
- Kramer, Petrus A.: See—
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- Kranik, John R.: See—
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- Kraus, Edmund J.: See—
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- Kraus, Robert A.; and Kraus, Edmund J. Passive solar heater fluid pump system. 4,246,890, Cl. 126-433.000.
- Kremer, Walter, to Johannes Bockemuhl, Firma. Frame for partial illumination in photocopying of negatives, diapositives and the like. 4,247,199, Cl. 355-72.000.
- Kretschmer, Horst: See—
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- Krieg, Walter: See—
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- Krieger, Robert R. Firing pin. 4,246,830, Cl. 89-179.000.
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Marianowski, Leonard G.; Donado, Rafael A.; and Maru, Hansraj C., to Institute of Gas Technology. Carbonate fuel cell anodes. 4,247,604, Cl. 429-40.000.

Marion, Thomas E., to Maryland Cup Corporation. Cup bead or fill lining former. 4,247,277, Cl. 425-393.000.

Mark, Hermann; and Szabolcs, Otto, to Isovolta Österreichische Isolierstoffwerke Aktiengesellschaft. Aromatic polyesters of 9,9-bis-(4-hydroxyphenyl)-fluorene, phthalic acids and phosphorus halides. 4,247,681, Cl. 528-169.000.

Mark, Victor; and Hedges, Charles V., to General Electric Company. Keto-diphenol compounds. 4,247,484, Cl. 568-326.000.

Markezich, Ronald L., to General Electric Company. Thermally stable polycarbonate compositions comprising oxetane phosphonites. 4,247,448, Cl. 260-45.80A.

Marks, Alan M., to Johnson & Johnson. Tretinoin in a gel vehicle for acne treatment. 4,247,547, Cl. 424-240.000.

Marks, Alvin M.; and Marks, Mortimer. 3D Multichrome filters for spectacle frames. 4,247,177, Cl. 351-44.000.

Marks, Mortimer: See—
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Marriott, William H., Jr.; and Imier, Vaughn R., to PPG Industries, Inc. Ceramic conveyor rolls with metal end caps clamped thereto. 4,247,000, Cl. 198-780.000.

Marsh, Walter G.; Rhoades, James J.; and Nolan, Frank, to Tapco Products Company, Inc. Stand for dispensing rolled sheet stock. 4,246,817, Cl. 83-455.000.

Marshall, John, II, deceased: See—
Kuczynski, William A.; and Marshall, John, II, deceased, 4,247,061, Cl. 244-17.190.

Marshall & Pike Enterprises Inc.: See—
Shea, Madilyn R.; and Pike, Earl A., 4,247,594, Cl. 428-328.000.

Marshall, Ruth Ann D., administratrix: See—
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Martens, Winand H.: See—
Bodenmann, Hans U.; Van Herle, Louis P.; and Martens, Winand H., 4,247,006, Cl. 206-528.000.

Martin, David H. Heat transfer and storage means. 4,246,889, Cl. 126-433.000.

Martin, Jonathan F.; and Cherba, David M., to Westinghouse Electric Corp. Programmable dual stack relay ladder diagram line solver and programming panel therefor with prompter. 4,247,901, Cl. 364-900.000.

Martin, Walter J.; and Furtado, John, to Raytheon Company. Signal combiner with permuted addressing. 4,247,900, Cl. 364-581.000.

Martin, Wolfram, to Gebrüder Junghans GmbH. Timepiece with hybrid display. 4,247,930, Cl. 368-84.000.

Martinez, Miguel. Surgical cutting instrument. 4,246,902, Cl. 128-305.000.

Maru, Hansraj C.: See—
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Marusiak, Wojciech: See—
Henke, Ulrich; Marusiak, Wojciech; and Baumler, Hermann, 4,246,880, Cl. 123-549.000.

Marvin Glass & Associates: See—
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Kulesza, Ralph J.; Schoenfeld, Palmer J.; and Disko, Harry, 4,246,719, Cl. 46-41.000.

Maryland Cup Corporation: See—
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Maschinenbau Oppenweiler GmbH: See—
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Mason, Charles E.: See—
Thakur, Pramod C.; Mason, Charles E.; Lauer, Stephen D.; and Jones, Emrys H., Jr., 4,247,312, Cl. 55-166.000.

Mason, Robert W.: See—
Fung, Ignatius; and Mason, Robert W., 4,247,022, Cl. 222-146.00H.

Masonite Corporation: See—
Sutton, Roger F.; Blomquist, Robert O.; and Luck, Allan J., 4,247,511, Cl. 264-252.000.

Mast, Aquila D.: See—
Anstee, L. Lavern; and Mast, Aquila D., 4,246,743, Cl. 56-341.000.

Mast, Fred, to Gretag Aktiengesellschaft. Zoom lens for photographic printers. 4,247,168, Cl. 350-430.000.

Masters, William E. Rotational molding system. 4,247,279, Cl. 425-430.000.

Mastronardi, James A., to Northern Telecom Limited. Alternate frame shift color video display technique. 4,247,865, Cl. 358-4.000.

Masuda, Shuji: See—
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, 4,247,332, Cl. 264-18.100.

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Elmer, Peter J.; Kimmitt, Maurice F.; Matheson, William S.; and Roberts, Arthur, 4,247,768, Cl. 250-222.00R.

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Matsubara, Kenichi: See—
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Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, to Mitsui Petrochemical Industries, Ltd. Thermoplastic elastomer blends with olefin plastic, and foamed products of the blends. 4,247,652, Cl. 521-95.000.

Matsui, Isamu; Takasaka, Shigeru; and Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Pneumatic yarn splicing apparatus. 4,246,744, Cl. 57-22.000.

Matsukura, Motoo: See—
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Matsumoto, Hiroshi: See—
Prager, Jay M.; Sadlow, Joseph F.; Nitzsche, John K.; Nikonchuk, Thomas A.; Farrand, John E.; Gonzales, Roman; and Matsumoto, Hiroshi, 4,247,882, Cl. 361-380.000.

Matsumoto, Kuniharu: See—
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Matsumoto, Teruo: See—
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Matsuoka, Yoshiyuki: See—
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Matsushima, Yasunobu: See—
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Matsushita Electric Industrial Co., Ltd.: See—
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Matsutani, Tsutomu: See—
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Mattel, Inc.: See—
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Mathews, James F.; and Sommerfeld, Eugene G., to Du Pont de Nemours, E. I., and Company. Water-borne coating composition made from epoxy resin, polymeric acid and tertiary amine. 4,247,439, Cl. 260-29.6NR.

Matty, Thomas C.: See—
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Matzuk, Terrance. Self-contained ultrasonic scanner. 4,246,792, Cl. 73-620.000.

Maurer Engineering Inc.: See—
McDonald, William J., Jr., 4,246,976, Cl. 175-107.000.

Maurice, Terrence J.: See—
Murray, E. Donald; Maurice, Terrence J.; and Barker, Larry D., 4,247,573, Cl. 426-656.000.

Maussion, Daniel, to Compagnie Internationale pour l'Informatique. Method and circuit arrangement for generating and processing two separate pulse trains bearing information. 4,247,760, Cl. 235-449.000.

Mawhinney, Daniel D., to RCA Corporation. Smart noise generator. 4,247,946, Cl. 455-1.000.

May, Joseph N., to Xerox Corporation. Sheet feeding and registration apparatus. 4,247,095, Cl. 271-233.000.

Mayama, Koichi: See—
Yoshizawa, Shigeru; Aoki, Hirokazu; Chiba, Shinaku; Mayama, Koichi; Toyooka, Takashi; and Saito, Nobuo, 4,247,911, Cl. 365-6.000.

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Quayle, Lawrence L., 4,247,158, Cl. 312-213.000.

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Frost, Richard C.; Gomez, Eduardo W.; and McAnally, Robert W., 4,247,066, Cl. 244-219.000.

McCabe, James E. Paper spring method. 4,247,289, Cl. 493-386.000.

McCall, John M., to Upjohn Company. The. Methods of treating psychosis. 4,247,553, Cl. 424-250.000.

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Ward, Robert J.; Kawakami, James H.; and McCarthy, Neil J., Jr., 4,247,354, Cl. 156-329.000.

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McDaniel, Max P.; and Welch, Melvin B., to Phillips Petroleum Company. Activation of supported chromium oxide catalysts. 4,247,421, Cl. 252-458.000.

McDonald, Michael P.; and Anderson, Larry W., to Westinghouse Electric Corp. Train vehicle control microprocessor power reset. 4,247,897, Cl. 364-436.000.

McDonald, William J., Jr., to Maurer Engineering Inc. Down hole drilling motor with pressure balanced bearing seals. 4,246,976, Cl. 175-107.000.

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McGraw-Edison Company: See—
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McGrew, Norman E.; and Grow, Ralph S., to Western Helicopter Services, Inc. Slash burning. 4,247,281, Cl. 431-91.000.

McGuckin, Hugh G.; and Cohen, Hyman L., to Eastman Kodak Company. Continuous-tone dyed diazo imaging process. 4,247,615, Cl. 430-145.000.

McIntosh, Arthur M., to Borg-Warner Corporation. Screw operated coupling. 4,246,996, Cl. 192-94.000.

McIntyre, Donald E.; Veros, David J.; and Veros, Duane W. Simulated leather accessory and method of making same. 4,247,350, Cl. 156-216.000.

McIntyre, William H., to Westinghouse Electric Corp. Technique for in situ calibration of a gas detector. 4,247,380, Cl. 204-195.00S.

McJunkin Corporation: See—
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McJunkin, H. P., Jr.; and Rowley, L. W., to McJunkin Corporation. Fluorescent mine lighting fixture. 4,247,884, Cl. 362-164.000.

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McLoughlin, John; Athanasias, Neocles; and Rotblum, Yehuda, to McLoughlin, John. Chemical injection system for fire fighting. 4,246,969, Cl. 169-13.000.

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- Mehta, Arun K., to Combustion Engineering, Inc. Fuel firing method. 4,246,853, Cl. 110-347.000.
- Meijer-Hoffman, Lucia R. M.; and de Jonge, Pieter H., to Stamicarbon, B.V. Process for removing melamine from melamine-containing liquids. 4,247,645, Cl. 435-262.000.
- Meli, Vincenzo: See—
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- Meloni, Robert A.: See—
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- Memorex Corporation: See—
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- Merlen, Monty M.; and Slaker, Frank A., to Intec Corporation. Method and apparatus for a web edge tracking flaw detection system. 4,247,204, Cl. 356-431.000.
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- Micale, Fortunato J.: See—
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- Mikulecky, Karel; Elias, Jiri; Burysek, Frantisek; Esner, Stanislav; Skoda, Stanislav; Tyl, Miloslav; and Janousek, Jan, to Vyzkumny ustav bavinarsky. Method of and apparatus for piecing yarn in open end rotor spinning units. 4,246,749, Cl. 57-263.000.
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- Miller, Ralph A., to Garrett Corporation. The. Evacuation slide deceleration. 4,246,980, Cl. 182-48.000.
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- Miyahara, Kingo, to Dow Co., Ltd. Liquid fuel burner for burning liquid fuel in gasified form. 4,247,282, Cl. 431-168.000.
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- Mobil Oil Corporation: See—
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- Mohr, Paul R.: See—
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King, Anthony P., 4,247,156, Cl. 308-26.000.
- Monogram Industries, Inc.: See—
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- Howe, Robert K.; and Lee, Len F., 4,247,322, Cl. 71-88.000.
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- Montgomery Elevator Company: See—
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- Morgan, Glenn G., to Texaco Inc. Vapor collecting system. 4,246,938, Cl. 141-52.000.
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- Morio, Shuji, to Yamatake-Honeywell Company Limited. Ignition device for oil burners. 4,247,880, Cl. 361-256.000.
- Morley Furniture Spring Construction: See—
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- Morohashi, Kazuo: See—
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- Moros, David: See—
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- Morozov, Vyacheslav A.: See—
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- Morrison, Bertram L., to ACF Industries, Incorporated. Seal assembly for valves. 4,247,080, Cl. 251-315.000.
- Morschek, Timothy J., to Eaton Corporation. Synchronizer for transmissions. 4,246,993, Cl. 192-53.00F.
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- Moss, Ernest K.: See—
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- Mueller, Kurt H.; and Werner, Jean J., to Bell Telephone Laboratories, Incorporated. Equalizer for complex data signals. 4,247,940, Cl. 375-14.000.
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- Munroe, James L.: See—
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- Munz, Eberhard: See—
Ziegenhorn, Joachim; Munz, Eberhard; Draeger, Brigitte; Hagen, Alexander; and Gruber, Wolfgang, 4,247,630, Cl. 435-10.000.
- Muraki, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray tube unit, 4,247,782, Cl. 250-523.000.
- Murakoshi, Makoto: See—
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- Murata, Atsuo; Tsuchiya, Syuji; Konno, Akihiro; Arima, Fumiyo; and Ikeda, Hisao, to Nissan Chemical Industries Limited. Process for producing aminoxide, 4,247,480, Cl. 564-298.000.
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- Murata, Toshinori: See—
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- Murphy, Joseph M.: See—
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- Murray, Robert R.: See—
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- Musch, Gordon F.: See—
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- Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Use of mixture containing caryophyllene alcohols in augmenting or enhancing the aroma of a solid or liquid anionic, cationic or nonionic detergent, 4,247,409, Cl. 252-174.110.
- Muto, Rudolph. Tracheotomy obturator and tube flange, 4,246,897, Cl. 128-207.150.
- Myles, J. Edgar, to J. E. Myles, Inc. Pressure Indicator, 4,246,797, Cl. 73-744.000.
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- Nabeshima, Shigeyasu: See—
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- Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material and method for processing the same, 4,247,620, Cl. 430-264.000.
- Nagel, Roger N.: See—
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- Nakagawa, Yasuhiko; Etoh, Yukihiko; Nakai, Meroji; and Nakajima, Ryoji, to Nissan Motor Company, Limited. Internal combustion engine with dual induction system and with fuel injection system to discharge fuel into primary induction system, 4,246,874, Cl. 123-308.000.
- Nakai, Meroji: See—
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- Nakajima, Ryoji: See—
Nakagawa, Yasuhiko; Etoh, Yukihiko; Nakai, Meroji; and Nakajima, Ryoji, 4,246,874, Cl. 123-308.000.
- Nakamura, Hiroshi: See—
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- Nakamura, Norihiko, to Rhythm Watch Company Limited. Time striking device for timepiece, 4,247,933, Cl. 368-269.000.
- Nakamura, Norio: See—
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- Nakao, Hideo: See—
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- Narveson, Parm L.: See—
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- National Distillers and Chemical Corp.: See—
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- Murib, Jawad H., 4,247,467, Cl. 260-343.600.
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- NCR Corporation: See—
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- Swan, William O., Jr., 4,247,214, Cl. 400-705.100.
- Neece, James R.: See—
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- Neefe, Charles W., to Neefe Optical Laboratory, Inc. Method of controlling the adhesion of cast lenses to the mold, 4,247,492, Cl. 264-2.300.
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- Neidleman, Saul L.; Amon, William F., Jr.; and Geigert, John, to Cetus Corporation. Method for producing epoxides and glycols from alkenes, 4,247,641, Cl. 435-123.000.
- Nelson, Mark E. Traffic signs, 4,246,715, Cl. 40-607.000.
- Nelson, Rolland W. Process and method of use for a stable emulsified edible liquid starch product, 4,247,561, Cl. 426-53.000.
- Nessel, Jiri M., to AGL Corporation. Electrical levelling system for laser beam, 4,247,809, Cl. 318-630.000.
- Neumann, Gerhard M., to Delbag-Luftfilter GmbH. Filter element, 4,247,315, Cl. 55-350.000.
- New York Institute of Technology: See—
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- Neworal, Alfred: See—
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- Nichols, Wayne C., to General Motors Corporation. Combination speed transducer and speedometer cable, 4,246,790, Cl. 73-493.000.
- Nielsen, Ole B. T.: See—
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- Nihon Parkerizing Co., Ltd.: See—
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- Nijhawan, Pramodh; and Duckworth, Joseph M., to Envirotech Corporation. Coke oven fumes control system, 4,247,370, Cl. 202-263.000.
- Nikoden, Joseph, Jr., to Detroit Bullet Trap Corporation. Shooting booth, 4,247,115, Cl. 273-317.000.
- Nikonchuk, Thomas A.: See—
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- Nippon Chemiphar Co., Ltd.: See—
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- Nippon Electric Co., Ltd.: See—
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- Nippon Kogaku K.K.: See—
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- Nippon Kokan Kabushiki Kaisha: See—
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- Nippon Oil Company, Ltd.: See—
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- Kimura, Shoji; and Ishida, Noboru, 4,247,415, Cl. 252-396.000.
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- Nippon Oil and Fats Company, Limited: See—
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- Nippon Steel Corporation: See—
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- Nishikawa, Yoshiyuki: See—
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- Nishizawa, Masahiro; Yokomizo, Hiroshi; Tomito, Yoshifumi; Nonogaki, Saburo; and Manabe, Toshikatsu, to Hitachi, Ltd. Method of forming fluorescent screens of color picture tubes, 4,247,612, Cl. 430-28.000.
- Nissan Chemical Industries Limited: See—
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- Nissan Motor Company, Limited: See—
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- Nitzsche, John K.: See—
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- Nix, Paul T.; and Fields, Spencer, to Millipore Corporation. Reagent and method for the analytic determination of hydrogen peroxide, 4,247,631, Cl. 435-10.000.
- Nixdorf Computer AG: See—
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- NL Industries, Inc.: See—
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- Noguchi, Eiji: See—
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- Nohda, Masao; and Morohashi, Kazuo, to Nippon Kogaku K.K. Projection type lens meter, 4,247,200, Cl. 356-124.000.
- Nojiri, Akio; Sawasaki, Takashi; and Koreeda, Toshio, to Furukawa Electric Co., Ltd. The Method of crosslinking poly- α -olefin series resins, 4,247,667, Cl. 525-254.000.
- Nolan, Frank: See—
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- Nolf, Jean-Marie E., to N.V. Raychem S.A. Branch-off method, 4,246,687, Cl. 29-447.000.
- Nomura, Hirokazu: See—
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- Nomura, Minderu; Iwata, Susumu; and Ono, Mithuo, to Ricoh Co., Ltd. Thermosensitive recording material, 4,247,595, Cl. 428-329.000.
- Nonogaki, Saburo: See—
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- Nordson Corporation: See—
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- Norris, Alan H.; and Chambley, Phillip W., to WWG Industries, Inc. Self-twist yarn and method of making same, 4,246,750, Cl. 57-293.000.
- Norris Industries, Inc.: See—
Fay, John A.; Walsh, Cyril M.; and Ko, Venancio P., 4,246,916, Cl. 134-105.000.
- Norris, Philip R., to Polaroid Corporation. Card motion picture apparatus with adjustable barrel cam, 4,247,180, Cl. 352-82.000.
- Norsk Cerealindustri ved Statens Teknologiske Institut: See—
Knutrud, Leif B., 4,246,835, Cl. 99-472.000.
- North American Philips Corporation: See—
Stupp, Edward H.; and Turnbull, Andrew A., 4,247,352, Cl. 156-272.000.
- Northern Telecom Limited: See—
Kos, Steven; and Baraff, David R., 4,247,874, Cl. 358-294.000.
- Mastroratti, James A., 4,247,865, Cl. 358-4.000.
- Northrop Corporation: See—
Malm, Robert, 4,247,943, Cl. 375-79.000.
- Northway Marketing Ltd.: See—
Branfman, Alan, 4,246,725, Cl. 47-73.000.
- Norwood, Richard E.: See—
Jooss, Karl; and Norwood, Richard E., 4,247,794, Cl. 310-13.000.
- Nowack, Gerhard P.: See—
Johnson, Marvin M.; Nowack, Gerhard P.; and Tabler, Donald C., 4,247,389, Cl. 208-181.000.
- Nowogrodzki, Markus, to RCA Corporation. Frequency translation means, 4,247,822, Cl. 328-15.000.
- NPI Corporation: See—
Brown, John S., 4,246,834, Cl. 99-334.000.
- N.V. Raychem S.A.: See—
Nolf, Jean-Marie E., 4,246,687, Cl. 29-447.000.
- Selleslags, Frank K. A., 4,246,709, Cl. 40-2.00R.
- Oakes, Vincent: See—
Sinnige, Hermannus J. M.; Hageman, Hendrik J.; Mija, Willem J.; de Graaf, Stephanus A. G.; and Oakes, Vincent, 4,247,692, Cl. 544-194.000.
- O'Boyle, Matthew, to Catalyst Research Corporation. Lithium halide primary cell having end of life indicator means, 4,247,607, Cl. 429-101.000.
- O'Brien, C. Douglas; Bown, Herbert G.; and Green, Thomas E., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Touch sensitive computer input device, 4,247,767, Cl. 250-221.000.
- O'Brien, Patrick F.; Kazan, John; and Andrade, John R., to American Cyanamid Company. Process for preparing 2,4,5,6-tetraaminopyrimidine sulfate, 4,247,693, Cl. 544-323.000.
- Occidental Oil Shale, Inc.: See—
Cha, Chang Y., 4,246,965, Cl. 166-251.000.
- O'Connell, John J.; and Pike, William R., to American Hospital Supply Corporation. Method of silver plating a tooth structure, 4,247,575, Cl. 427-2.000.
- O'Connor, Alton J., to Walbro Corporation. Fuel safety valve and regulator, 4,246,931, Cl. 137-494.000.
- Odds, Gustav A.: See—
Edelson, Leo; Odds, Trygve R.; and Odds, Gustav A., 4,247,068, Cl. 248-162.100.
- Odds, Trygve R.: See—
Edelson, Leo; Odds, Trygve R.; and Odds, Gustav A., 4,247,068, Cl. 248-162.100.
- O'Dell, Robert R.: See—
Carpenter, Kim H.; and O'Dell, Robert R., 4,247,854, Cl. 340-758.000.
- Odnodushny, Viktor A.: See—
Moshnin, Evgeny N.; Romashko, Nikolai I.; Prozorov, Leonid V.; Zorev, Nikolai N.; Scherba, Oleg V.; Odnodushny, Viktor A.; Zhiltsov, Nikolai I.; Rabinovich, Lev A.; Tupitsyn, Lev V.; Alexeev, Konstantin P.; Kukulshkin, Boris P.; Brjukhanov, Jury V.; Trifonov, Boris A.; Morozov, Vyacheslav A.; Rudyak, Gennady V.; Bakhvalov, Sergei K.; deceased; and Bakhvalova, Larisa M., administrator, 4,246,772, Cl. 72-358.000.
- O'Fall, Joseph M., to Shale Oil Science & Systems, Inc. Conical screen structure, 4,246,998, Cl. 196-46.100.
- Ogawa, Hiroshi: See—
Komori, Shigehiro; and Ogawa, Hiroshi, 4,247,192, Cl. 355-8.000.
- Ogawa, Masao, to Brother Kogyo Kabushiki Kaisha. Safety device for pattern selection in zigzag sewing machines, 4,246,858, Cl. 112-275.000.
- Ogawa, Masaya; Sugiyama, Takashi; and Mizuno, Hiroshi, to Minolta Camera Kabushiki Kaisha. Cleaning device for use in electrophotographic copying machines, 4,247,196, Cl. 355-15.000.
- Ogawa, Shuji: See—
Yagi, Shigenori; Tabata, Norikazu; and Ogawa, Shuji, 4,247,829, Cl. 331-94.5PE.
- Ogden, Richard G.; and Lawrence, Robert P., to Harrison, Henry R., a part interest. Apparatus for reducing the desire to smoke, 4,246,913, Cl. 131-171.00A.
- Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, to Seiko Koki Kabushiki Kaisha. Slip mechanism for a timepiece, 4,247,931, Cl. 368-185.000.
- Ogilvie, John T.: See—
Thompson, David G.; and Ogilvie, John T., 4,247,883, Cl. 361-433.000.
- Ohmori, Tadashi; and Ishikawa, Katuhiko, to Nippon Oil Company, Ltd. Method of removing acetylenes from C₄-hydrocarbon mixture containing butadiene, 4,247,725, Cl. 585-259.000.
- Ohmura, Kazutaka: See—
Inagami, Kaoru; Terabayashi, Takeshi; Ohmura, Kazutaka; Haruna, Masao; and Yuda, Tetsuji, 4,247,566, Cl. 426-276.000.
- Ohmura, Mototaka: See—
Yoshiga, Norio; Nakamura, Hiroshi; and Ohmura, Mototaka, 4,247,663, Cl. 525-227.000.
- Ohnmacht, Cyrus J.; and Malick, Jeffrey B., to ICI Americas Inc. Piperazine-1-carboxylic acid esters possessing antidepressant or analgesic activity, 4,247,549, Cl. 424-250.000.
- Ohno, Shigeaki; Aburatani, Nobuyuki; and Ueda, Nobuyuki, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Blowing composition, 4,247,412, Cl. 252-350.000.
- Ohno, Shigeaki; Aburatani, Nobuyuki; and Ueda, Nobuyuki, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing foamed synthetic resin products, 4,247,651, Cl. 521-92.000.
- O'Hori, Hiroshi D. Drip bar for brushes, 4,247,013, Cl. 220-90.000.
- Ohshima, Iwao; and Nakashima, Yasutaka, to Nitto Chemical Industry Co., Ltd.; and Mitsubishi Rayon Co., Ltd. Method for cooling polymeric hydrogel blocks, 4,247,437, Cl. 260-29.60H.
- Ohshima, Kiyoshi: See—
Kubota, Yoichi; Hosaka, Masao; and Ohshima, Kiyoshi, 4,247,194, Cl. 355-14.00R.
- Ohshima, Kihachiro: See—
Hata, Kunio; Matsukura, Motoo; Hatano, Satoshi; Ohshima, Kihachiro; Kano, Isao; Umeda, Hiroaki; and Awaji, Haruo, 4,247,569, Cl. 426-335.000.

Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masaomi; and Kawakami, Tomiko, to Ricoh Co., Ltd. Electrophotographic element containing a disazo pigment. 4,247,614, Cl. 430-79.000.

Oji Paper Co., Ltd.: See—
Soma, Shigeharu; Onodera, Tadao; and Onodera, Yoshio, 4,247,363, Cl. 162-28.000.

Okada, Hisao; and Kawamoto, Yukihiro, to Sanyo Electric Co., Ltd. Automatic modulation control in transmitter. 4,247,948, Cl. 455-116.000.

Okamoto, Toyoo; and Kuno, Masashi, to Ricoh Co., Ltd. Bias device for a copying machine. 4,247,195, Cl. 355-14.00D.

Okcuoglu, Selahattin A.: See—
Kacmarcik, Donald J.; Okcuoglu, Selahattin A.; and Raider, Jerry W., 4,247,210, Cl. 400-236.100.

Okuyama, Hidetoshi: See—
Toyama, Ryosuki; Inoue, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,247,698, Cl. 546-112.000.

Okuyama, Yasuhiko; and Takiya, Takeshi, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Display for frequency received by radio receiver. 4,247,950, Cl. 455-158.000.

Okuzawa, Tugio: See—
Kaneko, Tamaki; Mizuma, Kenichi; Okuzawa, Tugio; and Hosaka, Masao, 4,247,193, Cl. 355-14.00R.

Olabisi, Olagoke, to Union Carbide Corporation. Process for molding of plastic structural web articles. 4,247,515, Cl. 264-500.000.

Oldakowski, Stephen Z., to Lear Siegler, Inc. Linear motion mechanism with means for preventing back forces. 4,246,991, Cl. 192-8.00C.

Oldfelt, Sven, to Aktiebolaget Electrolux. Waste water vacuum conveyance method and apparatus. 4,246,925, Cl. 137-205.000.

Olds, George M. Graduate with automatic measuring means. 4,246,789, Cl. 73-427.000.

Olin Corporation: See—
Kadija, Igor V.; Woodard, Kenneth E., Jr.; and Waxelbaum, Paul M., 4,247,345, Cl. 156-73.400.

Popplewell, James M.; and Butt, Sheldon H., 4,246,960, Cl. 165-134.00R.

Turley, Richard J., 4,247,489, Cl. 260-983.000.

Olin, John G.; and Ahlquist, Norman C., to Sierra Instruments, Inc. Method and apparatus for sampling of a particle-bearing gas. 4,246,788, Cl. 73-421.50R.

Olympia Werke AG: See—
Behrendt, Wolfgang; Bohnhage, Detlef; Friedemann, Peter; Frolich, Bernhard; and Orzessek, Reinhold, 4,247,211, Cl. 400-477.000.

Olympus Optical Co., Ltd.: See—
Maitani, Yoshihisa; and Yamada, Toyotaka, 4,247,028, Cl. 224-267.000.

Shimoda, Miso; and Saitou, Sinichi, 4,247,878, Cl. 360-125.000.

Takizawa, Tatsuo, 4,247,839, Cl. 355-3.00R.

O'Neill, Brian M.: See—
Buselli, Gioachino; and O'Neill, Brian M., 4,247,821, Cl. 324-336.000.

Onkyo Kabushiki Kaisha: See—
Takahashi, Satoshi, 4,247,875, Cl. 360-66.000.

Ono, Hiroshi, to Shibuya Kogyo Company, Ltd. Air chuck for capping or uncapping machine. 4,246,738, Cl. 53-331.500.

Ono, Mithuo: See—
Nomura, Minoru; Iwata, Susumu; and Ono, Mithuo, 4,247,595, Cl. 428-329.000.

Onodera, Hideo, to Hitachi Denshi Kabushiki Kaisha. Pre-amplifiers for color television cameras. 4,247,868, Cl. 358-29.000.

Onodera, Hisakichi: See—
Onuki, Jin; Soeno, Ko; Suwa, Masateru; and Onodera, Hisakichi, 4,246,693, Cl. 29-580.000.

Onodera, Tadao: See—
Soma, Shigeharu; Onodera, Tadao; and Onodera, Yoshio, 4,247,363, Cl. 162-28.000.

Onodera, Yoshio: See—
Soma, Shigeharu; Onodera, Tadao; and Onodera, Yoshio, 4,247,363, Cl. 162-28.000.

Onuki, Jin; Soeno, Ko; Suwa, Masateru; and Onodera, Hisakichi, to Hitachi, Ltd. Method of fabricating semiconductor device by bonding together silicon substrate and electrode or the like with aluminum. 4,246,693, Cl. 29-580.000.

Oohori, Harumi; Shirai, Akira; Uemura, Hiroshi; and Nogami, Tomoyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for controlling hydraulic pressure in hydraulic brake system of vehicle. 4,247,153, Cl. 303-6.00C.

Oooka, Mituo; Yoshida, Makoto; Yamauchi, Masamichi; and Suzuki, Choken, to Citizen Watch Company Limited. Digital electronic timepiece. 4,247,927, Cl. 368-30.000.

Oosaka, Shigenori; and Murakoshi, Makoto, to Fuji Photo Film Co., Ltd. Film positioning device for microform printing system. 4,247,197, Cl. 355-54.000.

Orzessek, Reinhold: See—
Behrendt, Wolfgang; Bohnhage, Detlef; Friedemann, Peter; Frolich, Bernhard; and Orzessek, Reinhold, 4,247,211, Cl. 400-477.000.

Osaka Gas Company Ltd.: See—
Haruta, Masao, 4,246,773, Cl. 73-24.000.

Osborne, Charles S., Jr.: See—
Culter, Robert G.; and Osborne, Charles S., Jr., 4,247,869, Cl. 358-67.000.

Oscarson, John R.: See—
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,247,462, Cl. 260-239.30P.

Otsuka Chemical Co., Ltd.: See—
Kinoshita, Tsukuru; Masuda, Shuji; and Hasegawa, Tetuo, 4,247,332, Cl. 106-18.160.

Otsuka Kagaku Yakuhin Kabushiki Kaisha: See—
Ohno, Shigeaki; Aburatani, Nobuyuki; and Ueda, Nobuyuki, 4,247,412, Cl. 252-350.000.

Ohno, Shigeaki; Aburatani, Nobuyuki; and Ueda, Nobuyuki, 4,247,651, Cl. 521-92.000.

Ott, Robert J., to Eastman Kodak Company. Electric field sensitization of polyacetylenic materials. 4,247,613, Cl. 430-31.000.

Otten, Antoon A. J.: See—
Wilcke, Robert; and Otten, Antoon A. J., 4,247,857, Cl. 343-117.00R.

Ovchinnikov, Viktor I.: See—
Kruzhanov, Jury V.; Dubinin, Viktor P.; Ovchinnikov, Viktor I.; and Saftonov, Vladimir E., 4,247,343, Cl. 148-1.500.

Overfield, Norbert W.: See—
Bouwkamp, Gerald R.; and Overfield, Norbert W., 4,246,876, Cl. 123-467.000.

OVF Glastechnik GmbH: See—
Hofmann, Herbert, 4,247,319, Cl. 65-109.000.

Owen, Geoffrey R.: See—
Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,247,558, Cl. 424-263.000.

Owens-Illinois, Inc.: See—
Birner, Richard A.; and Einfalt, Arthur C., 4,246,777, Cl. 73-83.000.

Kontz, Robert F., 4,247,357, Cl. 156-567.000.

Oy Nokia AB: See—
Karppo, Jukka S., 4,247,504, Cl. 264-174.000.

Pabst Brewing Company: See—
Case, Richard V.; Mezei, Louis M.; and Siegel, Jack M., 4,247,633, Cl. 435-17.000.

Paesler, Martin R. A., to Plessey Handel und Investments AG. Synthesis arrangements for use in digital data transmission systems. 4,247,937, Cl. 370-102.000.

Page, Robert B.: See—
Howe, Stephen H.; Preston, Barry; and Page, Robert B., 4,247,798, Cl. 313-225.000.

Page, Ronald. Power switching apparatus. 4,247,787, Cl. 307-112.000.

Pagnozzi, Ernesto G.: See—
Pagnozzi, Vincenzo; and Pagnozzi, Ernesto G., 4,246,704, Cl. 34-16.500.

Pagnozzi, Vincenzo; and Pagnozzi, Ernesto G. Process and plant for drying solid wood in planks or semifinished products by means of a superheated steam system. 4,246,704, Cl. 34-16.500.

Palange, Walter. Apparatus for use in producing knit fabrics. 4,246,768, Cl. 66-4.000.

Pall Corporation: See—
Seibert, Chesterfield F.; and Cordes, Harry, 4,247,311, Cl. 55-162.000.

Panavision, Incorporated: See—
Gottschalk, Robert E., 4,246,766, Cl. 64-11.00R.

Pandak, Zoltan I. Tennis net center stay and measuring device. 4,247,099, Cl. 273-29.00A.

Pansini, Andrew L. Quick connect handle for swimming pool cleaning tools. 4,247,216, Cl. 403-109.000.

Papadakis, Jimis. Water and energy conservation system for food serving establishments. 4,246,764, Cl. 62-183.000.

Paquette, David G., to Ford Motor Company. Method of forming and starting a sodium sulfur battery. 4,247,605, Cl. 429-52.000.

Parikh, Niranjan M.: See—
Beese, Ronald E.; Parikh, Niranjan M.; and Bauer, Carl F., 4,247,325, Cl. 75-97.00A.

Parker, Frederick J.: See—
Daniels, Terry; Parker, Frederick J.; and Eades, Alan G., 4,247,665, Cl. 525-421.000.

Parker, John J.: See—
Fouss, James L.; Sting, Donald W.; Parker, John J.; and Biango, Robert, 4,247,136, Cl. 285-319.000.

Parker, Richard G., to B. F. Goodrich Company. The Polymeric alkylated 1,2 dihydroquinolines. 4,247,664, Cl. 525-334.000.

Parras, Karlheinz, to Te Ka De Felten & Guillaume Fernmeldeanlagen GmbH. Testing system for data transmission paths. 4,247,934, Cl. 370-15.000.

Parrott, Ronald A.: See—
Mezak, John A.; and Parrott, Ronald A., 4,247,837, Cl. 333-202.000.

Pasco, Wayne D.: See—
Ledder, Glenn W.; Pasco, Wayne D.; and Svec, Paul S., 4,247,333, Cl. 106-38.900.

Pass, Curtis E.: See—
Dixon, Melvyn; Ghate, Bhaskar B.; Holmes, Ronald J. A.; and Pass, Curtis E., 4,247,500, Cl. 264-63.000.

Passaglia, Arcangelo: See—
Busacca, Guido; Meli, Vincenzo; and Passaglia, Arcangelo, 4,247,828, Cl. 331-90.000.

Passino, Jacques: See—
Fogle, Alva E., Jr.; Brennan, William E.; and Passino, Jacques, 4,246,734, Cl. 52-309.160.

Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Device for indicating airtightness. 4,246,864, Cl. 116-4.000.

Pastrick, Danny L., to Zimmer USA, Inc. Prosthetic joint. 4,246,662, Cl. 3-1.910.

Paterson, Stephen. Shopping cart construction. 4,247,130, Cl. 280-654.000.

Patry, Eric; and Belot, Pierre, to Sait-Societe des Accumulateurs Fixes et de Traction. Method of controlling the recharging of storage cells, and monitoring their state of charge. 4,247,812, Cl. 320-44.000.

Patterson, Ronald G.: See—
Calvert, Seymour; and Patterson, Ronald G., 4,247,308, Cl. 55-8.000.

Patxot, Francisco J., to Estampados Estil, S.A. Discharge printing of textiles dyed with indigo blue. 4,247,295, Cl. 8-465.000.

Patz, Ulrich: See—
Greve, Walter; Kaiser, Edgar; Grone, Dieter; and Patz, Ulrich, 4,247,383, Cl. 204-298.000.

Paul Hartmann Aktiengesellschaft: See—
Schroder, Friedrich-Wilhelm, 4,246,900, Cl. 128-287.000.

Paulson, Garry E.: See—
Gabel, Lorne G.; Paulson, Garry E.; and Kirk, Thomas G., 4,247,870, Cl. 358-93.000.

Pause, Denis R.; and Jablonski, Richard J., to General Electric Company. Coating compositions. 4,247,429, Cl. 260-29.2TN.

Pavlov, Vladimir V.: See—
Berber, Viktor A.; Zolotenko, Vladimir A.; Naguev, Evgeny N.; Pavlov, Vladimir V.; Sokolov, Viktor E.; Syromyatnikov, Alexei N.; and Eremenko, Anatoly I., 4,247,783, Cl. 250-574.000.

Pease, James F.: See—
Meckstroth, Alan F.; and Pease, James F., 4,246,690, Cl. 29-526.00R.

Pech, Karl H.; and Jahrstorfer, George W., to Chandler Evans Inc. Pump assembly incorporating vane pump and impeller. 4,247,263, Cl. 417-203.000.

Pedersen, Frank. Convertible overshoes. 4,246,707, Cl. 36-100.000.

Pelzer, Rudolf: See—
Friedrich, Hans-Georg; Halberschmidt, Friedrich; and Pelzer, Rudolf, 4,247,355, Cl. 156-382.000.

Pennwalt Corporation: See—
Cisavattani, Anthony; Flynn, Jack; and Ujvary, Josef, 4,247,779, Cl. 250-439.00P.

Peplow, Marvin J.: See—
Sandy, Julius W.; Peplow, Marvin J.; and Banek, Elmer W., 4,246,808, Cl. 81-9.50R.

Percy, James S., to Du Pont de Nemours, E. I., and Company. Stabilized formaldehyde solutions. 4,247,487, Cl. 568-422.000.

Perrin, Pierre; Hegar, Gert; Siegrist, Gerald; Seiler, Herbert; and Horn, Ulrich, to Ciba-Geigy Corporation. Process for improving the color yield and fastness properties of dyeings produced with anionic dyes on cellulose fibre material and cationic fibre-reactive compounds. 4,246,670, Cl. 8-566.000.

Perron, Robert M.: See—
Baudouin, Michel M.; and Perron, Robert M., 4,247,720, Cl. 568-772.000.

Perry Equipment Corporation: See—
Perry, Marney D., Jr.; and Graff, Robert A., 4,247,313, Cl. 55-302.000.

Perry, Marney D., Jr.; and Graff, Robert A., to Perry Equipment Corporation. Gas-particulate separator with pulse-jet cleanable filter elements. 4,247,313, Cl. 55-302.000.

Perry, Thomas W.: See—
Carrella, Richard F.; and Perry, Thomas W., 4,247,071, Cl. 248-396.000.

Persinger, James G. Method and apparatus for obtaining fertilizing solution from fossil fueled stationary engines. 4,247,321, Cl. 71-59.000.

Persons, Seth G., Jr. Reinforcing pad for athletic shoes. 4,246,706, Cl. 36-73.000.

Pertle, John E., to Tri Tool, Inc. Elbow mandrel. 4,246,814, Cl. 82-4.00C.

Peters, Bernd: See—
Weirich, Walter; and Peters, Bernd, 4,247,135, Cl. 285-137.00R.

Peterzen, Walter J.: See—
Klis, David S.; and Petersen, Walter J., 4,246,803, Cl. 74-513.000.

Peterson, Robert M., to Bell & Howell Company. Magnetic indexing system for microfilm reader. 4,247,184, Cl. 353-27.00A.

Petrucchi, Silvio: See—
Easley, Wiley L.; Hoeske, Richard J.; and Petrucci, Silvio, 4,247,501, Cl. 264-77.000.

Petrzika, Martin, to Firmenich SA. Organo-selenenyl compound and method for its preparation. 4,247,717, Cl. 568-425.000.

Petsch, Roland: See—
Harrer, Josef B.; Jagers, Anton; Petsch, Roland; and Pracher, Ernst, 4,247,816, Cl. 324-62.000.

Pettis, Penelope K.: See—
Cerami, Anthony; Koenig, Ronald J.; Javid, Jamshid; and Pettis, Penelope K., 4,247,533, Cl. 424-1.000.

Pfeifer, Rolf; and Matura, Eike, to Siemens Aktiengesellschaft. Operating console for an x-ray diagnostic installation. 4,247,777, Cl. 250-416.00R.

Pfizer Inc.: See—
Carrington, Roy; and Halek, George, 4,247,568, Cl. 426-321.000.

Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,247,462, Cl. 260-239.30P.

Kadin, Saul B., 4,247,699, Cl. 546-153.000.

Pharmaceutical Licences Company Ltd.: See—
Felsch, Horst; and Hantich, Gerhard, 4,247,702, Cl. 548-146.000.

Philip Morris Incorporated: See—
Rainer, Norman B.; and Bailey, Cynthia V., 4,246,910, Cl. 131-10.900.

Stultz, Edward B., 4,246,775, Cl. 73-38.000.

Phillips, Benjamin A.; and McPaul, Gordon P., to Allied Chemical Corporation. Absorption heat pump control system. 4,246,761, Cl. 62-148.000.

Phillips Petroleum Company: See—
Banasiak, Dennis S., 4,247,417, Cl. 252-429.00R.

Blackwell, Jennings P., 4,247,598, Cl. 428-419.000.

Bonazza, Benedict R.; and Holtz, Hans D., deceased, 4,247,300, Cl. 44-63.000.

Cheng, Paul J.; and Mills, King L., 4,247,530, Cl. 423-450.000.

Jackson, Henry G., 4,247,505, Cl. 264-176.00F.

Johnson, Marvin M.; Nowack, Gerhard P.; and Tabler, Donald C., 4,247,389, Cl. 208-181.000.

McDaniel, Max P.; and Welch, Melvin B., 4,247,421, Cl. 252-458.000.

Wier, Donald R., 4,247,405, Cl. 252-8.55D.

Phillips, Richard C.: See—
Hopings, Donald B.; and Phillips, Richard C., 4,246,866, Cl. 118-213.000.

Phipps, Arthur L., to Condec Corporation. Vacuum extrusion apparatus for forming foamed plastic products. 4,247,276, Cl. 425-325.000.

Pickenhagen, Wilhelm; and Smith, Alistair Y., to Firmenich SA. Flavoring with mixtures of ionones. 4,247,572, Cl. 426-538.000.

Pierburg GmbH & Co. KG: See—
Henke, Ulrich; Marusiak, Wojciech; and Baumler, Hermann, 4,246,880, Cl. 123-549.000.

Pike, Earl A.: See—
Shea, Madilyn R.; and Pike, Earl A., 4,247,594, Cl. 428-328.000.

Pike, William R.: See—
O'Connell, John J.; and Pike, William R., 4,247,575, Cl. 427-2.000.

Pinson, George T., to Boeing Company, The. Digitally-controlled artificial hand. 4,246,661, Cl. 3-1.100.

Pitesky, Isadore. Filtering and particulate washing device. 4,247,399, Cl. 210-341.000.

Pitney Bowes, Inc.: See—
Russell, John J., Jr., 4,247,597, Cl. 428-403.000.

Pixton, Betty G.: See—
Fruitstone, Mitchell J.; Carro, Jose; and Pixton, Betty G., 4,247,536, Cl. 424-12.000.

Plank, Charles J.: See—
Doherty, Harry G.; Plank, Charles J.; and Rosinski, Edward J., 4,247,416, Cl. 252-428.000.

Rubin, Mac K.; Rosinski, Edward J.; and Plank, Charles J., 4,247,728, Cl. 585-467.000.

Pless, Janos; and Sandrin, Edmond, to Sandoz Ltd. Organic compounds. 4,247,543, Cl. 424-177.000.

Plessey Handel und Investments AG: See—
Lawton, Rodney J., 4,247,827, Cl. 330-306.000.

Paesler, Martin R. A., 4,247,937, Cl. 370-102.000.

Plewes, John T., to Bell Telephone Laboratories, Incorporated. Alloy strengthening by hydridation. 4,247,327, Cl. 75-153.000.

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- Rayment, Ena M. Wheelchair, 4,247,125, Cl. 280-5.240.
- Raymond, James C., to Honeywell Information Systems Inc. Simulator for bit and byte synchronized data network, 4,247,941, Cl. 371-15.000.
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- Hughes, Larry M., 4,247,119, Cl. 369-77.000.
- Mawhinney, Daniel D., 4,247,946, Cl. 455-1.000.
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- Reed, Jay R., to United States of America, Navy. Force sensing system, 4,246,780, Cl. 73-140.000.
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- Reese, John T. Flushing assembly, 4,246,863, Cl. 440-88.000.
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- Rehm, Siegfried; and Beizinger, Kurt, to Schubert & Salzer. Apparatus for lining a housing of a fiber opening device and roller, 4,246,745, Cl. 57-58.910.
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- Reichert, Paul W., to Zeppa, Inc. Torso tethered training device, 4,247,117, Cl. 273-411.000.
- Reilly, Bertram B. Apparatus for solid waste pyrolysis, 4,247,367, Cl. 202-105.000.
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- Reitz, R. Larry; Hutton, Thomas W.; and Lewis, Sheldon N., to Rohm and Haas Company. Hydrocurable compositions containing oxazoline groups, 4,247,671, Cl. 526-260.000.
- Relles, Howard M.; and Williams, Frank J., III, to General Electric Company. Liquid extraction method for recovering aromatic bisimides, 4,247,464, Cl. 260-326.00N.
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- Renier, Georges; and Jullien, Jackie, to Saint-Gobain Industries. Bottom discharge palletized container system, 4,247,021, Cl. 222-143.000.
- Renner, Alfred; and Zahir, Abdul-Cader, to Ciba-Geigy Corporation. Curable mixtures based on maleimide and 2,2,4-trimethyl-1,2-dihydroquinoline, 4,247,670, Cl. 526-259.000.
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- Rettkowski, Gary, to Sandvik Aktiebolag. Retainer clip for cutter bits, 4,247,147, Cl. 299-10.000.
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- Gansert, Willi; Kuhn, Edgar; Slansky, Harry; and Kohl, Walter, 4,247,813, Cl. 320-48.000.
- Hofer, Friedrich-Wilhelm; Kotter, Wolfgang; and Schwerin, Gunther, 4,246,832, Cl. 91-444.000.
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- Yeh, Pochi A., 4,247,166, Cl. 350-374.000.
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- Rodgers, Aubrey; and Robertson, William G., to United States of America, Army. Semi-active laser seeker gyroscope, 4,246,801, Cl. 74-5.700.
- Rodrian, James A. Animal identification and estrus detection system, 4,247,758, Cl. 235-92.00MS.
- Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, to Messer Griesheim GmbH. Device for marking workpieces by means of powder, 4,247,043, Cl. 239-85.000.
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- Rohm and Haas Company: See—
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- Rubin, Mae K.; Rosinski, Edward J.; and Plank, Charles J., 4,247,728, Cl. 585-467.000.
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- Rotary Drilling Services, Inc.: See—
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- Rothchild, Alan J., to Rothchild Printing Company, Inc. Multi-sided display device, 4,246,714, Cl. 40-538.000.
- Rothchild Printing Company, Inc.: See—
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- Rothrock, Richard L., to BPR Grouting and Engineering, Inc. Offset drilling machine, 4,246,974, Cl. 173-38.000.
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Sabo, Alexander R.: See—
Hattori, Keisuke; and Sabo, Alexander R., 4,247,951, Cl. 455-183.000.

Saboe, Michael S.; and Goldblatt, Barry, to Avco Corporation. Composite ceramic/metallic turbine blade and method of making same. 4,247,259, Cl. 416-241.00B.

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Roeder, Georg; Sachs, Helmut; and Hajok, Dieter, 4,247,043, Cl. 239-85.000.

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Saint-Gobain Industries: See—
Friedrich, Hans-Georg; Halberschmidt, Friedrich; and Pelzer, Rudolf, 4,247,355, Cl. 156-382.000.

Remier, Georges; and Jullien, Jackie, 4,247,021, Cl. 222-143.000.

Sauer, Gerd, 4,247,954, Cl. 455-243.000.

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Moriyama, Denji, 4,247,567, Cl. 426-302.000.

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Saletan, David I.; and Chun, Heungwoo W., to Shell Oil Company. Purification of electrolytically-produced chlorine. 4,247,532, Cl. 570-234.000.

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Mixer, Terence W., 4,246,710, Cl. 40-16.400.

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Ashton, Theodore; Klinger, William E.; and Samodell, Ralph M., 4,247,751, Cl. 219-130.310.

Sample, Paul E., to American Can Company. Labelled package for low temperature use. 4,247,563, Cl. 426-87.000.

Sander, Jürgen; Buhr, Gerhard; and Ruckert, Hans, to Hoechst Aktiengesellschaft. Positive-working radiation-sensitive copying composition and method of using to form relief images. 4,247,611, Cl. 430-286.000.

Sanders, Albert J., Jr., to SWS Silicones Corporation. Protective coatings. 4,247,330, Cl. 106-3.000.

Sanders Associates, Inc.: See—
Stromswold, Chester E.; and Apostolos, John T., 4,247,939, Cl. 375-1.000.

Sanders, Virgil E.; and Anderson, Dana Z., to Litton Systems, Inc. Isotropic nonplanar ring laser. 4,247,832, Cl. 331-94.50C.

Sanderson, Roger S.; and Whelchel, Robert C., to Sanderson, Roger S. Sterilized storage container. 4,247,517, Cl. 422-26.000.

Sandland, Paul: See—
Levy, Kenneth; and Sandland, Paul, 4,247,203, Cl. 356-398.000.

Sandoz Ltd.: See—
Henzi, Beat, 4,247,457, Cl. 260-158.000.

Knobel, Walter; and Zeller, Karl, 4,247,290, Cl. 8-515.000.

Pless, Janos; and Sandrin, Edmond, 4,247,543, Cl. 424-177.000.

Sandrin, Edmond: See—
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Rettkowski, Gary, 4,247,147, Cl. 299-10.000.

Sandy, Julius W.; Peplow, Marvin J.; and Baneck, Elmer W., to Ideal Industries, Inc. Precision small wire stripper and blade structure. 4,246,808, Cl. 81-9.50R.

Sankyo Company Limited: See—
Yoshimoto, Masafumi; Miyazawa, Hachio; Nishimura, Takuzo; Ando, Akiko; Nakamura, Norio; and Nakao, Hideo, 4,247,548, Cl. 424-246.000.

Sano, Fumiaki: See—
Ueno, Masayuki; Sano, Fumiaki; Sagae, Makoto; and Kayama, Tateo, 4,247,088, Cl. 266-273.000.

Sano, Takezo; Inoue, Tadanori; Uemura, Yukikazu; and Furuta, Akihiro, to Sumitomo Chemical Company, Limited. Original pattern plate obtained by use of photo-sensitive resin composition. 4,247,621, Cl. 430-269.000.

Sano, Tsutomu, to Kobe Steel, Ltd. Exhaust gas treatment device for injection molding machines. 4,247,519, Cl. 422-169.000.

Sansone, Eugene A.; and Sukovich, Edward A., to Singer Company, The. Presser foot lift operable independently by manual or power devices. 4,246,856, Cl. 112-239.000.

Sanyo Electric Co., Ltd.: See—
Okada, Hisao; and Kawamoto, Yukihiro, 4,247,948, Cl. 455-116.000.

Okuyama, Yasuhiko; and Takiya, Takeshi, 4,247,950, Cl. 455-158.000.

Sapal Societe Anonyme des Plieuses Automatiques: See—
Chenevard, Alexis, 4,246,740, Cl. 53-448.000.

Sapkus, Jurgis; Lewis, J. Stephen; and Douglas, Raymond J., to Mattel, Inc. Growing baby doll. 4,246,722, Cl. 46-120.000.

Sarkar, Kshitindra M.: See—
Ruscoe, Michael J. H.; Sarkar, Kshitindra M.; and Clegg, Maurice A., 4,247,374, Cl. 204-23.000.

Sarkissian, Berge, to Uniroyal, Inc. Pneumatic tire having a pneumatic safety insert with beads. 4,246,948, Cl. 152-340.000.

Sarracino, Marcello, to Industrie Pirelli Società per Azioni. Cable insulation cross-linking apparatus with catenary and rectilinear cross-linking tubes. 4,247,280, Cl. 425-445.000.

Sasaki, Ichiro; Itatani, Hiroshi; Kashima, Mikito; Yoshimoto, Hataaki; Yamamoto, Shuji; and Sasaki, Yoshikazu, to Ube Industries, Ltd. Aromatic polyimide resin composition. 4,247,443, Cl. 260-33.40P.

Sasaki, Masaomi: See—
Ohta, Masafumi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Sasaki, Masaomi; and Kawakami, Tomiko, 4,247,614, Cl. 430-79.000.

Sasaki, Takashi: See—
Uchida, Takashi; Kikuchi, Shoji; Sasaki, Takashi; and Sato, Mikio, 4,247,628, Cl. 430-551.000.

Sasaki, Takehiko; and Maeda, Hidetoshi, to Sharp Kabushiki Kaisha. Switching mechanism for electronic wristwatch. 4,247,929, Cl. 368-69.000.

Sasaki, Teruaki: See—
Kikuta, Kojiro; Kurihara, Katsumi; Suzuki, Shohei; and Sasaki, Teruaki, 4,246,882, Cl. 123-658.000.

Sasaki, Tetsuro: See—
Kawasaki, Takemi; and Sasaki, Tetsuro, 4,246,949, Cl. 152-354.00R.

Sasaki, Yoshikazu: See—
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Sato, Hiroshi: See—
Shimizu, Hiroshi; Sato, Hiroshi; Miura, Nobuo; and Inada, Shuzo, 4,247,650, Cl. 521-56.000.

Sato, Isao: See—
Maehara, Kazuo; and Sato, Isao, 4,247,346, Cl. 156-73.500.

Sato, Kunihiko; Urata, Tetsuro; Asakawa, Kobun; Taguchi, Haruo; Kato, Yukio; and Uebayashi, Takeo, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Kokan Kabushiki Kaisha. Method for electrical discharge machining of a work in roll form. 4,247,748, Cl. 219-69.00M.

Sato, Mikio: See—
Uchida, Takashi; Kikuchi, Shoji; Sasaki, Takashi; and Sato, Mikio, 4,247,628, Cl. 430-551.000.

Sato, Yokichi: See—
Shimada, Shoji; Matsushima, Yasunobu; Sato, Yokichi; Matsumoto, Kuniharu; Akeyoshi, Kazuyuki; and Tobita, Takayuki, 4,246,865, Cl. 118-65.000.

Satomoto, Atsushi: See—
Kitamura, Kazuhiko; and Satomoto, Atsushi, 4,247,041, Cl. 236-48.00R.

Sauber, Klaus: See—
Kramer, Dieter; and Sauber, Klaus, 4,247,643, Cl. 435-178.000.

Sauer, Eldon G.: See—
Ingemann, Donald E.; Sauer, Eldon G.; and Smith, Ronald L., 4,246,674, Cl. 15-4.000.

Sauer, Gerd, to Saint-Gobain Industries. Active window antenna for motor vehicles. 4,247,954, Cl. 455-243.000.

Saund, Dalip, deceased; and by Saund, Dorothy, sole heir, to Saund, Dorothy A. Method for anchor retrieval. 4,246,860, Cl. 114-293.000.

Saund, Dorothy, sole heir: See—
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Saund, Dorothy A.: See—
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Sawall, Gerhard: See—
Knapp, Joet; and Sawall, Gerhard, 4,247,128, Cl. 280-403.000.

Sawamura, Mitsuharu: See—
Tokuhara, Mitsuhiro; and Sawamura, Mitsuharu, 4,247,167, Cl. 350-166.000.

Sawasaki, Takashi: See—
Nojiri, Akio; Sawasaki, Takashi; and Koreeda, Toshio, 4,247,667, Cl. 525-254.000.

Saxe, Robert L., to Research Frontiers Incorporated. Light valve containing improved light valve suspension. 4,247,175, Cl. 350-362.000.

Schachter, Zvi H.: See—
Bocksruker, Ronald W.; and Schachter, Zvi H., 4,246,871, Cl. 122-4.00A.

Schaeffer-Homburg GmbH: See—
Stanik, Raimund, 4,247,032, Cl. 227-18.000.

Schamberg, Eckehard; Holtschmidt, Ulrich; and Hellwig, Dieter, to Th. Goldschmidt AG. Process for the preparation of thermosettable urea-formaldehyde resins and method for use thereof. 4,247,433, Cl. 260-29.40R.

Schanning, Edward J. Modular zoned digital coolant control system for strip mill rolls. 4,247,047, Cl. 239-391.000.

Scherba, Oleg V.: See—
Moshnin, Evgeny N.; Romashko, Nikolai I.; Prozorov, Leonid V.; Zorev, Nikolai N.; Scherba, Oleg V.; Odnodushny, Viktor A.; Zhiltsov, Nikolai I.; Rabinovich, Lev A.; Tupitsyn, Lev V.; Alexeev, Konstantin P.; Kukushkin, Boris P.; Brjukhanov, Yuri V.; Trifonov, Boris A.; Morozov, Vyacheslav A.; Rudyak, Gennady V.; Bakhvalov, Sergei K., deceased; and Bakhvalova, Larisa M., administrator, 4,246,772, Cl. 72-358.000.

Schering Aktiengesellschaft: See—
Kieslich, Klaus; Raduchel, Bernd; Skubalia, Werner; Vorbruggen, Helmut; and Dahl, Helmut, 4,247,635, Cl. 435-63.000.

Schetina, Otto: See—
Wrulich, Herwig; Schetina, Otto; and Zitz, Alfred, 4,247,150, Cl. 299-86.000.

Schiller, Robert J.; and Alderman, Neal M., to Veeder Industries Inc. Fuel delivery control and registration system. 4,247,899, Cl. 364-465.000.

Schimanski, Georg; and von Philipp, Fritz, to Globol-Werk GmbH. Vaporizer for insecticides and/or other volatile active substances. 4,247,042, Cl. 239-43.000.

Schirring, Joachim; Alder, Hanspeter; and Weber, Jobst, to Swiss Aluminium Ltd. Facility for conducting electrical power to electrodes. 4,247,381, Cl. 204-225.000.

Schmauch, Hugo: See—
Weber, Heinrich; Dunga, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl-Heinz, 4,247,365, Cl. 201-41.000.

Schmidt, Henry, Jr., to Industrial Filter & Pump Mfg. Co. Filter element and method of use. 4,247,394, Cl. 210-767.000.

Schmidt, Oskar; and Sibril, Walter, to Lim-Holding S.A. Novel polymethers having terminal amino groups and plastic materials made therefrom. 4,247,677, Cl. 528-68.000.

Schmidt, Ulrich; and Fischer, Klaus, to Licentia Patent-Verwaltungs-G.m.b.H. Control data input device for the electronic control unit of an electrical household appliance. 4,247,845, Cl. 340-365.00R.

Schmitt, Frederick L.: See—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Vinals, Joaquin F.; Kiwala, Jacob; and Schmitt, Frederick L., 4,247,409, Cl. 252-174.110.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,247,423, Cl. 252-522.00R.

Schmitt, Henry K.: See—
Landaness, Clifford A.; and Schmitt, Henry K., 4,247,814, Cl. 324-54.000.

Schmitt, Larry. Portable swimmer training apparatus. 4,247,096, Cl. 272-71.000.

Schmoock, James C.: See—
Cate, Thomas M.; and Schmoock, James C., 4,247,789, Cl. 307-230.000.

Schnabel, Wolfram: See—
Serbent, Harry; Schnabel, Wolfram; and Reuter, Gerhard, 4,247,323, Cl. 75-36.000.

Schnabel, Eberhard, to Robert Bosch GmbH. Guidance control system for a steerable, trackless vehicle. 4,247,896, Cl. 364-436.000.

Schneider, Donald C. Ski lift with swivel chair. 4,246,848, Cl. 104-175.05T.

Schneider, Karl W.: See—
Halmos, Rudolph; and Schneider, Karl W., 4,246,972, Cl. 172-789.000.

Schoenfeld, Palmer J.: See—
Kulesza, Ralph J.; Schoenfeld, Palmer J.; and Disko, Harry, 4,246,719, Cl. 46-41.000.

Schoenrock, Karlheinz W. R.; Henscheid, Thomas H.; and Rounds, Hugh G., to Amalgamated Sugar Company, The. Process for producing a high fructose sweetener, high protein meal, and cereal germ oils. 4,247,636, Cl. 435-94.000.

Schonwald, Siegfried; and Breyer, Eberhard, to Siemens Aktiengesellschaft. Pressure regulated water supply system. 4,247,260, Cl. 417-38.000.

Schora, Frank C., Jr.; and Burnham, Kenneth B., Jr., to Institute of Gas Technology. Solids feeder having a solids-liquid separator. 4,247,240, Cl. 414-218.000.

Schosek, William O. Front mounted brace for an underground pipe installing device. 4,247,081, Cl. 254-29.00R.

Schosek, William O. Stabilizing means for an underground pipe installer device. 4,247,222, Cl. 405-184.000.

Schroder, Dieter K.: See—
Rai-Choudhury, Prosenjit; and Schroder, Dieter K., 4,247,859, Cl. 357-4.000.

Schroder, Friedrich-Wilhelm, to Paul Hartmann Aktiengesellschaft. Diaper including moisture-responsive seal means. 4,246,900, Cl. 128-287.000.

Schubert, Gunter, to IWKA-Industrie-Werke-Karlsruhe Augsburg AG. Apparatus for the continued manufacture of staple fibers from thermoplastic materials. 4,247,270, Cl. 425-66.000.

Schubert & Salzer: See—
Artzt, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,246,748, Cl. 57-265.000.

Rehm, Siegfried; and Beizinger, Kurt, 4,246,745, Cl. 57-58.910.

Schulein, Rolf G.; Liebecher, Johannes; and Himmighofen, Dieter, to Leifheit International Gunter Leifheit. Arrangement for comminuting foodstuffs. 4,247,054, Cl. 241-93.000.

Schulman, Marvin; and Schwartz, Marcus, to United States of America, Navy. Limb retention system. 4,247,064, Cl. 244-122.0AG.

Schultz, Helmut W.; and Domoto, Gerald A., to Dynecology. Propulsion system. 4,246,978, Cl. 180-165.000.

Schwartz, Abraham: See—
AuCoin, Thomas R.; Schwartz, Abraham; Wade, Melvin J.; and Malik, Roger J., 4,247,358, Cl. 156-601.000.

Schwartz, Leonard. Variable weight aerobic exercise glove. 4,247,097, Cl. 272-119.000.

Schwartz, Marcus: See—
Schulman, Marvin; and Schwartz, Marcus, 4,247,064, Cl. 244-122.0AG.

Schwarz, Hans-Helmut: See—
Immel, Otto; Schwarz, Hans-Helmut; and Quast, Hein, 4,247,485, Cl. 568-464.000.

Schweigel, Han-Joachim: See—
Gohler, Peter; Kretschmer, Horst; and Schweigel, Han-Joachim, 4,247,227, Cl. 406-15.000.

Schwerin, Gunther: See—
Hofer, Friedrich-Wilhelm; Kotter, Wolfgang; and Schwerin, Gunther, 4,246,832, Cl. 91-444.000.

Scott, Kenneth G.: See—
Debrun, Frank E., Jr.; Scott, Kenneth G.; and Weed, Lucretia J., 4,247,617, Cl. 430-228.000.

Sears Manufacturing Company: See—
Lischer, James F., 4,247,348, Cl. 156-79.000.

Seay, Euna A., executrix: See—
Seay, Robert L., deceased; Seay, Euna A., executrix; Rogers, William E.; and Willard, Jack G., 4,246,984, Cl. 188-2.00F.

Seay, Mrs. Robert L. (Euna A.): See—
Seay, Robert L., deceased; Seay, Euna A., executrix; Rogers, William E.; and Willard, Jack G., 4,246,984, Cl. 188-2.00F.

Seay, Robert L., deceased; by Seay, Euna A., executrix; Rogers, William E.; and Willard, Jack G., to Seay, Mrs. Robert L. (Euna A.); Willard, Jack Gordon; and Rogers, William Edward. Safety apparatus for wheelchairs. 4,246,984, Cl. 188-2.00F.

Seese, Mark A.: See—
Dumoulin, Joseph S. C.; Seese, Mark A.; and Albers, Edwin W., 4,247,420, Cl. 252-453.000.

Segmiller, Joseph M.; and Lewis, Thomas E., to United States of America, America. Method of forming high fragmentation mortar shells. 4,246,844, Cl. 102-67.000.

Seibel, Robert R., to Bell Telephone Laboratories, Incorporated. Extraction of data characters imbedded in data bytes. 4,247,945, Cl. 375-114.000.

Seibert, Chesterfield F.; and Cordes, Harry, to Pall Corporation. Downflow or upflow adsorbent fractionator flow control system. 4,247,311, Cl. 55-162.000.

Seifert, Gerd, to Siemens Aktiengesellschaft. X-ray diagnostic generator with an inverter feeding the high voltage transformer. 4,247,776, Cl. 250-406.000.

Seifert, Gunter: See—
Lewer, Hans; Poller, Dieter; and Seifert, Gunter, 4,247,221, Cl. 405-150.000.

Seiko Koki Kabushiki Kaisha: See—
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,247,931, Cl. 368-185.000.

Seiler, Herbert: See—
Perrin, Pierre; Hegar, Gert; Siegrist, Gerald; Seiler, Herbert; and Horn, Ulrich, 4,246,670, Cl. 8-566.000.

Seki, Junji: See—
Kato, Tsuneyuki; Hiraga, Keishiro; Seki, Junji; and Suzuki, Makoto, 4,247,507, Cl. 264-210.200.

Seki, Kazuichi; Shimizu, Yoshio; and Kato, Yoshio, to Gakko Hojin Tokai University. Vertical axis wind turbine. 4,247,252, Cl. 416-44.000.

Seki, Kazuichi; Shimizu, Yoshio; and Kato, Yoshio, to Gakko Hojin Tokai University. Vertical axis wind turbine. 4,247,253, Cl. 416-44.000.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Water soluble epoxy ester copolymers for sanitary can use. 4,247,659, Cl. 525-43.000.

Sella, Lino: See—
Fiorentino, Guido; and Sella, Lino, 4,247,796, Cl. 310-308.000.

Sellers, Gregory J.; and Bretts, Gerald R. Testing effectiveness of thermal insulation. 4,246,785, Cl. 73-356.000.

Selleslags, Frank K. A., to N.V. Raychem S.A. Identification carrying means. 4,246,709, Cl. 40-2.00R.

Senguro, Syozo: See—
Takemoto, Yutaka; Senguro, Syozo; and Nitta, Masayoshi, 4,247,686, Cl. 528-501.000.

Senyei, Andrew E.: See—
Widder, Kenneth J.; and Senyei, Andrew E., 4,247,406, Cl. 252-62.530.

Serbert, Harry; Schnabel, Wolfram; and Reuter, Gerhard, to Metallgesellschaft Aktiengesellschaft. Process of directly reducing iron oxide-containing materials. 4,247,323, Cl. 75-36.000.

Serber, Stephen L.: See—
Mueller, Dale A.; and Serber, Stephen L., 4,246,763, Cl. 62-160.000.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: See—
Flesselles, Jacques; Buisson, Jean; Morin, Michel; Boittin, Jean-Pierre; Tripot, Pierre; and Vallee, Claude, 4,246,774, Cl. 73-38.000.

Seto, Junetsu; and Nagai, Toru, to Sony Corporation. Magnetic recording medium and method of preparing the same. 4,247,593, Cl. 428-328.000.

Seto, Yoshito: See—
Amakasu, Toshinari; Fukui, Koetsu; and Seto, Yoshito, 4,247,223, Cl. 405-259.000.

Sewell Plastics, Inc.: See—
Alberghini, Alfred C., 4,247,012, Cl. 215-1.00C.

Seyler, Robert. Bowling ball including removable finger grip insert. 4,247,102, Cl. 273-63.00B.

SFS Stadler AG: See—
Boegel, Gerhard, 4,246,939, Cl. 29-771.000.

Shah, Raj: See—
Sekmakas, Kazys; and Shah, Raj, 4,247,659, Cl. 525-43.000.

Shaheen, Joseph M., to Rockwell International Corporation. Method of etching a surface of a body. 4,247,361, Cl. 156-630.000.

Shale Oil Science & Systems, Inc.: See—
O'Fall, Joseph M., 4,246,998, Cl. 196-46.100.

Shalit, Harold: See—
Kao, Jar-Lin; Wheaton, Gregory A.; Shalit, Harold; and Sheng, Ming N., 4,247,465, Cl. 260-340.200.

Sharp Kabushiki Kaisha: See—
Hayakawa, Masao; Maeda, Takamichi; Horii, Teruo; Kumura, Masao; and Chikawa, Yasunori, 4,247,590, Cl. 428-210.000.

Sasaki, Takehiko; and Maeda, Hidetoshi, 4,247,929, Cl. 368-69.000.

Uede, Hisashi; Take, Hiroshi; Koyanagi, Katubumi; and Inami, Yasuhiko, 4,247,855, Cl. 340-753.000.

Yoshida, Yukihiro; Izaki, Toru; Maegawa, Toshiyuki; and Tominaga, Satoshi, 4,247,905, Cl. 364-900.000.

Sharpe, Eugene S.; Herman, Albert I.; and Toolan, Susanne C., to United States of America, Agriculture. Foam flotation process for separating *Bacillus thuringiensis* sporulation products. 4,247,644, Cl. 435-242.000.

Shaw, Jack B. Lid-straw combination for soft drink cups. 4,247,016, Cl. 220-90.200.

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Akbar, Mohammed, 4,247,387, Cl. 208-106.000.

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Saletan, David I.; and Chun, Heungwoo W., 4,247,532, Cl. 570-234.000.

Slaugh, Lynn H., 4,247,726, Cl. 585-407.000.

Verbrugge, Pieter A.; and Kramer, Petrus A., 4,247,711, Cl. 560-124.000.

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Sherex Chemical Company, Inc.: See—
Egan, Richard R.; and Cotrell, Phillip L., 4,247,425, Cl. 252-548.000.

Sheritt Gordon Mines Limited: See—
Ruscoe, Michael J. H.; Sarkar, Kshitindra M.; and Clegg, Maurice A., 4,247,374, Cl. 204-23.000.

Shew, Jerry, to Stewart-Warner Corporation. Follower assembly for hand grease guns. 4,247,023, Cl. 222-386.000.

Shibakawa, Riichiro: See—
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,247,462, Cl. 260-239.30P.

Shibata, Katsuya; Hamada, Motohiro; and Iwamoto, Eiji, to Toyo Soda Manufacturing Co., Ltd. Process for preparing gamma phase quinacridone. 4,247,696, Cl. 546-49.000.

Shibuya Kogyo Company, Ltd.: See—
Ono, Hiroshi, 4,246,738, Cl. 53-331.500.

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Shimada, Katsuhiko; Komine, Isamu; and Tanabe, Hideya, to Nippon Kokan Kabushiki Kaisha. Apparatus for surface flaw detection on electrically conductive cylindrical material. 4,247,819, Cl. 324-233.000.

Shimada, Masayoshi: See—
Fujiyama, Hikaru; and Shimada, Masayoshi, 4,246,672, Cl. 9-321.000.

Shimada, Shoji; Matsushima, Yasunobu; Sato, Yokichi; Matsumoto, Kuniharu; Akeyoshi, Kazuyuki; and Tobita, Takayuki, to Asahi Glass Company Limited; and Nihon Parkerizing Co., Ltd. One side surface molten metallic coating apparatus. 4,246,865, Cl. 118-65.000.

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Shimizu, Koji, to Toray Silicone Company, Ltd. Mold and mildew resistant organopolysiloxane compositions. 4,247,442, Cl. 260-33.2SB.

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Date, Nobuaki; Sakurada, Nobuaki; Shimizu, Masami; and Aizawa, Hiroshi, 4,247,189, Cl. 354-173.000.

Uchidoi, Masanori; Aizawa, Hiroshi; Urushibara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,247,186, Cl. 354-24.000.

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Tamura, Masaki; Shimizu, Mizuho; and Tago, Minoru, 4,247,637, Cl. 435-96.000.

Shimizu, Shizuo: See—
Matsuda, Akira; Shimizu, Shizuo; and Abe, Shunji, 4,247,652, Cl. 521-95.000.

Shimizu, Yoshio: See—
Seki, Kazuichi; Shimizu, Yoshio; and Kato, Yoshio, 4,247,252, Cl. 416-44.000.

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Shimoda, Misao; and Saitou, Sinichi, to Olympus Optical Co., Ltd. Multi-channel magnetic head with a plurality of cores and method for manufacturing the cores. 4,247,878, Cl. 360-125.000.

Shin-Etsu Chemical Co., Ltd.: See—
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,247,440, Cl. 260-31.80R.

Imada, Kiyoshi; Ueno, Susumu; and Sodeyama, Osamu, 4,247,577, Cl. 427-40.000.

Shinagawa, Mitsuhiro; Matsuura, Shigeo; and Murata, Toshinori, to Hitachi, Ltd. Tunable high-frequency input circuit. 4,247,953, Cl. 455-191.000.

Shingu, Tetsuro: See—
Toyama, Ryosuki; Inoue, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,247,698, Cl. 546-112.000.

Shinozaki, Nobuo: See—
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,247,931, Cl. 368-185.000.

Shiozaki, Ryoji: See—
Imamura, Tetsuya; and Shiozaki, Ryoji, 4,247,408, Cl. 252-143.000.

Shirai, Akira: See—
Oohori, Harumi; Shirai, Akira; Uemura, Hiroshi; and Nogami, Tomoyuki, 4,247,153, Cl. 303-6.00C.

Shirokane, Yoshio: See—
Nakajima, Motoo; Mizusawa, Kiyoshi; and Shirokane, Yoshio, 4,247,632, Cl. 435-12.000.

Shoji, Suzuki; and Katsuki, Kamemoto, to Nippon Air Brake Co., Ltd. Brake control valve. 4,247,154, Cl. 303-24.00A.

Shong, Robert G.: See—
Cobbs, Walter H., Jr.; Shong, Robert G.; and Rehman, William R., 4,247,581, Cl. 427-373.000.

Shook, Norma G.: See—
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,246,992, Cl. 192-13.00R.

Shuto, Masamoto, to Japan Air Line Co., Ltd. Current collection system for travelling body. 4,246,986, Cl. 191-29.00R.

Shuttleworth, Leslie, to Eastman Kodak Company. Process for preparing azo dyes. 4,247,458, Cl. 260-158.000.

Siarto, Andrew V., to Siarto Machine & Tool Co., Inc. Machine tool. 4,246,683, Cl. 29-38.00C.

Siarto Machine & Tool Co., Inc.: See—
Siarto, Andrew V., 4,246,683, Cl. 29-38.00C.

Sibral, Walter: See—
Schmidt, Oskar; and Sibral, Walter, 4,247,677, Cl. 528-68.000.

Sid Harvey, Inc.: See—
Lindtveit, Herbert E., 4,247,267, Cl. 418-32.000.

Siegel, Jack M.: See—
Case, Richard V.; Mezei, Louis M.; and Siegel, Jack M., 4,247,633, Cl. 435-17.000.

Siegrist, Gerald: See—
Perrin, Pierre; Hegar, Gert; Siegrist, Gerald; Seiler, Herbert; and Horn, Ulrich, 4,246,670, Cl. 8-566.000.

Siemens Aktiengesellschaft: See—
Burkart, Klaus; and Wintzer, Manfred, 4,247,034, Cl. 228-116.000.

Christiansen, Hans; and Braun, Ewald, 4,247,956, Cl. 455-606.000.

Laar, Hans, 4,247,739, Cl. 178-46.000.

Pfeifer, Rolf; and Matura, Eike, 4,247,777, Cl. 250-416.00R.

Schonwald, Siegfried; and Breyer, Eberhard, 4,247,260, Cl. 417-38.000.

Seifert, Gerd, 4,247,776, Cl. 250-406.000.

Stein, Karl-Ulrich, 4,247,761, Cl. 250-201.000.

Tihanyi, Jenoe, 4,247,860, Cl. 357-23.000.

Waerve, Hans, 4,247,778, Cl. 250-439.00R.

Walter, Karl-Heinz, 4,247,174, Cl. 350-340.000.

Siemens Corporation: See—
Keller, Jacob P.; and Fay, Lawrence W., 4,247,877, Cl. 360-105.000.

Siemens, Paul A., to General Electric Company. Turbine engine shroud. 4,247,249, Cl. 415-174.000.

Sierra Instruments, Inc.: See—
Olin, John G.; and Ahlquist, Norman C., 4,246,788, Cl. 73-421.50R.

Sifford, Bruce M., to Ricoh Co., Ltd. V-29 Constellation detection method and apparatus. 4,247,944, Cl. 375-94.000.

Sigg, Hans; Viret, Robert; and Wegmann, Heinz, to Meseltron S.A. Contact sensing head. 4,246,795, Cl. 73-651.000.

Sigg, Hans, to Maag Gear-Wheel & Machine Company Ltd. Cant segment-radial bearing for heavily loaded high-speed shafts. 4,247,157, Cl. 308-73.000.

Signode Corporation: See—
Gould, Russell J., 4,247,591, Cl. 428-212.000.

Signoret, Jacques, to ABG-Semca S.A. Method and apparatus for conditioning air. 4,246,759, Cl. 62-77.000.

Simic, Milutin, to Chevron Research Company. Craze-resistant plasticized sulfur compositions. 4,247,336, Cl. 106-287.230.

Simms, John A., to Du Pont de Nemours & E. I., and Company. Acrylic graft copolymers and coating compositions thereof. 4,247,444, Cl. 260-33.6UA.

Simonsen, Carl J.: See—
Tsang, Sia K.; Simonsen, Carl J.; and Holt, William M., 4,247,917, Cl. 365-205.000.

Singer Company, The: See—
Johnson, Ralph E., 4,246,855, Cl. 112-158.00R.

Sansone, Eugene A.; and Sukovich, Edward A., 4,246,856, Cl. 112-239.000.

Sinnige, Hermannus J. M.; Hageman, Hendrik J.; Mijls, Willem J.; de Graaf, Stephanus A. G.; and Oakes, Vincent, to Akzona Incorporated. Triazine derivatives. 4,247,692, Cl. 544-194.000.

Sircar, Jagadish C.; and Capria, Thomas, to Warner-Lambert Company. 4,9-Dihydro-9-oxo-N-1H-tetrazol-5-yl-pyrazolo[5,1-b]quinazoline-2-carboxamides and antiallergic compositions and methods using them. 4,247,555, Cl. 424-251.000.

Sirel, Michel, to Les Cables de Lyon. Expansion joint for wave guides. 4,247,838, Cl. 333-254.000.

Sitton, Robert L.: See—
Duke, Jimmy R.; Miller, Walter E., Jr.; Kilbourn, Dorwin L.; Mangus, Nicholas J., Jr.; Sitton, Robert L.; and Fountain, Walter F., 4,247,059, Cl. 244-3.160.

Sitzlar, Rondal. Freeze protected hot water solar heating apparatus. 4,246,886, Cl. 126-420.000.

Sjolund, Ake G., to AB Resmastervice. Fluid jack and locking device. 4,247,082, Cl. 254-93.00R.

Skala, Stephen F. Pressure cooking appliance with thermal exchange fluid. 4,246,955, Cl. 165-26.000.

Skinner, David R.; Clemens, Ralph S.; and Cerrone, Robert A., to General Electric Company. Heat exchanger tube support. 4,246,872, Cl. 122-510.000.

Skinner, Earl; Emeott, Marvin; and Jevne, Allan, to Henkel Corporation. Interpenetrating dual cure resin compositions. 4,247,578, Cl. 427-44.000.

Skoda, Stanislav: See—
Mikulecky, Karel; Elias, Jiri; Burysek, Frantisek; Eaner, Stanislav; Skoda, Stanislav; Tyl, Miloslav; and Janousek, Jan, 4,246,749, Cl. 57-263.000.

Skreba, Gerhard: See—
Stratmann, Josef; Moring, Wilfried; and Skreba, Gerhard, 4,247,074, Cl. 249-86.000.

Skubalia, Werner: See—
Kieslich, Klaus; Raduchel, Bernd; Skubalia, Werner; Vorbruggen, Helmut; and Dahl, Helmut, 4,247,635, Cl. 435-63.000.

Slaker, Frank A.: See—
Merlen, Monty M.; and Slaker, Frank A., 4,247,204, Cl. 356-431.000.

Slansky, Harry: See—
Gansert, Willi; Kuhn, Edgar; Slansky, Harry; and Kohl, Walter, 4,247,813, Cl. 320-48.000.

Slaugh, Lynn H., to Shell Oil Company. Para-xylene process and catalyst. 4,247,726, Cl. 585-407.000.

Sleezer, Paul D.: See—
Lin, Jeng S.; and Sleezer, Paul D., 4,247,461, Cl. 260-239.100.

Sloan, Donald A.: See—
McMordie, James R.; and Sloan, Donald A., 4,246,987, Cl. 191-32.000.

Smith, Alfred H., Jr.; and Beers, M. Dale, to General Electric Company. Paintable one-component RTV systems. 4,247,445, Cl. 260-37.05B.

Smith, Alistair Y.: See—
Pickenhagen, Wilhelm; and Smith, Alistair Y., 4,247,572, Cl. 426-538.000.

Smith, Charles W., Jr.; Zimmerman, Franz X.; and Walker, William H., to Autoclave Engineers, Inc. Autoclave furnace with cooling system. 4,246,957, Cl. 165-61.000.

Smith, Charles W., Jr.; Walker, William H.; and Zimmerman, Franz X., to Autoclave Engineers, Inc. High pressure autoclave. 4,247,755, Cl. 219-400.000.

Smith, Christopher J.: See—
Smith, Noel E.; and Smith, Christopher J., 4,247,382, Cl. 204-297.00R.

Smith, Frank E.: See—
Lawson, Leslie E.; and Smith, Frank E., 4,247,328, Cl. 106-2.000.

Smith, Frederick W.: See—
Redwood, Martin; Smith, Frederick W.; and Mitchell, Richard F., 4,247,836, Cl. 333-195.000.

Smith, Harlan B. Camera mount. 4,247,067, Cl. 248-123.100.

Smith, Horace L., Jr., to Smitherm Industries, Inc. Apparatus for processing particulate solids. 4,246,836, Cl. 99-478.000.

Smith International, Inc.: See—
Allen, James H., 4,246,977, Cl. 175-329.000.

Smith, Jay, III; Jones, Lawrence T.; Karr, Gerald S.; and Grimm, Thomas H., to California R & D Center. Electronically controlled roadrace system with sound generator. 4,247,107, Cl. 273-86.00B.

Smith, John M., to Motorola, Inc. Method of manufacturing RF power semiconductor package. 4,246,697, Cl. 29-827.000.

Smith Kline & French Laboratories Limited: See—
Durant, Graham J.; Ganellin, Charon R.; Owen, Geoffrey R.; and Young, Rodney C., 4,247,558, Cl. 424-263.000.

Smith, Michael A.: See—
Fulkerson, Bennie C.; and Smith, Michael A., 4,247,208, Cl. 400-194.000.

Smith, Noel E.; and Smith, Christopher J. Cathode assembly for electrochemical apparatus. 4,247,382, Cl. 204-297.00R.

Smith, Otto J. M. Heliosat with a protective enclosure. 4,247,182, Cl. 353-3.000.

Smith, Richard H., to General Motors Corporation. Compression operated injector. 4,247,044, Cl. 239-87.000.

Smith, Ronald L.: See—
Ingermann, Donald E.; Sauer, Eldon G.; and Smith, Ronald L., 4,246,674, Cl. 15-4.000.

Smitherm Industries, Inc.: See—
Smith, Horace L., Jr., 4,246,836, Cl. 99-478.000.

Smoluchowski, Julian; and Wynn, Ray, Jr., to Flex-Kleen Corporation. Mechanical filter bag shaker assembly. 4,247,314, Cl. 55-304.000.

Societa Italiana Telecomunicazioni Siemens S.p.A.: See—
Busacca, Guido; Meli, Vincenzo; and Passaglia, Arcangelo, 4,247,828, Cl. 331-90.000.

Societe Anonyme dite: Delle-Alstom: See—
Dayet, Jacques, 4,246,923, Cl. 137-116.000.

Societe de Vente de l'Aluminium Pechiney: See—
Salese, Marc; and Klein, Dominique, 4,247,036, Cl. 228-194.000.

Societe Meusienne de Realisations Mecaniques "Realmecc": See—
Friess, Jean, 4,247,079, Cl. 251-174.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: See—
Benoist, Josette; Glowacki, Pierre A.; and Mandet, Gerard M. F., 4,247,257, Cl. 416-221.000.

Caruel, Jacques E. J.; and Gastebois, Philippe M. D., 4,246,758, Cl. 60-747.000.

Sodeyama, Osamu: See—
Imada, Kiyoshi; Ueno, Susumu; and Sodeyama, Osamu, 4,247,577, Cl. 427-40.000.

- Soeno, Ko: See—
Onuki, Jin; Soeno, Ko; Suwa, Masateru; and Onodera, Hisakichi, 4,246,693, Cl. 29-580.000.
- Sokolov, Mikhail M.: See—
Grigoriev, Valentin A.; Brodiansky, Viktor M.; Sokolov, Mikhail M.; and Kuvadin, Alexandr B., 4,247,736, Cl. 13-27.000.
- Sokolov, Viktor E.: See—
Berber, Viktor A.; Zolotenko, Vladimir A.; Naguev, Evgeny N.; Pavlov, Vladimir V.; Sokolov, Viktor E.; Syromyatnikov, Alexei N.; and Eremenko, Anatoly I., 4,247,783, Cl. 250-574.000.
- Solartron Electronic Group Limited: See—
Lee, Derek J., 4,246,705, Cl. 434-22.000.
- Solvay & Cie: See—
Reginato, Luigi; Bienfait, Charles; and Stevens, Jacques, 4,247,669, Cl. 526-156.000.
- Soma, Shigeharu; Onodera, Tadao; and Onodera, Yoshio, to Oji Paper Co., Ltd. Process for producing stone groundwood pulp from wood chips by using a stone grinder, 4,247,363, Cl. 162-28.000.
- Somekh, George S.: See—
Forte, Paulino; and Somekh, George S., 4,247,521, Cl. 422-256.000.
- Sommerfeld, Eugene G.: See—
Matthews, James F.; and Sommerfeld, Eugene G., 4,247,439, Cl. 260-29.6NR.
- Sony Corporation: See—
Seto, Junetsu; and Nagai, Toru, 4,247,593, Cl. 428-328.000.
- Shibuya, Michio, 4,247,952, Cl. 455-186.000.
- South Lyon Trucking Company, Inc.: See—
Hamlin, Richard S.; and Higgins, Wayne L., 4,247,331, Cl. 106-13.000.
- Southerlan, Marvin D.: See—
Kovar, Paul J.; and Southerlan, Marvin D., 4,246,736, Cl. 52-696.000.
- Spach, Richard N.; and Kovalchik, Steve J., Jr., to General Tire & Rubber Co., The. Expandable tire building drum with improved bladder, 4,247,356, Cl. 156-416.000.
- Speck Kolbenpumpenfabrik Otto Speck KG: See—
Droitsch, Lutz; and Wolff, Horst, 4,246,924, Cl. 137-116.000.
- Spektor, Gerald A. Method for forming an attaching, rotational, self-alignment apparatus, 4,246,686, Cl. 29-416.000.
- Spectrospin AG: See—
Keller, Toni; Tschopp, Werner; and Laukien, Gunther R., 4,247,820, Cl. 324-321.000.
- Spectrum Control, Inc.: See—
Johnson, Arthur J.; and Bostrom, Herbert G., 4,247,737, Cl. 174-35.0MS.
- Spencer, Gordon R.: See—
Dallos, Andras; Buckbee, John A.; and Spencer, Gordon R., 4,247,801, Cl. 315-107.000.
- Sperry Corporation: See—
Anstee, L. Lavern; and Mast, Aquila D., 4,246,743, Cl. 56-341.000.
- Hicks, Donald C., 4,247,810, Cl. 318-661.000.
- Müller, Harry; Narveson, Parm L.; Hancock, William R.; and Hsu, Joseph P., 4,247,843, Cl. 340-27.0NA.
- Vun Kannon, Robert S., Jr., 4,247,823, Cl. 328-160.000.
- Spillmann, Werner; and Lehmann, Rolf; to Escher Wyss Limited. Treatment of a web of material, 4,246,668, Cl. 8-149.000.
- Sprague Electric Company: See—
Coleman, James H., 4,247,881, Cl. 361-302.000.
- Gontowski, Walter S., Jr., 4,247,847, Cl. 340-566.000.
- Thompson, David G.; and Ogilvie, John T., 4,247,883, Cl. 361-433.000.
- Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Cyclohexenemethanols and their lower esters in perfume compositions, 4,247,423, Cl. 252-522.00R.
- Springer, Richard A.; and Theus, John G., to Tektronix, Inc. Memory access system, 4,247,920, Cl. 365-230.000.
- Springfix-Befestigungstechnik GmbH: See—
Ausprung, Erich, 4,247,219, Cl. 403-406.000.
- Springston, Jefferson J., to Lipman Electric Company, Inc. Water pumping device, 4,247,261, Cl. 417-44.000.
- Staedeli, Otto, to Maag Gear-Wheel & Machine Company Ltd. Automatically engageable synchronous jaw clutch with hydraulic engagement-servo device, 4,246,994, Cl. 192-53.00H.
- Stafford, Michael J., to Lucas Industries, Limited. Commutator, 4,247,795, Cl. 310-233.000.
- Stalherm, Dieter: See—
Knappstein, Johannes; Stalherm, Dieter; and Bocsanczy, Janos, 4,247,366, Cl. 201-41.000.
- Stamcarbon, B.V.: See—
Dautzenberg, Jozef M. A.; Mulders, Joannes M. C. A.; and Stijfs, Petrus A. M. J., 4,247,718, Cl. 568-654.000.
- Meijer-Hoffman, Lucia R. M.; and de Jonge, Pieter H., 4,247,645, Cl. 435-262.000.
- Stanadyne, Inc.: See—
Bouwkamp, Gerald R.; and Overfield, Norbert W., 4,246,876, Cl. 123-467.000.
- Standard Oil Company (Indiana): See—
Rumsey, Robert M.; and Thornton, Robert W., 4,246,746, Cl. 57-75.000.
- Stanik, Raimund, to Schaeffer-Homberg GmbH. Machine for the attachment of rivets, buttons or the like, 4,247,032, Cl. 227-18.000.
- Stansbury, Benjamin H., Jr. Flush toilet, 4,246,666, Cl. 4-438.000.
- Stauffer, Norman L., to Honeywell Inc. Grid scan range finding apparatus, 4,247,763, Cl. 250-204.000.
- Stavenau, Harold L., to Truth Incorporated. Portable observation stand, 4,246,981, Cl. 182-116.000.
- Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Arrangement for focusing the image of an object onto an image plane, 4,247,761, Cl. 250-201.000.
- Stein, Thomas R.: See—
Banta, Frederick; Ireland, Henry R.; Stein, Thomas R.; and Wilson, Robert C., Jr., 4,247,388, Cl. 208-111.000.
- Stephens Industries, Inc.: See—
Dobbs, William G., 4,247,008, Cl. 209-569.000.
- Sterling, Noel S., to Medline Industries, Inc. Hamper hood, 4,246,945, Cl. 150-51.000.
- Steven, Josef; and Bezold, Helmut, to Kraftwerk Union Aktiengesellschaft. Spring-force measuring device, 4,246,783, Cl. 73-161.000.
- Stevens, Jacques: See—
Reginato, Luigi; Bienfait, Charles; and Stevens, Jacques, 4,247,669, Cl. 526-156.000.
- Stevenson, James F., to Emhart Industries, Inc. Electrically heated glass forehead, 4,247,733, Cl. 13-6.000.
- Stewart-Warner Corporation: See—
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- Stigter, Hendrik G.: See—
Hinze, Adrien G.; and Stigter, Hendrik G., 4,247,426, Cl. 260-18.0PN.
- Stijfs, Petrus A. M. J.: See—
Dautzenberg, Jozef M. A.; Mulders, Joannes M. C. A.; and Stijfs, Petrus A. M. J., 4,247,718, Cl. 568-654.000.
- Stillwell, Billy E.: See—
Leffingwell, Edward A.; and Stillwell, Billy E., 4,247,603, Cl. 429-1.000.
- Stinaff, Girdwood L. Fender cleaning tire component, 4,246,946, Cl. 152-151.000.
- Sting, Donald W.: See—
Fouss, James L.; Sting, Donald W.; Parker, John J.; and Biango, Robert, 4,247,136, Cl. 285-319.000.
- Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C. Production and wet oxidation of heavy crude oil for generation of power, 4,246,966, Cl. 166-267.000.
- Stolt, Nils L.; Bengtsson, Gosta; and Krieg, Walter, to Alfa-Laval AB. Method for storing and transporting mixed cargo, 4,247,245, Cl. 414-786.000.
- Stone, Myron. Attachment for flying disk toy, 4,246,720, Cl. 46-74.00D.
- Storwal International Inc.: See—
McLaughlin, Gordon, 4,246,769, Cl. 70-85.000.
- Strantz, Lawrence D., to Westinghouse Air Brake Company. Remote control system for an automotive transmission in an earth-moving vehicle, 4,246,990, Cl. 192-4.00C.
- Stratmann, Josef; Moring, Wilfried; and Skreba, Gerhard, to Elektro-Thermit GmbH. Casting mold for aluminothermically welding rails together, 4,247,074, Cl. 249-86.000.
- Straub, Hermann, to Sulzer Brothers Limited. Closure means for a large diameter vessel, 4,247,015, Cl. 220-328.000.
- Stringer, Loren F., to Westinghouse Electric Corp. Constant current arc welder, 4,247,752, Cl. 219-130.330.
- Stromswold, Chester E.; and Apostolos, John T., to Sanders Associates, Inc. Spread spectrum detector, 4,247,939, Cl. 375-1.000.
- Stuart Plastics Ltd.: See—
Chao, Andy P., 4,247,580, Cl. 427-140.000.
- Studiengesellschaft Kohle mbH: See—
Zosel, Kurt, 4,247,570, Cl. 426-481.000.
- Stultz, Edward B., to Philip Morris Incorporated. Porosity measuring apparatus and perforating system using same, 4,246,775, Cl. 73-38.000.
- Stupp, Edward H.; and Turnbull, Andrew A., to North American Philips Corporation. Method of bonding crystal layers to insulating substrates, 4,247,352, Cl. 156-272.000.
- Suda, Yoshio: See—
Asai, Michihiko; Suda, Yoshio; Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,247,440, Cl. 260-31.80R.
- Sugiyama, Takashi: See—
Ogawa, Masaya; Sugiyama, Takashi; and Mizuno, Hiroshi, 4,247,196, Cl. 355-15.000.
- Sukovich, Edward A.: See—
Sansone, Eugene A.; and Sukovich, Edward A., 4,246,856, Cl. 112-239.000.
- Sulic, Jury N.: See—
Grachev, Konstantin A.; Sulic, Jury N.; and Tverskoi, David N., 4,246,813, Cl. 82-2.500.
- Sullivan, Paul J.: See—
Horan, William F.; Weindel, David P.; Sullivan, Paul J.; and Bridge, Ernest H., Jr., 4,247,109, Cl. 273-121.00A.
- Sulzer Brothers Limited: See—
Straub, Hermann, 4,247,015, Cl. 220-328.000.
- Sumi, Akiyasu: See—
Hashimoto, Shigeru; Mitani, Taizo; Isobe, Takashi; Aoyagi, Masao; Sumi, Akiyasu; and Tanaka, Katsumi, 4,247,190, Cl. 354-286.000.
- Sumi, Toshiaki: See—
Abe, Masahiro; Motosaka, Katsuo; and Sumi, Toshiaki, 4,247,246, Cl. 415-33.00T.
- Sumitomo Chemical Company, Limited: See—
Hirohara, Hideo; Nabeshima, Shigeyasu; Fujimoto, Masanori; and Nagase, Tsuneyuki, 4,247,642, Cl. 435-178.000.
- Sano, Takezo; Inoue, Tadanori; Uemura, Yukikazu; and Furuta, Akihiro, 4,247,621, Cl. 430-269.000.
- Takemoto, Yutaka; Senguro, Syozo; and Nitta, Masayoshi, 4,247,686, Cl. 528-501.000.

- Yamamoto, Hisao; Komatsu, Toshiaki; and Awata, Hiroshi, 4,247,354, Cl. 424-251.000.
- Sumitomo Metal Industries, Inc.: See—
Hiroshima, Tatsuo; and Hirota, Tetsuya, 4,247,818, Cl. 324-202.000.
- Sumitomo Ru-ber Industries, Ltd.: See—
Kawasaki, Takemi; and Sasaki, Tetsuro, 4,246,949, Cl. 152-354.00R.
- Summers, James W., to B. F. Goodrich Company, The. Processing extruded elastomers, 4,247,506, Cl. 264-177.00R.
- Summitt Packaging Systems, Inc.: See—
Gailitis, Adolph R., 4,247,025, Cl. 222-402.180.
- Summitt Packaging Systems, Inc.: See—
Gailitis, Adolph R., 4,247,049, Cl. 239-497.000.
- Sun Oil Company of Pennsylvania: See—
Rugen, Donald F., 4,247,721, Cl. 568-756.000.
- Sundstrand Corporation: See—
Reynolds, David W.; and Pollman, Frederic W., 4,246,806, Cl. 74-687.000.
- Sunesson, Karl G. Tensioning band fastening device, 4,247,235, Cl. 410-106.000.
- Suntech, Inc.: See—
Angstadt, Howard P., 4,247,478, Cl. 564-422.000.
- Suprunov, Vladimir, to Klockner-Humboldt-Deutz AG. Furnace installation for the pyrometallurgical treatment of fine-grained ore concentrates, 4,247,087, Cl. 266-212.000.
- Sutton, Roger F.; Blomquist, Robert O.; and Luck, Allan J., to Masonite Corporation. Edge treatment for fibreboard panels and the like, 4,247,511, Cl. 264-252.000.
- Suwa, Masateru: See—
Onuki, Jin; Soeno, Ko; Suwa, Masateru; and Onodera, Hisakichi, 4,246,693, Cl. 29-580.000.
- Suzuki, Choken: See—
Oooka, Mituo; Yoshida, Makoto; Yamauchi, Masamichi; and Suzuki, Choken, 4,247,927, Cl. 368-30.000.
- Suzuki, Fujio: See—
Ishida, Nakao; Maeda, Hiroshi; Suzuki, Fujio; Fujii, Toshikatsu; and Mizutani, Ituro, 4,247,541, Cl. 424-116.000.
- Suzuki, Makoto: See—
Katoh, Tsuneyuki; Hiraga, Keishiro; Seki, Junji; and Suzuki, Makoto, 4,247,507, Cl. 264-210.200.
- Suzuki, Nobuyuki: See—
Uchidori, Masanori; Aizawa, Hiroshi; Urushibara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,247,186, Cl. 354-24.000.
- Suzuki, Shoheti: See—
Kikuta, Kojiro; Kurihara, Katsumi; Suzuki, Shoheti; and Sasaki, Teruaki, 4,246,882, Cl. 123-658.000.
- Svec, Paul S.: See—
Ledder, Glenn W.; Pasco, Wayne D.; and Svec, Paul S., 4,247,333, Cl. 106-38.000.
- Swan, William O., Jr., to NCR Corporation. Character position control for a matrix printer, 4,247,214, Cl. 400-705.100.
- Swatten, Royston W., to Decca Limited. Illuminated panels, 4,247,747, Cl. 200-314.000.
- Swenson, Richard C., to United States of America, Navy. Buoy anchoring system, 4,246,671, Cl. 9-8.00R.
- Swiss Aluminium Ltd.: See—
Schirrig, Joachim; Alder, Hanspeter; and Weber, Jobst, 4,247,381, Cl. 204-225.000.
- SWS Silicones Corporation: See—
Sanders, Albert J., Jr., 4,247,330, Cl. 106-3.000.
- Syntex (U.S.A.) Inc.: See—
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,247,552, Cl. 424-250.000.
- Syromyatnikov, Alexei N.: See—
Berber, Viktor A.; Zolotenko, Vladimir A.; Naguev, Evgeny N.; Pavlov, Vladimir V.; Sokolov, Viktor E.; Syromyatnikov, Alexei N.; and Eremenko, Anatoly I., 4,247,783, Cl. 250-574.000.
- Szabolcs, Otto: See—
Mark, Hermann; and Szabolcs, Otto, 4,247,681, Cl. 528-169.000.
- Szelenyi, Istvan: See—
von Bebenburg, Walter; Szelenyi, Istvan; and Thieme, Klaus, 4,247,556, Cl. 424-256.000.
- Tabata, Norikazu: See—
Yagi, Shigenori; Tabata, Norikazu; and Ogawa, Shuji, 4,247,829, Cl. 331-94.5PE.
- Tabibi, Sohrab: See—
Artzi, Peter; Egbers, Gerhard; Guse, Rolf; and Tabibi, Sohrab, 4,246,748, Cl. 57-265.000.
- Tabler, Donald C.: See—
Johnson, Marvin M.; Nowack, Gerhard P.; and Tabler, Donald C., 4,247,389, Cl. 208-181.000.
- Tago, Minoru: See—
Tamura, Masaki; Shimizu, Mizuho; and Tago, Minoru, 4,247,637, Cl. 435-96.000.
- Taguchi, Haruo: See—
Sato, Kunihiko; Urata, Tetsuro; Asakawa, Kobun; Taguchi, Haruo; Kato, Yukio; and Uebayashi, Takeo, 4,247,748, Cl. 219-69.00M.
- Taguchi, Shinichiro: See—
Gomi, Hiroshi; and Taguchi, Shinichiro, 4,247,867, Cl. 358-19.000.
- Taito Co., Ltd.: See—
Toyama, Ryosuki; Inoue, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,247,698, Cl. 546-112.000.
- Takagi, Hiromitsu: See—
Shimano, Akio; and Takagi, Hiromitsu, 4,247,373, Cl. 204-15.000.
- Takahashi, Hideyuki; Matsuo, Yoshiyuki; and Hamanishi, Susumu, to Mitsubishi Petrochemical Company, Limited. Process for producing high purity benzene, 4,247,729, Cl. 585-483.000.
- Takahashi, Jiro: See—
Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiro, 4,247,629, Cl. 430-562.000.
- Takahashi, Kazuo: See—
Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,247,620, Cl. 430-264.000.
- Takahashi, Kunihiro: See—
Echigo, Naoyuki; Yamashita, Shiro; Kuwabara, Tsuneo; Takahashi, Kunihiro; and Motte, Shunichi, 4,247,797, Cl. 310-361.000.
- Takahashi, Satoshi, to Onkyo Kabushiki Kaisha. Circuitry for adjustment of biasing current for recording sound by two-head type tape-recorder, 4,247,875, Cl. 360-66.000.
- Takasaki, Shigeru: See—
Matsui, Isamu; Takasaki, Shigeru; and Mima, Hiroshi, 4,246,744, Cl. 57-22.000.
- Take, Hiroshi: See—
Uede, Hisashi; Take, Hiroshi; Koyanagi, Katsumi; and Inami, Yasuhiko, 4,247,855, Cl. 340-753.000.
- Takeda Chemical Industries, Ltd.: See—
Mochizuki, Kazutaka, 4,247,666, Cl. 525-528.000.
- Takeda, Yoshio: See—
Toyama, Ryosuki; Inoue, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,247,698, Cl. 546-112.000.
- Takemoto, Yutaka; Senguro, Syozo; and Nitta, Masayoshi, to Sumitomo Chemical Company, Limited. Process for removing VCM from polyvinyl chloride, 4,247,686, Cl. 528-501.000.
- Takenaka, Sadao: See—
Kurihara, Hiroshi; Katoh, Tadayoshi; and Takenaka, Sadao, 4,247,938, Cl. 371-5.000.
- Takiya, Takeshi: See—
Okuyama, Yasuhiko; and Takiya, Takeshi, 4,247,950, Cl. 455-158.000.
- Takizawa, Tatsuo, to Olympus Optical Co., Ltd. Electrographic apparatus having an improved exit opening portion, 4,247,839, Cl. 355-3.00R.
- Talbot, James E., to Talpak, Inc. Boat weatherization with heat-shrunk plastic film, 4,247,509, Cl. 264-230.000.
- Talbot, James R.: See—
Plunkett, Joseph A.; and Talbot, James R., 4,246,747, Cl. 57-245.000.
- Talpik, Inc.: See—
Talbot, James E., 4,247,509, Cl. 264-230.000.
- Tamai, Yasumasa; and Matsumoto, Tetsuo, to Hitachi, Ltd. Method for welding tubular members of stainless steel, 4,247,037, Cl. 228-203.000.
- Tamaki, Sigeo; and Nakagawa, Tohru, to Hitachi, Ltd. Accelerator pump for carburetor, 4,247,491, Cl. 261-34.00A.
- Tamashiro, Emory K., to Monogram Industries, Inc. Blind fastener, 4,246,828, Cl. 411-45.000.
- Tamura, Masaki; Shimizu, Mizuho; and Tago, Minoru, to CPC International Inc. Highly thermostable glucoamylase and process for its production, 4,247,637, Cl. 435-96.000.
- Tamura, Shuichi, to Canon Kabushiki Kaisha. Camera having focus detection device, 4,247,187, Cl. 354-25.000.
- Tanabe, Hideya: See—
Shimada, Katsuhiko; Komine, Isamu; and Tanabe, Hideya, 4,247,819, Cl. 324-233.000.
- Tanaka, Katsumi: See—
Hashimoto, Shigeru; Mitani, Taizo; Isobe, Takashi; Aoyagi, Masao; Sumi, Akiyasu; and Tanaka, Katsumi, 4,247,190, Cl. 354-286.000.
- Tanoue, Junichi: See—
Shimizu, Hidetoshi; and Tanoue, Junichi, 4,246,985, Cl. 188-71.900.
- Tapco Products Company, Inc.: See—
Marsh, Walter G.; Rhoades, James J.; and Nolan, Frank, 4,246,817, Cl. 83-455.000.
- Tardiff, George E., to Mooney Brothers. Bow-mounted quiver, 4,247,027, Cl. 224-197.000.
- Tarumi, Eiichi: See—
Tada, Seizo; Tarumi, Eiichi; Kawasaki, Hironobu; and Watanabe, Takashi, 4,247,344, Cl. 148-6.14R.
- Tarumizu, Yasumasa, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for controlling clutch-equipped torque converter, 4,246,997, Cl. 192-3.270.
- Tatsuguchi, Kazuo; Hirata, Atsumi; Akasaka, Tetsuaki; and Kayanuma, Kanji, to Victor Company of Japan, Limited. Reproducing transducer feeding device in a rotary recording medium reproducing apparatus, 4,247,741, Cl. 369-43.000.
- Taylor, Edmund P.: See—
Bryant, James G.; and Taylor, Edmund P., 4,246,999, Cl. 198-713.000.
- Taylor, Joseph W. Exhaust-indicator, 4,246,933, Cl. 137-552.000.
- TDK Electronics Co., Ltd.: See—
Mohri, Kaneo, 4,247,398, Cl. 210-222.000.
- Te Ka De Felten & Guillaume Fernmeldeanlagen GmbH: See—
Parras, Karlheinz, 4,247,934, Cl. 370-15.000.
- Technicon Instruments Corporation: See—
Barabino, Raymond C.; and Keyes, Melvin H., 4,247,647, Cl. 435-291.000.
- Tektronix, Inc.: See—
Culter, Robert G.; and Osborne, Charles S., Jr., 4,247,869, Cl. 358-67.000.

Springer, Richard A.; and Theus, John G., 4,247,920, Cl. 365-230.000.
 Teletype Corporation: See—
 Carlson, Robert L.; Jack, Ronald H.; and Leno, Theodore M., 4,247,209, Cl. 400-195.000.
 Tempmaster Corporation: See—
 Dean, Raymond H., 4,246,918, Cl. 137-1.000.
 Terabayashi, Takeshi: See—
 Inagami, Kaoru; Terabayashi, Takeshi; Ohmura, Kazutaka; Haruna, Masao; and Yuda, Tetsuji, 4,247,566, Cl. 426-276.000.
 Teradyne, Inc.: See—
 Heller, Lawrence D., 4,247,817, Cl. 324-73.00R.
 Terry, Ruel C.: See—
 Stoddard, Xerxes T.; Vaseen, Vesper A.; and Terry, Ruel C., 4,246,966, Cl. 166-267.000.
 Texaco Inc.: See—
 Morgan, Glenn G., 4,246,938, Cl. 141-52.000.
 Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., 4,247,302, Cl. 48-197.00R.
 Texas Instruments Incorporated: See—
 Bartlett, Keith G., 4,247,915, Cl. 365-154.000.
 Harper, V. Paul, 4,246,787, Cl. 73-362.0AR.
 Rao, G. R. Mohan, 4,246,692, Cl. 29-571.000.
 Thomson, John T.; and Johnston, Roy C., 4,246,979, Cl. 181-120.000.
 White, Lionel S., Jr.; and Hong, Ngai H., 4,247,919, Cl. 365-222.000.
 Wiemer, Klaus C.; and Lejeune, Joseph D., 4,246,786, Cl. 73-362.0AR.
 Tezuka, Akitomi. Package for laver-wrapped rice-ball, 4,247,564, Cl. 426-115.000.
 Th. Goldschmidt AG: See—
 Schamberg, Eckehard; Holtschmidt, Ulrich; and Hellwig, Dieter, 4,247,433, Cl. 260-29.40R.
 Thakur, Pramod C.; Mason, Charles E.; Lauer, Stephen D.; and Jones, Emrys H., Jr., to Conoco, Inc. Drilling fluid circulation system, 4,247,312, Cl. 55-166.000.
 Thebert, Glenn W., to General Motors Corporation. Blade tip clearance control, 4,247,247, Cl. 415-113.000.
 Thelen, William, to Bell Telephone Laboratories, Incorporated. Trunk test circuit, 4,247,742, Cl. 179-175.30R.
 Theus, John G.: See—
 Springer, Richard A.; and Theus, John G., 4,247,920, Cl. 365-230.000.
 Thieme, Klaus: See—
 von Bebenburg, Walter; Szelenyi, Istvan; and Thieme, Klaus, 4,247,536, Cl. 424-256.000.
 Thoma, Paul E.: See—
 Klein, Carl F.; and Thoma, Paul E., 4,247,299, Cl. 23-232.00E.
 Thomas A. Schutz Co., Inc.: See—
 Eckert, Ronald P., 4,246,713, Cl. 40-437.000.
 Thomas, Douglas P., to General Electric Company. Novel halobis-phenolethylene polycarbonate-vinyl aromatic resin blends, 4,247,662, Cl. 525-147.000.
 Thomas, Herbert: See—
 Wollweber, Hartmund; Thomas, Herbert; and Andrews, Peter, 4,247,546, Cl. 424-200.000.
 Thompson, Cornell. Leak scope for detecting oil leaks in plumbing equipment, 4,246,776, Cl. 73-40.50A.
 Thompson, David G.; and Ogilvie, John T., to Sprague Electric Company. Encapsulated capacitor, 4,247,883, Cl. 361-433.000.
 Thompson, Kenneth; and Ihde, Richard C., to Champion International Corporation. Improved thermoplastic coated paperboard web, 4,247,588, Cl. 428-157.000.
 Thompson, Robert W., to Minnesota Mining and Manufacturing Company. Microfilm cassette, 4,247,183, Cl. 353-26.00R.
 Thompson, William L.: See—
 Haber, Terry M., 4,246,733, Cl. 52-309.110.
 Thomson-CSF: See—
 Huu, Duyet N.; Ballegeer, Jean-Claude; and Guedj, Richard, 4,247,904, Cl. 364-900.000.
 Thomson, John T.; and Johnston, Roy C., to Texas Instruments Incorporated. Internal sleeve air release control apparatus in seismic air gun, 4,246,979, Cl. 181-120.000.
 Thorn Emi Limited: See—
 Howe, Stephen H.; Preston, Barry; and Page, Robert B., 4,247,798, Cl. 313-225.000.
 Thornton, Robert W.: See—
 Rumsey, Robert M.; and Thornton, Robert W., 4,246,746, Cl. 57-75.000.
 Thornton, Roy F., to General Electric Company. Aqueous electrolyte for secondary electrochemical cells, 4,247,610, Cl. 429-199.000.
 Thyssen Industrie Aktiengesellschaft: See—
 Raschbichler, Hans-Georg; Breitenbach, Otto; Boll, Jürgen; and Uttenreuther, Josef, 4,246,694, Cl. 29-596.000.
 Tihanyi, Jenoe, to Siemens Aktiengesellschaft. MIS Field effect transistor for high source-drain voltages, 4,247,860, Cl. 357-23.000.
 Tilbor, Neil; and Rosenhagen, William, to Ideal Toy Corporation. Time limited power boost passing for toy vehicles, 4,247,108, Cl. 273-86.00B.
 Tilley, Jefferson W., to Hoffmann-La Roche Inc. Intermediate in the production of adrenergic blocking agents, 4,247,710, Cl. 560-55.000.
 Timex Corporation: See—
 Dorfman, Leonard M., 4,247,928, Cl. 368-67.000.
 Tobin, Thomas J., Jr., to Heath Manufacturing Company. Bird feeder, 4,246,869, Cl. 119-51.00R.
 Tobita, Takayuki: See—
 Shimada, Shoji; Matsushima, Yasunobu; Sato, Yokichi; Matsumoto, Kuniharu; Akeyoshi, Kazuyuki; and Tobita, Takayuki, 4,246,865, Cl. 118-65.000.
 Togashi, Shizuo: See—
 Kawakami, Ken-Ichi; Saito, Shoji; and Togashi, Shizuo, 4,247,496, Cl. 264-22.000.
 Toge, Ryoiku, to Fujitsu Limited. Semiconductor memory device, 4,247,863, Cl. 357-49.000.
 Tokuhara, Mitsuhiro; and Sawamura, Mitsuharu, to Canon Kabushiki Kaisha. Dichroic mirror with at least ten layers, 4,247,167, Cl. 350-166.000.
 Tokyo Sanyo Electric Co., Ltd.: See—
 Okuyama, Yasuhiko; and Takiya, Takeshi, 4,247,950, Cl. 455-158.000.
 Tokyo Shibaura Denki Kabushiki Kaisha: See—
 Iwahashi, Hiroshi; and Ariizumi, Shoji, 4,247,918, Cl. 365-218.000.
 Muraki, Takeshi, 4,247,782, Cl. 250-523.000.
 Tokyo Shibaura Electric Co., Ltd.: See—
 Gomi, Hiroshi; and Taguchi, Shinichiro, 4,247,867, Cl. 358-19.000.
 Tomimaga, Satoshi: See—
 Yoshida, Yukihiko; Izaki, Toru; Maegawa, Toshiyuki; and Tomimaga, Satoshi, 4,247,905, Cl. 364-900.000.
 Tomito, Yoshifumi: See—
 Nishizawa, Masahiro; Yokomizo, Hiroshi; Tomito, Yoshifumi; Nonogaki, Saburo; and Manabe, Toshikatsu, 4,247,612, Cl. 430-28.000.
 Tone, Junsuke: See—
 Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,247,462, Cl. 260-239.30P.
 Toolan, Susanne C.: See—
 Sharpe, Eugene S.; Herman, Alberta I.; and Toolan, Susanne C., 4,247,644, Cl. 435-242.000.
 Top Roc Precast Corporation: See—
 Morgan, Burton D., 4,247,516, Cl. 264-503.000.
 Toray Industries, Inc.: See—
 Fukuda, Tadanori; Sakamoto, Sadayuki; and Saito, Masami, 4,247,675, Cl. 528-44.000.
 Kawakami, Ken-Ichi; Saito, Shoji; and Togashi, Shizuo, 4,247,496, Cl. 264-22.000.
 Toray Silicone Company, Ltd.: See—
 Shimizu, Koji, 4,247,442, Cl. 260-33.2SB.
 Torrington Company, The: See—
 Lobeck, John H.; and Allen, Richard D., 4,247,512, Cl. 264-242.000.
 Toyama, Ryosuki; Inoue, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, to Taito Co., Ltd. Red coloring composite and the method for its production, 4,247,698, Cl. 546-112.000.
 Toyo Soda Manufacturing Co., Ltd.: See—
 Miyahara, Isao; Miyazaki, Hiroshi; and Hashimoto, Shinichi, 4,247,527, Cl. 423-329.000.
 Mori, Tadaaki; Tsukidate, Takaaki; and Arika, Junji, 4,247,529, Cl. 423-371.000.
 Shibata, Katsuya; Hamada, Motohiro; and Iwamoto, Eiji, 4,247,696, Cl. 546-49.000.
 Tsutsumi, Yukihiko; Fukuda, Yutaka; and Matsubara, Kenichi, 4,247,708, Cl. 556-456.000.
 Toyooka, Takashi: See—
 Yoshizawa, Shigeru; Aoki, Hirokazu; Chiba, Shinsaku; Mayama, Koichi; Toyooka, Takashi; and Saito, Nobuo, 4,247,911, Cl. 365-6.000.
 Toyota Jidosha Kogyo Kabushiki Kaisha: See—
 Oohori, Harumi; Shirai, Akira; Uemura, Hiroshi; and Nogami, Tomoyuki, 4,247,153, Cl. 303-6.00C.
 Shimizu, Hidetoshi; and Tanoue, Junichi, 4,246,985, Cl. 188-71.900.
 Travalent, Louis J.; and Arenson, Herbert, to Cutter Laboratories, Inc. Syringe, 4,246,898, Cl. 128-218.00P.
 Trean Limited: See—
 Gravel, Jean J. O.; and Lombard, William K., 4,246,850, Cl. 110-235.000.
 Tremont, Samuel J.; and Williamson, Alex N., to Monsanto Company. Dehydrocoupling of toluene, 4,247,727, Cl. 585-428.000.
 Tri Tool, Inc.: See—
 Pertle, John E., 4,246,814, Cl. 82-4.00C.
 Trifonov, Boris A.: See—
 Moshnin, Evgeny N.; Romashko, Nikolai I.; Prozorov, Leonid V.; Zorev, Nikolai N.; Scherba, Oleg V.; Odnodushny, Viktor A.; Zhiltsov, Nikolai I.; Rabinovich, Lev A.; Tupitsyn, Lev V.; Alexeev, Konstantin P.; Kukushkin, Boris P.; Brjukhanov, Yuri V.; Trifonov, Boris A.; Morozov, Vyacheslav A.; Rudyak, Gennady V.; Bakhvalov, Sergei K., deceased; and Bakhvalova, Larisa M., administrator, 4,246,772, Cl. 72-358.000.
 Tripot, Pierre: See—
 Flesselles, Jacques; Buisson, Jean; Morin, Michel; Boittin, Jean-Pierre; Tripot, Pierre; and Vallee, Claude, 4,246,774, Cl. 73-38.000.
 Troncy, Robert: See—
 Cerny, Jacqueline; and Troncy, Robert, 4,247,450, Cl. 260-45.75W.
 Truth Incorporated: See—
 Stevens, Harold L., 4,246,981, Cl. 182-116.000.
 TRW Inc.: See—
 Lumm, Robert E.; and Margolin, Mark, 4,247,163, Cl. 350-96.210.
 Tryon, Dean G., to General Motors Corporation. Turbocharged engine control, 4,246,752, Cl. 60-290.000.

Tsang, Siu K.; Simonsen, Carl J.; and Holt, William M., to Intel Corporation. MOS Random-access memory, 4,247,917, Cl. 365-205.000.
 Tschopp, Werner: See—
 Keller, Toni; Tschopp, Werner; and Laukien, Gunther R., 4,247,820, Cl. 324-321.000.
 Tsuchiya, Syuji: See—
 Murata, Atsuo; Tsuchiya, Syuji; Konno, Akihiro; Arima, Fumiyo-shi; and Ikeda, Hisao, 4,247,480, Cl. 564-298.000.
 Tsuda, Seizo; Tarumi, Eiichi; Kawakami, Hironobu; and Watanabe, Takashi, to Nippon Steel Corporation. Rust preventing treatment of metal-plated steel materials, 4,247,344, Cl. 148-6.14R.
 Tsui, Robert T., to Memorex Corporation. Two rail slider assembly production technique for making thin film heads, 4,246,695, Cl. 29-603.000.
 Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Compact photographic lens with large aperture, 4,247,171, Cl. 350-464.000.
 Tsukidate, Takaaki: See—
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 Ueda, Nobuyuki: See—
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 Uetani, Yoshio; Shimizu, Akio; Kajita, Kozo; Yumimoto, Osamu; and Kuwano, Satoru, to Hitachi Maxell, Ltd. Silver oxide cell and its manufacture, 4,247,606, Cl. 429-91.000.
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 Klicks, Bernhard; and Korner, Jorg-Peter, 4,247,792, Cl. 310-104.000.
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 Unerl, John, Jr. Rifle telescope, 4,247,161, Cl. 350-10.000.
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 Brewster, Everard A. V.; and Pruett, Roy L., 4,247,486, Cl. 568-454.000.
 Chang, Ching M., 4,247,307, Cl. 55-2.000.
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 Olabisi, Olagoke, 4,247,515, Cl. 264-500.000.
 Poppelsdorf, Fedor, 4,247,482, Cl. 564-508.000.
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 Lewis, Meiron F., 4,247,835, Cl. 333-155.000.
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 America: See—
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 Rodgers, Aubrey; and Robertson, William G., 4,246,801, Cl. 74-5.700.
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 Upjohn Company, The: See—
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 Van Hanehem, Richard C.: See—
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 Vanlerberghe, Guy; and Handjani, Rose-Marie J., to L'Oreal. Storage stability of aqueous dispersions of spherules, 4,247,411, Cl. 252-316.000.
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 Banick, Gerard S.; and Van Seggern, Peter W., 4,247,077, Cl. 251-25.000.
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 Vartuli, James C.; and Zehner, Lee R., to Atlantic Richfield Company. Single phase vanadium(IV)bis(metaphosphate) oxidation catalyst with improved intrinsic surface area, 4,247,419, Cl. 252-435.000.
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 Kang, Kenneth S.; and Veeder, George T., III, 4,247,639, Cl. 435-101.000.
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 Schiller, Robert J.; and Alderman, Neal M., 4,247,899, Cl. 364-465.000.
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von Brachel, Hanswilli; Heinrich, Ernst; Grawinger, Otto; Hintermeier, Karl; and Kindler, Horst, to Cassella Aktiengesellschaft. Water-insoluble monoazo pyridone dye, 4,247,456, Cl. 260-156.000.
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 Wang Laboratories, Inc.: See—
 Corwin, Daniel W.; Koplow, Harold S.; Moros, David; and Anagnostopoulos, Paul, 4,247,906, Cl. 364-900.000.
 Wu, Edward S., 4,247,212, Cl. 400-536.200.

Ward, Robert J.; Kawakami, James H.; and McCarthy, Neil J., Jr., to Union Carbide Corporation. Bonding thermoplastic or thermosetting resins, 4,247,354, Cl. 156-329.000.
 Warner, David A., to Charles Stark Draper Laboratory, Inc., The. Apparatus for measuring angular and linear displacements, 4,247,769, Cl. 250-231.0SE.
 Warner-Lambert Company: See—
 Sircar, Jagdish C.; and Capiris, Thomas, 4,247,555, Cl. 424-251.000.
 Warren, Carl; Arline, Jimmie; and LaPalme, Julius. Demand illumination control apparatus, 4,247,766, Cl. 250-214.0AL.
 Warren, William H. Stuck egg releasing machine, 4,247,241, Cl. 414-417.000.
 Warrick, David; and Fulgar, Tony. Drumstick, 4,246,826, Cl. 84-422.00S.
 Warshawsky, Jerome, to I.W. Industries Inc. Swivel joint for a light, 4,247,886, Cl. 362-427.000.
 Wasko Gold Products Corp.: See—
 Cohen, Abraham M.; and James, Henry L., 4,246,954, Cl. 164-35.000.
 Watanabe, Kazumasa: See—
 Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichi; and Kobayashi, Tatsuhiko, 4,247,629, Cl. 430-562.000.
 Watanabe, Kazuo; Ienaka, Masanori; Kominami, Yasuo; and Homma, Makoto, to Hitachi, Ltd. Signal strength detecting circuit, 4,247,949, Cl. 455-154.000.
 Watanabe, Nobuatsu; and Morigaki, Kenichi, to Watanabe, Nobuatsu; and Applied Science Research Institute. Electrolytic cell of high voltage, 4,247,608, Cl. 429-194.000.
 Watanabe, Takashi: See—
 Tsuda, Seizo; Tarumi, Eiichi; Kawakami, Hironobu; and Watanabe, Takashi, 4,247,344, Cl. 148-6.14R.
 Watt, William R., to American Can Company. Method for producing bis[4-(diphenylsulfonio)phenyl], 4,247,472, Cl. 260-440.000.
 Wavre, Alain, to Ateliers des Charmilles S.A. Electrical discharge machining apparatus and process with controlled variable speed electrode orbiting, 4,247,749, Cl. 219-69.00V.
 Waxelbaum, Paul M.: See—
 Kadija, Igor V.; Woodard, Kenneth E., Jr.; and Waxelbaum, Paul M., 4,247,345, Cl. 156-73.400.
 Wayman, Clarence M., to University of Illinois Foundation. Solid state thermal engine, 4,246,754, Cl. 60-527.000.
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 Weber, Heinrich; Dungs, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasche, Karl-Heinz, to Carl Still GmbH & Co. KG, Firma. Method for cooling and dedusting degasification gases escaping from coal degasification chambers, 4,247,365, Cl. 201-41.000.
 Weber, Jobst: See—
 Schirning, Joachim; Alder, Hanspeter; and Weber, Jobst, 4,247,381, Cl. 204-225.000.
 Weber, Randy C. Dual mode arithmetic teaching apparatus, 4,247,895, Cl. 364-419.000.
 Webster, Gordon A.: See—
 Eiloart, Nigel C.; and Webster, Gordon A., 4,246,737, Cl. 52-729.000.
 Weed, Lucretia J.: See—
 Debruyne, Frank E., Jr.; Scott, Kenneth G.; and Weed, Lucretia J., 4,247,617, Cl. 430-228.000.
 Weekman, Vern W.: See—
 LaPierre, Rene B.; and Weekman, Vern W., 4,247,386, Cl. 208-61.000.
 Wegmann, Heinz: See—
 Sigg, Hans; Viret, Robert; and Wegmann, Heinz, 4,246,795, Cl. 73-651.000.
 Weidemann, Kurt, to Blaupunkt-Werke GmbH. Apparatus for matching the sound output of a radio receiver to the ambient noise level, 4,247,955, Cl. 455-245.000.
 Weiler, Rolf, to ITT Industries, Inc. Mechanically controlled power brake unit, 4,246,755, Cl. 60-547.00R.
 Weindel, David P. Game device, 4,247,111, Cl. 273-148.00R.
 Weindel, David P.: See—
 Horan, William F.; Weindel, David P.; Sullivan, Paul J.; and Bridge, Ernest H., Jr., 4,247,109, Cl. 273-121.00A.
 Weirich, Walter; and Peters, Bernd, to Gewerkschaft Eisenhütte Westfalen. Hydraulic coupling device, 4,247,135, Cl. 283-137.00R.
 Weirich, Walter; and Dettmers, Michael, to Gewerkschaft Eisenhütte Westfalen. Hydraulic conduit systems for mine installations, 4,247,226, Cl. 405-302.000.
 Weissman, Ilan, to Hargem Limited. Fixture for use in grinding and polishing table facets of gems, 4,246,727, Cl. 51-121.000.
 Welch, Albert B. Aerial mineral survey method and apparatus using pulsed laser beam to vaporize surface material, 4,247,770, Cl. 250-253.000.
 Welch, Melvin B.: See—
 McDaniel, Max P.; and Welch, Melvin B., 4,247,421, Cl. 252-458.000.
 Welter, Thomas N. H., to Goodyear Tire & Rubber Company, The. Asymmetric rim humping, 4,246,950, Cl. 152-381.400.
 Wennemann, Werner: See—
 Dahmen, Karl; Engel, Jurgen; Gross, Heinz; Henning, Martin; and Wennemann, Werner, 4,247,033, Cl. 228-102.000.
 Werner, Jean J.: See—
 Mueller, Kurt H.; and Werner, Jean J., 4,247,940, Cl. 375-14.000.

Werts, Jean P. A. R. J.: See—
Bodart, Robert; and Werts, Jean P. A. R. J., 4,247,935, Cl. 370-43.000.

Werych, Ewald R., to General Signal Corporation. Industrial furnace with ceramic insulating modules. 4,246,852, Cl. 110-336.000.

West, William S. Pressure source and systems incorporating it. 4,246,756, Cl. 60-640.000.

Western Helicopter Services, Inc.: See—
McGrew, Norman E.; and Grow, Ralph S., 4,247,281, Cl. 431-91.000.

Westinghouse Air Brake Company: See—
Strantz, Lawrence D., 4,246,990, Cl. 192-4.00C.

Westinghouse Electric Corp.: See—
Bluzer, Nathan, 4,247,788, Cl. 307-221.00D.

Bradley, John C.; and Cherba, David M., 4,247,909, Cl. 364-900.000.

Corth, Richard, 4,246,905, Cl. 128-395.000.

Elms, Robert T.; and Engel, Joseph C., 4,247,879, Cl. 361-45.000.

Fey, Maurice G., 4,247,732, Cl. 13-2.00P.

Martin, Jonathan F.; and Cherba, David M., 4,247,901, Cl. 364-900.000.

McDonald, Michael P.; and Anderson, Larry W., 4,247,897, Cl. 364-436.000.

McIntyre, William H., 4,247,380, Cl. 204-195.00S.

Rai-Choudhury, Prosenjit; and Schroder, Dieter K., 4,247,859, Cl. 357-4.000.

Retallick, Francis D., 4,246,751, Cl. 60-203.000.

Sagan, Stanley S.; Giardina, Angelo R.; and Reynolds, Samuel D., Jr., 4,246,958, Cl. 165-70.000.

Sahasrabudhe, Arun P.; and Matty, Thomas C., 4,247,790, Cl. 307-350.000.

Stringer, Loren F., 4,247,752, Cl. 219-130.330.

Wilson, John R., 4,247,745, Cl. 200-144.00B.

Westvaco Corporation: See—
Brown, Richard C.; Fisher, Harland S.; Kosciuszky, Theodore E.; and Murphy, Joseph M., 4,246,868, Cl. 118-694.000.

Forbes, Hampton E., Jr., 4,247,038, Cl. 229-32.000.

Wetterhorn, Richard H., to Dresser Industries, Inc. Pressure gauge construction. 4,246,796, Cl. 73-732.000.

Wevers, Henk W., to Queen's University at Kingston. Artificial ligament. 4,246,660, Cl. 3-1.000.

Wheaton, Gregory A.: See—
Kao, Jar-Lin; Wheaton, Gregory A.; Shalit, Harold; and Sheng, Ming N., 4,247,465, Cl. 260-340.200.

Wheelabrator-Frye Inc.: See—
Bergh, John C., 4,246,851, Cl. 110-281.000.

Welchell, Robert C.: See—
Sanderson, Roger S.; and Welchell, Robert C., 4,247,517, Cl. 422-26.000.

White, Lionel S., Jr.; and Hong, Ngai H., to Texas Instruments Incorporated. Low power quasi-static storage cell. 4,247,919, Cl. 365-222.000.

White-Stevens, Rodric H.: See—
Berti, Giovanni; White, William I.; and White-Stevens, Rodric H., 4,247,297, Cl. 23-230.00B.

White, William I.: See—
Berti, Giovanni; White, William I.; and White-Stevens, Rodric H., 4,247,297, Cl. 23-230.00B.

Whitehurst, Darrell D.: See—
Chen, Nai Y.; Walsh, Dennis E.; Yan, Tsoung Y.; and Whitehurst, Darrell D., 4,247,384, Cl. 208-8.0LE.

Whitney, Dennis E.: See—
Poskus, Gerald M.; Whitney, Dennis E.; Cope, James N.; and Borel, Robert J., 4,247,626, Cl. 430-498.000.

Whittaker, Donald G. M. Steering linkage. 4,247,129, Cl. 280-444.000.

Widder, Kenneth J.; and Senyei, Andrew E. Intravascularly-administrable, magnetically-localizable biodegradable carrier. 4,247,406, Cl. 252-62.530.

Widiger, Almar T.; Hwo, Charles C.; Gaylord, Norman G.; and Lu, Pang-Chia, to American Can Company. Composition comprising a blend of EVA polymers having differing VA contents; films and laminates made therefrom by extrusion; and heat-sealed food bags made from the laminates. 4,247,584, Cl. 428-35.000.

Wiegand, John R., to Echlin Manufacturing Company, The. Switchable magnetic device. 4,247,601, Cl. 428-611.000.

Wiegner, Georg. Sealed container with frangible partition. 4,247,001, Cl. 206-222.000.

Wiemer, Klaus C.; and Lejeune, Joseph D., to Texas Instruments Incorporated. Fast response temperature sensor and method of making. 4,246,786, Cl. 73-362.0AR.

Wier, Donald R., to Phillips Petroleum Company. Viscosity-stabilized aqueous solutions. 4,247,405, Cl. 252-8.55D.

Wiest, Hubert: See—
Eck, Herbert; Hafener, Klaus; and Wiest, Hubert, 4,247,438, Cl. 260-29.60T.

Wieser, Hartmut; Mayer, Norbert; and Knorr, Harald, to Hoechst Aktiengesellschaft. Urea derivatives, process for their manufacture and their use as light protecting agents for polymers. 4,247,449, Cl. 260-45.8NZ.

Wilber, James A.; and Christopher, Todd J., to RCA Corporation. Nested loop video disc servo system. 4,247,866, Cl. 358-8.000.

Wilcke, Robert; and Otten, Antoon A. J., to De Staat der Nederlanden, te dezen vertegenwoordigd door de directeur-generaal der Post-erijen, Telegrafie en Telefonie. Method for controlling an antenna of an earth station for telecommunication via satellites. 4,247,857, Cl. 343-117.00R.

Wilden, James K., to Wilden Pump & Engineering Co. Air driven diaphragm pump. 4,247,264, Cl. 417-393.000.

Wilden Pump & Engineering Co.: See—
Wilden, James K., 4,247,264, Cl. 417-393.000.

Wilkes, Donald F., to Atlantic Richfield Company. Vehicular suspension system. 4,247,127, Cl. 280-28.500.

Willard, Jack G.: See—
Seay, Robert L., deceased; Seay, Euna A., executrix; Rogers, William E.; and Willard, Jack G., 4,246,984, Cl. 188-2.00F.

Willard, Jack Gordon: See—
Seay, Robert L., deceased; Seay, Euna A., executrix; Rogers, William E.; and Willard, Jack G., 4,246,984, Cl. 188-2.00F.

Willbanks, Charles E., to Milliken Research Corporation. Nonimpact printer. 4,246,839, Cl. 101-1.000.

Williams, Frank J., III: See—
Relles, Howard M.; and Williams, Frank J., III, 4,247,464, Cl. 260-326.00N.

Williams, James C., to Buckeye Cellulose Corporation. The. High yield fiber sheets. 4,247,362, Cl. 162-13.000.

Williams, Leland E.; and Griffith, James O., to Dayco Corporation. Printing roller. 4,246,842, Cl. 101-367.000.

Williams, Leslie G.: See—
Downing, Joe R.; and Williams, Leslie G., 4,246,677, Cl. 16-35.00R.

Williamson, Alex N.: See—
Tremont, Samuel J.; and Williamson, Alex N., 4,247,727, Cl. 585-428.000.

Wilson, James W. A., to General Electric Company. Method and apparatus for operating DC motors at high frequency. 4,247,807, Cl. 318-338.000.

Wilson, John C.: See—
Fletcher, George L.; Przewdzicki, Wojciech M.; Wilson, John C.; Yacubucci, Paul D.; and Van Hanehem, Richard C., 4,247,625, Cl. 430-336.000.

Wilson, John R., to Westinghouse Electric Corp. Vacuum-type contactor assembly. 4,247,745, Cl. 200-144.00B.

Wilson, Kenneth E.: See—
Kempf, August J.; and Wilson, Kenneth E., 4,247,640, Cl. 435-119.000.

Wilson, Robert C., Jr.: See—
Banta, Frederick; Ireland, Henry R.; Stein, Thomas R.; and Wilson, Robert C., Jr., 4,247,388, Cl. 208-111.000.

Wilwerding, Dennis J., to Honeywell Inc. Contrast sensing apparatus for automatic focus systems. 4,247,762, Cl. 250-204.000.

Winberg, Jack S.; and Karlin, Richard A. Apparatus for self-monitoring of physiological variables. 4,246,906, Cl. 128-736.000.

Winkler & Dunneier Maschinenfabrik & Eisengiesserei GmbH & Co. KG: See—
Imhauser, Gerd; and Puderbach, Gerhard, 4,247,238, Cl. 414-43.000.

Winters, William M. Color changeable eyes device for manikin heads. 4,246,723, Cl. 46-135.00R.

Winton, Murray T.; Beezley, Dale L.; and Chan, Kwok S., to United States of America, Navy. AC Initiation system. 4,246,845, Cl. 102-206.000.

Wintzer, Manfred: See—
Burkart, Klaus; and Wintzer, Manfred, 4,247,034, Cl. 228-116.000.

Witco Chemical Corporation: See—
Barker, Graham, 4,247,538, Cl. 424-70.000.

Witzel, Bruce E.: See—
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,247,700, Cl. 546-242.000.

Woldy, Paul N.; Kaufman, Harold C.; Dach, Michael M.; and Beall, James F., to Texaco Inc. Process for gasification and production of by-product superheated steam. 4,247,302, Cl. 48-197.00R.

Wolf, Lutz, to Carl Schenck AG, Firma. Method for producing a mat especially in the manufacture of particle boards. 4,247,497, Cl. 264-40.400.

Wolff, Horst: See—
Droitsch, Lutz; and Wolff, Horst, 4,246,924, Cl. 137-116.000.

Wolfrum, Gerhard: See—
Hugl, Herbert; and Wolfrum, Gerhard, 4,247,460, Cl. 260-186.000.

Wollweber, Hartmund; Thomas, Herbert; and Andrews, Peter, to Bayer Aktiengesellschaft. Phosphorylureidobenzene derivatives and their medicinal use. 4,247,546, Cl. 424-200.000.

Wood, Charles L.; and Daudt, Stephen W., to Ball Corporation. Glassware forming machine computer-ram controller system. 4,247,317, Cl. 65-29.000.

Woodard, Kenneth E., Jr.: See—
Kadija, Igor V.; Woodard, Kenneth E., Jr.; and Waxelbaum, Paul M., 4,247,345, Cl. 156-73.400.

World Wide Oil Tools, Inc.: See—
Keast, Larry G.; and Horton, Herbert D., 4,246,809, Cl. 81-57.160.

Worner, Siegfried, to J. Eberspacher. Exhaust muffler with catalyst. 4,247,520, Cl. 422-176.000.

Wrulich, Herwig; Schetina, Otto; and Zitz, Alfred, to Voest-Alpine Aktiengesellschaft. Bit arrangement for a cutting tool. 4,247,150, Cl. 299-86.000.

Wu, Edward S., to Wang Laboratories, Inc. Printer flaten clutch. 4,247,212, Cl. 400-556.200.

Wu, Yeongchi; and Erber, Roger A., to Illinois Tool Works Inc. Disposable urethral catheter assembly. 4,246,909, Cl. 128-762.000.

Wuenschel, Hans F. Cycloidal fluid flow engine. 4,247,251, Cl. 416-24.000.

Wunder, Friedrich; Arpe, Hans-Jürgen; Hachenberg, Horst; and Leupold, Ernst I., to Hoechst Aktiengesellschaft. Process for the manu-

facture of lower alkenes from methanol and/or dimethyl ether. 4,247,731, Cl. 585-640.000.

Wunsch, Eckart: See—
Wunsch, Erich; Wunsch, Udo; and Wunsch, Eckart, 4,247,172, Cl. 350-289.000.

Wunsch, Erich; Wunsch, Udo; and Wunsch, Eckart. Setting or adjusting means for rearview mirrors of motor vehicles. 4,247,172, Cl. 350-289.000.

Wunsch, Udo: See—
Wunsch, Erich; Wunsch, Udo; and Wunsch, Eckart, 4,247,172, Cl. 350-289.000.

Wurmli, Albert, to Ciba-Geigy Corporation. Sulphonated, aromatic reaction products, processes for their manufacture and their use as substances having a tanning action. 4,247,293, Cl. 8-94.240.

Wurscher, Horst, to U.S. Philips Corporation. Platen for printing devices. 4,247,213, Cl. 400-661.000.

WWG Industries, Inc.: See—
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Wynn, Ray, Jr.: See—
Smoluchowski, Julian; and Wynn, Ray, Jr., 4,247,314, Cl. 55-304.000.

Xerox Corporation: See—
Brueggemann, Harry P., 4,247,160, Cl. 350-6.800.

Hudson, Frederick W., 4,246,867, Cl. 118-655.000.

May, Joseph N., 4,247,095, Cl. 271-233.000.

Yacubucci, Paul D.: See—
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Yagi, Shigenori; Tabata, Norikazu; and Ogawa, Shuji, to Mitsubishi Denki Kabushiki Kaisha. Silent discharge type gas laser device. 4,247,829, Cl. 331-94.5PE.

Yamabe, Shigeru: See—
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Yamada, Kazuhisa: See—
Utena, Makoto; Yamada, Kazuhisa; Kamada, Hidemoto; and Inagami, Kaoru, 4,247,574, Cl. 426-656.000.

Yamada, Takehiko, to Yoshida Kogyo K.K. Method for removing fastener elements from a slide fastener chain and apparatus therefor. 4,246,681, Cl. 29-426.400.

Yamada, Toyotaka: See—
Maitani, Yoshihisa; and Yamada, Toyotaka, 4,247,028, Cl. 224-267.000.

Yamamoto, Hisao; Komatsu, Toshiaki; and Awata, Hiroshi, to Sumitomo Chemical Company, Limited. Method for the prevention of gastro-intestinal ulcer caused by a non-steroidal anti-inflammatory agent. 4,247,554, Cl. 424-251.000.

Yamamoto, Noboru, to Chino Optical Co., Ltd. Zooming structure of interchangeable camera lens. 4,247,170, Cl. 350-430.000.

Yamamoto, Osamu: See—
Toyama, Ryosuki; Inoue, Hiroyuki; Shingu, Tetsuro; Takeda, Yoshio; Ikumoto, Takeshi; Okuyama, Hidetoshi; and Yamamoto, Osamu, 4,247,698, Cl. 546-112.000.

Yamamoto, Shuji: See—
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Yamashiro, Osamu: See—
Gappa, Takeshi; and Yamashiro, Osamu, 4,247,826, Cl. 330-264.000.

Yamashiro Seika Kabushiki Kaisha: See—
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Yamashita, Shiro: See—
Echigo, Naoyuki; Yamashita, Shiro; Kuwabara, Tsuneo; Takahashi, Kunihiko; and Motte, Shunichi, 4,247,797, Cl. 310-361.000.

Yamatake-Honeywell Company Limited: See—
Morio, Shuji, 4,247,880, Cl. 361-256.000.

Yamauchi, Masamichi: See—
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Yamauchi, Yukio: See—
Kitta, Hiroyuki; and Yamauchi, Yukio, 4,247,848, Cl. 340-584.000.

Yan, Tsoung Y.: See—
Chen, Nai Y.; Walsh, Dennis E.; Yan, Tsoung Y.; and Whitehurst, Darrell D., 4,247,384, Cl. 208-8.0LE.

Yee, Tin B. Electrical fiber conductor. 4,247,596, Cl. 428-380.000.

Yeh, Pochi A., to Rockwell International Corporation. Single plate birefringent optical filter. 4,247,166, Cl. 350-374.000.

Yergen, Robert F. Sealing means sealing interconnected fitting assemblies. 4,247,134, Cl. 285-38.000.

Yokomizo, Hiroshi: See—
Nishizawa, Masahiro; Yokomizo, Hiroshi; Tomito, Yoshifumi; Nonogaki, Saburo; and Manabe, Toshikatsu, 4,247,612, Cl. 430-28.000.

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Bloch, Rene; and Yonath, Jacob, 4,247,401, Cl. 210-638.000.

Yonekura, Shiro; Matsutani, Tsutomu; and Nishikawa, Yoshiyuki, to Daiichi-Nippon Cables, Ltd.; and Mitsuba Mfg Co., Ltd. Continuous vulcanizer for producing elongated member. 4,247,271, Cl. 425-68.000.

Yoshida Kogyo K.K.: See—
Forster, Karl-Heinz, 4,247,230, Cl. 406-88.000.

Yamada, Takehiko, 4,246,681, Cl. 29-426.400.

Yoshida, Makoto: See—
Oooka, Mituo; Yoshida, Makoto; Yamauchi, Masamichi; and Suzuki, Choken, 4,247,927, Cl. 368-30.000.

Yoshida, Yukihiko; Izaki, Toru; Maegawa, Toshiyuki; and Tominaga, Satoshi, to Sharp Kabushiki Kaisha. Memory clear system. 4,247,905, Cl. 364-900.000.

Yoshiga, Norio; Nakamura, Hiroshi; and Ohmura, Mototaka, to Mitsubishi Plastics Industries Limited. Heat shrinkable polyvinyl chloride film with methyl methacrylate polymer additive. 4,247,663, Cl. 525-227.000.

Yoshii, Eisuke; and Kawase, Hiroshi, to Ricoh Watch Co., Ltd. Method and apparatus for root canal irrigation. 4,247,288, Cl. 433-224.000.

Yoshimoto, Hataaki: See—
Sasaki, Ichiro; Itatani, Hiroshi; Kashima, Mikito; Yoshimoto, Hataaki; Yamamoto, Shuji; and Sasaki, Yoshikazu, 4,247,443, Cl. 260-33.40P.

Yoshimoto, Masafumi; Miyazawa, Hachio; Nishimura, Takuzo; Ando, Akiko; Nakamura, Norio; and Nakao, Hideo, to Sankyo Company Limited. 7 α -Methoxycephalosporin derivatives and their pharmaceutical compositions having antibacterial activity. 4,247,548, Cl. 424-246.000.

Yoshino, Masaharu; and Hirabayashi, Michio, to Izumi Denki Corporation. Printing machine for printing on a three-dimensional article. 4,246,840, Cl. 101-37.000.

Yoshizawa, Shigeru; Aoki, Hirokazu; Chiba, Shinsaku; Mayama, Koichi; Toyooka, Takashi; and Saito, Nobuo, to Hitachi, Ltd. Drive circuit for magnetic bubble device. 4,247,911, Cl. 365-6.000.

Young, Rodney C.: See—
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Yuda, Tetsuji: See—
Inagami, Kaoru; Terabayashi, Takeshi; Ohmura, Kazutaka; Haruna, Masao; and Yuda, Tetsuji, 4,247,566, Cl. 426-276.000.

Yumimoto, Osamu: See—
Uetani, Yoshio; Shimizu, Akio; Kajita, Kozo; Yumimoto, Osamu; and Kuwano, Satoru, 4,247,606, Cl. 429-91.000.

Yuris, Nora; Cekander, Eugene J.; Kazaoka, Masaru; and Chuang, Jim P., to Cubic Western Data. Self-service passenger ticketing system. 4,247,759, Cl. 235-381.000.

Zabick, Clarence J., to NL Industries, Inc. Shock absorbing subassembly. 4,246,765, Cl. 64-23.000.

Zahir, Abdul-Cader: See—
Renner, Alfred; and Zahir, Abdul-Cader, 4,247,670, Cl. 526-259.000.

Zahradnik, Rudolf, to Maplan Maschinen- und Technische Anlagen Planungs- und Fertigungs-Gesellschaft m.b.H. Screw extruder for the processing of thermoplastic resins and similar materials. 4,247,206, Cl. 366-83.000.

Zapolski, Bronislaw; Eisenkramer, Arthur; and Zeller, Noel E., to Zelco Industries, Inc. Alarm light. 4,247,844, Cl. 340-321.000.

Zappala, Giuseppe, to Indesit Industria Elettrodomestici Italiana. Circuit for driving saw-tooth current in a coil. 4,247,805, Cl. 315-408.000.

Zedler, Martin R., to Conoco, Inc. Alarm notification apparatus. 4,247,846, Cl. 340-523.000.

Zeeger, Jim: See—
Rough, J. Kirkwood H., 4,247,793, Cl. 310-12.000.

Zehner, Lee R.: See—
Vartuli, James C.; and Zehner, Lee R., 4,247,419, Cl. 252-435.000.

Zelaty, John W., to General Electric Company. Turbomachinery blade with improved tip cap. 4,247,254, Cl. 416-97.00R.

Zelco Industries, Inc.: See—
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Zeller, Karl: See—
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Zeller, Noel E.: See—
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Zep-Pey, Chen. Continuous masecuite vacuum filtering system. 4,247,341, Cl. 127-9.000.

Zeppa, Inc.: See—
Reichert, Paul W., 4,247,117, Cl. 273-411.000.

Zhiltsov, Nikolai I.: See—
Moslimin, Evgeny N.; Romashko, Nikolai I.; Prozorov, Leonid V.; Zorev, Nikolai N.; Scherba, Oleg V.; Odnodushny, Viktor A.; Zhiltsov, Nikolai I.; Rabinovich, Lev A.; Tupitsyn, Lev V.; Alexeev, Konstantin P.; Kukushkin, Boris P.; Brjukhanov, Jury V.; Trifonov, Boris A.; Morozov, Vyacheslav A.; Rudyak, Gennady V.; Bakhvalov, Sergei K., deceased; and Bakhvalova, Larisa M., administrator, 4,246,772, Cl. 72-358.000.

Ziegenhorn, Joachim; Munz, Eberhard; Draeger, Brigitte; Hagen, Alexander; and Gruber, Wolfgang, to Boehringer Mannheim GmbH. Method and reagent for the determination of uric acid. 4,247,630, Cl. 435-10.000.

Zimmer USA, Inc.: See—
Patrick, Danny L., 4,246,662, Cl. 3-1.910.

Zimmerman, Franz X.: See—
Smith, Charles W., Jr.; Zimmerman, Franz X.; and Walker, William H., 4,246,957, Cl. 165-61.000.

Smith, Charles W., Jr.; Walker, William H.; and Zimmerman, Franz X., 4,247,755, Cl. 219-400.000.

Ziobrowski, Bernard G., to Ciba-Geigy Corporation. Metal chromate pigment compositions. 4,247,338, Cl. 106-298.000.

Zitz, Alfred: See—
Wrulich, Herwig; Schetina, Otto; and Zitz, Alfred, 4,247,150, Cl. 299-86.000.

Znotins, Andrew A.; and Brewer, Arthur D. Method of making 5,6-dihydro-2-methyl-N-phenyl-1,4-oxathin-3-carboxamide. 4,247,707, Cl. 549-22.000.

Zoecon Corporation: See—

Henrick, Clive A., 4,247,701, Cl. 546-300.000.

Zolotenko, Vladimir A.: See—

Berber, Viktor A.; Zolotenko, Vladimir A.; Naguev, Evgeny N.; Pavlov, Vladimir V.; Sokolov, Viktor E.; Syromyatnikov, Alexei N.; and Eremenko, Anatoly I., 4,247,783, Cl. 250-574.000.

Zolotor, Laurence A.: See—

Berky, John J.; Hunziker, John, Jr.; and Zolotor, Laurence A., 4,247,646, Cl. 435-284.000.

Zorev, Nikolai N.: See—

Moshnin, Evgeny N.; Romashko, Nikolai I.; Prozorov, Leonid V.; Zorev, Nikolai N.; Scherba, Oleg V.; Odnodushny, Viktor A.; Zhiltsov, Nikolai I.; Rabinovich, Lev A.; Tupitsyn, Lev V.; Alexeev, Konstantin P.; Kukushkin, Boris P.; Brjukhanov, Jury V.; Trifonov, Boris A.; Morozov, Vyacheslav A.; Rudyak, Gennady V.; Bakhvalov, Sergei K., deceased; and Bakhvalova, Larisa M., administrator, 4,246,772, Cl. 72-358.000.

Zosel, Kurt, to Studiengesellschaft Kohle mbH. Process for the decaffeination of coffee. 4,247,570, Cl. 426-481.000.

Zweifel, Hans; Kvita, Vratislav; and Berger, Joseph, to Ciba-Geigy Corporation. Photo-crosslinkable polymers having azidophthalimide side groups. 4,247,660, Cl. 525-61.000.

LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF JANUARY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Arneklev, Duane R.: See—

Teach, Eugene G.; and Arneklev, Duane R., Re. 30,495, Cl. 260-455.00A.

Ayerst, McKenna & Harrison, Ltd.: See—

Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., Re. 30,496, Cl. 424-177.000.

Baldwin, George D.; to Truck-Lite Co., Inc. Filament shock mounting for lamps. Re. 30,498, Cl. 362-296.000.

Blakeslee, Thomas R., to Logisticon, Inc. Reverse direction guidance system for lift truck. Re. 30,492, Cl. 180-168.000.

Bond, Herbert M.; and Rucinski, Michael E., to Buckbee-Mears Company. Cutting teeth for etched abrasives. Re. 30,494, Cl. 51-309.000.

Buckbee-Mears Company: See—

Bond, Herbert M.; and Rucinski, Michael E., Re. 30,494, Cl. 51-309.000.

Dow Chemical Company, The: See—

Raley, Charles F., Jr., Re. 30,497, Cl. 521-85.000.

Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., to Ayerst, McKenna & Harrison, Ltd. Tripeptide derivatives with central nervous system activity and preparation thereof. Re. 30,496, Cl. 424-177.000.

Gomez, Albert, to Spiral Binding Company, Inc. Apparatus for binding loose sheets. Re. 30,491, Cl. 11-1.00A.

Gotz, Manfred K.: See—

Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., Re. 30,496, Cl. 424-177.000.

Immer, Hans U.: See—

Failli, Amedeo; Immer, Hans U.; and Gotz, Manfred K., Re. 30,496, Cl. 424-177.000.

Kullberg, Bengt G. A. E. Apparatus for the prevention or limitation of water damage. Re. 30,493, Cl. 237-8.00R.

Logisticon, Inc.: See—

Blakeslee, Thomas R., Re. 30,492, Cl. 180-168.000.

Raley, Charles F., Jr., to Dow Chemical Company, The. Crosslinked olefin polymer having improved flame retardance. Re. 30,497, Cl. 521-85.000.

Rucinski, Michael E.: See—

Bond, Herbert M.; and Rucinski, Michael E., Re. 30,494, Cl. 51-309.000.

Spiral Binding Company, Inc.: See—

Gomez, Albert, Re. 30,491, Cl. 11-1.00A.

Stauffer Chemical Company: See—

Teach, Eugene G.; and Arneklev, Duane R., Re. 30,495, Cl. 260-455.00A.

Teach, Eugene G.; and Arneklev, Duane R., to Stauffer Chemical Company. Meta-thiocarbamyl phenylene ureas. Re. 30,495, Cl. 260-455.00A.

Truck-Lite Co., Inc.: See—

Baldwin, George D., Re. 30,498, Cl. 362-296.000.

LIST OF DESIGN PATENTEEES

Ackeret, Peter, to IISI Products AG. Container for tape cassettes. 258,023, 1-27-81, Cl. D3-35.000.

Ackeret, Peter, to IISI Products AG. Container for tape cassettes. 258,024, 1-27-81, Cl. D3-35.000.

Ackeret, Peter, to IISI Products AG. Container for tape cassettes. 258,025, 1-27-81, Cl. D3-35.000.

Ackeret, Peter, to IISI Products AG. Container for tape cassettes. 258,026, 1-27-81, Cl. D3-35.000.

Aliczky, Laszlo: See—

Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,077, Cl. D23-43.000.

Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,078, Cl. D23-43.000.

Amba Marketing Systems, Inc.: See—

Bryce, Linda M., 258,020, Cl. D2-229.000.

Anderson, Bobby. Combined can and pull tab opener. 258,041, 1-27-81, Cl. D8-40.000.

Artistic Woodwork Co. Limited: See—

Vihma, Johannes, 258,090, Cl. D25-74.000.

Backstrom, Olof F., to Oy Fiskars AB. Pinking shears. 258,042, 1-27-81, Cl. D8-57.000.

Bakus, Steven L., to Felt Products Mfg. Co. Combined dispensing closure and overcap. 258,051, 1-27-81, Cl. D9-449.000.

Ball, Quentin R.: See—

Cusimano, Richard J.; Van Arsdell, John C., Jr.; Cromwell, Gordon W.; Seppala, Elmer J.; Ball, Quentin R.; Fossella, Gregory; and Mercadante, Michael J., 258,062, Cl. D14-66.000.

Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Box blank. 258,049, 1-27-81, Cl. D9-432.000.

Bardeau, William M. Combined coffee brewer and warmer. 258,065, 1-27-81, Cl. D15-113.000.

Basic Incorporated: See—

Cusimano, Richard J.; Van Arsdell, John C., Jr.; Cromwell, Gordon W.; Seppala, Elmer J.; Ball, Quentin R.; Fossella, Gregory; and Mercadante, Michael J., 258,062, Cl. D14-66.000.

Bavis, Edward F., to E. F. Bavis & Associates, Inc. Building structure. 258,087, 1-27-81, Cl. D25-31.000.

Beatrice Foods Co.: See—

Brown, James B.; and Peterson, Dean, 258,073, Cl. D22-19.000.

Behrendt, Dennis B.: See—

Pokorny, Ann R.; Sims, C. Ray; Behrendt, Dennis B.; Burt, Robert B.; Crawford, Herman; and McKeag, Wm. A., 258,086, Cl. D25-25.000.

Bogart, Robert M., Jr., to Kalt Corporation. Holder for camera and flash. 258,067, 1-27-81, Cl. D16-47.000.

Bonaventura, Thomas C. Golf accessory holder. 258,021, 1-27-81, Cl. D2-400.000.

Boughton, Kenneth W.: See—

Wiedenbeck, Roger D.; Boughton, Kenneth W.; and Maurer, Richard, 258,076, Cl. D23-40.000.

Bowman, Jim H. Livestock dip vat. 258,094, 1-27-81, Cl. D30-99.000.

Britt, William J.; and Wilson, Daniel C., to Morton-Norwich Products, Inc. Refrigerator air freshener. 258,081, 1-27-81, Cl. D23-150.000.

Brown, James B.; and Peterson, Dean, to Beatrice Foods Co. Insect trap. 258,073, 1-27-81, Cl. D22-19.000.

Bryce, Linda M., to Amba Marketing Systems, Inc. Apron. 258,020, 1-27-81, Cl. D2-229.000.

Burt, Robert B.: See—

Pokorny, Ann R.; Sims, C. Ray; Behrendt, Dennis B.; Burt, Robert B.; Crawford, Herman; and McKeag, Wm. A., 258,086, Cl. D25-25.000.

Cajon Company: See—

Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,077, Cl. D23-43.000.

Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,078, Cl. D23-43.000.

Casillan, Angel B.: See—

Reed, Thomas F.; and Casillan, Angel B., 258,091, Cl. D28-02.000.

Chicago Pneumatic Tool Company: See—

Whitehill, Cassius F.; Patel, Ghanshyam C.; and Whitehill, Robert D., 258,063, Cl. D15-9.000.

Collins, Herbert, to Schenley Industries, Inc. Combined bottle and cup. 258,045, 1-27-81, Cl. D9-337.000.

Conti, Rino, to Dart Industries Inc. Sugar bowl or the like. 258,037, 1-27-81, Cl. D7-64.000.

Cornou, Jean. Oyster container. 258,050, 1-27-81, Cl. D99-47.000.

Crawford, Herman: See—

Pokorny, Ann R.; Sims, C. Ray; Behrendt, Dennis B.; Burt, Robert B.; Crawford, Herman; and McKeag, Wm. A., 258,086, Cl. D25-25.000.

Cromwell, Gordon W.: See—

Cusimano, Richard J.; Van Arsdell, John C., Jr.; Cromwell, Gordon W.; Seppala, Elmer J.; Ball, Quentin R.; Fossella, Gregory; and Mercadante, Michael J., 258,062, Cl. D14-66.000.

Cusimano, Richard J.; Van Arsdell, John C., Jr.; Cromwell, Gordon W.; Seppala, Elmer J.; Ball, Quentin R.; Fossella, Gregory; and Mercadante, Michael J., to Basic Incorporated. Telephone dialer. 258,062, 1-27-81, Cl. D14-66.000.

D'Amato, Cyrus. Humidifier for a greenhouse. 258,080, 1-27-81, Cl. D23-146.000.

Dart Industries Inc.: See—
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Davis, H. Mary, Display stand, 258,030, 1-27-81, Cl. D6-157.000.
DeGregorio, James V., Paper holding cassette, 258,066, 1-27-81, Cl. D16-32.000.
Dessert, Richard, Inflatable chair, 258,028, 1-27-81, Cl. D6-47.000.
Dietrich, Gerhard, to Grundig Aktiengesellschaft, Dictating apparatus, 258,058, 1-27-81, Cl. D14-3.000.
Dietrich, Gerhard, to Grundig Aktiengesellschaft, Dictating apparatus, 258,059, 1-27-81, Cl. D14-3.000.
Dracon Industries: See—
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Drutz, Alvin S.: See—
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Duncan, Farris N.: See—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 258,049, Cl. D9-432.000.
E. F. Bavis & Associates, Inc.: See—
Bavis, Edward F., 258,087, Cl. D25-31.000.
Ellis, Mark L., Auto roof hoist, 258,054, 1-27-81, Cl. D12-54.000.
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Fenwick, Anita R., Beach blanket with storage pocket, 258,035, 1-27-81, Cl. D6-267.000.
Firanzi, Jack H., Can stacker, 258,052, 1-27-81, Cl. D9-499.000.
Florists' Transworld Delivery Association: See—
Kaufmann, Donald A., 258,039, Cl. D7-98.000.
Floyd, Roger M.: See—
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 258,049, Cl. D9-432.000.
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Forsberg, John R., to Helene Curtis Industries, Inc., Hair dryer attachment, 258,092, 1-27-81, Cl. D28-18.000.
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Dietrich, Gerhard, 258,059, Cl. D14-3.000.
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Hickey-Mitchell Company: See—
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Hilary Page "Sensible" Toys Limited: See—
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Houdek, Mark R.: See—
Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,077, Cl. D23-43.000.
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Kaufmann, Donald A., to Florists' Transworld Delivery Association, Combined nutcracker and nut bowl, 258,039, 1-27-81, Cl. D7-98.000.
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Mara, Maureen, to Mara, Maureen, Picture frame, 258,034, 1-27-81, Cl. D6-236.000.
Marion Laboratories, Inc.: See—
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Strand, Gordon A., 258,048, Cl. D9-385.000.
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Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,077, Cl. D23-43.000.
Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,078, Cl. D23-43.000.
Whitehill, Cassius F.; Patel, Ghanshyam C.; and Whitehill, Robert D., to Chicago Pneumatic Tool Company, Globoid-worm compressor, 258,063, 1-27-81, Cl. D15-9.000.
Whitehill, Robert D.: See—
Whitehill, Cassius F.; Patel, Ghanshyam C.; and Whitehill, Robert D., 258,063, Cl. D15-9.000.
Wiedenbeck, Roger D.; Boughton, Kenneth W.; and Maurer, Richard, to Johnson Corporation, The, Rotary joint, 258,076, 1-27-81, Cl. D23-40.000.
Wilson, Daniel C.: See—
Britt, William J.; and Wilson, Daniel C., 258,081, Cl. D23-150.000.
Yonex Sports Kabushiki Kaisha: See—
Yoneyama, Minoru, 258,072, Cl. D21-212.000.
Yoneyama, Minoru, to Yonex Sports Kabushiki Kaisha, Tennis racket, 258,072, 1-27-81, Cl. D21-212.000.

LIST OF PLANT PATENTEES

Bailey, Catherine H.: See—
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.
Byrum, Roy L., to Joseph H. Hill Company, Seedling rose plant, 4,631, 1-27-81, Cl. 11.000.
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.
Purdue Research Foundation: See—
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.
Emerson, Frank H.: See—
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.
F. Harmon Saville, Nor'East Miniature Roses: See—
Schwartz, Ernest, deceased, 4,630, Cl. 8.000.
Flemer, William, III, to Tresearch, Flowering crab apple tree, 4,632, 1-27-81, Cl. 34.000.
Hough, L. Fredric: See—
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.
Janick, Jules: See—
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.
Joseph H. Hill Company: See—
Byrum, Roy L., 4,631, Cl. 11.000.
Mowry, James B.: See—
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.
Purdue Research Foundation: See—
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.
Schwartz, Ernest, deceased (by Schwartz, Hazel E., executrix), to F. Harmon Saville, Nor'East Miniature Roses, Rose plant, 4,630, 1-27-81, Cl. 8.000.
Schwartz, Hazel E., executrix: See—
Schwartz, Ernest, deceased, 4,630, Cl. 8.000.
Tresearch: See—
Flemer, William, III, 4,632, Cl. 34.000.
van Staaveren, M. C., Alstroemeria plant named King Cardinal, 4,634, 1-27-81, Cl. 68.000.
van Staaveren, M. C., Alstroemeria named Red Sunset, 4,635, 1-27-81, Cl. 68.000.
Williams, Edwin B.: See—
Dayton, Daniel F.; Emerson, Frank H.; Janick, Jules; Williams, Edwin B.; Bailey, Catherine H.; Mowry, James B.; and Hough, L. Fredric, 4,633, Cl. 34.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 27, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2	CLASS 34	CLASS 60	436	4,246,811	CLASS 116	269	4,246,927
71	4,246,657	16.5	4,246,704	203	4,246,751	315	4,246,928
152 R	4,246,658	290	4,246,752	290	4,246,752	382	4,246,929
175	4,246,659	398	4,246,753	398	4,246,753	493.9	4,246,930
CLASS 3	CLASS 36	527	4,246,754	527 R	4,246,754	494	4,246,931
1	4,246,660	640	4,246,755	640	4,246,755	512	4,246,932
1.1	4,246,661	737	4,246,757	737	4,246,757	552	4,246,933
1.91	4,246,662	747	4,246,758	747	4,246,758	596.13	4,246,934
CLASS 4	CLASS 40	139	4,246,815	139	4,246,815	840	4,246,935
191	4,246,664	157	4,246,816	157	4,246,816	CLASS 118	
318	4,246,665	455	4,246,817	455	4,246,817	65	4,246,865
438	4,246,666	478	4,246,818	478	4,246,818	213	4,246,866
500	4,246,667	582	4,246,819	582	4,246,819	655	4,246,867
CLASS 6	CLASS 42	707	4,246,821	707	4,246,821	694	4,246,868
4 R	4,246,667	1.01	4,246,822	1.01	4,246,822	CLASS 119	
CLASS 8	CLASS 44	1.22	4,246,823	1.22	4,246,823	51 R	4,246,869
94.11	4,247,292	336	4,246,824	336	4,246,824	54	4,246,878
94.24	4,247,293	415	4,246,825	415	4,246,825	75	4,246,870
137	4,247,294	422 S	4,246,826	422 S	4,246,826	CLASS 122	
149	4,246,668	470 R	4,246,827	470 R	4,246,827	4 A	4,246,871
156	4,246,669	CLASS 65	4,247,317	29	4,247,317	510	4,246,872
465	4,247,295	109	4,247,319	109	4,247,319	CLASS 123	
495	4,247,291	136	4,247,320	136	4,247,320	48 AA	4,246,873
506	4,247,296	CLASS 66	4,246,768	4	4,246,768	308	4,246,874
515	4,247,290	CLASS 70	4,246,769	85	4,246,769	440	4,246,875
566	4,246,670	CLASS 71	4,247,321	59	4,247,321	467	4,246,876
CLASS 9	CLASS 47	CLASS 72	4,247,322	88	4,247,322	470	4,246,877
8 R	4,246,671	CLASS 73	4,246,773	24	4,246,773	523	4,246,878
321	4,246,672	CLASS 74	4,246,801	25	4,246,801	533	4,246,879
CLASS 11	CLASS 48	CLASS 75	4,247,323	36	4,247,323	549	4,246,880
1 A	Re.30,491	CLASS 76	4,246,802	25	4,246,802	644	4,246,881
CLASS 12	CLASS 49	CLASS 77	4,246,803	25	4,246,803	658	4,246,882
14.4	4,246,673	CLASS 78	4,246,804	25	4,246,804	CLASS 124	
CLASS 13	CLASS 50	CLASS 79	4,246,805	25	4,246,805	24 R	4,246,883
2 P	4,247,732	CLASS 80	4,246,806	25	4,246,806	CLASS 126	
6	4,247,733	CLASS 81	4,246,807	25	4,246,807	246	4,246,884
24	4,247,734	CLASS 82	4,246,811	4	4,246,811	417	4,246,885
25	4,247,735	CLASS 83	4,246,815	139	4,246,815	420	4,246,886
27	4,247,736	CLASS 84	4,246,822	1.01	4,246,822	427	4,246,887
CLASS 15	CLASS 51	CLASS 85	4,246,839	1	4,246,839	429	4,246,888
4	4,246,674	CLASS 86	4,246,844	67	4,246,844	433	4,246,889
315	4,246,675	CLASS 87	4,246,845	206	4,246,845	438	4,246,890
353	4,246,676	CLASS 88	4,246,846	69	4,246,846	443	4,246,891
CLASS 16	CLASS 52	CLASS 89	4,246,847	172 BT	4,246,847	CLASS 127	
35 R	4,246,677	CLASS 90	4,246,848	173 ST	4,246,848	9	4,247,341
CLASS 23	CLASS 53	CLASS 91	4,246,851	235	4,246,851	48	4,247,340
230 B	4,247,297	CLASS 92	4,246,853	451	4,246,853	CLASS 128	
230 R	4,247,298	CLASS 93	4,246,854	67	4,246,854	1 R	4,246,893
232 E	4,247,299	CLASS 94	4,246,855	206	4,246,855	92 E	4,246,894
CLASS 24	CLASS 54	CLASS 95	4,246,856	69	4,246,856	130	4,246,895
230 R	4,246,679	CLASS 96	4,246,857	276	4,246,857	207.15	4,246,896
4,246,680	CLASS 55	CLASS 97	4,246,858	276	4,246,858	218 P	4,246,897
CLASS 25	CLASS 56	CLASS 98	4,246,859	276	4,246,859	287	4,246,900
25.11	4,246,682	CLASS 99	4,246,860	293	4,246,860	295	4,246,901
38 C	4,246,683	CLASS 100	4,246,861	235	4,246,861	305	4,246,902
90 R	4,246,684	CLASS 101	4,246,862	235	4,246,862	325	4,246,903
407	4,246,685	CLASS 102	4,246,863	347	4,246,863	335.5	4,246,904
416	4,246,686	CLASS 103	4,246,864	347	4,246,864	395	4,246,905
426.4	4,246,687	CLASS 104	4,246,865	347	4,246,865	736	4,246,906
426.5	4,246,688	CLASS 105	4,246,866	347	4,246,866	738	4,246,907
436	4,246,689	CLASS 106	4,246,867	347	4,246,867	748	4,246,908
447	4,246,690	CLASS 107	4,246,868	347	4,246,868	762	4,246,909
526 R	4,246,691	CLASS 108	4,246,869	347	4,246,869	CLASS 131	
571	4,246,692	CLASS 109	4,246,870	347	4,246,870	10.9	4,246,910
580	4,246,693	CLASS 110	4,246,871	347	4,246,871	149	4,246,911
596	4,246,694	CLASS 111	4,246,872	347	4,246,872	170 R	4,246,912
603	4,246,695	CLASS 112	4,246,873	347	4,246,873	171 A	4,246,913
631	4,246,696	CLASS 113	4,246,874	347	4,246,874	CLASS 132	
771	4,246,697	CLASS 114	4,246,875	347	4,246,875	76.4	4,246,914
827	4,246,698	CLASS 115	4,246,876	347	4,246,876	CLASS 133	
CLASS 30	CLASS 57	CLASS 116	4,246,877	347	4,246,877	6	4,246,915
134	4,246,699	CLASS 117	4,246,878	347	4,246,878	CLASS 134	
182	4,246,700	CLASS 118	4,246,879	347	4,246,879	2	4,247,342
300	4,246,701	CLASS 119	4,246,880	347	4,246,880	105	4,246,916
382	4,246,702	CLASS 120	4,246,881	347	4,246,881	CLASS 137	
CLASS 33	CLASS 58	CLASS 121	4,246,882	347	4,246,882	1	4,246,918
174 B	4,246,703	CLASS 122	4,246,883	347	4,246,883	13	4,246,919
430	4,246,703	CLASS 123	4,246,884	347	4,246,884	102	4,246,920
		CLASS 124	4,246,885	347	4,246,885	110	4,246,921
		CLASS 125	4,246,886	347	4,246,886	116	4,246,922
		CLASS 126	4,246,887	347	4,246,887	116	4,246,923
		CLASS 127	4,246,888	347	4,246,888	116	4,246,924
		CLASS 128	4,246,889	347	4,246,889	205	4,246,925
		CLASS 129	4,246,890	347	4,246,890	209	4,246,926
		CLASS 130	4,246,891	347	4,246,891		
		CLASS 131	4,246,892	347	4,246,892		
		CLASS 132	4,246,893	347	4,246,893		
		CLASS 133	4,246,894	347	4,246,894		
		CLASS 134	4,246,895	347	4,246,895		
		CLASS 135	4,246,896	347	4,246,896		
		CLASS 136	4,246,897	347	4,246,897		
		CLASS 137	4,246,898	347	4,246,898		
		CLASS 138	4,246,899	347	4,246,899		
		CLASS 139	4,246,900	347	4,246,900		
		CLASS 140	4,246,901	347	4,246,901		
		CLASS 141	4,246,902	347	4,246,902		
		CLASS 142	4,246,903	347	4,246,903		
		CLASS 143	4,246,904	347	4,246,904		
		CLASS 144	4,246,905	347	4,246,905		
		CLASS 145	4,246,906	347	4,246,906		
		CLASS 146	4,246,907	347	4,246,907		
		CLASS 147	4,246,908	347	4,246,908		
		CLASS 148	4,246,909	347	4,246,909		
		CLASS 149	4,246,910	347	4,246,910		
		CLASS 150	4,246,911	347	4,246,911		
		CLASS 151	4,246,912	347	4,246,912		
		CLASS 152	4,246,913	347	4,246,913		
		CLASS 153	4,246,914	347	4,246,914		
		CLASS 154	4,246,915	347	4,246,915		
		CLASS 155	4,246,916	347	4,246,916		
		CLASS 156	4,246,917	347	4,246,917		
		CLASS 157	4,246,918	347	4,246,918		
		CLASS 158	4,246,919	347	4,246,919		
		CLASS 159	4,246,920	347	4,246,920		
		CLASS 160	4,246,921	347	4,246,921		
		CLASS 161	4,246,922	347	4,246,922		
		CLASS 162	4,246,923	347	4,246,923		
		CLASS 163	4,246,924	347	4,246,924		
		CLASS 164	4,246,925	347	4,246,925		
		CLASS 165	4,246,926	347	4,246,926		
		CLASS 166	4,246,927	347	4,246,927		
		CLASS 167	4,246,928	347	4,246,928		
		CLASS 168	4,246,929	347	4,246,929		
		CLASS 169	4,246,930	347	4,246,930		
		CLASS 170	4,246,931	347	4,246,931		
		CLASS 171	4,246,932	347	4,246,932		
		CLASS 172	4,246,933	347	4,246,933		
		CLASS 173	4,246,934	347	4,246,934		
		CLASS 174	4,246,935	347	4,246,935		

789	4,246,972	10	4,247,385	396	4,247,048	119	4,247,097	367	4,247,799
CLASS 173		61	4,247,386	497	4,247,049	130	4,247,098	CLASS 315	
8	4,246,973	106	4,247,387	498	4,247,050	29 BA	4,247,099	39	4,247,800
38	4,246,974	111	4,247,388	542	4,247,051	26	4,247,101	107	4,247,801
CLASS 174		181	4,247,389	585	4,247,052	28.5 AV	4,247,102	169.2	4,247,802
35 MS	4,247,737	CLASS 209		CLASS 241		29.2 N	4,247,103	289	4,247,803
53	4,247,738	129	4,247,390	57	4,247,053	29.2 TN	4,247,104	344	4,247,804
CLASS 175		164	4,247,391	95	4,247,054	29.4 R	4,247,105	408	4,247,805
61	4,246,975	301	4,247,392	119	4,247,055	29.6 H	4,247,106	CLASS 318	
107	4,246,976	392	4,247,007	167	4,247,056	29.6 MP	4,247,107	267	4,247,806
329	4,246,977	569	4,247,008	CLASS 242		29.6 NR	4,247,108	338	4,247,807
CLASS 178		73 S	4,247,395	47.01	4,247,057	29.6 RB	4,247,109	345 G	4,247,808
46	4,247,739	126	4,247,396	55.17	4,247,058	29.6 T	4,247,110	630	4,247,809
CLASS 179		162	4,247,397	CLASS 244		31.8 R	4,247,111	661	4,247,810
18 AH	4,247,740	222	4,247,398	3.16	4,247,059	32.8 SB	4,247,112	CLASS 320	
175.3 R	4,247,742	341	4,247,399	16	4,247,060	33.2 SB	4,247,113	35	4,247,811
CLASS 180		531	4,247,400	17.19	4,247,061	33.4 P	4,247,114	44	4,247,812
165	4,246,978	638	4,247,393	91	4,247,062	33.6 UA	4,247,115	48	4,247,813
168	Re.30.492	767	4,247,401	122 AG	4,247,063	37 SB	4,247,116	CLASS 324	
CLASS 181		CLASS 211		215	4,247,064	45.7 P	4,247,117	54	4,247,814
120	4,246,979	60 R	4,247,009	219	4,247,065	45.75 W	4,247,118	58.5 A	4,247,815
CLASS 182		131	4,247,010	CLASS 248		45.8 A	4,247,119	62	4,247,816
48	4,246,980	194	4,247,011	123.1	4,247,067	45.8 NZ	4,247,120	73 R	4,247,817
116	4,246,981	CLASS 215		162.1	4,247,068	112 R	4,247,121	202	4,247,818
CLASS 184		1 C	4,247,012	185	4,247,069	112.5 R	4,247,122	233	4,247,819
106	4,246,982	CLASS 219		226.5	4,247,070	145 B	4,247,123	321	4,247,820
CLASS 187		69 M	4,247,748	396	4,247,071	156	4,247,124	336	4,247,821
29 R	4,246,983	69 V	4,247,749	582	4,247,072	158	4,247,125	CLASS 328	
CLASS 188		130.31	4,247,751	CLASS 249		185	4,247,126	15	4,247,822
2 F	4,246,984	130.33	4,247,752	38	4,247,073	186	4,247,127	160	4,247,823
71.9	4,246,985	201	4,247,753	86	4,247,074	239.1 P	4,247,128	CLASS 330	
CLASS 191		384	4,247,754	95	4,247,075	245.6	4,247,129	253	4,247,824
29 R	4,246,986	400	4,247,755	CLASS 250		326 N	4,247,130	261	4,247,825
32	4,246,987	528	4,247,756	201	4,247,761	340.2	4,247,131	398	4,247,826
CLASS 192		90	4,247,013	204	4,247,762	343.6	4,247,132	431	4,247,827
2	4,246,988	90.2	4,247,014	CLASS 251		4,247,763	CLASS 285	90	4,247,828
3.27	4,246,989	328	4,247,015	214 AL	4,247,764	346.22	4,247,133	94.5 C	4,247,831
4 A	4,246,990	CLASS 221		222 R	4,247,765	391	4,247,134	94.5 D	4,247,832
8 C	4,246,991	227	4,247,017	410.7	4,247,766	440.7	4,247,135	94.5 G	4,247,833
13 R	4,246,992	CLASS 222		410.7	4,247,767	440.7	4,247,136	94.5 PE	4,247,834
53 F	4,246,993	1	4,247,018	455 A	4,247,768	455 A	4,247,137	CLASS 333	
53 H	4,246,994	56	4,247,019	465 D	4,247,769	465 D	4,247,138	155	4,247,835
58 B	4,246,995	83.5	4,247,020	465 E	4,247,770	465 E	4,247,139	195	4,247,836
94	4,246,996	143	4,247,021	983	4,247,771	983	4,247,140	202	4,247,837
CLASS 196		146 H	4,247,022	CLASS 261		983	4,247,141	254	4,247,838
46.1	4,246,998	386	4,247,023	34 A	4,247,491	34 A	4,247,142	CLASS 335	
CLASS 198		402.16	4,247,024	CLASS 264		87.2	4,247,143	18	4,247,840
713	4,246,999	402.18	4,247,025	0.5	4,247,495	0.5	4,247,144	CLASS 336	
780	4,247,000	42.42	4,247,026	1.4	4,247,496	1.4	4,247,145	150	4,247,841
CLASS 200		197	4,247,027	2.3	4,247,497	2.3	4,247,146	CLASS 338	
44	4,247,743	267	4,247,028	40.4	4,247,498	40.4	4,247,147	302	4,247,842
47	4,247,744	271	4,247,029	61	4,247,499	61	4,247,148	CLASS 339	
144 B	4,247,745	273	4,247,030	41	4,247,500	41	4,247,149	95 R	4,247,159
147 R	4,247,746	CLASS 225		77	4,247,501	77	4,247,150	CLASS 340	
314	4,247,747	2	4,247,031	10	4,247,502	10	4,247,151	27 NA	4,247,843
CLASS 201		CLASS 227		40	4,247,503	40	4,247,152	365 R	4,247,844
41	4,247,365	315	4,247,032	130	4,247,504	130	4,247,153	523	4,247,845
CLASS 202		CLASS 252		168	4,247,505	168	4,247,154	566	4,247,846
105	4,247,367	8.5 A	4,247,402	174 F	4,247,506	174 F	4,247,155	584	4,247,847
158	4,247,368	8.5 LC	4,247,403	177 R	4,247,507	177 R	4,247,156	660	4,247,848
176	4,247,369	8.5 D	4,247,404	210.2	4,247,508	210.2	4,247,157	694	4,247,849
263	4,247,370	51.5 A	4,247,405	219	4,247,509	219	4,247,158	706	4,247,850
CLASS 203		62.53	4,247,406	230	4,247,510	230	4,247,159	715	4,247,851
7	4,247,371	64.54	4,247,407	236	4,247,511	236	4,247,160	723	4,247,852
CLASS 204		143	4,247,408	242	4,247,512	242	4,247,161	758	4,247,853
15	4,247,372	174.11	4,247,409	252	4,247,513	252	4,247,162	771	4,247,854
23	4,247,373	305	4,247,410	345	4,247,514	345	4,247,163	CLASS 343	
98	4,247,374	316	4,247,411	500	4,247,515	500	4,247,164	117 R	4,247,857
128	4,247,375	356	4,247,412	503	4,247,516	503	4,247,165	729	4,247,858
129.65	4,247,376	CLASS 232		CLASS 266		86	4,247,086	CLASS 350	
129.95	4,247,377	35	4,247,039	86	4,247,086	86	4,247,087	6.8	4,247,160
157.1 R	4,247,378	CLASS 235		212	4,247,087	212	4,247,088	10	4,247,161
195 S	4,247,379	92 MS	4,247,758	273	4,247,088	273	4,247,089	86.21	4,247,162
225	4,247,380	381	4,247,759	CLASS 267		9	4,247,155	96.27	4,247,163
297 R	4,247,381	449	4,247,760	CLASS 269		26	4,247,156	166	4,247,164
298	4,247,382	615	4,247,757	CLASS 270		73	4,247,157	289	4,247,165
CLASS 206		46 R	4,247,040	CLASS 271		12	4,247,158	307	4,247,166
313	4,247,001	48 R	4,247,041	CLASS 272		13	4,247,159	340	4,247,167
486	4,247,002	8 R	Re.30.493	CLASS 273		104	4,247,160	362	4,247,168
506	4,247,003	CLASS 239		29 R	4,247,081	233	4,247,161	374	4,247,169
525	4,247,004	43	4,247,042	86 R	4,247,082	308	4,247,162	430	4,247,170
528	4,247,005	85	4,247,043	93 R	4,247,083	361	4,247,163	464	4,247,171
CLASS 208		87	4,247,044	183	4,247,084	213	4,247,164		
8 LE	4,247,384	156	4,247,045	233	4,247,085	225	4,247,165		
		318	4,247,046	CLASS 287					
		391	4,247,047	438	4,247,205				

CLASS 351	710	4,247,902	88	4,247,230	248.56	4,247,551	286	4,247,611	263	4,247,673	
7	4,247,176	821	4,247,903	CLASS 407	250	4,247,549	336	4,247,625	CLASS 528		
44	4,247,177	900	4,247,904	101	4,247,231	4,247,552	342	4,247,618	21	4,247,674	
47	4,247,178		4,247,905	114	4,247,232	251	4,247,553	498	4,247,626	44	4,247,675
171	4,247,179		4,247,906	CLASS 408			4,247,554	512	4,247,627	49	4,247,676
82	4,247,180		4,247,907	185	4,247,233	256	4,247,555	551	4,247,628	68	4,247,677
CLASS 352			4,247,908	CLASS 409			4,247,556	562	4,247,629	83	4,247,678
CLASS 353			4,247,909	260	4,247,234	263	4,247,557	91	4,247,281	168	4,247,679
1	4,247,181	CLASS 365	4,247,910	CLASS 410			4,247,558	168	4,247,282	169	4,247,680
3	4,247,182	6	4,247,911	106	4,247,235	CLASS 425	4,247,559	253	4,247,283	175	4,247,681
26 R	4,247,183	15	4,247,912	129	4,247,236	63	4,247,269	49	4,247,284	313	4,247,682
27 A	4,247,184	109	4,247,913	154	4,247,237	66	4,247,270	501	4,247,285		4,247,683
77	4,247,185	154	4,247,914	182	4,247,238	68	4,247,271	CLASS 432			4,247,684
CLASS 354		182	4,247,915	205	4,247,239	147	4,247,272	CLASS 433			4,247,685
24	4,247,186	205	4,247,916	205	4,247,240	174.2	4,247,273	CLASS 434			4,247,686
25	4,247,187	218	4,247,917	45	4,246,828	193	4,247,274	141	4,247,285	12	4,247,687
60 E	4,247,188	222	4,247,918	CLASS 411		198	4,247,275	170	4,247,286	96	4,247,688
173	4,247,189	228	4,247,919	CLASS 414		298	4,247,276	199	4,247,287		
286	4,247,190	230	4,247,920	43	4,247,238	325	4,247,277	224	4,247,288	CLASS 544	
CLASS 355		233	4,247,921	44	4,247,239	393	4,247,278	22	4,246,705	97	4,247,689
3 R	4,247,839	CLASS 366		417	4,247,240	408	4,247,279	CLASS 435		149	4,247,690
4	4,247,840	83	4,247,206	724	4,247,241	445	4,247,280	CLASS 436		183	4,247,691
8	4,247,841	CLASS 367		753	4,247,242	53	4,247,561	10	4,247,630	194	4,247,692
14 D	4,247,842	786	4,247,243	786	4,247,244	72	4,247,562	12	4,247,631	323	4,247,693
14 R	4,247,843	8	4,247,922	CLASS 415		87	4,247,563	17	4,247,632	CLASS 546	
15	4,247,844	110	4,247,923	53 T	4,247,245	115	4,247,564	40	4,247,633	11	4,247,694
54	4,247,845	CLASS 368		113	4,247,246	126	4,247,565	17	4,247,634	49	4,247,695
72	4,247,846	3	4,247,925	136	4,247,247	136	4,247,566	63	4,247,635		4,247,696
CLASS 356		28	4,247,926	174	4,247,248	302	4,247,567	94	4,247,636	74	4,247,697
124	4,247,200	67	4,247,927	219 C	4,247,249	321	4,247,568	96	4,247,637	112	4,247,698
310	4,247,201	69	4,247,928	CLASS 416		335	4,247,569	101	4,247,638	153	4,247,699
398	4,247,202	84	4,247,929	24	4,247,251	481	4,247,570	119	4,247,639	242	4,247,700
431	4,247,203	185	4,247,930	44	4,247,252	535	4,247,571	123	4,247,640	300	4,247,701
CLASS 357		287	4,247,931	97 R	4,247,253	538	4,247,572	178	4,247,641	CLASS 548	
4	4,247,859	169	4,247,932	141	4,247,254	656	4,247,573	242	4,247,642	146	4,247,702
23	4,247,860	CLASS 369		198 A	4,247,255	CLASS 427		262	4,247,643	216	4,247,703
43	4,247,861	43	4,247,741	221	4,247,256	2	4,247,575	284	4,247,644	303	4,247,704
48	4,247,862	77	4,247,742	230	4,247,257	40	4,247,576	291	4,247,645	315	4,247,705
49	4,247,863	173	4,247,743	240 B	4,247,258	44	4,247,577	CLASS 440		12	4,247,706
79	4,247,864	233	4,247,744	CLASS 417		91	4,247,578	17	4,246,861	22	4,247,707
CLASS 358		15	4,247,934	38	4,247,260	140	4,247,579	73	4,246,862	456	4,247,708
4	4,247,865	43	4,247,935	44	4,247,261	373	4,247,581	88	4,246,863	CLASS 549	
8	4,247,866	100	4,247,936	54	4,247,262	31	4,247,582	CLASS 441		12	4,247,709
18	4,247,867	102	4,247,937	203	4,247,263	35	4,247,583	116	4,246,864	22	4,247,710
29	4,247,868	CLASS 371		393	4,247,264	43	4,247,584	154	4,246,865	456	4,247,708
67	4,247,869	5	4,247,938	424	4,247,265	116	4,247,585	156	4,247,946	53	4,247,709
93	4,247,870	15	4,247,941	567	4,247,266	135	4,247,586	181	4,247,947	55	4,247,710
248	4,247,871	CLASS 375		32	4,247,267	157	4,247,587	186	4,247,948	124	4,247,711
256	4,247,872	1	4,247,939	256	4,247,268	209	4,247,588	191	4,247,949	161	4,247,712
282	4,247,873	14	4,247,940	CLASS 422		210	4,247,589	186	4,247,950	192	4,247,713
294	4,247,874	25	4,247,942	26	4,247,517	212	4,247,590	243	4,247,951	221	4,247,714
CLASS 360		79	4,247,943	142	4,247,518	266	4,247,591	245	4,247,952	CLASS 562	
66	4,247,875	114	4,247,945	169	4,247,519	328	4,247,592	606	4,247,953	462	4,247,715
92	4,247,876	CLASS 400		176	4,247,520	329	4,247,593	386	4,247,954	513	4,247,716
105	4,247,877	121	4,247,307	256	4,247,521	380	4,247,594	CLASS 493		51	4,247,716
125	4,247,878	8	4,247,308	CLASS 423		403	4,247,595	CLASS 494		251	4,247,717
45	4,247,879	194	4,247,309	8	4,247,522	419	4,247,596	32	4,247,289	298	4,247,718
256	4,247,880	236.1	4,247,310	2	4,247,523	458	4,247,597	116	4,247,289	422	4,247,719
302	4,247,881	477	4,247,311	118	4,247,524	607	4,247,598	32	4,247,290	436	4,247,720
380	4,247,882	556.2	4,247,312	242	4,247,525	611	4,247,599	56	4,247,291	492	4,247,721
433	4,247,883	661	4,247,313	266	4,247,526	671	4,247,600	85	4,247,292	508	4,247,722
CLASS 362		705.1	4,247,314	329	4,247,527	CLASS 429		92	4,247,293	CLASS 568	
164	4,247,884	371	4,247,315	424	4,247,528	1	4,247,601	85	4,247,294	12	4,247,723
296	Re.30,498	450	4,247,316	371	4,247,529	40	4,247,602	164	4,247,295	326	4,247,724
401	4,247,885	477	4,247,317	477	4,247,530	52	4,247,603	175	4,247,296	341	4,247,725
427	4,247,886	109	4,247,318	CLASS 424		91	4,247,604	182	4,247,297	422	4,247,726
37	4,247,887	164	4,247,319	1	4,247,531	101	4,247,605	43	4,247,298	436	4,247,727
47	4,247,888	217	4,247,320	12	4,247,532	194	4,247,606	61	4,247,299	492	4,247,728
126	4,247,889	406	4,247,321	62	4,247,533	199	4,247,607	88	4,247,300	508	4,247,729
137	4,247,890	CLASS 408		70	4,247,534	CLASS 430		127	4,247,301	CLASS 570	
200	4,247,891	53	4,247,220	95	4,247,535	28	4,247,612	147	4,247,302	234	4,247,730
419	4,247,892	180	4,247,221	116	4,247,536	31	4,247,613	164	4,247,303	CLASS 585	
436	4,247,893	154	4,247,222	122	4,247,537	79	4,247,614	175	4,247,304	259	4,247,731
460	4,247,894	260	4,247,223	177	4,247,538	192	4,247,615	182	4,247,305	407	4,247,732
465	4,247,895	299	4,247,224	180	4,247,539	228	4,247,616	200	4,247,306	428	4,247,733
481	4,247,896	302	4,247,225	181	4,247,540	253	4,247,617	216	4,247,307	467	4,247,734
581	4,247,897	CLASS 406		200	4,247,541	264	4,247,618	260	4,247,308	483	4,247,735
581	4,247,898	15	4,247,226	240	4,247,542	269	4,247,619	262	4,247,309	581	4,247,736
581	4,247,899	39	4,247,227	244	4,247,543	270	4,247,620	262	4,247,310	640	4,247,737
581	4,247,900	79	4,247,228	246	4,247,544	275	4,247,621	262	4,247,311		
581	4,247,901	39	4,247,229	246	4,247,545	281	4,247,622	262	4,247,312		
581	4,247,902	39	4,247,230	246	4,247,546	281	4,247,623	262	4,247,313		
581	4,247,903	39	4,247,231	246	4,247,547	281	4,247,624	262	4,247,314		
581	4,247,904	39	4,247,232	246	4,247,548	281	4,247,625	262	4,247,315		
581	4,247,905	39	4,247,233	246	4,247,549	281	4,247,626	262	4,247,316		
581	4,247,906	39	4,247,234	246	4,247,550	281	4,247,627	262	4,247,317		
581	4,247,907	39	4,247,235	246	4,247,551	281	4,247,628	262	4,247,318		
581	4,247,908	39	4,247,236	246	4,247,552	281	4,247,629	262	4,247,319		
581	4,247,909	39	4,247,237	246	4,247,553	281	4,247,630	262	4,247,320		
581	4,247,910	39	4,247,238	246	4,247,554	281	4,247,631	262	4,247,321		
581	4,247,911	39	4,247,239	246	4,247,555	281	4,247,632	262	4,247,322		
581	4,247,912	39	4,247,240	246	4,247,556	281	4,247,633	262	4,247,323		
581	4,247,913	39	4,247,241	246	4,247,557	281	4,247,634	262	4,247,324		
581	4,247,914	39	4,247,242	246	4,247,558	281	4,247,635	262	4,247,325		
581	4,247,915	39	4,247,243	246	4,247,559	281	4,247,636	262	4,247,326		
581	4,247,916	39	4,247,244	246	4,247,560	281	4,247,637	262	4,247,327		
581	4,247,917	39	4,247,245	246	4,247,561	281	4,247,638	262	4,247,328		
581	4,247,918	39	4,247,246	246	4,247,562	281	4,247,639	262</			

CLASSIFICATION OF DESIGNS

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D2—	229	258,020	177	258,033	337	258,045	50	258,060	212	258,072	D24—	1.1	258,084		
	400	258,021	236	258,034	385	258,047	64	258,061	D22—	19	258,073	D25—	22	258,085	
D3—	35	258,022	267	258,035		258,048	66	258,062		31	258,074		25	258,086	
		258,023	D7—	46	258,036	432	258,049	D15—	9	258,063	D23—	21	258,075	31	258,087
		258,024		64	258,037	449	258,051		54	258,064		40	258,076	38	258,088
		258,025		86	258,038	499	258,052		113	258,065		43	258,077	70	258,089
		258,026	D8—	98	258,039	D11—	157	258,053	D16—	32	258,066	D28—	74	258,090	
		258,027		5	258,040	D12—	54	258,054		47	258,067		02	258,091	
D6—	47	258,028		40	258,041		62	258,055	D17—	5	258,068	D30—	18	258,092	
	144	258,031		57	258,042	D13—	01	258,056	D19—	48	258,069		1	258,093	
	146	258,029		99	258,043	D14—	3	258,058	D20—	6	258,070	D99—	99	258,094	
	157	258,030		356	258,044		258,059		D21—	130	258,071		47	258,050	
	158	258,032	D9—	36	258,046		02	258,057		163	258,083				

CLASSIFICATION OF PLANTS

P.—	8	4,630	11	4,631	34	4,632	4,633	68	4,634	4,635
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GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

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PATENTS

1 :	4,247,251	4,246,826	4,247,544	4,247,684	4,246,703	4,247,991
4 :	4,247,117	4,246,833	4,247,575	4,247,685	4,246,713	4,247,604
	4,247,893	4,246,834	4,247,583	4,247,699	4,246,715	4,247,644
6 :	4,246,695	4,246,844	4,247,600	4,247,847	4,246,719	4,247,659
	4,246,828	4,246,845	4,247,641	4,247,899	4,246,734	4,247,740
	4,246,848	4,246,846	4,247,657	4,247,903	4,246,754	4,247,742
	4,246,871	4,246,860	4,247,682	4,247,038	4,246,808	4,247,745
	4,246,914	4,246,890	4,247,701	4,247,427	4,246,810	4,247,750
	4,247,237	4,246,892	4,247,759	4,247,444	4,246,815	4,247,910
	4,247,352	4,246,913	4,247,785	4,247,474	4,246,824	4,246,662
	4,247,605	4,246,916	4,247,789	4,247,487	4,246,838	4,246,723
	4,247,639	4,246,947	4,247,791	4,247,514	4,246,849	4,246,851
	4,247,804	4,246,953	4,247,809	4,247,549	4,246,878	4,246,999
	4,247,877	4,246,959	4,247,832	4,247,563	4,246,899	4,247,119
8 :	4,247,966	4,246,963	4,247,837	4,247,576	4,246,906	4,247,143
9 :	4,247,446	4,246,965	4,247,862	4,247,618	4,246,909	4,247,243
	4,247,462	4,246,977	4,247,895	4,247,624	4,246,945	4,247,247
	4,247,599	4,246,984	4,247,907	4,247,713	4,246,955	4,247,317
	4,247,683	4,247,018	4,247,916	4,247,721	4,246,983	4,247,326
	4,247,733	4,247,051	4,247,917	4,246,776	4,246,989	4,247,370
01 :	4,246,661	4,247,058	4,247,925	4,247,371	4,246,990	4,247,448
	4,246,706	4,247,073	4,247,928	4,246,721	4,246,996	4,247,484
	4,246,801	4,247,078	4,247,943	4,246,768	4,247,010	4,247,512
	4,247,059	4,247,084	4,247,944	4,246,791	4,247,023	4,247,542
	4,247,396	4,247,086	4,247,951	4,246,861	4,247,046	4,247,543
	4,247,833	4,247,107	4,246,674	4,246,862	4,247,056	4,247,703
04 :	4,246,736	4,247,116	4,246,973	4,246,863	4,247,056	4,247,715
	4,246,784	4,247,126	4,247,229	4,246,885	4,247,076	4,247,866
	4,246,922	4,247,132	4,247,762	4,247,068	4,247,089	4,247,866
	4,247,350	4,247,160	4,247,763	4,247,081	4,247,090	4,247,145
	4,247,369	4,247,166	4,247,794	4,247,142	4,247,115	4,247,158
	4,247,786	4,247,181	4,246,796	4,247,201	4,247,149	4,247,347
	4,247,810	4,247,182	4,246,819	4,247,222	4,247,163	4,247,361
	4,247,843	4,247,185	4,246,820	4,247,367	4,247,209	4,246,729
	4,247,891	4,247,198	4,246,853	4,247,377	4,247,231	4,246,742
	4,247,646	4,247,203	4,246,859	4,247,390	4,247,233	4,246,869
05 :	Re. 30,892	4,247,205	4,246,868	4,247,481	4,247,240	4,246,918
06 :	Re. 30,893	4,247,216	4,246,876	4,247,522	4,247,266	4,246,998
	4,246,666	4,247,264	4,246,904	4,247,536	4,247,267	4,247,214
	4,246,680	4,247,276	4,246,948	4,247,603	4,247,275	4,247,321
	4,246,688	4,247,286	4,246,960	4,247,757	4,247,314	4,247,072
	4,246,699	4,247,289	4,247,061	4,247,766	4,247,325	4,247,210
	4,246,710	4,247,292	4,247,135	4,247,908	4,247,394	4,247,316
	4,246,722	4,247,301	4,247,204	4,246,746	4,247,406	4,247,404
	4,246,733	4,247,308	4,247,244	4,246,750	4,247,433	4,247,662
	4,246,756	4,247,336	4,247,248	4,247,012	4,247,498	4,247,030
	4,246,766	4,247,361	4,247,258	4,247,063	4,247,502	4,247,048
	4,246,788	4,247,379	4,247,259	4,247,076	4,247,511	4,247,208
	4,246,800	4,247,385	4,247,263	4,246,886	4,247,537	4,247,490
	4,246,814	4,247,399	4,247,432	4,246,887	4,247,559	4,247,846
	4,246,822	4,247,468	4,247,489	4,246,659	4,247,562	4,246,702
	4,246,825	4,247,517	4,247,597	4,246,689	4,247,565	4,246,902
		4,247,531	4,247,671	4,246,697		

PI 55

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

4,246,935	4,247,901	4,247,690	4,247,623	4,247,680	4,247,897
4,246,952	4,247,909	4,247,693	4,247,625	4,247,714	4,247,942
4,247,091	Re.30,494	4,247,695	4,247,626	4,247,751	4,247,285
4,247,122	4,246,678	4,247,697	4,247,627	4,247,793	4,247,109
4,247,261	4,246,686	4,247,700	4,247,638	4,247,814	4,247,111
4,247,277	4,246,716	4,247,704	4,247,640	4,247,854	4,247,382
4,247,607	4,246,763	4,247,710	4,247,673	4,246,883	4,247,900
4,247,774	4,246,797	4,247,712	4,247,681	4,246,919	4,246,839
4,247,780	4,246,803	4,247,724	4,247,688	4,246,920	4,246,941
4,247,788	4,246,811	4,247,775	4,247,752	4,246,964	4,247,279
4,247,815	4,246,981	4,247,822	4,247,764	4,246,967	4,247,342
4,247,914	4,247,011	4,247,844	4,247,779	4,246,968	4,247,505
4,246,665	4,247,183	4,247,861	4,247,781	4,247,008	4,246,942
4,246,787	4,247,298	4,247,945	4,247,799	4,247,300	4,247,345
4,246,872	4,247,359	4,247,946	4,247,807	4,247,389	4,247,362
4,246,896	4,247,396	4,247,127	4,247,811	4,247,405	4,247,784
4,246,897	4,247,469	Re.30,491	4,247,834	4,247,417	4,246,664
4,246,917	4,247,578	Re.30,498	4,247,885	4,247,421	4,246,692
4,247,014	4,247,609	4,246,657	4,247,886	4,247,430	4,246,765
4,247,025	4,247,616	4,246,675	4,247,912	4,247,530	4,246,779
4,247,049	4,247,656	4,246,698	4,247,922	4,247,598	4,246,782
4,247,180	4,247,674	4,246,711	4,247,947	4,247,719	4,246,786
4,247,212	4,247,913	4,246,714	4,246,889	4,246,771	4,246,809
4,247,241	4,246,671	4,246,717	4,246,930	4,246,818	4,246,854
4,247,376	4,246,663	4,246,725	4,246,987	4,246,940	4,246,901
4,247,413	4,246,677	4,246,752	4,247,178	4,247,060	4,246,928
4,247,455	4,246,884	4,246,753	4,247,588	4,247,067	4,246,933
4,247,501	4,246,898	4,246,757	4,247,658	4,247,075	4,246,938
4,247,594	4,246,970	4,246,760	4,247,743	4,247,100	4,246,943
4,247,617	4,247,005	4,246,762	4,247,808	4,247,134	4,246,951
4,247,756	4,247,039	4,246,764	4,246,684	4,247,239	4,246,974
4,247,769	4,247,322	4,246,867	4,246,690	4,247,281	4,246,975
4,247,772	4,247,329	4,246,893	4,246,731	4,247,393	4,246,976
4,247,800	4,247,335	4,246,915	4,246,777	4,247,920	4,246,979
4,247,801	4,247,435	4,246,926	4,246,793	4,246,685	4,247,066
4,247,817	4,247,526	4,246,954	4,246,794	4,246,691	4,247,080
4,247,851	4,247,727	4,246,956	4,246,842	4,246,743	4,247,096
4,247,883	4,247,085	4,246,969	4,246,866	4,246,751	4,247,098
4,247,898	4,246,888	4,246,978	4,246,934	4,246,792	4,247,162
4,247,906	4,247,003	4,247,029	4,246,946	4,246,891	4,247,228
4,247,941	4,246,907	4,247,095	4,246,972	4,246,903	4,247,302
Re.30,497	4,247,882	4,247,101	4,246,982	4,246,927	4,247,313
4,246,683	4,247,939	4,247,104	4,246,991	4,246,932	4,247,368
4,246,712	4,246,676	4,247,108	4,247,019	4,246,957	4,247,402
4,246,726	4,246,679	4,247,113	4,247,026	4,246,958	4,247,492
4,246,728	4,246,707	4,247,130	4,247,035	4,247,000	4,247,508
4,246,761	4,246,720	4,247,137	4,247,055	4,247,016	4,247,532
4,246,789	4,246,780	4,247,139	4,247,070	4,247,045	4,247,726
4,246,790	4,246,785	4,247,146	4,247,103	4,247,047	4,247,770
4,246,798	4,246,847	4,247,175	4,247,112	4,247,064	4,247,849
4,246,799	4,246,855	4,247,177	4,247,136	4,247,097	4,247,853
4,246,804	4,246,905	4,247,236	4,247,217	4,247,106	4,247,881
4,246,812	4,246,980	4,247,249	4,247,225	4,247,147	4,247,892
4,246,817	4,246,992	4,247,262	4,247,250	4,247,161	4,247,915
4,246,830	4,247,013	4,247,283	4,247,254	4,247,224	4,247,919
4,246,843	4,247,027	4,247,304	4,247,284	4,247,232	4,246,669
4,246,875	4,247,031	4,247,307	4,247,305	4,247,234	4,247,400
4,246,877	4,247,077	4,247,311	4,247,330	4,247,255	4,247,636
4,246,929	4,247,114	4,247,333	4,247,356	4,247,320	4,246,775
4,246,931	4,247,120	4,247,338	4,247,357	4,247,340	4,246,836
4,246,988	4,247,287	4,247,352	4,247,380	4,247,364	4,246,910
4,246,993	4,247,327	4,247,372	4,247,395	4,247,386	4,247,318
4,246,995	4,247,354	4,247,429	4,247,403	4,247,419	4,247,397
4,247,002	4,247,358	4,247,431	4,247,418	4,247,434	4,247,705
4,247,044	4,247,384	4,247,441	4,247,424	4,247,439	4,247,890
4,247,052	4,247,388	4,247,445	4,247,425	4,247,478	4,246,894
4,247,071	4,247,409	4,247,459	4,247,428	4,247,500	4,247,312
4,247,092	4,247,410	4,247,461	4,247,451	4,247,509	4,247,482
4,247,099	4,247,416	4,247,464	4,247,467	4,247,524	4,247,655
4,247,151	4,247,423	4,247,466	4,247,477	4,247,722	4,247,884
4,247,152	4,247,447	4,247,475	4,247,506	4,247,728	4,246,852
4,247,331	4,247,463	4,247,499	4,247,516	4,247,732	4,247,184
4,247,422	4,247,465	4,247,521	4,247,534	4,247,734	4,247,242
4,247,528	4,247,472	4,247,533	4,247,581	4,247,737	4,247,299
4,247,553	4,247,473	4,247,535	4,247,584	4,247,755	4,247,349
4,247,555	4,247,515	4,247,579	4,247,647	4,247,790	4,247,633
4,247,585	4,247,538	4,247,601	4,247,661	4,247,830	4,247,744
4,247,586	4,247,547	4,247,610	4,247,664	4,247,840	4,247,758
4,247,592	4,247,589	4,247,613	4,247,676	4,247,859	4,247,806
4,247,771	4,247,619	4,247,615	4,247,678	4,247,864	4,247,936
4,247,850	4,247,631	4,247,622	4,247,679	4,247,879	

DESIGN PATENTS

04 : 258,020	258,061	258,074	258,076	36 : 258,034	258,077
06 : 258,021	258,068	258,031	258,086	258,060	258,078
258,028	258,070	258,091	258,032	258,062	258,087
258,030	258,085	258,049	258,040	258,080	41 : 258,044
258,033	08 : 258,084	258,036	258,093	258,029	44 : 258,055
258,035	12 : 258,041	258,037	258,094	258,038	45 : 258,064
258,046	17 : 258,051	258,066	258,083	258,047	258,081
258,052	258,073	258,039	258,022	258,048	46 : 258,088
258,054	258,092	258,075	258,045	258,063	47 : 258,067
258,056	18 : 258,053				

PLANT PATENTS

17 : 4,633	18 : 4,631	24 : 4,630	34 : 4,632		
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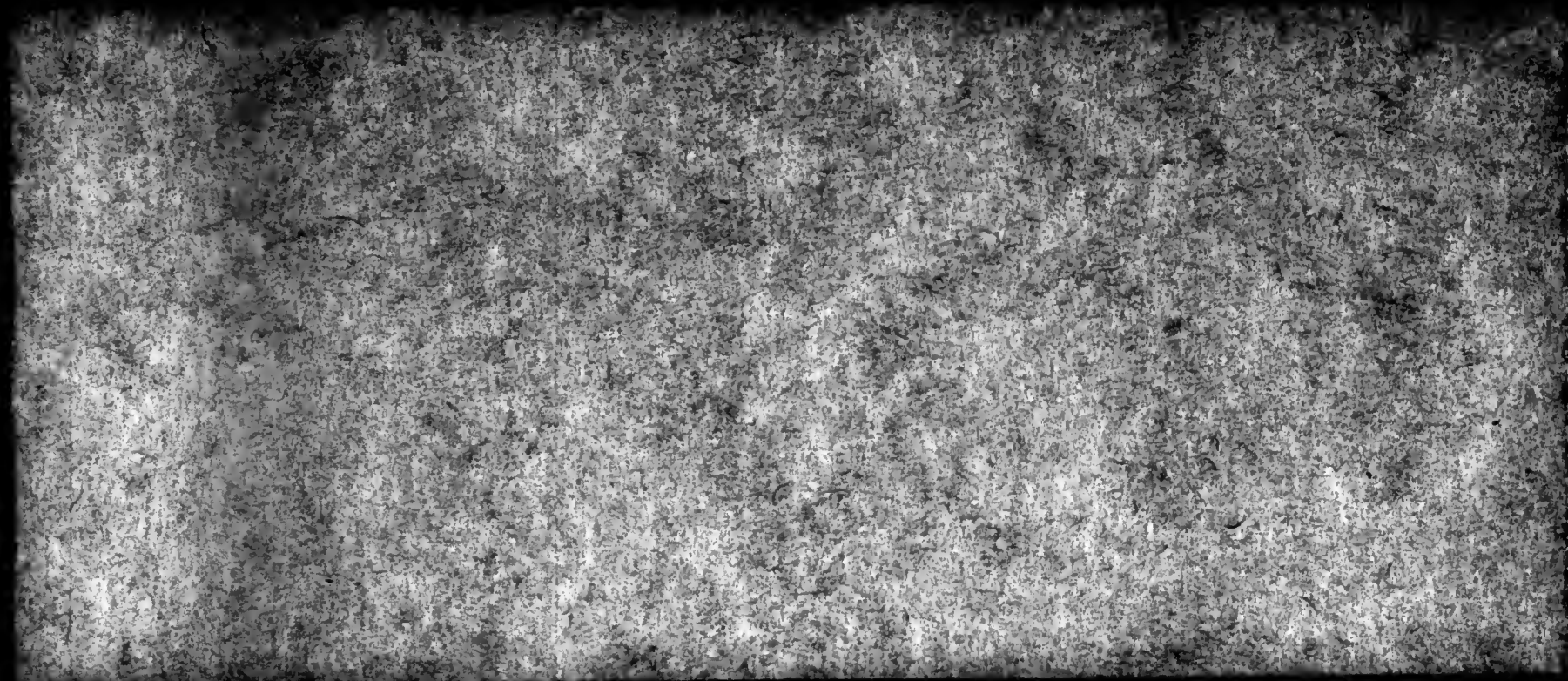
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